

Morven Offshore Wind Farm

Morven Hawthorn Pit Grid Connection Project

Preliminary Environmental Information Report

Volume 2, Annex 3.1: Benthic Ecological Technical Report

MVCNS-J4029-GOB-00009
October 2026
B01

GoBe

Document status

Version	Purpose of document	Authored by	Checker	Approved by	Date
B01	PEIR	GoBe	LL	LS	October 2026

Prepared by:	Prepared for:
GoBe	Morven Offshore Wind Limited

Table of contents

Executive Summary **1**

1 Introduction **3**

1.1 Overview 3
1.2 Consultation and engagement 4
1.3 Study Areas 4

2 Background information **6**

2.1 Legislative background 6

3 Methodology **8**

3.1 Overview 8
3.2 Desktop data 8
3.3 MHPGC Project-specific surveys 15

4 Benthic subtidal ecology baseline **27**

4.1 Overview 27
4.2 Bathymetry seabed features 27
4.3 Sediment characteristics 28
4.4 Sediment chemistry 37
4.5 Seabed habitat and communities 41
4.6 Invasive non-native species 49

5 Benthic intertidal ecology baseline **51**

5.2 Sediment characteristics 51
5.3 Seabed habitat and communities 53
5.4 Invasive non-native species 54

6 Designated sites **55**

7 Valued ecological receptors **57**

8 Summary **66**

8.1 Baseline summary 66

9 References **67**

Appendix A ..... XOCEAN Ltd. (2023) Geophysical Survey Report 73

Appendix B ..... XOCEAN Ltd. (2025) Geophysical Survey Report 74

Appendix C ..... Gardline Ltd. (2024) Environmental Baseline Report 75

Appendix D ..... Gardline Ltd. (2024) Habitat Assessment Report 76

Appendix E ..... Gardline Ltd. (2025) Environmental Baseline Report 77

Appendix F ..... Gardline Ltd. (2025) Habitat Assessment Report 78

Appendix G ..... OWC (2025) Biotope Mapping Technical Note 79

Appendix H ..... Intertidal Benthic Survey Methodology 80

H.1 Intertidal Phase I survey 80

H.2 Intertidal Phase II survey 80
Appendix I ..... 2023 and 2024 survey sample locations 82
Appendix J ..... Species scientific common names and biotopes 85
J.1 Latin and common names 85
J.2 Biotopes 86
J.3 Responses to Natural England Discretionary Advice Service Provided (August, 2026) 88

List of tables

Table 3-1 Baseline data sources 9
Table 3-2. Site-specific surveys 18
Table 3-3: SACFOR abundance scale 25
Table 3-4: Stony reef criteria (Irving, 2009) 26
Table 4-1: Concentration of heavy metals that exceeded marine sediment EQS values in the MHPGC Project PEIR Red Line Boundary 39
Table 4-2: Total PAH concentration that exceeded Long *et al.* (1995) marine sediment EQS values within the MHPGC Project PEIR Red Line Boundary 40
Table 6-1: Summary of designated sites within the Benthic Ecology Study Area and relevant qualifying features (Figure Figure 1-1) 55
Table 7-1 Valued Ecological Receptors (VERs) identified within the Project PEIR Red Line Boundary and Benthic Subtidal Ecology Study Area in Scottish waters 58
Table 7-2 Valued Ecological Receptors (VERs) identified within the Project PEIR Red Line Boundary and Benthic Subtidal Ecology Study Area in English waters 61
Table 9-1: Subtidal benthic sample locations within the MHPGC Project PEIR Red Line Boundary 82

List of figures

Figure 1-1 Benthic Subtidal and Intertidal Ecology Study Areas and relevant designated sites 5
Figure 3-1: Geophysical and benthic survey extents within the MHPGC Project PEIR Red Line Boundary 21
Figure 4-1 EUNIS classification within the Benthic Subtidal Ecology Study Area (EMODnet, 2023) 32
Figure 4-2: OneBenthic faunal cluster mapping 33
Figure 4-3: EUNIS habitat classification and sediment type and feature within the MHPGC Project PEIR Red Line Boundary (OWC, 2025) 34
Figure 4-4. Example DDV stills of frequent to common burrows (top, ENV210), frequent to common *P. phosphorea* (left, ENV230) and occasional to occasional *Virgularia stet.* (right, ENV121) 48
Figure 4-5 Example DDV stills of medium (left, ENV219) and low resemblance stony reef (right, ENV198) ... 49
Figure 5-1 Intertidal seabed substrates within the Benthic Intertidal Ecology Study Area 52

Glossary

Term	Meaning
Annex I Habitat	Annex I refers to a habitat as defined under the European Union (EU) Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive).
The Applicant	The legal entity making the applications for consent; Morven Offshore Wind Limited (MvOWL).
Bathymetry	The measurement of water depth in oceans, seas and lakes.
Benthic ecology	Benthic ecology encompasses the study of the organisms living in and on the sea floor, the interactions between them and impacts on the surrounding environment.
Biotope	The combination of physical environment (habitat) and its distinctive assemblage of characterising species.
Bivalve	A class of molluscs, which have a hard calcareous shell made of two parts or 'valves'.
Bryozoan	A phylum of filter feeding aquatic invertebrate animals, nearly all living in sedentary colonies.
Circalittoral	The region from the lower limit of the infralittoral zone to the maximum depth at which photosynthesis is still possible.
Cnidarian	An aquatic invertebrate of the phylum Cnidaria characterised by a decentralised nervous system distributed throughout a gelatinous body.
Development Consent Order (DCO)	An order made under the Planning Act 2008, as amended, granting development consent.
Echinoderm	An invertebrate animal belonging to the phylum Echinodermata that includes sea stars, brittle stars, feather stars, sea urchins and sea cucumbers.
Environmental Impact Assessment (EIA)	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Environmental Statement (ES)	The document presenting the results of the EIA process.
Epifauna	Animals living on the surface of the seabed.
Habitat	The environment that a plant or animal lives in.
Habitats Directive	Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the Habitats Directive) is the European Union Directive from which the requirement for the consideration of potential impacts of the MHPGC Project upon European sites and sites designated within the National Site Network is derived.
High Voltage Alternating Current (HVAC)	A HVAC electric power transmission system uses alternating current for electric power transmission that periodically reverses direction at regular intervals.
High Voltage Direct Current (HVDC)	A HVDC electric power transmission system uses direct current for electric power transmission, in contrast to the more common

Term	Meaning
	alternating current systems. Most HVDC links use voltages between 100 kilovolts (kV) and 800kV.
Infauna	The animals living in the sediments of the seabed.
Inshore waters	Marine waters from mean high water springs extending seaward to 12 nautical miles (nm).
Intertidal area	The area between Mean High-Water Springs (MHWS) and Mean Low Water Springs (MLWS).
Landfall	The area in which the offshore export cables make landfall (come onshore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area between the trenchless technique exit pits and the transition joint bay inclusive of all construction works.
Littoral	The littoral zone extends from MHWS, which is rarely inundated, to shoreline areas that are permanently submerged.
Lowest Astronomical Tide (LAT)	The lowest tide level that can be expected to occur under average meteorological conditions and under any combination of astronomical conditions.
Macrofauna	Animals that can typically be retained in a sieve with a mesh size of at least 1 millimetre (mm). This term is used in relation to benthic subtidal ecology.
Marine Conservation Zone (MCZ)	An area designated under the Marine and Coastal Access Act 2009 in English waters for the purpose of conserving marine flora, fauna, habitats or features of geological or geomorphological interest.
Marine Management Organisation (MMO)	The MMO, as a UK government body, is responsible for licensing, regulating and overseeing activities in the marine environment for English waters. For a DCO and deemed marine licence, the MMO acts as a statutory consultee, advising on marine planning, environmental impacts, habitats and compliance with marine licensing regulations.
Marine Protected Area (MPA)	Areas within the United Kingdom's seas designated for the protection of marine life and habitats against damage caused by human activities.
Mean High Water Springs (MHWS)	The most inshore level location reached by the sea at high tide during mean high water spring tide. This is defined as the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest.
Mean Low Water Springs (MLWS)	The average height of the low water levels of each pair of successive low waters during the periods of about 24 hours when the tidal range is at its greatest.
Megafauna	Larger benthic animals (typically >1 centimetre (cm)) that are easily visible and often observed in seafloor imagery.
MHPGC Project Preliminary Environmental Information Report (PEIR)	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project and which helps to inform consultation responses.

Term	Meaning
MHPGC Project PEIR Red Line Boundary	The area within which all components of the MHPGC Project will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).
MHPGC Project Scoping Opinions	Separate scoping opinions received from PINS (on behalf of the Secretary of State(SoS)) and MD-LOT (on behalf of the Scottish Ministers) in response to the MHPGC Project Scoping Report. The MHPGC Project Scoping Opinions contain the range of issues that PINS, and MD-LOT in consultation with statutory stakeholders, have identified should be considered within the EIA process.
Morven Hawthorn Pit Grid Connection Project	The MHPGC Project is comprised of the offshore export cables in Scottish and English waters from the Morven North or the Morven South offshore substation platform(s) (OSP), landfall, onshore export cables, the onshore land substation (LSS) and AC connection cables. Also referred to in this report as the MHPGC Project, for ease of reading.
Morven North Offshore Wind Array Project and Morven South Offshore Wind Array Project	Morven North and Morven South comprises the Morven North Offshore Wind Array Project and Morven South Offshore Wind Array Project, collectively.
Mollusc	Invertebrate animal belonging to the phylum Mollusca that includes snails, clams, chitons, tooth shells, and octopi.
National Grid Hawthorn Pit Substation	The National Grid substation at Hawthorn Pit, County Durham, which the Alternating Current (AC) connection cables will connect into from the onshore land substation.
Natural Environment and Rural Communities Act (NERC) 2006	UK legislation that establishes duties on public authorities in England to have regard to the conservation of biodiversity when exercising their functions. The Act also provides for statutory lists of habitats and species of principal importance for the conservation of biodiversity in England (under Section 41).
Offshore waters	The area seaward of 12 nm extending out to the UK's continental shelf.
Offshore export cables	HVDC cables which bring electricity from either the Morven North or Morven South OSP to the TJB at landfall.
Offshore export cable corridor	The proposed corridor in which the offshore export cables will be located, from either the Morven North or Morven South OSP to the Transition Joint Bay (TJB) at landfall.
Offshore substation platforms (OSP(s))	OSP(s) comprise the support structure, topside and electrical components used for collecting the electricity generated by the wind turbine generators, in Scottish waters, for the passage or transmission to landfall. These OSP(s) can be divided into two types: • HVAC collector substations; • HVDC converter substations.
Polyaromatic hydrocarbons (PAH)	A class of chemicals that occur naturally in coal, crude oil, and gasoline.
Polychlorinated biphenyls (PCB)	They belong to a broad family of human-created organic chemicals known as chlorinated hydrocarbons. Although most were banned

Term	Meaning
	in 1986, they linger on in detectable levels in animals, fish and humans.
Superabundant, Abundant, Common, Frequent, Occasional, Rare (SACFOR) scale	A semi-quantitative abundance score developed to support the description of marine benthic communities.
the Study Area	For each environmental topic, the baseline environment will be characterised, and the potential environmental impacts will be described within a topic-specific study area. Specific Study Areas are defined for each topic and are based on the maximum spatial extent across which potential impacts of the MHPGC Project may be experienced by the relevant receptors (i.e. Zone of Influence (ZoI)).
Subtidal	An area below LAT that is always submerged by water.
Tidal cycle	One high tide plus a successive low tide.
Tidal ellipse	The illustration of the variance of tidal currents in horizontal space.
Transition Joint Bay (TJB)	An underground bay housing a joint which connects the offshore export cables to the onshore export cables. The TJB will be located in the vicinity of the onshore side of the landfall.
Trenchless techniques	Construction methods used to install underground or sub-surface infrastructure without the need for continuous open trench excavation, thereby avoiding or minimising disturbance to surface features, habitats and existing land users.
Zone of influence (ZoI)	The area within which impacts arising from the MHPGC Project could occur upon receptors.

Acronyms

Unit	Meaning
AC	Alternating Current
AET	Apparent Effects Threshold
AL	Action Level
AMBI	AZTI Marine Biotic Index
BAP	Biodiversity Action Plan
BDC	Biodiversity Committee
BGS	British Geological Survey
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CIEEM	Chartered Institute of Ecology and Environmental Management
CSQG	Canadian Sediment Quality Guideline
DCO	Development Consent Order
DDV	Drop Down Video
Defra	Department for Environment, Food and Rural Affairs
EC	European Commission

Unit	Meaning
eDNA	Environmental DNA
EEA	European Environment Agency
EIA	Environmental Impact Assessment
EMODnet	European Marine Observation Data Network
EQS	Environmental Quality Standards
ERL	Effects Range Low
ERM	Effect Range Medium
ES	Environmental Statement
EU	European Union
EUNIS	European Union Nature Information System
FOCI	Feature of Conservation Importance
GB	Great Britain
GIS	Geographic Information System
HDD	Horizontal Directional Drilling
HF	Hydrofluoric Acid
HPI	Habitats of Principal Importance
HPMA	Highly Protected Marine Area
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IAS	Invasive Alien Species
IBTS	International Bottom Trawl Survey
ICES	International Council for the Exploration of the Sea
INNS	Invasive Non-Native Species
IQI	Infaunal Quality Index
JNCC	Joint Nature Conservation Committee
KP	Kilometre Point
LAT	Lowest Astronomical Tide
LF	Landfall
LOD	Limit of Detection
MAGIC	Multi-Agency Geographic Information for the Countryside
MBES	Multibeam Echosounder
MCS	Marine Conservation Society
MCZ	Marine Conservation Zone
MD-LOT	Marine Directorate – Licencing and Operations Team
MESH	Mapping European Seabed Habitats
MHPGC	Morven Hawthorn Pit Grid Connection

Unit	Meaning
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MNCR	Marine Nature Conservation Review
MPA	Marine Protected Area
NECO	North East Coastal Observatory
NERC	Natural Environment and Rural Communities
NMBAQC	Northeast Atlantic Marine Biological Analytical Quality Control
NMCAQC	National Marine Chemical Analytical Quality Control scheme
NMEAQC	National Marine Ecotoxological Analytical Quality Control scheme
NMMP	National Marine Monitoring Programme
NMPi	National Marine Plan Interactive
NNSS	Non-Native Species Secretariat
OGL	Open Government Licence
OSPAR	Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic
OWF	Offshore Wind Farm
PAH	Polyaromatic hydrocarbons
PCB	Polychlorinated Biphenyl
PEIR	Preliminary Environmental Information Report
PEL	Probably Effect Level
PINS	The Planning Inspectorate
PMF	Priority Marine Feature
PSA	Particle Size Analysis
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SACFOR	Superabundant, Abundant, Common, Frequent, Occasional and Rare
SBP	Sub-Bottom Profiler
SCI	Sites of Community Importance
SoS	Secretary of State
SPA	Special Protection Area
SPI	Species of Principle Importance
SSC	Suspended Sediment Concentrations
SSS	Sidescan Sonar
SSSI	Site of Special Scientific Interest
TEL	Threshold Effect Level

Unit	Meaning
TJB	Transition Joint Bay
UAV	Unmanned Aerial Vehicle
UHRS	Ultra High Resolution Seismic system
UK	United Kingdom
UKOOA	United Kingdom Offshore Operators Association
VER	Valued Ecological Receptor
WFD	Water Framework Directive
WoRMS	World Register of Marine Species
ZoI	Zone of Influence

Units

Unit	Meaning
%	Percent
cm	Centimetre
g	Gram
ha	Hectare
km	Kilometre
m	Metre
mm	Millimetre
nm	Nautical mile
µg	Microgram

Executive Summary

This Benthic Ecology Technical Report provides a comprehensive detailed characterisation of the benthic subtidal and intertidal ecology baseline against which the Morven Hawthorn Pit Grid Connection Project (hereafter 'MHPGC Project') can be assessed. This report acts as a synthesis of available information relevant to benthic subtidal and intertidal ecology, integrating findings from a detailed desktop review of existing data sources with MHPGC Project-specific survey data.

The MHPGC Project will connect the offshore substation platform(s) (OSP(s)) of Morven North Offshore Wind Array Project or Morven South Offshore Wind Array Project (hereafter 'Morven North or Morven South'), located approximately 61 kilometres (km), at their closest point, from the Aberdeenshire coast in Scottish waters, to the National Grid Hawthorn Pit Substation in County Durham, England. The offshore export cables would traverse Scottish offshore, English offshore and English inshore waters.

For the purposes of the benthic ecology assessment, the Benthic Subtidal and Intertidal Ecology Study Areas are defined by the MHPGC Project Preliminary Environmental Information Report (PEIR) Red Line Boundary (inclusive of the MHPGC Project offshore export cable corridor, Morven North and Morven South) plus a precautionary 9 km buffer. The 9 km buffer reflects the maximum tidal excursion distance, and therefore the maximum spatial extent over which potential benthic impacts may occur. The Benthic Subtidal and Intertidal Ecology Study Areas have been characterised using a combination of data sources, including project-specific surveys undertaken within the PEIR Red Line Boundary to date, survey data from relevant adjacent projects and designated sites, and regional benthic ecology data from the wider North Sea to inform receptor identification.

Multiple MHPGC Project-specific surveys, including geophysical and subtidal benthic surveys have contributed to the benthic ecology baseline within the MHPGC Project PEIR Red Line Boundary. Grab samples, drop down video, Particle Size Analysis (PSA) and macrofaunal data obtained from the surveys were used to classify macrofaunal community groups within the MHPGC Project PEIR Red Line Boundary, in accordance with the European Union Nature Identification System (EUNIS). Habitats were subsequently assessed in terms of their ecological and conservation importance, based on current marine legislation and guidance.

In offshore Scottish waters within the Benthic Subtidal Ecology Study Area, the seabed is predominantly sandy with localised gravelly sediments. Within the MHPGC Project PEIR Red Line Boundary, sparse boulders extend southwards, from Morven South into English offshore waters, alongside localised muddy sand. Project-specific surveys identified the biotope '*Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud' (MD6218/SS.SMu.OMu.PjefThyAfil), associated with sandy mud and mud habitats on the Scottish Biodiversity List, and the 'burrowed mud' Priority Marine Feature (PMF). Biotopes linked to the PMF 'subtidal sands and gravels' have also been recorded at Morven North and South, and ocean quahog (*Arctica islandica*) (also a PMF and listed by the Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)) was identified within the MHPGC PEIR Red Line Boundary. Evidence of Annex I 'Reefs' (stony reef) is present within the wider Benthic Subtidal Ecology Study Area, although limited within the MHPGC PEIR Red Line Boundary. Sediment contamination within the MHPGC Project PEIR Red Line Boundary is minimal, with a single arsenic Environmental Quality Standard (EQS) exceedance recorded.

In offshore English waters within the Benthic Subtidal Ecology Study Area, seabed habitats comprise a mix of coarse sediment, sand, mud and mixed sediments. Within the MHPGC Project PEIR Red Line Boundary, sediments transition from predominantly offshore sand to coarser sediments and localised rock near landfall. Designated sedimentary habitats are present, including those associated with the UK BAP Priority Habitat 'mud habitats in deep water' and the Habitat of Principal Importance (HPI) 'sublittoral sands and gravels'. 'Sea pen and burrowing megafauna communities' (OSPAR-listed, a feature of the Farnes East Marine Conservation Zone (MCZ) and typically associated with the HPI 'Mud habitats in deep water') occur within the MHPGC Project PEIR Red Line Boundary. Two locations within the PEIR Red Line Boundary were identified as Annex I stony reef, exhibiting a medium resemblance to Annex I reef in accordance with the criteria described by Irving (2009). Annex I biogenic 'Reef' (*Sabellaria spinulosa*) and kelp bed (a HPI and UK BAP Priority Habitat) may occur within the wider Benthic Subtidal Ecology Study Area based on historic records, although these habitats were not detected within the MHPGC Project PEIR Red Line Boundary by site-specific surveys. Intertidal habitats, including mudflats, rocky reef and subtidal soft sediments, are likely present but remain unconfirmed pending Phase I and Phase II intertidal surveys to be undertaken in 2026.

Within the Benthic Subtidal and Intertidal Ecology Study Area, across Scottish and English waters, records of Invasive Non-Native Species (INNS) were extremely limited. MHPGC Project-specific surveys indicated low levels of sediment contamination. In Scottish waters, contaminant concentrations were largely consistent with background conditions, with only a single isolated exceedance of lower-tier sediment quality thresholds for arsenic recorded. In English waters, some heavy metals and polyaromatic hydrocarbons (PAHs) exceeded lower-tier sediment quality thresholds (e.g. Centre for Environment, Fisheries and Aquaculture Science (Cefas) AL1 and Effects Range Low (ERL) values), particularly in inshore areas. However, no exceedances of higher-tier thresholds (e.g. Cefas AL2 or Effects Range Medium (ERM)) were identified, and observed patterns were consistent with natural sediment characteristics and historical influences., indicating limited effects to the marine environment.

The preliminary environmental information presented in this technical report has been used to identify any habitats or species of conservation importance and/or sensitivity to MHPGC Project activities to support the PEIR. This will subsequently inform the assessment of likely significant effects for the purposes of the Environmental Impact Assessment (EIA) which will be presented in the Environmental Statement (ES) to be submitted as a part of the Development Consent Order (DCO) application. The habitats and species of particular importance present within the MHPGC Project PEIR Red Line boundary comprise subtidal sands and gravels, subtidal muds and sea pen and burrowing megafauna communities. There is also potential for subtidal mixed sediments, stony reef, *S. spinulosa* reef, kelp beds and ocean quahog potentially within the wider Benthic Subtidal Ecology Study Area.

1 Introduction

1.1 Overview

1.1.1.1 This Benthic Ecology Technical Report for the MHPGC Project aims to provide a detailed baseline characterisation of the benthic subtidal and intertidal ecology within the defined study areas (**Section 1.3**). The survey extents are illustrated in **Figure 1-1**.

1.1.1.2 This report focuses on the assessment of the data collected during the MHPGC project-specific surveys, alongside a review of the associated reports derived from the project-specific surveys (**Table 3.2**).

1.1.1.3 Additionally, the data have been contextualised through a desktop study of the existing online resources available for benthic subtidal and intertidal ecology (**Table 3.1**), relevant to the study areas outlined in **Section 1.3**.

1.1.1.4 This report forms **Volume 2, Annex 3.1: Benthic Ecology Technical Report, of the Preliminary Environmental Information Report (PEIR)** prepared for the MHPGC Project and supports **Volume 2, Chapter 3: Benthic Subtidal and Intertidal Ecology, of the PEIR**.

1.1.1.5 To support the assessment of effects, the ecological information presented in this technical report was used to establish the baseline conditions, including habitats and species of conservation importance and/or high sensitivity to activities associated with the MHPGC Project.

1.2 Consultation and engagement

1.2.1 Scoping

1.2.1.1 A Scoping Report for the MHPGC Project was issued to the Planning Inspectorate (PINS) and the Marine Directorate – Licencing and Operations Team (MD-LOT) in February 2025 (RPS, 2025). Following consultation with the appropriate statutory bodies, PINS (on behalf of the Secretary of State (SoS)) and MD-LOT both provided Scoping Opinions in March 2025 (PINS, 2025; MD-LOT, 2025, respectively).

1.2.1.2 **Volume 2 Chapter 3: Benthic Subtidal and Intertidal Ecology**, **of the PEIR** sets out the key comments raised in the MHPGC Project Scoping Opinions specific to the benthic subtidal and intertidal ecology and details of how these comments have been addressed within the PEIR.

1.2.2 Further consultation and engagement

1.2.2.1 Following the EIA Scoping stage, ongoing consultation and engagement has been undertaken with Natural England through their Discretionary Advice Service (DAS). A summary of comments received from Natural England in August 2026 is provided in **Appendix J.3**, together with details of how the consultation responses have been considered and addressed.

1.3 Study Areas

1.3.1.1 The MHPGC Project would connect the OSP(s) of Morven North or Morven South, located approximately 61 km, at their closest point, from the Aberdeenshire coast in Scottish waters, to the National Grid Hawthorn Pit Substation in County Durham, England. The offshore export cables would traverse Scottish offshore, English offshore and English inshore[1] waters.

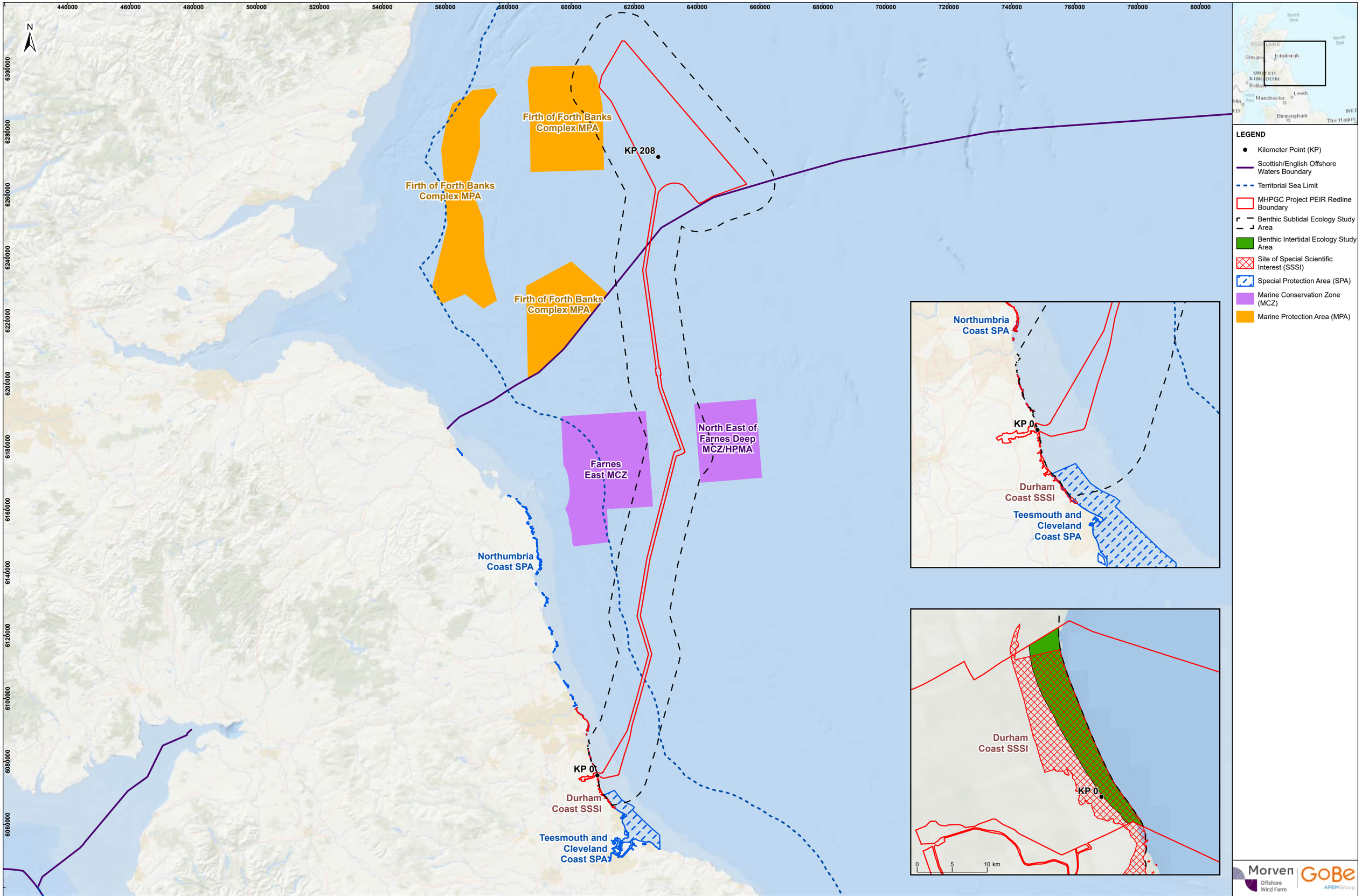
1.3.1.2 For the purposes of this report the study areas for benthic subtidal and intertidal ecology have been defined by the following:

- The MHPGC Project PEIR Red Line Boundary is inclusive of Scottish offshore, English offshore and inshore waters to landfall south of Seaham (**Figure 1-1**). The MHPGC Project PEIR Red Line Boundary includes, and extends from Kilometre Point (KP) 208 offshore, in Scottish Waters, to KP0 at Mean High Water Springs (MHWS) at the landfall. KPs are linear reference markers positioned at 1 km intervals within the MHPGC-Project PEIR Red Line boundary, with KP0 located at the landfall;
- The Benthic Subtidal Ecology Study Area is defined by a 9 km buffer around the MHPGC Project PEIR Red Line Boundary. This buffer represents the distance of one spring tidal ellipse, in order to incorporate the maximum distance sediments may travel in one tidal cycle, as described in **Volume 2, Annex 2.2: Model Design Validation and Results**. This buffer defines the likely maximum spatial extent of potential indirect impacts of the MHPGC Project; and
- The Benthic Intertidal Ecology Study Area, defined by the intertidal habitats up to the MHWS mark within the MHPGC Project PEIR Red Line Boundary. As trenchless techniques will be used at landfall, with the exit pits in the subtidal environment, no direct impacts to intertidal benthic ecology receptors are expected; however, the intertidal area is included for completeness.

1.3.1.3 Regional benthic ecology data from the wider North Sea have also been considered to contextualise the study areas identified above and provide a broader understanding of baseline conditions and ecological variability.

1.3.1.4 The Benthic Subtidal and Intertidal Ecology Study Areas are outlined within **Figure 1-1**.

[1] Inshore within 12 nautical miles (nm), offshore beyond 12nm.



Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
BENTHIC SUBTIDAL AND INTERTIDAL ECOLOGY STUDY AREAS AND RELEVANT DESIGNATED SITES

0 5 10 15 20 25 km

Scale@A31:1,050,000

Geodetic Information:
Datum: European 1950
Projection: ED 1950 UTM Zone 30N

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
World Ocean Base: OceanWise, Esri, GEBCO, Garmin, NaturalVue
World Ocean Base: Esri, Garmin, NaturalVue

Morven Offshore Wind Farm | GoBe APEM Group

Drawing Number:
FIGURE 1-1

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-

2 Background information

2.1 Legislative background

2.1.1 International

OSPAR Commission

2.1.1.1 At its Biodiversity Committee (BDC) meeting in 2003, the Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) Commission agreed to proceed with a programme to collate existing data on the distribution of 14 key habitats, as part of a wider programme to develop measures for their protection and conservation. The United Kingdom (UK) agreed to compile the relevant data for its own marine waters, including those of England and Scotland, and submit these for collation into composite maps on the distribution of each habitat type across the whole OSPAR area. The work has been coordinated by the Joint Nature Conservation Committee (JNCC).

2.1.1.2 OSPAR has also identified a number of Threatened and/or Declining Species and Habitats, several of which are relevant to this report, including:

- *S. spinulosa* reef;
- Sea pen and burrowing megafauna communities; and
- Ocean quahog.

European Habitats Directive

2.1.1.3 The Habitats Directive (92/43/EEC) established a framework for the conservation of habitats and species of European importance through the designation and protection of Special Areas of Conservation (SACs). Together with Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EC), these sites form a network of protected areas. Following the UK's withdrawal from the European Union, the requirements of the Habitats and Birds Directives were retained in domestic legislation through the Conservation of Habitats and Species Regulations, ensuring continuity of habitat and species protection across England and Scotland.

2.1.1.4 Habitats of particular relevance to this report include:

- Annex I 'Reefs', including subtidal reefs (e.g. biogenic reefs formed by *Sabellaria spinulosa* or *Modiolus modiolus,* and rocky reefs formed from iceberg scour or moraine deposits);

2.1.2 UK (including England and Scotland)

UK Post-2010 Biodiversity Framework

2.1.2.1 The 'UK Post-2010 Biodiversity Framework' was published in July 2012 to succeed the UK Biodiversity Action Plan (BAP) and 'Conserving Biodiversity – the UK Approach'. It reflects a shift in strategic direction following the publication of the Convention on Biological Diversity's 'Strategic Plan for Biodiversity 2011-2020' and the EU Biodiversity Strategy in May 2011. The framework provides an overarching approach for biodiversity conservation across the UK, including England and Scotland, with delivery implemented through devolved national strategies.

2.1.2.2 All of the 1,150 species, 391 Species Action Plans and 45 Habitat Action Plans previously included in the UK BAP were carried forward into the framework. Key UK BAP habitats of particular relevance to this report are:

- mud habitats in deep water;
- saline lagoon and
- *S. spinulosa* reefs;

Natural Environment and Rural Communities Act 200

2.1.2.3 Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 requires the SoS to publish a list of Habitats of Principle Importance (HPI(s)) and Species of Principal Importance

(SPI(s)) for the purpose of conserving biodiversity in England. These HPIs and SPIs are used to inform decision-making and assessment of impacts in environmental impact assessments. Many of these habitats correspond to those previously identified as UK BAP priority habitats and include a number of marine and benthic habitats. HPIs of relevance to this report include:

- subtidal sands and gravels;
- coastal sand dunes;
- subtidal mud habitats;
- horse mussel beds;
- mud habitats in deep water;
- intertidal mudflats;
- intertidal boulder communities;
- saline lagoons; and
- *S. spinulosa reefs*.

No SPIs are of relevance to this report.

The UK Monitoring Programme

2.1.2.4 The UK National Marine Monitoring Programme (NMMP) was established in response to the 1986 House of Lords select committee on marine science and technology, who recommended that a common approach to marine monitoring should be established to comply with the international and national commitments (OSPAR Convention and EC Directives). The NMMP focuses on stable depositional sites and records data on sediment chemistry, biological communities, the bioaccumulation of heavy metals (cadmium, mercury and lead) and their ecological effects.

2.1.2.5 A National Marine Biology Analytical Quality Control Scheme (NMBAQC) was established in 1992 to establish quality assurance standards for the biological aspects of the NMMP. Similar schemes exist for chemical monitoring (NMCAQC) and ecotoxicological monitoring (NMEAQC) (Davies et al., 2001).

2.1.3 Scotland

Natural Conservation (Scotland) Act 2004

2.1.3.1 Natural Conservation (Scotland) Act 2004 (Scottish Government, 2004); place a statutory duty on public authorities in Scotland to further the conservation of biodiversity and identify species and habitats of principle importance for biodiversity conservation through the Scottish Biodiversity List. Species of relevance to this report include:

- ocean quahog.

Priority Marine Features

2.1.3.2 In July 2014, Scottish Ministers adopted a list of 81 PMFs, many of which are features characteristic of the Scottish marine environment. The list, which covers a variety of habitats and species that are a priority for conservation in Scotland's seas, was developed by Marine Directorate, the Joint Nature Conservation Committee (JNCC) and NatureScot. PMFs include a range of intertidal and continental shelf habitats, deep sea habitats, mammals, fish, shellfish, and other invertebrates. Habitats and species of relevance to this report include:

- ocean quahog;
- horse mussel beds;
- burrowed mud;
- intertidal mudflats;
- kelp beds;
- offshore deep sea muds; and
- offshore subtidal sands and gravels.

3 Methodology

3.1 Overview

3.1.1.1 The subtidal and intertidal benthic ecology baseline for the MHPGC Project has been derived from a combination of publicly available desktop data sources and MHPGC Project-specific surveys. These sources and details are described in **Table 3.1** and **Table 3.2**, respectively.

3.2 Desktop data

3.2.1.1 A significant amount of publicly available data exists within the Benthic Subtidal and Intertidal Ecology Study Areas. This includes broadscale habitat mapping and information collected for Offshore Wind Farms (OWFs), as well as publicly available data sources and literature. Where relevant, this information has been used to help inform the benthic ecology baseline characterisation in relation to the MHPGC Project.

3.2.1.2 Key data sources for the benthic ecology baseline are detailed in **Table 3.1**.

Table 3.1 Baseline data sources

Source	Summary	Coverage of Study Area
Existing Offshore Wind Farm (OWF) data		
Morven North Offshore Wind Array Project EIA Report: Volume 3, Annex 8.1 Benthic Subtidal Ecology Shared Technical Report (Tetra Tech RPS Energy, 2026a)	A technical report for Morven North and Morven South that presents a baseline characterisation of the seabed habitats and benthic communities within these respective site boundaries. The report includes the analysis of benthic site-specific survey data from a survey undertaken from April to August 2022 by Gardline Ltd. within the Morven North and Morven South study areas (extending to 5-14 km around the respective boundaries). The sampling strategy was designed to characterise the benthic communities associated with all the broadscale habitats and identify any potentially sensitive features. There were 100 survey stations across the two study areas at which grab sampling and DDV surveys were undertaken, with DDV surveys also completed at an additional two stations. Three sediment samples were collected at each of the 100 grab sampling stations, with samples used for macrofaunal and eDNA analyses. Physicochemical analyses were undertaken at 52 stations, while eDNA analyses were completed for 50 of the 100 samples. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area in Scottish waters where the MHPGC Project PEIR Red Line Boundary overlaps with Morven North and Morven South.
Morven North Offshore Wind Array Project EIA Report: Volume 3, Annex 7.1 Physical Processes Shared Technical Report (Tetra Tech RPS Energy, 2026b)	A technical report for Morven North and Morven South presents a baseline characterisation of physical processes within these respective site boundaries. The report includes an analysis of a geophysical site-specific data from a survey undertaken from April to August 2022 by Gardine and XOcean to establish bathymetry, seabed geology, morphology and sediments. The surveys comprised geophysical methods (including Multibeam Echosounder (MBES), Side-Scan Sonar (SSS), Sub-Bottom Profiling (SBP) and an Ultra High Resolution Seismic (UHRS) system). This data has been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area, where the MHPGC Project PEIR Red Line Boundary overlaps with Morven North and Morven South.
Eastern Green Link 1 – Scotland England Green Link 1 / Eastern Link 1 – Marine Scheme (AECOM, 2022a)	The Eastern Green Link 1 Environmental Appraisal Report presents a baseline characterisation of seabed habitats and benthic communities within the cable corridor. A benthic characterisation survey was undertaken by Fugro, with offshore survey operations conducted between October and December 2020 and nearshore and intertidal survey operations undertaken in November 2021. The survey comprised DDV surveys and benthic grab sampling at 46 subtidal environmental sampling stations, together with 31 camera transects. A modified Phase I walkover habitat mapping survey and intertidal core sampling were also undertaken at the landfall locations. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal and Intertidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area in English waters. Intersects the MHPGC Project PEIR Red Line Boundary approximately 8 km from the proposed MHPGC Project landfall. The proposed landfall for Eastern Green Link 1 in English waters is approximately 3.4 km north of the proposed MHPGC Project landfall.
Eastern Green Link 2 – Marine Scheme: Environmental Apprailsal Report, Volume 2, Chapter 8 Benthic Ecology (AECOM, 2022b)	The Eastern Green Link 2 Environmental Appraisal Report presents a baseline characterisation of seabed habitats and benthic communities within the cable corridor. A benthic characterisation survey was undertaken by NEXTGeosolutions, with nearshore survey operations conducted between 19 April and 20 May 2021 and offshore survey operations conducted between 14 and 30 July 2021. The benthic survey comprised DDV surveys and benthic grab sampling at a total of 63 survey stations. In addition, 146 video	Partial coverage of the Benthic Subtidal Ecology Study Area. Eastern Green Link 2 intersects the MHPGC Project PEIR Red Line Boundary, with limited

Source	Summary	Coverage of Study Area
	and camera ground-truthing stations were surveyed across the corridor. A modified Phase I walkover habitat mapping survey and intertidal core sampling were undertaken at the landfall locations. A further 30 grab and core samples were collected to characterise the intertidal benthic environment in terms of physicochemical characteristics and biological communities. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	overlap in the northwest in Scottish waters, and intersection of the central section in English waters.
Cambois Connection – Marine Scheme Environmental Statement – Volume 3, Appendix 8.1 Benthic Survey Report (Phase 1 and 2) (Natural Power, 2023)	A technical report for the Cambois Connection Marine Scheme presents a baseline characterisation of the seabed habitats and benthic communities within the Cambois Connection export cable corridor. The Cambois Connection is one of two proposed export cable corridor routes for the Berwick Bank OWF. Benthic surveys were undertaken in two phases: The Phase 1 survey included benthic grab sampling at 58 planned survey stations, DDV at 27 of the survey stations and incorporation of geophysical survey data and Phase 1 survey data into benthic habitat mapping. The Phase 2 survey included DDV at an additional 43 survey stations and incorporation of Phase 1 and Phase 2 survey data into benthic habitat mapping. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area. The Cambois Connection lies approximately 0.25 km west of the MHPGC Project PEIR Red Line Boundary, making landfall at Cambois Beach, Northumberland, approximately 39 km north of the MHPGC Project landfall location.
Cambois Connection – Marine Scheme Environmental Statement – Volume 3, Appendix 8.2: Intertidal Survey Report (Ocean Ecology Ltd., 2023)	A technical report for the Cambois Connection Marine Scheme presents a baseline characterisation of the seabed habitats and benthic communities within two intertidal survey areas at Cambois Beach, Northumberland, the proposed landfall locations for the Cambois Connection export cable corridor. The Cambois Connection is one of two proposed export cable corridor routes for the Berwick Bank OWF. At both locations, situated within the north and south of Cambois Beach, surveys comprised intertidal walkover surveys and Unmanned Aerial Vehicle (UAV) mapping. These surveys were used to identify and map EUNIS habitats and biotopes, as well as features of conservation interest and invasive non-native species (INNS). The walkover surveys were undertaken between 11 and 14 December 2022, while UAV imagery was collected during low-water periods on 12 December 2022. A total of 254 images were collected at the southern site and 387 images at the northern site. This data has been used to identify the seabed sediments and biotopes likely to occur within the Benthic Intertidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area. The Cambois Connection lies approximately 0.25 km west of the MHPGC Project PEIR Red Line Boundary, making landfall at Cambois Beach, Northumberland, approximately 39 km north of the MHPGC Project landfall location.
Ossian Array Environmental Impact Assessment (EIA) Report: Appendix 8.1 Benthic Subtidal Ecology Technical Report (RPS, 2024a)	A technical report for Ossian OWF provides a baseline characterisation of seabed habitats and benthic communities within the Ossian array area, based on a combination of desktop data review and site-specific surveys undertaken in 2022. The surveys comprised geophysical methods (including MBES, SSS and SBP) and environmental sampling, including 80 grab sampling stations (0.1 m²) for macrofauna and PSA, 10 additional grab samples for sediment contaminants, 80 Drop-Down Video (DDV) stations with photographic imagery, and 10 epibenthic beam trawl transects. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area. The Ossian Array Area lies approximately 5.50 km east of the MHPGC Project PEIR Red Line Boundary, in Scottish waters.
Bowdun OWF EIA Report: Appendix 8,1: Benthic Ecology Technical Report (Thistle Wind Partners (TWP), 2026)	A technical report for the Bowdun OWF. The report provides a baseline characterisation of seabed habitats and benthic communities within the Bowden array area and offshore export cable corridor, based on a combination of desktop data review and site-specific surveys undertaken between 2023 and 2024. The surveys comprised geophysical methods (including MBES, SSS, SBP and ultra-high-resolution seismic) and environmental sampling, including 93 DDV stations with still imagery, 91 grab sampling stations (0.1–0.2 m²) for macrofauna and PSA, 46 sediment samples for contaminant analysis, 16 blue carbon samples, and	The Bowdun OWF lies approximately 10.03 km northwest of the MHPGC Project PEIR Red Line Boundary, in Scottish waters.

Source	Summary	Coverage of Study Area
	water quality sampling at 16 stations. Intertidal surveys included Phase 1 walkover surveys with seven transects and quadrat sampling at the landfall. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	
Seagreen Alpha and Bravo OWF: ES – Chapter 11: Benthic Ecology and Intertidal Ecology (Seagreen, 2012)	An ES Chapter for the Seagreen OWF. The chapter provides a baseline characterisation of seabed habitats and benthic communities within Project Alpha, Project Bravo and the offshore export cable corridor, based on a combination of desktop data and site-specific surveys undertaken in 2011. The surveys comprised geophysical data and environmental sampling, including 169 grab sampling stations (0.1 m² mini Hamon grab) for macrofauna and PSA, 53 epibenthic beam trawl stations, and DDV sampling at all grab and trawl locations using a VideoRay Remotely Operated Vehicle (ROV). Intertidal surveys were undertaken at proposed landfalls using Phase 1 walkover methods with transects and quadrat sampling. These data have been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal Ecology Area.	The Seagreen Alpha and Bravo Array Area lies approximately 25.15 km west of the MHPGC Project PEIR Red Line Boundary, in Scottish waters.
Publicly Available Datasets		
EMODnet EUSeaMap broad-scale seabed habitat map for Europe (EMODnet, 2023).	Broad-scale predictive seabed habitat map for Europe, using EUNIS (2022) classifications. This data has been used to identify the seabed sediments and biotopes likely to occur within the Benthic Subtidal and Intertidal Ecology Study Area.	Full coverage of the Benthic Subtidal Ecology Study Area.
Annex I Reefs in UK waters (JNCC, 2022)	The Annex I Reefs in UK Waters dataset (JNCC, 2022) provides a UK-wide geospatial compilation of mapped Annex I 'Reef' habitat, including both high confidence and potential reef extents, as well as supplementary areas identified for reef management purposes. The dataset is derived from multiple data sources, including EUNIS habitat maps, site-specific reef surveys, broad-scale habitat models and conservation evidence datasets.	Partial coverage of the Benthic Subtidal Ecology Study Area.
National Marine Plan interactive (NMPi) PMF datasets (Marine Directorate, 2026)	Provides mapped spatial layers of Scotland's PMFs. They collate verified species and habitat records from Marine Directorate, NatureScot and JNCC into standardised Geographic Information System (GIS) datasets that show the known distribution of PMFs and related protected-area features. This data has been used to identify PMFs likely to occur within the Benthic Subtidal Ecology Study Area. EUNIS habitat classifications are translated into Annex I reef subtypes (bedrock, stony and biogenic reef), with reef features assigned either High or Potential confidence based on the quantity and quality of supporting evidence, survey coverage and mapping confidence.	Partial coverage of the Benthic Subtidal Ecology Study Area.
EUNIS Level 3 Combined Map (JNCC, no date(n.d.)), accessed via Multi-Agency Geographic Information for the Countryside (MAGIC) Maps (2026)	A spatial dataset providing a broad-scale classification of seabed habitats across UK waters, based on the EUNIS habitat classification. The dataset integrates a range of survey data, legacy mapping programmes (e.g. MNCR), and modelled and composite products (including Mapping European Seabed Habitats (MESH)-derived datasets) to produce a nationally consistent, full-coverage map of marine habitats. It supports the identification of dominant substrate types and biological communities likely to occur. While attributes may indicate links to Annex I habitats (e.g. reefs), these represent derived interpretations rather than primary conservation designations. This data has been used to identify seabed habitats likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area.

Source	Summary	Coverage of Study Area
Cefas OneBenthic Baseline Tool (Cefas, 2025a)	OneBenthic is a cloud-based data platform that visualises faunal cluster identities from benthic grab and core samples (0.1 m², 1 mm sieve) stored in the OneBenthic database — a large, standardised compilation of seabed macrofauna and sediment particle-size data from UK government, industry, and academic sources. The Cefas OneBenthic habitat classification assigns benthic macrofaunal assemblages following the methodology of Cooper et al. (2019), based on comparable 0.1 m² grab and core samples collected since 1998. The dataset is used to map macrofaunal assemblage groups (faunal clusters), originally defined alongside their associated sediment types by Cooper and Barry (2017) (Cefas, 2025a). This data has been used to identify the seabed sediments likely to occur within the Benthic Subtidal and Intertidal Ecology Study Area.	Partial coverage of the Benthic Subtidal and Intertidal Ecology Study Area.
British Geological Survey (BGS) - Intertidal Substrate Foreshore (England and Scotland) (BGS, 2004)	Beach composition classification data collated as a desk study. Data created as part of the FutureCoast Project. This data has been used to identify the seabed sediments likely to occur within the Benthic Intertidal Ecology Study Area.	Partial coverage of the Benthic Intertidal Ecology Study Area.
North East Coastal Observatory (NECO) Map Viewer and Catalogue – Habitat Mapping 2023 data (NECO, 2023)	Comprises a high-resolution, locally derived classification of terrestrial, intertidal and inshore habitats along the coastline. The dataset is based on interpretation of recent aerial imagery and supporting coastal survey data and includes a broad range of habitat types consistent with Phase 1/UKHab-style classifications. It provides detailed spatial coverage of coastal and intertidal environments. This data has been used to identify the seabed sediments and habitats that are likely to occur within the Benthic Intertidal Ecology Study Area.	Partial coverage of the Benthic Intertidal Ecology Study Area.
Literature		
Marine Conservation Zone Benthic Community Analysis (Sotheran et al., 2016)	This report presents the outputs of a UK-wide analysis of benthic survey data collected to support MCZ designation and assessment. The report compiles and standardises seabed imagery and sample data from multiple surveys, including those undertaken in 2012 and 2014, to classify benthic habitats and communities using the EUNIS system. This enables the identification and mapping of biotopes across MCZs, including Farnes East MCZ, and supports the evidence base for determining the presence, extent and conservation status of designated features and broader benthic habitat types. This data has been used to identify the benthic biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area.
Biotope assignment of grab samples from four surveys undertaken in 2011 across Scotland's Seas (2012) (Pearce et al., 2014)	This report presents the analysis of benthic grab sample data collected during four surveys undertaken across Scottish waters in 2011, including the Firth of Forth, North Sea, North East Atlantic and Windsock areas. The study is based on 291 benthic grab samples collected using a range of grab types (e.g. Day grab, Hamon grab and box corer), with associated particle size distribution data where available. Biological (macrofaunal) and sediment data were analysed using multivariate statistical techniques (e.g. cluster analysis) to identify faunal assemblages and assign biotopes within standard classification schemes (e.g. EUNIS). Where existing classifications were insufficient, new biotopes were proposed based on the observed assemblages and environmental conditions. This data has been used to identify the benthic biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area.

Source	Summary	Coverage of Study Area
Analysis of seabed imagery from the 2011 survey of the Firth of Forth Banks Complex, the 2011 IBTS Q4 survey and additional deep-water sites from Marine Scotland Science surveys (2012) (Axelsson et al., 2014)	This report presents the analysis of seabed imagery from surveys in Scottish waters, including the 2011 Firth of Forth Banks Complex survey, the 2011 International Bottom Trawl Survey (IBTS) Quarter 4 (Q4) survey, and selected Marine Scotland Science deep-water surveys. The study is based on DDV and still photography used to identify habitats, characterise epifaunal communities and assign biotopes. Survey effort included 31 stations in the Firth of Forth (approximately 10.5 hours of video and 649 still images), seven IBTS stations (approximately 3.5 hours of video and 221 images), and six deep-water camera transects. Data were analysed to describe substrata, record fauna and classify habitats using standard biotope schemes. This data has been used to categorise the benthic biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area.
North East of Farnes Deep rMCZ Post-survey Site Report (Department for Environment, Food and Rural Affairs (Defra), 2015)	This report presents the findings of a dedicated seabed survey undertaken in March 2012 to provide direct evidence of seabed habitats and associated biological communities to inform MCZ designation. The survey combined acoustic data (multibeam bathymetry and backscatter) with ground-truthing methods, including 46 grab sampling stations (0.1 m² Hamon grab) for macrofauna and PSA, and 18 drop-down video and still image stations using a towed camera system. Sediment and faunal data were analysed and integrated with acoustic data to classify seabed habitats (e.g. EUNIS broadscale habitats) and produce an updated spatial habitat map of the site. This data has been used to categorise the benthic biotopes likely to occur within the Benthic Subtidal Ecology Study Area.	Partial coverage of the Benthic Subtidal Ecology Study Area.
Community Analysis of Offshore MCZ Grab and Video Data (2014) (Allen et al., 2016)	This report presents a regional-scale analysis of benthic grab and video survey data collected across multiple offshore MCZs between 2012 and 2014, including North East of Farnes Deep. The study applies standardised analytical methods to characterise benthic communities and assign EUNIS biotopes based on species composition and environmental variables. The outputs provide a consistent evidence base for identifying, mapping and comparing benthic habitats across sites, supporting MCZ designation and informing understanding of the distribution and ecological characteristics of benthic communities.	Partial coverage of the Benthic Subtidal Ecology Study Area.
Durham Heritage Coast Seasearch Survey Report 2009 (Marine Conservation Society (MCS), 2009)	The Seasearch Survey Report (2009) documents a programme of volunteer diver surveys undertaken along the Durham Heritage Coast to characterise marine habitats and species following historic industrial impacts. Surveys were conducted at six inshore sites using standard Seasearch methodology, with divers recording habitat types, species observations and notable environmental features during timed dives. The study targeted a range of shallow subtidal environments (approximately 4–10 m depth), with data collected through in situ observations and photographic records. The report provides site-based descriptions of seabed habitats, a species inventory and comparison with earlier surveys (1991). This data has been used to identify the seabed sediments and habitats likely to occur within the Benthic Subtidal and Intertidal Ecology Study Aera.	Partial coverage of the Benthic Subtidal Intertidal Ecology Study Area.
The Durham Heritage Coasta Seasearch Site Surveys 1991-2016 (MCS, 2016)	The Seasearch Site Surveys Report (1991–2016) compiles volunteer diver records collected along the Durham Heritage Coast (including the 2009 survey; MCS, 2009), Using standard Seasearch methods, data were gathered from multiple inshore and offshore dive sites to record habitats, species and notable features, with a focus on improving understanding of marine biodiversity and informing conservation priorities. This data has been used to identify the seabed sediments and habitats likely to occur within the Benthic Subtidal and Intertidal Ecology Study Aera.	Partial coverage of the Benthic Subtidal and Intertidal Ecology Study Area.

Source	Summary	Coverage of Study Area
Cell 1 Regional Coastal Monitoring Programme Update Report 17: 'Partial Measures' Survey 2025 (Royal HaskoningDHV, 2025)	The survey forms part of the Cell 1 Regional Coastal Monitoring Programme and provides site-specific coastal monitoring data along the Durham frontage. The report presents results from repeat beach profile, topographic and cliff-top surveys undertaken in spring 2018, enabling assessment of short-term and longer-term changes in coastal morphology, including beach levels, sediment distribution and cliff recession. The dataset is derived from systematic, repeated field surveys along fixed transects and control points, and is used to support understanding of coastal processes, erosion trends and shoreline stability within the study area. Of particular relevance to the MHPGC Project, Blast Beache (located within the landfall area) has been subject to detailed monitoring, including assessment of beach profile variability and sediment dynamics. This data has been used to identify the seabed sediments and habitats likely to occur within the Benthic Intertidal Ecology Study Area.	Partial coverage of the Benthic Intertidal Ecology Study Area.

3.3 MHPGC Project-specific surveys

3.3.1.1 Several MHPGC Project-specific surveys have been undertaken to date to inform the benthic ecology baseline within the MHPGC Project PEIR Red Line Boundary and previously within the EIA Scoping Red Line Boundary. A summary of the surveys is presented in **Table 3.2,** with the survey extents and sample points that lie within the MHPGC Project PEIR Red Line Boundary illustrated in **Figure** 3-1.

3.3.1.2 Additionally, an intertidal benthic survey is planned to be completed in Summer 2026, to comprise Phase I and Phase II surveys, and an UAV survey, to be conducted by Ocean Ecology Ltd. Results will be presented within an Intertidal Survey Report included as an technical annex to the ES for the DCO application. The methodology for the survey which has been agreed with Natural England can be found in **Appendix H**.

3.3.2 Geophysical surveys

Overview

3.3.2.1 Two geophysical survey campaigns were undertaken by XOCEAN Ltd., as part of the MHPGC Project. An initial survey was conducted between January and June 2023 (**Appendix A**), focussing on a range of offshore export cable route options (A-C) and associated landfall options (LF1-3). A further site-specific survey was undertaken between July 2024 and March 2025 (**Appendix B**) in relation to the preferred cable route (GC-1) and associated landfall options (LF1-4).

3.3.2.2 The geophysical survey methodology was broadly consistent between the 2023, and 2024 to 2025 surveys; however, the latter adopted a more targeted and higher-resolution approach focused on the refinement of a preferred export cable route, compared to the broader optioneering scope of the earlier survey.

3.3.2.3 The 2023 geophysical survey campaign was split into two phases of acquisition, the first to focus on the collection of MBES and SBP data. The second phase involved the collection SSS and magnetometer data by Gardline Ltd, which were subsequently incorporated into the seabed interpretation by XOCEAN. The survey had a maximum width of approximately 500 m, with the extent of this survey within the MHPGC Project PEIR Red Line Boundary illustrated in **Figure** 3-1.

3.3.2.4 Following the initial survey campaign in 2023, a further geophysical survey was undertaken in 2024 to 2025. Data collected from Gardline Ltd. in 2023 (see **Appendix C**) was integrated into this survey campaign. The 2024 to 2025 survey extent comprised a 500 m wide survey corridor along the approximately 210 km offshore cable corridor and used multiple shallow geophysical techniques (MBES, SBP, SSS and magnetometer). When combined with the 2023 survey, this resulted in up to 1,000 m of geophysical survey coverage along the offshore cable corridor. The extent of this survey within the MHPGC Project PEIR Red Line Boundary illustrated in **Figure** 3-1.

3.3.2.5 Observed seafloor features as well as larger scale morphological features were classified into bedform types, such as ripples, mega-ripples, sand waves and sandbanks. Backscatter data was also analysed to help inform assessments of change in seabed sediments across the MHPGC Project PEIR Red Line Boundary. This was compared to and complemented by BGS Seabed Folk classification (Folk, 1954) data. The BGS Folk's 16 classes are grouped into five classes that are used for allocation to EUNIS sediment classes that are used for the determination of marine habitat biotopes (Long, 2006) (see **Figure B.1** in **Appendix D**)**.** Sediment types were then interpretated along the MHPGC Project PEIR Red Line Boundary using the broad EUNIS (2022) classifications.

3.3.3 Subtidal benthic surveys

Overview

3.3.3.1 Two MHPGC Project-specific subtidal surveys were undertaken by Gardline Ltd. An initial survey was conducted during June to November 2023 (**Appendix C**), focussing on a range of offshore export cable route options (A-C) and associated landfall options (LF1-3). A subsequent survey was

undertaken during August and September 2024 (**Appendix E**), which focussed on infilling data gaps and refining baseline conditions in relation to the preferred offshore export cable route (GC-1) and associated landfall options (LF1-4). The 2023 and 2024 surveys followed a consistent methodological approach but differed in their survey extent and sampling density The 2023 survey focussed on a range of offshore export cable route and landfall options under consideration at the time, whilst the 2024 survey focussed on the preferred offshore export cable route and associated landfall options. Both surveys were informed by available bathymetry data collected by XOCEAN Ltd (see **Appendix B** and **Appendix D**) and supported by pre-sampling clearance surveys to ensure safe and representative station placement.

3.3.3.2 Both surveys undertook sediment sampling using a 0.1 m² Day grab for PSA (and subsequent classification according to Folk sediment groups), sediment chemistry analysis, and benthic macrofauna identification to species level (where possible), including quantification of abundance and biomass. These data were used for multivariate community analysis to identify faunal groupings for biotope classification and to calculate biodiversity indices.

3.3.3.3 DDV surveys were also undertaken to provide qualitative assessment of seabed habitats, epifauna and biotope distribution. DDV surveys comprised still imagery and video footage collected along camera transects centred on each survey station (shown in **Figure** 3-1), typically extending approximately 200 m in total. Survey stations were pre-selected prior to survey acquisition as part of the survey design process, based on a desktop study of publicly available data. Prior to sampling, geophysical survey data were used to confirm that station locations were suitable for sampling operations. The imagery data were used to characterise seabed sediments, identify epifaunal species and habitats, and support habitat classification and interpretation of benthic community distribution. Further methodological detail is provided in **Appendix C** and **Appendix E**.

2023 survey

3.3.3.4 The 2023 subtidal survey (**Appendix C**) comprised 133 stations, 35 of which were located within the MHPGC Project PEIR Red Line Boundary (station numbers and closest KP location are shown in **Figure** 3-1 and provided in tabular format in **Appendix I**). All stations were in English waters.

3.3.3.5 DDV data were successfully acquired at all stations. Sediment sampling was successfully obtained at 127 stations; of these, 33 stations were within the MHPGC Project PEIR Red Line Boundary.

3.3.3.6 Following several unsuccessful grab sampling attempts, six stations were abandoned due to: misfires of the grab; low sample retention; rocks stuck in the grab jaws or the presence of Myxinidae. Two of these stations where grab samples failed were within the MHPGC Project PEIR Red Line Boundary, at Stations ENV068 and ENV070, near KP6 and KP4 respectively.

3.3.3.7 Sampling was undertaken at approximately 4 km intervals, with a minimum of three grab samples collected at each station. These comprised replicate samples for benthic macrofaunal analysis (one processed and one retained as spare) and a sample for PSA. Additional samples for sediment chemistry were acquired at 16 of the 35 stations, resulting in a total of 448 grab samples acquired across the survey.

3.3.3.8 eDNA sediment samples were also collected at selected sample stations, with samples from 15 stations within the MHPGC Project PEIR Red Line Boundary analysed.

2024 survey

3.3.3.9 The 2024 survey (**Appendix E**) comprised 59 stations, of which 43 were located within the MHPGC Project PEIR Red Line Boundary (station numbers and closest KP location are shown in **Figure** 3-1, and provided in tabular format **Appendix I**) (seven in Scottish waters, 36 in English waters). The remaining stations were located outside the MHPGC Project PEIR Red Line Boundary as they were positioned within inshore areas associated with earlier landfall route options.

3.3.3.10 DDV data were successfully acquired at all stations. Sediment sampling was successfully obtained at 50 stations; of these, 37 stations were within the MHPGC Project PEIR Red Line Boundary.

3.3.3.11 Following several unsuccessful grab sampling attempts likely attributed to coarse sediments, three stations were abandoned. Similarly, sampling was not attempted at four stations after review of the

seabed imagery due to the presence of cobbles and boulders. All six of these stations where grab sampling was unsuccessful or not undertaken were within the MHPGC Project PEIR Red Line Boundary (at Stations ENV188, ENV197, ENV198, ENV199, ENV219 and ENV239, clustered within the nearshore section of the export cable route between approximately KP4 and KP6).

3.3.3.12 To capture spatial variation along the refined export cable route, the 2024 survey was structured into northern (predominantly Scottish waters), central (English waters) and southern (English waters) sections. This supported a stratified sampling approach and allowed for increased sampling resolution in more environmentally variable or inshore areas.

3.3.3.13 Sampling density varied along the route, with stations spaced at approximately 4 km intervals in Scottish waters (seven stations) and approximately 2 km intervals in English waters (36 stations). At each station, a minimum of three grab samples were collected for PSA and macrofaunal analysis, with additional samples for sediment chemistry collected at 23 of the 43 stations within the MHPGC Project PEIR Red Line Boundary.

3.3.3.14 eDNA sediment samples were also collected at selected sample stations, with samples from 20 stations within the MHPGC Project PEIR Red Line Boundary analysed.

Sediment chemistry

3.3.3.15 Sediment chemistry analysis undertaken across both benthic surveys included the assessment of heavy metals[2], PAH, polychlorinated biphenyls (PCB) and organotins. The results were compared to published background data for marine sediments such as United Kingdom Offshore Operators Association (UKOOA) (2001 data), Cefas AL thresholds (MMO, 2023), along with toxicity thresholds including ERL and Effects Range Medium (ERM; Long *et al*. 1995) and the Apparent Effects Threshold (AET) as detailed by Buchman (2008).

[2] Heavy metal concentrations for sediment samples in English waters were determined following extraction by aqua regia. For samples in Scottish waters, metal concentrations were determined using extraction by aqua regia and Hydrofluoric Acid (HF) digestion.

Table 3.2. Site-specific surveys

Survey type	Survey location	Survey methods	Survey description	Coverage of the MHPGC Project PEIR Red Line Boundary	Survey contractor	Date of surveys	Reference
Geophysical surveys	Offshore cable corridor route options (routes A–C) and associated landfall route options (LF1–LF3)	• MBES; • SBP • SSS • Magnetometer • Unmanned Arial Vehicle (UAV) photogrammetry (landfall/intertidal topographic survey only)	Data acquisition was conducted in two phases. Survey lines followed a central route position line with multiple winglines, achieving ~500 m corridor coverage, with SBP on selected lines and cross-lines every ~2 km; the route was divided into ~10 km survey blocks. The surveys identified seabed characteristics and features based on acoustic data, detecting hundreds of linear features, ~390 magnetic targets, and over 1,000 seabed contacts (e.g. boulders, debris, wrecks) per route, with UAV data providing high-resolution topography at shore crossings.	Overlaps with the majority of the MHPGC Project PEIR Red Line Boundary. Also covers areas outside of the MHPGC Project PEIR Red Line Boundary (but within the Benthic Subtidal Ecology Study Area) due to multiple offshore export cable corridor and associated landfall route options being considered at this stage.	XOCEAN Ltd. (with SSS and magnetometer data collected by Gardline)	January to June 2023	XOCEAN (2023); **Appendix A**
	Offshore sections of the selected export cable route (GC-1) and associated landfall route options (LF1–LF4).	• MBES • SBP • SSS • Magnetometer	Data acquisition was conducted in two phases. Survey lines included a central route line with multiple winglines and cross-lines to achieve ~500 m corridor coverage, supplemented by integration of 2023 datasets. Acoustic data identified seabed characteristics and features, with over 12,000 contacts recorded alongside numerous boulder fields, shipwrecks, and infrastructure crossings across the route.	Overlaps with the majority of the MHPGC Project PEIR Red Line Boundary. Also covers areas outside of the MHPGC Project PEIR Red Line Boundary (but within the Benthic Subtidal Ecology Study Area) due to multiple landfall route options being considered at this stage.	XOCEAN Ltd.	July 2024 to March 2025	XOCEAN (2025); **Appendix B**
Benthic subtidal survey	Offshore and inshore offshore cable corridor route options (routes A–C) and associated landfall route	• Drop-down camera (seabed imagery) • Grab sampling (0.1 m² Day grab) • Macrofaunal analysis • PSA • Environmental DNA (eDNA) sampling	A total of 133 survey stations were surveyed at ~4 km intervals, comprising 56 stations along an eastern offshore survey corridor, 58 stations along a more westerly offshore survey corridor, and 19 stations across landfall options. Drop-down camera imagery was collected at all stations and sediment sampling was attempted using a 0.1 m²	Overlaps with the MHPGC Project PEIR Red Line Boundary (35 of 133 survey stations were located within it, of which successful grab samples were obtained at 33 stations).	Gardline Ltd.	June to November 2023	Gardline (2024a); **Appendix C** (and associated Habitat Assessment report;

Survey type	Survey location	Survey methods	Survey description	Coverage of the MHPGC Project PEIR Red Line Boundary	Survey contractor	Date of surveys	Reference
	options (LF1–LF3)	• Sediment chemistry analysis (e.g. hydrocarbons, metals, contaminants)	Day grab, successfully obtaining samples at 127 stations. A minimum of three grab samples were collected at each station for ecological analysis (PSA and benthic macrofauna), with additional grab samples collected at selected stations for chemical analyses, resulting in a total of 448 grab samples.	Also covers areas outside of the MHPGC Project PEIR Red Line Boundary (but within the Benthic Subtidal Ecology Study Area) due to multiple offshore export cable corridor and associated landfall route options being considered at this stage.			Gardline (2024b); **Appendix D**)
	Offshore sections of the selected export cable route (GC-1) and associated landfall route options (LF1–LF4).	• Grab sampling (e.g. 0.1 m² Day grab) • Drop-down camera (seabed imagery) • Macrofaunal analysis • PSA • Sediment chemistry analysis (where applicable) • eDNA sampling	A total of 59 stations were surveyed (including additional inshore stations and transects), where drop-down camera imagery was acquired at all locations and sediment sampling using a 0.1 m² Day grab was attempted at 52 stations, successfully obtaining samples at 49 stations (177 grab samples in total). Sampling was typically undertaken at ~2–4 km intervals. The programme focused on refining existing baseline conditions rather than full coverage, with stations positioned to infill data gaps and verify previous results, and geophysical clearance surveys undertaken at sampling locations to ensure safe operations.	Overlaps with the MHPGC Project PEIR Red Line Boundary (43 of 59 survey stations were located within it, of which successful grab samples were obtained at 37 stations). Also covers areas outside of the MHPGC Project PEIR Red Line Boundary (but within the Benthic Subtidal Ecology Study Area) due to multiple landfall route options being considered at this stage.	Gardline Ltd.	August to September 2024	Gardline (2025a); **Appendix E** (and associated Habitat Assessment Report; Gardline (2025b);**Appendix F**)
Intertidal survey	The intertidal of the selected landfall location	• Phase I walkover survey • Phase II survey sediment sampling – Macrofauna analysis – PSA	Survey to characterise intertidal habitats and sediments at landfall.	To cover the Benthic Intertidal Ecology Study Area.	Ocean Ecology Ltd.	Summer 2026	Ocean Ecology (unpublished); **Appendix H** (methodology)

Survey type	Survey location	Survey methods	Survey description	Coverage of the MHPGC Project PEIR Red Line Boundary	Survey contractor	Date of surveys	Reference
		– Sediment chemistry analysis • UAV photogrammetry					



LEGEND

- Kilometer Point (KP)
- Scottish/English Offshore Waters Boundary
- MHPGC Project PEIR Redline Boundary
- Benthic Subtidal Ecology Study Area
- Geophysical Survey Extent 2003
- Geophysical Survey Extent 2024/2025
- Sample Station 2023
- Sample Station 2024

Morven Offshore Wind Farm | GoBe APEM Group

Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
GEOPHYSICAL AND BENTHIC SURVEY EXTENTS WITHIN THE MHPGC PROJECT PEIR RED LINE BOUNDARY - SHEET 1

0 1 2 3 km

Scale@A3: 1:120,000

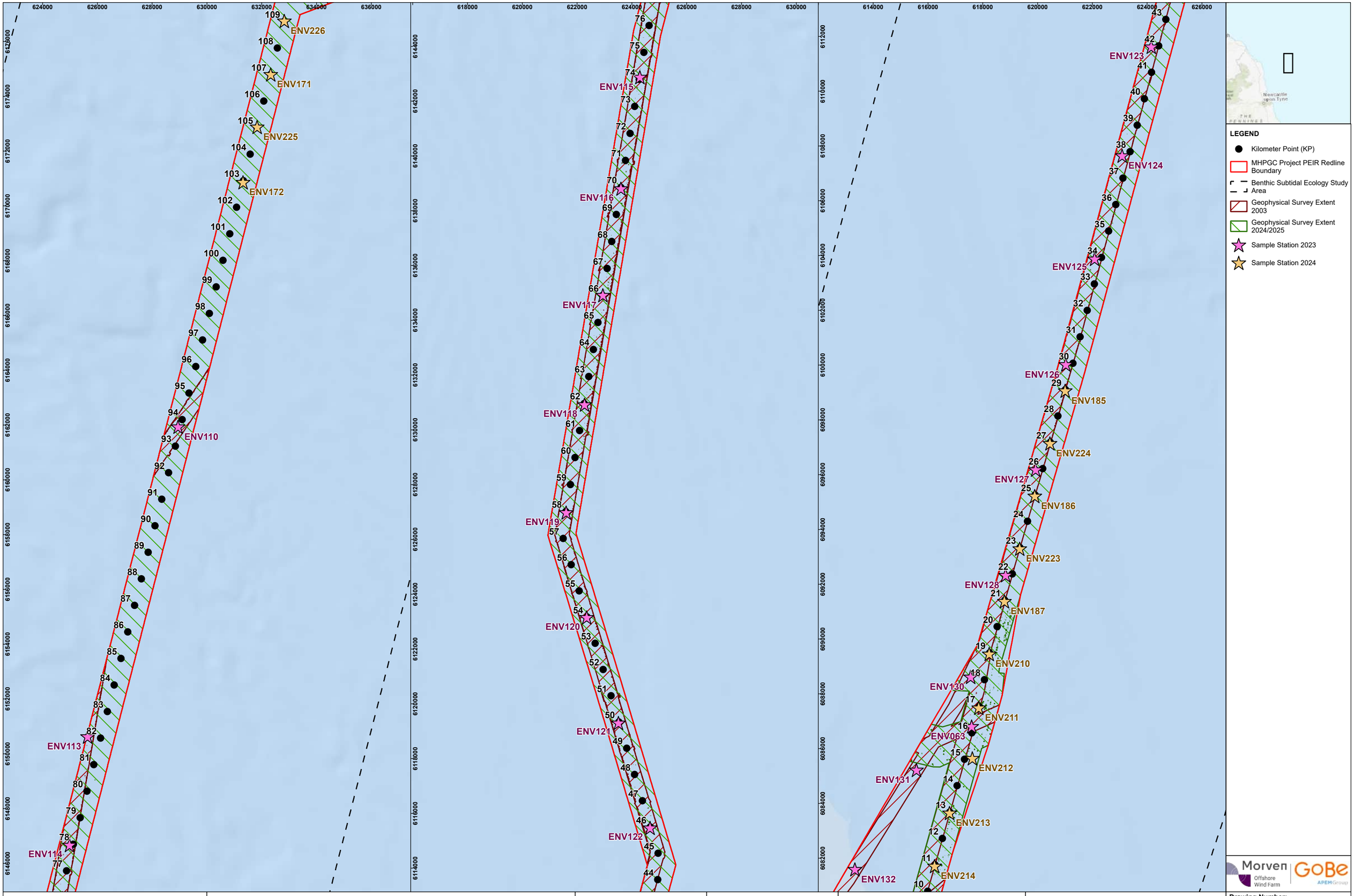
Geodetic Information:
Datum: European 1950
Projection: ED 1950 UTM Zone 30N

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
World Ocean Base: OceanWise, Esri, Garmin, NaturalVue
World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS

Drawing Number:
FIGURE 3-1

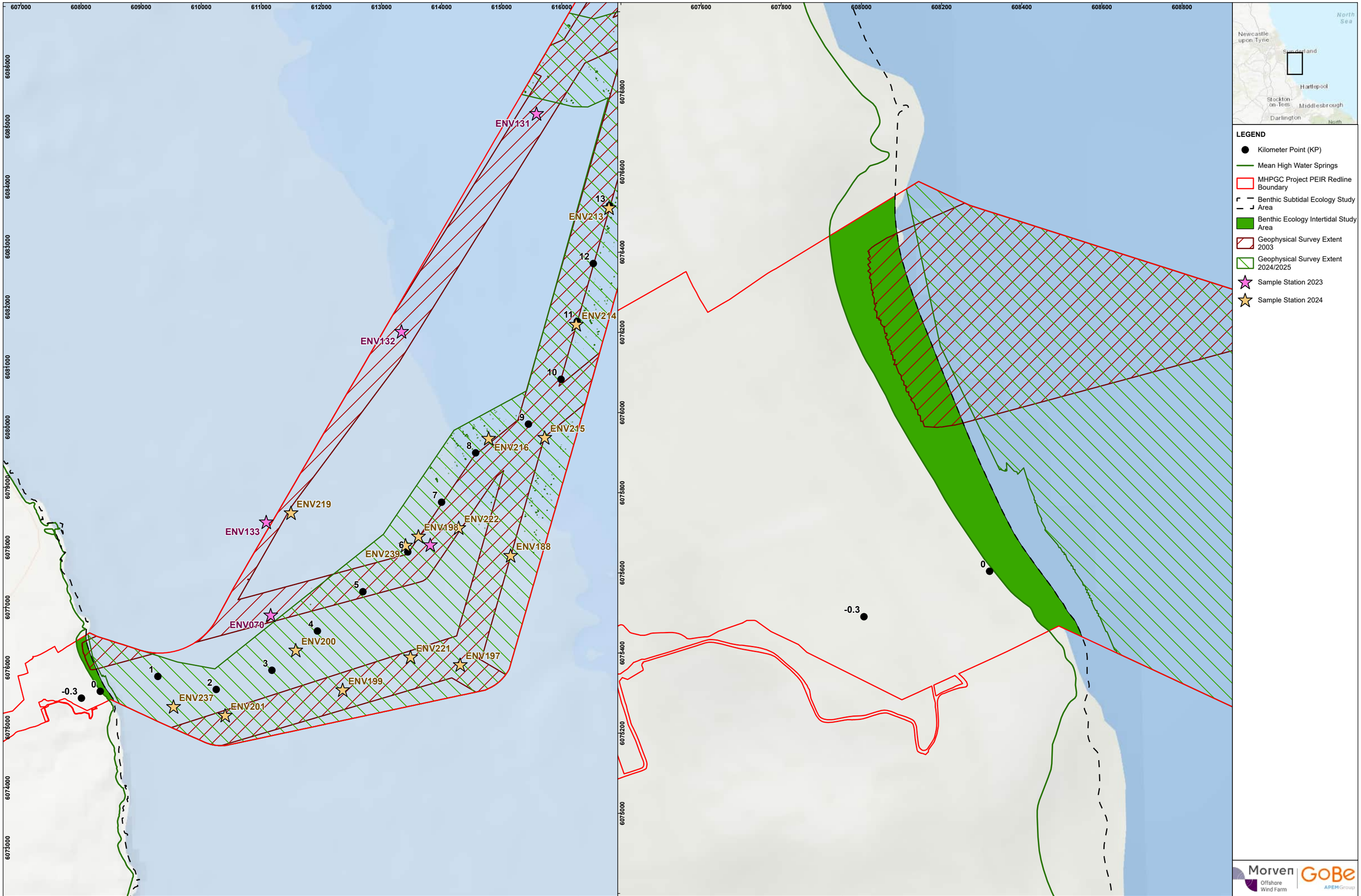
VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-



Project Name: MORVEN HAWTHORN PIT GRID CONNECTION PROJECT	**Drawing Title:** GEOPHYSICAL AND BENTHIC SURVEY EXTENTS WITHIN THE MHPGC PROJECT PEIR RED LINE BOUNDARY - SHEET 2	0 1 2 3 km Scale@A3: 1:120,000	**Geodetic Information:** Datum: European 1950 Projection: ED 1950 UTM Zone 30N	**Data Sources:** BP, Ordnance Survey	**Service Layer Credits:** World Ocean Base: OceanWise, Esri, Garmin, NaturalVue World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS

Drawing Number: FIGURE 3-1

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-



LEGEND

- Kilometer Point (KP)
- Mean High Water Springs
- MHPGC Project PEIR Redline Boundary
- Benthic Subtidal Ecology Study Area
- Benthic Ecology Intertidal Study Area
- Geophysical Survey Extent 2003
- Geophysical Survey Extent 2024/2025
- Sample Station 2023
- Sample Station 2024

Project Name: MORVEN HAWTHORN PIT GRID CONNECTION PROJECT	**Drawing Title:** GEOPHYSICAL AND BENTHIC SURVEY EXTENTS WITHIN THE MHPGC PROJECT PEIR RED LINE BOUNDARY - SHEET 3	0 0.5 1 km Scale@A3: 1:55,000	**Geodetic Information:** Datum: European 1950 Projection: ED 1950 UTM Zone 30N	**Data Sources:** BP, Ordnance Survey	**Service Layer Credits:** World Topographic Map: Esri, HERE, Garmin, FAO, USGS World Ocean Base: Esri, Garmin, NaturalVue

Drawing Number: FIGURE 3-1

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-

3.3.4 Habitat classification, analysis and mapping

3.3.4.1 Data collected from the 2023 and 2024 subtidal benthic surveys and supporting geophysical surveys were integrated to classify and map seabed habitats within the MHPGC Project PEIR Red Line Boundary. Seabed imagery (including still images and video) was reviewed alongside sediment and biological data to characterise habitat types based on depth, sediment composition and observed fauna. These datasets (see **Appendix A** to **Appendix F**) were analysed by OWC to assign EUNIS (2022) habitat classifications to distinct macrofaunal community groups, providing a consistent framework for describing benthic habitats and supporting subsequent ecological assessment.

3.3.4.2 Grab samples, DDV, PSA and macrofaunal data obtained from the surveys were used to classify the sampled areas in accordance with the EUNIS (2022) biotope classifications, which is a hierarchical system used to classify habitats in the marine environment depending on their sediment type and biota (European Environment Agency (EEA), 2021). Habitats were subsequently assessed in terms of their ecological and conservation importance, drawing from current marine legislation and guidance.

3.3.4.3 During the benthic subtidal surveys, habitats of conservation importance requiring further assessment were identified. 'Sea pen and burrowing megafauna communities' and 'stony reef' habitats were recorded as features of conservation interest and progressed for detailed characterisation using the methodologies described in the following sections.

Sea pen and burrowing megafauna communities

3.3.4.4 Density classifications, as laid out by the MNCR SACFOR (Superabundant, Abundant, Common, Frequent, Occasional and Rare) scale (JNCC, 2013), were used to quantify sea pens and burrows (see **Table 3.3)**. The Joint Nature Conservation Committee (JNCC) clarification report (2014b) specifies that multiple sightings of burrows and/or mounds attributable to relevant species together with sea pens, if present, should be classified as at least 'frequent' for their size on the SACFOR scale to be considered a 'sea pen and burrowing megafauna communities' habitat. However, it acknowledges the inherent difficulties of identifying species from burrow type alone despite ever evolving guidance, such as those cited by the International Council for the Exploration of the Sea (ICES) (2011) guide.

3.3.4.5 Subsequently, the overall density of burrows themselves was assessed instead, to consider whether their density was a 'prominent' feature of the sediment surface and potentially indicative of a sub-surface complex gallery burrow system. To be considered a 'sea pen and burrowing megafauna communities' habitat, densities of burrows and/or mounds, together with sea pens if present should be classified as 'frequent' or above on the SACFOR scale (see purple shading in **Table 3.3)**.

Table 3.3: SACFOR abundance scale

Density	Size of individuals (centimetres (cm))			
	<1cm	1 to 3cm	3 to 15cm	>15cm
≥10,000m^2	S	S	S	S
≥1,000m^2 to <10,000m^2	A	S	S	S
≥100m^2 to <1,000m^2	C	A	S	S
≥10m^2 to <100m^2	F	C	A	S
≥1m^2 to <10m^2	O	F	C	A
≥0.1m^2 to <1m^2	R	O	F	C
≥0.01m^2 to <0.1m^2	R	R	O	F
≥0.001m^2 to <0.01m^2	R	R	R	O
<0.001m^2	R	R	R	R

S= Superabundant, A = Abundant, C = Common, F = Frequent, O = Occasional and R = Rare. Table amended from: JNCC (2013).

For sedentary species attached to the substratum, percentage cover should be used in preference to the density scale whenever possible.

Densities of burrows and/or mounds, together with sea pens if present, to be considered a 'sea pen and burrowing megafauna communities' habitat

Stony reef

3.3.4.6 The criteria used to assess potential stony reefs are given in **Table 3.4**. When considering the potential of an area to qualify as stony reef habitat, the overarching criterium is the sediment composition, with at least 10% of stones larger than 64 mm for a habitat to be considered as reef (Irving, 2009). However, the relationship between the coarse material and sediment matrix in which it lies is integral in determining 'reefiness'. Specifically, clast-supported implies that the cobbles are touching each other, whereas matrix-supported implies that there is finer sediment surrounding each cobble. Reefs are also defined as having relief from the seafloor, meaning they are topographically distinct from the surrounding seabed. In keeping with the definition of the Habitats Directive Interpretation Manual, elevation is used as another criterion for assessment (Irving, 2009).

3.3.4.7 The epifaunal community of potential reef habitat is also a determinant of 'reefiness', and proportion of epifaunal taxa is included as an assessment criterion. Within the Irving (2009) scheme, areas of potential stony reef habitat must be greater than 25 m² to be classified as reef. There are three categories of stony reef 'low', 'medium' and 'high', however, when determining whether an area of the seabed should be considered as Annex I stony reef, if a 'low' is scored in any of the four characteristics (composition, elevation, extent or biota), then a strong justification would be required for this area to qualify as reef under the EU Habitats Directive (Irving, 2009).

3.3.4.8 The multi-criteria scoring system as defined by Irving (2009) is given in **Table 3.4**.

Table 3.4: Stony reef criteria (Irving, 2009)

Characteristic	Resemblance to stony reef			
	Not a stony reef	Low	Medium	High
Composition	<10% cobbles/boulders	10 to <40% cobbles/boulders	40 to <95% cobbles/boulders	≥95% cobbles/boulders
		Dominated by sediment	Dominated by cobbles/boulders	
Elevation	Flat seabed	<0.064m	0.064 to <5m	≥5m
Extent	≤25m^2	>25m^2		>25m^2
Biota[3]	Dominated by infaunal species	–	–	>80% of species present composed of epifaunal species

3.3.5 Intertidal benthic survey

3.3.5.1 In 2026, an intertidal Phase I walkover and UAV survey and a Phase II quantitative sampling survey will be undertaken of the intertidal habitats and communities present to provide baseline information for the intertidal area at landfall at Blast Beach (see **Sheet 3** of **Figure 4-1**).

3.3.5.2 The proposed intertidal surveys will identify, describe and map the extent and spatial distribution of the biotopes and biotope complexes present within the survey area. This will be undertaken by a combination of broadscale biotope mapping undertaken in the Phase I walkover survey, supplemented by the Phase II collection of physical samples, for sediment and faunal analysis.

3.3.5.3 The survey methodology can be found in **Appendix H**. The results from the intertidal survey will be presented within this technical report and the ES at DCO submission.

[3] No low or medium biota thresholds were defined in Irving (2009).

4 Benthic subtidal ecology baseline

4.1 Overview

4.1.1.1 The offshore export cables of the MHPGC Project would traverse from the OSPs through Scottish offshore waters, English offshore waters and through English inshore waters and make landfall south of Seaham, Blast Beach via trenchless techniques (see Sheet 3 of Figure 3-1).

4.1.1.2 The following sections provide the broad regional characterisation of the benthic subtidal ecology and intertidal ecology within the Benthic Subtidal and Intertidal Ecology Study Area, and wider region where relevant, before focussing on a summary of the site-specific data within the MHPGC Project PEIR Red Line Boundary, with the full details provided within the associated appendices (**Table 3.2**).

4.2 Bathymetry seabed features

4.2.1 Scottish waters

Regional

4.2.1.1 The Firth of Forth Banks Complex MPA (the Montrose Bank portion) lies within the Benthic Subtidal Ecology Study Area and adjacent to the northern section of MHPGC Project PEIR Red Line Boundary (0.0 km to the west) (**Figure 1-1**). The MPA ranges in depth from approximately 110 m below sea-level to just 30 m below sea-level on top of the shelf banks and mounds (JNCC, 2024a).

MHPGC Project PEIR Red Line Boundary

4.2.1.1 Geophysical data collected in 2022 indicates that the water depth in MHPGC Project PEIR Red Line Boundary where it overlaps withMorven North Boundary ranges between 64 m to 75 m, relative to Lowest Astronomical Tide (LAT), with depths ranging from 64 m to 76 m across the Morven South Boundary (Tetra Tech RPS Energy, 2026b). Bathymetry within the MHPGC Project offshore export cable corridor in Scottish waters is between 55 m and 71 m below LAT and is generally uniform southward into English waters, with only minor variations in depth (**Appendix A** and **Appendix B**).

4.2.2 English waters

Regional

4.2.2.1 The MHPGC Project PEIR Red Line Boundary is approximately 150 km to the northwest of Dogger Bank, the shallowest point of the North Sea at approximately 15 m below sea level (Quante et al., 2016). Northwards from Dogger Bank, the basin declines smoothly towards the shelf edge down to a depth of approximately 200 m (Quante et al., 2016).

4.2.2.2 Farnes East MCZ and North of Farnes East Deep MCZ / Highly Protected Marine Area (HMPA) lie within the Benthic Subtidal Ecology Study Area and within close proximity to the MHPGC Project PEIR Red Line Boundary (2.2 km to the west and 4.1 km to the east respectively) (**Figure 1-1**), with depths at these sites ranging from 30 m to 100 m (JNCC, 2024b; JNCC, 2025).

MHPGC PEIR Red Line Boundary

4.2.2.3 Bathymetry within the MHPGC Project PEIR Red Line Boundary in English waters ranged from KP2 at landfall to almost 106 m below LAT at KP84. The depth is generally uniform, with half of the MHPGC Project PEIR Red Line Boundary deeper than 70 m LAT between KP118 and KP25 (see **Appendix B)**.

4.2.2.4 From the boundary with Scottish territorial waters, at KP180, the seabed ranged between 60 m and 70 m LAT, with little variation, to KP120. The depth then increases, varying between 90 m to 100 m LAT from KP91, reaching the deepest point at KP84 as outlined within **Appendix B**. The bathymetry within the MHPGC Project PEIR Red Line Boundary then rises to 80 m below LAT at KP34. A steady ascent continues for the final 30 km until reaching the shoreline (-1.43m below LAT) (see **Appendix A**).

4.3 Sediment characteristics

4.3.1 Scottish waters

Regional

4.3.1.1 Based on EUSeaMap data (EMODnet, 2023), accessed via the National Marine Plan Interactive (NMPi) (Marine Scotland, 2019), offshore regions of the central North Sea and northern areas of the southern North Sea are characterised predominantly by extensive areas of 'Atlantic offshore circalittoral sand' (MD52/SS.SSa). Relatively widespread areas of 'Atlantic offshore circalittoral coarse sediment' (MD32/SS.SCS) and 'Atlantic offshore circalittoral mud' (MD62/SS.SMu) are also present, with MD32 particularly dominant in Scottish waters. More discrete patches of 'Atlantic offshore circalittoral mixed sediment' (MD42/SS.SMx) occur locally, especially in inshore and transitional areas.

4.3.1.2 Similarly, within the Benthic Subtidal Ecology Study Area in Scottish waters, seabed sediments are dominated by 'Atlantic offshore circalittoral sand' (MD52/SS.SSa), with more discrete areas of 'Atlantic offshore circalittoral coarse sediment' (MD32/SS.SCS) in the northwest and southwest, as outlined within **Figure 4-1.**

4.3.1.3 The EUSeaMap data aligns with data from the Cefas OneBenthic data (Cefas, 2025a) that indicates the Benthic Subtidal Ecology Study Area in Scottish waters is dominated by gravelly sand or gravelly muddy sand, supporting communities dominated by infaunal polychaetes, bivalves and amphipods. The specific OneBenthic faunal clusters mapped are 'infaunal polychaetes and bivalves with brittlestars' (D2b) with smaller areas of 'bivalves with polychaetes' (D1), 'infaunal polychaetes with nemertea and bivalves' (D2a), 'infaunal polychaetes and amphipods' (D2c) and 'burrowing amphipods and infaunal polychaetes' (D2d) (**Figure 4-2**).

4.3.1.4 Along the route of the Eastern Green Link 2 corridor, which overlaps with the Benthic Subtidal Ecology Study Area, the benthic environment was characterised predominantly by offshore circalittoral mixed sediment and circalittoral sand habitats, with an area of deep circalittoral coarse sediment overlapping the western edge of the Morven North Boundary (AECOM, 2022b).

4.3.1.5 The Cambois Connection lies within close proximity to the MHPGC Project PEIR Red Line Boundary (0.25 km to the west), within the Benthic Subtidal Ecology Study Area. Site-specific surveys were undertaken within the Cambois Connection export cable corridor; however, only three of the 58 sample locations were situated within Scottish waters (Natural Power, 2023). At these locations, the sediment was classified as muddy sand according to the Folk particle size classification system (Folk, 1954). Based on macrofaunal and DDV analyses, a single broad biotope was recorded: circalittoral fine sand.

4.3.1.6 Site-specific surveys undertaken within the array area of the Ossian OWF, located 5.50 km to the east of the MHPGC Project PEIR Red Line Boundary (within the Benthic Subtidal Ecology Study Area), determined that the seabed was dominated by deep circalittoral sand, with numerous patches of gravel also observed, mainly in the west of the survey area (in areas lying adjacent to the northeast of the MHPGC Project PEIR Red Line Boundary) (RPS, 2024). There was also the presence of megaripples and sand waves, indicating some degree of sediment mobility and occasional furrows, indicative of erosion.

4.3.1.7 Site-specific surveys for the Bowdun OWF, located approximately 10.03 km northwest of the MHPGC Project PEIR Red Line Boundary (outside of the Benthic Subtidal Ecology Study Area), identified a predominantly sand-dominated seabed with variable gravel and silt content across both the array area and offshore export cable corridor (TWP, 2026). Seabed morphology was characterised by mobile bedforms including megaripples and ripples, indicative of active sediment transport processes, with sandwaves and localised boulders present in parts of the site, and bedrock outcrops largely confined to inshore sections of the offshore export cable corridor.

4.3.1.8 Site-specific surveys undertaken for the Seagreen OWF (Project Alpha and Project Bravo), located approximately 25.15 km west of the MHPGC Project PEIR Red Line Boundary (outside of the Benthic Subtidal Ecology Study Area), identified seabed conditions typical of the central North Sea, comprising extensive areas of predominantly featureless, sediment-dominated seabed (Seagreen,

2012). The sediments were largely homogeneous and sand-dominated, with limited spatial variability across the array areas, although slightly more heterogeneous conditions were recorded along the offshore export cable corridor.

4.3.1.9 The Montrose Bank portion of the Firth of Forth Banks Complex MPA is situated adjacent to the MHPGC Project PEIR Red Line Boundary within the Benthic Subtidal Ecology Study Area (**Figure 1-1**). The MPA is designated for notable features, such as offshore subtidal sands and gravels and shelf banks and mounds and moraines. The offshore subtidal sands and gravels feature comprises a heterogeneous mosaic of coarse sandy and mixed sediments, interspersed with small patches of rock and mud. The habitat heterogeneity is attributed to natural localised hydrodynamic processes influencing the MPA (JNCC, 2014). Offshore subtidal sands and gravels are listed as a PMF in Scottish waters (NatureScot, 2020) and are listed on the Scottish Biodiversity List (Scottish Government, 2020).

MHPGC Project PEIR Red Line Boundary

4.3.1.10 Results of the geophysical and benthic surveys of Morven North and Morven South indicated that the sediments within the survey study areas (extending 5-14 km around the Morven North Boundary and Morven South Boundary) were relatively homogenous, dominated by fine to medium sand with varying amounts of gravel and shell fragments (Tetra Tech RPS Energy, 2026a;b). Boulders and numerous cobbles were also identified within both study areas (Tetra Tech RPS Energy, 2026b). Within the study area at Morven North, coarser sediments were generally found toward the southeast (Tetra Tech RPS Energy, 2026a). Within the study area at Morven South, stations with higher mud content were generally found towards the southeast (Tetra Tech RPS Energy, 2026a).

4.3.1.11 Within the MHPGC Project offshore export cable corridor, in Scottish waters, notable seabed features were limited, with homogenous sand with occasional patches of pitted seabed. These were recorded in the offshore section, primarily associated with sandwave crests (approximately KP93–KP120) and more irregular seabed areas between KP111 and KP158, with only occasional patches elsewhere. No sandbanks were observed within the MHPGC Project PEIR Red Line Boundary during the MHPGC Project-specific geophysical surveys. Further information in relation to sediment features is outlined within **Appendix B**.

4.3.1.12 During the MHPGC Project-specific geophysical surveys, sediments identified within the offshore export cable corridor in Scottish waters were predominantly sandy, with sediment mixing between KP183 and KP186 (**Figure** 4-3). There were some localised gravelly areas stretching across the width of the offshore export cable corridor at KP192 and at the border with English territorial waters at KP181(see **Appendix B**) (**Figure** 4-3). PSA analysis of subtidal grab samples collected during benthic surveys also indicated that the MHPGC Project PEIR Red Line Boundary was dominated by sandy sediments, with survey stations in Scottish waters classified as sand and muddy sand (Folk and Ward, 1957; see **Appendix E**).

4.3.1.13 In addition, sparse boulders were identified throughout the MHPGC Project PEIR Red Line Boundary in Scottish waters, present over a stretch of roughly 30 km, from KP208 and extending into English waters (see **Appendix B**) (**Figure** 4-3).

4.3.2 English waters

Regional

4.3.2.1 Based on EUSeaMap data (EMODnet, 2023), within the Benthic Subtidal Ecology Study Area located in English waters, seabed sediments in the northern section are dominated by 'Atlantic offshore circalittoral sand' (MD52/ SS.SSa), with more discrete areas of 'Atlantic offshore circalittoral coarse sediment' (MD32/SS.SCS) in the northeast (see **Figure 4-1**). The sediment transitions to become dominated by 'Atlantic offshore circalittoral mud' (MD62/SS.SMu) in the southern section of the Benthic Subtidal Ecology Study Area. In the inshore areas, a mix of biotopes can be found, including 'Atlantic circalittoral mud' (MC62/SS.SMu), which transitions to 'Atlantic circalittoral sand'

(MC52/SS.SSa) closer to shore, and discrete areas of 'Atlantic circalittoral mixed sediment' (MC42/SS.SMx.CMx).

4.3.2.2 The EUSeaMap data aligns with faunal cluster data from the Cefas OneBenthic (Cefas, 2025a) that indicates that the Benthic Subtidal Ecology Study Area in English waters is also dominated by sand-based sediments with the faunal cluster 'infaunal polychaetes and bivalves with brittlestars' (D2b) mapped across most of the area (**Figure 4-2**). A discrete area of 'infaunal polychaetes and amphipods' (D2c) is mapped at approximately KP150 to KP140, and there are some patches in the inshore area. In shallow waters, from KP18 to the landfall, the sediments remain the same but support the clusters 'bivalves with polychaetes' (D1), 'infaunal polychaetes and amphipods' (D2c). There is also a very small area where the sediment is dominated by gravel, rather than sand, supporting the cluster 'mixed sediment assemblage of polychaetes, bivalves and brittlestars' (C1b).

4.3.2.3 The Cambois Connection lies within close proximity to the MHPGC Project PEIR Red Line Boundary (0.25 km to the west), within the Benthic Subtidal Ecology Study Area, making landfall at Cambois Beach, Northumberland, approximately 39 km north of the MHPGC Project landfall location. Site-specific surveys were undertaken within the Cambois Connection export cable corridor (Natural Power, 2023). The majority of sediment samples were classified as muddy sand according to the Folk particle size classification system (Folk, 1954), including the section lying closest to the MHPGC Project PEIR Red Line Boundary, with some sites classed as muddy sandy gravels. Based on macrofaunal and DDV analyses, the northwestern section of the export cable corridor was characterised predominantly by sand habitats, comprising mainly circalittoral fine sand and muddy sand biotopes, with localised areas of offshore coarse sediment. Within the section adjacent to the MHPGC Project PEIR Red Line Boundary, habitats transitioned to offshore mud and mixed sediment biotopes. Offshore mud and sandy mud biotopes remained the dominant habitat types along the majority of the remaining length of the cable corridor.

4.3.2.4 Surveys undertaken for Eastern Green Link 1, which intersects the MHPGC Project PEIR Red Line Boundary approximately 8 km offshore from the proposed landfall, similarly identified a seabed dominated by sand and muddy sand sediments, with localised areas of mixed sediment, coarse sediment and rock habitat along the cable corridor. These results reflect the heterogeneous nature of benthic habitats across the offshore and nearshore sections of the northeast English coast (AECOM, 2022a).

4.3.2.5 The Farnes East MCZ is located 2.2 km from the MHPGC Project PEIR Red Line Boundary, within the Benthic Subtidal Ecology Study Area, as outlined within **Figure 1-1**. The seabed in the site is predominantly composed of subtidal coarse sediment, subtidal sand, and subtidal mixed sediments, with some small patches of moderate energy circalittoral rock. At the deepest point of the MCZ, there is a glacial trench, which contains subtidal mud (JNCC, 2021). These subtidal sediment types are all listed as protected features of the MCZ. The Farnes East MCZ post-survey site report combined data from the 2012 and 2014 site verification surveys and analysed the biotypes. The results confirmed the presence of moderate energy circalittoral rock, subtidal coarse sediment, subtidal sand, subtidal mud, and subtidal mixed sediments (Defra, 2015).

4.3.2.6 North East of Farnes Deep MCZ and HPMA is located 4.1 km from the MHPGC Project PEIR Red Line Boundary, within the Benthic Subtidal Ecology Study Area as outlined within **Figure 1-1**. The seabed in the site is mainly composed of subtidal mixed sediments, with subtidal sand and subtidal coarse sediment each also occupying approximately a quarter of the total site area, with a discrete area of subtidal mud present in the west of the site. All of these are designated as protected features of the MCZ. The geological and geographical features of the site include glacial features and topographic features of the North East Bank seabed mound or pinnacle; however, these are not designated features of the MCZ. The protected feature of the HPMA is the entire marine ecosystem of the area i.e. all marine flora and fauna, habitats and geological or geomorphological interests, including all abiotic elements and supporting ecosystem functions and processes.

MHPGC Project PEIR Red Line Boundary

4.3.2.7 From Scottish waters territorial limits, there are limited seabed features until KP158, when features such as pitted seabed, mottled seafloor, seabed furrows dominate the MHPGC Project PEIR Red Line Boundary until KP121. At KP120, sand waves are present becoming more regular between KP133 and KP93. These sediment waveforms begin to phase out at KP70 (see **Appendix B)**.

4.3.2.8 For the final 50 km of the MHPGC Project PEIR Red Line Boundary, the seabed was observed to be featureless, although isolated rock outcrops indicative of boulder fields were identified between KP41 and KP30 and KP17 to KP1, along with localised areas of sand ripples (e.g. KP20) (see **Appendix B**) (**Figure** 4-3).

4.3.2.9 Evidence of seabed scouring was also found in discrete locations, typically at sediment boundaries, and is likely driven by interactions of different grain sizes (see **Appendix A** and **Appendix B**). However, no sandbanks were observed within the MHPGC Project PEIR Red Line Boundary during the MHPGC Project specific geophysical surveys.

4.3.2.10 The results of the benthic subtidal surveys undertaken within the MHPGC Project PEIR Red Line Boundary are consistent with the regional sediment classifications based on EMODnet (2023) and Cefas (2025a) data. Sediments within English waters of the MHPGC Project PEIR Red Line Boundary are predominantly characterised by muddy sand, sandy mud and sand (see **Appendix D** and **Appendix F)**.

4.3.2.11 MHPGC Project-specific geophysical surveys indicated that, from the Scottish territorial limits at KP180, sediments within the MHPGC Project PEIR Red Line Boundary in English waters, comprise sand or a muddy sand overlaying a coarse sediment. To KP138, the seabed is heterogeneous with a mosaic of sediments, trending towards coarser sediment between KP101 and KP138, with the mottled seafloor indicating mixed sediment, such as gravelly muddy sand (see **Appendix B)**.

4.3.2.12 Between KP119 and KP90, sediment waves sort the medium sand, with coarser sediment with patches of gravel present. From KP53 to KP20, the sediment is interpreted as homogeneous fine to medium sand, with some coarser inclusions (see **Appendix B)**. PSA analysis of sediments collected during benthic subtidal surveys supports this classification, demonstrating that English waters within the MHPGC Project PEIR Red Line Boundary are dominated by sediment, predominantly muddy sand and sandy mud (between KP119 and KP19; Folk and Ward, 1957; **Appendix C** and **Appendix E**).

4.3.2.13 Approaching landfall, the seabed includes small rock outcrops and patches of sandy gravel forming a veneer over rocky areas. These occur as intermittent bands of gravelly sand, which reduce in extent closer to shore. The landfall area itself is characterised by gravelly sand between KP8 and KP2 (see **Appendix A** and **Appendix B**).

4.3.2.14 **Figure** 4-3 presents an overview of the sediment types and features within the MHPGC Project PEIR Red Line Boundary.

420000 440000 460000 480000 500000 520000 540000 560000 580000 600000 620000 640000 660000 680000 700000 720000 740000 760000 780000 800000

6320000 6300000 6280000 6260000 6240000 6220000 6200000 6180000 6160000 6140000 6120000 6100000 6080000 6060000

N

Nose's Point



LEGEND

- Scottish/English Offshore Waters Boundary
- Territorial Sea Limit
- Mean High Water Springs
- MHPGC Project PEIR Redline Boundary
- Benthic Subtidal Ecology Study Area
- Kelp Beds (Broadscale Habitats - Natural England)
- Offshore Subtidal Sands and Gravel

EUSeaMap (2025) Habitat Types (EUNIS 2019)

- MB12: Atlantic infralittoral rock
- MC12: Atlantic circalittoral rock
- MD12: Atlantic offshore circalittoral rock
- MD32: Atlantic offshore circalittoral coarse sediment
- MC42: Atlantic circalittoral mixed sediment
- MD42: Atlantic offshore circalittoral mixed sediment
- MB52: Atlantic infralittoral sand
- MC52: Atlantic circalittoral sand
- MD52: Atlantic offshore circalittoral sand
- MC62: Atlantic circalittoral mud
- MD62: Atlantic offshore circalittoral mud
- MC2211: [Sabellaria spinulosa] on stable Atlantic circalittoral mixed sediment

Morven Offshore Wind Farm | GoBe APEM Group

Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
EUNIS CLASSIFICATION WITHIN THE BENTHIC SUBTIDAL ECOLOGY STUDY AREA (EMODNET, 2023)

0 5 10 15 20 25 km

Scale@A31:1,100,000

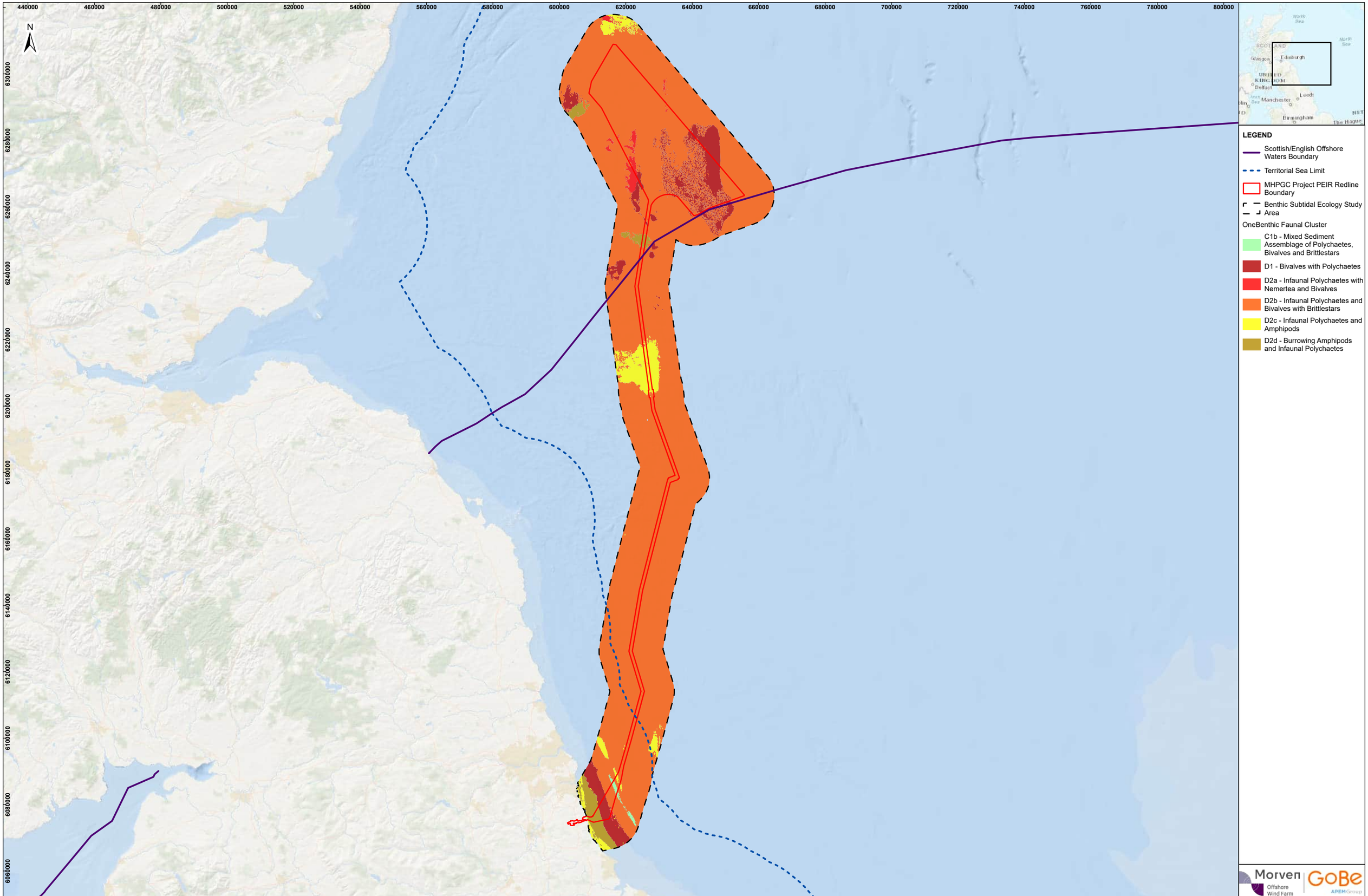
Geodetic Information:
Datum: European 1950
Projection: ED 1950 UTM Zone 30N

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
World Ocean Base: OceanWise, Esri, Garmin, NaturalVue
World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS
World Ocean Base: OceanWise, Esri, GEBCO, Garmin, NaturalVue

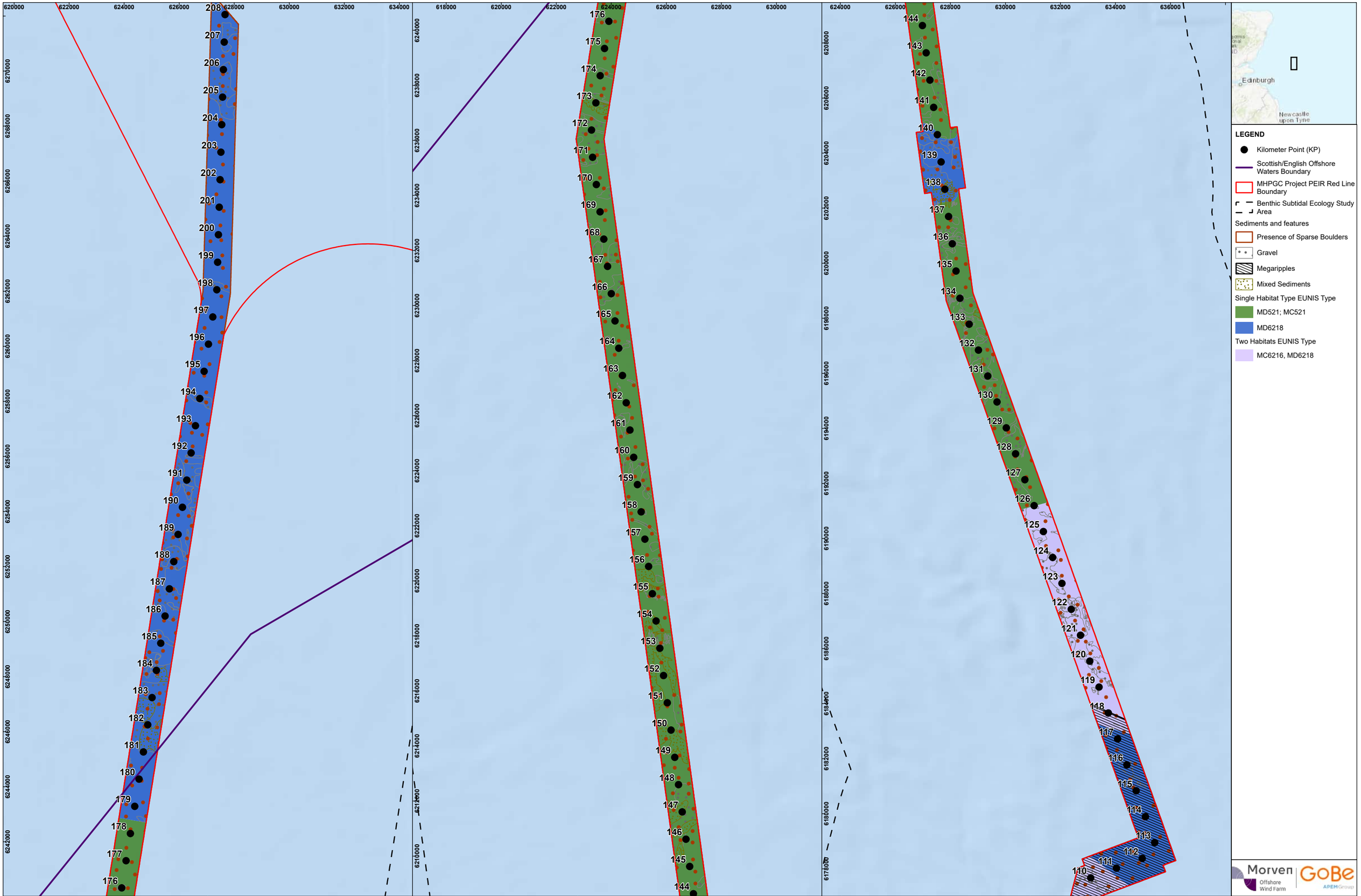
Drawing Number:
FIGURE 4-1

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-



Project Name: MORVEN HAWTHORN PIT GRID CONNECTION PROJECT	**Drawing Title:** ONEBENTHIC FAUNAL CLUSTER MAPPING	0 5 10 15 20 25 km Scale@A3:1:1,000,000	**Geodetic Information:** Datum: European 1950 Projection: ED 1950 UTM Zone 30N	**Data Sources:** BP, Ordnance Survey	**Service Layer Credits:** World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS World Ocean Base: OceanWise, Esri, GEBCO, Garmin, NaturalVue	**Drawing Number:** FIGURE 4-2

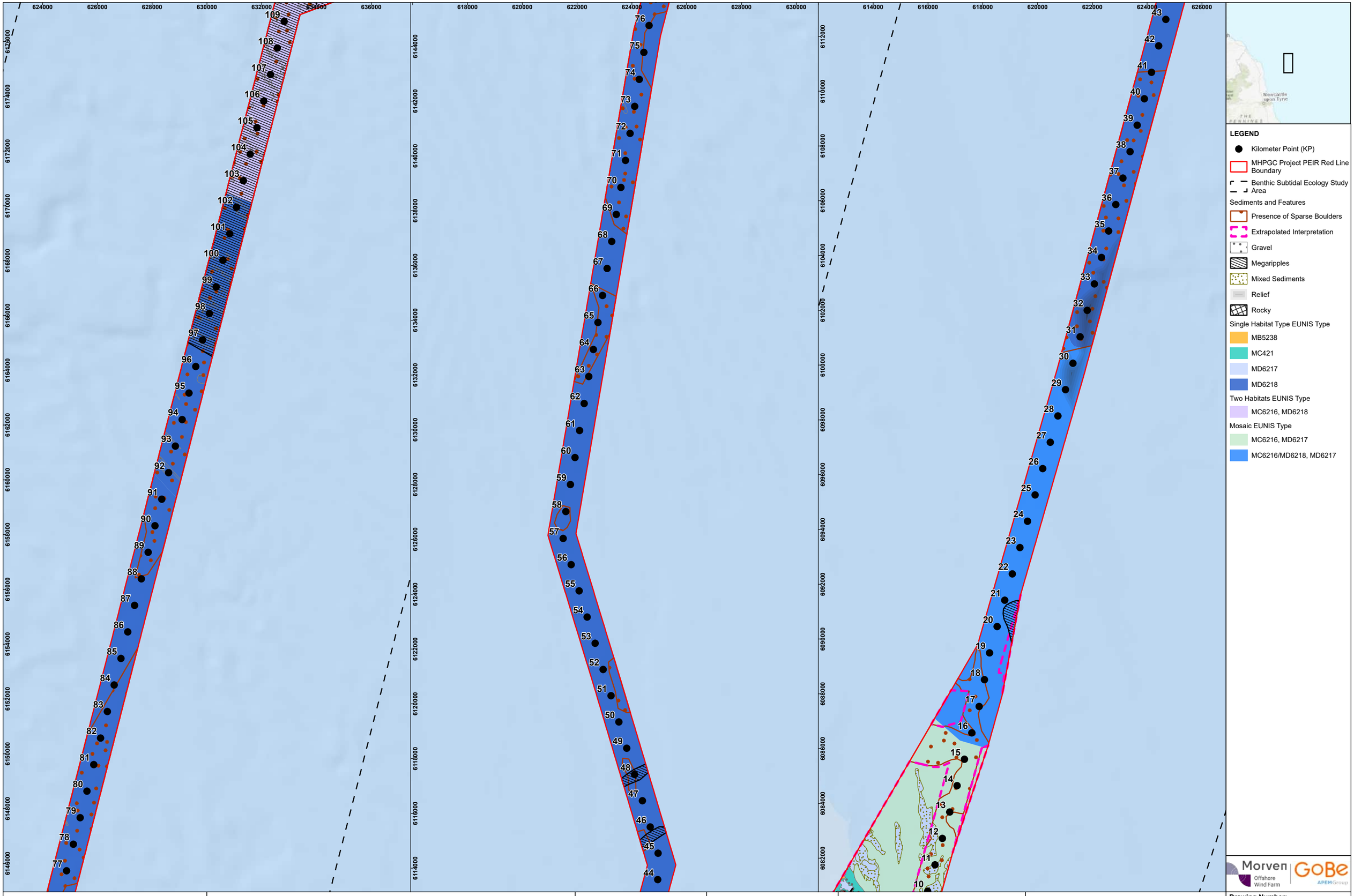
VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-



Project Name: MORVEN HAWTHORN PIT GRID CONNECTION PROJECT	**Drawing Title:** EUNIS HABITAT CLASSIFICATION AND SEDIMENT TYPE AND FEATURES WITHIN THE MHPGC PEIR RED LINE BOUNDARY (OWC, 2025) - SHEET 1	0 1 2 3 km Scale@A3: 1:120,000	**Geodetic Information:** Datum: European 1950 Projection: ED 1950 UTM Zone 30N	**Data Sources:** BP, Ordnance Survey	**Service Layer Credits:** World Ocean Base: OceanWise, Esri, Garmin, NaturalVue World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS

Drawing Number:
FIGURE 4-3

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-



Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
EUNIS HABITAT CLASSIFICATION AND SEDIMENT TYPE AND FEATURES WITHIN THE MHPGC PEIR RED LINE BOUNDARY (OWC, 2025) - SHEET 2

0 1 2 3 km

Scale@A3: 1:120,000

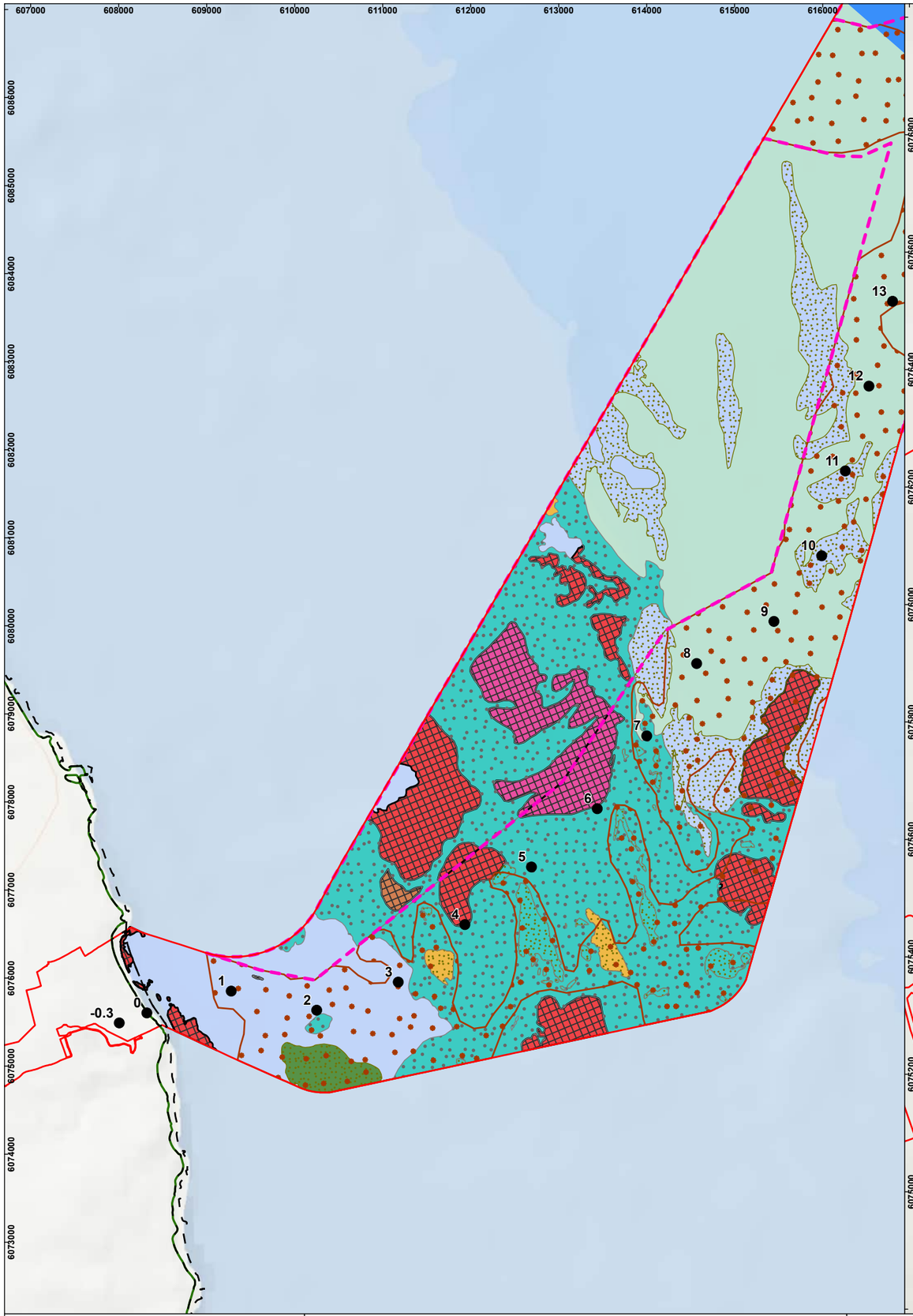
Geodetic Information:
Datum: European 1950
Projection: ED 1950 UTM Zone 30N

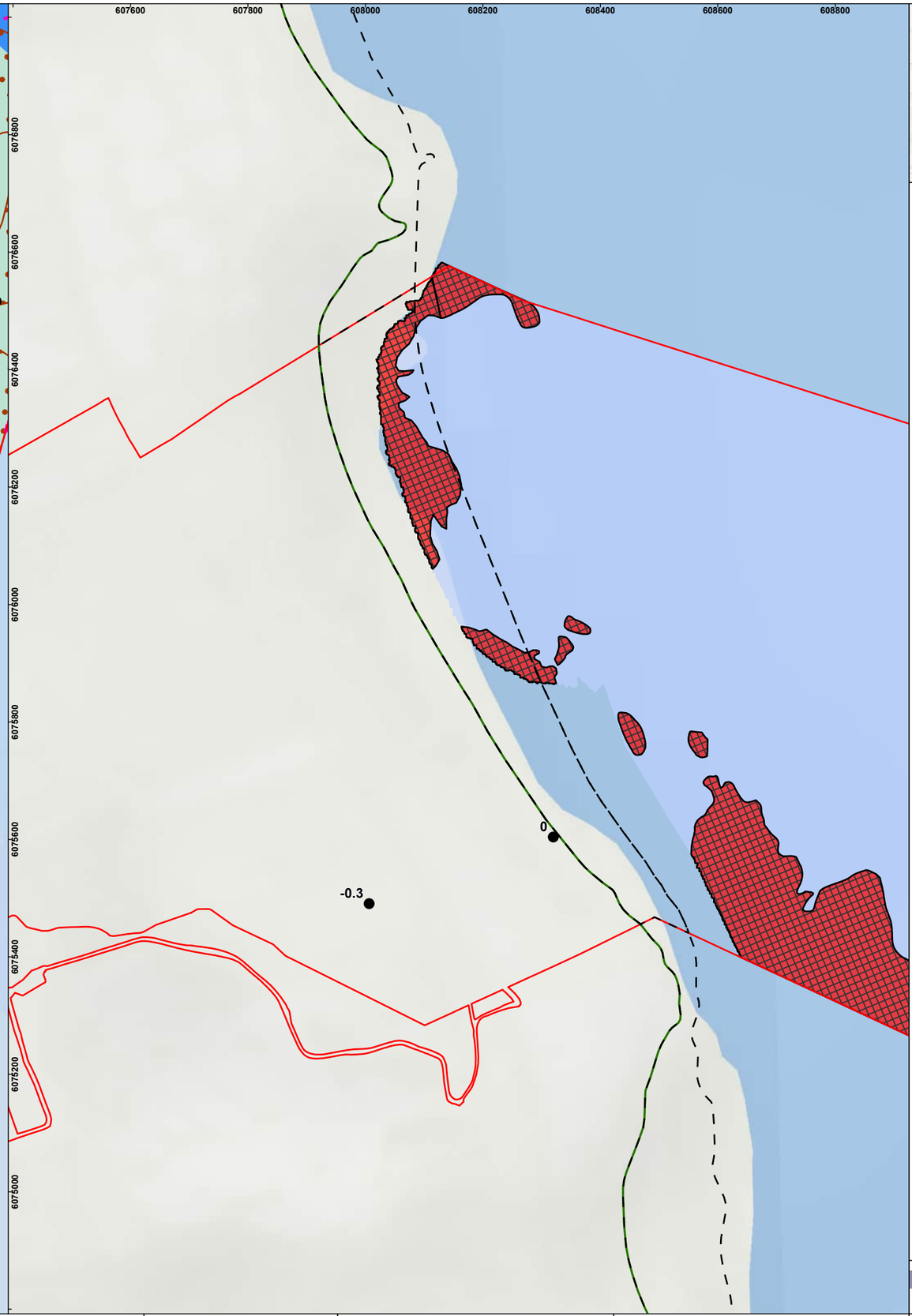
Data Sources:
BP, Ordnance Survey

Service Layer Credits:
World Ocean Base: OceanWise, Esri, Garmin, NaturalVue
World Topographic Map: Esri, HERE, Garmin, FAO, NOAA, USGS

Drawing Number:
FIGURE 4-3

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-







LEGEND

- Kilometer Point (KP)
- Mean High Water Springs
- MHPGC Project PEIR Red Line Boundary
- Benthic Subtidal Ecology Study Area

Sediments and Features

- Presence of Sparse Boulders
- Extrapolated Interpretation
- Gravel
- Mixed Sediments
- Rocky

Single Habitat Type EUNIS Type

- MB5238
- MC121
- MC421
- MD521; MC521
- MD6217

Mosaic EUNIS Type

- MC121, MC42
- MC121, MC521
- MC6216, MD6217
- MC6216/MD6218, MD6217

Morven Offshore Wind Farm | GoBe APEMGroup

Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
EUNIS HABITAT CLASSIFICATION AND SEDIMENT TYPE AND FEATURES WITHIN THE MHPGC PEIR RED LINE BOUNDARY (OWC, 2025) - SHEET 3

0 0.5 1 km

Scale@A3: 1:55,000

Geodetic Information:
Datum: European 1950
Projection: ED 1950 UTM Zone 30N

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
World Topographic Map: Esri, HERE, Garmin, FAO, USGS
World Ocean Base: Esri, Garmin, NaturalVue

Drawing Number:
FIGURE 4-3

VER	DATE	DETAILS	BY	CHECK
00	04/09/2026	Initial Issue	GB	AdB
-	-	-	-	-

4.4 Sediment chemistry

4.4.1 Scottish waters

Regional

4.4.1.1 Along the route of the Eastern Green Link 2 corridor, which overlaps with the Benthic Subtidal Ecology Study Area, chemical analysis undertaken (AECOM, 2022b). Sediment contaminant concentrations were within background levels reported for North Sea sediments, with no evidence of contamination above typical regional levels (AECOM, 2022b).

4.4.1.2 The Cambois Connection lies within close proximity to the MHPGC Project PEIR Red Line Boundary (0.25 km to the west), within the Benthic Subtidal Ecology Study Area, however no sediment contaminant samples were taken within Scottish waters (Natural Power, 2023).

4.4.1.3 Sediment chemistry within the Ossian OWF, located 5.50 km to the east of the MHPGC Project PEIR Red Line Boundary (within the Benthic Subtidal Ecology Study Area), was characterised by generally low and spatially uniform contaminant concentrations. Concentrations of metals, including Cd, Cr, Cu, Pb, Hg, Ni and Zn, were consistently below applicable guideline thresholds across the study area (RPS, 2024). Arsenic (As) was the only metal to show an exceedance, recorded at a single station where it exceeded lower screening criteria but remained below Cefas AL1. Organotins and PCBs were below detection limits, while hydrocarbons and PAHs were present at low levels consistent with background North Sea conditions, with only minor localised elevations. Overall, contaminant levels indicate largely unpolluted sediments with no evidence of widespread contamination.

4.4.1.4 Sediment chemistry analysis for the Bowdun OWF, located approximately 10.03 km northwest of the MHPGC Project PEIR Red Line Boundary (outside of the Benthic Subtidal Ecology Study Area), indicated generally low contaminant levels across the study area, with most trace metals, PCBs, PAHs and organotins below Marine Scotland ALs and Canadian Sediment Quality Guideline (CSQG) thresholds (TWP, 2026). Limited exceedances were recorded for As (at several stations) and Cr (at one station), although concentrations remained below effects-based thresholds (e.g. PEL/AL2), indicating low ecological risk. Organic contaminants were also low overall, with only minor exceedances at a small number of inshore stations. Overall, sediment chemistry reflected natural variability with no evidence of widespread contamination.

4.4.1.5 Sediment chemistry at the Seagreen Project Alpha, located approximately 25.15 km west of the MHPGC Project PEIR Red Line Boundary (outside of the Benthic Subtidal Ecology Study Area), indicates generally low contaminant concentrations, with levels below those expected to result in adverse effects on benthic communities (Seagreen, 2012). Although As was recorded at elevated levels at most stations, concentrations remained below Cefas AL1 thresholds and are considered indicative of natural background conditions rather than anthropogenic contamination. As such, any sediment disturbance during construction is unlikely to result in significant adverse impacts to benthic ecology.

MHPGC Project PEIR Red Line Boundary

4.4.1.6 Surveys associated with Morven North and Morven South reported only a single station sampled with a concentration of As exceeding the Marine Scotland AL1 and CSQG Threshold Effect Level (TEL). This station was in the northern extent of Morven North and did not exceed the Cefas AL2 or CSQG Probably Effect Level (PEL) levels (Tetra Tech RPS Energy, 2026a). All other survey stations were below the Marine Scotland AL1 and CSQG TEL for As and all other metals tested (Tetra Tech RPS Energy, 2026a).

4.4.1.7 Similarly, results from the Morven North and Morven South site-specific surveys showed low levels of PCBs, with only four stations with detectable levels, which were below Marine Scotland AL1 and below the CSQG TEL (Tetra Tech RPS Energy, 2026a). Concentrations of all PAH at all stations across Morven North and Morven South were below their relevant CSQG TEL and Marine Scotland AL1 thresholds (Tetra Tech RPS Energy, 2026a). Levels of organotin were below the detection limit at all stations (Tetra Tech RPS Energy, 2026a).

4.4.1.8 During MHPGC Project-specific benthic subtidal surveys, sediment within the MHPGC Project PEIR Red Line Boundary in Scottish waters were analysed for concentrations of heavy metals, PAHs, PCBs, and organotin. Full results are detailed within **Appendix C** and **Appendix E**.

4.4.1.9 Analysis indicated that concentrations of PCBs, PAHs and organotins in sediment samples from Scottish waters were below the Limit of Detection (LOD) and/or did not exceed their respective marine sediment Environmental Quality Standards (EQS) values. The following sections provide a summary of the results, focussing only on those contaminants and survey stations where EQS values were exceeded.

4.4.1.10 With regards to heavy metals, concentrations of As, Cd, Cr, Cu, Hg, Ni, Pb, Zn, Barium (Ba) and Vanadium (V) were determined. Contaminant concentrations were compared to sediment quality standards including Cefas ALs, Long *et al*. (1995) ERL, ERM, Buchman (2008) AET values, UKOOA (2001) 95th percentile and other marine sediment EQS values. For the heavy metals Cd, Cu, Hg, Ba and V, no samples indicated a sediment concentration above any EQS value.

4.4.1.11 In Scottish waters, a single sample (ENV179 at KP184) exceeded the ERL value for As. All other samples were below EQS values and for the remaining heavy metals were below the UKOOA (2001) mean for the central North Sea and can therefore be considered consistent with background concentrations.

4.4.1.12 Full results of heavy metal concentrations are presented in **Appendix C** and **Appendix E.**

4.4.2 English waters

Regional

4.4.2.1 The Cambois Connection lies within close proximity to the MHPGC Project PEIR Red Line Boundary (0.25 km to the west), within the Benthic Subtidal Ecology Study Area. The Cambois Connection landfall is located at Cambois Beach, Northumberland, approximately 39 km north of the MHPGC Project landfall location. All sediment samples taken for chemical analyses were located in English waters (Natural Power, 2023). Contaminated sediment results for the Cambois Connection showed low levels of chemical contaminants at stations sampled within the export cable corridor (Natural Power, 2023). The contaminants analysed included trace metals (arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), nickel (Ni) and zinc (Zn)), organotins (dibutyltin and tributyltin), PCBs, PAHs and total hydrocarbon content. The majority of contaminant levels at sampled stations were below Cefas AL1 and Canadian Interim Sediment Quality Guidelines. No contaminants exceeded Cefas AL2, and concentrations of organotins, PCBs and total PAHs were generally below relevant guideline thresholds. Toal hydrocarbon content levels were above Cefas AL1 at two locations, while chromium and nickel only marginally exceeded AL1 at a small number of stations. These locations are relatively close to shore in an area with high shipping activity associated with the nearby Port of Blyth.

4.4.2.2 Contaminant information reported for the Eastern Green Link 1, Easter Green Link 2, Bowdun, Seagreen and Ossian OWFs in Scottish waters is also considered relevant to English waters in the vicinity of the MHPGC Project, given their geographic proximity to the Scottish–English border (Seagreen, 2012; AECOM, 2022a; AECOM, 2022b; RPS, 2024; Tetra Tech RPS Energy, 2026a; TWP, 2026).

4.4.2.3 Historically, large volumes of colliery spoil were deposited along Durham coastline, resulting in sediment smothering and increased turbidity, with early surveys recording extensive siltation and low levels of marine life (MCS, 2009; 2016). Subsequent remediation has reduced these pressures, although residual sediment influence and anthropogenic material remain evident, and seabed conditions continue to reflect a legacy of disturbance (MCS, 2016).

MHPGC Project PEIR Red Line Boundary

4.4.2.4 During benthic subtidal surveys, sediment within the MHPGC Project PEIR Red Line Boundary in English waters was analysed for sediment contaminants for heavy metals, PAHs, PCBs, and organotin.

4.4.2.5 Analysis indicated that concentrations of PCBs and organotin in sediment samples from English waters did not exceed their respective marine sediment EQS values. Full results are detailed within **Appendix C** and **Appendix E**. The following sections provide a summary of the results, focussing only on those contaminants and survey stations where EQS values were exceeded.

Heavy Metals

4.4.2.6 Concentrations of As, Cd, Cr, Cu, Hg, Ni, Pb and Zn were determined and contaminant concentrations were compared to sediment quality standards including Cefas ALs, Long *et al*. (1995) ERL, ERM, Buchman (2008) AET values, UKOOA (2001) 95$_{th}$ percentile and other marine sediment EQS values. For the heavy metals Cd, Cu and Hg, no samples indicated a sediment concentration above any EQS value.

4.4.2.7 In English waters, metal concentrations were directly compared to Cefas ALs (MMO, 2023). Of the metals that were analysed, five (As, Cr, Ni, Pb and Zn) reported concentration above Cefas AL1 at one or more stations, with survey station ENV200, at KP4, recording concentrations above Cefas AL1 for all four of these metals. No analyte was reported to exceed Cefas AL2.

4.4.2.8 The highest concentrations of the metals were recorded approaching landfall, at survey stations ENV215 and ENV200 (KP9 and KP4, respectively). These corresponded with higher proportions of fine sediment, indicating these concentrations were consistent with natural variation.

4.4.2.9 A summary of heavy metal concentrations that exceeded marine sediment EQS values are presented in **Table 4.1** with full results detailed in **Appendix C** and **Appendix E.**

Table 4.1: Concentration of heavy metals that exceeded marine sediment EQS values in the MHPGC Project PEIR Red Line Boundary

Survey	Station	Nearest KP	Metal concentrations (µg g^{-1})				
			As	Cr	Ni	Pb	Zn
MMO (2023)	Cefas AL1		20.0	40	20	50	130
	Cefas AL2		100.0	400	200	500	800
2023	ENV116	70	8.6	45.8	25.2	27.0	57.1
2024	ENV185	29	9.2	31.3	20.8	31.0	65.0
2024	ENV215	9	22.4	36.8	28.5	90.8	123.0
2024	ENV222	7	25.3	29.3	24.0	71.1	111.0
2024	ENV221	4	20.8	17.7	16.2	51.3	88.0
2024	ENV200	4	30.1	28.4	26.5	94.7	132.0
2024	ENV201	2	17.6	14.7	14.2	50.1	92.0

Blanks indicate concentrations below limit of detection (LOD)

Concentrations exceed Cefas AL1 (MMO, 2023)

Concentrations exceed Cefas AL2 (MMO, 2023)

Polycyclic Aromatic Hydrocarbons

4.4.2.10 PAHs enter the environment through a range of sources, including road run-off, sewage, atmospheric circulation, and from historical industrial discharge. Once in the environment, PAHs exert a strong affinity for organic carbon and as such organic sediment in rivers can act as a substantial environmental sink. Due to the high affinity for organic carbon, once ingested by fauna PAHs may cause oxidative stress and lead to adverse effects in the organism. Most species have a limited ability to metabolise PAHs and as a result these can bioaccumulate to toxic levels.

4.4.2.11 **Appendix C** and **Appendix E** present the full results of PAH analytes and details that 14 of the sample locations with the MHPGC Project PEIR Red Line Boundary (between KP30 and KP4) contained PAH concentrations above Cefas AL1 for one or more PAHs.

4.4.2.12 The best estimates of the potential toxicity of PAHs in marine sediments are the ERL and ERM values (Long *et al.,* 1995). Individual PAH analytes were generally below both ERL and ERM values within the MHPGC Project PEIR Red Line Boundary indicating that toxic effects to fauna by PAHs are unlikely for the majority of the MHPGC Project PEIR Red Line Boundary. However, **Table 4.2** shows that there were five stations in the inshore areas between KP9 and KP4 of the MHPGC Project PEIR Red Line Boundary which recorded total PAH concentrations above the ERL. However, specific PAHs (Acenaphthene, Benzo[ghi]perylene and Fluorene) were detected above the ERL at multiple stations between KP29 and KP4 (see **Appendix C** and **Appendix E**). In general, total PAH concentrations showed a significant correlation with increasing proportions of fines and depth.

Table 4.2: Total PAH concentration that exceeded Long *et al.* (1995) marine sediment EQS values within the MHPGC Project PEIR Red Line Boundary

Survey	Station	Nearest KP	Total PAH concentration (µg/g[1])
Long *et al.* (1995)		ERL	4,022
		ERM	44,792
2024	ENV215	9	13,530
2024	ENV222	7	13,205
2024	ENV221	4	25,420
2024	ENV200	4	25,420
2024	ENV201	4	14,468

Concentrations exceed Long et al. (1995) ERL

Concentrations exceed Long et al. (1995) ERM

4.5 Seabed habitat and communities

4.5.1 Scottish waters

Regional

4.5.1.1 The Cambois Connection lies within close proximity to the MHPGC Project PEIR Red Line Boundary (0.25 km to the west), within the Benthic Subtidal Ecology Study Area. Site-specific surveys were undertaken within the Cambois Connection export cable corridor; however, only three of the 58 sample locations were situated within Scottish waters (Natural Power, 2023). At these locations, the biotope was categorised as '*Abra prismatica, Bathyporeia elegans* and polychaetes in circalittoral fine sand' (MC5212/SS.SSa.CFiSa.ApriBatPo). The only habitat of conservation importance found within the Cambois Connection export cable corridor was the PMF 'offshore subtidal sands and gravels'.

4.5.1.2 Benthic surveys undertaken at Ossian OWF, located 5.50 km to the east of the MHPGC Project PEIR Red Line Boundary (within the Benthic Subtidal Ecology Study Area), determined that infaunal composition was typical of North Sea assemblages being dominated by polychaete worms such as the sand mason (*Lanice conchilega* and *Spiophanes bombyx*), while the epifauna was characterised bycnidarians and bryozoans (Ossian, 2024). No Annex I reef habitats were identified within the Ossian survey area, although a number of habitats and species of conservation importance were recorded, including 'offshore subtidal sands and gravels' and subtidal sand and gravel habitats, which were widespread across the site. Ocean quahog and individual horse mussels (both designated as PMFs in Scotland due to their ecological importance and sensitivity) were recorded at low densities, alongside occurrences of sea pens; however, characteristic sea pen and burrowing megafauna communities, which are also recognised as PMFs, were not confirmed.

4.5.1.3 Benthic communities at Bowdun OWF, located approximately 10.03 km northwest of the MHPGC Project PEIR Red Line Boundary (outside of the Benthic Subtidal Ecology Study Area), were characteristic of North Sea circalittoral soft sediments, with infaunal assemblages dominated by polychaetes and echinoderms (notably brittlestars), with secondary contributions from bivalves and crustaceans (TWP, 2026). The dominant biotope was '*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (MC5211/SS.SSa.CFiSa.EpusOborApri), with additional occurrences of circalittoral muddy sand, offshore circalittoral sand, and localised coarse sediment biotopes reflecting sediment heterogeneity. No Annex I reef habitats (such as reef-forming *S. spinulosa*) were identified, and sea pen and burrowing megafauna communities were absent, indicating assemblages typical of sand-dominated offshore habitats.

4.5.1.4 The benthic communities recorded at Seagreen OWF (Project Alpha and Project Bravo), located approximately 25.15 km west of the MHPGC Project PEIR Red Line Boundary (outside of the Benthic Subtidal Ecology Study Area), were characteristic of offshore circalittoral soft sediment habitats, with relatively low-diversity assemblages dominated by patchy distributions of polychaete worms and bivalves, consistent with MC52/SS.SSa biotope complexes (Seagreen, 2012). Species diversity was slightly higher along the export cable corridor, reflecting localised increases in habitat variability. While *S. spinulosa* was recorded across the site, it was not observed forming reef structures. The only species of conservation importance identified was ocean quahog which occurred at low densities and was represented predominantly by juvenile individuals. Overall, the assemblages were typical of the wider region and indicative of broadly undisturbed circalittoral sedimentary habitats.

4.5.1.5 Analysis by Axelsson *et al.* (2014), reported three broad habitat type within the Firth of Forth Complex Bank MPAs: soft sediments with ripples, mixed sediment and coarse sediments with some rocky outcrops. A total of 12 biotopes were identified, with the most common being a 'circalittoral muddy sand' (SS.SSa.CMuSa, similar to MC52) biotope complex. This complex comprised two biotopes, one dominated by bivalves (*Abra alba* and *Nucula nitidosa*), and the other by brittlestars (*Acrocnida brachiate*) and the sand star (*Astropecten irregularis*). In the northern part of the surveyed area (overlapping with the Benthic Subtidal Ecology Study Area), gravelly sand sediments were more frequently recorded, while the southern part was dominated by gravelly muddy sands and mixed sediments. Soft corals (*Alcyonium digitatum*) and ascidians were typically present in coarser sediments (Axelsson *et al*., 2014).

4.5.1.6 A 2014 study of the Firth of Forth Banks Complex MPA, observed 'sea pens and burrowing megafauna' habitats were observed on finer sediments classified as sandy mud in the Wee Bankie portion of the MPA (Axelsson *et al.,* 2014). However, this portion of the MPA is outside of the Benthic Subtidal Ecology Study Area, located approximately 32 km from the MHPGC Project PEIR Red Line Boundary. The 'sea pens and burrowing megafauna communities' habitat are listed on the OSPAR (2008) list of threatened and/or declining species and habitats and is also listed as a component biotope of the burrowed mud habitat which is a PMF (NatureScot, 2020). Additionally, 'mud habitats in deep water' are listed on the Scottish Biodiversity List (Scottish Government, 2020). However, this habitat is widespread throughout the central North Sea (OSPAR, 2010; Hill *et al.*, 2022).

4.5.1.7 A 2014 study of the Firth of Forth Banks Complex MPA (the Montrose Bank portion of which is located adjacent to the MHPGC Project PEIR Red Line Boundary), identified stony reef in areas characterised by large pebbles and cobbles on muddy sand and gravel colonised by large aggregations of ascidians or *A. digitatum* (Axelsson *et al*., 2014). Stony reef is as listed under Annex I of the Habitats Directive as (1170) 'reef' (EU, 1992).

4.5.1.8 Two broad faunal assemblage groups were identified within the Firth of Forth Banks Complex MPA (Pearce *et al.,* 2014). One assemblage comprised aggregations of the polychaete *S. bombyx* in deep circalittoral sands and coarse sands. *S. bombyx* is a tube dwelling, typically found in clean sand (Ager, 2005). The second assemblage comprised mixed sands and gravels supporting a rich polychaete and epifaunal community (including the squat lobster *Galathea intermedia*). *S. spinulosa* reefs with sea squirt (*Ascidella scabra*) and squat lobster on gravelly sand were also present (Pearce *et al*., 2014). However, *S. spinulosa* reefs were only considered to be present in the Wee Bankie area of the Firth of Forth Banks Complex MPA, which falls outside of the Benthic Subtidal Ecology Study Area.

4.5.1.9 Ocean quahog is protected as a designated feature of the Firth of Forth Banks Complex MPA (of which the Montrose Bank portion is located adjacent to the MHPGC Project PEIR Red Line Boundary). Ocean quahog is listed on the OSPAR (2008) list of threatened and/or declining species and habitats and is listed as a low or limited mobility species PMF in Scottish waters (NatureScot, 2020). However, this bivalve species is commonly found within this area of the North Sea. Surveys of Morven North and Morven South, also located within the MHPGC Project PEIR Red Line Boundary, also observed adult specimens of ocean quahog (RPS, 2024).

4.5.1.10 The PMF 'offshore subtidal sands and gravels' have been recorded within the Benthic Subtidal Ecology Study Area, outside of the MHPGC Project PEIR Red Line Boundary, centred around the Firth of Forth Banks Complex MPA (Marine Directorate, 2026; **Figure 4-1**).

MHPGC Project PEIR Red Line Boundary

4.5.1.11 The seabed within the MHPGC Project PEIR Red Line Boundary within Scottish waters (KP208 to KP181) was classified as '*Paramphinome jeffreysii*, *Thyasira spp*. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud' (MD6218/SS.SMu.OMu.PjefThyAfil). The EUNIS habitat classification for each survey station within the MHPGC Project PEIR Red Line Boundary are mapped in
Figure 4-3, observing habitats that are consistent with EUSeaMap and OneBenthic data (Cefas, 2025a; EMODnet, 2023). The methodology used to produce the biotope map (**Figure** 4-3) is shown in **Appendix G.**

4.5.1.12 During the MHPGC Project subtidal benthic surveys, there were no observations of sea pen (*Pennatula phosphorea* and *Virgularia* sp.) or characteristic burrows within the MHPGC Project PEIR Red Line Boundary in Scottish waters (see **Appendix D** and **Appendix F**).

4.5.1.13 During the MHPGC Project subtidal benthic surveys, there were no observations of potential stony reef within the MHPGC Project PEIR Red Line Boundary in Scottish waters (see **Appendix D** and **Appendix F**).

4.5.1.14 During the MHPGC Project subtidal benthic surveys, there were no observations of 'offshore subtidal sands and gravels', a PMF, within the MHPGC Project PEIR Red Line Boundary in Scottish waters (see **Appendix D** and **Appendix F**). Conversely, the seabed was observed to be dominated by mud, specifically subtidal mud (MD6218/SS.SMu.OMu.PjefThyAfil) (see **Appendix G** and **Figure** 4-3).

4.5.1.15 One juvenile ocean quahog was found in a sediment sample at ENV176 (near KP196) (**Appendix E**).

4.5.1.16 In addition, Morven North and Morven South are located within the MHPGC Project PEIR Red Line Boundary (see **Figure 1-1**). Surveys were undertaken in 2022 for these two array sites included DDV and grab sampling (Tetra Tech RPS Energy, 2026a). Results showed that the sediment ranged from fine to coarse sand with gravel and shell material and some isolated areas of cobbles. The visible seabed faunal communities observed across Morven North and Morven South were typically sparse, however soft substrates were dominated by annelids, arthropods, cnidarians, echinoderms and molluscs, with fewer species recorded on coarser sediments, such as gravel, cobbles, and boulders (RPS, 2024). The dominant benthic communities identified were:

- *'Abra prismatica*, *Bathyporeia elegans* and polychaetes in circalittoral fine sand' (MC5212/SS.SSa.CFiSa.ApriBatPo);
- *'Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (MC5211/SS.SSa.CFiSa.EpusOborApri);
- *'Siphonoecetes*, Nephtyidae polychaetes and venerid bivalves in circalittoral sand' (MC521/SS.SSa.CFiSa) (Tetra Tech RPS Energy, 2026a).

4.5.1.17 Additionally, a discrete occurrence of the biotope 'Atlantic circalittoral sand' (MC52/SS.SSa) was identified in the northwest corner of Morven North (Tetra Tech RPS Energy, 2026a). The biotope '*Abra prismatica, Bathyporeia elegans* and polychaetes in circalittoral fine sand' (MD4211/SS.SMx.OMx.PoVen) was also recorded at a single location within the wider study area (within 9 km of the Morven North Boundary).

4.5.1.18 The scarce tube-dwelling anemone (*Arachnanthus sarsi*), a PMF and a species on the Scottish Biodiversity List, was identified at three sample stations within the Morven North Boundary, and one sample station within the Morven South Boundary. Sea pens and burrows were also observed within the Morven North Boundary and Morven South Boundary, however the definition of 'sea pen and burrowing megafauna community' habitat was not met.

4.5.1.19 *S. spinulosa* sand tube aggregations were identified at one sample station, in the northern part of the Benthic Subtidal Ecology Study Area, outside of the Morven North Boundary (Tetra Tech RPS Energy, 2026a). Although tube aggregations were present on isolated cobbles and boulders, their extent and coverage were limited and did not satisfy the criteria for Annex I reef habitat. No *S. spinulosa* aggregations were recorded within the Morven South Boundary or elsewhere in the Morven South study area.

4.5.1.20 Live horse mussels, an OSPAR Threatened and/or Declining Species, were observed at 33 stations within the Morven North study area and 21 stations within the Morven South study area, including stations within both development boundaries (Tetra Tech RPS Energy, 2026a). However, occurrences were limited to scattered, solitary individuals, with no evidence of the dense aggregations required to support identification of *M. modiolus* reef habitat. Consequently, the feature did not meet the criteria for either PMF or Annex I reef habitat.

4.5.1.21 Areas containing cobbles and boulders were assessed for Annex I stony reef habitat (Tetra Tech RPS Energy, 2026a). While some stations exhibited isolated patches of coarse substrate supporting epifaunal assemblages, these features were limited in extent, matrix-supported, and lacked the spatial continuity and biological characteristics required to qualify as Annex I reef habitat.

4.5.1.22 Evidence of species associated with the PMF 'fragile sponge and anthozoan communities on subtidal rocky habitats' was also recorded, including Porifera and *Alcyonidium diaphanum* (Tetra Tech RPS Energy, 2026a). However, these taxa occurred at low abundance and restricted spatial extent and were not considered representative of the habitat.

4.5.2 English waters

Regional

4.5.2.1 The Eastern Green Link 2 corridor overlaps with the Benthic Subtidal Ecology Study Area, with the majority intersecting English waters. The dominant habitats along most of the corridor were offshore circalittoral sand and offshore circalittoral mixed sediment, with circalittoral coarse sediment and *S. spinulosa* biotopes occurring in more localised sections of the route (AECOM, 2022b). Several

habitats and species of conservation importance were recorded within the Eastern Green Link 2 corridor in English waters, including localised *S. spinulosa* Annex I reef, and the PMF habitat 'subtidal sands and gravels' (AECOM, 2022b). A poor example of the OSPAR-listed 'sea pen and burrowing megafauna communities' habitat was also identified. This habitat is associated with fine muddy sediments characteristic of the HPI 'Mud habitats in deep water'. Species of conservation importance included ocean quahog, while horse mussel was recorded in low numbers with no reef-forming beds present. No Annex I bedrock reef or representative examples of mud habitats in deep water were recorded.

4.5.2.2 Similarly, Eastern Green Link 1 was dominated by deep circalittoral sand habitats, with additional areas of deep circalittoral mixed sediment, deep circalittoral mud, deep circalittoral coarse sediment and circalittoral rock habitats identified along the route (AECOM, 2022a). Communities recorded during Eastern Green Link 1 surveys were characteristic of North Sea soft-sediment habitats and were dominated by polychaetes, bivalves, crustaceans and echinoderms, including taxa associated with circalittoral sand, mixed sediment and mud habitats (AECOM, 2022a).

4.5.2.3 The Cambois Connection lies within close proximity to the MHPGC Project PEIR Red Line Boundary (0.25 km to the west), within the Benthic Subtidal Ecology Study Area. The Cambois Connection landfall is located at Cambois Beach, Northumberland, approximately 39 km north of the MHPGC Project landfall location. Site-specific surveys were undertaken within the Cambois Connection export cable corridor, with 55 out of the 58 sample locations within English waters (Natural Power, 2023). The following biotopes were recorded, along with the biotopes '*Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud' (MD6218/SS.SMu.OMu.PjefThyAfil) and 'Atlantic offshore circalittoral mixed sediment' (MD42/SS.SMx) that were present within the section lying adjacent to the MHPGC Project PEIR Red Line Boundary:

- '*Kurtiella bidentata* and *Thyasira* spp. in circalittoral muddy mixed sediment' (MC4213/ SS.SMx.CMx.KurThyMx);
- '*Abra prismatica, Bathyporeia elegans* and polychaetes in circalittoral fine sand' (MC5212/ SS.SSa.CFiSa.ApriBatPo);
- '*Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand' (MD5212/SS.SSa.OSa.OfusAfil);
- '*Thyasira* spp. and *Ennucula tenuis* in circalittoral sandy mud' (MC6212/SS.SMu.CSaMu.ThyEten);
- 'Atlantic offshore circalittoral mud' (MD62/SS.SMu);
- *'Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in offshore circalittoral sandy mud' (MD6218/SS.SMu.OMu.PjefThyAfil); and
- '*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand' (MB5236/SS.SSa.IMuSa.FfabMag).

4.5.2.4 Species and habitats of conservation importance were identified within the Cambois Connection export cable corridor (Natural Power, 2023). These included the HPI 'subtidal sands and gravels' and the OSPAR threatened and/or declining species ocean quahog. Individual specimens of *S. spinulosa* were recorded at one station; however, no *S. spinulosa* reef habitat was identified. The sea pen *P. phosphorea* was recorded from DDV imagery, although no areas met the criteria for the PMF/OSPAR habitat 'Sea pen and burrowing megafauna communities'. Reef-like substrate was observed within one segment of the video record from Station 1 near the landfall and was initially considered representative of Annex I stony reef; however, the station was subsequently classified as a mixed habitat dominated by MB5236/SS.SSa.IMuSa.FfabMag, and was therefore not mapped as Annex I reef.

4.5.2.5 Seasearch surveys (conducted between 1991 to 2016) recorded a range of circalittoral and infralittoral habitats along the Durham coastline within which the Benthic Subtidal Ecology Study Area lies (MCS, 2016). In 2009, these included stepped and sloping circalittoral bedrock, often characterised by dense silt cover and generally low biodiversity (MCS, 2009). Sediment habitats comprised infralittoral and circalittoral sands (including areas affected by coal waste), muddy gravel and mixed ground with occasional boulders. Biological communities were typically sparse, with occasional occurrences of species such as spirorbid worms, starfish and anemones, although mixed

ground habitats supported more developed assemblages including dead men's fingers and hornwrack (MCS, 2009).

4.5.2.6 'Sea pen and burrowing megafauna communities' is protected as a designated feature of Farnes East MCZ, located 2.2 km to the west of the closest point of the MHPGC Project PEIR Red Line Boundary, as illustrated in **Figure 1-1**. 'Sea pen and burrowing megafauna communities' habitat is listed on the OSPAR (2008) list of threatened and/or declining species and habitats. However, this habitat is widespread throughout the central North Sea (OSPAR, 2010; Hill *et al.*, 2022).

4.5.2.7 Sotheran *et al*. (2016) also recorded the following biotopes within Farnes East MCZ in 2012 and 2014:

- '*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (MC5211/SS.SSa.CFiSa.EpusOborApri);
- '*Thyasira* spp. and *Ennucula tenuis* in circalittoral sandy mud' (SS.SMu.CSaMu.ThyEten – assigned to EUNIS (2022) habitat class M5.4 (circalittoral mud); broadly corresponding to Atlantic circalittoral sandy mud habitats (e.g. MC6212));
- 'Offshore circalittoral mixed sediment' (MD42/SS.SMx);
- 'Offshore circalittoral coarse sediment' (MD321/SS.SCS.OCS);
- '*Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand' (MD5212/SS.SSa.OSa.OfusAfil).

4.5.2.8 From community analysis of offshore grab and DDV data, the faunal communities for the North East of Farnes Deep MCZ and HPMA were characterised (Allen *et al.,* 2016). Polychaetes were common across the area including *Hydroides norvegica*, *Paramphinome. jeffreysii, Galathowenia oculata*, *Paradoneis lyra* and *Mediomastus fragilis*. Other common fauna within these samples included pea urchin (*Echinocyamus pusillus*), sea slater (*Ligia asellus*), as well as Nemertea and Sipuncula species. Biotopes identified from these surveys were:

- 'Polychaete-rich deep *Venus* community in offshore mixed sediments' (MD4211/SS.SMx.OMx.PoVen);
- '*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand' (MC5211/SS.SSa.CFiSa.EpusOborApri);
- '*Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand' (MD5212/SS.SSa.OSa.OfusAfil);
- 'Circalittoral fine sand' (MC521/SS.SSa.CFiSa);
- 'Circalittoral mixed sediment' (MC42/SS.SMx.CMx).

4.5.2.9 During a 2012 North East of Farnes Deep MCZ site verification survey, sea pens and macrofaunal burrows were observed, but the description of sediment in these samples did not match the 'sea pen and burrowing megafauna communities' habitat and so this was not included as a designated feature of the site (Defra, 2015).

4.5.2.10 Stony reef is a protected feature of Farnes East MCZ (located 2.2 km to the west of the closest point of the MHPGC Project PEIR Red Line Boundary). Stony reef is listed under Annex I of the Habitats Directive as (1170) 'reef' (EU, 1992).

4.5.2.11 Subtidal sands and gravels are a protected feature of Farnes East MCZ and the North East of Farnes Deep MCZ/HPMA (located 2.2 km and 4.1 km from the closet point of the MHPGC Project PEIR Red Line Boundary, respectively). Subtidal sands and gravels are listed as a HPI under Section 41 of the 2006 NERC Act. This habitat is widely distributed throughout the North Sea.

4.5.2.12 Both the Farnes East MCZ and the North East of Farnes Deep MCZ/HPMA (located 2.2 km and 4.1 km from the closet point of the MHPGC Project PEIR Red Line Boundary, respectively) are designated for subtidal mud features. In addition, 'muds in deep water' are listed as a HPI under Section 41 of the 2006 NERC Act. This habitat is widely distributed throughout the North Sea.

4.5.2.13 Subtidal mixed sediment is listed as a designated feature for both the Farnes East MCZ and the North East of Farnes Deep MCZ/HPMA (located 2.2 km and 4.1 km from the closet point of the MHPGC Project PEIR Red Line Boundary, respectively). This habitat is widely distributed throughout the North Sea.

4.5.2.14 Northumbria Coast SPA/Ramsar, and Teesmouth and Cleveland Coast SPA/Ramsar lie within the Benthic Subtidal Ecology Study Area, approximately 1.7 km to the north and 6.4 km from the south of the landfall area respectively. While not designated for benthic features, subtidal soft sediments, including offshore sand and mud, support the designated bird species by providing habitat for benthic prey such as forage fish and invertebrates (Natural England, 2017; Natural England, 2020a).

4.5.2.15 Ocean quahog is protected as a designated feature of the Farnes East MCZ (located 2.2 km to the west of the closest point of the MHPGC Project PEIR Red Line Boundary) (JNCC, 2020). In addition, ocean quahog was recorded during a 2012 site verification survey of North East of Farnes Deep MCZ/HPMA (located 4.1 km to the west of the closest point of the MHPGC Project PEIR Red Line Boundary), with observations predominantly in the eastern and south-western corner of the MCZ/HPMA (Defra, 2015). Ocean quahog is listed on the OSPAR (2008) list of threatened and/or declining species and habitats. This species is widely distributed throughout the North Sea.

4.5.2.16 An extensive area of kelp bed lies within the Benthic Subtidal Ecology Study Area, stretching northwards from Seaham Beach to South Shields (JNCC, n.d.; subtidal kelp bed layer accessed via MAGIC Maps, 2026) (**Figure 4-1**).

4.5.2.17 According to EMODnet (2023), a relatively large area of '*Sabellaria spinulosa* on stable circalittoral mixed sediment' MC2211/SS.SBR.PoR.SspiMx lies within the Benthic Subtidal Ecology Study Area (and within the MHPGC Project PEIR Red Line Boundary), approximately 2 km offshore (**Figure 4-1**).

MHPGC Project PEIR Red Line Boundary

4.5.2.18 Data from the MHPGC Project-specific surveys was reviewed, in **Appendix G**, to provide EUNIS habitat code to each distinct macrofaunal community group identified within the MHPGC Project PEIR Red Line Boundary. A summary of the EUNIS habitat codes identified within MHPGC Project PEIR Red Line Boundary in English waters is provided below and is illustrated in Figure 4-3:

- *'Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud' (MD6218/SS.SMu.OMu.PjefThyAfil).
  - From the border with Scottish territorial waters at KP180, transitioning at KP178. Also present between KP140 and KP138, and from KP126 to KP34.
- 'Faunal communities of Atlantic circalittoral sand / Faunal communities in Atlantic offshore circalittoral sand' (MC521/MD521; SS.SSa.CFiSa/SS.SSa.OSa).
  - From KP178 to KP126.
- 'Sea pens and burrowing megafauna in Atlantic circalittoral fine mud' (MC6216/SS.SMu.CFiMu.SpnMeg).
  - Between KP124 and KP102, occurring as discrete areas alongside MD6218.
- *'Levinsenia gracilis* and *Heteromastus filiformis* in Atlantic offshore circalittoral mud and sandy mud' (MD6217/SS.SMu.OMu.LevHet) with MC6216/SS.SMu.CFiMu.SpnMeg.
  - KP30 to KP16 (mosaic with MD6218). Also, in the inshore area from KP15 to KP8 (sandy sediments with these habitats present).
- 'Faunal communities of Atlantic circalittoral mixed sediment' (MC421/SS.SMx.CMx).
  - From KP7 to KP2 approaching landfall.
  - This habitat is interspersed with small outcrops of rock of 'Faunal turf communities on Atlantic circalittoral rock' (MC121/CR.HCR.FaT) and finer sediment habitats such as '*Spisula subtruncata* and *Nephtys hombergii* in Atlantic infralittoral muddy sand' (MB5238/SS.SSa.IMuSa.SsubNhom) and mosaics of MC121/MC521 (CR.HCR.FaT/ SS.SSa.CFiSa) and MC121/'Atlantic circalittoral mixed sediment' (MC42/SS.SMx.CMx).

4.5.2.19 Several protected subtidal habitats and species were identified by the benthic subtidal surveys. Firstly, coarse sediments and sand biotopes (MC3, MC5, MD3 and MD5) observed at 13 survey stations within the MHPGC Project PEIR Red Line Boundary in English waters, predominantly

between KP173 and KP133 (see **Figure** 4-3 and **Appendix G**), indicative of subtidal sands and gravels.

4.5.2.20 Mixed sediment biotopes (MC4 and MD4) observed at six survey stations within the MHPGC Project PEIR Red Line Boundary in English waters, in areas approaching landfall between KP6 and KP4 (see **Figure** 4-3 and **Appendix G)**, indicative of subtidal mixed sediment.

4.5.2.21 During the MHPGC Project subtidal benthic surveys, ocean quahog siphons were observed using DDV at four survey stations within the MHPGC Project PEIR Red Line Boundary in English waters, at survey station ENV201 (near KP2), ENV015 (near KP74), ENV014 (near KP78) and ENV084 (near KP165) (ranging from one to three siphon pairs) (**Appendix D** and **Appendix F**). Furthermore, ocean quahog juveniles were detected at 25 stations within the MHPGC Project PEIR Red Line Boundary via sediment sampling (ENV222, ENV216, ENV214, ENV212, ENV211, ENV187, ENV128, ENV127, ENV185, ENV117, ENV113, ENV110, ENV226, ENV101, ENV228, ENV229, ENV230, ENV231, ENV233, ENV091, ENV234, ENV235A, ENV090, ENV089, ENV180); corresponding to KP7-29 and KP66-145 and KP180), with individuals ranging from 1-10 individuals per station, and 84 individuals counted in total).

4.5.2.22 At Nose's Point, near Blast Beach (**Figure 4-1**), three habitats were recorded in 2009 by Seasearch surveys: 'kelp park', with kelp species *Laminaria hyperborea* and *L. digitata* present, but sparse, on the upper surfaces of the rocky ridges; 'short animal turf on rocks', mainly comprising encrusting sponges; and, 'sediment with life apparent', with sand of medium-coarse grained and fairly form, with ridges 5-10 cm high, running in a northwest to southeast direction and several lugworm casts (MCS, 2009). Species recorded in this habitat included plaice and harbour crabs (MCS, 2009).

4.5.2.23 According to EMODnet (2023), a relatively large area of MC2211/SS.SBR.PoR.SspiMx lies within the MHPGC Project PEIR Red Line Boundary, approximately 2 km offshore, indicating potential *S. spinulosa* reef presence (**Figure 4-1**). A corresponding area of potential *S. spinulosa* reef is also identified within the JNCC (2022) Annex I Reef dataset; this lies within the area denoted by the EMODnet data, although its mapped extent is smaller and is classified as high potential reef. However, no *S. spinulosa* individuals or fragments were detected within the MHPGC Project PEIR Red Line Boundary during the site-specific surveys (**Appendix C** to **Appendix F**).

Sea pen and burrowing megafauna communities

4.5.2.24 In English waters, seabed imagery from the MHPGC Project specific benthic surveys revealed that two species of sea pen (*P. phosphorea* and *Virgularia* sp.) and burrows were present within the MHPGC Project PEIR Red Line Boundary (see **Appendix D** and **Appendix F**). In addition, single individuals of *Virgularia mirabilis* were found in sediment samples taken at ENV221, ENV222, ENV216, ENV215, ENV214, ENV121 and ENV124 (corresponding to KP4-11 and KP38 and KP50; ranging from one to three individuals respectively), and *P. phosphorea* individuals were found in sediment samples taken at ENV230 (near KP118), ENV231 (near KP119) and ENV233 (near KP124) (ranging from one to two individuals respectively) (**Appendix C** and **Appendix E**). Therefore, a detailed assessment of the 'sea pen and burrowing megafauna community' habitat as identified by OSPAR (2010) was conducted, referring to the MNCR SACFOR abundance scale (JNCC, 2013), as described in **Appendix D** and **Appendix F**.

4.5.2.25 Sea pen and burrow densities were calculated for each station using the total area covered by the seabed imagery. As discussed in **Section 3.3.4**, to be considered a 'sea pen and burrowing megafauna communities' habitat, densities of burrows and/or mounds, together with sea pens if present should be classified as 'frequent' or above on the SACFOR scale.

4.5.2.26 Densities of *P. phosphorea* were classified in a range that encompassed 'frequent' at 14 survey stations (between KP122 and KP66) (**Appendix D** and **Appendix F**) and densities of *Virgularia* sp. were only classified in a range that encompassed 'frequent' at one survey station (ENV224, at KP27) (**Appendix F**), indicating the presence of the 'sea pen and burrowing megafauna communities' habitat at these locations. Examples of DDV stills of *P. phosphorea* and *Virgularia stet*. are provided in **Figure 4-4**.

4.5.2.27 Burrows were classified in a range that encompassed 'frequent' at 25 survey stations, notably towards the south of the MHPGC Project PEIR Red Line Boundary, indicating the presence of the 'sea pen and burrowing megafauna communities' habitat at these locations (**Appendix D** and **Appendix F**).

4.5.2.28 Of these stations, five survey stations (survey stations ENV187, ENV210, ENV211, ENV212 and ENV230; approximately KP21, KP19, KP17, KP15 and KP118 respectively) could be considered as showing the greatest similarity to a 'sea pen and burrowing megafauna communities' habitat in that burrows encompassed the SACFOR ranges frequent to common (**Appendix F**). In addition, although burrows were present, burrowing fauna were rarely sighted, therefore, many burrows could not confidently be attributed to any of the classified megafauna species within the 'sea pen and burrowing megafauna community habitat classification'. Examples of DDV stills of burrows are provided in **Figure 4-4**.

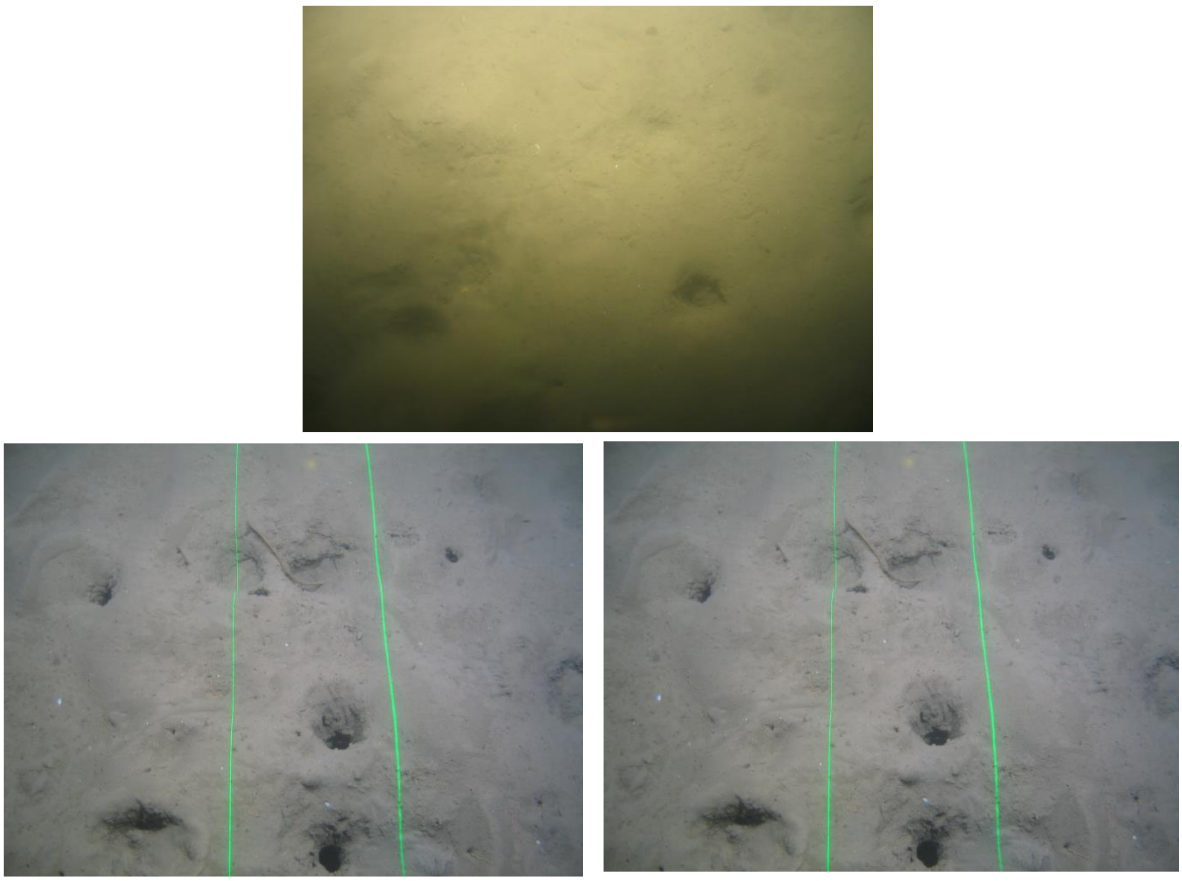


Figure 4-4. Example DDV stills of frequent to common burrows (top, ENV210), frequent to common *P. phosphorea* (left, ENV230) and occasional to occasional *Virgularia stet.* (right, ENV121)

Stony reef

4.5.2.29 Seabed imagery and sediment composition from the MHPGC Project specific benthic surveys showed evidence of potential stony reef at 17 survey stations in the form of isolated cobbles and/or boulders or isolated patches of cobbles or scattered cobbles in inshore areas (between KP6 and KP4), nine of which were located within the MHPGC Project PEIR Red Line Boundary (**Appendix F**). Therefore, analysis for stony reef was conducted to determine the resemblance, if any, to the protected habitat based on the criteria adopted by Irving (2009) as set out in **Section 3.3.4.**

4.5.2.30 Of the survey stations assessed for stony reef, six stations (ENV182, ENV188, ENV204, ENV219, ENV238 and ENV240), showed medium resemblance to stony reef. Two of these survey stations (ENV188 and ENV219, at KP6) were located within the MHPGC Project PEIR Red Line Boundary. All other survey stations showed 'low' or no resemblance. Examples of DDV stills of both medium and low resemblance stony reef are provided in **Figure 4-5**.

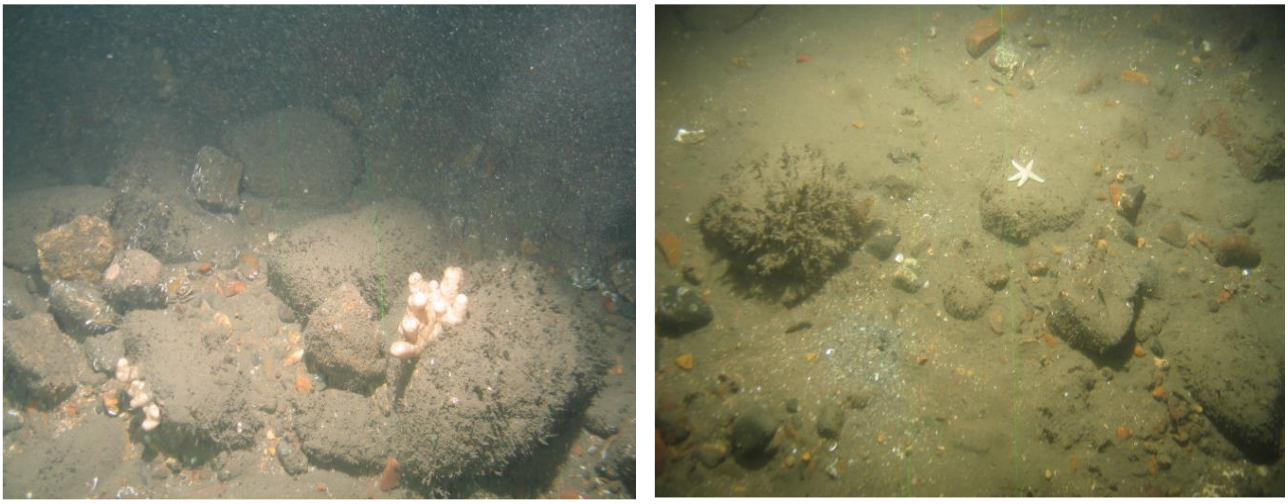


Figure 4-5 Example DDV stills of medium (left, ENV219) and low resemblance stony reef (right, ENV198)

4.5.2.31 Project-specific geophysical and benthic survey data were reviewed for evidence of peat and clay exposures. No peat or clay exposures were identified during the geophysical or benthic surveys. In the nearshore section of the MHPGC Project PEIR Red Line Boundary, geophysical interpretation identified areas of rock outcrop, rocky morphology and possible glacial till outcrops between approximately KP0 and KP10. However, no peat and clay exposure habitats with piddocks were identified during the subtidal surveys and no evidence of piddock borings or piddock communities was recorded (**Appendix A** to **Appendix F**). A project-specific intertidal survey has not yet been undertaken and will provide further information on the presence or absence of intertidal peat and clay exposure habitats within the landfall area.

4.6 Invasive non-native species

4.6.1.1 Invasive Non-Native Species (INNS) on the following national and international species lists were considered for this review:

- Invasive Alien Species (IAS) of Union Concern (listed under EU Regulation (1143/2014) on invasive alien (non-native) species (IAS Regulation 2014) (European Parliament and Council, 2014);
- UK Marine Non-Indigenous Species Priority List (updated 2020) (GB NNSS, 2020);
- Wildlife & Countryside Act 1981, Schedule 9 species (UK Parliament, 1981);
- Water Framework Directive (WFD) UK Technical Advisory Group (TAG) species (UKTAG, 2021); and
- Invasive species that threaten Scotland (NatureScot, 2026).

4.6.1.2 INNS records within the NBN Atlas (NBN Atlas, 2026) for the Benthic Subtidal Ecology Study Area were assessed. Only records with a Creative Commons Attribution (CC-BY) licence or an Open Government Licence (OGL) were included. (Records with a Non-Commercial licence (CC-BY-NC) were excluded, as they are not licensed for commercial use.)

4.6.1.3 It is important to note that a lack of presence records does not necessarily indicate true absence. INNS can be difficult to detect, particularly during the early stages of establishment and/or when present as eggs, larvae, or other propagules. Accordingly, INNS management should adopt a precautionary and holistic approach, assuming potential presence rather than absence.

4.6.2 Scottish waters

Regional

4.6.2.1 During a review of the NBN Atlas, no INNS records were identified within the Benthic Subtidal Ecology Study Area in Scottish waters.

MHPGC PEIR Red Line Boundary

4.6.2.2 No INNS were identified during the project-specific benthic surveys in Scottish waters.

4.6.3 English waters

Regional

4.6.3.1 During a review of NBN Atlas, one INNS record was detected within the Benthic Subtidal Ecology Study Area, approximately 1 km offshore from Seaham. This was a presence record for the orange-tipped sea squirt (*Corella eumyota*) (record year = 2017; data provider = Marine Biological Association; coordinate uncertainty = 70 m), which is on the UK Marine Non-Indigenous Species Priority List, and is listed as invasive by NatureScot (2026). However, it is important to note that the orange-tipped sea squirt is relatively widespread around the coast of England, including the northeast (NBN Atlas, 2026).

MHPGC Project PEIR Red Line Boundary

4.6.3.2 No INNS were identified during the project specific benthic surveys in English waters.

5 Benthic intertidal ecology baseline

5.1.1.1 As outlined within **Section 1.3**, the MHPGC Project will utilise a trenchless solution at landfall, with the exit pit entirely in the subtidal environment, thus directly avoiding the intertidal area. The entirety of the Benthic Intertidal Ecology Study Area is within English waters.

5.1.1.2 As outlined in **Section 3.3.5**, in 2026, an intertidal Phase I walkover and UAV survey and a Phase II quantitative sampling survey will be undertaken of the intertidal habitats and communities present to provide baseline information for the landfall at Blast Beach (see **Sheet 3 of Figure** 4-3). The results from the intertidal survey will be presented within the ES at DCO submission and will further inform the intertidal baseline characterisation.

5.2 Sediment characteristics

5.2.1 English waters

Regional

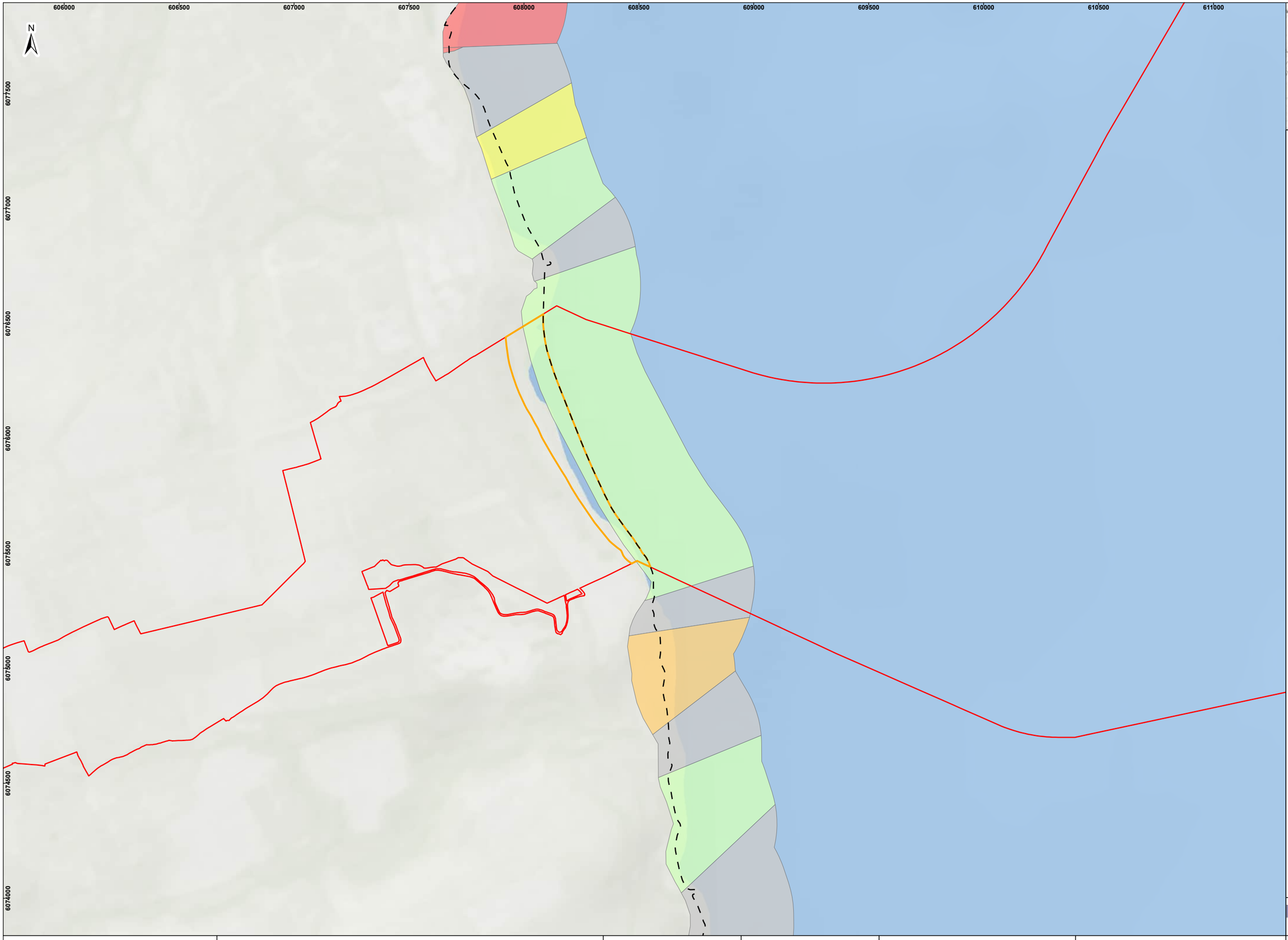
5.2.1.1 The Eastern Green Link 1 landfall in English waters is proposed to be at Hawthorn Pit, Seaham, County Durham, approximately 3.4 km north of the proposed MHPGC Project landfall (AECOM, 2022a). At the English landfall, the foreshore was characterised by sand at the lower shore and coarser sediments, including pebbles and cobbles, at the upper shore. Littoral bedrock outcrops were also present locally. The habitats present were considered typical of a sandy and coarse sediment shore.

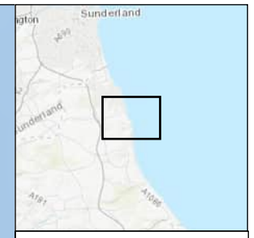
5.2.1.2 The Durham coastline comprises magnesian limestone cliffs with intertidal and inshore sediments including sands, gravels and silts, often influenced by high exposure, sediment mobility and coastal processes (MCS, 2009; 2016).

MHPGC Project PEIR Red Line Boundary

5.2.1.3 The intertidal area within the MHPGC Project PEIR Red Line Boundary mainly consists of relatively large areas of gravel (BGS, 2015; **Figure 5-1**). Similarly, interpretation of the geophysical data identified areas of rock occurring within the inshore section of the MHPGC Project PEIR Red Line Boundary (**Figure** 4-3).

5.2.1.4 Publicly available datasets owned by NECO and Natural England indicate that the landfall location at Blast Beach is characterised by subtidal soft sediment (sand), transitioning to gravel and shingle in the upper shore, and maritime cliffs and slopes rising from the upper shore (NECO, 2023; Royal HaskoningDHV, 2025). However, a dedicated project-specific intertidal survey has not yet been undertaken.





LEGEND

- MHPGC Project PEIR Redline Boundary
- Benthic Subtidal Ecology Study Area
- Benthic Intertidal Ecology Study Area

Intertidal Substrate Foreshore (BGS)

- Gravel
- Made Ground (Man Made)
- Rock Platform
- Sand
- Sand and Gravel

Morven Offshore Wind Farm | GoBe APEM Group

Project Name: MORVEN HAWTHORN PIT GRID CONNECTION PROJECT	**Drawing Title:** INTERTIDAL SEABED SUBSTRATES WITHIN THE BENTHIC INTERTIDAL ECOLOGY STUDY AREA	0 100 200 300 m Scale@A3: 1:15,000	**Geodetic Information:** Datum: European 1950 Projection: ED 1950 UTM Zone 30N	**Data Sources:** BP, Ordnance Survey	**Service Layer Credits:** World Ocean Base: Esri, Garmin, NaturalVue World Topographic Map: DoBH, OS, Esri, HERE, Garmin, USGS, NGA

Drawing Number: FIGURE 5-1

VER	DATE	DETAILS	BY	CHECK
00	09/09/2026	Initial Issue	GB	AdB
-	-	-	-	-

5.3 Seabed habitat and communities

5.3.1 English waters

Regional

5.3.1.1 The Eastern Green Link 1 landfall in English waters is proposed to be at Hawthorn Pit, Seaham, County Durham, approximately 3.4 km north of the proposed MHPGC Project landfall (AECOM, 2022a). At the English landfall, habitats comprised sandy and coarse sediment shores with localised bedrock outcrops. These habitats are representative of the coastal environment in the vicinity of the proposed landfall and support benthic communities associated with sandy, coarse sediment and rocky shore habitats (AECOM, 2022a).

5.3.1.2 Intertidal and inshore habitats along the Durham coastline comprise a mosaic of rocky substrates (bedrock, boulders and cobbles) and mixed sediments (MCS, 2009; 2016). Rocky habitats dominate much of the coastline and, in shallow subtidal areas, may support macroalgal communities such as kelp and red algae, transitioning to animal-dominated assemblages (e.g. hydroids, bryozoans and anemones) in deeper or more turbid conditions (MCS, 2009; 2016).

5.3.1.3 These rocky intertidal habitats provide important foraging areas for qualifying bird species associated with nearby designated sites, including the Northumbria Coast SPA/Ramsar and Teesmouth and Cleveland Coast SPA/Ramsar, which are located approximately 1.7 km to the north and 6.4 km to the south of the landfall area, respectively (Natural England, 2017; Natural England, 2020a). Within the Northumbria Coast SPA/Ramsar, bird species such as turnstone utilise seaweed-covered rocks for feeding, particularly at high tide (Natural England, 2017). Durham Coast SSSI overlaps the Northumbria Coast SPA/Ramsar and similarly protects bird species (Natural England, 1999).

5.3.1.4 Sediment-dominated intertidal habitats, including mudflats and sandflats, are also present within the wider Benthic Intertidal Ecology Study Area, particularly in sheltered coastal and estuarine environments. These habitats form key components of both the Northumbria Coast SPA/Ramsar and Teesmouth and Cleveland Coast SPA/Ramsar, supporting forage fish and invertebrate communities that provide an important prey resource for qualifying bird species (Natural England, 2017; Natural England, 2020a).

5.3.1.5 The Teesmouth and Cleveland Coast SPA/Ramsar additionally includes saline lagoons and areas of saltmarsh, which occur within the wider coastal system but outside of the Benthic Subtidal and Intertidal Ecology Study Area. Saltmarsh is a feature of the Teesmouth and Cleveland Coast SSSI, which overlaps the SPA/Ramsar but lies further south, whilst saline lagoons are present within the River Tees Estuary, which similarly lies outside of the Benthic Subtidal and Intertidal Ecology Study Area (Natural England, 2018). Although not a dominant feature along the open Durham coastline, a small, isolated saline lagoon (approximately 0.12 ha) is present at the landfall location at Blast Beach (NECO, 2023). However, the lagoon is not designated as an Annex I habitat. This area is otherwise characterised by gravel upper shore habitats and maritime cliffs and slopes rising to approximately 40 m (NECO, 2023; Royal HaskoningDHV, 2018).

MHPGC PEIR Red Line Boundary

5.3.1.6 Interpretation of the benthic survey data into EUNIS Habitat Classifications (**Appendix G**) identified the rocky areas in the inshore section of the MHPGC Project PEIR Red Line Boundary as 'Faunal turf communities on Atlantic circalittoral rock' (MC121/CR.HCR.FaT). These areas occur within a broader area classified as '*Levinsenia gracilis* and *Heteromastus filifirmis* in Atlantic offshore circalittoral mud and sandy mud' (MD6217/SS.SMu.OMu.LevHet) (**Figure** 4-3). A mix of rocky shore and soft sediment habitats are therefore likely to be present in the intertidal. However, a dedicated project-specific intertidal survey has not yet been undertaken.

5.4 Invasive non-native species

5.4.1 Regional

5.4.1.1 During a review of the NBN Atlas, no INNS records were identified within the Benthic Intertidal Ecology Study Area in English waters.

5.4.2 MHPGC PEIR Red Line Boundary

5.4.2.1 No INNS were identified during the project-specific benthic surveys in English waters. However, a dedicated project-specific intertidal survey has not yet been undertaken.

6 Designated sites

6.1.1.1 There are several sites designated for benthic ecology features within the Benthic Subtidal Ecology Study Area. These sites, and their designating features, are outlined in **Table 6.1** and shown in **Figure 1-1.**

6.1.1.2 The nature designations which have been included for consideration in the benthic and intertidal ecology assessment comprise sites within the National Site Network (i.e., SACs and Special Protection Areas (SPAs)) or nationally designated sites (i.e., MCZs and Sites of Special Scientific Interest (SSSIs)) with benthic subtidal and intertidal ecology features.

6.1.1.3 Highly mobile species, particularly birds and fish, may depend on benthic communities through predator–prey relationships, and therefore designated sites for which features may have functional linkages to benthic ecology within the Benthic Subtidal and Intertidal Ecology Study Area have also been considered. These include Northumbria Coast SPA/Ramsar and Teesmouth and Cleveland Coast SPA/Ramsar. Conservation objectives of these sites that are of relevance to benthic ecology include maintaining or restoring: the extent and distribution of the habitats of the qualifying features; the structure and function of the habitats of the qualifying features; and the supporting processes on which the habitats of the qualifying features rely.

6.1.1.4 There were no MHPGC Project specific surveys undertaken within designated sites. However, where survey data and condition assessments of those sites located within the Benthic Subtidal Ecology Study Area is available (e.g. Pearce *et al.,* 2014; Axelsson *et al.* 2014; Defra, 2015; Allen *et al.,* 2016), these have been used to inform the benthic ecology baseline characterisation in **Sections 4.3** and **4.5,** for Scottish and English waters, respectively.

Table 6.1: Summary of designated sites within the Benthic Subtidal and Intertidal Ecology Study Area and relevant qualifying features (Figure Figure 1-1)

Designated site	Distance from the closest point of the MHPGC Project PEIR Red Line Boundary (km)	Nearest KP	Relevant qualifying benthic features
Designated sites in Scottish waters			
Firth of Forth Banks Complex MPA (UKNCMPA018)	0.0 (the Montrose Bank portion of which is adjacent to MHPGC Project PEIR Red Line Boundary)	258 (Adjacent to Morven North)	• Ocean quahog; • Offshore subtidal sands and gravels.
Designated sites in English waters			
Farnes East MCZ (UKMCZ0043)	2.2	91	• Moderate energy circalittoral rock; • Subtidal coarse sediment; • Subtidal sand; • Subtidal mud; • Subtidal mixed sediments; • Sea pen and burrowing megafauna communities.
North East of Farnes Deep MCZ (UKMCZ0023)	4.1	113	• Ocean quahog; • Subtidal mixed sediments; • Subtidal coarse sediment; • Subtidal mud; • Subtidal sand.

Designated site	Distance from the closest point of the MHPGC Project PEIR Red Line Boundary (km)	Nearest KP	Relevant qualifying benthic features
North East of Farnes Deep HPMA (UKEHPMA001)	4.1	113	• The marine ecosystem of the area (includes the seabed, water column and sea surface and everything living within).
Northumbria Coast SPA/Ramsar (UK9020325/UK11049)	1.7	0	No benthic features designated. Included due to benthic habitats within the SPA/Ramsar that supporting qualifying bird species, and that occur within the Benthic Subtidal and Intertidal Ecology Study Area: • Intertidal rocky reefs (bedrock, boulders, cobbles); • Intertidal mudflats and sandflats (including estuarine areas); • Subtidal soft sediments (offshore sand and mud).
Durham Coast SSSI	1.7 (overlaps with Northumbria Coast SPA/Ramsar)	0	No benthic features designated. Included due to benthic habitat supporting designated bird species: • Intertidal rocky reefs (bedrock, boulders, cobbles).
Teesmouth and Cleveland Coast SPA/Ramsar (UK9006061/UK11068)	6.4	0	No benthic features designated. Included due to benthic habitats within the SPA/Ramsar that support qualifying bird species, and that occur within the Benthic Subtidal and Intertidal Ecology Study Area: • Intertidal rocky habitats (bedrock, boulders, cobbles); • Intertidal mudflats and sandflats (including estuarine areas); • Subtidal soft sediments (sand and mud).

7 Valued ecological receptors

7.1.1.1 The value of ecological features is dependent upon their biodiversity, social, and economic value within a geographic framework of appropriate reference (CIEEM, 2024). Within England and Scotland, the most straightforward context for assessing ecological value is to identify those species and habitats that have a specific biodiversity importance recognised through international agreements, UK-wide frameworks, and relevant national legislation and policy. These include, for example, habitats and species listed by OSPAR, those identified under the UK Post-2010 Biodiversity Framework (which succeeded the UK Biodiversity Action Plan), and habitats and species protected under the Conservation of Habitats and Species Regulations (as amended following EU Exit), including features forming part of the UK national site network (e.g. SACs and SPAs) (see **Section 2.1**).

7.1.1.2 At a national level, consideration is also given to habitats and species of principal importance listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 in England, and the Scottish Biodiversity List established under the Nature Conservation (Scotland) Act 2004, as well as PMFs identified by Scottish Ministers (see **Section 2.1)**.

7.1.1.3 However, only a small proportion of marine habitats and species are afforded protection under the existing legislative or policy framework and therefore evaluation must also assess value according to the functional role of the habitat or species. For example, some features may not have a specific conservation value in themselves but may be functionally linked to a feature of high conservation value.

7.1.1.4 **Table 7.1** and **Table 7.2** presents the Valued Ecological Receptors (VERs) (in Scottish and English waters respectively), their conservation status and importance within the Benthic Subtidal and Intertidal Ecology Study Area and the justification and regional importance of each receptor.

Table 7.1 Valued Ecological Receptors (VERs) identified within the Project PEIR Red Line Boundary and Benthic Subtidal Ecology Study Area in Scottish waters

VER	Representative biotopes (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Area and justification
Subtidal biotopes					
Offshore circalittoral fine sand communities dominated by burrowing bivalves and polychaetes	MC5212 MC5211	Associated with the PMF 'Offshore subtidal sands and gravels'.	Present locally, associated with discrete areas of clean to slightly gravelly sand. These biotopes occur within Morven North and Morven South, but are not dominant within the Scottish section of the MHPGC Project PEIR Red Line Boundary, where sediments are primarily sandy mud.	✓	Regional – associated with the PMF 'Offshore subtidal sands and gravels' and associated with sandier sediment habitats that are present but not widespread within the Benthic Subtidal and Intertidal Ecology Study Area.
Offshore circalittoral sandy mud communities with burrowing bivalves, polychaetes, and brittlestars	MD6218	Associated with offshore subtidal mud and sandy mud habitats (Scottish Biodiversity List) May be associated with 'offshore deep sea mud' PMF where supporting fauna present.	Present extensively, reflecting the predominance of sandy mud sediments. This biotope forms the dominant habitat within the Scottish section of the MHPGC Project PEIR Red Line Boundary.	✓	Regional – representative of widespread North Sea sedimentary habitats and characteristic of circalittoral mud and sandy mud environments across the Benthic Subtidal and Intertidal Ecology Study Area.
Offshore circalittoral mixed sediment communities dominated by polychaetes and bivalves	MD4211	May contribute to the PMF 'Offshore subtidal sands and gravels' where associated with coarse and mixed sediment habitats.	Very localised. Recorded at a single location in the northern part of the Benthic Subtidal and Intertidal Ecology Study Area in association with mixed sediment habitats.	X	Local to Regional – representative of offshore mixed sediment communities that occur sporadically within the wider North Sea. The habitat has limited distribution within the Benthic Subtidal and Intertidal Ecology Study Area and

VER	Representative biotopes (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Area and justification
					is not a dominant component of the Scottish section of the MHPGC Project PEIR Red Line Boundary.
Protected benthic habitats and species					
Stony reef	N/A	Annex I habitat ('Reefs'). Scottish Biodiversity List. UK BAP priority habitat.	Present locally, associated with areas of coarse sediment including cobbles and boulders. Limited evidence of potential stony reef was recorded within the Scottish section of the MHPGC Project PEIR Red Line Boundary.	X	International – Annex I habitat ('Reefs') and habitat listed on the Scottish Biodiversity List, protected under multiple conservation frameworks.
Offshore subtidal sands and gravels	N/A	PMF. Designated feature of the Firth of Forth Banks Complex MPA.	Present locally, particularly associated with offshore banks and sand/gravel features (e.g. Firth of Forth Banks Complex MPA). Not recorded within the Scottish section of the MHPGC Project PEIR Red Line Boundary, where sediments are predominantly muddy.	X	National – PMF and designated feature of the Firth of Forth Banks Complex MPA, with recognised conservation importance in UK waters despite being regionally widespread.
Ocean quahog (*Arctica islandica*)	N/A	PMF. OSPAR List of threatened and/or declining species for the Greater North Sea (OSPAR Region II). Designated feature of the Firth of Forth Banks Complex MPA.	Present locally, including within the Firth of Forth Banks Complex MPA. Observed within the Scottish section of the MHPGC Project PEIR Red Line Boundary at a limited number of survey stations.	✓	International – listed on the OSPAR List of Threatened and/or Declining Species and a PMF, and a designated feature of the Firth of Forth Banks Complex MPA, with broad distribution across the North Sea.

VER	Representative biotopes (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Area and justification
Scarce tube-dwelling anemone (*Arachnanthus sarsi*)	N/A	PMF. Scottish Biodiversity List.	Present locally. Recorded at a limited number of survey stations within the Morven North Boundary and Morven South Boundary.	✓	National – PMF and Scottish Biodiversity listed species. Although recorded at relatively few locations within the Benthic Subtidal and Intertidal Ecology Study Area, the species is of conservation importance in Scottish waters and represents a notable component of the local benthic assemblage.

Table 7.2 Valued Ecological Receptors (VERs) identified within the Project PEIR Red Line Boundary and Benthic Subtidal Ecology Study Area in English waters

VER	Representative biotope (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Study Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Study Area and justification
Subtidal biotopes					
Offshore circalittoral mud and sandy mud communities with burrowing infauna	MD6217 MD6218	HPI (Section 41 NERC Act) – 'Mud habitats in deep water'. UK BAP priority habitat.	Present extensively, reflecting the widespread occurrence of mud and sandy mud sediments. These biotopes form a large proportion of the MHPGC Project PEIR Red Line Boundary, particularly along offshore sections of the Offshore Export Cable Corridor.	✓	Regional – representative of widespread North Sea sedimentary habitats and characteristic of circalittoral mud and sandy mud environments.
	MC6212		Present locally within the Benthic Subtidal and Intertidal Ecology Study Area, associated with circalittoral sandy mud sediments.	X	
Offshore infralittoral to circalittoral sand and muddy sand communities	MB5238	HPI (Section 41 NERC Act) – 'Sublittoral sands and gravels' (where sand-dominated). UK BAP priority habitat.	Present locally, associated with transitional muddy sand sediments. This biotope occurs intermittently within the MHPGC Project PEIR Red Line Boundary, particularly where sediments become sandier towards inshore areas.	✓	Regional – representative of subtidal sand and muddy sand habitats that are widely distributed across the North Sea.
	MB5236		Present locally within the Benthic Subtidal and Intertidal Ecology Study Area, associated with infralittoral sandy mud sediments.	X	
Offshore circalittoral sediment communities (sand, mixed and coarse sediments)	MC4213 MC5211 MC5212 MD5212 MD4211	HPI (Section 41 NERC Act) – 'Sublittoral sands and gravels' (where applicable). UK BAP priority habitat.	Present within the wider Benthic Subtidal Ecology Study Area, representing a mosaic of sand, mixed and coarse sediment habitats. Not recorded within the MHPGC Project PEIR Red Line Boundary.	X	Regional – representative of circalittoral sand, mixed and coarse sediment habitats that are widely distributed across the North Sea
Protected benthic habitats and species					
Sea pen and burrowing	MC6216	OSPAR List of Threatened and/or Declining Species and	Present locally, including within and adjacent to designated sites (e.g. Farnes East MCZ).	✓	International – listed on the OSPAR List of Threatened and/or Declining Species and

VER	Representative biotope (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Study Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Study Area and justification
megafauna communities		Habitats (Region II – Greater North Sea). Designated feature of the Farnes East MCZ (as 'Sea pen and burrowing megafauna communities').	Recorded locally within the MHPGC Project PEIR Red Line Boundary, occurring in discrete patches where suitable sediment and faunal densities are present.		Habitats and a designated feature of the Farnes East MCZ.
Sabellaria spinulosa reef	MC2211	Annex I habitat ('Reefs'). OSPAR List of Threatened and/or Declining Species and Habitats (Region II – Greater North Sea). HPI (Section 41 NERC Act). UK BAP priority habitat. FOCI under the Marine and Coastal Access Act 2009.	Present locally. No reef habitat was recorded within the MHPGC Project PEIR Red Line Boundary.	X	International – Annex I habitat and OSPAR-listed habitat with recognised conservation importance across the North Sea.
Stony reef	N/A	Annex I habitat ('Reefs'). HPI (Section 41 NERC Act). UK BAP priority habitat. FOCI under the Marine and Coastal Access Act 2009.	Present within a nearby designated site (Farnes East MCZ), although not a designated feature. Only limited evidence of potential stony reef was recorded within the MHPGC Project PEIR Red Line Boundary, restricted to isolated cobbles and boulders in inshore areas.	✓	International – Annex I habitat and HPI, protected under multiple conservation frameworks.
Ocean quahog	N/A	OSPAR List of Threatened and/or Declining Species and Habitats (Region II – Greater North Sea).	Designated feature of Farnes East MCZ and North East of Farnes Deep MCZ. Present intermittently along the majority of the MHPGC Project PEIR Red Line Boundary, particularly within the northern section.	✓	International – OSPAR listed, and an MCZ feature.
Kelp bed	N/A	HPI (Section 41 NERC Act). UK BAP priority habitat ('Intertidal and subtidal kelp beds').	Present along the inshore coastal zone, although it is not present within the MHPGC Project PEIR Red Line Boundary.	X	National – HPI and UK BAP priority habitat, widely distributed along UK coasts.
MCZ designated broad habitats					

VER	Representative biotope (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Study Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Study Area and justification
Moderate energy circalittoral rock	N/A	Designated feature of Farnes East MCZ.	Present within a designated site. Not recorded within the MHPGC Project PEIR Red Line Boundary.	X	National – designated feature of Farnes East MCZ.
Subtidal coarse sediment	N/A	Designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ.	Present within a designated site and more widely. Recorded at a limited number of locations within the MHPGC Project PEIR Red Line Boundary.	X	National – designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ, and representative of coarse sediment habitats.
Subtidal sand	N/A	Designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ.	Present within a designated site and more widely. Occurs intermittently within the MHPGC Project PEIR Red Line Boundary, particularly along central sections of the Offshore Export Cable Corridor.	X	National – designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ, and widely distributed across the North Sea.
Subtidal mud	N/A	Designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ.	Present within a designated site and more widely. Forms a dominant habitat within large parts of the MHPGC Project PEIR Red Line Boundary.	X	National – designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ, and characteristic of extensive North Sea sedimentary environments.
Subtidal mixed sediments	N/A	Designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ.	Present within a designated site and more widely. Recorded locally within the MHPGC Project PEIR Red Line Boundary, particularly towards landfall.	X	National – designated feature of the North East of Farnes Deep MCZ/HPMA and Farnes East MCZ, and representative of

VER	Representative biotope (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Study Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Study Area and justification
					mixed sediment habitats.
Supporting habitat for SPA/Ramsar and SSSI sites within the Benthic Subtidal and Intertidal Ecology Study Area					
Intertidal rocky reefs (bedrock, boulders, cobbles)	N/A	Annex I habitat ('Reefs'). HPI (Section 41 NERC Act). UK BAP priority habitat. FOCI under the Marine and Coastal Access Act 2009. Supporting habitat for the Northumbria Coast SPA/Ramsar, Teesmouth and Cleveland Coast SPA/Ramsar and Durham Coast SSSI.	Present along the coastline. Intertidal surveys within the MHPGC Project PEIR Red Line Boundary have not yet been undertaken and are scheduled for 2026.	N/A (at the time of writing, site-specific surveys have not yet been undertaken).	International – Annex I habitat and HPI supporting designated SPA/SSSI features.
Intertidal mudflats and sandflats (including estuarine areas)	N/A	Annex I habitat ('Mudflats and sandflats not covered by seawater at low tide'). HPI (Section 41 NERC Act). UK BAP priority habitat. FOCI under the Marine and Coastal Access Act 2009. Supporting habitat for the Northumbria Coast SPA/Ramsar and Teesmouth and Cleveland Coast SPA/Ramsar.	Present locally in sheltered coastal and estuarine environments. Intertidal surveys within the MHPGC Project PEIR Red Line Boundary have not yet been undertaken and are scheduled for 2026.	N/A (at the time of writing, site-specific surveys have not yet been undertaken).	International – Annex I habitat and HPI supporting SPA features.
Subtidal soft sediments (offshore sand and mud)	N/A	HPI (Section 41 NERC Act) – 'Sublittoral sands and gravels' and sublittoral mud habitats. UK BAP priority habitat. FOCI under the Marine and Coastal Access Act 2009.	Present extensively. Forms the predominant habitat throughout much of the MHPGC Project PEIR Red Line Boundary.	N/A (at the time of writing, site-specific surveys have not yet	National – HPI representing widespread sublittoral sand and mud habitats.

VER	Representative biotope (EUNIS, 2022)	Conservation interest	Distribution within the Benthic Subtidal and Intertidal Ecology Study Area	Within the MHPGC Project PEIR Red Line Boundary?	Importance within the Benthic Subtidal and Intertidal Ecology Study Area and justification
		Supporting habitat for the Northumbria Coast SPA/Ramsar and Teesmouth and Cleveland Coast SPA/Ramsar.		been undertaken).	
Saline lagoon	N/A	Annex I habitat ('Coastal lagoons'). HPI (Section 41 NERC Act). UK BAP priority habitat. Supporting habitat for the Teesmouth and Cleveland Coast SPA/Ramsar.	Present locally within the wider study area, associated with coastal and estuarine environments (e.g. Teesmouth). Not recorded within the MHPGC Project PEIR Red Line Boundary.	X	International – Annex I habitat of high conservation value supporting distinct benthic communities and associated with designated SPA/Ramsar features.

8 Summary

8.1 Baseline summary

8.1.1.1 This baseline represents a synthesis of available evidence from desktop datasets, site-specific geophysical and benthic surveys, and relevant third-party studies to characterise the benthic subtidal and intertidal ecology within the Benthic Subtidal and Intertidal Ecology Study Area across Scottish and English waters. The purpose of this technical report is to identify and describe the habitats, species and ecological features present within the Benthic Subtidal and Intertidal Ecology Study Area and to provide the ecological baseline that will inform the EIA.

8.1.1.2 At a regional scale, the Benthic Subtidal Ecology Study Area is characterised by a mosaic of sediment types (see **Section 4.3**), primarily Atlantic offshore circalittoral coarse sediment (MD32) and Atlantic offshore circalittoral sand (MD52), with more localised areas of: Atlantic offshore circalittoral mud (MD62); Atlantic offshore circalittoral mixed sediment (MD42); and Atlantic circalittoral rock (MC12). Benthic communities are typical of the North Sea, generally comprising infaunal assemblages dominated by polychaetes, bivalves and echinoderms (see **Section 4.5**).

8.1.1.3 Within Scottish waters, sediments are predominantly sandy, with localised gravelly areas and sparse boulders extending southward into English waters. Within the MHPGC Project PEIR Red Line Boundary, benthic habitats are characterised by sandy mud biotopes (MD6218), indicative of widespread circalittoral mud and sandy environments. Habitats and species of conservation importance within the wider Benthic Subtidal Ecology Study Area include offshore subtidal sands and gravels (PMF), stony reef (Annex I 'Reefs'), sea pen and burrowing megafauna communities (OSPAR-listed), and ocean quahog. Within the MHPGC Project PEIR Red Line boundary, only limited evidence of these features was recorded, with the exception of ocean quahog, which was observed at low densities. No confirmed records of sea pen communities or stony reef were identified.

8.1.1.4 Within English waters, seabed sediments comprise a more heterogeneous mosaic of sand, muddy sand, coarse sediment and mixed sediment, transitioning to coarser and locally rocky substrates towards landfall. Designated and PMF habitats present within the Benthic Subtidal Ecology Study Area include sea pen and burrowing megafauna communities, subtidal sands and gravels, subtidal mud and mixed sediments, as well as ocean quahog. Sea pen and burrowing megafauna communities were identified locally within the MHPGC Project PEIR Red Line Boundary. However, these occurrences are spatially discrete and consistent with the wider regional distribution of this habitat. Two locations within the MHPGC Project PEIR Red Line Boundary were identified as Annex I stony reef, exhibiting a medium resemblance to Annex I reef in accordance with the criteria described by Irving (2009). Annex I biogenic 'Reef' (*Sabellaria spinulosa*) and kelp bed (a HPI and UK BAP Priority Habitat) may occur within the wider Benthic Subtidal Ecology Study Area based on historical evidence but within the MHPGC Project PEIR Red Line Boundary there was no evidence of these habitats.

8.1.1.5 Sediment contamination across the Benthic Subtidal Ecology Study Area is generally low (see **Section 4.4**). While isolated exceedances of EQS and Cefas AL1 were recorded for certain metals and PAHs, no samples exceeded Cefas AL2 thresholds. Contaminant concentrations are therefore considered to be within expected background ranges for the North Sea and unlikely to result in significant ecological effects.

8.1.1.6 No INNS were recorded within the MHPGC Project PEIR Red Line Boundary, and only a single historic record was identified within the Benthic Subtidal Ecology Study Area, indicating a very low INNS risk (see **Section 4.5.2.31**).

8.1.1.7 Overall, the benthic environment within the Benthic Subtidal Ecology Study Area is characterised by widespread, largely homogeneous sedimentary habitats typical of the North Sea, with localised occurrences of habitats and species of conservation importance. These receptors are generally of regional importance and are widely distributed. Within the MHPGC Project PEIR Red Line Boundary, higher sensitivity habitats such as Annex I reef are limited in extent or absent, while localised records of sea pens and ocean quahog have been identified.

9 References

AECOM. (2022a). Scotland England Green Link 1 / Eastern Link 1 – Marine Scheme. Available at: https://marine.gov.scot/sites/default/files/environmental_appraisal_report_v2_-_chapter_8_benthic_ecology_-_redacted.pdf (Accessed: September 2026)

AECOM. (2022b). Eastern Green Link 2 – Marine Scheme. Environmental Appraisal Report, Volume 2, Chapter 8: Benthic Ecology. Available at: https://marine.gov.scot/sites/default/files/c8_environmental_appraisal_report_-_benthic_ecology_0.pdf (Accessed: July 2026)

Ager, O.E.D. (2005). *Spiophanes bombyx* A bristleworm. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews. Plymouth: Marine Biological Association of the United Kingdom. Available at: https://www.marlin.ac.uk/species/detail/1705 (Accessed: November 2025).

Allen, C., Axelsson, M. and Dewey, S. (2016). Community Analysis of Offshore MCZ Grab and Video Data (2014). JNCC Report No. 588. Available at: https://data.jncc.gov.uk/data/c20ff00a-04ac-4eec-967e-d56f1feedbad/JNCC-Report-588-FINAL-WEB.pdf (Accessed: November 2025).

Axelsson, M., Dewey, S. and Allen, C. (2014). Analysis of seabed imagery from the 2011 survey of the Firth of Forth Banks Complex, the 2011 IBTS Q4 survey and additional deepwater sites from Marine Scotland Science surveys (2012). JNCC Report No. 471.

Council of Europe. (1979). Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). Bern, Switzerland, 19 September 1979.

British Geological Society (BGS). (2004). Intertidal Substrate Foreshore (England and Scotland). Geological Survey, Nottingham, UK.

Buchman, M.F. (2008). NOAA Screening Quick Reference Tables. NOAA OR&R Report 08-1. Seattle WA: NOAA Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.

Centre for Environment, Fisheries and Aquaculture Science. (2025a). OneBenthic Portal. Available at: https://rconnect.cefas.co.uk/onebenthic_portal/ (Accessed: October 2025).

Centre for Environment, Fisheries and Aquaculture Science. (2025b). OneBenthic Portal OneBenthic Non-Native Species Tool. Available at: https://rconnect.cefas.co.uk/onebenthic_nonnativespecies/ (Accessed: November 2025).

Chartered Institute of Ecology and Environmental Management (CIEEM). (2018, amended 2024). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

Cooper, K.M. and Barry, J. (2017). A big data approach to macrofaunal baseline assessment, monitoring and sustainable exploitation of the seabed. Scientific Reports, 7(12431).

Cooper, K.M., Bolam, S. G., Downie, A. L. and Barry, J. (2019), Biological-based habitat classification approaches promote cost-efficient monitoring: an example using seabed assemblages. J Appl Ecol. 56, pp.1085–1098.

Davies, J., Baxter, J., Bradley, M., Connor, D., Khan, J., Murray, E., Sanderson, W., Turnbull, C., and Vincent, M. (2001). Marine monitoring handbook. Joint Nature Conservation Committee (JNCC).

Department for Environment, Food and Rural Affairs. (2015). North East of Farnes Deep rMCZ Post-survey Site Report. Report number 5, version 9. Available at: https://randd.defra.gov.uk/ProjectDetails?ProjectID=18983&FromSearch=Y&Publisher=1&SearchText=mb0129&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description (Accessed: November 2025).

Department for Environment, Food and Rural Affairs. (2024). Magic Interactive Mapping. Available at: https://magic.defra.gov.uk/home.htm (Accessed: October: 2025).

Department of Energy and Climate Change. (2024a). Overarching National Policy Statements for Energy (NPS EN-1). Available at: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1 (Accessed: July 2025).

Eno, N.C., Clark, R.A. and Sanderson, W.G. (1997). Non-native marine species in British waters: a review and directory. Peterborough: Joint Nature Conservation Committee. Available at: https://data.jncc.gov.uk/data/1684dd5e-36e3-4969-852f-4541c82240eb/non-native-species-review-directory.pdf (Accessed: November 2025).

European Environment Agency (EEA). (2021). EUNIS habitat classification. Available at: https://eunis.eea.europa.eu/index.jsp (Accessed: October 2025).

European Marine Observation Data Network. (2023). EUSeaMap 2023: A broad-scale predictive habitat map for Europe's seas. EMODnet. Available at: https://emodnet.ec.europa.eu/en/seabed-habitats (Accessed: October 2025).

European Parliament and Council (2014). Regulation (EU) No 1143/2014 of 22 October 2014 on the prevention and management of the introduction and spread of invasive alien species (IAS Regulation). Official Journal of the European Union, L317, pp. 35–55. Available at: https://eur-lex.europa.eu/eli/reg/2014/1143/oj (Accessed: June, 2026)

European Union. (1992). Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.

Folk, R.L. (1954). The distinction between grain size and mineral composition in sedimentary-rock nomenclature. Journal of Geology, 62(4), 344–359.

Folk, R.L. and Ward, W.C. (1957). Brazos River bar: A study in the significance of grain size parameters. Journal of Sedimentary Petrology, 27(1), 3–26.

Gardline (2023). Morven Export Cable Route. Benthic Scoping Document.

Great British Non-native Species Secretariat (GB NNSS) (2020). UK Marine Non-Indigenous Species (NIS) Priority List (2020 update). Available at: https://www.nonnativespecies.org/assets/UK_Marine_NIS_priority_list_2020-1.pdf (Accessed: June 2026)

Hill, J.M., Tyler-Walters, H. and Garrard, S.L. (2022). Sea pens and burrowing megafauna in circalittoral fine mud. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews. Available at: https://www.marlin.ac.uk/habitats/detail/131 (Accessed: October 2025).

International Council for the Exploration of the Sea. (2011). Protocols for Assessing the Status of Sea-pen and Burrowing Megafauna Communities. Available at: https://ices-library.figshare.com/articles/report/OSPAR_request_-_Protocols_for_assessing_the_status_of_sea-pen_and_burrowing_megafauna_communities/18688214?file=33472799 (Accessed: October 2025).

Irving, R. (2009). The identification of the main characteristics of stony reef habitats under the Habitats Directive. Summary report of an inter-agency workshop 26-27 March 2008. JNCC Report No. 432. Peterborough: JNCC.

Joint Nature Conservation Committee (JNCC). (2004). Common Standards Monitoring Guidance for Littoral Sediments. JNCC report, JNCC, Peterborough, 1743-8160. Available at: https://data.jncc.gov.uk/data/9b4bff32-b2b1-4059-aa00-bb57d747db23/CSM-LittoralSedimentHabitats-2004.pdf (Accessed: August 2025).

JNCC. (2013). SACFOR abundance scale used for both littoral and sublittoral taxa from 1990 onwards. Available at: https://mhc.jncc.gov.uk/media/1009/sacfor.pdf (Accessed: October 2025).

JNCC. (2014). Firth of Forth Banks Complex MPA – Relevant Documentation – Site Summary Document. Available at: https://data.jncc.gov.uk/data/4d478592-6a82-4a75-97ad-de7057da9e8a/FFBC-1-SiteSummaryDocument-July14.pdf (Accessed: October 2025).

JNCC. (2020). CEND0618 Survey Report: North East of Farnes Deep MCZ and Farnes East MCZ 2020. Available at: https://hub.jncc.gov.uk/assets/9910b634-47d2-4203-b729-7fe02ef6ade3 (Accessed: October 2025).

JNCC. (2021). Farnes East MPA Site Description. Available at: https://jncc.gov.uk/our-work/farnes-east-mpa/ (Accessed: October 2025).

JNCC. (2022). Annex I Reefs in UK waters (Open Data) (Version 8.3, 2022). Available at: https://jncc.gov.uk/resources/8f886e47-31d6-477e-9240-65ac42bee709 (Accessed: September 2026)

JNCC. (2024a). Firth of Forth Banks Complex MPA. Available at: https://jncc.gov.uk/our-work/firth-of-forth-banks-complex-mpa/#summary (Accessed: June 2026).

JNCC. (2024b). North East of Farnes Deep MPA and HMPA. Available at: https://jncc.gov.uk/our-work/north-east-of-farnes-deep-mpa-and-hpma/ (Accessed: June 2026).

JNCC. (2025). Farnes East MPA. Available at: https://jncc.gov.uk/our-work/farnes-east-mpa/ (Accessed: June 2026).

JNCC and Defra. (2012). UK Post-2010 Biodiversity Framework. Produced on behalf of the Four Countries' Biodiversity Group. Available at: https://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf (Accessed: October 2025).

JNCC (no date). EUNIS Level 3 Combined Map: a full-coverage seabed habitat dataset for UK waters integrating survey and modelled data. Joint Nature Conservation Committee. Available at: https://magic.defra.gov.uk/MagicMap.html (Accessed: June 2026).

Long, E.R., MacDonald, D.D., Smith, S.L. and Calder, F.D. (1995). Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. Environmental Management, 19pp.81-97.

Long, D. (2006). BGS detailed explanation of seabed sediment modified Folk classification. British Geological Survey internal report IR/06/056. Keyworth, Nottingham: British Geological Survey.

Multi-Agency Geographic Information for the Countryside (MAGIC) Maps (2026). MAGIC Maps. Available at: https://magic.defra.gov.uk/MagicMap.html (Accessed: June 2026).

Marine Directorate – Licencing Operations Team. (2025). Scoping Opinion - Morven Offshore Wind Farm, Hawthorn Pit Grid Connection. Available at: https://marine.gov.scot/sites/default/files/morven_offshore_wind_farm_-_scop-0058_-_hawthorn_pit_grid_connection_-_scoping_opinion.pdf (Accessed: July 2025).

Marine Management Organisation. (2023). Marine Licensing: sediment analysis and sample plans. Available at: https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans###Suitability%20of%20material (Accessed: October 2025).

National Biodiversity Network (NBN) Atlas. (2026). NBN Atlas. Available at: https://nbnatlas.org/ (Accessed: June 2026).

Natural England (1999). Durham Coast SSSI Citation. Available at: https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S1000255&SiteName=durham%20coast&countyCode=&responsiblePerson=&SeaArea=&IFCAArea= (Accessed: June 2026).

Natural England (2017). Annex 2 Special Protection Area (SPA) Citation: Northumbria Coast. Available at: https://publications.naturalengland.org.uk/publication/6372874327687168 (Accessed: June 2026).

Natural England (2018). Teesmouth and Cleveland Coast SSSI Citation. Available at: https://designatedsites.naturalengland.org.uk/SiteDetail.aspx?SiteCode=S2000856&SiteName=Teesmouth%20and%20Cleveland%20Coast&countyCode=&responsiblePerson=&SeaArea=&IFCAArea= (Accessed: August 2026)

Natural England. (2019). European Site Conservation Objectives for Northumbria Coast Special Protection Area Site Code: UK9006131. Available at: https://publications.naturalengland.org.uk/publication/6372874327687168 (Accessed: June 2026).

Natural England (2020a). Annex 2 Special Protection Area (SPA) Citation: Teesmouth and Cleveland Coast. Available at: https://publications.naturalengland.org.uk/publication/6619918699069440 (Accessed: June 2026).

Natural England (2020b). European Site Conservation Objectives for Teesmouth and Cleveland Coast Special Protection Area Site Code: UK9006061. Available at: https://publications.naturalengland.org.uk/publication/6619918699069440 (Accessed: June 2026).

Natural Power. (2023). Cambois Connection – Marine Scheme Environmental Statement – Volume 3, Appendix 8.1: Benthic Survey Report (Phase 1 and 2). Available at: environmental_statement_-_volume_3_-_appendix_8.1_benthic_survey_report_pha.pdf (Accessed: June 2026).

NatureScot. (2020). Priority Marine Features in Scotland's Seas - Habitats. Available at: https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats (Accessed: October 2025).

NatureScot (2026). Marine non-native species. Available at: https://www.nature.scot/professional-advice/land-and-sea-management/managing-coasts-and-seas/marine-non-native-species (Accessed: June 2026).

North East Coastal Observatory (NECO). (2023). North East Coastal Observatory (NECO) Map Viewer and Catalogue – Habitat Mapping 2023 data. Available at: https://northeastcoastalobservatory.org.uk/data/data_view_&_download/ (Accessed: June 2026).

Ocean Ecology Ltd. (2023). Cambois Connection – Marine Scheme Environmental Statement – Volume 3, Appendix 8.2: Intertidal Survey Report. Available at: environmental_statement_-_volume_3_-_appendix_8.2_intertidal_survey_report.pdf (Accessed: June 2026).

Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic. (2008). OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR Reference Number: 2008-6). Available at: https://www.ospar.org/site/assets/files/1505/08-06e_ospar_list_species_and_habitats.doc (Accessed: October 2025).

Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic. (2010). Background Document for Sea pen and Burrowing megafauna Communities. Available at: https://www.ospar.org/documents?v=7261 (Accessed: October 2025).

Parry, M.E.V. (2019). Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Revised 2019). JNCC Report No. 546. ISSN 0963-8091. Peterborough, UK: JNCC.

Pearce, B., Grubb, L., Earnshaw, S., Pitts, J. and Goodchild, R. (2014). Biotope Assignment of Grab Samples from Fours Surveys Undertaken in 2011 Across Scotland's Seas (2012). JNCC Report N0. 509, Available at: https://data.jncc.gov.uk/data/aaa48a36-d5bc-4f06-ab80-5d9efd949fd8/JNCC-Report-509-FINAL-WEB.pdf (Accessed: November 2025).

Planning Inspectorate (PINS). (2025). Scoping Opinion: Proposed Morven Hawthorn Pit Grid Connection Project - EN0210005. Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0210005-000005-Scoping%20Opinion%20-%20Morven%20Hawthorn%20Pit%20Grid%20Connection%20Project.pdf (Accessed: July 2025).

Quante, M. & Colijn, Franciscus & Bakker, Jan & Haerdtle, Werner & Heinrich, Hartmut & Lefebvre, Christiana & Nöhren, Ingeborg & Olesen, Jørgen & Pohlmann, Thomas & Sterr, Horst & Sündermann, Jürgen & Tölle, Merja. (2016). Introduction to the Assessment—Characteristics of the Region. 10.1007/978-3-319-39745-0_1.

Royal HaskoningDHV. (2025) Cell 1 Regional Coastal Monitoring Programme Update Report 17: 'Partial Measures' Survey 2025. Cell 1 Regional Coastal Monitoring Programme Update Report 10: 'Partial Measures' Survey 2018. Durham County Council. Available at: https://coastalmonitoring.org/pdf_download/?metadata_id=661871 (Accessed: June 2025).

RPS. (2024a). Ossian Array EIA Report: Appendix 8.1 Benthic Subtidal Ecology Technical Report. Available at: https://marine.gov.scot/sites/default/files/volume_3_-_technical_reports_-_appendix_8.1_-_benthic_subtidal_ecology_technical_report.pdf (Accessed: January 2026).

RPS. (2024b). Morven Offshore Wind Farm Array Project: Benthic Subtidal Ecology Technical Report. In press.

RPS. (2025). Morven Hawthorn Pit Grid Connection Project Environmental Impact Assessment Scoping Report. Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0210005-000004-Morven%20Hawthorn%20Pit%20Grid%20Connection%20Project%20Scoping%20Report.pdf (Accessed: July 2025).

Scottish Government. (2004). Nature Conservation (Scotland) Act 2004. Edinburgh: HMSO.

Scottish Government. (2020). Scottish Biodiversity List. Available at: https://www.gov.scot/publications/scottish-biodiversity-list/ (Accessed: October 2025).

Seagreen. (2012). Seagreen Alpha and Bravo OWF: ES – Chapter 11: Benthic Ecology and Intertidal Ecology. Available at: https://marine.gov.scot/datafiles/lot/SG_FoF_alpha-bravo/SG_Phase1_Offshore_Project_Consent_Application_Document%20(September%202012)/006%20ES/Volume%20I_Main%20Text/A4MRSEAG-Z-DOC100-SPR-060_ES_11.pdf (Accessed: June 2026).

SeaSearch (2024). SeaSearch online mapping tool. Available at: https://www.seasearch.org.uk/ (Accessed: August 2024).

Sotheran, I., Welch, R., Benson, A. and Jones, L. (2016). Marine Conservation Zone Benthic Community Analysis Phase 1. JNCC Report No. 595. Joint Nature Conservation Committee (JNCC), Peterborough.

Tetra Tech RPS Energy Ltd. (2026a). Morven North Offshore Wind Array Project Environmental Impact Assessment Report. Volume 3, Annex 8.1: Benthic Subtidal Ecology Shared Technical Report. Available at: https://www.morvenoffshorewind.com/wp-content/uploads/2026/05/MVN_EIA_Vol-3_Annex-8.1_Benthic-Subtidal-Ecology-Shared-Technical-Report.pdf (Accessed: June 2026).

Tetra Tech RPS Energy Ltd. (2026b). Morven North Offshore Wind Array Project Environmental Impact Assessment Report. Volume 3, Annex 7.1: Physical Processes Shared Technical Report. Available at: MVN_EIA_Vol-3_Annex-7.1_Physical-Processes-Shared-Technical-Report.pdf (Accessed: June 2026).

Thistle Wind Partners (TWP). (2026). Bowdun OWF EIA Report: Appendix 8,1: Benthic Ecology Technical Report. Available at: https://marine.gov.scot/sites/default/files/technical_appendix_8.1_-_benthic_ecology_technical_report.pdf (Accessed: June 2026).

UKOOA, 2001. An Analysis of U.K. Offshore Oil and Gas Environmental Surveys 1975-95. Heriot-University.

UK Parliament (1981). Wildlife and Countryside Act 1981 (Chapter 69), Schedule 9. Available at: https://www.legislation.gov.uk/ukpga/1981/69/schedule/9 (Accessed: June 2026)

UK Technical Advisory Group on the Water Framework Directive (UKTAG) (2021). Classification of aquatic alien species according to their level of impact. Working paper v8 (29 January 2021). Available at: https://www.wfduk.org/sites/default/files/UKTAG%20classification%20of%20alien%20species%20working%20paper%20v8.pdf (Accessed: June, 2026)

World Register of Marine Species. (2025). World Register of Marine Species Available at: http://www.marinespecies.org/ (Accessed: August 2025).

Appendix A XOCEAN Ltd. (2023) Geophysical Survey Report

XOCEAN

00741-BPX-SCO-WIND

Morven Cable Route Survey Results Report



Document Control

Category	Details
Document Title:	Morven Cable Route Survey Results Report
Document Type:	Survey Results Report
Author(s):	Tom Burden
Approval:	Rachael Langan
Issue Date:	22/09/2023

Version Control

Revision	Date	Author(s)	Review	Comment
01	22/09/2023	Tom Burden	Rachael Langan	Initial draft

Table of Contents

1 Executive Summary 7
2 Survey Information 8
2.1 Overview 8
2.2 Survey Area 8
2.3 Survey Objectives 11
2.4 Survey Parameters (can be taken from the Method Statement) 11
3 Survey Acquisition 13
3.1 Equipment (Align with to Ops report) 13
3.2 Measurement Units and Presentation 14
3.3 Time 14
3.4 Personnel 14
4 Processing Methodology 15
4.1 Processing Software 15
4.2 Offline Quality Assurance 15
4.3 Data Transfer 15
4.4 Position and Motion Processing 16
4.5 MBES Data Processing 17
4.6 Backscatter Processing 19
4.7 SBP Processing 19
4.8 UAV Data Processing 20
4.9 Data Interpretation and Analysis 21
5 Results 22
5.1 Bathymetry 22
5.2 Seabed Characterisation 24
5.3 Seabed Feature Areas 27
5.4 Seabed Linear features 30
5.5 Seabed Surface Point Features 34
5.6 Magnetometer targets 42
5.7 UAV – Topography 42
6 Data Quality 48
6.1 MBES Survey Accuracy and Data Quality 48
6.2 Backscatter Data quality 48
6.3 SSS Data Quality 49
6.4 SBP Data Quality 51
6.5 Magnetometer Data Quality 52
6.6 Concessions and Limitations 52
7 Deliverables 54
8 Appendix 55
8.1 Appendix 1 – XO-450 Technical Specification 55
8.2 Appendix 2 – UAV Technical Specification 56

List of Figures

Figure 1: Project Area Overview. 8
Figure 2: Overview of the RPL 9
Figure 3: Close up of the RPL split point connecting to the three landfall areas. 10
Figure 4: UAV survey areas 10
Figure 5: POSPac workflow diagram. 17
Figure 6: Autoclean processing workflow diagram. 18
Figure 7: SBP processing workflow. 20
Figure 8: Landfall bathymetry for all routes. 22
Figure 9: Route A and Route B bathymetry over deepest bathymetry and route divergence. 23
Figure 10: Route C deepest bathymetry 24
Figure 11: Overview of Landfall seabed surface sediment. 25
Figure 12: Seabed surface sediment over route B and route A blocks 6 to 10. 26
Figure 13: Seabed surface sediment of block A11 (left) and A13 (right). 26
Figure 14: Seabed surface sediment over route C block C4 to C5 (left), and C9 to C13 (right). 27
Figure 15: Seabed features of the Landfall routes. 28
Figure 16: Seabed features of Route A block s A7 to A10 and B0 to B3 (left), block A17 to A19 (right). 29
Figure 17: Seabed features of Route C, block C9 to C12 (left), and block C22 to C25 (right). 30
Figure 18: Side scan sonar image of SSS_1126 near the RPL. 31
Figure 19: North Sea link cable alongside faint trawl scars overlaid on SSS and MBES 32
Figure 20:Side scan sonar image of linear contact SSS_0244 near the RPL. 33
Figure 21: Side scan sonar and bathymetry of Route C block C11 North Sea Link crossing. 34
Figure 22: Route A and B inshore point targets and Boulder Fields. 35
Figure 23: Wrecks found in Route A and B Landfall. 1) STAG 5. 2) Carmarthen Coast. 3) Carmarthen Coast Possibly. 4) Zeeland. 5) Hogarth. 36
Figure 24: Wrecks found in Route A and B. 1) Unidentified. 2) John M Smart. 3)Hans Hoth. 37
Figure 25: Seabed point features and boulder fields in Route A and B. Route A and B divergence (left), Block A11 and A12 (right) 38
Figure 26: Landfall seabed contacts and boulder fields for Route C. 39
Figure 27: Wrecks located in Landfall 3 C. Vianna (Left), Unnamed (Right) 40
Figure 28: Wrecks located in Route C block C3 Unnamed (left), and block C6 Rachael Jayne IV (right). 40
Figure 29: Route C contacts and boulder fields in block s C4 to C6 (Left), and C10 to C13 (right). 41
Figure 30 Example of magnetometer target MC_304 with a peak to peak amplitude of 1,650nT associated with the North Sea Link cables. 42
Figure 31: Height data at LAT of Landfall 1. 43
Figure 32: Orthophoto data of Landfall 1. 43
Figure 33: Height data at LAT of Landfall 2. 44
Figure 34: Orthophoto of Landfall 2. 45
Figure 35: Full UAV route height data at Ellipsoid. 46
Figure 36: Full UAV orthophoto coverage. 47
Figure 37: Hit count in block A6 at the deepest point of the survey 48
Figure 38: Example of backscatter data quality from Route A LF1 49
Figure 39: Extent of the SSS inshore coverage. 50

Figure 40:SSS coverage gaps along Route A. 51

List of Tables

Table 1: Project information..... 7
Table 2: Datum transformation parameters as per the Scope of Work..... 11
Table 3: Datum transformation parameters..... 11
Table 4: Datum transformation parameters..... 12
Table 5: Online parameters..... 12
Table 6: Alarms used in the navigation software..... 12
Table 7: Project equipment..... 13
Table 8: Personnel utilised during the project..... 14
Table 9: Processing software..... 15
Table 10: Bedform classification chart..... 21
Table 11: Linear Features Summary..... 30
Table 12: Route C linear feature summary..... 33
Table 13: Point target Summary table..... 34
Table 14: Object size detection using MBES relative to water depth from XOCEAN proposal..... 52
Table 15: Digital data deliverables..... 54
Table 16: Reporting deliverables..... 54

Abbreviations & Definitions

DPR	Daily Progress Report
DTM	Digital Terrain Model
ED50	European Datum 1950
EPSG	European Petroleum Survey Group
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
IHO	International Hydrographic Organisation
IMU	Inertial Measurement Unit
LAT	Lowest Astronomical Tide (vertical datum)
MAC	Mobilisation and Calibration
MBES	Multi-beam echo sounder
OS	Ordnance Survey
1 PPS	One Pulse per Second
PP-RTK	Post Processed Real Time Kinematic
PP	Post Processed
QC	Quality Control
SD	Standard Deviation
SVP	Sound Velocity Profile
SVS	Sound Velocity Sensor
THU	Total Horizontal Uncertainty
TVU	Total Vertical Uncertainty
UHD	Ultra High Density
UKHO	United Kingdom Hydrographic Office
UAV	Unmanned Arial Vehicle
USB	Universal Serial Bus
USV	Unmanned Surface Vessel
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
VORF	Vertical Offshore Reference Frame
WGS84	World Geodetic System 1984

1 Executive Summary

Table 1: Project information.

Project Type	Investigation Survey
Client	bp
Project Location	North Sea
Vessel(s) Employed	XO-04 – MMSI: 232023832 – Call Sign: MFWS5 XO-06 – MMSI: 232025477 – Call Sign: MGMK5 XO-08 – MMSI: 232027631 – Call Sign: MHIJ7 XO-16 – MMSI: 232039413 – Call Sign: MKMB2 XO-18 – MMSI: 232039415 – Call Sign: MKMB6 XO-20 – MMSI: 232042736 – Call Sign: MLUK4 XO-22 – MMSI: 232044014 – Call Sign: MMIM7 XO-23 – MMSI: 232044015 – Call Sign: MMIM8
Mission Duration	3336 hours
Project Manager	Adam Harding

2 Survey Information

2.1 Overview

Morven is a proposed wind farm development by the Joint Venture formed by bp and ENBW and is located in UKCS waters. The site investigation work was collected to support the design of the export cable route (approximately 260 km in length), connecting the wind farm facility to shore south of Sunderland.

The campaign was split into two phases of acquisition, the first to focus on the collection of the MBES and SBP acquisition carried out by XOCEAN. The second phase involved the collection of sidescan sonar and magnetometer data by Guardline, which XOCEAN would feed into seabed interpretation.

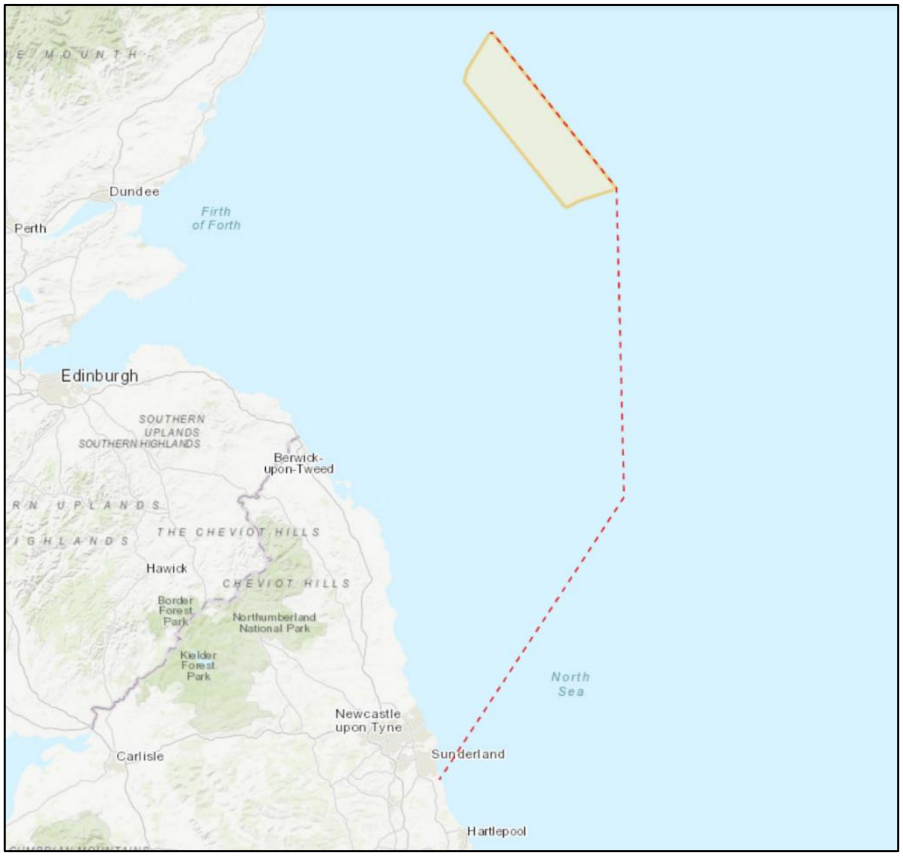


Figure 1: Project Area Overview

2.2 Survey Area

The survey site was made of 3 route options, Route A, Route B and Route C. Each route shared three landing options, LF1, LF2, and LF3. Due to the length of the route options the survey areas were broken into ~10km sections, to aid in consistency each block was surveyed to completion before starting a new block. All surveying was based off the route RPL, with each RPL surveyed with the following -

- A centre line over the RPL with 4 +/- winglines at 50m spacing totalling 9 mainlines
- Combined MBES coverage ~500m corridor centred on RPL

- SBP coverage on 5 of the 9 lines including the RPL and 4 winglines
- Cross line collected every 2km

Due to the length of the route options the survey areas were broken into ~10km sections.

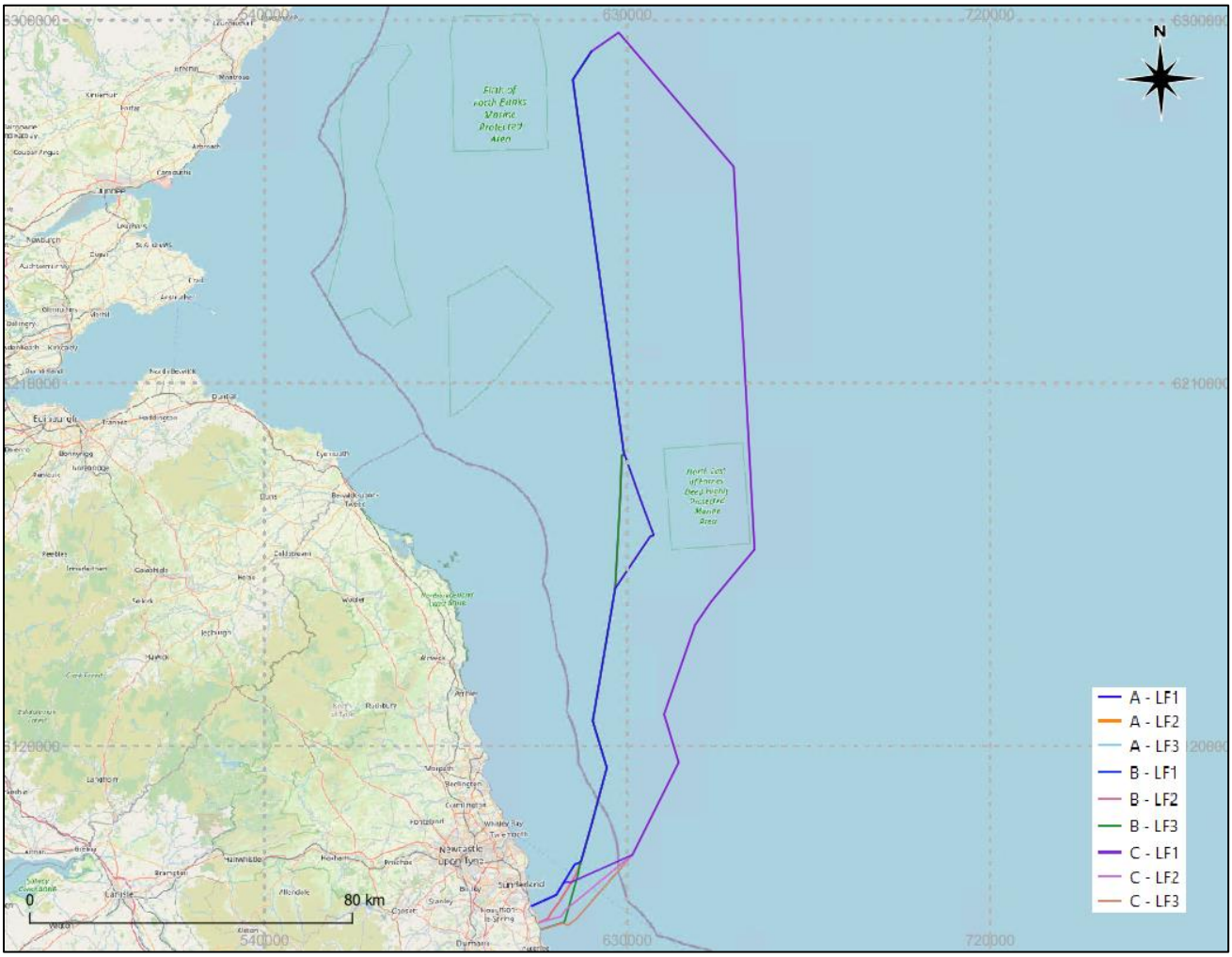


Figure 2: Overview of the RPL

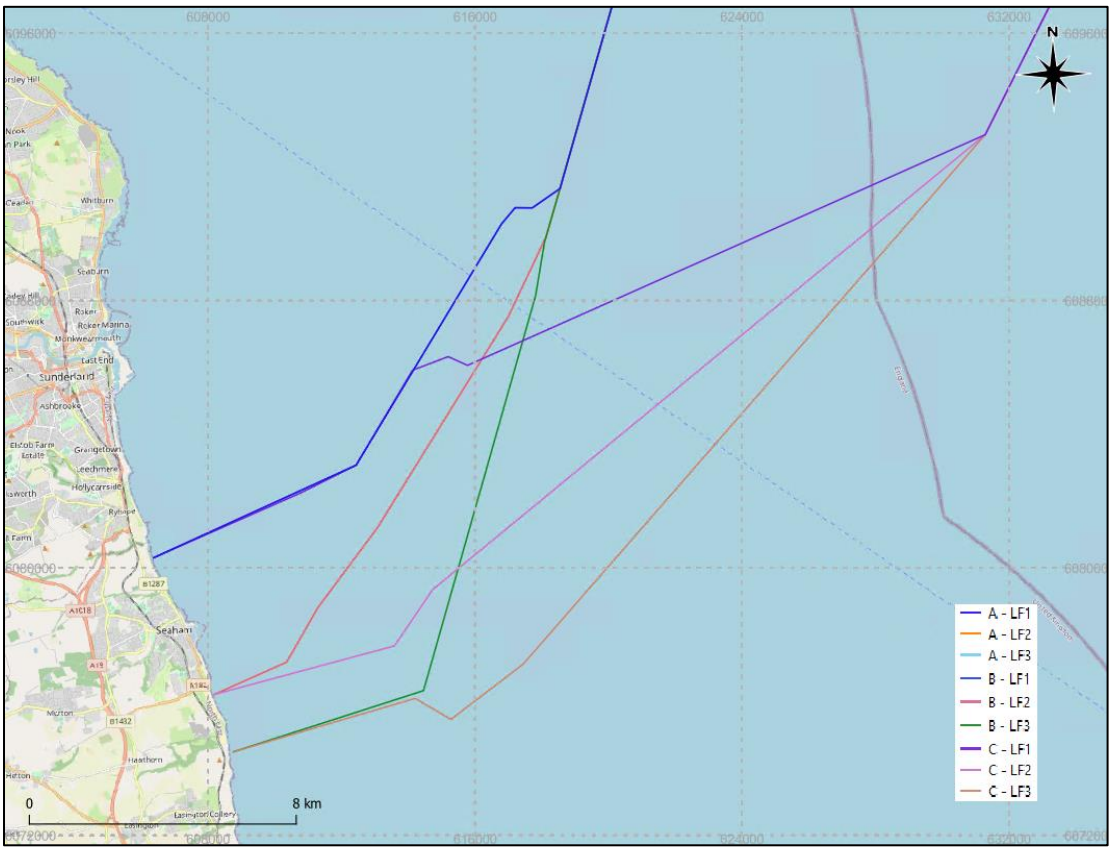


Figure 3: Close up of the RPL split point connecting to the three landfall areas

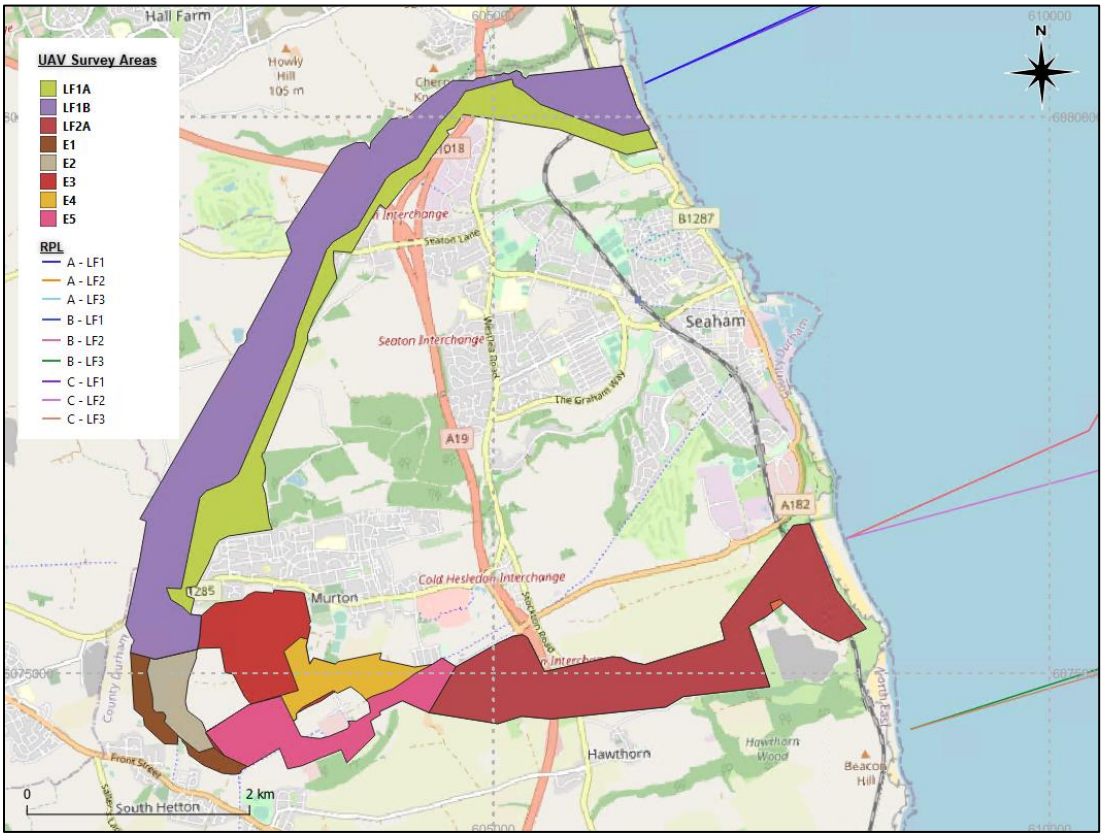


Figure 4: UAV survey areas

2.3 Survey Objectives

- Multibeam Echosounder:
  - DTM to have 1m bin size with 5 hits per bin.
  - Data to have no gaps larger than 5 consecutive bins.
  - Permissible data gaps being more than 30m apart (full survey achieving min. 99% coverage).
- Sub Bottom Profiler:
  - Vertical resolution of 0.2m, configured to optimise data in the top 5m of seabed.
- Photogrammetry
  - Full coverage of the termination point, LF1, and LF2 inshore routes

2.4 Survey Parameters (can be taken from the Method Statement)

Geodetic parameters are detailed below.

Table 2: Datum transformation parameters as per the Scope of Work.

Global Positioning System Geodetic Parameters		
	FROM	**TO**
	WGS 1984 (ITRF08)	ED50 (EPSG: 6230)
Spheroid	WGS 1984 (EPSG Code 6326)	International 1924 (EPSG: 7022)
Semi-major axis (a)	6 378 137.0	6378388.0
Flattening	298.257223563	298.257222101
Parameters		
NOTE: “is arcsec	Shift X (m)	89.5
	Shift Y (m)	93.8
	Shift Z (m)	132.1
	Rotation X (“)	0
	Rotation Y (“)	0
	Rotation Z (“)	0.156
	Scale (ppm)	1.2003

Table 3: Datum transformation parameters.

Projection Parameters	
Geodetic Projection	ED50 UTM Zone 30 (N)
EPSG Code	23030
Zone	30N
Central Meridian	3° W
Latitude origin	0° N
False Easting	500 000 m
False Northing	0 m
Central Scale Factor	0.999 600
Units	Metres
Time Datum	UTC

Table 4: Datum transformation parameters.

Vertical Reference Parameters	
Vertical Datum	LAT
Height model	VORF Model
Geoid model	VORF Ellipsoid to LAT

Table 5: Online parameters.

Online Parameters		
Equipment / Item	**Value**	**Unit**
MBES opening angle	Varying range along route	deg
MBES max swath width	Varying range along route	m
MBES frequency	400	kHz
Survey speed	2.5	kts
Innomar Medium LF	8	kHz

Table 6: Alarms used in the navigation software.

Type	Alarms When
Sound velocity at Echo Sounder vs. Sound velocity profile	>2 m/s
Time Synchronisation on board systems	Fail

3 Survey Acquisition

3.1 Equipment (Align with to Ops report)

The XO-450 USVs are a class of permanently fitted autonomous hydrographic survey vessels, owned and operated by XOCEAN of Carlingford, Ireland. All the survey equipment is regularly calibrated, details of which can be found within the separate Mobilisation & Calibration Reports. All equipment utilised is described in Table 7.

Table 7: Project equipment.

Function	Equipment	Comments
Survey Platform	XO-450 uncrewed vessels: 'XO-04', XO-06', 'XO-08','XO-16', XO-18', 'XO-20', 'XO-22', XO-23'	XOCEAN USV – specification in Appendix 1.
Primary Positioning System	Applanix Wavemaster II POS MV 320	Positioned close to sonar heads, dimensional control carried out during mobilisation.
Primary Gyro and INS System	Applanix Wavemaster II POS MV 320	
Sonar System	Norbit Winghead B51s – all USV	0.5 x 0.9° system when operated at 400 kHz - broadband multibeam sonar.
Sub-Bottom Profiler	Innomar Medium SES2000 – ,XO-18', 'XO-20', ,XO-22', 'XO-23'	Set with 8kHz primary frequency and 1 pulse cycle
Sound Velocity Measurement	Located at the MBES transducer: AML Micro X SVS – All vessels Winch deployment: Valeport SWiFT SVP – All vessels	AML Micro X SVS Range – 1375-1625 m/s Resolution – 0.001 m/s Accuracy – ±0.025 m/s Valeport SWiFT SVP Range – 1375-1900 m/s Resolution – 0.001 m/s Accuracy – ±0.02 m/s Max pressure – 50 Bar
Survey Navigation System	Beamworx NavaQ	Version 2022.3
UAV Platform	SenseFly eBee X UAV	55 min Max Flight Time 20 megapixel camera with ground sampling distance of 2.5cm/pixel at 120m flight altitude 6 Directional Sensing and Positioning

3.2 Measurement Units and Presentation

Unless otherwise stated:

- Dates are quoted in dd/mm/yyyy format.
- Time are quoted in hh:mm:ss format.
- Linear measurements are quoted in metres (m) or kilometres (km) at a precision of 0.01 m (1 cm).
- Angular measurements are quoted in degrees and decimal degrees, Grid (G) or True (T).
- Geographical coordinates are quoted in ddd°mm°ss.sss format.
- Grid coordinates are provided in metres rounded to the nearest centimetre.
- Depths are described in hydrographic format with positive values indicating a depth below the vertical datum.

3.3 Time

All survey computers, video and log keeping were synchronised to Coordinated Universal Time (UTC), derived from Global Navigation Satellite System (GNSS). The primary positioning system output one pulse per second (1 PPS) from the GNSS clock of the primary antenna. The 1 PPS pulse was input into NavAQ where it was continually monitored for continuity, graphically notifying the online surveyor if it stopped. It was checked and confirmed that all instruments were synchronised with primary positioning system.

3.4 Personnel

Table 8 details personnel that were involved in the processing stages and their function, as well as information relating to the operations and survey managers:

Table 8: Personnel utilised during the project.

Title	Name (& Company as applicable)	Location	Responsibilities
Project Manager	Adam Harding	Remote	Supervision of project and operation planning.
Survey Manager	Connor Stewart	Remote	Survey supervision and planning.
UAV Survey Manager	Jonathan Hargraves	Remote	UAV survey supervision and planning
Reporting Manager	Thomas Burden	Remote	To oversee the processing workflow, data management, deliverable QC, and reports.
Lead Geophysicist	Joe Wheeler	Remote	To oversee geophysical workflow, and interpretation.
USV Pilots	Multiple	Remote	Safety of navigation and USV helming.
Online Surveyors	Multiple	Remote	Responsible for data acquisition and online data QC.
Processors	Multiple	Remote	Responsible for bathymetric processing and interpretation.
Geophysicists	Multiple	Remote	Responsible for geophysical data processing and interpretation.
Data Coordinator	Piers Cummings	Remote	Responsible for data transfer and validation.

4 Processing Methodology

4.1 Processing Software

Multiple software were used during the data processing and delivery procedure, Table 9 outlines the different examples and their application.

Table 9: Processing software.

Manufacturer	Software	Version
Scooter Software	Beyond Compare	4.4.2
BeamworX	Autopatch	2022.3
BeamworX	NavAQ	2022.3
BeamworX	Autoclean	2022.3
Applanix	POSPac MMS	8.7.2003 SP2
Blue Marble	Global Mapper	V24
ESRI	ARCMap	10.8
Dug	DUG Insight	5.1
Coda Ocotpus	Survey Engine Seismic+	6.0
AgEagle Aerial Systems	eMotion 3	3.5.132
Pix4D	Pix4DMapper	4.7.5
QPS	Qimera	2.5.1

4.2 Offline Quality Assurance

Hull-mounted Norbit Winghead MBES data was collected in NavAQ and stored in .bwxraw files. The Primary Reference Position (online) was provided by an Applanix POS MV system, augmented with Marinestar G4+ corrections in real time to establish a horizontal position accurate to <0.1 m, and a vertical position accurate to <0.15 m. The POS MV combines Global Positioning System (GPS) and Inertial Measurement Unit (IMU) data into a tightly coupled integrated navigation solution. Preliminary coverage and data quality checks were made in NavAQ software. The data was corrected with the observed sound velocity profiles to adjust for refraction effects. The sound velocity profiles and correlation with the MBES sound velocity sensor were also monitored to inform the online surveyor when the velocity changed more than 2m/s to the loaded profile.
The corridor / route .shp files, provided by SSE, were used as a base for the survey areas. The sounding density was monitored online in the NavAQ navigational/logging software to accurately meet the survey requirements. After completion of each of the survey areas, the data was checked to ensure its quality. If grid cells with low density were identified, supplementary infill survey lines were run. Innomar SBP was collected in SESwin innomar software recording .SES3 files. The Innomar's position was obtained from the Applanix POS MV system mentioned above. Live Motion was applied to the seismic data online from the Inertial Measurement Unit (IMU) to correct for motion where possible. The Innomar data was assessed live on its own screen during acquisition checking data for Motion issues, Clipping of data, Navigation, Quality and more.

4.3 Data Transfer

Logged data was continuously backed up during survey acquisition with redundancy storage in place. The online PC data was copied to a storage drive connected to the USV, which in turn was backed up to a removable SSD for ship-to-shore transfer during port calls. This process was automated using Syncback software ensuring that all data was validated against its source location. A second validation process was undertaken by using Beyond Compare software to take a "snapshot" of the source location and then

validating it against subsequent copies of the data. When in port, the site team removed the SSD from the USV and the data was then sent to an approved data upload location by a secure delivery service. From this point, the Report Manager verified the data against the snapshot file and the raw data was safely backed up to both a physical storage location and a cloud storage location for the duration of the project.

4.4 Position and Motion Processing

In order to provide the most accurate post-processed kinematic positioning solution, Applanix POSPac MMS was utilised to generate a Smoothed Best Estimate of Trajectory file which could be applied to the MBES data to provide greater accuracy in motion and positioning. The data logged by the on-board POS MV was loaded into POSPac MMS and processed using Applanix's PP-RTX cloud-based GNSS correction service. The forward-backwards-forwards processing routine allows for improved smoothing in the solution when short drops in positioning quality occur creating a solution that has cm level accuracy without the reliance on base stations. Once processed, all data was carefully inspected for quality; assessing altitude, smoothed performance metrics, P-DOP, processing mode, and number of available satellites. Once checked and approved, the SBETs were exported for application in the MBES processing software. The full workflow for POSPac MMS is shown in Figure 5.

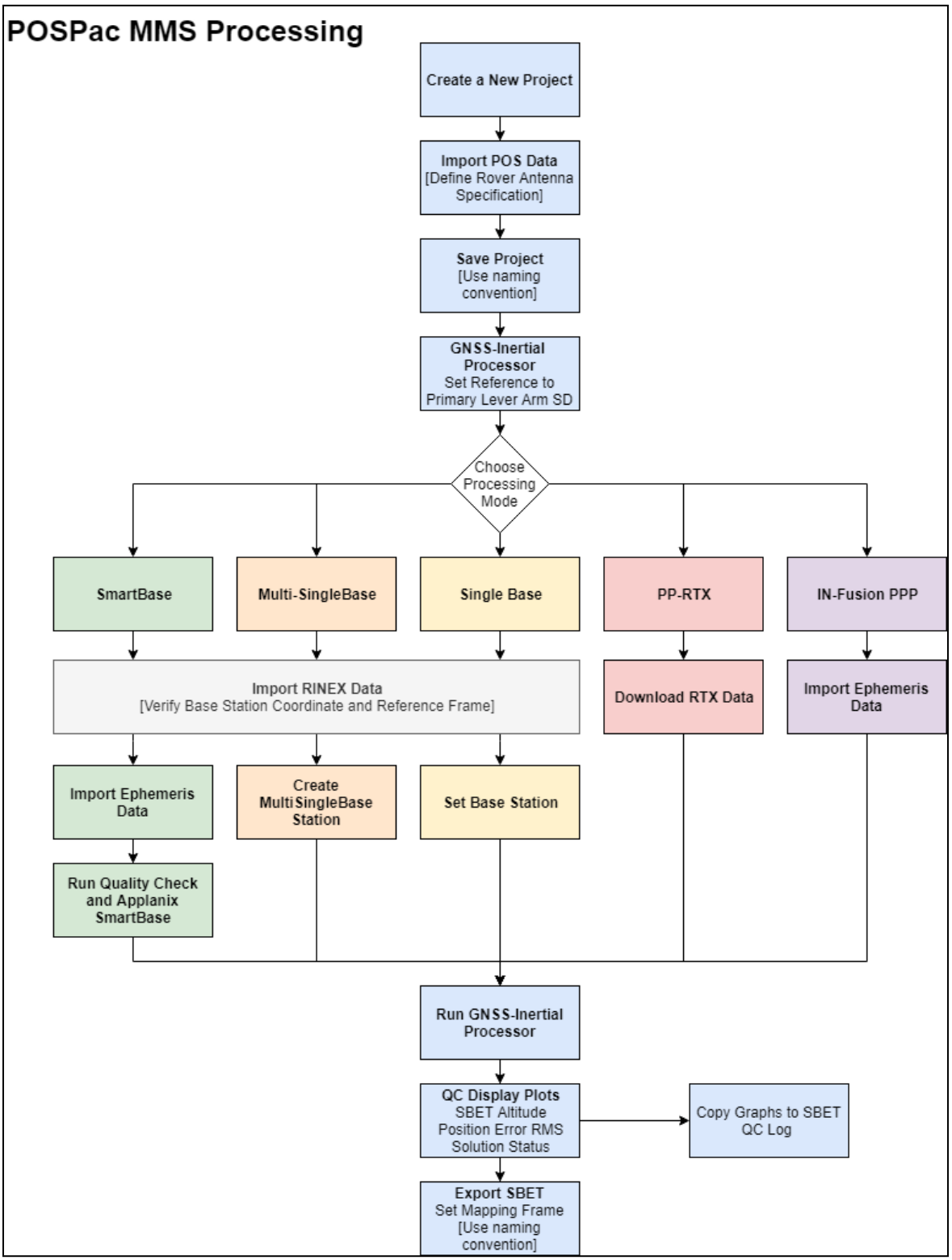


Figure 5: POSPac workflow diagram.

4.5 MBES Data Processing

The exported SBET file was imported into Autoclean (version 2022.3) and the real-time values were overwritten with the post processed data. The MBES data was then reduced to LAT using the UKHO VORF geoid model and corrected with the observed sound velocity profiles to adjust for refraction effects. The data was cleaned in Autoclean, using a combination of models and filters

to identify and remove any noise or erroneous data. Special care was taken in order to preserve the shallowest soundings for detection purposes and to ensure that no objects of interest were missed along the route. This workflow can be observed in Figure 6.

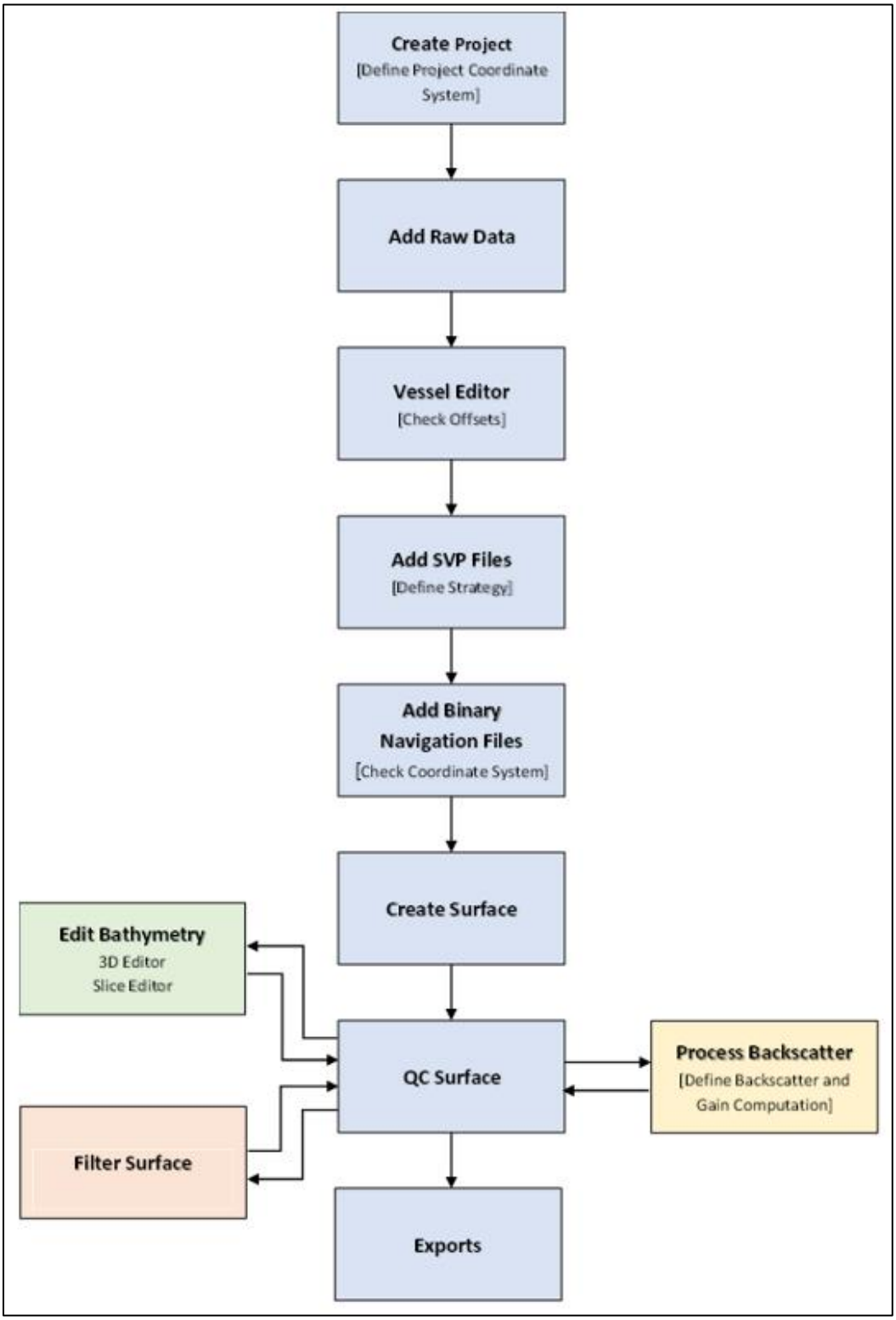


Figure 6: Autoclean processing workflow diagram.

4.6 Backscatter Processing

Processing of the backscatter data was performed using Autoclean (version 2022.3). Backscatter snippets were recorded online and saved to the same raw data files are the multibeam. The height corrected and cleaned projects created during multibeam processing were then used for processing backscatter using the Backscatter Processing tool. In this tool, radiometric corrections, Angle Varying Gain (AVG) adjustments, and anti-aliasing of the backscatter data were performed. From the resultant processed data, a backscatter mosaic can be created for charting and analysis.

4.7 SBP Processing

The Sub-Bottom Profiler (SBP) processing workflow used is displayed in Figure 7. SBP data from the Innomar 100 Medium was logged in the SESWIN data acquisition software in ses3 format. These files were then converted to seg-y using Innomar SES Convert (version 2.3.34). The data was then loaded into SonarWiz where the files were combined and checked for corruption errors and errors with the embedded navigation data.

The combined seg-y's were loaded into DUG Insight to be denoised using processing tools such as a Cadzow filter, time frequency filter, and gain pass filters to improve the data visually. The tidal elevation was applied to the seg-y data also and QC'd against bathymetry heights and for any motion issues. The final data QC and interpretation was performed in DUG Insight. The processor then applied further frequency filters, gains and colours to highlight the sub-surface geology in the data files. Each data file was interpreted to pick the major reflectors below the seabed. The data was interpreted in one project thereby ensuring that data had consistent picking across blocks. The processor used the SSS and MBES data to aid the interpretation of the data by overlaying the seismic record with the MBES DTM to check that the two datasets were corelated. The picks were computer generated contoured in DUG Insight to create an isopach chart and QC'd for any errors. Where there is no data interpreted in the SBP it is not possible to create contours. Two reasons for this are when the interpreted horizon is deeper than the Innomar recorded or the line either side does not have enough interpretation.

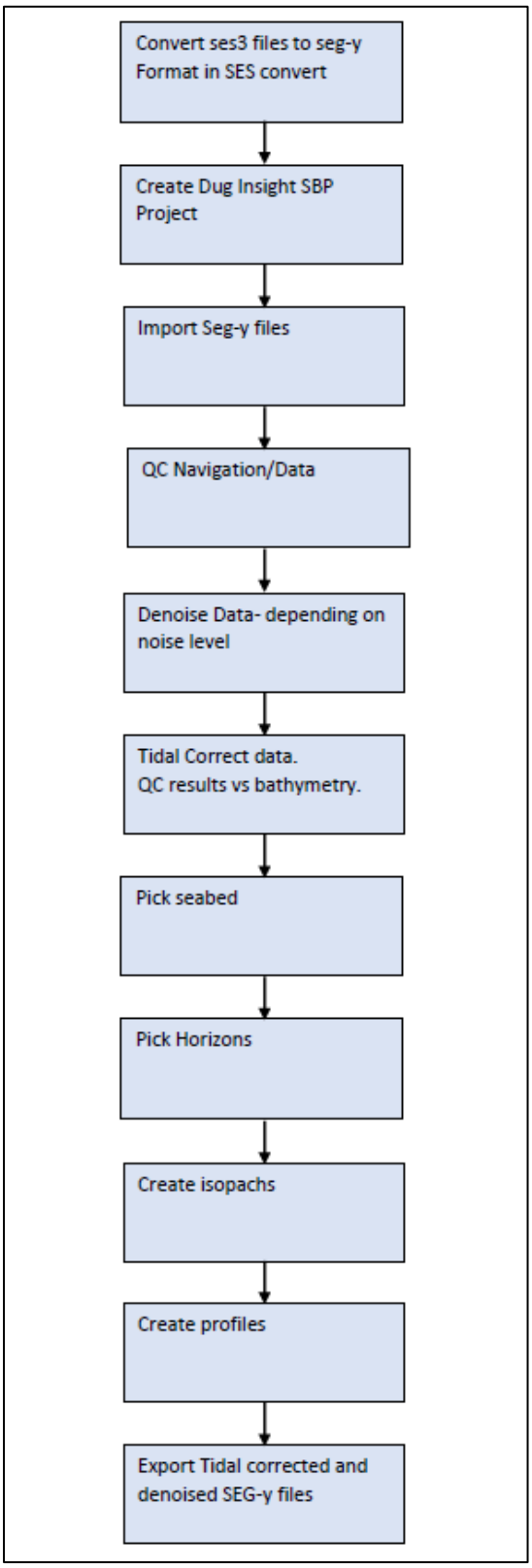


Figure 7: SBP processing workflow.

4.8 UAV Data Processing

A UAV was deployed to capture data at both the Morgan and Mona pipeline landfall areas. The onshore data collected was initially processed in the senseFly eMotion software (version 3.18.274).This included applying post-processed RTK positioning to the

series of images captured. This data was then exported to Pix4DMapper (version 4.6.4) to create orthophotos and point cloud files in .las format. The final DTM was created using the .las files and the Structure from Motion (SfM) tool in Qimera.

4.9 Data Interpretation and Analysis

Target Identification

Features and targets were identified in Autoclean/Sonarwiz using the waterfall view to identify and measure observed features. Point features such as boulders, debris and wrecks were checked for and marked as appropriate. These targets were then corroborated with data sets from other sensors to increase confidence in our identification of the target. Boulders were not individually picked in areas with a concentration of > 10 features per 100m^2, instead, “Boulder Area” polygons were established defining the maximum extents of these continuous areas.

Morphological features and surficial sediment analysis

Observed seafloor features included isolated points as well as larger scale morphological features. Features formed from the effect of currents were classified using Table 10 from ABPmer (2015), based on classifications by Morelissen et al, (2003) and Knaapen (2005).

Table 10: Bedform classification chart.

Bedform type	Related flow	Scale	Length (m)	Height (m)	Mobility
Ripples	Wave and tide	Micro	0.1-1	0.01-0.1	Hours(~1m/day)
Megaripples	Tide (near bed currents)	Micro	1-30	0.1-1	Hours-Days (~100m/year)
Sandwaves	Tide (near bed residual currents)	Meso	30-700	1-5	Days-Decades (~10m/year)
Sandbanks	Tide (depth averaged residual currents)	Macro	Max 15000	5-15	Years-Centuries (~1m/year)

Backscatter data was analysed to help inform assessments of change in seabed sediments across the corridor. This was compared to and complemented by British Geological Survey (BGS) Seabed Folks classification. The variation in intensity of return from the backscatter provides a broad indication of softer or harder sediments. Whilst specific identification of sediments cannot be accurately made without ground truthing, as requested by the client, we have made an interpretation from of the sediment types along the corridor using the Broad Classifications.

5 Results

5.1 Bathymetry



Figure 8: Landfall bathymetry for all routes.

Route A & B

There were no observed sudden or extreme changes in depth anywhere along Route A or B. The shoalest point occurs at the shoreline -1.43m LAT, this descends at a steady rate for 30km reaching 80m below LAT at the start of block A1 (Figure 8). The rate of decent slows over block A1 reaching 90m LAT which then varies between 90 to 100m LAT through to block A6 82km offshore. Block A6 reaches the deepest depth of 106.58m LAT before beginning to ascend where the routes diverge for 30-40km (Figure 9). Route B rises to 79m LAT before a brief channel which precedes a 70m LAT rise that continues for 2.5km. Over blocks B1 and B2 the seabed falls back to 98.25m LAT before rising to 72.68m LAT over block B3 where it rejoins Route A. Route A varies between 85m to 95m LAT over blocks A7 to A9 before rising to 72m LAT in Block A10 where Route B rejoins. The final 93km averages between 60-70m LAT depth with little variation along the route.

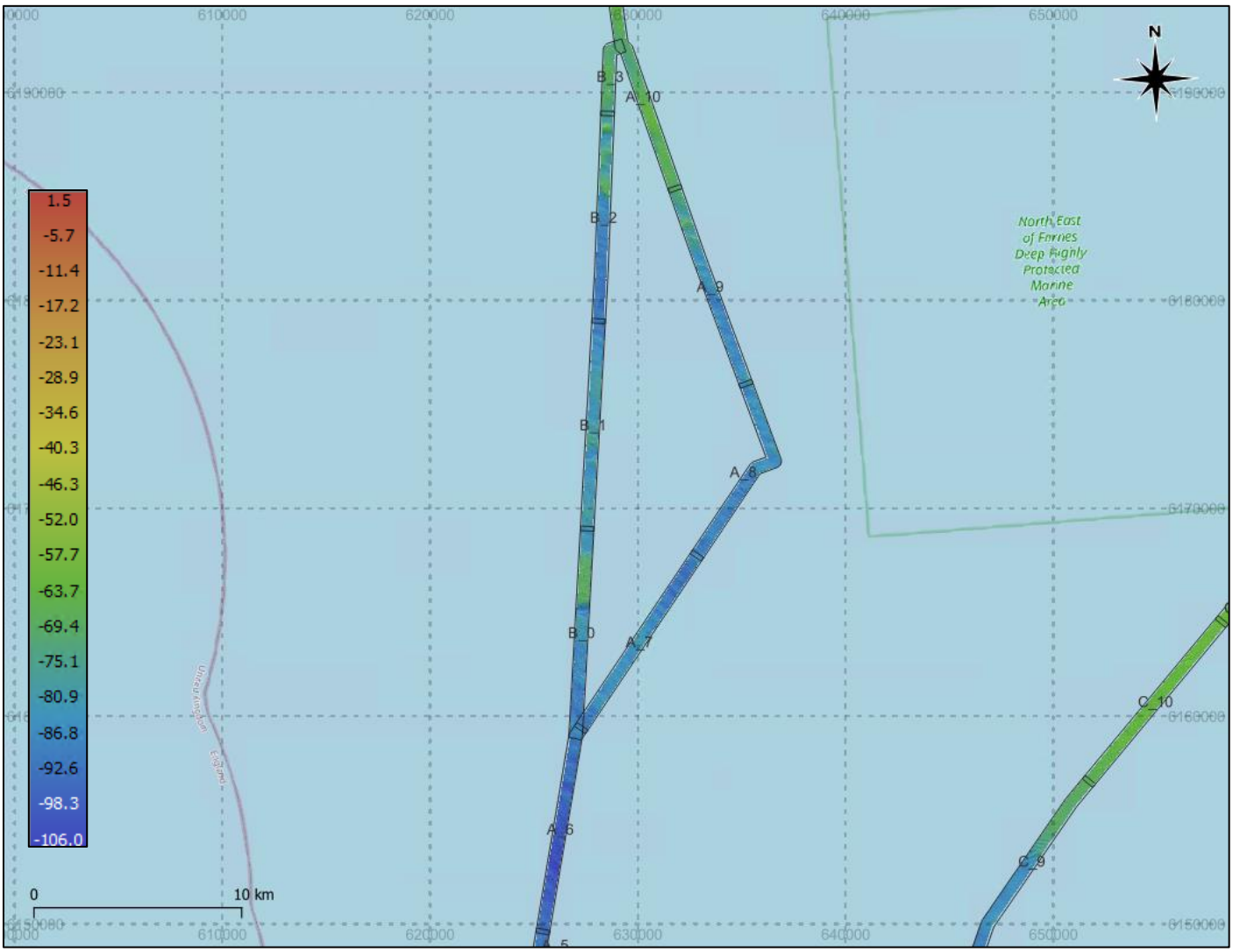


Figure 9: Route A and Route B bathymetry over deepest bathymetry and route divergence.

Route C

There were no observed sudden or extreme changes in depth anywhere along Route C. The shoalest point occurs at the shoreline -1.43m LAT, the descends at a steady rate along the three Landfall routes for ~25km reaching 78.92m LAT deep just short of the routes converging (Figure 8). This then rises four 18km reaching 60.23m LAT in block C4 before descending again. The route reaches 92.95m LAT 26km further in block C7 where it then begins to ascend (Figure 10). Over 25km reaching block C10 the seabed ascends to 61.11m LAT, before descending to 80.98m LAT 54km further in block C16. After a brief ascent to 58.61m LAT between block C17 and C18 the seabed falls between 65-75m LAT for the final 73km.

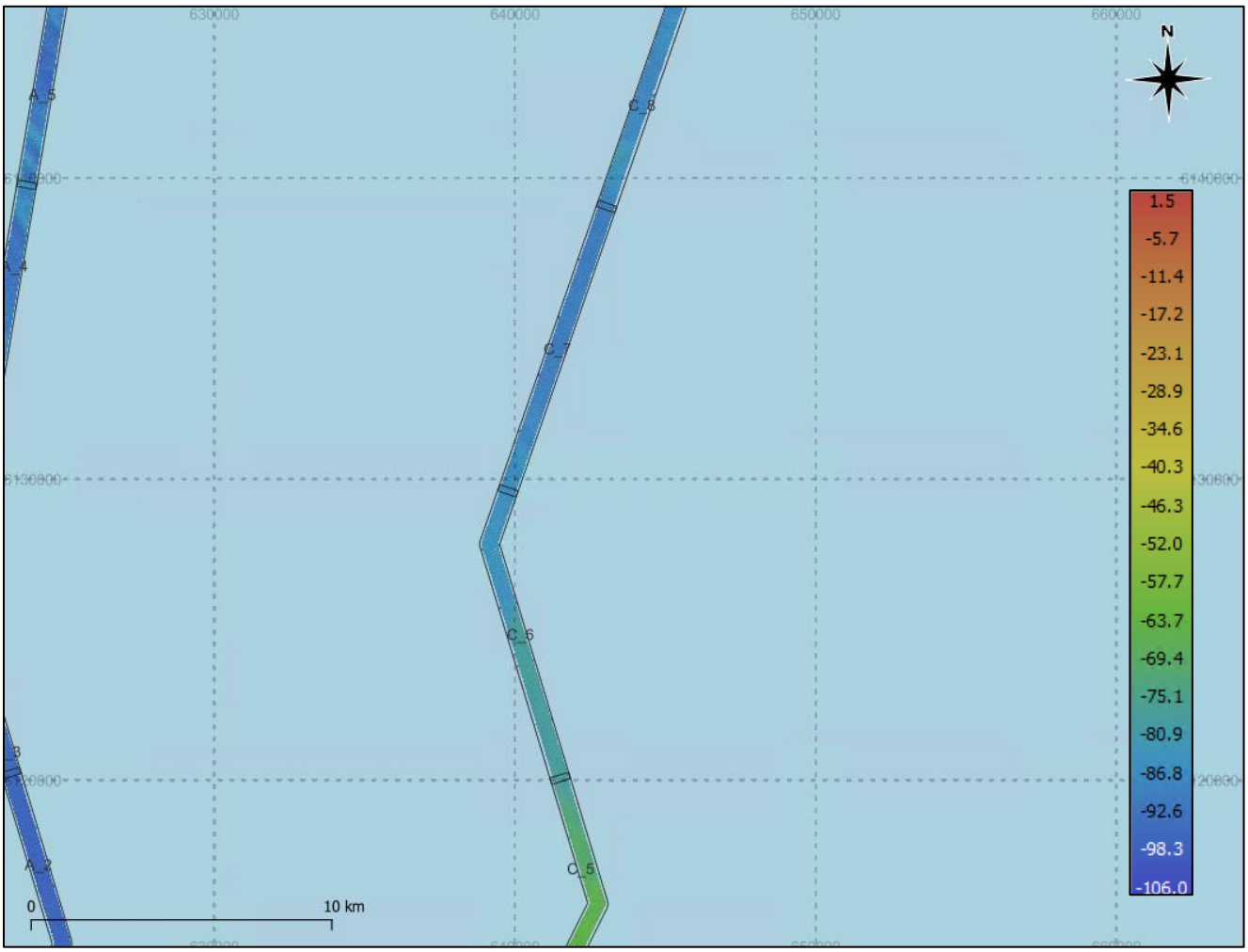


Figure 10: Route C deepest bathymetry

5.2 Seabed Characterisation

All interpretation has been carried out using comparisons to previous data sets and reference local charting of the area. No grab samples or verification has been done to corroborate this interpretation.

Landfall

Landfall area contains the most dynamic area of the survey. All landfalls begin predominantly Gravelly Sand for the inshore most 2-3km, both landfalls 2 and 3 show finer mud sediments also mixed in (Figure 11). In that area there are small sections of outcroppings of rock as well as patches of Sandy gravel forming a veneer over rocky areas. After this, all routes continue offshore for a further 5-7km as a veneer of Sandy Gravel over rocky areas. In the northern landing routes Gravelly Sand is interspersed in small sections within this Sandy Gravel veneer area. The southern routes show smaller areas of interspersed Gravelly Sand but have large areas further along the route.

As the veneer area ends all landings transition to predominantly Muddy Sand but each route differs in sediment during this transition. Landfall 1 A and C transition to Muddy Sand for the rest of the Landfall areas. Landfall 2 A first transitions to Slightly Gravelly Muddy Sand for 3km before a small area of Slight Muddy and gives way to Muddy Sand for the remainder of the Landfall section. Landfall 3 A and 2 C transition to Muddy Sand with areas of Gravelly Sand and Slightly Gravelly Muddy Sand. Landfall 3 C has 4.3km of predominantly Gravelly Sand before transitioning to Muddy Sand for the rest of the Landfall area.

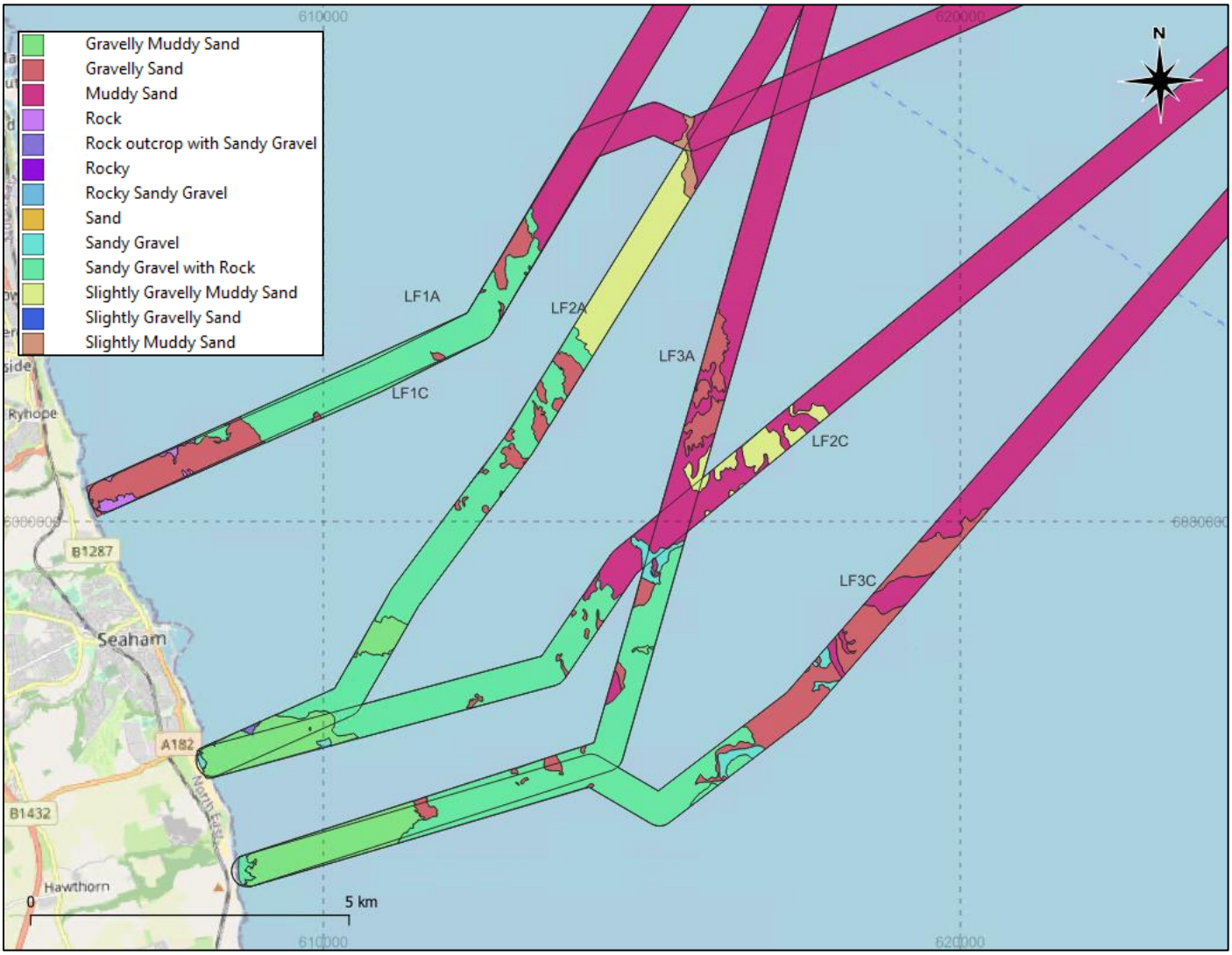


Figure 11: Overview of Landfall seabed surface sediment.

Route A & B

The Muddy Sand identified in the landfall area continues for over 70km along route A and B until they split after block A6. From this point onwards both routes are predominantly Sand interspersed with large areas of Gravelly Sand (Figure 12). Both routes continue this until their termination at the windfarm site. Only two areas interrupt the Sand and Gravelly Sand. Block A11 contains a 1.5km long area of Slightly Gravelly Sand and 500m long area of Sandy Gravel (Figure 13). Block 13 contains some brief (~500m) strips of Sandy Gravel running across the route (Figure 13).

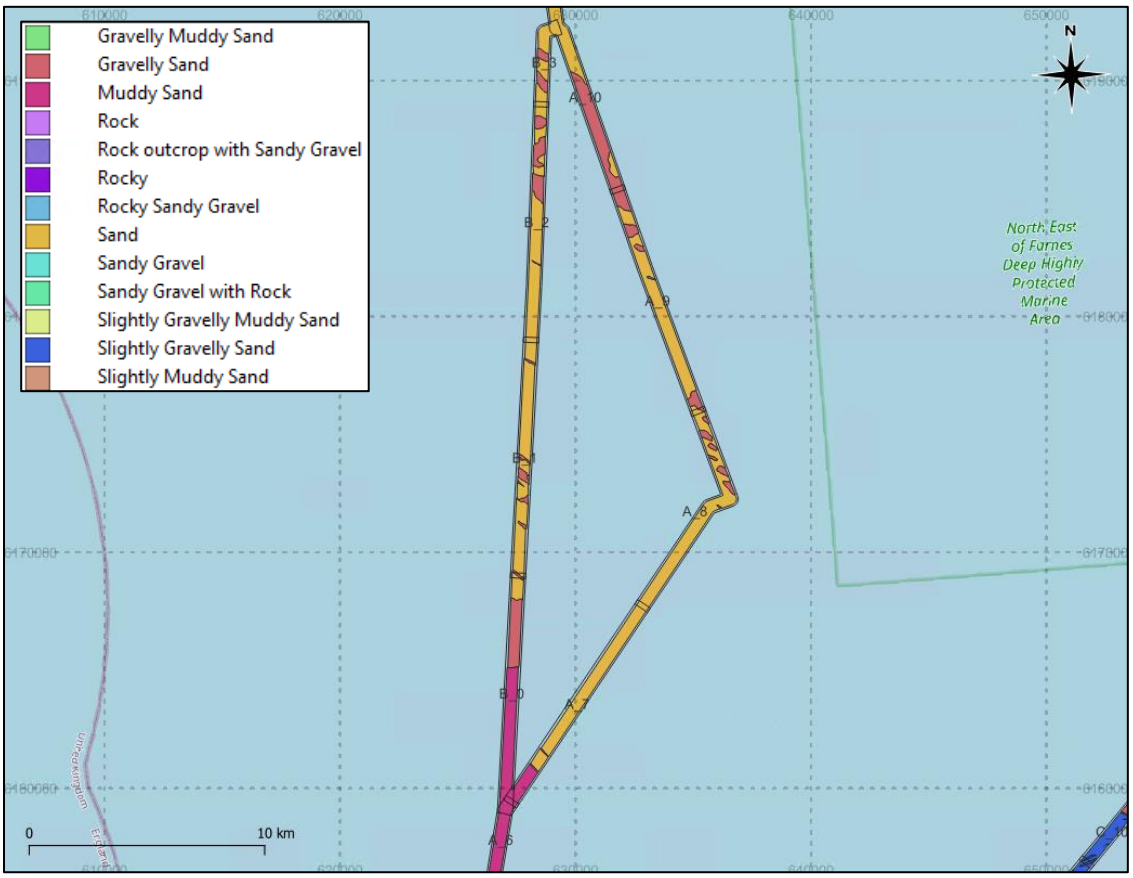


Figure 12: Seabed surface sediment over route B and route A blocks 6 to 10.

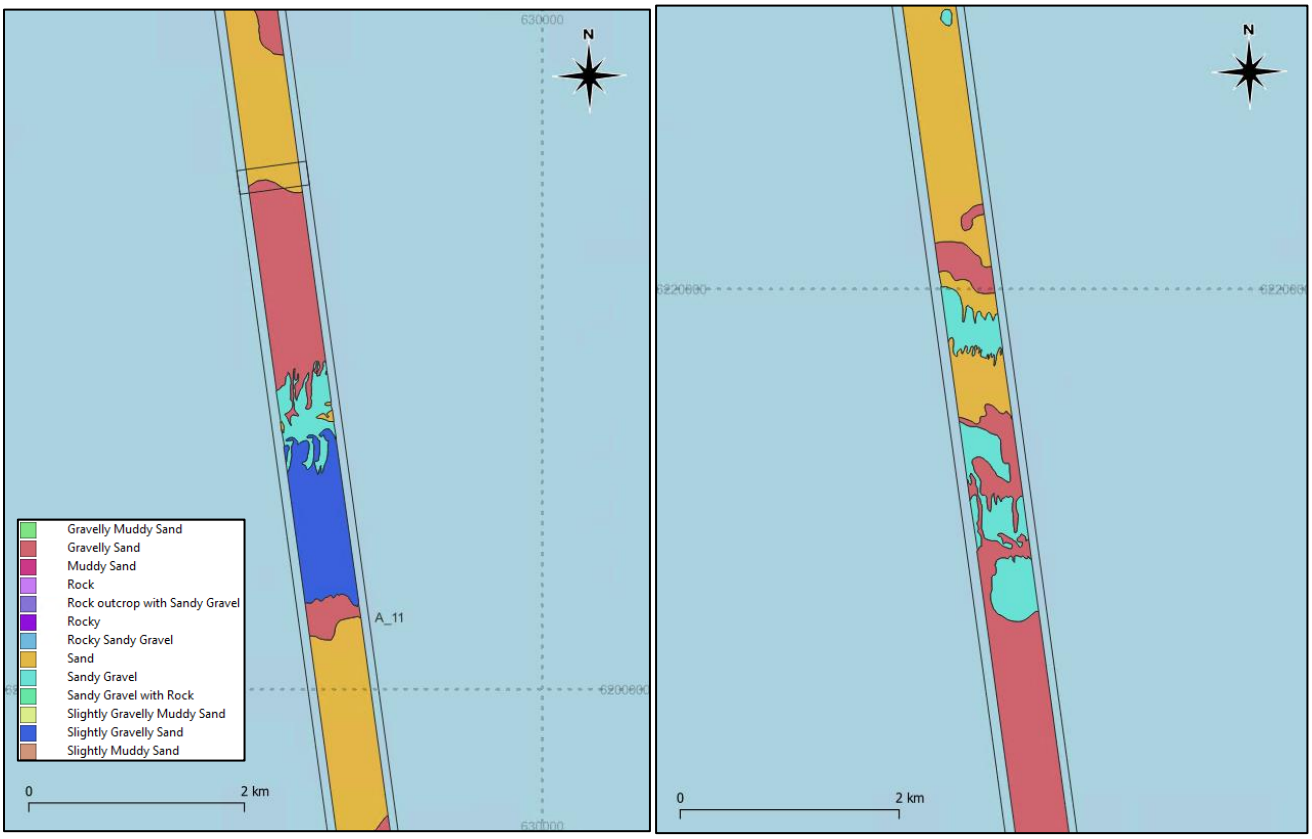


Figure 13: Seabed surface sediment of block A11 (left) and A13 (right).

Route C

Muddy Sand identified in the Landfall contuinues along route C for over 17km to block C4. The following 7km is Gravelly Sand with areas of Rock dispersered throughout, and a 1km wide swath of Slightly Muddy Sand crossing the centre of it (Figure 14). The following 44km from C5 to C9 is Sand. C10 to C12 is an alternating substrate of Slightly Gravelly Sand and Gravelly Sand (Figure 14). This covers 30km and has two small patches of Sandy gravel ocurring in block C10 and C11. The following 14km over block C13 and C14 is Sand. The next 3.7km is Slightly Gravelly Sand followed by around 3km of Gravelly Sand. This gives way to Sand once again, which in C15 is intespered by patches of Slightly Gravelly Sand. From this point onwards the route is predominantly Sand, few blocks contain any differeing sediement. C17 contains a 3.5km area of Gravelly Sand with small areas of Sandy Gravel. C19 contains six thin (50m ~ 100m) strips of Slightly Gravelly Sand over 3km, and a single small area of Gravelly Sand. C22 contains the final sediment change from Sand to over 7km of Gravelly Sand.

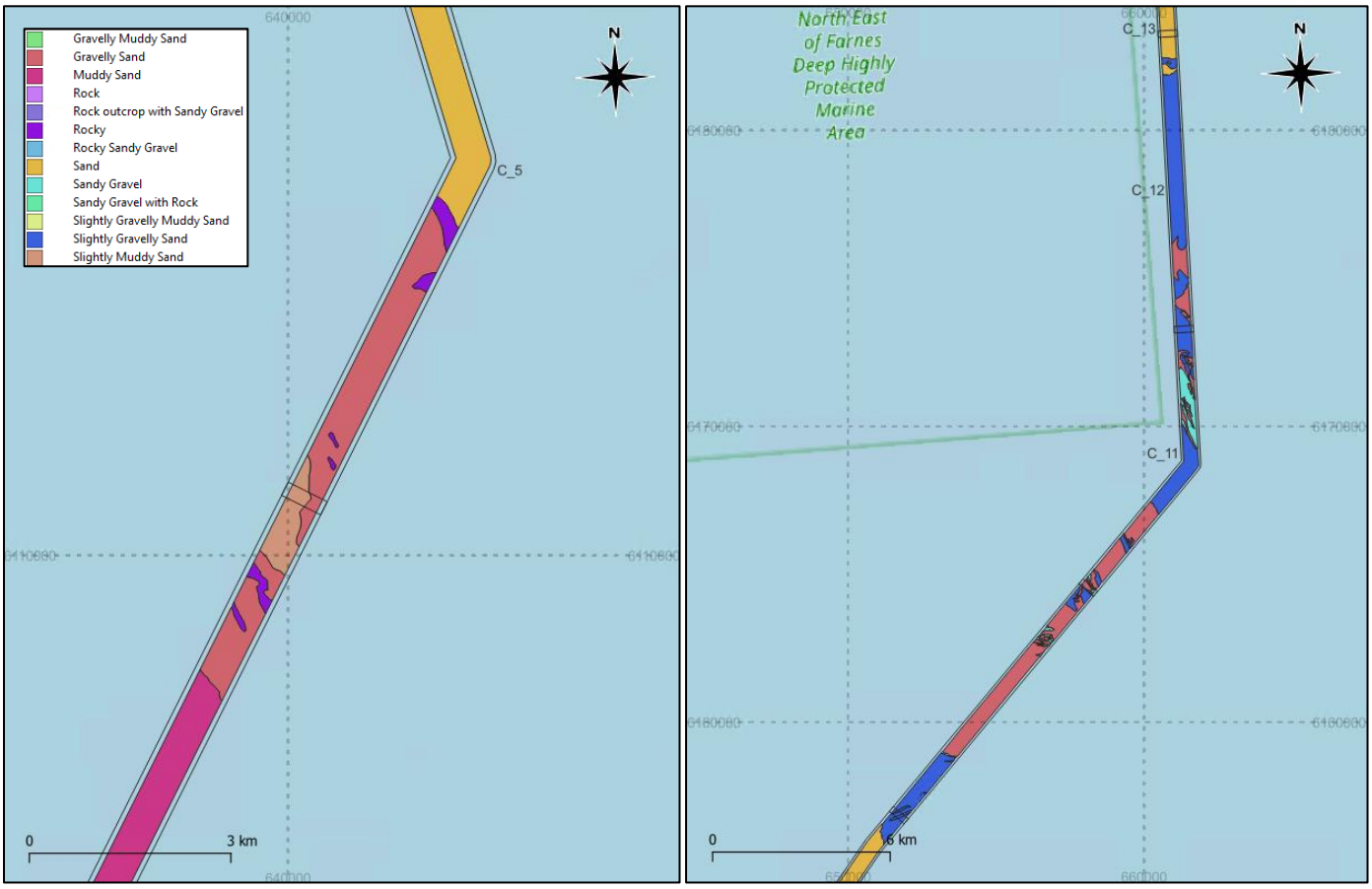


Figure 14: Seabed surface sediment over route C block C4 to C5 (left), and C9 to C13 (right).

5.3 Seabed Feature Areas

Landfall

The landfall routes are dominated by two main features, Bedrock and Potential Hardgrounds (Figure 15). All three Landfall routes show small areas of bedrock at their most inshore extents. Around 2.5km into each route there are 5-7km long sections of Bedrock and Potential Hardgrounds. These areas align with the sediment boundaries of Sandy Gravel forming a veneer over rocky areas (Figure 15). Much of these areas have been also flagged as Boulder Field (not displayed in figure). Within these areas on all routes are small areas of sand ripples. The sand ripples are more prevalent in Landfall 3 where the presence of bedrock at the surface is reduced. The rest of the Landfall area is featureless apart from two small areas of scour around two shipwrecks in Landfall 2 A and Landfall 3 A.

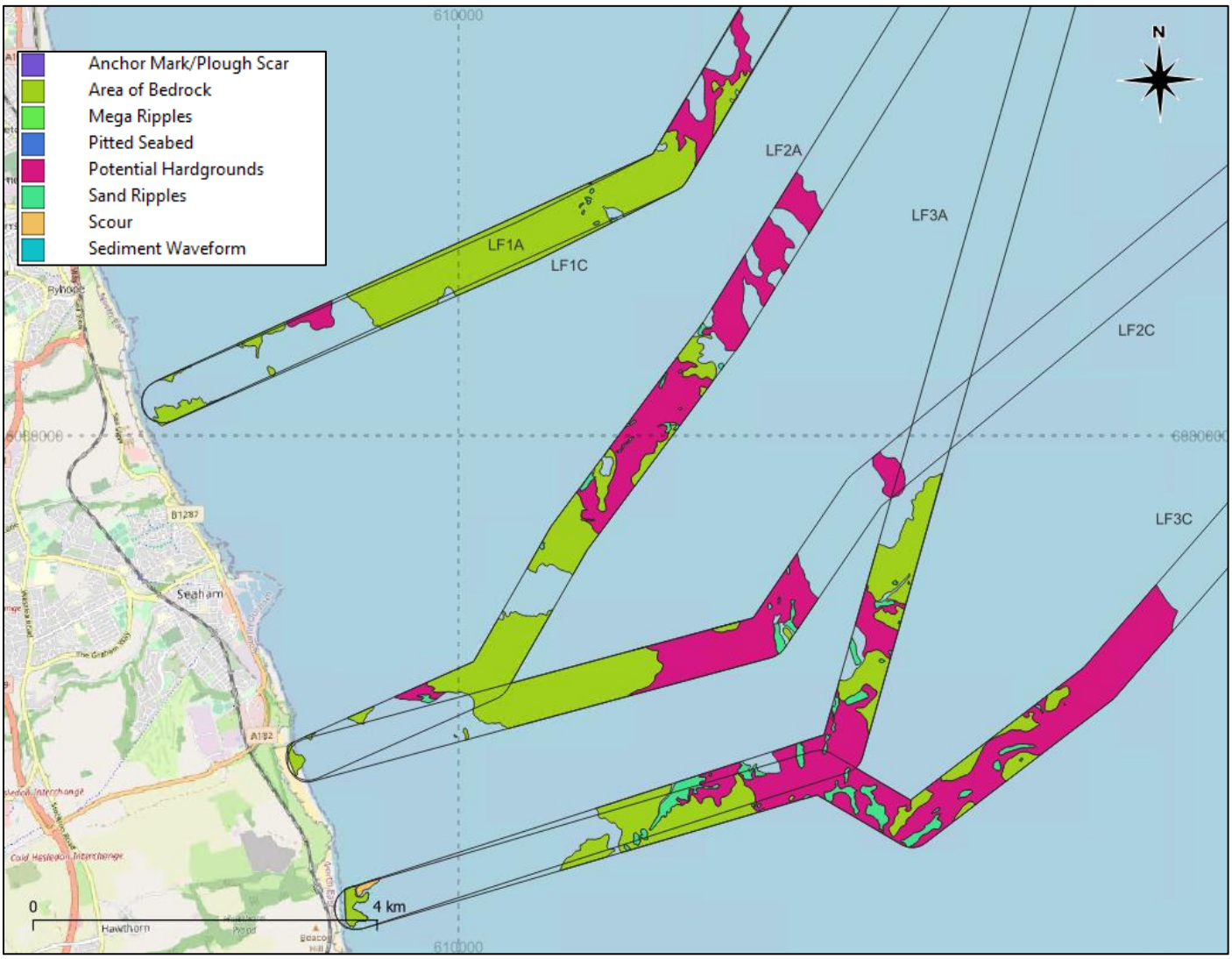


Figure 15: Seabed features of the Landfall routes.

Route A & B

Route A and B contain limited features until block A4. Three areas of scour were identified in this area surrounding wrecks, two in block A0 and one in A2. In block A4 we see 4.5km of sediment waveform, the following 24km alternates between sediment waveform and featureless seabed. The route splits at this point separating into route A and B, both however show similar features. Scattered boulder fields dominate this area, both routes have areas of pitted seabed likely caused by small rocks (Figure 16). After both routes rejoin a small section of potential hardground is visible overlapping with a boulder field in block A11. The following 30km over block A11 to A14 contains areas of Sand Ripples, which appear again alongside Mega ripples from block A16 for a further 40km until the end of the route (Figure 16). Scour is found from block A11 onwards in discrete areas often around sediment boundaries likely caused by the interactions of different grain sizes. Along block A18 of boulder fields are also identified along with pitted seabed in the adjacent blocks, likely caused by scour around small rocks in the area.

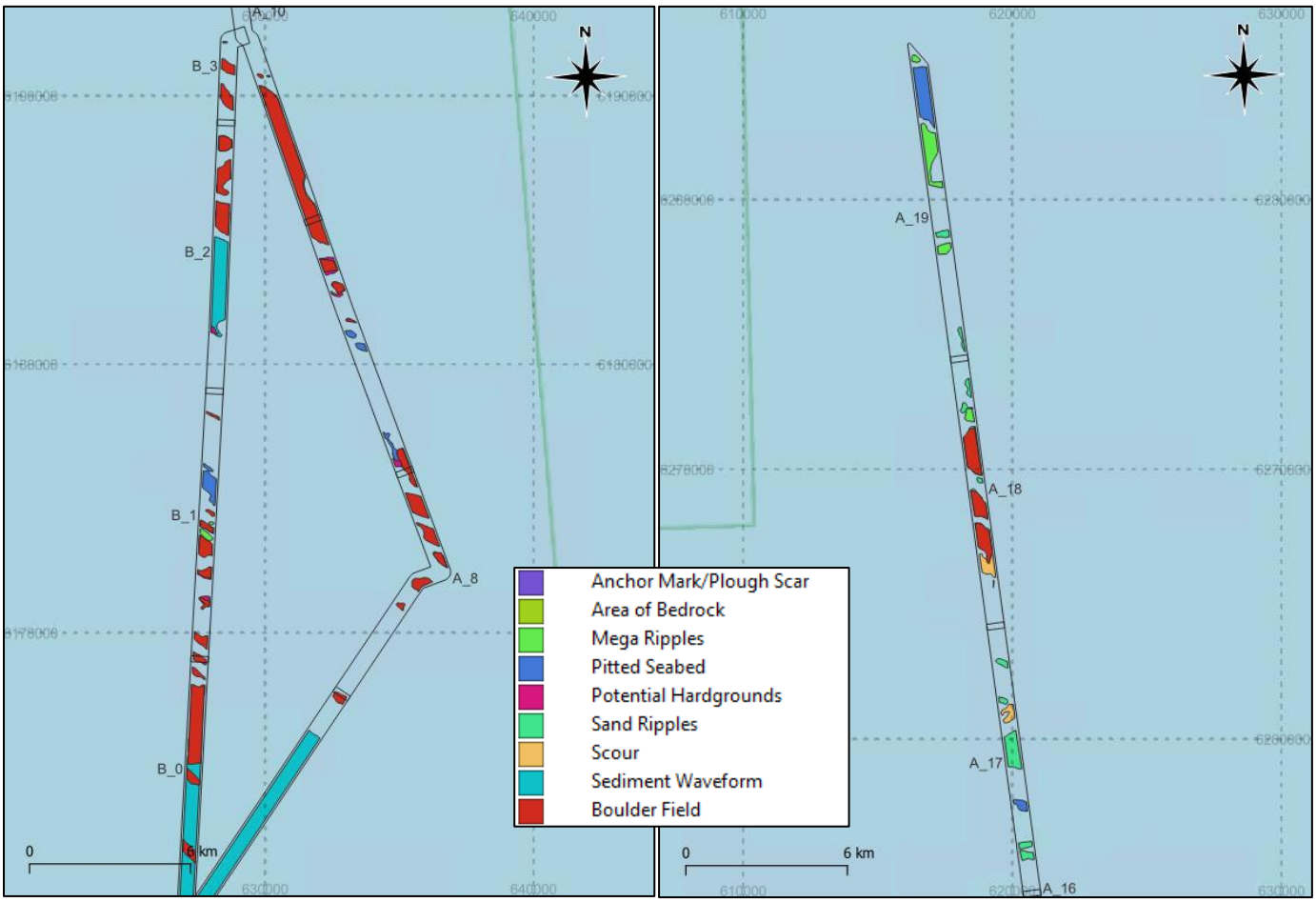


Figure 16: Seabed features of Route A block s A7 to A10 and B0 to B3 (left), block A17 to A19 (right).

Route C

Route C block C3 contains a small amount of scour due to a wreck located in its southern extent, but it otherwise featureless. Blocks C4 and C5 contain large areas of boulder fields, these align with increased sediment grain sizes in the area. The following 35km from block C6 to C9 are featureless. The flowing 35km from block A9 to A12 contain a higher density of features (Figure 17). This aligns with sediment changes in the area. Block A9, A10, and A12 contain Sediment Waveforms, with all blocks containing Sand Ripples (Figure 17). Areas of scour are seen in all four blocks, mostly aligning with sediment boundaries with larger section occurring in block C11. The scour is likely caused by differing sediment migration between differing grain sizes. A 2.5km long boulder field is present in block A10 with smaller boulder fields in C11 and C12 (Figure 17).

Small sections of Sediment Waveforms are seen in C13 and C14, all less than 500m wide. An area of scour is seen over C14 and C15 in the same area as sediment changes, again likely caused by differing sediment properties. The following 12km over block C16 are featureless until a boulder field with adjacent scour and sand ripples are found covering 3.6km of block C17. The following 56km are featureless from block C17 to C23, only block C19 contains 3.2km of sediment waveforms. The remaining 21km are dominated by waveforms (Figure 17). Sand Ripples and Sediment Waveforms are found in block C23, these surround a 3.5km long Boulder Field. Mega Ripples are then the only feature, covering both blocks C24 and C25 until the end of the route.

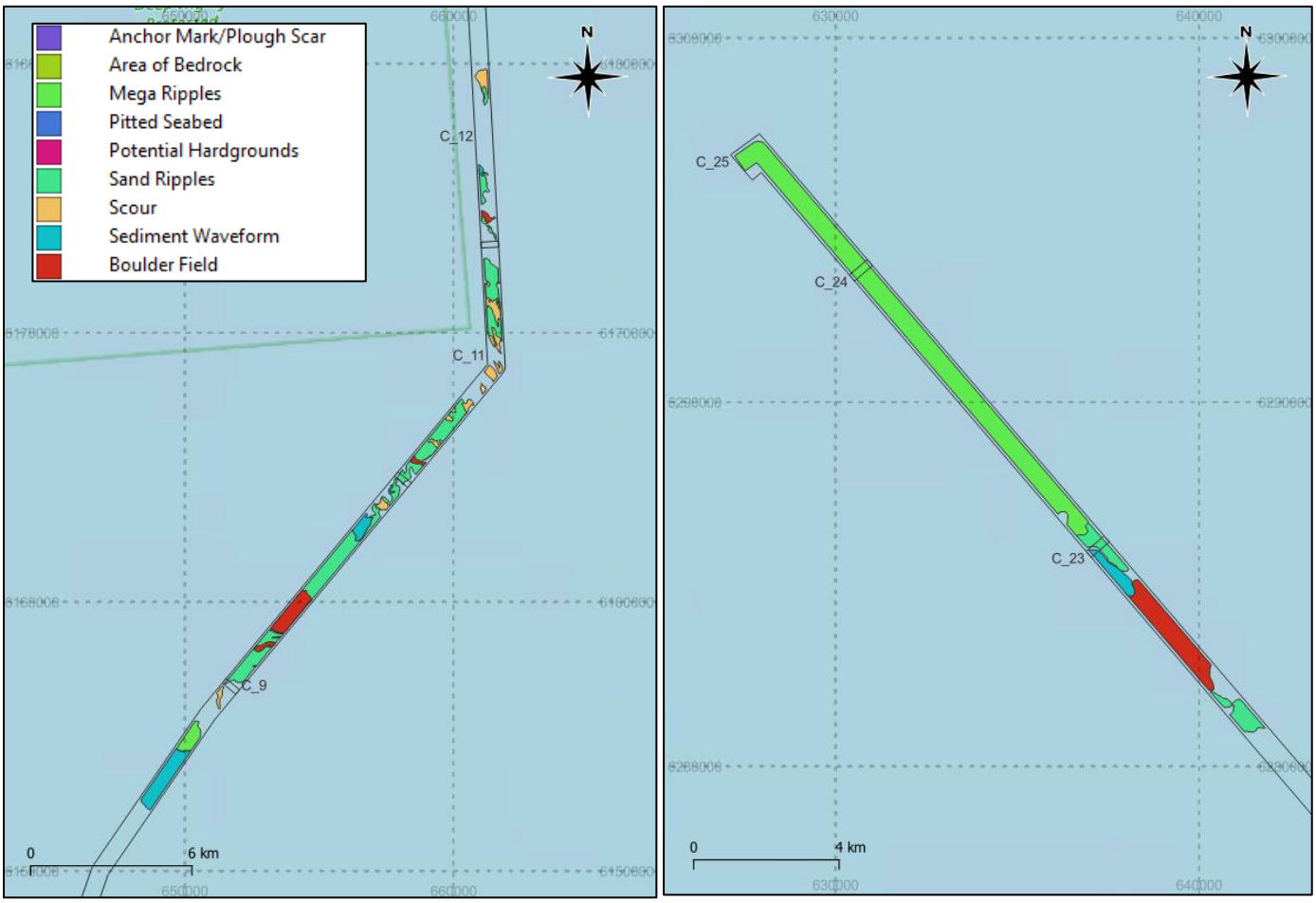


Figure 17: Seabed features of Route C, block C9 to C12 (left), and block C22 to C25 (right).

5.4 Seabed Linear features

Route A & B

Only four different linear features classifications were identified within Route A & B. 138 linear targets were identified within the survey boundaries. Most are the most common feature is trawl scars, occurring between blocks A0 to A7/B0. Only 94 of the most prominent were digitised to highlight the prominent locations they occur. Sand wave crests have been digitised and align with the sediment waveform area features. The features occur in blocks A4 to A7, and B0 to B2, in total 31 crests were digitised. In route A & B 7 Linear debris were identified in the side scan sonar. All targets were identified as debris, in the further offshore blocks with low trawling activity. Blocks A10 to A12, A14, A15, A18, and A19 each had a single linear debris identified within them. The largest of which was in block A12, with a length of 21.5m falling 57m away from the RPL (Figure 18). Existing infrastructure within route A was visible, 4 cables were digitised and identified. Two power cables of the North Sea Link run parallel crossing the centre of block A3 (Figure 19). Aqua Comms communication cable HAV 2.1 has a visible impression on the seabed running through the centre of block A2. Altibox communication NO-UK cable has a minimal impression on the seabed but can be identified in the north end of block A2.

Table 11: Linear Features Summary.

Feature	Number	Comment
Trawl Scar	94	
Sandwave Crest	31	
Linear Debris	7	
Cable	4	2x North Sea Link 1x Aqua Comms 1x Altibox NO-UK

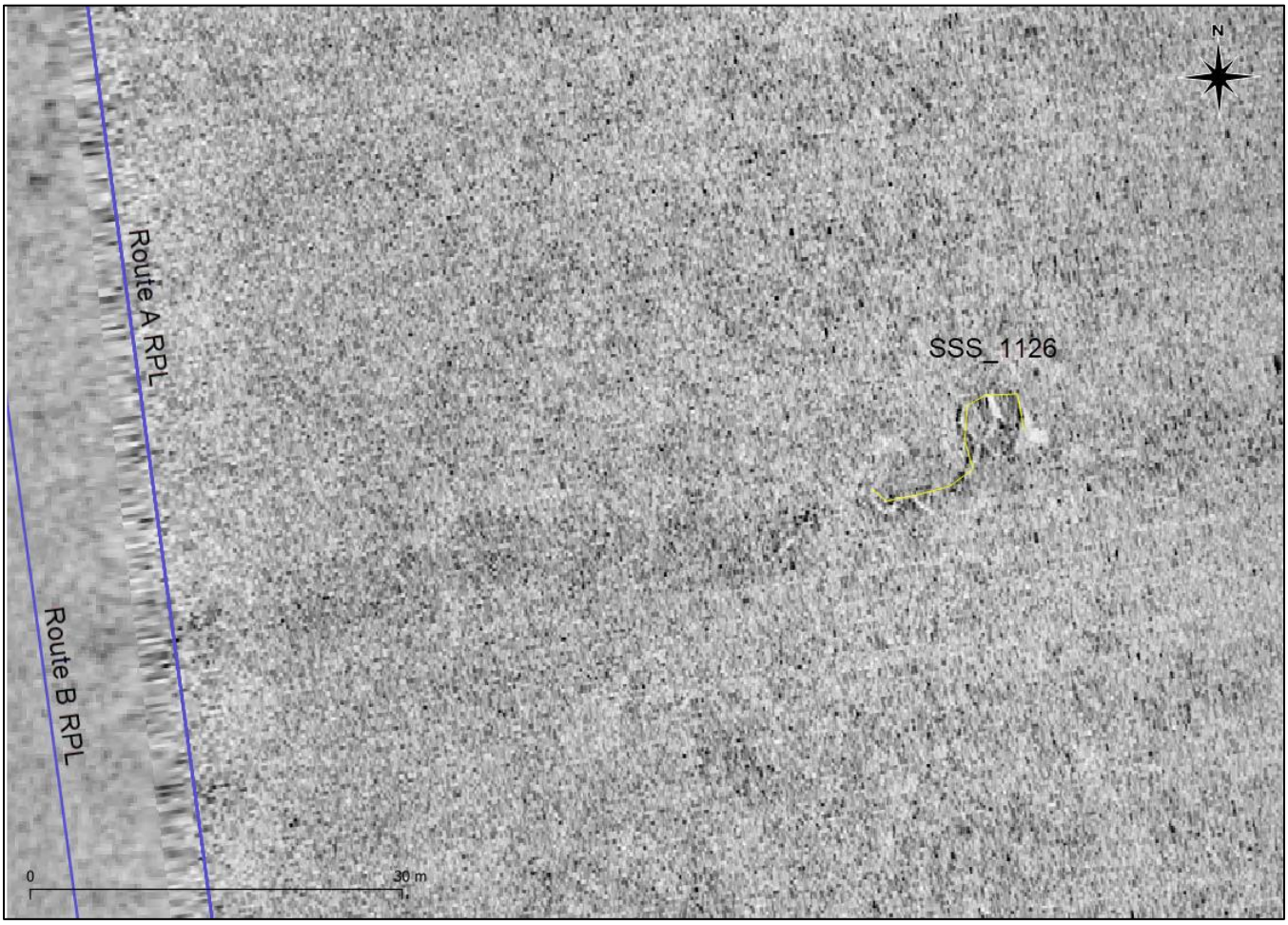


Figure 18: Side scan sonar image of SSS_1126 near the RPL.

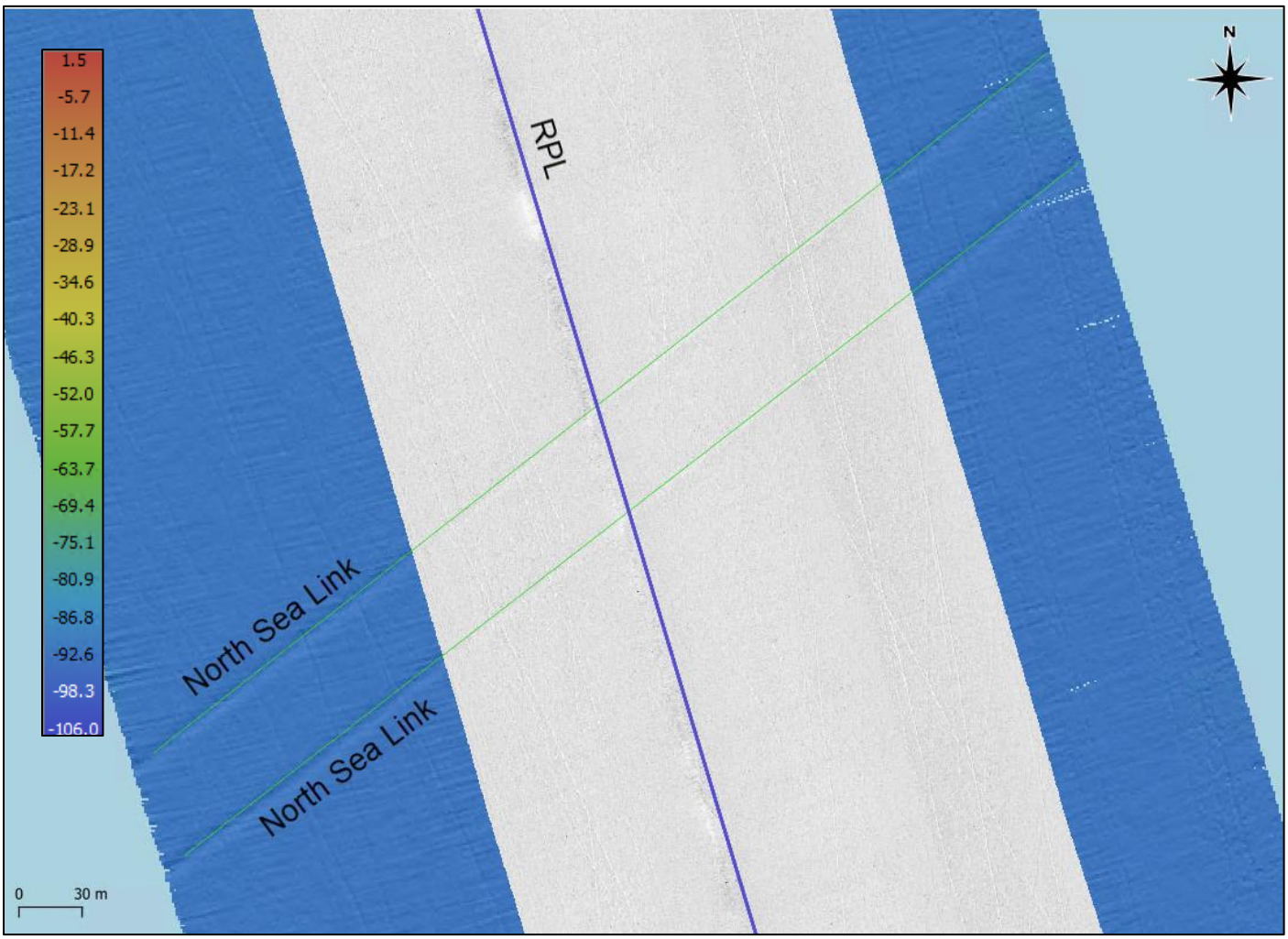


Figure 19: North Sea link cable alongside faint trawl scars overlaid on SSS and MBES

Route C

Only four different linear features classifications were identified within Route C. 150 linear targets were identified within the survey boundaries. Most are the most common feature is trawl scars. These are concentrated in two areas, Landfall Route C most offshore extents, and between block C6 to C8. A few singular trawl scars were identified in adjacent blocks of the concentrated areas, as well a single scar crossing block C19. Only 112 of the most prominent Trawl Scars were digitised to highlight areas of high concentrations. Sandwave crests were identified in areas of sediment waveforms along Route C. In total 20 crests were digitised, in four discrete areas, blocks C9, C10, C19, and C23.

Linear debris were identified by SSS in Route C. In total 14 were found across eight different blocks. The largest was identified in block C9, it is 212.65m long and is 15.8m away from the RPL (Figure 20). Route C is crossed by the same 4 existing cables as route A. Two power cables of the North Sea Link run parallel crossing the centre of block C11 (Figure 21). Aqua Comms communication cable HAV 2.1 has a visible impression on the seabed running through the southern half of block C6. Altibox communication NO-UK cable has a minimal impression on the seabed but can be identified in the north end of block C6.

Table 12: Route C linear feature summary.

Feature	Number	Comment
Trawl Scar	112	
Sandwave Crest	20	
Linear Debris	14	
Cable	4	2x North Sea Link 1x Aqua Comms 1x Altibox NO-UK

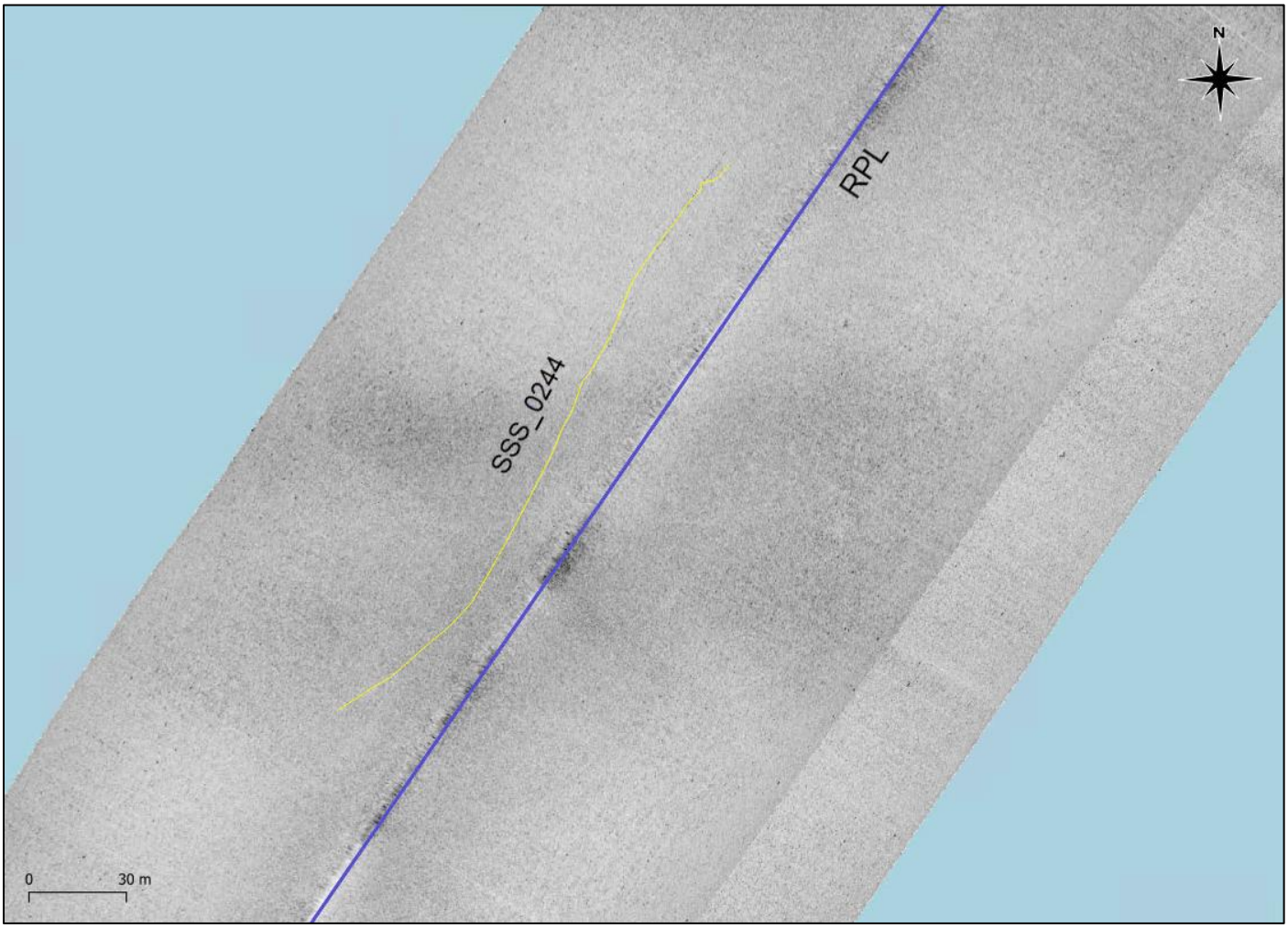


Figure 20:Side scan sonar image of linear contact SSS_0244 near the RPL.

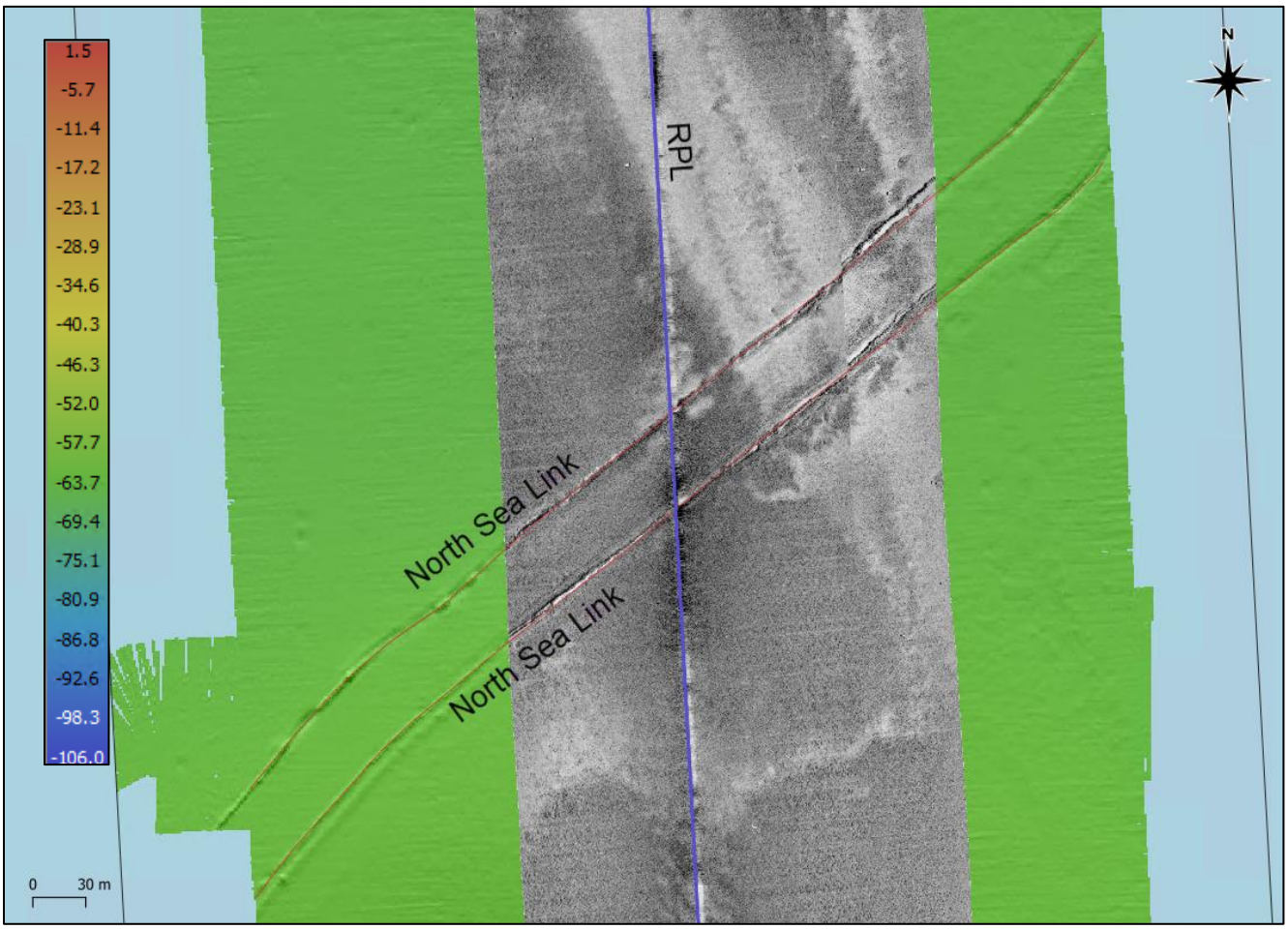


Figure 21: Side scan sonar and bathymetry of Route C block C11 North Sea Link crossing.

5.5 Seabed Surface Point Features

Table 13: Point target Summary table.

Feature	Route A Contacts	Route B Contacts	Route C Contacts
Possible Boulder	1121	1127	1539
Possible Debris	89	89	129
Wreck	9	9	4
Boulder Field Area (km^2)	21.56 km^2	21.13 km^2	18.05 km^2

Route A & B

As much of Route A and B share the same route they contain similar numbers of contacts. Route A contains 1219 distinct contacts, Route B contains 1225 distinct contacts. The Landfall region has a large number of targets as well as large areas of boulder field (Figure 22). Boulder fields were identified based on a density of 10 boulders per $100m^2$, within such areas contacts were not added to the contact list. However, contacts identified inside boulder fields that were deemed of importance such as wrecks, were still identified. Within the landfall area of Route A and B $13.83km^2$ was identified as boulder fields, this closely matches the rocky and rock with veneer areas of the seabed sediment identification. A high volume of targets identified rest at the edges of boulder fields,

where the density no longer meets the boulder field density requirement. Within the Landfall area 505 targets are identified, 492 of which are boulders and 7 are Debris. The remaining 6 are wrecks.

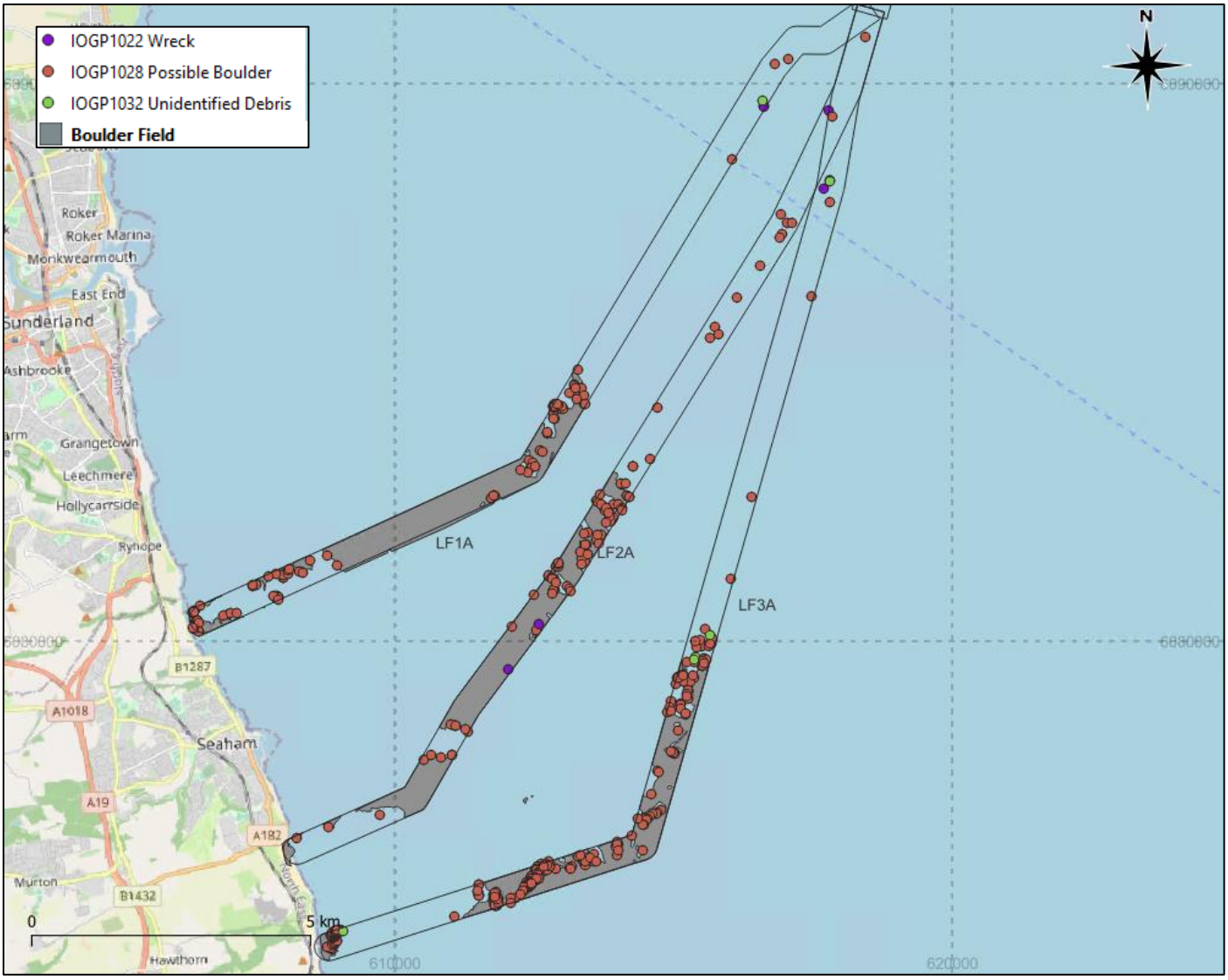


Figure 22: Route A and B inshore point targets and Boulder Fields.

In most offshore end of Landfall 1 A the wreck of STAG 5 rests at 49.45m LAT (UKHO ID 5721, Contact ID MBES_0606, Figure 23). It is 28.94 m long, and 4.45m high and lies 205m away from the RPL. It has another contact identified as part of the wreck but could be debris associated with it (Contact ID MBES_0597, Figure 23). Landfall 2 A contains 3 wrecks, two of which are identified by the UKHO as the same vessel. The first lies 5.3km along route at 22.23m LAT, 169m from the RPL (Contact ID MBES_0492, Figure 23). It is identified as the Carmarthen Coast (UKHO ID 5664), and rests in a state of decay stretching 68.23m long and 4.11m high. The next wreck occurs 1km further along route, it is identified as 'Possibly the Carmarthen Coast' (UKHO ID 5665, Contact ID_0526, Figure 23). It lies in a state of decay at 25.39m LAT. It is 43.67m long and 4.53m high, resting 125m from the RPL. The last wreck within Landfall 2 A occurs within the final 2km of the Route. It lies on the boundary of Landfall 3 A at 42.57m LAT. It is identified as the wreck of the Zeeland (UKHO ID 5720, Contact ID MBES_0672, Figure 23), it is 89.57m long and 8.58m high, resting 128m from the RPL. The final wreck in the Landfall area is in Landfall 3 A 3.4km before the end of the landfall section. It is identified as the Hogarth (UKHO ID 5708, Contact ID MBES_0643, Figure 23), lying 98m from the RPL. It is 81.98m long and

9.81m high at its highest point, lying upright on the seabed.

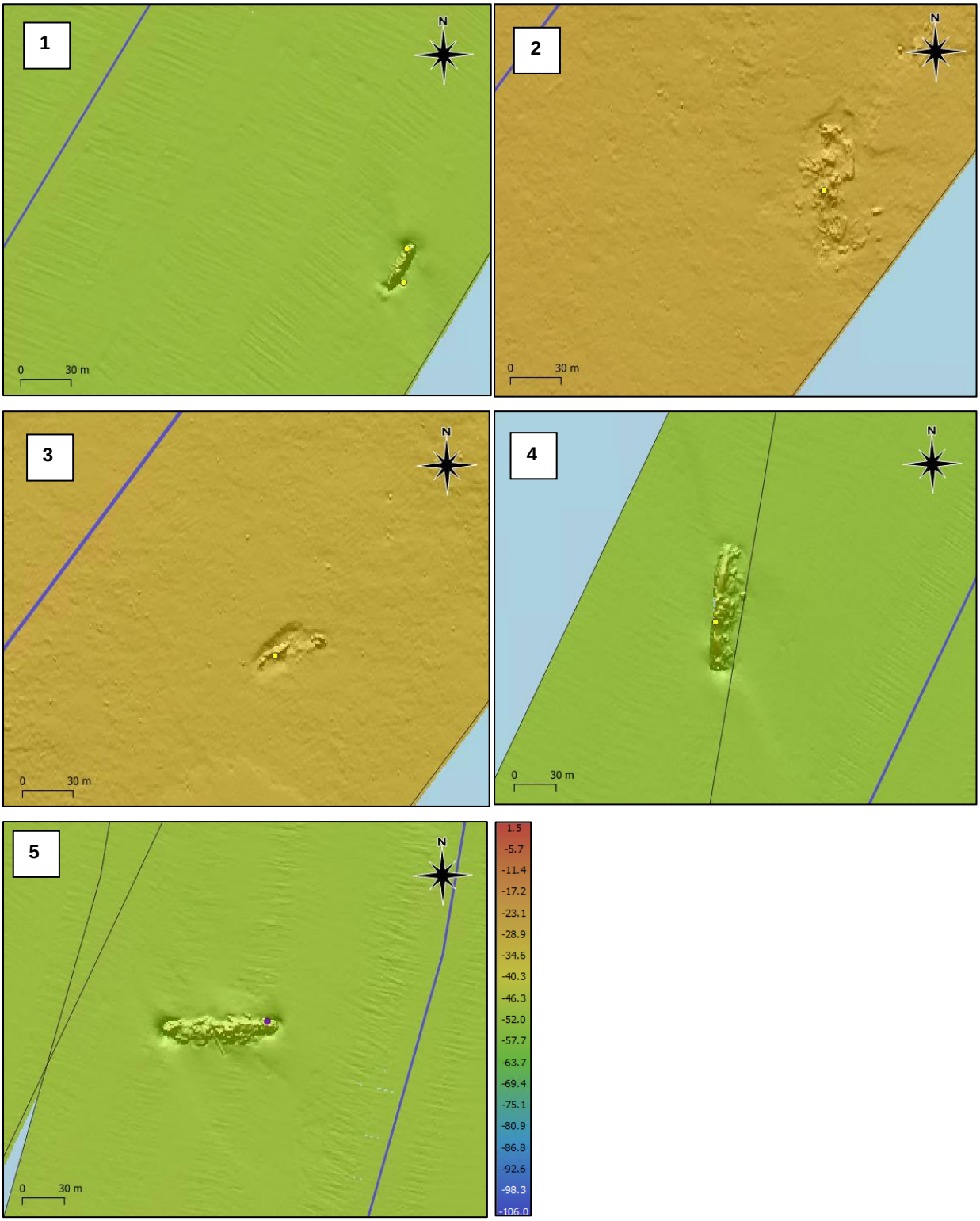


Figure 23: Wrecks found in Route A and B Landfall. 1) STAG 5. 2) Carmarthen Coast. 3) Carmarthen Coast Possibly. 4) Zeeland. 5) Hogarth.

After the Landfall options the route has only 20 contacts and no boulder fields over 70km between block A0 to A6. However within these contacts are the last three identified wrecks along these routes. In the southern half of block A0 lies an unidentified wreck

(UKHO ID 5737, Contact ID 0002, Figure 24). It lies at 53.63m LAT 88.5m from the RPL. It rests on its side, with 32.2m length and 4.6m height visible. Block A0 contains a second wreck at the norther end of the block, the John M Smart (Possibly) lies on its side 94.7m from the RPL (UKHO ID 4281, Contact ID MBES_0001, Figure 24). It rests at 74.79m LAT and has visible dimensions of 42.5m long and 6.5m high. The final wreck of Route A and B lies on the boundary of Blocks A1 and A2. It is identified as the Hans Hoth lying 120.1m from the RPL (UKHO ID 4328, Contact ID 0006, Figure 24). It appears mostly buried at 88.93m LAT, only 21.3m length and 3.8m high is visible.

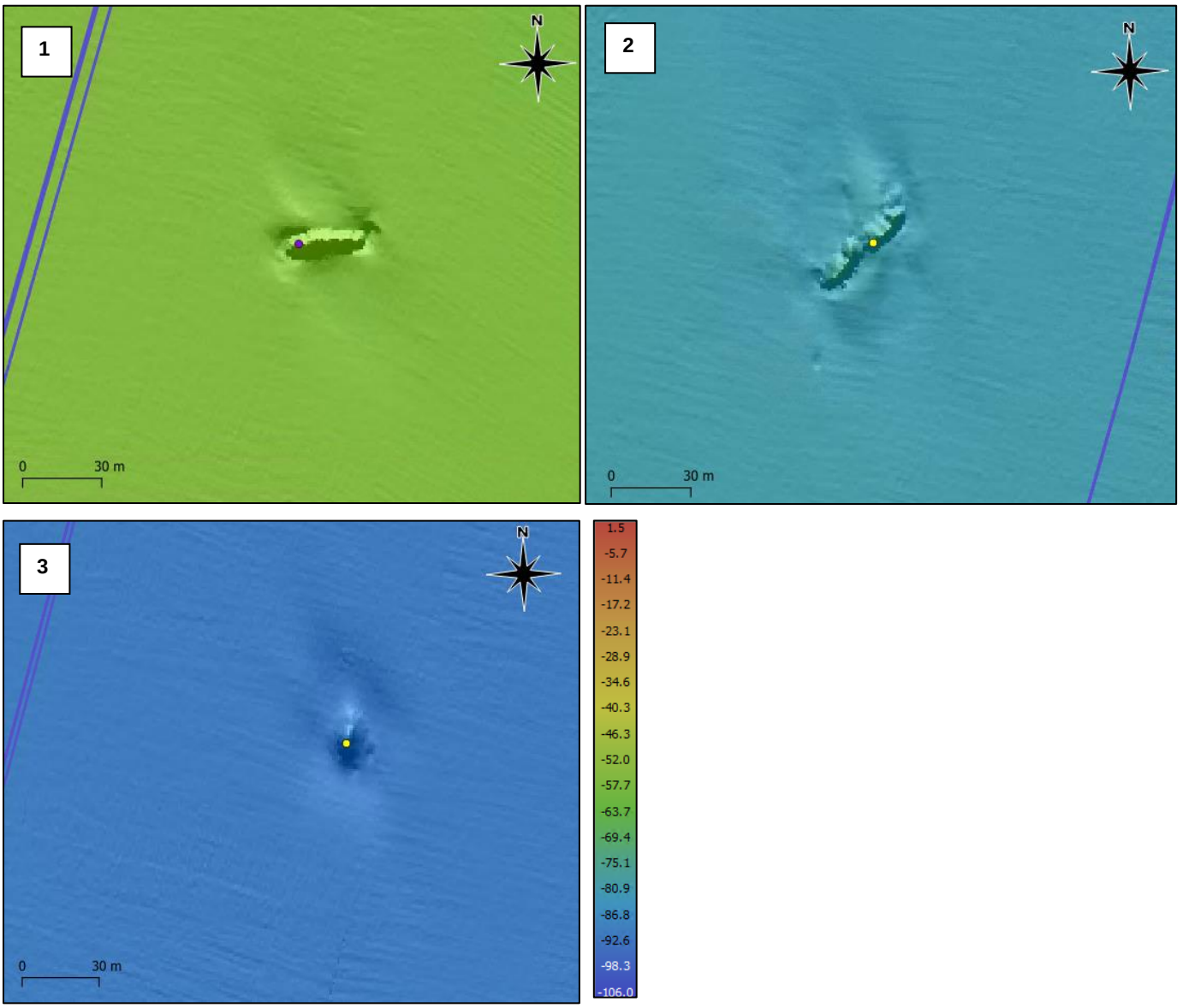


Figure 24: Wrecks found in Route A and B. 1) Unidentified. 2) John M Smart. 3)Hans Hoth.

Following the split in the two routes both show an increase in boulder field and boulder density. Both routes contain only possible boulders or debris (Figure 25). Over 37.5km through block A7 to A10, route A contains 114 individual contacts and 4.83km^2 of boulder field area. Route B from block B0 to B3 contains 123 contacts and 4.4km^2 of boulder field. Prevalence of boulder fields reduces after this point, only blocks A11, A12, A16 and A18 contain boulder fields once the routes combine. This only results in 2.9km^2 of the remaining 94km covered in boulder fields. Individual contacts are consistently found through all the remaining blocks of Route A and B. Overall 580 contacts have been identified, comprised of 513 boulders and 67 debris. Higher densities of contacts were found in blocks A11 and A12 (Figure 25), in these areas the contacts boarded on boulder field intensity classification. Clusters

of concentrated contacts were also found in blocks A13 to A16 but was inconsistent though the block.

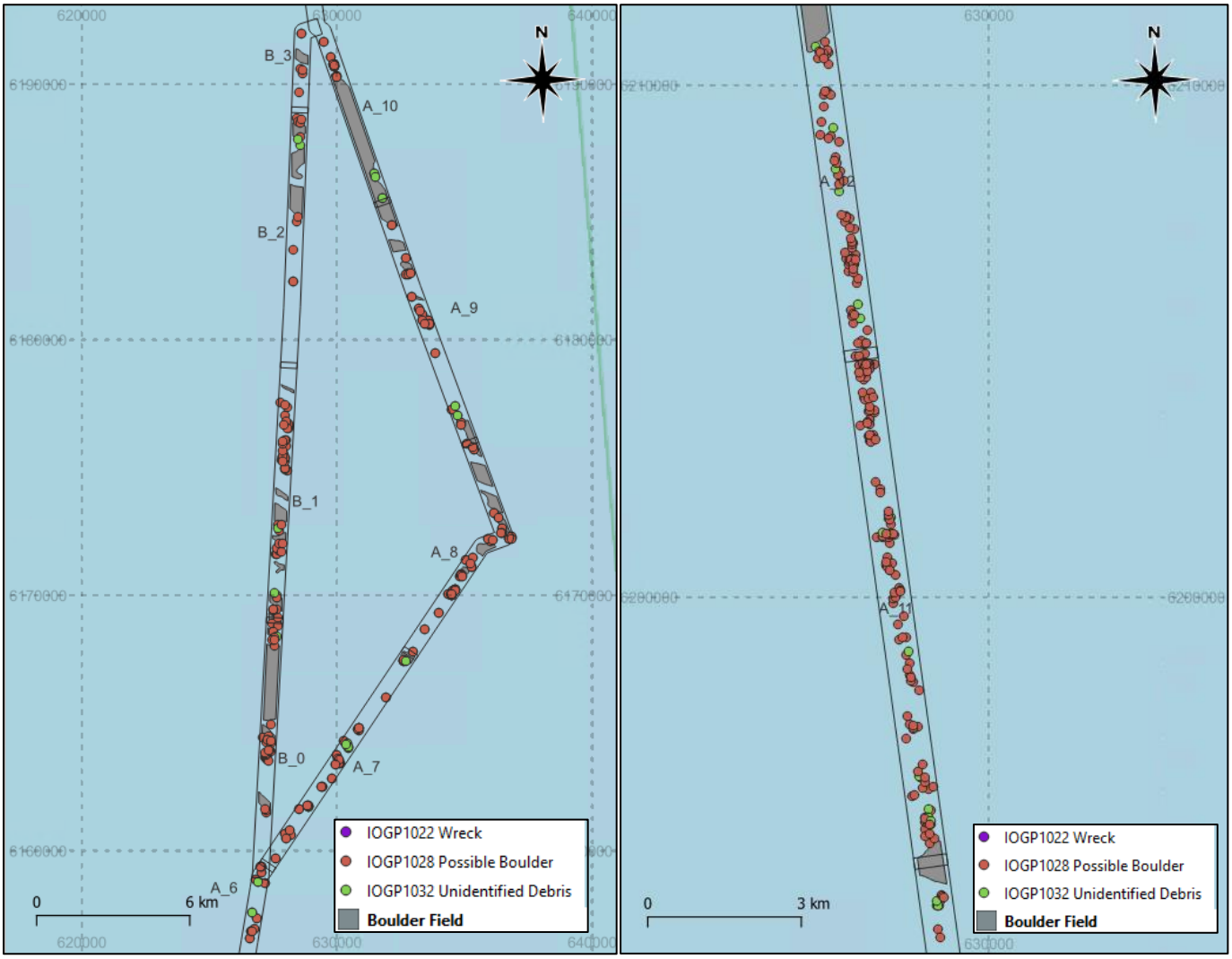


Figure 25: Seabed point features and boulder fields in Route A and B. Route A and B divergence (left), Block A11 and A12 (right)

Route C

Route C contains 1669 distinct contacts and large areas of boulder fields. Boulder fields were identified based on a density of 10 boulders per 100m^2, within such areas contacts were not added to the contact list. However, contact identified inside Boulder fields that were deemed of importance such as wrecks, were still identified. The boulder fields in the Landfall areas cover 8.52km^2, this area overlaps the rocky and rock with veneer of sediment of the inshore section of the Landfall routes (Figure 26). This is less than route A and B due to the Landfall 3 C route taking a different route through the rocky inshore areas. In the Landfall areas 640 contacts were identified, 630 of which were possible boulders, 8 were possible debris, and 2 confirmed wrecks. Most contacts are adjacent boulder field areas where their density no longer meets the boulder field density requirements. The density of boulders rapidly decreases after 9-11km along all three routes.

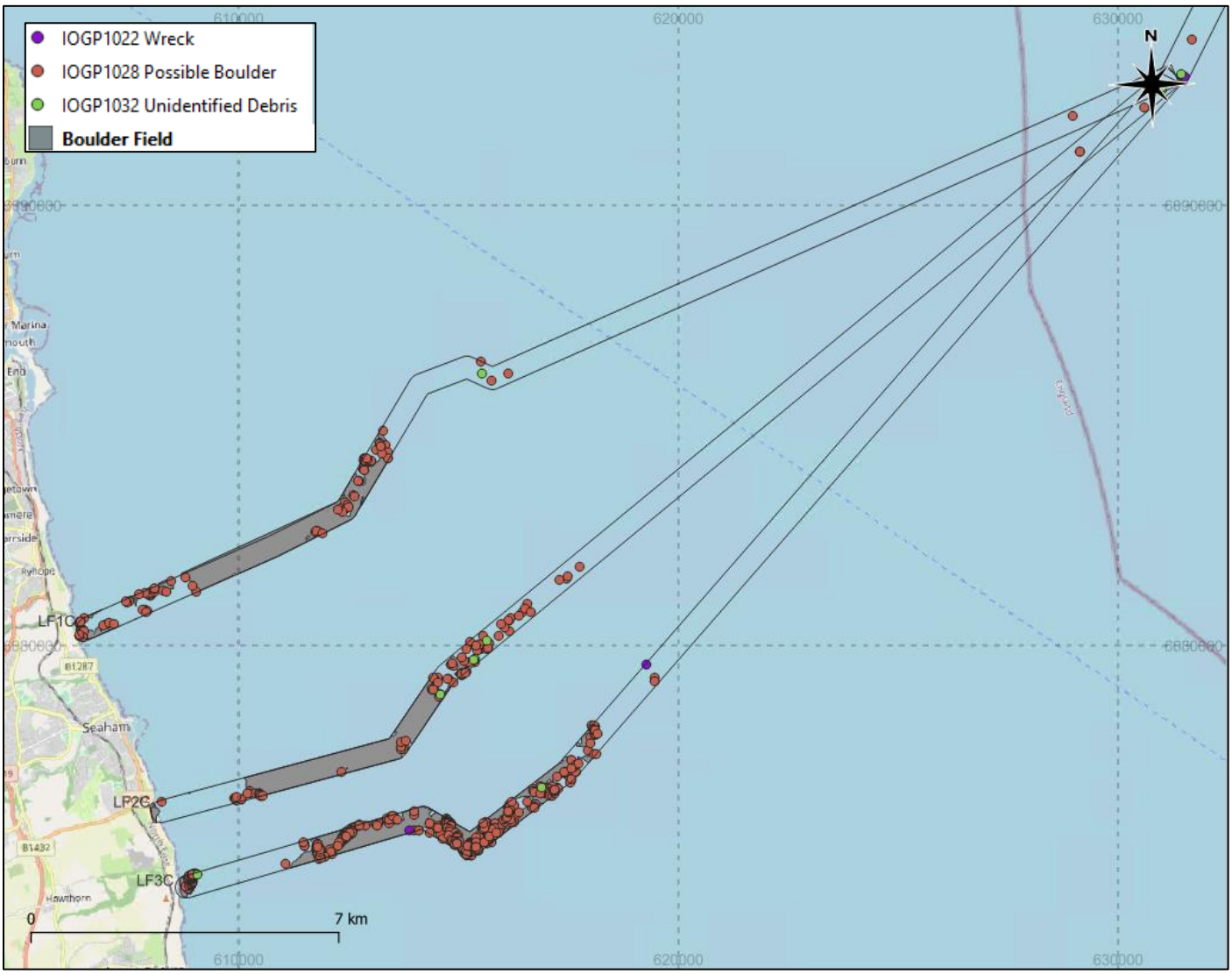


Figure 26: Landfall seabed contacts and boulder fields for Route C.

Two wrecks of interest have been identified within the Landfall 3 C route. The first is 5.3km from the shoreline and lies 193m south of the RPL in a boulder field. We have identified the wreck as possibly the Vianna (UKHO ID 5663, Contact ID MBES_0418, Figure 27). The wreck lies 58m from the UKHO marker for the Vianna and matches the dimensions. It lies upright at 22.03m LAT in a state of decay, its visible length is 62.72m and height is 5.18m. The final wreck in Landfall 3 C is 7.2km further along the RPL. The unnamed wreck lies 224m from the RPL (UKHO ID 5779, Contact ID MBES_0734, Figure 27). It lies partially buried at 40.1m LAT, with dimensions of 22.14m long and 3.7m high.

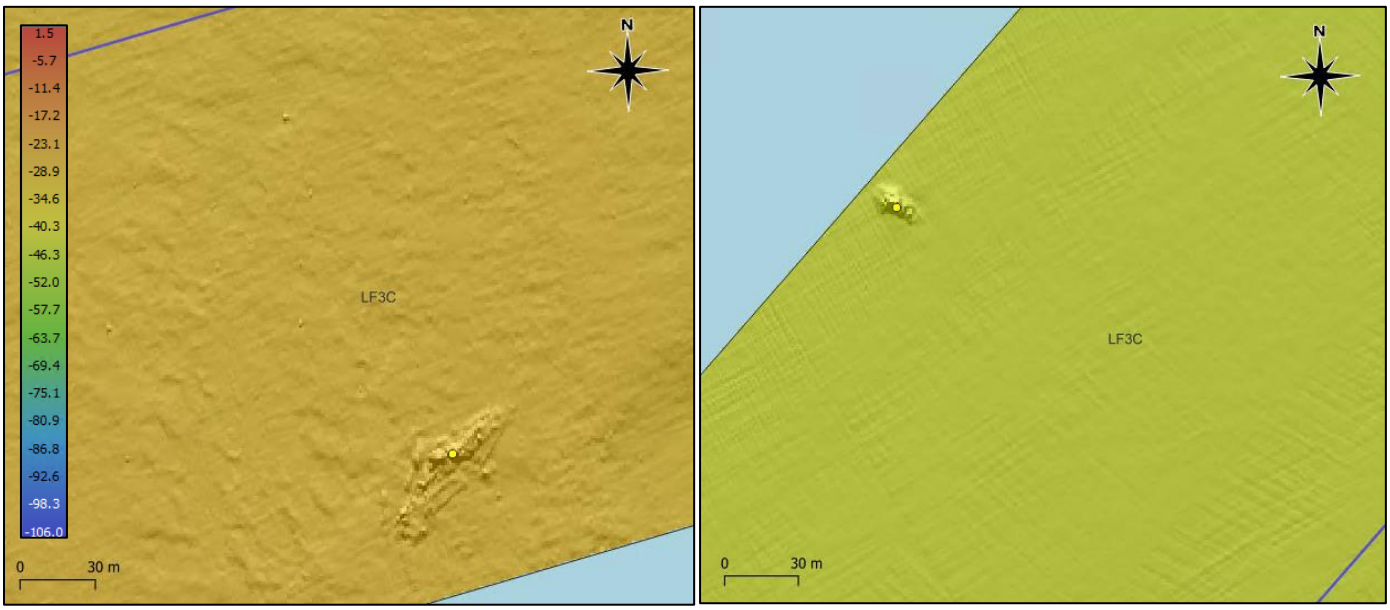


Figure 27: Wrecks located in Landfall 3 C. Vianna (Left), Unnamed (Right)

As the Landfall options converge there are a small number of contacts and a single wreck. It is unnamed and rests 208m from the RPL (UKHO ID 5779, Contact ID, MBES_0734, Figure 28). It lies partially buried at a depth of 40.1m LAT, the visible remains measure 22.14m in length and 3.7m in height. The northern half of Block C3 sees an increase in contact density, this increases until density reaches boulder field specification which covers 7.16km^2 of block C4 and C5 before reducing in density into block C6 (Figure 29). In this block is the final wreck of route C. The wreck of the Rachael Jayne IV is found 111m from the RPL (UKHO ID 81138, Contact ID MBES_0148, Figure 28). It lies possibly partially buried at 73.46m LAT, with visible dimensions of 14.19m in length and 5.8m in height.

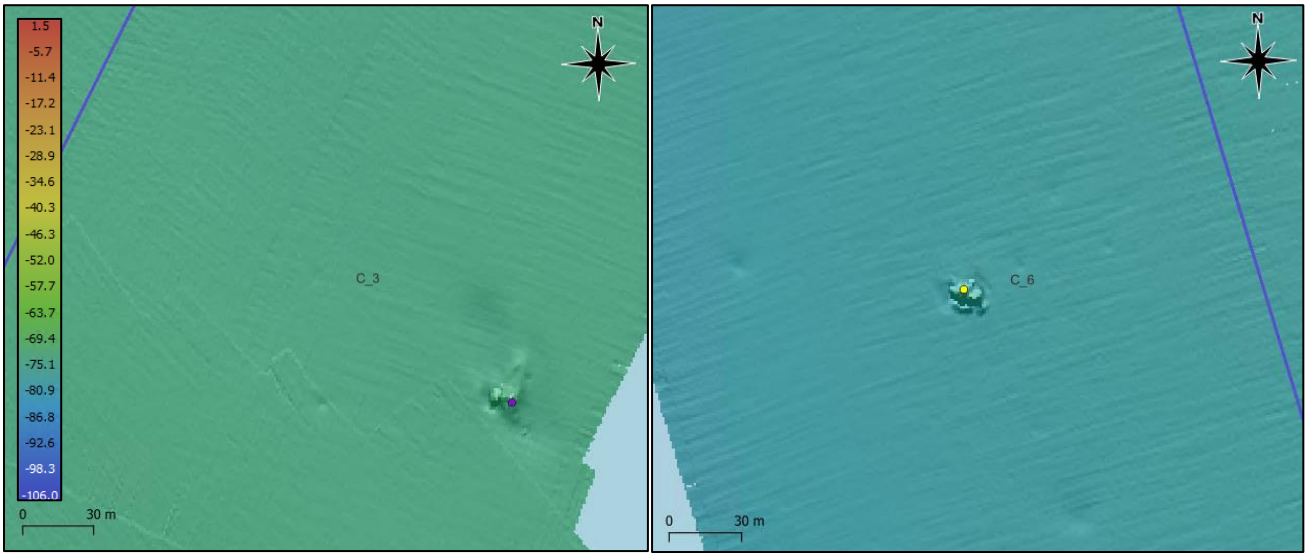


Figure 28: Wrecks located in Route C block C3 Unnamed (left), and block C6 Rachael Jayne IV (right).

Contacts continue at lower densities until block C10. In C10 is a small boulder Field covering 1.03km^2 (Figure 29). Following block C10 is a region of dense contacts bordering on boulder field classification, with small sections reaching that classification. This small area contains 432 contacts, 409 possible boulders and 18 possible debris, and 0.18km^2 of boulder field. This continues for 20km through blocks C11 and C12, dissipating by block C13 (Figure 29). The frequency of contacts increases in block C14 to C16, appearing in a collection of distinct clustered areas, comprising of 171 contacts and a boulder field of 0.04km^2. A boulder field of 1.12km^2 is found in the following block C17 before the frequency of contacts is reduced through blocks C18 to C20. No contacts were identified in block C21 and C22. A concentration of contacts were found in block C23 and part of C24. It contained 110 contacts, of which 104 were possible boulders and 6 were possible debris. This concentration ends with contacts for a further 8km until Block C25 where a small number of contacts are found near the route's termination.

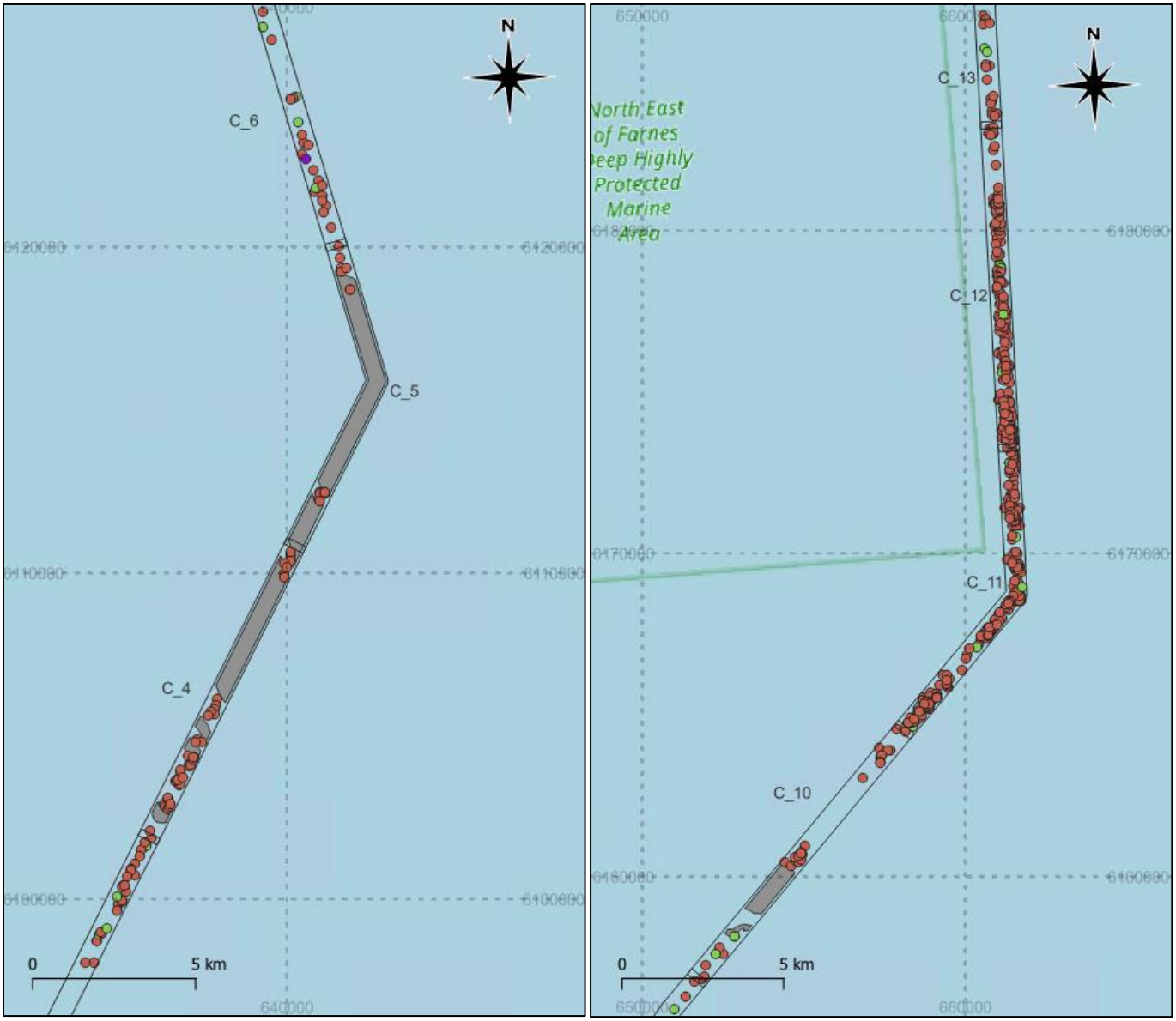


Figure 29: Route C contacts and boulder fields in blocks C4 to C6 (Left), and C10 to C13 (right).

5.6 Magnetometer targets

A total of 391 magnetic targets were seen in the data above 5nT peak to peak amplitude. Of the magnetic targets identified, 256 targets were between 5nT to 20nT peak to peak and 12 targets were >100nT peak to peak. Most of the magnetic targets are buried targets, only four targets are associated with surface targets.

Eleven of the targets identified are associated with cables. Two of the targets associated with cables are large complex targets with peak-to-peak amplitudes of 1,650nT and 60,942nT where the active North Sea Link cables are exposed (Figure 30).

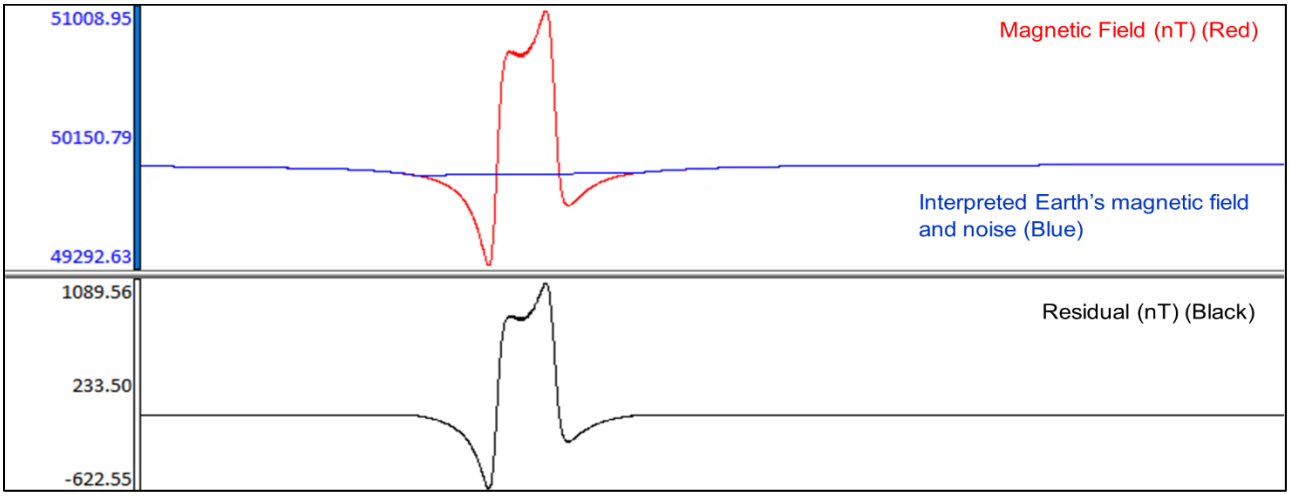


Figure 30 Example of magnetometer target MC_304 with a peak to peak amplitude of 1,650nT associated with the North Sea Link cables.

5.7 UAV – Topography

Due to the limited vertical datum coverage of LAT, the data has been delivered in both LAT to its furthest extents, and the whole area at Ellipsoid. This report will discuss the shoreline landings separately using LAT height before discussing the further inshore sections at Ellipsoid.

Shoreline LAT – Landfall 1

Landfall 1 continued the gradual slope of Gravelly Sand sediment up to the base of the shoreline cliff feature at ~5m LAT (Figure 31). The sediment at the base is comprised of rocks and higher grain size sediments. The cliff rises ~25m to ~30m LAT over 20m distance from the beach to fields and farmland. The land consistently rises moving inshore, crossing the B1287 and the Durham Coast Line railway (Figure 32). It peaks in this data set at 68.38m LAT in the western reaches of the data.

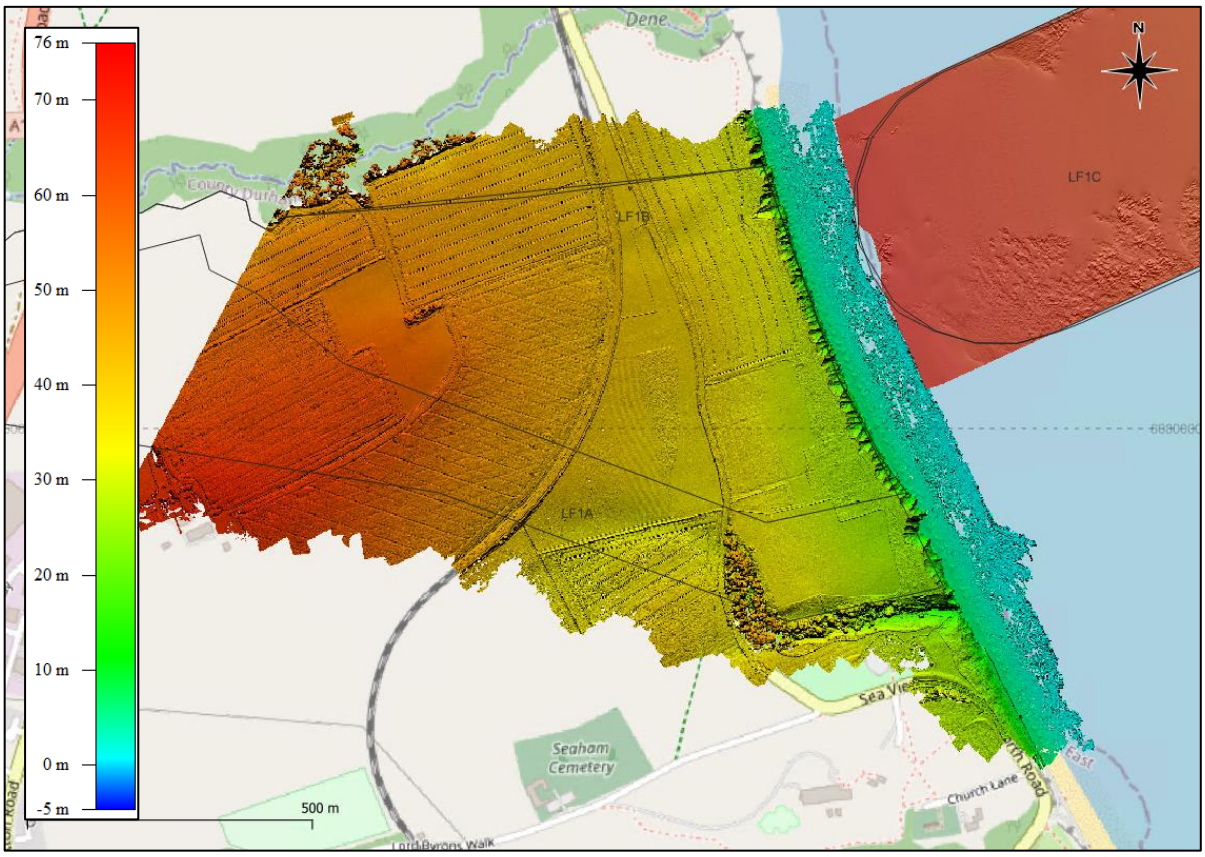


Figure 31: Height data at LAT of Landfall 1.



Figure 32: Orthophoto data of Landfall 1.

Shoreline LAT- Landfall 2

Landfall 2 continues the slope of the bathymetry until a small rise in the shoreline at ~6m LAT, caused by grains size increases and tidla forces (Figure 33). This 1-1.5m step to 8 to 9m sees a deacrese in height further inshore approaching the cliffside. At the base of the cliff sits pools of water, these areas of standing water sit ~1m deeper than the surrounding sedment. Over the course of 10-20m inland the land rises from 7m LAT to 35m to 40m LAT up the cliffs. In the centre of this survey area is a public footpath that accesses the beach down a reduced incline section of the cliffside. The land continues inshore, crossing the Durham Coastal Footpath and the Durham Coastal Line Railway (Figure 34). The land steadily rises to 102.63m LAT at its most western reaches of this data set.

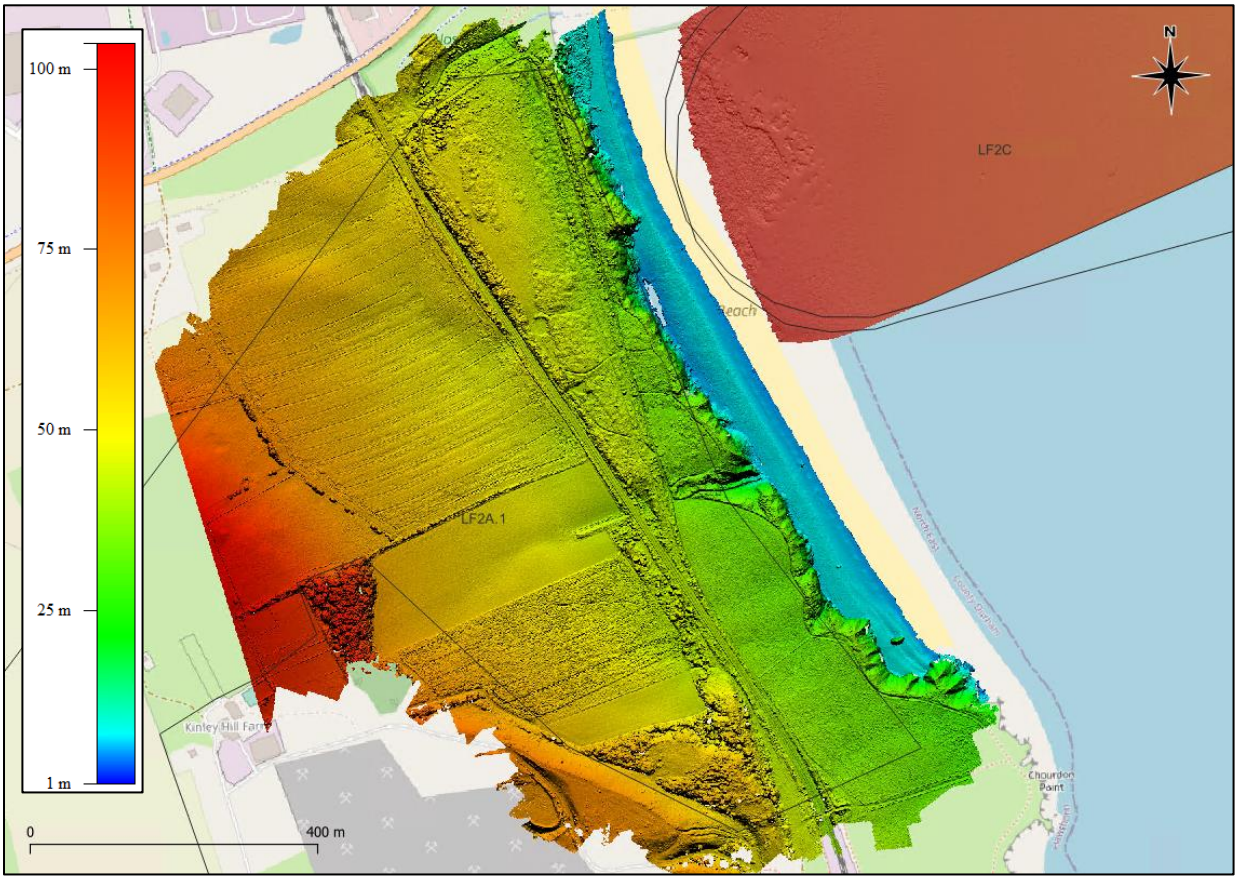


Figure 33: Height data at LAT of Landfall 2.



Figure 34: Orthophoto of Landfall 2.

Ellipsoid Data – Full Route

Continuing from the LAT interpretation both routes show no sudden changes in height. In both routes they continue to rise inland reaching around 160m Ellipsoid between 3.5km into their inland route. The increase in height slows and begins to undulate in both routes, eventually reaching both routes peak height of 188m Ellipsoid in block E3 where the routes combine (Figure 35). Farmland is the dominant feature of the route, multiple fields for crop growing are visible (Figure 36). Multiple roads cross Landfall 1, the A1018 and adjacent B1285 road crosses Landfall 1 around 1.25km inland. A further 1.2km inland the A19 crosses before the B1404 0.6km further along the route. The final road crossing is the B1285, 7km along the route (Figure 36). Landfall 2 cross less infrastructure. The B1423 followed closely by the adjacent A19 crosses Landfall 2, 2.5km from the shoreline. The route then passes around the Jade Business Park and its access roads before ending (Figure 36).

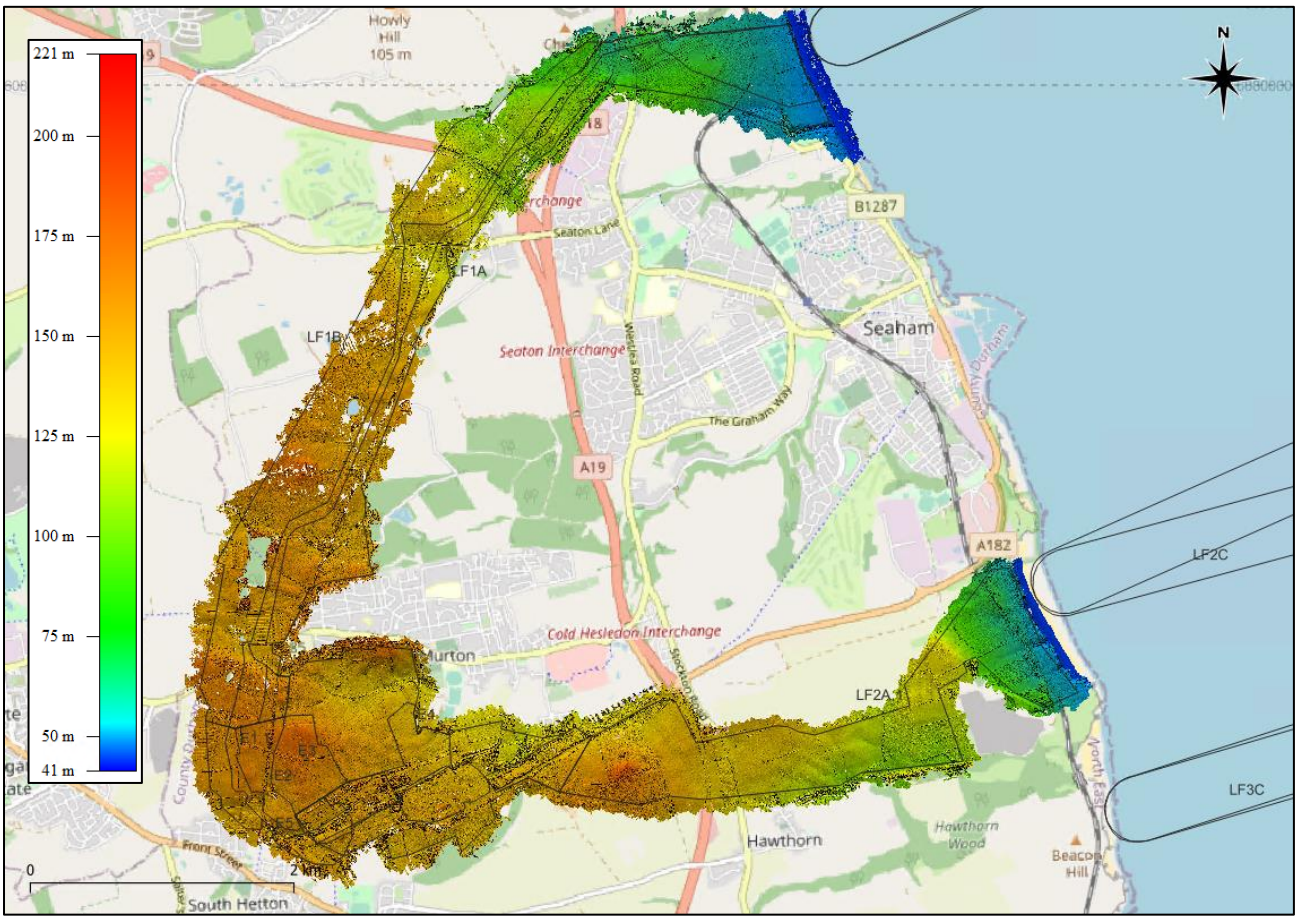


Figure 35: Full UAV route height data at Ellipsoid.



Figure 36: Full UAV orthophoto coverage.

6 Data Quality

6.1 MBES Survey Accuracy and Data Quality

The MBES achieved full coverage of the survey planned survey lines, achieving ~500m corridor width. High levels of depth accuracy were achieved between all eight vessels, and was corroborated with previous data in the area from earlier 2023 survey campaigns. The high level of quality allowed identification of seabed features as well as small to medium targets on the seabed even on 100m of water.

The survey achieved 100.0% hit count coverage. Most of the survey surpassed the target specification of 5 hits per m^2 (Figure 10). There were areas of reduced density observed in deeper waters, this was as a limitation of the line plan and the depths reached. These areas of reduced density were communicated and were deemed to have no tangible impact upon object detection.

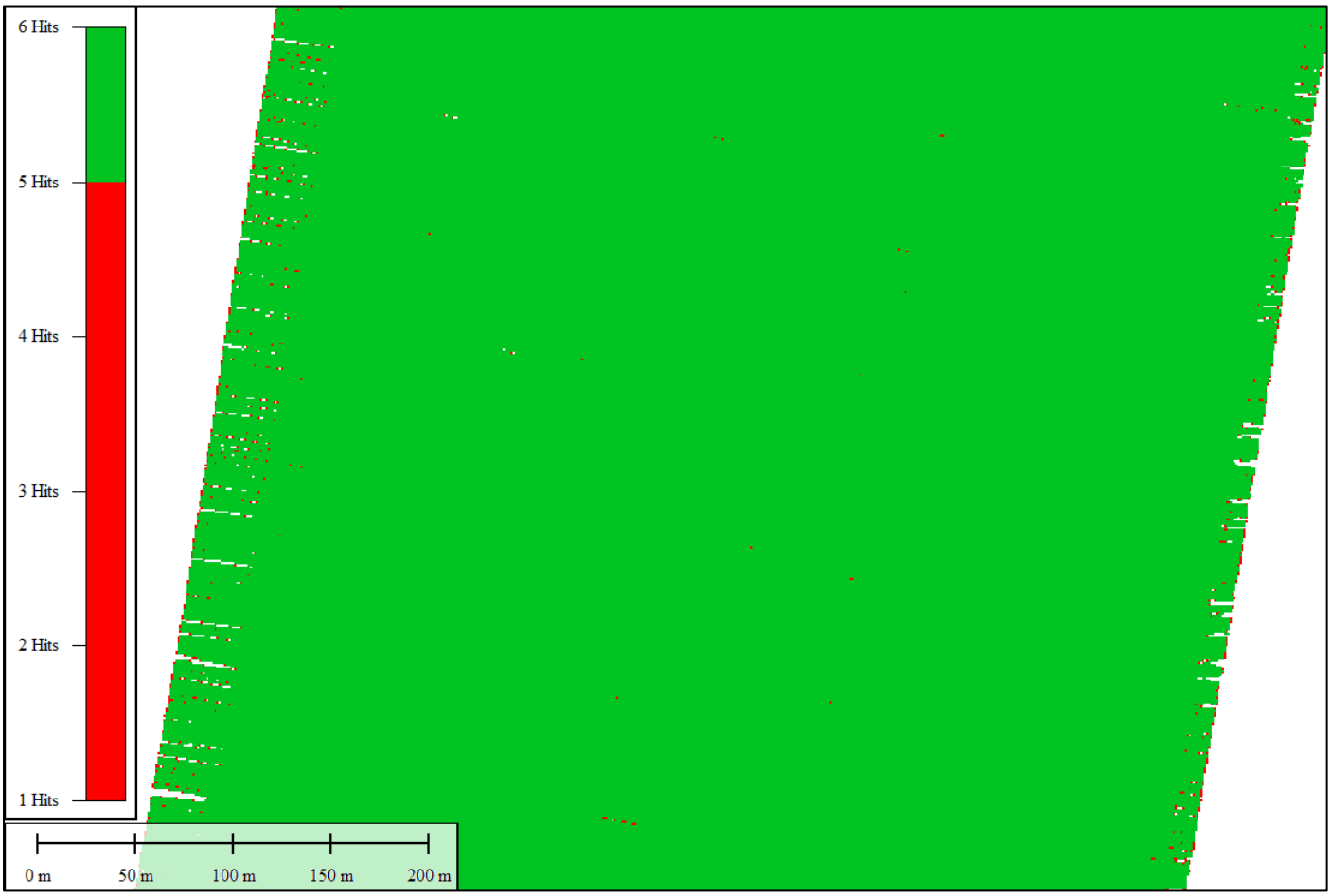


Figure 37: Hit count in block A6 at the deepest point of the survey.

6.2 Backscatter Data quality

The backscatter was of good quality allowing distinction of seabed surface sediment changes as well as confirming targets identified in the bathy data. A visual artifact was present in the nadir of the survey lines, causing the nadir appearing more dynamic than the surrounding seabed. This did not affect our use of the data as the features could still be clearly seen in these areas.

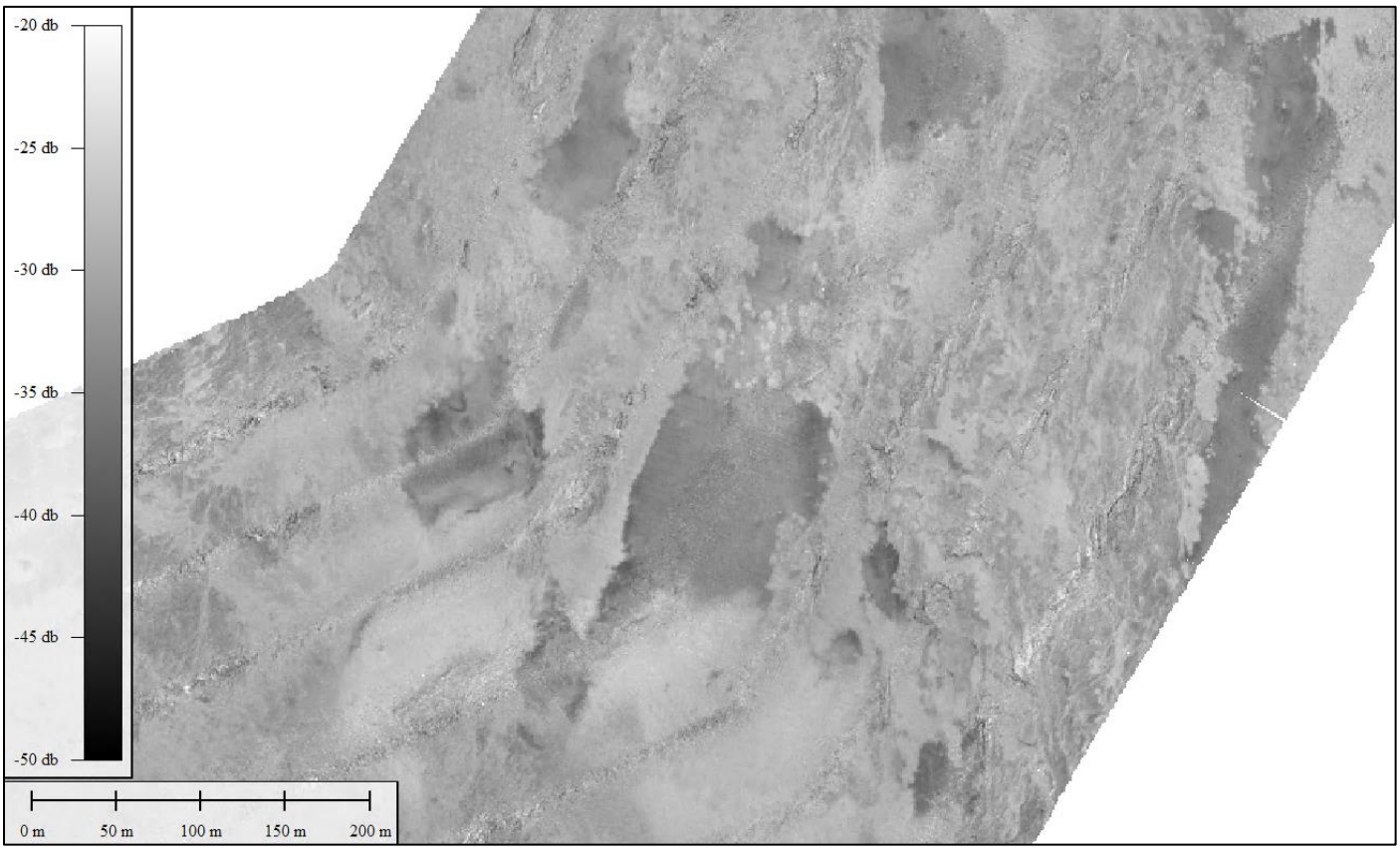


Figure 38: Example of backscatter data quality from Route A LF1

6.3 SSS Data Quality

SSS data was collected by Gardline and used by XOCEAN for seabed feature interpretation. The data was of good quality, allowing accurate interpretation of the seabed. Some regions did suffer from weather affected motion resulting in striping in the outer ranges of the data, but this did not detract from the overall quality of the mosaic or the interpretability of the data. Targets within specification of >0.5m in any dimension were of good resolution and easily resolvable (Figure 20).

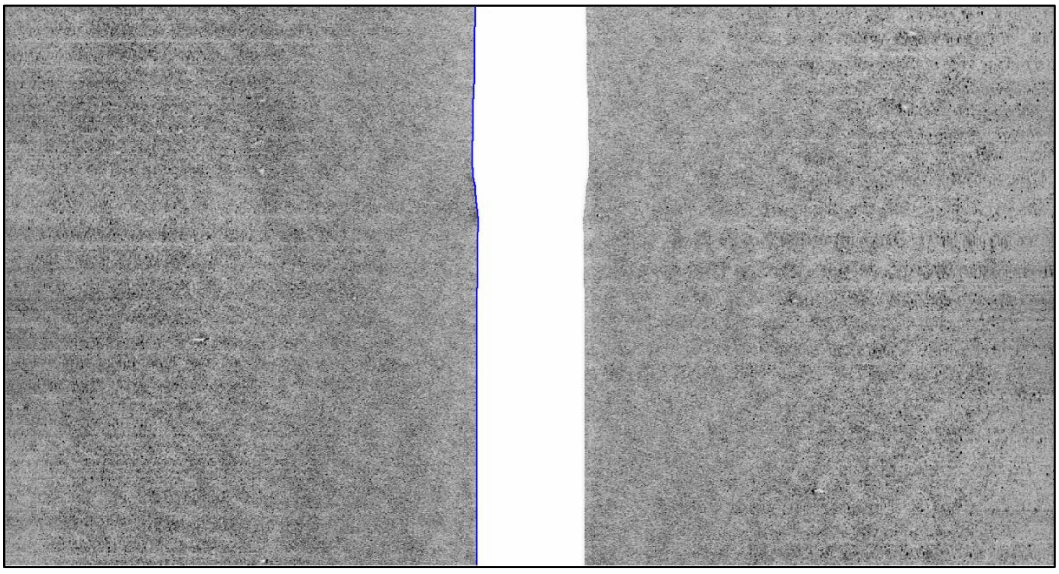


Figure 20: Example of a line in waterfall View in SonarWiz showing target interpretability and data quality.

The SSS was planned to follow the RPL for all three routes to Landfall 1 and 2, each receiving a centreline over the RPL and an

offset wingline to cover the nadir. Inshore coverage reached the 20m depth contour before survey stopped. A single line connecting the tow route was also ran (Figure 39).

Full coverage was not achieved, two gaps in data coverage occur along route A. A 4km section of the route covering block A16 to A17 had no centre or wing line. A second gap occurs between block A17 to A18 for 2.8km also had no centre or wing line. Cross lines were run in these areas, breaking up the extent of the gap providing some use in seabed characteristics in those areas (Figure 40).



Figure 39: Extent of the SSS inshore coverage.

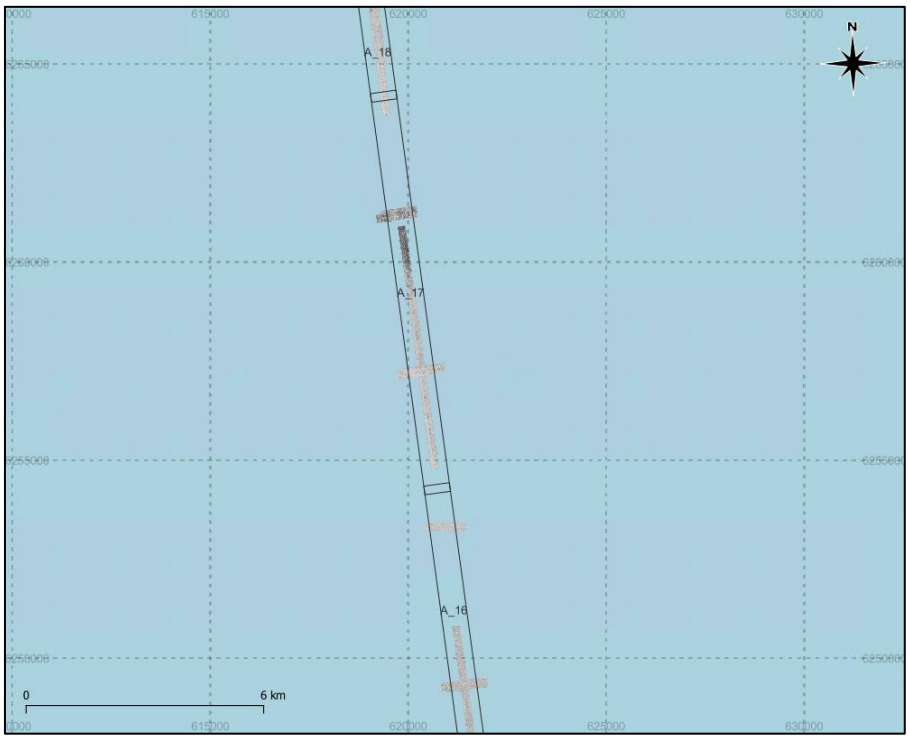


Figure 40:SSS coverage gaps along Route A.

6.4 SBP Data Quality

The SBP was of good quality, consistently achieving deeper than 5m penetration. SBP was collected on all lines ran but only required on the centre line and every other wing line. If a line collected was bellow standards, an adjacent line from the winglines that were not required served as replacement for coverage as agreed in a weekly processing meeting with bp. Data acquired by USV X23 was subject to electrical interference which was reduced in processing resulting in no impact to the data quality. The There was some weather affected motion in the data, which was corrected in processing, resulting in high image quality displayed (Figure 22).

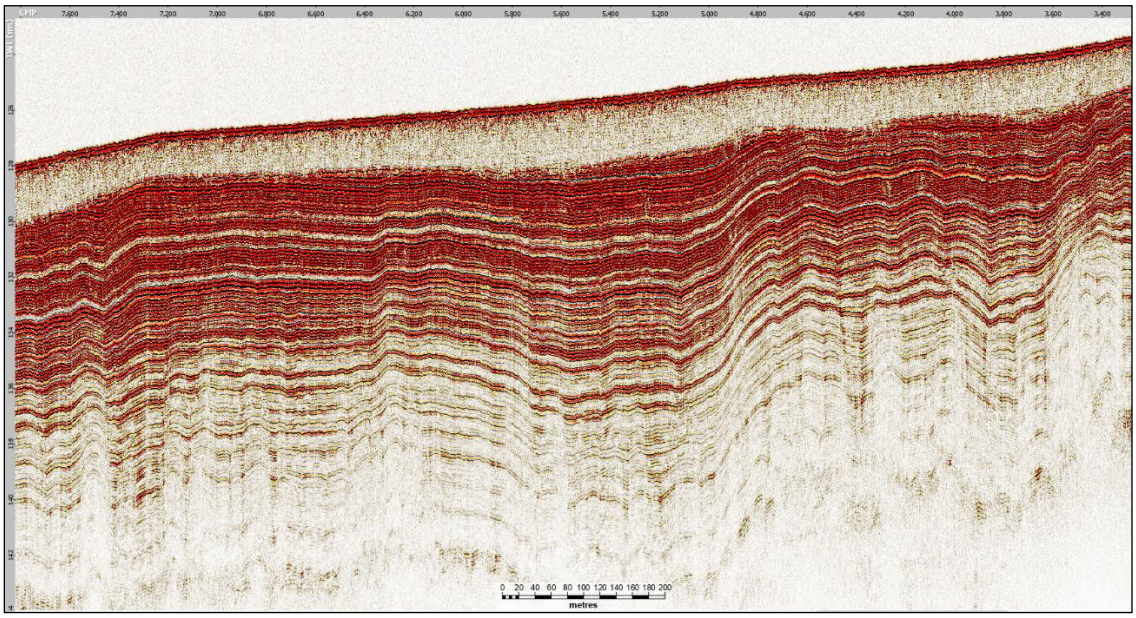


Figure 22: Example of SBP data quality from A2 centre line.

6.5 Magnetometer Data Quality

The magnetometer data was collected by Gardline and used by XOCEAN for interpretation. The magnetometer data achieved the target specification. Some regions did suffer from interference in the magnetic field however, the quality allowed identification of any targets above 5nT peak to peak amplitude within the survey area (Figure 23).

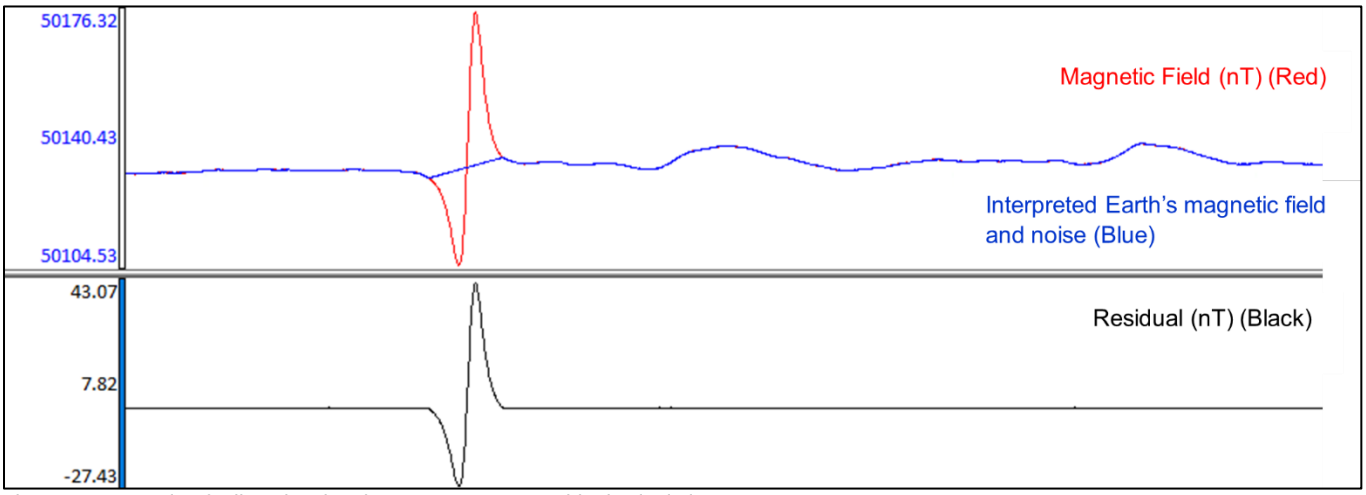


Figure 23: Example of a line showing the magnetometer residual calculation.

The magnetometer survey was planned to follow the RPL for all three routes to landfall 1 and 2, each receiving a centreline over the RPL and an offset wingline. Inshore coverage reached the 20m depth contour before survey stopped. A single line connecting the tow route was also ran.

Full coverage was not achieved, there was one 550m gap in coverage along Route C on block 18. The wingline was not acquired in two regions, along Route A between blocks 16 and 17 and along Route C between blocks 13 and 21.

6.6 Concessions and Limitations

MBES target picking

Although The MBES collected exceeds the required quality targets in much of the data, it is in its nature limited in its target identifying abilities, as described in our proposal.

Table 14: Object size detection using MBES relative to water depth from XOCEAN proposal.

Water Depth	Size of Object Detected
10 m	0.1 m x 0.1 m
20 m	0.2 m x 0.2 m
30 m	0.3 m x 0.3 m
50 m	0.5 m x 0.5 m
75 m	1.0 m x 1.0 m
100 m	2.0 m x 2.0 m

Much of the survey occurred in water depths greater than 50m, this meant identifying 0.5mx0.5m targets was difficult in much of the survey. As SSS is designed to identify objects it was used to verify our MBES targeting in areas of overlapping coverage. In areas of identified SSS targets the MBES would show the scour of an object, or a single swath would show evidence of a target. In these locations we opted to not report a confirmation of identification in the MBES. Though the evidence of an object was there, with the

object not clearly visible it could not be confirmed. These signs of a target were present throughout the survey, and as such there are likely higher densities of small targets in areas of MBES only coverage.

Time based alignment disparities

Data collection for this project was split into three distinct time periods. The inshore MBES and SBP data were predominantly collected between January- February 2023. The offshore MBES and SBP data was collected mid-April- early June. The SSS and MAG data was collected mid to late June. This did not inhibit the accuracy and alignment of the survey, but seabed movement was observed in some areas of the survey. In such cases any difference in sediment features or characteristics the most recent data set was given priority.

7 Deliverables

Table 15: Digital data deliverables.

Item No.	Contracted services deliverables	Quantity	Format	Spec
3	MBES: Processed, ungridded	1 per line	.las	Reduced to LAT
4	MBES: Processed, gridded	1 per block 1 per block	.xyz .tif	Reduced to LAT, 1m
8	Backscatter: Intensity geotiff	1 per block	.tif	1m
11	SBP: Processed, reduced	1 per line	.segy	
18	UAV: Heights	1 per datum 1per datum	.xyz .tif	Reduced to LAT, 0.5m
	UAV: Orthophoto	1 per block	.tif	0.2m
19	SVP: Graph with profile	1 per profile	.csv	Depth v Speed
20	Contours	1x	.shp	1m interval
21	Target Listing	1x Listing 1x Points	.xlsx .shp	>0.5m w/ attributes table
22	Seabed Classification	1x	.shp	
23	Seabed & Morphological Features	1x Point 1x Line 1x Polygon	.shp .shp .shp	
24	SSDM / Geodatabase	1x	.gdb	

Table 16: Reporting deliverables.

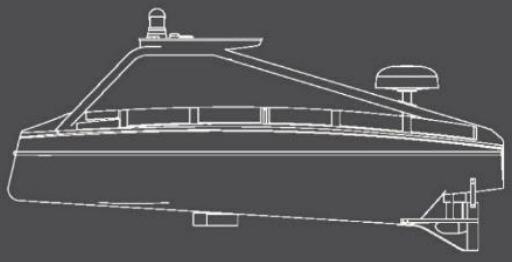
Item No.	Contracted reporting deliverables	Quantity	Format
1	DPR	1 per operational day	.pdf
2	Mobilisation & Calibration Report	1 per USV	.pdf
3	Operations Report	1x	.pdf
4	Results Report	1x	.pdf

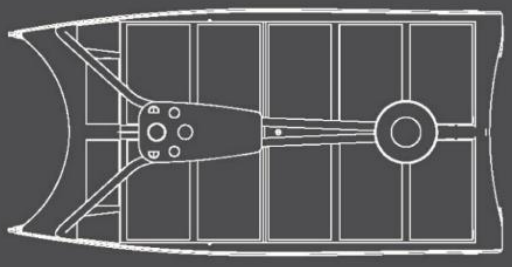
8 Appendix

8.1 Appendix 1 – XO-450 Technical Specification

Ocean data, delivered.

Using Unmanned Surface Vessels (USVs) XOCEAN provides turnkey data collection services to surveyors, companies and agencies.





Physical Dimensions

Length	4.5m
Width	2.2m
Height	2.2m

Applications

- Fisheries
- Bathymetric Survey
- Data Harvesting
- Metocean Data
- Environmental Monitoring

Technical Specification

Model name	XO-450
Hull	Composite wave piercing catamaran type
Weight	750kg
Payload	100kg
Propulsion	2 x DC drives
Steering	Differential steering
Hybrid power system	Solar deck | lithium-ion batteries | micro diesel generator
Continuous electrical load	3kW
Speed	4.0 knots
Endurance	18 days | range 1,512nm
Communications	Over horizon via satellite broadband
Control	Control via XOCEAN Cyberdeck
Situational awareness	AIS | thermal imaging camera visible light cameras | image detection
Conspicuity	Active radar reflector | AIS transmissions navigation lights | sound signals
Transportation	Road trailer | shipping container
Sensor mounting	Sonar post | SVP winch | MRU | weather station

XOCEAN®

xocean.com
info@xocean.com

xoceansocial xocean

© Copyright 2019. XOCEAN Limited, Greenore, Co. Louth, Ireland A91 E765. Company number 599121

8.2 Appendix 2 – UAV Technical Specification

Hardware Datasheet

eBee X

Wingspan	116 cm (45.7 in)
Material	Expanded Polypropylene (EPP)
Underbody skin	Curv® Polypropylene thermoplastic composite
Weight (Empty)	0.8 kg
Max Take-off weight	1.6 kg
Backpack dimension	75 x 50 x 29 cm (29.5 x 19.7 x 11.4 in)
Motor	Low-noise, brushless, electric
Detachable wing	Yes
Empty backpack weight	4.6 kg

Coverage & accuracy

Nominal coverage at 122 m (400 ft)	220 ha (550 A), with senseFly S.O.D.A. and without Endurance Extension
Max. nominal coverage at 122 m (400 ft)	500 ha (1,235 A), with senseFly S.O.D.A. 3D and with Endurance Extension
Ground sampling distance at 122 m (400 ft)	2.5 cm/px (1.0 in/px), with senseFly Aeria X
Lowest ground sampling distance	1,0 cm/px (0.4 in/px) with senseFly Aeria X
Absolute X, Y, Z accuracy (RTK/PPK activated)	1.5 cm (0.6 in)

Flight performance

Cruise speed	40-110 km/h (11-30 m/s or 25-68 mph)
Max wind resistance	Up to 46 km/h (12.8 m/s or 28.6 mph)
Landing type	Linear landing (5 m/16.4 ft accuracy in 20° angle cone)
Service temperature	-15° to 40°C *
Humidity	Light rain resistance
Ground avoidance	Yes - LiDAR (range 120m)

High Precision

Upgradable on demand	Yes
RTK	Virtual Base Station, Base Station Unknown point, Base Station Known point
PPK	Yes
GNSS	GPS+GLONASS

Maintenance and service

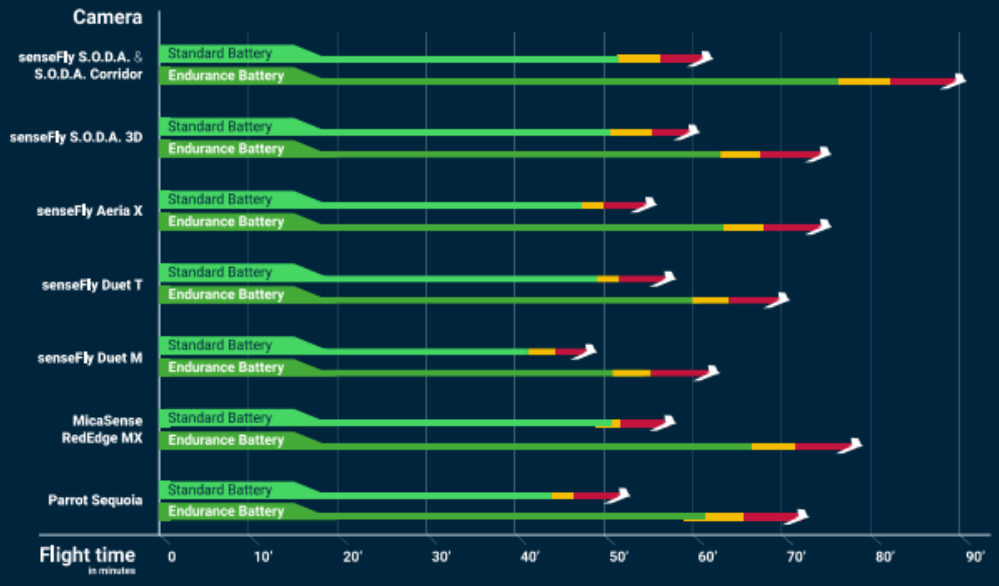
Spare Parts Available	Pitot Tubes, Wings, Propellers and vertical surfaces
Modular Repair	Auto Pilot Stack, Upper Body and Lower Body
Service	Every 100 flight hours

*Working above 35°C / 95°F requires to protect the drone from the sun while on the ground

Battery	*Standard*	***Endurance***
Power	3700 mAh	4900 mAh
Voltage	15.2V	15.2V
Number of cells	4 Cell	4 Cell
Type	LiHV	LiHV
Energy	56.24Wh	74.48Wh
Weight	330g	420g

Radio Link	
Certification	CE or FCC
Range	3 km nominal (up to 8 km) / 1.9 mi (up to 5 mi)
Frequency	2.400 - 2.4835 GHz
Encryption AES 254	Available
EIRP	CE/JP 20.0 dBm max FCC 22.5 dBm max

How long can you fly with your eBee X?



Automatic safe return when the battery is low

Mission

The drone is performing its mission and capturing images

Low endurance

15% and below is enough to return Home and land.

Low battery

Below 10%, it is no longer possible to continue the mission. The drone returns home to land.



The above figures represent optimal flight conditions. It is not representative of all flight times and will vary depending on flight conditions. Also note that the condition of the pitot tube can influence flight time. Flights longer than 60 minutes require Endurance Activation.
**Max. coverage figures based on eBee X flight over flat terrain, in optimal conditions, using a senseFly S.O.D.A. 3D camera.

Appendix B XOCEAN Ltd. (2025) Geophysical Survey Report

XOCEAN

01139-BPX-SCO-WIND

Morven GC-1 Export Cable Route Geophysical Survey 2024-2025

Survey Results Report



Document Control

Category	Details
Document Title:	Morven GC-1 Cable route Geophysical Survey Results Report, 2024
Document Type:	Survey Results Report
Author(s):	Amélie Thébault, Gaëlle Granjard, Ronan Hickey
Approval:	Adam Harding
Issue Date:	16/04/2025

Version Control

Revision	Date	Author(s)	Review	Comment
00	16/04/2025	Ronan Hickey, Amélie Thebault, Gaëlle Granjard		For client review
01	27/05/2025	Ronan Hickey, Hannah Bartlett		Issued for use

Table of Contents

1 Executive Summary 8
2 Survey Information 11
2.1 Overview 11
2.2 Survey Area 12
2.3 Survey Objectives 14
2.4 Survey Parameters 15
3 Survey Acquisition 17
3.1 Equipment 17
3.2 Measurement Units and Presentation 18
3.3 Time 18
3.4 Personnel 18
4 Processing Methodology 20
4.1 Processing Software 20
4.2 Offline Quality Assurance 20
4.3 Data Transfer 21
4.4 Position and Motion Processing 21
4.5 MBES Data Processing 22
4.6 Backscatter Processing 24
4.7 SBP Processing 24
4.8 SSS Data Processing 25
4.9 Magnetometer Processing 26
4.10 Data Interpretation and Analysis 27
5 Results 35
5.1 Nearshore Section (LF1/LF2 and LF3/LF4) 35
5.2 Offshore Section (OF) 42
5.3 Contacts and Shipwrecks 53
5.4 Crossings and Existing infrastructure 56
5.5 Anthropogenic activities 57
6 Data Quality 60
6.1 MBES Survey Accuracy and Data Quality 60
6.2 Backscatter Data Quality 64
6.3 SSS Data Quality 65
6.4 SBP Data Quality 69
6.5 Magnetometer Data Quality 70
6.6 Concessions and Limitations 72
7 Deliverables 77
8 References 79
9 Appendix 80
9.1 Appendix 1 – XO-450 Technical Specification 80

List of Figures

Figure 1: Morven Offshore Wind Farm location. 11
Figure 2: Overview of the survey area and KP routing of the offshore section to the Morven OWF. 12
Figure 3: KP routing on the 4 different options nearshore. 13
Figure 4: POSPac workflow diagram. 22
Figure 5: Autoclean processing workflow diagram. 23
Figure 6: SBP processing workflow. 25
Figure 7:SSS Workflow in Moga Seaview. 26
Figure 8: Magnetometer processing workflow. 27
Figure 9: Simplification of Folks sediment classes by the British Geological Survey (Long, 2006). 30
Figure 10: Bathymetry and seabed features in the nearshore section off Seaham Beach (LF1) 35
Figure 11: Bathymetry and seabed features in the nearshore section off Dawton Point (LF3/LF4) 36
Figure 12: Bathymetry and seabed features in the transition between Nearshore (LF routes) and Offshore (OF route) 36
Figure 13: Nearshore 2024-2023 Difference map 37
Figure 14: Inclusion of coarse sediment amongst the sand in the nearshore section of NS07 in 2023 (left image, backscatter) no longer visible in 2025 (right image, side scan sonar). 38
Figure 15: Example of difference between 2023 (left image, backscatter) and 2025 surveys (right image, side scan sonar) in NS01. 38
Figure 16: Sediment Classification in the LF1/LF2 Nearshore Route (KP0-10) 39
Figure 17: Rock outcrops and boulders seen in NS01 at 5m LAT / KP0.5 (Left: Shaded backscatter, right: non-shaded side scan sonar) 39
Figure 18: Sediment Classification in the LF3 and LF4 Nearshore Routes (KP0-10 and KP0-12) 40
Figure 19: Coarse sediment with rocky texture possibly covered with mud or vegetation in NS08 between KP4 and 5 (Left: Shaded backscatter; right: shaded side scan sonar) 40
Figure 20: Sediment classification in the transition between Nearshore (LF routes) and Offshore (OF route) 41
Figure 21:General bathymetry of the offshore section 42
Figure 22: General bathymetry profile between KP0 and KP100 (OF) 43
Figure 23: General bathymetry profile between KP100 and KP190 (OF) 43
Figure 24: Bathymetry and seabed features, OF route KP0-73 44
Figure 25: Bathymetry and seabed features, OF route, KP70-114 45
Figure 26: Bathymetry and seabed features, OF route, KP112-154 46
Figure 27: Bathymetry and seabed features, OF route, KP153-190 47
Figure 28: Examples of seabed features found in the Offshore Route (Vertical exaggeration x7) 48
Figure 29: Sediment classification, OF route KP0-73 49
Figure 30: Sediment Classification, OF route KP70-113 50
Figure 31: Example of the diversity of sediment types in A15 (KP155) 51
Figure 32: Closeup from previous figure; Shaded Backscatter imagery revealing a mottled seafloor (left) the side scan sonar equivalent (right) in A15 51
Figure 33: Sediment classification, OF route KP112-154 52
Figure 34: Sediment classification, OF route KP154-190 53
Figure 35:Mag data showing Diffuser pipe. 57
Figure 36:Fishing gear seen in the SSS data in A012 58
Figure 37:Wire/Chain seen in SSS data with possible fishing traps in A013 59

Figure 38: Total vertical uncertainty equation. 60
Figure 39: Example of THU specification achieved for 00741, 00977 and 01139 in A11. 62
Figure 40: Example of TVU specification achieved for 00741, 00977 and 01139 in A11. 63
Figure 41: Low density cells in 00833 Data purchase areas. 64
Figure 42: Backscatter image including data from 3 different campaign. 65
Figure 43: Example of backscatter data quality from NS08 65
Figure 44:SSS Example of good quality data. 66
Figure 45:SSS example of rejected data due to poor weather conditions 66
Figure 46:SSS data example aligning with Bathymetry of the North Sea Link Cable trenching Block A03a. 67
Figure 47:SSS Example of shoal of fish masking data 68
Figure 48:SSS example environmental Thermocline affecting data after 30m. 68
Figure 49:SSS example noise from USV in shallow section. Example is the shallowest line 0152_20241018_180610_NS01-MV24-TOW-26.0001-U 69
Figure 50:SBP example before processing containing noise line: X16_00833A23_1_20230210_135539_CH0_LF-CH1. 70
Figure 51:SBP example after Processing applied line: X16_00833A23_1_20230210_135539_CH0_LF-CH1. 70
Figure 52:Mag Data example line:X11_0093_20241007_210037_NS03. 71
Figure 53:Mag Noisy data line:0149_20241018_164943_NS01_1. 71
Figure 54:Mag Data example Noise above 5nt. Line:X09_0160_20241018_193842_A00_1. 72
Figure 55:2023-2024 Seabed movement on top and around the Pipe diffuser (01139_MBES_0300), NS06. 73
Figure 56:SSS coverage, arrows pointing to gaps due to fishing activity. 74
Figure 57:SSS coverage overlaid on backscatter illustrating gaps filled 75
Figure 58:Mag coverage, arrows pointing to gaps due to fishing activity 76

List of Tables

Table 1: Project information 8
Table 2: Key findings in the Nearshore (LF1/LF2 and LF3/LF4) 8
Table 3: Datum transformation parameters as per the Scope of Work. 15
Table 4: Projection parameters. 15
Table 5: Vertical Datum transformation parameters. 15
Table 6: Online parameters. 16
Table 7: Alarms used in the navigation software. 16
Table 8: Project equipment 17
Table 9: Personnel utilised during the project 18
Table 10: Processing software. 20
Table 11:SSS confidence level applied 28
Table 12: Seabed Features Nomenclature derived from SSDM existing symbology classes 28
Table 13: Surficial sediment classification. 31
Table 14:Types of contacts found in MBES and SSS datasets in the survey. 54
Table 15: Contacts and shipwrecks, nearshore section 54
Table 16: Cable and pipeline in the Morven Export Cable Route (Source: Kis-Orca, 2022) 56
Table 17: Total propagated uncertainty per blocks and per projects. 61
Table 18: % of cells within density spec in the low density affected blocks. 63
Table 19: Object size detection using MBES relative to water depth from XOCEAN proposal 72
Table 20: Digital data deliverables 77
Table 21: Reporting deliverables. 78

Abbreviations & Definitions

AS	Analytic Signal
AVG	Angle Varied Gain
BKS	Backscatter
DPR	Daily Progress Report
DTM	Digital Terrain Model
ECR	Export Cable Route
ED50	European Datum 1950
EPSG	European Petroleum Survey Group
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
HW	High Water
Hz	Hertz
IHO	International Hydrographic Organisation
IMU	Inertial Measurement Unit
KP	Kilometre Point
LAT	Lowest Astronomical Tide (vertical datum)
m	metre
MAC	Mobilisation and Calibration
Mag	Magnetometer
MBES	Multi-beam echo sounder
nT	NanoTesla
OS	Ordnance Survey
OWF	Offshore Wind Farm
1 PPS	One Pulse per Second
PP-RTK	Post Processed Real Time Kinematic
PP	Post Processed
QC	Quality Control
RPL	Route Position List
SBET	Smoothed Best Estimate of Trajectory
SBP	Sub-bottom Profiler
SD	Standard Deviation
SSD	Solid State Drive
SSS	Sidescan Sonar
SVP	Sound Velocity Profile
SVS	Sound Velocity Sensor
THU	Total Horizontal Uncertainty
TPU	Total Propagated Uncertainty
TVU	Total Vertical Uncertainty
UHD	Ultra High Density
UKHO	United Kingdom Hydrographic Office
USB	Universal Serial Bus
USBL	Ultra-short baseline acoustic positioning system

USV	Uncrewed Surface Vessel
UTC	Coordinated Universal Time
UTM	Universal Transverse Mercator
VORF	Vertical Offshore Reference Frame
WGS84	World Geodetic System 1984

1 Executive Summary

During July 2024 to March 2025, XOCEAN completed the following project:

Table 1: Project information.

Project Type	Export Cable Route Survey
Client	Morven Offshore Wind Limited (bp & EnBW Joint Venture)
Project Location	Central North Sea
Vessel(s) Employed	XO-08 – MMSI: 232027631 – Call Sign: MHIJ7 XO-09 – MMSI: 232027632 – Call Sign: MHIJ8 XO-11 – MMSI: 232033343 – Call Sign: MIRG4 XO-16 – MMSI: 232039413 – Call Sign: MKMB2 XO-19 – MMSI: 232039416 – Call Sign: MKMB8 XO-23 – MMSI: 232044015 – Call Sign: MMIM8 XO-26 – MMSI: 232052508 – Call Sign: MOQM9 XO-29 – MMSI: 232053990 – Call Sign: MOXJ4
Mission Duration	11130 hours 05 mins
Project Manager	Adam Harding

Table 2: Key findings in the Nearshore (LF1/LF2 and LF3/LF4)

Bathymetry and Seabed Features	Surface Sediment and Boulder fields	Target & Obstructions
Min Depth: 0.42 m LAT (NS06) Max Depth: 51.8 m LAT (NS09) Seaham beach landfall KP0-3 rock outcrop or till on the flanks of the corridor. KP3-7 seafloor appears rocky and covered with a thin sediment layer from 16m to 35m LAT. South of Nose's Point, similar features are observed KP0-1 rock outcrop or till in the centre of the route, KP3-9 and KP3-10 both options contain rocky morphology. extending from 20m to 40m LAT.	The two divisions of nearshore routes share similar sediment types and boulder fields over the initial few km. On the LF3/LF4 route the sediment seems more mixed than on the LF1/LF2 route Both routes feature boulder fields, with outcrop and boulders dominating the terrain to 9km to10km. In the deeper sections beyond 9-10km along both routes, the boulder correspond to the sediment type, diminishing in quality as the sediment transitions to a finer, sandy seabed.	Inside the survey boundaries 5 shipwrecks observed from the UKHO database. 4 in the SSS and 1 in the MBES due to beyond the shallow limits of the SSS system in NS01. Active fish gear on each of the routes. NS06 Contains a sewage diffuser pipe(MBES Contact: 01139_MBES_0300) at the surface it is rock dump protected. The diffuser pipe can be observed on the mag data where it is covered by the seabed. 252 Mag targets

Further offshore, the seabed deepens gently from 40m to 50m LAT, with limited seabed features just scouring around shipwrecks indicating current influence. There is significant change in seabed depths noticed between the different surveys 2023 and 2024. Due to seabed mobility . NS01 and the northern section of NS02 show notable erosion NS06 has a mix of sediment accretion and erosion. NS07 and NS08 predominantly show sediment accumulation between KP2 and KP4.		

Table 3: Key findings in the Offshore Section (OF).

Bathymetry and Seabed Features	Surface Sediment and Boulder fields	Target & Obstructions
Min Depth: 43.7 m LAT (A00) Max Depth: 106.8 m LAT (A06) On the offshore section the KP was starts at KP0 in the South. KP5 to KP98 Roughly half of the route is deeper than 70m LAT. KP100 to KP188 depth oscillations between 55m and 71m LAT near the Morven OWF approach. The first 50km are mostly featureless except for a bathymetrical high at KP14 and a valley 150m wide. From KP51, sediment waveforms with NW/SE crests appear, becoming more regular and parallel between KP73 and KP93. Sediment waveforms phase out at KP100. Seabed rises steadily between KP93 and KP103, then stabilizes at around	KP0 to KP73, the sediment is Interpreted as homogeneous fine to medium sand, with some coarser inclusions in A05. Between A07 to A10, sediment waves sort the medium sand, with coarser sediment accumulating at the crests. At the junction of A09 and A10, sediment becomes coarser, with a patch of gravel in A10. Between A11 and A15, the seabed is heterogeneous with intertwined substrates, trending towards coarser sediment between KP101 and KP138. The sediment mixes before becoming homogeneous but slightly coarse sand in the south. A closeup on the mottled seafloor indicates mixed sediment, such as gravelly	Inside the survey boundaries 8 shipwrecks observed 7 of the 8 are linked to the UKHO database. The target 01139_MBES_0149 Possible Boulder or Possible Wreck on SSS A07 01139_MBES_0169 A01 IOPG1032 Unidentified Debris is a target of interest Fishing gear identified in Blocks A13,A12,A11b,A09a. Three existing cables cross the route identified in the MBES,SSS and Mag . 144 Mag targets.

65m LAT, with hilly and irregular features until KP138, eventually transitioning to homogeneous sand.	muddy sand. After KP155, the texture smooths for 7km, then shows erosional features and sediment mixing between KP163 and KP166. The last 30km have smooth sand with patches of coarse sediment and boulders.	

2 Survey Information

2.1 Overview

Morven Offshore Wind Limited, a joint venture formed by BP and EnBW, is developing the Morven offshore windfarm (2.9 GW) off the coast of Aberdeen in the Central North Sea (Figure 1)

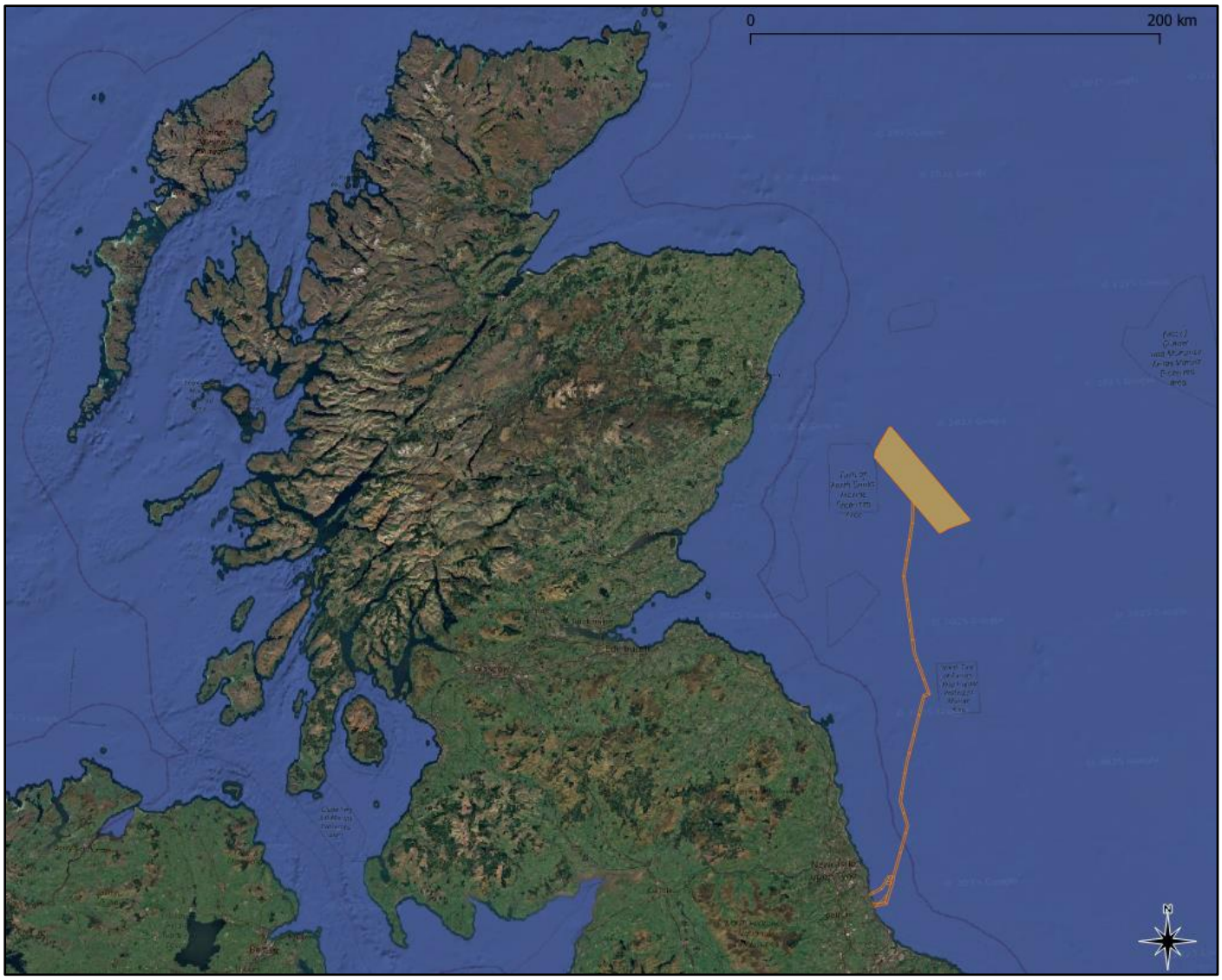


Figure 1: Morven Offshore Wind Farm location.

Between July 2024 and March 2025, XOCEAN conducted a geophysical survey along the approximately 210 km proposed GC-1 export cable route, extending from the Morven Offshore Windfarm array area southward to a proposed landfall site near Sunderland. This route was selected following an initial survey campaign completed in 2023. In the nearshore zone, four route options are still under consideration.

The 1 km wide corridor was surveyed using multiple shallow geophysical techniques.

- Data acquisition was carried out using a fleet of Uncrewed Surface Vessels (USVs) and divided into two distinct phases: The first phase focused on hull-mounted sensor acquisition, including Multibeam Echosounder (MBES) and Sub-Bottom Profiler (SBP) data.

- The second phase involved towed sensor operations, collecting Sidescan Sonar (SSS) and Magnetometer data.

The aims of the geophysical survey were:

- To provide data for assessment of obstructions, seabed contacts, sediments, and morphology that could have a significant impact on the cable installation.
- To provide data to allow the project to fulfil its obligations under the granted consent(s) in terms of archaeological, environmental assessment and consenting obligations.

2.2 Survey Area

The survey area consisted of a 1km wide corridor along the approximately 210km GC-1 Morven export cable route located in between the Morven lease area to the proposed shore connection point South of Sunderland. The survey area was divided in two parts: the offshore corridor and the nearshore blocks. Given the length of the route the survey areas were broken into ~10km sections, to aid in consistency each block was surveyed to completion before starting a new block. In the offshore section survey blocks were named A00 to A18. In the Nearshore, blocks are named NS01 to NS09.

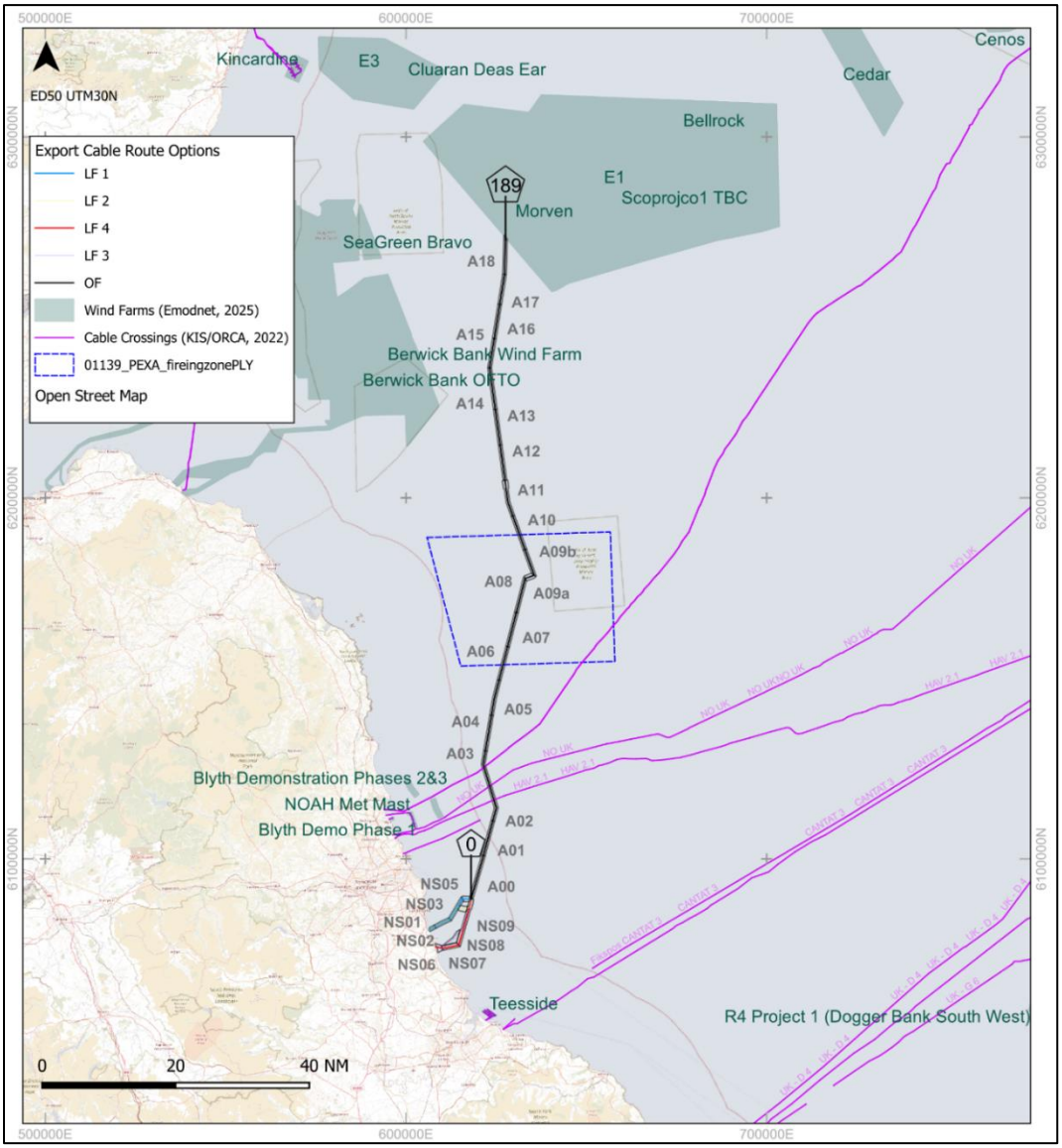


Figure 2: Overview of the survey area and KP routing of the offshore section to the Morven OWF.

For the ease of reporting and charting KPs were given. Consequently, the route was split into an offshore route ('OF') and 4 alternatives routes in the nearshore blocks ('LF1' to 'LF4').

As suggested by the client, the offshore route starts at KP0 at the intersection of the end of the 4 nearshore routes (Figure 2). Subsequently each nearshore option was given its own KP referencing from landfall to the offshore start (Figure). LF1 and LF2 both begin off North of Seaham Beach then split around KP10.5. LF3 and LF4 both start off Nose's Point and split at KP2 before joining back around KP11. For the purposes of reporting and charting, LF1 and LF4 are considered as the main options and KPs are referred to those, except on the charts that are singly representing LF2 and LF3 sections which are not otherwise visible. Events offshore will be reported relatively to the OF section KPs.

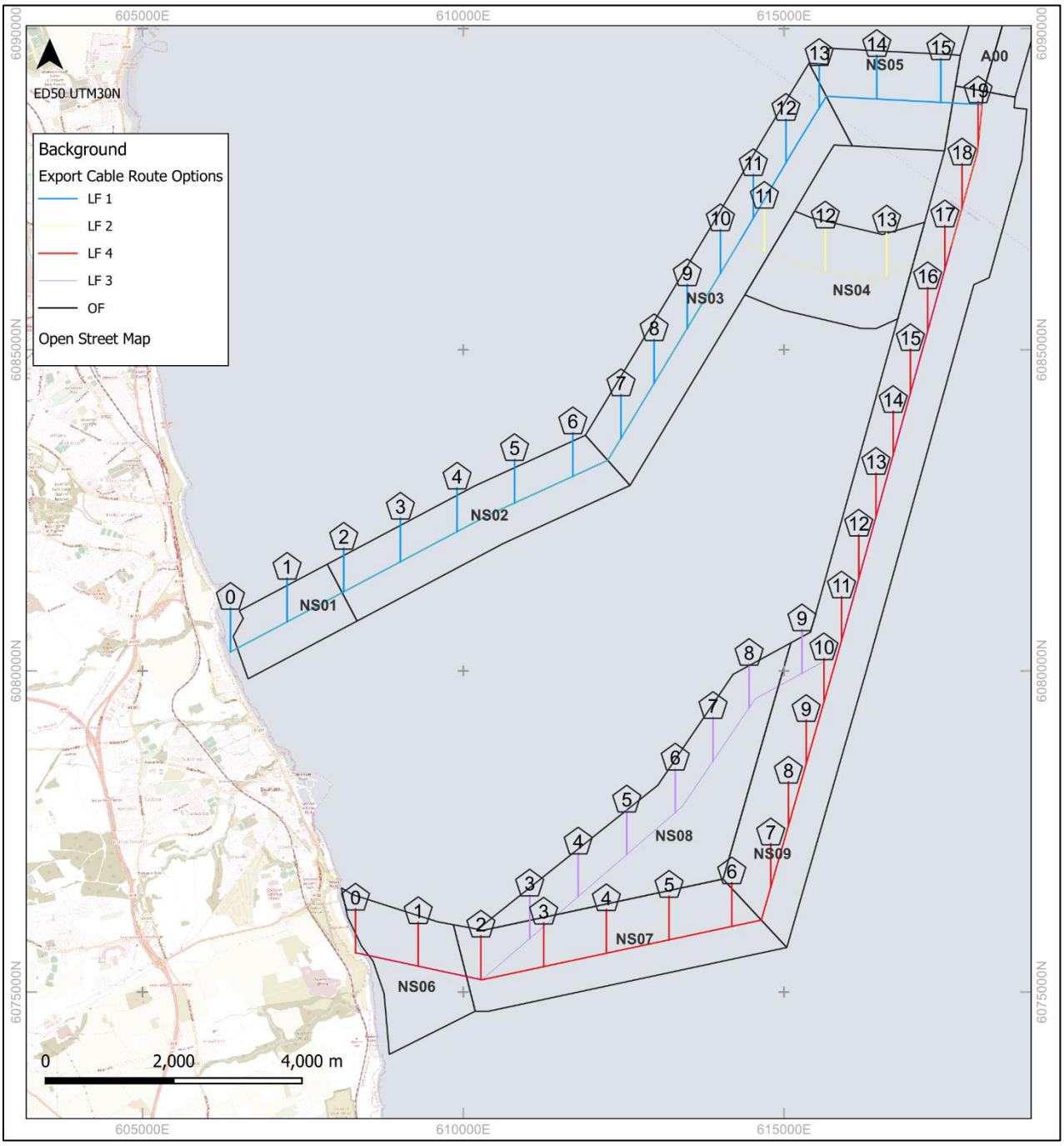


Figure 3: KP routing on the 4 different options nearshore.

All surveying was based off the route RPL, with each RPL surveyed with the following:

Phase 1:

- A centreline over the RPL with 10 +/- winglines at 50m spacing totalling 21 mainlines in the block outside the Morven EXC 2023 survey scope. MBES & SBP were acquired on all lines.
- Cross lines collected every 2km
- Historical data from previous surveys were used to reduce the number of lines required in some sections.

Phase 2:

- A centreline over the RPL with 3 +/- winglines at 150m spacing totalling 7 mainlines in the block outside the Morven EXC 2023 survey scope. SSS&MAG were acquired on all lines. In the two shallowest blocks, NS01 and NS06, the line spacing was reduced to 30m. Historical data collected by Gardline in 2023 along the Centreline are integrated to reduce the lines required into the areas of unchanged sections.

2.3 Survey Objectives

To achieve the survey aims outlined in section 2.1 the following objectives and scope were defined:

MBES Bathymetry and Backscatter:

- Full coverage of high resolution MBES to complete historical data coverage from previous surveys (00741, 00977 and 00833)
- DTM to have 1m bin size with 5 hits per bin.
- Data to have no gaps larger than 5 consecutive bins.
- Permissible data gaps being more than 30m apart (full survey achieving min. 99% coverage).

Sub-bottom profiler:

- Collected on all MBES lines;
- Vertical resolution of 0.2m, configured to optimise data in the t*op 5m of seabed.*

Towed SSS and Magnetometer:

- Full route high frequency coverage across 1,000m wide corridor;
- Line space at 150m / range at 90m;
- No nadir coverage;
- 0.5m minimum size object detection;
- Magnetometer data must be within high frequency SSS data;
- Magnetometer data to be acquired less than 15m above seabed.

Data collected from Gardline in 2023 along the centreline in areas of the route that are unchanged are integrated to the current survey campaign.

2.4 Survey Parameters

Geodetic parameters are detailed below.

Table 3: Datum transformation parameters as per the Scope of Work.

Global Positioning System Geodetic Parameters		
Transformation	ED50 to WGS84 (18) EPSG Code: 1311	
	FROM	TO
	WGS 1984 (ITRF08)	ED50 (EPSG :6230)
Ellipsoid	WGS 1984 (EPSG Code 6326)	WGS84 International 1924 (EPSG:7022)
Semi-major axis (a)	6378137.0	6 378 388.0
Flattening	298.257223563	298.257222101
Parameters		
NOTE: “is arcsec	Shift X (m)	89.50
	Shift Y (m)	93.80
	Shift Z (m)	123.10
	Rotation X (“)	0
	Rotation Y (“)	0
	Rotation Z (“)	0.156
	Scale (ppm)	1.2003

Table 4: Projection parameters.

Projection Parameters	
Geodetic Projection	ED50 UTM Zone 30 (N)
EPSG Code	23030
Zone	30N
Central Meridian	3° W
Latitude origin	0° N
False Easting	500 000 m
False Northing	0 m
Central Scale Factor	0.999 600
Units	Metres
Time Datum	UTC

Table 5: Vertical Datum transformation parameters.

Vertical Reference Parameters	
Vertical Datum	LAT
Height model	VORF Model
Geoid model	VORF Ellipsoid to LAT

Table 6: Online parameters.

Online Parameters		
Equipment / Item	Value	Unit
MBES opening angle	Varying range along route	deg
MBES max swath width	Varying range along route	m
MBES frequency	400	kHz
Survey speed	2.5	kts
Innomar Medium 100 SBP	8	kHz
SSS Klein KK-SVY	600/300	kHz
Magnetometer Synapse Marine Magnetics	10	Hz

Table 7: Alarms used in the navigation software.

Type	Alarms When
Sound velocity at Echo Sounder vs. Sound velocity profile	>2 m/s
Time Synchronisation on board systems	Fail

3 Survey Acquisition

3.1 Equipment

The XO-450 USVs are a class of permanently fitted autonomous hydrographic survey vessels, owned and operated by XOCEAN of Carlingford, Ireland. All the survey equipment is regularly calibrated, details of which can be found within the separate Mobilisation & Calibration Reports. All equipment utilised is described in Table 8.

Table 8: Project equipment.

Function	Equipment	Comments
Survey Platform	XO-450 uncrewed vessels: MBES & SBP 'XO-16', XO-19', 'XO-23', 'XO-26', 'XO-29' SSS & MAG : 'XO-08', 'XO-09', 'XO-11'	XOCEAN USV – specification in Appendix 1.
Primary Positioning System	Applanix Wavemaster II	Positioned close to sonar heads, dimensional control carried out during mobilisation.
Primary Gyro and INS System	Applanix Wavemaster II	
Underwater positioning	Sonardyne HPT 3000 USBL Transceiver & Mini-Ranger Transponder 2024 – 'XO-08', 'XO-09', 'XO-11',	19-34kHz with variable interrogation frequency
Sonar System	Norbit Winghead B51s – 'XO-16', XO-19', 'XO-23', 'XO-26', 'XO-29' Norbit i77 – 'XO-09' R2sonic 2024 – 'XO-08', 'XO-11'	-0.5 x 0.9° system when operated at 400 kHz - broadband multibeam sonar. -0.5 x 1° system when operated at 400 kHz - broadband multibeam sonar.
Sub-Bottom Profiler	Innomar Medium 100 SBP – ''XO-16', XO-19', 'XO-23', 'XO-26',	Set with 8kHz primary frequency and 1 pulse cycle
Sidescan Sonar	Klein 4K-SVY Towfish – 'XO-08', 'XO-09', 'XO-11',	Dual Frequency 300/600kHz
Magnetometer	Marine Magnetics Synapse Magnetometer - XO-08', 'XO-09', 'XO-11'	Set at 10hz sampling rate.
Sound Velocity Measurement	**Located at the MBES transducer:** AML Micro X SVS **Winch deployment:**	**AML Micro X SVS** Range – 1375-1625 m/s Resolution – 0.001 m/s Accuracy – ±0.025 m/s

	Valeport SWiFT SVP – All vessels	**Valeport SWiFT SVP** Range – 1375-1900 m/s Resolution – 0.001 m/s Accuracy – ±0.02 m/s Max pressure – 50 Bar
Survey Navigation System	BeamworX NavAQ	Version 2024.1

3.2 Measurement Units and Presentation

Unless otherwise stated:

- Dates are quoted in dd/mm/yyyy format.
- Time are quoted in hh:mm:ss format.
- Linear measurements are quoted in metres (m) or kilometres (km) at a precision of 0.01 m (1 cm).
- Angular measurements are quoted in degrees and decimal degrees, Grid (G) or True (T).
- Geographical coordinates are quoted in ddd°mm°ss.sss format.
- Grid coordinates are provided in metres rounded to the nearest centimetre.
- Depths are described in hydrographic format with positive values indicating a depth below the vertical datum.

3.3 Time

All survey computers, video and log keeping were synchronised to Coordinated Universal Time (UTC), derived from Global Navigation Satellite System (GNSS). The primary positioning system output one pulse per second (1 PPS) from the GNSS clock of the primary antenna. The 1 PPS pulse was input into NavAQ where it was continually monitored for continuity, graphically notifying the online surveyor if it stopped. It was checked and confirmed that all instruments were synchronised with primary positioning system.

3.4 Personnel

Table 9 details personnel that were involved in the processing stages and their function, as well as information relating to the operations and survey managers:

Table 9: Personnel utilised during the project.

Title	Name (& Company as applicable)	Location	Responsibilities
Project Manager	Adam Harding	Remote	Supervision of project and operation planning.
Survey Manager	Connor Stewart	Remote	Survey supervision and planning.
Reporting Manager	Gaëlle Granjard	Remote	To oversee the processing workflow, data management, deliverable QC, and reports.
Lead Geophysicist	Joe Wheeler	Remote	To oversee geophysical workflow, and interpretation.
Magnetometer specialists	Ocean Floor Geophysics	Remote	To take responsibility for the processing, quality, deliverable QC and reports regarding Magnetometer data.
USV Pilots	Multiple	Remote	Safety of navigation and USV helming.

Online Surveyors	Multiple	Remote	Responsible for data acquisition and online data QC.
Processors	Multiple	Remote	Responsible for bathymetric processing and interpretation.
Geophysicists	Ronan Hickey	Remote	Responsible for geophysical data processing and interpretation.
Data Coordinator	Piers Cummings	Remote	Responsible for data transfer and validation.

4 Processing Methodology

4.1 Processing Software

Multiple software were used during the data processing and delivery procedure, Table 10 outlines the different examples and their application.

Table 10: Processing software.

Manufacturer	Software	Version
Scooter Software	Beyond Compare	4.4.7
BeamworX	Autopatch	2024.1
BeamworX	NavAQ	2024.1
BeamworX	Autoclean	2024.1
Applanix	POSPac MMS	9.1
Blue Marble	Global Mapper	V25.0
ESRI	ARCMap	3.4.0
Dug	DUG Insight	5.1 (405231)
Innomar	SES Convert	2334_210621
Seequent	Geosoft Oasis Montaj	2023.1.1
MOGA	Seaview	6.3.156
QGIS	QGIS	3.40.4

4.2 Offline Quality Assurance

Hull-mounted Norbit Winghead MBES data was collected in NavAQ and stored in. bwxraw files. The Primary Reference Position (online) was provided by an Applanix POS MV system, augmented with Marinestar G4+ corrections in real time to establish a horizontal position accurate to <0.1 m, and a vertical position accurate to <0.15 m. The POS MV combines Global Positioning System (GPS) and Inertial Measurement Unit (IMU) data into a tightly coupled integrated navigation solution. Preliminary coverage and data quality checks were made in NavAQ software. The data was corrected with the observed sound velocity profiles to adjust for refraction effects. The sound velocity profiles and correlation with the MBES sound velocity sensor were also monitored to inform the online surveyor when the velocity changed more than 2m/s to the loaded profile.

The corridor / route .shp files, provided by BP, were used as a base for the survey areas. The sounding density was monitored online in the NavAQ navigational/logging software to accurately meet the survey requirements. After completion of each of the survey areas, the data was checked to ensure its quality. If grid cells with low density were identified, supplementary infill survey lines were run. Innomar SBP was collected in SESwin innomar software recording. SES3 files. The Innomar's position was obtained from the Applanix POS MV system mentioned above. Live Motion was applied to the seismic data online from the Inertial Measurement Unit (IMU) to correct for motion where possible. The Innomar data was assessed live on its own screen during acquisition checking data for Motion issues, Clipping of data, Navigation, Quality and more.

The towed SSS data was recorded in NavAQ and stored in. bwraw files. The position was obtained from a USBL beacon positioned closed to the SSS applying a measured offset. A live QC was Performed on the navAQ screen and in the SonarPro Kelin software where image quality was evaluated using graphical representations for Altitude, Heading, pitch and Roll.
The towed Mag data was recorded in NavAQ and stored in .maglog files. The position was obtained from a USBL beacon positioned

closed to the SSS applying a measured offset. For live QC the Mag data was evaluated in NavAQ graphs carefully examining the magnetic field for noise and quality, as well as the altitude was within parameters of the work's scope. The position of both towed systems were plotted in NavAQ and monitored online.

4.3 Data Transfer

Logged data was continuously backed up during survey acquisition with redundancy storage in place. The online PC data was copied to a storage drive connected to the USV, which in turn was backed up to a removable SSD for ship-to-shore transfer during port calls. This process was automated using Syncback software ensuring that all data was validated against its source location. A second validation process was undertaken by using Beyond Compare software to take a "snapshot" of the source location and then validating it against subsequent copies of the data. When in port, the site team removed the SSD from the USV and the data was then sent to an approved data upload location by a secure delivery service. From this point, the Report Manager verified the data against the snapshot file and the raw data was safely backed up to both a physical storage location and a cloud storage location for the duration of the project.

4.4 Position and Motion Processing

In order to provide the most accurate post-processed kinematic positioning solution, Applanix POSPac MMS was utilised to generate a Smoothed Best Estimate of Trajectory file which could be applied to the MBES data to provide greater accuracy in motion and positioning. The data logged by the on-board POS MV was loaded into POSPac MMS and processed using Applanix's PP-RTX cloud-based GNSS correction service. The forward-backwards-forwards processing routine allows for improved smoothing in the solution when short drops in positioning quality occur creating a solution that has cm level accuracy without the reliance on base stations. Once processed, all data was carefully inspected for quality: assessing altitude, smoothed performance metrics, P-DOP, processing mode, and number of available satellites. Once checked and approved, the SBETs were exported for application in the MBES processing software. The full workflow for POSPac MMS is shown in Figure 4.

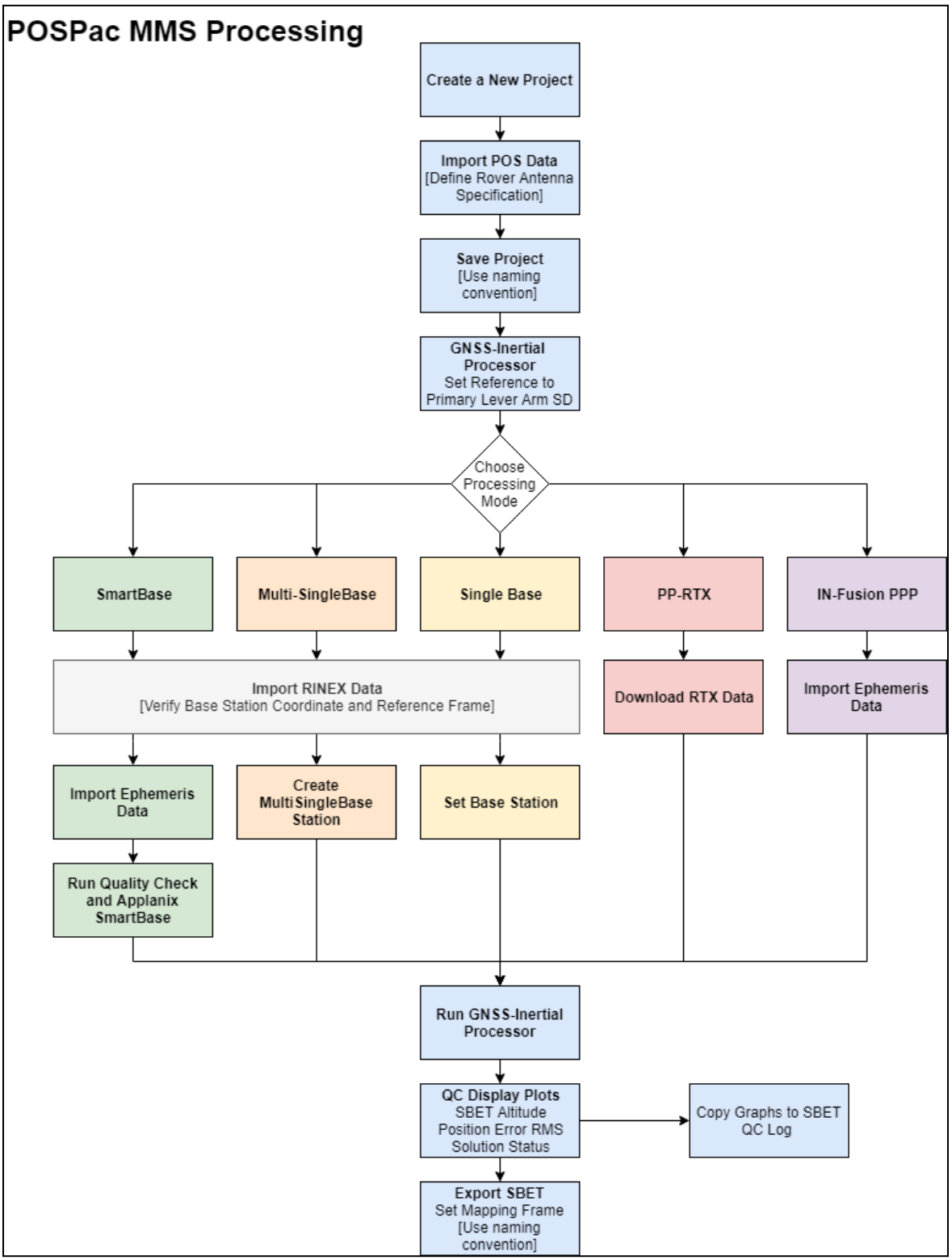


Figure 4: POSPac workflow diagram.

4.5 MBES Data Processing

The exported SBET file was imported into Autoclean (version 2024.1) and the real-time values were overwritten with the post processed data. The MBES data was then reduced to LAT using the UKHO VORF geoid model and corrected with the observed sound velocity profiles to adjust for refraction effects. The data was cleaned in Autoclean, using a combination of models and filters

to identify and remove any noise or erroneous data. Special care was taken in order to preserve the shallowest soundings for detection purposes and to ensure that no objects of interest were missed along the route. This workflow can be observed in Figure 5.

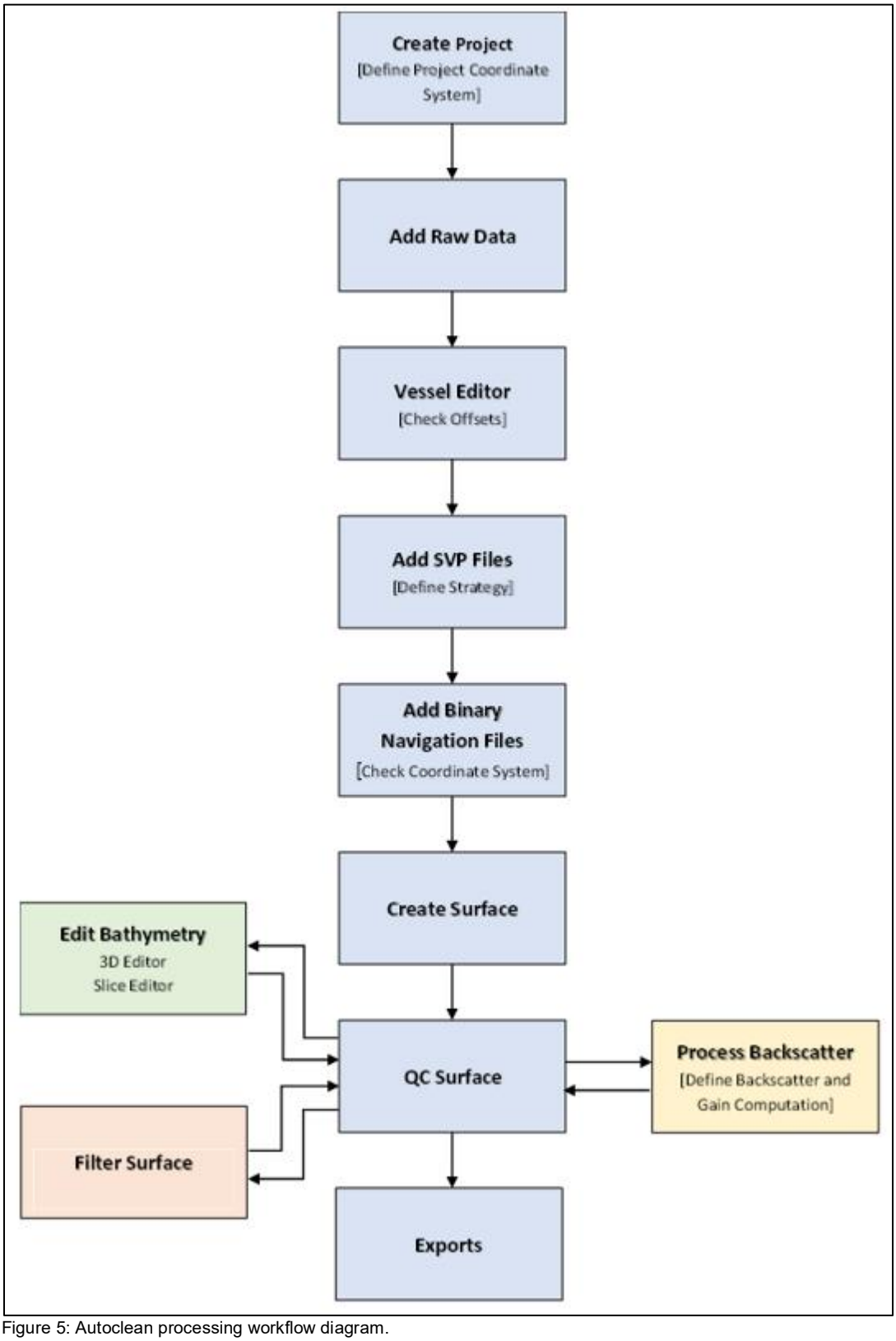


Figure 5: Autoclean processing workflow diagram.

4.6 Backscatter Processing

Processing of the backscatter data was performed using Autoclean (version 2024.1). Backscatter snippets were recorded online and saved to the same raw data files are the multibeam. The height corrected and cleaned projects created during multibeam processing were then used for processing backscatter using the Backscatter Processing tool. In this tool, radiometric corrections, Angle Varying Gain (AVG) adjustments, and anti-aliasing of the backscatter data were performed. From the resultant processed data, a backscatter mosaic can be created for charting and analysis.

4.7 SBP Processing

The Sub-Bottom Profiler (SBP) processing workflow used is displayed in Figure 6. SBP data from the Innomar 100 Medium was logged in the SESWIN data acquisition software in ses3 format. These files were then converted to seg-y using Innomar SES Convert (version 2.3.34). The data was then loaded into our proprietary in-house software XTreme – SBP QC, where an initial QC of file integrity was performed. Once this check was done, seg-y files were then loaded into a dedicated QC project for the relevant area of the survey where lines were accepted or rejected based on data quality. Necessary infills and reruns were identified at this point and fed back to the online survey team to action as required.

Accepted files were exported and passed through into processing. These files were first aggregated utilising Xtreme – SBP QC with the resulting combined files being output with the suffix "_agXXX". These combined files were then processed within the Xtreme software to perform an initial track of the seabed. Results of the seabed tracking were QC'd and once deemed were loaded into DUG Insight to be passed through our processing workflow.

Ahead of de-noising, files affected by short range motion were corrected for by shifting the data to a median/mean smoothed seabed pick. All files were assessed independently, and the motion correction process was adapted for variations in motion wavelength exhibited within the data. The files were then passed through light navigational (XY) smoothing, followed by a time variant gain to amplify the deeper reflectors where present. The tidal elevation was applied to the seg-y data also and QC'd against bathymetry heights to ensure consistency between data sets and whether further static corrections were required. The gains were then normalised to ensure all trace amplitudes were between -5 and 5 for consistency amongst files. Segy-s were then denoised using processing tools such as a Cadzow filter, multi-phase time frequency filters and bandpass filters to improve the data visually. The final step involved checking the necessary information was written into the correct header locations before exporting the final segys. Where necessary, files affected with longer wave motion were corrected, by calculating the difference in bathymetric versus interpreted seafloor height and shifting the data by this calculated value.

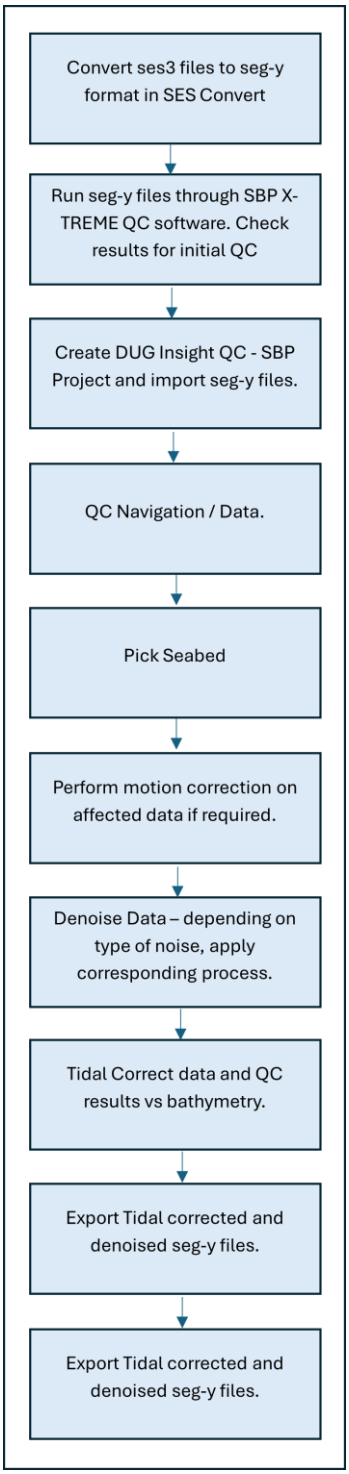


Figure 6: SBP processing workflow.

4.8 SSS Data Processing

This survey campaign utilised a towed Klein 4K-SVY side-scan sonar system. Data was processed and interpreted in Moga Seaview. The data were first bottom-tracked, and gains were applied using the appropriate filters. Positioning corrections were applied to the raw data where required, such as heading smoothing and offsets. These were checked by identifying targets on a bathymetry surface. Lines were layered in an order that emphasises identified targets and features. A de-striping filter was applied after the target identification stage to improve the quality of the mosaic image. The workflow is shown in Figure 7.

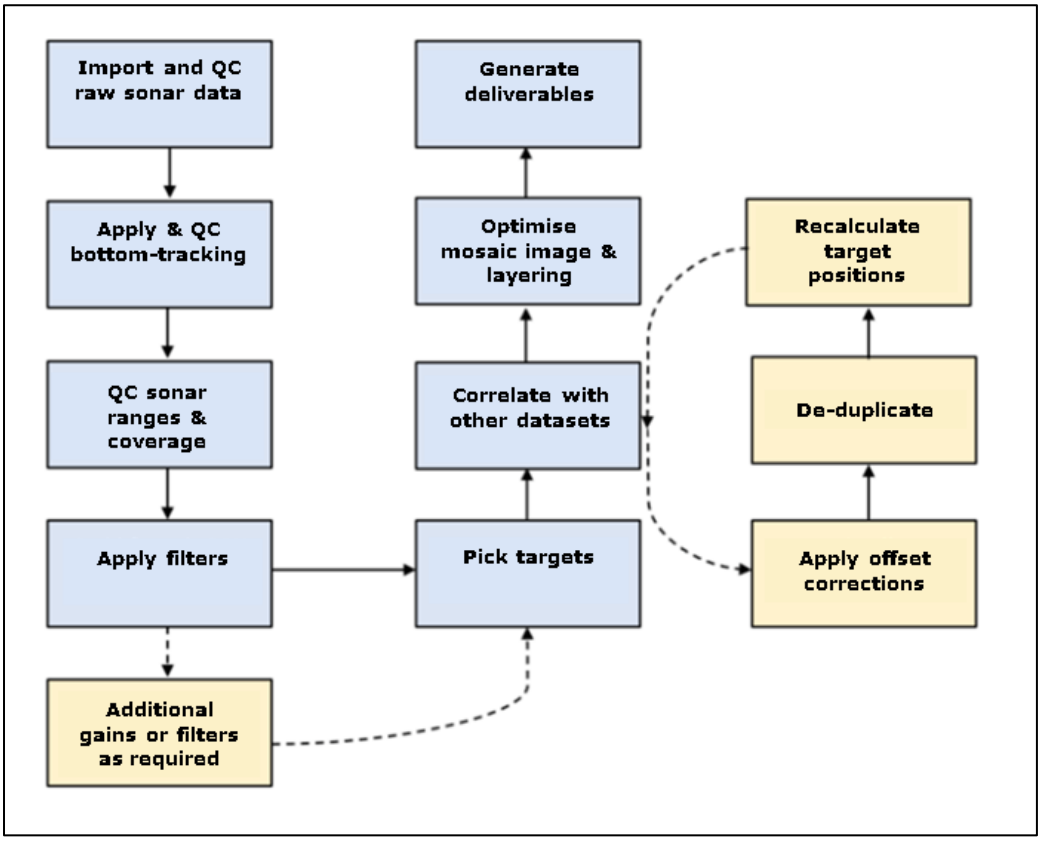


Figure 7:SSS Workflow in Moga Seaview.

4.9 Magnetometer Processing

A Marine Magnetics Synapse magnetometer was towed via a piggyback cable 5m behind the SSS system. Positioning was supplied via a USBL Beacon above the SSS system with laybacks applied to the magnetometer's position. Data was acquired online via BeamworX NavAQ software recording .maglog files. The .maglog files where then imported into Oasis Montaj where the appropriate coordinate system was applied to the data. The magnetometer data was assessed per line, processing navigation looking for spikes or jumps in the positioning and smoothing the position on a line-by-line basis. The altimeter was then checked for spikes, smoothed and filtered. Any data above 15m was rejected in quality control for this project. The magnetic data measurement was then de-spiked, smoothed and normalised to endeavour to remove the magnetic noise where possible. In this project, two residuals were generated: One residual displaying the interpreted targets, while the other was a traditional residual that retained the magnetometer noise, allowing for the calculation of the difference between the magnetic field and the background geology. This was carried out to make it easier to identify interpreted targets from noise. The residual was gridded and targets of 5 nT and greater, peak to peak, were picked were possible. Target width measurements were taken between inflection points of dipoles, and at return to 0 nT on the flanking arms of monopoles. All Grids created utilized the Viridis Colour scale, which was previously supplied by BP. All deliverables were exported, and a final QC was taken before sending the deliverables to client.

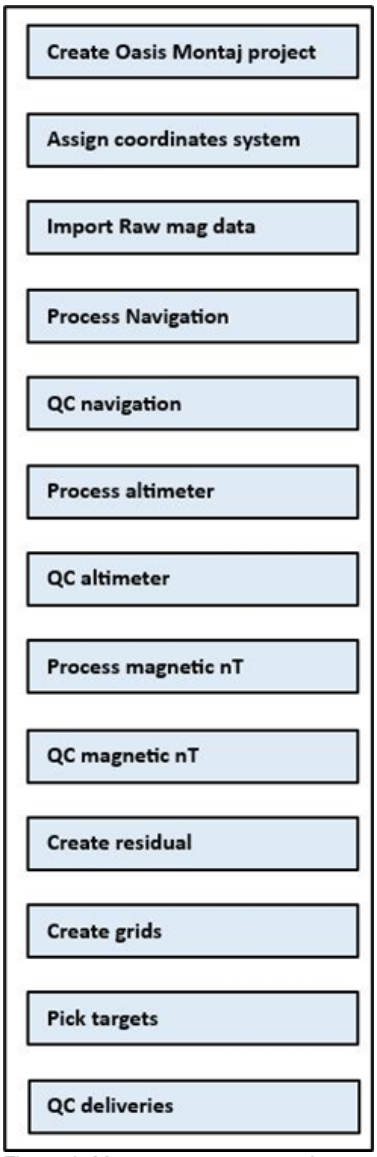


Figure 8: Magnetometer processing workflow.

4.10 Data Interpretation and Analysis

Target Identification

Features and targets were identified in Oasis Montaj/Autoclean/Seaview using the waterfall view to identify and measure observed features. Point features such as boulders, debris and wrecks were checked for and marked as appropriate. These targets were then corroborated with data sets from other sensors to increase confidence in our identification of the target. Boulders were not individually picked in areas with a concentration of > 10 features per 100m2, instead, “Boulder Area” polygons were established defining the maximum extents of these continuous areas.

The 00741 MBES target files have been renamed with an additional prefix and imported into the 01139 contact file. The bathymetric, BKS, and LAS data files were provided for the entire blocks, so the same approach was applied to the MBES targets. The 00741 SSS and 00741 MAG targets were not included in the sensor target correlation. However, these have been delivered in 00741 and can still be loaded in a GIS software as needed.

In addition to correlating the targets, a confidence level has been assigned to the SSS contacts, as outlined in the table below:

Table 11:SSS confidence level applied

SSS target Confidence level	Condition
1	Seen only on one SSS line
2	Seen on multiple SSS lines or 1 other sensor
3	Seen on multiple SSS lines and 1 other sensor
4	Seen on multiple SSS lines and multiple other sensors

Morphological features

Interpretation of multibeam (bathymetry & backscatter) as well as SSS data included the digitisation of 'seabed features' following the SSDM classification. For clarification purposes, classification was simplified as much as possible by choosing features that were estimated to be more relevant for the purpose of this survey i.e. potential obstacles to cable laying. In the case of current-induced features, larger features were digitised in favour of the smaller ones present in the same location.

Table 12 below lists the features from the SSDM classification which are the most likely to occur in the North Sea, and therefore in this project, as well as the definitions used.

Table 12: Seabed Features Nomenclature derived from SSDM existing symbology classes.

IOGP Symbology Class	IOGP Title	Morphology type (Dove et al., 2020)	Geomorphology Setting/Process (Nanson et al., 2022)	Definition	Comment
Polygons					
IOGP3001	Isolated Pockmark	Morphological Lows	Fluid-flow process	A crater-like depression caused by fluid escaping through the seafloor	Unless evidence of seeping gas the term depression is preferred
IOGP3004	Sand Ripples	Morphological Highs	Current-Induced	Length of ~0.1-1m, height of ~0.01-0.1m, moving approx. 1m/d	Characteristics described by Morelissen et al.2003, Knaapen, 2005
IOGP3006	Jackup Rig / Spudcan Footprint	Morphological Lows	Anthropogenic	Footprints left following the removal of infrastructure such as rigs	
IOGP3008	Pitted Seabed	Morphological Lows	Glacial	Area of mobile sediment eroded away superficially in patches	Although the process can vary, in this project it was found that pitted seabed was related to glacial till deposits
IOGP3012	Channel Floor	Morphological Lows	Current-Induced	A general term for an elongated bathymetric low	
IOGP3013	Hillock /Hummocky Seafloor	Morphological Highs	Various	General term to describe an area which displays irregular groups of mounds or rougher seabed which	This is often related to a sediment change

	Topography Area			cannot be classified otherwise	
IOGP3015	Sediment Waveform	Morphological Highs	Current-Induced	length of 200-500m, height of ~5m, moving approx. 10m/yr	"Very large dunes" (Ashley, 1990) with the characteristics described by Morelissen et al.2003, Knaapen, 2005
IOGP3027	Depression	Morphological Lows	Various	General term for a small scale bathymetric low or a pit which is not a scour.	
IOGP3029	Eroded/Thinned drape	N/A	Various	Sediment covering rock with clear surface expression	
IOGP3031	Fish Traps	N/A	Anthropogenic	Can also be used for lobster pots	
IOGP3036	Scour	Morphological Lows	Current-Induced	Depression of mobile sediment around an object (geological or anthropogenic) caused by current erosion	
IOGP3051	Sandbar	Morphological Highs	Current-Induced	Tidal Sandbank with a length of 5000m, height of ~10m, moving approx. 1m/yr	"Ridges" (Ashley, 1990) with the characteristics described by Morelissen et al.2003, Knaapen, 2005
IOGP3052	Mega Ripples	Morphological Highs	Current-Induced	length of ~10m, height of ~0.1m, moving approx. 100m/yr	"Medium to large dunes" (Ashley, 1990) with the characteristics described by Morelissen et al.2003, Knaapen, 2005
IOGP3071	Boundary - Outcrop	N/A	Various	Used if/when rock area is unlikely to be bedrock or it is unknown	Example: glacial till may be defined as outcrops and not bedrock
IOGP3075	Area with Numerous Boulders	N/A	Various	Boulder field with a density defined on a project basis	« Density of over 10 boulders larger per 100mx100m
IOGP3078	Area of Anchor/Wire scars	Morphological Lows	Anthropogenic	Area of anthropological scarring	
IOGP3079	Area of Bedrock	N/A	Various	Bedrock outcropping/subcropping to surface	

IOGP3084	Seafloor Furrow/Grooves	Morphological Lows	Various	Elongated, narrow and relatively shallow bathymetric low which commonly occur in sub-parallel groups	
Lines					
IOGP2001	Anchor/ Plough mark	Morphological Lows	Anthropogenic	Single anchor or plough scarring	
IOGP2004	Trawlscar	Morphological Lows	Anthropogenic	Trawl scarring	
IOGP2053	Lineament	Various	Various	A linear to curvilinear topographic feature of positive, negative or indeterminate relief.	
IOGP2069	Sand Wave Crest	Morphological Highs	Current-Induced	Shallowest line of sandwaves	Useful to visualise the main orientation and spacing
IOGP2078	Cable	N/A	Anthropogenic	Cable or Umbilical carrying Data or Power	
XOCE2080	Pipeline	N/A	Anthropogenic	Pipeline (carrying gas, oil, condensate, or other substance)	This class was added by XOcean as it is absent from the SSDM

Surficial sediment analysis

Backscatter data was analysed to help inform assessments of change in seabed sediments across the corridor. This was compared to and complemented by British Geological Survey (BGS) “seabed sediment” 1:250,000 maps using Folk’s sediment classification 16 classes (1954). These classes comprise 15 sedimentary groups which are based on the weight percent of three aggregates (mud, sand, gravel) in the sediment, as well as the Rock and Boulders class for all boulders greater than 256mm in size. The BGS simplified Folk’s 16 classes into 5 classes (Long, 2006) as illustrated in Figure 9.

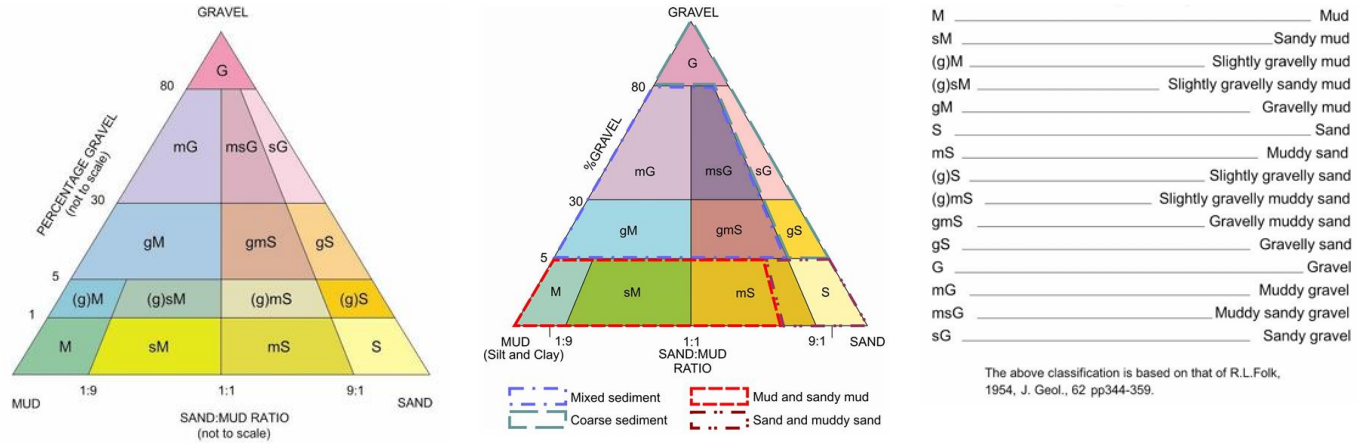
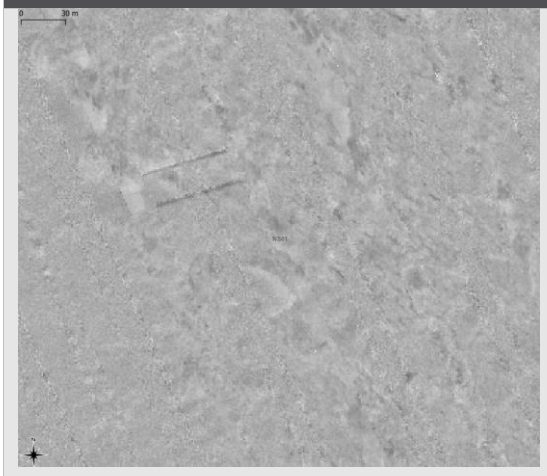


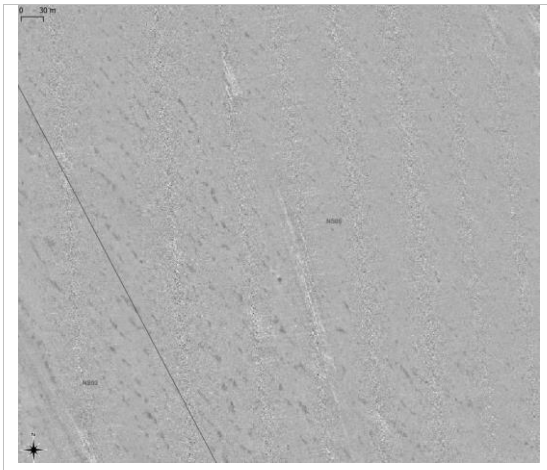
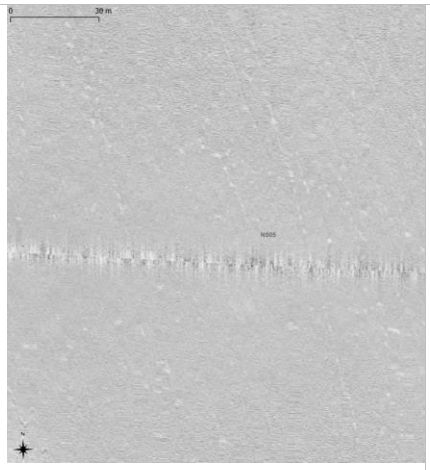
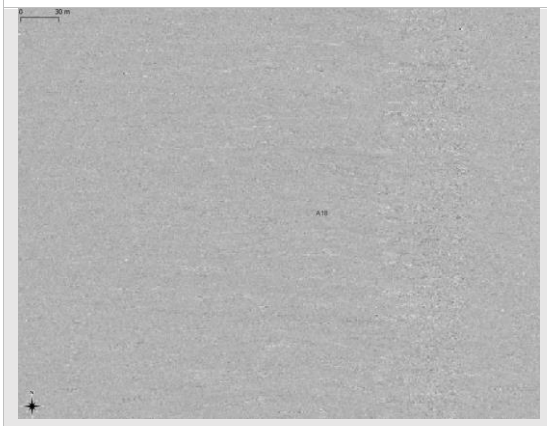
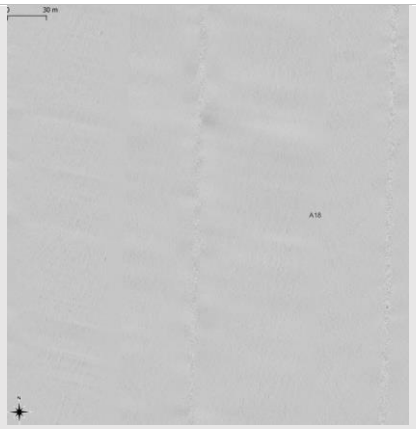
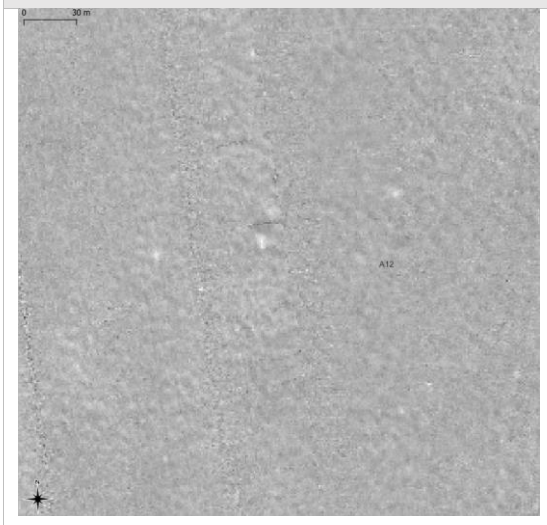
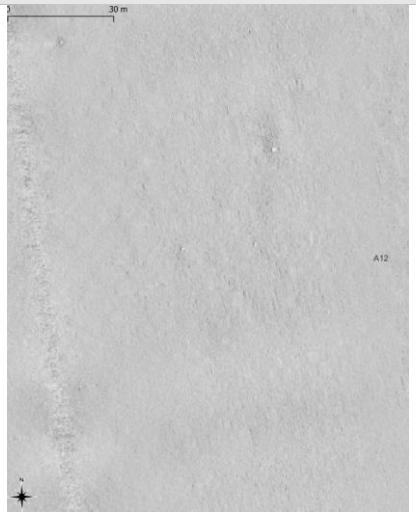
Figure 9: Simplification of Folks sediment classes by the British Geological Survey (Long, 2006).

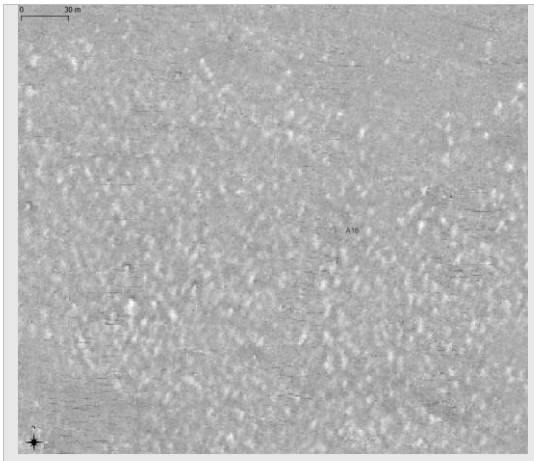
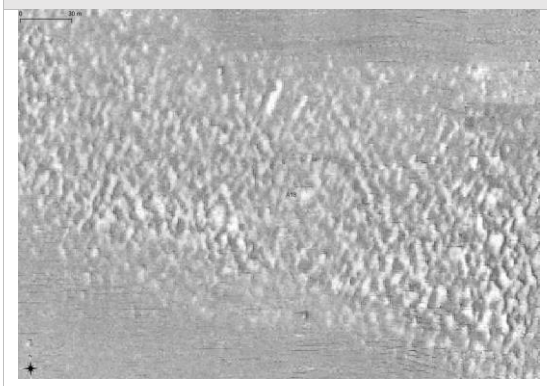
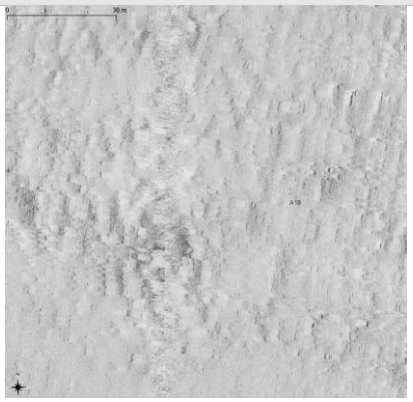
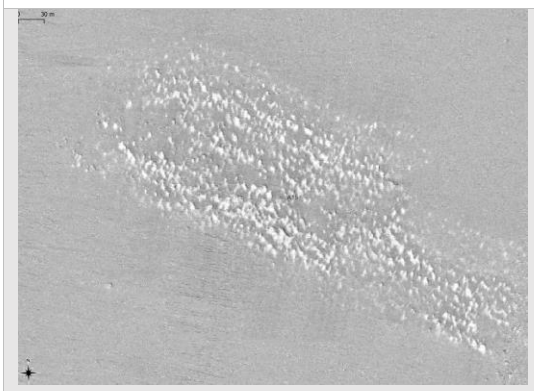
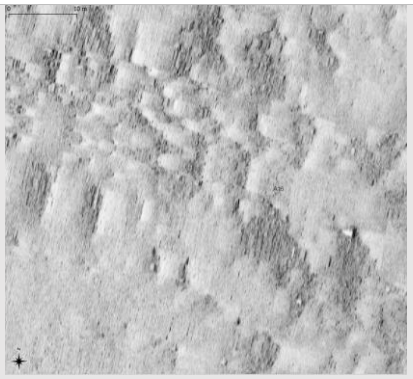
This simplification is more compatible with the inaccurate nature of the acoustic sensor to map sediment types. The variation in intensity of return from the backscatter provides a broad indication of softer versus harder sediments. After normalisation throughout the dataset, the strength varies between -45 and -25 dB. Side scan sonar imagery provides complementary details on texture which can help in the interpretation. Ground truthing is always preferable to verify acoustic interpretation.

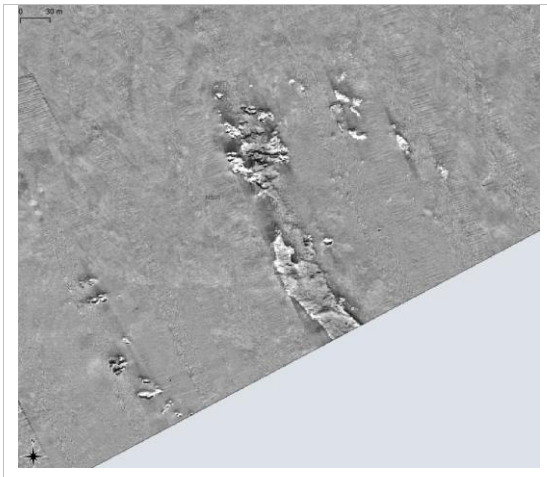
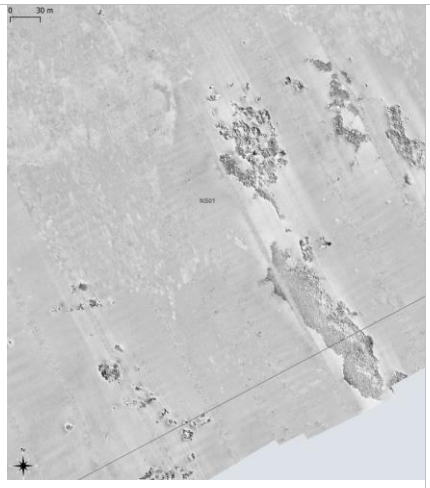
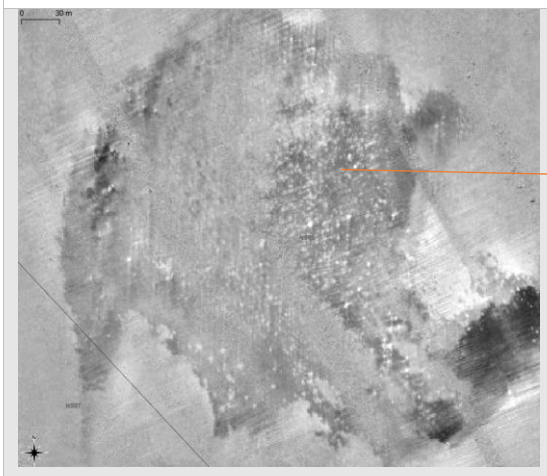
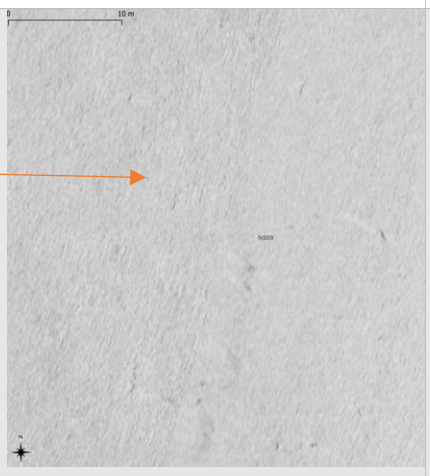
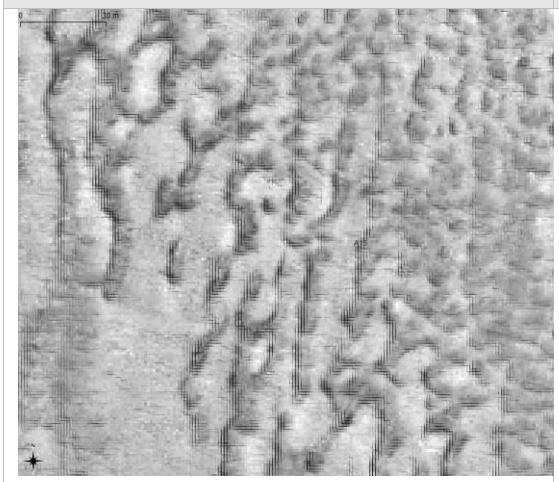
SSDM classification by default refers to another sediment classification method, developed by Wentworth (1922). This method overlaps with Folk's as documented in a study by Valentine (2019) but is not directly comparable with Folk's 16 classes used in the BGS data. Whilst it is allowed in the SSDM to add symbology codes as required, it was understood that this was not the preferred choice by BP. Instead of adding 16 new codes, it was decided to use the existing overlapping ones (IOGP 3205 – Rocky, IOGP3101 – Gravel for Coarse Sediment and IOGP3102 – Sand) and to add only codes to reflect the simplified Folk 5 classification: XOCE3103 – Mud to muddy Sand and XOCE3105 – Mixed Sediment.
The detailed Folk 16 classification was given in the Feature Description attribute.
The interpretation from of the sediment types along the corridor can be summarised in Table 13.

Table 13: Surficial sediment classification.

Backscatter Image (normalised between values of -45 and -25)	Side scan sonar image	BGS Chart Folks 16 Classification description (Feature Description)	Folks 5 simplification (Symbology Code and Feature Name)
		slightly gravelly muddy Sand – (g)mS	Mud to Muddy Sand (XOCE3103)
Heterogenous but low contrast medium greys	Some boulders present, relatively high proportion of mud		

 Darker speckles and patches, no texture	 White speckles	muddy Sand – mS	Sand (IOGP3102) if S:M ratio > 4:1 else Mud to Muddy Sand (XOCE3103)
 Smooth, medium reflectivity	 Smooth, medium reflectivity	Sand - S	Sand (IOGP3102)
 Very light texture visible (shaded backscatter)	 Some black ‘speckles’	Slightly gravelly sand (g)S-	

 Very lightly pitted, 'spotted' sand (shaded backscatter)	 Likely proportion of gravel :5-30%	Gravelly Sand - gS	Coarse Sediment (IOGP3101-Gravel)
 Some pitting or ripples, contrast between greys (shaded backscatter)	 Likely proportion of gravel :30-80%	sandy Gravel – sG	Coarse Sediment (IOGP3101-Gravel)
 Pitting, white patches in surrounding sand (shaded backscatter)	 > 80% gravel in the dark patches, some boulders	Gravel - G	Coarse Sediment (IOGP3101-Gravel)

 Coarse texture, high reflectivity (light grey to white) (shaded backscatter)		Rocks and Boulders	Rock & Boulders (IOGP3205 - Rocky)
 Relatively large darker area dotted with bright white pixels	 No texture, like mud, possible boulders (faint shadow)	Gravelly Mud gM	Mixed Sediment (XOCE3105)
 Some texture (shaded back scatter), high contrast between darker than medium sand and lighter smooth material	 Sand Ripples texture in more reflective areas vs faint white areas absorbing acoustic signal	muddy sandy Gravel – msG or gravelly muddy Sand gmS	Mixed Sediment (XOCE3105)

5 Results

5.1 Nearshore Section (LF1/LF2 and LF3/LF4)

Bathymetry and Seabed Features

From the landfall position at Seaham Beach the seabed deepens relatively steadily over 2000m from 2 to 16m LAT (KP0-3). Either side of the corridor rock outcrops are visible. It is unsure whether those are bedrock or derived from till. From 16m LAT to 35m LAT (KP3-7) the seafloor appears rocky or rugged and covered with a thin layer of sediment (Figure 10).

From the landfall position South of Nose's Point, the seabed exhibits the same features as described for LF1/LF2, with the rocky morphology spreading slightly deeper from 20 to 40m LAT (Figure). In NS06, a rockdump is protecting a sewage diffuser (UKHO Obstruction ID 57068).

On both division of the nearshore route boulder fields were digitised separately from the MBES DTM (2023/2024) and the side scan sonar imagery (2025) highlighting changes due to the erosion of mobile sediment. Boulder fields are found in areas otherwise classified as rock outcrops, eroded / thin drape, and pitted seabed.

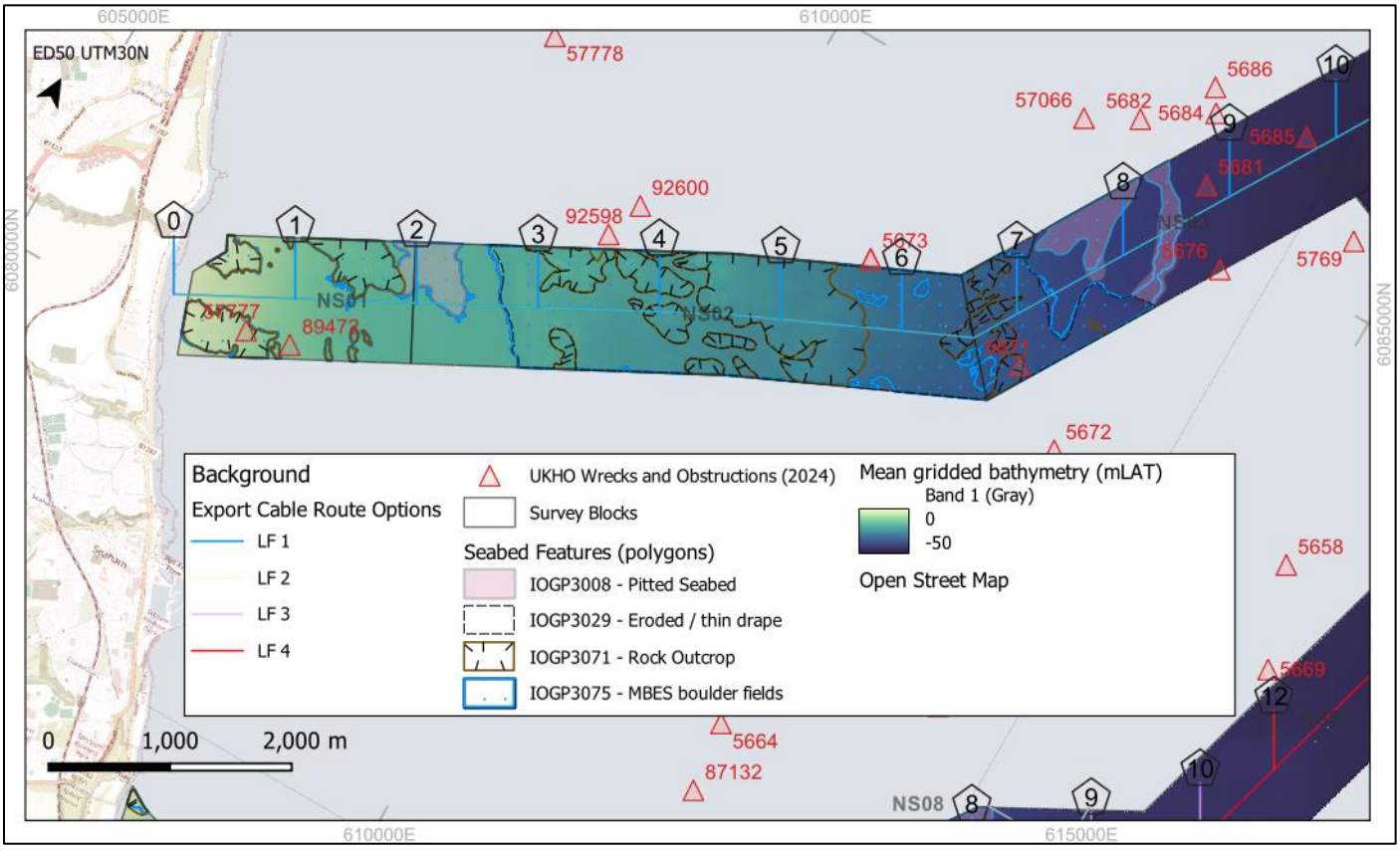


Figure 10: Bathymetry and seabed features in the nearshore section off Seaham Beach (LF1)

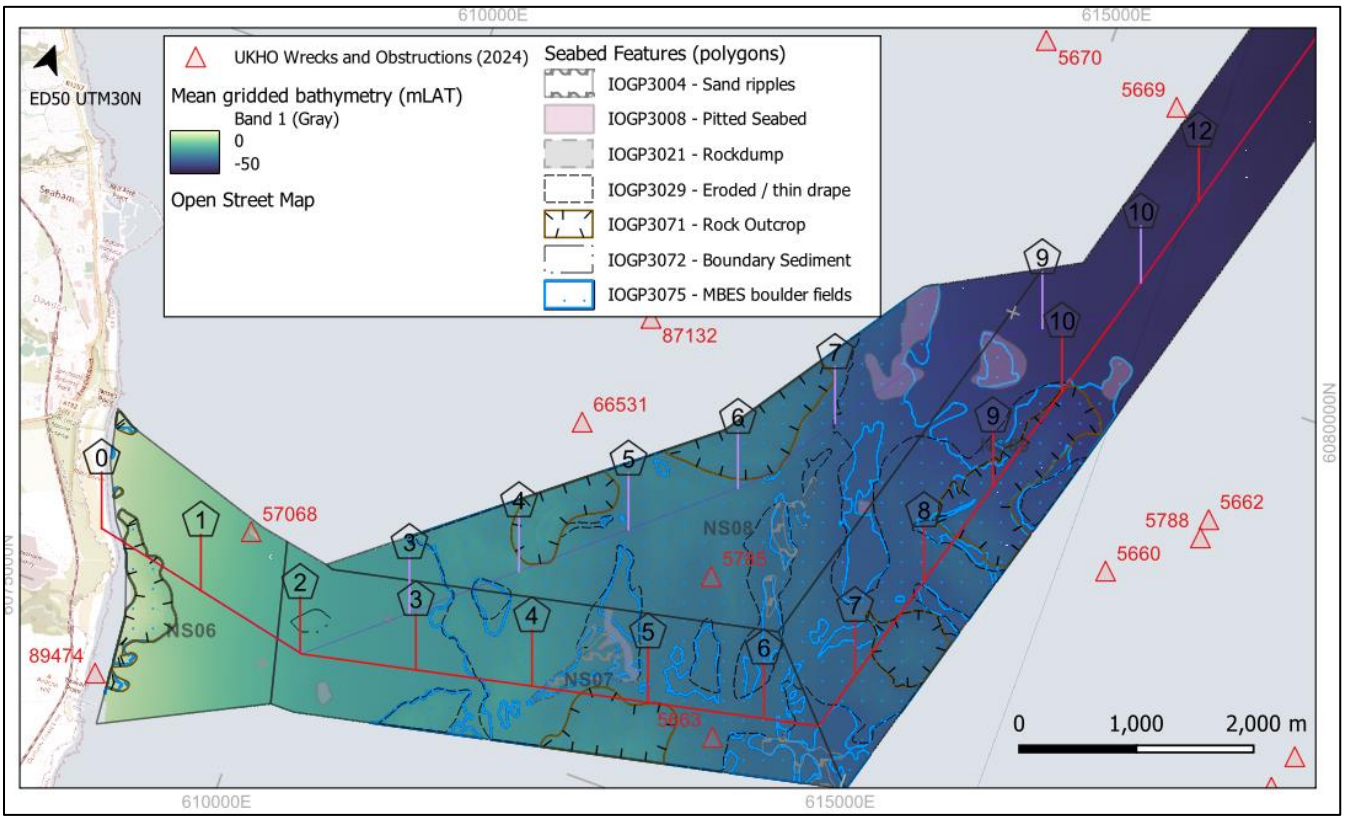


Figure 11: Bathymetry and seabed features in the nearshore section off Dawton Point (LF3/LF4)

Further offshore, the seabed deepens gently from 40m to 50mLAT. There are no seabed features apart from scouring around large shipwrecks (Figure 12), indicating the influence of currents over the mobile sediment.

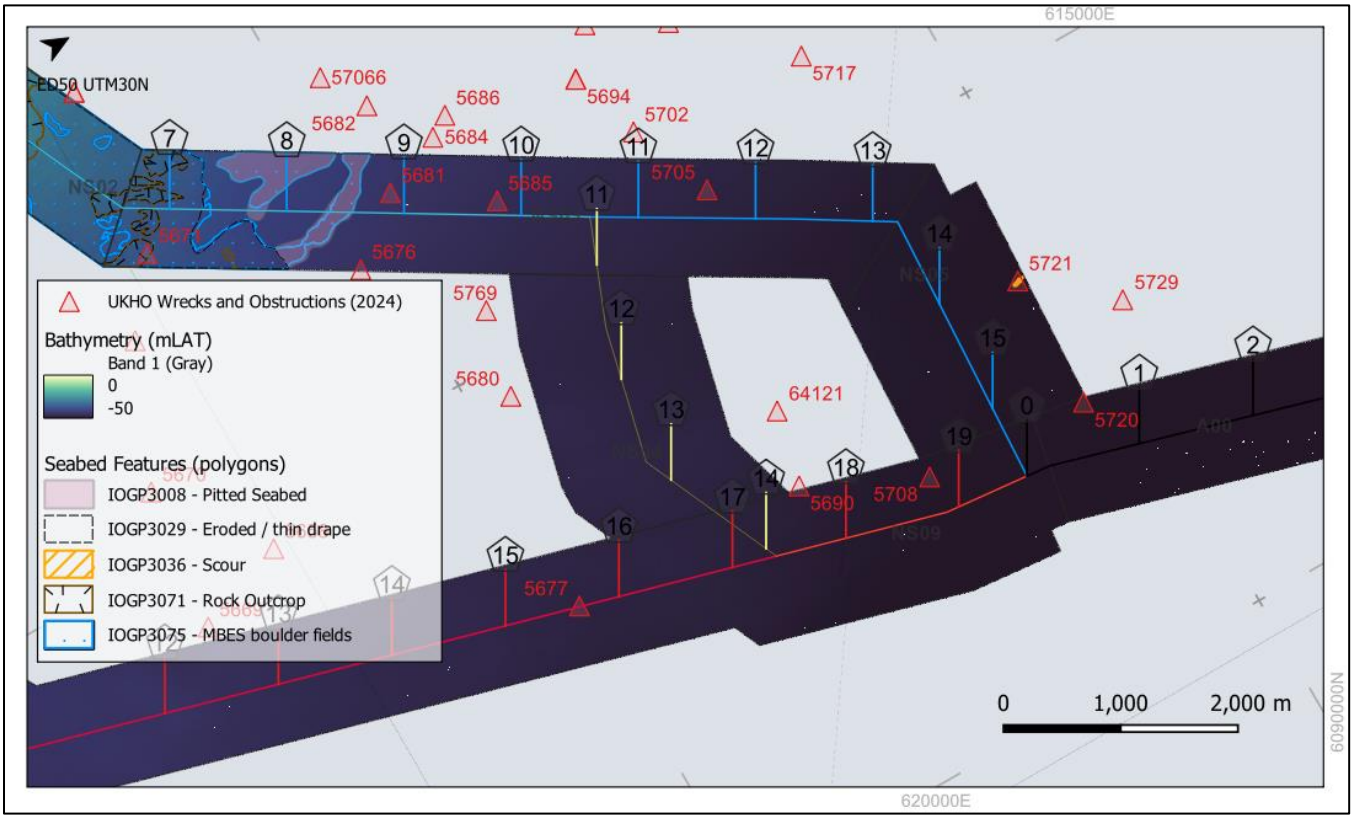


Figure 12: Bathymetry and seabed features in the transition between Nearshore (LF routes) and Offshore (OF route)

Mobility of the sediment in the nearshore area

The nearshore area is primarily covered by data from the 00833 Data Purchase and the 00741 survey, all acquired in 2023. The 01139 MBES scope in this region was limited to centerlines and crosslines acquisitions. A 2024–2023 difference map was generated using these lines in conjunction with 2024 MBES data acquired during the towing phase. As the latter dataset was outside the original 01139 scope, it was not processed as part of the main workflow, which explains observed discrepancies in GNSS height on certain lines.

The combination of both datasets nonetheless provided valuable insights into seabed mobility in the nearshore zone. Notably, NS01 and the northern section of NS02 (up to KP3) exhibit significant areas of erosion. NS06 presents a mix of sediment accretion and erosion, while NS07 and NS08 predominantly show sediment accumulation between KP2 and KP4.

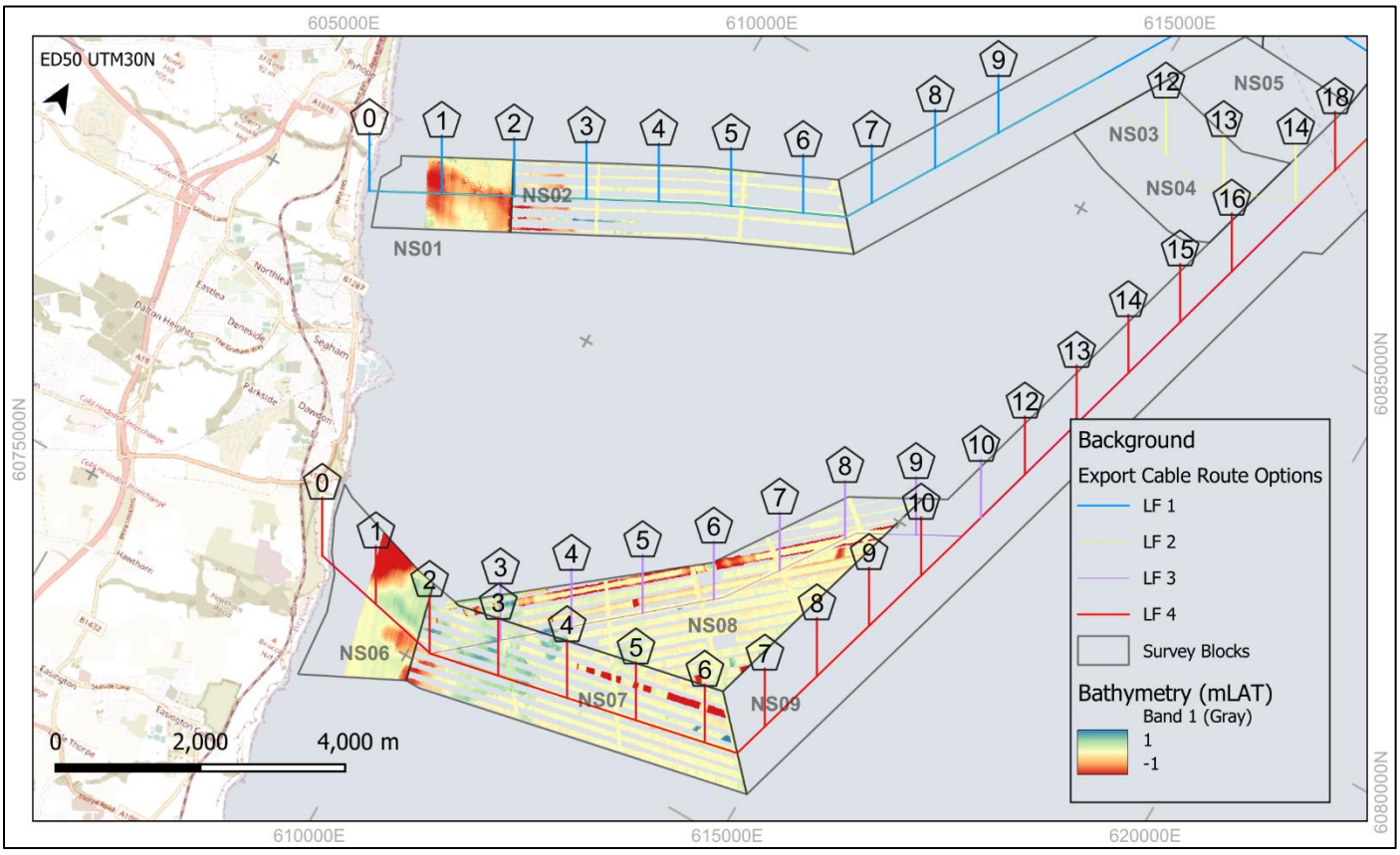


Figure 13: Nearshore 2024-2023 Difference map

Sediment Classification

In the nearshore area mobile sediment has moved (Figure 13). As a result, there are some discrepancies between the backscatter dataset and the side scan sonar (more recent), especially in the nearshore. An example of this is shown in Figure 14, where a patch of coarse sand is distinct from the surrounding finer sediment. This is no longer visible on the side scan sonar imagery in 2025, which was verified using backscatter data captured as a by product on 2025 towing vessels. The reverse situation is also true in NS01 where patch of rocks or gravels were not seen in 2023 but were in 2025 (Figure 15).

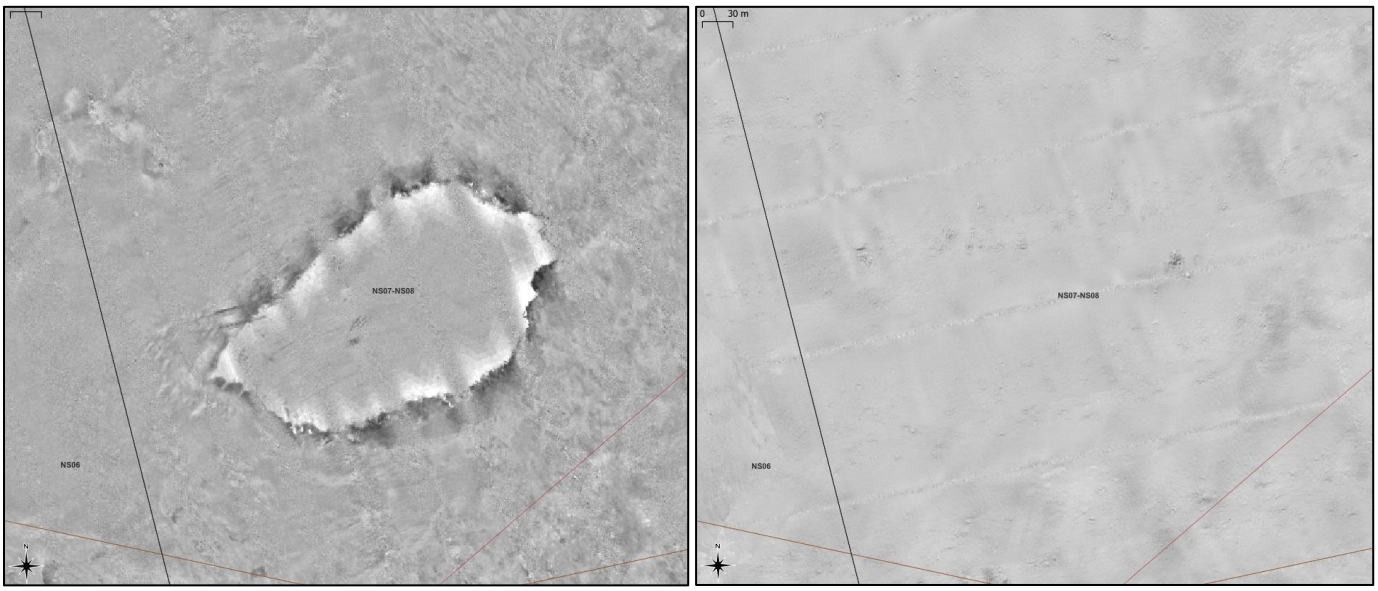


Figure 14: Inclusion of coarse sediment amongst the sand in the nearshore section of NS07 in 2023 (left image, backscatter) no longer visible in 2025 (right image, side scan sonar).

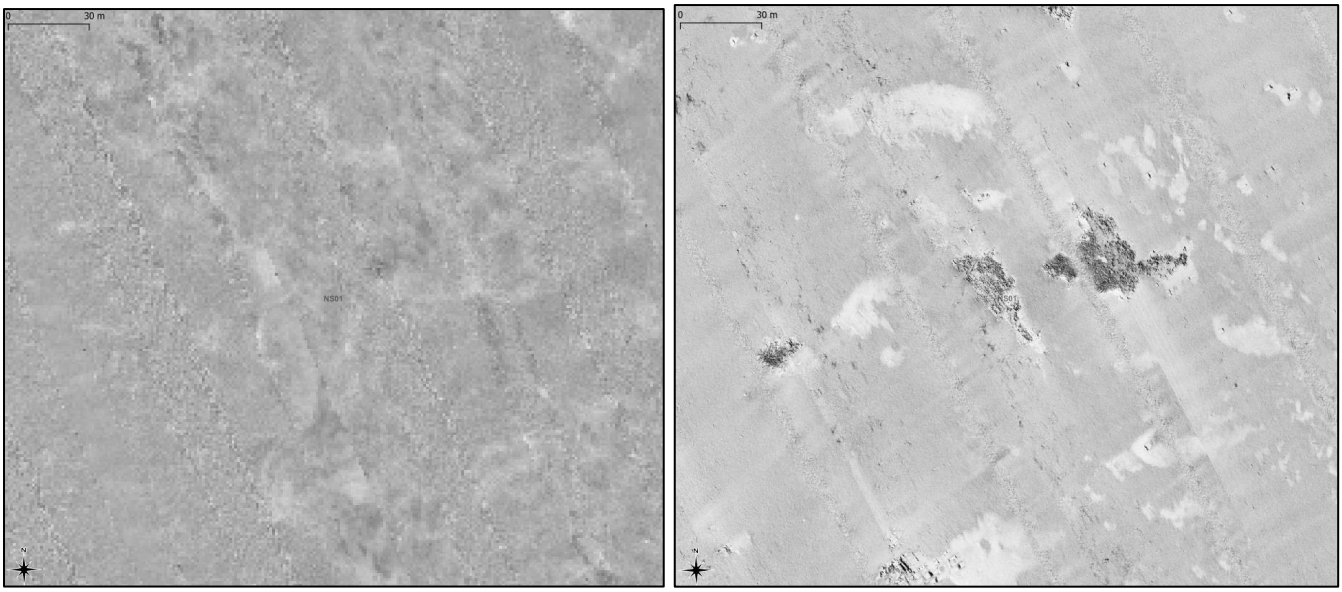


Figure 15: Example of difference between 2023 (left image, backscatter) and 2025 surveys (right image, side scan sonar) in NS01.

Sediment Classification

A study published by the Channel Coastal Observatory in 2021 included grab samples, and a substrate analysis based on Folk's 5 classes. Previous interpretation from the 00741-BP-ENG-WIND scope (2023) was revised in line with the study and expanded to the boundaries of this project.

Both divisions of the nearshore corridor display the same types of substrates for the first 6km (Figure 16 and Figure 18). Rock outcrops are visible closest to the beach (Figure 17), amongst a sediment thought to be slightly gravelly muddy sand. A clear boundary occurs in NS02 at 16m LAT (KP2.7) and in NS07 around 21m LAT, separating this fine sand from a coarse sediment matrix, interpretated as Gravel with rock outcrops in places, possibly covered with vegetation or a layer of fine sediment judging by the presence of low reflectivity patches (Figure 19). These coarse sediment and rocky zones are correlated to boulder fields.

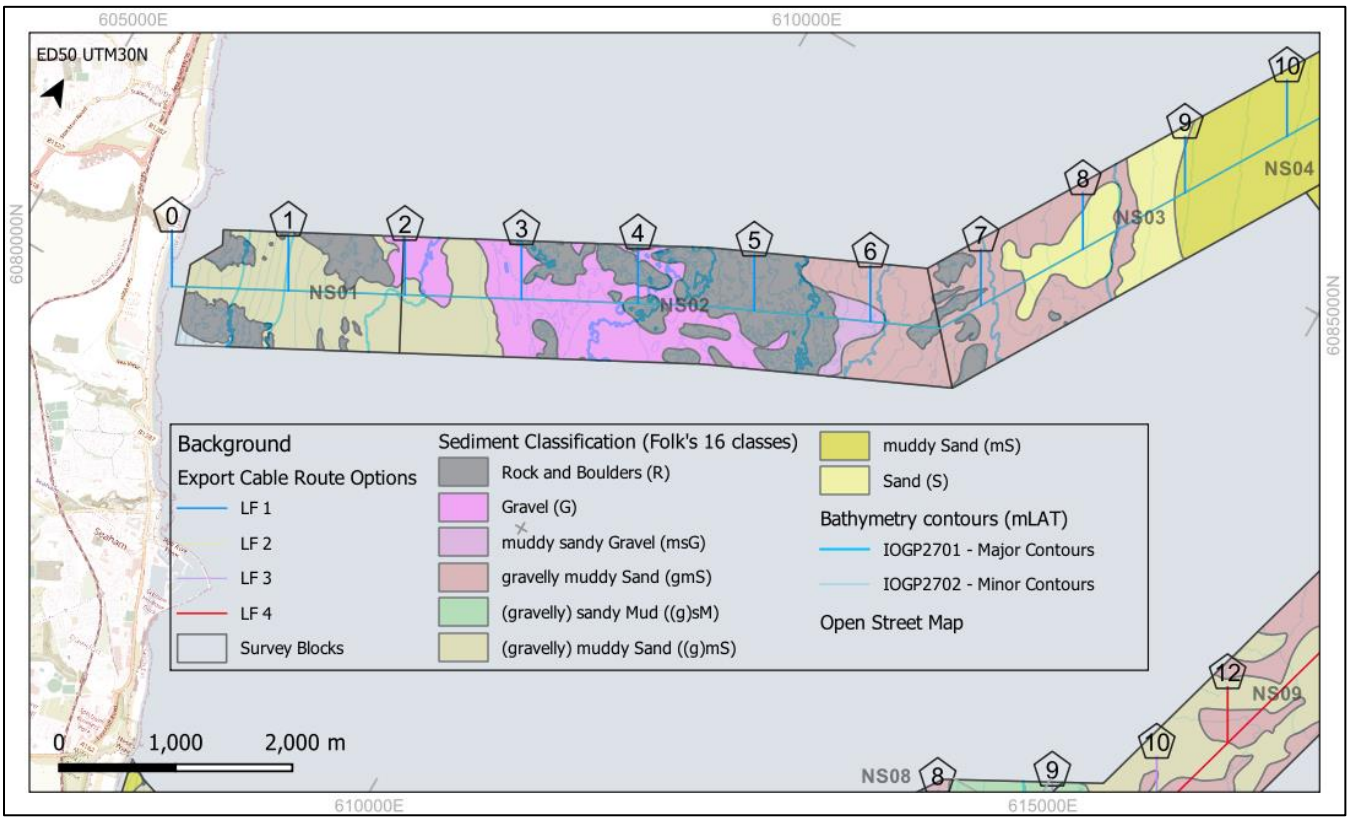


Figure 16: Sediment Classification in the LF1/LF2 Nearshore Route (KP0-10)

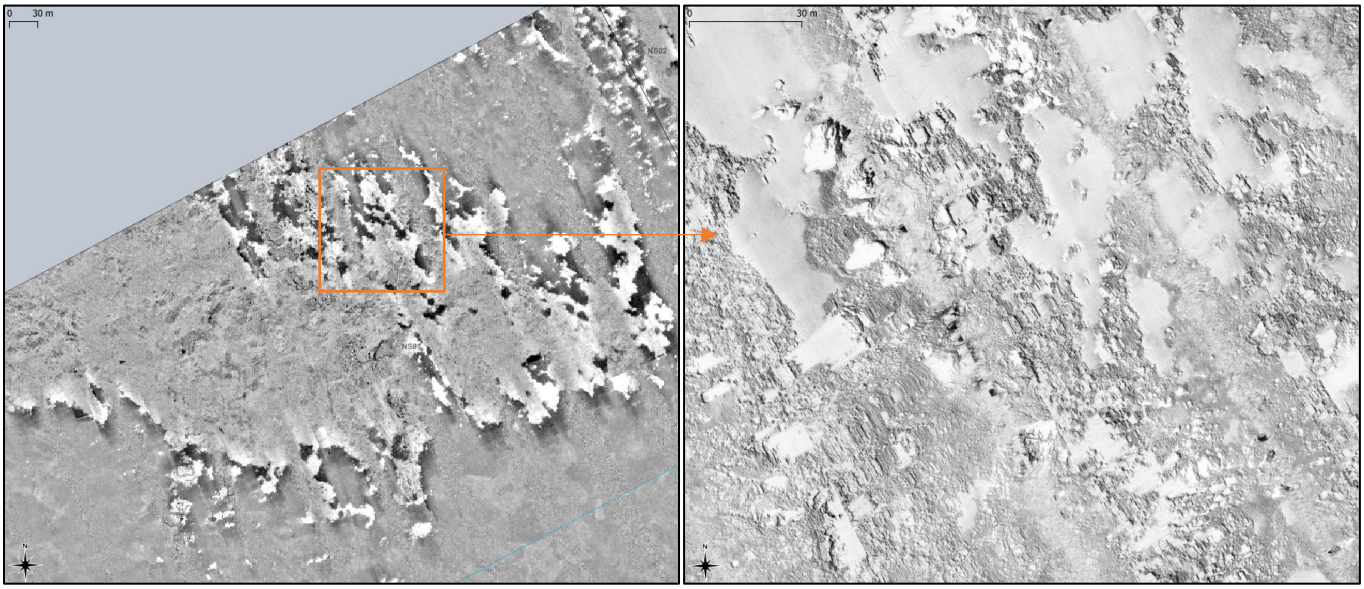


Figure 17: Rock outcrops and boulders seen in NS01 at 5m LAT / KP0.5 (Left: Shaded backscatter, right: non-shaded side scan sonar)

On the LF3/LF4 route the sediment seems more mixed than on the LF1/LF2 route (Figure 18). Inclusions of gravelly mud patches are possible, the extent of which seems to have slightly changed between 2023 (backscatter dataset) and 2024 (side scan sonar dataset). Around KP2 (N07) as well as in the NS08 and NS09 blocks the sediment appears heterogenous on the backscatter as if made of all 3 sediment components and is therefore classified as gravelly muddy sand.

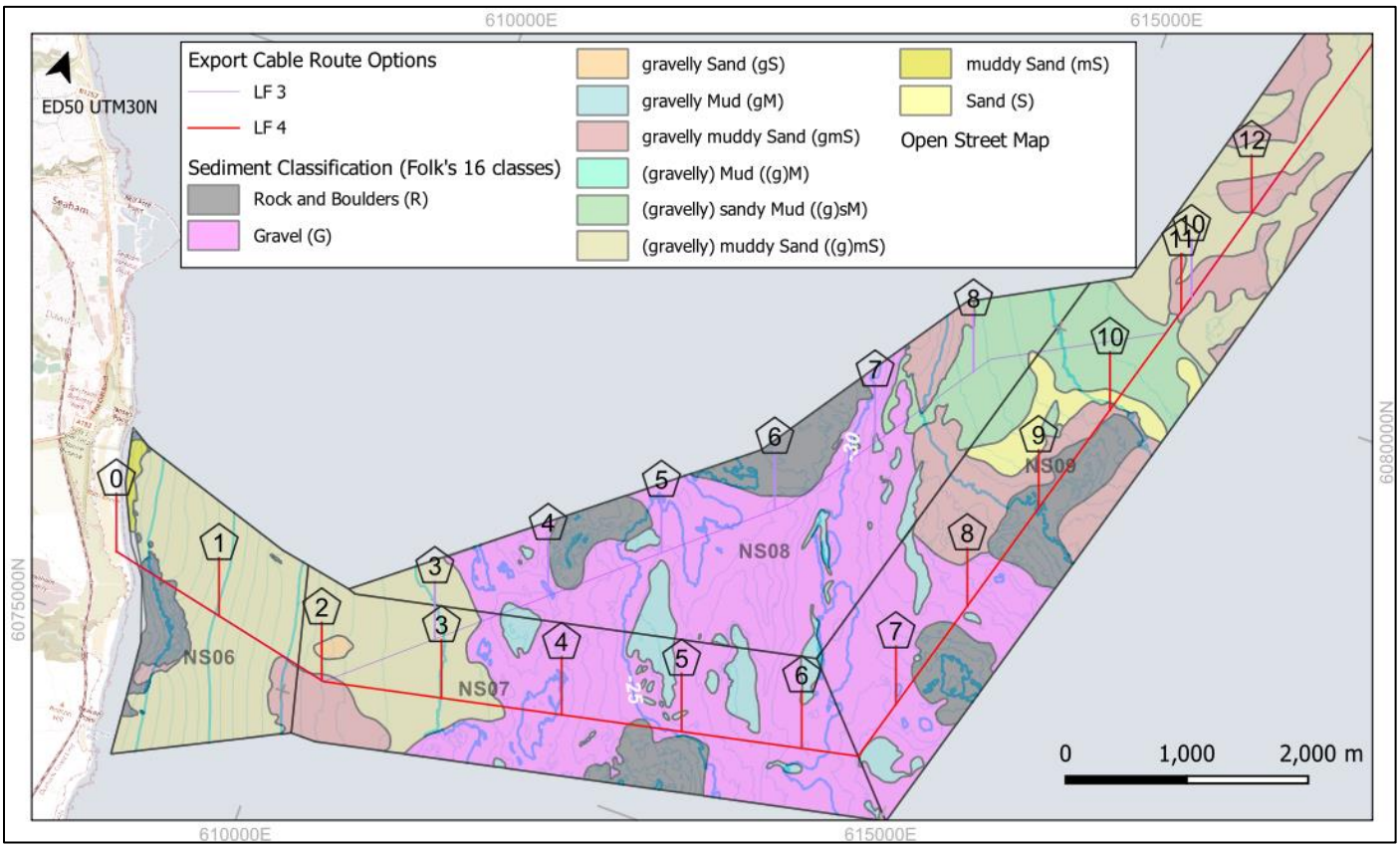
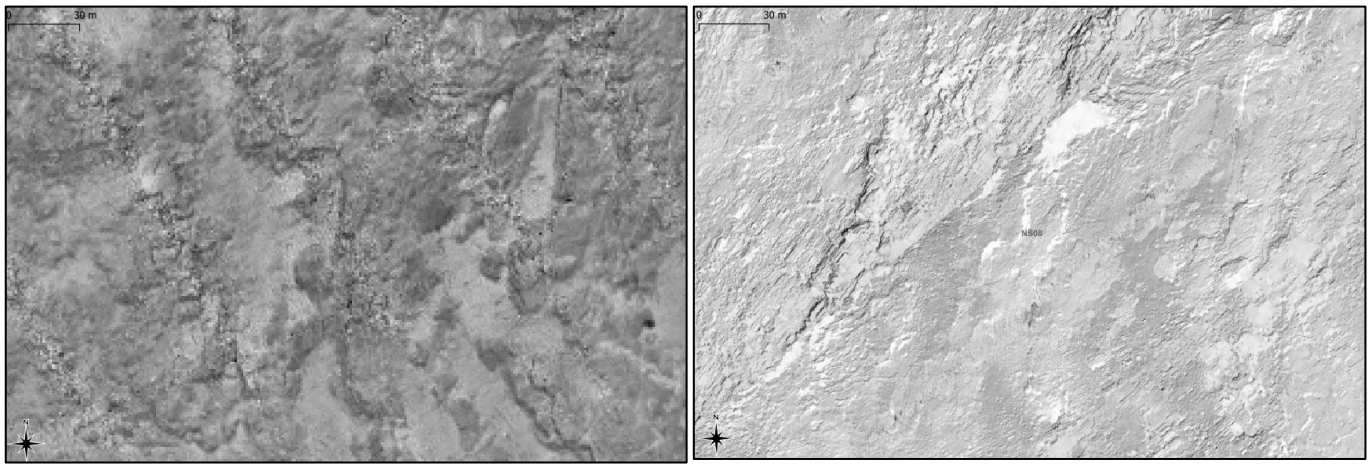


Figure 18: Sediment Classification in the LF3 and LF4 Nearshore Routes (KP0-10 and KP0-12)


Figure 19: Coarse sediment with rocky texture possibly covered with mud or vegetation in NS08 between KP4 and 5 (Left: Shaded backscatter; right: shaded side scan sonar)

As the seabed deepens the heterogeneity of the sediment evolves from a Mixed Sediment (such as gravelly muddy sand) with a relatively higher Mud content to a muddy Sand with higher Sand content. From approximately 51m LAT where the offshore section starts the seabed is made of a smooth homogeneous sand (Figure 20).

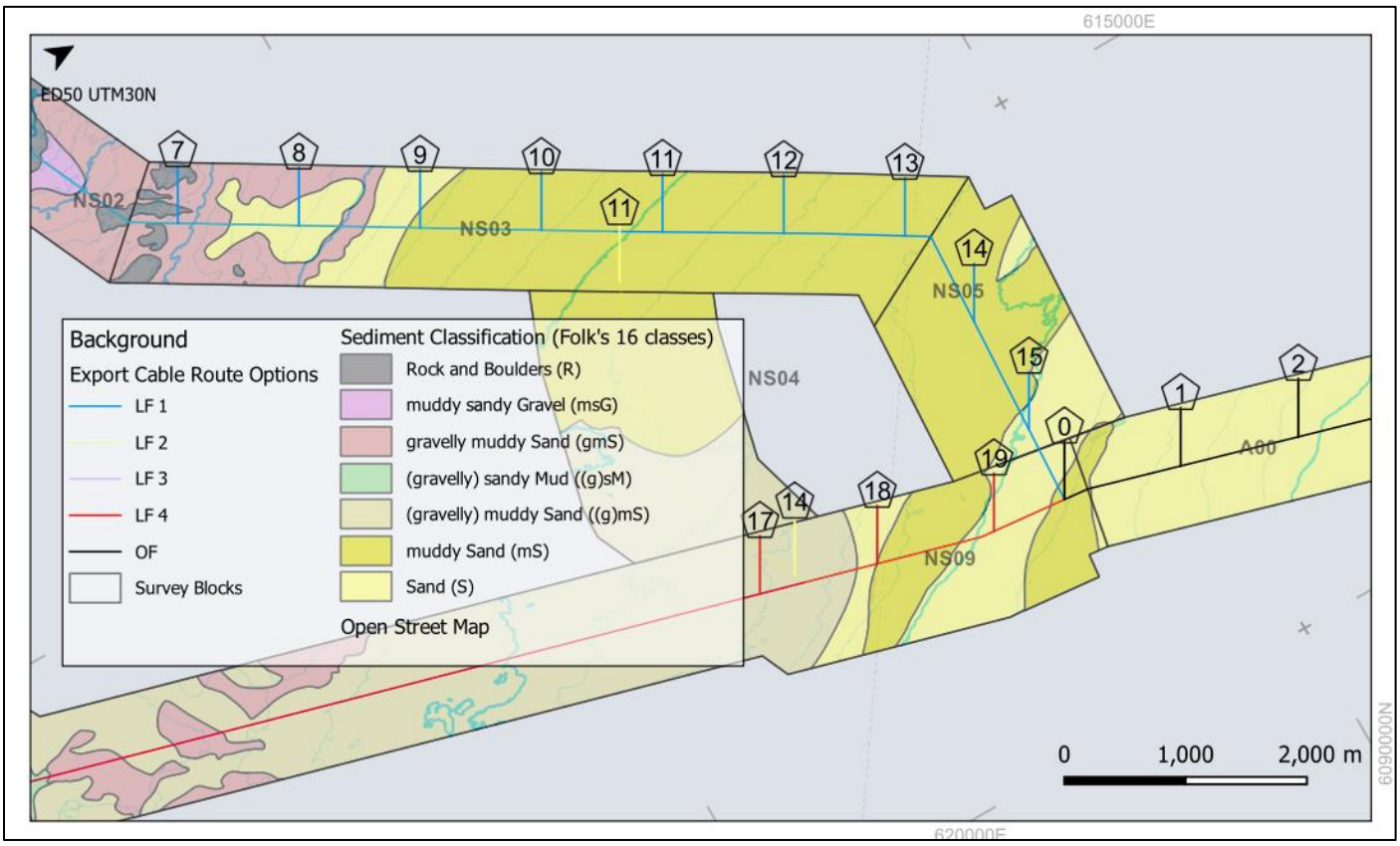


Figure 20: Sediment classification in the transition between Nearshore (LF routes) and Offshore (OF route)

5.2 Offshore Section (OF)

Bathymetry and Seabed Features

The offshore section encompasses survey blocks A00 to A18, with a preliminary KP0 placed at the South of A00 as requested by the client (Figure 21). Depths range from approximately 50m LAT to almost 106m LAT in A06 (KP64). About half of the offshore route is deeper than 70m LAT between KP5 and KP98 in some sort of wide channel (Figure 22), whilst the depth o scillates in between 55 and 71 m LAT in between KP100 and KP188 at the Morven OWF approach.

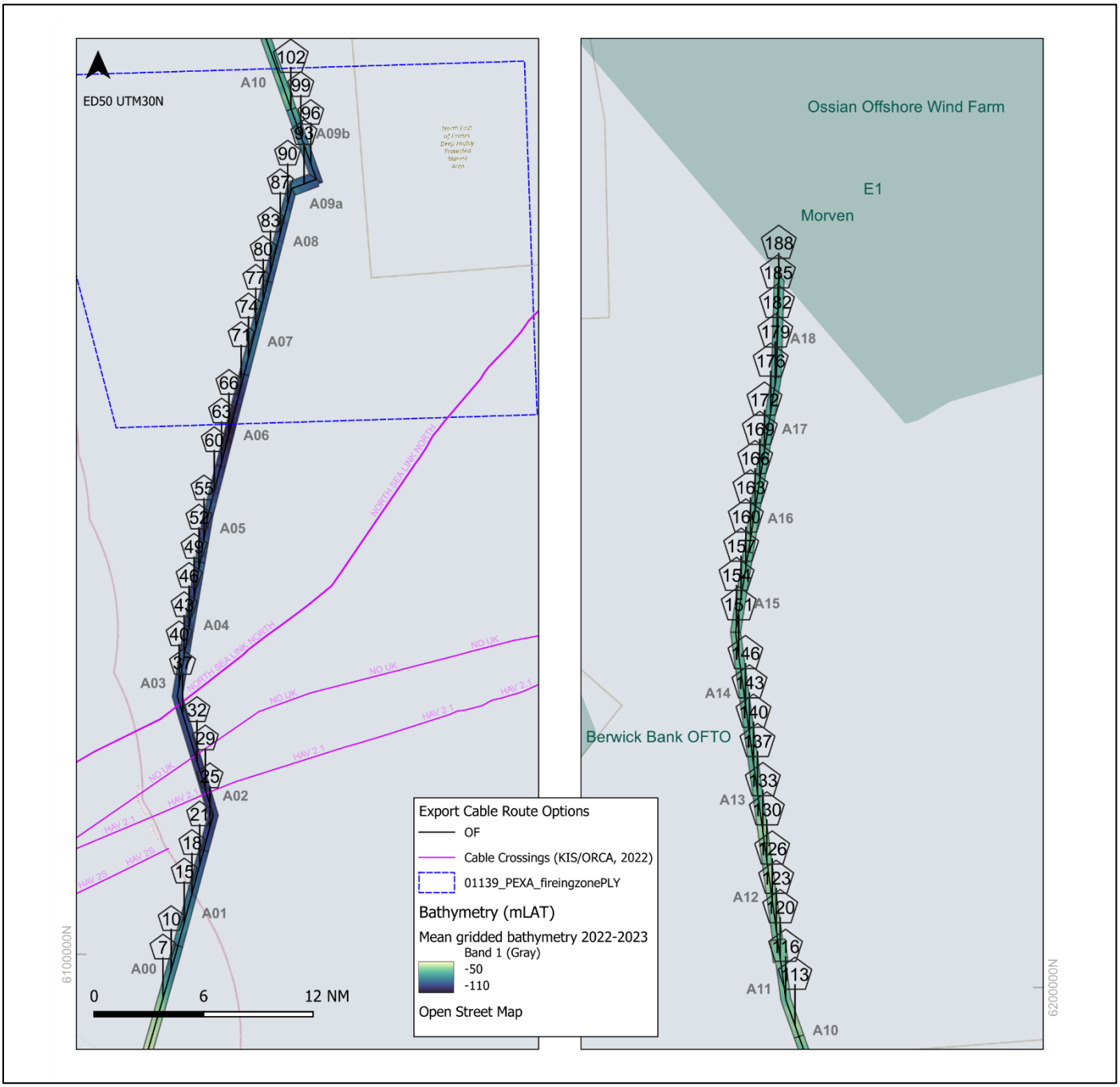


Figure 21:General bathymetry of the offshore section

Ocean data, delivered.

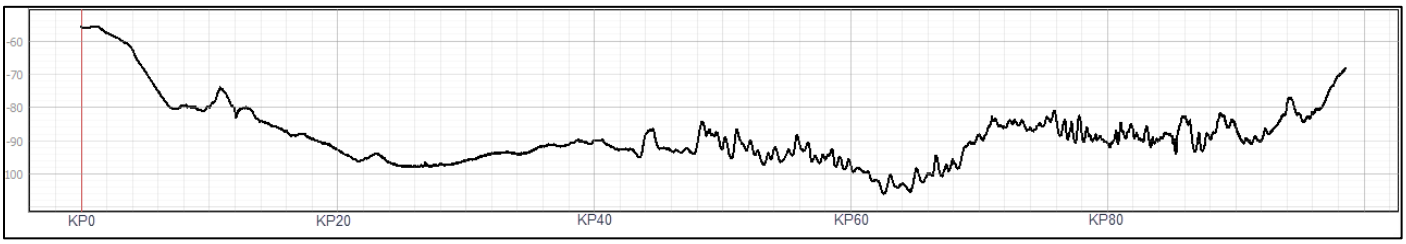


Figure 22: General bathymetry profile between KP0 and KP100 (OF)

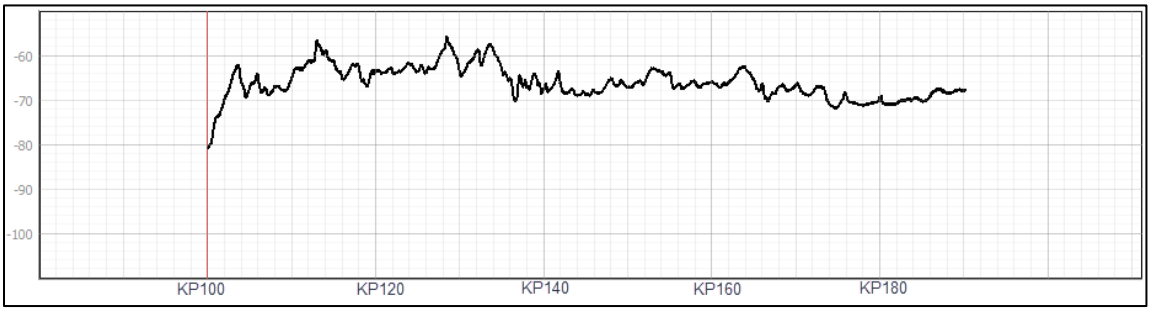


Figure 23: General bathymetry profile between KP100 and KP190 (OF)

The first 50km of the offshore route are featureless, save for a punctual bathymetrical high around KP14, directly followed by a 6m deep and 150m wide valley(Figure 24) . Three cables cross the route at KP28.5, KP32.5 and KP38 are observed in the MBES, SSS and Mag survey data (see section on Crossings and Existing infrastructure).

From KP51 sediment waveforms are forming with NW/SE orientated crests, although these are not very well defined and quite short, with a wavelength of approximately 600m and with a 5m height. Trawl marks are abundant throughout the whole section covered by the charts in Figure 24.

Between KP73 and KP93, these sandwaves seem to become more regular and parallel with their crests between 80 and 85m LAT and their throughs between 87 and 95m LAT, before phasing out at KP100 (Figure 25). The crests are often characterised by pitted seabed or a mottled seafloor, which translates into a higher gravel and rocks content than the surrounding sediment, as confirmed by the boulder fields digitised from SSS imagery.

Between KP93 and KP103 the mean seabed rises steadily before stabilising at approximately 65m LAT for the rest of the route. The seafloor is then neither flat nor smooth but rather hilly with irregular depths variations of +-5m coupled with patches of pitted seabed, mottled seafloor, seabed furrows (Figure 25). These features dominate particularly between KP101 and KP138 (Figure 28), before being eventually replaced by homogenous sand with occasional patches of pitted seabed (Figure 27).

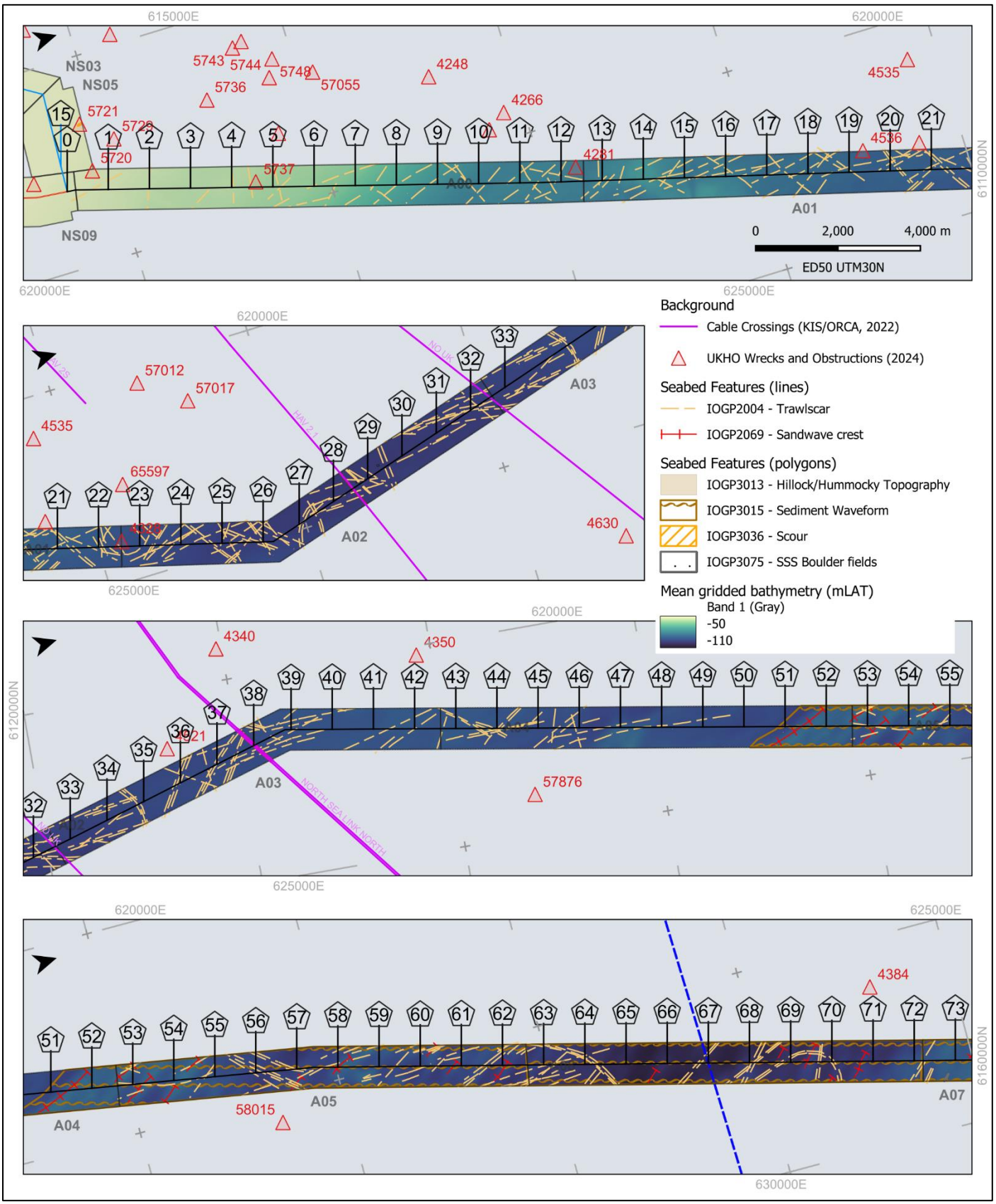


Figure 24: Bathymetry and seabed features, OF route KP0-73

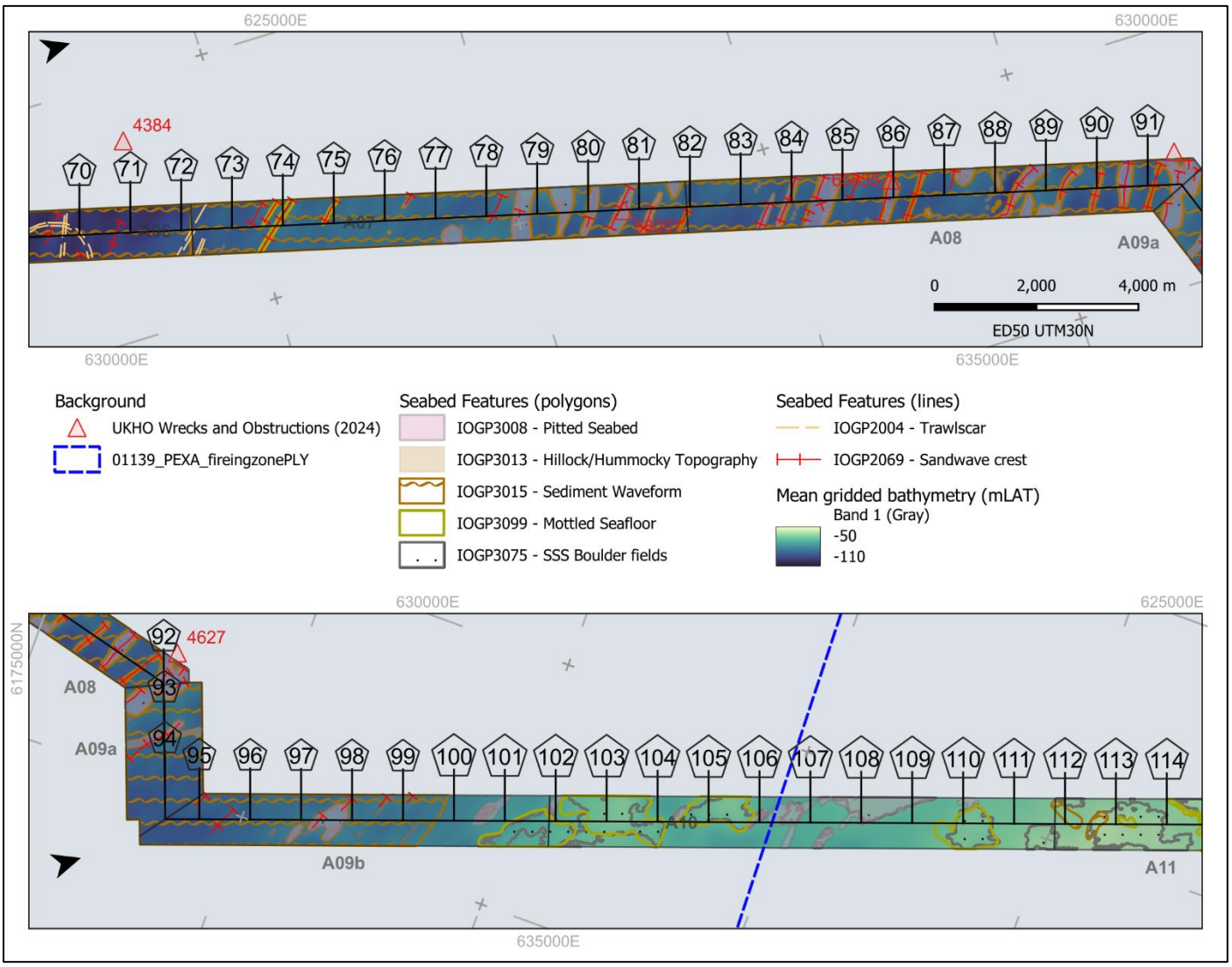


Figure 25: Bathymetry and seabed features, OF route, KP70-114

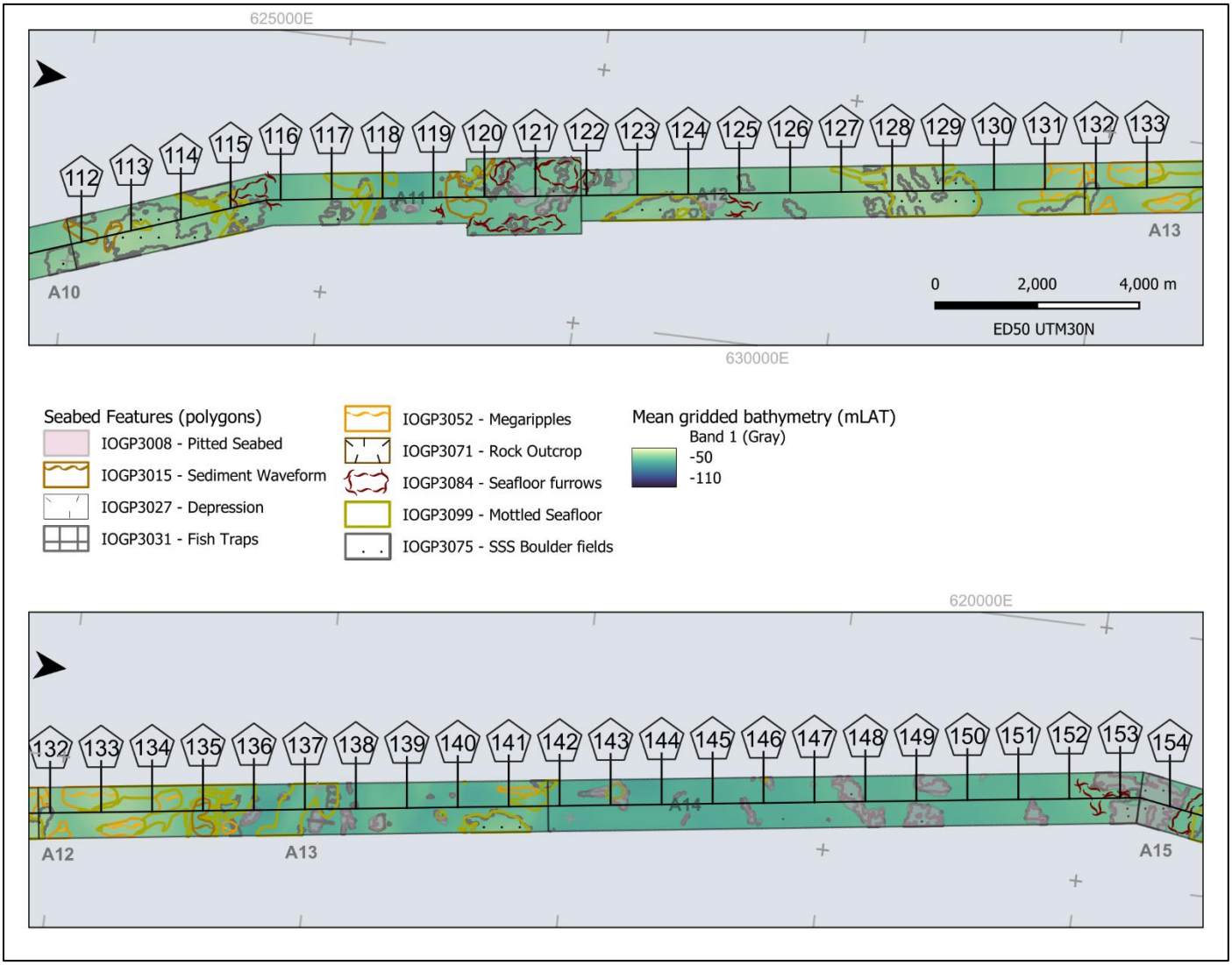


Figure 26: Bathymetry and seabed features, OF route, KP112-154

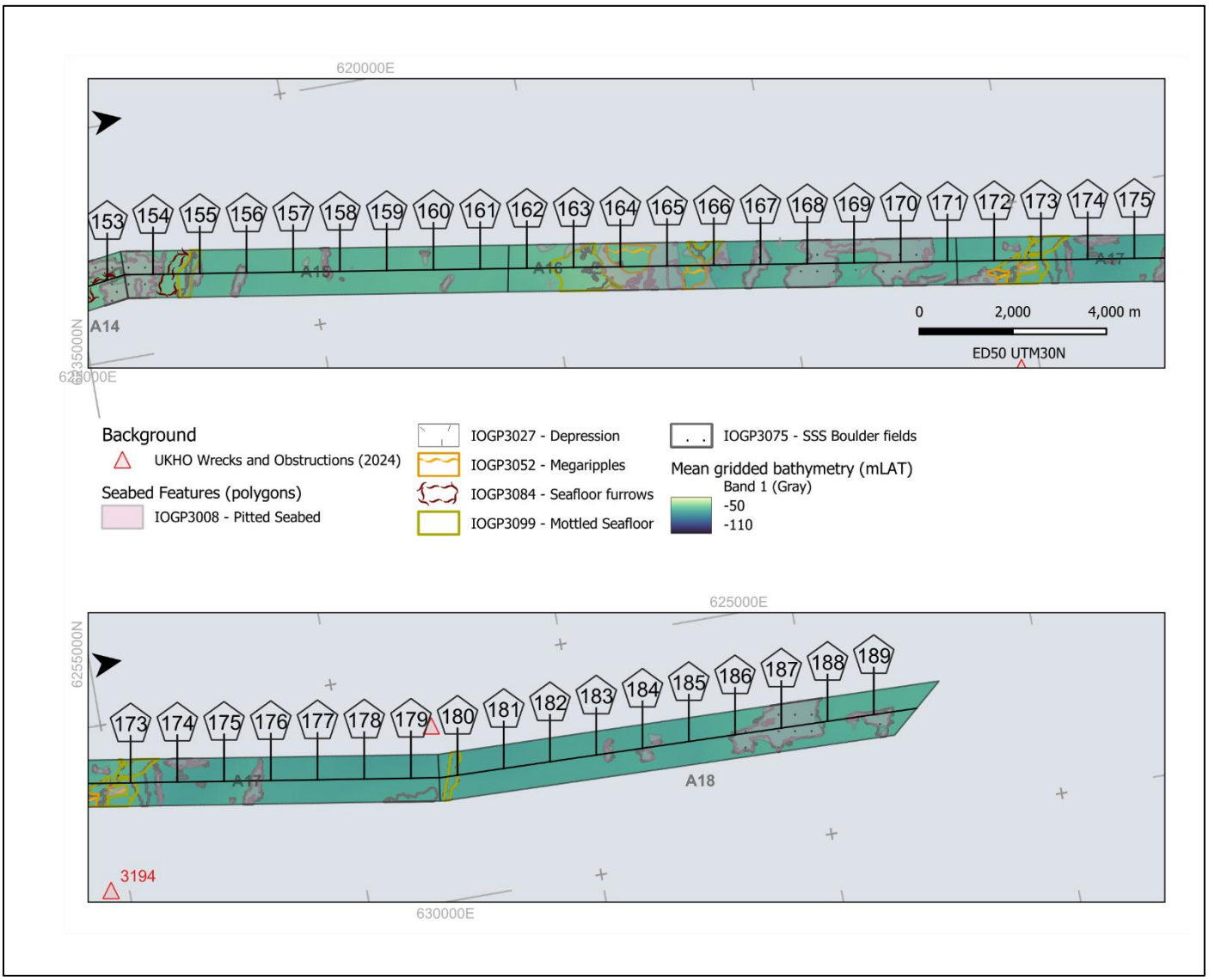


Figure 27: Bathymetry and seabed features, OF route, KP153-190

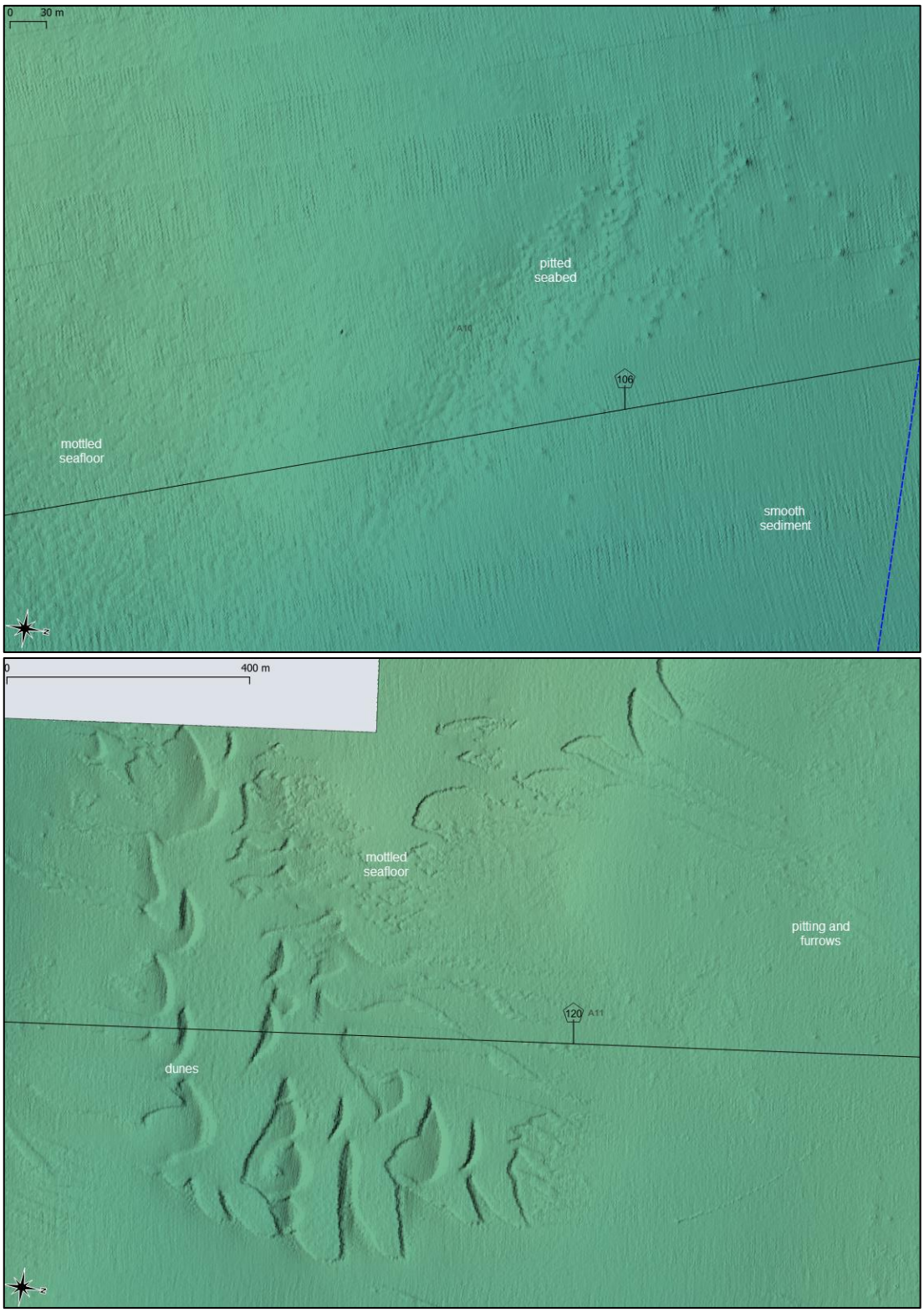


Figure 28: Examples of seabed features found in the Offshore Route (Vertical exaggeration x7)

Sediment Classification

The sediment from KP0 to KP73 in blocks A00-A06 is a homogeneous, probably fine to medium, sand. The only exceptions to this are a couple of inclusions of coarser sediment in A05 (Figure 29).

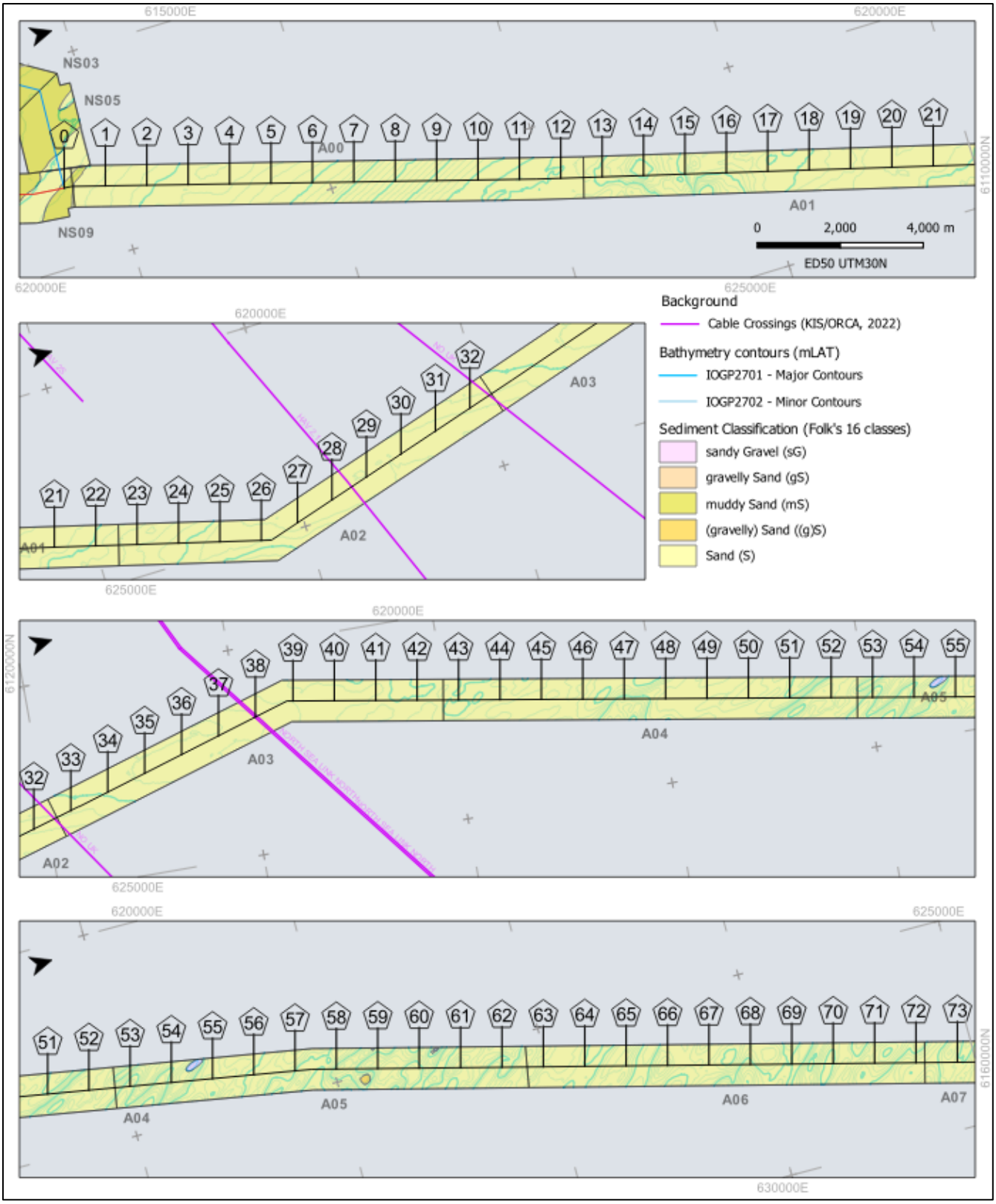


Figure 29: Sediment classification, OF route KP0-73

Between A07 and A10, the medium sand becomes sorted along sediment waves, orientated NW/SE. Coarser sediment - gravelly sand to sandy gravel - accumulates at the top of these crests. At the junction of blocks A09 and A10, sediment waves end, and the sediment is clearly coarser on a wider area, with even a patch of gravel in the middle of A10 (Figure 30).



Figure 30: Sediment Classification, OF route KP70-113

Between A11 and A15, the seabed looks heterogenous, with different intertwined substrates (Figure 33). This diversity is not reflected at the scale of the available BGS data, but there is a general trend for the sediment to become coarser between KP101 and KP138. An example of the complexity of the sediment classification is shown in Figure 31. It is possible that a sand or a muddy sand layer on top of a coarse sediment, is eroding, forming thereby first a pitted seabed and revealing till, therefore classified as sandy Gravel. In this example the sediment seems to mix before gradually becoming homogenous but slightly coarse sand in the South.

A closeup on the mottled seafloor shown in Figure could indicate a mixed sediment such as a gravelly muddy sand: the relative dark shades in the backscatter correspond to faint white areas in the side scan sonar, absorbing the acoustic waves and hinting towards a muddy composition. The coarse sediment seems to reflect relatively strongly on the side scan sonar where ripples are visible and could be a gravelly sand. Boulders in the area could confirm the gravelly composition of this mixed sediment.

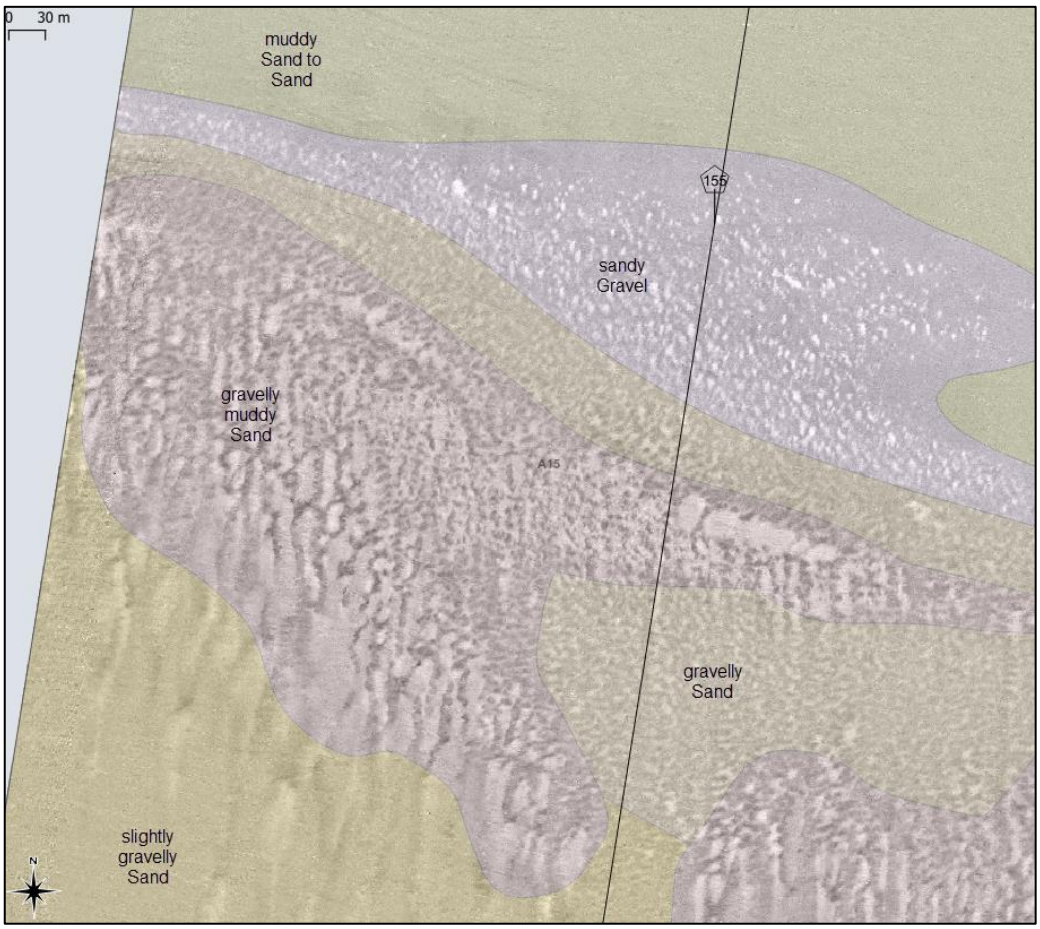


Figure 31: Example of the diversity of sediment types in A15 (KP155)

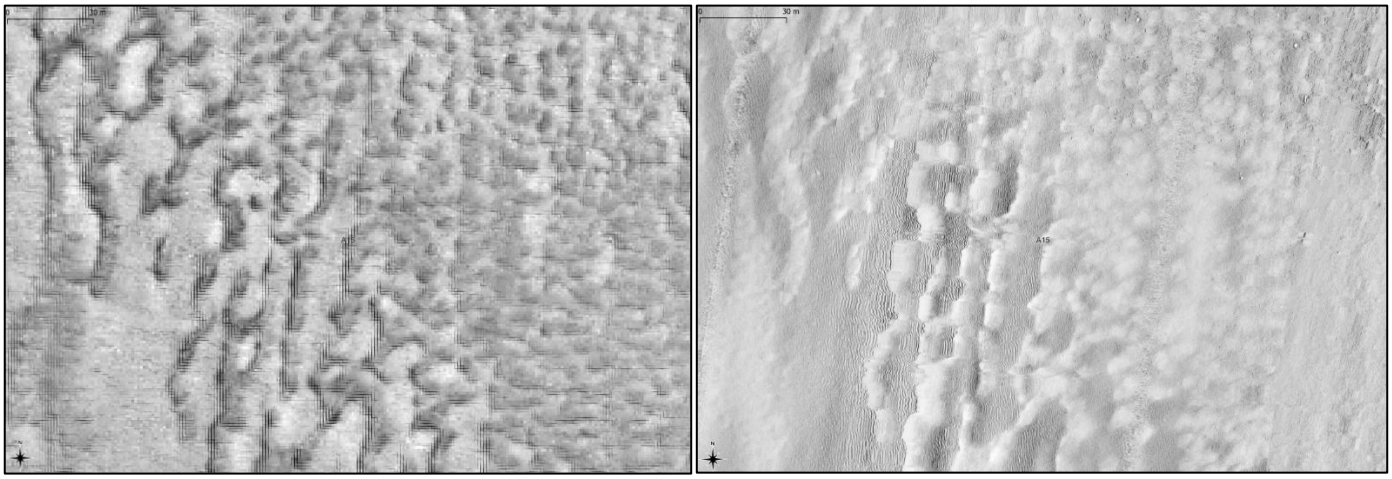


Figure 32: Closeup from previous figure; Shaded Backscatter imagery revealing a mottled seafloor (left) the side scan sonar equivalent (right) in A15.

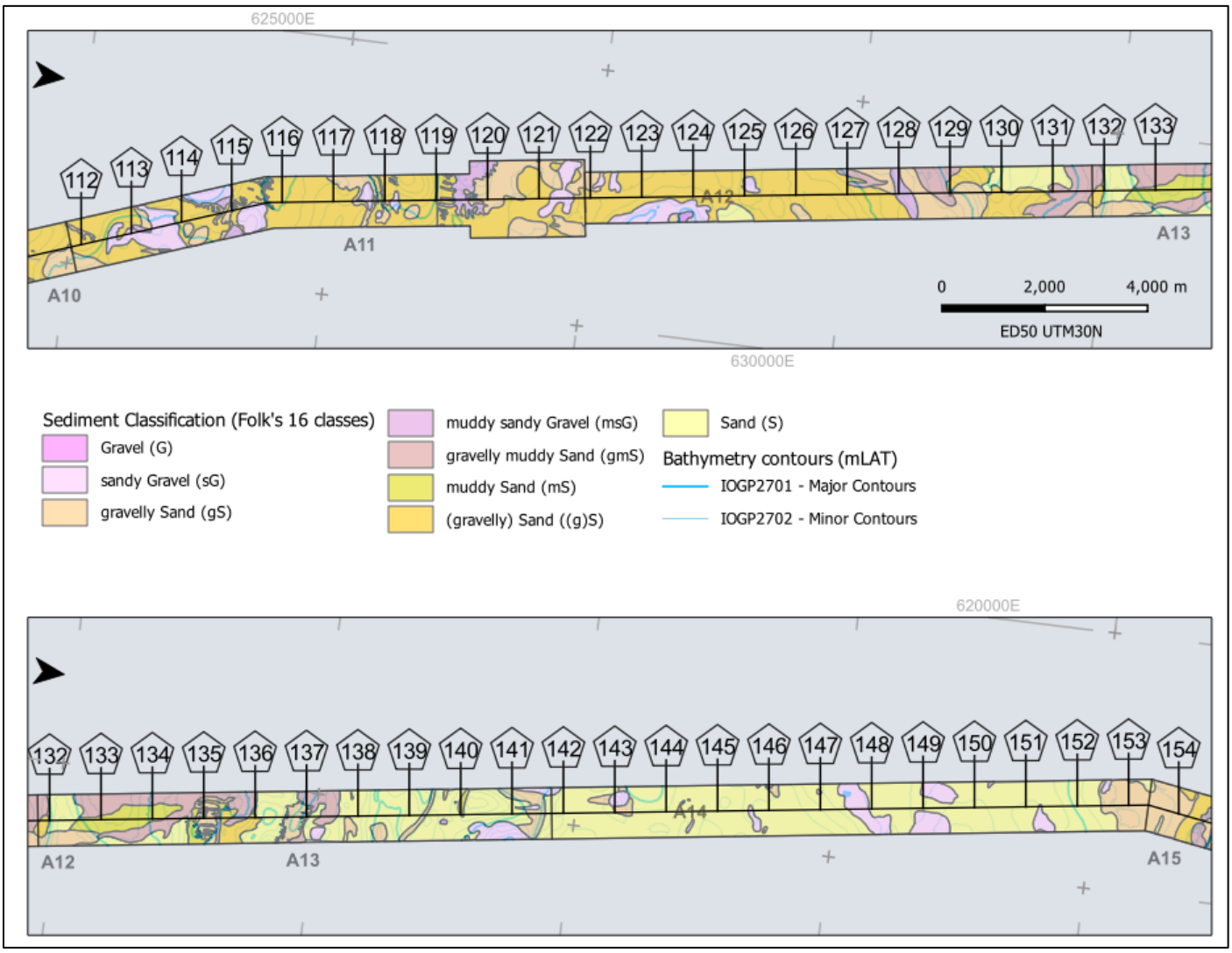


Figure 33: Sediment classification, OF route KP112-154

After KP155 a relatively smoother texture takes place for 7km before showing similar erosional features and sediment mixing between KP163 and 166 (Figure 34). For the last 30 km the smooth sand is punctuated by patches of coarse sediment and boulders corresponding to different intensities of pitting as well mottled seafloor. Table 13 shows different stages of pitting and their interpretated sediment classification which was applied here.

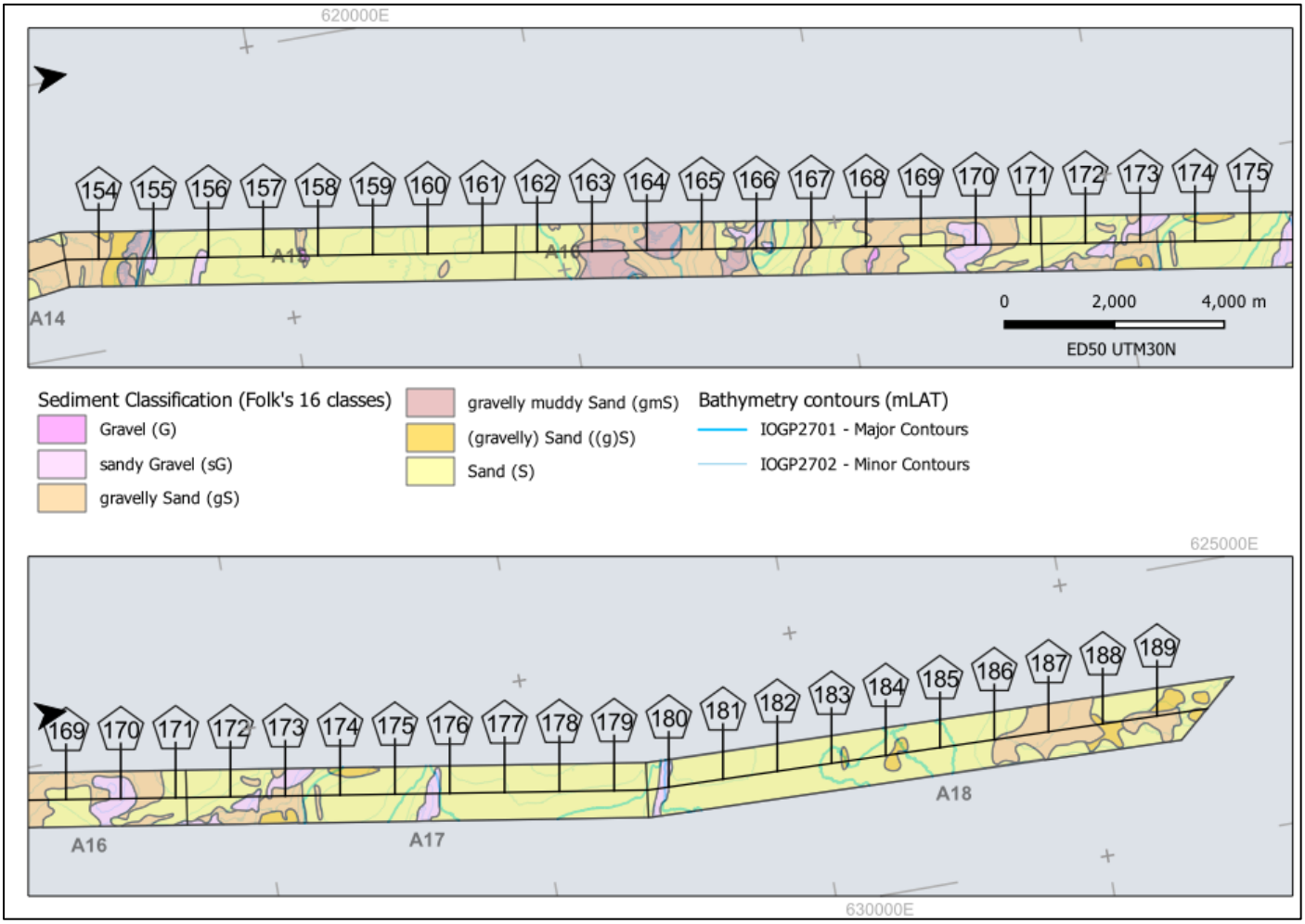


Figure 34: Sediment classification, OF route KP154-190

5.3 Contacts and Shipwrecks

A total of 12930 discreet targets were identified on the DTM surface across the survey area in addition to 249 areas designated as 'Boulder Fields' where individual boulders were not picked unless they were a contact of interest. More information on how these boulder fields were picked is available in Section 4, and where they are found in Section 5.

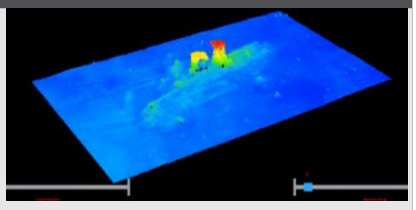
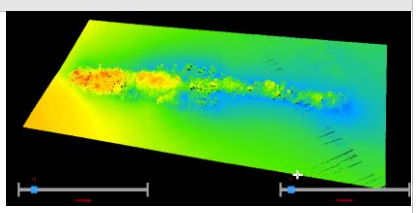
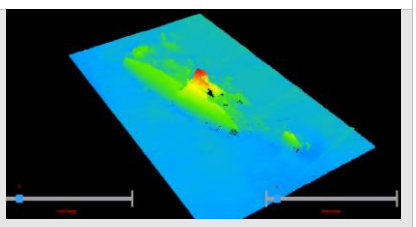
11549 targets were observed in the sidescan sonar data for the 01139 scope, (including boulders) down to 0.5m in any dimension.

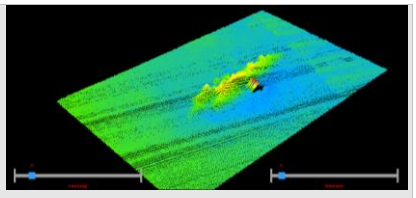
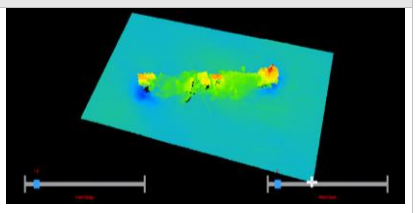
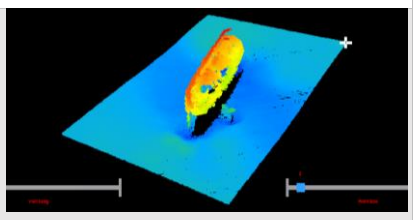
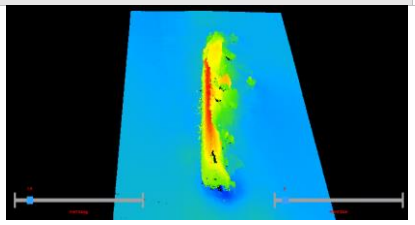
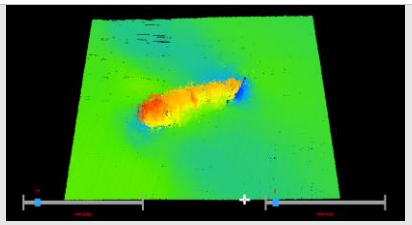
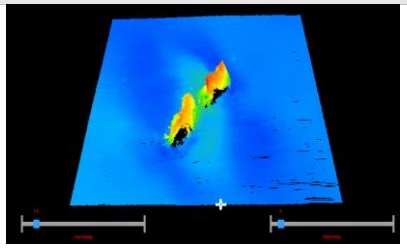
All the 12804 surficial contacts were combined into a Master Target Listing delivered separately. MBES contacts that could be correlated to SSS were indicated as such. Magnetometer anomalies that could be correlated to any type of contact were also mentioned. 298 MBES contacts could be cross correlated with side scan sonar, 15 of which are also nearby magnetic anomalies. A summary of the contact findings can be found in Table 14.

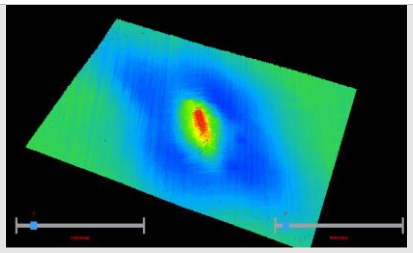
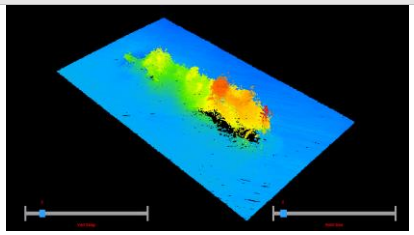
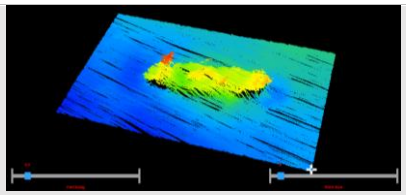
Table 14:Types of contacts found in MBES and SSS datasets in the survey.

Categories of Contacts and SSDM Classification	Contacts number
ACTIVITY	
IOGP2075 - Wire/Chain	127
IOGP2078 - Cable	3
DEBRIS	
IOGP1032 – Unidentified Debris	943
IOGP1022 - Wreck	22
IOGP2002 - Linear Debris	135
IOGP2079 –Other (Use Comments)	6
GEOLOGY	
IOGP1003 - Seabed Mound	3
IOGP1028 - Possible Boulder	11564
OTHER	
IOGP1041 - Other	1
Grand Total	12804

Table 15: Contacts and shipwrecks, nearshore section

Target ID	Name/ UKHO ID	Dimensions	Comment	Image
00741_MBES_0418	VIANNA (Possibly) 5663	62.7x23.2x5.2	Steam ship Well broken up Orientation SSW/NNE	
01139_MBES_0300	57068	115.7x20.7x1.79	Pipes/Tubes/Diffusers	
01139_MBES_0218	TEAL (Probably) 5785	54.1x16.8x4.9	Steam ship, Mainly collapsed Stern intact and inverted	
	NORMAN 57777		Steam ship Fully rigged	Not found

01139_MBES_0386	89472	13.1x2.5x0.3		
	5671			Not Found
	5676			Not found
	5677		Equipment 100ft of 15in casing	Not found
	5681			Not found
	5685			Not found
	5705			Not Found
00741_MBES_0643	HOGARTH 5708	81.99x22.66x9.81	Steam ship Broken in two, Orientation W/E	
00741_MBES_0606	STAG 5 (Probably) 5721	28.94x6.44x4.45	Tug Probably partially buried Orientation NNE/SSW	
00741_MBES_0672	ZEELAND (Possibly) 5720	89.6x22.9x8.6	Steam ship Probably on its side Orientation N/S Block A00	
00741_MBES_0002	Unidentified 5737	32.2x10.7x4.6	Probably on its side Orientation W/E Block A00	
00741_MBES_0001	JOHN M SMART (Possibly) 4281	42.5x8.5x6.5	Trawler Possible in two pieces Orientation SSW/NNE Block A00	

00741_MBES_0006	HANS HOTH (Probably) 4328	21.3x8.1x3.8	Steam ship Probably area of wreckage Orientation N/S Block A02	
01139_MBES_0148	58007	40.9x8.36x4.6	Intact Upright Mast or attached trawl Orientation SE/NW Block A07	
01139_MBES_0141	65635	19.4x6.9x2.7	Intact Orientation W/E Block A08	

5.4 Crossings and Existing infrastructure

The ECR is crossed by three existing cables as listed in Table 16 and visible at an overview level in Figure 2. This list may not be exhaustive and was built with available data at the time of writing.

Table 16: Cable and pipeline in the Morven Export Cable Route (Source: Kis-Orca, 2022)

Item	Name	Status	Owner	Crossing	Observed in MBES/BKS Data	Observed in Mag	Observed in SSS
1	North Sea Link North	Active	North Sea Link	A03	Yes, Buried	Yes	Yes
2	Norway to UK	Active	Altibox	A02-A03	Yes, Buried	Yes	Yes
3	Havhingsten Seg 2.1	Active	AquaComms	A02	Yes, Buried	Yes	Yes

There is a sewage diffuser Pipe in NS06 (Figure 35) listed as MBES contact 01139_MBES_0300 is shown in Table 15 above because it was reference in the UKHO wreck database as a point vector.

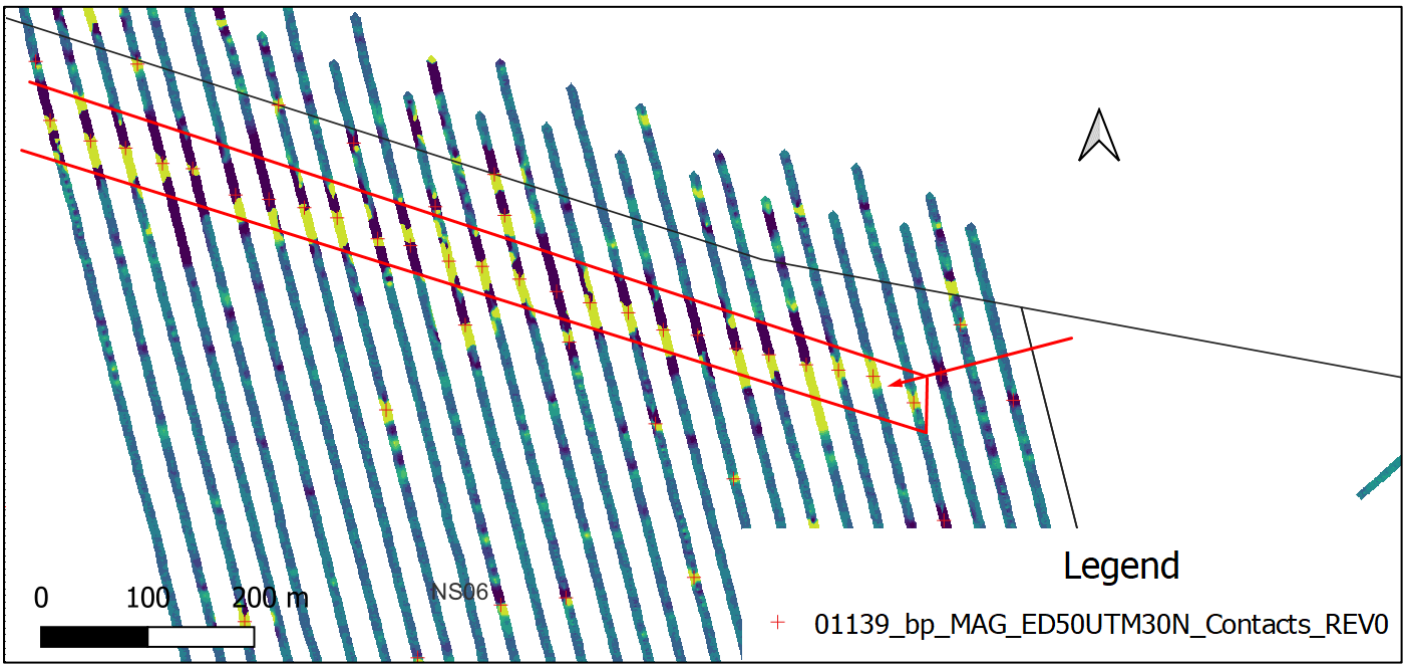


Figure 35:Mag data showing Diffuser pipe.

5.5 Anthropogenic activities

Fishing gear was spotted in nine of the survey blocks across the route. (Figure 36) shows an example of fishing gear spotted in A12. Several wires/chains were also seen in the SSS data, an example from A13 is shown in (Figure 37). Numerous Linear Debris where observed along the survey route.

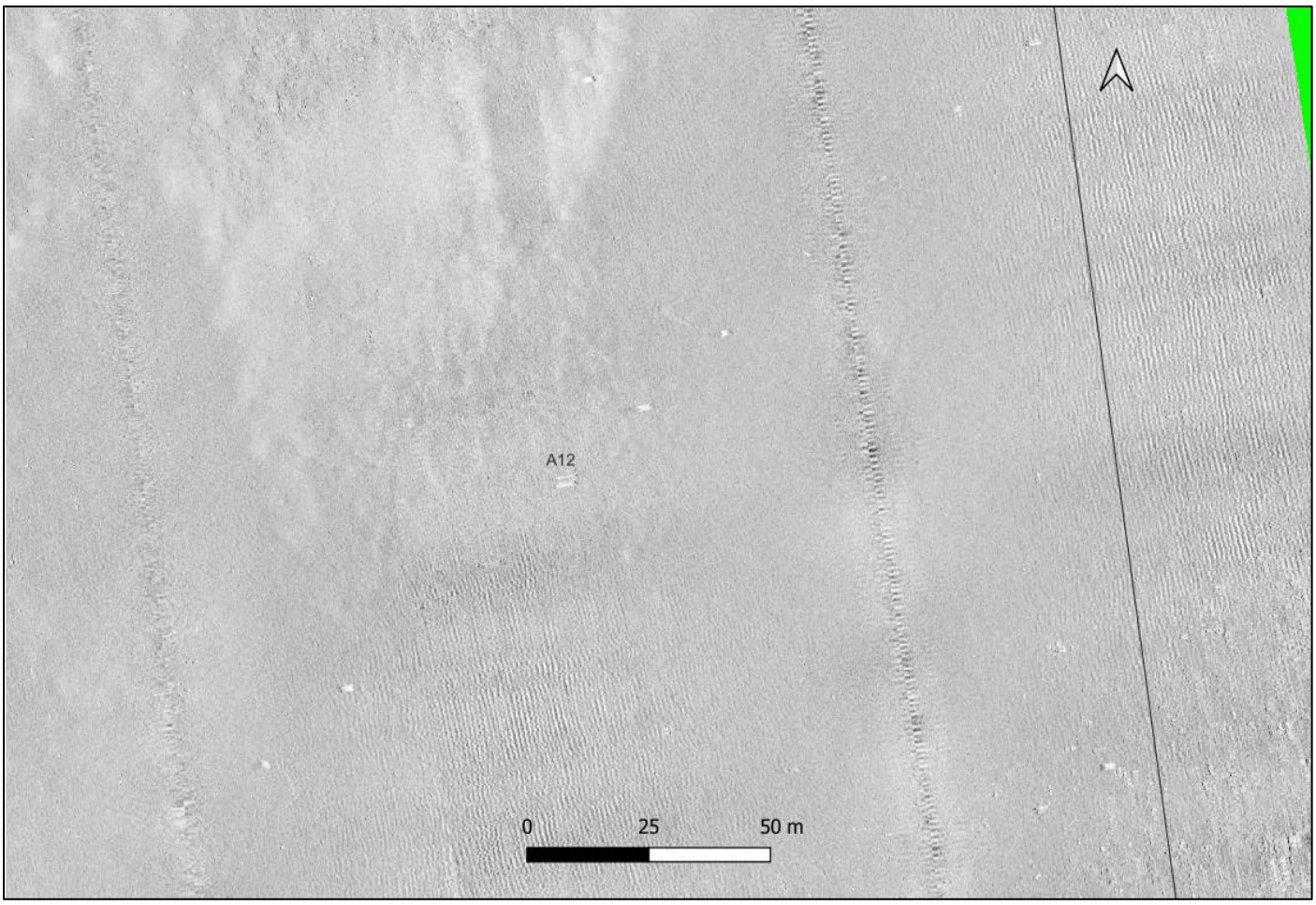


Figure 36:Fishing gear seen in the SSS data in A012

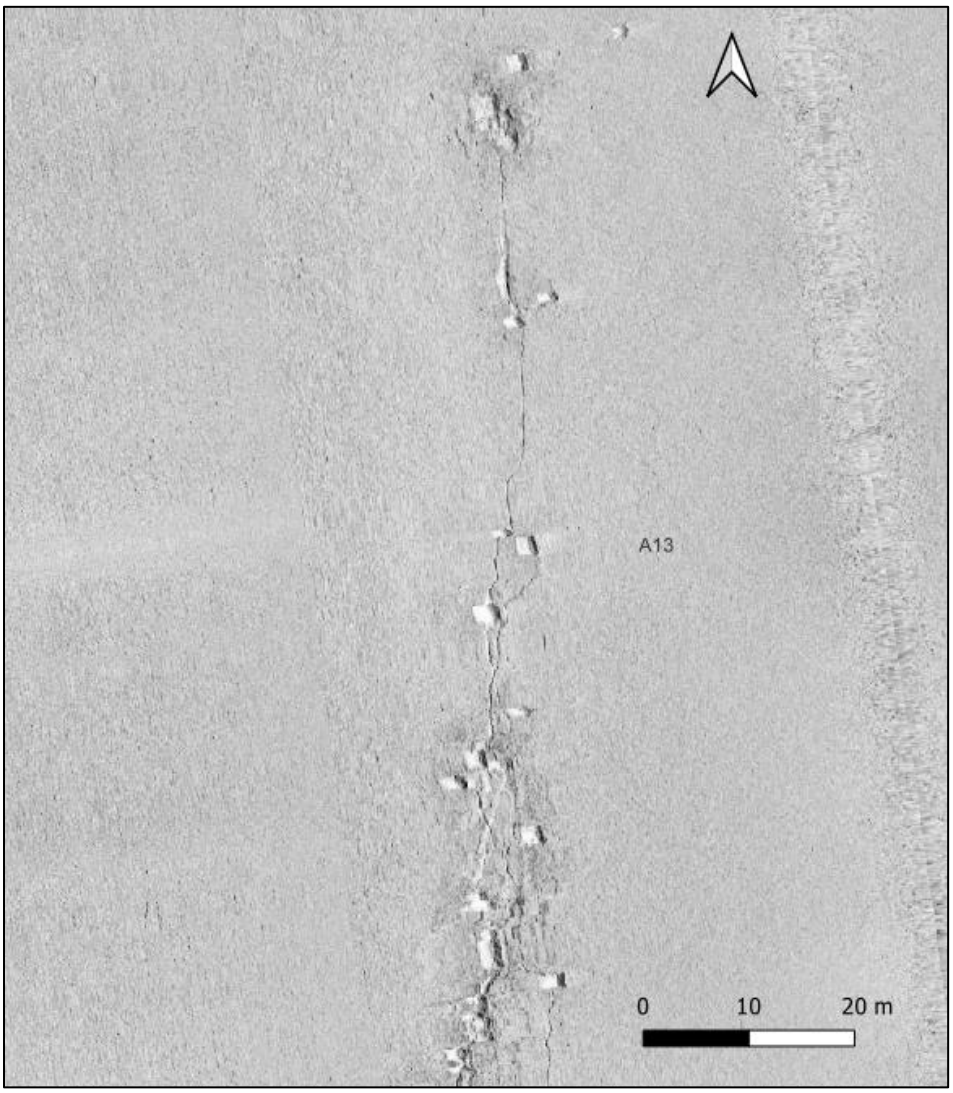


Figure 37:Wire/Chain seen in SSS data with possible fishing traps in A013

6 Data Quality

6.1 MBES Survey Accuracy and Data Quality

The MBES achieved full coverage of the survey area provided. High levels of depth accuracy were achieved between all vessels and was corroborated with previous data in the area from 2023. The high level of quality allowed identification of seabed features as well as small to medium targets on the seabed. No issues occurred that impacted the quality of the multibeam data.

Total Propagated Uncertainty

Total propagated uncertainty for this survey achieved XOCEAN standards which equate to IHO Special Order standard as taken from "IHO Standards for Hydrographic Surveys S-44 Edition 6.1.0". This document provides guidance on total allowable vertical and horizontal uncertainty (Max THU/TVU) by defining the portion of uncertainty that does not vary with depth (a=0.25m) and the portion of uncertainty that does vary with depth (b=0.0075). It provides the formula to calculate the Max TVU in metres (Figure 38), with the application of this equation TVU was calculated for each survey blocks and presented below alongside the achieved mean TVU / THU. For IHO Special Order THU is fixed to 2m. The evaluation of each survey block is displayed in Table 17: Total propagated uncertainty per blocks and per projects., they all showed a mean and observed THU & TVU achieving or exceeding IHO Special Order.

$$TVU_{max}(d) = \sqrt{a^2 + (b \times d)^2}$$

Figure 38: Total vertical uncertainty equation.

It is important to note that TPU values were not a requirement in 2023. As a result, these were either not configured or improperly configured during previous survey campaigns (00741, 00977, and 00833). Therefore, THU and TVU values have been exported and reviewed separately by block and by project to avoid introducing bias into the results (Table 17).
Figure 39 and Figure 40 present the THU and TVU values for block A11, which includes data from three different campaigns: 00741, 00977, and 01139. While the multibeam data quality remains consistent across all campaigns, the reported THU/TVU values vary between projects, highlighting differences in configuration rather than data integrity.

Table 17: Total propagated uncertainty per blocks and per projects.

		Observed Mean TVU				IHO Allowable TVU	Observed Mean THU				IHO Allowable THU
Block	**Mean depth**	**00741**	**00977**	**00833**	**01139**		**00741**	**00977**	**00833**	**01139**	
A0	67.81	Missing	0.3	Missing	0.168	0.57	Missing	0.442	Missing	0.423	2
A1	84.33	Missing	0.301	N/A	0.17	0.68	Missing	0.524	N/A	0.498	2
A2	96.15	Missing	0.302	N/A	0.168	0.76	Missing	0.587	N/A	0.546	2
A3	92.81	0.032	0.302	N/A	0.171	0.74	0.522	0.565	N/A	0.518	2
A4	91.54	0.039	0.301	N/A	0.164	0.73	0.522	0.557	N/A	0.491	2
A5	92.76	0.038	0.302	N/A	0.164	0.74	0.524	0.563	N/A	0.545	2
A6	99.87	N/A	N/A	N/A	0.167	0.79	N/A	N/A	N/A	0.551	2
A7	85.86	N/A	N/A	N/A	0.165	0.69	N/A	N/A	N/A	0.473	2
A8	87.63	N/A	N/A	N/A	0.165	0.70	N/A	N/A	N/A	0.467	2
A9a	86.87	N/A	N/A	N/A	0.166	0.70	N/A	N/A	N/A	0.467	2
A9b	81.94	N/A	0.302	N/A	0.167	0.66	N/A	0.513	N/A	0.443	2
A10	66.46	N/A	0.302	N/A	0.164	0.56	N/A	0.441	N/A	0.369	2
A11	62.77	0.036	0.319	N/A	0.163	0.53	0.377	0.413	N/A	0.357	2
A12	61.63	0.035	N/A	N/A	0.168	0.53	0.359	N/A	N/A	0.357	2
A13	64.30	0.035	N/A	N/A	0.165	0.54	0.374	N/A	N/A	0.363	2
A14	66.96	0.036	N/A	N/A	0.169	0.56	0.389	N/A	N/A	0.384	2
A15	66.20	N/A	N/A	N/A	0.165	0.56	N/A	N/A	N/A	0.372	2
A16	66.69	N/A	N/A	N/A	0.166	0.56	N/A	N/A	N/A	0.373	2
A17	69.99	N/A	N/A	N/A	0.164	0.58	N/A	N/A	N/A	0.386	2
A18	69.43	N/A	N/A	N/A	0.167	0.58	N/A	N/A	N/A	0.388	2
NS01	18.34	0.019	N/A	0.018	0.153	0.29	0.048	N/A	0.089	0.016	2
NS02	21.63	0.024	N/A	0.026	0.155	0.30	0.178	N/A	0.159	0.168	2
NS03	42.77	0.027	N/A	0.106	0.163	0.41	0.261	N/A	0.291	0.294	2
NS04	45.88	0.028	N/A	0.049	0.167	0.43	0.274	N/A	0.305	0.319	2
NS05	49.70	0.027	N/A	0.086	0.16	0.45	0.284	N/A	0.357	0.318	2
NS06	9.09	N/A	N/A	0.018	0.153	0.26	N/A	N/A	0.09	0.206	2
NS07	22.93	N/A	N/A	0.025	0.156	0.30	N/A	N/A	0.17	0.185	2
NS08	28.46	0.025	N/A	0.029	0.158	0.33	0.223	N/A	0.206	0.22	2
NS09	42.14	0.028	N/A	0.036	0.164	0.40	0.255	N/A	0.265	0.301	2

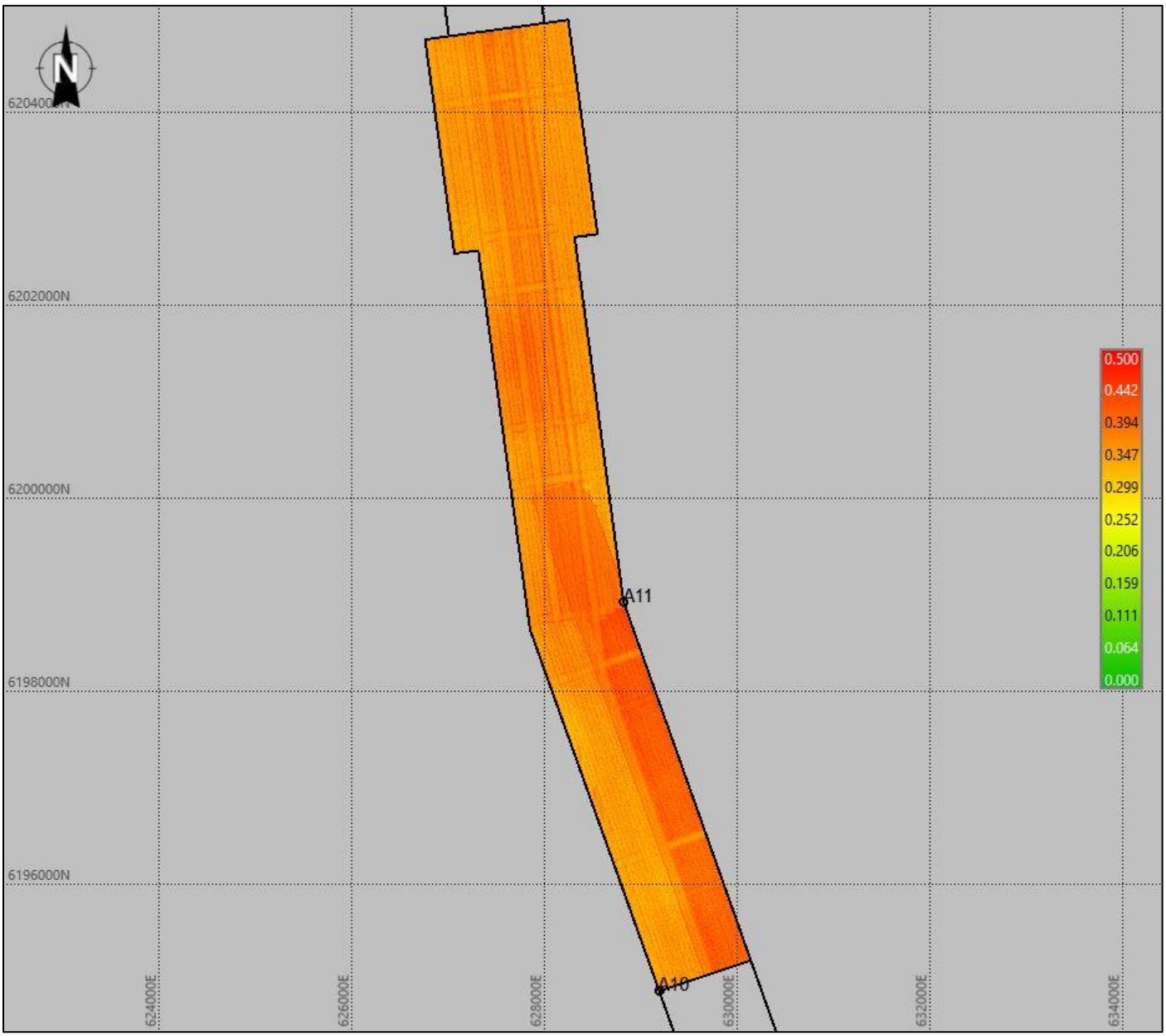


Figure 39: Example of THU specification achieved for 00741, 00977 and 01139 in A11.

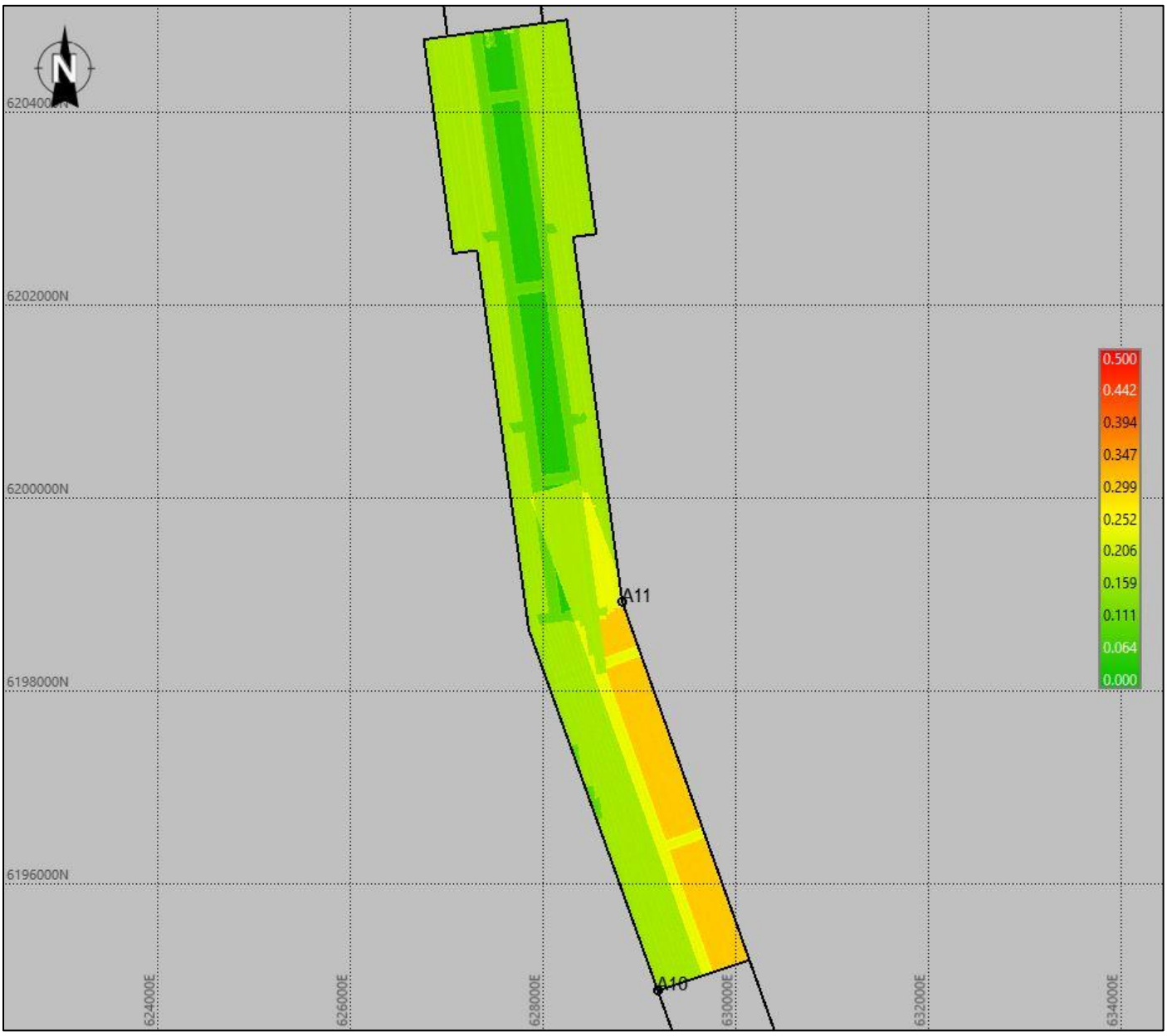


Figure 40: Example of TVU specification achieved for 00741, 00977 and 01139 in A11.

Sounding Density

The 01139 survey successfully achieved 100% hit count coverage, meeting and in most cases exceeding the target specification of 5 hits per m². However, areas of reduced data density were identified within the 00833 Data Purchase coverage (see Table 18).

Table 18: % of cells within density spec in the low density affected blocks.

	% of Cells with Hit count of at least 5
A00	99.98
NS02	99.98

NS03	99.98
NS04	96.99
NS05	99.95
NS08	99.98
NS09	97.85

To enhance coverage in these regions, MBES data from the towed campaign were integrated alongside the 00741 dataset (Figure 41). These lower-density areas were communicated to the client. Notably, the 01139 survey scope ensured complete Side Scan Sonar coverage across the area, supporting robust object detection capabilities. Additionally, the quality of the acquired data was sufficient to enable confident interpretation of seabed features and seabed classification.

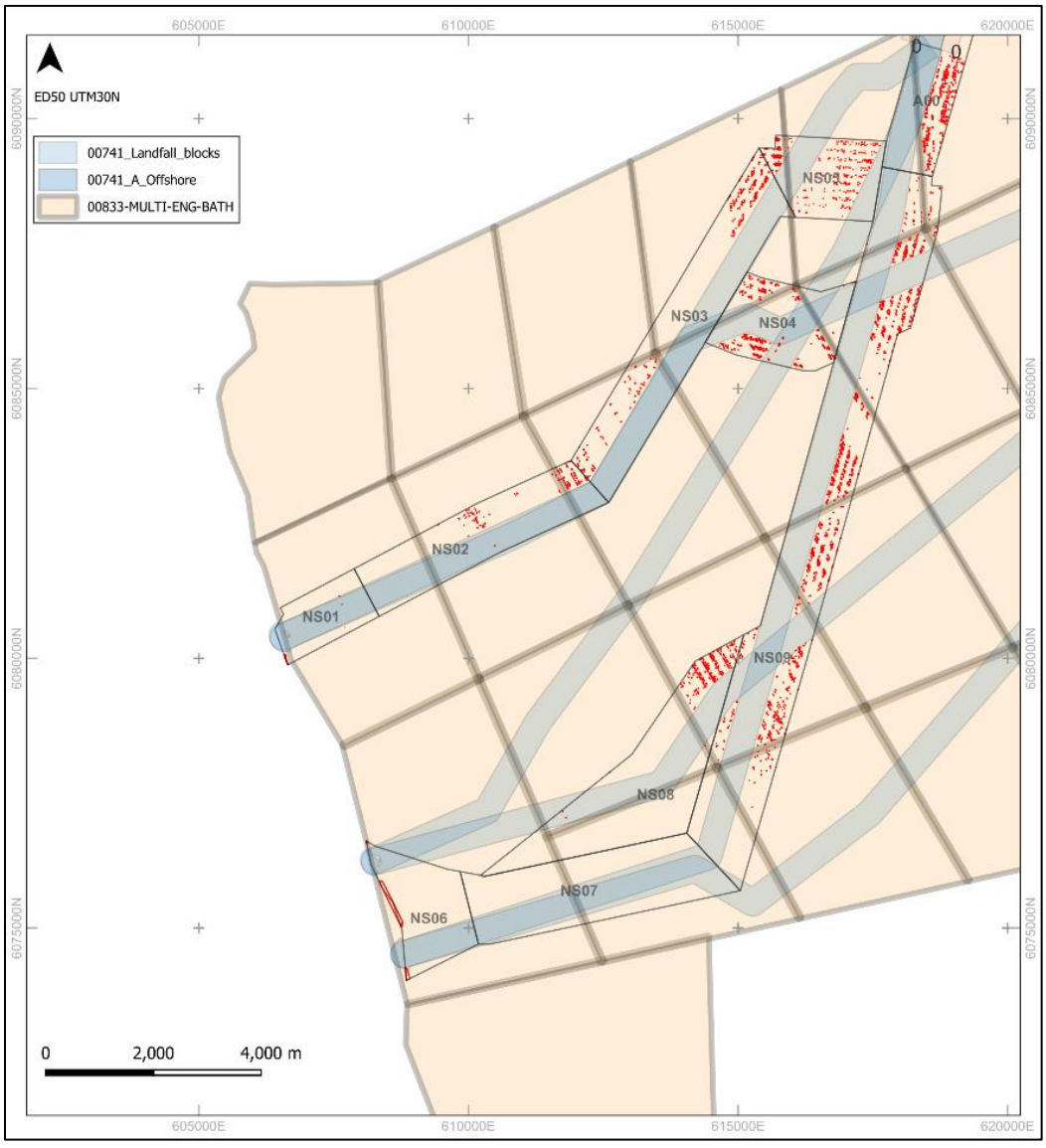


Figure 41: Low density cells in 00833 Data purchase areas.

6.2 Backscatter Data Quality

Some discrepancies in the quality can be seen in between the different campaign but overall the Backscatter was of good quality allowing distinction of seabed surface sediment changes as well as confirming targets identified in the bathy data (Figure 42).

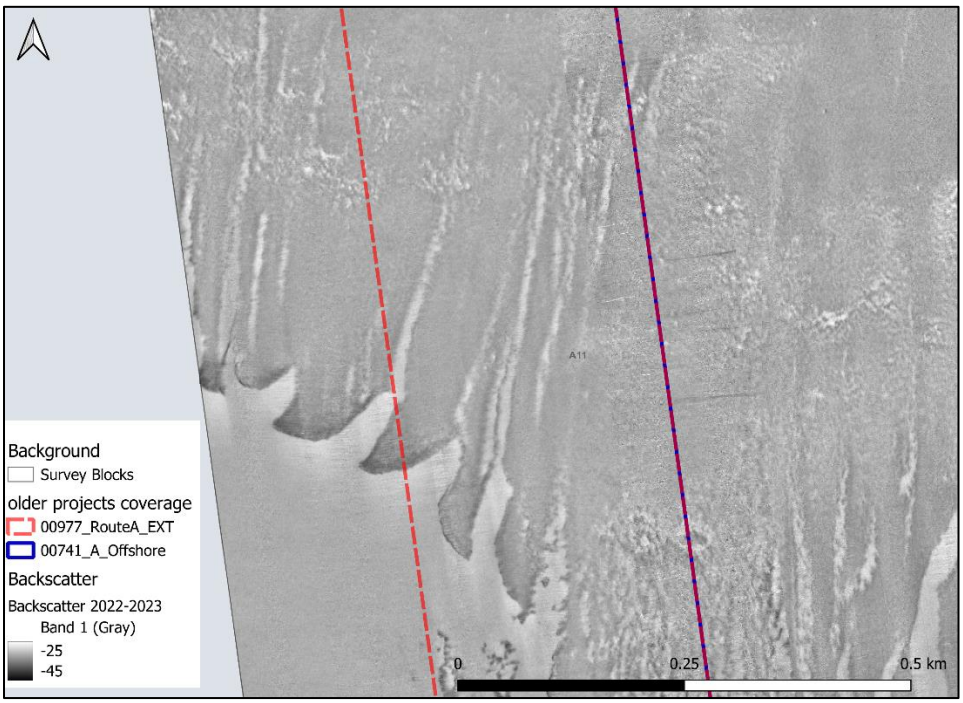


Figure 42: Backscatter image including data from 3 different campaign.

A visual artifact was present in the nadir of some survey lines, causing the nadir appearing more dynamic than the surrounding seabed (Figure 43). This did not affect our use of the data as the features could still be clearly seen in these areas.

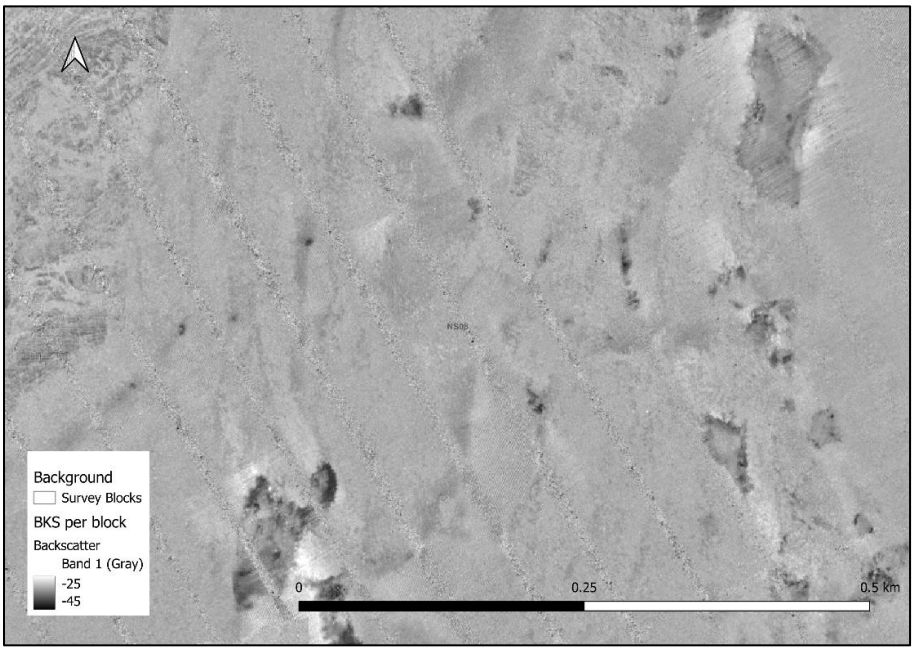


Figure 43: Example of backscatter data quality from NS08

6.3 SSS Data Quality

Side scan sonar data quality was good for the majority of the lines with a good example shown in Figure 44. Poor weather affected motion of the towfish at times during the survey (Figure 45), degrading the visual quality of the dataset. Data was kept whenever quality remained satisfactory to detect targets down to 0.5m in any dimension. Good position accuracy was achieved with lines run on reciprocal headings showing good alignment of seabed features between lines and good cross-comparison with the MBES bathymetry (Figure 46).

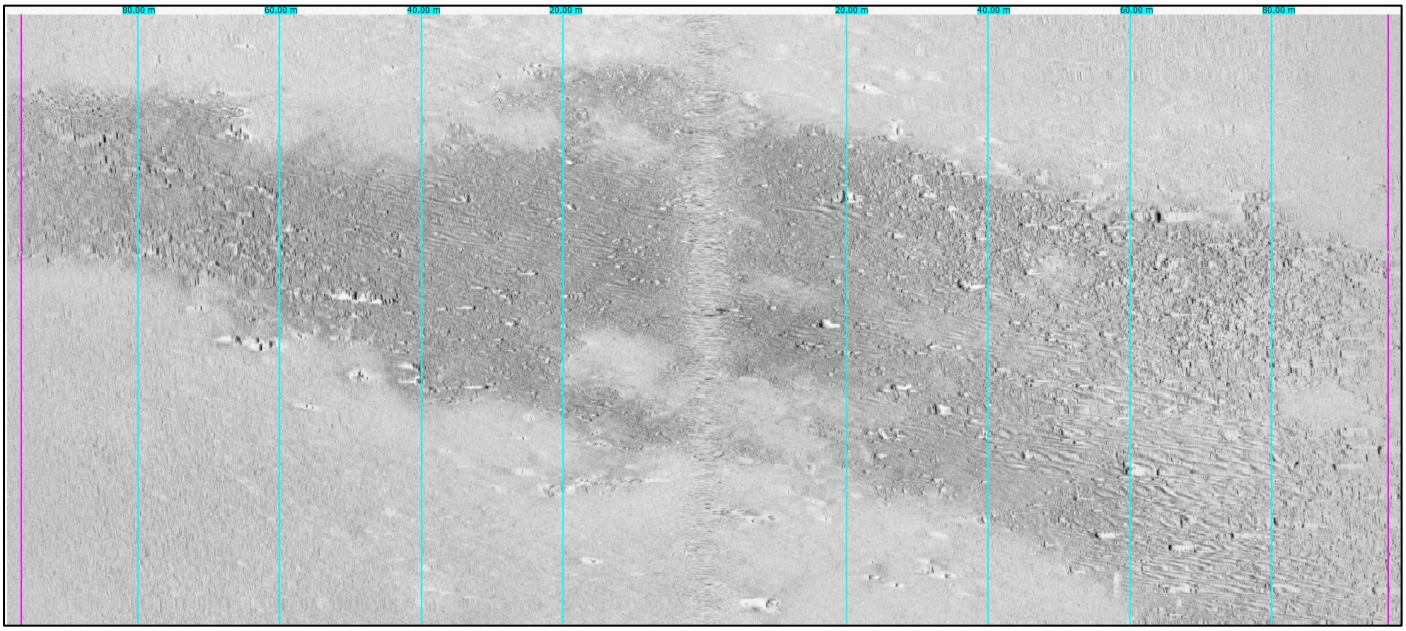


Figure 44:SSS Example of good quality data.

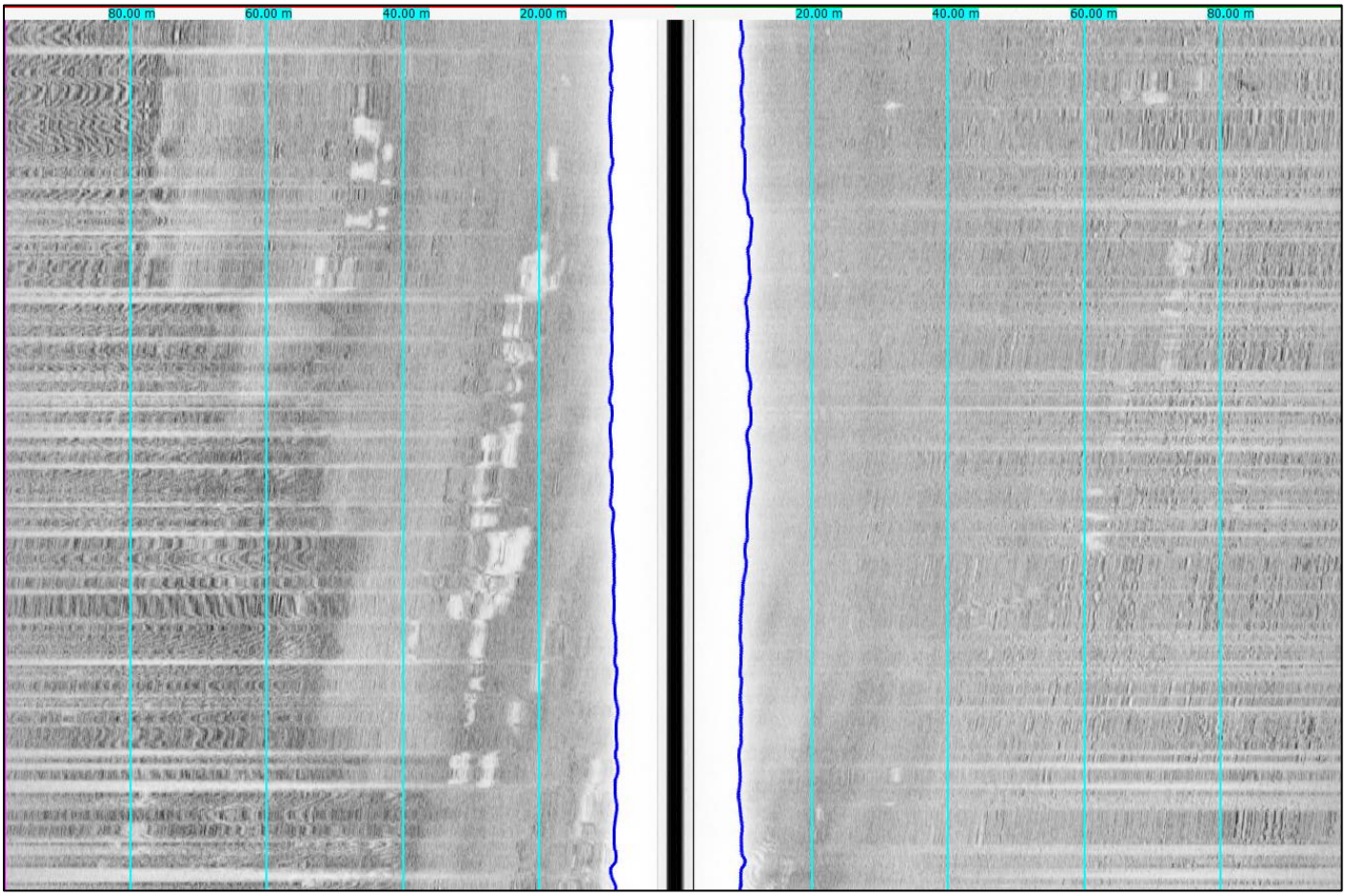


Figure 45:SSS example of rejected data due to poor weather conditions

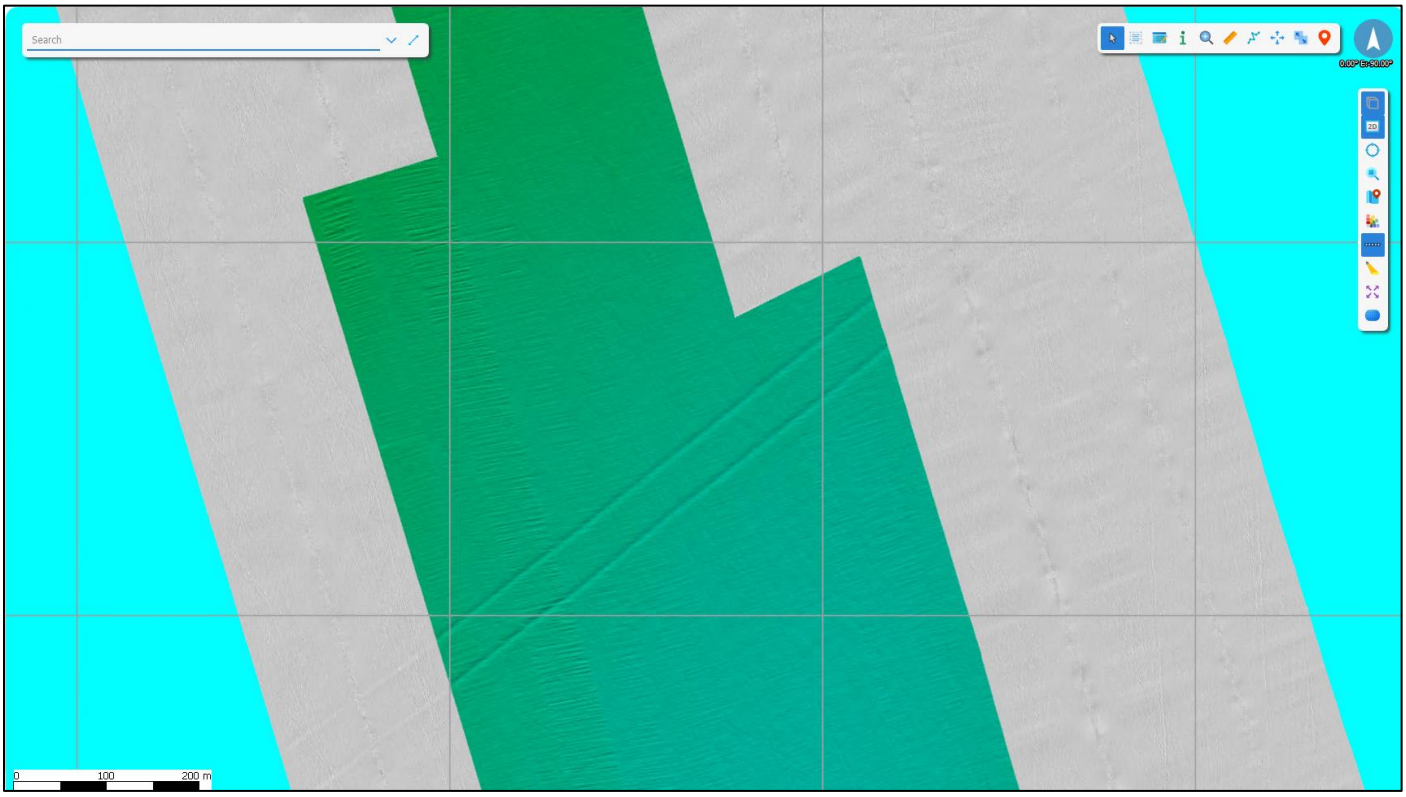


Figure 46:SSS data example aligning with Bathymetry of the North Sea Link Cable trenching Block A03a.

During a meeting on February 6, 2025, between the Client and XOCEAN, environmental factors affecting the SSS data were discussed. It was noted that fish occasionally masked the SSS data for short periods (Figure 47) in certain areas along the route. However, reruns were deemed unnecessary due to adequate Bathy and backscatter coverage in the affected regions.

Additionally, a thermocline environmental artifact was identified in Block A00, adjacent to the Tyne River (Figure 48). This artifact caused variations in the water's speed of sound, leading to adjustments in processing of the SSS range to retain as much data as possible. Similar to the previous case, reruns were not required due to sufficient Bathy and backscatter coverage. In shallow sections of the route, the SSS line spacing was reduced to optimize data quality. This Adjustment was necessary because the SSS, being close to the USV picking up noise as anticipated in area so shallow (Figure 49).

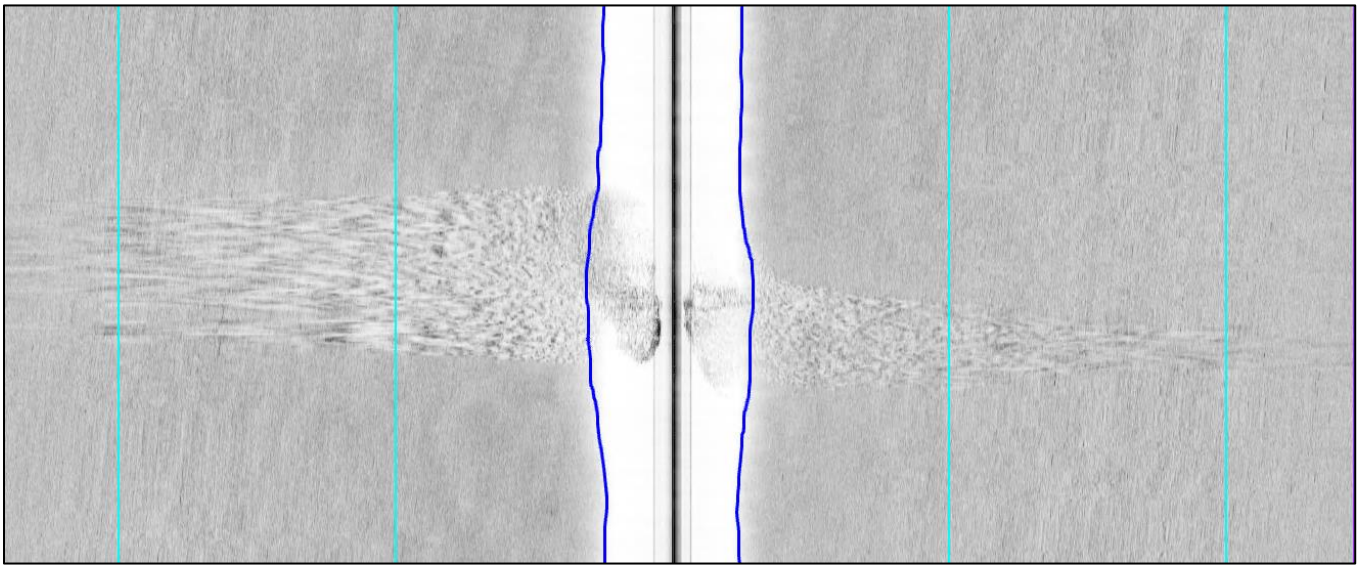


Figure 47:SSS Example of shoal of fish masking data

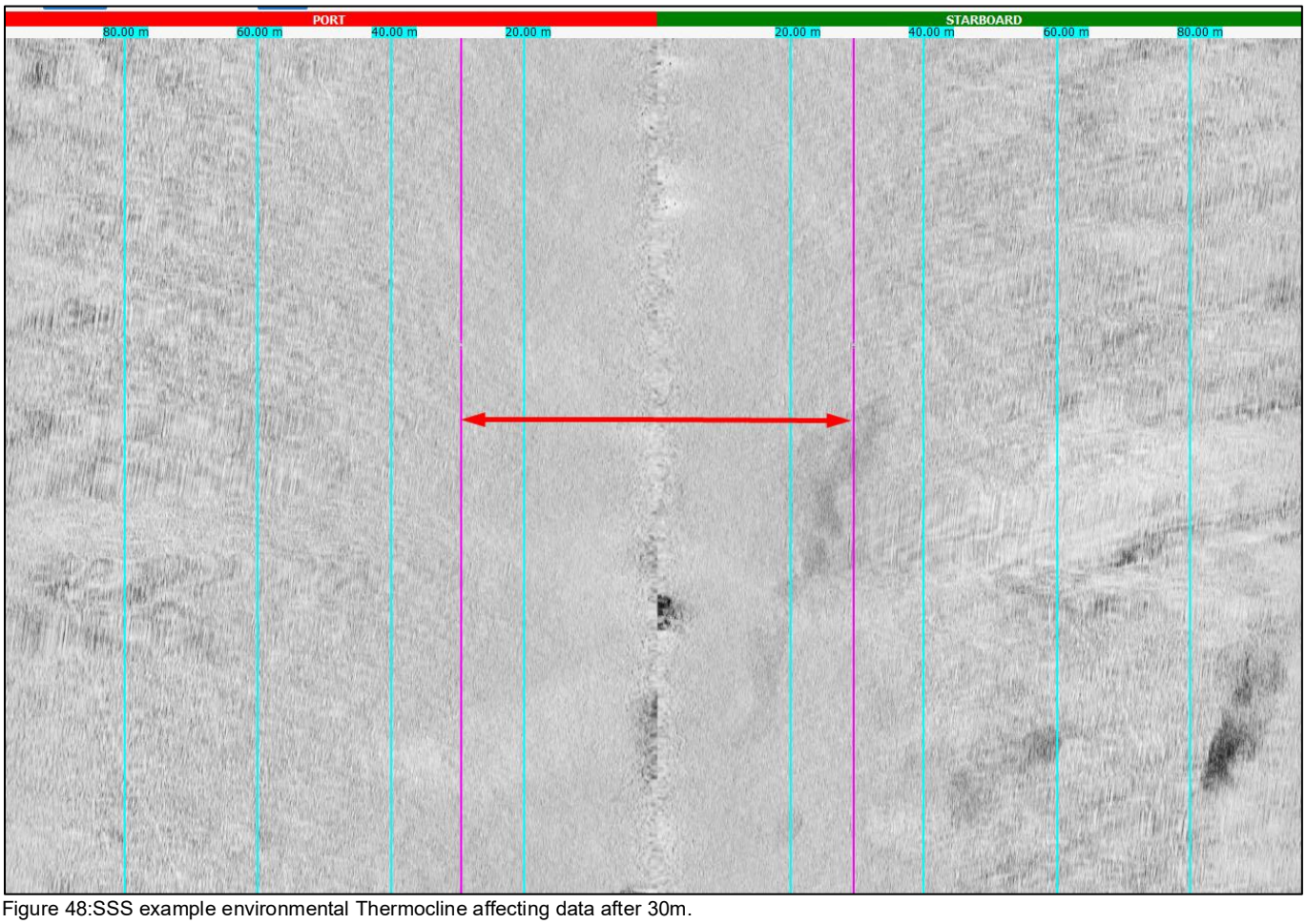


Figure 48:SSS example environmental Thermocline affecting data after 30m.



Figure 49:SSS example noise from USV in shallow section. Example is the shallowest line 0152_20241018_180610_NS01-MV24-TOW-26.0001-U

6.4 SBP Data Quality

Innomar quality was considered of good quality for the project, with the main limitation being the geology affecting the penetration of the system. This however still allowed for on average a 5m resolvable depth for most of the area. In some areas due to the compact nature of the surficial geology and/or boulder fields there was little if no penetration at all. In data containing noise, denoise processing was performed to clean up the lines. An example shown in (Figure 50) before processing and the same line after processing (Figure 51).

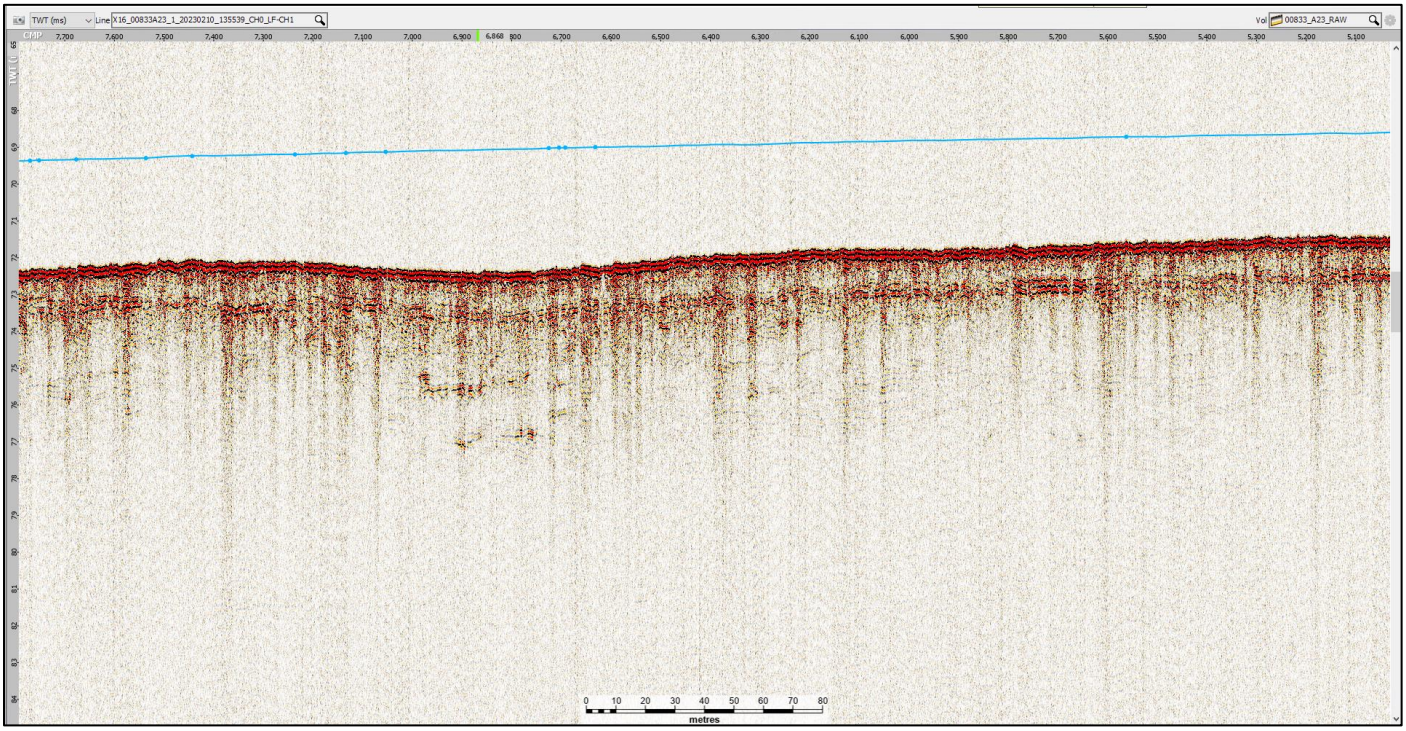


Figure 50:SBP example before processing containing noise line: X16_00833A23_1_20230210_135539_CH0_LF-CH1.

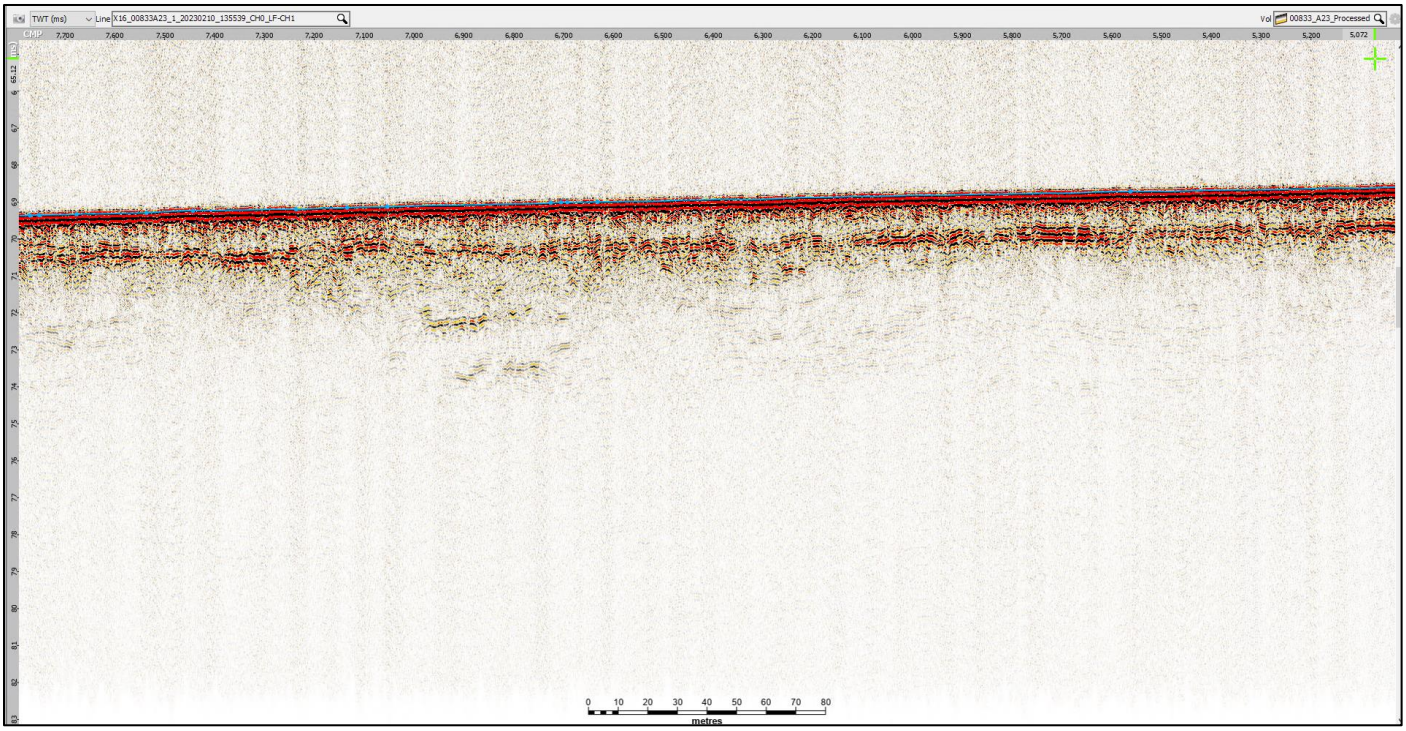


Figure 51:SBP example after Processing applied line: X16_00833A23_1_20230210_135539_CH0_LF-CH1.

6.5 Magnetometer Data Quality

Single magnetometer was acquired along all the same lines as the SSS. Each magnetometer data file was assessed on a line-by-

line basis to ensure it met the required specifications. The overall quality of the magnetometer data was generally good. Figure 52 below illustrates an example of good quality magnetometer data, featuring two anomalies of different shapes: a dipole and a positive monopole. slight noise, with a peak-to-peak amplitude of 1nT, is visible but does not affect the targets being picked in this project.

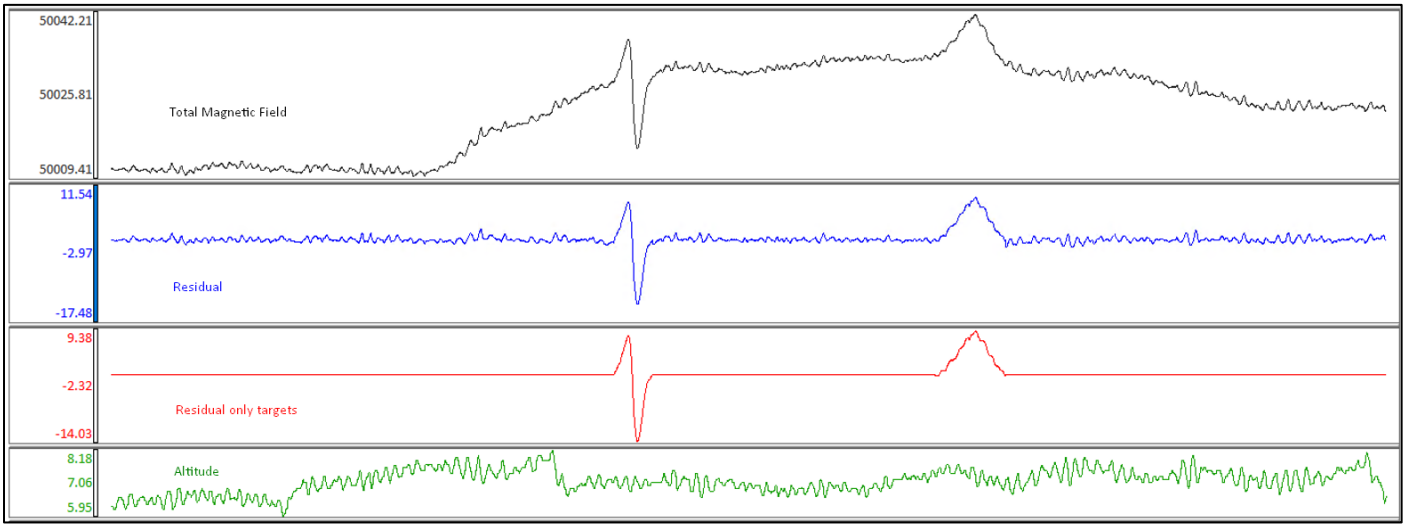


Figure 52:Mag Data example line:X11_0093_20241007_210037_NS03.

During a meeting on February 6, 2025, between the Client and XOCEAN, it was noted that magnetometer data lines were affected by weather conditions, resulting in noise levels exceeding 5nT peak-to-peak. As a result, a decision was made to attempt to identify targets where possible on these lines. Figure 53 below shows a line where the noise was below 5nT peak-to-peak, which did not hinder the ability to identify 5nT targets. Figure 54 beneath illustrates a line with noise levels exceeding 5nT peak-to-peak, where an effort was made to identify targets above 5nT.

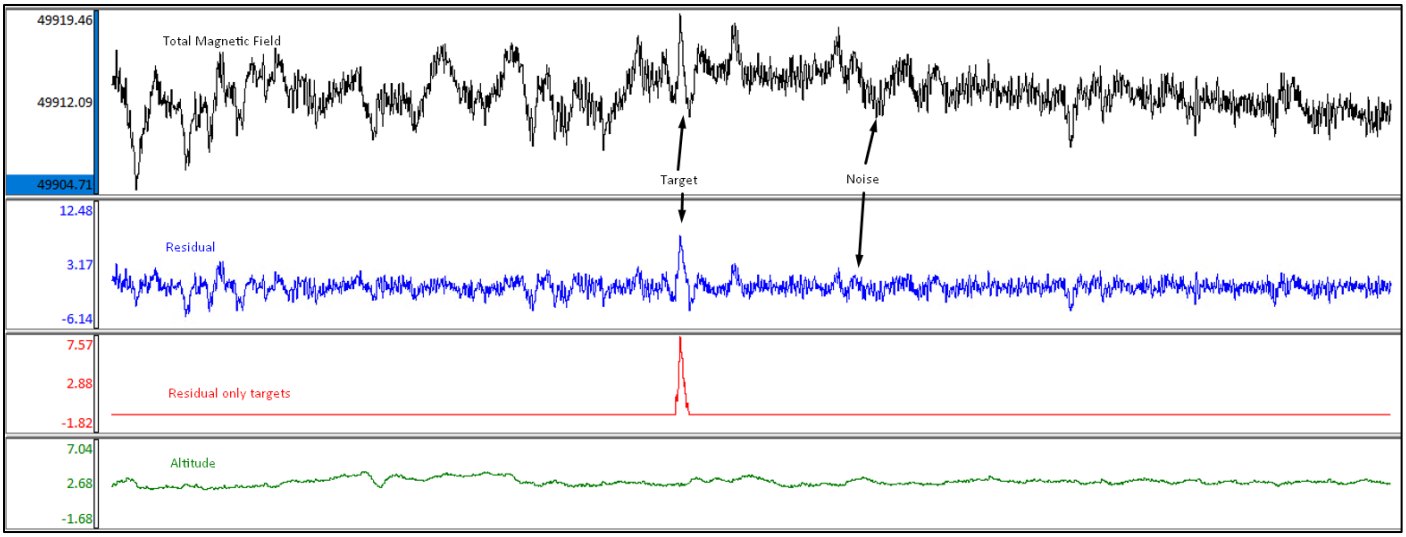


Figure 53:Mag Noisy data line:0149_20241018_164943_NS01_1.

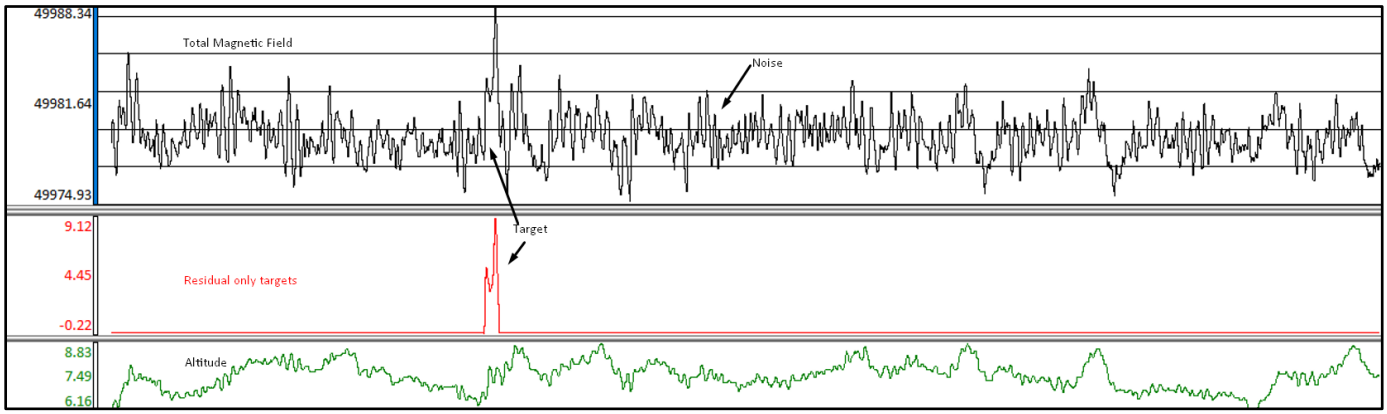


Figure 54:Mag Data example Noise above 5nt. Line:X09_0160_20241018_193842_A00_1.

6.6 Concessions and Limitations

6.6.1 MBES target picking

Although The MBES collected exceeds the required quality targets in much of the data, it is in its nature limited in its target identifying abilities, as described in the 00741 Results Report.

Much of the survey occurred in water depths greater than 50m, this meant identifying 0.5mx0.5m targets was difficult in much of the survey. As SSS covers the full area and is designed to identify objects it was used to verify our MBES targeting. In areas of identified SSS targets the MBES would show the scour of an object, or a single swath would show evidence of a target. In these locations we opted to not report a confirmation of identification in the MBES. Though the evidence of an object was there, with the object not clearly visible it could not be confirmed. This results in a much higher SSS target when compared to the MBES targets.

Table 19: Object size detection using MBES relative to water depth from XOCEAN proposal.

Water Depth	Size of Object Detected
10 m	0.1 m x 0.1 m
20 m	0.2 m x 0.2 m
30 m	m 0.3 m x 0.3 m
50 m	0.5 m x 0.5 m
75 m	1.0 m x 1.0 m
100 m	2.0 m x 2.0 m

6.6.2 Time based alignment disparities.

Data collection for this project was conducted over an extended period, spanning from January–February 2023 to March 2025. While this temporal distribution did not affect the overall accuracy or alignment of the surveys, evidence of seabed movement was observed in certain areas, as illustrated in Figure 55. The figure below provides a clear example of soft sediment displacement around the pipe diffuser (MBES Contact: 01139_MBES_0300), confirming that the observed height differences were due to natural seabed dynamics rather than inaccuracies in GNSS-based tidal reduction. As such as well as a combined bathymetry surface temporal surfaces were also provided.

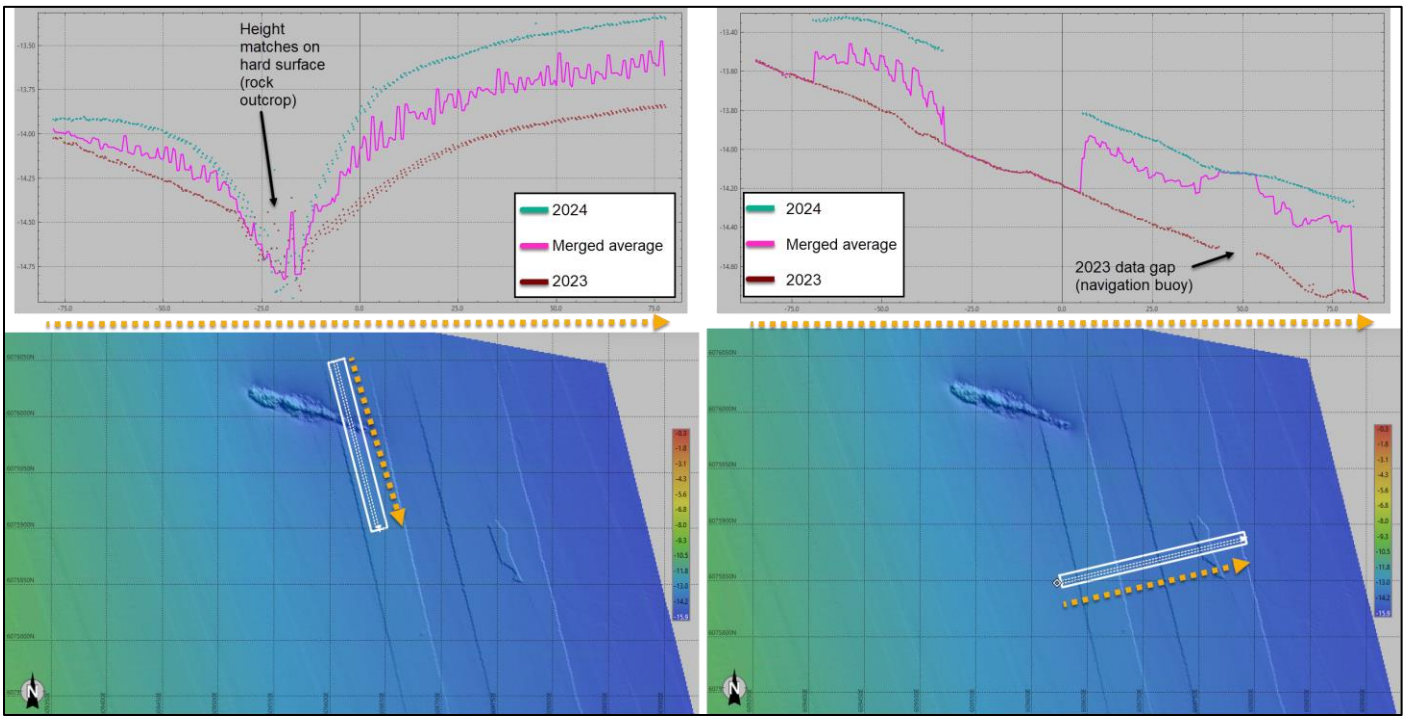


Figure 55:2023-2024 Seabed movement on top and around the Pipe diffuser (01139_MBES_0300), NS06.

6.6.3 Boulder Field Definition and Impact on Target Picking

Boulder fields along the route have been defined from multiple datasets collected across different years (2023 to 2025) In the nearshore area, observed seabed mobility between 2023 and 2024 has resulted in some boulders being covered or uncovered over time. During early phases of target picking, only 2023 MBES data were available, and boulder fields were delineated based on that source. With the availability of 2024/2025 SSS mosaics, the extent of boulder fields has evolved, directly impacting target picking boundaries, as targets are generally selected outside boulder fields.

To maintain consistency and ensure traceability, both MBES- and SSS-derived boulder fields have been retained in the seabed feature classification. The "Feature Interpretation Source" attribute specifies the data source used to define each boulder field. As a result, some MBES-defined targets may fall within later SSS-derived boulder fields, and vice versa. This should be considered when reviewing target positions in these areas. Since boulder positions are not expected to shift significantly, previously detected features have been preserved even if later surveys suggest temporary coverage. In all other parts of the route, boulder fields have been defined solely using SSS data.

6.6.4 Gaps in survey due to obstructions

Efforts were made in this project to acquire coverage that met the job's scope at various times of the year. However, this was not possible due to fishing activities in the nearshore areas during 2024 and 2025. The blocks affecting the SSS coverage in the nearshore are NS09, NS08, and NS07, as shown in (Figure 56). Where gaps are present, they are covered by backscatter (Figure 57) and bathymetry datasets from the 00741 survey. The magnetometer data, towed along the same lines as the SSS, has a different range resulting in only two gaps observed in Blocks NS09 and NS07 (Figure 58).

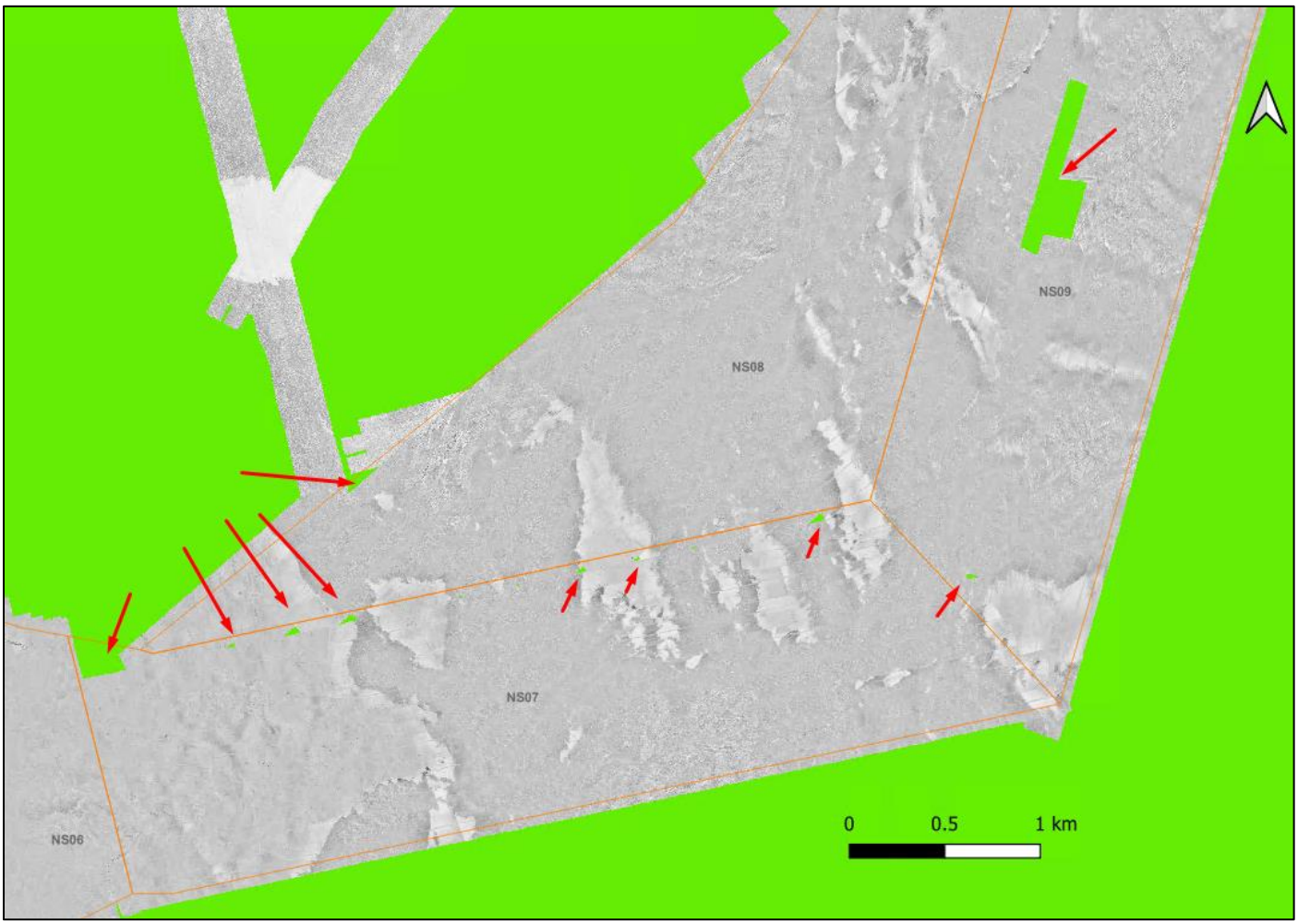


Figure 56:SSS coverage, arrows pointing to gaps due to fishing activity.

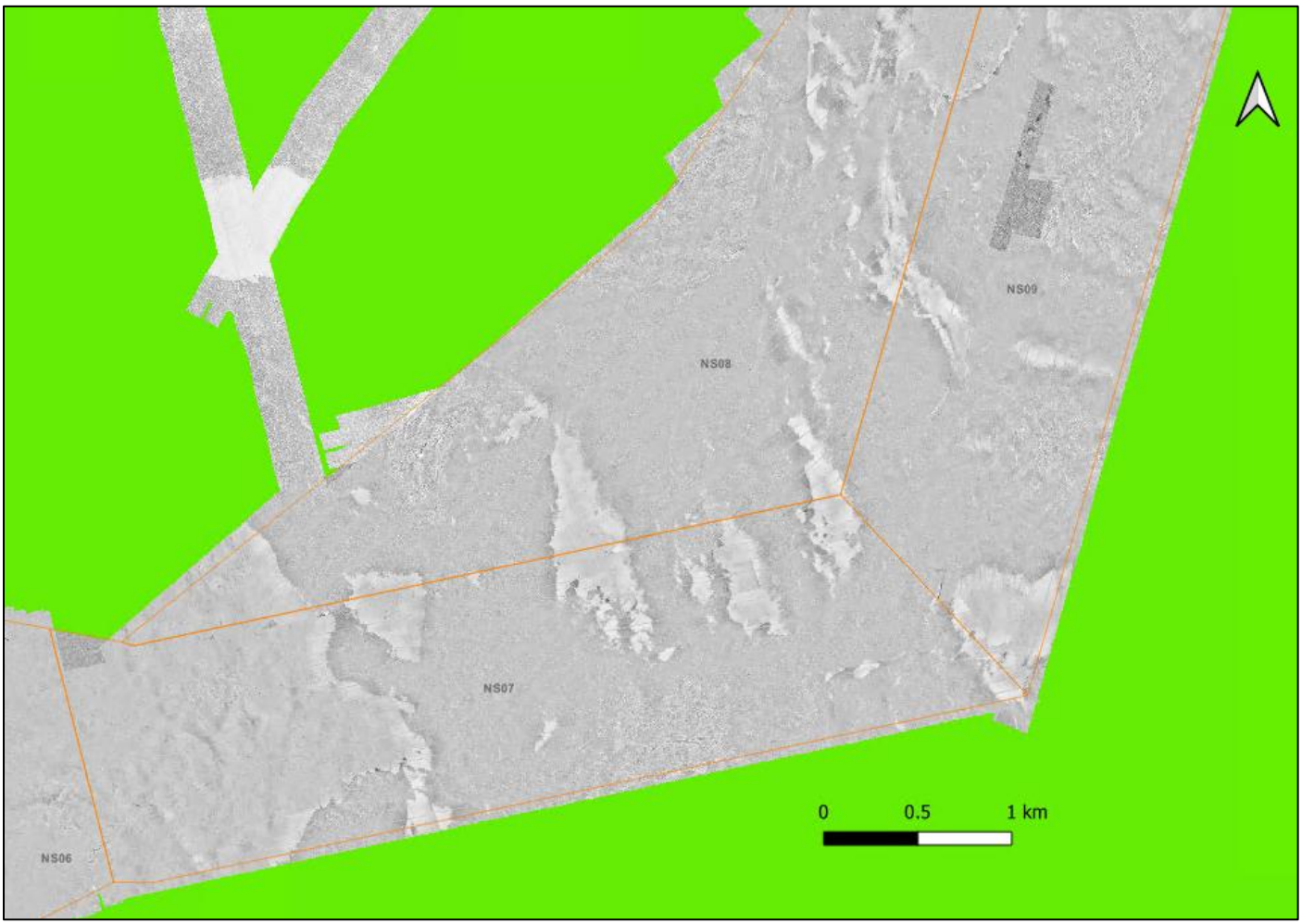


Figure 57:SSS coverage overlaid on backscatter illustrating gaps filled.

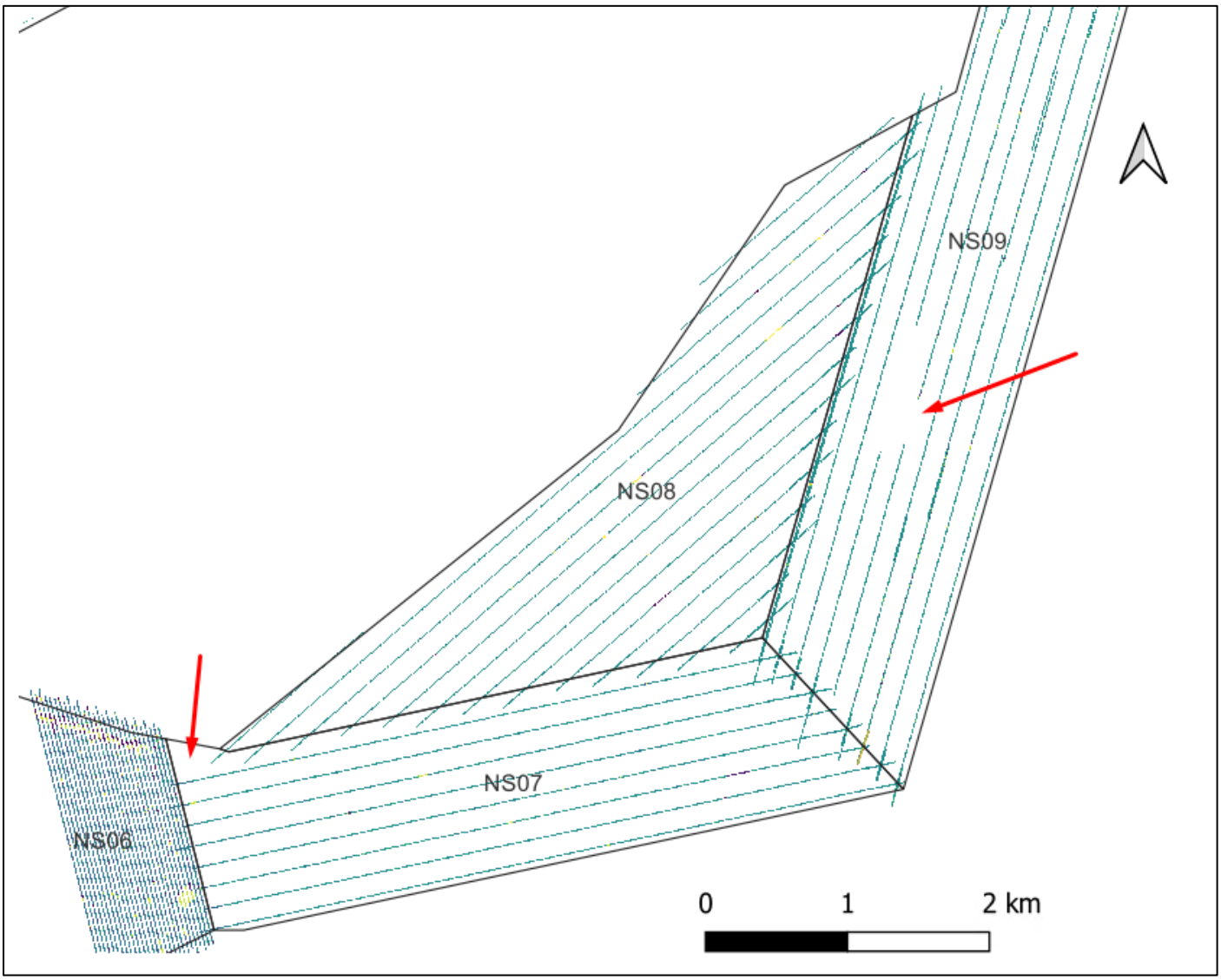


Figure 58:Mag coverage, arrows pointing to gaps due to fishing activity.

7 Deliverables

Table 20: Digital data deliverables.

Item No.	Contracted services deliverables	Quantity	Format	Spec
1	Trackplots	1 per sensor	.shp	
2	SVP ASCII	1 per profile	.csv	Depth v Speed
3	MBES: Raw Data	1 per line	.gsf	
3	MBES: Processed, ungridded	1x	.las	Reduced to LAT
4	MBES: Processed, gridded	1x 1x	.xyz .tif (floating point)	Reduced to LAT, 1m
5	MBES: TVU	1x	.tif	
6	MBES: THU	1x	..tif	
7	Backscatter: Intensity	1x 1x	.xyz .tif (floating point)	1m
8	SSS: Corrected mosaic	2x	.tif	10cm resolution High frequency and Low frequency
9	SSS:Raw Data	1 per line	.XTF	High frequency and Low frequency
10	SSS:Processed Data	1 per line	.XTF	High frequency and Low frequency
11	SBP: Processed, reduced	1 per line	.segy	
12	MAG:Raw Data	1 per line	.MAGLOG	
13	MAG:Project	3X	.Project (Oasis Montaj)	Split due to size.
14	MAG: 2D Analytic Signal	2x	.flt .tif	Normal AS
15	MAG: 2D Analytic Signal Targets	2x	.flt .tif	Only targets
16	MAG: Total Field	2x	.flt .tif	
17	MAG: Residual	2x	.flt .tif	Normal Residual
18	MAG: Residual Targets	2x	.flt .tif	Only targets
18	MAG:Altitude	2x	.flt .tif	
19	Contours	1x	.shp	1m interval
20	Target Listing	1x Listing 1x Points	.xlsx,csv .shp	>0.5m w/ attributes table,sensor correlation. Master listing and

				individual sensors listings
21	SSS Targe Images	1x per SSS target	.tif	
22	SSDM / Geodatabase	1x	.gdb .aprx	Full project containing Polygons, Lines and Points
23	Charts	40x	.pdf .aprx	1:10000

Table 21: Reporting deliverables.

Item No.	Contracted reporting deliverables	Quantity	Format
1	DPR	1 per operational day	.pdf
2	Mobilisation & Calibration Report	1 per USV	.pdf
3	Operations Report	1x	.pdf
4	Technical Note	1x	.pdf
5	Interpretive Results Report	1x	.pdf

8 References

Amos, W. and M. Lusty, 2021. Seabed Mapping : HI1543 Sunderland to Redcar

Folk, R.L., 1954, The distinction between grain size and mineral composition in sedimentary-rock nomenclature: The Journal of Geology, v. 62, no. 4, p. 344–359. [Also available at https://doi.org/10.1086/626171.]

Long, D., 2006, Seabed sediment classification: British Geological Survey web page, accessed March 2025 at https://webarchive.nationalarchives.gov.uk/ukgwa/20101014085414/http://www.searchmesh.net/PDF/BGS%20detailed%20explanation%20of%20seabed%20sediment%20modified%20folk%20classification.pdf

Valentine, P.C., 2019, Sediment classification and the characterization, identification, and mapping of geologic substrates for the glaciated Gulf of Maine seabed and other terrains, providing a physical framework for ecological research and seabed management: U.S. Geological Survey Scientific Investigations Report 2019–5073, 37 p., https://doi.org/10.3133/sir20195073.

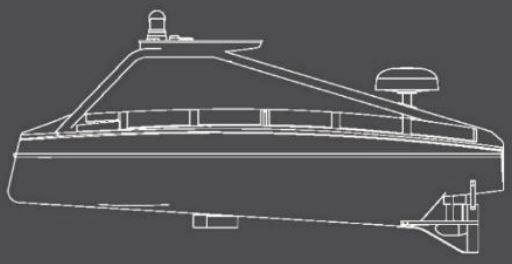
Wentworth, C.K., 1922, A scale of grade and class terms for clastic sediments: The Journal of Geology, v. 30, no. 5, p. 377–392. [Also available at https://doi.org/10.1086/622910.]

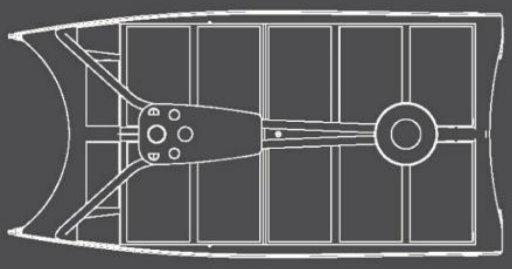
9 Appendix

9.1 Appendix 1 – XO-450 Technical Specification

Ocean data, delivered.

Using Unmanned Surface Vessels (USVs) XOCEAN provides turnkey data collection services to surveyors, companies and agencies.





Physical Dimensions

Length	4.5m
Width	2.2m
Height	2.2m

Applications

- Fisheries
- Bathymetric Survey
- Data Harvesting
- Metocean Data
- Environmental Monitoring

Technical Specification

Model name	XO-450
Hull	Composite wave piercing catamaran type
Weight	750kg
Payload	100kg
Propulsion	2 x DC drives
Steering	Differential steering
Hybrid power system	Solar deck | lithium-ion batteries | micro diesel generator
Continuous electrical load	3kW
Speed	4.0 knots
Endurance	18 days | range 1,512nm
Communications	Over horizon via satellite broadband
Control	Control via XOCEAN Cyberdeck
Situational awareness	AIS | thermal imaging camera visible light cameras | image detection
Conspicuity	Active radar reflector | AIS transmissions navigation lights | sound signals
Transportation	Road trailer | shipping container
Sensor mounting	Sonar post | SVP winch | MRU | weather station

XOCEAN®

xocean.com
info@xocean.com

xoceansocial xocean

© Copyright 2019. XOCEAN Limited, Greenore, Co. Louth, Ireland A91 E765. Company number 599121

Appendix C Report Gardline Ltd. (2024) Environmental Baseline

Survey Report for:
Morven Offshore Wind Limited

Project:
Morven Export Cable Route 2023

Description:
Environmental Baseline Survey Report

Survey Date:
June 2023 to November 2023

Project Number:
54027

Client Reference
CW204658

Report Status:
Rev1

REPORT AUTHORISATION AND DISTRIBUTION

Compilation	Geophysics	M Newton
	Surveying	R Grice
	Environmental	J Davison
	Geotechnical	N Kilburn
Authorisation	Checked	L Hearnden
	Approved	R Eyley-Roberts

Revision	Date	Title	Description
0	04-Apr-2024	Draft	pdf
1	20-May-2024	Rev1	pdf

Distribution

Morven Offshore Wind Ltd
Chertsey Road
Sunbury on Thames
TW16 7BP

For attention of

Simon Dykes
Simon.dykes@se1.bp.com

EXECUTIVE SUMMARY

During June to November 2023, Gardline Limited conducted an integrated survey on behalf of Morven Offshore Wind Limited along the export cable routes (ECR) of the proposed Morven wind farm, situated approximately 60km southeast of Aberdeen. The survey was conducted onboard the motor vehicle *Ocean Geograph* with environmental operations undertaken between 04-Jul-2023 and 09-Nov-2023. The current report details the results of the Morven environmental baseline survey with the results of the geotechnical survey summarised where relevant and given in full separately (Gardline, 2024a; Gardline, 2024b).

A total of 133 stations were pre-selected as part of a benthic survey strategy desktop study of publicly available data prior to survey acquisition (Gardline, 2023a). This comprised of 56 stations (Stations ENV001 to ENV056) located along the eastern route, 58 stations (Stations ENV071 to ENV128) along the western route and 19 situated across the options for landfall. At all 133 stations drop-down camera data were successfully acquired. Sediment sampling was attempted at 133 stations across the survey area, of these the required full suite as per the benthic scoping document (Gardline, 2023a) was obtained at 127 stations. All successful samples were acquired using a 0.1m^2 Day grab.

Across the survey area, sediments were recorded as heterogenous and displayed wide-ranging particle size distributions, ranging from extremely poor to moderately well sorted. Most stations were classified as either fine sand (n=52; 39%), coarse silt (n=28; 21%), or very fine sand (n=26; 20%). When classified under Folk and Ward (1957), sediments were predominantly either muddy sand (n=57; 43%) or sand (n=42; 32%). Relative to the wider context, sediments across the survey area were broadly consistent with background level (UKOOA, 2001).

Concentrations of total organic carbon (TOC), varied from 0.13% to 14.8%, with a mean concentration of 0.68% (±1.79SD). Excluding Station ENV133, TOC ranged from 0.13 % to 1.5%. ENV133 had a vastly higher value due to the proximity to the coastline.

Total hydrocarbons (THC) were analysed using ultra-violet fluorescence spectroscopy (UVFS) at 66 stations to meet MMO (2023) guidelines. Additionally, concentrations of THC were analysed by GC-FID at 11 stations which were in Scottish waters. Using UVFS, THC ranged from 1.02µg g^{-1} to 269µg g^{-1} with a mean of 21 µg g^{-1} (±50.4SD). Concentrations of THC analysed by gas chromatography flame ionisation ranged from 3.88µg g^{-1} to 9.84µg g^{-1} with a mean of 6.48µg g^{-1}(±1.97SD). UKOOA (2001) reported a mean THC concentration of 9.51µg g^{-1} and a 95th percentile of 40.1µg g^{-1} for central North Sea (CNS) stations over 5km from existing infrastructure. Only Station ENV009 within the Scottish stations was above the UKOOA mean and could therefore be considered consistent with background concentrations. Overall, THC concentrations were generally below thresholds expected to impact on fauna communities.

Total polycyclic aromatic hydrocarbons (PAH) concentrations for the MMO (2023) stipulated compounds ranged from 3ng g^{-1} to 40233ng g^{-1}, with four stations below limit of detection (LOD). The molecular mass indices identified pyrogenic PAHs at all stations. Eleven stations that were in Scottish waters were additionally analysed by gas chromatography mass spectrometry, with results ranging between 0.003µg g^{-1} to 0.024µg g^{-1}, with a mean of 0.011µg g^{-1} (±0.007SD). Concentrations were below the UKOOA (2001) mean of 0.287µg g^{-1}. Low naphthalenes, phenanthrenes and dibenzothiophenes concentrations across the eleven stations further support the lack of petrogenic contamination across the survey area.

Polychlorinated biphenyl concentrations were typically recorded below LOD across the survey area, with 20 of the 65 stations having values above LOD. Of these twenty stations, no concentrations exceeded the Cefas Action Level (CAL) 1 concentrations.

Following extraction by aqua regia to comply with MMO (2023) specification metals were directly compared to CALs (MMO, 2023), Buchman (2008) apparent effects thresholds (AETs) and Long *et al.* (1995) effects range low (ERL) and effects range median (ERM) values. Of the metals that were reported, five (arsenic (As), chromium, mercury (Hg), nickel and lead) values exceeded CAL 1 at one or more station, with no analyte exceeding CAL 2. Metal concentrations across the survey area were below the relevant AET and ERM values. However, concentrations of As were reported to be above the ERL at twelve stations while concentrations of copper were above ERL at a single station. Additionally, metals extraction was conducted for stations located in Scottish waters following hydrofluoric acid extraction. Of the metals analysed, cadmium and Hg were below LOD at all stations while all other stations were below the UKOOA (2001) mean for CNS indicating that these stations were comparable to the wider area.

Organotin concentrations were reported to be below the LOD at all stations surveyed, except for Station ENV133 where concentrations of dibutyltin and tributyltin were recorded as 0.003 and 0.005µg g^{-1} respectively.

Concentrations of organochloropesticides were generally below LOD across the survey area. Where CALs were available, only Dieldrin concentrations at Stations ENV059, ENV097 and ENV133 exceeded CAL 1.

Analysis of environmental DNA detected a total of 1025 operational taxonomic units (OTUs) across the survey area. This was broken down to 620 sediment bacteria OTUs, 303 sediment infauna OTUs, 19 sediment fish OTUs, 57 water fish OTUs and 26 marine mammal OTUs. Overall, there was a high proportion of widespread and lone taxon suggesting that the community had been subjected to relatively little disturbance. Similar observations were seen in the comparison survey (Gardline, 2023b).

The macrofauna analysis identified 52107 individuals representing 461 taxa from the 128 stations sampled across the survey area. The macrofaunal community was characterised by a dominance of Annelida (Polychaeta), accounting for 58% of individuals and 42% of taxa within the adult only faunal dataset with *Paramphinome jeffreysii* accounting for 32% of the Annelida abundance.

With consideration of the particle size analysis, imagery and macrofaunal results, the heterogenous survey area was classified to Level 4 or 5 EUNIS habitat type codes, whilst stations without macrofaunal data were classified to Level 3 EUNIS habitat type codes. Most stations were classified as MD521: Faunal communities in Atlantic offshore circalittoral sand or MD6218: *Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud.

Report	Report Number
Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical and Environmental Survey Operations Report	54027.1
Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume I: Field Operations and Preliminary Results	54027 (Volume 1)
Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume II: Measured and Derived Geotechnical Parameters and Final Results	54027 (Volume 2)
Morven Export Cable Route Benthic Scoping Document	54027.E0
Morven ECR Environmental Field Report	54027.E1
Morven Export Cable Route Marine Mammal Observation and Passive Acoustic Monitoring Report	54027.E2
Morven Export Cable Route Environmental Baseline Report	54027.E3
Morven Export Cable Route Habitat Assessment Report	54027.E4

USE OF THIS REPORT

This report has been prepared with due care and diligence and with the skill reasonably expected of a reputable contractor experienced in the types of work carried out under the contract and as such the findings in this report are based on an interpretation of data which is a matter of opinion on which professionals may differ and unless clearly stated is not a recommendation of any course of action.

Gardline Limited has prepared this report for the client identified on the front cover in fulfilment of its contractual obligations under the referenced contract and the only liabilities Gardline Limited accept are those contained therein.

Please be aware that further distribution of this report, in whole or part, or the use of the data for a purpose not expressly stated within the contractual work scope is at the client's sole risk and Gardline Limited recommends that this disclaimer be included in any such distribution.

GARDLINE LIMITED
Endeavour House, Admiralty Road, Great Yarmouth, Norfolk, NR30 3NG, England
Telephone +44 (0) 1493 845600 Fax +44 (0) 1493852106
www.gardline.com

LOCATION MAP

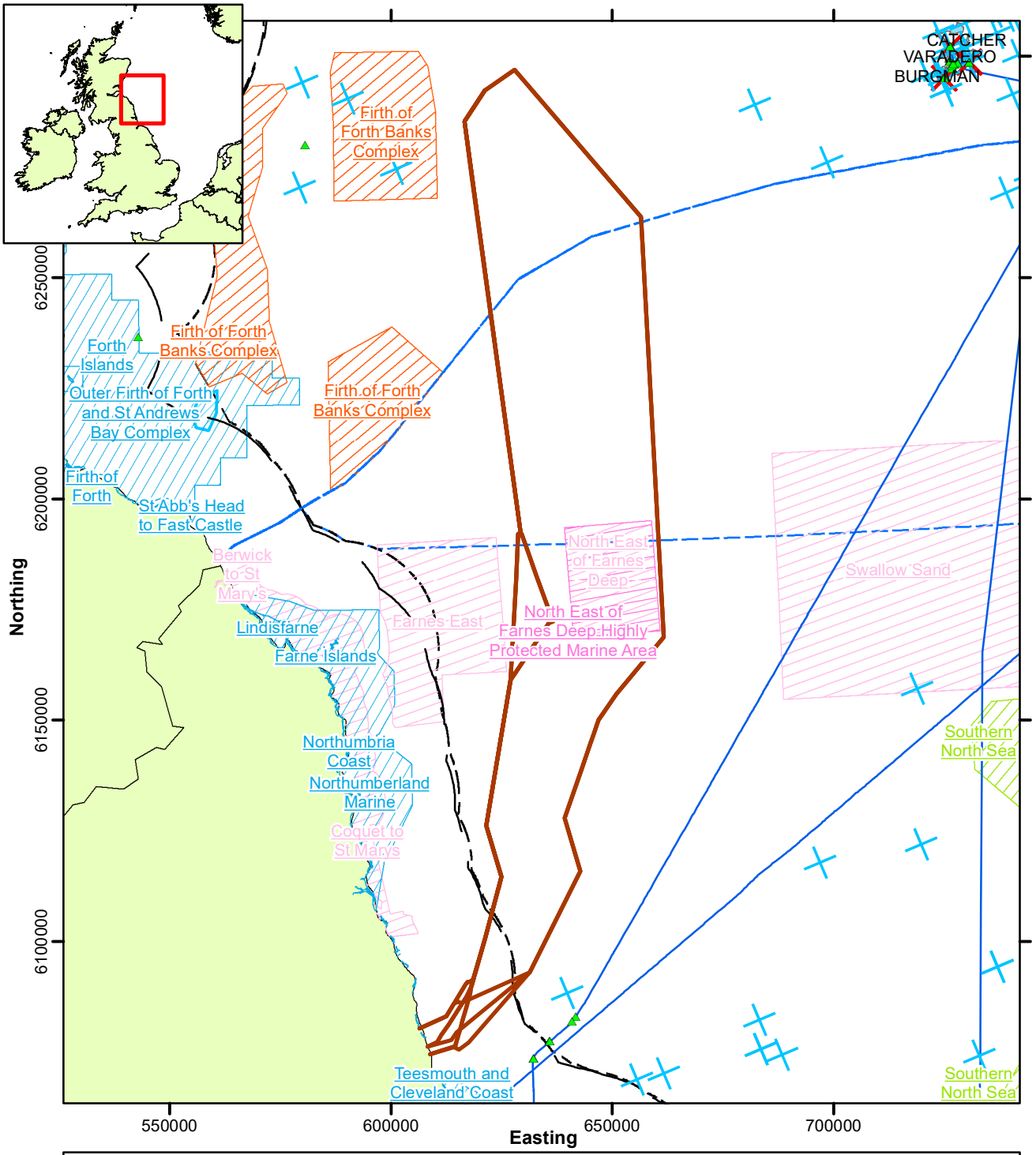


TABLE OF CONTENTS

REPORT AUTHORISATION AND DISTRIBUTION II
EXECUTIVE SUMMARY III
USE OF THIS REPORT V
LOCATION MAP VI
TABLE OF CONTENTS VII
LIST OF FIGURES VIII
LIST OF TABLES IX
GLOSSARY OF TERMS AND ABBREVIATIONS X
1 INTRODUCTION 1
1.1 Scope of Work 1
1.2 Environmental Survey Strategy 1
1.3 Comparison Data 8
1.4 Published Background Data 9
1.5 Existing Infrastructure 11
2 RESULTS AND DISCUSSION 12
2.1 Geophysical Survey Summary 12
2.2 Seabed Imagery Observations Summary 12
2.3 Sediment Sampling Summary 12
2.4 Sediment Characteristics 13
2.5 Hydrocarbon Concentrations 17
2.6 Metal Concentrations 30
2.7 Organochloropesticides 33
2.8 Statistical Analysis of Sediment Physico-chemical Results 33
2.9 DNA Metabarcoding Results 38
2.10 OTU Community Structure using Multivariate Analyses 52
2.11 Multivariate Comparison of Metabarcoding Results to Physico-chemical Data 60
2.12 Macrofaunal Interpretation 60
2.13 EUNIS Habitat Classification 79
3 BIBLIOGRAPHY 82

APPENDICES
APPENDIX A FIELD SAMPLING LOGS
APPENDIX B METHODS
APPENDIX C BACKGROUND INFORMATION
APPENDIX D PARTICLE SIZE ANALYSIS
APPENDIX E SPEARMAN'S RANK CORRELATION
APPENDIX F HYDROCARBON ANALYSIS
APPENDIX G DNA ANALYSIS
APPENDIX H MACROFAUNA ANALYSIS
APPENDIX I EUNIS CLASSIFICATION

LIST OF FIGURES

Figure 1.1 Station Overview 7
Figure 2.1 Particle Size Analysis by Station 17
Figure 2.2 Total hydrocarbon Concentrations and Shipping Density 21
Figure 2.3 PAH Molecular Weight Indices 25
Figure 2.4 Naphthalene and Phenanthrene Parents Versus Alkylated Homologue PAHs 28
Figure 2.5 Multivariate Analyses of Physico-chemical Data 35
Figure 2.6 Multivariate Analyses of Physico-chemical Data Excluding Stations ENV131 and ENV133 35
Figure 2.7 Multivariate Analyses of Physico-chemical Data 37
Figure 2.8 Contributions of Gross Sediment OTU Taxonomic Groups 43
Figure 2.9 Sediment OTU Taxonomic Heat Trees 44
Figure 2.10 Sediment OTU Accumulation Curves 46
Figure 2.11 Contributions of Gross Water OTU Taxonomic Groups 49
Figure 2.12 Water Fish OTU Taxonomic Heat Tree 50
Figure 2.13 OTU Accumulation Curve 51
Figure 2.14 Multivariate Analysis of Sediment Bacteria Data 55
Figure 2.15 Multivariate Analysis of Sediment Infauna Data 55
Figure 2.16 Multivariate Analysis of Sediment Fish Data 56
Figure 2.17 Multivariate Analysis of Water Fish Data 59
Figure 2.18 Multivariate Analysis of Water Marine Mammal Data 59
Figure 2.19 Contributions of Gross Taxonomic Groups 63
Figure 2.20 Adult Data Set Species Accumulation Curve 68
Figure 2.21 Multivariate Analysis of Faunal Abundance Data 75
Figure 2.22 Multivariate Analysis of Faunal Biomass Data 77
Figure 2.23 Adult Abundance Macrofauna nMDS Overlayed with Physico-Chemical Data 79

LIST OF TABLES

Table 1.1 Summary of Environmental Sampling Positions and Samples Acquired 3
Table 1.2 Details of Comparable Survey 9
Table 1.3 Details of Historical Wells 11
Table 2.1 Sediment Characteristics 15
Table 2.2 THC by UVFS 20
Table 2.3 Summary of Sediment Hydrocarbon Analyses 21
Table 2.4 n-Alkane Concentrations 23
Table 2.5 PAH Concentrations for MMO (2023) Stipulated Compounds 26
Table 2.6 PAH Concentrations 27
Table 2.7 Total Concentrations of PBCs and ICES 7 PCBs 29
Table 2.8 Sediment Metal Concentrations from Aqua Regia Digestion 31
Table 2.9 Sediment Metal Concentrations from HF Digestion 32
Table 2.10 Concentrations of OCPs 33
Table 2.11 Physico-chemical Parameters Influencing SIMPROF Separation 34
Table 2.12 Physico-chemical Parameters Influencing SIMPROF Separation 36
Table.2.13 OTU Detections per Target and Percentage Successfully Classified 39
Table 2.14 Contribution of Gross Sediment Bacteria OTU Taxonomic Groups 41
Table 2.15 Contribution of Gross Sediment Fish OTU Taxonomic Groups 41
Table 2.16 Contribution of Gross Sediment Infauna OTU Taxonomic Groups 42
Table 2.17 Summary of Sediment Bacteria, Infauna and Fish Richness 45
Table 2.18 Contribution of Gross Water Fish OTU Taxonomic Groups 48
Table 2.19 Contribution of Gross Water Marine Mammal OTU Taxonomic Groups 48
Table 2.20 Summary of Water Fish and Marine Mammal Richness 50
Table 2.21 Taxa influencing Sediment Bacterial OTU SIMPROF Variation 53
Table 2.22 Taxa influencing Sediment Infauna OTU SIMPROF Variation 53
Table 2.23 Taxa influencing Sediment Fish OTU SIMPROF Variation 54
Table 2.24 Taxa influencing Water Fish OTU SIMPROF Variation 57
Table 2.25 Taxa influencing Sediment Marine Mammal OTU SIMPROF Variation 58
Table 2.26 Contribution of Gross Taxonomic Groups 62
Table 2.27 Biomass Contribution of Gross Taxonomic Groups 62
Table 2.28 Species Ranking by Abundance 66
Table 2.29 Species Ranking by Biomass 67
Table 2.30 Faunal Univariate Statistics 70
Table 2.31 Taxa Influencing Adult Abundance SIMPROF Variation 73
Table 2.32 Taxa Influencing Adult Biomass SIMPROF Variation 74

GLOSSARY OF TERMS AND ABBREVIATIONS

AET	Apparent effects threshold
Aliphatic	An organic compound having open-chain structure (see Alkane)
Alkane	Any of a series of open-chain, saturated hydrocarbons C_nH_{2n+2} (*e.g.* methane, ethane)
Anthropogenic	Produced or caused by human activity
BAC	Background assessment criteria
BC(s)	Background concentration(s)
Benthic	Relating to the seabed
BSD	Benthic scoping document
Biogenic	Produced by living organisms
BSI	British Standards Institute
CCC	Continuing calibration check
CEMP	Coordinated Environmental Management Programme
Clay	Sediment grains <3.9µm in diameter
CM	Central meridian
CPI	Carbon preference index
CPT	Cone penetration testing
CRM	Certified reference materials
DBT	Dibenzothiophene
DCM	Dichloromethane
EAC	Environmental Assessment Criteria
EBS	Environmental baseline survey
ECR	Export cable route
eDNA	Environmental DNA
ERL	Effects range low
ERM	Effects range median
ESGOSS	Ecological Steering Group on the Oil Spill in Shetland
Fines	Sediment grains <63µm in diameter (same as Mud)
GC	Gas chromatography
GC-FID	Gas chromatography flame ionization detector
GC-MS	Gas chromatography mass spectrometry
GC-MS-MS	Gas chromatography tandem mass spectrometry
Gravel	Sediment grains >2mm in diameter
HF	Hydrofluoric acid
HMW	High molecular weight
HPMA	Highly Protected Marine Area
ICP-OES	Inductively coupled plasma optical emission spectrometry
ICP-MS	Inductively coupled plasma mass spectrometry
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
LAT	Lowest astronomical tide
LMW	Low molecular weight
LOD	Limit of detection
Macrofauna	Organisms that are normally larger than the mesh size of the sieve used. In this case 0.5mm.
MBES	Multi-beam echo sounder
MCZ	Marine Conservation Zone
MDS	Multi dimensional scaling
Meiofauna	Organisms that are usually smaller than the mesh size of the sieve used. Then state the sieve size *e.g.*, In this case 1mm.
MMO	Marine Management Organisation
Mud	Sediment grains <63µm (includes Silt and Clay)
NCMPA	Nature Conservation Marine Protected Area
NDIR	Non-dispersive infrared
NMBAQC	North East Atlantic Marine Biological Analytical Quality Control
NOAA	National Oceanic and Atmospheric Administration
NPD	Naphthalenes, phenanthrenes and dibenzothiophenes
NSTA	North Sea Transition Authority
OCP(s)	Organochloropesticides
OSPAR	Oslo and Paris Convention
PAH(s)	Polycyclic aromatic hydrocarbon(s)
PCB(s)	Polychlorinated biphenyl
Petrogenic	Relating to unburned petroleum products
PRIMER	A statistical analysis program - Plymouth Routines in Multivariate Research
PSA	Particle size analysis
Pyrogenic	Produced under conditions involving intense heat
SAC	Special Area of Conservation
SBP	Sub bottom profiler
Sand	Sediment grains ≥63µm and <2mm in diameter
SD	Standard deviation
Silt	Sediment grains ≥3.9µm and <63µm in diameter
Sobs	A species accumulation curve with samples added in label order
Sorting	Measure of the range of grain sizes in a sediment sample
SOW	Scope of work
SPA	Special Protected Area
SSS	Side scan sonar
THC	Total hydrocarbons
TOC	Total organic carbon
UCM	Unresolved complex mixture
UGE	A smoothed species accumulation curve based on samples being added randomly and averaged over several runs
UKCS	United Kingdom Continental Shelf
UKHO	UK Hydrographic Office
UKOOA	United Kingdom Offshore Operators Association
US EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
UVFS	Ultra-violet fluorescence spectroscopy

1 INTRODUCTION

1.1 Scope of Work

During June to November 2023, Gardline Limited (Gardline) conducted an integrated survey on behalf of Morven Offshore Wind Limited along the export cable routes (ECR) of the proposed Morven wind farm, situated in the central North Sea approximately 60km southeast of Aberdeen. The survey was conducted onboard the motor vessel *Ocean Geograph* between 19-Jun-2023 to 10-Nov-2023 with environmental operations undertaken between 04-Jul-2023 and 09-Nov-2023, details of the site location are displayed in Figure 1.1.

As detailed in the scope of work (SOW; bp, 2023), the overall survey aims were data collection to support the design of an export cable route (ECR) connecting the proposed Morven wind farm to shore.

The objectives of the environmental survey included:

- to determine the characteristics of the seabed sediment type and contamination status
- to characterise benthic communities (infauna and epifauna)
- to identify any environmentally sensitive habitats (*e.g.* potential Habitats Direct Annex I and priority marine features)

This report presents the results of the environmental baseline survey (EBS). Results of the habitat assessment (Gardline, Pending) and geotechnical surveys (Gardline, 2024a; Gardline, 2024b) are presented separately.

All positional information in this report is referenced to International 1924 Ellipsoid, ED 1950. All grid coordinates are projected using UTM Projection, Grid Zone 30N, CM 3ºW.

1.2 Environmental Survey Strategy

To enable clear and concise reporting the naming convention of the stations have been shortened by the removal of the 'BP23MVEXP-ENV-DC/GS/WS-' station identifier. These shortened names have been used throughout the report where possible, though the original full names have been retained in the image file names and on the video overlays. The full and abbreviated station names have been presented in Table 1.1 along with details of the final target co-ordinates and data acquired. The actual position of the grab samples and seabed imagery, which may be offset from the intended target, are presented in the positional logs within Appendix A.

In order to meet the objectives of the SOW (bp, 2023), a total of 133 stations were pre-selected as part of a benthic survey strategy desktop study of publicly available data prior to survey acquisition (Gardline, 2023a). This comprised of 56 stations (Stations ENV001 to ENV056) located along the eastern route, 58 stations (Stations ENV071 to ENV128) along the western route and 19 situated across the options for landfall. All stations were selected at approximately 4km intervals, of these stations, twenty-two were in Scottish waters and the remainder were in English waters. To check that the proposed cable routes were clear of archaeological artefacts and UXO for grab sampling operations, MBES, magnetometer and SSS reconnaissance lines were run over each station target. Details of the targets including their reason for selection, relative location and anticipated findings are presented in Table 1.1 while an overview of the stations is presented spatially in Figure 1.1.

At all 133 stations drop-down camera data were successfully acquired, with seven re-runs conducted across five stations due to; bad weather, no HD video being captured or low image quality when using the freshwater lens. As per the benthic scoping document (BSD; Gardline, 2023a), all transects were at least 200m in length and arranged in a cruciform arrangement. A deviation from the SOW was approved on 19-Oct-2023 to allow

drop-down video transects for seabed pre-clearance for core penetration testing (CPT) and vibrocore sampling; these were not analysed as part of the environmental scope.

A minimum of three grab samples were proposed every 4km using a 0.1m^2 Day grab for analysis of particle size, environmental DNA (eDNA) and macrofaunal community. An additional grab sample was acquired at 68 stations for chemical analysis including Stations ENV030 to ENV035 due to close proximity to the North East of Farnes Deep highly protected marine area. Following several unsuccessful grab sampling attempts, six stations were abandoned due to; misfires of the grab, low sample retention, rocks stuck in the grab jaws or the presence of Myxinidae.

Table 1.1 Summary of Environmental Sampling Positions and Samples Acquired

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
									Sub-samples[2]							
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO Specification)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-001	ENV001	630 092	6 294 363	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	6
BP23MVEXP-ENV-002	ENV002	632 683	6 291 340	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						3
BP23MVEXP-ENV-003	ENV003	635 281	6 288 299	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	6
BP23MVEXP-ENV-004	ENV004	637 941	6 285 279	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						3
BP23MVEXP-ENV-005	ENV005	640 532	6 282 261	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1	1	1	6
BP23MVEXP-ENV-006	ENV006	643 128	6 279 228	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						3
BP23MVEXP-ENV-007	ENV007	645 743	6 276 186	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-008	ENV008	648 378	6 273 115	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-009	ENV009	650 936	6 270 129	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-010	ENV010	653 551	6 267 079	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-011	ENV011	656 157	6 264 039	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-012	ENV012	656 656	6 260 131	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-013	ENV013	656 877	6 256 136	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-014	ENV014	657 092	6 252 144	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-015	ENV015	657 314	6 248 185	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-016	ENV016	657 529	6 244 154	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-017	ENV017	657 756	6 240 164	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-018	ENV018	657 939	6 236 203	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-019	ENV019	658 157	6 232 173	General flat seabed, SSS shows low to high reflectivity seabed, mixed sediments	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-020	ENV020	658 374	6 228 181	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	9	1	1		1						
BP23MVEXP-ENV-021	ENV021	658 588	6 224 181	Base of shoaling seabed, flat seabed, SSS shows low reflectivity, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-022	ENV022	658 789	6 220 190	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-023	ENV023	659 015	6 216 191	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-024	ENV024	659 215	6 212 354	Base of shoaling seabed, flat seabed, SSS shows low reflectivity, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-025	ENV025	659 446	6 208 080	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-026	ENV026	659 653	6 204 210	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-027	ENV027	659 868	6 200 219	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-028	ENV028	660 086	6 196 220	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-029	ENV029	660 307	6 192 230	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-030	ENV030	660 581	6 188 239	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-031	ENV031	660 798	6 184 246	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-032	ENV032	661 016	6 180 251	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediments	Y	3	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-033	ENV033	661 235	6 176 269	General flat seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y	4	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-034	ENV034	661 478	6 172 275	General flat seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-035	ENV035	661 223	6 168 222	General flat seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y	6										
BP23MVEXP-ENV-036	ENV036	658 815	6 165 338	Middle of shoaling seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-037	ENV037	656 204	6 162 209	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-038	ENV038	653 638	6 159 136	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-039	ENV039	651 097	6 156 056	General flat seabed, SSS shows low reflectivity seabed. Sandy sediment	Y	2	3	2	1	1						2
BP23MVEXP-ENV-040	ENV040	648 723	6 152 682	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
									Sub-samples[2]							
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO Specification)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-041	ENV041	646 687	6 149 423	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-042	ENV042	645 395	6 145 643	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-043	ENV043	644 054	6 141 780	Middle of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-044	ENV044	642 775	6 138 054	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-045	ENV045	641 483	6 134 299	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-046	ENV046	640 073	6 130 539	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-047	ENV047	639 530	6 126 759	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-048	ENV048	640 642	6 122 945	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-049	ENV049	641 831	6 119 158	Middle of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-050	ENV050	642 446	6 115 178	General flat seabed, SSS shows low reflectivity seabed. Sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-051	ENV051	640 672	6 111 630	Small ridge to the north, general flat seabed, SSS shows low reflectivity with scattered boulders, Sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-052	ENV052	638 949	6 108 153	General flat seabed, SSS shows medium to high reflectivity seabed with boulders	Y	6					1	1	1			4
BP23MVEXP-ENV-053	ENV053	637 135	6 104 545	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed with scattered boulders, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-054	ENV054	635 346	6 100 990	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediments	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-055	ENV055	633 583	6 097 485	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediments	Y	1	3	2	1	1						2
BP23MVEXP-ENV-056	ENV056	631 745	6 093 826	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-057	ENV057	628 558	6 091 692	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-058	ENV058	629 040	6 091 085	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-059	ENV059	624 889	6 090 061	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-060	ENV060	625 885	6 088 496	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-061	ENV061	621 239	6 088 432	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-062	ENV062	622 796	6 085 952	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-063	ENV063	617 596	6 086 808	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-064	ENV064	619 737	6 083 425	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-065	ENV065	614 050	6 085 716	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-066	ENV066	616 631	6 080 874	General flat seabed, SSS shows low to high reflectivity seabed, mixed sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-067	ENV067A	611 697	6 082 732	General flat seabed, SSS shows high reflectivity seabed, mixed sandy sediment	Y	6						1				
BP23MVEXP-ENV-068	ENV068	613 813	6 078 042	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	7						1				
BP23MVEXP-ENV-069	ENV069	609 888	6 081 851	General flat seabed, SSS shows high reflectivity seabed, mixed sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-070	ENV070	611 157	6 076 873	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	10										
BP23MVEXP-ENV-071	ENV071	617 141	6 281 096	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-072	ENV072	617 683	6 277 122	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-073	ENV073	618 229	6 273 143	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-074	ENV074	618 778	6 269 161	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-075	ENV075	619 313	6 265 236	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-076	ENV076	619 800	6 261 234	Peak of shoaling seabed, SSS shows high reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-077	ENV077	620 314	6 257 253	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-078	ENV078	620 873	6 253 243	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-079	ENV079	621 428	6 249 280	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-080	ENV080	621 960	6 245 400	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
									Sub-samples[2]							
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO Specification)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-081	ENV081	622 506	6 241 445	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-082	ENV082	623 038	6 237 536	Peak of shoaling seabed, SSS shows low- high reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-083	ENV083	623 635	6 233 497	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-084	ENV084	624 135	6 229 544	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-085	ENV085	624 677	6 225 569	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-086	ENV086	625 218	6 221 618	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-087	ENV087	625 786	6 217 725	Middle of shoaling seabed, SSS shows low-high reflectivity seabed, rippled sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-088	ENV088	626 296	6 213 734	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-089	ENV089	626 842	6 209 725	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-090	ENV090	627 380	6 205 770	Middle of shoaling seabed, general flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-091	ENV091	627 934	6 201 734	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-092	ENV092	628 458	6 197 868	Peak of shoaling seabed, SSS shows low- high reflectivity seabed, sandy sediment	Y	4	3	2	1	1						2
BP23MVEXP-ENV-093	ENV093	629 054	6 193 880	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-094	ENV094	628 588	6 190 282	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-095	ENV095	630 186	6 190 154	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-096	ENV096	628 432	6 186 279	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-097	ENV097	631 463	6 186 300	Peak of shoaling seabed, SSS shows low- high reflectivity seabed, sandy sediment	Y	4	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-098	ENV098	628 264	6 182 327	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-099	ENV099	632 746	6 182 610	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-100	ENV100	628 064	6 178 337	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-101	ENV101	634 211	6 178 844	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-102	ENV102	627 849	6 174 330	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-103	ENV103	635 613	6 175 059	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-104	ENV104	627 686	6 170 307	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-105	ENV105	635 667	6 171 916	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	3	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-106	ENV106	627 403	6 166 336	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment with boulders	Y	2	3	2	1	1						2
BP23MVEXP-ENV-107	ENV107	633 418	6 168 578	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-108	ENV108	627 184	6 162 321	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-109	ENV109	631 206	6 165 285	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-110	ENV110	628 946	6 161 934	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-111	ENV111	626 978	6 158 542	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-112	ENV112	626 284	6 154 439	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-113	ENV113	625 643	6 150 623	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-114	ENV114	624 983	6 146 663	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-115	ENV115	624 293	6 142 873	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-116	ENV116	623 603	6 138 802	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-117	ENV117	622 943	6 134 912	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-118	ENV118	622 273	6 130 918	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-119	ENV119	621 603	6 126 979	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-120	ENV120	622 353	6 123 151	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
									Sub-samples[2]							
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO Specification)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-121	ENV121	623 511	6 119 299	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-122	ENV122	624 665	6 115 470	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-123	ENV123	624 150	6 111 614	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-124	ENV124	623 089	6 107 641	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-125	ENV125	622 083	6 103 872	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-126	ENV126	621 032	6 100 018	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-127	ENV127	619 930	6 096 179	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-128	ENV128	618 835	6 092 326	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-129	ENV129	616 332	6 089 421	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-130	ENV130	617 558	6 088 614	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-131	ENV131	615 581	6 085 218	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-132	ENV132	613 334	6 081 592	Middle of shoaling seabed, SSS shows low to high reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-133	ENV133	611 083	6 078 422	Peak of shoaling seabed, SSS shows low to high reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4

1 Final environmental target locations. Actual sampling positions for each individual grab sample are detailed in Appendix A

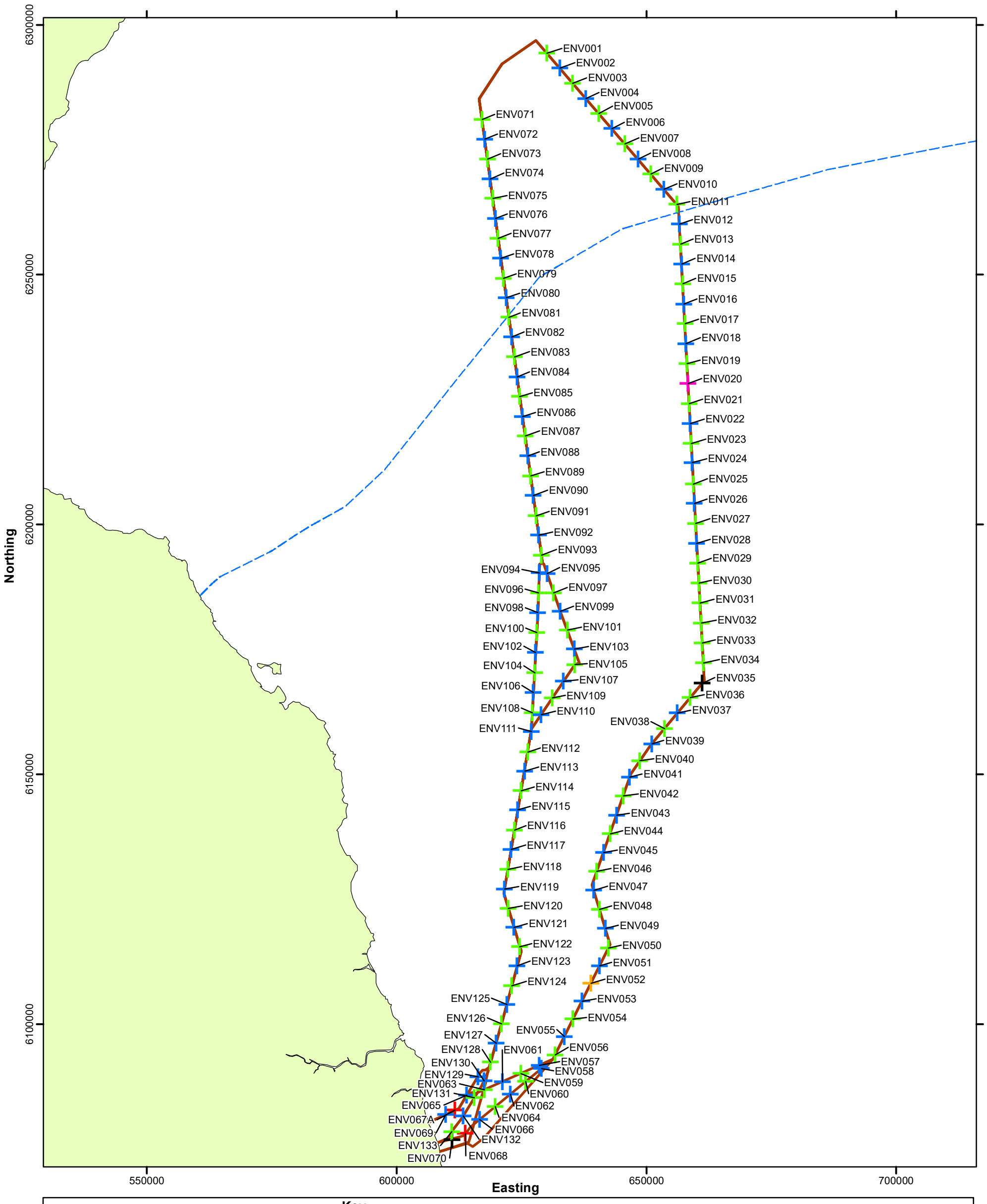
2 Sampling was abandoned at Stations ENV020, ENV035, ENV052, ENV067A, ENV68 and ENV070 due to low retention, rocks in the jaws and the sampler misfiring.

3 One macrofauna sample was sent to be analysed, the other kept as a spare at room temperature. Analysis methods are as detailed in Appendix B

4 Grey text indicates eDNA samples collected but not analysed.

5 Where available, one spare sub-sample was stored in a 1l glass jar available for chemistry analysis (MMO specification), one subsample was stored in a 120ml amber glass jar and available for hydrocarbons, organotin and PCB analysis, up to three sub-samples were stored in double-lined zip-lock bags and available for analysis of metal, particle size, eDNA and fish eDNA if required.

Figure 1.1 Station Overview



1.3 Comparison Data

Where possible the results obtained from the current survey were compared to the findings of the previous survey undertaken by Gardline (2023b). The comparison survey was conducted in 2022 as part of the environmental survey for the Morven array area.

For the current and previous survey (Gardline, 2023b) particle size analysis (PSA) was undertaken using wet and dry sieving, with the <1mm fraction analysed using a Malvern Mastersizer 2000 laser diffraction particle sizer. No dispersants were used and the sediments were not treated to remove the organic fraction prior to analysis. The PSA statistics were calculated using Folk and Ward (1957). In the current and previous survey, total organic carbon (TOC) was analysed following inorganic carbon removal with acid by induction fitted with a non-dispersive infrared (NDIR) cell. The analysis of polychlorinated biphenyls (PCBs) was by ultrasonic solvent extraction followed by gas chromatography tandem mass spectrometry (GC-MS-MS) for both the current and previous survey (Gardline, 2023b) while organotins were analysed following hydrochloric acid and methanol digest.

Analysis of organochloropesticides (OCPs) was conducted at the current survey only.

Methods conducted for MMO (2023) specification (hydrocarbons and metals) were not comparable to the comparison survey however a group of eleven stations conducted in Scottish waters were conducted using similar methods. Hydrocarbons were conducted utilising dichloromethane (DCM) solvent extraction followed by analysis with gas chromatography flame ionisation (GC-FID) for total hydrocarbon (THC) concentrations and aliphatic (n-alkanes) fraction, N-alkanes are reported between nC_{10} to nC_{37} for the eleven stations and the previous survey (Gardline, 2023b). Gas chromatography mass spectrometry (GC-MS) was used for the determination of the polycyclic aromatic hydrocarbons (PAH) fractions.

For the eleven stations and comparison survey (Gardline, 2023b) analysis methods for arsenic (As), barium (Ba), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickle (Ni), lead (Pb), vanadium (V) and zinc (Zn) involved hydrofluoric (HF) acid extraction followed by subsequent analysis using an inductively coupled plasma mass spectrometer (ICP-MS) or inductively coupled plasma optical emission spectrometry (ICP-OES).

Faunal samples in the current and previous survey were screened through a 0.5mm sieve prior to analysis and separate DNA samples were acquired for metabarcoding.

Table 1.2 Details of Comparable Survey

	Current Survey	Gardline (2023b)
Survey Date	Jun to Nov 2023	May to Aug 2022
Survey Type and Number of Stations	EBS 133 stations	EBS 100 stations
Predominant sediment type		Sand (fine to medium), slightly gravelly sand (fine), muddy sand (fine), slightly gravelly muddy sand (fine) and sandy gravel
Water depth (m LAT) sampled	24m – 104m	64m – 81m
Approximate distance and direction from current survey	NA	600m to 183km
Comparison data available	• PSA (Folk and Ward statistics) • TOC by induction furnace (FOC) • PCBs and OCPs by ultrasonic solvent extraction and GC-MS • Organotins by hydrochloric acid and methanol digest *MMO Specification* • THC/PAH by solvent extraction and GC • Metals – As, Cd, Cr, Cu, Ni, Pb, Zn by aqua regia extraction followed by ICP-MS analysis. *Additional Analysis – Scottish Stations* • THC/PAH by wet vortex extraction and GC (THC prior to fractionation) • Metals – As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, V and Zn by HF extraction. • Macrofauna 0.5mm mesh size • eDNA analysis of sediment and water	As per current survey other than: • No OCPs • Hg by nitric acid extraction • Hydrocarbon and metals analysis not comparable with MMO (2023) specification.

1.4 Published Background Data

Reference, where possible, has been made to suitable published background data for marine sediments from the North-East Atlantic and North Sea such as Cefas Action Levels (CALs; MMO, 2023), UKOOA (2001) and OSPAR (2005), along with toxicity information including effects range low (ERL) and effects range median (ERM; Long *et al.*, 1995) and the apparent effects thresholds (AETs) as detailed by Buchman (2008). Background information is also provided in Appendix C.

The MMO (2023) CALs are used to assess dredging material and its suitability for disposal at sea. The values can be used in conjunction with other assessment methods to monitor the contaminant levels of metals, organotins and PCBs. In general, contaminant levels in dredged material below CAL1 are of no concern and are unlikely to influence the licensing decision. Dredged material with contaminant levels between CAL1 and CAL2 would require further consideration and testing before a decision can be made. Dredged material with contaminant levels above CAL2 is generally considered unsuitable for sea disposal.

The United Kingdom Offshore Operators Association (UKOOA) commissioned an analysis of seabed environmental surveys carried out on behalf of UK North Sea offshore oil operators. The purpose of these surveys was to monitor the seabed in the vicinity of offshore operations with the aim of detecting environmental

impact. The analysis was completed in three phases. Phase 1 consisted of the compilation of an inventory of surveys carried out in the UK sector. This initially summarised the results of 472 environmental surveys carried out between 1975 and 1998 by environmental monitoring contractors, government agencies and universities. Background contaminant levels were recorded in three different sectors of the North Sea, and the presence of oil installation clusters situated successively further north allowed the region to be separated into northern (north of latitude 60°N), central (between latitudes 55°N and 60°N) and southern (south of latitude 55°N) sectors. Phase 2 involved the production of database files containing detailed biological, chemical and location data. Phase 3 examined the extent of contamination from offshore exploration and production activities and impacts on the biota and attempted to determine any large-scale trends over wider geographical areas. This final phase was completed in April 2001. Care was taken to record the database in a format that ensures the contaminant concentrations measured by different analytical methods are kept separate. UKOOA (2001) background reference concentrations were averaged from stations >5km from the nearest platform in each of the three sections of the North Sea, with hydrocarbon concentrations determined by gas chromatography (GC) and metal concentrations as given by sodium fusion or similar extraction methods. Mean data and 95th percentiles are available; the latter representing the threshold, which 95% of stations recorded a concentration below. Comparison and reference are made throughout this report to findings from the published report (UKOOA, 2001) with reference to the UKOOA defined central North Sea sector.

OSPAR (2005) has published a set of background concentrations (BC), which represent the concentrations of certain hazardous substances that would be expected in the North-East Atlantic if certain industrial developments had not happened. OSPAR has also described 'background assessment criteria' (BACs), a set of statistical tools that enable testing of whether mean observed concentrations (*i.e.*, collected during a seabed survey) can be near background concentrations. Where no updated BCs have been developed, the upper limit of the range of background/reference concentrations (BRC) have been used. Comparison to OSPAR (2005) data required normalisation of the hydrocarbon concentrations to 2.5% TOC, while metals are normalised to 5% Al. However, OSPAR (2015) acknowledge that the current BC and BAC may be inappropriate for application throughout the Convention area, as they were derived from a data set that emphasises the northern part of the Convention area and within other areas there may be differences in origin and composition of the sediment. OSPAR (2015) point out that if the composition of the sampled sediments is very different to the sediment type defined for the assessment criteria, normalisation will require a large extrapolation and may cause an unacceptable uncertainty. As such, where OSPAR (2005) BC, BAC and BRC values are compared with predominantly sandy or coarse sediments, particularly in the southern part of the convention area, interpretation should be treated with some caution.

The best estimates of the potential toxicity of PAHs in marine sediments are ERL and ERM concentrations for total low molecular weight (2- to 3-ring, LMW), total high molecular weight (4- to 6-ring, HMW) and total 2-6 ring PAHs (Neff, 2004) as given by Long *et al.* (1995) and OSPAR (2009b). These concentrations are not actual thresholds of toxicity but delineate concentration ranges with associated probabilities of toxicity. More information on the ERL and ERM for PAHs can be found in Appendix Section C.2. Long *et al.* (1995) also define ERL and ERM values for selected metals.

OSPAR have also defined Environmental Assessment Criteria (EAC) for PAHs, PCBs and the metals Cd, Pb and Zn as part of their Coordinated Environmental Management Programme (CEMP; OSPAR, 2009b). EACs represent the contaminant concentration in the environment below which no chronic effects are expected to occur in marine species, including the most sensitive species. Therefore, concentrations below the EACs are considered to present no significant risk to the environment. EACs for a range of contaminants were proposed in 2004, and updated EACs for PCBs were proposed in 2008. Further EACs continue to be developed for use in data assessments. Comparison with EACs required normalisation of PAH and PCB concentrations to 2.5% TOC and metals to 1% TOC. Where EACs are not available, OSPAR instead advise using the afore-mentioned Effects Range Low (ERL) and Effects Range Median (ERM) values.

Buchman's (2008) AETs were obtained by establishing relationships between the sediment metal concentrations and benthic community toxicological impacts and correspond to the highest concentrations at which no toxicological effects were observed.

1.5 Existing Infrastructure

Based on data from NSTA (2023) there is no existing infrastructure within 5km of the Morven ECR. The position and status of the nearest wells are listed in Table 1.3 and plotted on the location map for completeness.

Table 1.3 Details of Historical Wells

Infrastructure	Easting	Northing	Status	Intent	Completion Date	Distance and Direction from Station
41/01- 1	639 617	6 088 070	Plugged and abandoned	Exploration	28-Jun-1992	9.7km SE of ENV056
27/03-1	649 557	6 315 378	Plugged and abandoned	Exploration	08-Sep-1967	28.6km NE of ENV001
26/14- 1	601 001	6 274 333	Plugged and abandoned	Exploration	07-Jun-1984	16.9km W of ENV072
26/08-1	590 037	6 290 239	Plugged and abandoned	Exploration	27-Nov-1992	28.6km WNW of ENV071

2 RESULTS AND DISCUSSION

2.1 Geophysical Survey Summary

Geophysical data were successfully acquired across the Morven ECR routes, this included an initial geophysical clearance phase of the sampling locations to complete environmental and geotechnical operations.

The geophysical requirement for this project was to acquire 2 lines at 80m spacing along all of the ECR sections with around 1000 line km to be acquired, utilising MBES, SSS and SBP. No final interpretation of the datasets was undertaken.

2.2 Seabed Imagery Observations Summary

The analysis of camera investigations is not yet completed and will be reported in full in the habitat assessment report (Gardline, Pending).

2.3 Sediment Sampling Summary

Sediment sampling was conducted at 133 stations across the survey area, of these the required suite was collected at 127 stations. All successful samples were acquired using a 0.1m^2 Day grab. Environmental deck and positioning logs are presented in Appendix A.

Across the survey area, areas of heterogeneous sediment which included a high proportion of gravel and cobbles tended to recover smaller samples. Of the six stations (Stations ENV020, ENV035, ENV052, ENV067a, ENV068 and ENV070) where the full suite was not obtained, no successful samples were obtained at four stations (ENV035, ENV067a, ENV068 and ENV070). Multiple attempts were made at all stations to acquire samples, at Station ENV035 after multiple attempts with the Day grab the mini-Hamon grab was deployed but still did not yield a successful sample. At the four stations where no samples were obtained, cobbles and boulders were observed in preliminary review of seabed imagery which impacted sampling attempts.

Overall, a total of 448 grab samples were acquired from 543 attempts (83% success rate). Of these retained samples, 99.6% were acquired within 10m of the target location (n=446) and the remaining two samples were acquired within 20m of the target. Where sampling attempts failed multiple times, the grab was redeployed 10m from the original target location. On average, samples were obtained within 1.8m of the target location (±1.6SD) with the maximum distance between target and sampling location being 11.2m. The 95 unsuccessful sampling attempts were spread across 35 stations and were due to; low sample retention (43%), rocks stuck in the grab jaws (36%), misfires of the grab (19%) or the presence of Myxinidae (3%).

Seabed sampling indicated that the seabed comprised sandy sediments with varying amounts of fines, shell fragments and occasional areas of sandy or muddy sediments with cobbles and gravels.

Visible fauna observed within the retrieved grab were limited and included:

- Annelida (Polychaeta)
- Arthropoda (Brachyura, Decapoda, *Nephrops norvegicus*, Paguroidea)
- Bryozoa (Flustridae)
- Cnidaria (Hydrozoa, Pennatuloidea)
- Echinodermata (Asteroidea, *Echinocardium cordatum*, Ophiuroidea
- Mollusca (*Arctica islandica*, Bivalvia, Gastropoda, Scaphopoda)

2.4 Sediment Characteristics

2.4.1 Particle Size Analysis

The PSA results, determined using wet and dry sieving and laser diffraction, are presented in Table 2.1 along with a summary of comparable and published background data. Full PSA results from the current survey, including histograms illustrating the particle size distribution at each of the sampled stations are presented in Appendix D.

Across the survey area, sediments were recorded as heterogenous and displayed wide-ranging particle size distributions under Folk & Ward (1957), ranging from extremely poor to moderately well sorted. Mean particle diameter varied from 27µm at Station ENV059 to 2078µm at Station ENV092. Excluding the four significant outlier stations ($p<0.01$; Stations ENV092, ENV076, ENV087 and ENV037) the mean particle diameter varied from 27µm at Station ENV059 to 422µm at Station ENV034. Across the survey area a significant negative correlation between water depth (m) and mean grain size (µm) was observed (Spearman's $r=-0.62$, $p<0.01$; Appendix E).

Of the 128 stations where PSA was collected, 12 had negligible (<5%) fines content (<63µm; silt and clay) with a further 38 having fines content >10%. Gravel (>2µm) content was <1% at most stations (n=110) and was >15% at four stations (Stations ENV066; ENV076; ENV092 and ENV131). Most stations were classified as either fine sand (n=52; 39%), coarse silt (28, 21%), or very fine sand (n=26, 20%) under Wentworth (1922). Stations were generally poorly sorted (poor to extremely poor; n=92, 69%) and had leptokurtic distributions (leptokurtic to extremely leptokurtic; n=83, 62%). When classified under Folk and Ward (1957) sediments were predominantly either muddy sand (n=57; 43%) or sand (n=42; 32%), these stations recorded modal phi values between 1.0 and 4.0 (Appendix D).

The sediments across the survey area were broadly consistent with those previously recorded in a previous survey conducted across the Morven array area (Gardline, 2023b). Both surveys had a wide range of grain diameter but similar means, summarised in Table 2.1. The wider range of sediment classifications in this survey can be attributed to the spatial variation across the approximately 260km long ECR. Sediments at the north end of the ECR resembled those observed in the previous survey (Gardline, 2023b), with sediments at the southern end having higher proportions of fines, likely due to the proximity to the coastline and major riverine systems as illustrated in Figure 2.1.

The mean grain size and fines content as presented by UKOOA (2001) for stations over 5km from existing infrastructure in the central North Sea (between latitudes 55°N and 60°N), sampled between 1975 and 1995 (hereafter referred to as background stations) are presented in Table 2.1. Relative to the wider context, sediments across the survey area were broadly consistent with background level.

2.4.2 Total Organic Carbon

The results of TOC analysis are presented in Table 2.1. TOC is measured as a percentage of the total sample mass, representing the organic carbon constituent of the organic matter. Organic matter in marine sediments primarily comprises detrital matter and naphthenic materials (carboxylic acid and humic substances with a small proportion of biological biomass).

Where collected, concentrations of TOC ranged from 0.13% at Station ENV019 to 14.8% at Station ENV133, Excluding Station ENV133 TOC ranged from 0.13% at Station ENV019 to 1.5% at Station ENV059. The vastly higher value observed at Station ENV133 is likely attributed to the proximity to the coastline (approximately 3.5km). The survey mean TOC value was 0.68% (±1.79SD), with positive correlations observed between TOC and depth ($r= 0.29$, $p<0.05$) and percentage fines ($r=0.80$, $p<0.01$; Appendix E).

In general, for continental shelf sediments there is a close relationship between organic carbon content and the surface area of the mineral matrix (Mayer, 1994). Increased TOC is expected with fine sediment, as is adsorbs to the increased surface area provided by the fine grain particles. As such, the positive correlation between TOC and fines was expected.

Although TOC concentrations across the whole survey area were inconsistent (t-test; $p<0.05$) with those previously recorded in the Morven array area (Gardline, 2023b), this is expected due to the spatial variation, depth and proximity to the shore and riverine output and were consistent with natural variation across the survey area.

Table 2.1 Sediment Characteristics

Station	Mean Diameter (µm)[1]	Mean Diameter (phi)[1]	Fines %	Sand %	Gravel %	Wentworth Classification of Mean Grain Size	Sorting[1]	Modified Folk Classification[1]	% TOC
ENV001	196	2.4	5.7	93.8	0.4	Fine sand	Moderately well	Sand	0.22
ENV002	190	2.4	8.7	91.2	0.1	Fine sand	Moderate	Sand	NC
ENV003	190	2.4	6.5	93.4	0.1	Fine sand	Moderate	Sand	0.18
ENV004	197	2.3	7.5	91.3	1.2	Fine sand	Moderate	Slightly gravelly sand	NC
ENV005	181	2.5	8.5	91.1	0.4	Fine sand	Moderate	Sand	0.22
ENV006	189	2.4	8.3	91.6	0.1	Fine sand	Moderate	Sand	NC
ENV007	180	2.5	8.6	91.4	0.0	Fine sand	Moderate	Sand	0.23
ENV008	180	2.5	7.9	91.6	0.5	Fine sand	Moderate	Sand	NC
ENV009	175	2.5	7.4	92.6	0.0	Fine sand	Moderate	Sand	0.23
ENV010	168	2.6	10.6	89.4	0.0	Fine sand	Moderate	Muddy sand	NC
ENV011	181	2.5	9.2	90.7	0.0	Fine sand	Moderate	Sand	0.23
ENV012	193	2.4	8.4	91.6	0.0	Fine sand	Moderate	Sand	NC
ENV013	194	2.4	8.4	91.5	0.0	Fine sand	Moderate	Sand	0.20
ENV014	188	2.4	9.3	90.6	0.2	Fine sand	Poor	Sand	NC
ENV015	198	2.3	8.5	91.5	0.0	Fine sand	Moderate	Sand	0.20
ENV016	205	2.3	6.0	93.9	0.0	Fine sand	Moderate	Sand	NC
ENV017	220	2.2	7.4	92.5	0.1	Fine sand	Moderate	Sand	0.16
ENV018	236	2.1	3.4	96.5	0.1	Fine sand	Well	Sand	NC
ENV019	243	2.0	0.0	100.0	0.0	Fine sand	Well	Sand	0.13
ENV021	193	2.4	11.3	88.5	0.2	Fine sand	Poor	Muddy sand	0.19
ENV022	177	2.5	11.3	88.6	0.0	Fine sand	Poor	Muddy sand	NC
ENV023	129	3.0	15.7	84.2	0.0	Fine sand	Poor	Muddy sand	0.22
ENV024	219	2.2	9.5	90.5	0.0	Fine sand	Poor	Sand	NC
ENV025	205	2.3	12.1	83.4	4.5	Fine sand	Poor	Slightly gravelly muddy sand	0.20
ENV026	210	2.3	10.9	89.1	0.0	Fine sand	Poor	Muddy sand	NC
ENV027	273	1.9	6.0	93.9	0.1	Medium sand	Poor	Sand	0.26
ENV028	196	2.3	11.8	88.1	0.0	Fine sand	Poor	Muddy sand	NC
ENV029	114	3.1	17.6	82.3	0.0	Very fine sand	Poor	Muddy sand	0.22
ENV030	171	2.5	16.0	83.9	0.1	Fine sand	Poor	Muddy sand	0.27
ENV031	214	2.2	9.7	89.8	0.5	Fine sand	Poor	Sand	0.34
ENV032	299	1.7	5.7	94.0	0.3	Medium sand	Poor	Sand	0.25
ENV033	365	1.5	5.0	88.5	6.5	Medium sand	Poor	Gravelly sand	0.26
ENV034	422	1.2	1.7	97.8	0.5	Medium sand	Moderate	Sand	0.31
ENV036	289	1.8	3.4	96.4	0.3	Medium sand	Moderate	Sand	0.29
ENV037	540	0.9	6.4	93.2	0.4	Coarse sand	Poor	Sand	NC
ENV038	315	1.7	7.8	91.9	0.3	Medium sand	Poor	Sand	0.23
ENV039	208	2.3	14.6	84.1	1.2	Fine sand	Poor	Slightly gravelly muddy sand	NC
ENV040	100	3.3	28.9	70.9	0.2	Very fine sand	Very poor	Muddy sand	0.50
ENV041	114	3.1	21.2	78.7	0.0	Very fine sand	Very poor	Muddy sand	NC
ENV042	86	3.5	28.0	71.5	0.4	Very fine sand	Very poor	Muddy sand	0.49
ENV043	81	3.6	32.8	67.1	0.0	Very fine sand	Very poor	Muddy sand	NC
ENV044	79	3.7	31.1	68.6	0.2	Very fine sand	Very poor	Muddy sand	0.68
ENV045	49	4.4	45.0	54.8	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV046	64	4.0	36.0	63.7	0.3	Very fine sand	Very poor	Muddy sand	0.56
ENV047	67	3.9	33.9	65.7	0.4	Very fine sand	Very poor	Muddy sand	NC
ENV048	96	3.4	25.5	74.3	0.1	Very fine sand	Very poor	Muddy sand	0.46
ENV049	105	3.3	24.6	75.3	0.0	Very fine sand	Very poor	Muddy sand	NC
ENV050	88	3.5	35.0	58.4	6.5	Very fine sand	Very poor	Gravelly muddy sand	0.78
ENV051	410	1.3	7.2	91.5	1.3	Medium sand	Poor	Slightly gravelly sand	NC
ENV052	178	2.5	12.6	86.8	0.6	Fine sand	Poor	Muddy sand	0.40
ENV053	101	3.3	25.3	73.6	1.0	Very fine sand	Very poor	Muddy sand	NC
ENV054	106	3.2	20.9	79.0	0.1	Very fine sand	Very poor	Muddy sand	0.41
ENV055	60	4.1	27.9	71.9	0.1	Coarse silt	Very poor	Muddy sand	NC
ENV056	58	4.1	30.9	68.9	0.0	Coarse silt	Very poor	Muddy sand	0.66
ENV057	45	4.5	40.3	59.6	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV058	43	4.5	41.9	57.9	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV059	27	5.2	60.2	39.7	0.0	Medium silt	Very poor	Sandy mud	1.50
ENV060	32	5.0	55.3	44.6	0.0	Coarse silt	Very poor	Sandy mud	1.21
ENV061	39	4.7	44.8	55.0	0.1	Coarse silt	Very poor	Muddy sand	NC
ENV062	37	4.8	47.2	52.5	0.2	Coarse silt	Very poor	Muddy sand	NC
ENV063	95	3.4	31.5	68.3	0.2	Very fine sand	Very poor	Muddy sand	0.63
ENV064	62	4.0	30.0	69.8	0.1	Coarse silt	Very poor	Muddy sand	0.83
ENV065	39	4.7	50.4	48.4	1.1	Coarse silt	Very poor	Slightly gravelly sandy mud	NC
ENV066	121	3.0	48.0	27.2	24.7	Very fine sand	Extremely poor	Gravelly mud	NC
ENV069	102	3.3	16.7	83.3	0.0	Very fine sand	Moderate	Muddy sand	NC
ENV071	209	2.3	7.1	92.5	0.4	Fine sand	Moderate	Sand	0.35
ENV072	170	2.6	10.1	89.4	0.5	Fine sand	Moderate	Muddy sand	NC
ENV073	196	2.4	10.2	89.6	0.2	Fine sand	Poor	Muddy sand	0.31
ENV074	236	2.1	6.3	93.6	0.1	Fine sand	Moderate	Sand	NC
ENV075	237	2.1	5.0	94.9	0.1	Fine sand	Moderate	Sand	0.28
ENV076	736	0.4	3.5	70.4	26.1	Coarse sand	Poor	Gravelly sand	NC
ENV077	253	2.0	5.2	93.9	0.8	Medium sand	Moderate	Sand	0.28
ENV078	231	2.1	7.9	91.6	0.5	Fine sand	Poor	Sand	NC
ENV079	249	2.0	6.0	92.0	2.0	Fine sand	Poor	Slightly gravelly sand	0.36
ENV080	223	2.2	6.4	93.5	0.1	Fine sand	Moderate	Sand	NC
ENV081	175	2.5	9.8	90.1	0.0	Fine sand	Poor	Sand	0.27

Station		Mean Diameter (µm)[1]	Mean Diameter (phi)[1]	Fines %	Sand %	Gravel %	Wentworth Classification of Mean Grain Size	Sorting[1]	Modified Folk Classification[1]	% TOC
ENV082		194	2.4	6.9	93.0	0.1	Fine sand	Moderate	Sand	NC
ENV083		191	2.4	10.0	89.9	0.1	Fine sand	Poor	Muddy sand	0.27
ENV084		212	2.2	8.8	91.0	0.2	Fine sand	Poor	Sand	NC
ENV085		171	2.5	11.2	88.7	0.0	Fine sand	Poor	Muddy sand	0.29
ENV086		338	1.6	3.8	96.0	0.2	Medium sand	Moderate	Sand	NC
ENV087		567	0.8	1.1	97.6	1.2	Coarse sand	Moderately well	Slightly gravelly sand	0.23
ENV088		374	1.4	4.7	93.1	2.2	Medium sand	Moderate	Slightly gravelly sand	NC
ENV089		312	1.7	2.2	97.2	0.7	Medium sand	Moderately well	Sand	0.27
ENV090		235	2.1	4.9	94.2	0.8	Fine sand	Moderate	Sand	NC
ENV091		218	2.2	9.3	90.6	0.1	Fine sand	Poor	Sand	0.30
ENV092		2078	-1.1	0.9	35.6	63.5	Granule	Poor	Sandy gravel	NC
ENV093		222	2.2	5.8	93.9	0.2	Fine sand	Moderate	Sand	0.28
ENV094		219	2.2	9.8	89.6	0.5	Fine sand	Poor	Sand	NC
ENV095		238	2.1	8.2	91.4	0.4	Fine sand	Poor	Sand	NC
ENV096		150	2.7	15.4	84.6	0.0	Fine sand	Poor	Muddy sand	0.39
ENV097		231	2.1	5.2	94.3	0.4	Fine sand	Moderate	Sand	0.28
ENV098		77	3.7	23.3	76.0	0.6	Very fine sand	Poor	Muddy sand	NC
ENV099		103	3.3	20.7	77.8	1.4	Very fine sand	Very poor	Slightly gravelly muddy sand	NC
ENV100		58	4.1	30.8	69.0	0.1	Coarse silt	Poor	Muddy sand	0.47
ENV101		72	3.8	26.3	73.5	0.1	Very fine sand	Very poor	Muddy sand	0.56
ENV102		130	2.9	18.4	81.6	0.0	Fine sand	Poor	Muddy sand	NC
ENV103		111	3.2	20.5	79.1	0.3	Very fine sand	Very poor	Muddy sand	NC
ENV104		125	3.0	18.0	82.0	0.0	Very fine sand	Poor	Muddy sand	0.39
ENV105		87	3.5	25.3	73.2	1.5	Very fine sand	Very poor	Slightly gravelly muddy sand	0.30
ENV106		194	2.4	16.7	81.9	1.3	Fine sand	Very poor	Slightly gravelly muddy sand	NC
ENV107		103	3.3	22.6	77.3	0.1	Very fine sand	Very poor	Muddy sand	NC
ENV108		73	3.8	26.0	73.8	0.1	Very fine sand	Very poor	Muddy sand	0.45
ENV109		54	4.2	31.3	68.6	0.0	Coarse silt	Poor	Muddy sand	0.64
ENV110		108	3.2	20.3	79.6	0.1	Very fine sand	Poor	Muddy sand	NC
ENV111		54	4.2	33.6	66.3	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV112		46	4.4	38.8	61.0	0.1	Coarse silt	Very poor	Muddy sand	0.54
ENV113		44	4.5	40.2	59.7	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV114		46	4.4	38.0	61.8	0.1	Coarse silt	Very poor	Muddy sand	0.62
ENV115		40	4.6	42.9	57.0	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV116		48	4.4	40.1	59.5	0.3	Coarse silt	Very poor	Muddy sand	0.60
ENV117		39	4.7	44.9	55.0	0.0	Coarse silt	Very poor	Muddy sand	NC
ENV118		37	4.8	49.3	50.6	0.1	Coarse silt	Very poor	Muddy sand	0.87
ENV119		34	4.9	50.5	49.4	0.0	Coarse silt	Very poor	Sandy mud	NC
ENV120		30	5.1	56.7	43.1	0.0	Medium silt	Very poor	Sandy mud	1.05
ENV121		30	5.1	57.0	42.9	0.0	Medium silt	Very poor	Sandy mud	NC
ENV122		30	5.1	57.1	42.7	0.0	Medium silt	Very poor	Sandy mud	1.29
ENV123		31	5.0	55.7	44.1	0.0	Medium silt	Very poor	Sandy mud	NC
ENV124		35	4.8	50.1	49.8	0.0	Coarse silt	Very poor	Sandy mud	0.91
ENV125		45	4.5	45.8	53.9	0.3	Coarse silt	Very poor	Muddy sand	NC
ENV126		31	5.0	57.4	42.4	0.1	Medium silt	Very poor	Sandy mud	1.02
ENV127		33	4.9	53.8	46.0	0.0	Coarse silt	Very poor	Sandy mud	NC
ENV128		54	4.2	34.7	65.1	0.1	Coarse silt	Very poor	Muddy sand	0.71
ENV129		58	4.1	37.1	62.7	0.1	Coarse silt	Very poor	Muddy sand	NC
ENV130		62	4.0	33.5	65.2	1.2	Coarse silt	Very poor	Slightly gravelly muddy sand	NC
ENV131		268	1.9	22.4	60.6	17.0	Medium sand	Very poor	Gravelly muddy sand	1.05
ENV132		73	3.8	37.6	62.3	0.0	Very fine sand	Poor	Muddy sand	NC
ENV133		38	4.7	57.3	42.4	0.1	Coarse silt	Very poor	Sandy mud	14.80
This Study	Minimum	27	-1.1	0.0	27.2	0.0	Medium silt to coarse silt	Extremely poor to moderately well	Sandy gravel, Gravelly sand, slightly gravelly sand, slightly gravelly muddy sand, sand, muddy sand, gravelly muddy sand, gravelly mud, slightly gravelly sandy mud, sandy mud	0.13
	Maximum	2078	5.2	60.2	100.0	63.5				14.80
	Mean	173	3.0	21.6	76.9	1.4				0.68
	±SD	206	1.2	16.9	17.5	6.6				1.79
Gardline (2023b)	Minimum	132	-0.1	2.9	62.8	0.0	Fine to coarse sand	Very poor to moderately well	Sand, slightly gravelly sand, muddy sand, sandy gravel, lightly gravelly muddy sand	0.13
	Maximum	1102	2.9	16.7	96.2	32.0				0.38
	Mean	219	2.2	7.8	91.3	0.9				0.19
	±SD	93	0.3	2.3	3.7	3.2				0.05
UKOOA (2001)	Mean	120.7	3.1	17.4	NA	NA	Very fine sand	NA	NA	NA
	95th Percentile	31.5	5.0	77.6			Coarse silt			NA
	Muddy Sand Sediments	74.3	3.8	33.6			Very fine sand			NA

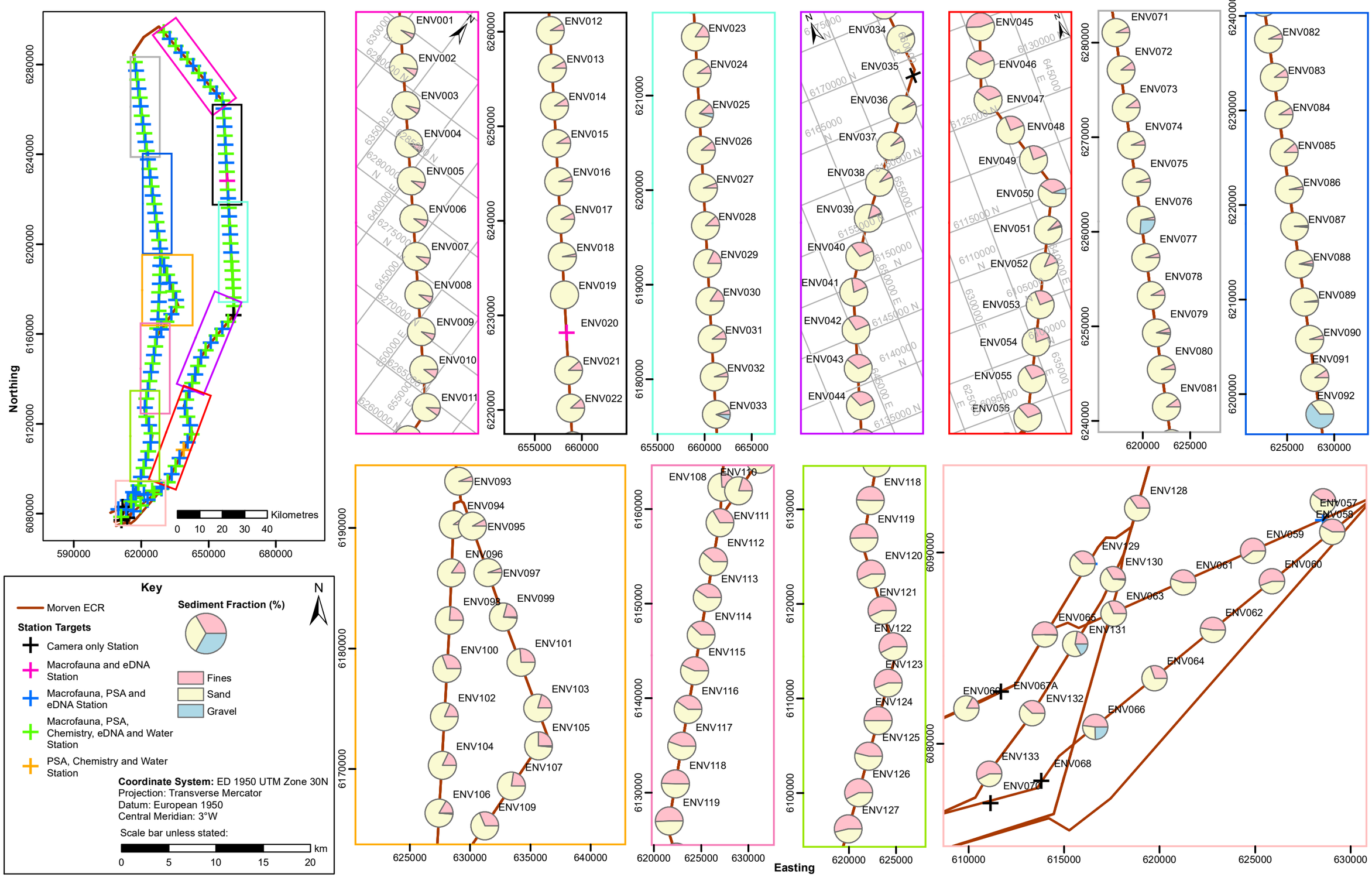
Sediments were not treated to remove carbonates prior to particle size analyses.

1 Sorting according to Folk and Ward (1957).

Results in blue are from comparison survey data, see Section 1.3

Results in green are from published background data, see Section 1.4

Figure 2.1 Particle Size Analysis by Station



2.5 Hydrocarbon Concentrations

2.5.1 Total Hydrocarbons and Alkanes

Concentrations of THC were analysed using ultra-violet fluorescence spectroscopy (UVFS) at 66 stations to meet MMO (2023) guidelines. Additionally, concentrations of THC were analysed by GC-FID at 11 stations which were in Scottish waters. Details of analytical methods are presented in Appendix B.6.2. A summary of the THC values determined by UVFS are presented in Table 2.2, THC ranged from 1.0µg g^{-1} at Station ENV104 to 269.0µg g^{-1} at Station ENV133 with 36 stations recorded below limit of detection (LOD). Significant variation between stations across the survey areas was observed, where THC was seen to be significantly positively correlated with the percentage of fines ($r=0.84$, $p<0.01$) and significantly negatively correlated with mean particle diameter ($r=-0.75$, $p<0.01$). THC values were also observed to be the highest near the coast, in regions of high densities of vessel traffic. This is displayed in Figure 2.2 where THC values are gridded against weekly vessel traffic for 2019.

A summary of the results of the hydrocarbon analyses conducted in Scottish waters are presented in Table 2.3 together with concentrations of n-alkanes nC_{10} to nC_{37}, pristane and phytane. Individual n-alkane concentrations are tabulated in Table 2.4, with bar charts for the eleven stations in Appendix F. Concentrations of THC analysed by GC-FID (comprising n-alkanes, pristane, phytane, unresolved complex mixture (UCM) and PAHs) ranged from 3.88µg g^{-1} to 9.84µg g^{-1} with a mean of 6.48µg g^{-1} (±1.97SD). Concentrations of THC analysed by GC-FID were within a range previously recorded for the Morven array area (Gardline, 2023b).

To put these results into a wider context, UKOOA (2001) reported a mean THC concentration of 9.51µg g^{-1} (measured by GC, n=159) and a 95th percentile of 40.1µg g^{-1} for CNS stations over 5km from existing infrastructure, sampled between 1975 and 1995. Only Station ENV009 within the Scottish stations was above the UKOOA mean and could therefore be considered consistent with background concentrations.

It has previously been shown that benthic macrofauna may suffer adverse effects when THC concentrations are in excess of 50µg g^{-1} (Kjeilen-Eilertsen *et al.*, 2004; UKOOA, 2002; UKOOA, 2005) and as such, this value represents the threshold above which hydrocarbons are expected to have a 'significant environmental impact'. Kingston (1992) also previously reported that benthic macrofauna suffer adverse effects, namely reduced diversity, when THC concentrations are more than 50µg g^{-1} to 60µg g^{-1} and that specific sensitive species may be impacted at levels greater than 10µg g^{-1} Mair *et al.* (1987) observed a notable increase in the dominance of opportunistic species at THC levels more than 291.4µg g^{-1}. The THC concentrations across the survey area were below these published threshold values and therefore the faunal community was not expected to be adversely affected by THC.

Although THC concentrations give an indication of the total oil in the sediment at each station, it does not give an indication of the source. Analysis of GC chromatograms (Appendix F) may provide an indication of the origin of hydrocarbons in marine sediments and the extent to which they are weathered. Peaks in the gas chromatograms correspond to individual n-alkanes and other compounds, with carbon numbers increasing with eluting time. The area beneath the trace constitutes a complex mixture (see Section C.2 for further information) of hydrocarbons that could not be resolved by GC-FID. This UCM includes cycloalkane compounds, which remain after substantial weathering and biodegradation of petrogenic inputs to the sediment (McDougall, 2000).

The chromatograms generally presented a consistent pattern of low level, high molecular weight (HMW) resolved n-alkanes and UCM ranging from approximately nC_{20} to nC_{38} with a peak between nC_{28} to nC_{32}. Such distributions are considered typical of background levels of hydrocarbons inputs in areas of historical oil and gas exploration which include a relatively low level UCM distributed between nC_{20} to nC_{33}. Overall, the UCM

accounted for 53% to 74% of THC across the stations in Scottish waters, indicating that hydrocarbons were from a mixture of both weathered and fresher inputs.

Further insight into the origin of hydrocarbons in marine sediments can be gained by measuring concentrations of individual alkanes (Table 2.4). Total n-alkane concentrations varied between 0.054µg g^{-1} at Station ENV003 and 0.119µg g^{-1} at Station ENV011. The concentrations of n-alkanes were distributed with a greater proportion of HMW n-alkanes (nC_{21} to nC_{37}) which accounted for 85% to 97% of the total n-alkanes across the stations sampled. Peaks in concentrations for most stations were at odd numbers within the range nC_{25} and nC_{31}, with the highest peaks typically at nC_{29} and nC_{31}. Their distribution within the HMW range indicated the presence of biogenic n-alkanes most likely derived from diffuse higher terrestrial plant waxes (Bouloubassi *et al.*, 2001).

In general, the distribution of n-alkanes and concentrations were comparable to those encountered in the previous survey conducted at the Morven array area (Gardline, 2023b) so may be considered typical for the wider region. The CNS mean background concentrations of n-alkanes (UKOOA, 2001) was 0.400µg g^{-1} (n=307 stations) with total n-alkanes in samples where analysis was conducted below the mean and therefore could be considered representative of the wider area.

The ratio of odd to even numbered n-alkane within the HMW range (nC_{26} to nC_{30}), commonly referred to as the carbon preference index (CPI), can provide further insight into the origin of alkanes in marine sediment. Marine sediments containing a high level of biogenically derived (odd carbon number) n-alkanes are known to have CPI ≥2.0, with values ≥4.0 suggesting a virtual absence of petrogenic hydrocarbons (McDougall, 2000). CPI values close to 0 indicate a predominance of petrogenic hydrocarbons. Across the stations where analysis was conducted CPI values ranged from 1.3 to 4.6 with a mean of 2.7 (±1.1SD) suggesting a mixture of petrogenic and biogenic inputs, dominated by biogenic input. Stations ENV001, ENV003 and ENV075 all recorded CPI values >3.5, indicating a very low level of petrogenic hydrocarbons, in addition Station ENV079 recorded a CPI of 4.6 indicating a virtual absence of petrogenic hydrocarbons.

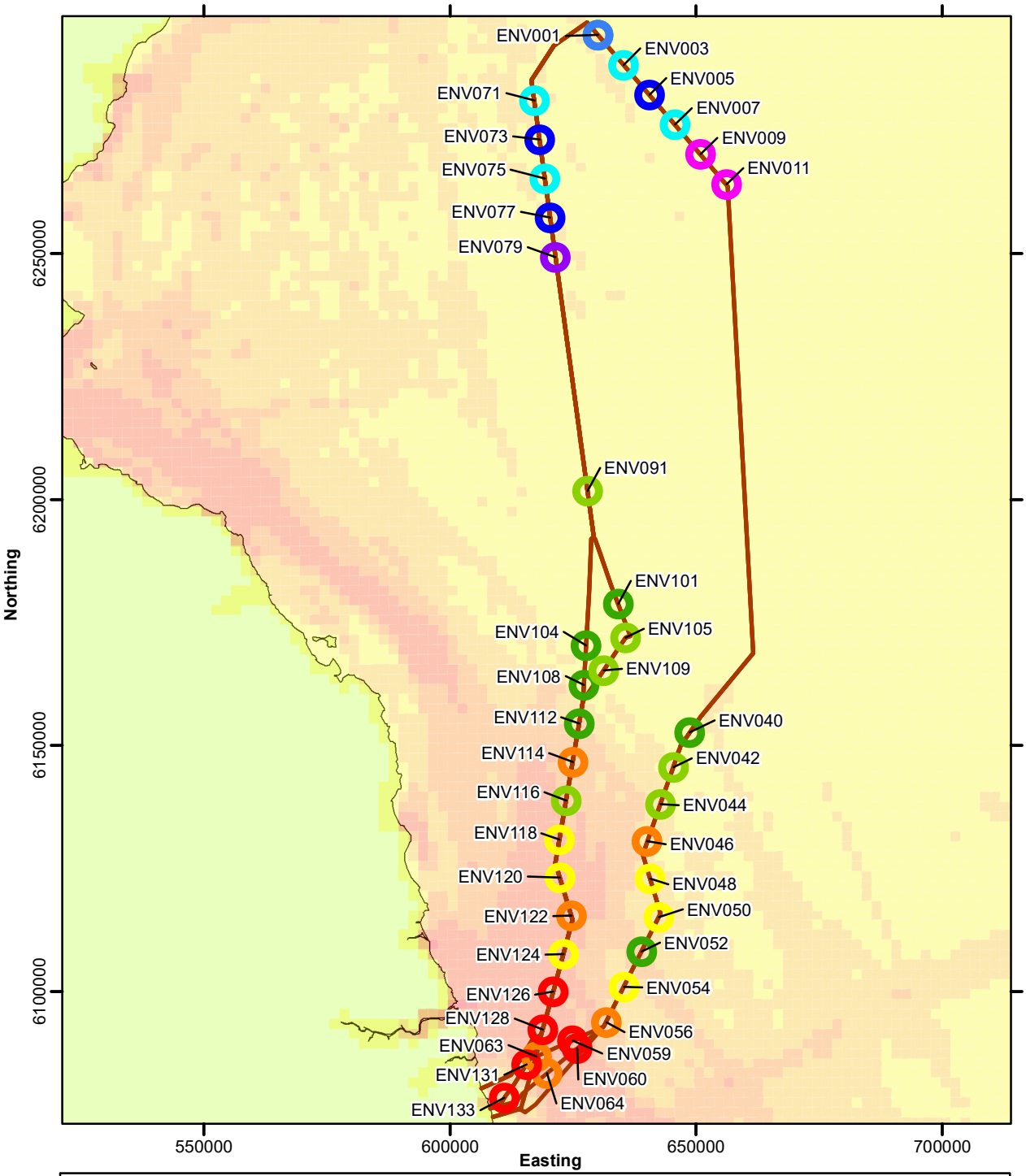
To put this into context, CPI across the stations analysed was within the range recorded in the comparison survey (Gardline, 2023b) and on average higher than CNS mean background CPI.

The ratio of the isoprenoids pristane (Pr) and phytane (Ph) can be used to derive similar information to the CPI where a high Pr:Ph ratio is indicative of biogenic hydrocarbons most commonly originating from the decomposition of the phytol side-chain of chlorophyll (Muniz *et al.*, 2004) The isoprenoid Pr is primarily biogenic in origin (Bouloubassi *et al.*, 2001; Muniz *et al.*, 2004) while Ph is rarely produced biogenically but is a common component of crude oil (Steinhauer & Boehm, 1992). Pr concentrations ranged from 0.007µg g^{-1} at Station ENV003 to 0.015µg g^{-1} at Station ENV001, with Ph absent from all stations indicating the general predominance of biogenic hydrocarbons. Pr:Ph ratios could not be calculated for any station, however an indicative Pr:Ph ratio of >7 was calculated across all stations. These indicative ratios suggest the general predominance of biogenic hydrocarbons.

Table 2.2 THC by UVFS

Station	THC by UVFS
ENV001	<1
ENV003	<1
ENV005	<1
ENV007	<1
ENV009	<1
ENV011	<1
ENV013	<1
ENV015	<1
ENV017	<1
ENV019	<1
ENV021	<1
ENV023	<1
ENV025	<1
ENV027	<1
ENV029	<1
ENV030	<1
ENV031	<1
ENV032	<1
ENV033	<1
ENV034	<1
ENV036	<1
ENV038	<1
ENV040	2.5
ENV042	4.0
ENV044	5.0
ENV046	8.7
ENV048	5.1
ENV050	6.4
ENV052	1.3
ENV054	5.5
ENV056	8.6
ENV059	31.8
ENV060	23.1
ENV063	12.4
ENV064	18.2
ENV071	<1
ENV073	<1
ENV075	<1
ENV077	<1
ENV079	<1
ENV081	<1
ENV083	<1
ENV085	<1
ENV087	<1
ENV089	<1
ENV091	5.0
ENV093	<1
ENV096	<1
ENV097	<1
ENV100	<1
ENV101	2.0
ENV104	1.0
ENV105	4.8
ENV108	2.7
ENV109	3.7
ENV112	3.3
ENV114	9.0
ENV116	4.7
ENV118	6.3
ENV120	7.3
ENV122	9.3
ENV124	8.6
ENV126	28.1
ENV128	33.8
ENV131	99.4
ENV133	269.0
This survey – Min	<1
This survey – Max	269.0
This survey – Average	21.0
This survey – SD	50.4

Figure 2.2 Total hydrocarbon Concentrations and Shipping Density



Key

THC by GC-FID (µg g^{-1})
- 3.8 - 5.1
- 5.1 - 6.3
- 6.3 - 7.5
- 7.5 - 8.7
- 8.7 - 9.8

THC by UV fluorescence spectroscopy (µg g^{-1})
- 0.0 - 3.3
- 3.3 - 5.0
- 5.0 - 8.6
- 8.6 - 18.2
- 18.2 - 269.0

Only stations where Total Hydrocarbon concentrations exceeded the LOD are shown

Morven ECR

Weekly Average Vessel Transits for Whole Year 2019 (MMO, 2019)
- 1-200
- >200 - 500
- >500 - 1000
- >1000 - 10000

N

Kilometres
0 10 20 30 40

Coordinate System: ED 1950 UTM Zone 30N
Projection: Transverse Mercator Datum: European 1950
Central Meridian: 3.0° W

Table 2.3 Summary of Sediment Hydrocarbon Analyses

Station		GC-FID									GC-MS		
				n-alkanes				Isoprenoids					
		THC	UCM	nC_{10-20}	nC_{21-37}	nC_{10-37}	CPI[1]	Pristane (Pr)	Phytane (Ph)	Pr/Ph Ratio	NPD[2]	Total PAH	NPD[2]/4-6 Ring
ENV001		5.42	3.07	0.009	0.070	0.079	3.8	0.015	<1	>15	NC	0.003	NC
ENV003		3.88	2.23	0.004	0.050	0.054	3.5	0.007	<1	>7	NC	0.005	NC
ENV005		7.25	4.25	0.009	0.091	0.100	1.6	0.011	<1	>11	0.006	0.019	0.429
ENV007		5.05	3.74	0.002	0.061	0.063	2.7	0.009	<1	>9	0.002	0.011	0.187
ENV009		9.84	5.47	0.015	0.089	0.104	1.3	0.009	<1	>9	0.004	0.019	0.275
ENV011		8.81	4.87	0.009	0.109	0.119	1.5	0.008	<1	>8	0.004	0.024	0.198
ENV071		4.47	3.17	0.013	0.085	0.098	2.2	0.010	<1	>10	NC	0.007	NC
ENV073		7.14	4.19	0.012	0.068	0.081	2.2	0.008	<1	>8	0.001	0.009	0.195
ENV075		4.45	2.54	0.004	0.059	0.063	3.8	0.008	<1	>8	NC	0.005	NC
ENV077		6.84	3.60	0.009	0.091	0.101	4.6	0.007	<1	>7	0.001	0.004	0.523
ENV079		8.10	4.58	0.007	0.062	0.069	2.3	0.008	<1	>8	0.001	0.010	0.145
This survey	Minimum	3.88	2.23	0.002	0.050	0.054	1.3	0.007	NC	NC	NC	0.003	0.145
	Maximum	9.84	5.47	0.015	0.109	0.119	4.6	0.015	NC	NC	0.006	0.024	0.523
	Mean	6.48	3.79	0.009	0.076	0.085	2.7	0.009	NC	NC	NC	0.011	0.279
	±SD	1.97	1.00	0.004	0.018	0.021	1.1	0.002	NC	NC	NC	0.007	0.143
Gardline (2023b)	Minimum	2.84	2.13	0.004	0.032	0.036	1.94	<0.001	<0.001	1	NC	NC	0.098
	Maximum	13.63	7.61	0.036	0.169	0.190	4.82	0.118	0.003	39	0.058	0.137	1.350
	Mean	6.30	3.89	0.015	0.089	0.104	3.13	0.018	0.002	16	0.009	0.017	0.378
	±SD	2.30	1.31	0.007	0.031	0.036	0.67	0.018	0.001	13	0.016	0.023	0.402
UKOOA (2001) for CNS	Mean	9.51	NA	NA	NA	0.400	2.040	NA	NA	NA	0.105	0.287	NA
	95th Percentile	40.10				1.180	2.790				NA	NA	
	Muddy Sand Sediments	9.84				0.51	1.82				0.095	0.381	

Unless indicated, concentrations expressed as µg g^{-1} dry sediment

1 Calculated using $2(nC_{27} + nC_{29})/nC_{26} + 2(nC_{28}) + nC_{30}$ (Farrington & Tripp, 1977).

2 Naphthalenes, phenanthrenes and dibenzothiophenes (total).

NC Not calculated due to values being below LOD

NA Not available

Results in blue are from comparison survey data, see Section 1.3

Results in green are from published background data, see Section 1.4

Table 2.4 n-Alkane Concentrations

Station	ENV001	ENV003	ENV005	ENV007	ENV009	ENV011	ENV071	ENV073	ENV075	ENV077	ENV079
nC_{10}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{11}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{12}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{13}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{14}	2	<1	<1	<1	2	<1	2	2	<1	2	<1
nC_{15}	4	<1	3	<1	5	4	6	5	<1	2	<1
nC_{16}	<1	<1	2	<1	3	2	<1	1	<1	3	2
nC_{17}	2	2	3	2	3	2	3	2	2	2	2
nC_{18}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{19}	2	2	2	<1	2	2	2	2	2	<1	2
nC_{20}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
nC_{21}	2	2	2	2	2	2	<1	1	<1	<1	1
nC_{22}	<1	<1	<1	<1	2	2	<1	<1	<1	<1	<1
nC_{23}	1	<1	<1	2	2	3	<1	2	<1	<1	<1
nC_{24}	3	4	6	5	7	9	4	6	3	2	4
nC_{25}	11	14	10	8	10	10	11	9	8	3	4
nC_{26}	2	2	3	<1	2	3	2	3	<1	1	2
nC_{27}	5	4	7	6	6	7	6	7	4	5	6
nC_{28}	2	<1	3	2	2	3	3	2	2	<1	2
nC_{29}	12	9	13	12	11	17	13	14	9	9	11
nC_{30}	6	5	10	5	15	12	8	5	4	8	7
nC_{31}	13	4	10	7	9	16	11	6	8	6	12
nC_{32}	<1	<1	2	3	7	7	2	<1	3	<1	<1
nC_{33}	6	3	2	6	7	5	10	6	1	6	6
nC_{34}	2	<1	4	3	3	7	8	4	1	2	2
nC_{35}	4	1	10	2	2	4	5	3	16	49	2
nC_{36}	<1	2	9	<1	2	3	2	2	<1	<1	2
nC_{37}	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total	79	54	100	63	104	119	98	81	63	101	69

Concentrations expressed as ng g^{-1} dry weight sediment.

2.5.2 Polycyclic Aromatic Hydrocarbons

Total PAH concentrations of analytes quantified under MMO (2023) accredited analysis ranged from 3ng g^{-1} to 40233ng g^{-1} across the survey area. It is important to note that total PAH concentrations were below LOD at four stations (Stations ENV019, ENV077, ENV087 and ENV089). Total PAH concentrations showed a significant correlation with increasing proportions of fines ($r=0.88$, $p<0.01$) and depth ($r=0.41$, $p<0.01$; Appendix E).

Information on the origin of PAHs can be derived from the parent compound molecular weight indices as detailed by Yunker *et al*. (2002) and adopted in Fisner *et al*. (2013) and are presented in Figure 2.3. The molecular mass indices identified pyrogenic PAHs in all cases.

Further evidence of petrogenic inputs can be observed from the prevalence of alkylated homologues over parent compounds in the lower weight fractions of naphthalene and phenanthrene (Wang & Fingas, 2005). As illustrated in Figure 2.4 it is evident that the alkylated homologues are more abundant than their parent compounds which indicates there are PAHs from petrogenic sources present, however concentrations were low. Two stations differed from this trend, where Station ENV027 had a higher prevalence of parent compounds for both naphthalene and phenanthrene and Station ENV030 had higher a prevalence of Phenanthrene over its

homologues. In both instances where homologues were more prevalent than parent compounds, concentrations were low.

The best estimates of the potential toxicity of PAHs in marine sediments are the ERL and ERM values (Long *et al.*, 1995), as described in Section 1.4 and Appendix C.2. Total PAH concentrations were generally well below their respective ERL values (4.022µg g^{-1}) for all stations except for at Station ENV133 (4.023µg g^{-1}) and therefore indicate that toxic effects to fauna by PAHs are unlikely for the majority of the survey area. Individual PAH analytes were generally below both ERL and ERM values across the survey area, where only Acenaphthene, Benzo[ghi]perylene and Fluorene were detected above the ERL at multiple stations (See Table 2.5). Station ENV133 had numerous analytes above the ERL, some of these values also exceeded the Buchman (2008) AET values. The concentrations of multiple PAHs at Station ENV133 were particularly elevated, exceeding ERL, ERM and AET values indicating that toxic effects on fauna exposed to these sediments were likely.

When comparing to the OSPAR (2009b) concentrations were first normalised to 2.5% TOC (as presented in Appendix G). After normalisation many of the measurable concentrations for many of the PAHs were considered above BC values. Further, concentrations of naphthalene were above EAC threshold concentrations at thirteen stations and fluoranthene at eight stations. Additionally, Anthracene and Pyrene exceed EAC thresholds at several stations. As mentioned in Section 1.4 normalisation to TOC within coarser substrate areas these thresholds are subject to greater uncertainty.

In addition to MMO analysis, eleven stations were in Scottish waters and were analysed by GC-MS with detailed information on analytical methods presented in Appendix B.6. Results are summarised in Table 2.3 with a breakdown of the individual PAHs and their alkyl derivatives are presented in Table 2.6. Bar charts, showing the proportion of parent compounds and alkylated homologues for each molecule weight class of PAH are presented in Appendix F. In addition, US EPA 16 priority PAHs are presented in Appendix F.

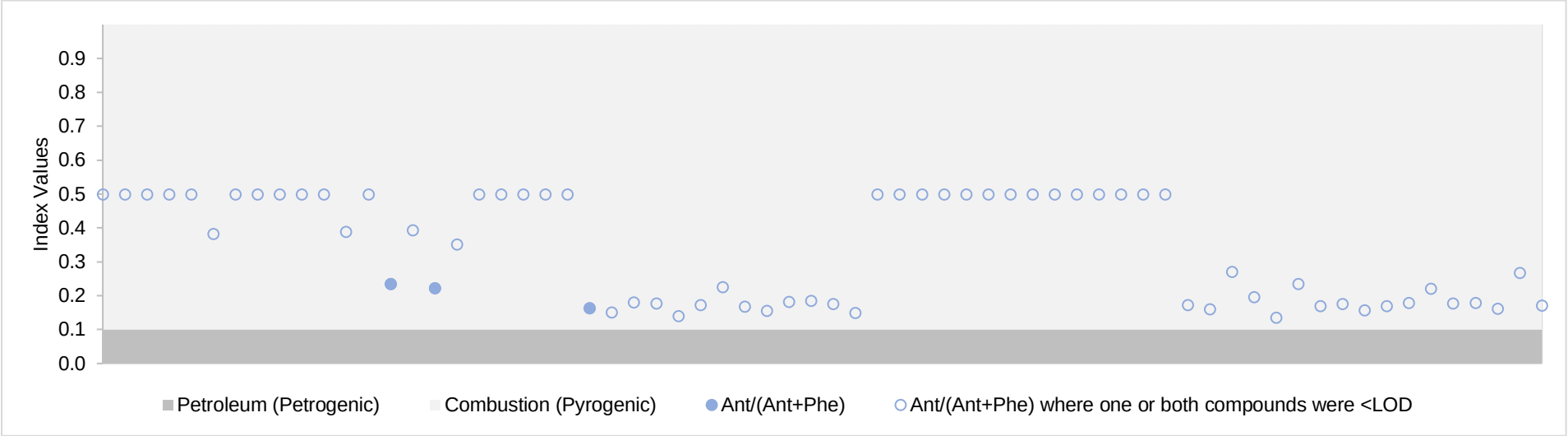
Total PAHs for the eleven Scottish samples analysis ranged between 0.003µg g^{-1} at Station ENV001 to 0.024µg g^{-1} at Station ENV011. The mean concentration of 0.011µg g^{-1} (±0.007SD) was comparable to those previously recorded in the Morven array area (Gardline, 2023b). Further, concentrations were below the UKOOA (2001) mean of 0.287µg g^{-1}.

The 2-3 ring NPD concentrations were below LOD at four stations and within the eleven stations surveyed ranged between 0.001µg g^{-1} and 0.006µg g^{-1}. The low NPD concentrations across the eleven stations further support the lack of petrogenic contamination across the survey area. The mean NPD concentration for these stations (0.003µg g^{-1}) is consistent with the Morven array area (2023b) along with all concentrations being below the UKOOA mean of 0.105µg g^{-1} for CNS stations.

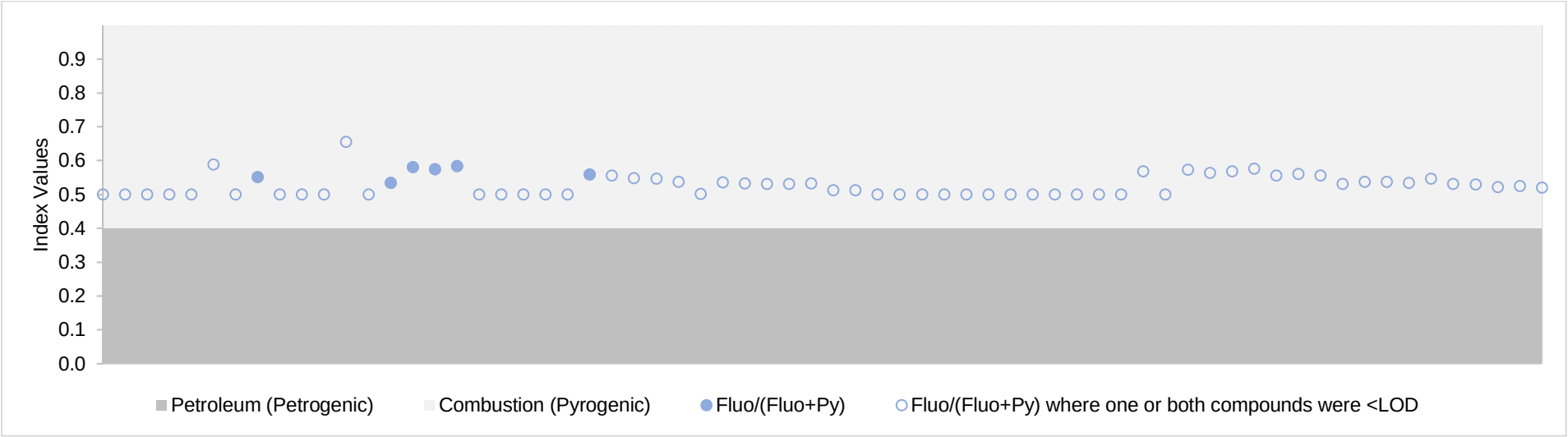
When compared against OSPAR (2005) BC, BAC and BRC where concentrations were above LOD none of the US EPA 16 PAHs exceeded BC values. All total PAH values at these eleven stations were well below the ERL values as well as AET thresholds (Buchman, 2008).

Figure 2.3 PAH Molecular Weight Indices

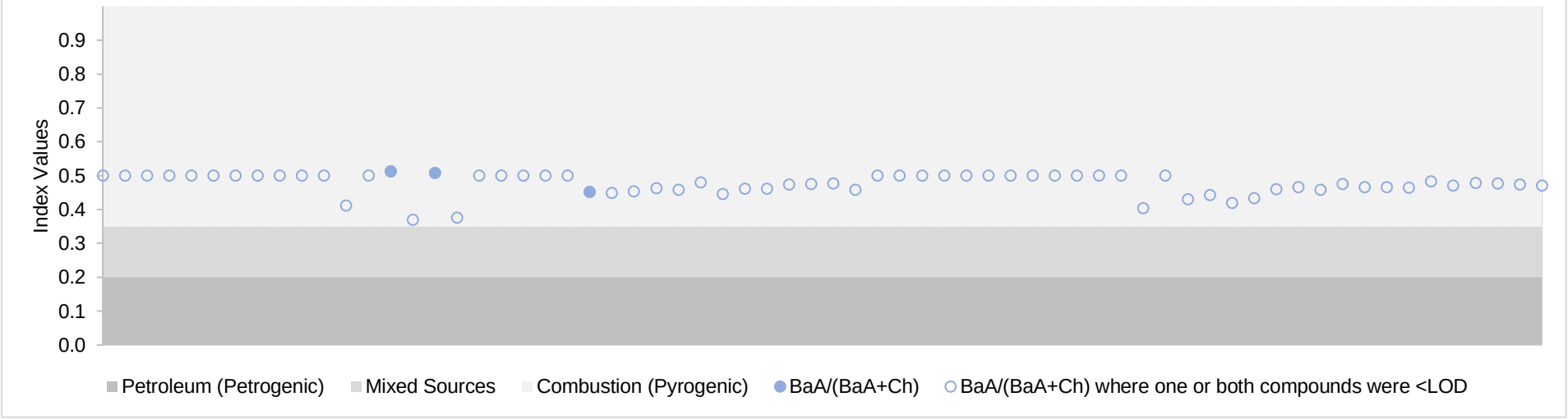
a) Calculated Ratio of 178 Molecular Weights PAH Index



b) Calculated Ratio of 202 Molecular Weights PAH Index



c) Calculated Ratio of 228 Molecular Weights PAH Index



d) Calculated Ratio of 276 Molecular Weights PAH Index

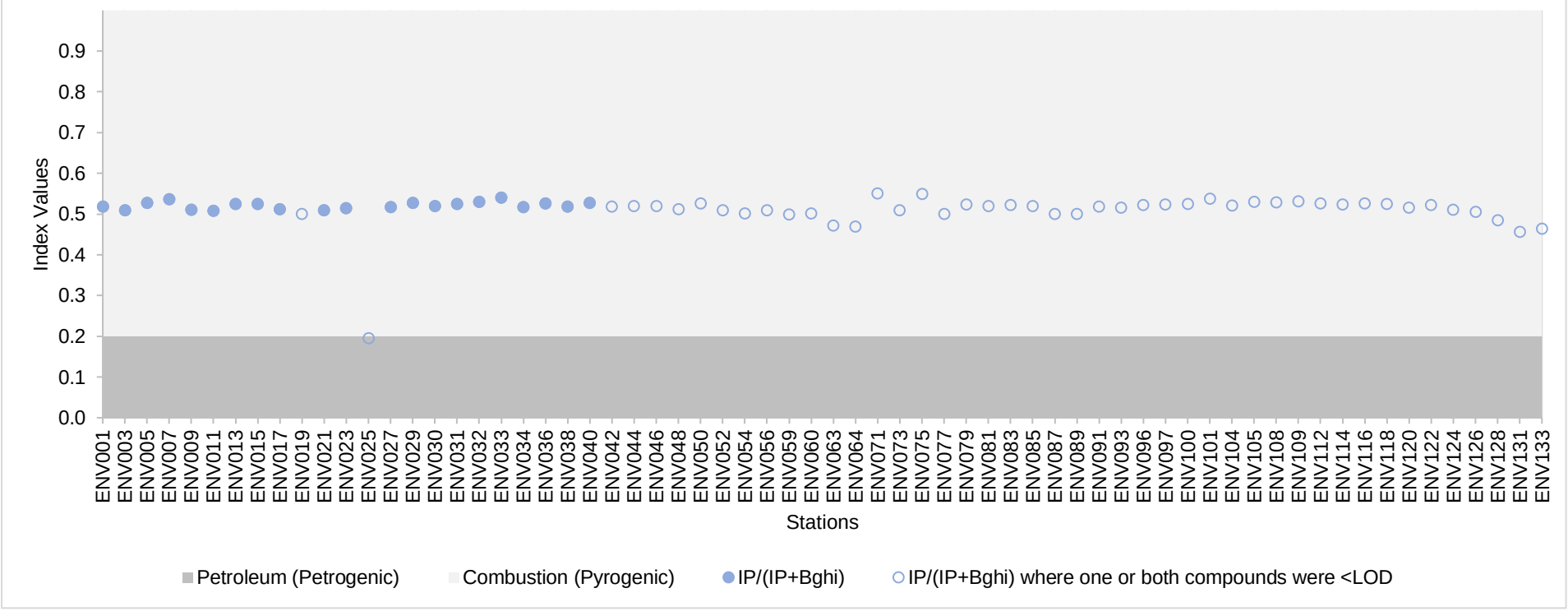


Table 2.5 PAH Concentrations for MMO (2023) Stipulated Compounds

Station	ENV001	ENV003	ENV005	ENV007	ENV009	ENV011	ENV013	ENV015	ENV017	ENV019	ENV021	ENV023	ENV025	ENV027	ENV029	ENV030	ENV031	ENV032	ENV033	ENV034	ENV036	ENV038	ENV040	ENV042	ENV044	ENV046	ENV048	ENV050	ENV052	ENV054	ENV056	ENV059	ENV060	ENV063	Long et al. (1995) ERL	Long et al. (1995) ERM	Buchman (2008) AET
Acenaphthene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	2	1	2	<1	<1	4	24	19	8	**16**	**500**	**130^{E}**
Acenaphthylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	2	11	10	3	**44**	**640**	**71^{E}**
Anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	24	<1	4	<1	<1	<1	<1	<1	<1	2	2	4	4	3	5	<1	2	7	43	34	13	**85.3**	**1100**	**280^{E}**
Benzo[a]anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	58	<1	7	<1	<1	<1	<1	<1	<1	7	8	14	15	12	22	3	7	23	116	93	29	**261**	**1600**	**960^{e}**
Benzo[a]pyrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	79	2	7	2	<1	<1	<1	<1	<1	10	11	19	19	14	30	4	8	27	132	103	30	**430**	**1600**	**1100^{E}**
Benzo[b]fluoranthene	2	2	3	3	3	3	2	2	<1	<1	2	4	2	60	6	9	5	3	2	<1	2	2	21	24	36	37	26	55	7	15	43	167	134	33	NA	NA	**1800 ^{EJ}**
Benzo[e]pyrene	2	3	5	5	5	6	3	3	3	<1	4	7	4	59	9	10	7	4	3	2	3	3	24	26	40	39	27	58	9	16	43	154	122	33	NA	NA	NA
Benzo[ghi]perylene	<1	<1	2	2	2	2	<1	1	<1	<1	<1	3	1	43	4	6	3	2	<1	<1	<1	1	13	14	23	23	17	34	5	10	29	117	93	27	**85**	NA	**670^{M}**
Benzo[k]fluoranthene	<1	2	2	3	2	3	<1	2	<1	<1	2	4	2	60	5	9	4	2	<1	<1	2	2	17	18	28	28	20	42	5	11	33	132	102	27	NA	NA	**1800^{EJ}**
C1-naphthalenes	4	2	<1	1	<1	<1	<1	<1	<1	<1	<1	2	<1	11	2	2	2	<1	<1	<1	<1	1	16	18	24	26	27	35	5	15	58	272	212	95	NA	NA	NA
C1-phenanthrene	2	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	2	<1	22	2	7	2	<1	<1	<1	<1	<1	12	15	25	25	27	31	5	13	53	244	188	82	NA	NA	NA
C2-naphthalenes	3	<1	2	<1	2	2	<1	2	<1	<1	<1	3	<1	8	3	3	3	<1	<1	<1	<1	1	17	19	26	28	32	35	5	15	62	288	219	98	NA	NA	NA
C3-naphthalenes	3	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	3	<1	10	2	2	3	<1	<1	<1	<1	<1	16	19	26	27	34	34	5	15	64	305	226	108	NA	NA	NA
Chrysene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	55	2	7	2	<1	<1	<1	<1	<1	8	10	17	17	14	24	3	8	27	129	102	32	**384**	**2800**	**950^{E}**
Dibenzo[ah]anthracene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	10	<1	2	<1	<1	<1	<1	<1	<1	3	4	6	6	4	10	1	3	7	30	22	6	**63.4**	**260**	**230^{OM}**
Fluoranthene	<1	<1	<1	<1	<1	1	<1	2	<1	<1	<1	2	<1	102	3	17	2	<1	<1	<1	<1	<1	13	15	25	26	21	34	4	12	42	209	162	52	**600**	**5100**	**1300^{E}**
Fluorene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	12	<1	2	<1	<1	<1	<1	<1	<1	2	2	3	3	2	4	<1	1	7	35	27	11	**19**	**540**	**120^{E}**
Indeno[1,2,3-cd]pyrene	3	3	6	6	5	6	4	4	3	<1	4	8	<1	64	10	11	8	4	3	2	3	3	26	28	43	42	28	64	9	16	45	153	123	29	**240**	NA	**600^{M}**
Naphthalene	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	37	<1	<1	<1	<1	<1	<1	<1	<1	5	6	9	9	8	12	2	5	20	97	78	33	**160**	**2100**	**230^{E}**
Perylene	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	18	<1	2	<1	<1	<1	<1	<1	<1	2	3	4	4	3	5	<1	2	6	26	21	6	NA	NA	NA
Phenanthrene	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	2	<1	77	2	12	2	<1	<1	<1	<1	<1	9	12	17	18	18	25	3	9	38	192	148	60	**240**	**1500**	**660^{E}**
Pyrene	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	89	2	12	2	<1	<1	<1	<1	<1	10	12	21	21	18	34	4	11	37	184	142	49	**665**	**2600**	**2400^{E}**
Total	**19**	**12**	**19**	**20**	**19**	**29**	**9**	**17**	**5**	**<1**	**12**	**42**	**10**	**911**	**51**	**132**	**45**	**15**	**8**	**3**	**10**	**14**	**233**	**264**	**411**	**418**	**357**	**597**	**78**	**193**	**676**	**3060**	**2379**	**864**	**4022**	**44792**	NA

Station	ENV064	ENV071	ENV073	ENV075	ENV077	ENV079	ENV081	ENV083	ENV085	ENV087	ENV089	ENV091	ENV093	ENV096	ENV097	ENV100	ENV101	ENV104	ENV105	ENV108	ENV109	ENV112	ENV114	ENV116	ENV118	ENV120	ENV122	ENV124	ENV126	ENV128	ENV131	ENV133	Long et al. (1995) ERL	Long et al. (1995) ERM	Buchman (2008) AET
Acenaphthene	13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	3	4	5	6	11	13	29	346	**16**	**500**	**130^{E}**
Acenaphthylene	6	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	2	5	4	6	6	19	132	**44**	**640**	**71^{E}**
Anthracene	22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	4	3	3	4	6	8	18	13	20	24	84	636	**85.3**	**1100**	**280^{E}**
Benzo[a]anthracene	48	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	4	2	3	5	13	13	16	12	24	26	54	42	58	52	129	1060	**261**	**1600**	**960^{e}**
Benzo[a]pyrene	49	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	5	7	3	4	7	17	18	22	16	31	33	60	50	68	53	114	903	**430**	**1600**	**1100^{E}**
Benzo[b]fluoranthene	56	1	2	<1	<1	2	2	2	2	<1	<1	2	2	4	2	13	15	7	11	17	33	38	39	30	60	60	92	80	99	67	116	833	NA	NA	**1800 ^{EJ}**
Benzo[e]pyrene	52	2	3	2	<1	2	2	3	3	<1	<1	3	3	6	3	16	19	9	13	19	37	42	43	32	63	64	89	81	95	63	82	506	NA	NA	NA
Benzo[ghi]perylene	44	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	8	9	4	6	10	19	22	24	18	37	38	59	52	66	50	93	727	**85**	NA	**670^{M}**
Benzo[k]fluoranthene	44	<1	<1	<1	<1	2	<1	1	<1	<1	<1	2	<1	4	2	9	12	6	7	12	24	27	30	22	45	46	74	61	75	52	110	721	NA	NA	**1800^{EJ}**
C1-naphthalenes	201	1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	1	<1	7	6	4	6	8	20	21	19	24	47	50	72	87	142	174	313	7070	NA	NA	NA
C1-phenanthrene	164	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	6	7	3	6	8	19	20	22	24	45	47	85	73	112	155	297	3670	NA	NA	NA
C2-naphthalenes	205	<1	<1	<1	<1	2	<1	<1	2	<1	<1	2	<1	3	<1	10	9	6	6	9	22	23	24	27	51	55	82	93	149	193	334	6140	NA	NA	NA
C3-naphthalenes	202	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	8	7	4	6	10	20	22	23	27	54	62	91	95	162	209	361	5330	NA	NA	NA
Chrysene	57	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	4	5	2	4	6	15	15	18	14	27	30	58	47	64	57	143	1190	**384**	**2800**	**950^{E}**
Dibenzo[ah]anthracene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	3	<1	2	3	6	7	7	5	11	11	17	14	18	12	26	131	**63.4**	**260**	**230^{OM}**
Fluoranthene	87	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	6	8	4	5	9	23	23	25	23	41	48	91	71	105	102	245	2090	**600**	**5100**	**1300^{E}**
Fluorene	20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	2	3	3	6	6	10	10	18	19	41	544	**19**	**540**	**120^{E}**
Indeno[1,2,3-cd]pyrene	46	3	3	3	<1	2	3	3	4	<1	<1	3	3	6	3	18	23	10	14	21	42	47	47	36	70	68	98	84	97	59	69	439	**240**	NA	**600^{M}**
Naphthalene	61	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	2	1	2	3	7	8	7	7	16	16	24	28	46	57	116	2590	**160**	**2100**	**230^{E}**
Perylene	10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	4	4	5	4	7	7	12	11	14	11	24	175	NA	NA	NA
Phenanthrene	124	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	5	5	3	4	6	13	15	16	21	31	36	63	58	90	124	230	3080	**240**	**1500**	**660^{E}**
Pyrene	83	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	4	6	3	4	7	18	18	22	20	35	41	75	62	93	93	221	1920	**665**	**2600**	**2400^{E}**
Total	**1603**	**8**	**7**	**5**		**10**	**7**	**10**	**13**			**12**	**7**	**38**	**9**	**128**	**148**	**70**	**104**	**163**	**358**	**389**	**413**	**371**	**711**	**758**	**1233**	**1120**	**1609**	**1645**	**3197**	**40233**	**4022**	**44792**	NA

Concentrations expressed as ng g^{-1} dry weight sediment

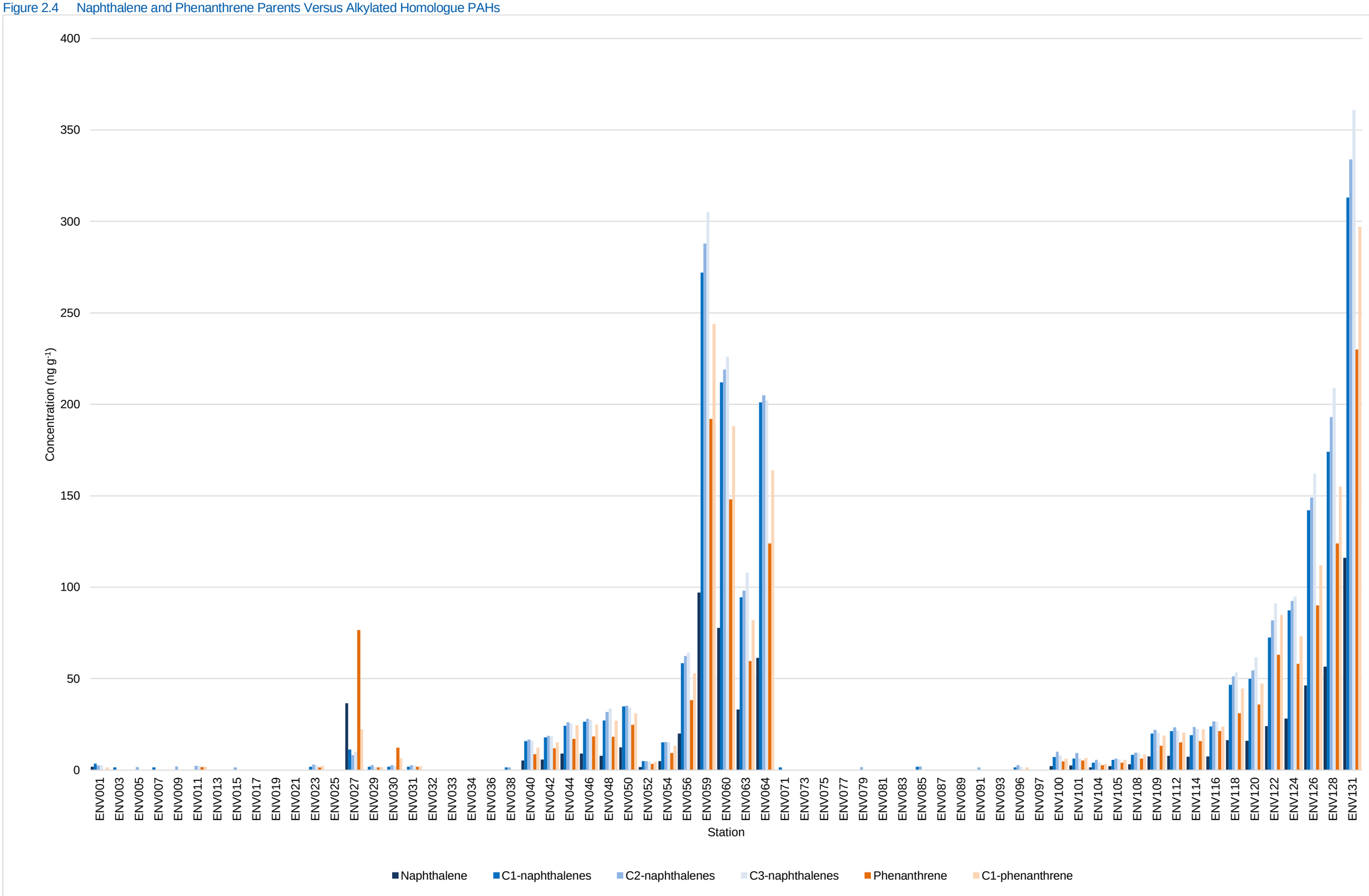
Table 2.6 PAH Concentrations

Station	ENV001	ENV003	ENV005	ENV007	ENV009	ENV011	ENV071	ENV073	ENV075	ENV077	ENV079
Naphthalene (128)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C1 128	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
C2 128	<1	<1	3	2	2	2	<1	<1	<1	<1	1
C3 128	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
C4 128	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total 128	**NC**	**NC**	**6**	**2**	**2**	**2**	**NC**	**NC**	**NC**	**NC**	**1**
Phenanthrene/Anthracene (178)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
C1 178	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C2 178	<1	<1	<1	<1	2	2	<1	1	<1	1	<1
C3 178	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total 178	**NC**	**NC**	**NC**	**NC**	**2**	**2**	**NC**	**1**	**NC**	**1**	**NC**
Dibenzothiophene (184)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C1 184	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C2 184	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C3 184	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total 184	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**
Fluoranthene/Pyrene (202)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
C1 202	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C2 202	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C3 202	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total 202	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**
Benzanthracene/Chrysene (228)	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
C1 228	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C2 228	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total 228	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**	**NC**
Benzfluoranthrenes/Benzopyrenes (252)	NC	NC	3	2	4	6	1	1	NC	NC	1
C1 252	<1	2	2	2	3	4	2	2	2	1	2
C2 252	<1	<1	2	<1	2	2	<1	<1	<1	<1	2
Total 252	**NC**	**2**	**7**	**4**	**8**	**12**	**4**	**3**	**2**	**1**	**5**
Dibenzoanthanthrenes/Idenopyrene/ Benzperylene (276)	3	3	6	5	7	8	4	4	3	1	4
C1 276	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
C2 276	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total 276	**3**	**3**	**6**	**5**	**7**	**8**	**4**	**4**	**3**	**1**	**4**
Total NPD[1]	**NC**	**NC**	**6**	**2**	**4**	**4**	**NC**	**1**	**NC**	**1**	**1**
Total 2 to 6 ring PAH	**3**	**5**	**19**	**11**	**19**	**24**	**7**	**9**	**5**	**4**	**10**

Concentrations expressed as ng g^{-1} dry weight sediment

1 Napthalenes, phenanthrenes and dibenzothiophenes

Figure 2.4 Naphthalene and Phenanthrene Parents Versus Alkylated Homologue PAHs



2.5.3 Polychlorinated Biphenyl Concentrations

Polychlorinated biphenyl concentrations were typically recorded below LOD across the survey area, with 20 of the 65 stations having values above LOD. Of these twenty stations, no concentrations exceeded the CAL 1 concentrations or Long et al. (1995) ERL concentrations (Table 2.7). Full results for the individual samples are presented in Appendix F.

The ICES 7 PCBs which include seven PCB congeners which cover the range of toxicological properties of the group where compared against OSPAR (2009b) thresholds after normalisation to 2.5% TOC (Appendix F), five stations (Stations ENV019, ENV046, ENV048, ENV059 and ENV097) exceeded EAC thresholds for at least one ICES 7 PCBs.

According to OSPAR (2013) PCB153 is generally present in the highest concentrations and correlates well with other analysed PCBs, while PCB118 is representative of the more toxicologically relevant mono-ortho/planar PCBs. In the current survey PCB118 was recorded at similar concentrations to that of PCB153 indicating that toxicological effects of PCBs may be apparent.

Table 2.7 Total Concentrations of PBCs and ICES 7 PCBs

Station	PCB28	PCB52	PCB101	PCB118	PCB138	PCB153	PCB180	Total PCBs	Total ICES-7 PCBs
ENV003	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.12	0.12	0.12
ENV019	0.13	0.19	0.2	0.19	0.11	0.19	0.22	4.52	1.29
ENV042	<0.08	<0.08	0.09	0.09	0.09	0.09	<0.08	0.44	0.27
ENV044	<0.08	<0.08	<0.08	<0.08	<0.08	0.11	<0.08	0.11	0.11
ENV046	<0.08	0.09	0.16	0.14	0.19	0.22	0.11	1.46	0.77
ENV048	<0.08	<0.08	<0.08	0.12	0.09	<0.08	<0.08	0.61	0.09
ENV059	0.39	0.4	0.65	0.7	0.6	0.69	0.46	11.91	3.71
ENV060	0.12	0.1	0.12	0.2	0.16	0.2	<0.08	1.47	0.7
ENV064	<0.08	<0.08	0.09	<0.08	0.11	0.1	<0.08	0.5	0.3
ENV097	0.36	0.47	0.46	0.4	0.37	0.41	0.47	10.9	2.95
ENV114	<0.08	<0.08	<0.08	<0.08	0.08	0.03	<0.08	0.11	0.11
ENV116	<0.08	<0.08	<0.08	0.08	<0.08	0.08	<0.08	0.16	0.08
ENV118	<0.08	<0.08	<0.08	0.09	0.12	0.14	<0.08	0.35	0.26
ENV120	<0.08	<0.08	<0.08	0.1	0.11	0.08	<0.08	0.29	0.19
ENV122	0.1	<0.08	<0.08	0.12	0.12	0.11	<0.08	0.54	0.33
ENV124	<0.08	<0.08	<0.08	0.11	0.1	0.12	<0.08	0.51	0.22
ENV126	0.14	0.08	0.1	0.16	0.11	0.15	<0.08	1.25	0.58
ENV128	0.11	0.1	<0.08	0.09	<0.08	<0.08	<0.08	0.57	0.21
ENV131	0.16	0.08	<0.08	0.11	<0.08	0.08	<0.08	0.85	0.42
ENV133	0.71	0.65	0.84	0.79	0.99	1.04	0.6	11.31	4.83
Minimum[1]	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
Maximum	0.71	0.65	0.84	0.79	0.99	1.04	0.6	11.91	4.83
Mean[2]	0.25	0.24	0.30	0.22	0.22	0.23	0.33	2.40	0.88
±SD	0.21	0.21	0.28	0.22	0.25	0.26	0.21	3.99	1.34
CAL 1	NA	NA	NA	NA	NA	NA	NA	20	10
ERL	NA	NA	NA	NA	NA	NA	NA	NA	11.5

Concentrations expressed as ng g^{-1} dry weight sediment.

1 Although only stations where one or more value was above LOD has been displayed, the minimum value relates to all stations analysed.

2 Mean and SD relate to stations where values >LOD only

Results in green are from published background data, see Section 1.4

2.6 Metal Concentrations

2.6.1 Trace Metal Concentrations

Following extraction by aqua regia, concentrations of As, Cd, Cr, Cu, Hg, Ni, Pb and Zn were determined by ICP-MS. The results of the metal analyses for the survey area are presented in Table 2.8. In addition, CALs are also displayed.

Three metals (As, Cu and Ni) showed some significant correlation with depth ($r=-0.25$, $r=0.28$ and $r=0.29$, $p<0.05$; Appendix E) and one (Cr) was strongly correlated with increasing depth ($r=0.39$, $p<0.01$). All metals except As were strongly correlated with increasing proportions of fines ($p<0.01$) and decreasing mean grain diameter ($p<0.01$; Appendix E).

Metals data were directly compared to CALs (MMO, 2023), of the metals that were reported, five (As, Cr, Hg, Ni and Pb) reported values above CAL 1 at one or more station. No analyte was recorded to exceed CAL 2.

In addition to the metals analysis conducted following MMO (2023) specification eleven stations located in Scottish waters had additional metals analysis conducted. Following extraction by HF acid, concentrations of As, Cd, Cr, Cu, Pb, Hg, Ni, V and Zn were determined by ICP-MS while Ba was determined by ICP-OES. Results of the metal analyses are presented in Table 2.9.

Of the metals analysed Cd and Hg were below LOD at all stations. Concentrations of Cu and V exceeded UKOOA (2001) mean for CNS at eight stations. All other metals were below UKOOA mean and no station exceeded the 95th percentile for any metal analyte indicating that concentrations were comparable to the wider area. Metal concentrations were also directly compared to Buchman (2008) AETs and Long *et al*. (1995) ERL and ERM concentrations. Only As concentrations exceeded ERL concentrations at seven of the eleven stations analysed with no station exceeding the AET concentrations. Results for the eleven Scottish stations were lower or comparable to the comparison survey (Gardline, 2023b) for Cr, Pb, Ni and Zn however concentrations were higher for Cu and V.

2.6.2 Organotins

Organotin concentrations were reported to below LOD at all stations surveyed, except for Station ENV133 where concentrations of dibutyltin and tributyltin were recorded as 0.003µg g^{-1} and 0.005µg g^{-1} respectively.

Table 2.8 Sediment Metal Concentrations from Aqua Regia Digestion

Stations		As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
ENV001		2.7	0.1	9.2	1.9	<0.01	3.1	3.0	8.3
ENV003		2.9	0.1	10.1	2.4	<0.01	4.0	3.5	9.3
ENV005		2.5	0.1	9.1	2.0	<0.01	3.8	3.2	8.7
ENV007		2.5	<0.04	9.5	1.8	0.02	3.7	3.3	8.8
ENV009		2.5	0.1	8.9	1.7	0.02	3.5	3.2	8.6
ENV011		2.6	<0.04	9.1	1.8	0.03	3.7	3.5	8.9
ENV013		2.8	0.1	9.1	1.9	0.03	3.8	3.2	10.2
ENV015		2.8	0.1	8.5	1.9	0.03	4.0	3.0	13.2
ENV017		3.1	0.1	8.4	2.1	0.01	3.2	3.1	13.7
ENV019		4.5	0.1	7.8	2.1	<0.01	3.9	4.1	12.7
ENV021		3.2	0.1	8.9	2.1	0.01	3.1	3.4	10.8
ENV023		2.8	0.1	8.9	2.0	<0.01	3.9	4.3	11.7
ENV025		3.1	0.0	8.9	2.3	<0.01	4.1	4.3	12.0
ENV027		4.6	0.1	12.5	2.2	<0.01	4.2	5.6	16.4
ENV029		3.0	<0.04	9.9	2.2	<0.01	4.5	5.3	14.6
ENV030		4.0	0.1	11.8	2.3	<0.01	4.8	5.4	14.8
ENV031		4.5	0.1	11.2	2.7	0.01	4.9	6.1	14.8
ENV032		10.1	0.0	13.0	2.5	<0.01	4.8	9.0	17.1
ENV033		10.0	0.1	11.6	2.5	<0.01	5.3	9.6	15.4
ENV034		12.6	0.1	8.2	2.1	<0.01	9.3	9.2	15.5
ENV036		9.7	0.1	7.0	2.0	<0.01	5.1	9.0	26.4
ENV038		9.7	<0.04	6.9	3.9	<0.01	5.2	7.9	20.5
ENV040		4.0	0.1	10.9	3.2	0.02	6.9	8.6	23.4
ENV042		4.3	0.0	13.0	3.0	0.02	7.5	8.7	28.1
ENV044		8.3	0.1	19.3	4.2	0.03	9.3	15.2	32.0
ENV046		4.2	0.1	13.7	3.1	0.02	7.5	8.7	28.8
ENV048		4.4	0.1	15.9	3.8	0.02	8.8	10.3	30.5
ENV050		4.7	0.1	16.5	3.8	0.02	9.4	10.4	27.2
ENV052		6.8	0.0	14.9	3.4	0.02	6.9	10.5	34.2
ENV054		5.8	0.1	14.1	3.3	0.05	7.6	10.6	28.6
ENV056		5.2	0.1	15.2	4.0	0.02	9.3	12.2	30.1
ENV059		6.7	0.1	28.1	9.0	0.07	18.8	29.3	54.2
ENV060		6.6	0.1	25.0	7.8	0.06	16.5	28.2	52.0
ENV063		8.3	0.1	13.9	4.2	0.02	9.0	19.5	42.0
ENV064		6.2	0.1	17.2	6.4	0.34	11.0	19.2	48.0
ENV071		3.7	<0.04	12.4	3.3	<0.01	7.2	4.7	15.6
ENV073		3.1	<0.04	12.6	2.0	0.05	4.9	3.7	9.4
ENV075		4.7	<0.04	12.8	2.1	0.03	6.5	4.5	14.0
ENV077		5.1	<0.04	10.3	2.1	0.01	4.8	4.3	13.3
ENV079		4.1	<0.04	10.8	2.1	0.04	4.3	4.8	14.0
ENV081		3.1	0.1	9.8	2.5	0.01	4.2	3.3	16.5
ENV083		3.6	<0.04	11.2	2.3	<0.01	4.4	3.7	13.2
ENV085		2.7	<0.04	9.6	2.6	<0.01	4.4	3.6	13.4
ENV087		16.0	0.1	11.7	2.9	<0.01	7.8	7.7	22.0
ENV089		11.2	0.1	9.4	2.1	<0.01	4.6	6.7	14.1
ENV091		4.8	0.1	10.0	2.2	<0.01	3.9	4.2	12.8
ENV093		5.3	0.0	10.7	1.9	<0.01	3.7	4.8	13.8
ENV096		4.7	0.1	12.0	2.6	<0.01	5.3	5.7	18.1
ENV097		5.5	0.1	12.5	2.4	<0.01	5.1	6.3	16.0
ENV100		3.6	0.1	13.2	3.2	0.01	6.6	7.2	18.0
ENV101		4.1	<0.04	14.8	3.4	<0.01	8.2	8.4	20.8
ENV104		4.2	0.1	14.9	3.1	<0.01	9.4	7.9	17.9
ENV105		4.1	<0.04	12.6	2.5	<0.01	7.0	7.3	15.6
ENV108		5.0	0.1	17.5	4.1	<0.01	9.8	10.4	23.0
ENV109		4.1	0.1	17.3	4.0	<0.01	10.5	11.1	24.4
ENV112		4.1	0.1	18.2	4.9	<0.01	10.8	10.8	25.8
ENV114		4.2	0.1	18.4	5.3	0.02	11.8	11.5	29.0
ENV116		8.6	0.1	45.8	10.9	0.04	25.2	27.0	57.1
ENV118		5.0	0.1	21.5	5.8	<0.01	14.2	15.5	35.2
ENV120		4.8	0.1	23.6	6.1	0.02	15.3	17.3	38.1
ENV122		5.4	0.1	24.5	7.3	0.06	15.4	18.7	60.6
ENV124		5.3	0.1	22.0	6.5	0.06	13.7	17.6	48.2
ENV126		5.1	0.1	23.7	7.2	0.06	14.9	20.9	50.0
ENV128		4.5	0.1	16.2	5.0	0.06	10.8	15.8	38.6
ENV131		11.7	0.1	16.4	7.4	0.07	13.2	27.0	61.4
ENV133		24.7	0.3	30.5	37.5	0.32	26.8	109.0	123.0
This Study	Minimum	2.5	0.0	6.9	0.01	0.01	3.1	3.0	8.3
	Maximum	24.7	0.3	45.8	0.34	0.34	26.8	109.0	123.0
	Average	5.6	0.1	14.1	0.05	0.05	7.9	10.8	24.9
	±SD	3.6	0.0	6.6	0.07	0.07	5.0	14.0	18.7
CAL 1 (MMO, 2023)		20	0.4	40	40	0.3	20	50	130
CAL 2 (MMO, 2023)		100	5	400	400	3	200	500	800

Concentrations expressed as µg g^{-1} dry weight sediment.
Grey text indicates concentrations below LOD.
Blue cells indicates concentrations above CAL 1.
Results in green are from published background data, see Section 1.4

Table 2.9 Sediment Metal Concentrations from HF Digestion

Station		As	Cd	Cr	Cu	Pb	Hg	Ni	V	Zn	Ba
ENV001		10.1	<0.03	14	3.3	7.3	<0.01	2.5	25.1	13.7	198
ENV003		10	<0.03	13.9	3.9	7.7	<0.01	2.8	24.2	12.2	218
ENV005		9.6	<0.03	13.9	5.8	8.2	<0.01	3.5	22.3	12.2	223
ENV007		9.5	<0.03	13.4	7.5	8.4	<0.01	3.2	21.6	12.8	217
ENV009		6.8	<0.03	12	9	7.5	<0.01	3	16.1	13.2	197
ENV011		7.6	<0.03	12.4	9.3	8.4	<0.01	3.2	18.6	13.2	189
ENV071		10.5	<0.03	17.4	8.9	10.2	<0.01	3.5	24.1	14.5	252
ENV073		9.9	<0.03	15.4	8.1	9.5	<0.01	3.1	22.5	13.3	222
ENV075		7.5	<0.03	12	8.8	7.2	<0.01	2.7	19	10.5	186
ENV077		9.4	<0.03	13.5	9.6	8.7	<0.01	3.6	23.4	13.1	221
ENV079		7.9	<0.03	15.3	8.9	9.4	<0.01	3.6	22.7	14	209
This survey	Minimum	6.8	<0.03	12.0	3.3	7.2	<0.01	2.5	16.1	10.5	186
	Maximum	10.5	<0.03	17.4	9.6	10.2	<0.01	3.6	25.1	14.5	252
	Average	9.0	NC	13.9	7.6	8.4	NC	3.2	21.8	13.0	212
	±SD	1.3	NC	1.6	2.2	1.0	NC	0.4	2.8	1.1	19
Gardline (2023b)	Minimum	3.0	<0.2	12.5	2.3	7.6	<0.01	3.6	11.9	15.1	NA
	Maximum	38.9	<0.2	24.3	5.7	23.4	0.04	12.0	50.9	36.7	NA
	Average	4.6	NC	16.6	3.3	9.2	NC	4.9	17.3	19.2	NA
	±SD	6.1	NC	2.6	0.9	2.2	NC	1.4	5.7	3.5	NA
UKOOA (2001) for CNS	Mean	NA	0.76	23.86	6.32	12.63	0.17	11.46	21.52	21.28	348.47
	95th Percentile	NA	1	54	18	26.8	0.58	21.75	41	43.4	720
	Muddy Sand Sediments	NA	NA	NA	NA	1.9	0.43	NA	41	71	340.33
Long et al. (1995)	ERL	8.2	1.2	81	34	46.7	0.15	20.9	NA	150	NA
	ERM	70	9.6	370	270	218	0.71	51.6	NA	410	NA
Buchman (2008) AET		35	3	62	390	400	0.41	110	57	410	NA

Concentrations expressed as µg g^{-1} dry weight sediment.

NC Not calculated due to values below LOD.

NA Not Available

Red cells indicate concentrations above UKOOA (2001) mean.

Green cells indicate concentrations above Long et al. (1995) ERL.

Results in blue are from comparison survey data, see Section 1.3

Results in green are from published background data, see Section 1.4

2.7 Organochloropesticides

Concentrations of OCPs were generally below LOD across the survey area, where analytes were detected at eighteen of the sixty-six stations (summarised in Table 2.10). Where CALs were available, only dieldrin concentrations at Stations ENV059, ENV097 and ENV133 exceeded CAL 1.

Table 2.10 Concentrations of OCPs

Station	alpha-Hexachlorocyclohexane	beta-Hexachlorocyclohexane	gamma-Hexachlorocyclohexane	Dieldrin	Hexachlorobenzene	p,p'-Dichlorodiphenyldichloroethylene	p,p'-Dichlorodiphenyltrichloroethane	p,p'-Dichlorodiphenyldichloroethane	Total
ENV019	0.1	0.1	0.2	0.2	<0.1	0.5	<0.1	<0.1	1.1
ENV044	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
ENV048	<0.1	<0.1	0.3	0.3	<0.1	0.2	<0.1	<0.1	0.8
ENV050	<0.1	<0.1	0.1	0.1	<0.1	0.1	<0.1	<0.1	0.3
ENV056	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
ENV059	0.1	0.3	0.6	0.6	0.2	1	0.2	0.2	3.2
ENV060	<0.1	<0.1	<0.1	<0.1	0.1	0.3	0.1	0.1	0.6
ENV063	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
ENV064	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1
ENV097	0.2	0.4	0.5	0.5	0.1	1	0.1	0.1	2.9
ENV116	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.2
ENV120	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	0.4
ENV122	<0.1	<0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.7
ENV124	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.2	0.8
ENV126	<0.1	<0.1	0.1	0.1	0.2	0.2	0.2	0.2	1.0
ENV128	<0.1	<0.1	<0.1	<0.1	0.2	0.2	0.2	0.2	0.8
ENV131	<0.1	<0.1	<0.1	<0.1	0.1	0.2	0.1	0.1	0.5
ENV133	0.2	<0.1	0.8	0.8	0.8	2.2	0.8	0.8	6.4
CAL 1 (MMO, 2023)	NA	NA	NA	0.5	NA	NA	1	NA	NA

Concentrations expressed as ng g^{-1}dry weight sediment.
Only stations where one or more value was above LOD displayed.
Grey text indicates concentrations below LOD.
Blue cells indicates concentrations above CAL 1.
NA Not Available
Results in green are from published background data, see Section 1.4

2.8 Statistical Analysis of Sediment Physico-chemical Results

2.8.1 MMO Specification

Multivariate analyses were performed using PRIMER v7 on the physico-chemical data conducted to MMO (2023) specification to ascertain similarities and differences within the environmental data. Prior to undertaking analyses the following variables were excluded:

- Mean particle diameter (phi) was excluded as mean particle diameter (µm) is more intuitive.
- Sand content was excluded as it correlated (>99%) with fine content.

- THC was excluded as it was closely correlated (>95%) with PAH concentration and many samples were represented by values below the LOD.
- NPD concentrations were excluded due to being closely correlated (>99%) with TOC content.
- Cd, Hg, organotins, PCBs and OCPs were excluded as their concentrations were <LOD and/or showed limited variability (i.e., fewer than 5 different values across the data set).

The data set was normalised to make variables unitless and a Euclidean distance resemblance matrix was produced. A CLUSTER analysis was performed to graphically represent the (dis)similarities between the stations, with a SIMPROF routine run in conjunction, to show whether the differences between stations were statistically significant. Stations joined by red lines are statistically indistinguishable from each other while those joined by black lines are statistically distinct. Only three or more stations can be considered a true cluster due to the permutative nature of SIMPROF. A non-metric multidimensional scaling (nMDS) routine was also run, which creates a two-dimensional plot of the stations from the similarity matrix. The configuration of the stations on the MDS plot reflects similarity with distances between stations being representative of their Euclidean distance or relative (dis)similarity.

The Euclidean similarity dendrogram for the 66 station sediment characteristics data set is presented in Figure 2.5 and the dendrogram generated from the data set excluding Stations ENV131 and ENV133 is presented in Figure 2.6. The SIMPROF routine for the full data set identified nineteen statistically distinct groups, where the first two groups comprised of single stations (Stations ENV131 and ENV133) and were separated by relatively large Euclidean distances of 17.98 for Station ENV131 and 8.12 for Station ENV133. All other stations were grouped at less than 4.93. To aid in interpretation, broad groups were assigned to stations at a Euclidean distance of 3.1 which resulted in; four outlying stations, one SIMPROF group of seven statistically indistinguishable stations and two broad groups. A fix collapse of 1% was applied to down-weigh the distinctiveness of Stations ENV131 and ENV133, resulting in a stress value of 0.05, indicating it is a good two-dimensional representation of the rank dis(similarities) and overall pattern observed (Figure 2.5b). However, this representation was still heavily skewed by the results for Stations ENV131 and ENV133, so an additional nMDS plot was generated with these excluded. This returned a stress value of 0.05, indicating it is a good two-dimensional representation of the rank dis(similarities) and overall pattern observed (Figure 2.6b). The key factors responsible for the multivariate pattern in the 66 station sediment characteristics data set are displayed in Table 2.11, based on a review of the raw data and SIMPER analysis.

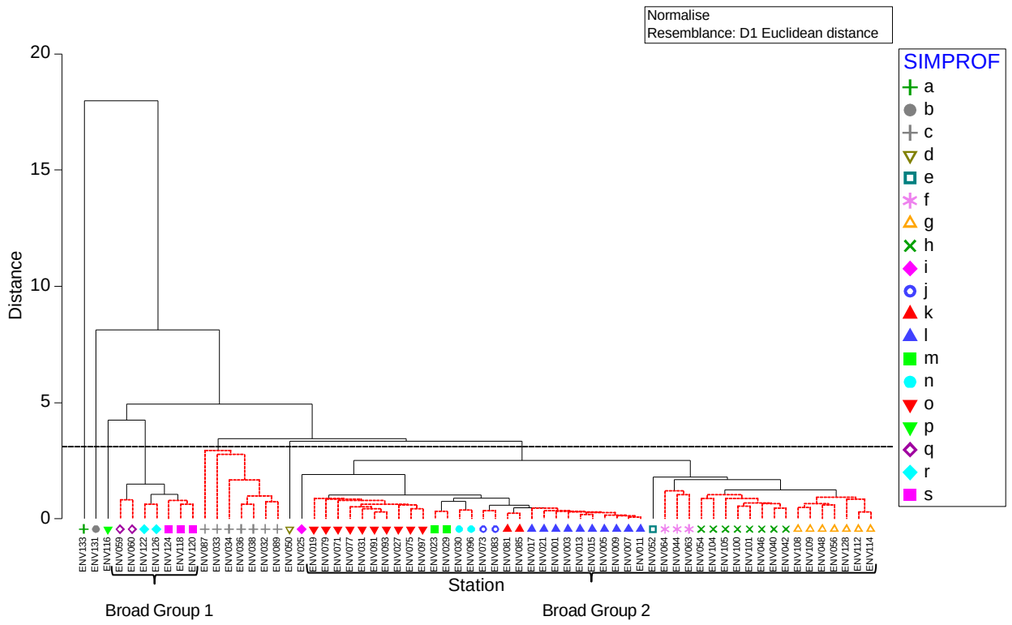
The results of a BEST BIOENV routine on the data set indicated that five analytes accounted for *c*.99% of the variation between stations, these were the concentration of As, Ni, Zn and the proportion of fines, and gravels. Further, when looking at these factors in isolation, the BEST result indicated that the concentration of Ni correlated with *c*.78% of the overall pattern.

Table 2.11 Physico-chemical Parameters Influencing SIMPROF Separation

SIMPROF	Euclidean Distance Dissimilarity	Physico-Chemical Parameters Influencing Sample Separation
a vs *b, p, c, d*, Broad Groups 1 and 2	17.98	Highest concentrations of Total PAHs, TOC, Cu and Pb
b vs *p, c, d*, Broad Groups 1 and 2	8.12	Highest proportion of gravels
p and Broad Group 1 vs *c,d*, Broad Group 2	4.93	Higher concentrations of Cr, Ni and Zn Higher proportion of fines
p vs Broad Group 1	4.24	Higher concentrations of Cr and Ni
c vs *d*, Broad Group 2	3.45	Higher mean grain size Higher concentrations of As
d vs Broad Group 2	3.34	Higher proportions of gravels and fines

Figure 2.5 Multivariate Analyses of Physico-chemical Data

a) Euclidean Distance Dendrogram



b) MDS Ordination

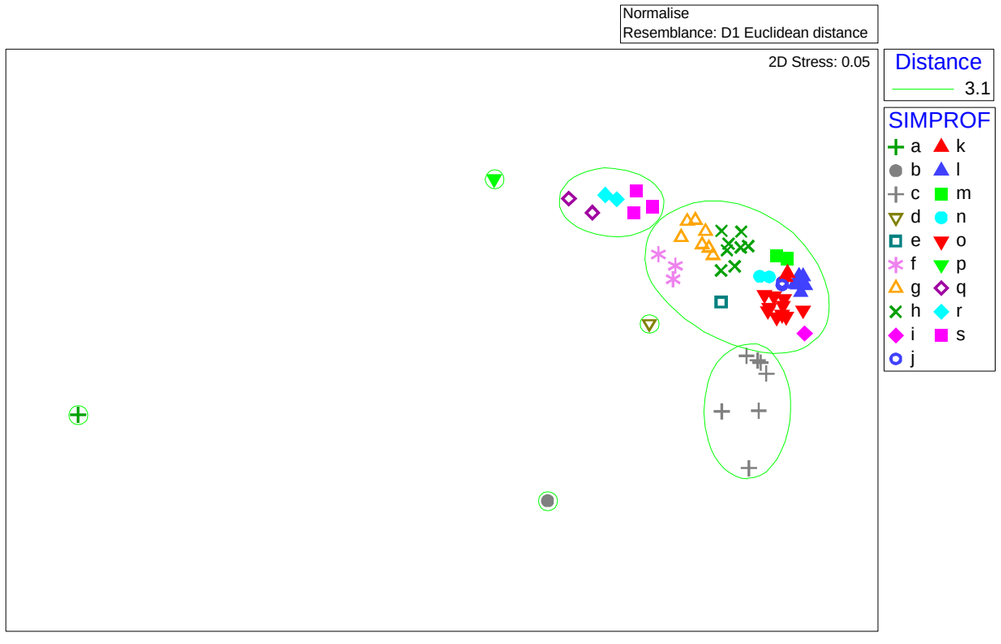
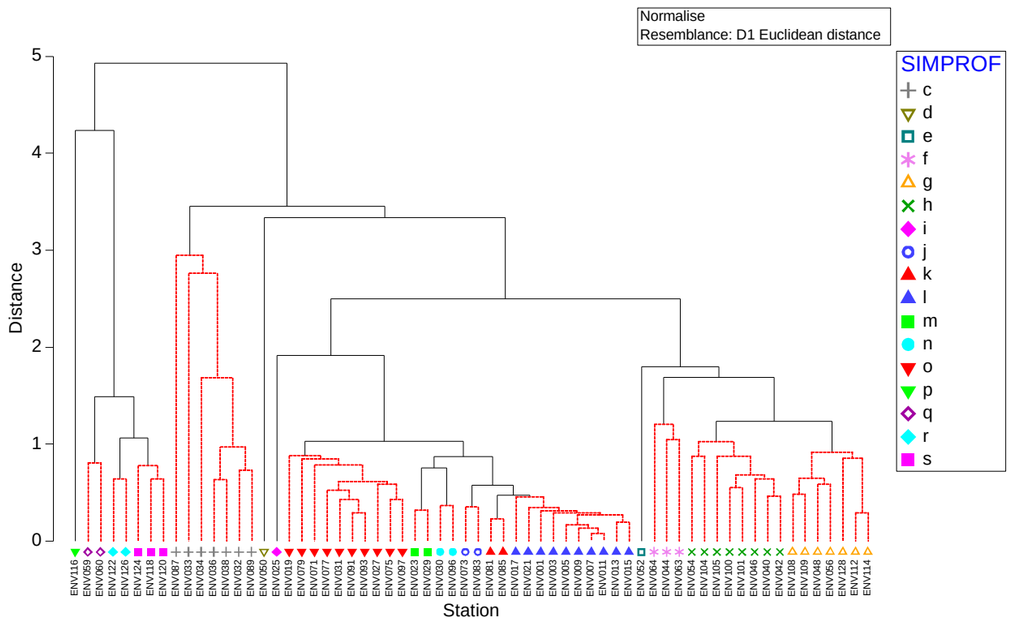
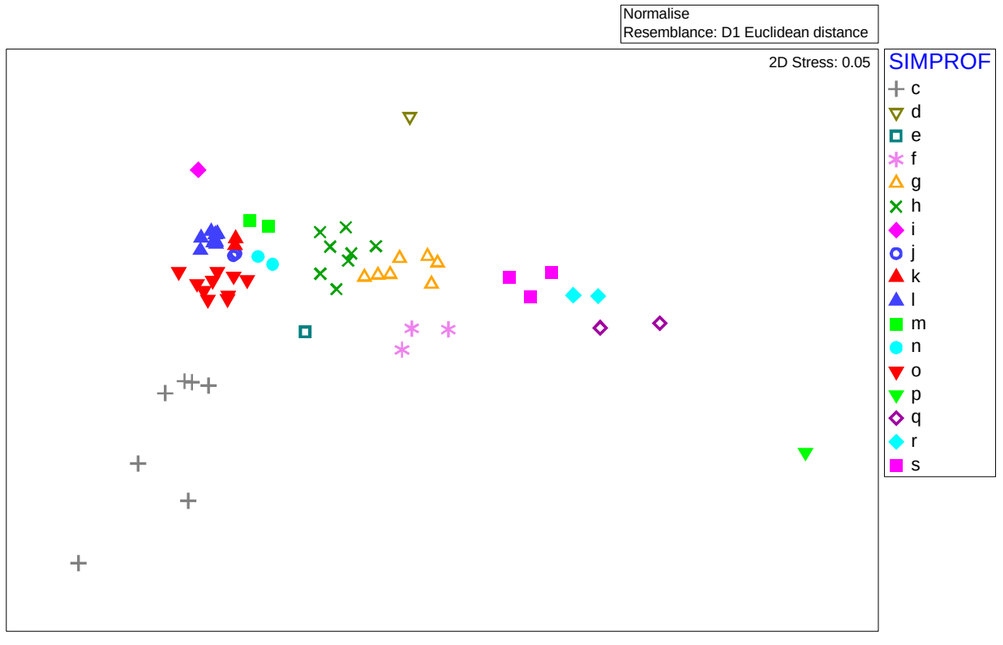


Figure 2.6 Multivariate Analyses of Physico-chemical Data Excluding Stations ENV131 and ENV133

a) Euclidean Distance Dendrogram



b) MDS Ordination



2.8.2 Scottish Samples

In addition to the analyses above, additional chemical analyses were conducted at the eleven stations in Scottish waters. For these stations, the data sets for sediment characteristics (PSA and TOC) and additional chemical data were combined. These were then analysed to ascertain similarities and differences between stations based on these factors. Prior to undertaking analyses the following variables were excluded:

- Mean particle diameter (phi) was excluded as mean particle diameter (µm) is more intuitive.
- UCM was excluded as it was closely correlated (>95%) with total oil concentrations.
- Cd and Hg were excluded as their concentrations were <LOD.

The data set was normalised and a Euclidean distance resemblance matrix was produced. A CLUSTER analysis was performed, with a SIMPROF routine run in conjunction. A nMDS routine was also run. The Euclidean similarity dendrogram for the eleven station sediment characteristics data set is presented in Figure 2.7a. The SIMPROF routine for the Scottish samples data set identified three statistically distinct groups, one SIMPROF group of eight statistically indistinguishable stations, one closely associated pair and one outlier. The corresponding nMDS had a stress value of 0.11, indicating it is a useful two-dimensional representation of the rank dis(similarities) and overall pattern observed in the sediment characteristics data set (Figure 2.7b). The key factors responsible for the multivariate pattern in the eleven station sediment characteristics data set are displayed in Table 2.12, based on a review of the raw data and SIMPER analysis. Mean diameter and percentage fines have been plotted to illustrate the trends in Figure 2.7c.

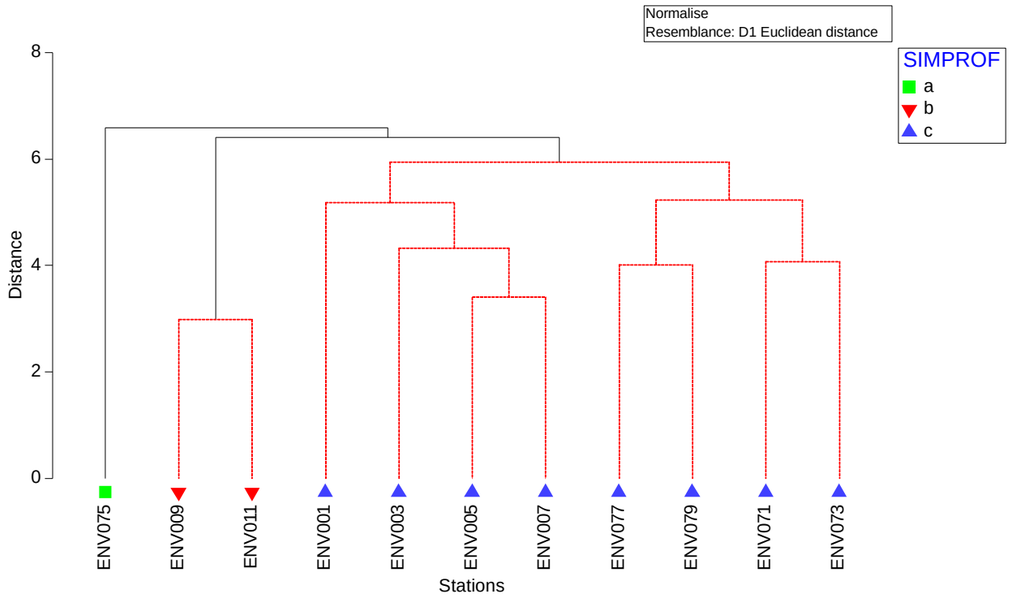
The results of a BEST BIOENV routine on the data set indicated that five analytes accounted for *c.*88% of the variation between stations, these were the concentration of PAHs, Cr, Cu, Pb and mean grain diameter. Further, when looking at these factors in isolation, the BEST result indicated that the concentration of Pb correlated with *c.*50% of the overall pattern.

Table 2.12 Physico-chemical Parameters Influencing SIMPROF Separation

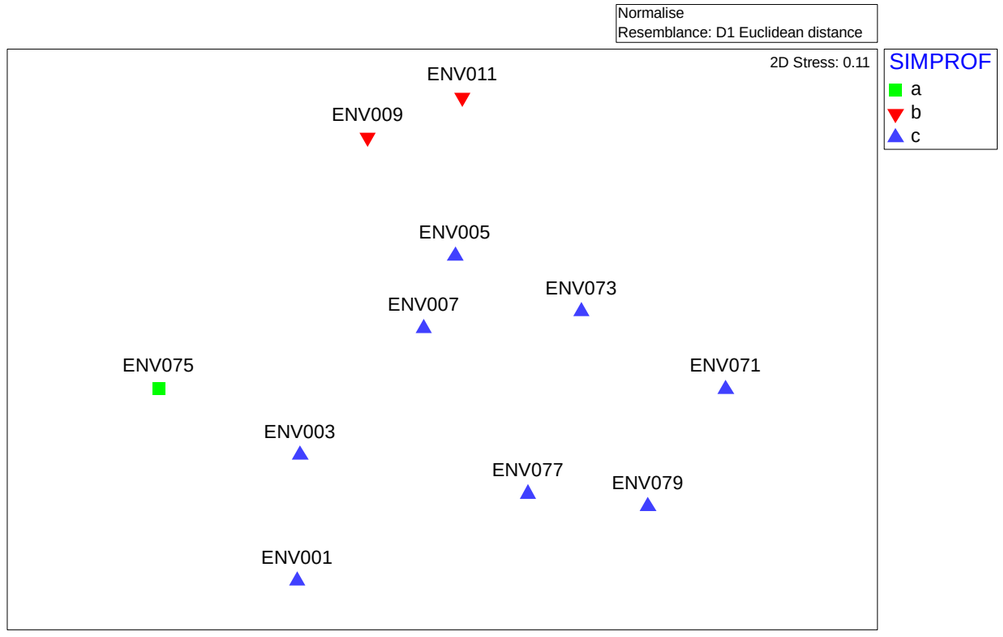
SIMPROF	Euclidean Distance Dissimilarity	Physico-Chemical Parameters Influencing Sample Separation
a vs b,c	6.6	Highest proportion of sands and largest mean grain size Lower concentrations of As, Cr and Ni and nC_{10-20} alkanes Lowest concentrations of Ba, Pb and Zn and lowest proportion of fines
b vs c	6.4	Higher concentrations of US EPA PAHs, nC_{10-37} and nC_{10-20} alkanes, Cu Lower concentrations of As, Ba, Cr and V and lower mean grain size

Figure 2.7 Multivariate Analyses of Physico-chemical Data

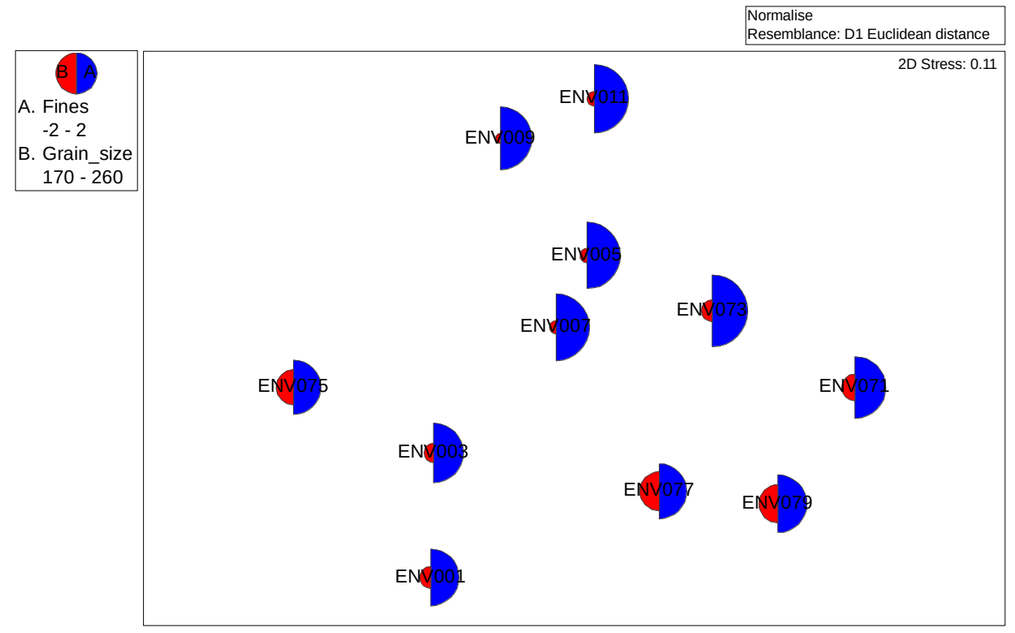
a) Euclidean Distance Dendrogram



b) MDS Ordination



nMDS Ordination With Bubbles Representing a Selection of Environmental Variables



2.9 DNA Metabarcoding Results

2.9.1 Overview

Two grab samples were attempted from each of the 133 stations across the Morven survey area; of these one sediment sample from 65 stations were sent to the laboratory for analysis. On successful retrieval of a grab sample, a surface scrape sub-sample was taken from 56 of these and sent to the laboratory for analysis of fish communities. Furthermore, at a subset of 68 stations water (near surface and near seabed) samples were collected and sent to the laboratory. The remaining samples were retained as spares. All records are provided in Appendix G. Each row represents one operational taxonomic unit (OTU), shown with the lowest possible taxonomic assignment based on currently available reference data. Each column represents a sample, showing the proportion of sequence reads per detected OTU. Care should be taken in interpreting the numbers of reads in terms of relative species abundance or biomass as unavoidable biases introduced during the laboratory process can have a major effect on this relationship, for example, some species amplify more readily than others during processing. Additionally, multiple OTUs relating to the same species may be detected which may create analytical bias. Whilst each analysis (bacterial, infaunal, fish, mammal) targets a specific taxonomic group, a single taxon may be detected in multiple analyses.

The most conservative approach is to analyse the data in terms of presence-absence. Due to the number of taxa included in the analysis, presence-absence data still has high statistical power for demonstrating change. If abundance data for species is important to the project, then incidence across multiple samples can be used as a proxy for abundance (e.g., a species detected in every sample replicate is likely to be more abundant than one found only in a small proportion of replicates).

2.9.2 Summary of Notable Species

The presence of eDNA does not exhaustively determine the presence of a taxon as eDNA can persist in the environment after the organism has left the area or died.

Atlantic cod (*Gadus morhua*), Atlantic horse mackerel (*Trachurus trachurus*) and haddock (*Melanogrammus aeglefinus*) are listed as 'Vulnerable' on the IUCN red list (2024). Additionally, eDNA from the European eel (*Anguilla anguilla*) listed as 'Critical' on the IUCN Red List was also detected. The bivalve *A. islandica* was also detected, a species listed as threatened and/or declining under OSPAR (2008).

Two marine mammals recorded (white-beaked dolphin (*Lagenorhynchus albirostris*) and harbour porpoise (*Phocoena phocoena*)) are both PMFs in Scottish waters (NatureScot, 2020) with both taxa being detected in at least one of the stations located in Scottish waters.

Both *G. morhua* and *M. aeglefinus* were detected from eDNA in the comparison survey (Gardline, 2023b). Additionally, *L. albirostris* and *P. phocoena* were also detected in the comparison survey.

2.9.3 Sediment eDNA Summary Statistics

A total of 1025 OTUs were detected across the survey area as reported in Table.2.13. Of the 1025 detected OTUs, a lower percentage (1.1%) of the bacterial OTUs were identified to species level when compared to other analyses, possibly related to a smaller pool of reference material for bacterial OTUs. The number of OTUs was like that recorded in the previous survey (n=1105; Gardline, 2023b).

Table.2.13 OTU Detections per Target and Percentage Successfully Classified

Target	Number of OTUs	% Contribution					
		Phylum	Class	Order	Family	Genus	Species
Bacteria	620	83.9	64.8	40.0	27.4	8.5	1.1
Infauna	303	100	92.7	83.5	79.9	63.0	42.6
Fish (sediment)	19	100	100	100	100	89.5	84.2
Fish (water)	57	100	100	100	100	89.5	78.9
Marine Mammals (water)	26	100	100	100	100	88.5	80.8
Total	1025	90.2	76.6	58.8	50.1	32.7	21.3

Bacteria

The sediment bacterial data set detected 30 taxonomic groups based on class, with the proportional contributions of these taxonomic groups to the overall structure of the survey area in detailed in Table 2.14 and presented for each station in Figure 2.8a. The 'Others' category comprised 218 OTUs which could not be identified to class.

The most detected taxonomic group across the survey area (n=218) was 'Others' which accounted for 35% of OTUs. The second most detected taxonomic group was the Gammaproteobacteria (n=128) accounting for 21% of OTUs. The dominance of Gammaproteobacteria is somewhat expected given it is one of the richest classes of bacteria (Williams *et al.*, 2010). The relative dominance of 'Others' within the proportional contributions was partly due to the inability to resolve to further than phylum (n=118) or kingdom (n=100).

A total of 39 bacterial OTUs (6%) were detected in all sediment samples, while 10% (n=61) occurred in a single sediment sample. The relatively high numbers of widespread taxa and lone taxa across the survey area suggested that the community had been subjected to relatively little disturbance.

Similar trends were observed in the previous survey (Gardline, 2023b), where 22 taxonomic groups were detected. In addition, the most abundant taxonomic group was also 'Others', accounting for 42% of OTUs (n=272). The second most abundant group was also Gammaproteobacteria (n=119) however more classes were detected in the current survey compared to the previous survey.

Infauna

A total of 45 taxonomic groups based on class were detected from the sediment infaunal data sets, with the proportional contribution of these taxonomic groups to the overall structure of the survey area detailed in Table 2.16 and presented for each station in Figure 2.8b. The 'Others' category comprised 22 OTUs which could not be identified to class. Polychaeta (n=79) was the most detected taxonomic group across the survey area and accounted for 26% of OTUs. The next most detected groups were Copepoda (n=34; 11%) and Dinophyceae (27; 9%). Nineteen infaunal taxonomic groups were presented by a single OTU (Table 2.16).

Of the 303 infaunal OTUs, a total of 111 (37%) were present in a single sample across the survey area. However, unlike the bacterial data set none was detected in all samples. The absence of a consistent infaunal community as well as a relatively high proportion of lone OTUs suggest the community heterogeneity across the survey area may have been under sampled for the infaunal size class. When compared to the previous survey (Gardline, 2023b) there was a difference in most detected taxa however 'Other' and Polychaeta where among the most detected OTUs in both surveys.

Fish

A total of ten taxonomic groups based on family were detected, with the proportional contribution of these taxonomic groups to the overall structure of the survey area detailed in Table 2.15 and presented for each station in Figure 2.8c. Gadidae (n=5) was the most detected taxonomic group across the survey area and accounted for 26% of OTUs. The next detected group was Pleuronectiformes (n=4; 21%) and six taxonomic groups were

represented by a single OTU (Table 2.15). Gadidae and Pleuronectiformes were also among the most detected OTUs within the comparison survey (Gardline, 2023b).

Table 2.14 Contribution of Gross Sediment Bacteria OTU Taxonomic Groups

Group	Current Survey		Gardline (2023b)	
	Taxa	% Contribution	Taxa	% Contribution
Acidimicrobiia	6	1	2	<1
Acidobacteriae	25	4	29	4
Actinomycetia	28	5	22	3
Alphaproteobacteria	59	10	47	7
Aminicenantia	3	<1		
Anaerolineae	13	2	4	<1
Bacilli	1	<1	1	<1
Bacteroidia	66	11	45	7
Campylobacteria	1	<1		
Clostridia	1	<1	1	<1
Cyanobacteriia	2	<1	2	<1
Dehalococcoidia	2	<1		
Desulfuromonadia	2	<1		
Fusobacteriia	1	<1		
Gammaproteobacteria	128	21	119	18
Gemmatimonadetes	2	<1		
Ignavibacteria	1	<1		
Kiritimatiellae	3	<1	10	2.0
Latescibacteria	1	<1		
Moduliflexia	1	<1		
Nitrososphaeria	2	<1		
Nitrospinia	4	1		
Nitrospiria	2	<1	1	<1
Others	218	35	272	42
Phycisphaerae	2	<1	2	<1
Planctomycetia	24	4	55	9
Thermodesulfovibrionia	1	<1		
Thermoleophilia	1	<1	2	<1
Thermoplasmata	2	<1		
Verrucomicrobiae	18	3	25	4
Total	**620**	**100**		

Results in blue are from comparison survey data, see Section 1.3

Table 2.15 Contribution of Gross Sediment Fish OTU Taxonomic Groups

Group	Current Survey		Gardline (2023b)	
	Taxa	% Contribution	Taxa	% Contribution
Ammodytidae	1	5	2	12
Callionymidae	1	5		
Clupeidae	2	11	2	12
Gadidae	5	26	5	29
Gobiidae	2	11		
Lotidae	1	5		
Pleuronectidae	4	21	6	35
Scombridae	1	5	1	6
Soleidae	1	5		
Triglidae	1	5	1	6
Total	**19**	**100**	**17**	**100**

Results in blue are from comparison survey data, see Section 1.3

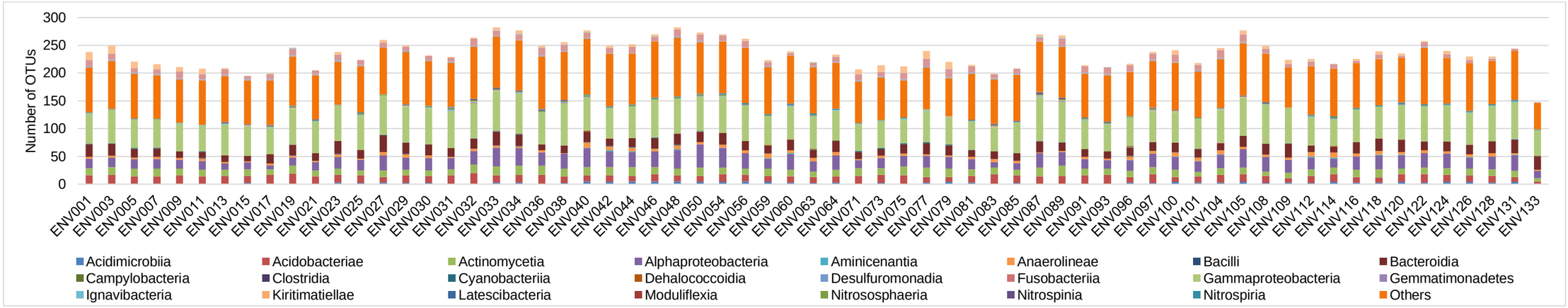
Table 2.16 Contribution of Gross Sediment Infauna OTU Taxonomic Groups

Phylum	Group	Current Survey		Gardline (2023)	
		Taxa	Proportional Contribution (%)	Taxa	Proportional Contribution (%)
Amoebozoa	Discosea	6	2		
Annelida	Clitellata	4	1	2	<1
Annelida	Polychaeta	79	26	49	12
Arthropoda	Copepoda	34	11		
Arthropoda	Malacostraca	8	3	1	<1
Arthropoda	Ostracoda	1	<1	6	1
Arthropoda	Thecostraca	2	1	45	11
Ascomycota	Eurotiomycetes	2	1		
Ascomycota	Leotiomycetes	1	<1		
Ascomycota	Sordariomycetes	1	<1		
Bacillariophyta	Bacillariophyceae	10	3		
Basidiomycota	Tremellomycetes	1	<1		
Bryozoa	Gymnolaemata	2	1		
Chaetognatha	Sagittoidea	1	<1	1	<1
Chlorophyta	Chloropicophyceae	1	<1		
Chlorophyta	Mamiellophyceae	4	1		
Chlorophyta	Pyramimonadophyceae	1	<1		
Chordata	Leptocardii	1	<1		
Chordata	Myxini	1	<1		
Chordata	Teleostei	1	<1		
Cnidaria	Anthozoa	4	1	4	1
Cnidaria	Hydrozoa	18	6	10	2
Cnidaria	Scyphozoa	2	1	1	<1
Echinodermata	Asteroidea	4	1		
Echinodermata	Echinoidea	5	2	2	<1
Echinodermata	Holothuroidea	1	<1		
Echinodermata	Ophiuroidea	5	2	2	<1
Haptophyta	Coccolithophyceae	1	<1		
Kinorhyncha	Allomalorhagida	2	1		
Kinorhyncha	Cyclorhagida	2	1		
Mollusca	Bivalvia	14	5	2	<1
Mollusca	Caudofoveata	1	<1		
Mollusca	Gastropoda	14	5	4	1
Myzozoa	Dinophyceae	27	9		
Nematoda	Chromadorea	3	1		
Nemertea	Hoplonemertea	2	1	1	<1
Nemertea	Palaeonemertea	2	1	1	<1
Nemertea	Pilidiophora	3	1	2	<1
Ochrophyta	Dictyochophyceae	1	<1		
Ochrophyta	Pelagophyceae	1	<1		
Ochrophyta	Phaeophyceae	1	<1		
Porifera	Demospongiae	6	2		
Priapulida	Other	22	7	91	22
Rotifera	Eurotatoria	1	<1	6	1
Total		**303**	**100**		

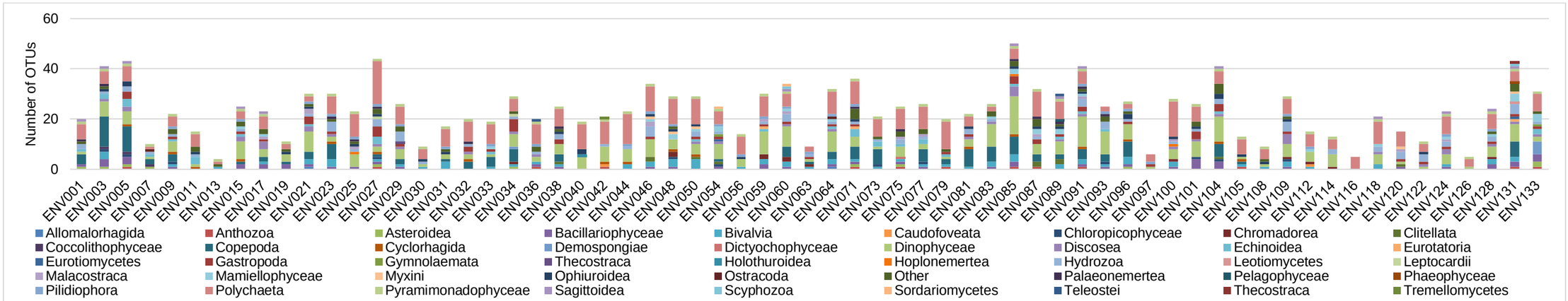
Results in blue are from comparison survey data, see Section 1.3

Figure 2.8 Contributions of Gross Sediment OTU Taxonomic Groups

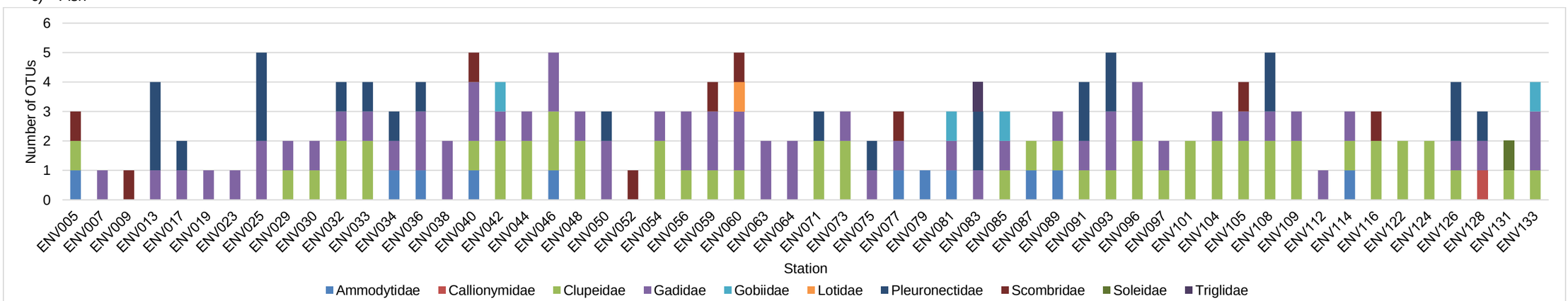
a) Bacteria



b) Infauna



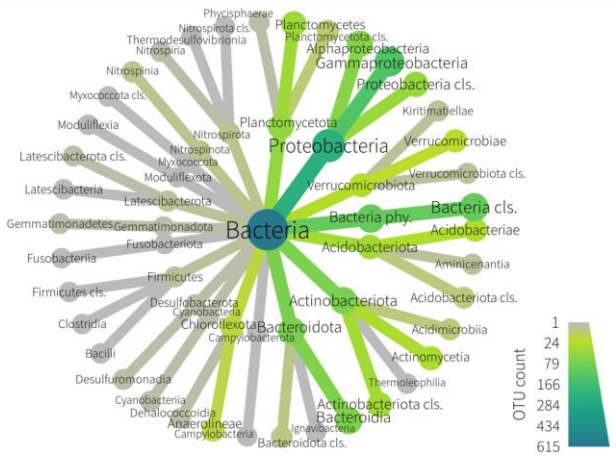
c) Fish



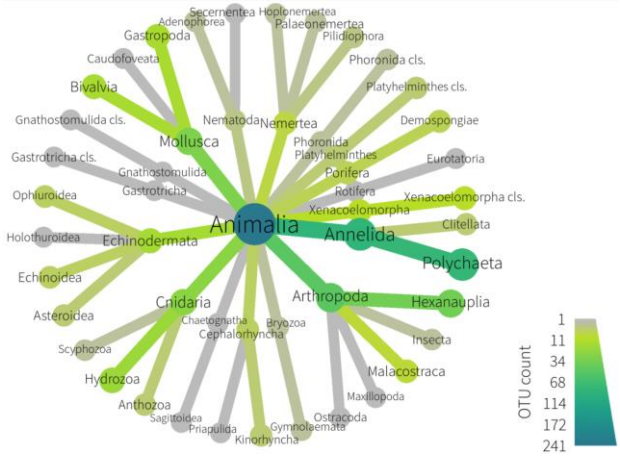
Comparative taxonomic heat trees detailing the number of OTUs across the survey area from bacterial taxa and infaunal taxa down to the order rank are presented in Figure 2.9a and Figure 2.9b. The heat tree for fish taxa down to the rank of species is presented in Figure 2.9c. The nodes (circles) represent a taxon whilst the lines detail the hierarchical relationships between taxa. The colour scale and relative width of the nodes represent the number of OTUs for each taxon. Labels without nodes represent missing taxa. Summary statistics for the sediment DNA richness are detailed in Table 2.17.

Figure 2.9 Sediment OTU Taxonomic Heat Trees

a) Bacteria



b) Infauna



c) Fish

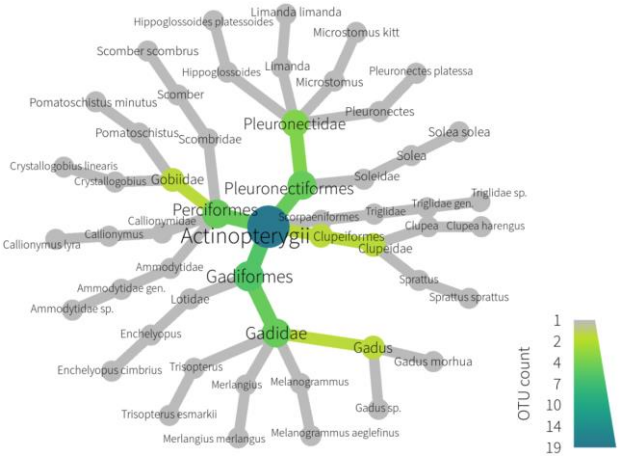


Table 2.17 Summary of Sediment Bacteria, Infauna and Fish Taxonomic Richness

	Bacterial		Infaunal		Fish	
	Current Survey	Gardline (2023b)	Current Survey	Gardline (2023b)	Current Survey	Gardline (2023b)
Minimum	148	225	4	10	1	0
Maximum	282	381	50	84	5	5
Mean	235	324	24	43	3	3
±SD	26	39	10	15	1	2

Results in blue are from comparison survey data, see Section 1.3

OTU accumulation plots for the sediment bacterial, infaunal and fish data sets are presented in Figure 2.10. Each plot shows the increasing total number of different OTUs detected as stations are pooled. Two lines are plotted; the first (plotted in blue and often referred to as the Sobs curve) adds the new taxon to those already recorded, in sample order. The second line (plotted in red and often referred to as the UGE curve) is smooth, as it is an average output based on the samples being added in a random order 999 times (Ugland *et al.*, 2003). Notable changes in the slope of the Sobs curve compared to the UGE curve can be an indication of differences in the community composition. Further, the relative position of the Sobs curve above or below that of the UGE curve can reflect the number of OTUs versus expectations had all sample been equal.

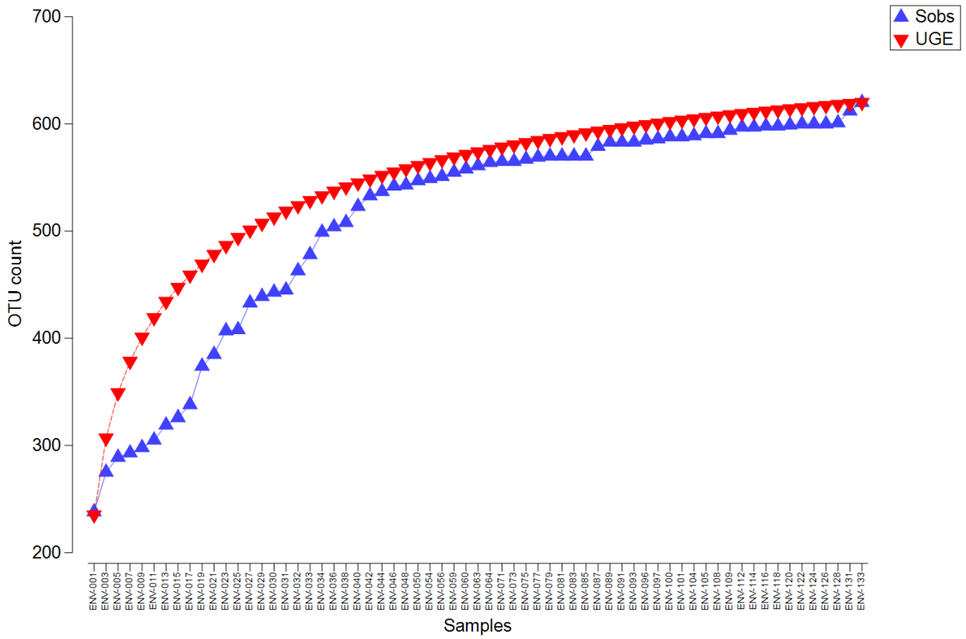
The Sobs curve for the sediment bacterial analysis data set (Figure 2.10a) began and remained below the UGE curve, with the gap narrowing around Station ENV040. Noticeable changes in OTU count were observed at Stations ENV019 and ENV027 but are likely due to natural variation over the survey area. The narrowing of the distance between Sobs and UGE curves after Station ENV032 may have been due to the increase in grain size. Until Station ENV032 the largest mean grain size per station was 273µm, all stations between Station ENV032 and Station ENV038 exceeded this and sediments were observed to be coarser. Another jump at Station ENV040 can likely be attributed to a change in depth and increase in fines. After Station ENV040, the Sobs curve remained slightly below the UGE curve, but mimicked its profile suggesting that the range of environments present in the survey area was covered by this point.

The Sobs curve for the sediment infaunal analysis data set (Figure 2.10b) dropped below the UGE curve at Station ENV007 and remained below throughout each subsequent addition. A substantial increase in OTU count was observed at Station ENV034, like that observed in the bacterial analysis data and also likely due to changes in sediment composition. OTU counts effectively plateaued at Station ENV104, implying that by this point most present taxa had been detected. Finally, a large increase in OTU count was observed at Stations ENV131 and ENV133, which was likely due to proximity to the coastline and a shallowing of the seabed.

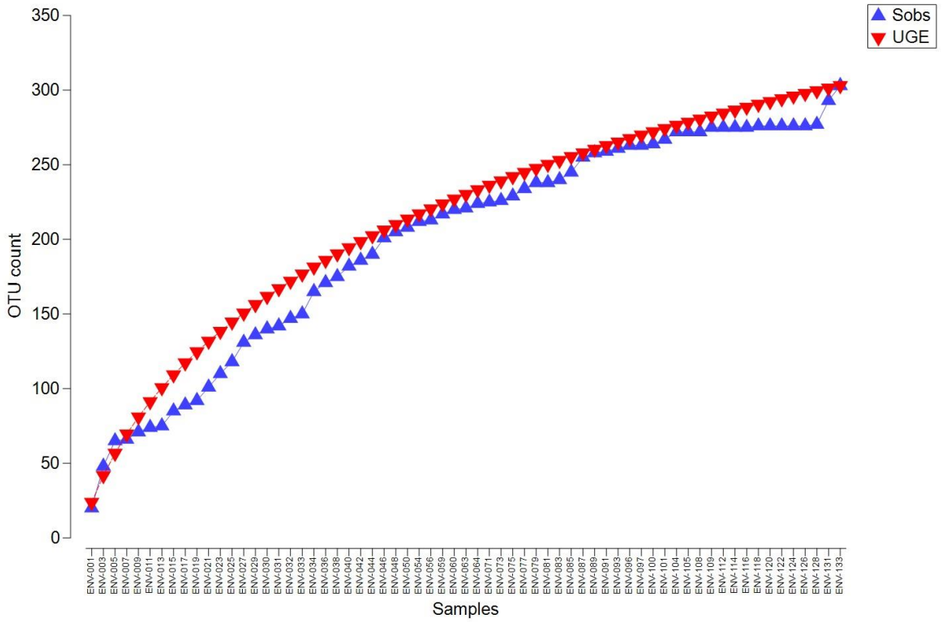
Sediment fish analyses only identified a total of nineteen marine taxa, which lead to the Sobs curve not fitting the UGE curve tightly per station (Figure 2.10c). Overall, the Sobs curve was in line with the UGE curve and no new taxa were detected between Stations ENV083 and ENV126. An additional OTU was detected at both Station ENV131 and ENV133, likely due to changes in community composition with increasing proximity to the coastline.

Figure 2.10 Sediment OTU Accumulation Curves

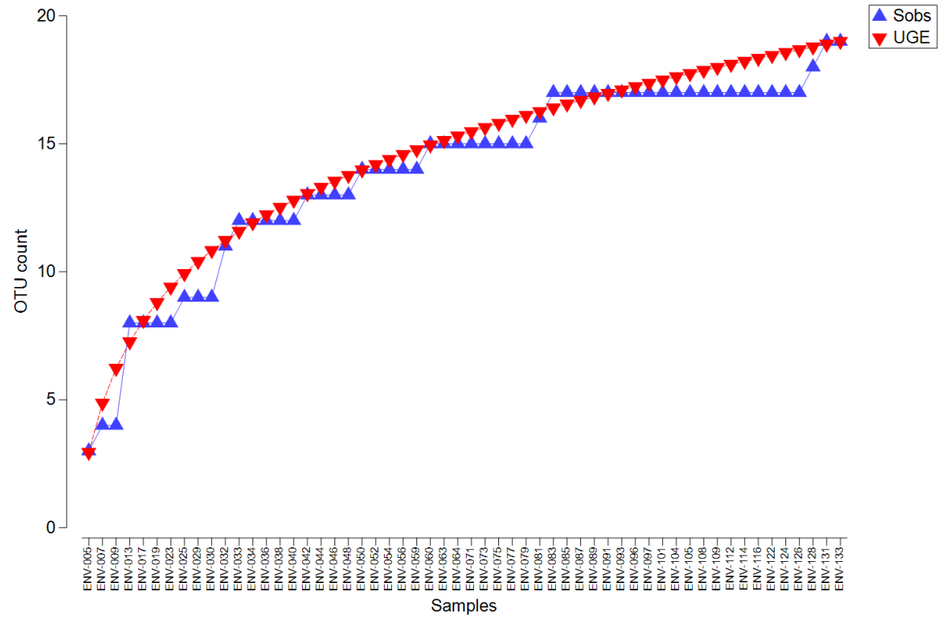
a) Bacteria



b) Infauna



c) Fish



2.9.4 Water eDNA Summary Statistics

Fish

Water samples were analysed for the presence of fish eDNA, excluding sharks and rays. A total of 31 taxonomic groups based on family were identified from the fish data sets, with the proportional contribution of these taxonomic groups to the overall structure of the survey area detailed in Table 2.18 and presented for each station in Figure 2.11a.

Gadidae (n=8) was the most detected taxonomic group across the survey area and accounted for 14% of OTUs. The next most detected groups were Gobiidae (n=5; 9%) and Cottidae (n=3; 5%). Eighteen taxonomic groups were presented by a single OTU (Table 2.18). A similar trend was seen in the previous Gardline (2023b) survey with Gadidae and Gobiidae among the most detected OTUs.

Of the 57 fish OTUs, a total of 13 (23%) were present in a single sample however none were detected in all samples. Like with sediment infauna it is likely that the community has been under sampled.

Marine Mammals

A total of 16 taxonomic groups based on family were identified from the infaunal data sets, with the proportional contribution of these taxonomic groups to the overall structure of the survey area detailed in Table 2.19 and presented for each station in Figure 2.11b.

Due to the methodology employed other species beyond the targeted group have been identified. These have been retained in the data for comprehension of the data. Three taxa (Gadidae, Gobidae and Phocoenidae) were ranked as the most detected taxonomic groups across the survey area and accounted for 12% (n=3) of OTUs respectively. Nine taxonomic groups were presented by a single OTU (Table 2.19). Of the identified groups, three (Balaenopteridae, Delphinidae and Phocoenidae) were target taxa.

Table 2.18 Contribution of Gross Water Fish OTU Taxonomic Groups

Group	Current Survey		Gardline (2023)	
	Taxa	% Contribution	Taxa	% Contribution
Agonidae	1	2		
Alosidae	1	2		
Ammodytidae	2	4	2	11
Anguillidae	1	2		
Argentinidae	1	2		
Belonidae	1	2		
Blenniidae	1	2		
Callionymidae	2	4	1	5
Carangidae	1	2		
Cichlidae	1	2		
Clupeidae	2	4	2	11
Cottidae	3	5		
Cyclopteridae	1	2		
Gadidae	8	14	4	21
Gasterosteidae	1	2		
Gobiidae	5	9	2	11
Labridae	2	4		
Lophiidae	1	2		
Lotidae	1	2	1	5
Mullidae	1	2		
Phocoenidae	1	2		
Pholidae	1	2		
Pleuronectidae	5	9	4	21
Salmonidae	2	4		
Scombridae	1	2	1	5
Scophthalmidae	2	4	1	5
Soleidae	2	4		
Stichaeidae	2	4		
Trachinidae	1	2		
Triglidae	1	2	1	5
Zoarcidae	2	4		
Total	**57**	**100**	**19**	**100**

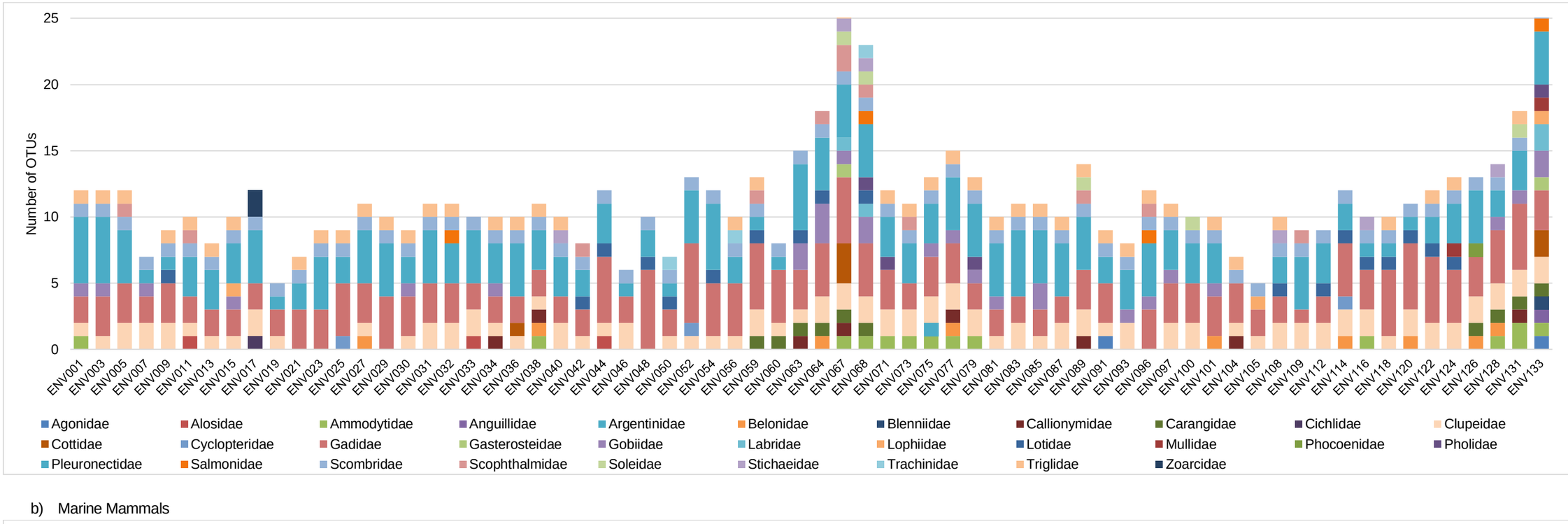
Results in blue are from comparison survey data, see Section 1.3

Table 2.19 Contribution of Gross Water Marine Mammal OTU Taxonomic Groups

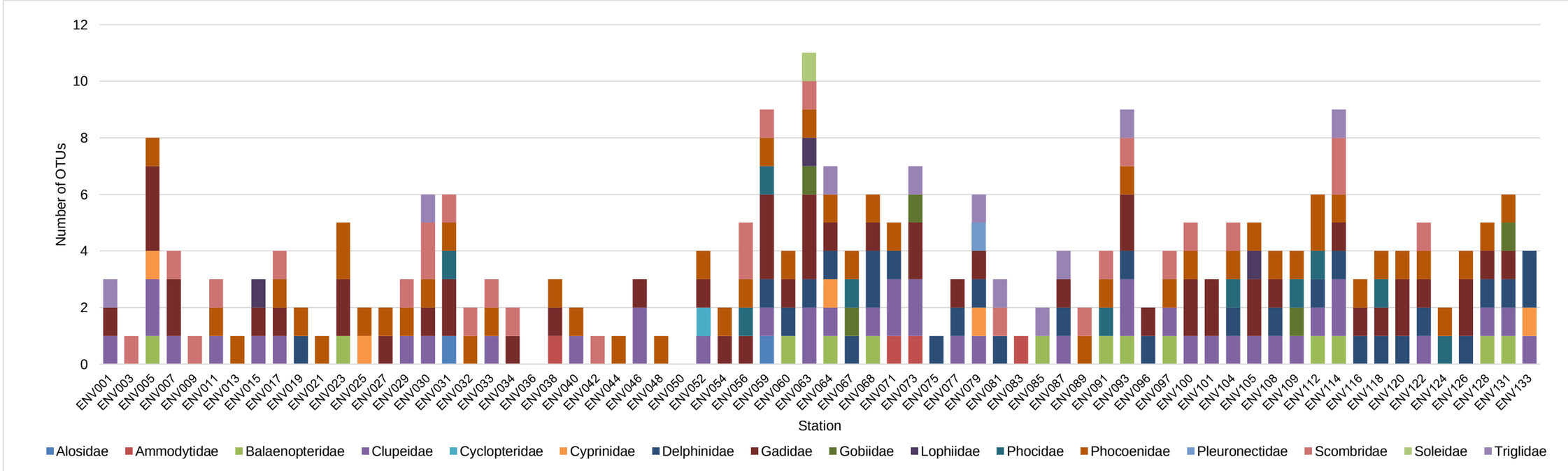
Group	Abundance	% Contribution
Alosidae	2	8
Ammodytidae	1	4
Balaenopteridae	1	4
Clupeidae	2	8
Cyclopteridae	1	4
Cyprinidae	1	4
Delphinidae	2	8
Gadidae	3	12
Gobiidae	3	12
Lophiidae	1	4
Phocidae	1	4
Phocoenidae	3	12
Pleuronectidae	1	4
Scombridae	2	8
Soleidae	1	4
Triglidae	1	4
Total	**26**	**100**

Figure 2.11 Contributions of Gross Water OTU Taxonomic Groups

a) Fish



b) Marine Mammals



A comparative taxonomic heat tree detailing the number of OTUs across the survey area from water fish analysis down to the family rank is presented in Figure 2.12. Summary statistics for water analyses are provided in Table 2.20.

Figure 2.12 Water Fish OTU Taxonomic Heat Tree

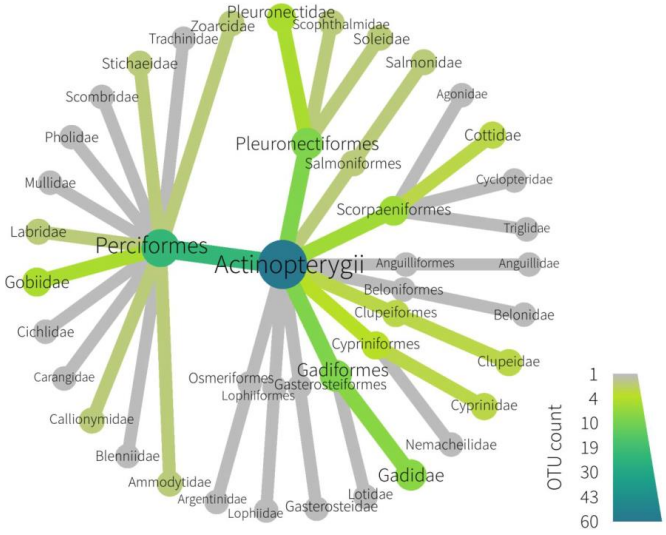


Table 2.20 Summary of Water Fish and Marine Mammal Taxonomic Richness

	Fish		Mammal
	Current Survey	Gardline (2023b)	Current Survey
Minimum	5	0	0
Maximum	27	11	11
Mean	11	5	4
±SD	4	3	2

Results in blue are from comparison survey data, see Section 1.3

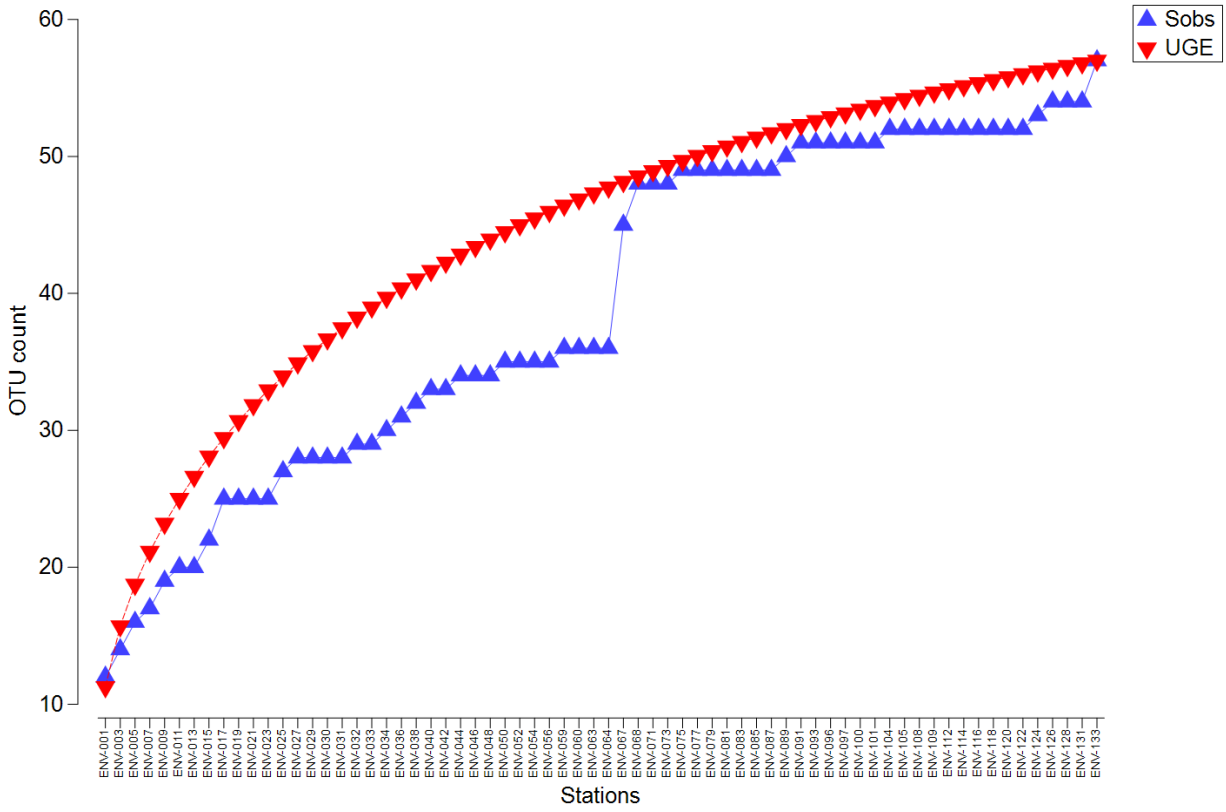
OTU accumulation plots for the fish and marine mammal water analysis data sets are presented in Figure 2.13.

The Sobs curve (Figure 2.13a) for fish analysis data was below the UGE curve for much of the survey area, until the gap was narrowed at Station ENV067, with the addition of nine new OTUs. This proportionally large increase in OTUs may be due to the change in sediment type likely reflective of a change in habitat type. New OTUs after this station were sparse, suggesting that most of the fauna across the survey area had been identified at this point.

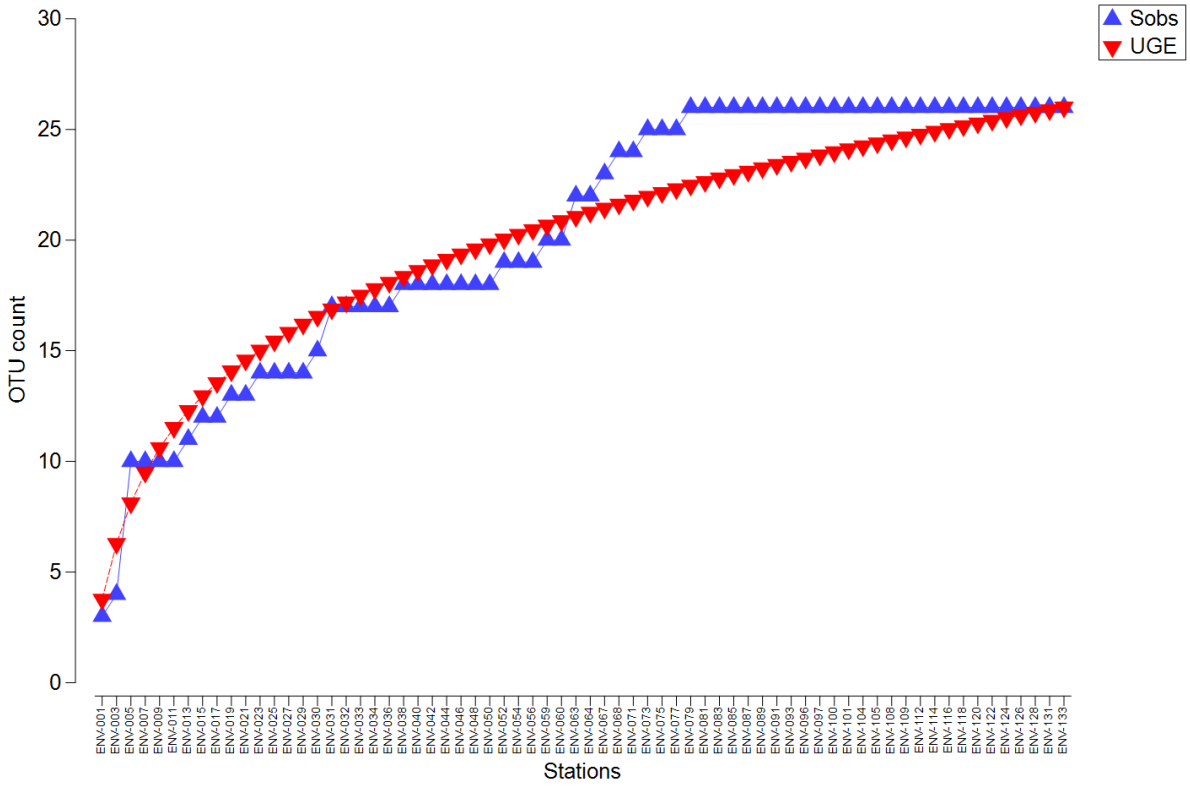
The marine mammal Sobs curve (Figure 2.13b) was mostly in line with the UGE curve, increasing gradually to Station ENV063 where the Sobs curve exceeded the UGE. The Sobs curve then plateaued at Station ENV079 and saw no further OTUs identified. This implies that all taxa present in the survey area and identifiable using this analysis method were quantified by this point.

Figure 2.13 OTU Accumulation Curve

a) Fish



b) Marine Mammals



2.10 OTU Community Structure using Multivariate Analyses

2.10.1 Sediment eDNA

Bacteria

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the sediment bacteria samples are displayed in Figure 2.14.

The CLUSTER analysis and resulting dendrogram identified 39 SIMPROF groups which comprised 19 outliers, 15 closely associated pairs and 5 clusters. All samples were considered more dissimilar than similar and grouped at c. 27% similarity. The generally low similarities are potentially due to the bacterial communities being far richer than equivalent metazoan communities and less discriminately bound to the sediment given their established variation with both overlying water quality along with direct sediment physico-chemistry (Allison & Martiny, 2008; Frühe *et al.*, 2021). However, they still provide a suitable sensitive receptor to environmental pressures for environmental monitoring (Horton *et al.*, 2019).

The nMDS ordination of the sediment bacteria sample data set (Figure 2.14b) revealed a similar pattern to the CLUSTER analysis and with a stress level of 0.16, this can be considered as a useful two-dimensional representation of rank dis(similarities) and overall pattern observed in the data set.

Examination of the sediment bacteria data set together with results of the SIMPER analyses at a group level is presented in Table 2.21. This was restricted to explaining separations where similarity was less than 48% for conciseness. The broad groups identified showed differences due to subtle variations in taxa community structure within particular SIMPROF groups.

Infauna

The CLUSTER analysis and resulting dendrogram for the survey area sediment infauna OTU data set (Figure 2.15a) identified 25 SIMPROF groups; 12 outliers, 5 closely associated pairs and 8 clusters. All samples were more dissimilar than similar grouping together at <1% similarity.

The MDS ordination of the sediment infaunal data set (Figure 2.15b) revealed a similar pattern to the CLUSTER analysis with a stress level of 0.24, this should be treated with caution as a two-dimensional representation of rank dis(similarities) and overall pattern observed in the data set.

Examinations of the sediment infauna sample data together with the results of SIMPER analysis are presented in Table 2.22 together with the principle contributors to the groupings and separation of the samples. This was restricted to explaining separations where similarity was less than 3% for conciseness.

Table 2.21 Taxa influencing Sediment Bacterial OTU SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	Group Influencing Sample Separation
a vs Broad Groups 1, 2, 3 and *g*	73	15 Actinobacteriota OTUs were absent from SIMPROF *a* (*c*. 3.5% of the dissimilarity) whilst 5 OTUs were less abundant (*c*. 1.2% of the dissimilarity) and 3 were more abundant (*c*. 0.6% of the dissimilarity) 15 Bacteroidota OTUs were more abundant in SIMPROF *a* (*c*. 6.2% of the dissimilarity) whilst 6 were unique to SIMPROF *a* (*c*. 5% of the dissimilarity) 33 Proteobacteria OTUs were absent from SIMPROF *a* (*c*. 8% of the dissimilarity), 29 OTUs were more abundant (*c*. 13% of the dissimilarity) and 12 OTUs were less abundant in SIMPROF *a* (*c*. 3% of the dissimilarity)
Broad Group 1 vs Broad Groups 2 and 3 and *g*	61	66 Proteobacteria were more abundant in Broad Group 1 (*c*. 18.8% of the dissimilarity) while 17 OTUs were less abundant (*c*. 3.6% of the dissimilarity) 12 Bacteroidota were less abundant in Broad Group 1 (*c*. 2.6% of the dissimilarity and 9 OTUs were more abundant in Broad Group 1 (*c*. 2.6% of the dissimilairty) 12 Acidobacteriota OTUs and 21 Planctomycetota OTUs were more abundant in Broad Group 1 (*c*. 3.5% and 5.8% of the dissimilarity) 22 Actinobacteriota OTUs were more abundant in Broad Group 1 (*c*. 6.3% of the dissimilarity) while 9 OTUs were less abundant (*c*. 2% of the dissimilarity)
g vs Broad Groups 2 and 3	59	68 Proteobacteria OTUs were more abundant in SIMPROF *g* (*c*. 28.7% of the dissimilarity) while 6 OTUs were less abundant (*c*. 1.4% of the dissimilarity) 23 Bacteroidota were more abundant in SIMPROF *g* (*c*. 9.5% of the dissimilarity) while 5 OTUs were unique to SIMPROF *g* (*c*. 2.2% of the dissimilarity) 11 Planctomycetota OTUs and 8 Verrucomicrobiota were more abundant in SIMPROF *g* (c. 3.9% and 2.9% of the dissimilarity)
Broad Group 2 vs Broad group 3	56	51 Proteobacteria were more abundant in Broad Group 2 (*c*. 6.1% of the dissimilarity) while 15 OTUs were less abundant in Broad Group 2 (*c*. 3.8% of the dissimilarity) 11 Bacteroidota OTUs were more abundant in Broad Group 2 (*c*. 3.7% of the dissimilarity) 18 Planctomycetota OTUs were less abundant in Broad Group 2 (*c*. 4.9% of the dissimilarity) 15 Actinobacteriota OTUS were more abundant in Broad Group 2 (*c*. 4.7% of the dissimilarity) and 15 OTUs were less abundant in Broad Group 2 (*c*. 3.9% of the dissimilarity)

Table 2.22 Taxa influencing Sediment Infauna OTU SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	OTUs and Groups Influencing Sample Separation
a vs *b, c* and Broad Group 1	100	27 Annelida OTUs were absent from SIMPROF a (c. 13.8% of the dissimilarity), Eunicida IM-D1Y5CM, *Pholoe baltica* IM-LVL096 and Flabelligeridae IM-4WY8Z1 were more abundant in SIMPROF *a* (*c*. 16.2% of the dissimilarity) Pycnococcaceae IM-677J7A, Chloropicaceae IM-12LVNX, *Bathycoccus prasinos* IM-095E6D and *Micromonas* IM-997I0G were absent from SIMPROF *a* (*c*. 4.7% of the dissimilarity) 12 Myzozoa OTUs, 3 Cnidaria OTUs and 8 Mollusca OTUs were absent from SIMPROF *a* (*c.* 11.2%, 4% and 4.4% of the dissimilarity)
b vs *c* and Broad Group 1	98	*Terschellingia* IM-79MG2D absent from SIMPROF *b* (*c*. 5.3% of the dissimilarity) 7 Mollusca OTUs absent from SIMPROF *b* (*c.* 4.0% of the dissimilarity) and *Retusa umbilicata* IM-8MKE31 more abundant in SIMPROF *b* (*c*. 5% of the dissimilarity) 27 Annelida OTUs absent from SIMPROF *b* (*c*. 14.2% of the dissimilarity) and Spionida IM-OO85FM more abundant in SIMPROF *b* (*c*. 2.9% of the dissimilarity)
c vs Broad Group 1	98	26 Annelida OTUs absent from SIMPROF *c* (*c*. 13% of the dissimilarity), Polychaeta IM-7K147S and Phyllodocida IM-1J519V more abundant in SIMPROF *c* (*c*. 14.8% of the dissimilarity) Pycnococcaceae IM-677J7A, Chloropicaceae IM-12LVNX, *Bathycoccus prasinos* IM-095E6D and *Micromonas* IM-997I0G absent from SIMPROF *c* (*c*. 4.8% of the dissimilarity) 11 Myzozoa OTUs, 3 Cnidaria OTUs, 9 Mollusca OTUs, 4 Amoebozoa OTUs, 2 Bacillaiophyta OTUs and 12 Arthropoda OTUs absent from SIMPROF *c* (*c*. 27.1% of the dissimilarity)

Fish

CLUSTER analysis and the resulting dendrogram for the survey area sediment fish OTU data set (Figure 2.17a) identified six SIMPROF groups; two outliers (SIMPROF *a* and *d*) and four clusters (SIMPROF *b, c, e* and *f*) all of which were more dissimilar than similar grouping together at *c*. 4% similarity.

The MDS ordination of the sediment fish data set (Figure 2.17b) revealed a similar pattern to the CLUSTER analysis with a stress level of 0.18, this can be considered as a useful two-dimensional representation of rank dis(similarities) and overall pattern observed in the data set.

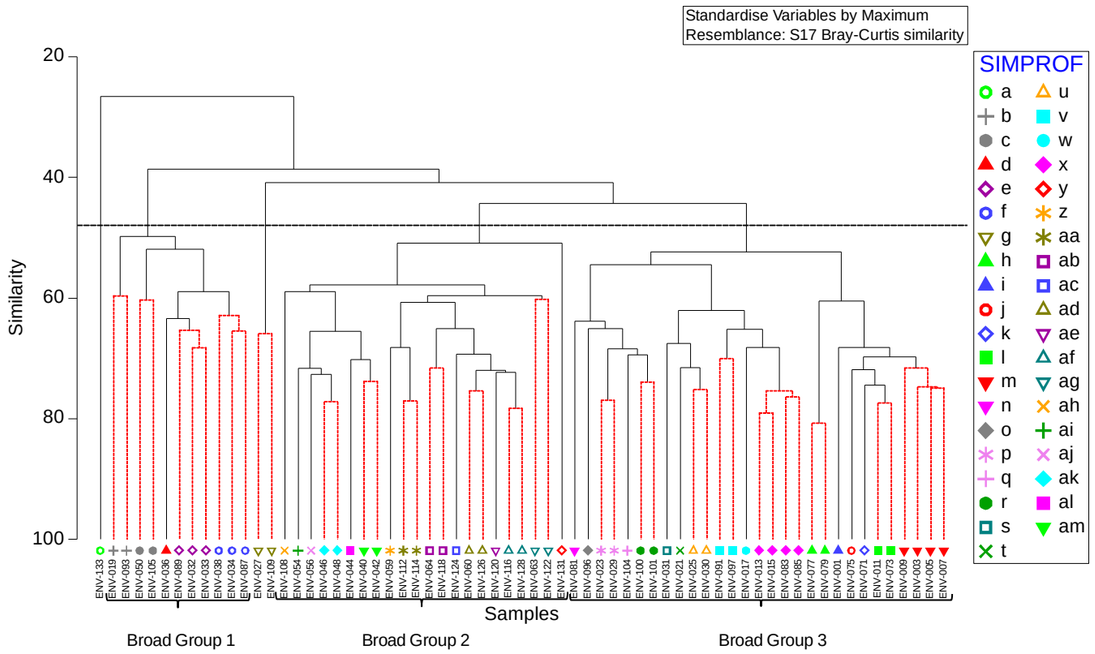
The key families and individual OTUs responsible for the multivariate pattern in the fish eDNA data set are displayed in Table 2.23, based on SIMPER analysis and a review of the raw data. Compared to both the bacterial and infaunal data sets, a small number of OTUs made a large contribution to the separation of the groups likely due to the smaller number of OTUs detected overall.

Table 2.23 Taxa influencing Sediment Fish OTU SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	OTUs and Groups Influencing Sample Separation
a vs *b,c,d,e,f*	96	*Callionymus lyra* IM-5W871B unique to SIMPROF *a* (*c*. 30.5% of the dissimilarity) *Microstomus kitt* IM-9Z4J32 more abundant in SIMPROF *a* (*c*. 30.6% of the dissimilarity) *Clupea harengus* IM-H6683F absent from SIMPROF *a* (*c*. 10.1% of the dissimilarity)
d,e,f vs *b,c*	89	*Clupea harengus* IM-H6683F and *Melanogrammus aeglefinus* IM-F25B05 less abundant in SIMPROF *d,e,f* (*c*. 29.3% of the dissimilarity) *Merlangius merlangus* IM-Y439L8 and *Hippoglossoides platessoides* IM-GN7780 more abundant in SIMPROF *d,e,f* (*c*. 25.6% of the dissimilarity) *Gadus* IM-U7150G and *Pomatoschistus minutus* IM-PX5MQ9 unique to SIMPROF *d,e,f* (*c*. 18.6% of the dissimilarity)
f vs *d,e*	88	*Gadus* IM-U7150G and *Hippoglossoides platessoides* IM-GN7780 unique to SIMPROF *f* (*c*. 45.7% of the dissimilarity) *Merlangius merlangus* IM-Y439L8 less abundant in SIMPROF *f* (*c.* 47.1% of the dissimilarity) *Pomatoschistus minutus* IM-PX5MQ9 absent from SIMPROF *f* (*c*. 11.7% of the dissimilarity)
b vs *c*	85	*Melanogrammus aeglefinus* IM-F25B05, *Limanda limanda* IM-671BU9 and Ammodytidae IM-2Y9H72 less abundant in SIMPROF *b* (*c*. 48.7% of the dissimilarity) *Clupea harengus* IM-H6683F more abundant in SIMPROF *b* (*c*. 23% of the dissimilarity)
d vs *e*	83	*Enchelyopus cimbrius* IM-N30G37 and *Sprattus sprattus* IM-25HY87 unique to SIMPROF *d* (*c*. 60.8% of the dissimilarity) *Merlangius merlangus* IM-Y439L8 less abundant in SIMPROF *d* (*c.* 14.1% of the dissimilarity)

Figure 2.14 Multivariate Analysis of Sediment Bacteria Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

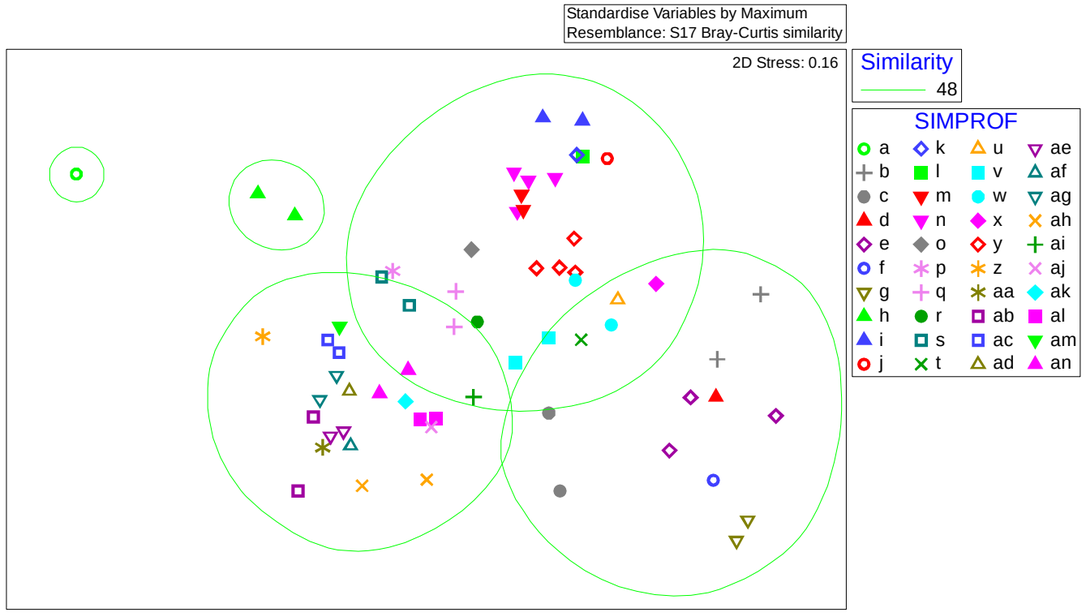
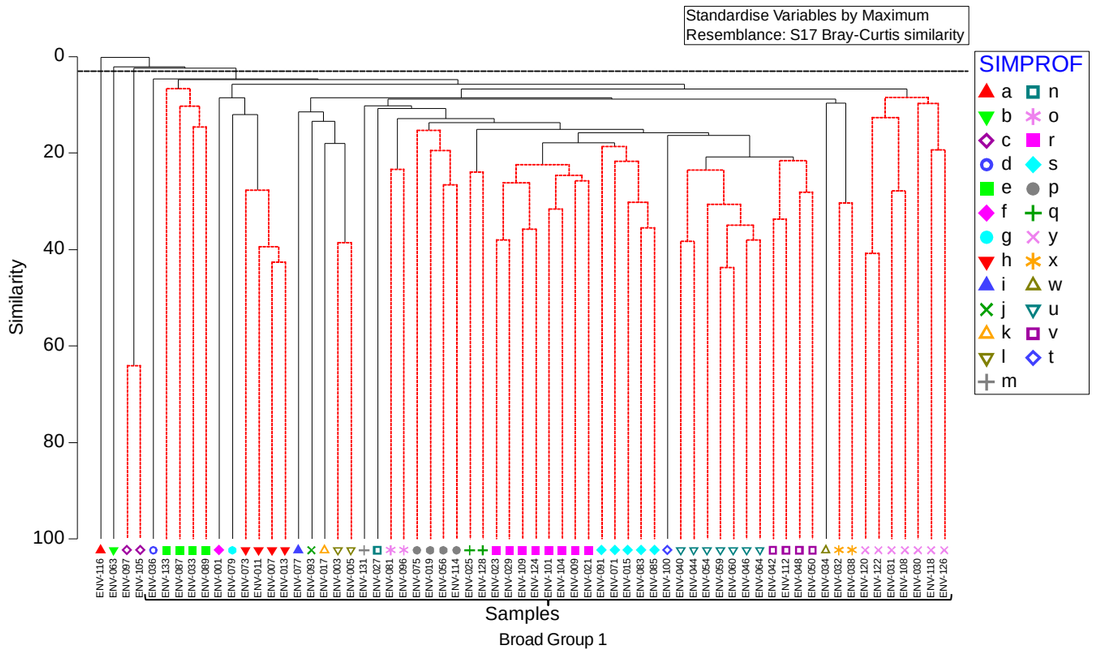


Figure 2.15 Multivariate Analysis of Sediment Infauna Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

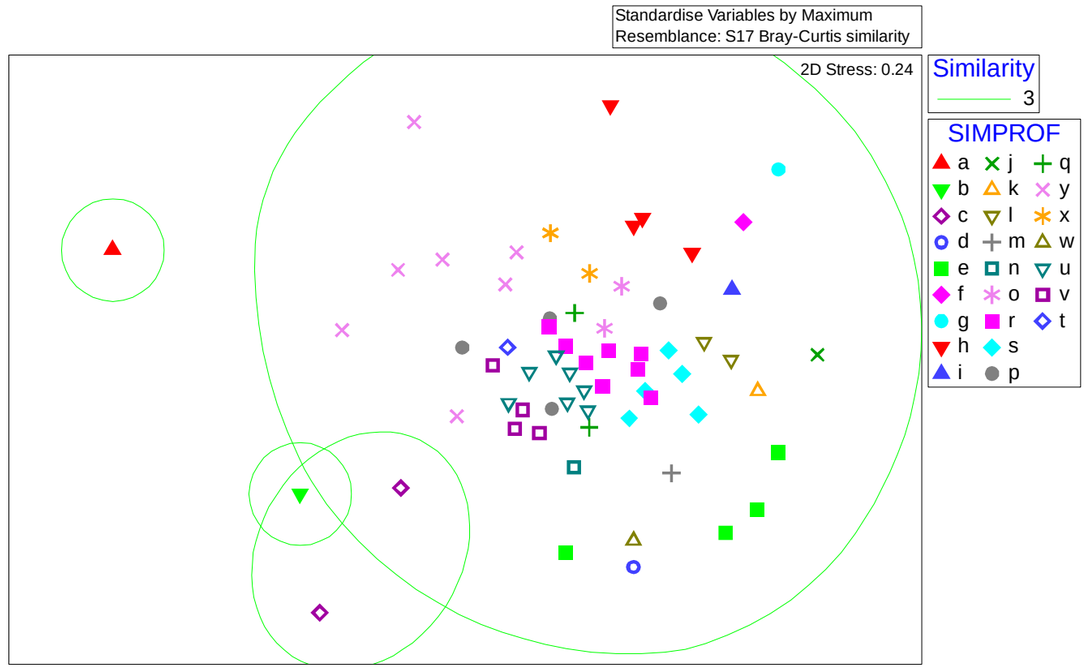
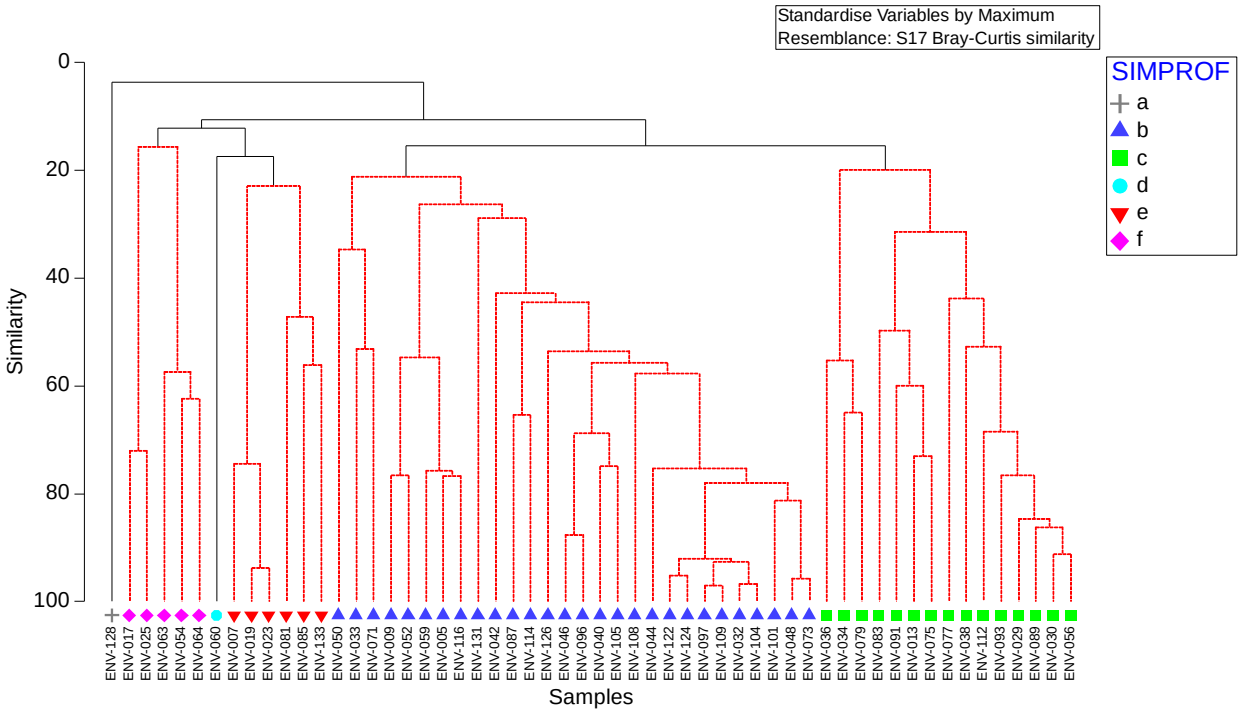
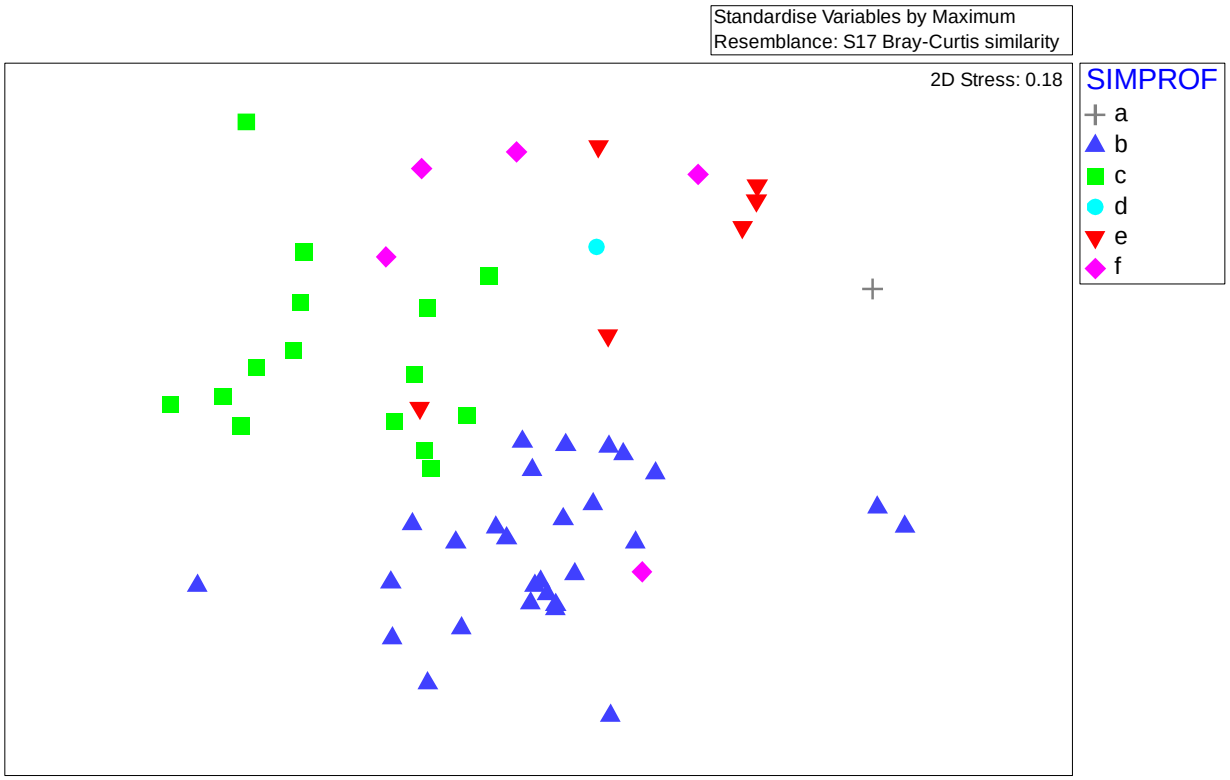


Figure 2.16 Multivariate Analysis of Sediment Fish Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination



2.10.2 Water eDNA

Fish

CLUSTER analysis and resulting dendrogram for the survey area water fish OTU data set (Figure 2.17a) identified six SIMPROF groups comprising two outliers (SIMPROF *b* and *d*), one closely associated pair (SIMPROF *a*) and three clusters (SIMPROF *c, e* and *f*) all of which were more dissimilar than similar grouping together at *c*. 9% similarity.

The nMDS ordination of the water fish data set (Figure 2.17b) revealed a similar pattern to the CLUSTER analysis with a stress level of 0.25, the nMDS ordination should be treated with caution as a two-dimensional representation of rank dis(similarities) and overall pattern observed in the data set.

The individual OTUs responsible for the multivariate pattern in the fish eDNA data set are displayed in Table 2.24, based on SIMPER analysis and a review of the raw data. Like the sediment fish analysis, a small number of OTUs made a large contribution to the separation of the groups.

Table 2.24 Taxa influencing Water Fish OTU SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	OTUs and Groups Influencing Sample Separation
SIMPROF *a* vs SIMPROF *b,c,d,e,f*	91	*Myoxocephalus scorpius* IM-684P2D, *Gadus morhua* IM-566W4J, *Ctenolabrus rupestris* IM-88K8P5, *Echiichthys vipera* IM-QTA38I, *Pholis gunnellus* IM-X8JMR5, *Phrynorhombus norvegicus* IM-5K840L and *Chirolophis ascanii* IM-20L1X9 were more abundant in SIMPROF *a* (*c*. 35.6% of the dissimilarity) *Gasterosteus aculeatus* IM-3693PA, *Pomatoschistus pictus* IM-2R97A4, *Micrenophrys lilljeborgii* IM-BJK85A, *Anguilla anguilla* IM-15MDNV, *Lipophrys pholis* IM-6FSK1Z, *Labrus* IM-Y05C25, *Trisopterus luscus* IM-U5JO0P and *Taurulus bubalis* IM-K0H647 unique to SIMPROF *a* (*c*. 36.2% of the dissimilarity)
SIMPROF *b,c* vs SIMPROF *d,e,f*	80	*Clupea harengus* IM-H6683F, *Microstomus kitt* IM-9Z4J32, *Hippoglossoides platessoides* IM-GN7780 and *Trisopterus minutus* IM-169S1P more abundant in SIMPROF *b,c* (*c*. 30.6% of the dissimilarity) *Salmo trutta* IM-00RM06 unique to SIMPROF *b,c* (*c*. 4.7% of the dissimilarity) *Scomber scombrus* IM-LR6159, *Melanogrammus aeglefinus* IM-F25B05, *Limanda limanda* IM-671BU9, *Sprattus sprattus* IM-25HY87, Triglidae IM-7OH057, *Merlangius merlangus* IM-Y439L8 and *Pleuronectes platessa* IM-3F88Y4 less abundant in SIMPROF *b,c* (*c*. 36.1% of the dissimilarity)
SIMPROF *d* SIMPROF *e,f*	80	*Crystallogobius linearis* IM-99O9E1, *Salmo salar* IM-2RZ812, *Scomber scombrus* IM-LR6159 and *Pleuronectes platessa* IM-3F88Y4 more abundant in SIMPROF *d* (*c*. 46.4% of the dissimilarity) *Phrynorhombus norvegicus* IM-5K840L unique to SIMPROF *d* (*c*. 11.6% of the dissimilarity) *Sprattus sprattus* IM-25HY87 absent from SIMPROF *d* (*c*. 3.6% of the dissimilarity) Triglidae IM-7OH057, *Limanda limanda* IM-671BU9 and *Melanogrammus aeglefinus* IM-F25B05 less abundant in SIMPROF *d* (*c.* 10.1% of the dissimilarity)
SIMPROF *e* vs SIMPROF *f*	76	*Merlangius merlangus* IM-Y439L8, *Microstomus kitt* IM-9Z4J32, *Sprattus sprattus* IM-25HY87, *Gadus morhua* IM-566W4J, *Pomatoschistus minutus* IM-PX5MQ9, *Belone belone* IM-8976EZ, *Enchelyopus cimbrius* IM-N30G37 and *Gadus* IM-U7150G less abundant in SIMPROF *e* (*c.* 37.9% of the dissimilarity) *Scomber scombrus* IM-LR6159, Triglidae IM-7OH057, *Melanogrammus aeglefinus* IM-F25B05, *Limanda limanda* IM-671BU9, *Hippoglossoides platessoides* IM-GN7780 and *Pleuronectes platessa* IM-3F88Y4 more abundant in SIMPROF *e* (*c*. 30.9% of the dissimilarity) *Trachurus trachurus* IM-19YS90 absent from SIMPROF *e* (*c.* 3.0% of the dissimilarity)
SIMPROF *b* vs SIMPROF *c*	71	*Salmo trutta* IM-00RM06, *Ctenolabrus rupestris* IM-88K8P5, *Trisopterus minutus* IM-169S1P and *Pholis gunnellus* IM-X8JMR5 unique to SIMPROF *b* (*c*. 53.6% of the dissimilarity) *Clupea harengus* IM-H6683F and *Sprattus sprattus* IM-25HY87 more abundant in SIMPROF *b* (*c*. 17.9% of the dissimilarity)

Marine Mammals

CLUSTER analysis and resulting dendrogram for the survey area water mammal OTU data set (Figure 2.18a) identified eleven SIMPROF groups; four outliers (SIMPROF *b, c, f* and *g*), one closely related pair (SIMPROF *a*) and six clusters (SIMPROF *d, e, h, i, j* and *k*). All samples were considered more dissimilar than similar and grouped at c. 0% similarity.

The nMDS ordination of the water mammal data set (Figure 2.18) revealed a similar pattern to the CLUSTER analysis with a stress level of 0.11, this can be considered as a useful two-dimensional representation of rank dis(similarities) and overall pattern observed in the data set.

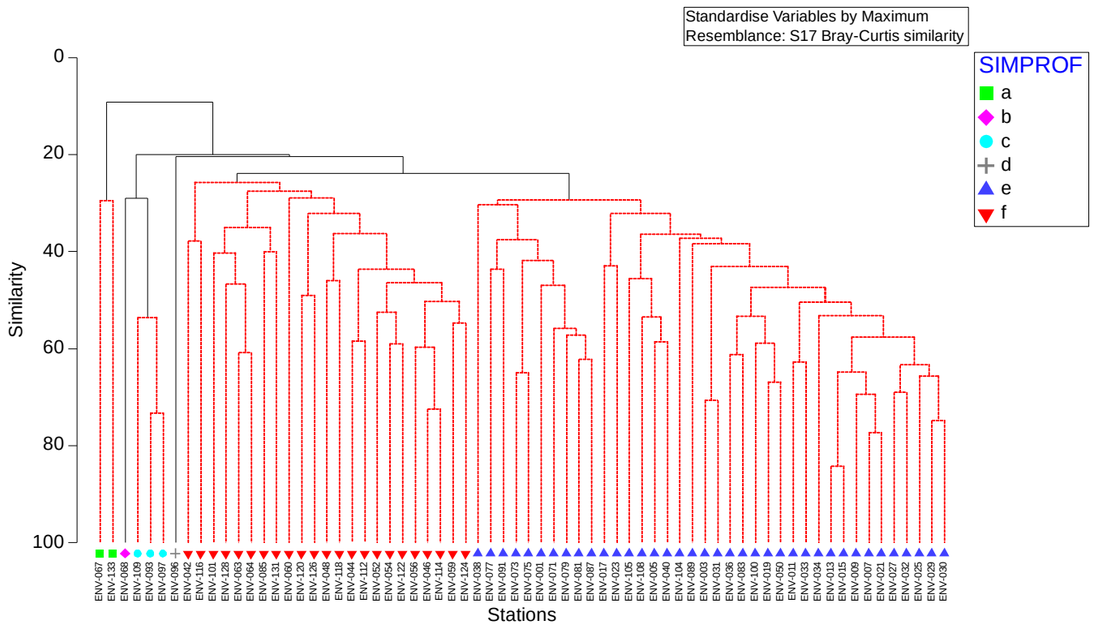
The individual OTUs responsible for the multivariate pattern in the marine mammal eDNA data set are displayed in Table 2.25 based on SIMPER analysis and a review of the raw data. This was restricted to explaining separations where similarity was less than 2% for conciseness. A small number of OTUs made a large contribution to the separation of the groups likely due to the smaller number of OTUs detected overall. This was the most extreme in the mammal data, with groups being separated by 100% dissimilarity due to the presence or absence of up to three OTUs.

Table 2.25 Taxa influencing Sediment Marine Mammal OTU SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	OTUs and Groups Influencing Sample Separation
SIMPROF *a* vs SIMPROF *b,c,d* and Broad Group A	100	*Phocoena phocoena* IM-P75C93 and *Lagenorhynchus albirostris* IM-398OS5 absent from SIMPROF *a* (*c*. 51.6% of the dissimilarity) *Phocoena* IM-1IM49H unique to SIMPROF *a* (*c*. 22.3% of the dissimilarity)
SIMPROF *b* vs SIMPROF *c,d* and Broad Group A	100	*Phocoena phocoena* IM-P75C93, *Lagenorhynchus albirostris* IM-398OS5 and *Scomber scombrus* IM-L3T6ZC absent from SIMPROF *b* (*c*. 73.3% of the dissimilarity)
SIMPROF *c* and SIMPROF *d* and Broad Group A	100	*Ammodytes marinus* IM-F5S86E more abundant in SIMPROF *c* (*c*. 43.2% of the dissimilarity) *Phocoena phocoena* IM-P75C93 and *Lagenorhynchus albirostris* IM-398OS5 absent from SIMPROF *c* (*c*. 37.8% of the dissimilarity)
SIMPROF *d* vs Broad Group 1	99	*Phocoena phocoena* IM-P75C93 and *Lagenorhynchus albirostris* IM-398OS5 absent from SIMPROF *d* (*c*. 38.5% of the dissimilarity) *Scomber scombrus* IM-L3T6ZC and *Melanogrammus aeglefinus* IM-Q4SG4Y more abundant in SIMPROF *d* (*c*. 20.1% of the dissimilarity)

Figure 2.17 Multivariate Analysis of Water Fish Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

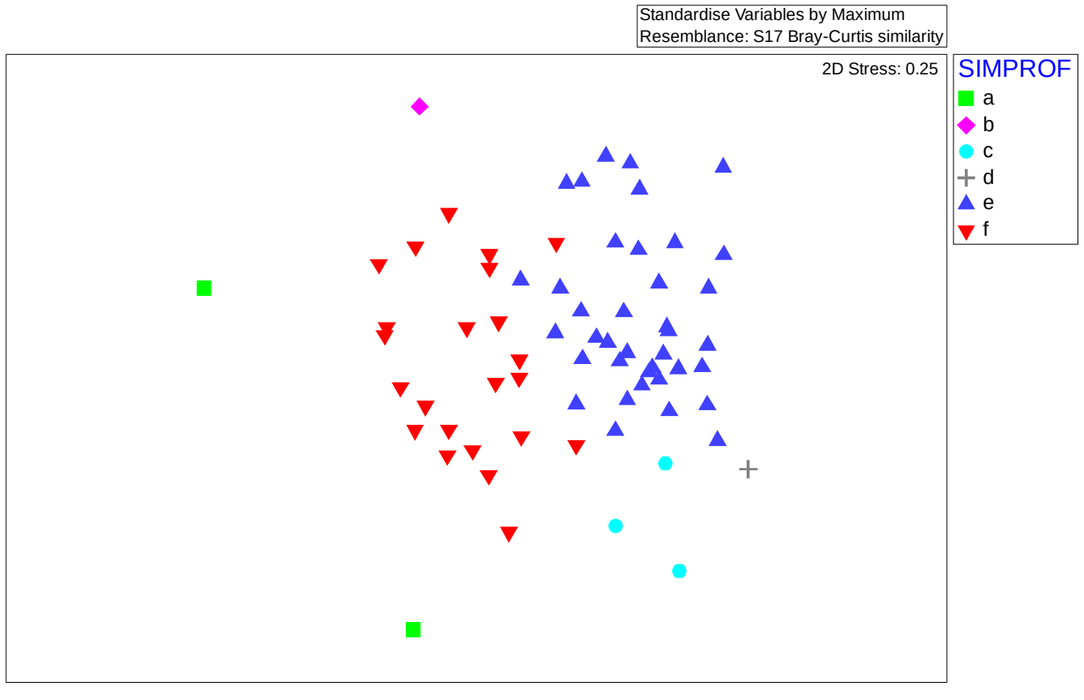
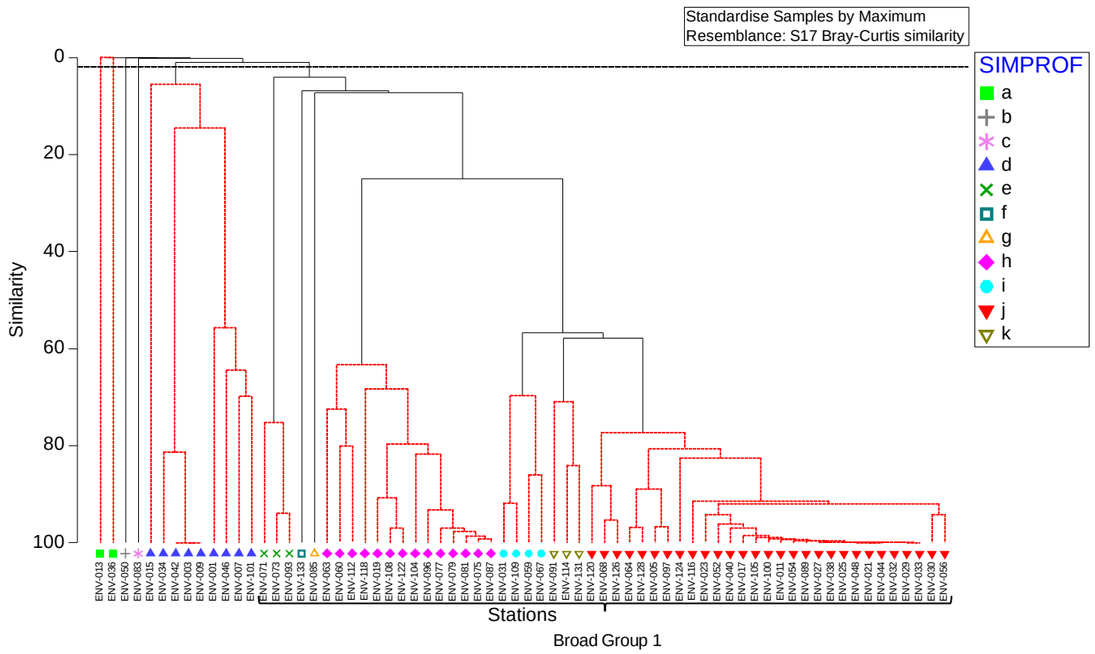
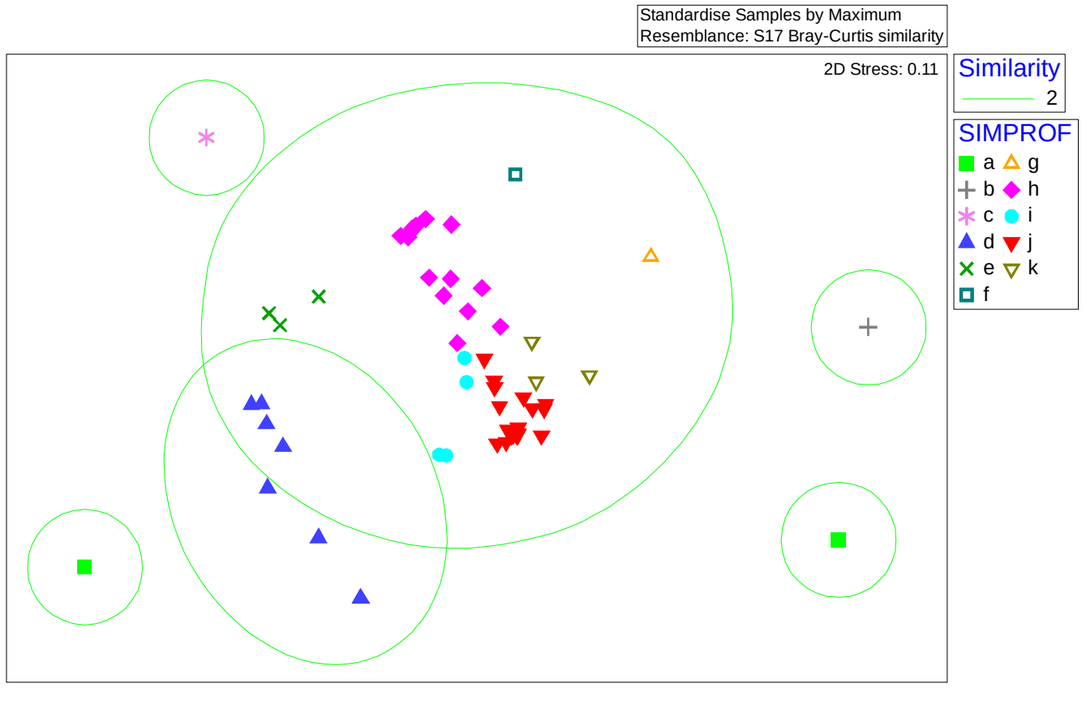


Figure 2.18 Multivariate Analysis of Water Marine Mammal Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination



2.11 Multivariate Comparison of Metabarcoding Results to Physico-chemical Data

The multivariate patterns for all five DNA data sets were individually compared to the physico-chemical data to determine if any correlations were present. This was not possible for three stations (Stations ENV052, ENV067 and ENV068) in the water fish and marine mammal data sets due to unsuccessful grab sampling at these stations.

BV STEP analyses was conducted on the five DNA data sets; this identified a sub-set of two physico-chemical variables (total PAHs and mean grain size) which showed a 72% correlation with the sediment bacteria DNA multivariate pattern. A sub-set of three physico-chemical variables (As, Cu and mean grain size) showed a 35% correlation with the sediment invertebrate DNA multivariate pattern. A sub-set of two physico-chemical variables (TOC and % gravel) showed a 10% correlation with the sediment fish DNA multivariate pattern. A sub-set of three physico-chemical variables (Pb, Zn and % fines) showed a 45% correlation with the water fish DNA data set multivariate pattern. Finally, a sub-set of two physico-chemical variables (As and % gravels) showed a 5% correlation with the water mammal DNA multivariate pattern.

An analysis of similarity (ANOSIM) was conducted on the five DNA data sets to investigate the influence of depth (rounded down to the nearest 5m LAT). This revealed a significant but low-level impact on the sediment bacteria DNA data set ($r=0.252$, $p<0.05$) and the water fish DNA data set ($r=0.238$, $p<0.05$).

Further sampling, including additional stations and replication would allow further investigation of the relationship between DNA data and the physico-chemical variables. As a result of the current sample sizes for each of the five data sets (sediment bacterial, n=65; sediment invertebrate, n=65; sediment fish, n=56; water fish, n=68 and water mammal, n=68) and use of single DNA replicates per station the statistical robustness of the analysis patterns are limited and may be obscured.

2.12 Macrofaunal Interpretation

2.12.1 Overview

Two 0.1m^2 faunal samples (MFA and MFB) were collected from 128 station, one of which (the MFA sample) was worked up and the second retained and appropriately stored as a spare. All faunal samples were screened through a 0.5mm mesh sieve. Before analysing the data set provided by the laboratory, several taxa were removed as per our stated methods; however, all records, regardless of whether they were included in statistical analyses, are listed in Appendix H.

2.12.2 Summary of Notable Species

A total of 165 juvenile individuals of *A. islandica* were recorded across the Morven survey area, being present at 49 stations. This is a long-lived species with a slow growth rate and is on the OSPAR (2008) list of threatened and/or declining species and habitats. However, *A. islandica* is commonly found in this area of the North Sea, where populations of 40 to 80 year old specimens have been recorded, with a substantial proportion over 100 years old (OSPAR, 2009a).

Single individuals of the sea pen species *Pennatula phosphorea* and *Virgularia mirabilis* were recorded at six stations (*P. phosphorea* at Stations ENV022, ENV026, ENV104 and ENV105, and *V. mirabilis* at Stations ENV121 and ENV124) within the survey area. Sea pens are included as a defining species of the 'sea pen and burrowing megafauna communities' habitat as defined by OSPAR (2010).

Eight individuals of the genus *Haploops* were recorded across two stations (seven at Station ENV50 and one at Station ENV51) within the survey area. *Haploops* species are the defining taxa for the '*Haploops* habitat' listed on the OSPAR (2008) list of threatened and/or declining species and habitats. However, as defined by (OSPAR, 2008) to be a *Haploops* habitat, at least 50% of the epibenthic crustacea biomass must comprise *Haploops*. The small number of individuals identified in this survey do not make up a sufficient percentage of the biomass to constitute a *Haploops* habitat.

2.12.3 Summary Statistics

A total of 52107 individuals representing 461 taxa were recorded from across the 128 stations sampled. Of these, juveniles accounted for 8094 individuals from 23 taxa; representing 16% of individuals and 5% of the taxa recorded. Juveniles, although a valid part of the community, are ephemeral in their nature due to high levels of mortality and can temporarily disturb the normal balance of relative abundance amongst species (and consequent measures of diversity). A 2STAGE analysis was conducted in PRIMER to determine whether the presence of juveniles caused significant variation between the rationalised full and adult only faunal community structure. The test showed that the two data sets were 99% similar, indicating no significant difference between the two faunal communities. When ranked by abundance, one juvenile taxon (Ophiuroidea) was ranked within the top ten taxa. (OSPAR, 2017) recommends that should juvenile appear among the top ten ranked taxa in the dataset, statistical analysis of the faunal community should be conducted both with and without juveniles to illustrate their influence on the faunal community. Consequently, the adult dataset will be presented within this report, with the full dataset discussed where relevant.

The data sets (full and adult) were divided into five taxonomic groups: Annelida (Polychaeta), Arthropoda (Malacostraca), Mollusca, Echinodermata and 'Others'. The 'Others' category comprised Annelida (Clitellata, Sipuncula), Arthropoda (Pycnogonida), Chordata (Ascidiacea), Cnidaria (Anthozoa), Foraminifera, Hemichordata (Enteropneusta), Nemertea, Phoronida and Platyhelminthes. The absolute and proportional contributions of these five taxonomic groups to the overall community structure of adult only and full fauna are summarised in Table 2.26. The contributions of each taxonomic group to total individuals and taxa are illustrated as stacked bar charts in Figure 2.19.

In the adult dataset, Annelida (Polychaeta; n=25556) was the most abundant taxonomic group accounting for 58% of the sampled individuals and 42% (n=185) of taxa. Overall, Annelida had the highest number of individuals recorded and was the most abundant group at 94% of stations. *Paramphinome jeffreysii* (n=8283) accounted for 32% of annelid abundance and 19% of the overall adult abundance. The polychaete *P. jeffreysii* is one of the most encountered polychaetes in the North Sea and is often abundant in grab samples. Abundance of this species in the North Sea is reportedly increasing in general (Rees *et al.*, 2007). Gage (2001) showed that polychaetes in Atlantic waters consistently dominate soft bottom benthos from the continental shelves to abyssal plains and over 50% of macrofaunal individuals generally comprised polychaete worms, indicating that the survey areas are typical for the region.

Overall, the second most abundant group was Mollusca (n=6896), accounting for 16% of the total sampled adult individuals and 19% of the adult taxa. A single taxon; Abra contributed 15% of the Mollusca abundance and 2% of the overall adult abundance. Arthropoda (Malacostraca) accounted for 11% (n=5005) of adult individuals, however, it accounted for 28% of the adult taxa indicating that this taxonomic group was relatively diverse.

Generally, there was high variation in total individual and taxa abundance across the survey area, with adult abundance ranging from zero individuals recorded at Station ENV080 to 926 individuals at Station ENV111. At Station ENV80, sample retention was comparable to other samples acquired and the lab found no issues with the preservation of the sample, therefore it is likely that the low abundance recorded is a true representation of the sample.

Of the 461 adult and juvenile taxa recorded along the proposed route, none were present at every station. A total of 93 taxa (20% of total taxa) were recorded at a single station and of those 74 (16% of total taxa) were represented by a single individual. It is generally accepted that ecological communities which are frequently subjected to local disturbance or contamination events will be dominated by a limited number of tolerant taxa, which will be represented in high individual abundances (Clarke & Warwick, 2006). There was no evidence of localised super-abundances of pollution tolerant taxa in this survey suggesting a reasonably diverse community that has been subjected to relatively little disturbance or contamination.

Table 2.26 Contribution of Gross Taxonomic Groups

Group	Current Survey				Gardline (2023b)			
	Individuals		Taxa		Individuals		Taxa	
	Abundance	% Contribution	Abundance	% Contribution	Abundance	% Contribution	Abundance	% Contribution
Adult Fauna								
Annelida - Polychaeta	25556	58	185	42	14826	57	104	42
Arthropoda - Malacostraca	5005	11	125	28	2633	10	61	25
Mollusca	6896	16	85	19	1886	7	10	4
Echinodermata	3712	8	18	4	5677	22	55	22
Others	2844	6	27	6	817	3	17	7
Total	44013	100	440	100	25839	100	247	100
Full Fauna								
Annelida - Polychaeta	25673	49	190	41	14835	56	105	41
Arthropoda - Malacostraca	5019	10	130	28	2642	10	63	25
Mollusca	7350	14	89	19	2482	9	12	5
Echinodermata	11219	22	24	5	5818	22	57	22
Others	2846	5	28	6	817	3	17	7
Total	52107	100	461	100	26594	100	254	100

Results in blue are from comparison survey data, see Section 1.3

When considering the adult data set in terms of biomass a total wet weight of 348.80g was recorded across the survey area (Table 2.27). As was to be expected, Echinodermata (n=134.20g) was dominant by weight and accounting for 38% of the sampled weight for the survey area. Polychaeta was the second by weight and comprised 26% of the sample weight. Biomass contributions were slightly different compared to the comparison (Gardline, 2023b) survey with polychaetes accounting for twice the biomass compared to the previous survey.

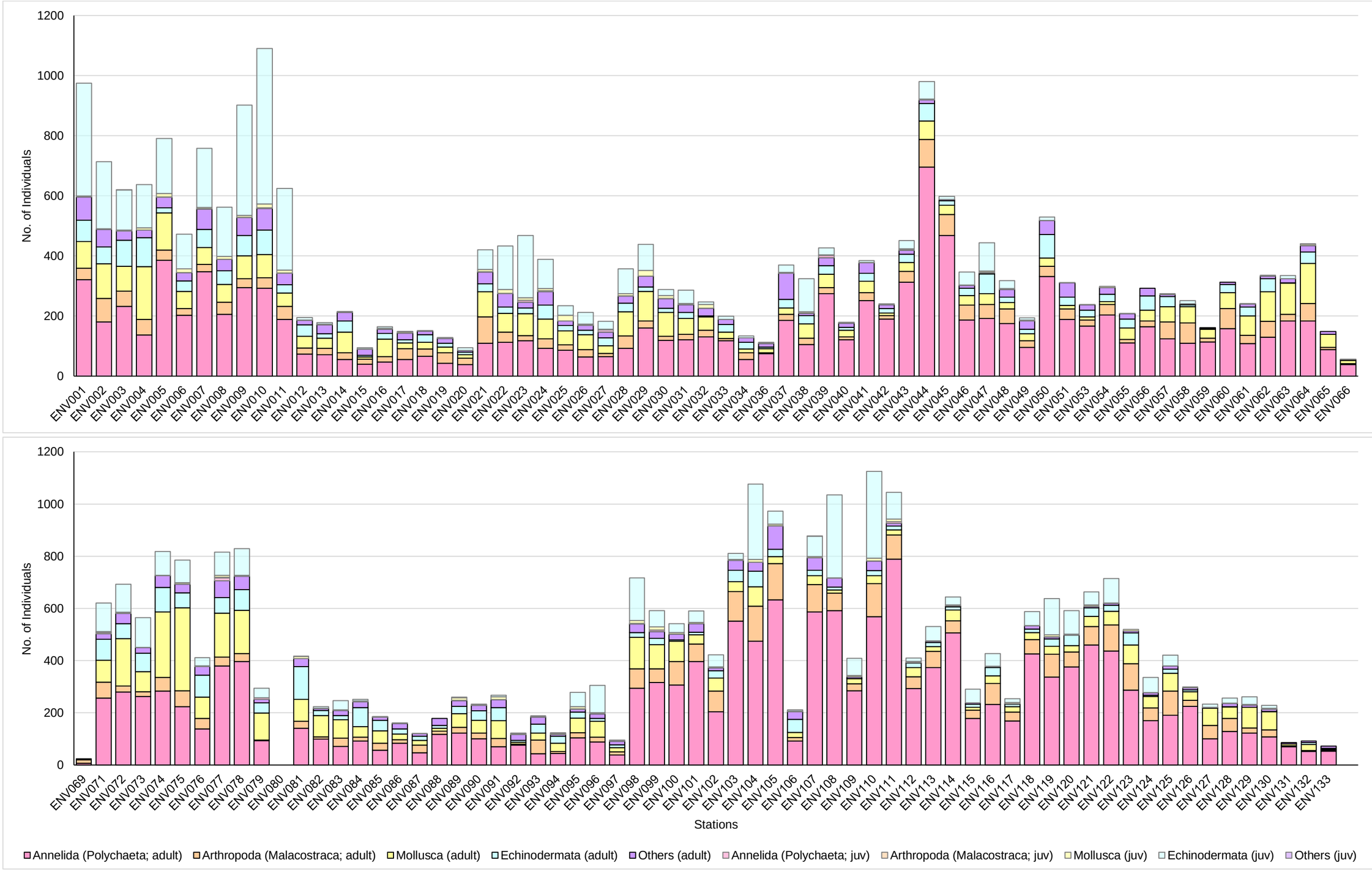
Table 2.27 Biomass Contribution of Gross Taxonomic Groups

Group	This Survey		Gardline (2023b)	
	Total Biomass (g)	% Contribution	Total Biomass (g)	% Contribution
Adult Fauna				
Annelida (Polychaeta)	91.53	26	49.12	13
Arthropoda (Malacostraca)	25.79	7	2.24	1
Mollusca	82.21	24	129.10	35
Echinodermata	134.20	38	181.37	49
Others	14.28	4	5.51	1
Total	348.01	100	367.34	100
Full Fauna				
Annelida (Polychaeta)	91.65	26	49.12	13
Arthropoda (Malacostraca)	25.86	7	2.24	1
Mollusca	83.16	23	129.10	35
Echinodermata	139.15	39	181.37	49
Others	14.28	4	5.51	1
Total	354.10	100	367.34	100

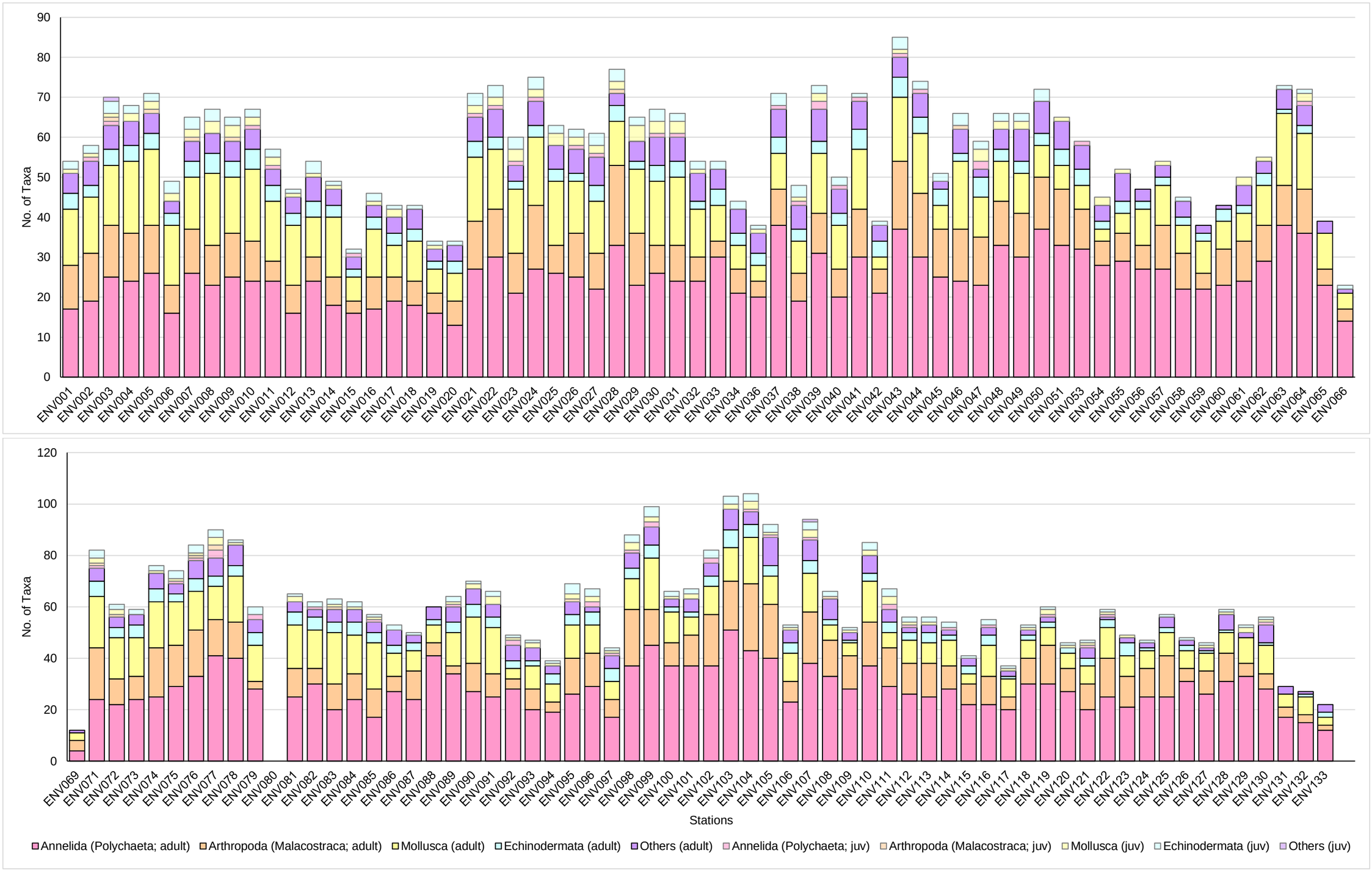
Results in blue are from comparison survey data, see Section 1.3

Figure 2.19 Contributions of Gross Taxonomic Groups

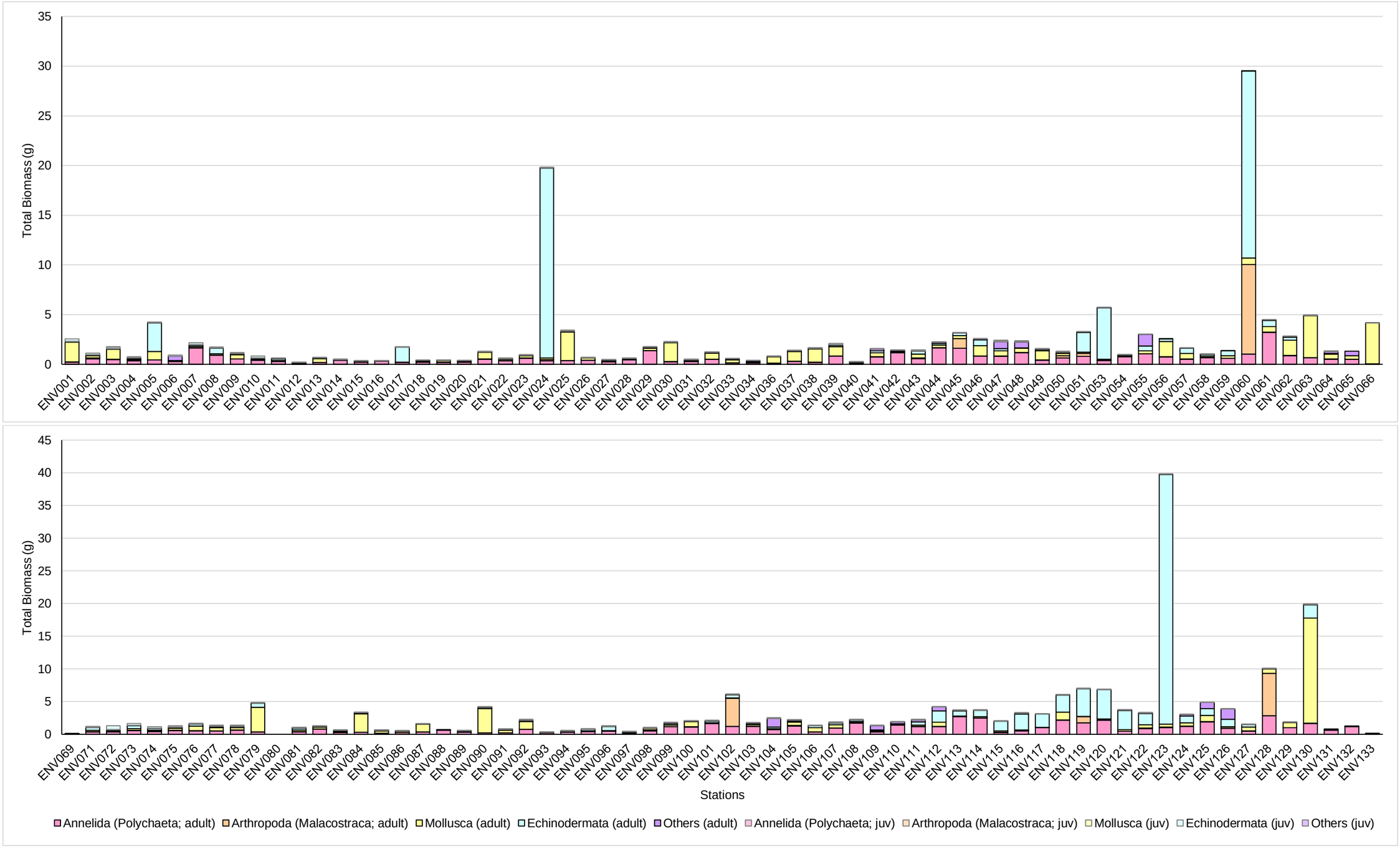
a) Individuals



b) Taxa


No. of Taxa
Stations
Annelida (Polychaeta; adult)
Arthropoda (Malacostraca; adult)
Mollusca (adult)
Echinodermata (adult)
Others (adult)
Annelida (Polychaeta; juv)
Arthropoda (Malacostraca; juv)
Mollusca (juv)
Echinodermata (juv)
Others (juv)

c) Biomass


Total Biomass (g)
Stations
Annelida (Polychaeta; adult)
Arthropoda (Malacostraca; adult)
Mollusca (adult)
Echinodermata (adult)
Others (adult)
Annelida (Polychaeta; juv)
Arthropoda (Malacostraca; juv)
Mollusca (juv)
Echinodermata (juv)
Others (juv)

Species ranking provides additional information on the dominance structure of the faunal community along the Morven ECR and results are presented based on abundance in Table 2.28 and based on biomass in Table 2.29. In both the top ten ranked full dataset and adult only dataset based on abundance, five taxa were Annelida, two were Echinodermata, and one each were Arthropoda, Mollusca, and Others. There was one juvenile taxon (Ophiuroidea) within the top ten of the full fauna data. With juveniles excluded, *Ophiocten affinis* joined the top ten (Table 2.28).

When considering all macrofaunal species observed within the survey area in terms of feeding guilds, for taxa where this information was available there was examples of suspension feeders (both passive and active) (n=6) or deposit feeders (surface and sub-surface) (n=9), and predatory and scavenger species (n=14).

Results of the species ranking and fidelity scores can give a further indication of a taxon's distribution, with results ≥0.8 and ≤1.2 indicating a generally even distribution of a taxon, whilst values outside of this range represent a patchier distribution. Only one taxon (*Heteromastus filiformis)* within the adult only fauna top ten by abundance (Table 2.28) fell within this range, indicating an uneven distribution. Of the nine taxa potentially exhibiting a patchy distribution, seven taxa were less abundant than their rank by score would suggest, further indicating a patchy distribution of taxa. Nemertea with a fidelity score of 0.40 was much less abundant (ranked 10th) than its rank by score (4th) further indicating the patchy distribution of this taxa. Contrary to this the echinoderm *Ophiocten affinis* was more abundant (ranked 11th) than its score (ranked 10th) would suggest and given that it was present at fewer stations (n=75) this is consistent with localised higher abundances at certain stations.

The faunal community for the survey area was broadly consistent with what was previously recorded in the Gardline (2023b) comparison survey. Four of the top ten listed taxa were also ranked within the comparison adult data set.

Table 2.28 Species Ranking by Abundance

Rank		Species/Taxon	Total Rank Score	Fidelity	Total Abundance
Score	Abundance				
Adult Fauna					
1	1	*Paramphinome jeffreysii*	629	0.49	8283
2	2	Amphiuridae	570	0.49	1815
3	4	***Scoloplos armiger***	430	0.42	1251
4	10	Nemertea	357	0.40	918
5	6	Galathowenia	336	0.44	1160
6	7	***Spiophanes bombyx***	331	0.52	1082
7	8	***Abra***	300	0.59	1004
8	9	*Protomedeia fasciata*	284	0.74	980
9	5	*Heteromastus filiformis*	266	1.04	1204
10	11	***Ophiocten affinis***	258	2.02	888
Full Fauna					
1	1	*Paramphinome jeffreysii*	615	0.48	8283
2	4	Amphiuridae	519	0.45	1815
3	2	Ophiuroidea (Juvenile)	515	0.50	3778
4	6	***Scoloplos armiger***	382	0.43	1251
5	12	Nemertea	315	0.41	918
6	8	Galathowenia	301	0.47	1160
7	9	***Spiophanes bombyx***	300	0.59	1082
8	10	***Abra***	263	0.68	1004
9	11	*Protomedeia fasciata*	262	1.02	980
10	7	*Heteromastus filiformis*	254	1.98	1204

Taxa are coloured according to their taxonomic groupings: Annelida (Polychaeta), Arthropoda (Malacostraca), Mollusca, Echinodermata, Others

Taxa in **bold** were in the top ten ranked species (by score) in the Gardline (2023b) comparison survey.

When considering species ranking based on biomass (Table 2.29), there was some movement in terms of species ranking compared to the abundance. Across the Morven ECR, two polychaetes (*P. jeffreysii* and *Scoloplos armiger*) remained within the top ten when ranked by biomass, with other taxa being replaced by relatively larger polychaetes, two larger species of Echinodermata and one species of Mollusca.

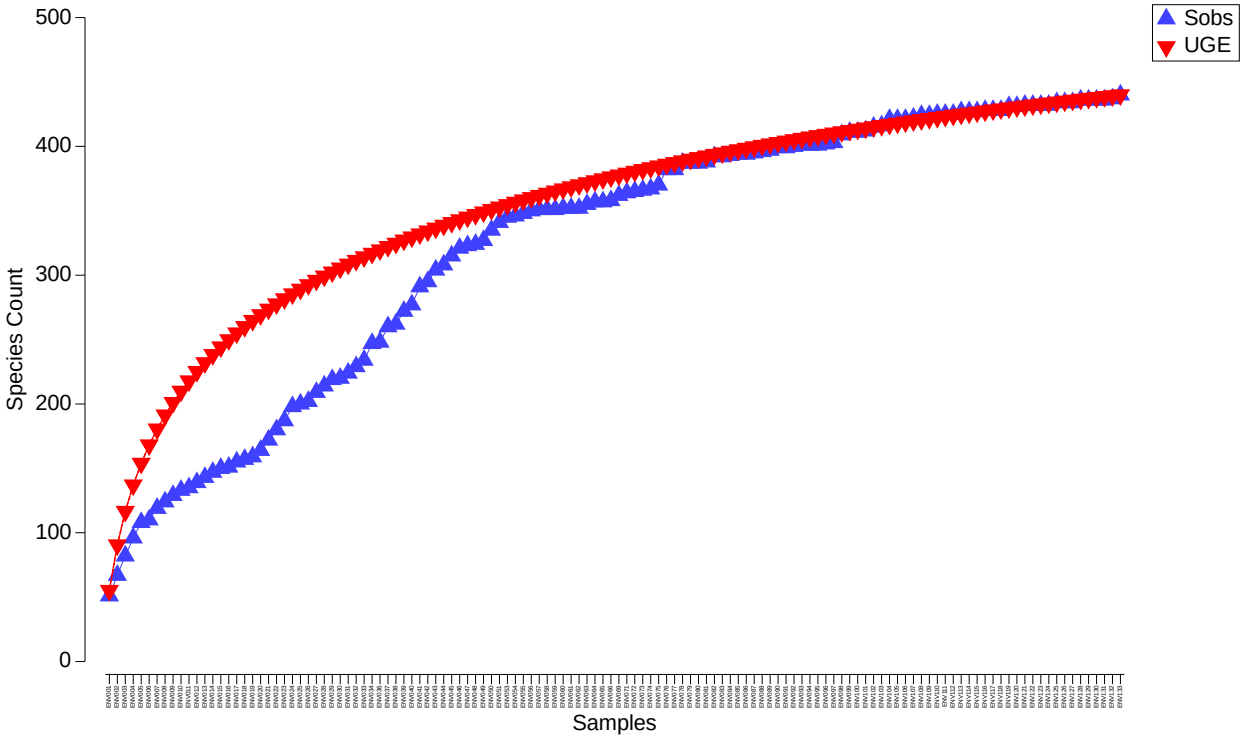
Table 2.29 Species Ranking by Biomass

Rank		Species/Taxon	Total Rank Score	Fidelity	Total Biomass
Score	Biomass				
Adult Fauna					
1	17	***Scoloplos armiger***	416	0.42	4.71
2	9	***Amphiura filiformis***	358	0.40	7.57
3	2	*Amphiura chiajei*	264	0.33	33.34
4	10	***Nephtys hombergii***	256	0.37	7.15
4	12	*Praxillella affinis*	256	0.37	5.94
5	26	***Sthenelais limicola***	248	0.41	2.77
6	5	*Glycera unicornis*	233	0.47	11.68
7	8	*Antalis entalis*	208	0.52	8.42
8	20	*Paramphinome jeffreysii*	200	0.67	3.91
9	22	*Notomastus*	180	0.90	3.56
10	27	*Diplocirrus glaucus*	161	1.61	2.64
Full Fauna					
1	17	***Scoloplos armiger***	401	0.31	4.71
2	9	***Amphiura filiformis***	349	0.30	7.57
3	2	*Amphiura chiajei*	264	0.26	33.34
4	12	*Praxillella affinis*	253	0.28	5.94
5	10	***Nephtys hombergii***	252	0.33	7.15
6	27	***Sthenelais limicola***	236	0.37	2.77
7	5	*Glycera unicornis*	233	0.46	11.68
8	18	*Spatangoida* (Juvenile)	226	0.59	4.44
9	8	*Antalis entalis*	203	0.79	8.42
10	21	*Paramphinome jeffreysii*	194	1.52	3.91

Taxa are coloured according to their taxonomic groupings: Annelida (Polychaeta), Mollusca, Echinodermata,
Taxa in **bold** were in the top ten ranked species (by score) in the Gardline (2023b) comparison survey.

A species accumulation plot for the adult only data set is presented in Figure 2.20. The Sobs curve began below the UGE curve indicating that less taxa were elicited than average from the samples. The Sobs curve continued to follow below the UGE curve upon subsequent sample additions until the addition of Station ENV104, where 5 additional taxa were added, 3 of which were unique to this station. Preceding subtle shifts occurred at Stations ENV041, ENV076 and ENV098 where the Sobs curve was notable (>400%) steeper than the UGE curve. Following the addition of Station ENV104 the UGE curve then followed the Sobs curve upon subsequent sample additions. Both the UGE and Sobs curves were still increasing towards the end of the plot and therefore further sampling may have elicited additional taxa though the rate of increase was small.

Figure 2.20 Adult Data Set Species Accumulation Curve



2.12.4 Diversity using Univariate Statistics

The full and adult only datasets were analysed to provide the total number of individuals and taxa, Shannon Wiener diversity index (*H'*); calculated using logarithm base 2 (Shannon & Weaver, 1949), Pielou's eveness (*J*), Simpson's dominance (λ) and Margalef's index (*d*). Increasing values of the Shannon Wiener diversity index correspond to increasing diversity of the community. Values for Pielou's evenness and Simpson's dominance both range from 0 to 1, with 1 indicating an even community for the former and a dominated community for the latter. Margalef's index takes account of the number of species present for a given number of individuals. Detailed information on the methods for univariate statistics are presented in Appendix B.10.

The univariate statistics for the adult only data and summary statistics for the full fauna data set are displayed in Table 2.30. The number of individuals were higher (two tailed, two sample unequal variance t-test $p>0.05$) than the Gardline (2023b) survey, along with the number of taxa.

With the exclusion of Station ENV080 (as this sample did not contain any fauna), Shannon-Weiner diversity values ranged from 2.38 at Station ENV110 to 5.44 at Station ENV027 with a mean of 4.53 which is broadly in line with the mean background of 4.36 (n=144) for the CNS (UKOOA, 2001). These values are also within the range recorded in the comparison survey (Gardline, 2023b). Margalef's index across the survey area showed a relatively large range in species richness between stations; Station ENV103 had the highest index (14.55) while Station ENV066 had the lowest index (3.46).

Rarefraction (ES(24) estimated that across 24 individuals, the number of taxa would range from 7 at Station ENV111 to 18 at Station ENV083. This range of values together with Shannon-Weiner and Pielou's evenness were negatively correlated with percentage fines (Spearman's $p<0.01$, Appendix E).

Pielou's evenness suggested the community was overall more even than uneven, with values ranging from 0.40 at Station ENV111 to 0.93 at Station ENV097. This was further supported by Simpson's dominance values which ranged from 0.03 at Station ENV025 to 0.49 at Station ENV110. Samples showed similar values for diversity indices when compared to the (UKOOA, 2001) average for the CNS, indicating that values were as expected for the region.

To quantitatively assess the changes in diversity across the wider region, beta diversity between the current and comparison survey (Gardline, 2023b) was calculated using Jaccard similarity index (Jaccard, 1908). Beta diversity indices measure the change in diversity of taxa from one environment to another by calculating the number of taxa that are different between the two environments. The Jaccard (1908) similarity index ranges from 0 to 1 with 1 indicating 100% similarity in the species composition of the community; however, these values do not reflect relative abundance differences. With a resulting index value of 0.55 this suggests that there was some degree of similarity between the current survey and comparison survey (Gardline, 2023b).

Table 2.30 Faunal Univariate Statistics

Station	No. of Taxa	No. of Individuals	Margalef's Richness (*d*)	Simpson's Dominance (λ)	Pielou's Eveness (*J*)	Shannon Wiener Diversity (H'_{log2})	ES (24)
Adult Fauna							
ENV001	51	596	7.82	0.08	0.76	4.33	13.2
ENV002	54	488	8.56	0.05	0.83	4.80	15.4
ENV003	63	483	10.03	0.06	0.80	4.77	14.8
ENV004	64	486	10.18	0.05	0.83	4.98	15.9
ENV005	66	595	10.17	0.06	0.79	4.80	14.8
ENV006	44	344	7.36	0.07	0.82	4.49	14.2
ENV007	59	556	9.18	0.08	0.77	4.53	13.9
ENV008	61	389	10.06	0.05	0.83	4.93	15.7
ENV009	59	527	9.25	0.06	0.80	4.71	14.8
ENV010	62	558	9.65	0.05	0.81	4.80	15.0
ENV011	52	342	8.74	0.06	0.83	4.72	15.1
ENV012	45	186	8.42	0.07	0.83	4.57	14.6
ENV013	50	171	9.53	0.05	0.86	4.84	15.9
ENV014	47	212	8.59	0.07	0.82	4.55	14.4
ENV015	30	89	6.46	0.08	0.87	4.25	14.2
ENV016	43	156	8.32	0.06	0.85	4.61	15.0
ENV017	40	143	7.86	0.05	0.89	4.73	15.9
ENV018	42	150	8.18	0.04	0.91	4.90	16.8
ENV019	32	125	6.42	0.09	0.85	4.23	13.9
ENV020	33	85	7.20	0.05	0.91	4.61	16.2
ENV021	65	346	10.95	0.04	0.87	5.21	17.0
ENV022	67	274	11.76	0.05	0.85	5.15	16.6
ENV023	53	246	9.45	0.05	0.86	4.95	16.2
ENV024	69	281	12.06	0.04	0.85	5.21	16.9
ENV025	58	184	10.93	0.03	0.91	5.32	18.1
ENV026	57	169	10.92	0.04	0.90	5.24	17.7
ENV027	55	147	10.82	0.04	0.90	5.21	17.8
ENV028	71	266	12.54	0.04	0.88	5.44	17.9
ENV029	59	333	9.99	0.08	0.80	4.70	14.7
ENV030	60	258	10.62	0.06	0.83	4.92	15.9
ENV031	60	237	10.79	0.05	0.86	5.10	16.7
ENV032	51	226	9.22	0.07	0.82	4.65	14.8
ENV033	52	189	9.73	0.06	0.86	4.90	16.2
ENV034	42	127	8.46	0.06	0.88	4.72	15.9
ENV036	36	108	7.48	0.08	0.84	4.34	14.3
ENV037	67	342	11.31	0.06	0.82	4.95	15.5
ENV038	43	209	7.86	0.09	0.81	4.42	14.1
ENV039	67	394	11.04	0.18	0.69	4.16	12.6
ENV040	47	176	8.90	0.14	0.76	4.20	13.4
ENV041	69	377	11.46	0.09	0.76	4.66	14.4
ENV042	38	237	6.77	0.19	0.68	3.59	11.0
ENV043	80	418	13.09	0.13	0.69	4.38	12.8
ENV044	71	919	10.26	0.25	0.57	3.49	10.1
ENV045	49	588	7.53	0.25	0.55	3.08	8.4
ENV046	62	302	10.68	0.13	0.71	4.24	12.7
ENV047	52	343	8.74	0.09	0.77	4.39	13.5
ENV048	62	288	10.77	0.06	0.82	4.90	15.6
ENV049	62	184	11.70	0.05	0.85	5.09	16.5
ENV050	69	518	10.88	0.08	0.77	4.67	14.2
ENV051	64	310	10.98	0.06	0.81	4.88	15.3
ENV053	58	237	10.42	0.05	0.84	4.94	15.9
ENV054	43	295	7.39	0.06	0.84	4.57	14.6
ENV055	51	208	9.37	0.06	0.84	4.75	15.3
ENV056	47	292	8.10	0.08	0.80	4.44	13.7
ENV057	53	271	9.28	0.06	0.82	4.72	15.0
ENV058	44	241	7.84	0.07	0.83	4.51	14.4
ENV059	38	161	7.28	0.12	0.77	4.03	12.6
ENV060	43	313	7.31	0.08	0.81	4.41	13.9
ENV061	48	240	8.58	0.06	0.84	4.67	14.9
ENV062	54	333	9.13	0.05	0.84	4.84	15.4
ENV063	72	324	12.28	0.06	0.84	5.17	16.6
ENV064	68	434	11.03	0.05	0.83	5.06	16.2
ENV065	39	149	7.59	0.05	0.90	4.76	16.1
ENV066	22	55	5.24	0.11	0.86	3.84	13.4
ENV069	12	24	3.46	0.15	0.87	3.12	12.0
ENV071	75	502	11.90	0.05	0.82	5.11	16.1
ENV072	56	581	8.64	0.06	0.81	4.70	14.7
ENV073	57	450	9.17	0.05	0.82	4.80	15.2
ENV074	73	725	10.93	0.06	0.77	4.79	14.6
ENV075	69	693	10.40	0.07	0.75	4.60	13.9
ENV076	78	377	12.98	0.05	0.82	5.17	16.3
ENV077	79	706	11.89	0.05	0.79	4.95	15.2
ENV078	84	723	12.61	0.06	0.78	4.96	15.4
ENV079	55	252	9.77	0.05	0.84	4.83	15.4
ENV081	62	408	10.15	0.08	0.81	4.82	15.2
ENV082	59	216	10.79	0.04	0.87	5.12	16.8
ENV083	59	209	10.86	0.03	0.91	5.34	18.1
ENV084	59	242	10.57	0.09	0.80	4.68	14.9
ENV085	54	183	10.17	0.07	0.83	4.75	15.2
ENV086	51	159	9.86	0.05	0.90	5.10	17.4
ENV087	49	120	10.03	0.04	0.90	5.04	17.3
ENV088	60	178	11.39	0.04	0.90	5.31	17.9
ENV089	60	247	10.71	0.05	0.85	4.99	16.1
ENV090	67	229	12.15	0.05	0.87	5.26	17.2
ENV091	61	250	10.87	0.05	0.84	5.00	16.1
ENV092	45	117	9.24	0.05	0.89	4.91	16.9
ENV093	44	183	8.25	0.07	0.82	4.48	14.1
ENV094	37	117	7.56	0.06	0.88	4.58	15.4
ENV095	62	214	11.37	0.04	0.90	5.34	17.8
ENV096	60	195	11.19	0.06	0.84	4.99	16.3
ENV097	41	91	8.87	0.04	0.93	4.97	17.8

Station		No. of Taxa	No. of Individuals	Margalef's Richness (*d*)	Simpson's Dominance (λ)	Pielou's Eveness (*J*)	Shannon Wiener Diversity (H'_{log2})	ES (24)
ENV098		81	540	12.72	0.08	0.77	4.87	14.9
ENV099		91	511	14.43	0.06	0.80	5.19	16.0
ENV100		63	501	9.97	0.15	0.68	4.09	12.3
ENV101		63	542	9.85	0.21	0.64	3.84	11.7
ENV102		77	372	12.84	0.08	0.79	4.98	15.5
ENV103		98	784	14.55	0.11	0.71	4.67	13.7
ENV104		97	776	14.43	0.09	0.76	5.00	15.3
ENV105		87	916	12.61	0.15	0.65	4.17	12.0
ENV106		51	204	9.40	0.10	0.77	4.38	13.5
ENV107		86	793	12.73	0.32	0.54	3.45	10.1
ENV108		63	716	9.43	0.38	0.49	2.94	8.8
ENV109		50	338	8.41	0.34	0.55	3.09	9.6
ENV110		80	782	11.86	0.24	0.60	3.81	11.3
ENV111		59	926	8.49	0.49	0.40	2.38	7.2
ENV112		52	392	8.54	0.23	0.65	3.71	11.5
ENV113		53	475	8.44	0.28	0.57	3.27	9.6
ENV114		51	610	7.80	0.35	0.53	2.99	9.1
ENV115		40	238	7.13	0.23	0.66	3.49	10.8
ENV116		52	377	8.60	0.19	0.67	3.84	11.8
ENV117		35	235	6.23	0.23	0.67	3.44	10.8
ENV118		51	533	7.96	0.21	0.66	3.76	11.7
ENV119		56	490	8.88	0.12	0.75	4.34	13.4
ENV120		44	498	6.92	0.22	0.65	3.56	10.9
ENV121		44	607	6.71	0.32	0.55	3.03	9.3
ENV122		56	619	8.56	0.20	0.65	3.76	11.5
ENV123		48	513	7.53	0.12	0.74	4.13	12.5
ENV124		46	277	8.00	0.06	0.84	4.65	15.0
ENV125		56	380	9.26	0.05	0.86	4.98	16.1
ENV126		47	296	8.08	0.08	0.80	4.44	13.9
ENV127		44	220	7.97	0.06	0.85	4.64	14.9
ENV128		57	236	10.25	0.05	0.86	4.99	16.2
ENV129		50	230	9.01	0.05	0.86	4.87	15.9
ENV130		53	214	9.69	0.04	0.88	5.05	16.7
ENV131		29	86	6.29	0.12	0.80	3.87	12.5
ENV132		27	92	5.75	0.07	0.87	4.12	13.4
ENV133		22	73	4.89	0.12	0.84	3.73	12.3
This Study	Minimum	12	24	3.46	0.03	0.40	2.38	7.2
	Maximum	98	926	14.55	0.49	0.93	5.44	18.1
	Mean	56	347	9.53	0.10	0.79	4.53	14.4
	±SD	15	204	2.01	0.08	0.10	0.61	2.3
(Gardline, 2023b)	Minimum	30	84	5.60	0.03	0.54	3.02	19.1
	Maximum	64	530	11.10	0.34	0.93	5.28	42.6
	Mean	48	258	8.50	0.13	0.76	4.20	28.3
	±SD	7	90	1.10	0.06	0.08	0.45	4.0
Full Fauna								
This Study	Minimum	12	24	3.46	0.04	0.46	2.77	0.07
	Maximum	104	1125	15.36	0.39	0.93	5.31	39.79
	Mean	59	410	9.89	0.10	0.78	4.51	2.81
	±SD	16	264	2.15	0.07	0.10	0.58	4.94
UKOOA (2001)Mean (CNS)		75	383	NA	0.13	0.72	4.36	NA

Results in blue are from comparison survey data, see Section 1.3
Results in green are from published background data, see Section 1.4

2.12.5 Faunal Community Structure using Multivariate Analyses

In comparison to univariate statistics, multivariate analyses enable subtle trends within the full and adult data sets to be identified. Multivariate analyses were performed on the rationalised data using PRIMERv7 (Plymouth Marine Laboratories). Bray-Curtis similarity matrices were produced based on the fourth root transformed abundance data sets. This transformation was chosen to down-weigh the influence of the numerically dominant taxa.

A SIMPROF permutation test was conducted in conjunction with CLUSTER analysis and the results illustrated on a dendrogram. The Bray-Curtis similarity dendrogram and nMDS plot for the adult only fauna data is present in Figure 2.21.

The CLUSTER analysis and dendrogram for the adult only abundance data (Figure 2.21a) identified 35 SIMPROF groups which comprised nine outliers (SIMPROF *a, b, f, j, o, r, u, z, ac*), eight closely associated pairs (SIMPROF *c, d, e, q, s, t, v, ad*) and eighteen clusters (SIMPROF *g, h, i, k, l, m, n, p, w, x, y, aa, ab, ae, af, ag, ah, ai, ah*). All samples were more dissimilar than similar to one another.

The nMDS ordination (Figure 2.21b) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.14, the nMDS can be considered a useful representation of rank (dis)similarities of the overall pattern observed in the data.

Examination of the adult only abundance sample data set together with results of SIMPER analyses presented in Table 2.31 highlighted the principle contributors to the grouping and separation of the samples This was restricted to explaining the separation where similarity was less than 28% for conciseness. Variation in taxa, namely the top ten ranked taxa were responsible for the sample separation.

Table 2.31 Taxa Influencing Adult Abundance SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	Taxa Influencing Separation
a vs *b,c*, Broad Groups 1 and 2	100	Absence of taxa from SIMPROF *a*
b vs *c*, Broad Groups 1 and 2	90	**Amphiuridae**, ***Galathowenia***, ***Abra***, ***S. armiger***, *Retusa, Spiophanes kroyeri, Harpinia antennaria,* ***S. bombyx*** absent from SIMPROF *b* (*c.* 12.5% of the dissimilarity) Higher abundance of *Diastylis bradyi, Bathyporeia elegans* in SIMPROF *b* (*c*. 3.4% of the dissimilarity) Lower abundance of ***P. jeffreysii*** in SIMPROF *b* (*c*. 1.7% of the dissimilarity)
c vs Broad Group 1 and 2	82	***S. armiger***, *Phoronis, Ophiocten affinis* absent from SIMPROF *c* (*c*. 3.7% of the dissimilarity) Higher abundance of *Lumbrineris aniara agg., Peresiella clymenoides, Levinsenia gracilis* in SIMPROF *c* (*c*. 3.9% of the dissimilarity) Lower abundance of ***P. jeffreysii*****, Amphiuridae,** ***Galathowenia, S. bombyx****, Retusa, S. kroyeri*, Thyasiridae, ***Abra*** in SIMPROF *c* (*c*. 10.6% of the dissimilarity)
Broad Group 1 vs Broad Group 2	74	Absence of ***P. fasciata, H. filiformis*** from Broad Group 1 (*c.* 3.2% of the dissimilarity) Higher abundance of ***S. armiger, S. bombyx****, Echinocyamus pusillus, O. affinis* in Broad Group 1 (*c.* 4.6% of the dissimilarity) Lower abundance of ***P. jeffreysii****, Pholoe assimilis, Praxillella affinis* in Broad Group 1 (*c.* 4.2% of the dissimilarity)

Taxa in **bold** are included within the top ten ranked taxa (adult abundance data)

There was some rearranging of the dendrogram of the stations in terms of biomass (Figure 2.22) compared to clustering identified when based on abundance. The Morven ECR adult biomass data was similarly analysed with CLUSTER analysis and identified 30 SIMPROF groups comprising 7 outliers (SIMPROF *a, b, g, n, p, v* and *z*), 6 closely related pairs (SIMPROF *j, m, r, u, w* and *ad*) and 17 clusters (SIMPROF *c, d, e, f, h, i, k, l, o, q, s, t, x, y, aa, ab* and *ac*). Like grouping by abundance all samples were more dissimilar than similar to one another.

The nMDS ordinations of the Morven ECR adult biomass data (Figure 2.22a) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.14 the ordination can be considered a useful two-dimensional representation of rank dis(similariites) and the overall pattern in the data set.

Examination of the Morven adult only biomass data set together with results of SIMPER analysis presented in Table 2.32, highlighted the principle contributors to the groupings and separation of the samples. Much of the groupings were due to differing proportions resulting from the top ten dominant taxa in terms of biomass.

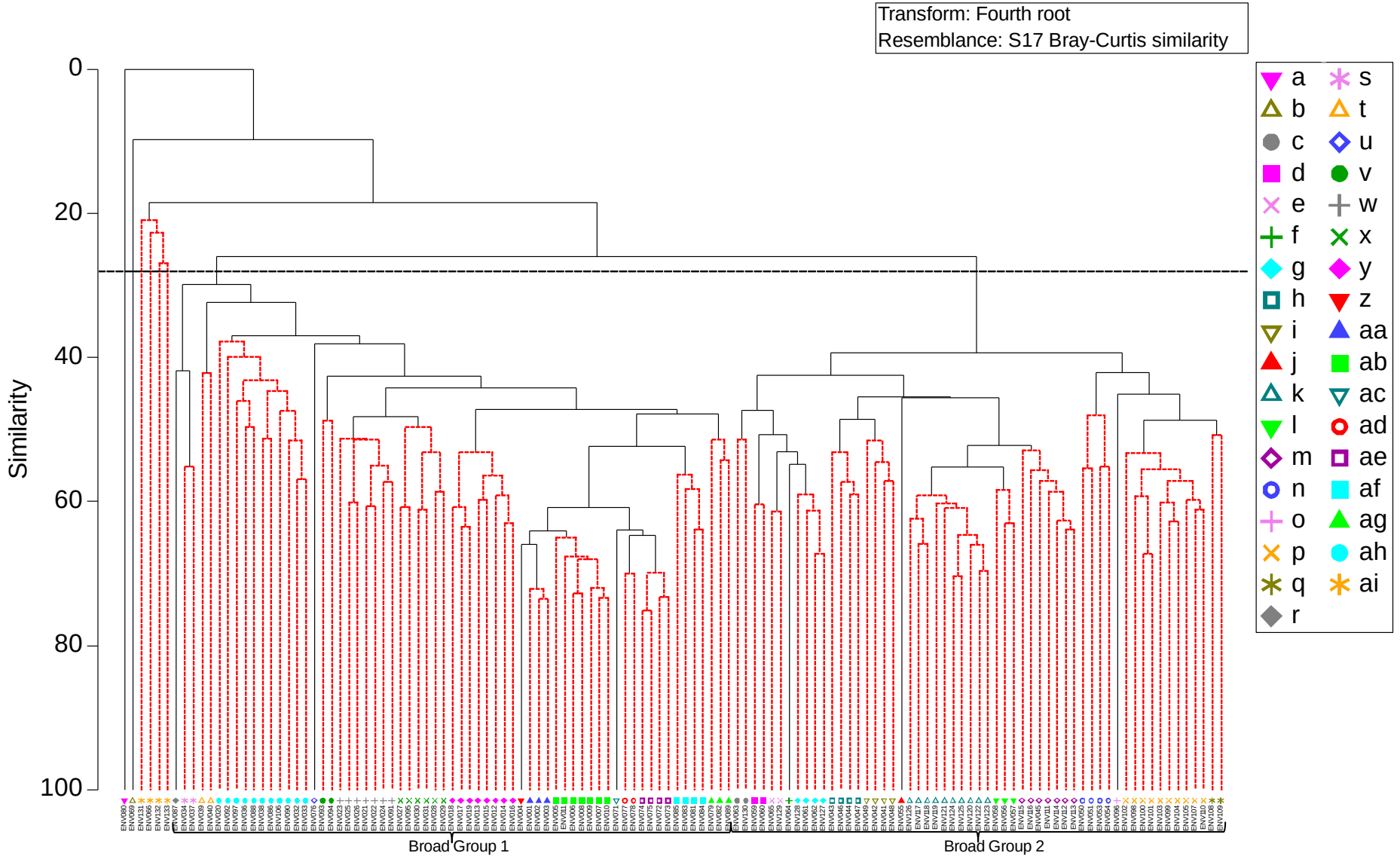
Table 2.32 Taxa Influencing Adult Biomass SIMPROF Variation

SIMPROF	Bray-Curtis Dissimilarity (%)	Taxa Influencing Separation
a vs *b, ad, u*, Broad Group 1 and 2	100	Absence of biomass in SIMPROF *a*
b vs *ad, u*, Broad Group 1 and 2	92	Biomass recorded of *D. bradyi* in SIMPROF *b* (*c.* 2.9% of the dissimilarity) Absence of biomass for ***S. armiger***, Amphiuridae, ***D. glaucus***, *Galathowenia* and ***A. filiformis*** in SIMPROF *b* (*c.* 8.2% of the dissimilarity)
ad vs *u*, Broad Group 1 and 2	87	Higher biomass of *Dosinia exoleta* and *L. aniara agg*. in SIMPROF *ad* (*c.* 5.8% of the dissimilarity) Absence of biomass for ***S. armiger***, ***D. glaucus***, ***P. jeffreysii***, *S. kroyeri* and ***A. chiajei*** in SIMPROF *ad* (*c.* 7.4% of the dissimilarity) Lower biomass of ***A. filiformis*** in SIMPROF *ad* (*c.* 1.5% of the dissimilarity)
u vs Broad Group 1 and 2	80	Higher biomass of ***G. unicornis***, *L. aniara agg.*, ***N. hombergii***, *Thyasira biplicata* and *N. assimilis* in SIMPROF *u* (*c.* 11.5% of the dissimilarity) Absence of biomass for *S. armiger, Galathowenia,* ***A. filiformis*** and ***A. chiajei*** from SIMPROF *u* (*c*. 5.6% of the dissimilarity)
Broad Group 1 vs Broad Group 2	77	Higher biomass of ***A. chiajei***, ***G. unicornis***, *Heteromastus filiformis,* ***P. affinis***, *Abyssoninoe hibernica* and *Abra nitida* in Broad Group 1 (*c*. 10.8 of the dissimilarity) Lower biomass of ***S. armiger*** and ***S. limicola*** in Broad Group 1 (*c*. 2.9% of the dissimilarity)

Taxa in **bold** are included within the top ten ranked taxa (adult biomass data)

Figure 2.21 Multivariate Analysis of Faunal Abundance Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

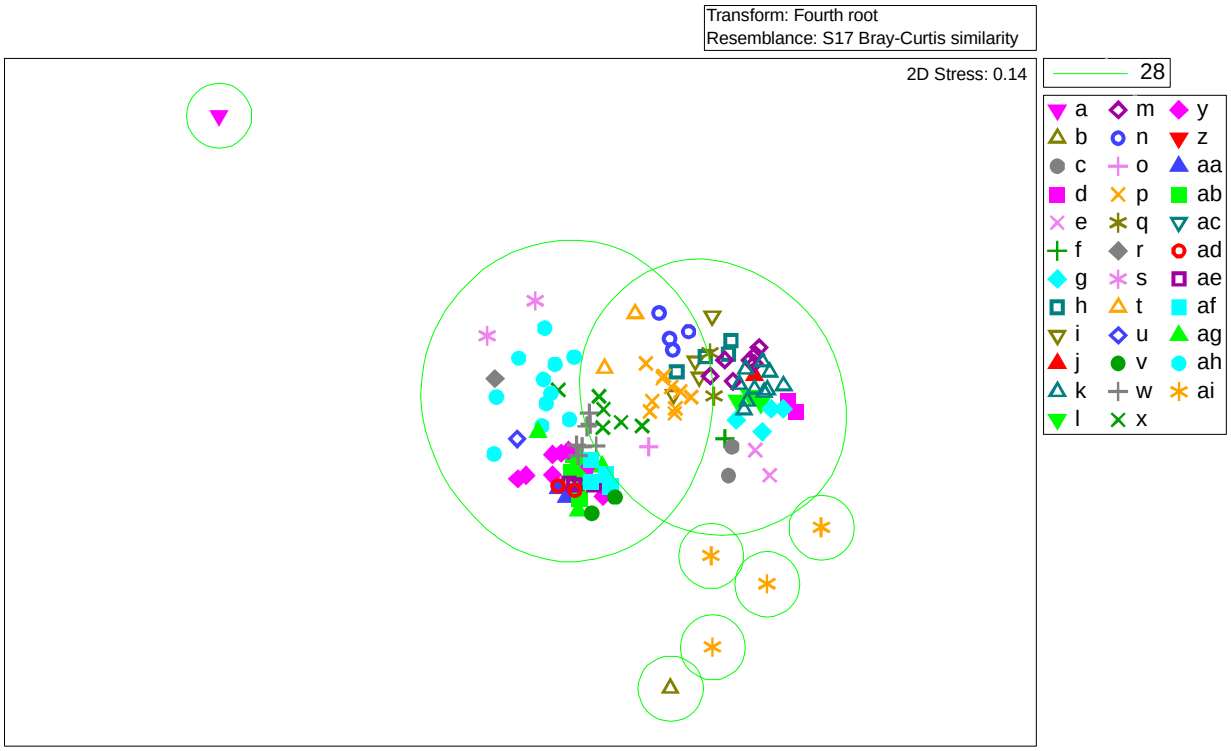
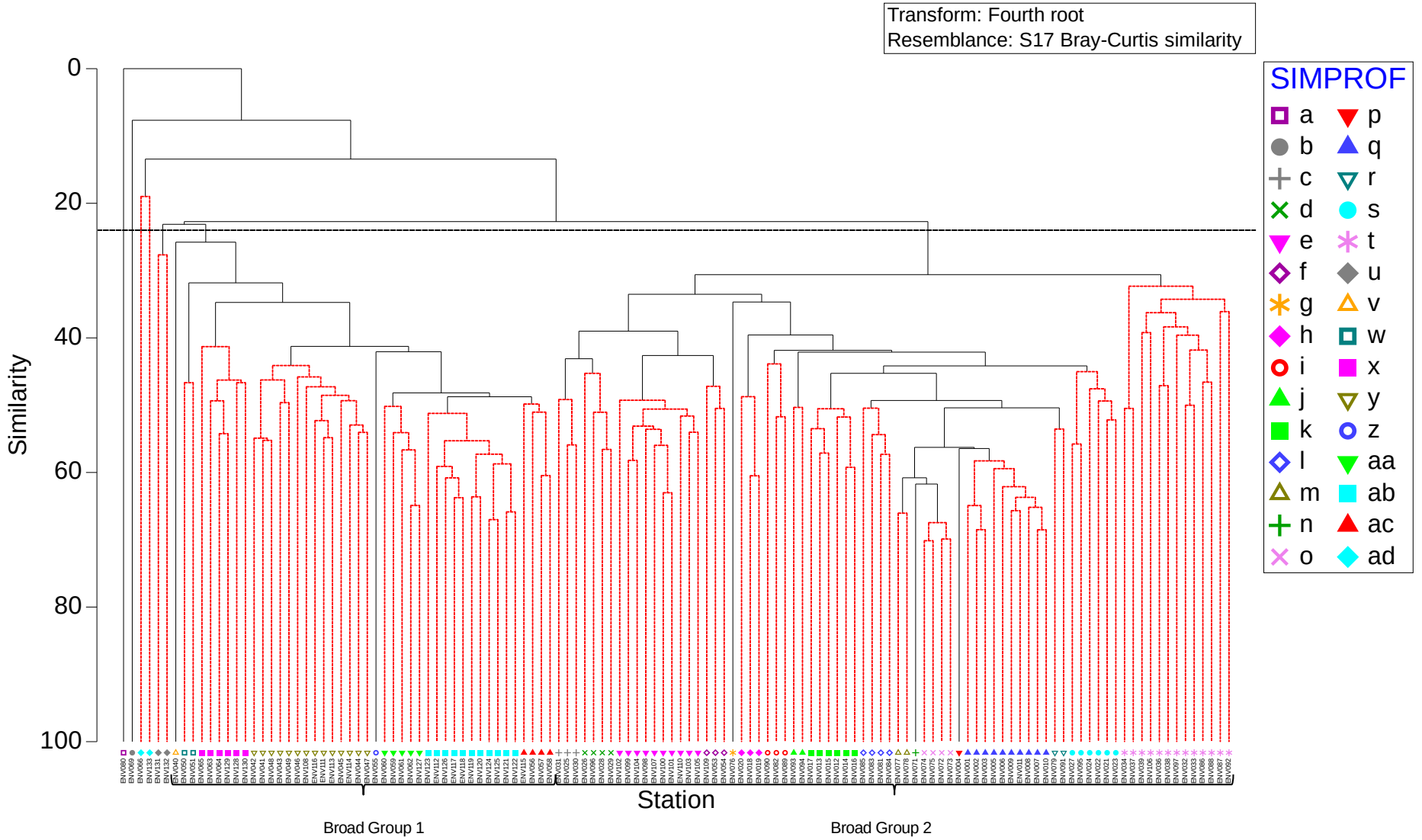
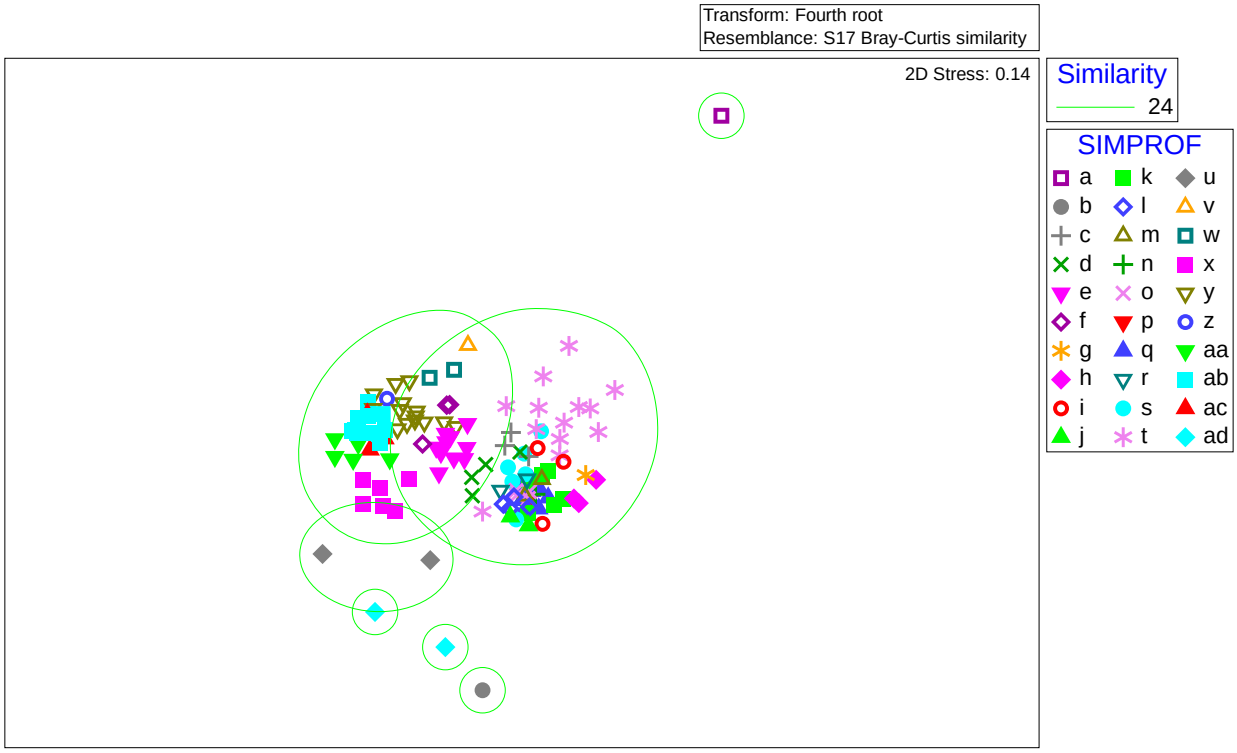


Figure 2.22 Multivariate Analysis of Faunal Biomass Data

a) Bray-Curtis Similarity Dendrogram



b) MDS Ordination

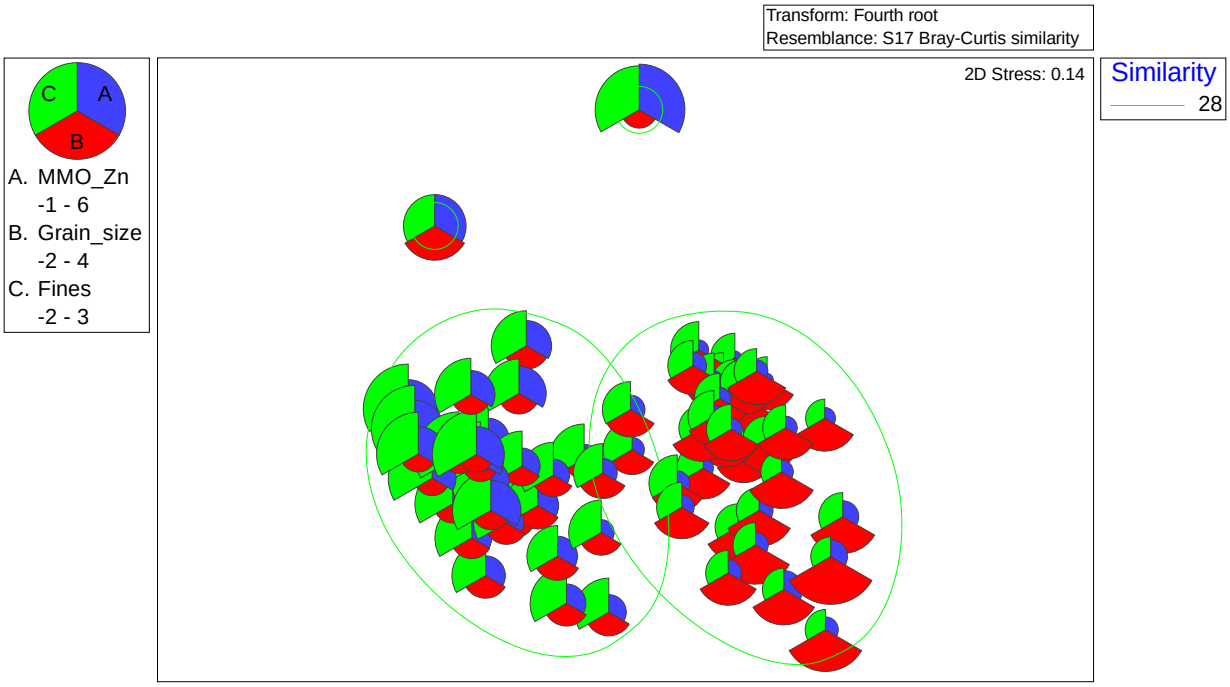


2.12.6 Multivariate Comparison of Faunal and Physico-Chemical Data Sets

The macrofauna community adult dataset was compared to the physico-chemical data in PRIMER v7 to determine if any patterns in the faunal community correlated with the environmental factors assessed. A BIO-ENV test was run on a subset of the adult only abundance dataset for stations which also acquired MMO physico-chem samples.

The BIO-ENV analysis identified a significant 81% correlation between the adult fauna multivariate pattern with three physico-chemical variables: Zn concentration, grain size and percentage of fines (Figure 2.23). This suggests that across the Morven ECR survey area, shifts in the faunal community reflect variations in the physical sediment characteristics and associated sediment metal concentrations.

Figure 2.23 Adult Abundance Macrofauna nMDS Overlayed with Physico-Chemical Data



2.13 EUNIS Habitat Classification

For stations with PSA and macrofauna sampling, results of the EUNIS habitat classification EEA (2019) based on PSA and macrofaunal data are summarised below and detailed in full in Appendix I. Four stations (Stations ENV035, ENV067A, ENV068 and ENV070) were investigated with seabed imagery but not sampled for macrofauna or PSA. These stations have been designated EUNIS habitat types based on seabed imagery observations only. Station ENV052 was investigated with seabed imagery, sampled for PSA but not sampled for macrofauna. This station has been designated EUNIS habitat types based on seabed imagery observations and PSA results.

Sixty-six stations, which were predominantly towards the north of the ECR, were classified as the EUNIS habitat type code as follows:

- EUNIS broad habitat MD5: Offshore circalittoral sand
- EUNIS main habitat MD52: Atlantic offshore circalittoral sand
- EUNIS biotope complex MD521: Faunal communities in Atlantic offshore circalittoral sand. This biotope is described as “offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands…

characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms" by EEA (2019)

Fifty-six stations were classified as the EUNIS habitat type code as follows:

- EUNIS broad habitat MD6: Offshore circalittoral mud
- EUNIS main habitat MD62: Atlantic offshore circalittoral mud
- EUNIS biotype complex MD621: Faunal communities in Atlantic offshore circalittoral mud
- EUNIS biotope MD6218: *Paramphinome jeffreysii, Thyasira spp. and Amphiura filiformis* in Atlantic offshore circalittoral sandy mud. This biotope is described as "offshore cohesive sandy mud communities characterised by the polychaete *P. jeffreysii*, bivalves such as *Thyasira equalis* and *Thyasira gouldi* and the brittlestar *A. filiformis*" by EEA (2019)

Four stations were classified as the EUNIS habitat type code as follows:

- EUNIS broad habitat MD6: Offshore circalittoral mud
- EUNIS main habitat MD62: Atlantic offshore circalittoral mud
- EUNIS biotype complex MD621: Faunal communities in Atlantic offshore circalittoral mud
- EUNIS biotope MD6217: *Levinsenia gracilis* and *Heteromastus filifirmis* in Atlantic offshore circalittoral mud and sandy mud. This biotope is described as "offshore mud and sand mud … characterised by polychaetes *L. gracilis* and *H. filiformis*" by EEA (2019)

One station (ENV069) showed a mismatch between observed sediments and PSA results. For this report, only PSA results and macrofauna results are considered. As a result, the station was classified as the EUNIS habitat type code as follows:

- EUNIS broad habitat MC5: Circalittoral sand
- EUNIS main habitat MC52: Atlantic circalittoral sand
- EUNIS biotope complex MC521: Faunal communities in Atlantic circalittoral sand. This biotope is described as "sand communities … in depths of over 15-20 m … characterised by a wide range of echinoderms…, polychaetes and bivalves" by EEA (2019)

One station (ENV080) recorded zero fauna in the macrofauna sample and as such could only be classified as a Level 3 EUNIS habitat type code:

- EUNIS broad habitat MD5: Offshore circalittoral sand
- EUNIS main habitat MD52: Atlantic offshore circalittoral sand. This biotope is described as "Atlantic offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands" by EEA (2019)

The following stations did not acquire macrofaunal stations were not sampled for macrofauna and therefore were only classified to a Level 3 EUNIS habitat type code.

Stations ENV035 and ENV052 were classified as:

- EUNIS broad habitat MD4: Offshore circalittoral mixed sediment
- EUNIS main habitat MD42: Atlantic offshore circalittoral mixed sediment. This biotope is described as being "Atlantic offshore (deep) circalittoral habitats with slightly muddy mixed gravelly sand and stones or shell" by EEA (2019).

Stations ENV067A, ENV068 and ENV070) were classified as:

- EUNIS broad habitat MC4: Circalittoral mixed sediment
- EUNIS main habitat MC42: Atlantic circalittoral mixed sediment. This biotope is described as "Mixed (heterogeneous) sediment habitats in the circalittoral zone (generally below 15-20m) including well

mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles" by EEA (2019).

3 BIBLIOGRAPHY

Allison, S.D. & Martiny, J.B.H., 2008. Resistance, resilience, and redundancy in microbial communities. *Proceedings of the National Academy of Sciences of the United States of America*, [PDF] 12 August. pp.11512-19. Available at: https://www.pnas.org/doi/epdf/10.1073/pnas.0801925105 [Accessed 1st Feb 2023].

Bence, A.E., Kvenvolden, K.A. & Kennicutt, M.C., 1996. Organic geochemistry applied to environmental assessments of Prince William Sound, Alaska, after the Exon Valdez oil spill. *Organic Geochemistry*, 24, pp.7-42.

Berthou, F. & Friocourt, M.P., 1981. Gas chromatographic separation of diastereomeric isoprenoids as molecular markers of oil pollution. *Journal of Chromatography*, 219, pp.393-402.

Blott, S.J., 2010. *A Grain Size Distribution and Statistics Package for the Analysis of Unconsolidated Sediments by Sieving or Laser Granulometer, GRADISTAT V8.0*. Berkshire, UK: Kenneth Pye Associates Ltd.

Bouloubassi, I., Fillaux, J. & Saliot, A., 2001. Hydrocarbons in surface sediments from the Changjiang (Yangtze River) Estuary, East China Sea. *Marine Pollution Bulletin*, pp.1335-46.

bp, 2023. *Morven – Export Cable Route - 2023 Integrated Survey – Scope of Work*. Rev 3. Sudbury on Thames: bp Solutions - Survey Team.

Breuer, E., Stevenson, A.G., Howe, A.G., Carroll, J. & Shimmield, G.B., 2004. Drill cutting accumulation in the Northern and Central North Sea: a review of environmental interactions and chemical fate. *Marine Pollution Bulletin*, 48, pp.12-25.

Bryan, G.W. & Langston, W.J., 1992. Bioavailability, accumulation and effects of heavy metals in sediments with special reference to United Kingdom estuaries: a review. *Environmental Pollution*, 76, pp.89-131.

BSI, 2005. *Water quality – Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna*. BS EN ISO 16665:2005. British Standards Institution.

Buchman, M.F., 2008. *NOAA Screening Quick Reference Tables*. NOAA NOAA OR&R Report 08-1. Seattle WA: NOAA Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.

Clarke, K.R. & Warwick, R.M., 2006. *Change in marine communities: an approach to statistical analysis and interpretation*. 2nd ed. Plymouth, UK: PRIMER-E, Plymouth Marine Laboratory.

Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northern, K.O. & Reker, J.B., 2004. *The Marine Habitat Classification for Britain and Ireland Version 04.05. JNCC, Peterborough ISBN 1 861 07561 8 (internet version)*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1027/04_05_introduction.pdf [Accessed 05 Nov 2021].

Davies, J.M., Andy, J.M., Blackman, R.A., Blanchard, J.R., Ferbrache, J.E., Moore, D.C., Somerville, H.J., Whitehead, A. & Wilkinson, T., 1984. Environmental effects of the use of oil-based drilling muds in the North Sea. *Marine Polution Bulletin*, 15(10), pp.363-70.

Douglas, A.G. & Eglinton, G., 1966. Barium in the marine environment: potential indicator of drilling contamination. In *Research on environmental fate and effects of drilling fluids and cuttings.* Lake Beuna Vista, Florida, 1966.

Douglas, G., Hall, P.B., Bowler, B. & Williams, P.F.V., 1981. Analysis of hydrocarbons in sediments as indicators of pollution. *Proceedings of the Royal Society of Edinburgh Section B (Biology)*, 80B, pp.113-34.

DTI, 1992. *Conditions for the Discharge of Oil Contaminated Cuttings Resulting from Offshore Drilling Operations*.

EEA, 2019. *EUNIS habitat type hierarchical view 2021/2022*. [Online] Available at: https://eunis.eea.europa.eu/habitats.jsp [Accessed 6th Feb 2023].

Eleftheriou, A. & Basford, D.J., 1989. The macrobenthic infauna of the offshore northern North Sea. *Journal of the Marine Biological Association of the UK*, (69), pp.123-43.

ESGOSS, 1994. *The Environmental Impact of the Wreck of the Braer. The Ecological Steering Group on the Oil Spill in Shetland.* Edinburgh: The Scottish Office.

Farrington, J.W. & Tripp, B.W., 1977. Hydrocarbons in western North Atlantic surface sediments. *Geochimica et Cosmochimica Acta*, 41, pp.1627-41.

Fisner, B., Taniguchi, S., Moreira, F., Bicego, M.C. & Turra, A., 2013. Polycyclic aromatic hydrocarbons (PAHs) in plastic pellets; Variability in the concentration and composition at different sediment depths in a sandy beach. *Marine Pollution Bulletin*, 70, pp.219-26.

Folk, R.L., 1954. The distinction between grain size and mineral composition in sedimentary rock nomenclature. *Journal of Geology*, 62, pp.344-59.

Folk, R.L. & Ward, W.C., 1957. Brazos river bar: a study of the significance of grain size parameters. *Journal of Sedimentary Petrology*, 27, pp.3-26.

Frühe, L., Dully, V., Forster, D., Keeley, N.B., Laroche, O., Pochon, X., Robinson, S., Wilding, T.A. & Thorsten, S., 2021. Global Trends of Benthic Bacterial Diversity and Community Composition Along Organic Enrichment Gradients of Salmon Farms. *Frontiers in Microbiology*, [PDF].29 Apr, p.17. Available at: https://www.readcube.com/articles/10.3389/fmicb.2021.637811 [Accessed 6th Feb 2023].

Gage, J.D., 2001. Deep-sea benthic community and environmental impact assessment at the Atlantic Frontier. *Continental Shelf Research*, [PDF]. May, 21(8), pp.957-86. Available at: https://www.sciencedirect.com/science/article/abs/pii/S0278434300001205 [Accessed 30th Jan 2023].

Gage, J.D. & Tyler, P.A., 1992. *Deep-Sea Biology: A Natural History of Organisms at the Deep-Sea Floor*. Cambridge: Cambridge University Press.

Gardline, 2018. *Treatment of North Sea Soft-Sediment Faunal Data sets. August 2018*. Great Yarmouth: Gardline Ltd.

Gardline, 2023a. *Morven Export Cable Route Benthic Scoping Document*. Final. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gardline, 2023b. *Moven Offshore Wind Farm Integrated Survey UKCS Quads 26 and 27 Environmental Baseline Survey Report*. Final. Gardline Ref: 11779. Great Yarmouth, UK: Gardline Limited.

Gardline, 2024a. *Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume I: Field Operations and Preliminary Results*. Draft. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gardline, 2024b. *Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume II: Measured and Derived Geotechnical Parameters and Final Results*. Draft. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gardline, Pending. *Morven ECR Habitat Assessment Report*. Draft. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gerrard, S., Grant, A., Marsh, R. & London, C., 1999. *Drill cuttings piles in the North Sea: Management options during platform decommissioning.* Report No 31. University of East Anglia.

Gibson, R.N., Atkinson, R.J.A. & Gordon, J.D.M., 2005. *Oceanography and Marine Biology: An Annual Review*. Florida, USA: CRC Press.

Horton, D.J., Theis, K.R., Uzarski, D.G. & Learman, D.R., 2019. Microbial community structure and microbial networks correspond to nutrient gradients within coastal wetlands of the Laurentian Great Lakes. *FEMS Microbiology Ecology*, [PDF].11 Mar, 95(4), p.34. Available at: https://academic.oup.com/femsec/article/95/4/fiz033/5374519 [Accessed 6th Feb 2023].

IUCN, 2024. *IUCN Red List of Threatened Species*. [Online] (2023-1) Available at: http://www.iucnredlist.org/ [Accessed 24 January 2024].

Jaccard, P., 1908. Nouvelles Recherches Sur la Distribution Florale. *Bulletin de la Societe Vaudoise des Sciences Naturelles*, 44, pp.223-70.

Jeng, W.-L., 2006. Higher plant *n*-alkane average chain length as an indicator of petrogenic hydrocarbon contamination in marine sediments. *Marine Chemistry*, [PDF]. 102, pp.242-51. Available at: http://ntur.lib.ntu.edu.tw/bitstream/246246/173858/1/29.pdf [Accessed 27th Jan 2023].

Kingston, P.F., 1992. Impact of offshore oil production installations on the benthos of the North Sea. *ICES Journal of Marine Science*, [PDF]. 49(1), pp.45-53. Available at: https://academic.oup.com/icesjms/article/49/1/45/732779 [Accessed 27th Jan 2023].

Kjeilen-Eilertsen, G., Westerlund, S., Bamber, S., Tandber, A.H., Myhre, L.P. & Tvedten, O., 2004. *UKOOA phase III- Characterisation of Beryl, Brent A, Brent S, Clyde and Miller cuttings piles through field work, laboratory studies and chemical analysis*. Final Report – 2004-197.

Krumbein, W.C. & Pettijohn, F.J., 1938. *Manual of Sedimentary Petrography.* New York: Appleton-Century-Crofts.

Laflamme, R.E. & Hites, R.A., 1978. The global distribution of polycyclic aromatic hydrocarbons in recent sediments. *Geochim Cosmochim Acta*, 42, pp.289-303.

Larsen, P.F., Gadbois, D.F. & Johnson, A.C., 1986. Polycyclic aromatic hydrocarbons in Gulf of Maine sediments: distributions and mode of transport. *Marine Environmental Research,* 18, pp.231-44.

Leahy, J.G. & Colwell, R.R., 1990. Microbial degradation of hydrocarbons in then environment. *Microbiological Review*, 54, pp.305-15.

Lemke, M.J., Brown, B.J. & Leff, L.G., 1997. The Response of Three Bacterial Populations to Pollution in a Stream. *Microbial Ecology*, 34, pp.224-31.

Long, E.R., MacDonald, D.D., Smith, S.L. & Calder, F.D., 1995. Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environmental Management*, 19, pp.81-97.

Luoma, S.N. & Davis, J.A., 1983. Requirements for modelling trace metal partitioning in oxidised estuarine sediments. *Marine Chemistry*, 12, pp.159-81.

Lyons, W.C. & Plisga, G.J., 2005. *Standard Handbook of Petroleum and Natural Gas Engineering*. Oxford, UK: Gulf Professional Publishing.

Mair, J.M., Matheson, I. & Appelbee, J.F., 1987. Offshore Macrobenthic Recovery in the Murchison Field Following the Termination of Drill-Cuttings Discharges. *Marine Pollution Bulletin*, 18(12), pp.628-34.

Mason, C., 2016. *NMBAQC's Best Practice Guidance Particle Size Analysis (PSA) for Supporting Biological Analysis*. [Online] Available at: http://www.nmbaqcs.org/media/1255/psa-guidance_update18012016.pdf [Accessed 09 November 2018].

Mayer, L.M., 1994. Surface area control on organic carbon accumulation in continental shelf sediments. *Geochimica et Cosmochimica Acta*, 58, pp.1271-84.

McDougall, J., 2000. Section 5.1. The significance of hydrocarbons in surficial sediments from the Altantic Margin regions. In *Hydrocarbons in environmental surveys of the seafloor of the UK Atlantic Margin*. Daventry, Northants NN11 5EA, UK.: Geotek Limited ISBN 09538399-0-7.

MMO, 2023. *Marine Licensing: sediment analysis and sample plans*. [Online] Available at: https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans###Suitability%20of%20material [Accessed 05 Feb 2024].

Muniz, P., Danulat, E., Yannicelli, B., García-Alonso, J., Medina, G. & Bícego, M.C., 2004. Assessment of contamination by heavy metals and petroleum hydrocarbons in sediments of Montevideo Harbour (Uruguay). *Environment International*, 29, pp.1019-28.

NatureScot, 2020. *Dolphins, whales and porpoises*. [Online] Available at: https://www.nature.scot/plants-animals-and-fungi/mammals/marine-mammals/dolphins-whales-and-porpoises [Accessed 6th Feb 2023].

Neff, J.M., 1979. *Polycyclic aromatic hydrocarbons in the aquatic environment. Sources, fates and environmental effects*. Essex, England: Applied Science Publishers Ltd.

Neff, J.M., 2004. *Bioaccumulation in Marine Organisms: Effect of Contaminants from Oil Well Produced Water*. Oxford, UK: Elsevier.

Neff, J.M., 2005. *Composition, environmental fates, and biological effect of water based drilling muds and cuttings discharged to the marine environment. A synthesis and annotated bibliography*. Petroleum Environmental Research Forum (PERF) and American Petroleum Institute.

NSTA, 2023. *North Sea Transition Authority Open Data*. [Online] Available at: https://www.nstauthority.co.uk/data-centre/nsta-open-data/ [Accessed 09 Dec 2022].

OSPAR, 2005. *Agreement on background concentrations for contaminants in seawater, biota and sediment*. [Online] (OSPAR agreement 2005-6.) Available at: https://www.ospar.org/convention/agreements?q=OSPA&t=32281&a=7455.

OSPAR, 2008. *OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR Reference Number: 2008-6)*. [Online] Available at: http://www.ospar.org/documents/DBASE/DECRECS/Agreements/08-06e_OSPAR List species and habitats.doc.

OSPAR, 2009a. *Background Document for Ocean quahog arctica islandica*. [Online] Available at: https://www.ospar.org/documents?v=7171 [Accessed 05 Nov 2021].

OSPAR, 2009b. *CEMP. Background Document on CEMP Assessment Criteria for the QSR 2010 (Publication 461)*. [pdf] Available at: https://www.ospar.org/work-areas/cross-cutting-issues/cemp [Accessed 30 January 2018].

OSPAR, 2010. *Background Document for Seapen and Burrowing megafauna Communities*. [pdf] Available at: https://www.ospar.org/documents?v=7261 [Accessed 27 July 2021].

OSPAR, 2013. *Levels and trends in marine contaminants and their biological effects - CEMP Assessment Report 2012*. [pdf] Available at: https://www.ospar.org/ospar-data/p00596_assessment_report_2012_cemp.pdf [Accessed 2 April 2024].

OSPAR, 2015. *CEMP - JAMP Guidelines for Monitoring Contaminants in Sediments (Agreement 2002-16). 2015 Update.* [Online] Available at: http://www.ospar.org/work-areas/cross-cutting-issues/cemp [Accessed 2nd December 2016].

OSPAR, 2017. *Decisions, Recommendations & Agreements*. [Document] (OSPAR Guidelines for Monitoring the Environmental Impact of Offshore Oil and Gas Activites Agreement 2017-02) Available at: https://www.ospar.org/convention/agreements?q=monitoring&t=32281&a=7458&s= [Accessed 29 January 2018].

Page, D.S., Boehm, G.S., Douglas, G.S., Bence, A.E., Burns, W.A. & Manciewicz, P.J., 1998. Petroleum sources in the western Gulf of Alaska/Shelikoff Straight area. *Marine Pollution Bulletin*, 36, pp.1004-12.

Parry, M.E.V., 2019. *Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Revised 2019)*. JNCC Report No. 546. ISSN 0963-8091. Peterborough, UK: JNCC.

Rees, H.L., Eggeleton, J.D., Rachor, E. & Vanden Bergh, E., 2007. Structure and dynamics of the North Sea benthos. *ICES Cooperative Research Report*, 288, p.258.

Rygg, B., 1985. Distribution of Species along Pollution induced Diversity Gradients in Benthic Communities in Norwegian Fjords. *Marine Pollution Bulletin*, 16, pp.469-74.

Shannon, C.E. & Weaver, W., 1949. *The mathematical theory of communication*. Urbana: University of Illinois Press.

Steinhauer, M.S. & Boehm, P.D., 1992. The composition and distribution of saturated and aromatic hydrocarbons in near shore sediments, river sediments, and coastal peat of the Alaskan Beaufort Sea: implications for detecting anthropogenic hydrocarbon inputs. *Marine Environmental Research*, 33, pp.223-53.

Tran, K., Yu, C. & Zeng, E., 1995. *Petrogenic and Biogenic Sources of N-alkanes off San Diego, California.* [Online] Available at: ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/1994_95AnnualReport/ar05.pdf [Accessed 03 March 2010].

Udden, J.A., 1914. Mechanical composition of clastic sediments. *Bulletin of the Geological Society of America*, 25, pp.655-744.

Ugland, K.I., Gray, J.S. & Ellingsen, K.E., 2003. The species-accumulation curve and estimation of species richness. *Journal of Animal Ecology*, 72, pp.888-97.

UKOOA, 2001. *An Analysis of U.K. Offshore Oil and Gas Environmental Surveys 1975-95*. Heriot-University.

UKOOA, 2002. *UKOOA Drill Cuttings Initiative Final Report, February 2002*. UKOOA Drill Cuttings Initiative Executive Committee.

UKOOA, 2005. *UKOOAJIP 2004 Drill Cuttings Initiative Phase III. Final Report*. 20132900. UKOOA.

US EPA, 2008. *Introduction to the Clean Water Act - Glossary*. [Online] Available at: http://www.epa.gov/owow/watershed/wacademy/acad2000/pdf/IntrotoCWA.pdf [Accessed 03 March 2010].

Wang, Z. & Fingas, M.F., 2005. Oil and Petroleum Product Fingerprinting Analysis by Gas Chromatographic Techniques. In L.M.L. Nollet, ed. *Chromatographic Analysis of the Environment*. 3rd ed. CRC Press. pp.1027-101.

Warwick, R.M. & Clarke, K.R., 1991. A comparison of some methods for analysing changes in benthic community structure. *Journal of the Marine Biological Association of the U.K.*, 71, pp.225-44.

Wentworth, C.K., 1922. A scale of grade and class terms for clastic sediments. *Journal of geology*, (30), pp.377-92.

Williams, K.P., Gillespie, J.J., Sobral, B.W.S., Nordburg, E.K., Snyder, E.E., Shallom, J.M. & Dickerson, A.W., 2010. Phylogeny of Gammaproteobacteria. *Journal of Bacteriology*, [PDF].1st May, 192(9), pp.2305-14. Available at: https://journals.asm.org/doi/epub/10.1128/JB.01480-09 [Accessed 2nd Feb 2023].

Youngblood, W.W. & Blumer, M., 1975. Polycyclic aromatic hydrocarbons in the environment: homologues series in soils and recent marine sediments. *Geochim Cosmochim Acta*, 39, pp.1303-14.

Yunker, M.B., Macdonald, R.W., Vingarzan, R., Mitchell, R.H., Goyette, D. & Sylvestre, S., 2002. PAHs in the Fraser River basin; a critical appraisal of PAH ratios as indicators of PAH source and composition. *Organic Geochemistry*, 33(1), pp.489-515.

APPENDICES

APPENDIX A FIELD SAMPLING LOGS

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Jul-2023	22:03:25	1	BP23MVEXP-ENV-DC-001			Camera	67	630058	6294402	630092	6294363	-34	39	52	139		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
04-Jul-2023	22:04:39	2	BP23MVEXP-ENV-DC-001			Camera	67	630058	6294402	630092	6294363	-34	39	52	139		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
04-Jul-2023	22:05:41	3	BP23MVEXP-ENV-DC-001			Camera	67	630059	6294402	630092	6294363	-33	39	52	140		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
04-Jul-2023	22:06:07	4	BP23MVEXP-ENV-DC-001			Camera	67	630060	6294400	630092	6294363	-32	37	49	139		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
04-Jul-2023	22:07:11	5	BP23MVEXP-ENV-DC-001			Camera	67	630067	6294393	630092	6294363	-25	30	39	141		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
04-Jul-2023	22:07:55	6	BP23MVEXP-ENV-DC-001			Camera	67	630072	6294388	630092	6294363	-20	25	32	141		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
04-Jul-2023	22:09:04	7	BP23MVEXP-ENV-DC-001			Camera	67	630079	6294380	630092	6294363	-13	17	21	143		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
04-Jul-2023	22:09:33	8	BP23MVEXP-ENV-DC-001			Camera	67	630082	6294376	630092	6294363	-10	13	17	143		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
04-Jul-2023	22:09:44	9	BP23MVEXP-ENV-DC-001			Camera	67	630083	6294375	630092	6294363	-9	12	15	144		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
04-Jul-2023	22:09:53	10	BP23MVEXP-ENV-DC-001			Camera	67	630084	6294375	630092	6294363	-8	12	14	145		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
04-Jul-2023	22:10:16	11	BP23MVEXP-ENV-DC-001			Camera	67	630086	6294371	630092	6294363	-6	8	10	147		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
04-Jul-2023	22:10:57	12	BP23MVEXP-ENV-DC-001			Camera	67	630091	6294367	630092	6294363	-1	4	4	161		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
04-Jul-2023	22:11:15	13	BP23MVEXP-ENV-DC-001			Camera	67	630093	6294365	630092	6294363	1	2	2	-158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
04-Jul-2023	22:11:28	14	BP23MVEXP-ENV-DC-001			Camera	67	630094	6294363	630092	6294363	2	0	2	-93		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
04-Jul-2023	22:11:36	15	BP23MVEXP-ENV-DC-001			Camera	67	630095	6294362	630092	6294363	3	-1	3	-75		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
04-Jul-2023	22:11:56	16	BP23MVEXP-ENV-DC-001			Camera	67	630097	6294360	630092	6294363	5	-3	6	-64		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
04-Jul-2023	22:12:50	17	BP23MVEXP-ENV-DC-001			Camera	67	630103	6294354	630092	6294363	11	-9	14	-50		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
04-Jul-2023	22:13:11	18	BP23MVEXP-ENV-DC-001			Camera	67	630105	6294352	630092	6294363	13	-11	17	-48		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
04-Jul-2023	22:13:38	19	BP23MVEXP-ENV-DC-001			Camera	67	630107	6294348	630092	6294363	15	-15	21	-46		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
04-Jul-2023	22:14:04	20	BP23MVEXP-ENV-DC-001			Camera	67	630110	6294345	630092	6294363	18	-18	25	-45		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
04-Jul-2023	22:14:33	21	BP23MVEXP-ENV-DC-001			Camera	67	630113	6294342	630092	6294363	21	-21	30	-45		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
04-Jul-2023	22:14:50	22	BP23MVEXP-ENV-DC-001			Camera	67	630115	6294340	630092	6294363	23	-23	33	-45		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
04-Jul-2023	22:15:10	23	BP23MVEXP-ENV-DC-001			Camera	67	630117	6294337	630092	6294363	25	-26	36	-44		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
04-Jul-2023	22:15:19	24	BP23MVEXP-ENV-DC-001			Camera	67	630118	6294336	630092	6294363	26	-27	37	-44		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
04-Jul-2023	22:16:03	25	BP23MVEXP-ENV-DC-001			Camera	67	630123	6294332	630092	6294363	31	-31	44	-44		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
04-Jul-2023	22:16:14	26	BP23MVEXP-ENV-DC-001			Camera	67	630124	6294330	630092	6294363	32	-33	46	-44		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
04-Jul-2023	22:29:37	27	BP23MVEXP-ENV-DC-001			Camera	67	630128	6294395	630092	6294363	36	32	48	-131		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
04-Jul-2023	22:29:49	28	BP23MVEXP-ENV-DC-001			Camera	67	630128	6294394	630092	6294363	36	31	48	-131		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
04-Jul-2023	22:30:02	29	BP23MVEXP-ENV-DC-001			Camera	67	630128	6294394	630092	6294363	36	31	48	-131		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
04-Jul-2023	22:31:02	30	BP23MVEXP-ENV-DC-001			Camera	67	630125	6294390	630092	6294363	33	27	42	-130		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
04-Jul-2023	22:31:49	31	BP23MVEXP-ENV-DC-001			Camera	67	630119	6294385	630092	6294363	27	22	35	-129		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
04-Jul-2023	22:32:07	32	BP23MVEXP-ENV-DC-001			Camera	67	630116	6294383	630092	6294363	24	20	31	-130		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
04-Jul-2023	22:32:17	33	BP23MVEXP-ENV-DC-001			Camera	67	630115	6294382	630092	6294363	23	19	30	-129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
04-Jul-2023	22:32:30	34	BP23MVEXP-ENV-DC-001			Camera	67	630114	6294380	630092	6294363	22	17	28	-128		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
04-Jul-2023	22:32:40	35	BP23MVEXP-ENV-DC-001			Camera	67	630113	6294379	630092	6294363	21	16	26	-128		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
04-Jul-2023	22:32:58	36	BP23MVEXP-ENV-DC-001			Camera	67	630110	6294377	630092	6294363	19	14	23	-127		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
04-Jul-2023	22:33:15	37	BP23MVEXP-ENV-DC-001			Camera	67	630108	6294375	630092	6294363	16	12	20	-126		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
04-Jul-2023	22:33:29	38	BP23MVEXP-ENV-DC-001			Camera	67	630106	6294373	630092	6294363	14	10	17	-125		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
04-Jul-2023	22:34:19	39	BP23MVEXP-ENV-DC-001			Camera	67	630101	6294369	630092	6294363	9	6	11	-123		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
04-Jul-2023	22:34:53	40	BP23MVEXP-ENV-DC-001			Camera	67	630097	6294365	630092	6294363	5	2	5	-117		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
04-Jul-2023	22:35:14	41	BP23MVEXP-ENV-DC-001			Camera	67	630095	6294364	630092	6294363	3	1	3	-103		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
04-Jul-2023	22:35:22	42	BP23MVEXP-ENV-DC-001			Camera	67	630094	6294363	630092	6294363	2	0	2	-79		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
04-Jul-2023	22:35:31	43	BP23MVEXP-ENV-DC-001			Camera	67	630093	6294362	630092	6294363	1	-1	1	-34		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
04-Jul-2023	22:36:02	44	BP23MVEXP-ENV-DC-001			Camera	67	630090	6294358	630092	6294363	-2	-5	5	26		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
04-Jul-2023	22:36:24	45	BP23MVEXP-ENV-DC-001			Camera	67	630087	6294356	630092	6294363	-5	-7	9	35		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
04-Jul-2023	22:36:48	46	BP23MVEXP-ENV-DC-001			Camera	67	630084	6294353	630092	6294363	-8	-10	13	37		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
04-Jul-2023	22:37:21	47	BP23MVEXP-ENV-DC-001			Camera	67	630081	6294350	630092	6294363	-11	-13	18	40		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
04-Jul-2023	22:38:31	48	BP23MVEXP-ENV-DC-001			Camera	67	630072	6294342	630092	6294363	-20	-21	29	44		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
04-Jul-2023	22:40:00	49	BP23MVEXP-ENV-DC-001			Camera	67	630062	6294333	630092	6294363	-30	-31	43	45		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
04-Jul-2023	22:41:10	50	BP23MVEXP-ENV-DC-001			Camera	67	630055	6294327	630092	6294363	-37	-36	52	46		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
04-Jul-2023	22:41:25	51	BP23MVEXP-ENV-DC-001			Camera	67	630055	6294327	630092	6294363	-38	-36	52	46		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	01:31:59	52	BP23MVEXP-ENV-DC-002			Camera	66	632648	6291365	632683	6291340	-35	25	43	126		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	01:32:35	53	BP23MVEXP-ENV-DC-002			Camera	66	632648	6291365	632683	6291340	-35	25	43	126		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	01:34:03	54	BP23MVEXP-ENV-DC-002			Camera	66	632649	6291366	632683	6291340	-34	26	43	127		(Raw Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	01:35:24	55	BP23MVEXP-ENV-DC-002			Camera	66	632649	6291365	632683	6291340	-34	25	42	126		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	01:37:33	56	BP23MVEXP-ENV-DC-002			Camera	66	632653	6291362	632683	6291340	-30	22	37	126		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	01:38:28	57	BP23MVEXP-ENV-DC-002			Camera	66	632658	6291356	632683	6291340	-25	16	29	122		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	01:38:57	58	BP23MVEXP-ENV-DC-002			Camera	66	632661	6291352	632683	6291340	-22	12	25	118		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	01:39:49	59	BP23MVEXP-ENV-DC-002			Camera	66	632667	6291347	632683	6291340	-16	7	17	112		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	01:40:38	60	BP23MVEXP-ENV-DC-002			Camera	66	632672	6291342	632683	6291340	-11	2	11	102		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	01:41:30	61	BP23MVEXP-ENV-DC-002			Camera	66	632677	6291337	632683	6291340	-6	-3	6	62		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	01:41:51	62	BP23MVEXP-ENV-DC-002			Camera	66	632680	6291335	632683	6291340	-3	-5	6	31		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	01:42:40	63	BP23MVEXP-ENV-DC-002			Camera	66	632685	6291328	632683	6291340	2	-12	12	-9		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	01:44:10	64	BP23MVEXP-ENV-DC-002			Camera	66	632693	6291317	632683	6291340	10	-23	25	-25		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	01:45:26	65	BP23MVEXP-ENV-DC-002			Camera	66	632701	6291309	632683	6291340	18	-31	36	-31		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	01:46:54	66	BP23MVEXP-ENV-DC-002			Camera	66	632711	6291298	632683	6291340	28	-42	50	-34		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	01:59:31	67	BP23MVEXP-ENV-DC-002			Camera	66	632718	6291358	632683	6291340	35	18	39	-118		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	02:00:22	68	BP23MVEXP-ENV-DC-002			Camera	66	632715	6291357	632683	6291340	32	17	36	-119		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	02:00:40	69	BP23MVEXP-ENV-DC-002			Camera	66	632713	6291356	632683	6291340	30	16	34	-118		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	02:00:47	70	BP23MVEXP-ENV-DC-002			Camera	66	632712	6291355	632683	6291340	29	15	32	-118		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	02:01:04	71	BP23MVEXP-ENV-DC-002			Camera	66	632709	6291353	632683	6291340	26	13	29	-117		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	02:01:31	72	BP23MVEXP-ENV-DC-002			Camera	66	632705	6291351	632683	6291340	22	11	25	-117		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	02:01:45	73	BP23MVEXP-ENV-DC-002			Camera	66	632704	6291350	632683	6291340	21	10	23	-116		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	02:02:22	74	BP23MVEXP-ENV-DC-002			Camera	66	632699	6291346	632683	6291340	16	6	17	-109		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	02:02:35	75	BP23MVEXP-ENV-DC-002			Camera	66	632698	6291344	632683	6291340	15	4	15	-105		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	02:03:03	76	BP23MVEXP-ENV-DC-002			Camera	66	632694	6291341	632683	6291340	11	1	11	-97		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	02:03:41	77	BP23MVEXP-ENV-DC-002			Camera	66	632690	6291337	632683	6291340	7	-3	8	-69		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	02:04:05	78	BP23MVEXP-ENV-DC-002			Camera	66	632688	6291335	632683	6291340	5	-5	7	-42		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	02:04:16	79	BP23MVEXP-ENV-DC-002			Camera	66	632686	6291334	632683	6291340	3	-6	7	-30		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	02:04:26	80	BP23MVEXP-ENV-DC-002			Camera	66	632685	6291333	632683	6291340	2	-7	7	-17		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	02:04:35	81	BP23MVEXP-ENV-DC-002			Camera	66	632684	6291332	632683	6291340	1	-8	8	-10		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	02:04:52	82	BP23MVEXP-ENV-DC-002			Camera	66	632682	6291330	632683	6291340	-1	-10	10	4		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	02:05:01	83	BP23MVEXP-ENV-DC-002			Camera	66	632681	6291329	632683	6291340	-2	-12	12	8		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	02:05:41	84	BP23MVEXP-ENV-DC-002			Camera	66	632677	6291325	632683	6291340	-6	-15	16	21		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	02:06:30	85	BP23MVEXP-ENV-DC-002			Camera	66	632671	6291319	632683	6291340	-12	-21	24	30		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	02:06:39	86	BP23MVEXP-ENV-DC-002			Camera	66	632670	6291318	632683	6291340	-13	-22	25	30		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	02:06:47	87	BP23MVEXP-ENV-DC-002			Camera	66	632670	6291317	632683	6291340	-14	-23	26	31		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	02:07:06	88	BP23MVEXP-ENV-DC-002			Camera	66	632667	6291315	632683	6291340	-16	-25	30	32		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	02:08:17	89	BP23MVEXP-ENV-DC-002			Camera	66	632659	6291308	632683	6291340	-24	-32	40	37		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	02:08:39	90	BP23MVEXP-ENV-DC-002			Camera	66	632657	6291307	632683	6291340	-26	-33	42	38		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	02:08:56	91	BP23MVEXP-ENV-DC-002			Camera	66	632655	6291305	632683	6291340	-28	-35	45	39		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	02:09:50	92	BP23MVEXP-ENV-DC-002				66	632648	6291298	632683	6291340	-35	-42	54	40		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A) Fix no photo
05-Jul-2023	02:10:05	93	BP23MVEXP-ENV-DC-002			Camera	66	632647	6291297	632683	6291340	-36	-43	56	40		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	02:10:18	94	BP23MVEXP-ENV-DC-002			Camera	66	632645	6291295	632683	6291340	-38	-45	58	40		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	03:29:38	95	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288331	635281	6288299	-32	33	46	135		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	03:30:50	96	BP23MVEXP-ENV-DC-003			Camera	68	635248	6288330	635281	6288299	-33	31	45	133		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	03:30:59	97	BP23MVEXP-ENV-DC-003			Camera	68	635248	6288330	635281	6288299	-33	31	45	134		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	03:31:34	98	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288331	635281	6288299	-32	32	45	134		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	03:31:58	99	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288331	635281	6288299	-32	32	45	135		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	03:32:26	100	BP23MVEXP-ENV-DC-003			Camera	68	635251	6288329	635281	6288299	-30	30	43	135		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	03:32:52	101	BP23MVEXP-ENV-DC-003			Camera	68	635253	6288328	635281	6288299	-28	29	40	136		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	03:33:02	102	BP23MVEXP-ENV-DC-003			Camera	68	635253	6288327	635281	6288299	-28	28	40	136		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	03:33:29	103	BP23MVEXP-ENV-DC-003			Camera	69	635255	6288325	635281	6288299	-26	26	37	135		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	03:33:41	104	BP23MVEXP-ENV-DC-003			Camera	69	635256	6288324	635281	6288299	-25	25	35	135		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	03:34:12	105	BP23MVEXP-ENV-DC-003			Camera	69	635258	6288321	635281	6288299	-23	23	32	135		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	03:34:20	106	BP23MVEXP-ENV-DC-003			Camera	68	635259	6288321	635281	6288299	-22	22	31	134		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	03:34:53	107	BP23MVEXP-ENV-DC-003			Camera	69	635261	6288319	635281	6288299	-20	20	28	135		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	03:35:24	108	BP23MVEXP-ENV-DC-003			Camera	69	635263	6288317	635281	6288299	-18	18	25	136		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	03:35:49	109	BP23MVEXP-ENV-DC-003			Camera	69	635265	6288315	635281	6288299	-16	16	23	135		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	03:36:35	110	BP23MVEXP-ENV-DC-003			Camera	68	635268	6288311	635281	6288299	-13	12	18	135		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	03:37:09	111	BP23MVEXP-ENV-DC-003			Camera	68	635271	6288308	635281	6288299	-10	9	14	133		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	03:38:17	112	BP23MVEXP-ENV-DC-003			Camera	68	635276	6288303	635281	6288299	-5	4	7	131		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	03:38:42	113	BP23MVEXP-ENV-DC-003			Camera	68	635278	6288302	635281	6288299	-3	3	4	131		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	03:38:54	114	BP23MVEXP-ENV-DC-003			Camera	68	635279	6288301	635281	6288299	-2	2	3	131		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	03:40:09	115	BP23MVEXP-ENV-DC-003			Camera	68	635284	6288295	635281	6288299	3	-4	5	-35		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	03:40:59	116	BP23MVEXP-ENV-DC-003			Camera	68	635288	6288292	635281	6288299	7	-7	10	-42		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	03:42:29	117	BP23MVEXP-ENV-DC-003			Camera	68	635294	6288286	635281	6288299	13	-13	18	-44		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	03:43:49	118	BP23MVEXP-ENV-DC-003			Camera	68	635300	6288279	635281	6288299	19	-20	27	-44		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	03:44:19	119	BP23MVEXP-ENV-DC-003			Camera	68	635302	6288277	635281	6288299	21	-22	30	-44		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	03:46:12	120	BP23MVEXP-ENV-DC-003			Camera	68	635310	6288268	635281	6288299	29	-31	42	-43		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	03:46:41	121	BP23MVEXP-ENV-DC-003			Camera	69	635312	6288266	635281	6288299	31	-33	45	-43		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	03:59:35	122	BP23MVEXP-ENV-DC-003			Camera	68	635242	6288260	635281	6288299	-39	-39	55	45		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	04:00:30	123	BP23MVEXP-ENV-DC-003			Camera	68	635243	6288262	635281	6288299	-38	-37	54	46		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	04:01:28	124	BP23MVEXP-ENV-DC-003			Camera	69	635247	6288266	635281	6288299	-34	-33	48	46		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	04:01:53	125	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288267	635281	6288299	-32	-32	45	46		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	04:02:56	126	BP23MVEXP-ENV-DC-003			Camera	68	635253	6288272	635281	6288299	-28	-27	39	46		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	04:03:28	127	BP23MVEXP-ENV-DC-003			Camera	68	635256	6288274	635281	6288299	-25	-25	35	46		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	04:04:33	128	BP23MVEXP-ENV-DC-003			Camera	68	635260	6288280	635281	6288299	-21	-19	28	47		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	04:05:40	129	BP23MVEXP-ENV-DC-003			Camera	68	635266	6288285	635281	6288299	-15	-14	20	47		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	04:06:09	130	BP23MVEXP-ENV-DC-003			Camera	68	635269	6288287	635281	6288299	-13	-12	17	47		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	04:06:53	131	BP23MVEXP-ENV-DC-003			Camera	68	635272	6288290	635281	6288299	-9	-9	12	45		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	04:07:11	132A	BP23MVEXP-ENV-DC-003			Camera	71	635274	6288291	635281	6288299	-7	-8	11	41		(Raw Nav, Kongsberg 14208, img#38) (B)
05-Jul-2023	04:07:36	132B	BP23MVEXP-ENV-DC-003			Camera	68	635275	6288293	635281	6288299	-6	-6	8	44		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	04:08:11	133	BP23MVEXP-ENV-DC-003			Camera	68	635278	6288295	635281	6288299	-3	-4	5	43		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	04:08:59	134	BP23MVEXP-ENV-DC-003			Camera	68	635281	6288299	635281	6288299	0	0	0	157		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	04:10:00	135	BP23MVEXP-ENV-DC-003			Camera	68	635286	6288303	635281	6288299	5	4	6	-132		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	04:10:44	136	BP23MVEXP-ENV-DC-003			Camera	68	635289	6288306	635281	6288299	8	7	11	-131		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	04:11:18	137	BP23MVEXP-ENV-DC-003			Camera	69	635292	6288309	635281	6288299	11	10	15	-132		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	04:11:52	138	BP23MVEXP-ENV-DC-003			Camera	69	635294	6288311	635281	6288299	13	12	18	-132		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	04:12:27	139	BP23MVEXP-ENV-DC-003			Camera	69	635296	6288313	635281	6288299	15	14	21	-132		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	04:12:57	140	BP23MVEXP-ENV-DC-003			Camera	69	635298	6288315	635281	6288299	17	16	24	-133		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	04:13:40	141	BP23MVEXP-ENV-DC-003			Camera	69	635302	6288320	635281	6288299	21	21	29	-135		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	04:14:31	142	BP23MVEXP-ENV-DC-003			Camera	69	635305	6288323	635281	6288299	24	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	04:15:12	143	BP23MVEXP-ENV-DC-003			Camera	69	635309	6288326	635281	6288299	28	27	39	-134		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	04:15:33	144	BP23MVEXP-ENV-DC-003			Camera	69	635311	6288327	635281	6288299	30	29	41	-134		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	04:16:28	145	BP23MVEXP-ENV-DC-003			Camera	69	635315	6288331	635281	6288299	34	32	47	-133		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	06:58:31	146	BP23MVEXP-ENV-DC-004			Camera	70	637909	6285325	637941	6285279	-32	46	56	146		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	06:59:41	147	BP23MVEXP-ENV-DC-004			Camera	70	637909	6285326	637941	6285279	-32	47	57	146		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	07:00:52	148	BP23MVEXP-ENV-DC-004			Camera	70	637911	6285325	637941	6285279	-30	46	55	147		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	07:01:24	149	BP23MVEXP-ENV-DC-004			Camera	70	637912	6285323	637941	6285279	-29	44	53	146		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	07:01:59	150	BP23MVEXP-ENV-DC-004			Camera	70	637913	6285321	637941	6285279	-28	42	51	147		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	07:02:28	151	BP23MVEXP-ENV-DC-004			Camera	70	637916	6285319	637941	6285279	-25	40	48	148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	07:03:10	152	BP23MVEXP-ENV-DC-004			Camera	70	637919	6285316	637941	6285279	-22	37	43	149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	07:03:46	153	BP23MVEXP-ENV-DC-004			Camera	70	637921	6285313	637941	6285279	-20	34	39	149		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	07:04:28	154	BP23MVEXP-ENV-DC-004			Camera	70	637924	6285310	637941	6285279	-17	31	35	152		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	07:04:57	155	BP23MVEXP-ENV-DC-004			Camera	70	637927	6285308	637941	6285279	-14	29	32	154		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	07:05:14	156	BP23MVEXP-ENV-DC-004			Camera	70	637928	6285307	637941	6285279	-13	28	31	156		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	07:05:54	157	BP23MVEXP-ENV-DC-004			Camera	70	637931	6285305	637941	6285279	-10	26	28	160		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	07:07:03	158	BP23MVEXP-ENV-DC-004			Camera	70	637935	6285299	637941	6285279	-6	20	21	164		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	07:07:14	159	BP23MVEXP-ENV-DC-004			Camera	70	637936	6285298	637941	6285279	-5	19	20	166		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	07:07:57	160	BP23MVEXP-ENV-DC-004			Camera	70	637939	6285296	637941	6285279	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	07:08:27	161	BP23MVEXP-ENV-DC-004			Camera	70	637942	6285294	637941	6285279	1	15	15	-178		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	07:08:30	162	BP23MVEXP-ENV-DC-004			Camera	70	637942	6285293	637941	6285279	1	14	14	-176		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	07:10:01	163	BP23MVEXP-ENV-DC-004			Camera	70	637947	6285287	637941	6285279	6	8	10	-142		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A) Fix no photo
05-Jul-2023	07:10:43	164	BP23MVEXP-ENV-DC-004			Camera	70	637950	6285283	637941	6285279	9	4	10	-113		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	07:11:59	165	BP23MVEXP-ENV-DC-004			Camera	70	637955	6285277	637941	6285279	14	-2	14	-82		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	07:13:11	166	BP23MVEXP-ENV-DC-004			Camera	70	637961	6285272	637941	6285279	20	-7	21	-71		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	07:13:28	167	BP23MVEXP-ENV-DC-004				70	637962	6285271	637941	6285279	21	-8	23	-69		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A) Fix no photo
05-Jul-2023	07:14:02	168	BP23MVEXP-ENV-DC-004			Camera	70	637965	6285268	637941	6285279	24	-11	26	-66		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	07:14:41	169	BP23MVEXP-ENV-DC-004			Camera	70	637967	6285265	637941	6285279	26	-14	29	-62		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	07:15:06	170	BP23MVEXP-ENV-DC-004			Camera	70	637968	6285263	637941	6285279	27	-16	31	-60		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	07:15:30	171	BP23MVEXP-ENV-DC-004			Camera	70	637970	6285261	637941	6285279	29	-18	34	-58		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	07:25:54	172	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285320	637941	6285279	37	41	56	-138		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	07:26:15	173	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285322	637941	6285279	37	43	57	-139		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	07:26:47	174	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285322	637941	6285279	37	43	57	-139		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	07:27:18	175	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285322	637941	6285279	37	43	57	-140		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	07:27:24	176	BP23MVEXP-ENV-DC-004			Camera	70	637977	6285322	637941	6285279	36	43	56	-140		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	07:27:50	177	BP23MVEXP-ENV-DC-004			Camera	70	637976	6285321	637941	6285279	35	43	55	-141		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	07:28:45	178	BP23MVEXP-ENV-DC-004			Camera	70	637971	6285318	637941	6285279	30	39	50	-143		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	07:29:24	179	BP23MVEXP-ENV-DC-004			Camera	70	637966	6285314	637941	6285279	25	35	43	-145		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	07:29:59	180	BP23MVEXP-ENV-DC-004			Camera	70	637962	6285311	637941	6285279	21	32	38	-146		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	07:30:07	181	BP23MVEXP-ENV-DC-004			Camera	70	637961	6285310	637941	6285279	20	31	37	-147		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	07:30:23	182	BP23MVEXP-ENV-DC-004			Camera	70	637960	6285308	637941	6285279	19	29	34	-147		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	07:30:37	183	BP23MVEXP-ENV-DC-004			Camera	70	637958	6285307	637941	6285279	17	28	33	-149		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	07:31:40	184	BP23MVEXP-ENV-DC-004			Camera	70	637954	6285302	637941	6285279	13	23	26	-151		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	07:32:21	185	BP23MVEXP-ENV-DC-004			Camera	70	637951	6285300	637941	6285279	10	21	23	-154		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	07:32:26	186	BP23MVEXP-ENV-DC-004			Camera	70	637951	6285299	637941	6285279	10	20	23	-153		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	07:32:55	187	BP23MVEXP-ENV-DC-004			Camera	70	637948	6285297	637941	6285279	7	18	19	-158		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	07:33:12	188	BP23MVEXP-ENV-DC-004			Camera	70	637948	6285296	637941	6285279	7	17	18	-159		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	07:33:38	189	BP23MVEXP-ENV-DC-004			Camera	70	637946	6285295	637941	6285279	5	16	16	-163		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	07:33:48	190	BP23MVEXP-ENV-DC-004			Camera	70	637945	6285294	637941	6285279	4	15	15	-165		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	07:34:26	191	BP23MVEXP-ENV-DC-004			Camera	70	637941	6285290	637941	6285279	0	11	11	180		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	07:35:31	192	BP23MVEXP-ENV-DC-004			Camera	70	637936	6285286	637941	6285279	-5	7	8	142		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	07:35:58	193	BP23MVEXP-ENV-DC-004			Camera	70	637934	6285282	637941	6285279	-7	3	8	116		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	07:36:31	194	BP23MVEXP-ENV-DC-004			Camera	70	637932	6285281	637941	6285279	-9	2	9	103		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	07:39:06	195	BP23MVEXP-ENV-DC-004			Camera	69	637921	6285270	637941	6285279	-20	-9	22	66		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	07:39:36	196	BP23MVEXP-ENV-DC-004			Camera	69	637919	6285267	637941	6285279	-22	-12	25	63		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	07:39:40	197	BP23MVEXP-ENV-DC-004			Camera	69	637918	6285267	637941	6285279	-23	-12	26	63		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	07:40:33	198	BP23MVEXP-ENV-DC-004			Camera	69	637914	6285265	637941	6285279	-27	-14	30	62		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	07:41:07	199	BP23MVEXP-ENV-DC-004			Camera	69	637911	6285261	637941	6285279	-30	-18	35	59		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
05-Jul-2023	08:57:55	200	BP23MVEXP-ENV-DC-005			Camera	75	640499	6282311	640532	6282261	-33	50	59	147		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	08:58:16	201	BP23MVEXP-ENV-DC-005			Camera	75	640501	6282310	640532	6282261	-31	49	58	148		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	08:58:47	202	BP23MVEXP-ENV-DC-005			Camera	75	640501	6282311	640532	6282261	-31	51	59	148		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	08:59:38	203	BP23MVEXP-ENV-DC-005			Camera	75	640502	6282309	640532	6282261	-30	48	57	148		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	09:00:15	204	BP23MVEXP-ENV-DC-005			Camera	75	640504	6282307	640532	6282261	-28	46	54	149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	09:00:53	205	BP23MVEXP-ENV-DC-005			Camera	75	640506	6282305	640532	6282261	-26	44	51	150		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	09:01:20	206	BP23MVEXP-ENV-DC-005			Camera	75	640508	6282303	640532	6282261	-24	42	48	150		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	09:01:57	207	BP23MVEXP-ENV-DC-005			Camera	75	640510	6282300	640532	6282261	-22	39	45	150		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	09:02:56	208	BP23MVEXP-ENV-DC-005			Camera	76	640514	6282294	640532	6282261	-18	33	38	152		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	09:03:21	209	BP23MVEXP-ENV-DC-005			Camera	75	640516	6282292	640532	6282261	-16	31	35	152		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	09:03:48	210	BP23MVEXP-ENV-DC-005			Camera	75	640517	6282290	640532	6282261	-15	29	32	153		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	09:04:17	211	BP23MVEXP-ENV-DC-005				75	640519	6282288	640532	6282261	-13	27	30	155		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A) Fix no photo
05-Jul-2023	09:04:30	212	BP23MVEXP-ENV-DC-005			Camera	75	640520	6282287	640532	6282261	-12	26	29	156		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	09:04:59	213	BP23MVEXP-ENV-DC-005			Camera	75	640522	6282284	640532	6282261	-10	23	25	156		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	09:05:23	214	BP23MVEXP-ENV-DC-005			Camera	75	640523	6282282	640532	6282261	-9	21	23	158		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	09:05:49	215	BP23MVEXP-ENV-DC-005			Camera	76	640525	6282281	640532	6282261	-7	20	21	160		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	09:06:11	216	BP23MVEXP-ENV-DC-005			Camera	76	640526	6282278	640532	6282261	-6	17	18	162		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	09:06:40	217	BP23MVEXP-ENV-DC-005			Camera	76	640528	6282276	640532	6282261	-4	15	16	165		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	09:07:01	218	BP23MVEXP-ENV-DC-005			Camera	76	640529	6282275	640532	6282261	-3	14	14	170		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	09:07:17	219	BP23MVEXP-ENV-DC-005			Camera	76	640530	6282273	640532	6282261	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	09:07:31	220	BP23MVEXP-ENV-DC-005			Camera	76	640532	6282272	640532	6282261	0	11	11	-178		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	09:08:32	221	BP23MVEXP-ENV-DC-005			Camera	76	640536	6282267	640532	6282261	4	6	7	-146		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	09:09:02	222	BP23MVEXP-ENV-DC-005			Camera	76	640538	6282265	640532	6282261	6	4	7	-123		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	09:10:01	223	BP23MVEXP-ENV-DC-005			Camera	76	640540	6282260	640532	6282261	8	-1	8	-84		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	09:10:38	224	BP23MVEXP-ENV-DC-005			Camera	76	640543	6282257	640532	6282261	11	-4	12	-70		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	09:10:59	225	BP23MVEXP-ENV-DC-005			Camera	76	640545	6282255	640532	6282261	13	-6	14	-66		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	09:11:18	226	BP23MVEXP-ENV-DC-005			Camera	76	640546	6282254	640532	6282261	14	-7	16	-63		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	09:12:50	227	BP23MVEXP-ENV-DC-005			Camera	76	640552	6282246	640532	6282261	20	-15	25	-54		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	09:13:44	228	BP23MVEXP-ENV-DC-005			Camera	76	640555	6282242	640532	6282261	23	-19	30	-51		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	09:14:39	229	BP23MVEXP-ENV-DC-005			Camera	76	640558	6282238	640532	6282261	26	-23	35	-48		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	09:16:20	230	BP23MVEXP-ENV-DC-005			Camera	76	640565	6282230	640532	6282261	33	-31	45	-46		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	09:30:55	231	BP23MVEXP-ENV-DC-005			Camera	76	640568	6282291	640532	6282261	36	30	47	-130		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	09:32:29	232	BP23MVEXP-ENV-DC-005			Camera	76	640565	6282291	640532	6282261	33	30	44	-132		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	09:32:54	233	BP23MVEXP-ENV-DC-005			Camera	76	640563	6282290	640532	6282261	32	29	43	-132		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	09:33:08	234	BP23MVEXP-ENV-DC-005				76	640562	6282289	640532	6282261	30	28	41	-133		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A) Fix no photo
05-Jul-2023	09:33:50	235	BP23MVEXP-ENV-DC-005			Camera	76	640559	6282287	640532	6282261	27	26	37	-133		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	09:34:16	236	BP23MVEXP-ENV-DC-005			Camera	76	640557	6282284	640532	6282261	25	23	34	-133		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	09:34:59	237	BP23MVEXP-ENV-DC-005			Camera	76	640554	6282281	640532	6282261	22	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	09:35:45	238	BP23MVEXP-ENV-DC-005			Camera	76	640551	6282278	640532	6282261	19	17	26	-132		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	09:36:27	239	BP23MVEXP-ENV-DC-005			Camera	76	640547	6282275	640532	6282261	15	15	21	-133		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	09:36:51	240	BP23MVEXP-ENV-DC-005			Camera	76	640546	6282273	640532	6282261	14	12	18	-131		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	09:37:47	241	BP23MVEXP-ENV-DC-005			Camera	76	640542	6282269	640532	6282261	10	8	12	-129		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	09:38:12	242	BP23MVEXP-ENV-DC-005			Camera	76	640539	6282266	640532	6282261	7	5	9	-126		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	09:38:58	243	BP23MVEXP-ENV-DC-005			Camera	75	640536	6282263	640532	6282261	4	2	4	-117		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	09:39:40	244	BP23MVEXP-ENV-DC-005			Camera	75	640532	6282260	640532	6282261	0	-1	1	-22		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	09:40:56	245	BP23MVEXP-ENV-DC-005			Camera	75	640526	6282255	640532	6282261	-6	-6	9	43		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	09:41:24	246	BP23MVEXP-ENV-DC-005			Camera	75	640524	6282253	640532	6282261	-8	-8	11	43		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	09:42:09	247	BP23MVEXP-ENV-DC-005			Camera	75	640521	6282250	640532	6282261	-11	-11	16	44		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	09:43:06	248	BP23MVEXP-ENV-DC-005			Camera	75	640517	6282246	640532	6282261	-15	-15	21	45		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	09:43:14	249	BP23MVEXP-ENV-DC-005			Camera	75	640516	6282245	640532	6282261	-16	-16	22	45		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	09:43:55	250	BP23MVEXP-ENV-DC-005			Camera	75	640513	6282242	640532	6282261	-19	-19	27	45		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	09:44:50	251	BP23MVEXP-ENV-DC-005			Camera	75	640509	6282239	640532	6282261	-23	-22	32	46		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	09:45:03	252	BP23MVEXP-ENV-DC-005			Camera	75	640508	6282238	640532	6282261	-24	-24	34	46		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	09:45:22	253	BP23MVEXP-ENV-DC-005			Camera	75	640506	6282236	640532	6282261	-26	-25	36	46		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	09:46:20	254	BP23MVEXP-ENV-DC-005			Camera	75	640502	6282232	640532	6282261	-30	-29	42	46		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
05-Jul-2023	09:47:22	255	BP23MVEXP-ENV-DC-005			Camera	75	640497	6282228	640532	6282261	-35	-33	48	47		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	09:48:04	256	BP23MVEXP-ENV-DC-005			Camera	75	640496	6282226	640532	6282261	-36	-35	51	46		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
05-Jul-2023	11:37:44	257	BP23MVEXP-ENV-DC-006			Camera	73	643094	6279265	643128	6279228	-34	37	50	137		(Raw Nav, Kongsberg 14208, img#58) (B) (T.A)
05-Jul-2023	11:38:21	258	BP23MVEXP-ENV-DC-006			Camera	73	643094	6279266	643128	6279228	-34	38	51	138		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
05-Jul-2023	11:38:40	259	BP23MVEXP-ENV-DC-006			Camera	73	643094	6279266	643128	6279228	-34	38	51	138		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
05-Jul-2023	11:39:09	260	BP23MVEXP-ENV-DC-006			Camera	73	643095	6279265	643128	6279228	-33	38	50	138		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
05-Jul-2023	11:40:10	261	BP23MVEXP-ENV-DC-006			Camera	74	643098	6279261	643128	6279228	-30	33	45	138		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
05-Jul-2023	11:40:35	262	BP23MVEXP-ENV-DC-006			Camera	74	643100	6279259	643128	6279228	-28	31	42	138		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
05-Jul-2023	11:40:52	263	BP23MVEXP-ENV-DC-006			Camera	74	643102	6279257	643128	6279228	-26	29	39	138		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
05-Jul-2023	11:41:06	264	BP23MVEXP-ENV-DC-006			Camera	74	643103	6279256	643128	6279228	-25	28	38	138		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
05-Jul-2023	11:41:13	265	BP23MVEXP-ENV-DC-006			Camera	74	643103	6279256	643128	6279228	-25	28	37	138		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
05-Jul-2023	11:41:49	266	BP23MVEXP-ENV-DC-006			Camera	74	643106	6279253	643128	6279228	-22	25	33	138		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
05-Jul-2023	11:42:05	267	BP23MVEXP-ENV-DC-006			Camera	74	643107	6279252	643128	6279228	-21	24	32	138		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
05-Jul-2023	11:42:18	268	BP23MVEXP-ENV-DC-006			Camera	73	643108	6279251	643128	6279228	-20	23	30	138		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
05-Jul-2023	11:42:32	269	BP23MVEXP-ENV-DC-006			Camera	74	643109	6279250	643128	6279228	-19	22	29	139		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
05-Jul-2023	11:43:14	270	BP23MVEXP-ENV-DC-006			Camera	74	643112	6279247	643128	6279228	-16	19	25	140		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
05-Jul-2023	11:43:24	271	BP23MVEXP-ENV-DC-006			Camera	74	643113	6279246	643128	6279228	-15	18	24	140		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
05-Jul-2023	11:43:45	272	BP23MVEXP-ENV-DC-006			Camera	74	643114	6279245	643128	6279228	-14	17	21	140		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
05-Jul-2023	11:43:51	273	BP23MVEXP-ENV-DC-006			Camera	74	643115	6279244	643128	6279228	-13	16	21	140		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
05-Jul-2023	11:44:11	274	BP23MVEXP-ENV-DC-006			Camera	74	643116	6279242	643128	6279228	-12	14	19	141		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
05-Jul-2023	11:44:22	275	BP23MVEXP-ENV-DC-006			Camera	74	643117	6279242	643128	6279228	-11	14	18	140		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
05-Jul-2023	11:44:29	276	BP23MVEXP-ENV-DC-006			Camera	74	643117	6279241	643128	6279228	-11	13	17	140		(Corr'd Nav, Kongsberg 14208, img#77) (B) (T.A)
05-Jul-2023	11:45:18	277	BP23MVEXP-ENV-DC-006			Camera	74	643121	6279237	643128	6279228	-7	9	12	142		(Corr'd Nav, Kongsberg 14208, img#78) (B) (T.A)
05-Jul-2023	11:45:41	278	BP23MVEXP-ENV-DC-006			Camera	74	643123	6279236	643128	6279228	-5	8	9	147		(Corr'd Nav, Kongsberg 14208, img#79) (B) (T.A)
05-Jul-2023	11:45:50	279	BP23MVEXP-ENV-DC-006			Camera	74	643124	6279235	643128	6279228	-4	7	9	149		(Corr'd Nav, Kongsberg 14208, img#80) (B) (T.A)
05-Jul-2023	11:46:00	280	BP23MVEXP-ENV-DC-006			Camera	74	643124	6279235	643128	6279228	-4	7	8	150		(Corr'd Nav, Kongsberg 14208, img#81) (B) (T.A)
05-Jul-2023	11:46:10	281	BP23MVEXP-ENV-DC-006			Camera	74	643124	6279234	643128	6279228	-4	6	7	151		(Corr'd Nav, Kongsberg 14208, img#82) (B) (T.A)
05-Jul-2023	11:46:29	282	BP23MVEXP-ENV-DC-006				74	643125	6279233	643128	6279228	-3	5	6	151		(Corr'd Nav, Kongsberg 14208, img#83) (B) (T.A) Fix no photo
05-Jul-2023	11:46:43	283	BP23MVEXP-ENV-DC-006			Camera	74	643127	6279231	643128	6279228	-1	3	3	158		(Corr'd Nav, Kongsberg 14208, img#84) (B) (T.A)
05-Jul-2023	11:46:50	284	BP23MVEXP-ENV-DC-006			Camera	74	643127	6279230	643128	6279228	-1	2	2	162		(Corr'd Nav, Kongsberg 14208, img#85) (B) (T.A)
05-Jul-2023	11:46:59	285	BP23MVEXP-ENV-DC-006			Camera	74	643128	6279229	643128	6279228	0	1	1	178		(Corr'd Nav, Kongsberg 14208, img#86) (B) (T.A)
05-Jul-2023	11:47:08	286	BP23MVEXP-ENV-DC-006			Camera	74	643129	6279228	643128	6279228	1	0	1	-110		(Corr'd Nav, Kongsberg 14208, img#87) (B) (T.A)
05-Jul-2023	11:47:20	287	BP23MVEXP-ENV-DC-006			Camera	74	643130	6279227	643128	6279228	2	-1	2	-61		(Corr'd Nav, Kongsberg 14208, img#88) (B) (T.A)
05-Jul-2023	11:47:28	288	BP23MVEXP-ENV-DC-006			Camera	74	643130	6279226	643128	6279228	2	-2	3	-54		(Corr'd Nav, Kongsberg 14208, img#89) (B) (T.A)
05-Jul-2023	11:47:41	289	BP23MVEXP-ENV-DC-006			Camera	74	643131	6279226	643128	6279228	3	-2	4	-51		(Corr'd Nav, Kongsberg 14208, img#90) (B) (T.A)
05-Jul-2023	11:47:49	290	BP23MVEXP-ENV-DC-006			Camera	74	643132	6279225	643128	6279228	4	-3	4	-52		(Corr'd Nav, Kongsberg 14208, img#91) (B) (T.A)
05-Jul-2023	11:49:41	291	BP23MVEXP-ENV-DC-006			Camera	74	643140	6279217	643128	6279228	12	-11	16	-48		(Corr'd Nav, Kongsberg 14208, img#92) (B) (T.A)
05-Jul-2023	11:52:17	292	BP23MVEXP-ENV-DC-006			Camera	74	643151	6279206	643128	6279228	23	-22	32	-47		(Corr'd Nav, Kongsberg 14208, img#93) (B) (T.A)
05-Jul-2023	11:54:04	293	BP23MVEXP-ENV-DC-006			Camera	74	643159	6279197	643128	6279228	31	-31	43	-45		(Corr'd Nav, Kongsberg 14208, img#94) (B) (T.A)
05-Jul-2023	11:54:13	294	BP23MVEXP-ENV-DC-006			Camera	74	643159	6279197	643128	6279228	31	-31	44	-45		(Corr'd Nav, Kongsberg 14208, img#95) (B) (T.A)
05-Jul-2023	12:13:56	295	BP23MVEXP-ENV-DC-006			Camera	73	643091	6279194	643128	6279228	-37	-34	50	48		(Corr'd Nav, Kongsberg 14208, img#96) (B) (T.A)
05-Jul-2023	12:14:22	296	BP23MVEXP-ENV-DC-006			Camera	73	643092	6279195	643128	6279228	-36	-33	49	48		(Corr'd Nav, Kongsberg 14208, img#97) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	12:14:40	297	BP23MVEXP-ENV-DC-006			Camera	73	643093	6279196	643128	6279228	-35	-32	47	48		(Corr'd Nav, Kongsberg 14208, img#98) (B) (T.A)
05-Jul-2023	12:15:06	298	BP23MVEXP-ENV-DC-006			Camera	73	643095	6279198	643128	6279228	-33	-30	45	48		(Corr'd Nav, Kongsberg 14208, img#99) (B) (T.A)
05-Jul-2023	12:15:19	299	BP23MVEXP-ENV-DC-006			Camera	73	643096	6279199	643128	6279228	-32	-29	43	48		(Corr'd Nav, Kongsberg 14208, img#100) (B) (T.A)
05-Jul-2023	12:15:46	300	BP23MVEXP-ENV-DC-006			Camera	74	643098	6279202	643128	6279228	-30	-26	40	48		(Corr'd Nav, Kongsberg 14208, img#101) (B) (T.A)
05-Jul-2023	12:15:59	301	BP23MVEXP-ENV-DC-006			Camera	74	643099	6279203	643128	6279228	-29	-26	38	48		(Corr'd Nav, Kongsberg 14208, img#102) (B) (T.A)
05-Jul-2023	12:16:18	302	BP23MVEXP-ENV-DC-006			Camera	73	643101	6279203	643128	6279228	-27	-25	37	48		(Corr'd Nav, Kongsberg 14208, img#103) (B) (T.A)
05-Jul-2023	12:16:44	303	BP23MVEXP-ENV-DC-006			Camera	73	643102	6279205	643128	6279228	-26	-23	35	48		(Corr'd Nav, Kongsberg 14208, img#104) (B) (T.A)
05-Jul-2023	12:17:22	304	BP23MVEXP-ENV-DC-006			Camera	73	643105	6279207	643128	6279228	-23	-21	31	47		(Corr'd Nav, Kongsberg 14208, img#105) (B) (T.A)
05-Jul-2023	12:17:31	305	BP23MVEXP-ENV-DC-006			Camera	73	643106	6279207	643128	6279228	-22	-21	30	47		(Corr'd Nav, Kongsberg 14208, img#106) (B) (T.A)
05-Jul-2023	12:18:01	306	BP23MVEXP-ENV-DC-006			Camera	74	643108	6279210	643128	6279228	-20	-18	27	47		(Corr'd Nav, Kongsberg 14208, img#107) (B) (T.A)
05-Jul-2023	12:18:12	307	BP23MVEXP-ENV-DC-006			Camera	73	643109	6279210	643128	6279228	-19	-18	26	47		(Corr'd Nav, Kongsberg 14208, img#108) (B) (T.A)
05-Jul-2023	12:18:51	308	BP23MVEXP-ENV-DC-006			Camera	74	643112	6279213	643128	6279228	-16	-15	22	48		(Corr'd Nav, Kongsberg 14208, img#109) (B) (T.A)
05-Jul-2023	12:19:56	309	BP23MVEXP-ENV-DC-006			Camera	74	643117	6279218	643128	6279228	-11	-10	15	47		(Corr'd Nav, Kongsberg 14208, img#110) (B) (T.A)
05-Jul-2023	12:20:06	310	BP23MVEXP-ENV-DC-006			Camera	74	643118	6279218	643128	6279228	-10	-10	14	47		(Corr'd Nav, Kongsberg 14208, img#111) (B) (T.A)
05-Jul-2023	12:20:30	311	BP23MVEXP-ENV-DC-006			Camera	74	643120	6279220	643128	6279228	-9	-8	12	47		(Corr'd Nav, Kongsberg 14208, img#112) (B) (T.A)
05-Jul-2023	12:20:46	312	BP23MVEXP-ENV-DC-006			Camera	74	643121	6279221	643128	6279228	-7	-7	10	46		(Corr'd Nav, Kongsberg 14208, img#113) (B) (T.A)
05-Jul-2023	12:21:06	313	BP23MVEXP-ENV-DC-006			Camera	74	643122	6279222	643128	6279228	-6	-6	8	46		(Corr'd Nav, Kongsberg 14208, img#114) (B) (T.A)
05-Jul-2023	12:21:20	314	BP23MVEXP-ENV-DC-006			Camera	74	643123	6279223	643128	6279228	-5	-5	7	44		(Corr'd Nav, Kongsberg 14208, img#115) (B) (T.A)
05-Jul-2023	12:21:44	315	BP23MVEXP-ENV-DC-006			Camera	74	643125	6279224	643128	6279228	-3	-4	5	40		(Corr'd Nav, Kongsberg 14208, img#116) (B) (T.A)
05-Jul-2023	12:21:53	316	BP23MVEXP-ENV-DC-006			Camera	74	643125	6279225	643128	6279228	-3	-3	4	38		(Corr'd Nav, Kongsberg 14208, img#117) (B) (T.A)
05-Jul-2023	12:22:18	317	BP23MVEXP-ENV-DC-006			Camera	74	643127	6279226	643128	6279228	-1	-2	2	25		(Corr'd Nav, Kongsberg 14208, img#118) (B) (T.A)
05-Jul-2023	12:22:32	318	BP23MVEXP-ENV-DC-006			Camera	74	643129	6279228	643128	6279228	1	0	1	-62		(Corr'd Nav, Kongsberg 14208, img#119) (B) (T.A)
05-Jul-2023	12:22:49	319	BP23MVEXP-ENV-DC-006			Camera	74	643130	6279229	643128	6279228	2	1	2	-116		(Corr'd Nav, Kongsberg 14208, img#120) (B) (T.A)
05-Jul-2023	12:23:35	320	BP23MVEXP-ENV-DC-006			Camera	74	643133	6279232	643128	6279228	5	4	7	-129		(Corr'd Nav, Kongsberg 14208, img#121) (B) (T.A)
05-Jul-2023	12:24:32	321	BP23MVEXP-ENV-DC-006			Camera	74	643138	6279237	643128	6279228	10	9	13	-131		(Corr'd Nav, Kongsberg 14208, img#122) (B) (T.A)
05-Jul-2023	12:25:03	322	BP23MVEXP-ENV-DC-006			Camera	74	643140	6279239	643128	6279228	12	11	16	-131		(Corr'd Nav, Kongsberg 14208, img#123) (B) (T.A)
05-Jul-2023	12:26:15	323	BP23MVEXP-ENV-DC-006			Camera	74	643145	6279243	643128	6279228	17	15	22	-131		(Corr'd Nav, Kongsberg 14208, img#124) (B) (T.A)
05-Jul-2023	12:26:25	324	BP23MVEXP-ENV-DC-006			Camera	74	643145	6279243	643128	6279228	18	15	23	-131		(Corr'd Nav, Kongsberg 14208, img#125) (B) (T.A)
05-Jul-2023	12:27:34	325	BP23MVEXP-ENV-DC-006			Camera	74	643151	6279248	643128	6279228	23	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#126) (B) (T.A)
05-Jul-2023	12:30:34	326	BP23MVEXP-ENV-DC-006			Camera	74	643163	6279260	643128	6279228	35	32	48	-133		(Corr'd Nav, Kongsberg 14208, img#127) (B) (T.A)
05-Jul-2023	12:30:44	327	BP23MVEXP-ENV-DC-006			Camera	74	643163	6279261	643128	6279228	35	33	48	-133		(Corr'd Nav, Kongsberg 14208, img#128) (B) (T.A)
05-Jul-2023	13:51:36	328	BP23MVEXP-ENV-DC-007			Camera	72	645706	6276219	645743	6276186	-37	33	50	132		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	13:52:35	329	BP23MVEXP-ENV-DC-007			Camera	72	645710	6276223	645743	6276186	-33	37	50	138		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	13:53:18	330	BP23MVEXP-ENV-DC-007			Camera	72	645710	6276221	645743	6276186	-33	35	48	137		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	13:54:05	331	BP23MVEXP-ENV-DC-007			Camera	72	645714	6276219	645743	6276186	-30	33	44	138		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	13:54:23	332	BP23MVEXP-ENV-DC-007			Camera	72	645715	6276218	645743	6276186	-28	32	42	139		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	13:54:44	333	BP23MVEXP-ENV-DC-007			Camera	72	645717	6276216	645743	6276186	-26	30	40	139		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	13:54:55	334	BP23MVEXP-ENV-DC-007			Camera	72	645718	6276215	645743	6276186	-25	30	39	140		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	13:55:33	335	BP23MVEXP-ENV-DC-007			Camera	72	645721	6276213	645743	6276186	-22	27	35	141		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	13:55:57	336	BP23MVEXP-ENV-DC-007			Camera	72	645722	6276212	645743	6276186	-21	26	34	141		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	13:57:03	337	BP23MVEXP-ENV-DC-007			Camera	72	645726	6276206	645743	6276186	-17	20	27	139		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	13:57:11	338	BP23MVEXP-ENV-DC-007			Camera	72	645726	6276206	645743	6276186	-17	20	26	140		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	13:59:06	339	BP23MVEXP-ENV-DC-007			Camera	72	645735	6276197	645743	6276186	-8	11	14	143		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	13:59:19	340	BP23MVEXP-ENV-DC-007			Camera	72	645736	6276196	645743	6276186	-7	10	13	144		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	14:00:11	341	BP23MVEXP-ENV-DC-007			Camera	72	645740	6276193	645743	6276186	-3	7	8	154		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	14:00:28	342	BP23MVEXP-ENV-DC-007			Camera	72	645741	6276192	645743	6276186	-2	6	7	162		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	14:00:52	343	BP23MVEXP-ENV-DC-007			Camera	72	645743	6276191	645743	6276186	0	5	5	-177		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	14:01:09	344	BP23MVEXP-ENV-DC-007			Camera	72	645745	6276190	645743	6276186	2	4	4	-156		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	14:01:21	345	BP23MVEXP-ENV-DC-007				72	645745	6276188	645743	6276186	2	2	3	-136		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A) Fix no photo
05-Jul-2023	14:01:31	346	BP23MVEXP-ENV-DC-007			Camera	72	645746	6276187	645743	6276186	3	1	3	-116		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	14:01:45	347	BP23MVEXP-ENV-DC-007			Camera	72	645746	6276186	645743	6276186	3	0	3	-90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	14:02:07	348	BP23MVEXP-ENV-DC-007			Camera	72	645748	6276184	645743	6276186	5	-2	5	-65		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	14:02:44	349	BP23MVEXP-ENV-DC-007			Camera	72	645750	6276181	645743	6276186	7	-5	9	-52		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	14:05:17	350	BP23MVEXP-ENV-DC-007			Camera	72	645762	6276171	645743	6276186	19	-15	24	-51		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	14:05:23	351	BP23MVEXP-ENV-DC-007			Camera	72	645762	6276171	645743	6276186	19	-15	25	-51		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	14:06:22	352	BP23MVEXP-ENV-DC-007			Camera	72	645766	6276166	645743	6276186	24	-20	31	-50		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	14:06:34	353	BP23MVEXP-ENV-DC-007			Camera	72	645767	6276165	645743	6276186	24	-21	32	-49		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	14:08:10	354	BP23MVEXP-ENV-DC-007			Camera	72	645774	6276157	645743	6276186	31	-29	43	-47		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	14:17:42	355	BP23MVEXP-ENV-DC-007			Camera	72	645751	6276149	645743	6276186	8	-37	38	-13		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	14:31:23	356	BP23MVEXP-ENV-DC-007			Camera	72	645715	6276156	645743	6276186	-28	-31	42	43		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	14:31:40	357	BP23MVEXP-ENV-DC-007			Camera	72	645710	6276156	645743	6276186	-33	-30	44	48		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	14:32:09	358	BP23MVEXP-ENV-DC-007			Camera	72	645715	6276174	645743	6276186	-28	-12	30	67		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	14:32:37	359	BP23MVEXP-ENV-DC-007			Camera	72	645721	6276160	645743	6276186	-22	-26	34	40		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	14:32:54	360	BP23MVEXP-ENV-DC-007			Camera	72	645722	6276172	645743	6276186	-21	-14	25	57		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	14:33:04	361	BP23MVEXP-ENV-DC-007			Camera	72	645718	6276173	645743	6276186	-25	-13	28	62		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	14:33:19	362	BP23MVEXP-ENV-DC-007			Camera	72	645718	6276163	645743	6276186	-25	-23	34	48		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	14:33:43	363	BP23MVEXP-ENV-DC-007			Camera	72	645729	6276196	645743	6276186	-14	10	17	125		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	14:34:14	364	BP23MVEXP-ENV-DC-007			Camera	72	645724	6276178	645743	6276186	-19	-8	21	67		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	14:34:25	365	BP23MVEXP-ENV-DC-007			Camera	72	645724	6276178	645743	6276186	-19	-8	20	66		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	14:35:14	366	BP23MVEXP-ENV-DC-007			Camera	72	645727	6276179	645743	6276186	-16	-7	17	65		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	14:35:29	367	BP23MVEXP-ENV-DC-007			Camera	72	645727	6276173	645743	6276186	-16	-14	21	50		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	14:36:25	368	BP23MVEXP-ENV-DC-007			Camera	72	645728	6276190	645743	6276186	-15	4	16	104		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	14:37:08	369	BP23MVEXP-ENV-DC-007			Camera	72	645735	6276181	645743	6276186	-8	-5	9	57		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	14:37:20	370	BP23MVEXP-ENV-DC-007			Camera	72	645741	6276208	645743	6276186	-2	22	22	174		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	14:37:59	371	BP23MVEXP-ENV-DC-007			Camera	72	645754	6276217	645743	6276186	11	31	32	-161		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	14:38:08	372	BP23MVEXP-ENV-DC-007			Camera	72	645750	6276205	645743	6276186	7	19	20	-160		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	14:38:19	373	BP23MVEXP-ENV-DC-007			Camera	72	645741	6276186	645743	6276186	-2	0	2	99		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	14:38:51	374	BP23MVEXP-ENV-DC-007			Camera	72	645743	6276213	645743	6276186	0	27	27	-179		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	14:39:04	375	BP23MVEXP-ENV-DC-007			Camera	72	645745	6276209	645743	6276186	2	23	23	-175		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	14:39:18	376	BP23MVEXP-ENV-DC-007			Camera	72	645745	6276190	645743	6276186	2	4	4	-152		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	14:42:23	377	BP23MVEXP-ENV-DC-007			Camera	72	645760	6276210	645743	6276186	17	24	29	-144		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	14:42:34	378	BP23MVEXP-ENV-DC-007			Camera	72	645760	6276209	645743	6276186	17	23	29	-143		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	14:42:56	379	BP23MVEXP-ENV-DC-007			Camera	72	645762	6276213	645743	6276186	19	27	34	-145		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	14:43:40	380	BP23MVEXP-ENV-DC-007			Camera	72	645764	6276208	645743	6276186	21	22	30	-136		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	14:44:15	381	BP23MVEXP-ENV-DC-007			Camera	72	645767	6276210	645743	6276186	24	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	14:45:04	382	BP23MVEXP-ENV-DC-007			Camera	72	645772	6276222	645743	6276186	29	36	46	-141		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
05-Jul-2023	14:45:56	383	BP23MVEXP-ENV-DC-007			Camera	72	645774	6276216	645743	6276186	31	30	43	-134		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	16:50:41	384	BP23MVEXP-ENV-DC-008			Camera	72	648342	6273082	648378	6273115	-36	-33	49	47		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	16:52:31	385	BP23MVEXP-ENV-DC-008			Camera	72	648341	6273081	648378	6273115	-37	-34	50	48		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	16:56:59	386	BP23MVEXP-ENV-DC-008			Camera	72	648345	6273084	648378	6273115	-33	-31	45	46		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	16:57:36	387	BP23MVEXP-ENV-DC-008			Camera	72	648348	6273087	648378	6273115	-30	-28	42	47		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	16:57:45	388	BP23MVEXP-ENV-DC-008			Camera	72	648349	6273087	648378	6273115	-30	-28	41	47		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	16:57:58	389	BP23MVEXP-ENV-DC-008			Camera	72	648349	6273089	648378	6273115	-29	-26	39	47		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	16:58:56	390	BP23MVEXP-ENV-DC-008			Camera	72	648354	6273093	648378	6273115	-24	-22	32	48		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	16:59:28	391	BP23MVEXP-ENV-DC-008			Camera	72	648357	6273095	648378	6273115	-21	-21	30	46		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	16:59:55	392	BP23MVEXP-ENV-DC-008			Camera	72	648358	6273097	648378	6273115	-20	-18	27	48		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	17:00:22	393	BP23MVEXP-ENV-DC-008			Camera	72	648361	6273099	648378	6273115	-17	-16	23	46		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	17:00:33	394	BP23MVEXP-ENV-DC-008			Camera	72	648362	6273100	648378	6273115	-16	-15	22	46		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	17:01:00	395	BP23MVEXP-ENV-DC-008			Camera	72	648363	6273102	648378	6273115	-15	-13	20	48		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	17:01:24	396	BP23MVEXP-ENV-DC-008			Camera	72	648365	6273103	648378	6273115	-13	-12	18	48		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	17:01:43	397	BP23MVEXP-ENV-DC-008			Camera	72	648367	6273104	648378	6273115	-11	-11	15	47		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	17:02:55	398	BP23MVEXP-ENV-DC-008			Camera	72	648373	6273110	648378	6273115	-5	-5	7	49		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	17:03:29	399	BP23MVEXP-ENV-DC-008			Camera	72	648375	6273113	648378	6273115	-3	-2	4	52		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	17:03:39	400	BP23MVEXP-ENV-DC-008			Camera	72	648376	6273113	648378	6273115	-2	-2	3	55		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	17:03:51	401	BP23MVEXP-ENV-DC-008			Camera	72	648376	6273114	648378	6273115	-2	-1	2	64		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	17:04:20	402	BP23MVEXP-ENV-DC-008			Camera	72	648379	6273116	648378	6273115	1	1	1	-145		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	17:06:27	403	BP23MVEXP-ENV-DC-008			Camera	72	648389	6273126	648378	6273115	11	11	15	-134		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	17:07:21	404	BP23MVEXP-ENV-DC-008			Camera	72	648392	6273129	648378	6273115	14	14	19	-134		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	17:07:34	405	BP23MVEXP-ENV-DC-008			Camera	72	648393	6273130	648378	6273115	15	15	21	-134		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	17:08:56	406	BP23MVEXP-ENV-DC-008			Camera	72	648399	6273136	648378	6273115	21	21	30	-135		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	17:09:05	407	BP23MVEXP-ENV-DC-008			Camera	72	648400	6273137	648378	6273115	22	22	31	-135		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	17:09:34	408	BP23MVEXP-ENV-DC-008			Camera	72	648403	6273139	648378	6273115	25	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	17:11:12	409	BP23MVEXP-ENV-DC-008			Camera	72	648409	6273146	648378	6273115	31	31	44	-134		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	17:30:49	410	BP23MVEXP-ENV-DC-008			Camera	72	648347	6273148	648378	6273115	-31	33	45	137		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	17:31:13	411	BP23MVEXP-ENV-DC-008			Camera	72	648349	6273146	648378	6273115	-29	31	42	137		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	17:32:32	412	BP23MVEXP-ENV-DC-008			Camera	72	648355	6273139	648378	6273115	-23	24	33	136		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	17:32:44	413	BP23MVEXP-ENV-DC-008			Camera	72	648356	6273138	648378	6273115	-22	23	32	136		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	17:33:24	414	BP23MVEXP-ENV-DC-008			Camera	72	648359	6273136	648378	6273115	-19	21	28	138		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	17:33:38	415	BP23MVEXP-ENV-DC-008			Camera	72	648360	6273135	648378	6273115	-18	21	27	139		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	17:33:54	416	BP23MVEXP-ENV-DC-008			Camera	72	648361	6273134	648378	6273115	-17	19	25	139		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	17:35:08	417	BP23MVEXP-ENV-DC-008			Camera	72	648367	6273128	648378	6273115	-11	13	17	140		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	17:35:50	418	BP23MVEXP-ENV-DC-008			Camera	72	648370	6273125	648378	6273115	-8	10	13	141		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	17:36:41	419	BP23MVEXP-ENV-DC-008			Camera	72	648374	6273121	648378	6273115	-4	6	7	143		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	17:37:07	420	BP23MVEXP-ENV-DC-008			Camera	72	648375	6273119	648378	6273115	-3	4	5	145		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	17:37:15	421	BP23MVEXP-ENV-DC-008			Camera	72	648376	6273119	648378	6273115	-2	4	4	148		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	17:37:40	422	BP23MVEXP-ENV-DC-008			Camera	72	648378	6273117	648378	6273115	0	2	2	166		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	17:37:45	423	BP23MVEXP-ENV-DC-008			Camera	72	648378	6273116	648378	6273115	0	1	1	-176		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	17:37:55	424	BP23MVEXP-ENV-DC-008			Camera	72	648379	6273116	648378	6273115	1	1	1	-125		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	17:38:19	425	BP23MVEXP-ENV-DC-008			Camera	72	648381	6273114	648378	6273115	3	-1	3	-66		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	17:38:39	426	BP23MVEXP-ENV-DC-008			Camera	72	648382	6273113	648378	6273115	4	-2	5	-58		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	17:39:25	427	BP23MVEXP-ENV-DC-008			Camera	72	648385	6273109	648378	6273115	7	-6	9	-48		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	17:39:41	428	BP23MVEXP-ENV-DC-008			Camera	72	648386	6273108	648378	6273115	8	-7	10	-48		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	17:40:25	429	BP23MVEXP-ENV-DC-008			Camera	72	648389	6273104	648378	6273115	11	-11	15	-46		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	17:41:00	430	BP23MVEXP-ENV-DC-008			Camera	72	648392	6273102	648378	6273115	14	-13	19	-47		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	17:41:06	431	BP23MVEXP-ENV-DC-008			Camera	72	648392	6273102	648378	6273115	14	-13	19	-47		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	17:41:44	432	BP23MVEXP-ENV-DC-008			Camera	72	648395	6273099	648378	6273115	17	-16	23	-47		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	17:43:48	433	BP23MVEXP-ENV-DC-008			Camera	72	648404	6273089	648378	6273115	26	-26	36	-45		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	17:44:37	434	BP23MVEXP-ENV-DC-008			Camera	72	648408	6273086	648378	6273115	30	-29	42	-45		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	19:03:23	435	BP23MVEXP-ENV-DC-009			Camera	73	650905	6270172	650936	6270129	-31	43	53	144		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	19:04:52	436	BP23MVEXP-ENV-DC-009			Camera	73	650905	6270171	650936	6270129	-31	42	52	144		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	19:05:29	437	BP23MVEXP-ENV-DC-009			Camera	74	650906	6270171	650936	6270129	-30	42	51	145		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	19:06:08	438	BP23MVEXP-ENV-DC-009			Camera	73	650909	6270168	650936	6270129	-27	40	48	145		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	19:06:20	439	BP23MVEXP-ENV-DC-009			Camera	73	650910	6270168	650936	6270129	-26	39	47	146		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	19:06:54	440	BP23MVEXP-ENV-DC-009			Camera	73	650912	6270165	650936	6270129	-24	36	44	146		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	19:07:04	441	BP23MVEXP-ENV-DC-009			Camera	73	650913	6270164	650936	6270129	-23	35	42	147		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	19:07:27	442	BP23MVEXP-ENV-DC-009			Camera	73	650915	6270163	650936	6270129	-22	34	40	148		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	19:07:39	443	BP23MVEXP-ENV-DC-009			Camera	73	650915	6270163	650936	6270129	-21	34	39	148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	19:08:37	444	BP23MVEXP-ENV-DC-009			Camera	73	650920	6270156	650936	6270129	-16	27	32	149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	19:08:51	445	BP23MVEXP-ENV-DC-009			Camera	74	650921	6270155	650936	6270129	-15	26	30	150		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	19:09:36	446	BP23MVEXP-ENV-DC-009			Camera	74	650924	6270152	650936	6270129	-13	23	26	151		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	19:11:13	447	BP23MVEXP-ENV-DC-009			Camera	74	650930	6270143	650936	6270129	-6	14	15	158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	19:11:55	448	BP23MVEXP-ENV-DC-009			Camera	74	650933	6270140	650936	6270129	-3	11	11	164		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	19:12:46	449	BP23MVEXP-ENV-DC-009			Camera	74	650936	6270137	650936	6270129	0	8	8	-177		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	19:12:57	450	BP23MVEXP-ENV-DC-009			Camera	74	650937	6270136	650936	6270129	1	7	7	-169		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	19:13:10	451	BP23MVEXP-ENV-DC-009			Camera	74	650938	6270135	650936	6270129	2	6	6	-158		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	19:13:26	452	BP23MVEXP-ENV-DC-009			Camera	74	650939	6270133	650936	6270129	3	4	6	-142		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	19:13:39	453	BP23MVEXP-ENV-DC-009				75	650940.25	6270132.39	650936	6270129	-4	-3	5	231	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:13:48	454	BP23MVEXP-ENV-DC-009				75	650940.25	6270132.39	650936	6270129	-4	-3	5	231	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:11	455	BP23MVEXP-ENV-DC-009			Camera	75	650940.92	6270131.74	650936	6270129	-5	-3	6	241	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:20	456	BP23MVEXP-ENV-DC-009			Camera	75	650942.38	6270130.16	650936	6270129	-6	-1	6	260	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:44	457	BP23MVEXP-ENV-DC-009			Camera	75	650942.95	6270129.61	650936	6270129	-7	-1	7	265	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:58	458	BP23MVEXP-ENV-DC-009			Camera	75	650944.53	6270127.26	650936	6270129	-9	2	9	282	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:15:37	459	BP23MVEXP-ENV-DC-009			Camera	75	650945.15	6270126.49	650936	6270129	-9	3	9	285	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:15:57	460	BP23MVEXP-ENV-DC-009			Camera	75	650947.87	6270123.19	650936	6270129	-12	6	13	296	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:16:38	461	BP23MVEXP-ENV-DC-009			Camera	75	650949.04	6270121.86	650936	6270129	-13	7	15	299	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:17:08	462	BP23MVEXP-ENV-DC-009			Camera	75	650951.82	6270118.48	650936	6270129	-16	11	19	304	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:17:30	463	BP23MVEXP-ENV-DC-009			Camera	75	650953.79	6270115.82	650936	6270129	-18	13	22	307	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:17:44	464	BP23MVEXP-ENV-DC-009			Camera	75	650955.09	6270114.82	650936	6270129	-19	14	24	307	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:19:11	465	BP23MVEXP-ENV-DC-009			Camera	74	650962	6270108	650936	6270129	26	-21	33	-52		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	19:20:22	466	BP23MVEXP-ENV-DC-009			Camera	74	650967	6270103	650936	6270129	31	-26	40	-49		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	19:20:43	467	BP23MVEXP-ENV-DC-009			Camera	74	650968	6270101	650936	6270129	32	-28	42	-49		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	19:22:55	468	BP23MVEXP-ENV-DC-009			Camera	74	650972	6270095	650936	6270129	36	-34	50	-47		(Raw Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	19:34:46	469	BP23MVEXP-ENV-DC-009			Camera	74	650971	6270161	650936	6270129	35	32	48	-133		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	19:35:25	470	BP23MVEXP-ENV-DC-009			Camera	74	650971	6270162	650936	6270129	35	33	48	-134		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	19:36:02	471	BP23MVEXP-ENV-DC-009			Camera	74	650969	6270162	650936	6270129	33	33	46	-135		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	19:36:26	472	BP23MVEXP-ENV-DC-009			Camera	74	650967	6270160	650936	6270129	31	31	44	-135		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	19:37:03	473	BP23MVEXP-ENV-DC-009			Camera	74	650965	6270158	650936	6270129	29	29	41	-135		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	19:37:37	474	BP23MVEXP-ENV-DC-009			Camera	74	650962	6270155	650936	6270129	26	26	37	-135		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	19:37:58	475	BP23MVEXP-ENV-DC-009			Camera	74	650960	6270153	650936	6270129	24	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	19:38:19	476	BP23MVEXP-ENV-DC-009			Camera	74	650959	6270152	650936	6270129	23	23	33	-136		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	19:39:11	477	BP23MVEXP-ENV-DC-009			Camera	74	650955	6270149	650936	6270129	19	20	27	-136		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	19:39:22	478	BP23MVEXP-ENV-DC-009			Camera	74	650954	6270148	650936	6270129	18	19	26	-136		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	19:40:37	479	BP23MVEXP-ENV-DC-009			Camera	74	650949	6270142	650936	6270129	13	13	18	-135		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	19:42:54	480	BP23MVEXP-ENV-DC-009			Camera	74	650939	6270133	650936	6270129	3	4	5	-146		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	19:43:14	481	BP23MVEXP-ENV-DC-009			Camera	74	650937	6270131	650936	6270129	1	2	3	-149		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	19:43:23	482	BP23MVEXP-ENV-DC-009			Camera	74	650937	6270131	650936	6270129	1	2	2	-157		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	19:43:37	483	BP23MVEXP-ENV-DC-009			Camera	74	650936	6270129	650936	6270129	0	0	1	150		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	19:44:03	484	BP23MVEXP-ENV-DC-009			Camera	74	650934	6270128	650936	6270129	-2	-1	2	65		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	19:45:25	485	BP23MVEXP-ENV-DC-009			Camera	74	650928	6270122	650936	6270129	-8	-7	11	50		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	19:47:36	486	BP23MVEXP-ENV-DC-009			Camera	74	650918	6270113	650936	6270129	-18	-16	24	48		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	19:48:23	487	BP23MVEXP-ENV-DC-009			Camera	74	650915	6270111	650936	6270129	-21	-18	27	49		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	19:49:46	488	BP23MVEXP-ENV-DC-009			Camera	74	650908	6270104	650936	6270129	-28	-25	38	48		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	19:50:28	489	BP23MVEXP-ENV-DC-009			Camera	73	650905	6270101	650936	6270129	-31	-28	42	48		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	19:51:17	490	BP23MVEXP-ENV-DC-009			Camera	74	650903	6270099	650936	6270129	-33	-30	45	48		(Raw Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	21:55:24	491	BP23MVEXP-ENV-DC-010			Camera	74	653517	6267123	653551	6267079	-34	44	55	142		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
05-Jul-2023	21:58:15	492	BP23MVEXP-ENV-DC-010			Camera	74	653523	6267119	653551	6267079	-28	40	49	145		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	21:58:40	493	BP23MVEXP-ENV-DC-010			Camera	74	653524	6267117	653551	6267079	-27	38	47	145		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	21:59:17	494	BP23MVEXP-ENV-DC-010			Camera	74	653526	6267114	653551	6267079	-25	35	43	145		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	21:59:36	495	BP23MVEXP-ENV-DC-010			Camera	74	653527	6267113	653551	6267079	-24	34	41	145		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	21:59:50	496	BP23MVEXP-ENV-DC-010			Camera	74	653528	6267112	653551	6267079	-23	33	40	145		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	22:00:00	497	BP23MVEXP-ENV-DC-010			Camera	74	653529	6267111	653551	6267079	-22	32	39	145		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	22:01:11	498	BP23MVEXP-ENV-DC-010			Camera	74	653534	6267105	653551	6267079	-17	26	31	147		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	22:03:12	499	BP23MVEXP-ENV-DC-010			Camera	74	653541	6267095	653551	6267079	-10	16	19	147		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	22:03:39	500	BP23MVEXP-ENV-DC-010			Camera	74	653543	6267092	653551	6267079	-8	13	16	148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	22:04:12	501	BP23MVEXP-ENV-DC-010			Camera	74	653545	6267090	653551	6267079	-6	11	13	150		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	22:04:52	502	BP23MVEXP-ENV-DC-010			Camera	74	653548	6267087	653551	6267079	-3	8	9	158		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	22:05:18	503	BP23MVEXP-ENV-DC-010			Camera	74	653550	6267085	653551	6267079	-1	6	6	168		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	22:05:30	504	BP23MVEXP-ENV-DC-010			Camera	74	653551	6267084	653551	6267079	0	5	5	176		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	22:05:56	505	BP23MVEXP-ENV-DC-010			Camera	74	653553	6267082	653551	6267079	2	3	3	-153		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	22:06:08	506	BP23MVEXP-ENV-DC-010				74	653553	6267081	653551	6267079	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A) Fix no photo
05-Jul-2023	22:06:20	507	BP23MVEXP-ENV-DC-010			Camera	74	653554	6267080	653551	6267079	3	1	3	-117		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	22:06:37	508	BP23MVEXP-ENV-DC-010			Camera	74	653555	6267079	653551	6267079	4	0	4	-86		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	22:06:49	509	BP23MVEXP-ENV-DC-010			Camera	74	653555	6267078	653551	6267079	4	-1	5	-75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	22:07:08	510	BP23MVEXP-ENV-DC-010			Camera	74	653556	6267077	653551	6267079	5	-2	6	-66		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	22:07:37	511	BP23MVEXP-ENV-DC-010			Camera	74	653557	6267075	653551	6267079	6	-4	8	-57		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	22:08:05	512	BP23MVEXP-ENV-DC-010			Camera	74	653559	6267072	653551	6267079	8	-7	11	-51		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	22:08:18	513	BP23MVEXP-ENV-DC-010			Camera	74	653560	6267071	653551	6267079	9	-8	12	-50		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	22:09:44	514	BP23MVEXP-ENV-DC-010			Camera	74	653567	6267065	653551	6267079	16	-14	21	-49		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	22:09:53	515	BP23MVEXP-ENV-DC-010			Camera	74	653567	6267065	653551	6267079	16	-15	22	-48		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	22:10:20	516	BP23MVEXP-ENV-DC-010			Camera	74	653569	6267062	653551	6267079	18	-17	25	-47		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	22:11:19	517	BP23MVEXP-ENV-DC-010			Camera	74	653573	6267058	653551	6267079	22	-21	30	-46		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	22:11:40	518	BP23MVEXP-ENV-DC-010			Camera	74	653575	6267056	653551	6267079	24	-23	33	-46		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	22:12:37	519	BP23MVEXP-ENV-DC-010			Camera	74	653580	6267051	653551	6267079	29	-28	40	-46		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	22:13:07	520	BP23MVEXP-ENV-DC-010			Camera	74	653582	6267049	653551	6267079	31	-30	43	-45		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	22:14:04	521	BP23MVEXP-ENV-DC-010			Camera	74	653585	6267043	653551	6267079	34	-36	49	-44		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	22:23:08	522	BP23MVEXP-ENV-DC-010			Camera	74	653586	6267089	653551	6267079	35	10	37	-105		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	22:27:43	523	BP23MVEXP-ENV-DC-010			Camera	74	653588	6267112	653551	6267079	37	33	50	-131		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	22:28:19	524	BP23MVEXP-ENV-DC-010			Camera	74	653586	6267109	653551	6267079	35	30	46	-131		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	22:28:57	525	BP23MVEXP-ENV-DC-010			Camera	74	653581	6267106	653551	6267079	30	27	41	-132		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	22:29:08	526	BP23MVEXP-ENV-DC-010			Camera	74	653580	6267105	653551	6267079	29	26	39	-132		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	22:30:01	527	BP23MVEXP-ENV-DC-010			Camera	74	653576	6267102	653551	6267079	25	23	34	-132		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	22:30:37	528	BP23MVEXP-ENV-DC-010			Camera	74	653573	6267099	653551	6267079	22	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	22:33:24	529	BP23MVEXP-ENV-DC-010			Camera	74	653560	6267087	653551	6267079	9	8	12	-129		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	22:34:44	530	BP23MVEXP-ENV-DC-010			Camera	74	653554	6267081	653551	6267079	3	2	4	-124		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	22:34:53	531	BP23MVEXP-ENV-DC-010			Camera	74	653554	6267081	653551	6267079	3	2	3	-126		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	22:35:16	532	BP23MVEXP-ENV-DC-010			Camera	74	653552	6267079	653551	6267079	1	0	1	-110		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	22:35:23	533	BP23MVEXP-ENV-DC-010			Camera	74	653551	6267079	653551	6267079	0	0	0	8		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	22:35:35	534	BP23MVEXP-ENV-DC-010			Camera	74	653550	6267078	653551	6267079	-1	-1	1	46		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	22:35:47	535	BP23MVEXP-ENV-DC-010			Camera	74	653549	6267077	653551	6267079	-2	-2	2	48		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	22:36:25	536	BP23MVEXP-ENV-DC-010			Camera	74	653547	6267075	653551	6267079	-4	-4	6	46		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	22:37:10	537	BP23MVEXP-ENV-DC-010			Camera	74	653543	6267071	653551	6267079	-8	-8	11	45		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	22:37:20	538	BP23MVEXP-ENV-DC-010			Camera	74	653543	6267071	653551	6267079	-8	-8	12	46		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	22:38:09	539	BP23MVEXP-ENV-DC-010			Camera	74	653539	6267066	653551	6267079	-12	-13	17	43		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	22:39:16	540	BP23MVEXP-ENV-DC-010			Camera	74	653534	6267062	653551	6267079	-17	-17	24	45		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	22:41:57	541	BP23MVEXP-ENV-DC-010			Camera	74	653522	6267050	653551	6267079	-29	-29	41	45		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	00:14:13	542	BP23MVEXP-ENV-DC-011			Camera	73	656121	6264072	656157	6264039	-37	33	49	132		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	00:14:34	543	BP23MVEXP-ENV-DC-011			Camera	73	656120	6264072	656157	6264039	-37	33	50	132		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	00:15:24	544	BP23MVEXP-ENV-DC-011			Camera	73	656120	6264072	656157	6264039	-37	33	50	132		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	00:16:14	545	BP23MVEXP-ENV-DC-011			Camera	73	656120	6264072	656157	6264039	-37	33	50	132		(Raw Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	00:18:58	546	BP23MVEXP-ENV-DC-011			Camera	73	656125	6264069	656157	6264039	-32	30	44	133		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	00:20:01	547	BP23MVEXP-ENV-DC-011			Camera	73	656129	6264065	656157	6264039	-28	26	38	133		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	00:20:42	548	BP23MVEXP-ENV-DC-011			Camera	73	656133	6264063	656157	6264039	-24	24	34	134		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	00:21:18	549	BP23MVEXP-ENV-DC-011			Camera	73	656136	6264061	656157	6264039	-21	22	30	136		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	00:22:13	550	BP23MVEXP-ENV-DC-011			Camera	73	656139	6264057	656157	6264039	-18	18	25	136		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	00:22:35	551	BP23MVEXP-ENV-DC-011			Camera	73	656141	6264056	656157	6264039	-16	17	23	136		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	00:23:14	552	BP23MVEXP-ENV-DC-011			Camera	73	656144	6264053	656157	6264039	-13	14	19	137		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	00:24:03	553	BP23MVEXP-ENV-DC-011			Camera	73	656147	6264050	656157	6264039	-10	11	14	138		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	00:25:38	554	BP23MVEXP-ENV-DC-011			Camera	73	656155	6264043	656157	6264039	-2	4	5	157		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	00:26:12	555	BP23MVEXP-ENV-DC-011			Camera	73	656158	6264040	656157	6264039	1	1	1	-136		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	00:27:02	556	BP23MVEXP-ENV-DC-011			Camera	73	656162	6264035	656157	6264039	5	-4	6	-52		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	00:27:20	557	BP23MVEXP-ENV-DC-011			Camera	73	656163	6264034	656157	6264039	6	-5	8	-49		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	00:28:05	558	BP23MVEXP-ENV-DC-011			Camera	73	656166	6264032	656157	6264039	9	-7	12	-51		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	00:29:24	559	BP23MVEXP-ENV-DC-011			Camera	73	656172	6264027	656157	6264039	15	-12	19	-50		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	00:29:36	560	BP23MVEXP-ENV-DC-011			Camera	73	656172	6264026	656157	6264039	15	-13	20	-48		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	00:30:45	561	BP23MVEXP-ENV-DC-011			Camera	73	656177	6264021	656157	6264039	20	-18	27	-48		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	00:30:58	562	BP23MVEXP-ENV-DC-011			Camera	73	656178	6264020	656157	6264039	21	-19	29	-48		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	00:32:33	563	BP23MVEXP-ENV-DC-011			Camera	73	656185	6264014	656157	6264039	28	-25	38	-48		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	00:32:50	564	BP23MVEXP-ENV-DC-011			Camera	73	656186	6264013	656157	6264039	30	-26	40	-48		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	00:50:50	565	BP23MVEXP-ENV-DC-011			Camera	73	656192	6264072	656157	6264039	35	33	48	-134		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	00:52:00	566	BP23MVEXP-ENV-DC-011			Camera	73	656190	6264071	656157	6264039	33	32	46	-134		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	00:53:17	567	BP23MVEXP-ENV-DC-011			Camera	73	656187	6264068	656157	6264039	30	29	41	-134		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	00:54:13	568	BP23MVEXP-ENV-DC-011			Camera	73	656184	6264065	656157	6264039	27	26	37	-134		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	00:55:13	569	BP23MVEXP-ENV-DC-011			Camera	73	656178	6264060	656157	6264039	21	21	30	-135		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	00:56:46	570	BP23MVEXP-ENV-DC-011			Camera	73	656171	6264054	656157	6264039	14	15	20	-137		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	00:59:17	571	BP23MVEXP-ENV-DC-011			Camera	73	656161	6264043	656157	6264039	4	4	6	-136		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	01:00:00	572	BP23MVEXP-ENV-DC-011			Camera	73	656157	6264040	656157	6264039	0	1	1	-140		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	01:01:04	573	BP23MVEXP-ENV-DC-011			Camera	73	656152	6264035	656157	6264039	-5	-4	6	50		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	01:01:34	574	BP23MVEXP-ENV-DC-011			Camera	73	656150	6264032	656157	6264039	-7	-7	10	45		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	01:02:24	575	BP23MVEXP-ENV-DC-011			Camera	73	656147	6264029	656157	6264039	-10	-10	14	45		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	01:02:57	576	BP23MVEXP-ENV-DC-011			Camera	73	656145	6264027	656157	6264039	-12	-12	17	46		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	01:03:11	577	BP23MVEXP-ENV-DC-011			Camera	73	656144	6264026	656157	6264039	-13	-13	19	45		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	01:04:24	578	BP23MVEXP-ENV-DC-011			Camera	73	656137	6264020	656157	6264039	-20	-19	27	46		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	01:05:10	579	BP23MVEXP-ENV-DC-011			Camera	73	656134	6264017	656157	6264039	-23	-22	32	46		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	01:05:47	580	BP23MVEXP-ENV-DC-011			Camera	73	656131	6264015	656157	6264039	-26	-24	36	47		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	01:06:27	581	BP23MVEXP-ENV-DC-011			Camera	73	656128	6264012	656157	6264039	-29	-27	40	47		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	01:06:43	582	BP23MVEXP-ENV-DC-011				73	656127	6264010	656157	6264039	-30	-29	41	46		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A) Fix no photo
06-Jul-2023	01:07:12	583	BP23MVEXP-ENV-DC-011			Camera	73	656125	6264008	656157	6264039	-32	-31	45	45		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	01:07:35	584	BP23MVEXP-ENV-DC-011			Camera	73	656123	6264006	656157	6264039	-34	-33	47	45		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	01:07:53	585	BP23MVEXP-ENV-DC-011			Camera	73	656122	6264005	656157	6264039	-35	-34	49	46		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	02:52:22	586	BP23MVEXP-ENV-DC-012			Camera	73	656653	6260180	656656	6260131	-3	49	49	177		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	02:53:35	587	BP23MVEXP-ENV-DC-012			Camera	73	656652	6260181	656656	6260131	-4	50	50	175		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	02:54:58	588	BP23MVEXP-ENV-DC-012			Camera	73	656653	6260180	656656	6260131	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	02:55:45	589	BP23MVEXP-ENV-DC-012			Camera	73	656653	6260176	656656	6260131	-3	45	45	176		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	02:56:10	590	BP23MVEXP-ENV-DC-012			Camera	73	656654	6260173	656656	6260131	-2	42	42	177		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	02:57:08	591	BP23MVEXP-ENV-DC-012			Camera	73	656655	6260168	656656	6260131	-1	37	37	178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	02:57:55	592	BP23MVEXP-ENV-DC-012			Camera	73	656655	6260163	656656	6260131	-1	32	32	178		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	02:58:40	593	BP23MVEXP-ENV-DC-012			Camera	73	656656	6260158	656656	6260131	0	27	27	180		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	02:58:54	594	BP23MVEXP-ENV-DC-012			Camera	73	656656	6260156	656656	6260131	0	25	25	-180		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	02:59:51	595	BP23MVEXP-ENV-DC-012			Camera	73	656657	6260151	656656	6260131	1	20	20	-176		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	03:00:24	596	BP23MVEXP-ENV-DC-012			Camera	73	656657	6260147	656656	6260131	1	16	16	-176		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	03:00:54	597	BP23MVEXP-ENV-DC-012			Camera	73	656658	6260144	656656	6260131	2	13	13	-174		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	03:02:51	598	BP23MVEXP-ENV-DC-012			Camera	73	656659	6260132	656656	6260131	3	1	4	-113		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	03:03:05	599	BP23MVEXP-ENV-DC-012			Camera	73	656659	6260131	656656	6260131	3	0	3	-91		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	03:04:12	600	BP23MVEXP-ENV-DC-012			Camera	73	656661	6260124	656656	6260131	5	-7	9	-36		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	03:04:43	601	BP23MVEXP-ENV-DC-012			Camera	73	656661	6260121	656656	6260131	5	-10	11	-28		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	03:05:43	602	BP23MVEXP-ENV-DC-012			Camera	73	656662	6260115	656656	6260131	6	-16	17	-21		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	03:06:32	603	BP23MVEXP-ENV-DC-012			Camera	73	656662	6260110	656656	6260131	6	-21	22	-17		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	03:07:56	604	BP23MVEXP-ENV-DC-012			Camera	73	656664	6260102	656656	6260131	8	-29	30	-16		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	03:08:21	605	BP23MVEXP-ENV-DC-012			Camera	73	656663	6260099	656656	6260131	7	-32	32	-13		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	03:08:46	606	BP23MVEXP-ENV-DC-012			Camera	73	656664	6260097	656656	6260131	8	-34	35	-13		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	03:09:08	607	BP23MVEXP-ENV-DC-012			Camera	73	656665	6260094	656656	6260131	9	-37	38	-13		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	03:09:44	608	BP23MVEXP-ENV-DC-012			Camera	73	656665	6260090	656656	6260131	9	-41	42	-12		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	03:10:17	609	BP23MVEXP-ENV-DC-012			Camera	73	656665	6260088	656656	6260131	9	-43	44	-12		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	03:24:17	610	BP23MVEXP-ENV-DC-012			Camera	73	656705	6260134	656656	6260131	49	3	49	-93		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	03:25:16	611	BP23MVEXP-ENV-DC-012			Camera	73	656699	6260136	656656	6260131	43	5	44	-96		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	03:25:33	612	BP23MVEXP-ENV-DC-012			Camera	73	656698	6260136	656656	6260131	42	5	43	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	03:26:00	613	BP23MVEXP-ENV-DC-012			Camera	73	656695	6260135	656656	6260131	39	4	39	-97		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	03:26:29	614	BP23MVEXP-ENV-DC-012			Camera	73	656692	6260135	656656	6260131	36	4	36	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	03:27:06	615	BP23MVEXP-ENV-DC-012			Camera	73	656688	6260134	656656	6260131	32	3	32	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	03:27:36	616	BP23MVEXP-ENV-DC-012			Camera	73	656684	6260135	656656	6260131	28	4	29	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	03:28:15	617	BP23MVEXP-ENV-DC-012			Camera	73	656681	6260135	656656	6260131	25	4	25	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	03:29:13	618	BP23MVEXP-ENV-DC-012			Camera	73	656675	6260135	656656	6260131	19	4	19	-101		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	03:29:44	619	BP23MVEXP-ENV-DC-012			Camera	73	656671	6260134	656656	6260131	15	3	16	-102		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	03:30:57	620	BP23MVEXP-ENV-DC-012			Camera	73	656664	6260133	656656	6260131	8	2	8	-104		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	03:31:51	621	BP23MVEXP-ENV-DC-012			Camera	73	656660	6260133	656656	6260131	4	2	4	-117		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	03:32:13	622	BP23MVEXP-ENV-DC-012			Camera	73	656657	6260133	656656	6260131	1	2	2	-154		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	03:32:42	623	BP23MVEXP-ENV-DC-012			Camera	73	656654	6260132	656656	6260131	-2	1	3	121		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	03:33:55	624	BP23MVEXP-ENV-DC-012			Camera	73	656646	6260132	656656	6260131	-10	1	10	98		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	03:34:31	625	BP23MVEXP-ENV-DC-012			Camera	73	656643	6260132	656656	6260131	-13	1	13	94		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	03:35:18	626	BP23MVEXP-ENV-DC-012			Camera	73	656638	6260132	656656	6260131	-18	1	18	94		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	03:35:59	627	BP23MVEXP-ENV-DC-012			Camera	73	656633	6260131	656656	6260131	-23	0	23	90		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	03:36:32	628	BP23MVEXP-ENV-DC-012			Camera	73	656630	6260131	656656	6260131	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	03:37:18	629	BP23MVEXP-ENV-DC-012			Camera	73	656626	6260132	656656	6260131	-30	1	30	91		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	03:38:24	630	BP23MVEXP-ENV-DC-012			Camera	73	656619	6260130	656656	6260131	-37	-1	37	89		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	03:39:30	631	BP23MVEXP-ENV-DC-012			Camera	73	656611	6260129	656656	6260131	-45	-2	45	87		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	03:40:05	632	BP23MVEXP-ENV-DC-012			Camera	73	656608	6260129	656656	6260131	-48	-2	48	88		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	04:43:30	633	BP23MVEXP-ENV-DC-013			Camera	74	656881	6256083	656877	6256136	4	-53	53	-4		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	04:45:13	634	BP23MVEXP-ENV-DC-013			Camera	74	656881	6256084	656877	6256136	4	-52	52	-4		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	04:46:24	635	BP23MVEXP-ENV-DC-013			Camera	74	656880	6256089	656877	6256136	3	-47	47	-4		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	04:46:53	636	BP23MVEXP-ENV-DC-013			Camera	74	656880	6256091	656877	6256136	3	-45	45	-4		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	04:47:45	637	BP23MVEXP-ENV-DC-013			Camera	74	656880	6256097	656877	6256136	3	-39	39	-4		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	04:48:10	638	BP23MVEXP-ENV-DC-013			Camera	74	656879	6256100	656877	6256136	2	-37	37	-4		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	04:48:35	639	BP23MVEXP-ENV-DC-013			Camera	74	656879	6256102	656877	6256136	2	-34	34	-4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	04:49:45	640	BP23MVEXP-ENV-DC-013			Camera	74	656879	6256110	656877	6256136	2	-26	26	-3		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	04:50:32	641	BP23MVEXP-ENV-DC-013			Camera	74	656878	6256115	656877	6256136	1	-21	21	-3		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	04:51:12	642	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256119	656877	6256136	0	-17	17	-1		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	04:52:37	643	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256128	656877	6256136	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	04:53:00	644	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256130	656877	6256136	0	-6	6	3		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	04:53:26	645	BP23MVEXP-ENV-DC-013			Camera	74	656876	6256134	656877	6256136	-1	-2	2	15		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	04:53:54	646	BP23MVEXP-ENV-DC-013			Camera	74	656876	6256137	656877	6256136	-1	1	1	119		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	04:54:26	647	BP23MVEXP-ENV-DC-013			Camera	74	656875	6256140	656877	6256136	-2	4	4	156		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	04:54:52	648	BP23MVEXP-ENV-DC-013			Camera	74	656876	6256142	656877	6256136	-1	6	7	168		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	04:55:07	649	BP23MVEXP-ENV-DC-013			Camera	74	656875	6256144	656877	6256136	-2	8	8	167		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	04:55:34	650	BP23MVEXP-ENV-DC-013			Camera	74	656875	6256146	656877	6256136	-2	10	10	170		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	04:56:18	651	BP23MVEXP-ENV-DC-013			Camera	74	656874	6256151	656877	6256136	-3	15	15	170		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	04:56:48	652	BP23MVEXP-ENV-DC-013			Camera	74	656874	6256154	656877	6256136	-3	18	18	170		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	04:57:20	653	BP23MVEXP-ENV-DC-013			Camera	74	656874	6256158	656877	6256136	-3	22	22	171		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	04:57:47	654	BP23MVEXP-ENV-DC-013			Camera	74	656873	6256161	656877	6256136	-4	25	25	171		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	04:58:14	655	BP23MVEXP-ENV-DC-013			Camera	74	656873	6256163	656877	6256136	-4	27	28	172		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	04:58:59	656	BP23MVEXP-ENV-DC-013			Camera	74	656873	6256168	656877	6256136	-4	32	32	173		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	04:59:50	657	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256173	656877	6256136	-5	37	38	173		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	05:00:33	658	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256178	656877	6256136	-5	42	42	173		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	05:01:14	659	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256182	656877	6256136	-5	46	46	173		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	05:14:45	660	BP23MVEXP-ENV-DC-013			Camera	74	656828	6256131	656877	6256136	-49	-5	49	85		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	05:16:28	661	BP23MVEXP-ENV-DC-013			Camera	74	656832	6256130	656877	6256136	-45	-6	46	83		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	05:16:43	662	BP23MVEXP-ENV-DC-013			Camera	74	656833	6256130	656877	6256136	-44	-6	44	83		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	05:17:04	663	BP23MVEXP-ENV-DC-013			Camera	74	656836	6256131	656877	6256136	-41	-5	41	83		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	05:17:42	664	BP23MVEXP-ENV-DC-013			Camera	74	656840	6256132	656877	6256136	-37	-4	37	84		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	05:18:22	665	BP23MVEXP-ENV-DC-013			Camera	74	656845	6256132	656877	6256136	-32	-4	32	84		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	05:19:57	666	BP23MVEXP-ENV-DC-013			Camera	74	656854	6256134	656877	6256136	-23	-2	23	85		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	05:20:20	667	BP23MVEXP-ENV-DC-013			Camera	74	656856	6256134	656877	6256136	-21	-2	21	85		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	05:20:53	668	BP23MVEXP-ENV-DC-013			Camera	74	656860	6256134	656877	6256136	-17	-2	17	85		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	05:21:06	669	BP23MVEXP-ENV-DC-013			Camera	74	656861	6256135	656877	6256136	-16	-1	16	85		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	05:21:25	670	BP23MVEXP-ENV-DC-013			Camera	74	656863	6256135	656877	6256136	-14	-1	14	85		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	05:22:08	671	BP23MVEXP-ENV-DC-013			Camera	74	656867	6256135	656877	6256136	-10	-1	10	83		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	05:22:41	672	BP23MVEXP-ENV-DC-013			Camera	74	656871	6256136	656877	6256136	-6	0	6	86		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	05:22:47	673	BP23MVEXP-ENV-DC-013			Camera	74	656871	6256136	656877	6256136	-6	0	6	87		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	05:22:54	674	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256136	656877	6256136	-5	0	5	90		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	05:23:39	675	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256136	656877	6256136	0	0	0	121		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	05:25:00	676	BP23MVEXP-ENV-DC-013			Camera	74	656885	6256137	656877	6256136	8	1	8	-100		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	05:25:05	677	BP23MVEXP-ENV-DC-013			Camera	74	656886	6256138	656877	6256136	9	2	9	-100		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	05:25:28	678	BP23MVEXP-ENV-DC-013			Camera	74	656888	6256138	656877	6256136	11	2	11	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	05:26:43	679	BP23MVEXP-ENV-DC-013			Camera	74	656897	6256140	656877	6256136	20	4	20	-101		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	05:27:31	680	BP23MVEXP-ENV-DC-013			Camera	74	656901	6256140	656877	6256136	24	4	24	-101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	05:28:49	681	BP23MVEXP-ENV-DC-013			Camera	74	656909	6256142	656877	6256136	32	6	33	-100		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	05:29:06	682	BP23MVEXP-ENV-DC-013			Camera	74	656911	6256142	656877	6256136	34	6	35	-99		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	05:29:14	683	BP23MVEXP-ENV-DC-013			Camera	74	656912	6256142	656877	6256136	35	6	35	-99		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	05:29:32	684	BP23MVEXP-ENV-DC-013			Camera	74	656914	6256142	656877	6256136	37	6	37	-99		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	05:30:39	685	BP23MVEXP-ENV-DC-013			Camera	74	656920	6256143	656877	6256136	43	7	44	-99		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
06-Jul-2023	05:31:29	686	BP23MVEXP-ENV-DC-013			Camera	74	656926	6256145	656877	6256136	49	9	50	-100		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	07:27:06	687	BP23MVEXP-ENV-DC-014			Camera	74	657142	6252153	657092	6252144	50	9	51	-100		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	07:27:50	688	BP23MVEXP-ENV-DC-014			Camera	74	657142	6252153	657092	6252144	50	9	51	-100		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	07:29:19	689	BP23MVEXP-ENV-DC-014			Camera	74	657137	6252152	657092	6252144	45	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	07:30:10	690	BP23MVEXP-ENV-DC-014			Camera	74	657132	6252151	657092	6252144	40	7	40	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	07:30:16	691	BP23MVEXP-ENV-DC-014			Camera	74	657131	6252151	657092	6252144	39	7	40	-100		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	07:30:59	692	BP23MVEXP-ENV-DC-014			Camera	74	657127	6252151	657092	6252144	35	7	35	-101		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	07:31:32	693	BP23MVEXP-ENV-DC-014			Camera	74	657123	6252151	657092	6252144	31	7	32	-102		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	07:31:50	694	BP23MVEXP-ENV-DC-014			Camera	74	657121	6252150	657092	6252144	29	6	30	-102		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	07:32:02	695	BP23MVEXP-ENV-DC-014			Camera	74	657120	6252150	657092	6252144	28	6	29	-102		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	07:32:32	696	BP23MVEXP-ENV-DC-014			Camera	74	657117	6252150	657092	6252144	25	6	25	-103		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	07:32:47	697	BP23MVEXP-ENV-DC-014			Camera	74	657115	6252149	657092	6252144	23	5	24	-102		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	07:33:46	698	BP23MVEXP-ENV-DC-014			Camera	74	657110	6252148	657092	6252144	18	4	19	-103		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	07:33:52	699	BP23MVEXP-ENV-DC-014			Camera	74	657110	6252148	657092	6252144	18	4	18	-104		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	07:34:57	700	BP23MVEXP-ENV-DC-014			Camera	74	657102	6252147	657092	6252144	10	3	11	-108		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	07:35:30	701	BP23MVEXP-ENV-DC-014			Camera	74	657099	6252147	657092	6252144	7	3	8	-111		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	07:36:06	702	BP23MVEXP-ENV-DC-014			Camera	74	657095	6252146	657092	6252144	3	2	4	-118		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	07:37:10	703	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252145	657092	6252144	-3	1	4	113		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	07:37:22	704	BP23MVEXP-ENV-DC-014			Camera	74	657087	6252145	657092	6252144	-5	1	5	107		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	07:37:59	705	BP23MVEXP-ENV-DC-014			Camera	74	657084	6252145	657092	6252144	-8	1	8	98		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	07:38:37	706	BP23MVEXP-ENV-DC-014			Camera	74	657080	6252144	657092	6252144	-12	0	12	92		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	07:39:19	707	BP23MVEXP-ENV-DC-014			Camera	74	657077	6252145	657092	6252144	-16	1	15	92		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	07:39:36	708	BP23MVEXP-ENV-DC-014			Camera	74	657075	6252144	657092	6252144	-17	0	17	91		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	07:40:04	709	BP23MVEXP-ENV-DC-014			Camera	74	657072	6252144	657092	6252144	-20	0	20	89		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	07:40:13	710	BP23MVEXP-ENV-DC-014			Camera	74	657071	6252143	657092	6252144	-21	-1	21	88		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	07:40:53	711	BP23MVEXP-ENV-DC-014			Camera	74	657066	6252142	657092	6252144	-26	-2	26	87		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	07:41:01	712	BP23MVEXP-ENV-DC-014			Camera	74	657066	6252142	657092	6252144	-26	-2	27	86		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	07:41:10	713	BP23MVEXP-ENV-DC-014			Camera	74	657065	6252142	657092	6252144	-27	-2	27	86		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	07:41:48	714	BP23MVEXP-ENV-DC-014			Camera	74	657061	6252141	657092	6252144	-31	-3	31	85		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	07:42:13	715	BP23MVEXP-ENV-DC-014			Camera	74	657058	6252141	657092	6252144	-34	-3	34	85		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	07:44:02	716	BP23MVEXP-ENV-DC-014			Camera	74	657047	6252140	657092	6252144	-45	-4	45	85		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	07:44:32	717	BP23MVEXP-ENV-DC-014			Camera	74	657044	6252139	657092	6252144	-48	-5	48	84		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	07:59:51	718	BP23MVEXP-ENV-DC-014			Camera	74	657088	6252195	657092	6252144	-4	51	51	175		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	08:01:04	719	BP23MVEXP-ENV-DC-014			Camera	74	657088	6252194	657092	6252144	-4	50	50	176		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	08:01:52	720	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252190	657092	6252144	-3	46	46	176		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	08:02:16	721	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252188	657092	6252144	-3	44	44	176		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	08:02:32	722	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252186	657092	6252144	-3	42	42	176		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	08:02:49	723	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252185	657092	6252144	-3	41	41	176		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	08:03:31	724	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252180	657092	6252144	-3	36	36	176		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	08:03:38	725	BP23MVEXP-ENV-DC-014			Camera	74	657090	6252180	657092	6252144	-2	36	36	176		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	08:04:06	726	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252177	657092	6252144	-1	33	33	178		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	08:04:31	727	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252174	657092	6252144	-1	30	30	179		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	08:04:48	728	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252172	657092	6252144	-1	28	28	179		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	08:05:11	729	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252170	657092	6252144	-1	26	26	178		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	08:05:32	730	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252169	657092	6252144	-1	25	25	179		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	08:06:10	731	BP23MVEXP-ENV-DC-014			Camera	74	657092	6252164	657092	6252144	0	21	20	-180		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	08:07:02	732	BP23MVEXP-ENV-DC-014			Camera	74	657093	6252159	657092	6252144	1	15	15	-177		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	08:07:43	733	BP23MVEXP-ENV-DC-014			Camera	74	657093	6252155	657092	6252144	1	11	11	-175		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	08:08:52	734	BP23MVEXP-ENV-DC-014			Camera	74	657093	6252148	657092	6252144	1	4	4	-161		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	08:11:35	735	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252132	657092	6252144	4	-12	13	-19		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	08:12:46	736	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252124	657092	6252144	4	-20	21	-12		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	08:13:12	737	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252121	657092	6252144	4	-23	23	-10		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	08:13:55	738	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252117	657092	6252144	4	-27	27	-9		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	08:16:08	739	BP23MVEXP-ENV-DC-014			Camera	74	657099	6252104	657092	6252144	7	-40	40	-9		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
06-Jul-2023	08:17:06	740	BP23MVEXP-ENV-DC-014			Camera	74	657099	6252100	657092	6252144	7	-44	45	-9		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	09:31:25	741	BP23MVEXP-ENV-DC-015			Camera	72	657311	6248234	657314	6248185	-3	49	49	177		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	09:33:22	742	BP23MVEXP-ENV-DC-015			Camera	72	657313	6248226	657314	6248185	-1	41	41	178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	09:34:22	743	BP23MVEXP-ENV-DC-015			Camera	72	657313	6248219	657314	6248185	-1	34	34	178		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	09:35:52	744	BP23MVEXP-ENV-DC-015			Camera	72	657314	6248210	657314	6248185	0	25	25	180		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	09:36:22	745	BP23MVEXP-ENV-DC-015			Camera	72	657314	6248207	657314	6248185	0	22	22	-179		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	09:36:51	746	BP23MVEXP-ENV-DC-015			Camera	72	657314	6248204	657314	6248185	0	19	19	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	09:37:55	747	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248196	657314	6248185	1	12	12	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	09:38:05	748	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248195	657314	6248185	1	11	11	-176		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	09:38:13	749	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248195	657314	6248185	1	10	10	-176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	09:39:05	750	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248189	657314	6248185	1	4	4	-166		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	09:39:21	751	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248187	657314	6248185	1	2	3	-151		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	09:39:38	752	BP23MVEXP-ENV-DC-015			Camera	72	657316	6248186	657314	6248185	2	1	2	-121		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	09:39:48	753	BP23MVEXP-ENV-DC-015			Camera	72	657316	6248185	657314	6248185	2	0	2	-103		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	09:40:30	754	BP23MVEXP-ENV-DC-015			Camera	72	657317	6248181	657314	6248185	3	-4	5	-32		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	09:40:44	755	BP23MVEXP-ENV-DC-015			Camera	72	657317	6248179	657314	6248185	3	-6	7	-23		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	09:41:42	756	BP23MVEXP-ENV-DC-015			Camera	72	657317	6248173	657314	6248185	3	-13	13	-13		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	09:43:28	757	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248162	657314	6248185	4	-23	23	-9		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	09:43:47	758	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248160	657314	6248185	4	-25	25	-9		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	09:44:15	759	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248157	657314	6248185	4	-28	28	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	09:44:23	760	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248156	657314	6248185	4	-29	29	-8		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	09:47:04	761	BP23MVEXP-ENV-DC-015			Camera	72	657319	6248140	657314	6248185	5	-45	45	-7		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	09:47:24	762	BP23MVEXP-ENV-DC-015			Camera	72	657319	6248138	657314	6248185	5	-47	47	-6		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	10:01:12	763	BP23MVEXP-ENV-DC-015			Camera	72	657362	6248187	657314	6248185	48	2	48	-92		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	10:03:43	764	BP23MVEXP-ENV-DC-015			Camera	72	657352	6248186	657314	6248185	38	1	38	-91		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	10:03:53	765	BP23MVEXP-ENV-DC-015			Camera	72	657351	6248186	657314	6248185	37	1	37	-91		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	10:03:57	766	BP23MVEXP-ENV-DC-015			Camera	72	657351	6248186	657314	6248185	37	1	37	-91		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	10:04:17	767	BP23MVEXP-ENV-DC-015			Camera	72	657348	6248186	657314	6248185	34	1	34	-91		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	10:04:55	768	BP23MVEXP-ENV-DC-015			Camera	72	657344	6248185	657314	6248185	30	0	30	-90		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	10:05:48	769	BP23MVEXP-ENV-DC-015			Camera	72	657339	6248185	657314	6248185	25	0	25	-90		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	10:06:26	770	BP23MVEXP-ENV-DC-015			Camera	72	657336	6248185	657314	6248185	22	0	22	-89		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	10:07:17	771	BP23MVEXP-ENV-DC-015			Camera	72	657331	6248184	657314	6248185	17	-1	17	-86		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	10:07:36	772	BP23MVEXP-ENV-DC-015			Camera	72	657328	6248183	657314	6248185	14	-2	15	-83		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	10:09:29	773	BP23MVEXP-ENV-DC-015			Camera	72	657316	6248182	657314	6248185	2	-3	3	-40		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	10:11:12	774	BP23MVEXP-ENV-DC-015			Camera	72	657306	6248182	657314	6248185	-8	-3	9	68		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	10:11:17	775	BP23MVEXP-ENV-DC-015			Camera	72	657305	6248182	657314	6248185	-9	-3	9	69		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	10:12:05	776	BP23MVEXP-ENV-DC-015			Camera	72	657301	6248181	657314	6248185	-13	-4	14	73		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	10:14:19	777	BP23MVEXP-ENV-DC-015			Camera	72	657287	6248180	657314	6248185	-27	-5	27	80		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	10:14:43	778	BP23MVEXP-ENV-DC-015			Camera	72	657284	6248180	657314	6248185	-30	-5	30	81		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	10:15:41	779	BP23MVEXP-ENV-DC-015			Camera	72	657278	6248179	657314	6248185	-36	-6	36	81		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	10:17:00	780	BP23MVEXP-ENV-DC-015			Camera	72	657270	6248178	657314	6248185	-44	-7	44	81		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	10:17:12	781	BP23MVEXP-ENV-DC-015			Camera	72	657269	6248178	657314	6248185	-45	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	10:17:24	782	BP23MVEXP-ENV-DC-015			Camera	72	657268	6248178	657314	6248185	-46	-7	46	82		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	10:17:35	783	BP23MVEXP-ENV-DC-015			Camera	72	657267	6248179	657314	6248185	-47	-6	47	82		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	10:18:24	784	BP23MVEXP-ENV-DC-015			Camera	72	657264	6248179	657314	6248185	-50	-6	50	83		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	12:03:20	785	BP23MVEXP-ENV-DC-016			Camera	69	657477	6244152	657529	6244154	-52	-2	52	87		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	12:05:09	786	BP23MVEXP-ENV-DC-016			Camera	69	657478	6244152	657529	6244154	-51	-2	51	88		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	12:05:21	787	BP23MVEXP-ENV-DC-016			Camera	69	657479	6244152	657529	6244154	-50	-2	50	88		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	12:05:53	788	BP23MVEXP-ENV-DC-016			Camera	69	657481	6244153	657529	6244154	-48	-1	48	88		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	12:06:12	789	BP23MVEXP-ENV-DC-016			Camera	69	657483	6244153	657529	6244154	-46	-1	46	88		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	12:06:40	790	BP23MVEXP-ENV-DC-016			Camera	69	657486	6244153	657529	6244154	-43	-1	43	88		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	12:06:53	791	BP23MVEXP-ENV-DC-016			Camera	69	657488	6244153	657529	6244154	-42	-1	41	88		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	12:07:26	792	BP23MVEXP-ENV-DC-016			Camera	69	657491	6244153	657529	6244154	-38	-1	38	88		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	12:07:49	793	BP23MVEXP-ENV-DC-016			Camera	69	657494	6244153	657529	6244154	-36	-1	36	88		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	12:08:03	794	BP23MVEXP-ENV-DC-016			Camera	70	657495	6244153	657529	6244154	-34	-1	34	89		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	12:08:28	795	BP23MVEXP-ENV-DC-016			Camera	69	657498	6244153	657529	6244154	-31	-1	31	89		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	12:09:19	796	BP23MVEXP-ENV-DC-016			Camera	70	657503	6244154	657529	6244154	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	12:10:56	797	BP23MVEXP-ENV-DC-016			Camera	70	657513	6244155	657529	6244154	-16	1	16	93		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	12:12:36	798	BP23MVEXP-ENV-DC-016			Camera	70	657523	6244156	657529	6244154	-6	2	6	108		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	12:13:00	799	BP23MVEXP-ENV-DC-016			Camera	70	657526	6244156	657529	6244154	-3	2	4	125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	12:13:11	800	BP23MVEXP-ENV-DC-016			Camera	70	657527	6244156	657529	6244154	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	12:13:34	801	BP23MVEXP-ENV-DC-016			Camera	70	657530	6244156	657529	6244154	1	2	2	-161		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	12:14:17	802	BP23MVEXP-ENV-DC-016			Camera	70	657534	6244156	657529	6244154	5	2	6	-114		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	12:16:05	803	BP23MVEXP-ENV-DC-016			Camera	70	657545	6244158	657529	6244154	16	4	16	-105		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	12:18:10	804	BP23MVEXP-ENV-DC-016			Camera	70	657558	6244159	657529	6244154	29	5	29	-100		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	12:18:20	805	BP23MVEXP-ENV-DC-016			Camera	70	657559	6244159	657529	6244154	30	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	12:18:31	806	BP23MVEXP-ENV-DC-016			Camera	70	657560	6244159	657529	6244154	31	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	12:18:52	807	BP23MVEXP-ENV-DC-016			Camera	70	657562	6244159	657529	6244154	33	5	33	-99		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	12:19:11	808	BP23MVEXP-ENV-DC-016			Camera	70	657564	6244159	657529	6244154	35	5	35	-99		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	12:19:35	809	BP23MVEXP-ENV-DC-016			Camera	70	657567	6244160	657529	6244154	38	6	38	-98		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	12:37:30	810	BP23MVEXP-ENV-DC-016			Camera	70	657525	6244202	657529	6244154	-4	48	49	175		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	12:38:42	811	BP23MVEXP-ENV-DC-016			Camera	70	657524	6244200	657529	6244154	-5	46	47	173		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	12:39:19	812	BP23MVEXP-ENV-DC-016			Camera	70	657524	6244196	657529	6244154	-5	42	42	173		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	12:39:49	813	BP23MVEXP-ENV-DC-016			Camera	70	657524	6244193	657529	6244154	-5	39	39	173		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	12:40:14	814	BP23MVEXP-ENV-DC-016			Camera	70	657525	6244190	657529	6244154	-4	36	36	173		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	12:41:02	815	BP23MVEXP-ENV-DC-016			Camera	70	657526	6244185	657529	6244154	-3	31	31	174		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	12:43:39	816	BP23MVEXP-ENV-DC-016			Camera	70	657528	6244169	657529	6244154	-1	15	15	177		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	12:44:11	817	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244166	657529	6244154	0	12	12	178		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	12:44:52	818	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244163	657529	6244154	0	9	9	-180		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	12:45:54	819	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244155	657529	6244154	0	1	1	175		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	12:46:02	820	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244154	657529	6244154	0	0	0	-172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	12:46:15	821	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244153	657529	6244154	0	-1	1	-14		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	12:46:28	822	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244152	657529	6244154	0	-2	2	-6		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	12:46:47	823	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244150	657529	6244154	0	-4	4	-5		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	12:47:51	824	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244143	657529	6244154	2	-11	11	-8		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	12:48:03	825	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244142	657529	6244154	2	-12	12	-8		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	12:48:14	826	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244141	657529	6244154	2	-13	13	-9		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	12:48:34	827	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244139	657529	6244154	2	-16	16	-9		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	12:49:03	828	BP23MVEXP-ENV-DC-016			Camera	70	657532	6244135	657529	6244154	3	-19	19	-8		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	12:49:13	829	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244134	657529	6244154	2	-20	20	-7		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	12:49:45	830	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244131	657529	6244154	2	-23	23	-6		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	12:49:54	831	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244131	657529	6244154	2	-24	24	-6		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	12:50:34	832	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244126	657529	6244154	2	-28	28	-5		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	12:50:47	833	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244125	657529	6244154	2	-29	29	-5		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	12:51:38	834	BP23MVEXP-ENV-DC-016			Camera	70	657533	6244120	657529	6244154	4	-34	34	-6		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	12:51:47	835	BP23MVEXP-ENV-DC-016			Camera	70	657533	6244119	657529	6244154	4	-35	35	-6		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	13:58:16	836	BP23MVEXP-ENV-DC-017			Camera	67	657755	6240109	657756	6240164	-1	-55	55	1		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	14:00:55	837	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240114	657756	6240164	-2	-50	50	2		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	14:01:27	838	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240117	657756	6240164	-2	-47	47	3		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	14:01:46	839	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240119	657756	6240164	-2	-45	45	3		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	14:02:25	840	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240123	657756	6240164	-2	-41	41	3		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	14:03:29	841	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240130	657756	6240164	-3	-34	34	4		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	14:04:03	842	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240133	657756	6240164	-3	-31	31	5		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	14:04:32	843	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240136	657756	6240164	-3	-28	28	5		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	14:04:50	844	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240138	657756	6240164	-3	-26	26	6		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	14:05:17	845	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240141	657756	6240164	-3	-23	23	8		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	14:06:17	846	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240147	657756	6240164	-3	-17	17	11		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	14:06:34	847	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240149	657756	6240164	-3	-15	15	13		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	14:07:40	848	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240156	657756	6240164	-4	-8	9	24		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	14:08:09	849	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240159	657756	6240164	-4	-6	7	37		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	14:09:07	850	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240165	657756	6240164	-4	1	4	98		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	14:09:21	851	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240166	657756	6240164	-4	2	4	119		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	14:09:41	852	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240168	657756	6240164	-5	4	6	129		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	14:10:02	853	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240170	657756	6240164	-5	6	8	140		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	14:10:21	854	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240172	657756	6240164	-5	8	9	146		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	14:11:08	855	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240176	657756	6240164	-5	12	14	157		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	14:11:36	856	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240179	657756	6240164	-6	15	16	160		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	14:12:18	857	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240183	657756	6240164	-6	20	20	163		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	14:13:04	858	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240188	657756	6240164	-6	24	25	166		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	14:13:40	859	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240192	657756	6240164	-6	28	29	167		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	14:14:19	860	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240196	657756	6240164	-7	32	32	168		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	14:14:57	861	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240198	657756	6240164	-7	34	35	168		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	14:15:49	862	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240201	657756	6240164	-7	37	38	169		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	14:16:35	863	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240203	657756	6240164	-7	39	40	170		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	14:17:05	864	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240205	657756	6240164	-8	41	42	170		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	14:17:44	865	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240206	657756	6240164	-8	42	43	170		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	14:18:10	866	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240208	657756	6240164	-8	44	44	170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	14:18:35	867	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240209	657756	6240164	-8	45	46	169		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	14:19:04	868	BP23MVEXP-ENV-DC-017			Camera	67	657747	6240210	657756	6240164	-9	46	47	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	14:38:06	869	BP23MVEXP-ENV-DC-017			Camera	67	657716	6240158	657756	6240164	-40	-6	41	81		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	14:39:22	870	BP23MVEXP-ENV-DC-017			Camera	67	657724	6240159	657756	6240164	-32	-5	33	81		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	14:39:41	871	BP23MVEXP-ENV-DC-017			Camera	67	657726	6240159	657756	6240164	-30	-5	31	81		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	14:40:19	872	BP23MVEXP-ENV-DC-017			Camera	67	657730	6240160	657756	6240164	-26	-4	27	82		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	14:40:28	873	BP23MVEXP-ENV-DC-017			Camera	67	657730	6240160	657756	6240164	-26	-4	26	81		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	14:41:17	874	BP23MVEXP-ENV-DC-017			Camera	67	657736	6240161	657756	6240164	-20	-3	21	80		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	14:41:44	875	BP23MVEXP-ENV-DC-017			Camera	67	657738	6240161	657756	6240164	-18	-3	18	80		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	14:42:56	876	BP23MVEXP-ENV-DC-017			Camera	67	657745	6240161	657756	6240164	-11	-3	11	74		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	14:43:21	877	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240162	657756	6240164	-8	-2	9	76		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	14:43:48	878	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240162	657756	6240164	-6	-2	6	73		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	14:44:38	879	BP23MVEXP-ENV-DC-017			Camera	68	657755	6240162	657756	6240164	-1	-2	2	19		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	14:45:11	880	BP23MVEXP-ENV-DC-017			Camera	68	657759	6240163	657756	6240164	3	-1	3	-73		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	14:45:24	881	BP23MVEXP-ENV-DC-017			Camera	68	657760	6240163	657756	6240164	4	-1	4	-81		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	14:45:49	882	BP23MVEXP-ENV-DC-017			Camera	68	657762	6240164	657756	6240164	6	0	6	-93		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	14:46:17	883	BP23MVEXP-ENV-DC-017			Camera	68	657765	6240165	657756	6240164	9	1	9	-95		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	14:47:22	884	BP23MVEXP-ENV-DC-017			Camera	68	657772	6240165	657756	6240164	16	1	16	-95		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	14:47:52	885	BP23MVEXP-ENV-DC-017			Camera	68	657776	6240165	657756	6240164	20	1	20	-94		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	14:48:42	886	BP23MVEXP-ENV-DC-017			Camera	68	657781	6240167	657756	6240164	25	4	25	-98		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	14:49:48	887	BP23MVEXP-ENV-DC-017			Camera	68	657787	6240167	657756	6240164	31	3	32	-96		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	14:50:33	888	BP23MVEXP-ENV-DC-017			Camera	68	657792	6240167	657756	6240164	36	3	36	-95		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	14:51:20	889	BP23MVEXP-ENV-DC-017			Camera	68	657797	6240168	657756	6240164	41	4	41	-95		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	14:52:00	890	BP23MVEXP-ENV-DC-017			Camera	68	657801	6240168	657756	6240164	45	4	45	-96		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
06-Jul-2023	16:25:06	891	BP23MVEXP-ENV-DC-018			Camera	61	657888	6236195	657939	6236203	-51	-8	52	262		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	16:27:11	892	BP23MVEXP-ENV-DC-018			Camera	61	657891	6236196	657939	6236203	-48	-7	49	261		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	16:27:43	893	BP23MVEXP-ENV-DC-018			Camera	61	657892	6236196	657939	6236203	-47	-7	47	262		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	16:28:09	894	BP23MVEXP-ENV-DC-018			Camera	61	657893	6236196	657939	6236203	-46	-7	46	261		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	16:29:37	895	BP23MVEXP-ENV-DC-018			Camera	61	657898	6236196	657939	6236203	-41	-7	42	261		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	16:29:54	896	BP23MVEXP-ENV-DC-018			Camera	61	657899	6236197	657939	6236203	-40	-6	41	261		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	16:30:25	897	BP23MVEXP-ENV-DC-018			Camera	61	657900	6236198	657939	6236203	-39	-5	39	262		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	16:31:43	898	BP23MVEXP-ENV-DC-018			Camera	61	657904	6236198	657939	6236203	-35	-5	35	262		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	16:32:24	899	BP23MVEXP-ENV-DC-018			Camera	61	657906	6236198	657939	6236203	-33	-5	33	261		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	16:34:36	900	BP23MVEXP-ENV-DC-018			Camera	61	657913	6236199	657939	6236203	-26	-4	26	261		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	16:35:37	901	BP23MVEXP-ENV-DC-018			Camera	61	657917	6236200	657939	6236203	-22	-3	22	261		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	16:37:29	902	BP23MVEXP-ENV-DC-018			Camera	61	657923	6236200	657939	6236203	-16	-3	17	260		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	16:37:54	903A	BP23MVEXP-ENV-DC-018			Camera	64	657923	6236200	657939	6236203	-16	-3	16	259		(Raw Nav, Kongsberg 14208, img#13) (B)
06-Jul-2023	16:38:36	903B	BP23MVEXP-ENV-DC-018			Camera	61	657925	6236201	657939	6236203	-14	-2	14	261		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	16:40:30	904	BP23MVEXP-ENV-DC-018			Camera	61	657931	6236202	657939	6236203	-8	-1	8	262		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	16:41:03	905	BP23MVEXP-ENV-DC-018			Camera	61	657933	6236202	657939	6236203	-6	-1	6	261		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	16:41:47	906	BP23MVEXP-ENV-DC-018			Camera	61	657935	6236203	657939	6236203	-4	0	4	270		(Raw Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	16:42:04	907	BP23MVEXP-ENV-DC-018			Camera	61	657936	6236202	657939	6236203	-3	-1	3	255		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	16:42:39	908	BP23MVEXP-ENV-DC-018			Camera	61	657938	6236202	657939	6236203	-1	-1	2	227		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	16:42:57	909	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236202	657939	6236203	0	-1	1	202		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	16:43:11	910	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236202	657939	6236203	0	-1	1	137		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	16:43:52	911	BP23MVEXP-ENV-DC-018			Camera	61	657942	6236202	657939	6236203	3	-1	3	107		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	16:44:09	912	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236202	657939	6236203	4	-1	4	103		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	16:47:14	913	BP23MVEXP-ENV-DC-018			Camera	61	657957	6236205	657939	6236203	18	2	18	85		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	16:47:55	914	BP23MVEXP-ENV-DC-018			Camera	61	657961	6236205	657939	6236203	22	2	22	86		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	16:50:22	915	BP23MVEXP-ENV-DC-018			Camera	62	657976	6236208	657939	6236203	37	5	38	83		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	16:52:01	916	BP23MVEXP-ENV-DC-018			Camera	62	657986	6236208	657939	6236203	47	5	47	83		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	17:07:13	917	BP23MVEXP-ENV-DC-018			Camera	61	657944	6236151	657939	6236203	5	-52	52	175		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	17:09:03	918	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236159	657939	6236203	4	-44	44	175		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	17:09:31	919	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236163	657939	6236203	4	-40	41	174		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	17:10:17	920	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236168	657939	6236203	4	-35	36	174		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	17:11:22	921	BP23MVEXP-ENV-DC-018			Camera	61	657942	6236175	657939	6236203	3	-28	28	174		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	17:11:57	922	BP23MVEXP-ENV-DC-018			Camera	61	657942	6236178	657939	6236203	3	-25	25	174		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	17:13:11	923	BP23MVEXP-ENV-DC-018			Camera	61	657941	6236186	657939	6236203	2	-17	17	174		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	17:14:18	924	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236193	657939	6236203	1	-10	10	175		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	17:14:42	925	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236196	657939	6236203	1	-7	7	174		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	17:15:06	926	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236198	657939	6236203	1	-5	5	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	17:15:13	927	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236199	657939	6236203	1	-4	4	172		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	17:15:32	928	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236201	657939	6236203	0	-2	2	172		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	17:15:49	929	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236202	657939	6236203	0	-1	1	159		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	17:15:59	930	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236203	657939	6236203	0	0	0	17		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	17:16:30	931	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236207	657939	6236203	0	4	4	353		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	17:16:38	932	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236208	657939	6236203	0	5	5	354		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	17:16:57	933	BP23MVEXP-ENV-DC-018			Camera	61	657938	6236209	657939	6236203	-1	6	6	352		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	17:17:18	934	BP23MVEXP-ENV-DC-018			Camera	61	657938	6236211	657939	6236203	-1	8	9	352		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	17:18:22	935	BP23MVEXP-ENV-DC-018			Camera	61	657937	6236218	657939	6236203	-2	15	15	354		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	17:18:53	936	BP23MVEXP-ENV-DC-018			Camera	61	657937	6236221	657939	6236203	-2	18	18	354		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	17:19:38	937	BP23MVEXP-ENV-DC-018			Camera	61	657936	6236226	657939	6236203	-3	23	23	353		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	17:19:45	938	BP23MVEXP-ENV-DC-018			Camera	61	657936	6236226	657939	6236203	-3	23	24	353		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	17:21:29	939	BP23MVEXP-ENV-DC-018			Camera	61	657935	6236237	657939	6236203	-4	34	35	354		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	17:22:29	940	BP23MVEXP-ENV-DC-018			Camera	61	657935	6236244	657939	6236203	-4	41	41	354		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	18:34:29	941	BP23MVEXP-ENV-DC-019			Camera	59	658206	6232176	658157	6232173	49	3	49	-94		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	18:36:18	942	BP23MVEXP-ENV-DC-019			Camera	59	658205	6232176	658157	6232173	48	3	48	-94		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	18:36:37	943	BP23MVEXP-ENV-DC-019			Camera	59	658204	6232176	658157	6232173	47	3	47	-94		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	18:37:15	944	BP23MVEXP-ENV-DC-019			Camera	59	658200	6232176	658157	6232173	43	3	43	-93		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	18:37:49	945	BP23MVEXP-ENV-DC-019			Camera	59	658196	6232175	658157	6232173	39	2	39	-93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	18:38:18	946	BP23MVEXP-ENV-DC-019			Camera	59	658193	6232175	658157	6232173	36	2	36	-93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	18:38:52	947	BP23MVEXP-ENV-DC-019			Camera	59	658189	6232175	658157	6232173	32	2	32	-93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	18:39:19	948	BP23MVEXP-ENV-DC-019			Camera	59	658186	6232174	658157	6232173	29	1	29	-93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	18:39:47	949	BP23MVEXP-ENV-DC-019			Camera	59	658184	6232174	658157	6232173	27	1	27	-93		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	18:40:01	950	BP23MVEXP-ENV-DC-019			Camera	59	658182	6232174	658157	6232173	25	1	25	-93		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	18:40:15	951	BP23MVEXP-ENV-DC-019			Camera	59	658181	6232174	658157	6232173	24	1	24	-93		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	18:40:49	952	BP23MVEXP-ENV-DC-019			Camera	59	658177	6232174	658157	6232173	20	1	20	-92		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	18:41:19	953	BP23MVEXP-ENV-DC-019			Camera	59	658174	6232174	658157	6232173	17	1	17	-92		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	18:42:11	954	BP23MVEXP-ENV-DC-019			Camera	59	658169	6232173	658157	6232173	12	0	12	-91		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	18:42:39	955	BP23MVEXP-ENV-DC-019			Camera	59	658166	6232173	658157	6232173	9	0	9	-90		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	18:43:19	956	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232173	658157	6232173	5	0	5	-87		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	18:43:37	957	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232172	658157	6232173	3	-1	3	-80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	18:43:53	958	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232172	658157	6232173	2	-1	2	-63		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	18:44:03	959	BP23MVEXP-ENV-DC-019			Camera	59	658157	6232172	658157	6232173	0	-1	1	-22		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	18:44:15	960	BP23MVEXP-ENV-DC-019			Camera	59	658156	6232172	658157	6232173	-1	-1	1	36		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	18:44:25	961	BP23MVEXP-ENV-DC-019			Camera	59	658155	6232172	658157	6232173	-2	-1	2	58		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	18:44:36	962	BP23MVEXP-ENV-DC-019			Camera	59	658154	6232172	658157	6232173	-3	-1	3	67		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	18:44:46	963	BP23MVEXP-ENV-DC-019			Camera	59	658153	6232172	658157	6232173	-4	-1	4	72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	18:44:58	964	BP23MVEXP-ENV-DC-019			Camera	59	658152	6232172	658157	6232173	-5	-1	6	75		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	18:45:29	965	BP23MVEXP-ENV-DC-019			Camera	59	658149	6232171	658157	6232173	-8	-2	9	77		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	18:46:08	966	BP23MVEXP-ENV-DC-019			Camera	59	658144	6232171	658157	6232173	-13	-2	13	79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	18:46:35	967	BP23MVEXP-ENV-DC-019			Camera	59	658141	6232170	658157	6232173	-16	-3	16	80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	18:48:45	968	BP23MVEXP-ENV-DC-019			Camera	59	658128	6232169	658157	6232173	-29	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	18:49:45	969	BP23MVEXP-ENV-DC-019			Camera	59	658122	6232169	658157	6232173	-35	-4	35	83		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	19:08:02	970	BP23MVEXP-ENV-DC-019			Camera	59	658154	6232224	658157	6232173	-3	51	51	177		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	19:08:47	971	BP23MVEXP-ENV-DC-019			Camera	59	658154	6232221	658157	6232173	-3	48	48	177		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	19:09:11	972	BP23MVEXP-ENV-DC-019			Camera	59	658155	6232219	658157	6232173	-2	46	46	177		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	19:09:25	973	BP23MVEXP-ENV-DC-019			Camera	59	658155	6232217	658157	6232173	-2	44	44	177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	19:10:19	974	BP23MVEXP-ENV-DC-019			Camera	59	658156	6232211	658157	6232173	-1	38	38	178		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	19:10:48	975	BP23MVEXP-ENV-DC-019			Camera	59	658156	6232208	658157	6232173	-1	35	35	179		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	19:12:38	976	BP23MVEXP-ENV-DC-019			Camera	59	658157	6232197	658157	6232173	0	24	24	-180		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	19:14:11	977	BP23MVEXP-ENV-DC-019			Camera	59	658158	6232187	658157	6232173	1	14	14	-175		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	19:15:06	978	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232182	658157	6232173	2	9	9	-168		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	19:15:26	979	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232180	658157	6232173	2	7	7	-165		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	19:16:08	980	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232176	658157	6232173	2	3	4	-140		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	19:16:19	981	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232175	658157	6232173	3	2	3	-122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	19:17:07	982	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232170	658157	6232173	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	19:17:30	983	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232167	658157	6232173	3	-6	6	-28		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	19:18:14	984	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232163	658157	6232173	3	-10	11	-18		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	19:19:10	985	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232157	658157	6232173	3	-16	17	-12		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	19:19:48	986	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232153	658157	6232173	3	-20	21	-9		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	19:20:28	987	BP23MVEXP-ENV-DC-019			Camera	59	658161	6232149	658157	6232173	4	-24	24	-9		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	19:21:59	988	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232139	658157	6232173	5	-34	34	-9		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	19:22:26	989	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232137	658157	6232173	5	-36	37	-8		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	19:23:15	990	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232132	658157	6232173	5	-41	42	-7		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	19:23:44	991	BP23MVEXP-ENV-DC-019			Camera	59	658163	6232129	658157	6232173	6	-44	45	-7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	19:24:13	992	BP23MVEXP-ENV-DC-019			Camera	59	658163	6232126	658157	6232173	6	-47	47	-7		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	20:55:48	993	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228236	658374	6228181	-2	56	56	178		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	20:58:02	994	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228235	658374	6228181	-2	54	54	178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	20:58:19	995	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228234	658374	6228181	-2	53	53	178		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	20:58:45	996	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228232	658374	6228181	-2	51	51	178		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	20:59:09	997	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228230	658374	6228181	-2	49	49	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	20:59:16	998	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228229	658374	6228181	-2	48	48	178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	21:00:01	999	BP23MVEXP-ENV-DC-020			Camera	61	658373	6228225	658374	6228181	-1	44	44	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	21:00:11	1000	BP23MVEXP-ENV-DC-020			Camera	61	658373	6228224	658374	6228181	-1	43	43	179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	21:00:28	1001	BP23MVEXP-ENV-DC-020			Camera	61	658373	6228222	658374	6228181	-1	41	41	179		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	21:00:45	1002	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228220	658374	6228181	0	39	39	179		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	21:01:02	1003	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228219	658374	6228181	0	38	38	180		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	21:01:15	1004	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228217	658374	6228181	0	36	36	180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	21:01:33	1005	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228216	658374	6228181	0	35	35	-180		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	21:02:08	1006	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228212	658374	6228181	1	31	31	-179		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	21:02:32	1007	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228210	658374	6228181	1	29	29	-178		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	21:02:46	1008	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228208	658374	6228181	1	27	27	-178		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	21:03:11	1009	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228205	658374	6228181	1	25	25	-178		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	21:03:30	1010	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228203	658374	6228181	0	23	22	-179		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	21:03:42	1011	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228202	658374	6228181	0	22	21	-179		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	21:04:18	1012	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228199	658374	6228181	1	18	18	-176		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	21:04:26	1013	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228198	658374	6228181	2	17	17	-175		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	21:04:34	1014	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228197	658374	6228181	2	16	16	-174		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	21:04:55	1015	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228195	658374	6228181	2	14	14	-172		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	21:05:32	1016	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228191	658374	6228181	2	10	10	-168		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	21:05:45	1017	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228189	658374	6228181	2	8	9	-167		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	21:06:32	1018	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228184	658374	6228181	2	3	4	-146		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	21:06:43	1019	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228183	658374	6228181	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	21:06:57	1020	BP23MVEXP-ENV-DC-020			Camera	61	658377	6228182	658374	6228181	3	1	3	-113		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	21:07:40	1021	BP23MVEXP-ENV-DC-020			Camera	61	658377	6228178	658374	6228181	3	-3	4	-49		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	21:08:05	1022	BP23MVEXP-ENV-DC-020			Camera	61	658378	6228175	658374	6228181	4	-6	7	-31		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	21:08:39	1023	BP23MVEXP-ENV-DC-020			Camera	61	658378	6228171	658374	6228181	4	-10	10	-20		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	21:08:52	1024	BP23MVEXP-ENV-DC-020			Camera	61	658377	6228170	658374	6228181	3	-11	12	-17		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	21:10:05	1025	BP23MVEXP-ENV-DC-020			Camera	61	658378	6228163	658374	6228181	4	-18	19	-13		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	21:11:46	1026	BP23MVEXP-ENV-DC-020			Camera	61	658379	6228153	658374	6228181	5	-29	29	-10		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	21:13:18	1027	BP23MVEXP-ENV-DC-020			Camera	61	658380	6228143	658374	6228181	6	-38	38	-9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	21:30:30	1028	BP23MVEXP-ENV-DC-020			Camera	61	658417	6228185	658374	6228181	43	4	44	-95		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	21:30:40	1029	BP23MVEXP-ENV-DC-020			Camera	61	658417	6228185	658374	6228181	43	4	43	-96		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	21:31:00	1030	BP23MVEXP-ENV-DC-020			Camera	61	658415	6228185	658374	6228181	41	4	41	-96		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	21:31:07	1031	BP23MVEXP-ENV-DC-020			Camera	61	658414	6228185	658374	6228181	40	4	40	-96		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	21:31:24	1032	BP23MVEXP-ENV-DC-020			Camera	61	658408	6228182	658374	6228181	34	1	34	-92		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	21:31:56	1033	BP23MVEXP-ENV-DC-020			Camera	61	658409	6228185	658374	6228181	35	4	35	-96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	21:32:10	1034	BP23MVEXP-ENV-DC-020			Camera	61	658407	6228185	658374	6228181	33	4	33	-96		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	21:32:19	1035	BP23MVEXP-ENV-DC-020			Camera	61	658406	6228185	658374	6228181	32	4	32	-96		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	21:32:36	1036	BP23MVEXP-ENV-DC-020			Camera	61	658404	6228184	658374	6228181	30	3	30	-96		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	21:33:13	1037	BP23MVEXP-ENV-DC-020			Camera	61	658400	6228176	658374	6228181	26	-5	26	-79		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	21:33:24	1038	BP23MVEXP-ENV-DC-020			Camera	61	658400	6228173	658374	6228181	26	-8	28	-72		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	21:33:30	1039	BP23MVEXP-ENV-DC-020			Camera	61	658404	6228176	658374	6228181	30	-5	31	-80		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	21:33:44	1040	BP23MVEXP-ENV-DC-020			Camera	61	658397	6228184	658374	6228181	23	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	21:33:51	1041	BP23MVEXP-ENV-DC-020			Camera	61	658396	6228184	658374	6228181	23	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	21:34:09	1042	BP23MVEXP-ENV-DC-020			Camera	61	658395	6228184	658374	6228181	21	3	21	-97		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	21:34:34	1043	BP23MVEXP-ENV-DC-020			Camera	61	658393	6228183	658374	6228181	19	2	19	-96		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	21:34:48	1044	BP23MVEXP-ENV-DC-020			Camera	61	658395	6228178	658374	6228181	21	-3	21	-82		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	21:35:16	1045	BP23MVEXP-ENV-DC-020			Camera	61	658393	6228177	658374	6228181	19	-5	19	-77		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
06-Jul-2023	21:35:25	1046	BP23MVEXP-ENV-DC-020			Camera	61	658388	6228182	658374	6228181	14	1	14	-96		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	21:35:30	1047	BP23MVEXP-ENV-DC-020			Camera	61	658390	6228185	658374	6228181	16	4	16	-102		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
06-Jul-2023	21:38:06	1048	BP23MVEXP-ENV-DC-020			Camera	61	658366	6228173	658374	6228181	-8	-8	12	45		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
06-Jul-2023	21:38:17	1049	BP23MVEXP-ENV-DC-020			Camera	61	658370	6228180	658374	6228181	-4	-1	4	77		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
06-Jul-2023	21:38:54	1050	BP23MVEXP-ENV-DC-020			Camera	61	658366	6228179	658374	6228181	-8	-2	8	79		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
06-Jul-2023	21:39:12	1051	BP23MVEXP-ENV-DC-020			Camera	61	658364	6228179	658374	6228181	-10	-2	10	80		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
06-Jul-2023	21:39:28	1052	BP23MVEXP-ENV-DC-020			Camera	61	658362	6228180	658374	6228181	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
06-Jul-2023	21:39:52	1053	BP23MVEXP-ENV-DC-020			Camera	61	658354	6228190	658374	6228181	-20	9	22	114		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
06-Jul-2023	21:40:08	1054	BP23MVEXP-ENV-DC-020			Camera	61	658356	6228184	658374	6228181	-18	3	18	100		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
06-Jul-2023	21:40:25	1055	BP23MVEXP-ENV-DC-020			Camera	61	658357	6228179	658374	6228181	-17	-2	17	84		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
06-Jul-2023	21:41:07	1056	BP23MVEXP-ENV-DC-020			Camera	61	658352	6228179	658374	6228181	-22	-2	22	84		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
06-Jul-2023	21:41:15	1057	BP23MVEXP-ENV-DC-020			Camera	61	658351	6228179	658374	6228181	-23	-2	23	84		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
06-Jul-2023	21:43:06	1058	BP23MVEXP-ENV-DC-020			Camera	61	658340	6228177	658374	6228181	-34	-4	34	83		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
06-Jul-2023	21:43:15	1059	BP23MVEXP-ENV-DC-020			Camera	61	658339	6228177	658374	6228181	-35	-4	35	83		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
06-Jul-2023	21:45:21	1060	BP23MVEXP-ENV-DC-020			Camera	61	658329	6228178	658374	6228181	-45	-3	45	86		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
06-Jul-2023	23:08:30	1061	BP23MVEXP-ENV-DC-021			Camera	71	658537	6224182	658588	6224181	-51	1	51	91		(Raw Nav, Kongsberg 14208, img#69) (B) (T.A)
06-Jul-2023	23:09:28	1062	BP23MVEXP-ENV-DC-021			Camera	71	658537	6224182	658588	6224181	-51	1	51	91		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	23:10:50	1063	BP23MVEXP-ENV-DC-021			Camera	71	658543	6224183	658588	6224181	-45	2	45	92		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	23:11:10	1064	BP23MVEXP-ENV-DC-021			Camera	71	658545	6224183	658588	6224181	-43	2	43	93		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	23:11:37	1065	BP23MVEXP-ENV-DC-021			Camera	71	658547	6224183	658588	6224181	-41	2	41	93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	23:12:36	1066	BP23MVEXP-ENV-DC-021			Camera	71	658553	6224183	658588	6224181	-35	2	35	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	23:12:47	1067	BP23MVEXP-ENV-DC-021			Camera	71	658554	6224183	658588	6224181	-34	2	34	94		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	23:13:09	1068	BP23MVEXP-ENV-DC-021			Camera	71	658556	6224183	658588	6224181	-32	2	32	94		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	23:13:47	1069	BP23MVEXP-ENV-DC-021			Camera	71	658560	6224184	658588	6224181	-28	3	28	95		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	23:14:10	1070	BP23MVEXP-ENV-DC-021			Camera	71	658563	6224184	658588	6224181	-25	3	25	96		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	23:14:53	1071	BP23MVEXP-ENV-DC-021			Camera	71	658567	6224184	658588	6224181	-21	3	21	98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	23:15:17	1072	BP23MVEXP-ENV-DC-021			Camera	71	658569	6224184	658588	6224181	-19	3	19	99		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	23:15:53	1073	BP23MVEXP-ENV-DC-021			Camera	71	658573	6224184	658588	6224181	-15	3	15	102		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	23:16:24	1074	BP23MVEXP-ENV-DC-021			Camera	71	658577	6224184	658588	6224181	-11	3	12	106		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	23:16:41	1075	BP23MVEXP-ENV-DC-021			Camera	71	658578	6224184	658588	6224181	-10	3	10	109		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	23:18:08	1076	BP23MVEXP-ENV-DC-021			Camera	71	658587	6224185	658588	6224181	-1	4	4	166		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	23:19:10	1077	BP23MVEXP-ENV-DC-021			Camera	71	658594	6224185	658588	6224181	6	4	7	-125		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	23:20:30	1078	BP23MVEXP-ENV-DC-021			Camera	71	658602	6224185	658588	6224181	14	4	14	-106		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	23:21:23	1079	BP23MVEXP-ENV-DC-021			Camera	71	658607	6224186	658588	6224181	19	5	20	-105		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	23:23:09	1080	BP23MVEXP-ENV-DC-021			Camera	71	658618	6224186	658588	6224181	30	5	30	-100		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	23:23:59	1081	BP23MVEXP-ENV-DC-021			Camera	71	658624	6224186	658588	6224181	36	5	36	-99		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	23:47:50	1082	BP23MVEXP-ENV-DC-021			Camera	71	658584	6224225	658588	6224181	-4	44	44	175		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	23:49:13	1083	BP23MVEXP-ENV-DC-021			Camera	71	658584	6224222	658588	6224181	-4	41	41	175		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	01:13:01	1084	BP23MVEXP-ENV-DC-021A			Camera	71	658585	6224230	658588	6224181	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	01:15:06	1085	BP23MVEXP-ENV-DC-021A			Camera	71	658585	6224228	658588	6224181	-3	47	47	176		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	01:15:39	1086	BP23MVEXP-ENV-DC-021A			Camera	71	658585	6224227	658588	6224181	-3	46	46	177		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	01:16:23	1087	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224224	658588	6224181	-2	43	43	177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Jul-2023	01:16:46	1088	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224223	658588	6224181	-2	42	42	177		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	01:18:06	1089	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224219	658588	6224181	-2	38	38	176		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	01:18:44	1090	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224217	658588	6224181	-2	36	36	176		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	01:20:07	1091	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224213	658588	6224181	-2	32	32	176		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	01:20:21	1092	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224212	658588	6224181	-2	31	31	176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	01:21:57	1093	BP23MVEXP-ENV-DC-021A			Camera	71	658587	6224206	658588	6224181	-1	25	25	177		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	01:23:29	1094	BP23MVEXP-ENV-DC-021A			Camera	71	658587	6224200	658588	6224181	-1	19	19	177		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	01:26:01	1095	BP23MVEXP-ENV-DC-021A			Camera	71	658589	6224184	658588	6224181	1	3	3	-171		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	01:27:26	1096	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224175	658588	6224181	2	-6	6	-17		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	01:27:44	1097	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224174	658588	6224181	2	-7	8	-15		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	01:28:05	1098	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224171	658588	6224181	2	-10	10	-13		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	01:29:32	1099	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224162	658588	6224181	2	-19	19	-6		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	01:29:49	1100	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224161	658588	6224181	2	-20	20	-5		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	01:30:54	1101	BP23MVEXP-ENV-DC-021A			Camera	71	658591	6224154	658588	6224181	3	-27	27	-6		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	01:31:51	1102	BP23MVEXP-ENV-DC-021A			Camera	71	658591	6224147	658588	6224181	3	-34	34	-6		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	01:32:56	1103	BP23MVEXP-ENV-DC-021A			Camera	72	658592	6224141	658588	6224181	4	-40	40	-5		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	01:33:45	1104	BP23MVEXP-ENV-DC-021A			Camera	72	658592	6224136	658588	6224181	4	-45	45	-6		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	01:34:09	1105	BP23MVEXP-ENV-DC-021A			Camera	72	658592	6224134	658588	6224181	4	-47	47	-5		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	01:39:21	1106	BP23MVEXP-ENV-DC-021B			Camera	72	658592	6224128	658588	6224181	4	-53	53	-5		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	01:40:52	1107	BP23MVEXP-ENV-DC-021B			Camera	72	658592	6224134	658588	6224181	4	-47	47	-5		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	01:42:19	1108	BP23MVEXP-ENV-DC-021B			Camera	72	658590	6224143	658588	6224181	2	-38	38	-3		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	01:42:38	1109	BP23MVEXP-ENV-DC-021B			Camera	72	658590	6224145	658588	6224181	2	-36	36	-3		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	01:43:14	1110	BP23MVEXP-ENV-DC-021B			Camera	72	658589	6224148	658588	6224181	1	-33	33	-2		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	01:43:54	1111	BP23MVEXP-ENV-DC-021B			Camera	72	658589	6224152	658588	6224181	1	-29	29	-2		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	01:44:37	1112	BP23MVEXP-ENV-DC-021B			Camera	71	658588	6224157	658588	6224181	0	-24	24	1		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	01:45:13	1113	BP23MVEXP-ENV-DC-021B			Camera	71	658588	6224160	658588	6224181	0	-21	21	0		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	01:46:04	1114	BP23MVEXP-ENV-DC-021B			Camera	71	658589	6224166	658588	6224181	1	-16	15	-2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	01:46:59	1115	BP23MVEXP-ENV-DC-021B			Camera	71	658587	6224171	658588	6224181	-1	-10	10	3		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	01:48:15	1116	BP23MVEXP-ENV-DC-021B			Camera	71	658587	6224179	658588	6224181	-1	-2	2	36		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	01:48:58	1117	BP23MVEXP-ENV-DC-021B			Camera	71	658586	6224183	658588	6224181	-2	2	3	133		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	01:50:07	1118	BP23MVEXP-ENV-DC-021B			Camera	71	658585	6224190	658588	6224181	-3	9	10	163		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	01:50:28	1119	BP23MVEXP-ENV-DC-021B			Camera	71	658585	6224192	658588	6224181	-3	11	12	165		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	01:51:42	1120	BP23MVEXP-ENV-DC-021B			Camera	71	658584	6224200	658588	6224181	-4	19	20	168		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	01:52:18	1121	BP23MVEXP-ENV-DC-021B			Camera	71	658584	6224204	658588	6224181	-4	23	23	169		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	01:54:40	1122	BP23MVEXP-ENV-DC-021B			Camera	71	658583	6224217	658588	6224181	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	01:56:05	1123	BP23MVEXP-ENV-DC-021B			Camera	71	658582	6224226	658588	6224181	-6	45	46	172		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	03:43:10	1124	BP23MVEXP-ENV-DC-022			Camera	76	658787	6220243	658789	6220190	-2	53	53	178		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	03:43:43	1125	BP23MVEXP-ENV-DC-022			Camera	76	658787	6220243	658789	6220190	-2	53	53	178		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	03:44:18	1126	BP23MVEXP-ENV-DC-022			Camera	76	658788	6220243	658789	6220190	-1	53	53	179		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	03:45:52	1127	BP23MVEXP-ENV-DC-022			Camera	76	658788	6220239	658789	6220190	-1	49	49	179		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	03:47:02	1128	BP23MVEXP-ENV-DC-022			Camera	76	658789	6220232	658789	6220190	0	42	42	180		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	03:48:02	1129	BP23MVEXP-ENV-DC-022			Camera	76	658790	6220226	658789	6220190	1	36	36	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	03:49:01	1130	BP23MVEXP-ENV-DC-022			Camera	76	658791	6220220	658789	6220190	2	30	30	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	03:50:17	1131	BP23MVEXP-ENV-DC-022			Camera	76	658790	6220212	658789	6220190	1	22	22	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	03:51:16	1132	BP23MVEXP-ENV-DC-022			Camera	76	658791	6220206	658789	6220190	2	16	16	-173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	03:53:07	1133	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220195	658789	6220190	3	5	5	-147		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	03:53:32	1134	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220192	658789	6220190	3	2	4	-119		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	03:54:07	1135	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220188	658789	6220190	3	-2	4	-55		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	03:54:56	1136	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220183	658789	6220190	3	-7	8	-27		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	03:56:15	1137	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220175	658789	6220190	5	-15	15	-18		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	03:57:27	1138	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220168	658789	6220190	5	-22	22	-12		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	03:58:09	1139	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220164	658789	6220190	5	-26	26	-10		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	03:59:12	1140	BP23MVEXP-ENV-DC-022			Camera	76	658795	6220159	658789	6220190	6	-31	32	-10		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	04:00:18	1141	BP23MVEXP-ENV-DC-022			Camera	76	658795	6220151	658789	6220190	6	-40	40	-9		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	04:01:08	1142	BP23MVEXP-ENV-DC-022			Camera	76	658795	6220146	658789	6220190	6	-44	45	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	04:01:55	1143	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220143	658789	6220190	5	-47	47	-6		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	04:02:20	1144	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220142	658789	6220190	5	-48	48	-6		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	04:15:44	1145	BP23MVEXP-ENV-DC-022			Camera	76	658836	6220190	658789	6220190	47	0	47	-90		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	04:18:57	1146	BP23MVEXP-ENV-DC-022			Camera	76	658835	6220194	658789	6220190	46	4	47	-95		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	04:19:19	1147	BP23MVEXP-ENV-DC-022			Camera	76	658834	6220194	658789	6220190	45	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	04:21:10	1148	BP23MVEXP-ENV-DC-022			Camera	76	658828	6220194	658789	6220190	39	4	39	-96		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Jul-2023	04:23:17	1149	BP23MVEXP-ENV-DC-022			Camera	76	658821	6220194	658789	6220190	32	4	32	-96		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	04:25:21	1150	BP23MVEXP-ENV-DC-022			Camera	76	658815	6220194	658789	6220190	26	4	27	-100		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	04:25:55	1151	BP23MVEXP-ENV-DC-022			Camera	76	658814	6220194	658789	6220190	25	4	25	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	04:27:35	1152	BP23MVEXP-ENV-DC-022				76	658808	6220191	658789	6220190	19	1	19	-94		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A) Fix no photo
07-Jul-2023	04:28:03	1153	BP23MVEXP-ENV-DC-022			Camera	76	658807	6220192	658789	6220190	18	2	18	-95		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	04:29:12	1154	BP23MVEXP-ENV-DC-022			Camera	3	658803	6220193	658789	6220190	14	3	14	-104		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	04:29:56	1155	BP23MVEXP-ENV-DC-022			Camera	76	658801	6220193	658789	6220190	12	3	13	-104		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	04:31:03	1156	BP23MVEXP-ENV-DC-022			Camera	76	658798	6220194	658789	6220190	9	4	10	-112		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	04:31:40	1157	BP23MVEXP-ENV-DC-022			Camera	76	658796	6220193	658789	6220190	7	3	8	-113		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	04:31:58	1158	BP23MVEXP-ENV-DC-022			Camera	76	658796	6220192	658789	6220190	7	2	7	-110		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	04:33:22	1159	BP23MVEXP-ENV-DC-022			Camera	76	658790	6220190	658789	6220190	1	0	1	-93		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	04:34:28	1160	BP23MVEXP-ENV-DC-022			Camera	76	658786	6220189	658789	6220190	-3	-1	3	77		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	04:35:16	1161	BP23MVEXP-ENV-DC-022			Camera	76	658784	6220190	658789	6220190	-5	0	5	89		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	04:35:44	1162	BP23MVEXP-ENV-DC-022			Camera	76	658783	6220190	658789	6220190	-6	0	6	88		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	04:38:46	1163	BP23MVEXP-ENV-DC-022			Camera	76	658774	6220189	658789	6220190	-15	-1	15	87		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	04:40:04	1164	BP23MVEXP-ENV-DC-022			Camera	76	658771	6220189	658789	6220190	-19	-1	19	88		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	04:41:08	1165	BP23MVEXP-ENV-DC-022			Camera	76	658768	6220189	658789	6220190	-21	-1	21	87		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	04:41:23	1166	BP23MVEXP-ENV-DC-022			Camera	76	658767	6220189	658789	6220190	-22	-1	22	87		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	04:41:46	1167	BP23MVEXP-ENV-DC-022			Camera	76	658766	6220189	658789	6220190	-23	-1	23	87		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	04:43:17	1168	BP23MVEXP-ENV-DC-022			Camera	76	658760	6220188	658789	6220190	-29	-2	29	87		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	04:45:22	1169	BP23MVEXP-ENV-DC-022			Camera	76	658754	6220188	658789	6220190	-35	-2	35	87		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	04:47:15	1170	BP23MVEXP-ENV-DC-022			Camera	76	658749	6220187	658789	6220190	-40	-3	40	85		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	04:47:51	1171	BP23MVEXP-ENV-DC-022			Camera	76	658747	6220186	658789	6220190	-42	-4	42	84		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	04:48:26	1172	BP23MVEXP-ENV-DC-022			Camera	76	658745	6220185	658789	6220190	-44	-5	44	84		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	13:50:27	1173	BP23MVEXP-ENV-DC-023			Camera	80	658962	6216190	659015	6216191	-53	-1	53	89		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	13:50:55	1174	BP23MVEXP-ENV-DC-023			Camera	80	658963	6216190	659015	6216191	-52	-1	52	89		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	13:51:49	1175	BP23MVEXP-ENV-DC-023			Camera	80	658964	6216190	659015	6216191	-51	-1	51	89		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	13:51:58	1176	BP23MVEXP-ENV-DC-023			Camera	80	658965	6216190	659015	6216191	-50	-1	50	89		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	13:52:43	1177	BP23MVEXP-ENV-DC-023			Camera	80	658965	6216191	659015	6216191	-50	0	50	90		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	13:52:57	1178	BP23MVEXP-ENV-DC-023			Camera	80	658966	6216192	659015	6216191	-49	1	49	91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	13:53:06	1179	BP23MVEXP-ENV-DC-023			Camera	80	658966	6216192	659015	6216191	-49	1	49	92		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	13:53:24	1180	BP23MVEXP-ENV-DC-023			Camera	80	658967	6216192	659015	6216191	-48	1	48	91		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	13:53:55	1181	BP23MVEXP-ENV-DC-023			Camera	80	658969	6216192	659015	6216191	-46	1	46	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	13:54:25	1182	BP23MVEXP-ENV-DC-023			Camera	80	658971	6216192	659015	6216191	-44	1	44	91		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	13:55:15	1183	BP23MVEXP-ENV-DC-023			Camera	80	658974	6216192	659015	6216191	-41	1	41	91		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	13:55:45	1184	BP23MVEXP-ENV-DC-023			Camera	80	658977	6216192	659015	6216191	-38	1	38	91		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	13:55:55	1185	BP23MVEXP-ENV-DC-023			Camera	80	658977	6216192	659015	6216191	-38	1	38	91		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	13:58:09	1186	BP23MVEXP-ENV-DC-023			Camera	80	658983	6216192	659015	6216191	-32	1	32	91		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	13:59:20	1187	BP23MVEXP-ENV-DC-023			Camera	80	658990	6216192	659015	6216191	-25	1	25	92		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Jul-2023	14:00:08	1188	BP23MVEXP-ENV-DC-023			Camera	80	658995	6216192	659015	6216191	-20	1	20	93		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	14:00:49	1189	BP23MVEXP-ENV-DC-023			Camera	80	659000	6216191	659015	6216191	-15	0	15	92		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	14:01:40	1190	BP23MVEXP-ENV-DC-023			Camera	80	659005	6216192	659015	6216191	-10	1	10	94		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	14:02:20	1191	BP23MVEXP-ENV-DC-023			Camera	80	659007	6216193	659015	6216191	-8	2	8	106		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	14:03:05	1192	BP23MVEXP-ENV-DC-023			Camera	80	659013	6216193	659015	6216191	-2	2	3	130		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	14:03:29	1193	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216193	659015	6216191	0	2	2	-165		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	14:04:27	1194	BP23MVEXP-ENV-DC-023			Camera	81	659021	6216194	659015	6216191	6	3	7	-118		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	14:04:50	1195	BP23MVEXP-ENV-DC-023			Camera	80	659024	6216193	659015	6216191	9	2	9	-103		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	14:05:14	1196	BP23MVEXP-ENV-DC-023			Camera	80	659027	6216192	659015	6216191	12	1	12	-97		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	14:05:34	1197	BP23MVEXP-ENV-DC-023			Camera	80	659029	6216192	659015	6216191	14	1	14	-96		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Jul-2023	14:06:16	1198	BP23MVEXP-ENV-DC-023			Camera	81	659033	6216193	659015	6216191	18	2	18	-95		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	14:06:32	1199	BP23MVEXP-ENV-DC-023			Camera	81	659035	6216193	659015	6216191	20	2	20	-96		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	14:06:54	1200	BP23MVEXP-ENV-DC-023			Camera	81	659036	6216194	659015	6216191	21	3	21	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	14:08:01	1201	BP23MVEXP-ENV-DC-023			Camera	81	659043	6216194	659015	6216191	29	3	29	-95		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Jul-2023	14:08:07	1202	BP23MVEXP-ENV-DC-023			Camera	81	659044	6216194	659015	6216191	29	3	29	-95		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	14:08:57	1203	BP23MVEXP-ENV-DC-023			Camera	81	659050	6216194	659015	6216191	35	3	35	-94		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	14:10:26	1204	BP23MVEXP-ENV-DC-023			Camera	81	659058	6216195	659015	6216191	43	4	43	-95		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	14:27:00	1205	BP23MVEXP-ENV-DC-023			Camera	80	659009	6216239	659015	6216191	-6	48	48	173		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	14:29:24	1206	BP23MVEXP-ENV-DC-023			Camera	80	659010	6216232	659015	6216191	-5	41	41	174		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	14:30:18	1207	BP23MVEXP-ENV-DC-023			Camera	80	659010	6216227	659015	6216191	-5	36	37	173		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	14:30:53	1208	BP23MVEXP-ENV-DC-023			Camera	80	659011	6216224	659015	6216191	-4	33	33	174		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	14:31:33	1209	BP23MVEXP-ENV-DC-023			Camera	80	659013	6216220	659015	6216191	-2	29	29	176		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	14:32:21	1210	BP23MVEXP-ENV-DC-023			Camera	80	659013	6216215	659015	6216191	-2	24	24	176		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	14:33:39	1211	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216207	659015	6216191	0	16	16	179		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	14:33:48	1212	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216206	659015	6216191	0	15	15	179		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	14:34:14	1213	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216204	659015	6216191	0	13	13	-180		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	14:34:54	1214	BP23MVEXP-ENV-DC-023			Camera	80	659016	6216199	659015	6216191	1	8	8	-175		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	14:36:01	1215	BP23MVEXP-ENV-DC-023			Camera	80	659016	6216193	659015	6216191	1	2	2	-164		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	14:37:44	1216	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216181	659015	6216191	2	-10	10	-11		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	14:37:56	1217	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216180	659015	6216191	2	-11	11	-11		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	14:38:11	1218	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216178	659015	6216191	2	-13	13	-10		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	14:38:36	1219	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216175	659015	6216191	2	-16	16	-9		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	14:39:38	1220	BP23MVEXP-ENV-DC-023			Camera	80	659018	6216171	659015	6216191	3	-21	21	-9		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	14:40:19	1221	BP23MVEXP-ENV-DC-023			Camera	80	659019	6216165	659015	6216191	4	-26	26	-9		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	14:41:27	1222	BP23MVEXP-ENV-DC-023			Camera	80	659020	6216159	659015	6216191	5	-32	32	-9		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Jul-2023	14:42:26	1223	BP23MVEXP-ENV-DC-023			Camera	80	659022	6216152	659015	6216191	7	-39	39	-10		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
07-Jul-2023	14:43:09	1224	BP23MVEXP-ENV-DC-023			Camera	80	659023	6216148	659015	6216191	8	-43	44	-10		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
07-Jul-2023	14:43:53	1225	BP23MVEXP-ENV-DC-023			Camera	80	659023	6216144	659015	6216191	8	-47	48	-10		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
07-Jul-2023	16:57:39	1226	BP23MVEXP-ENV-DC-025				74	659436	6208251	659440	6208210	-4	41	42	174		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A) Fix no photo
07-Jul-2023	16:58:05	1227	BP23MVEXP-ENV-DC-025				74	659435	6208251	659440	6208210	-5	41	41	173		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A) Fix no photo
07-Jul-2023	16:59:51	1228	BP23MVEXP-ENV-DC-025				74	659435	6208252	659440	6208210	-5	42	42	174		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A) Fix no photo
07-Jul-2023	17:00:18	1229	BP23MVEXP-ENV-DC-025				74	659435	6208254	659440	6208210	-5	44	45	173		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A) Fix no photo
07-Jul-2023	17:00:41	1230	BP23MVEXP-ENV-DC-025				74	659435	6208256	659440	6208210	-5	46	47	174		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A) Fix no photo
07-Jul-2023	18:27:21	1231	BP23MVEXP-ENV-DC-026			Camera	73	659601	6204203	659653	6204210	-52	-7	52	82		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	18:30:08	1232	BP23MVEXP-ENV-DC-026			Camera	73	659603	6204203	659653	6204210	-51	-7	51	82		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	18:30:24	1233	BP23MVEXP-ENV-DC-026			Camera	73	659604	6204203	659653	6204210	-49	-7	50	82		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	18:30:33	1234	BP23MVEXP-ENV-DC-026			Camera	73	659605	6204203	659653	6204210	-48	-7	49	82		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	18:30:49	1235	BP23MVEXP-ENV-DC-026			Camera	73	659606	6204203	659653	6204210	-47	-7	47	82		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	18:31:43	1236	BP23MVEXP-ENV-DC-026			Camera	73	659613	6204204	659653	6204210	-40	-6	40	81		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	18:32:12	1237	BP23MVEXP-ENV-DC-026			Camera	73	659616	6204204	659653	6204210	-37	-6	37	81		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	18:32:28	1238	BP23MVEXP-ENV-DC-026			Camera	73	659618	6204205	659653	6204210	-35	-5	36	81		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	18:33:34	1239	BP23MVEXP-ENV-DC-026			Camera	73	659625	6204205	659653	6204210	-28	-5	28	81		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	18:33:45	1240	BP23MVEXP-ENV-DC-026			Camera	73	659626	6204206	659653	6204210	-27	-4	27	81		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	18:33:53	1241	BP23MVEXP-ENV-DC-026			Camera	73	659627	6204206	659653	6204210	-26	-4	26	81		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	18:35:10	1242	BP23MVEXP-ENV-DC-026			Camera	73	659635	6204208	659653	6204210	-18	-2	18	84		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	18:35:31	1243	BP23MVEXP-ENV-DC-026			Camera	73	659637	6204209	659653	6204210	-16	-1	16	86		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	18:35:58	1244	BP23MVEXP-ENV-DC-026			Camera	73	659640	6204209	659653	6204210	-13	-1	13	86		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	18:36:23	1245	BP23MVEXP-ENV-DC-026			Camera	73	659643	6204209	659653	6204210	-10	-1	10	86		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	18:36:41	1246	BP23MVEXP-ENV-DC-026			Camera	73	659645	6204209	659653	6204210	-8	-1	8	86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	18:37:07	1247	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204210	659653	6204210	-5	0	5	87		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	18:37:18	1248	BP23MVEXP-ENV-DC-026			Camera	73	659649	6204210	659653	6204210	-4	0	4	87		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	18:37:34	1249	BP23MVEXP-ENV-DC-026			Camera	73	659651	6204210	659653	6204210	-2	0	2	94		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	18:37:41	1250	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204210	659653	6204210	-2	0	2	101		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	18:37:49	1251	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204210	659653	6204210	-1	0	1	123		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	18:38:01	1252	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204211	659653	6204210	0	1	1	-149		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	18:38:19	1253	BP23MVEXP-ENV-DC-026			Camera	73	659655	6204211	659653	6204210	2	1	2	-118		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	18:38:41	1254	BP23MVEXP-ENV-DC-026			Camera	73	659657	6204211	659653	6204210	4	1	5	-109		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	18:38:59	1255A	BP23MVEXP-ENV-DC-026			Camera	76	659659	6204212	659653	6204210	6	2	6	-108		(Raw Nav, Kongsberg 14208, img#25) (B)
07-Jul-2023	18:39:30	1255B	BP23MVEXP-ENV-DC-026			Camera	73	659662	6204212	659653	6204210	9	2	10	-101		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	18:40:33	1256	BP23MVEXP-ENV-DC-026			Camera	73	659668	6204213	659653	6204210	16	3	16	-101		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	18:42:13	1257	BP23MVEXP-ENV-DC-026			Camera	73	659679	6204215	659653	6204210	26	5	27	-100		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	19:01:05	1258	BP23MVEXP-ENV-DC-026			Camera	73	659646	6204256	659653	6204210	-7	46	47	171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Jul-2023	19:01:26	1259	BP23MVEXP-ENV-DC-026			Camera	73	659646	6204255	659653	6204210	-7	45	45	171		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	19:01:45	1260	BP23MVEXP-ENV-DC-026			Camera	73	659646	6204253	659653	6204210	-7	43	43	171		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	19:02:30	1261	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204247	659653	6204210	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	19:02:37	1262	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204246	659653	6204210	-5	36	37	172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	19:02:47	1263	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204245	659653	6204210	-5	35	35	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	19:03:30	1264	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204239	659653	6204210	-5	29	29	170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	19:04:47	1265	BP23MVEXP-ENV-DC-026			Camera	73	659650	6204231	659653	6204210	-3	21	21	171		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	19:05:22	1266	BP23MVEXP-ENV-DC-026			Camera	73	659650	6204228	659653	6204210	-3	18	18	171		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	19:06:23	1267	BP23MVEXP-ENV-DC-026			Camera	73	659651	6204222	659653	6204210	-2	12	12	172		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	19:06:30	1268	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204222	659653	6204210	-1	12	12	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	19:06:55	1269	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204219	659653	6204210	-1	9	9	172		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	19:07:45	1270	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204213	659653	6204210	-1	3	3	170		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	19:07:54	1271	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204212	659653	6204210	-1	2	2	167		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	19:08:01	1272	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204211	659653	6204210	0	1	1	172		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	19:08:08	1273	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204211	659653	6204210	0	1	1	180		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	19:08:16	1274	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204210	659653	6204210	0	0	0	-109		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	19:08:25	1275	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204209	659653	6204210	0	-1	1	-24		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	19:08:55	1276	BP23MVEXP-ENV-DC-026			Camera	73	659654	6204207	659653	6204210	1	-3	4	-10		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	19:09:33	1277	BP23MVEXP-ENV-DC-026			Camera	73	659654	6204202	659653	6204210	1	-8	8	-5		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	19:11:09	1278	BP23MVEXP-ENV-DC-026			Camera	73	659655	6204193	659653	6204210	2	-17	17	-7		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	19:11:27	1279	BP23MVEXP-ENV-DC-026			Camera	73	659656	6204191	659653	6204210	3	-19	19	-8		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Jul-2023	19:11:39	1280	BP23MVEXP-ENV-DC-026			Camera	73	659656	6204189	659653	6204210	3	-21	21	-7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
07-Jul-2023	19:12:48	1281	BP23MVEXP-ENV-DC-026			Camera	73	659656	6204182	659653	6204210	3	-28	28	-6		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
07-Jul-2023	19:15:42	1282	BP23MVEXP-ENV-DC-026			Camera	73	659660	6204166	659653	6204210	7	-44	45	-9		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
07-Jul-2023	20:28:01	1283	BP23MVEXP-ENV-DC-027			Camera	71	659873	6200170	659868	6200219	5	-49	49	-6		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	20:29:54	1284	BP23MVEXP-ENV-DC-027			Camera	71	659873	6200170	659868	6200219	5	-49	49	-6		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Jul-2023	20:30:35	1285	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200173	659868	6200219	4	-46	46	-5		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	20:31:05	1286	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200176	659868	6200219	4	-43	43	-5		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	20:31:41	1287	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200181	659868	6200219	4	-38	38	-5		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	20:33:01	1288	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200188	659868	6200219	3	-31	31	-5		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	20:33:35	1289	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200192	659868	6200219	2	-27	27	-5		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	20:34:27	1290	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200197	659868	6200219	2	-22	22	-5		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	20:35:11	1291	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200201	659868	6200219	2	-18	18	-5		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	20:36:08	1292	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200207	659868	6200219	1	-12	12	-5		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	20:37:05	1293	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200213	659868	6200219	0	-6	6	0		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	20:37:11	1294	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200214	659868	6200219	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	20:37:27	1295	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200216	659868	6200219	0	-3	4	7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	20:37:50	1296	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200218	659868	6200219	-1	-1	1	27		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	20:38:05	1297	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200219	659868	6200219	-1	0	1	101		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	20:38:25	1298	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200221	659868	6200219	-1	2	3	153		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	20:38:47	1299	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200224	659868	6200219	-1	5	5	164		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	20:39:10	1300	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200226	659868	6200219	-1	7	7	171		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	20:39:24	1301	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200228	659868	6200219	-1	9	9	172		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	20:40:02	1302	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200232	659868	6200219	-2	13	13	172		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	20:40:51	1303	BP23MVEXP-ENV-DC-027			Camera	71	659865	6200237	659868	6200219	-3	18	18	171		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	20:42:30	1304	BP23MVEXP-ENV-DC-027			Camera	71	659864	6200246	659868	6200219	-4	27	27	172		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	20:43:35	1305	BP23MVEXP-ENV-DC-027			Camera	71	659864	6200254	659868	6200219	-4	35	35	173		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	20:43:51	1306	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200255	659868	6200219	-5	36	36	173		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	20:44:12	1307	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200257	659868	6200219	-5	38	38	173		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Jul-2023	20:44:50	1308	BP23MVEXP-ENV-DC-027			Camera	71	659862	6200260	659868	6200219	-6	41	42	172		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	21:19:57	1309	BP23MVEXP-ENV-DC-027			Camera	71	659917	6200225	659868	6200219	49	6	49	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	21:20:04	1310	BP23MVEXP-ENV-DC-027			Camera	71	659916	6200225	659868	6200219	48	6	48	-97		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	21:20:35	1311	BP23MVEXP-ENV-DC-027			Camera	71	659914	6200224	659868	6200219	46	5	46	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Jul-2023	21:21:08	1312	BP23MVEXP-ENV-DC-027			Camera	71	659911	6200224	659868	6200219	43	5	43	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	21:21:14	1313	BP23MVEXP-ENV-DC-027			Camera	71	659910	6200224	659868	6200219	42	5	42	-96		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	21:21:24	1314	BP23MVEXP-ENV-DC-027			Camera	71	659909	6200224	659868	6200219	41	5	41	-96		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	21:21:39	1315	BP23MVEXP-ENV-DC-027			Camera	71	659907	6200224	659868	6200219	39	5	39	-97		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	21:22:21	1316	BP23MVEXP-ENV-DC-027			Camera	71	659902	6200223	659868	6200219	34	4	35	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	21:22:51	1317	BP23MVEXP-ENV-DC-027			Camera	71	659900	6200223	659868	6200219	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	21:23:04	1318	BP23MVEXP-ENV-DC-027			Camera	71	659899	6200222	659868	6200219	31	3	31	-96		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	21:23:20	1319	BP23MVEXP-ENV-DC-027			Camera	71	659897	6200222	659868	6200219	29	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	21:23:32	1320	BP23MVEXP-ENV-DC-027			Camera	71	659896	6200222	659868	6200219	28	3	28	-96		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	21:23:39	1321	BP23MVEXP-ENV-DC-027			Camera	71	659895	6200222	659868	6200219	27	3	27	-96		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	21:23:54	1322	BP23MVEXP-ENV-DC-027			Camera	71	659893	6200222	659868	6200219	25	3	25	-96		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	21:24:22	1323	BP23MVEXP-ENV-DC-027			Camera	71	659890	6200222	659868	6200219	22	3	22	-96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	21:24:40	1324	BP23MVEXP-ENV-DC-027			Camera	71	659888	6200222	659868	6200219	20	3	20	-97		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	21:24:59	1325	BP23MVEXP-ENV-DC-027			Camera	71	659887	6200221	659868	6200219	19	2	19	-97		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	21:25:36	1326	BP23MVEXP-ENV-DC-027			Camera	71	659883	6200221	659868	6200219	15	2	15	-98		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	21:26:03	1327	BP23MVEXP-ENV-DC-027			Camera	71	659880	6200221	659868	6200219	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	21:26:38	1328	BP23MVEXP-ENV-DC-027			Camera	71	659876	6200221	659868	6200219	8	2	8	-103		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	21:26:48	1329	BP23MVEXP-ENV-DC-027			Camera	71	659875	6200221	659868	6200219	7	2	7	-104		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	21:27:23	1330	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200220	659868	6200219	4	1	4	-106		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	21:27:33	1331	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200220	659868	6200219	3	1	3	-109		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	21:27:42	1332	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200220	659868	6200219	2	1	2	-115		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Jul-2023	21:27:54	1333	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200220	659868	6200219	1	1	1	-147		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
07-Jul-2023	21:28:03	1334	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200220	659868	6200219	0	1	1	158		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
07-Jul-2023	21:28:14	1335	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200220	659868	6200219	-2	1	2	129		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
07-Jul-2023	21:28:54	1336	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200220	659868	6200219	-5	1	5	101		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
07-Jul-2023	21:29:25	1337	BP23MVEXP-ENV-DC-027			Camera	71	659860	6200220	659868	6200219	-8	1	8	96		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
07-Jul-2023	21:29:41	1338	BP23MVEXP-ENV-DC-027			Camera	71	659858	6200220	659868	6200219	-10	1	10	95		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
07-Jul-2023	21:29:58	1339	BP23MVEXP-ENV-DC-027			Camera	71	659857	6200219	659868	6200219	-11	0	11	92		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
07-Jul-2023	21:30:17	1340	BP23MVEXP-ENV-DC-027			Camera	71	659855	6200219	659868	6200219	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
07-Jul-2023	21:30:49	1341	BP23MVEXP-ENV-DC-027			Camera	71	659852	6200218	659868	6200219	-16	-1	16	86		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
07-Jul-2023	21:31:09	1342	BP23MVEXP-ENV-DC-027			Camera	71	659850	6200217	659868	6200219	-18	-2	18	85		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
07-Jul-2023	21:31:32	1343	BP23MVEXP-ENV-DC-027			Camera	71	659847	6200217	659868	6200219	-21	-2	21	85		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
07-Jul-2023	21:33:17	1344	BP23MVEXP-ENV-DC-027			Camera	71	659836	6200215	659868	6200219	-32	-4	32	83		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
07-Jul-2023	21:50:25	1345	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200171	659868	6200219	3	-48	48	-4		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
07-Jul-2023	21:50:46	1346	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200173	659868	6200219	3	-46	46	-4		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
07-Jul-2023	21:50:54	1347	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200174	659868	6200219	3	-45	45	-3		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
07-Jul-2023	21:51:02	1348	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200175	659868	6200219	2	-44	44	-3		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
07-Jul-2023	21:51:13	1349	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200176	659868	6200219	2	-43	43	-3		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
07-Jul-2023	21:51:31	1350	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200178	659868	6200219	2	-41	41	-3		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
07-Jul-2023	21:51:40	1351	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200179	659868	6200219	2	-40	40	-3		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
07-Jul-2023	21:52:42	1352	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200185	659868	6200219	2	-34	34	-3		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
07-Jul-2023	21:53:08	1353	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200188	659868	6200219	2	-31	31	-3		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
07-Jul-2023	21:53:23	1354	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200189	659868	6200219	1	-30	30	-3		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
07-Jul-2023	21:53:59	1355	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200193	659868	6200219	1	-26	26	-2		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
07-Jul-2023	21:54:23	1356	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200196	659868	6200219	0	-23	23	-1		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
07-Jul-2023	21:55:44	1357	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200204	659868	6200219	-1	-15	15	2		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
07-Jul-2023	21:56:07	1358	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200207	659868	6200219	0	-12	12	2		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
07-Jul-2023	21:56:14	1359	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200207	659868	6200219	0	-12	12	2		(Corr'd Nav, Kongsberg 14208, img#77) (B) (T.A)
07-Jul-2023	21:57:14	1360	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200214	659868	6200219	-1	-5	5	9		(Corr'd Nav, Kongsberg 14208, img#78) (B) (T.A)
07-Jul-2023	21:57:53	1361	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200218	659868	6200219	-2	-1	2	49		(Corr'd Nav, Kongsberg 14208, img#79) (B) (T.A)
07-Jul-2023	21:58:05	1362	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200219	659868	6200219	-2	0	2	92		(Corr'd Nav, Kongsberg 14208, img#80) (B) (T.A)
07-Jul-2023	21:58:17	1363	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200220	659868	6200219	-2	1	2	129		(Corr'd Nav, Kongsberg 14208, img#81) (B) (T.A)
07-Jul-2023	21:58:27	1364	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200222	659868	6200219	-2	3	3	144		(Corr'd Nav, Kongsberg 14208, img#82) (B) (T.A)
07-Jul-2023	22:00:28	1365	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200233	659868	6200219	-2	14	15	173		(Corr'd Nav, Kongsberg 14208, img#83) (B) (T.A)
07-Jul-2023	22:03:46	1366	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200254	659868	6200219	-5	35	35	172		(Corr'd Nav, Kongsberg 14208, img#84) (B) (T.A)
08-Jul-2023	00:24:59	1367	BP23MVEXP-ENV-DC-028			Camera	74	660083	6196273	660086	6196220	-3	53	53	177		(Corr'd Nav, Kongsberg 14208, img#85) (B) (T.A)
08-Jul-2023	00:27:34	1368	BP23MVEXP-ENV-DC-028			Camera	74	660083	6196270	660086	6196220	-3	50	50	176		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	00:27:53	1369	BP23MVEXP-ENV-DC-028			Camera	74	660083	6196268	660086	6196220	-3	48	48	176		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	00:28:41	1370	BP23MVEXP-ENV-DC-028			Camera	74	660084	6196262	660086	6196220	-2	42	42	177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	00:30:04	1371	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196254	660086	6196220	-1	34	34	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	00:31:16	1372	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196247	660086	6196220	-1	27	27	177		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	00:31:23	1373	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196246	660086	6196220	-1	26	26	177		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	00:32:02	1374	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196242	660086	6196220	-1	22	22	178		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	00:32:29	1375	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196240	660086	6196220	-1	20	20	177		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	00:32:57	1376	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196237	660086	6196220	-1	17	17	178		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	00:33:44	1377	BP23MVEXP-ENV-DC-028			Camera	74	660086	6196231	660086	6196220	0	11	11	-180		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	00:34:18	1378	BP23MVEXP-ENV-DC-028			Camera	74	660086	6196228	660086	6196220	0	8	8	-178		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	00:34:57	1379	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196224	660086	6196220	1	4	4	-173		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	00:35:21	1380	BP23MVEXP-ENV-DC-028			Camera	74	660086	6196222	660086	6196220	0	2	2	-171		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	00:36:04	1381	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196217	660086	6196220	1	-3	3	-18		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	00:36:45	1382	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196212	660086	6196220	1	-8	8	-11		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	00:37:01	1383	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196211	660086	6196220	1	-9	9	-6		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	00:38:22	1384	BP23MVEXP-ENV-DC-028			Camera	74	660088	6196202	660086	6196220	2	-18	18	-8		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Jul-2023	00:39:23	1385	BP23MVEXP-ENV-DC-028			Camera	74	660089	6196195	660086	6196220	3	-25	25	-7		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	00:40:04	1386	BP23MVEXP-ENV-DC-028			Camera	74	660090	6196191	660086	6196220	4	-29	29	-7		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	00:41:07	1387	BP23MVEXP-ENV-DC-028			Camera	74	660089	6196186	660086	6196220	3	-34	35	-5		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	00:41:42	1388	BP23MVEXP-ENV-DC-028			Camera	75	660090	6196182	660086	6196220	4	-38	38	-5		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	00:42:39	1389	BP23MVEXP-ENV-DC-028			Camera	75	660090	6196175	660086	6196220	4	-45	45	-6		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	00:43:08	1390	BP23MVEXP-ENV-DC-028			Camera	75	660091	6196172	660086	6196220	5	-48	48	-6		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	01:07:18	1391	BP23MVEXP-ENV-DC-028			Camera	74	660135	6196224	660086	6196220	49	4	49	-94		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	01:08:48	1392	BP23MVEXP-ENV-DC-028			Camera	74	660134	6196223	660086	6196220	48	3	48	-94		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	01:09:12	1393	BP23MVEXP-ENV-DC-028			Camera	74	660133	6196223	660086	6196220	47	3	47	-94		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	01:11:26	1394	BP23MVEXP-ENV-DC-028			Camera	74	660120	6196221	660086	6196220	34	1	34	-91		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	01:13:12	1395	BP23MVEXP-ENV-DC-028			Camera	74	660108	6196220	660086	6196220	22	0	22	-90		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	01:13:51	1396	BP23MVEXP-ENV-DC-028			Camera	74	660104	6196220	660086	6196220	18	0	18	-91		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	01:15:53	1397	BP23MVEXP-ENV-DC-028			Camera	74	660093	6196217	660086	6196220	7	-3	7	-68		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	01:16:06	1398	BP23MVEXP-ENV-DC-028			Camera	74	660092	6196217	660086	6196220	6	-3	6	-66		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	01:16:39	1399	BP23MVEXP-ENV-DC-028			Camera	74	660088	6196217	660086	6196220	2	-3	4	-34		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	01:18:00	1400	BP23MVEXP-ENV-DC-028			Camera	74	660079	6196216	660086	6196220	-7	-4	8	59		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	01:18:21	1401	BP23MVEXP-ENV-DC-028			Camera	74	660077	6196216	660086	6196220	-9	-4	10	64		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	01:18:57	1402	BP23MVEXP-ENV-DC-028			Camera	74	660073	6196216	660086	6196220	-13	-4	13	74		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	01:19:33	1403	BP23MVEXP-ENV-DC-028			Camera	74	660070	6196216	660086	6196220	-16	-4	16	76		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	01:19:48	1404	BP23MVEXP-ENV-DC-028			Camera	74	660068	6196216	660086	6196220	-18	-4	18	76		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	01:20:41	1405	BP23MVEXP-ENV-DC-028			Camera	74	660063	6196215	660086	6196220	-23	-5	24	78		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	01:21:13	1406	BP23MVEXP-ENV-DC-028			Camera	74	660059	6196215	660086	6196220	-27	-5	27	79		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	01:21:45	1407	BP23MVEXP-ENV-DC-028			Camera	74	660057	6196215	660086	6196220	-30	-5	30	80		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	01:23:05	1408	BP23MVEXP-ENV-DC-028			Camera	74	660048	6196215	660086	6196220	-38	-5	38	82		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	01:23:52	1409	BP23MVEXP-ENV-DC-028			Camera	74	660043	6196214	660086	6196220	-43	-6	43	81		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
08-Jul-2023	01:24:27	1410	BP23MVEXP-ENV-DC-028			Camera	74	660040	6196212	660086	6196220	-46	-8	47	80		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	01:24:47	1411	BP23MVEXP-ENV-DC-028			Camera	74	660038	6196212	660086	6196220	-48	-8	49	81		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
08-Jul-2023	02:29:19	1412	BP23MVEXP-ENV-DC-029			Camera	76	660257	6192227	660307	6192230	-50	-3	50	87		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	02:30:50	1413	BP23MVEXP-ENV-DC-029			Camera	76	660258	6192226	660307	6192230	-49	-4	49	86		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	02:32:40	1414	BP23MVEXP-ENV-DC-029			Camera	76	660266	6192227	660307	6192230	-41	-3	41	86		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	02:33:47	1415	BP23MVEXP-ENV-DC-029			Camera	76	660273	6192228	660307	6192230	-34	-2	34	86		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	02:34:30	1416	BP23MVEXP-ENV-DC-029			Camera	76	660276	6192228	660307	6192230	-31	-2	31	85		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	02:35:09	1417	BP23MVEXP-ENV-DC-029			Camera	76	660281	6192228	660307	6192230	-26	-2	26	86		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	02:35:40	1418	BP23MVEXP-ENV-DC-029			Camera	76	660284	6192229	660307	6192230	-23	-1	23	87		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	02:36:47	1419	BP23MVEXP-ENV-DC-029			Camera	76	660292	6192229	660307	6192230	-15	-1	15	87		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	02:37:29	1420	BP23MVEXP-ENV-DC-029			Camera	76	660297	6192229	660307	6192230	-10	-1	10	85		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	02:38:03	1421	BP23MVEXP-ENV-DC-029			Camera	76	660300	6192230	660307	6192230	-7	0	7	87		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	02:38:12	1422	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192230	660307	6192230	-6	0	6	88		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	02:38:57	1423	BP23MVEXP-ENV-DC-029			Camera	76	660305	6192230	660307	6192230	-2	0	2	92		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	02:39:47	1424	BP23MVEXP-ENV-DC-029			Camera	76	660310	6192230	660307	6192230	3	0	3	-96		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	02:40:10	1425	BP23MVEXP-ENV-DC-029			Camera	76	660313	6192230	660307	6192230	6	0	6	-94		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	02:42:10	1426	BP23MVEXP-ENV-DC-029			Camera	76	660324	6192232	660307	6192230	17	2	17	-96		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	02:42:26	1427	BP23MVEXP-ENV-DC-029			Camera	76	660326	6192232	660307	6192230	19	2	19	-96		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	02:42:56	1428	BP23MVEXP-ENV-DC-029			Camera	76	660329	6192232	660307	6192230	22	2	22	-95		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	02:43:50	1429	BP23MVEXP-ENV-DC-029			Camera	77	660335	6192233	660307	6192230	28	3	28	-96		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	02:44:05	1430	BP23MVEXP-ENV-DC-029			Camera	76	660336	6192233	660307	6192230	29	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	02:44:50	1431	BP23MVEXP-ENV-DC-029			Camera	76	660342	6192233	660307	6192230	35	3	35	-96		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	02:45:38	1432	BP23MVEXP-ENV-DC-029			Camera	77	660346	6192233	660307	6192230	39	3	39	-95		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	02:46:43	1433	BP23MVEXP-ENV-DC-029			Camera	77	660353	6192234	660307	6192230	46	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	03:00:47	1434	BP23MVEXP-ENV-DC-029			Camera	77	660314	6192179	660307	6192230	7	-51	51	-7		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	03:02:28	1435	BP23MVEXP-ENV-DC-029			Camera	77	660310	6192180	660307	6192230	3	-50	50	-3		(Raw Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	03:04:10	1436	BP23MVEXP-ENV-DC-029			Camera	77	660309	6192186	660307	6192230	2	-44	44	-2		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	03:04:44	1437	BP23MVEXP-ENV-DC-029			Camera	77	660308	6192189	660307	6192230	1	-41	41	-2		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	03:05:20	1438	BP23MVEXP-ENV-DC-029			Camera	77	660308	6192193	660307	6192230	1	-37	37	-1		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	03:05:53	1439	BP23MVEXP-ENV-DC-029			Camera	77	660307	6192196	660307	6192230	0	-34	34	0		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	03:06:40	1440	BP23MVEXP-ENV-DC-029			Camera	77	660307	6192201	660307	6192230	0	-29	29	-1		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	03:07:12	1441	BP23MVEXP-ENV-DC-029			Camera	76	660307	6192204	660307	6192230	0	-26	26	0		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	03:08:26	1442	BP23MVEXP-ENV-DC-029			Camera	77	660306	6192211	660307	6192230	-1	-19	19	4		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	03:09:15	1443	BP23MVEXP-ENV-DC-029			Camera	77	660304	6192216	660307	6192230	-3	-14	15	10		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	03:10:20	1444	BP23MVEXP-ENV-DC-029			Camera	76	660303	6192223	660307	6192230	-4	-7	8	27		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	03:11:25	1445	BP23MVEXP-ENV-DC-029			Camera	76	660304	6192230	660307	6192230	-3	0	3	88		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	03:11:52	1446	BP23MVEXP-ENV-DC-029			Camera	76	660304	6192232	660307	6192230	-3	2	4	123		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	03:12:48	1447	BP23MVEXP-ENV-DC-029			Camera	76	660304	6192237	660307	6192230	-3	7	8	154		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	03:13:43	1448	BP23MVEXP-ENV-DC-029			Camera	76	660303	6192243	660307	6192230	-4	13	13	165		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	03:14:17	1449	BP23MVEXP-ENV-DC-029			Camera	76	660303	6192246	660307	6192230	-4	17	17	166		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	03:15:03	1450	BP23MVEXP-ENV-DC-029			Camera	76	660302	6192251	660307	6192230	-5	21	22	167		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	03:16:08	1451	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192258	660307	6192230	-6	28	28	168		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	03:16:57	1452	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192262	660307	6192230	-6	33	33	169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	03:17:54	1453	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192268	660307	6192230	-6	38	39	171		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	03:18:33	1454	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192272	660307	6192230	-6	43	43	172		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
08-Jul-2023	03:19:27	1455	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192277	660307	6192230	-6	47	47	172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	05:02:19	1456	BP23MVEXP-ENV-DC-030			Camera	74	660578	6188291	660581	6188239	-3	52	52	176		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	05:02:47	1457	BP23MVEXP-ENV-DC-030			Camera	74	660578	6188291	660581	6188239	-3	52	52	177		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	05:04:46	1458	BP23MVEXP-ENV-DC-030			Camera	74	660578	6188288	660581	6188239	-3	49	49	177		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	05:05:12	1459	BP23MVEXP-ENV-DC-030			Camera	74	660579	6188286	660581	6188239	-2	47	47	177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	05:06:12	1460	BP23MVEXP-ENV-DC-030			Camera	74	660579	6188279	660581	6188239	-2	40	40	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	05:07:31	1461	BP23MVEXP-ENV-DC-030			Camera	74	660580	6188272	660581	6188239	-1	33	33	178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	05:07:50	1462	BP23MVEXP-ENV-DC-030			Camera	74	660580	6188270	660581	6188239	-1	31	31	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	05:09:24	1463	BP23MVEXP-ENV-DC-030			Camera	74	660581	6188261	660581	6188239	0	22	22	-179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	05:10:26	1464	BP23MVEXP-ENV-DC-030			Camera	74	660582	6188253	660581	6188239	1	14	14	-176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	05:11:43	1465	BP23MVEXP-ENV-DC-030			Camera	74	660583	6188246	660581	6188239	2	7	7	-162		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	05:13:08	1466	BP23MVEXP-ENV-DC-030			Camera	74	660584	6188238	660581	6188239	3	-1	3	-78		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	05:13:26	1467	BP23MVEXP-ENV-DC-030			Camera	74	660584	6188237	660581	6188239	3	-2	4	-56		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	05:14:28	1468	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188230	660581	6188239	4	-9	9	-23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	05:15:23	1469	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188224	660581	6188239	4	-15	15	-16		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	05:15:43	1470	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188222	660581	6188239	4	-17	17	-14		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	05:16:29	1471	BP23MVEXP-ENV-DC-030			Camera	74	660586	6188217	660581	6188239	5	-22	23	-13		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	05:17:37	1472	BP23MVEXP-ENV-DC-030			Camera	74	660587	6188210	660581	6188239	6	-29	30	-11		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	05:18:37	1473	BP23MVEXP-ENV-DC-030			Camera	74	660587	6188203	660581	6188239	6	-36	36	-10		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	05:19:16	1474	BP23MVEXP-ENV-DC-030			Camera	74	660588	6188200	660581	6188239	7	-39	40	-10		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	05:19:43	1475	BP23MVEXP-ENV-DC-030			Camera	74	660589	6188197	660581	6188239	8	-42	42	-10		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	05:20:01	1476	BP23MVEXP-ENV-DC-030			Camera	74	660589	6188196	660581	6188239	8	-43	44	-10		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	05:20:16	1477	BP23MVEXP-ENV-DC-030			Camera	74	660588	6188195	660581	6188239	7	-44	45	-10		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	05:20:43	1478	BP23MVEXP-ENV-DC-030			Camera	74	660588	6188192	660581	6188239	7	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	05:21:25	1479	BP23MVEXP-ENV-DC-030			Camera	74	660587	6188188	660581	6188239	6	-51	51	-7		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	05:35:01	1480	BP23MVEXP-ENV-DC-030			Camera	74	660630	6188244	660581	6188239	49	5	49	-95		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	05:36:06	1481	BP23MVEXP-ENV-DC-030			Camera	74	660630	6188246	660581	6188239	49	7	50	-98		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	05:37:13	1482	BP23MVEXP-ENV-DC-030			Camera	74	660623	6188246	660581	6188239	42	7	43	-100		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	05:38:07	1483	BP23MVEXP-ENV-DC-030			Camera	74	660618	6188245	660581	6188239	37	6	37	-99		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	05:40:18	1484	BP23MVEXP-ENV-DC-030			Camera	74	660605	6188243	660581	6188239	24	4	24	-100		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Jul-2023	05:40:43	1485	BP23MVEXP-ENV-DC-030			Camera	74	660602	6188243	660581	6188239	21	4	22	-102		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	05:41:58	1486	BP23MVEXP-ENV-DC-030			Camera	74	660594	6188243	660581	6188239	13	4	13	-106		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	05:43:28	1487	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188242	660581	6188239	4	3	5	-128		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	05:44:09	1488	BP23MVEXP-ENV-DC-030			Camera	74	660580	6188241	660581	6188239	-1	2	2	168		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	05:45:03	1489	BP23MVEXP-ENV-DC-030			Camera	74	660576	6188240	660581	6188239	-5	1	6	105		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	05:45:37	1490	BP23MVEXP-ENV-DC-030			Camera	74	660572	6188240	660581	6188239	-9	1	9	95		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	05:48:27	1491	BP23MVEXP-ENV-DC-030			Camera	74	660555	6188237	660581	6188239	-26	-2	26	86		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	05:49:41	1492	BP23MVEXP-ENV-DC-030			Camera	74	660547	6188236	660581	6188239	-34	-3	34	85		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	05:51:20	1493	BP23MVEXP-ENV-DC-030			Camera	74	660537	6188234	660581	6188239	-44	-5	44	84		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	05:51:28	1494	BP23MVEXP-ENV-DC-030			Camera	74	660537	6188234	660581	6188239	-45	-5	45	84		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	08:05:27	1495	BP23MVEXP-ENV-DC-031A			Camera	73	660750	6184242	660798	6184246	-48	-4	48	86		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	08:07:03	1496	BP23MVEXP-ENV-DC-031A			Camera	73	660750	6184243	660798	6184246	-48	-3	48	86		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	08:07:22	1497	BP23MVEXP-ENV-DC-031A			Camera	73	660752	6184244	660798	6184246	-46	-2	46	87		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	08:07:59	1498	BP23MVEXP-ENV-DC-031A			Camera	73	660757	6184243	660798	6184246	-41	-3	41	86		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	08:10:07	1499	BP23MVEXP-ENV-DC-031A			Camera	73	660768	6184244	660798	6184246	-30	-2	30	86		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	08:10:20	1500	BP23MVEXP-ENV-DC-031A			Camera	73	660769	6184244	660798	6184246	-29	-2	29	86		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	08:11:24	1501	BP23MVEXP-ENV-DC-031A			Camera	73	660775	6184245	660798	6184246	-23	-1	23	87		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	08:11:58	1502	BP23MVEXP-ENV-DC-031A			Camera	73	660778	6184246	660798	6184246	-20	0	20	90		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	08:12:53	1503	BP23MVEXP-ENV-DC-031A			Camera	73	660783	6184247	660798	6184246	-15	1	15	93		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	08:13:55	1504	BP23MVEXP-ENV-DC-031A			Camera	73	660792	6184247	660798	6184246	-6	1	6	97		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	08:14:02	1505	BP23MVEXP-ENV-DC-031A			Camera	73	660792	6184247	660798	6184246	-6	1	6	98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	08:14:16	1506	BP23MVEXP-ENV-DC-031A			Camera	73	660794	6184247	660798	6184246	-4	1	4	100		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	08:16:33	1507	BP23MVEXP-ENV-DC-031A			Camera	73	660805	6184249	660798	6184246	7	3	7	-111		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	08:17:02	1508	BP23MVEXP-ENV-DC-031A			Camera	73	660807	6184249	660798	6184246	9	3	10	-107		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	08:17:47	1509	BP23MVEXP-ENV-DC-031A			Camera	73	660812	6184249	660798	6184246	14	3	14	-101		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	08:18:54	1510	BP23MVEXP-ENV-DC-031A			Camera	73	660819	6184250	660798	6184246	21	4	21	-101		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	08:19:27	1511	BP23MVEXP-ENV-DC-031A			Camera	73	660823	6184251	660798	6184246	25	5	25	-100		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	08:21:03	1512	BP23MVEXP-ENV-DC-031A			Camera	73	660830	6184253	660798	6184246	32	7	33	-103		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	08:21:22	1513	BP23MVEXP-ENV-DC-031A			Camera	73	660833	6184253	660798	6184246	35	7	36	-102		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	08:22:17	1514	BP23MVEXP-ENV-DC-031A			Camera	73	660839	6184254	660798	6184246	41	8	41	-101		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	08:22:49	1515	BP23MVEXP-ENV-DC-031A			Camera	73	660843	6184254	660798	6184246	45	8	46	-99		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	17:23:13	1516	BP23MVEXP-ENV-DC-031B			Camera	74	660790	6184290	660798	6184246	-8	44	45	170		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	17:26:00	1517	BP23MVEXP-ENV-DC-031B			Camera	74	660793	6184292	660798	6184246	-5	46	47	173		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	17:28:06	1518	BP23MVEXP-ENV-DC-031B			Camera	74	660795	6184295	660798	6184246	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	17:28:33	1519	BP23MVEXP-ENV-DC-031B			Camera	74	660796	6184293	660798	6184246	-2	47	47	178		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	17:29:01	1520	BP23MVEXP-ENV-DC-031B			Camera	74	660797	6184289	660798	6184246	-1	43	43	179		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	17:29:25	1521	BP23MVEXP-ENV-DC-031B			Camera	74	660797	6184287	660798	6184246	-1	41	41	179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	17:30:21	1522	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184281	660798	6184246	0	35	35	180		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	17:30:33	1523	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184279	660798	6184246	0	33	33	180		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	17:31:01	1524	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184277	660798	6184246	0	31	31	-180		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	17:32:22	1525	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184268	660798	6184246	0	22	22	-179		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	17:32:41	1526	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184266	660798	6184246	0	20	20	-179		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	17:32:48	1527	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184266	660798	6184246	0	20	20	-180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	17:33:30	1528	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184262	660798	6184246	0	16	16	-178		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	17:34:00	1529	BP23MVEXP-ENV-DC-031B			Camera	74	660800	6184258	660798	6184246	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	17:35:17	1530	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184251	660798	6184246	3	5	5	-152		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	17:35:40	1531	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184248	660798	6184246	3	2	3	-133		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	17:35:58	1532	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184247	660798	6184246	3	1	3	-103		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	17:36:32	1533	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184244	660798	6184246	3	-2	4	-53		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	17:37:44	1534	BP23MVEXP-ENV-DC-031B			Camera	74	660803	6184235	660798	6184246	5	-11	12	-26		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	17:38:15	1535	BP23MVEXP-ENV-DC-031B			Camera	74	660803	6184232	660798	6184246	5	-14	15	-20		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	17:39:11	1536	BP23MVEXP-ENV-DC-031B			Camera	73	660804	6184226	660798	6184246	6	-20	20	-16		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	17:39:38	1537	BP23MVEXP-ENV-DC-031B			Camera	73	660804	6184224	660798	6184246	6	-23	23	-14		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	17:39:53	1538	BP23MVEXP-ENV-DC-031B			Camera	73	660804	6184222	660798	6184246	6	-24	24	-13		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	17:41:12	1539	BP23MVEXP-ENV-DC-031B			Camera	73	660805	6184214	660798	6184246	7	-32	33	-13		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	17:41:33	1540	BP23MVEXP-ENV-DC-031B			Camera	73	660806	6184212	660798	6184246	8	-34	35	-13		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	17:43:21	1541	BP23MVEXP-ENV-DC-031B			Camera	73	660806	6184199	660798	6184246	8	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	19:17:30	1542	BP23MVEXP-ENV-DC-032			Camera	69	661014	6180298	661016	6180251	-2	47	47	178		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	19:18:52	1543	BP23MVEXP-ENV-DC-032			Camera	69	661015	6180298	661016	6180251	-1	47	47	178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	19:20:02	1544	BP23MVEXP-ENV-DC-032			Camera	69	661014	6180294	661016	6180251	-2	43	43	178		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	19:21:00	1545	BP23MVEXP-ENV-DC-032			Camera	69	661015	6180288	661016	6180251	-1	37	37	178		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	19:21:28	1546	BP23MVEXP-ENV-DC-032			Camera	69	661015	6180285	661016	6180251	-1	34	34	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	19:22:15	1547	BP23MVEXP-ENV-DC-032			Camera	69	661016	6180279	661016	6180251	0	28	28	179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	19:23:01	1548	BP23MVEXP-ENV-DC-032			Camera	69	661016	6180275	661016	6180251	0	24	24	-179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	19:23:37	1549	BP23MVEXP-ENV-DC-032			Camera	69	661017	6180271	661016	6180251	1	20	20	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	19:24:36	1550	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180265	661016	6180251	2	14	14	-171		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	19:25:03	1551	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180262	661016	6180251	2	11	11	-169		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	19:25:16	1552	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180261	661016	6180251	2	10	10	-168		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	19:26:16	1553	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180254	661016	6180251	2	3	4	-144		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	19:26:45	1554	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180251	661016	6180251	2	0	2	-93		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	19:27:00	1555	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180250	661016	6180251	3	-1	3	-61		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	19:27:18	1556	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180247	661016	6180251	3	-4	4	-38		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	19:28:09	1557	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180243	661016	6180251	3	-8	8	-19		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	19:28:37	1558	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180241	661016	6180251	3	-10	10	-14		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	19:28:46	1559	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180240	661016	6180251	2	-11	11	-13		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	19:29:14	1560	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180238	661016	6180251	2	-13	14	-11		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	19:29:55	1561	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180233	661016	6180251	2	-18	18	-7		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	19:30:12	1562	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180231	661016	6180251	2	-20	20	-7		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	19:30:28	1563	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180230	661016	6180251	2	-21	21	-6		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	19:31:04	1564	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180226	661016	6180251	2	-25	26	-6		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	19:31:29	1565	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180223	661016	6180251	3	-29	29	-6		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	19:31:55	1566	BP23MVEXP-ENV-DC-032			Camera	69	661020	6180219	661016	6180251	4	-32	32	-7		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	19:32:31	1567	BP23MVEXP-ENV-DC-032			Camera	69	661021	6180215	661016	6180251	5	-36	36	-8		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	19:33:15	1568	BP23MVEXP-ENV-DC-032			Camera	69	661022	6180211	661016	6180251	6	-40	41	-8		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	19:35:33	1569	BP23MVEXP-ENV-DC-032			Camera	69	661022	6180201	661016	6180251	6	-50	51	-7		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	19:50:48	1570	BP23MVEXP-ENV-DC-032			Camera	69	660968	6180248	661016	6180251	-48	-3	48	87		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	19:51:36	1571	BP23MVEXP-ENV-DC-032			Camera	69	660973	6180249	661016	6180251	-43	-2	43	87		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	19:52:11	1572	BP23MVEXP-ENV-DC-032			Camera	69	660977	6180249	661016	6180251	-39	-2	39	87		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	19:52:32	1573	BP23MVEXP-ENV-DC-032			Camera	69	660979	6180249	661016	6180251	-37	-2	37	87		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	19:53:44	1574	BP23MVEXP-ENV-DC-032			Camera	69	660987	6180251	661016	6180251	-29	0	29	89		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	19:54:18	1575	BP23MVEXP-ENV-DC-032			Camera	69	660990	6180251	661016	6180251	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	19:55:03	1576	BP23MVEXP-ENV-DC-032			Camera	69	660995	6180251	661016	6180251	-21	0	21	91		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	19:55:26	1577	BP23MVEXP-ENV-DC-032			Camera	69	660997	6180252	661016	6180251	-19	1	19	92		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	19:55:49	1578	BP23MVEXP-ENV-DC-032			Camera	69	660999	6180252	661016	6180251	-17	1	17	93		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	19:56:08	1579	BP23MVEXP-ENV-DC-032			Camera	69	661001	6180252	661016	6180251	-15	1	15	94		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	19:57:19	1580	BP23MVEXP-ENV-DC-032			Camera	69	661008	6180252	661016	6180251	-8	1	8	100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	19:58:04	1581	BP23MVEXP-ENV-DC-032			Camera	69	661012	6180253	661016	6180251	-4	2	5	122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	19:58:22	1582	BP23MVEXP-ENV-DC-032			Camera	69	661014	6180254	661016	6180251	-2	3	4	152		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	19:58:40	1583	BP23MVEXP-ENV-DC-032			Camera	69	661016	6180254	661016	6180251	0	3	3	-172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	19:59:35	1584	BP23MVEXP-ENV-DC-032			Camera	69	661023	6180254	661016	6180251	7	3	8	-115		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Jul-2023	20:00:33	1585	BP23MVEXP-ENV-DC-032			Camera	69	661029	6180255	661016	6180251	13	4	14	-108		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	20:01:27	1586	BP23MVEXP-ENV-DC-032			Camera	69	661033	6180256	661016	6180251	17	5	18	-106		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
08-Jul-2023	20:02:36	1587	BP23MVEXP-ENV-DC-032			Camera	69	661041	6180256	661016	6180251	25	5	26	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
08-Jul-2023	20:03:45	1588	BP23MVEXP-ENV-DC-032			Camera	69	661048	6180256	661016	6180251	33	5	33	-100		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
08-Jul-2023	20:06:34	1589	BP23MVEXP-ENV-DC-032			Camera	69	661065	6180258	661016	6180251	49	7	49	-99		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
08-Jul-2023	22:14:04	1590	BP23MVEXP-ENV-DC-033			Camera	66	661234	6176321	661235	6176269	-1	52	52	179		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	22:16:10	1591	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176318	661235	6176269	0	49	49	-180		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	22:16:32	1592	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176316	661235	6176269	0	47	47	-180		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	22:17:24	1593	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176310	661235	6176269	0	42	41	180		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	22:17:35	1594	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176310	661235	6176269	0	41	41	180		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	22:17:45	1595	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176309	661235	6176269	0	40	40	180		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	22:18:10	1596	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176306	661235	6176269	0	37	37	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	22:18:37	1597	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176304	661235	6176269	0	35	35	-179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	22:18:54	1598	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176302	661235	6176269	1	33	33	-178		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	22:19:08	1599	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176300	661235	6176269	1	31	31	-178		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	22:19:33	1600	BP23MVEXP-ENV-DC-033			Camera	66	661237	6176297	661235	6176269	2	28	28	-176		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	22:20:04	1601	BP23MVEXP-ENV-DC-033			Camera	66	661237	6176294	661235	6176269	2	25	25	-176		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	22:20:36	1602	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176292	661235	6176269	1	23	23	-177		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	22:20:49	1603	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176291	661235	6176269	1	22	22	-178		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	22:21:05	1604	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176290	661235	6176269	1	21	21	-177		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	22:21:36	1605	BP23MVEXP-ENV-DC-033			Camera	66	661237	6176287	661235	6176269	2	18	18	-174		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	22:21:52	1606	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176285	661235	6176269	3	16	16	-171		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	22:22:16	1607	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176282	661235	6176269	3	13	13	-166		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	22:22:38	1608	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176279	661235	6176269	3	10	11	-163		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	22:23:11	1609	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176275	661235	6176269	3	6	7	-156		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	22:23:41	1610	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176273	661235	6176269	3	4	5	-141		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	22:23:54	1611	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176271	661235	6176269	3	2	4	-130		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	22:24:03	1612	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176271	661235	6176269	3	2	4	-116		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	22:24:16	1613	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176269	661235	6176269	4	0	4	-90		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	22:24:28	1614	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176268	661235	6176269	4	-1	4	-72		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	22:25:58	1615	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176258	661235	6176269	4	-11	12	-21		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	22:26:14	1616	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176256	661235	6176269	4	-13	14	-19		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	22:26:35	1617	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176254	661235	6176269	5	-15	16	-17		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	22:26:58	1618	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176251	661235	6176269	4	-18	18	-14		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	22:28:13	1619	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176244	661235	6176269	5	-25	25	-12		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	22:28:24	1620	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176243	661235	6176269	5	-26	26	-12		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	22:28:44	1621	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176241	661235	6176269	5	-28	28	-11		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	22:29:07	1622	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176239	661235	6176269	5	-30	31	-10		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	22:30:05	1623	BP23MVEXP-ENV-DC-033			Camera	66	661241	6176233	661235	6176269	6	-36	36	-10		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	22:30:17	1624	BP23MVEXP-ENV-DC-033			Camera	66	661241	6176232	661235	6176269	6	-37	37	-10		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	22:31:30	1625	BP23MVEXP-ENV-DC-033			Camera	66	661241	6176226	661235	6176269	6	-43	44	-8		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	22:47:13	1626	BP23MVEXP-ENV-DC-033			Camera	66	661283	6176273	661235	6176269	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	22:47:37	1627	BP23MVEXP-ENV-DC-033			Camera	66	661281	6176273	661235	6176269	46	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	22:47:54	1628	BP23MVEXP-ENV-DC-033			Camera	66	661279	6176273	661235	6176269	44	4	44	-96		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	22:48:21	1629	BP23MVEXP-ENV-DC-033			Camera	66	661275	6176273	661235	6176269	40	4	41	-95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	22:48:33	1630	BP23MVEXP-ENV-DC-033			Camera	66	661274	6176273	661235	6176269	39	4	39	-96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	22:49:44	1631	BP23MVEXP-ENV-DC-033			Camera	66	661267	6176272	661235	6176269	32	3	32	-96		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	22:50:21	1632	BP23MVEXP-ENV-DC-033			Camera	66	661264	6176272	661235	6176269	29	3	29	-97		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
08-Jul-2023	22:51:24	1633	BP23MVEXP-ENV-DC-033			Camera	66	661257	6176271	661235	6176269	22	2	22	-96		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	22:52:06	1634	BP23MVEXP-ENV-DC-033			Camera	66	661253	6176271	661235	6176269	18	2	18	-96		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
08-Jul-2023	22:53:31	1635	BP23MVEXP-ENV-DC-033			Camera	66	661244	6176270	661235	6176269	9	1	9	-96		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
08-Jul-2023	22:53:56	1636	BP23MVEXP-ENV-DC-033			Camera	66	661242	6176269	661235	6176269	7	0	7	-93		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
08-Jul-2023	22:54:12	1637	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176269	661235	6176269	5	0	5	-93		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
08-Jul-2023	22:54:30	1638	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176269	661235	6176269	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
08-Jul-2023	22:54:55	1639	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176269	661235	6176269	0	0	0	-79		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
08-Jul-2023	22:55:09	1640	BP23MVEXP-ENV-DC-033			Camera	66	661234	6176269	661235	6176269	-1	0	1	69		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
08-Jul-2023	22:59:00	1641	BP23MVEXP-ENV-DC-033			Camera	66	661210	6176267	661235	6176269	-25	-2	25	85		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
08-Jul-2023	22:59:30	1642	BP23MVEXP-ENV-DC-033			Camera	66	661206	6176267	661235	6176269	-29	-2	29	85		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
08-Jul-2023	22:59:49	1643	BP23MVEXP-ENV-DC-033			Camera	66	661204	6176266	661235	6176269	-31	-3	31	85		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
09-Jul-2023	01:05:13	1644	BP23MVEXP-ENV-DC-034			Camera	64	661401	6172275	661451	6172274	-50	1	50	91		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	01:06:20	1645	BP23MVEXP-ENV-DC-034			Camera	65	661401	6172275	661451	6172274	50	-1	50	91		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
09-Jul-2023	01:06:37	1646	BP23MVEXP-ENV-DC-034			Camera	64	661403	6172274	661451	6172274	-48	0	48	91		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	01:07:03	1647	BP23MVEXP-ENV-DC-034			Camera	64	661406	6172275	661451	6172274	-46	1	45	91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	01:08:24	1648	BP23MVEXP-ENV-DC-034			Camera	64	661415	6172275	661451	6172274	-37	1	37	92		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	01:09:55	1649	BP23MVEXP-ENV-DC-034			Camera	64	661423	6172276	661451	6172274	-28	2	28	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	01:10:49	1650	BP23MVEXP-ENV-DC-034			Camera	64	661428	6172277	661451	6172274	-23	3	23	97		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	01:12:01	1651	BP23MVEXP-ENV-DC-034			Camera	64	661437	6172277	661451	6172274	-14	3	15	102		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	01:13:05	1652	BP23MVEXP-ENV-DC-034			Camera	64	661443	6172277	661451	6172274	-8	3	9	113		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	01:13:58	1653	BP23MVEXP-ENV-DC-034			Camera	64	661449	6172278	661451	6172274	-2	4	4	149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	01:15:23	1654	BP23MVEXP-ENV-DC-034			Camera	64	661457	6172278	661451	6172274	6	4	7	-121		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	01:15:50	1655	BP23MVEXP-ENV-DC-034			Camera	64	661460	6172278	661451	6172274	9	4	10	-112		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	01:16:41	1656	BP23MVEXP-ENV-DC-034			Camera	64	661466	6172279	661451	6172274	15	5	16	-107		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	01:17:55	1657	BP23MVEXP-ENV-DC-034			Camera	64	661473	6172279	661451	6172274	22	5	22	-103		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	01:18:26	1658	BP23MVEXP-ENV-DC-034			Camera	64	661476	6172279	661451	6172274	25	5	26	-102		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	01:19:17	1659	BP23MVEXP-ENV-DC-034			Camera	64	661481	6172279	661451	6172274	30	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	01:19:33	1660	BP23MVEXP-ENV-DC-034			Camera	64	661483	6172280	661451	6172274	32	6	32	-100		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	01:20:36	1661	BP23MVEXP-ENV-DC-034			Camera	64	661490	6172279	661451	6172274	39	5	39	-97		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	01:20:59	1662	BP23MVEXP-ENV-DC-034			Camera	64	661492	6172279	661451	6172274	41	5	41	-97		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	01:21:37	1663	BP23MVEXP-ENV-DC-034			Camera	64	661496	6172279	661451	6172274	45	5	45	-96		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	01:22:08	1664	BP23MVEXP-ENV-DC-034			Camera	64	661499	6172279	661451	6172274	48	5	49	-96		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	01:22:16	1665	BP23MVEXP-ENV-DC-034			Camera	64	661500	6172280	661451	6172274	49	6	49	-96		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	01:36:39	1666	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172320	661451	6172274	-5	46	47	174		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	01:38:15	1667	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172319	661451	6172274	-5	45	45	174		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	01:38:35	1668	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172318	661451	6172274	-5	44	44	174		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	01:39:28	1669	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172313	661451	6172274	-5	39	39	173		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	01:40:32	1670	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172306	661451	6172274	-5	32	32	172		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	01:40:59	1671	BP23MVEXP-ENV-DC-034			Camera	64	661447	6172303	661451	6172274	-4	29	29	172		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	01:41:58	1672	BP23MVEXP-ENV-DC-034			Camera	64	661448	6172297	661451	6172274	-3	23	23	172		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	01:42:52	1673	BP23MVEXP-ENV-DC-034			Camera	64	661449	6172291	661451	6172274	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	01:43:27	1674	BP23MVEXP-ENV-DC-034			Camera	64	661450	6172288	661451	6172274	-1	14	14	175		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	01:44:28	1675	BP23MVEXP-ENV-DC-034			Camera	64	661450	6172281	661451	6172274	-1	7	7	170		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	01:45:07	1676	BP23MVEXP-ENV-DC-034			Camera	64	661449	6172278	661451	6172274	-2	4	4	158		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	01:46:30	1677	BP23MVEXP-ENV-DC-034			Camera	64	661452	6172268	661451	6172274	1	-6	6	-5		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	01:47:46	1678	BP23MVEXP-ENV-DC-034			Camera	64	661452	6172260	661451	6172274	1	-14	14	-5		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	01:48:25	1679	BP23MVEXP-ENV-DC-034			Camera	64	661452	6172257	661451	6172274	1	-17	17	-5		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	01:49:39	1680	BP23MVEXP-ENV-DC-034			Camera	64	661453	6172249	661451	6172274	2	-25	26	-5		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	01:49:57	1681	BP23MVEXP-ENV-DC-034			Camera	64	661453	6172247	661451	6172274	2	-28	28	-5		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	01:50:28	1682	BP23MVEXP-ENV-DC-034			Camera	64	661454	6172243	661451	6172274	3	-31	31	-6		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	01:51:19	1683	BP23MVEXP-ENV-DC-034			Camera	64	661455	6172238	661451	6172274	4	-36	36	-6		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	01:52:33	1684	BP23MVEXP-ENV-DC-034			Camera	64	661456	6172230	661451	6172274	5	-44	44	-6		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	01:52:57	1685	BP23MVEXP-ENV-DC-034			Camera	64	661456	6172228	661451	6172274	5	-46	46	-6		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	03:28:31	1686	BP23MVEXP-ENV-DC-035			Camera	63	661190	6168181	661223	6168222	-33	-41	53	39		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	03:29:57	1687	BP23MVEXP-ENV-DC-035			Camera	63	661191	6168182	661223	6168222	-32	-40	51	38		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	03:30:30	1688	BP23MVEXP-ENV-DC-035			Camera	63	661192	6168184	661223	6168222	-31	-38	49	39		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	03:31:22	1689	BP23MVEXP-ENV-DC-035			Camera	63	661195	6168189	661223	6168222	-28	-33	44	41		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	03:32:41	1690	BP23MVEXP-ENV-DC-035			Camera	63	661201	6168195	661223	6168222	-22	-27	35	40		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	03:33:03	1691	BP23MVEXP-ENV-DC-035			Camera	63	661203	6168197	661223	6168222	-21	-25	33	39		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	03:33:17	1692	BP23MVEXP-ENV-DC-035			Camera	63	661203	6168197	661223	6168222	-20	-25	31	39		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	03:34:21	1693	BP23MVEXP-ENV-DC-035			Camera	63	661207	6168202	661223	6168222	-16	-20	25	39		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	03:34:53	1694	BP23MVEXP-ENV-DC-035			Camera	63	661209	6168205	661223	6168222	-14	-17	22	39		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	03:35:38	1695	BP23MVEXP-ENV-DC-035			Camera	63	661212	6168208	661223	6168222	-11	-14	18	39		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	03:36:21	1696	BP23MVEXP-ENV-DC-035			Camera	63	661214	6168212	661223	6168222	-9	-10	13	41		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	03:37:07	1697	BP23MVEXP-ENV-DC-035			Camera	63	661217	6168216	661223	6168222	-6	-6	9	43		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	03:37:48	1698	BP23MVEXP-ENV-DC-035			Camera	63	661219	6168219	661223	6168222	-4	-3	5	53		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	03:38:29	1699	BP23MVEXP-ENV-DC-035			Camera	63	661222	6168223	661223	6168222	-1	1	1	117		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	03:39:16	1700	BP23MVEXP-ENV-DC-035			Camera	63	661225	6168227	661223	6168222	2	5	6	-156		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	03:41:13	1701	BP23MVEXP-ENV-DC-035			Camera	63	661232	6168236	661223	6168222	9	14	17	-146		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	03:41:39	1702	BP23MVEXP-ENV-DC-035			Camera	63	661233	6168239	661223	6168222	11	17	20	-148		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	03:42:20	1703	BP23MVEXP-ENV-DC-035			Camera	63	661236	6168242	661223	6168222	13	20	24	-146		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	03:43:09	1704	BP23MVEXP-ENV-DC-035			Camera	63	661241	6168245	661223	6168222	18	23	29	-143		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	03:44:20	1705	BP23MVEXP-ENV-DC-035			Camera	63	661244	6168251	661223	6168222	21	29	36	-144		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	03:45:02	1706	BP23MVEXP-ENV-DC-035			Camera	63	661247	6168255	661223	6168222	25	33	41	-143		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	03:45:20	1707	BP23MVEXP-ENV-DC-035			Camera	63	661249	6168256	661223	6168222	26	34	42	-143		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	03:46:06	1708	BP23MVEXP-ENV-DC-035			Camera	63	661251	6168259	661223	6168222	28	37	47	-143		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	03:46:27	1709	BP23MVEXP-ENV-DC-035			Camera	63	661252	6168261	661223	6168222	29	39	49	-143		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	03:59:54	1710	BP23MVEXP-ENV-DC-035			Camera	63	661182	6168251	661223	6168222	-41	29	50	125		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	04:00:28	1711	BP23MVEXP-ENV-DC-035			Camera	63	661183	6168251	661223	6168222	-41	29	50	125		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	04:01:12	1712	BP23MVEXP-ENV-DC-035			Camera	63	661186	6168249	661223	6168222	-37	27	46	126		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	04:01:37	1713	BP23MVEXP-ENV-DC-035			Camera	63	661189	6168248	661223	6168222	-34	26	43	127		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	04:02:44	1714	BP23MVEXP-ENV-DC-035			Camera	63	661195	6168243	661223	6168222	-28	21	35	127		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	04:03:23	1715	BP23MVEXP-ENV-DC-035			Camera	63	661199	6168241	661223	6168222	-24	19	31	127		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	04:03:59	1716	BP23MVEXP-ENV-DC-035			Camera	63	661202	6168238	661223	6168222	-21	16	27	127		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	04:05:15	1717	BP23MVEXP-ENV-DC-035			Camera	63	661207	6168234	661223	6168222	-16	12	20	128		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	04:05:50	1718	BP23MVEXP-ENV-DC-035			Camera	63	661210	6168232	661223	6168222	-13	10	16	129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	04:06:27	1719	BP23MVEXP-ENV-DC-035			Camera	63	661214	6168230	661223	6168222	-9	8	12	130		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	04:07:19	1720	BP23MVEXP-ENV-DC-035			Camera	63	661218	6168226	661223	6168222	-5	4	6	132		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	04:07:54	1721	BP23MVEXP-ENV-DC-035			Camera	63	661221	6168224	661223	6168222	-2	2	3	140		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	04:08:35	1722	BP23MVEXP-ENV-DC-035			Camera	63	661224	6168222	661223	6168222	1	0	1	-91		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	04:09:11	1723	BP23MVEXP-ENV-DC-035			Camera	63	661227	6168220	661223	6168222	4	-2	5	-62		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	04:09:50	1724	BP23MVEXP-ENV-DC-035			Camera	63	661230	6168218	661223	6168222	7	-4	9	-60		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	04:11:15	1725	BP23MVEXP-ENV-DC-035			Camera	63	661238	6168212	661223	6168222	15	-10	18	-57		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	04:11:45	1726	BP23MVEXP-ENV-DC-035			Camera	63	661241	6168211	661223	6168222	18	-12	21	-57		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	04:12:53	1727	BP23MVEXP-ENV-DC-035			Camera	63	661247	6168207	661223	6168222	24	-15	28	-57		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	04:13:11	1728	BP23MVEXP-ENV-DC-035			Camera	63	661248	6168206	661223	6168222	25	-16	30	-57		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	04:14:02	1729	BP23MVEXP-ENV-DC-035			Camera	63	661252	6168203	661223	6168222	29	-20	35	-56		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	04:14:46	1730	BP23MVEXP-ENV-DC-035			Camera	63	661255	6168200	661223	6168222	32	-22	39	-56		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	04:15:29	1731	BP23MVEXP-ENV-DC-035			Camera	63	661259	6168197	661223	6168222	36	-25	44	-56		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	04:15:39	1732	BP23MVEXP-ENV-DC-035			Camera	63	661260	6168197	661223	6168222	37	-25	45	-56		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	04:16:20	1733	BP23MVEXP-ENV-DC-035			Camera	63	661264	6168195	661223	6168222	41	-27	49	-56		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	05:12:00	1734	BP23MVEXP-ENV-DC-036			Camera	65	658853	6165301	658815	6165338	38	-37	53	-46		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	05:13:50	1735	BP23MVEXP-ENV-DC-036			Camera	65	658853	6165302	658815	6165338	38	-36	52	-46		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	05:14:16	1736	BP23MVEXP-ENV-DC-036			Camera	65	658851	6165303	658815	6165338	36	-35	50	-46		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	05:15:43	1737	BP23MVEXP-ENV-DC-036			Camera	65	658844	6165308	658815	6165338	29	-31	42	-44		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	05:16:47	1738	BP23MVEXP-ENV-DC-036			Camera	65	658839	6165312	658815	6165338	24	-26	35	-43		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	05:17:14	1739	BP23MVEXP-ENV-DC-036			Camera	65	658837	6165314	658815	6165338	22	-24	33	-42		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	05:18:13	1740	BP23MVEXP-ENV-DC-036			Camera	65	658832	6165318	658815	6165338	17	-20	27	-40		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	05:18:48	1741	BP23MVEXP-ENV-DC-036			Camera	65	658829	6165320	658815	6165338	14	-18	23	-38		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	05:20:03	1742	BP23MVEXP-ENV-DC-036			Camera	65	658822	6165326	658815	6165338	7	-12	14	-31		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	05:20:40	1743	BP23MVEXP-ENV-DC-036			Camera	65	658819	6165328	658815	6165338	4	-10	11	-23		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	05:21:32	1744	BP23MVEXP-ENV-DC-036			Camera	65	658815	6165331	658815	6165338	0	-7	7	-3		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	05:22:27	1745	BP23MVEXP-ENV-DC-036			Camera	65	658811	6165335	658815	6165338	-4	-3	5	52		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	05:22:58	1746	BP23MVEXP-ENV-DC-036			Camera	65	658809	6165337	658815	6165338	-6	-1	6	81		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	05:23:58	1747	BP23MVEXP-ENV-DC-036			Camera	65	658805	6165341	658815	6165338	-10	3	11	105		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	05:24:53	1748	BP23MVEXP-ENV-DC-036			Camera	65	658800	6165344	658815	6165338	-15	6	16	112		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	05:25:47	1749	BP23MVEXP-ENV-DC-036			Camera	65	658796	6165348	658815	6165338	-19	10	21	117		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	05:26:44	1750	BP23MVEXP-ENV-DC-036			Camera	65	658792	6165351	658815	6165338	-23	13	27	120		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	05:28:07	1751	BP23MVEXP-ENV-DC-036			Camera	65	658785	6165356	658815	6165338	-30	18	35	121		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	05:29:18	1752	BP23MVEXP-ENV-DC-036			Camera	65	658780	6165361	658815	6165338	-35	23	42	123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	05:30:01	1753	BP23MVEXP-ENV-DC-036			Camera	65	658776	6165364	658815	6165338	-39	26	47	124		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	05:30:27	1754	BP23MVEXP-ENV-DC-036			Camera	65	658774	6165366	658815	6165338	-41	28	49	124		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	05:40:43	1755	BP23MVEXP-ENV-DC-036			Camera	65	658847	6165381	658815	6165338	32	43	54	-143		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	05:42:42	1756	BP23MVEXP-ENV-DC-036			Camera	65	658850	6165377	658815	6165338	35	39	53	-139		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	05:43:48	1757	BP23MVEXP-ENV-DC-036			Camera	65	658847	6165375	658815	6165338	32	37	49	-139		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	05:45:41	1758	BP23MVEXP-ENV-DC-036			Camera	65	658841	6165366	658815	6165338	26	28	38	-137		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	05:46:37	1759	BP23MVEXP-ENV-DC-036			Camera	65	658837	6165362	658815	6165338	22	24	33	-137		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	05:46:55	1760	BP23MVEXP-ENV-DC-036			Camera	65	658836	6165361	658815	6165338	21	23	31	-137		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	05:48:12	1761	BP23MVEXP-ENV-DC-036			Camera	65	658831	6165354	658815	6165338	16	16	23	-135		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	05:48:39	1762	BP23MVEXP-ENV-DC-036			Camera	65	658830	6165352	658815	6165338	15	14	20	-134		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	05:50:16	1763	BP23MVEXP-ENV-DC-036			Camera	65	658823	6165344	658815	6165338	8	6	10	-128		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	05:51:23	1764	BP23MVEXP-ENV-DC-036			Camera	65	658819	6165339	658815	6165338	4	1	4	-110		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	05:51:56	1765	BP23MVEXP-ENV-DC-036			Camera	65	658816	6165337	658815	6165338	1	-2	2	-43		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	05:52:49	1766	BP23MVEXP-ENV-DC-036			Camera	65	658813	6165332	658815	6165338	-2	-6	6	18		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	05:53:24	1767	BP23MVEXP-ENV-DC-036			Camera	65	658811	6165329	658815	6165338	-4	-9	10	26		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	05:55:05	1768	BP23MVEXP-ENV-DC-036			Camera	65	658804	6165321	658815	6165338	-11	-17	20	32		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	05:55:54	1769	BP23MVEXP-ENV-DC-036			Camera	65	658801	6165317	658815	6165338	-14	-21	25	33		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	05:56:58	1770	BP23MVEXP-ENV-DC-036			Camera	65	658797	6165312	658815	6165338	-18	-26	32	35		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	05:57:15	1771	BP23MVEXP-ENV-DC-036			Camera	65	658796	6165311	658815	6165338	-19	-27	33	35		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	05:57:34	1772	BP23MVEXP-ENV-DC-036			Camera	65	658795	6165309	658815	6165338	-20	-29	35	34		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	05:58:30	1773	BP23MVEXP-ENV-DC-036			Camera	65	658791	6165304	658815	6165338	-24	-34	41	35		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	05:58:33	1774	BP23MVEXP-ENV-DC-036			Camera	65	658791	6165304	658815	6165338	-24	-34	41	35		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	05:59:31	1775	BP23MVEXP-ENV-DC-036			Camera	65	658787	6165300	658815	6165338	-28	-38	47	36		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	07:31:01	1776	BP23MVEXP-ENV-DC-037			Camera	63	656243	6162175	656204	6162209	39	-34	52	-49		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	07:33:35	1777	BP23MVEXP-ENV-DC-037			Camera	67	656241	6162176	656204	6162209	-37	33	49	311		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
09-Jul-2023	07:34:11	1778	BP23MVEXP-ENV-DC-037			Camera	63	656238	6162178	656204	6162209	34	-31	46	-47		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	07:35:31	1779	BP23MVEXP-ENV-DC-037			Camera	63	656232	6162183	656204	6162209	28	-26	39	-47		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	07:36:05	1780	BP23MVEXP-ENV-DC-037			Camera	63	656229	6162185	656204	6162209	25	-24	34	-47		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	07:36:27	1781	BP23MVEXP-ENV-DC-037			Camera	63	656227	6162187	656204	6162209	23	-22	32	-46		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	07:37:34	1782	BP23MVEXP-ENV-DC-037			Camera	63	656221	6162191	656204	6162209	18	-18	25	-44		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	07:38:56	1783	BP23MVEXP-ENV-DC-037			Camera	63	656215	6162196	656204	6162209	11	-13	17	-41		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	07:40:26	1784	BP23MVEXP-ENV-DC-037			Camera	63	656207	6162203	656204	6162209	3	-6	7	-27		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	07:41:13	1785	BP23MVEXP-ENV-DC-037			Camera	63	656204	6162205	656204	6162209	0	-4	4	0		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	07:42:52	1786	BP23MVEXP-ENV-DC-037			Camera	63	656196	6162212	656204	6162209	-8	3	9	110		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	07:43:13	1787	BP23MVEXP-ENV-DC-037			Camera	63	656195	6162213	656204	6162209	-10	4	10	114		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	07:45:01	1788	BP23MVEXP-ENV-DC-037			Camera	63	656185	6162220	656204	6162209	-19	11	22	119		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	07:46:08	1789	BP23MVEXP-ENV-DC-037			Camera	63	656180	6162224	656204	6162209	-24	15	28	123		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	07:47:14	1790	BP23MVEXP-ENV-DC-037			Camera	63	656176	6162229	656204	6162209	-29	20	35	125		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	07:48:04	1791	BP23MVEXP-ENV-DC-037			Camera	63	656171	6162232	656204	6162209	-33	23	40	125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	07:49:06	1792	BP23MVEXP-ENV-DC-037			Camera	63	656166	6162236	656204	6162209	-38	27	47	126		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	08:01:51	1793	BP23MVEXP-ENV-DC-037			Camera	63	656174	6162172	656204	6162209	-30	-37	48	39		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	08:04:43	1794	BP23MVEXP-ENV-DC-037			Camera	63	656177	6162176	656204	6162209	-27	-33	42	39		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	08:05:19	1795	BP23MVEXP-ENV-DC-037			Camera	63	656180	6162180	656204	6162209	-24	-29	37	40		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	08:06:20	1796	BP23MVEXP-ENV-DC-037			Camera	63	656185	6162187	656204	6162209	-20	-23	30	41		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	08:06:58	1797	BP23MVEXP-ENV-DC-037			Camera	63	656187	6162190	656204	6162209	-17	-19	26	42		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	08:07:58	1798	BP23MVEXP-ENV-DC-037			Camera	63	656190	6162195	656204	6162209	-14	-14	20	44		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	08:08:58	1799	BP23MVEXP-ENV-DC-037			Camera	63	656195	6162199	656204	6162209	-9	-10	13	44		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	08:09:36	1800	BP23MVEXP-ENV-DC-037			Camera	63	656197	6162203	656204	6162209	-7	-6	10	48		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	08:10:27	1801	BP23MVEXP-ENV-DC-037			Camera	63	656200	6162207	656204	6162209	-4	-2	5	59		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	08:11:11	1802	BP23MVEXP-ENV-DC-037			Camera	63	656203	6162210	656204	6162209	-1	1	1	152		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	08:11:56	1803	BP23MVEXP-ENV-DC-037			Camera	63	656206	6162215	656204	6162209	2	6	6	-164		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	08:12:06	1804	BP23MVEXP-ENV-DC-037			Camera	63	656206	6162215	656204	6162209	2	6	7	-162		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	08:13:16	1805	BP23MVEXP-ENV-DC-037			Camera	63	656210	6162221	656204	6162209	6	12	14	-153		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	08:14:36	1806	BP23MVEXP-ENV-DC-037			Camera	63	656215	6162227	656204	6162209	11	18	22	-148		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	08:15:09	1807	BP23MVEXP-ENV-DC-037			Camera	63	656217	6162230	656204	6162209	13	21	25	-147		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	08:15:57	1808	BP23MVEXP-ENV-DC-037			Camera	63	656220	6162234	656204	6162209	16	25	29	-148		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	08:16:56	1809	BP23MVEXP-ENV-DC-037			Camera	63	656223	6162239	656204	6162209	19	30	35	-147		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	08:17:19	1810	BP23MVEXP-ENV-DC-037			Camera	63	656225	6162241	656204	6162209	21	32	38	-147		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	08:18:07	1811	BP23MVEXP-ENV-DC-037			Camera	63	656228	6162245	656204	6162209	25	36	43	-146		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	08:18:31	1812	BP23MVEXP-ENV-DC-037			Camera	63	656230	6162247	656204	6162209	26	38	46	-145		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	08:18:51	1813	BP23MVEXP-ENV-DC-037			Camera	63	656232	6162249	656204	6162209	28	40	48	-145		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	08:19:21	1814	BP23MVEXP-ENV-DC-037			Camera	63	656233	6162251	656204	6162209	29	42	51	-145		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	10:58:10	1816	BP23MVEXP-ENV-DC-038			Camera	64	653673	6159180	653638	6159136	35	44	56	-142		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	10:58:27	1817	BP23MVEXP-ENV-DC-038			Camera	64	653673	6159180	653638	6159136	35	44	56	-141		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	11:00:32	1818	BP23MVEXP-ENV-DC-038			Camera	64	653672	6159177	653638	6159136	34	42	54	-141		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	11:01:26	1819	BP23MVEXP-ENV-DC-038			Camera	64	653669	6159173	653638	6159136	31	37	48	-140		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	11:02:15	1820	BP23MVEXP-ENV-DC-038			Camera	64	653665	6159169	653638	6159136	27	33	43	-141		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	11:02:38	1821	BP23MVEXP-ENV-DC-038			Camera	64	653664	6159167	653638	6159136	26	31	40	-140		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	11:03:15	1822	BP23MVEXP-ENV-DC-038			Camera	64	653661	6159164	653638	6159136	23	28	36	-140		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	11:03:48	1823	BP23MVEXP-ENV-DC-038			Camera	64	653655	6159160	653638	6159136	17	24	29	-145		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	11:04:03	1824	BP23MVEXP-ENV-DC-038			Camera	64	653659	6159160	653638	6159136	21	24	31	-139		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	11:04:56	1825	BP23MVEXP-ENV-DC-038			Camera	64	653656	6159155	653638	6159136	18	20	26	-138		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	11:06:00	1826	BP23MVEXP-ENV-DC-038			Camera	64	653652	6159151	653638	6159136	14	15	20	-137		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	11:06:49	1827	BP23MVEXP-ENV-DC-038			Camera	64	653648	6159147	653638	6159136	10	11	15	-138		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	11:07:10	1828	BP23MVEXP-ENV-DC-038			Camera	64	653646	6159145	653638	6159136	8	9	13	-138		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	11:07:26	1829	BP23MVEXP-ENV-DC-038			Camera	64	653645	6159144	653638	6159136	7	8	11	-138		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	11:08:15	1830	BP23MVEXP-ENV-DC-038			Camera	64	653642	6159140	653638	6159136	4	4	6	-134		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	11:09:05	1831	BP23MVEXP-ENV-DC-038			Camera	64	653639	6159136	653638	6159136	1	0	1	-79		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	11:09:27	1832	BP23MVEXP-ENV-DC-038			Camera	64	653638	6159134	653638	6159136	0	-2	2	-1		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	11:10:54	1833	BP23MVEXP-ENV-DC-038			Camera	64	653632	6159127	653638	6159136	-6	-9	11	33		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	11:11:01	1834	BP23MVEXP-ENV-DC-038			Camera	64	653632	6159126	653638	6159136	-6	-10	12	33		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	11:12:33	1835	BP23MVEXP-ENV-DC-038			Camera	64	653626	6159120	653638	6159136	-12	-16	20	37		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	11:13:12	1836	BP23MVEXP-ENV-DC-038			Camera	64	653623	6159116	653638	6159136	-15	-20	25	37		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	11:13:47	1837	BP23MVEXP-ENV-DC-038			Camera	64	653622	6159113	653638	6159136	-16	-23	28	35		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	11:14:04	1838	BP23MVEXP-ENV-DC-038			Camera	64	653621	6159112	653638	6159136	-17	-24	30	36		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	11:14:41	1839	BP23MVEXP-ENV-DC-038			Camera	64	653618	6159109	653638	6159136	-20	-27	34	37		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	11:14:57	1840	BP23MVEXP-ENV-DC-038			Camera	64	653617	6159108	653638	6159136	-21	-28	35	37		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	11:15:44	1841	BP23MVEXP-ENV-DC-038			Camera	64	653614	6159104	653638	6159136	-24	-32	40	37		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	11:16:28	1842	BP23MVEXP-ENV-DC-038			Camera	64	653612	6159100	653638	6159136	-26	-36	44	36		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	11:16:44	1843	BP23MVEXP-ENV-DC-038			Camera	64	653611	6159099	653638	6159136	-27	-37	46	36		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	11:16:51	1844	BP23MVEXP-ENV-DC-038			Camera	64	653611	6159099	653638	6159136	-27	-37	46	36		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	11:17:11	1845	BP23MVEXP-ENV-DC-038			Camera	64	653609	6159098	653638	6159136	-29	-38	48	37		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	11:35:55	1846	BP23MVEXP-ENV-DC-038			Camera	64	653597	6159167	653638	6159136	-41	31	52	127		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	11:36:32	1847	BP23MVEXP-ENV-DC-038			Camera	64	653600	6159166	653638	6159136	-38	30	48	128		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	11:37:30	1848	BP23MVEXP-ENV-DC-038			Camera	64	653605	6159163	653638	6159136	-33	27	43	129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	11:37:57	1849	BP23MVEXP-ENV-DC-038			Camera	64	653607	6159162	653638	6159136	-31	26	40	130		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	11:38:48	1850	BP23MVEXP-ENV-DC-038			Camera	64	653612	6159159	653638	6159136	-26	23	35	132		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	11:39:09	1851	BP23MVEXP-ENV-DC-038			Camera	64	653614	6159158	653638	6159136	-24	22	32	132		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	11:40:17	1852	BP23MVEXP-ENV-DC-038			Camera	64	653619	6159154	653638	6159136	-19	18	26	134		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	11:41:08	1853	BP23MVEXP-ENV-DC-038			Camera	64	653624	6159151	653638	6159136	-14	15	20	137		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	11:41:36	1854	BP23MVEXP-ENV-DC-038			Camera	64	653626	6159149	653638	6159136	-12	13	18	138		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	11:42:04	1855	BP23MVEXP-ENV-DC-038			Camera	64	653628	6159148	653638	6159136	-10	13	16	141		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	11:42:58	1856	BP23MVEXP-ENV-DC-038			Camera	64	653632	6159145	653638	6159136	-6	9	11	150		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	11:43:35	1857	BP23MVEXP-ENV-DC-038			Camera	64	653636	6159143	653638	6159136	-2	7	8	165		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	11:43:53	1858	BP23MVEXP-ENV-DC-038			Camera	64	653638	6159142	653638	6159136	0	6	6	179		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	11:44:16	1859	BP23MVEXP-ENV-DC-038			Camera	64	653640	6159141	653638	6159136	2	5	6	-155		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	11:44:22	1860	BP23MVEXP-ENV-DC-038			Camera	64	653641	6159141	653638	6159136	3	5	6	-149		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	11:44:36	1861	BP23MVEXP-ENV-DC-038			Camera	64	653642	6159140	653638	6159136	4	4	6	-136		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	11:44:42	1862	BP23MVEXP-ENV-DC-038			Camera	64	653643	6159140	653638	6159136	5	4	6	-130		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	11:44:57	1863	BP23MVEXP-ENV-DC-038			Camera	64	653644	6159139	653638	6159136	6	3	6	-118		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	11:45:17	1864	BP23MVEXP-ENV-DC-038			Camera	64	653645	6159138	653638	6159136	7	2	7	-104		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	11:45:29	1865	BP23MVEXP-ENV-DC-038			Camera	64	653645	6159137	653638	6159136	7	1	7	-98		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	11:45:42	1866	BP23MVEXP-ENV-DC-038			Camera	64	653646	6159136	653638	6159136	8	0	8	-93		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	11:46:22	1867	BP23MVEXP-ENV-DC-038			Camera	64	653649	6159134	653638	6159136	11	-2	11	-80		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
09-Jul-2023	11:47:10	1868	BP23MVEXP-ENV-DC-038			Camera	64	653654	6159131	653638	6159136	16	-5	17	-74		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
09-Jul-2023	11:47:26	1869	BP23MVEXP-ENV-DC-038			Camera	64	653656	6159131	653638	6159136	18	-5	19	-73		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
09-Jul-2023	11:49:02	1870	BP23MVEXP-ENV-DC-038			Camera	64	653664	6159125	653638	6159136	26	-11	29	-67		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
09-Jul-2023	13:13:14	1871	BP23MVEXP-ENV-DC-039			Camera	70	651127	6156103	651097	6156056	30	47	56	-147		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	13:15:45	1872	BP23MVEXP-ENV-DC-039			Camera	70	651126	6156101	651097	6156056	29	45	53	-147		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	13:17:01	1873	BP23MVEXP-ENV-DC-039			Camera	70	651121	6156096	651097	6156056	24	40	46	-149		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	13:17:33	1874	BP23MVEXP-ENV-DC-039			Camera	70	651119	6156093	651097	6156056	22	37	43	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	13:18:16	1875	BP23MVEXP-ENV-DC-039			Camera	71	651117	6156089	651097	6156056	20	33	39	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	13:18:59	1876	BP23MVEXP-ENV-DC-039			Camera	70	651115	6156085	651097	6156056	18	29	34	-149		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	13:19:49	1877	BP23MVEXP-ENV-DC-039			Camera	70	651112	6156080	651097	6156056	15	25	29	-149		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	13:20:06	1878	BP23MVEXP-ENV-DC-039			Camera	70	651111	6156079	651097	6156056	14	23	26	-149		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	13:20:37	1879	BP23MVEXP-ENV-DC-039			Camera	70	651109	6156076	651097	6156056	12	20	23	-149		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	13:20:47	1880	BP23MVEXP-ENV-DC-039			Camera	70	651108	6156075	651097	6156056	11	19	22	-150		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	13:21:33	1881	BP23MVEXP-ENV-DC-039			Camera	70	651105	6156071	651097	6156056	8	15	17	-152		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	13:22:50	1882	BP23MVEXP-ENV-DC-039			Camera	70	651101	6156064	651097	6156056	4	8	9	-153		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	13:23:20	1883	BP23MVEXP-ENV-DC-039			Camera	71	651099	6156062	651097	6156056	2	6	6	-158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	13:23:41	1884	BP23MVEXP-ENV-DC-039			Camera	70	651098	6156060	651097	6156056	1	4	4	-166		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	13:24:04	1885	BP23MVEXP-ENV-DC-039			Camera	70	651096	6156058	651097	6156056	-1	2	2	159		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	13:24:20	1886	BP23MVEXP-ENV-DC-039			Camera	71	651095	6156057	651097	6156056	-2	1	2	110		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	13:24:49	1887	BP23MVEXP-ENV-DC-039			Camera	70	651094	6156054	651097	6156056	-3	-2	4	61		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	13:24:58	1888	BP23MVEXP-ENV-DC-039			Camera	70	651093	6156053	651097	6156056	-4	-3	5	55		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	13:25:09	1889	BP23MVEXP-ENV-DC-039			Camera	70	651093	6156053	651097	6156056	-4	-3	5	51		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	13:25:19	1890	BP23MVEXP-ENV-DC-039			Camera	70	651092	6156052	651097	6156056	-5	-4	6	48		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	13:25:29	1891	BP23MVEXP-ENV-DC-039			Camera	70	651092	6156051	651097	6156056	-5	-5	7	47		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	13:26:02	1892	BP23MVEXP-ENV-DC-039			Camera	70	651090	6156049	651097	6156056	-7	-7	10	45		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	13:26:26	1893	BP23MVEXP-ENV-DC-039			Camera	71	651088	6156047	651097	6156056	-9	-9	13	42		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	13:26:52	1894	BP23MVEXP-ENV-DC-039			Camera	71	651087	6156044	651097	6156056	-10	-12	16	39		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	13:27:42	1895	BP23MVEXP-ENV-DC-039			Camera	71	651084	6156039	651097	6156056	-13	-17	21	38		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	13:28:10	1896	BP23MVEXP-ENV-DC-039			Camera	70	651082	6156037	651097	6156056	-15	-19	24	38		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	13:30:29	1897	BP23MVEXP-ENV-DC-039			Camera	71	651074	6156026	651097	6156056	-23	-30	38	37		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	13:34:37	1898	BP23MVEXP-ENV-DC-039			Camera	70	651068	6156016	651097	6156056	-29	-40	50	36		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	13:47:23	1899	BP23MVEXP-ENV-DC-039			Camera	70	651057	6156087	651097	6156056	-40	31	51	128		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	13:49:58	1900	BP23MVEXP-ENV-DC-039			Camera	70	651060	6156085	651097	6156056	-37	29	47	128		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	13:50:08	1901	BP23MVEXP-ENV-DC-039			Camera	70	651061	6156085	651097	6156056	-36	29	46	129		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	13:51:01	1902	BP23MVEXP-ENV-DC-039			Camera	70	651066	6156083	651097	6156056	-32	27	41	130		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	13:51:37	1903	BP23MVEXP-ENV-DC-039			Camera	70	651069	6156080	651097	6156056	-28	25	37	131		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	13:52:40	1904	BP23MVEXP-ENV-DC-039			Camera	70	651074	6156076	651097	6156056	-23	20	31	131		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	13:52:50	1905	BP23MVEXP-ENV-DC-039			Camera	70	651075	6156076	651097	6156056	-23	20	30	131		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	13:53:46	1906	BP23MVEXP-ENV-DC-039			Camera	70	651079	6156072	651097	6156056	-18	16	24	132		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	13:54:50	1907	BP23MVEXP-ENV-DC-039			Camera	70	651084	6156068	651097	6156056	-13	12	18	135		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	13:54:58	1908	BP23MVEXP-ENV-DC-039			Camera	70	651085	6156068	651097	6156056	-12	12	17	135		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	13:55:13	1909	BP23MVEXP-ENV-DC-039			Camera	70	651086	6156067	651097	6156056	-11	11	16	136		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	13:55:20	1910	BP23MVEXP-ENV-DC-039			Camera	70	651087	6156067	651097	6156056	-10	11	15	136		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	13:55:27	1911	BP23MVEXP-ENV-DC-039			Camera	70	651087	6156066	651097	6156056	-10	10	14	136		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	13:57:28	1912	BP23MVEXP-ENV-DC-039			Camera	70	651098	6156058	651097	6156056	1	2	3	-153		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	13:57:37	1913	BP23MVEXP-ENV-DC-039			Camera	70	651099	6156058	651097	6156056	2	2	3	-137		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	13:57:49	1914	BP23MVEXP-ENV-DC-039			Camera	70	651100	6156057	651097	6156056	3	1	3	-113		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	13:58:12	1915	BP23MVEXP-ENV-DC-039			Camera	70	651101	6156056	651097	6156056	4	0	4	-85		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	13:58:40	1916	BP23MVEXP-ENV-DC-039			Camera	70	651103	6156054	651097	6156056	6	-2	6	-71		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	13:59:12	1917	BP23MVEXP-ENV-DC-039			Camera	70	651106	6156052	651097	6156056	9	-4	10	-65		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	13:59:21	1918	BP23MVEXP-ENV-DC-039			Camera	70	651107	6156051	651097	6156056	10	-5	11	-63		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	14:00:08	1919	BP23MVEXP-ENV-DC-039			Camera	70	651111	6156047	651097	6156056	14	-9	16	-58		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	14:00:42	1920	BP23MVEXP-ENV-DC-039			Camera	70	651113	6156046	651097	6156056	16	-10	19	-57		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	14:00:57	1921	BP23MVEXP-ENV-DC-039			Camera	70	651114	6156045	651097	6156056	17	-11	20	-56		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	14:01:45	1922	BP23MVEXP-ENV-DC-039			Camera	70	651118	6156042	651097	6156056	21	-15	25	-55		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
09-Jul-2023	14:02:06	1923	BP23MVEXP-ENV-DC-039			Camera	70	651119	6156040	651097	6156056	23	-16	27	-55		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
09-Jul-2023	14:02:51	1924	BP23MVEXP-ENV-DC-039			Camera	70	651123	6156038	651097	6156056	26	-18	32	-56		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
09-Jul-2023	14:03:04	1925	BP23MVEXP-ENV-DC-039			Camera	70	651125	6156037	651097	6156056	28	-19	33	-56		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
09-Jul-2023	14:04:32	1926	BP23MVEXP-ENV-DC-039			Camera	70	651133	6156031	651097	6156056	36	-25	43	-55		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
09-Jul-2023	14:05:20	1927	BP23MVEXP-ENV-DC-039			Camera	70	651136	6156029	651097	6156056	39	-27	48	-55		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
09-Jul-2023	15:15:34	1928	BP23MVEXP-ENV-DC-040			Camera	87	648690	6152730	648733	6152697	-43	33	54	128		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	15:16:57	1929	BP23MVEXP-ENV-DC-040			Camera	87	648690	6152729	648733	6152697	-43	32	54	127		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	15:19:02	1930	BP23MVEXP-ENV-DC-040			Camera	87	648696	6152727	648733	6152697	-37	30	48	128		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	15:20:01	1931	BP23MVEXP-ENV-DC-040			Camera	87	648700	6152723	648733	6152697	-33	26	42	129		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	15:21:52	1932	BP23MVEXP-ENV-DC-040			Camera	87	648710	6152717	648733	6152697	-23	20	31	130		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	15:23:47	1933	BP23MVEXP-ENV-DC-040			Camera	87	648720	6152710	648733	6152697	-13	13	18	134		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	15:24:12	1934	BP23MVEXP-ENV-DC-040			Camera	86	648722	6152708	648733	6152697	-11	11	16	135		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	15:25:11	1935	BP23MVEXP-ENV-DC-040			Camera	86	648727	6152705	648733	6152697	-6	8	10	143		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	15:26:20	1936	BP23MVEXP-ENV-DC-040			Camera	86	648733	6152701	648733	6152697	0	4	4	176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	15:26:38	1937	BP23MVEXP-ENV-DC-040			Camera	86	648734	6152700	648733	6152697	1	3	3	-154		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	15:26:49	1938	BP23MVEXP-ENV-DC-040			Camera	86	648735	6152699	648733	6152697	2	2	3	-128		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	15:27:09	1939	BP23MVEXP-ENV-DC-040			Camera	86	648737	6152697	648733	6152697	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	15:27:34	1940	BP23MVEXP-ENV-DC-040			Camera	86	648739	6152696	648733	6152697	6	-1	6	-80		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	15:28:27	1941	BP23MVEXP-ENV-DC-040			Camera	86	648744	6152693	648733	6152697	11	-4	12	-69		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	15:29:06	1942	BP23MVEXP-ENV-DC-040			Camera	86	648748	6152690	648733	6152697	15	-7	16	-65		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	15:29:36	1943	BP23MVEXP-ENV-DC-040			Camera	86	648751	6152689	648733	6152697	18	-8	20	-65		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	15:30:26	1944	BP23MVEXP-ENV-DC-040			Camera	86	648755	6152686	648733	6152697	22	-11	24	-63		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	15:30:44	1945	BP23MVEXP-ENV-DC-040			Camera	86	648756	6152685	648733	6152697	23	-12	26	-62		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	15:31:01	1946	BP23MVEXP-ENV-DC-040			Camera	86	648757	6152684	648733	6152697	24	-13	28	-62		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	15:31:07	1947	BP23MVEXP-ENV-DC-040			Camera	86	648758	6152684	648733	6152697	25	-14	28	-61		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	15:31:30	1948	BP23MVEXP-ENV-DC-040			Camera	86	648760	6152682	648733	6152697	27	-15	31	-61		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	15:32:00	1949	BP23MVEXP-ENV-DC-040			Camera	86	648762	6152681	648733	6152697	29	-16	33	-61		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	15:32:12	1950	BP23MVEXP-ENV-DC-040			Camera	86	648763	6152680	648733	6152697	30	-17	35	-61		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	15:33:00	1951	BP23MVEXP-ENV-DC-040			Camera	86	648767	6152677	648733	6152697	35	-20	40	-60		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	15:49:22	1952	BP23MVEXP-ENV-DC-040			Camera	86	648707	6152655	648733	6152697	-26	-42	49	31		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	15:49:47	1953	BP23MVEXP-ENV-DC-040			Camera	86	648709	6152657	648733	6152697	-24	-40	47	31		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	15:49:58	1954	BP23MVEXP-ENV-DC-040			Camera	86	648710	6152658	648733	6152697	-23	-39	46	31		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	15:50:30	1955	BP23MVEXP-ENV-DC-040			Camera	86	648711	6152661	648733	6152697	-22	-36	42	31		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	15:51:10	1956	BP23MVEXP-ENV-DC-040			Camera	86	648712	6152664	648733	6152697	-21	-33	39	32		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	15:52:07	1957	BP23MVEXP-ENV-DC-040			Camera	86	648716	6152669	648733	6152697	-17	-28	33	32		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	15:52:20	1958	BP23MVEXP-ENV-DC-040			Camera	86	648716	6152670	648733	6152697	-17	-27	32	32		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	15:52:40	1959	BP23MVEXP-ENV-DC-040			Camera	86	648718	6152671	648733	6152697	-15	-26	30	31		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	15:52:50	1960	BP23MVEXP-ENV-DC-040			Camera	86	648718	6152672	648733	6152697	-15	-25	29	31		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	15:53:12	1961	BP23MVEXP-ENV-DC-040			Camera	86	648719	6152674	648733	6152697	-14	-23	27	31		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	15:53:22	1962	BP23MVEXP-ENV-DC-040			Camera	86	648719	6152675	648733	6152697	-14	-23	26	31		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	15:54:02	1963	BP23MVEXP-ENV-DC-040			Camera	86	648721	6152678	648733	6152697	-12	-19	22	31		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	15:55:03	1964	BP23MVEXP-ENV-DC-040			Camera	86	648725	6152684	648733	6152697	-8	-13	16	32		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	15:55:58	1965	BP23MVEXP-ENV-DC-040			Camera	86	648728	6152689	648733	6152697	-5	-8	10	32		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	15:56:35	1966	BP23MVEXP-ENV-DC-040			Camera	86	648730	6152692	648733	6152697	-3	-5	6	32		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	15:57:04	1967	BP23MVEXP-ENV-DC-040			Camera	86	648731	6152694	648733	6152697	-2	-3	3	34		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	15:57:10	1968	BP23MVEXP-ENV-DC-040			Camera	86	648731	6152695	648733	6152697	-2	-2	3	35		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	15:57:24	1969	BP23MVEXP-ENV-DC-040			Camera	86	648732	6152696	648733	6152697	-1	-1	1	44		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	15:57:33	1970	BP23MVEXP-ENV-DC-040			Camera	86	648733	6152697	648733	6152697	0	0	0	81		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	15:57:46	1971	BP23MVEXP-ENV-DC-040			Camera	86	648733	6152698	648733	6152697	0	1	1	-167		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	15:58:13	1972	BP23MVEXP-ENV-DC-040			Camera	86	648735	6152700	648733	6152697	2	3	4	-154		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	15:58:59	1973	BP23MVEXP-ENV-DC-040			Camera	86	648737	6152704	648733	6152697	4	7	9	-151		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	15:59:24	1974	BP23MVEXP-ENV-DC-040			Camera	86	648739	6152707	648733	6152697	6	10	11	-150		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	15:59:43	1975	BP23MVEXP-ENV-DC-040			Camera	86	648740	6152708	648733	6152697	7	11	13	-149		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	15:59:57	1976	BP23MVEXP-ENV-DC-040			Camera	86	648740	6152709	648733	6152697	7	13	15	-149		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	16:00:48	1977	BP23MVEXP-ENV-DC-040			Camera	86	648743	6152714	648733	6152697	10	17	20	-148		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	16:01:29	1978	BP23MVEXP-ENV-DC-040			Camera	86	648745	6152718	648733	6152697	12	21	24	-149		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	17:42:22	1979	BP23MVEXP-ENV-DC-041			Camera	88	646637	6149439	646687	6149423	-50	16	53	107		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	17:44:29	1980	BP23MVEXP-ENV-DC-041			Camera	88	646639	6149437	646687	6149423	-48	14	49	106		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	17:45:14	1981	BP23MVEXP-ENV-DC-041			Camera	88	646644	6149436	646687	6149423	-44	13	45	106		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	17:45:31	1982	BP23MVEXP-ENV-DC-041			Camera	88	646645	6149435	646687	6149423	-42	13	44	107		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	17:46:07	1983	BP23MVEXP-ENV-DC-041			Camera	88	646649	6149434	646687	6149423	-38	11	39	106		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	17:46:42	1984	BP23MVEXP-ENV-DC-041			Camera	88	646653	6149433	646687	6149423	-34	10	36	107		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	17:47:25	1985	BP23MVEXP-ENV-DC-041			Camera	88	646657	6149432	646687	6149423	-30	9	31	107		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	17:47:56	1986	BP23MVEXP-ENV-DC-041			Camera	88	646660	6149431	646687	6149423	-27	8	28	107		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	17:49:02	1987	BP23MVEXP-ENV-DC-041			Camera	88	646666	6149430	646687	6149423	-21	7	22	108		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	17:49:28	1988	BP23MVEXP-ENV-DC-041			Camera	88	646669	6149429	646687	6149423	-18	6	19	109		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	17:50:15	1989	BP23MVEXP-ENV-DC-041			Camera	88	646673	6149428	646687	6149423	-14	5	14	110		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	17:50:51	1990	BP23MVEXP-ENV-DC-041			Camera	88	646677	6149427	646687	6149423	-10	4	10	111		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	17:51:40	1991	BP23MVEXP-ENV-DC-041			Camera	88	646682	6149425	646687	6149423	-5	2	5	113		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	17:51:54	1992	BP23MVEXP-ENV-DC-041			Camera	88	646684	6149425	646687	6149423	-3	2	4	116		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	17:52:24	1993	BP23MVEXP-ENV-DC-041			Camera	88	646686	6149424	646687	6149423	-1	1	1	139		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	17:52:34	1994	BP23MVEXP-ENV-DC-041			Camera	88	646687	6149424	646687	6149423	0	1	1	-175		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	17:52:42	1995	BP23MVEXP-ENV-DC-041			Camera	88	646688	6149424	646687	6149423	1	1	1	-126		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	17:52:48	1996	BP23MVEXP-ENV-DC-041			Camera	88	646688	6149423	646687	6149423	1	0	2	-108		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	17:53:07	1997	BP23MVEXP-ENV-DC-041			Camera	88	646690	6149423	646687	6149423	3	0	3	-90		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	17:53:36	1998	BP23MVEXP-ENV-DC-041			Camera	88	646694	6149422	646687	6149423	7	-1	7	-82		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	17:54:20	1999	BP23MVEXP-ENV-DC-041			Camera	88	646698	6149420	646687	6149423	11	-3	11	-76		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	17:55:36	2000	BP23MVEXP-ENV-DC-041			Camera	87	646706	6149419	646687	6149423	19	-4	19	-77		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	17:56:28	2001	BP23MVEXP-ENV-DC-041			Camera	88	646711	6149417	646687	6149423	24	-6	25	-76		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	17:57:08	2002	BP23MVEXP-ENV-DC-041			Camera	88	646715	6149416	646687	6149423	28	-7	29	-76		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	17:58:25	2003	BP23MVEXP-ENV-DC-041			Camera	88	646723	6149414	646687	6149423	36	-9	37	-76		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	17:58:59	2004	BP23MVEXP-ENV-DC-041			Camera	88	646726	6149413	646687	6149423	39	-10	40	-76		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	18:12:43	2005	BP23MVEXP-ENV-DC-041			Camera	87	646703	6149464	646687	6149423	16	41	44	-158		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	18:13:35	2006	BP23MVEXP-ENV-DC-041			Camera	87	646701	6149468	646687	6149423	14	45	47	-163		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	18:15:50	2007	BP23MVEXP-ENV-DC-041			Camera	87	646698	6149464	646687	6149423	11	41	42	-165		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	18:16:49	2008	BP23MVEXP-ENV-DC-041			Camera	87	646696	6149457	646687	6149423	9	34	36	-165		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	18:17:26	2009	BP23MVEXP-ENV-DC-041			Camera	88	646695	6149453	646687	6149423	8	30	31	-165		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	18:18:21	2010	BP23MVEXP-ENV-DC-041			Camera	88	646693	6149447	646687	6149423	6	24	25	-165		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	18:20:54	2011	BP23MVEXP-ENV-DC-041			Camera	88	646689	6149433	646687	6149423	2	10	10	-171		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	18:21:36	2012	BP23MVEXP-ENV-DC-041			Camera	88	646688	6149429	646687	6149423	1	6	6	-174		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	18:22:01	2013	BP23MVEXP-ENV-DC-041			Camera	88	646687	6149426	646687	6149423	0	3	3	179		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	18:22:24	2014	BP23MVEXP-ENV-DC-041			Camera	88	646686	6149423	646687	6149423	-1	0	1	106		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	18:23:17	2015	BP23MVEXP-ENV-DC-041			Camera	88	646685	6149417	646687	6149423	-2	-6	6	19		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	18:23:47	2016	BP23MVEXP-ENV-DC-041			Camera	88	646684	6149414	646687	6149423	-3	-9	9	17		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	18:24:57	2017	BP23MVEXP-ENV-DC-041			Camera	88	646682	6149406	646687	6149423	-5	-17	18	17		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	18:25:08	2018	BP23MVEXP-ENV-DC-041			Camera	88	646682	6149405	646687	6149423	-5	-18	19	16		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	18:25:24	2019	BP23MVEXP-ENV-DC-041			Camera	88	646681	6149404	646687	6149423	-6	-19	20	16		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	18:25:59	2020	BP23MVEXP-ENV-DC-041			Camera	88	646681	6149400	646687	6149423	-6	-23	24	16		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	18:27:24	2021	BP23MVEXP-ENV-DC-041			Camera	88	646679	6149391	646687	6149423	-8	-32	33	14		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	18:27:36	2022	BP23MVEXP-ENV-DC-041			Camera	88	646679	6149390	646687	6149423	-8	-33	34	14		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	18:28:29	2023	BP23MVEXP-ENV-DC-041			Camera	88	646678	6149385	646687	6149423	-9	-38	39	14		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	18:28:41	2024	BP23MVEXP-ENV-DC-041			Camera	88	646677	6149384	646687	6149423	-10	-39	41	14		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	18:29:19	2025	BP23MVEXP-ENV-DC-041			Camera	88	646676	6149380	646687	6149423	-11	-43	44	14		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	18:30:03	2026	BP23MVEXP-ENV-DC-041			Camera	88	646675	6149376	646687	6149423	-12	-47	48	15		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	18:30:23	2027	BP23MVEXP-ENV-DC-041			Camera	88	646674	6149374	646687	6149423	-13	-49	50	15		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	19:34:21	2028	BP23MVEXP-ENV-DC-042			Camera	89	645413	6145686	645395	6145643	18	43	47	-157		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	19:36:56	2029	BP23MVEXP-ENV-DC-042			Camera	89	645412	6145682	645395	6145643	17	39	42	-157		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	19:37:49	2030	BP23MVEXP-ENV-DC-042			Camera	89	645410	6145678	645395	6145643	15	35	38	-157		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	19:38:16	2031	BP23MVEXP-ENV-DC-042			Camera	89	645409	6145675	645395	6145643	14	32	35	-157		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	19:39:03	2032	BP23MVEXP-ENV-DC-042			Camera	89	645407	6145669	645395	6145643	12	27	29	-155		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	19:40:14	2033	BP23MVEXP-ENV-DC-042			Camera	88	645405	6145662	645395	6145643	10	19	22	-153		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	19:40:42	2034	BP23MVEXP-ENV-DC-042			Camera	88	645404	6145659	645395	6145643	9	16	18	-151		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	19:41:45	2035	BP23MVEXP-ENV-DC-042			Camera	88	645402	6145653	645395	6145643	7	10	13	-146		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	19:42:24	2036	BP23MVEXP-ENV-DC-042			Camera	88	645401	6145649	645395	6145643	6	6	9	-138		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	19:43:20	2037	BP23MVEXP-ENV-DC-042			Camera	88	645399	6145644	645395	6145643	4	1	4	-101		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	19:43:28	2038	BP23MVEXP-ENV-DC-042			Camera	88	645399	6145643	645395	6145643	4	0	4	-92		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	19:43:43	2039	BP23MVEXP-ENV-DC-042			Camera	88	645398	6145641	645395	6145643	3	-2	3	-58		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	19:44:55	2040	BP23MVEXP-ENV-DC-042			Camera	88	645395	6145635	645395	6145643	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	19:45:55	2041	BP23MVEXP-ENV-DC-042			Camera	88	645393	6145630	645395	6145643	-2	-13	13	9		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	19:46:52	2042	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145624	645395	6145643	-5	-19	19	14		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	19:47:13	2043	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145622	645395	6145643	-5	-21	22	14		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	19:47:58	2044	BP23MVEXP-ENV-DC-042			Camera	88	645389	6145618	645395	6145643	-6	-26	26	14		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	19:50:15	2045	BP23MVEXP-ENV-DC-042			Camera	88	645385	6145605	645395	6145643	-10	-38	39	15		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	19:51:02	2046	BP23MVEXP-ENV-DC-042			Camera	88	645383	6145601	645395	6145643	-12	-42	43	16		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	19:51:49	2047	BP23MVEXP-ENV-DC-042			Camera	88	645382	6145597	645395	6145643	-14	-46	48	16		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	19:59:51	2048	BP23MVEXP-ENV-DC-042			Camera	88	645409	6145610	645395	6145643	14	-33	36	-23		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	20:00:01	2049	BP23MVEXP-ENV-DC-042			Camera	88	645410	6145610	645395	6145643	15	-33	36	-24		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	20:07:08	2050	BP23MVEXP-ENV-DC-042			Camera	88	645441	6145630	645395	6145643	46	-13	48	-74		(Raw Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	20:07:31	2051	BP23MVEXP-ENV-DC-042			Camera	88	645439	6145629	645395	6145643	45	-14	47	-73		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	20:07:53	2052	BP23MVEXP-ENV-DC-042			Camera	88	645438	6145630	645395	6145643	43	-13	45	-73		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	20:08:24	2053	BP23MVEXP-ENV-DC-042			Camera	88	645435	6145631	645395	6145643	40	-12	42	-73		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	20:09:24	2054	BP23MVEXP-ENV-DC-042			Camera	88	645429	6145632	645395	6145643	34	-11	36	-72		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	20:10:02	2055	BP23MVEXP-ENV-DC-042			Camera	88	645426	6145633	645395	6145643	31	-10	32	-72		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	20:10:42	2056	BP23MVEXP-ENV-DC-042			Camera	88	645422	6145634	645395	6145643	27	-9	28	-72		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	20:11:16	2057	BP23MVEXP-ENV-DC-042			Camera	88	645418	6145635	645395	6145643	23	-8	24	-72		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	20:12:23	2058	BP23MVEXP-ENV-DC-042			Camera	88	645411	6145637	645395	6145643	16	-6	17	-71		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	20:12:42	2059	BP23MVEXP-ENV-DC-042			Camera	88	645409	6145638	645395	6145643	14	-5	15	-70		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	20:14:29	2060	BP23MVEXP-ENV-DC-042			Camera	88	645399	6145641	645395	6145643	4	-2	4	-57		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	20:14:39	2061	BP23MVEXP-ENV-DC-042			Camera	88	645398	6145641	645395	6145643	3	-2	4	-52		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	20:14:52	2062	BP23MVEXP-ENV-DC-042			Camera	88	645397	6145641	645395	6145643	2	-2	2	-41		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	20:15:03	2063	BP23MVEXP-ENV-DC-042			Camera	88	645396	6145642	645395	6145643	1	-1	2	-19		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	20:15:16	2064	BP23MVEXP-ENV-DC-042			Camera	88	645394	6145642	645395	6145643	-1	-1	1	27		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	20:15:45	2065	BP23MVEXP-ENV-DC-042			Camera	88	645392	6145643	645395	6145643	-3	0	3	91		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	20:15:58	2066	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145644	645395	6145643	-5	1	5	97		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	20:16:05	2067	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145644	645395	6145643	-5	1	5	99		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	20:16:56	2068	BP23MVEXP-ENV-DC-042			Camera	88	645383	6145645	645395	6145643	-12	2	12	102		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	20:17:03	2069	BP23MVEXP-ENV-DC-042			Camera	88	645382	6145646	645395	6145643	-13	3	13	102		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	20:17:51	2070	BP23MVEXP-ENV-DC-042			Camera	88	645378	6145647	645395	6145643	-17	4	17	102		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	20:18:13	2071	BP23MVEXP-ENV-DC-042			Camera	88	645376	6145647	645395	6145643	-19	4	19	103		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	20:18:55	2072	BP23MVEXP-ENV-DC-042			Camera	88	645372	6145648	645395	6145643	-23	5	23	102		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	20:19:16	2073	BP23MVEXP-ENV-DC-042			Camera	88	645370	6145648	645395	6145643	-25	5	25	102		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	20:20:13	2074	BP23MVEXP-ENV-DC-042			Camera	88	645365	6145650	645395	6145643	-30	7	31	104		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	20:20:28	2075	BP23MVEXP-ENV-DC-042			Camera	88	645363	6145651	645395	6145643	-32	8	32	104		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	20:20:40	2076	BP23MVEXP-ENV-DC-042			Camera	88	645362	6145651	645395	6145643	-33	8	34	104		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	20:21:18	2077	BP23MVEXP-ENV-DC-042			Camera	88	645358	6145652	645395	6145643	-37	9	38	104		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	20:22:44	2078	BP23MVEXP-ENV-DC-042			Camera	88	645350	6145655	645395	6145643	-45	12	46	105		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	22:00:48	2079	BP23MVEXP-ENV-DC-043			Camera	86	644072	6141827	644054	6141780	18	47	51	-160		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	22:02:40	2080	BP23MVEXP-ENV-DC-043			Camera	87	644071	6141827	644054	6141780	18	47	50	-160		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	22:02:59	2081	BP23MVEXP-ENV-DC-043			Camera	86	644071	6141826	644054	6141780	17	46	49	-160		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	22:03:48	2082	BP23MVEXP-ENV-DC-043			Camera	87	644069	6141821	644054	6141780	15	41	44	-160		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	22:04:11	2083	BP23MVEXP-ENV-DC-043			Camera	87	644068	6141819	644054	6141780	14	39	42	-160		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	22:04:38	2084	BP23MVEXP-ENV-DC-043			Camera	87	644068	6141816	644054	6141780	14	36	39	-160		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	22:05:29	2085	BP23MVEXP-ENV-DC-043			Camera	87	644066	6141811	644054	6141780	12	31	33	-159		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	22:06:38	2086	BP23MVEXP-ENV-DC-043			Camera	87	644064	6141805	644054	6141780	10	25	27	-158		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	22:07:12	2087	BP23MVEXP-ENV-DC-043			Camera	87	644064	6141803	644054	6141780	10	23	25	-157		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	22:07:39	2088	BP23MVEXP-ENV-DC-043			Camera	86	644063	6141802	644054	6141780	9	22	23	-158		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	22:08:46	2089	BP23MVEXP-ENV-DC-043			Camera	86	644061	6141796	644054	6141780	7	16	18	-155		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	22:09:44	2090	BP23MVEXP-ENV-DC-043			Camera	86	644059	6141790	644054	6141780	5	10	12	-153		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	22:09:51	2091	BP23MVEXP-ENV-DC-043			Camera	86	644059	6141790	644054	6141780	5	10	11	-153		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	22:10:54	2092	BP23MVEXP-ENV-DC-043			Camera	86	644057	6141783	644054	6141780	3	3	4	-141		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	22:11:17	2093	BP23MVEXP-ENV-DC-043			Camera	87	644056	6141781	644054	6141780	2	1	2	-119		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	22:12:28	2094	BP23MVEXP-ENV-DC-043			Camera	87	644054	6141774	644054	6141780	0	-6	6	4		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	22:13:06	2095	BP23MVEXP-ENV-DC-043			Camera	87	644053	6141770	644054	6141780	-1	-10	10	9		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	22:14:44	2096	BP23MVEXP-ENV-DC-043			Camera	87	644050	6141761	644054	6141780	-4	-19	20	13		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	22:15:31	2097	BP23MVEXP-ENV-DC-043			Camera	87	644048	6141756	644054	6141780	-6	-24	25	14		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	22:17:07	2098	BP23MVEXP-ENV-DC-043			Camera	87	644045	6141747	644054	6141780	-9	-33	34	15		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	22:17:27	2099	BP23MVEXP-ENV-DC-043			Camera	87	644044	6141745	644054	6141780	-10	-35	36	15		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	22:17:52	2100	BP23MVEXP-ENV-DC-043			Camera	87	644044	6141743	644054	6141780	-10	-37	39	16		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	22:18:29	2101	BP23MVEXP-ENV-DC-043			Camera	87	644042	6141739	644054	6141780	-12	-41	43	16		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	22:19:11	2102	BP23MVEXP-ENV-DC-043			Camera	87	644041	6141735	644054	6141780	-13	-45	47	16		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	22:23:52	2103	BP23MVEXP-ENV-DC-043			Camera	87	644030	6141750	644054	6141780	-24	-30	38	38		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	22:24:10	2104	BP23MVEXP-ENV-DC-043			Camera	87	644030	6141751	644054	6141780	-24	-29	38	40		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	22:33:14	2105	BP23MVEXP-ENV-DC-043			Camera	87	644006	6141796	644054	6141780	-48	16	51	109		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	22:33:47	2106	BP23MVEXP-ENV-DC-043			Camera	87	644009	6141795	644054	6141780	-45	15	47	108		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	22:34:20	2107	BP23MVEXP-ENV-DC-043			Camera	87	644012	6141794	644054	6141780	-42	14	44	108		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	22:34:41	2108	BP23MVEXP-ENV-DC-043			Camera	87	644014	6141793	644054	6141780	-40	13	42	108		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	22:35:30	2109	BP23MVEXP-ENV-DC-043			Camera	87	644019	6141791	644054	6141780	-35	11	36	108		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	22:36:00	2110	BP23MVEXP-ENV-DC-043			Camera	87	644023	6141790	644054	6141780	-32	10	33	108		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	22:37:35	2111	BP23MVEXP-ENV-DC-043			Camera	87	644032	6141787	644054	6141780	-22	7	23	109		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	22:38:39	2112	BP23MVEXP-ENV-DC-043			Camera	87	644038	6141785	644054	6141780	-16	5	16	109		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	22:39:33	2113	BP23MVEXP-ENV-DC-043			Camera	87	644044	6141784	644054	6141780	-10	4	11	111		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	22:39:43	2114	BP23MVEXP-ENV-DC-043			Camera	87	644045	6141784	644054	6141780	-9	4	10	112		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	22:40:19	2115	BP23MVEXP-ENV-DC-043			Camera	87	644048	6141782	644054	6141780	-6	2	7	111		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	22:40:47	2116	BP23MVEXP-ENV-DC-043			Camera	87	644050	6141781	644054	6141780	-4	1	4	113		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	22:40:57	2117	BP23MVEXP-ENV-DC-043			Camera	87	644051	6141781	644054	6141780	-3	1	3	115		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	22:41:17	2118	BP23MVEXP-ENV-DC-043			Camera	87	644054	6141781	644054	6141780	0	1	1	144		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	22:41:25	2119	BP23MVEXP-ENV-DC-043			Camera	87	644055	6141780	644054	6141780	1	0	1	-121		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	22:41:34	2120	BP23MVEXP-ENV-DC-043			Camera	87	644055	6141780	644054	6141780	1	0	1	-91		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	22:42:42	2121	BP23MVEXP-ENV-DC-043			Camera	87	644062	6141778	644054	6141780	8	-2	8	-79		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	22:42:51	2122	BP23MVEXP-ENV-DC-043			Camera	87	644063	6141778	644054	6141780	9	-2	10	-78		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	22:42:57	2123	BP23MVEXP-ENV-DC-043			Camera	87	644064	6141778	644054	6141780	10	-2	10	-78		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	22:43:12	2124	BP23MVEXP-ENV-DC-043			Camera	87	644065	6141778	644054	6141780	11	-2	11	-78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	22:43:28	2125	BP23MVEXP-ENV-DC-043			Camera	87	644067	6141777	644054	6141780	13	-3	13	-77		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	22:43:50	2126A	BP23MVEXP-ENV-DC-043			Camera	89	644069	6141777	644054	6141780	15	-3	15	-79		(Raw Nav, Kongsberg 14208, img#48) (B)
09-Jul-2023	22:44:06	2126B	BP23MVEXP-ENV-DC-043			Camera	87	644071	6141776	644054	6141780	17	-4	18	-78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	22:44:44	2127	BP23MVEXP-ENV-DC-043			Camera	87	644075	6141775	644054	6141780	21	-5	21	-76		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	22:45:34	2128	BP23MVEXP-ENV-DC-043			Camera	87	644080	6141773	644054	6141780	26	-7	27	-76		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	22:47:03	2129	BP23MVEXP-ENV-DC-043			Camera	87	644088	6141771	644054	6141780	34	-9	35	-74		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
09-Jul-2023	22:48:20	2130	BP23MVEXP-ENV-DC-043			Camera	87	644096	6141769	644054	6141780	42	-11	43	-75		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	00:01:27	2131	BP23MVEXP-ENV-DC-044			Camera	92	642793	6138105	642775	6138054	18	51	54	-161		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	00:02:34	2132	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138105	642775	6138054	17	51	54	-161		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	00:02:49	2133	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138104	642775	6138054	17	50	53	-161		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	00:03:16	2134	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138103	642775	6138054	17	49	51	-161		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	00:03:45	2135	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138100	642775	6138054	17	46	49	-160		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	00:04:40	2136	BP23MVEXP-ENV-DC-044			Camera	92	642790	6138095	642775	6138054	15	41	43	-160		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	00:05:23	2137	BP23MVEXP-ENV-DC-044			Camera	92	642788	6138091	642775	6138054	13	37	39	-160		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	00:05:59	2138	BP23MVEXP-ENV-DC-044			Camera	92	642787	6138087	642775	6138054	12	33	35	-160		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	00:06:33	2139	BP23MVEXP-ENV-DC-044			Camera	92	642786	6138083	642775	6138054	11	29	31	-159		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	00:07:31	2140	BP23MVEXP-ENV-DC-044			Camera	92	642784	6138078	642775	6138054	9	24	25	-160		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	00:08:19	2141	BP23MVEXP-ENV-DC-044			Camera	92	642782	6138073	642775	6138054	7	19	20	-159		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	00:08:52	2142	BP23MVEXP-ENV-DC-044			Camera	92	642781	6138070	642775	6138054	6	16	17	-159		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	00:09:45	2143	BP23MVEXP-ENV-DC-044			Camera	92	642779	6138065	642775	6138054	4	11	12	-159		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	00:10:22	2144	BP23MVEXP-ENV-DC-044			Camera	92	642779	6138062	642775	6138054	4	8	8	-155		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	00:11:07	2145	BP23MVEXP-ENV-DC-044			Camera	92	642777	6138057	642775	6138054	2	3	4	-147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	00:12:05	2146	BP23MVEXP-ENV-DC-044			Camera	92	642775	6138052	642775	6138054	0	-2	2	1		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	00:12:31	2147	BP23MVEXP-ENV-DC-044			Camera	92	642774	6138049	642775	6138054	-1	-5	5	6		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	00:13:22	2148	BP23MVEXP-ENV-DC-044			Camera	92	642773	6138044	642775	6138054	-2	-10	10	11		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	00:15:22	2149	BP23MVEXP-ENV-DC-044			Camera	92	642770	6138033	642775	6138054	-5	-21	22	15		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	00:15:39	2150	BP23MVEXP-ENV-DC-044			Camera	92	642769	6138031	642775	6138054	-6	-23	23	15		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	00:16:45	2151	BP23MVEXP-ENV-DC-044			Camera	92	642767	6138025	642775	6138054	-8	-29	30	16		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	00:17:24	2152	BP23MVEXP-ENV-DC-044			Camera	91	642766	6138022	642775	6138054	-9	-32	33	16		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	00:18:04	2153	BP23MVEXP-ENV-DC-044			Camera	91	642764	6138018	642775	6138054	-11	-37	38	16		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	00:18:26	2154	BP23MVEXP-ENV-DC-044			Camera	91	642764	6138015	642775	6138054	-11	-39	40	16		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	00:19:00	2155	BP23MVEXP-ENV-DC-044			Camera	91	642763	6138012	642775	6138054	-12	-42	44	16		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	00:19:18	2156	BP23MVEXP-ENV-DC-044			Camera	91	642762	6138010	642775	6138054	-13	-44	46	16		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	00:34:00	2157	BP23MVEXP-ENV-DC-044			Camera	92	642725	6138069	642775	6138054	-50	15	52	107		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	00:35:26	2158	BP23MVEXP-ENV-DC-044			Camera	92	642728	6138070	642775	6138054	-47	16	49	108		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	00:36:29	2159	BP23MVEXP-ENV-DC-044			Camera	92	642734	6138068	642775	6138054	-41	14	43	109		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	00:37:04	2160	BP23MVEXP-ENV-DC-044			Camera	92	642737	6138067	642775	6138054	-38	13	40	109		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	00:38:40	2161	BP23MVEXP-ENV-DC-044			Camera	92	642747	6138065	642775	6138054	-28	11	30	112		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	00:39:05	2162	BP23MVEXP-ENV-DC-044			Camera	92	642749	6138065	642775	6138054	-26	11	28	113		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	00:40:16	2163	BP23MVEXP-ENV-DC-044			Camera	92	642756	6138063	642775	6138054	-19	9	21	116		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	00:41:07	2164	BP23MVEXP-ENV-DC-044			Camera	92	642761	6138062	642775	6138054	-14	8	16	119		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	00:41:49	2165	BP23MVEXP-ENV-DC-044			Camera	92	642766	6138061	642775	6138054	-9	7	11	126		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	00:43:00	2166	BP23MVEXP-ENV-DC-044			Camera	92	642773	6138058	642775	6138054	-2	4	5	153		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	00:43:17	2167	BP23MVEXP-ENV-DC-044			Camera	92	642775	6138058	642775	6138054	0	4	4	172		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	00:43:56	2168	BP23MVEXP-ENV-DC-044			Camera	92	642778	6138056	642775	6138054	3	2	4	-129		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	00:44:36	2169	BP23MVEXP-ENV-DC-044			Camera	92	642782	6138055	642775	6138054	7	1	7	-100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	00:45:01	2170	BP23MVEXP-ENV-DC-044			Camera	92	642785	6138055	642775	6138054	10	1	10	-93		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	00:45:59	2171	BP23MVEXP-ENV-DC-044			Camera	92	642791	6138053	642775	6138054	16	-1	16	-85		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	00:46:39	2172	BP23MVEXP-ENV-DC-044			Camera	92	642795	6138052	642775	6138054	20	-2	20	-83		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	00:47:31	2173	BP23MVEXP-ENV-DC-044			Camera	92	642800	6138050	642775	6138054	25	-4	25	-80		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	00:48:04	2174	BP23MVEXP-ENV-DC-044			Camera	92	642803	6138049	642775	6138054	28	-5	29	-80		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	00:48:54	2175	BP23MVEXP-ENV-DC-044			Camera	92	642808	6138048	642775	6138054	33	-6	34	-79		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	00:50:16	2176	BP23MVEXP-ENV-DC-044			Camera	92	642817	6138045	642775	6138054	42	-9	43	-78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	00:50:40	2177	BP23MVEXP-ENV-DC-044			Camera	92	642819	6138044	642775	6138054	44	-10	45	-78		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	00:50:57	2178	BP23MVEXP-ENV-DC-044			Camera	92	642820	6138044	642775	6138054	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	00:51:14	2179	BP23MVEXP-ENV-DC-044			Camera	92	642822	6138043	642775	6138054	47	-11	48	-77		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	02:22:24	2180	BP23MVEXP-ENV-DC-045			Camera	92	641500	6134347	641483	6134299	17	48	51	-161		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	02:22:57	2181	BP23MVEXP-ENV-DC-045			Camera	92	641501	6134346	641483	6134299	18	47	50	-159		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	02:24:00	2182	BP23MVEXP-ENV-DC-045			Camera	92	641499	6134343	641483	6134299	16	44	47	-160		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	02:24:13	2183	BP23MVEXP-ENV-DC-045			Camera	92	641499	6134342	641483	6134299	16	43	46	-160		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	02:24:48	2184	BP23MVEXP-ENV-DC-045			Camera	92	641497	6134339	641483	6134299	14	40	42	-161		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	02:26:52	2185	BP23MVEXP-ENV-DC-045			Camera	92	641494	6134326	641483	6134299	11	27	29	-159		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	02:27:23	2186	BP23MVEXP-ENV-DC-045			Camera	92	641492	6134323	641483	6134299	9	24	26	-158		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	02:28:02	2187	BP23MVEXP-ENV-DC-045			Camera	92	641491	6134319	641483	6134299	8	20	22	-158		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	02:28:43	2188	BP23MVEXP-ENV-DC-045			Camera	92	641490	6134315	641483	6134299	7	17	18	-157		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	02:29:03	2189	BP23MVEXP-ENV-DC-045			Camera	92	641489	6134313	641483	6134299	6	14	16	-156		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	02:29:24	2190	BP23MVEXP-ENV-DC-045			Camera	92	641489	6134311	641483	6134299	6	12	14	-154		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	02:29:51	2191	BP23MVEXP-ENV-DC-045			Camera	92	641488	6134309	641483	6134299	5	10	11	-152		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	02:30:18	2192	BP23MVEXP-ENV-DC-045			Camera	92	641487	6134306	641483	6134299	4	7	8	-147		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	02:30:58	2193	BP23MVEXP-ENV-DC-045			Camera	92	641486	6134302	641483	6134299	3	3	4	-132		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	02:31:34	2194	BP23MVEXP-ENV-DC-045			Camera	92	641485	6134298	641483	6134299	2	-1	2	-53		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	02:32:05	2195	BP23MVEXP-ENV-DC-045			Camera	92	641484	6134294	641483	6134299	1	-5	5	-10		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	02:32:55	2196	BP23MVEXP-ENV-DC-045			Camera	92	641482	6134289	641483	6134299	-1	-10	10	3		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	02:33:33	2197	BP23MVEXP-ENV-DC-045			Camera	92	641481	6134285	641483	6134299	-2	-14	14	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	02:34:15	2198	BP23MVEXP-ENV-DC-045			Camera	92	641480	6134281	641483	6134299	-3	-18	18	8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	02:34:59	2199	BP23MVEXP-ENV-DC-045			Camera	92	641479	6134277	641483	6134299	-4	-22	22	10		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	02:36:04	2200	BP23MVEXP-ENV-DC-045			Camera	92	641477	6134270	641483	6134299	-6	-29	30	12		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	02:36:49	2201	BP23MVEXP-ENV-DC-045			Camera	92	641476	6134265	641483	6134299	-7	-34	35	12		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	02:37:22	2202	BP23MVEXP-ENV-DC-045			Camera	92	641474	6134262	641483	6134299	-9	-37	38	13		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	02:37:50	2203	BP23MVEXP-ENV-DC-045			Camera	92	641473	6134260	641483	6134299	-10	-40	41	14		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	02:38:26	2204	BP23MVEXP-ENV-DC-045			Camera	92	641472	6134256	641483	6134299	-11	-43	44	14		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	02:38:58	2205	BP23MVEXP-ENV-DC-045			Camera	92	641471	6134253	641483	6134299	-12	-46	47	15		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	02:56:28	2206	BP23MVEXP-ENV-DC-045			Camera	92	641433	6134313	641483	6134299	-50	14	52	106		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	02:57:19	2207	BP23MVEXP-ENV-DC-045			Camera	92	641437	6134312	641483	6134299	-46	13	48	106		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	02:58:09	2208	BP23MVEXP-ENV-DC-045			Camera	92	641441	6134311	641483	6134299	-42	12	43	107		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	02:58:50	2209	BP23MVEXP-ENV-DC-045			Camera	92	641446	6134310	641483	6134299	-37	11	39	106		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	02:59:39	2210	BP23MVEXP-ENV-DC-045			Camera	92	641451	6134309	641483	6134299	-32	10	34	107		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	03:00:54	2211	BP23MVEXP-ENV-DC-045			Camera	92	641458	6134307	641483	6134299	-25	8	26	107		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	03:01:32	2212	BP23MVEXP-ENV-DC-045			Camera	92	641462	6134305	641483	6134299	-21	6	22	107		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	03:02:06	2213	BP23MVEXP-ENV-DC-045			Camera	92	641465	6134304	641483	6134299	-18	5	18	107		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	03:03:08	2214	BP23MVEXP-ENV-DC-045			Camera	92	641471	6134303	641483	6134299	-12	4	12	109		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	03:03:52	2215	BP23MVEXP-ENV-DC-045			Camera	92	641476	6134302	641483	6134299	-7	3	8	115		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	03:04:39	2216	BP23MVEXP-ENV-DC-045				92	641480	6134301	641483	6134299	-3	2	4	131		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A) Fix no photo
10-Jul-2023	03:04:47	2217	BP23MVEXP-ENV-DC-045			Camera	92	641481	6134301	641483	6134299	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	03:05:26	2218	BP23MVEXP-ENV-DC-045			Camera	92	641486	6134299	641483	6134299	3	0	3	-100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	03:06:12	2219	BP23MVEXP-ENV-DC-045			Camera	92	641491	6134298	641483	6134299	8	-1	8	-82		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	03:07:33	2220	BP23MVEXP-ENV-DC-045			Camera	92	641499	6134296	641483	6134299	16	-3	16	-79		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	03:08:05	2221	BP23MVEXP-ENV-DC-045			Camera	92	641502	6134295	641483	6134299	19	-4	19	-78		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	03:09:19	2222	BP23MVEXP-ENV-DC-045			Camera	92	641509	6134293	641483	6134299	26	-6	27	-77		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	03:10:13	2223	BP23MVEXP-ENV-DC-045			Camera	92	641515	6134291	641483	6134299	32	-8	33	-76		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	03:10:40	2224	BP23MVEXP-ENV-DC-045			Camera	92	641518	6134290	641483	6134299	35	-9	36	-76		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	03:11:15	2225	BP23MVEXP-ENV-DC-045			Camera	92	641521	6134289	641483	6134299	38	-10	39	-75		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	03:12:19	2226	BP23MVEXP-ENV-DC-045			Camera	92	641526	6134287	641483	6134299	43	-12	45	-74		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	04:09:32	2227	BP23MVEXP-ENV-DC-046			Camera	86	640057	6130492	640073	6130539	-16	-47	49	19		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	04:10:47	2228	BP23MVEXP-ENV-DC-046			Camera	86	640057	6130493	640073	6130539	-16	-46	49	19		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	04:11:41	2229	BP23MVEXP-ENV-DC-046			Camera	86	640059	6130496	640073	6130539	-14	-43	45	19		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	04:12:35	2230	BP23MVEXP-ENV-DC-046			Camera	86	640059	6130503	640073	6130539	-14	-36	39	21		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	04:13:30	2231	BP23MVEXP-ENV-DC-046			Camera	86	640060	6130508	640073	6130539	-13	-31	34	22		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	04:13:59	2232	BP23MVEXP-ENV-DC-046				86	640061	6130511	640073	6130539	-12	-28	31	22		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A) Fix no photo
10-Jul-2023	04:14:11	2233	BP23MVEXP-ENV-DC-046			Camera	86	640062	6130512	640073	6130539	-11	-27	29	23		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	04:14:32	2234	BP23MVEXP-ENV-DC-046			Camera	86	640062	6130515	640073	6130539	-11	-24	26	24		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	04:15:09	2235	BP23MVEXP-ENV-DC-046			Camera	86	640064	6130518	640073	6130539	-9	-21	23	23		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	04:15:33	2236	BP23MVEXP-ENV-DC-046			Camera	86	640065	6130521	640073	6130539	-8	-19	20	23		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	04:16:00	2237	BP23MVEXP-ENV-DC-046			Camera	86	640066	6130523	640073	6130539	-7	-16	17	25		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	04:16:41	2238	BP23MVEXP-ENV-DC-046			Camera	86	640067	6130527	640073	6130539	-6	-12	14	27		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	04:17:13	2239	BP23MVEXP-ENV-DC-046			Camera	86	640068	6130530	640073	6130539	-5	-9	10	31		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	04:17:58	2240	BP23MVEXP-ENV-DC-046			Camera	86	640069	6130535	640073	6130539	-4	-4	6	44		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	04:18:38	2241	BP23MVEXP-ENV-DC-046			Camera	86	640070	6130538	640073	6130539	-3	-1	3	79		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	04:19:17	2242	BP23MVEXP-ENV-DC-046			Camera	86	640072	6130543	640073	6130539	-1	4	4	169		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	04:19:34	2243	BP23MVEXP-ENV-DC-046			Camera	86	640073	6130544	640073	6130539	0	5	5	178		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	04:20:04	2244	BP23MVEXP-ENV-DC-046			Camera	86	640074	6130547	640073	6130539	1	8	8	-174		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	04:20:27	2245	BP23MVEXP-ENV-DC-046			Camera	86	640074	6130549	640073	6130539	1	10	10	-173		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	04:20:46	2246	BP23MVEXP-ENV-DC-046			Camera	86	640075	6130551	640073	6130539	2	12	13	-171		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	04:21:40	2247	BP23MVEXP-ENV-DC-046			Camera	86	640077	6130556	640073	6130539	4	17	18	-168		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	04:22:19	2248	BP23MVEXP-ENV-DC-046			Camera	86	640078	6130561	640073	6130539	5	22	22	-167		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	04:22:51	2249	BP23MVEXP-ENV-DC-046			Camera	86	640080	6130565	640073	6130539	7	26	26	-166		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	04:23:13	2250	BP23MVEXP-ENV-DC-046			Camera	86	640080	6130566	640073	6130539	7	27	28	-165		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	04:24:03	2251	BP23MVEXP-ENV-DC-046			Camera	86	640082	6130571	640073	6130539	9	32	33	-165		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	04:24:30	2252	BP23MVEXP-ENV-DC-046			Camera	86	640082	6130573	640073	6130539	9	34	35	-165		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	04:25:47	2253	BP23MVEXP-ENV-DC-046			Camera	86	640085	6130580	640073	6130539	12	41	43	-164		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	04:38:33	2254	BP23MVEXP-ENV-DC-046			Camera	87	640027	6130555	640073	6130539	-46	16	49	109		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	04:39:57	2255	BP23MVEXP-ENV-DC-046			Camera	87	640025	6130552	640073	6130539	-48	13	50	105		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	04:40:33	2256	BP23MVEXP-ENV-DC-046			Camera	87	640028	6130551	640073	6130539	-45	12	46	104		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	04:41:14	2257	BP23MVEXP-ENV-DC-046			Camera	87	640033	6130549	640073	6130539	-40	10	41	105		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	04:41:40	2258	BP23MVEXP-ENV-DC-046			Camera	87	640036	6130549	640073	6130539	-37	10	38	104		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	04:42:24	2259	BP23MVEXP-ENV-DC-046			Camera	86	640041	6130548	640073	6130539	-32	9	34	106		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	04:42:54	2260	BP23MVEXP-ENV-DC-046			Camera	86	640043	6130547	640073	6130539	-30	8	31	104		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	04:43:42	2261	BP23MVEXP-ENV-DC-046			Camera	86	640047	6130545	640073	6130539	-26	6	26	103		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	04:44:28	2262	BP23MVEXP-ENV-DC-046			Camera	86	640052	6130544	640073	6130539	-21	5	21	103		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	04:45:18	2263	BP23MVEXP-ENV-DC-046			Camera	86	640056	6130542	640073	6130539	-17	3	17	102		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	04:45:47	2264	BP23MVEXP-ENV-DC-046			Camera	86	640059	6130542	640073	6130539	-14	3	14	102		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	04:46:27	2265	BP23MVEXP-ENV-DC-046			Camera	86	640063	6130541	640073	6130539	-10	2	10	100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	04:47:12	2266	BP23MVEXP-ENV-DC-046			Camera	86	640067	6130539	640073	6130539	-6	0	6	95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	04:47:36	2267	BP23MVEXP-ENV-DC-046			Camera	86	640070	6130539	640073	6130539	-3	0	3	82		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	04:48:32	2268	BP23MVEXP-ENV-DC-046			Camera	86	640076	6130537	640073	6130539	3	-2	4	-60		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	04:49:12	2269	BP23MVEXP-ENV-DC-046			Camera	86	640080	6130536	640073	6130539	7	-3	7	-68		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	04:50:17	2270	BP23MVEXP-ENV-DC-046			Camera	86	640086	6130534	640073	6130539	13	-5	14	-71		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	04:50:42	2271	BP23MVEXP-ENV-DC-046			Camera	86	640089	6130534	640073	6130539	16	-5	17	-71		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	04:51:42	2272	BP23MVEXP-ENV-DC-046			Camera	86	640094	6130532	640073	6130539	21	-7	23	-71		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	04:52:33	2273	BP23MVEXP-ENV-DC-046			Camera	86	640099	6130530	640073	6130539	27	-9	28	-71		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	04:53:44	2274	BP23MVEXP-ENV-DC-046			Camera	86	640107	6130528	640073	6130539	34	-11	36	-72		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	04:54:21	2275	BP23MVEXP-ENV-DC-046			Camera	86	640110	6130527	640073	6130539	37	-12	39	-72		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	04:55:04	2276	BP23MVEXP-ENV-DC-046			Camera	86	640114	6130526	640073	6130539	41	-13	43	-72		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	04:55:27	2277	BP23MVEXP-ENV-DC-046			Camera	86	640117	6130525	640073	6130539	44	-14	46	-72		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	06:25:03	2278	BP23MVEXP-ENV-DC-047			Camera	85	639544	6126700	639530	6126759	14	-59	61	-13		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	06:27:12	2279	BP23MVEXP-ENV-DC-047			Camera	85	639544	6126702	639530	6126759	15	-57	59	-14		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	06:27:44	2280	BP23MVEXP-ENV-DC-047			Camera	85	639545	6126704	639530	6126759	15	-55	57	-15		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	06:28:39	2281	BP23MVEXP-ENV-DC-047			Camera	85	639544	6126708	639530	6126759	14	-51	53	-15		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	06:29:06	2282	BP23MVEXP-ENV-DC-047			Camera	85	639543	6126710	639530	6126759	13	-49	51	-15		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	06:29:38	2283	BP23MVEXP-ENV-DC-047			Camera	85	639542	6126713	639530	6126759	12	-46	48	-15		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	06:31:51	2284	BP23MVEXP-ENV-DC-047			Camera	85	639539	6126725	639530	6126759	9	-34	35	-14		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	06:32:43	2285	BP23MVEXP-ENV-DC-047			Camera	85	639537	6126730	639530	6126759	7	-29	29	-14		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	06:33:29	2286	BP23MVEXP-ENV-DC-047			Camera	85	639536	6126735	639530	6126759	6	-24	25	-13		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	06:34:27	2287	BP23MVEXP-ENV-DC-047			Camera	85	639534	6126741	639530	6126759	4	-18	18	-13		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	06:35:56	2288	BP23MVEXP-ENV-DC-047			Camera	85	639531	6126750	639530	6126759	1	-9	10	-8		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	06:36:28	2289	BP23MVEXP-ENV-DC-047			Camera	85	639530	6126753	639530	6126759	0	-6	6	0		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	06:36:44	2290	BP23MVEXP-ENV-DC-047			Camera	85	639529	6126755	639530	6126759	-1	-4	4	7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	06:37:52	2291	BP23MVEXP-ENV-DC-047			Camera	85	639528	6126761	639530	6126759	-2	2	3	137		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	06:38:26	2292	BP23MVEXP-ENV-DC-047			Camera	85	639527	6126764	639530	6126759	-3	5	6	150		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	06:40:00	2293	BP23MVEXP-ENV-DC-047			Camera	85	639524	6126773	639530	6126759	-6	14	15	157		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	06:40:17	2294	BP23MVEXP-ENV-DC-047			Camera	85	639524	6126775	639530	6126759	-6	16	17	158		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	06:41:05	2295	BP23MVEXP-ENV-DC-047			Camera	85	639522	6126779	639530	6126759	-8	20	21	158		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	06:41:28	2296	BP23MVEXP-ENV-DC-047			Camera	85	639521	6126781	639530	6126759	-9	22	24	158		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	06:41:56	2297	BP23MVEXP-ENV-DC-047			Camera	85	639520	6126784	639530	6126759	-10	25	27	159		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	06:42:43	2298	BP23MVEXP-ENV-DC-047			Camera	85	639519	6126789	639530	6126759	-12	30	32	159		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	06:43:37	2299	BP23MVEXP-ENV-DC-047			Camera	85	639517	6126794	639530	6126759	-13	36	38	160		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	06:44:48	2300	BP23MVEXP-ENV-DC-047			Camera	85	639515	6126801	639530	6126759	-15	42	45	160		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	06:45:27	2301	BP23MVEXP-ENV-DC-047			Camera	85	639514	6126805	639530	6126759	-16	46	49	161		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	06:45:36	2302	BP23MVEXP-ENV-DC-047			Camera	85	639513	6126806	639530	6126759	-17	47	50	161		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	06:56:41	2303	BP23MVEXP-ENV-DC-047			Camera	85	639488	6126757	639530	6126759	-42	-2	42	88		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	06:57:14	2304	BP23MVEXP-ENV-DC-047			Camera	85	639487	6126755	639530	6126759	-43	-4	44	84		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	06:57:21	2305	BP23MVEXP-ENV-DC-047			Camera	85	639486	6126754	639530	6126759	-44	-5	44	83		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	06:59:39	2306	BP23MVEXP-ENV-DC-047			Camera	85	639485	6126747	639530	6126759	-45	-12	47	75		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	07:00:50	2307	BP23MVEXP-ENV-DC-047			Camera	85	639491	6126749	639530	6126759	-39	-10	41	75		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	07:01:15	2308	BP23MVEXP-ENV-DC-047			Camera	85	639493	6126750	639530	6126759	-37	-9	38	76		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	07:02:09	2309	BP23MVEXP-ENV-DC-047			Camera	85	639499	6126752	639530	6126759	-31	-7	32	76		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	07:02:48	2310	BP23MVEXP-ENV-DC-047			Camera	85	639503	6126753	639530	6126759	-27	-6	28	77		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	07:03:33	2311	BP23MVEXP-ENV-DC-047			Camera	85	639508	6126754	639530	6126759	-22	-5	22	77		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	07:03:43	2312	BP23MVEXP-ENV-DC-047			Camera	85	639509	6126754	639530	6126759	-21	-5	21	76		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	07:04:18	2313	BP23MVEXP-ENV-DC-047			Camera	85	639513	6126755	639530	6126759	-17	-4	18	77		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	07:06:59	2314	BP23MVEXP-ENV-DC-047			Camera	85	639528	6126760	639530	6126759	-2	1	2	109		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	07:07:40	2315	BP23MVEXP-ENV-DC-047			Camera	85	639532	6126761	639530	6126759	2	2	3	-131		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	07:09:15	2316	BP23MVEXP-ENV-DC-047			Camera	85	639541	6126764	639530	6126759	11	5	12	-115		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	07:10:38	2317	BP23MVEXP-ENV-DC-047			Camera	85	639548	6126767	639530	6126759	19	8	20	-114		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	07:12:03	2318	BP23MVEXP-ENV-DC-047			Camera	85	639557	6126769	639530	6126759	27	10	29	-111		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	07:12:32	2319	BP23MVEXP-ENV-DC-047			Camera	85	639560	6126770	639530	6126759	30	11	32	-110		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	07:12:57	2320	BP23MVEXP-ENV-DC-047			Camera	85	639563	6126770	639530	6126759	33	11	35	-109		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	07:14:03	2321	BP23MVEXP-ENV-DC-047			Camera	85	639570	6126772	639530	6126759	40	13	42	-108		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	07:14:31	2322	BP23MVEXP-ENV-DC-047			Camera	85	639572	6126773	639530	6126759	42	14	45	-109		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	07:15:09	2323	BP23MVEXP-ENV-DC-047			Camera	85	639576	6126774	639530	6126759	46	15	48	-109		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	08:10:39	2324	BP23MVEXP-ENV-DC-048			Camera	78	640632	6122986	640642	6122945	-10	41	42	166		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	08:11:36	2325	BP23MVEXP-ENV-DC-048			Camera	78	640632	6122986	640642	6122945	-10	41	43	166		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	08:16:07	2326	BP23MVEXP-ENV-DC-048			Camera	78	640625	6122994	640642	6122945	-17	49	52	161		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	08:17:14	2327	BP23MVEXP-ENV-DC-048			Camera	78	640628	6122987	640642	6122945	-14	42	45	162		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	08:17:53	2328	BP23MVEXP-ENV-DC-048			Camera	78	640629	6122984	640642	6122945	-13	39	41	162		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	08:18:50	2329	BP23MVEXP-ENV-DC-048			Camera	78	640631	6122978	640642	6122945	-11	33	35	162		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	08:19:16	2330	BP23MVEXP-ENV-DC-048			Camera	78	640633	6122975	640642	6122945	-9	30	32	163		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	08:20:16	2331	BP23MVEXP-ENV-DC-048			Camera	78	640635	6122968	640642	6122945	-7	24	24	164		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	08:20:46	2332	BP23MVEXP-ENV-DC-048			Camera	78	640636	6122965	640642	6122945	-6	21	21	164		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	08:21:33	2333	BP23MVEXP-ENV-DC-048			Camera	78	640637	6122961	640642	6122945	-5	16	17	163		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	08:22:14	2334	BP23MVEXP-ENV-DC-048			Camera	78	640639	6122957	640642	6122945	-3	12	13	164		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	08:22:36	2335	BP23MVEXP-ENV-DC-048			Camera	78	640639	6122955	640642	6122945	-3	10	10	164		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	08:23:14	2336	BP23MVEXP-ENV-DC-048			Camera	78	640641	6122951	640642	6122945	-1	6	6	167		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	08:23:38	2337	BP23MVEXP-ENV-DC-048			Camera	78	640642	6122949	640642	6122945	0	4	4	178		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	08:24:11	2338	BP23MVEXP-ENV-DC-048			Camera	78	640643	6122946	640642	6122945	1	1	1	-125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	08:24:25	2339	BP23MVEXP-ENV-DC-048			Camera	78	640643	6122944	640642	6122945	1	-1	2	-48		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	08:24:57	2340	BP23MVEXP-ENV-DC-048			Camera	78	640644	6122941	640642	6122945	2	-4	5	-28		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	08:25:34	2341	BP23MVEXP-ENV-DC-048			Camera	78	640646	6122937	640642	6122945	4	-8	9	-24		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	08:26:14	2342	BP23MVEXP-ENV-DC-048			Camera	78	640647	6122933	640642	6122945	5	-12	12	-22		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	08:26:51	2343	BP23MVEXP-ENV-DC-048			Camera	78	640648	6122930	640642	6122945	6	-15	16	-22		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	08:27:58	2344	BP23MVEXP-ENV-DC-048			Camera	78	640650	6122924	640642	6122945	8	-22	23	-21		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	08:28:26	2345	BP23MVEXP-ENV-DC-048			Camera	78	640651	6122921	640642	6122945	9	-24	26	-21		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	08:28:58	2346	BP23MVEXP-ENV-DC-048			Camera	78	640652	6122917	640642	6122945	10	-28	30	-21		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	08:29:37	2347	BP23MVEXP-ENV-DC-048			Camera	78	640654	6122914	640642	6122945	12	-31	33	-20		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	08:30:41	2348	BP23MVEXP-ENV-DC-048			Camera	78	640656	6122908	640642	6122945	14	-37	40	-20		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	08:31:04	2349	BP23MVEXP-ENV-DC-048			Camera	78	640656	6122905	640642	6122945	14	-40	42	-19		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	08:31:34	2350	BP23MVEXP-ENV-DC-048			Camera	78	640657	6122903	640642	6122945	15	-42	45	-19		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	08:46:04	2351	BP23MVEXP-ENV-DC-048			Camera	78	640592	6122930	640642	6122945	-50	-15	52	73		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	08:46:22	2352	BP23MVEXP-ENV-DC-048			Camera	78	640591	6122930	640642	6122945	-51	-15	53	74		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	08:47:31	2353	BP23MVEXP-ENV-DC-048			Camera	78	640593	6122933	640642	6122945	-49	-12	50	77		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	08:47:48	2354	BP23MVEXP-ENV-DC-048			Camera	78	640595	6122934	640642	6122945	-47	-11	48	77		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	08:48:45	2355	BP23MVEXP-ENV-DC-048			Camera	78	640601	6122937	640642	6122945	-41	-8	42	79		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	08:49:07	2356	BP23MVEXP-ENV-DC-048			Camera	78	640603	6122938	640642	6122945	-39	-7	40	79		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	08:49:52	2357	BP23MVEXP-ENV-DC-048				78	640607	6122939	640642	6122945	-35	-6	35	80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A) Fix no photo
10-Jul-2023	08:50:40	2358	BP23MVEXP-ENV-DC-048			Camera	78	640612	6122940	640642	6122945	-30	-5	30	81		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	08:51:09	2359	BP23MVEXP-ENV-DC-048			Camera	78	640615	6122941	640642	6122945	-27	-4	27	82		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	08:51:58	2360	BP23MVEXP-ENV-DC-048			Camera	78	640620	6122943	640642	6122945	-22	-2	22	85		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	08:52:48	2361	BP23MVEXP-ENV-DC-048			Camera	78	640625	6122945	640642	6122945	-17	0	17	89		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	08:53:09	2362	BP23MVEXP-ENV-DC-048			Camera	78	640627	6122945	640642	6122945	-15	0	15	92		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	08:53:25	2363	BP23MVEXP-ENV-DC-048			Camera	78	640629	6122946	640642	6122945	-13	1	13	95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	08:54:00	2364	BP23MVEXP-ENV-DC-048			Camera	78	640632	6122947	640642	6122945	-10	2	10	103		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	08:54:44	2365	BP23MVEXP-ENV-DC-048			Camera	78	640636	6122949	640642	6122945	-6	4	8	124		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	08:55:29	2366	BP23MVEXP-ENV-DC-048			Camera	78	640640	6122951	640642	6122945	-2	6	6	159		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	08:55:50	2367	BP23MVEXP-ENV-DC-048			Camera	78	640642	6122951	640642	6122945	0	6	6	-179		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	08:56:43	2368	BP23MVEXP-ENV-DC-048			Camera	78	640648	6122953	640642	6122945	6	8	10	-142		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	08:57:43	2369	BP23MVEXP-ENV-DC-048			Camera	78	640654	6122955	640642	6122945	12	10	15	-130		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	08:58:24	2370	BP23MVEXP-ENV-DC-048			Camera	78	640657	6122956	640642	6122945	15	11	19	-127		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	08:58:45	2371	BP23MVEXP-ENV-DC-048			Camera	78	640659	6122957	640642	6122945	17	12	21	-125		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	08:59:39	2372	BP23MVEXP-ENV-DC-048			Camera	78	640664	6122959	640642	6122945	22	14	26	-122		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	09:00:10	2373	BP23MVEXP-ENV-DC-048			Camera	78	640668	6122960	640642	6122945	26	15	30	-120		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	09:00:48	2374	BP23MVEXP-ENV-DC-048			Camera	78	640671	6122961	640642	6122945	29	16	34	-119		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	09:01:44	2375	BP23MVEXP-ENV-DC-048			Camera	78	640676	6122963	640642	6122945	34	18	39	-118		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	09:02:24	2376	BP23MVEXP-ENV-DC-048			Camera	78	640681	6122964	640642	6122945	39	19	43	-117		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	09:02:36	2377	BP23MVEXP-ENV-DC-048			Camera	78	640682	6122965	640642	6122945	40	20	45	-116		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Jul-2023	10:23:53	2378	BP23MVEXP-ENV-DC-049			Camera	76	641817	6119207	641831	6119158	-14	49	51	164		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Jul-2023	10:24:09	2379	BP23MVEXP-ENV-DC-049			Camera	76	641817	6119207	641831	6119158	-14	49	51	164		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	10:25:32	2380	BP23MVEXP-ENV-DC-049			Camera	76	641817	6119207	641831	6119158	-14	49	51	164		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	10:28:34	2381	BP23MVEXP-ENV-DC-049			Camera	76	641823	6119188	641831	6119158	-8	30	30	166		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	10:30:12	2382	BP23MVEXP-ENV-DC-049			Camera	75	641826	6119178	641831	6119158	-5	20	21	166		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	10:30:42	2383	BP23MVEXP-ENV-DC-049			Camera	75	641826	6119176	641831	6119158	-5	18	19	165		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	10:32:17	2384	BP23MVEXP-ENV-DC-049			Camera	75	641830	6119165	641831	6119158	-1	7	7	170		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	10:32:35	2385	BP23MVEXP-ENV-DC-049			Camera	75	641831	6119163	641831	6119158	0	5	5	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	10:33:42	2386	BP23MVEXP-ENV-DC-049			Camera	75	641833	6119157	641831	6119158	2	-1	2	-65		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	10:34:42	2387	BP23MVEXP-ENV-DC-049			Camera	75	641834	6119153	641831	6119158	3	-5	6	-29		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	10:36:54	2388	BP23MVEXP-ENV-DC-049			Camera	75	641838	6119139	641831	6119158	7	-19	20	-20		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	10:37:42	2389	BP23MVEXP-ENV-DC-049			Camera	75	641839	6119134	641831	6119158	8	-24	25	-20		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	10:38:33	2390	BP23MVEXP-ENV-DC-049			Camera	75	641841	6119129	641831	6119158	10	-29	30	-19		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	10:40:10	2391	BP23MVEXP-ENV-DC-049			Camera	75	641845	6119119	641831	6119158	14	-39	41	-19		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	10:40:36	2392	BP23MVEXP-ENV-DC-049			Camera	75	641846	6119117	641831	6119158	15	-41	43	-20		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	10:41:00	2393	BP23MVEXP-ENV-DC-049			Camera	75	641846	6119115	641831	6119158	15	-43	46	-20		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	10:53:55	2394	BP23MVEXP-ENV-DC-049			Camera	75	641786	6119142	641831	6119158	-45	-16	48	70		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	10:55:23	2395	BP23MVEXP-ENV-DC-049			Camera	75	641781	6119144	641831	6119158	-50	-15	52	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	10:56:35	2396	BP23MVEXP-ENV-DC-049			Camera	75	641786	6119145	641831	6119158	-46	-13	47	74		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	10:57:48	2397	BP23MVEXP-ENV-DC-049			Camera	75	641793	6119148	641831	6119158	-38	-10	39	75		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	10:57:57	2398	BP23MVEXP-ENV-DC-049			Camera	75	641794	6119148	641831	6119158	-37	-10	38	75		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	10:58:06	2399	BP23MVEXP-ENV-DC-049			Camera	75	641795	6119148	641831	6119158	-36	-10	37	75		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	10:58:22	2400	BP23MVEXP-ENV-DC-049			Camera	75	641796	6119149	641831	6119158	-35	-9	36	76		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	10:58:36	2401	BP23MVEXP-ENV-DC-049			Camera	75	641798	6119150	641831	6119158	-33	-8	34	76		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	11:00:02	2402	BP23MVEXP-ENV-DC-049			Camera	75	641807	6119154	641831	6119158	-24	-4	25	80		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	11:00:53	2403	BP23MVEXP-ENV-DC-049			Camera	75	641812	6119155	641831	6119158	-19	-3	19	80		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	11:01:15	2404	BP23MVEXP-ENV-DC-049			Camera	75	641814	6119155	641831	6119158	-17	-3	17	79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	11:01:22	2405	BP23MVEXP-ENV-DC-049			Camera	75	641815	6119155	641831	6119158	-16	-3	16	81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	11:02:25	2406	BP23MVEXP-ENV-DC-049			Camera	75	641821	6119158	641831	6119158	-10	0	10	88		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	11:02:41	2407	BP23MVEXP-ENV-DC-049			Camera	75	641822	6119158	641831	6119158	-9	0	9	92		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	11:03:23	2408	BP23MVEXP-ENV-DC-049			Camera	75	641827	6119159	641831	6119158	-4	1	5	106		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	11:04:12	2409	BP23MVEXP-ENV-DC-049			Camera	75	641831	6119161	641831	6119158	0	3	3	-177		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	11:04:18	2410	BP23MVEXP-ENV-DC-049			Camera	75	641832	6119161	641831	6119158	1	3	3	-167		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	11:04:25	2411	BP23MVEXP-ENV-DC-049			Camera	75	641832	6119161	641831	6119158	1	3	3	-154		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	11:04:31	2412	BP23MVEXP-ENV-DC-049			Camera	75	641833	6119161	641831	6119158	2	3	4	-148		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	11:04:41	2413	BP23MVEXP-ENV-DC-049			Camera	75	641834	6119162	641831	6119158	3	4	5	-142		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	11:04:49	2414	BP23MVEXP-ENV-DC-049			Camera	75	641835	6119162	641831	6119158	4	4	6	-140		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	11:04:57	2415	BP23MVEXP-ENV-DC-049			Camera	75	641835	6119163	641831	6119158	4	5	6	-136		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	11:05:06	2416	BP23MVEXP-ENV-DC-049			Camera	75	641837	6119163	641831	6119158	6	5	7	-132		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	11:05:13	2417	BP23MVEXP-ENV-DC-049			Camera	75	641837	6119163	641831	6119158	6	5	8	-130		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	11:05:34	2418	BP23MVEXP-ENV-DC-049			Camera	75	641839	6119163	641831	6119158	8	5	10	-124		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	11:05:41	2419	BP23MVEXP-ENV-DC-049			Camera	75	641840	6119164	641831	6119158	9	6	11	-122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	11:05:55	2420	BP23MVEXP-ENV-DC-049			Camera	75	641841	6119164	641831	6119158	10	6	12	-121		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	11:06:37	2421	BP23MVEXP-ENV-DC-049			Camera	75	641845	6119166	641831	6119158	15	8	16	-118		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	11:06:44	2422	BP23MVEXP-ENV-DC-049			Camera	75	641846	6119166	641831	6119158	15	8	17	-117		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	11:07:01	2423	BP23MVEXP-ENV-DC-049			Camera	75	641848	6119166	641831	6119158	17	8	19	-117		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	11:07:08	2424	BP23MVEXP-ENV-DC-049			Camera	75	641848	6119167	641831	6119158	17	9	19	-116		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	11:07:22	2425	BP23MVEXP-ENV-DC-049			Camera	75	641850	6119167	641831	6119158	19	9	21	-116		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	11:07:39	2426	BP23MVEXP-ENV-DC-049			Camera	75	641851	6119168	641831	6119158	20	10	23	-116		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	11:07:49	2427	BP23MVEXP-ENV-DC-049			Camera	75	641852	6119168	641831	6119158	21	10	24	-116		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	11:08:12	2428	BP23MVEXP-ENV-DC-049			Camera	75	641854	6119169	641831	6119158	23	11	26	-115		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	11:08:22	2429	BP23MVEXP-ENV-DC-049			Camera	75	641856	6119169	641831	6119158	25	11	27	-115		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	11:08:56	2430	BP23MVEXP-ENV-DC-049			Camera	76	641859	6119170	641831	6119158	28	12	31	-113		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	12:37:41	2431	BP23MVEXP-ENV-DC-050			Camera	66	642466	6115223	642446	6115177	20	46	50	-157		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	12:39:06	2432	BP23MVEXP-ENV-DC-050			Camera	66	642466	6115222	642446	6115177	20	45	49	-156		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	12:39:31	2433	BP23MVEXP-ENV-DC-050			Camera	66	642464	6115219	642446	6115177	18	42	46	-157		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	12:40:25	2434	BP23MVEXP-ENV-DC-050			Camera	66	642461	6115214	642446	6115177	16	37	40	-157		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	12:40:50	2435	BP23MVEXP-ENV-DC-050			Camera	66	642460	6115212	642446	6115177	14	35	38	-158		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	12:41:38	2436	BP23MVEXP-ENV-DC-050			Camera	66	642459	6115207	642446	6115177	13	30	33	-157		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	12:42:06	2437	BP23MVEXP-ENV-DC-050			Camera	66	642457	6115205	642446	6115177	11	28	30	-158		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	12:43:25	2438	BP23MVEXP-ENV-DC-050			Camera	66	642454	6115197	642446	6115177	8	20	22	-159		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	12:44:04	2439	BP23MVEXP-ENV-DC-050			Camera	66	642452	6115194	642446	6115177	6	17	18	-160		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	12:45:19	2440	BP23MVEXP-ENV-DC-050			Camera	66	642449	6115187	642446	6115177	3	10	10	-161		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	12:45:50	2441	BP23MVEXP-ENV-DC-050			Camera	66	642448	6115184	642446	6115177	2	7	7	-161		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	12:46:40	2442	BP23MVEXP-ENV-DC-050			Camera	66	642446	6115179	642446	6115177	0	2	2	-178		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	12:47:02	2443	BP23MVEXP-ENV-DC-050			Camera	66	642445	6115177	642446	6115177	-1	0	1	117		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	12:47:39	2444	BP23MVEXP-ENV-DC-050			Camera	66	642443	6115174	642446	6115177	-3	-3	4	37		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	12:47:59	2445	BP23MVEXP-ENV-DC-050			Camera	66	642443	6115172	642446	6115177	-3	-5	6	33		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	12:49:18	2446	BP23MVEXP-ENV-DC-050			Camera	66	642439	6115164	642446	6115177	-7	-13	14	27		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	12:49:57	2447	BP23MVEXP-ENV-DC-050			Camera	66	642438	6115161	642446	6115177	-8	-16	18	27		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	12:50:51	2448	BP23MVEXP-ENV-DC-050			Camera	66	642436	6115156	642446	6115177	-10	-21	24	26		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	12:51:21	2449	BP23MVEXP-ENV-DC-050			Camera	66	642434	6115153	642446	6115177	-12	-24	27	26		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	12:51:30	2450	BP23MVEXP-ENV-DC-050			Camera	66	642434	6115152	642446	6115177	-12	-25	28	26		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	12:51:43	2451	BP23MVEXP-ENV-DC-050			Camera	66	642433	6115151	642446	6115177	-13	-26	29	26		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	12:52:58	2452	BP23MVEXP-ENV-DC-050			Camera	66	642431	6115144	642446	6115177	-15	-33	36	25		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	12:53:55	2453	BP23MVEXP-ENV-DC-050			Camera	66	642428	6115139	642446	6115177	-18	-38	42	25		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	12:54:49	2454	BP23MVEXP-ENV-DC-050			Camera	65	642426	6115134	642446	6115177	-20	-43	48	25		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	13:10:14	2455	BP23MVEXP-ENV-DC-050			Camera	65	642397	6115203	642446	6115177	-49	26	56	117		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	13:11:29	2456	BP23MVEXP-ENV-DC-050			Camera	65	642399	6115205	642446	6115177	-47	28	55	121		(Raw Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	13:12:40	2457	BP23MVEXP-ENV-DC-050			Camera	66	642404	6115203	642446	6115177	-42	26	50	121		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	13:13:40	2458	BP23MVEXP-ENV-DC-050			Camera	66	642409	6115200	642446	6115177	-37	24	44	122		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	13:14:40	2459	BP23MVEXP-ENV-DC-050			Camera	66	642413	6115197	642446	6115177	-33	20	39	122		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	13:16:14	2460	BP23MVEXP-ENV-DC-050			Camera	66	642421	6115194	642446	6115177	-25	17	30	123		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	13:17:03	2461	BP23MVEXP-ENV-DC-050			Camera	66	642426	6115192	642446	6115177	-20	15	25	126		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	13:17:59	2462	BP23MVEXP-ENV-DC-050			Camera	66	642430	6115188	642446	6115177	-16	11	19	125		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	13:18:09	2463	BP23MVEXP-ENV-DC-050			Camera	66	642431	6115188	642446	6115177	-15	11	18	125		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	13:19:14	2464	BP23MVEXP-ENV-DC-050			Camera	66	642437	6115185	642446	6115177	-9	8	12	132		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	13:19:47	2465	BP23MVEXP-ENV-DC-050			Camera	66	642440	6115184	642446	6115177	-6	7	9	140		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	13:21:01	2466	BP23MVEXP-ENV-DC-050			Camera	66	642447	6115181	642446	6115177	1	4	4	-169		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	13:21:21	2467	BP23MVEXP-ENV-DC-050			Camera	66	642449	6115180	642446	6115177	3	3	4	-136		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	13:23:04	2468	BP23MVEXP-ENV-DC-050			Camera	66	642459	6115175	642446	6115177	13	-2	13	-82		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	13:23:30	2469	BP23MVEXP-ENV-DC-050			Camera	66	642461	6115174	642446	6115177	15	-3	16	-79		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	13:24:08	2470	BP23MVEXP-ENV-DC-050			Camera	66	642464	6115172	642446	6115177	19	-5	19	-75		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	13:24:42	2471	BP23MVEXP-ENV-DC-050			Camera	66	642468	6115170	642446	6115177	22	-7	23	-73		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	13:24:52	2472	BP23MVEXP-ENV-DC-050			Camera	66	642469	6115170	642446	6115177	23	-7	24	-73		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	13:25:38	2473	BP23MVEXP-ENV-DC-050			Camera	66	642473	6115168	642446	6115177	27	-9	28	-71		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	13:26:41	2474	BP23MVEXP-ENV-DC-050			Camera	66	642479	6115165	642446	6115177	33	-12	35	-70		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	13:27:46	2475	BP23MVEXP-ENV-DC-050			Camera	66	642485	6115162	642446	6115177	39	-15	42	-69		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	13:28:50	2476	BP23MVEXP-ENV-DC-050			Camera	66	642489	6115159	642446	6115177	43	-18	47	-68		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	13:29:11	2477	BP23MVEXP-ENV-DC-050			Camera	66	642490	6115158	642446	6115177	44	-19	48	-67		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	15:06:54	2478	BP23MVEXP-ENV-DC-051			Camera	65	640623	6111654	640669	6111625	-46	29	54	122		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	15:10:21	2479	BP23MVEXP-ENV-DC-051			Camera	65	640626	6111653	640669	6111625	-43	28	51	123		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	15:10:50	2480	BP23MVEXP-ENV-DC-051			Camera	65	640628	6111652	640669	6111625	-41	27	49	123		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	15:11:21	2481	BP23MVEXP-ENV-DC-051			Camera	65	640629	6111651	640669	6111625	-40	26	47	123		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	15:11:48	2482	BP23MVEXP-ENV-DC-051			Camera	65	640631	6111650	640669	6111625	-38	25	46	123		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	15:13:14	2483	BP23MVEXP-ENV-DC-051			Camera	65	640635	6111648	640669	6111625	-34	23	41	124		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	15:15:13	2484	BP23MVEXP-ENV-DC-051			Camera	65	640640	6111646	640669	6111625	-29	21	36	126		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	15:15:49	2485	BP23MVEXP-ENV-DC-051			Camera	65	640642	6111644	640669	6111625	-27	20	33	126		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	15:17:08	2486	BP23MVEXP-ENV-DC-051			Camera	65	640650	6111641	640669	6111625	-19	16	25	130		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	15:18:08	2487	BP23MVEXP-ENV-DC-051			Camera	65	640655	6111638	640669	6111625	-14	13	19	132		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	15:19:07	2488	BP23MVEXP-ENV-DC-051			Camera	65	640660	6111635	640669	6111625	-9	10	14	138		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	15:19:47	2489	BP23MVEXP-ENV-DC-051			Camera	65	640664	6111633	640669	6111625	-5	8	10	149		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	15:21:15	2490	BP23MVEXP-ENV-DC-051			Camera	65	640672	6111629	640669	6111625	3	4	5	-148		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	15:21:28	2491	BP23MVEXP-ENV-DC-051			Camera	65	640673	6111629	640669	6111625	4	4	5	-135		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	15:21:44	2492	BP23MVEXP-ENV-DC-051			Camera	65	640674	6111628	640669	6111625	5	3	6	-117		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	15:22:19	2493	BP23MVEXP-ENV-DC-051			Camera	65	640677	6111626	640669	6111625	8	1	8	-99		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	15:22:42	2494	BP23MVEXP-ENV-DC-051			Camera	65	640679	6111625	640669	6111625	10	0	10	-90		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	15:23:38	2495	BP23MVEXP-ENV-DC-051			Camera	65	640684	6111623	640669	6111625	15	-2	16	-81		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	15:25:15	2496	BP23MVEXP-ENV-DC-051			Camera	65	640694	6111617	640669	6111625	25	-8	26	-72		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	15:25:28	2497	BP23MVEXP-ENV-DC-051			Camera	65	640695	6111617	640669	6111625	26	-8	27	-72		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	15:26:17	2498	BP23MVEXP-ENV-DC-051			Camera	65	640699	6111614	640669	6111625	30	-11	32	-71		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	15:26:40	2499	BP23MVEXP-ENV-DC-051			Camera	65	640701	6111613	640669	6111625	32	-12	34	-70		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	15:27:06	2500	BP23MVEXP-ENV-DC-051			Camera	65	640703	6111612	640669	6111625	35	-13	37	-69		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	15:27:28	2501	BP23MVEXP-ENV-DC-051			Camera	65	640706	6111611	640669	6111625	37	-14	39	-69		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	15:27:36	2502	BP23MVEXP-ENV-DC-051			Camera	65	640706	6111611	640669	6111625	37	-14	40	-69		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	15:27:43	2503	BP23MVEXP-ENV-DC-051			Camera	65	640707	6111610	640669	6111625	38	-15	41	-69		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	15:28:28	2504	BP23MVEXP-ENV-DC-051			Camera	65	640711	6111608	640669	6111625	42	-17	45	-68		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	15:28:48	2505	BP23MVEXP-ENV-DC-051			Camera	65	640713	6111607	640669	6111625	44	-18	47	-68		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	15:31:14	2506	BP23MVEXP-ENV-DC-051			Camera	65	640717	6111604	640669	6111625	48	-21	52	-66		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	15:42:32	2507	BP23MVEXP-ENV-DC-051			Camera	65	640690	6111664	640669	6111625	21	39	45	-152		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	15:42:51	2508	BP23MVEXP-ENV-DC-051			Camera	65	640712	6111643	640669	6111625	43	18	46	-113		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	15:43:09	2509	BP23MVEXP-ENV-DC-051			Camera	65	640688	6111661	640669	6111625	19	36	40	-153		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	15:43:30	2510	BP23MVEXP-ENV-DC-051			Camera	65	640686	6111659	640669	6111625	17	34	38	-153		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	15:43:44	2511	BP23MVEXP-ENV-DC-051			Camera	65	640686	6111657	640669	6111625	17	32	36	-153		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	15:44:38	2512	BP23MVEXP-ENV-DC-051			Camera	65	640683	6111653	640669	6111625	14	28	31	-153		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	15:45:07	2513	BP23MVEXP-ENV-DC-051			Camera	65	640682	6111650	640669	6111625	13	25	28	-152		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	15:45:27	2514	BP23MVEXP-ENV-DC-051			Camera	65	640681	6111648	640669	6111625	12	23	26	-152		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	15:45:46	2515	BP23MVEXP-ENV-DC-051			Camera	65	640688	6111638	640669	6111625	19	13	23	-126		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	15:46:19	2516	BP23MVEXP-ENV-DC-051			Camera	65	640679	6111643	640669	6111625	10	18	20	-151		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	15:46:41	2517	BP23MVEXP-ENV-DC-051			Camera	65	640678	6111641	640669	6111625	9	16	18	-151		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	15:47:27	2518	BP23MVEXP-ENV-DC-051			Camera	65	640676	6111636	640669	6111625	7	11	13	-149		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	15:47:51	2519	BP23MVEXP-ENV-DC-051			Camera	65	640675	6111634	640669	6111625	6	9	11	-147		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	15:48:40	2520	BP23MVEXP-ENV-DC-051			Camera	65	640678	6111624	640669	6111625	9	-1	9	-86		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	15:48:54	2521	BP23MVEXP-ENV-DC-051			Camera	65	640672	6111629	640669	6111625	3	4	5	-143		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	15:49:03	2522	BP23MVEXP-ENV-DC-051			Camera	65	640671	6111628	640669	6111625	2	3	4	-142		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	15:49:07	2523	BP23MVEXP-ENV-DC-051			Camera	65	640671	6111628	640669	6111625	2	3	4	-142		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	15:49:14	2524	BP23MVEXP-ENV-DC-051			Camera	65	640671	6111627	640669	6111625	2	2	3	-141		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	15:49:31	2525	BP23MVEXP-ENV-DC-051			Camera	65	640670	6111626	640669	6111625	1	1	1	-129		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	15:49:40	2526	BP23MVEXP-ENV-DC-051			Camera	65	640669	6111625	640669	6111625	0	0	1	-66		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	15:49:50	2527	BP23MVEXP-ENV-DC-051			Camera	65	640669	6111624	640669	6111625	0	-1	1	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	15:51:21	2528	BP23MVEXP-ENV-DC-051			Camera	65	640666	6111615	640669	6111625	-3	-10	11	18		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	15:55:20	2529	BP23MVEXP-ENV-DC-051			Camera	65	640655	6111593	640669	6111625	-14	-32	35	23		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	16:57:26	2530	BP23MVEXP-ENV-DC-052			Camera	64	638969	6108198	638949	6108153	20	45	49	-156		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	16:59:05	2531	BP23MVEXP-ENV-DC-052			Camera	64	638968	6108197	638949	6108153	19	44	47	-157		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	16:59:19	2532	BP23MVEXP-ENV-DC-052			Camera	64	638967	6108195	638949	6108153	18	42	46	-157		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	16:59:44	2533	BP23MVEXP-ENV-DC-052			Camera	64	638966	6108193	638949	6108153	17	40	43	-157		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	16:59:57	2534	BP23MVEXP-ENV-DC-052			Camera	64	638965	6108192	638949	6108153	16	39	42	-157		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	17:00:08	2535	BP23MVEXP-ENV-DC-052			Camera	64	638965	6108190	638949	6108153	16	38	41	-157		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	17:00:25	2536	BP23MVEXP-ENV-DC-052			Camera	64	638964	6108189	638949	6108153	15	36	39	-157		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	17:00:36	2537	BP23MVEXP-ENV-DC-052			Camera	64	638964	6108188	638949	6108153	15	35	38	-157		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	17:00:55	2538	BP23MVEXP-ENV-DC-052			Camera	64	638963	6108186	638949	6108153	14	33	36	-157		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	17:01:25	2539	BP23MVEXP-ENV-DC-052			Camera	64	638962	6108183	638949	6108153	13	30	33	-157		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	17:01:46	2540	BP23MVEXP-ENV-DC-052			Camera	64	638961	6108181	638949	6108153	12	29	31	-157		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	17:01:57	2541	BP23MVEXP-ENV-DC-052			Camera	64	638961	6108180	638949	6108153	12	27	30	-156		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	17:02:13	2542	BP23MVEXP-ENV-DC-052			Camera	64	638960	6108179	638949	6108153	11	26	28	-156		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	17:02:30	2543	BP23MVEXP-ENV-DC-052			Camera	64	638960	6108177	638949	6108153	11	24	27	-156		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	17:02:54	2544	BP23MVEXP-ENV-DC-052			Camera	64	638959	6108175	638949	6108153	10	22	24	-156		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	17:03:32	2545	BP23MVEXP-ENV-DC-052			Camera	64	638957	6108171	638949	6108153	8	18	20	-156		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	17:03:53	2546	BP23MVEXP-ENV-DC-052			Camera	64	638956	6108169	638949	6108153	7	16	18	-156		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	17:04:32	2547	BP23MVEXP-ENV-DC-052			Camera	64	638955	6108166	638949	6108153	6	13	14	-156		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	17:04:42	2548	BP23MVEXP-ENV-DC-052			Camera	64	638954	6108165	638949	6108153	5	12	13	-155		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	17:05:15	2549	BP23MVEXP-ENV-DC-052			Camera	64	638953	6108162	638949	6108153	4	9	10	-154		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	17:05:33	2550	BP23MVEXP-ENV-DC-052			Camera	64	638952	6108160	638949	6108153	3	7	8	-154		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	17:06:12	2551	BP23MVEXP-ENV-DC-052			Camera	64	638951	6108156	638949	6108153	2	3	4	-151		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	17:06:29	2552	BP23MVEXP-ENV-DC-052			Camera	64	638950	6108154	638949	6108153	1	1	2	-143		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	17:06:51	2553	BP23MVEXP-ENV-DC-052			Camera	64	638949	6108152	638949	6108153	0	-1	1	-10		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	17:07:21	2554	BP23MVEXP-ENV-DC-052			Camera	64	638948	6108150	638949	6108153	-1	-3	4	18		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	17:07:28	2555	BP23MVEXP-ENV-DC-052			Camera	64	638948	6108149	638949	6108153	-1	-4	4	17		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	17:08:00	2556	BP23MVEXP-ENV-DC-052			Camera	64	638947	6108146	638949	6108153	-2	-7	8	18		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	17:08:14	2557	BP23MVEXP-ENV-DC-052			Camera	64	638946	6108144	638949	6108153	-3	-9	9	18		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	17:08:59	2558	BP23MVEXP-ENV-DC-052			Camera	64	638945	6108140	638949	6108153	-4	-13	14	19		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	17:09:12	2559	BP23MVEXP-ENV-DC-052			Camera	64	638944	6108139	638949	6108153	-5	-14	15	19		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	17:09:28	2560	BP23MVEXP-ENV-DC-052			Camera	64	638943	6108137	638949	6108153	-6	-16	17	19		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	17:10:32	2561	BP23MVEXP-ENV-DC-052			Camera	64	638941	6108131	638949	6108153	-8	-22	23	21		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	17:13:03	2562	BP23MVEXP-ENV-DC-052			Camera	64	638934	6108117	638949	6108153	-15	-36	39	22		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	17:13:46	2563	BP23MVEXP-ENV-DC-052			Camera	64	638933	6108113	638949	6108153	-16	-40	43	22		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	17:16:06	2564	BP23MVEXP-ENV-DC-052			Camera	64	638928	6108110	638949	6108153	-21	-44	48	26		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	17:20:36	2565	BP23MVEXP-ENV-DC-052			Camera	64	638918	6108134	638949	6108153	-32	-19	37	59		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	17:23:30	2566	BP23MVEXP-ENV-DC-052			Camera	64	638910	6108151	638949	6108153	-39	-2	39	87		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	17:29:39	2567	BP23MVEXP-ENV-DC-052			Camera	64	638908	6108172	638949	6108153	-41	19	45	115		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	17:29:55	2568	BP23MVEXP-ENV-DC-052			Camera	64	638910	6108171	638949	6108153	-39	18	43	115		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	17:30:02	2569	BP23MVEXP-ENV-DC-052			Camera	64	638910	6108171	638949	6108153	-39	18	43	115		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	17:30:16	2570	BP23MVEXP-ENV-DC-052			Camera	64	638912	6108170	638949	6108153	-37	17	41	115		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	17:30:25	2571	BP23MVEXP-ENV-DC-052			Camera	64	638913	6108170	638949	6108153	-37	17	40	114		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	17:30:40	2572	BP23MVEXP-ENV-DC-052			Camera	64	638914	6108169	638949	6108153	-35	16	39	114		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	17:30:53	2573	BP23MVEXP-ENV-DC-052			Camera	64	638915	6108168	638949	6108153	-34	15	38	114		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	17:31:39	2574	BP23MVEXP-ENV-DC-052			Camera	64	638919	6108167	638949	6108153	-30	14	33	114		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	17:33:23	2575	BP23MVEXP-ENV-DC-052			Camera	64	638929	6108162	638949	6108153	-20	9	22	115		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	17:33:53	2576	BP23MVEXP-ENV-DC-052			Camera	64	638932	6108161	638949	6108153	-17	8	19	115		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	17:35:30	2577	BP23MVEXP-ENV-DC-052			Camera	64	638941	6108157	638949	6108153	-8	4	9	118		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	17:36:00	2578	BP23MVEXP-ENV-DC-052			Camera	64	638944	6108156	638949	6108153	-5	3	6	120		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	17:36:08	2579	BP23MVEXP-ENV-DC-052			Camera	64	638944	6108156	638949	6108153	-5	3	5	121		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	17:36:23	2580	BP23MVEXP-ENV-DC-052			Camera	64	638946	6108155	638949	6108153	-3	2	4	124		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	17:36:48	2581	BP23MVEXP-ENV-DC-052			Camera	64	638948	6108154	638949	6108153	-1	1	1	142		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	17:37:21	2582	BP23MVEXP-ENV-DC-052			Camera	64	638951	6108153	638949	6108153	2	0	2	-81		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	17:38:33	2583	BP23MVEXP-ENV-DC-052			Camera	64	638958	6108150	638949	6108153	9	-3	10	-70		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Jul-2023	17:39:02	2584	BP23MVEXP-ENV-DC-052			Camera	64	638961	6108148	638949	6108153	12	-5	13	-68		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Jul-2023	17:39:34	2585	BP23MVEXP-ENV-DC-052			Camera	64	638965	6108147	638949	6108153	16	-6	17	-68		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
10-Jul-2023	17:40:03	2586	BP23MVEXP-ENV-DC-052			Camera	64	638967	6108145	638949	6108153	18	-8	19	-67		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
10-Jul-2023	17:40:11	2587	BP23MVEXP-ENV-DC-052			Camera	64	638968	6108145	638949	6108153	19	-8	21	-67		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
10-Jul-2023	17:41:26	2588	BP23MVEXP-ENV-DC-052			Camera	64	638975	6108142	638949	6108153	26	-11	28	-67		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
10-Jul-2023	17:42:03	2589	BP23MVEXP-ENV-DC-052			Camera	64	638978	6108141	638949	6108153	29	-13	31	-67		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
10-Jul-2023	17:43:05	2590	BP23MVEXP-ENV-DC-052			Camera	64	638984	6108138	638949	6108153	35	-15	38	-67		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
10-Jul-2023	17:43:59	2591	BP23MVEXP-ENV-DC-052			Camera	64	638989	6108136	638949	6108153	40	-17	44	-67		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
10-Jul-2023	17:44:24	2592	BP23MVEXP-ENV-DC-052			Camera	64	638992	6108135	638949	6108153	43	-18	47	-67		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
10-Jul-2023	20:29:14	2593	BP23MVEXP-ENV-DC-053			Camera	65	637158	6104586	637135	6104545	23	41	47	-151		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	20:30:23	2594	BP23MVEXP-ENV-DC-053			Camera	65	637157	6104585	637135	6104545	22	40	46	-151		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	20:30:38	2595	BP23MVEXP-ENV-DC-053			Camera	65	637157	6104585	637135	6104545	22	40	45	-151		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	20:30:58	2596	BP23MVEXP-ENV-DC-053			Camera	65	637156	6104583	637135	6104545	22	38	44	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	20:31:56	2597	BP23MVEXP-ENV-DC-053			Camera	65	637154	6104578	637135	6104545	19	33	38	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	20:32:26	2598	BP23MVEXP-ENV-DC-053			Camera	65	637153	6104574	637135	6104545	18	29	34	-148		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	20:33:01	2599	BP23MVEXP-ENV-DC-053			Camera	65	637151	6104571	637135	6104545	16	27	31	-149		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	20:33:30	2600	BP23MVEXP-ENV-DC-053			Camera	65	637149	6104569	637135	6104545	14	24	28	-149		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	20:34:02	2601	BP23MVEXP-ENV-DC-053			Camera	65	637148	6104566	637135	6104545	13	21	24	-147		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	20:34:35	2602	BP23MVEXP-ENV-DC-053			Camera	65	637147	6104562	637135	6104545	12	17	21	-144		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	20:35:07	2603	BP23MVEXP-ENV-DC-053			Camera	65	637146	6104560	637135	6104545	11	15	18	-142		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	20:35:20	2604	BP23MVEXP-ENV-DC-053			Camera	65	637146	6104558	637135	6104545	11	13	17	-141		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	20:35:54	2605	BP23MVEXP-ENV-DC-053			Camera	65	637144	6104554	637135	6104545	9	9	13	-135		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	20:36:27	2606	BP23MVEXP-ENV-DC-053			Camera	65	637142	6104552	637135	6104545	7	7	10	-132		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	20:36:48	2607	BP23MVEXP-ENV-DC-053			Camera	65	637141	6104549	637135	6104545	6	4	8	-125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	20:37:39	2608	BP23MVEXP-ENV-DC-053			Camera	65	637139	6104544	637135	6104545	4	-1	4	-71		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	20:37:55	2609	BP23MVEXP-ENV-DC-053			Camera	65	637138	6104542	637135	6104545	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	20:38:26	2610	BP23MVEXP-ENV-DC-053			Camera	65	637135	6104539	637135	6104545	0	-6	6	-2		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	20:38:38	2611	BP23MVEXP-ENV-DC-053			Camera	65	637134	6104538	637135	6104545	-1	-7	8	5		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	20:38:46	2612	BP23MVEXP-ENV-DC-053			Camera	65	637134	6104537	637135	6104545	-1	-8	8	8		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	20:39:45	2613	BP23MVEXP-ENV-DC-053			Camera	65	637131	6104533	637135	6104545	-4	-12	12	18		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	20:39:53	2614	BP23MVEXP-ENV-DC-053			Camera	65	637131	6104533	637135	6104545	-4	-12	13	18		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	20:40:02	2615	BP23MVEXP-ENV-DC-053			Camera	65	637131	6104532	637135	6104545	-4	-13	14	18		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	20:40:17	2616	BP23MVEXP-ENV-DC-053			Camera	65	637130	6104530	637135	6104545	-5	-15	15	18		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	20:40:49	2617	BP23MVEXP-ENV-DC-053			Camera	66	637129	6104527	637135	6104545	-6	-18	19	18		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	20:41:22	2618	BP23MVEXP-ENV-DC-053			Camera	66	637128	6104525	637135	6104545	-7	-21	22	19		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	20:41:58	2619	BP23MVEXP-ENV-DC-053			Camera	66	637126	6104521	637135	6104545	-9	-24	25	21		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	20:43:15	2620	BP23MVEXP-ENV-DC-053			Camera	65	637122	6104515	637135	6104545	-13	-30	33	24		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	20:59:58	2621	BP23MVEXP-ENV-DC-053			Camera	65	637089	6104566	637135	6104545	-46	21	50	115		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	21:00:29	2622	BP23MVEXP-ENV-DC-053			Camera	66	637089	6104567	637135	6104545	-46	22	51	115		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	21:01:06	2623	BP23MVEXP-ENV-DC-053			Camera	66	637091	6104566	637135	6104545	-44	21	48	116		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	21:01:31	2624	BP23MVEXP-ENV-DC-053			Camera	65	637094	6104565	637135	6104545	-41	20	46	116		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	21:02:58	2625	BP23MVEXP-ENV-DC-053			Camera	65	637103	6104561	637135	6104545	-32	16	36	116		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	21:03:51	2626	BP23MVEXP-ENV-DC-053			Camera	65	637108	6104559	637135	6104545	-27	14	30	117		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	21:05:07	2627	BP23MVEXP-ENV-DC-053			Camera	65	637115	6104555	637135	6104545	-20	10	22	117		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	21:05:18	2628	BP23MVEXP-ENV-DC-053			Camera	65	637116	6104555	637135	6104545	-19	10	21	117		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	21:05:50	2629	BP23MVEXP-ENV-DC-053			Camera	65	637119	6104553	637135	6104545	-16	8	18	118		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	21:06:08	2630	BP23MVEXP-ENV-DC-053			Camera	65	637121	6104553	637135	6104545	-14	8	16	118		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	21:06:59	2631	BP23MVEXP-ENV-DC-053			Camera	65	637126	6104550	637135	6104545	-9	5	10	122		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	21:07:35	2632	BP23MVEXP-ENV-DC-053			Camera	65	637129	6104549	637135	6104545	-6	4	7	122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	21:08:13	2633	BP23MVEXP-ENV-DC-053			Camera	65	637132	6104547	637135	6104545	-3	2	3	129		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	21:08:53	2634	BP23MVEXP-ENV-DC-053			Camera	65	637137	6104545	637135	6104545	2	0	2	-99		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	21:09:03	2635	BP23MVEXP-ENV-DC-053			Camera	65	637138	6104545	637135	6104545	3	0	3	-89		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	21:10:06	2636	BP23MVEXP-ENV-DC-053			Camera	65	637143	6104542	637135	6104545	8	-3	9	-72		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	21:10:16	2637	BP23MVEXP-ENV-DC-053			Camera	65	637144	6104542	637135	6104545	9	-3	10	-72		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	21:10:50	2638	BP23MVEXP-ENV-DC-053			Camera	65	637148	6104541	637135	6104545	13	-4	13	-73		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	21:11:44	2639	BP23MVEXP-ENV-DC-053			Camera	65	637152	6104539	637135	6104545	17	-6	18	-71		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	21:13:28	2640	BP23MVEXP-ENV-DC-053			Camera	65	637162	6104535	637135	6104545	27	-10	29	-70		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	21:14:07	2641	BP23MVEXP-ENV-DC-053			Camera	65	637165	6104534	637135	6104545	30	-12	32	-69		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	21:14:17	2642	BP23MVEXP-ENV-DC-053			Camera	65	637166	6104533	637135	6104545	31	-12	33	-69		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	21:14:43	2643	BP23MVEXP-ENV-DC-053			Camera	65	637169	6104532	637135	6104545	34	-13	37	-69		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	21:15:42	2644	BP23MVEXP-ENV-DC-053			Camera	65	637175	6104529	637135	6104545	40	-16	44	-68		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	21:16:10	2645	BP23MVEXP-ENV-DC-053			Camera	65	637179	6104528	637135	6104545	44	-17	47	-68		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	22:19:06	2646	BP23MVEXP-ENV-DC-054			Camera	69	635371	6101033	635346	6100990	25	43	50	-150		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	22:21:26	2647	BP23MVEXP-ENV-DC-054			Camera	69	635370	6101030	635346	6100990	24	40	46	-149		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	22:21:42	2648	BP23MVEXP-ENV-DC-054			Camera	68	635369	6101029	635346	6100990	23	39	45	-150		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	22:22:54	2649	BP23MVEXP-ENV-DC-054			Camera	68	635365	6101023	635346	6100990	19	33	38	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	22:23:50	2650	BP23MVEXP-ENV-DC-054			Camera	68	635363	6101018	635346	6100990	17	28	33	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	22:23:57	2651	BP23MVEXP-ENV-DC-054			Camera	68	635363	6101017	635346	6100990	17	27	32	-148		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	22:24:11	2652	BP23MVEXP-ENV-DC-054			Camera	68	635362	6101016	635346	6100990	16	26	31	-148		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	22:24:17	2653	BP23MVEXP-ENV-DC-054			Camera	68	635362	6101015	635346	6100990	16	26	30	-148		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	22:25:57	2654	BP23MVEXP-ENV-DC-054			Camera	68	635358	6101009	635346	6100990	12	19	22	-148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	22:26:28	2655	BP23MVEXP-ENV-DC-054			Camera	68	635356	6101006	635346	6100990	10	16	19	-147		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	22:26:52	2656	BP23MVEXP-ENV-DC-054			Camera	68	635355	6101004	635346	6100990	9	14	16	-146		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	22:28:56	2657	BP23MVEXP-ENV-DC-054			Camera	68	635350	6100992	635346	6100990	4	2	5	-116		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	22:29:03	2658	BP23MVEXP-ENV-DC-054			Camera	68	635350	6100991	635346	6100990	4	1	4	-108		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	22:29:41	2659	BP23MVEXP-ENV-DC-054			Camera	68	635348	6100988	635346	6100990	2	-2	3	-37		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	22:30:09	2660	BP23MVEXP-ENV-DC-054			Camera	68	635346	6100985	635346	6100990	0	-5	5	-6		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	22:30:26	2661	BP23MVEXP-ENV-DC-054			Camera	68	635346	6100984	635346	6100990	0	-6	6	3		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	22:31:00	2662	BP23MVEXP-ENV-DC-054			Camera	68	635344	6100981	635346	6100990	-2	-9	10	14		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	22:31:09	2663	BP23MVEXP-ENV-DC-054			Camera	68	635343	6100980	635346	6100990	-3	-10	11	15		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	22:32:21	2664	BP23MVEXP-ENV-DC-054			Camera	68	635340	6100973	635346	6100990	-6	-17	18	19		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	22:33:14	2665	BP23MVEXP-ENV-DC-054			Camera	68	635338	6100968	635346	6100990	-8	-22	24	20		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	22:33:21	2666	BP23MVEXP-ENV-DC-054			Camera	68	635337	6100967	635346	6100990	-9	-23	24	21		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	22:34:32	2667	BP23MVEXP-ENV-DC-054			Camera	68	635334	6100961	635346	6100990	-12	-29	31	22		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	22:35:49	2668	BP23MVEXP-ENV-DC-054			Camera	68	635331	6100954	635346	6100990	-15	-36	39	23		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	22:36:59	2669	BP23MVEXP-ENV-DC-054			Camera	68	635328	6100947	635346	6100990	-18	-43	46	23		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	22:37:24	2670	BP23MVEXP-ENV-DC-054			Camera	68	635327	6100946	635346	6100990	-20	-44	48	24		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	22:37:39	2671	BP23MVEXP-ENV-DC-054			Camera	68	635326	6100945	635346	6100990	-20	-45	49	24		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	22:38:22	2672	BP23MVEXP-ENV-DC-054			Camera	68	635325	6100944	635346	6100990	-21	-46	50	24		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	22:51:37	2673	BP23MVEXP-ENV-DC-054			Camera	68	635300	6101013	635346	6100990	-46	23	52	116		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	22:51:43	2674	BP23MVEXP-ENV-DC-054			Camera	68	635300	6101013	635346	6100990	-46	23	51	117		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	22:52:01	2675	BP23MVEXP-ENV-DC-054			Camera	68	635302	6101012	635346	6100990	-44	22	49	117		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	22:52:40	2676	BP23MVEXP-ENV-DC-054			Camera	68	635307	6101010	635346	6100990	-39	20	44	117		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	22:52:53	2677	BP23MVEXP-ENV-DC-054			Camera	68	635308	6101009	635346	6100990	-38	20	43	117		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	22:53:14	2678	BP23MVEXP-ENV-DC-054			Camera	68	635311	6101008	635346	6100990	-35	18	40	117		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	22:53:45	2679	BP23MVEXP-ENV-DC-054			Camera	68	635313	6101007	635346	6100990	-33	17	37	117		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	22:54:29	2680	BP23MVEXP-ENV-DC-054			Camera	68	635316	6101005	635346	6100990	-30	15	33	116		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	22:54:47	2681	BP23MVEXP-ENV-DC-054			Camera	68	635318	6101004	635346	6100990	-28	14	31	116		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	22:55:12	2682	BP23MVEXP-ENV-DC-054			Camera	68	635320	6101003	635346	6100990	-26	13	29	116		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	22:55:27	2683	BP23MVEXP-ENV-DC-054			Camera	68	635321	6101002	635346	6100990	-25	12	28	117		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	22:55:49	2684	BP23MVEXP-ENV-DC-054			Camera	68	635324	6101002	635346	6100990	-22	12	25	119		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	22:57:07	2685	BP23MVEXP-ENV-DC-054			Camera	68	635331	6100998	635346	6100990	-16	8	18	119		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	22:58:24	2686	BP23MVEXP-ENV-DC-054			Camera	68	635338	6100995	635346	6100990	-8	5	10	122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	23:00:10	2687	BP23MVEXP-ENV-DC-054			Camera	68	635349	6100992	635346	6100990	3	2	3	-119		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	23:00:58	2688	BP23MVEXP-ENV-DC-054			Camera	68	635353	6100990	635346	6100990	7	0	7	-90		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	23:02:20	2689	BP23MVEXP-ENV-DC-054			Camera	68	635361	6100986	635346	6100990	15	-4	15	-74		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	23:03:11	2690	BP23MVEXP-ENV-DC-054			Camera	68	635366	6100984	635346	6100990	20	-6	21	-73		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	23:04:31	2691	BP23MVEXP-ENV-DC-054			Camera	68	635373	6100981	635346	6100990	27	-9	29	-71		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	23:06:16	2692	BP23MVEXP-ENV-DC-054			Camera	68	635383	6100976	635346	6100990	37	-14	39	-69		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	23:07:37	2693	BP23MVEXP-ENV-DC-054			Camera	68	635390	6100974	635346	6100990	44	-16	47	-70		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	23:08:11	2694	BP23MVEXP-ENV-DC-054			Camera	68	635391	6100973	635346	6100990	45	-17	48	-69		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	01:07:19	2695	BP23MVEXP-ENV-DC-055			Camera	75	633541	6097506	633583	6097485	-42	21	47	117		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	01:08:05	2696	BP23MVEXP-ENV-DC-055			Camera	75	633541	6097507	633583	6097485	-42	22	47	118		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	01:09:00	2697	BP23MVEXP-ENV-DC-055			Camera	75	633544	6097506	633583	6097485	-39	21	44	118		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	01:09:51	2698	BP23MVEXP-ENV-DC-055			Camera	75	633549	6097504	633583	6097485	-34	19	39	119		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	01:10:06	2699	BP23MVEXP-ENV-DC-055			Camera	75	633551	6097503	633583	6097485	-32	18	37	119		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	01:10:35	2700	BP23MVEXP-ENV-DC-055			Camera	75	633553	6097502	633583	6097485	-30	17	35	119		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	01:11:14	2701	BP23MVEXP-ENV-DC-055			Camera	75	633555	6097501	633583	6097485	-28	16	32	120		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	01:11:27	2702	BP23MVEXP-ENV-DC-055			Camera	75	633556	6097500	633583	6097485	-27	15	31	120		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	01:11:58	2703	BP23MVEXP-ENV-DC-055			Camera	75	633559	6097499	633583	6097485	-24	14	27	121		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	01:12:35	2704	BP23MVEXP-ENV-DC-055			Camera	75	633564	6097497	633583	6097485	-19	12	22	123		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	01:12:57	2705	BP23MVEXP-ENV-DC-055			Camera	75	633567	6097495	633583	6097485	-16	10	19	123		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	01:13:29	2706	BP23MVEXP-ENV-DC-055			Camera	75	633569	6097494	633583	6097485	-14	9	17	122		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	01:13:57	2707	BP23MVEXP-ENV-DC-055			Camera	75	633571	6097493	633583	6097485	-12	8	15	124		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	01:14:42	2708	BP23MVEXP-ENV-DC-055			Camera	75	633576	6097492	633583	6097485	-7	7	10	133		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	01:15:39	2709	BP23MVEXP-ENV-DC-055			Camera	75	633582	6097488	633583	6097485	-1	3	3	154		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	01:15:58	2710	BP23MVEXP-ENV-DC-055			Camera	75	633583	6097487	633583	6097485	0	2	2	176		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	01:16:23	2711	BP23MVEXP-ENV-DC-055			Camera	75	633585	6097487	633583	6097485	2	2	2	-133		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	01:16:49	2712	BP23MVEXP-ENV-DC-055			Camera	75	633587	6097486	633583	6097485	4	1	4	-99		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	01:17:15	2713	BP23MVEXP-ENV-DC-055			Camera	75	633589	6097485	633583	6097485	6	0	6	-88		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	01:18:22	2714	BP23MVEXP-ENV-DC-055			Camera	75	633596	6097482	633583	6097485	13	-3	14	-76		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	01:18:31	2715	BP23MVEXP-ENV-DC-055			Camera	75	633597	6097481	633583	6097485	14	-4	15	-75		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	01:19:02	2716	BP23MVEXP-ENV-DC-055			Camera	75	633599	6097480	633583	6097485	16	-5	17	-72		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	01:19:19	2717	BP23MVEXP-ENV-DC-055			Camera	75	633600	6097479	633583	6097485	17	-6	18	-72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	01:19:57	2718	BP23MVEXP-ENV-DC-055			Camera	75	633604	6097479	633583	6097485	21	-6	22	-74		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	01:20:20	2719	BP23MVEXP-ENV-DC-055			Camera	75	633607	6097478	633583	6097485	24	-7	25	-73		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	01:21:09	2720	BP23MVEXP-ENV-DC-055			Camera	75	633613	6097474	633583	6097485	30	-11	32	-70		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	01:21:36	2721	BP23MVEXP-ENV-DC-055			Camera	75	633615	6097472	633583	6097485	32	-13	35	-68		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	01:21:58	2722	BP23MVEXP-ENV-DC-055			Camera	75	633617	6097471	633583	6097485	34	-14	36	-68		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	01:23:25	2723	BP23MVEXP-ENV-DC-055			Camera	75	633622	6097470	633583	6097485	39	-15	42	-70		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	01:24:09	2724	BP23MVEXP-ENV-DC-055			Camera	75	633629	6097468	633583	6097485	46	-17	49	-69		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	01:41:06	2725	BP23MVEXP-ENV-DC-055			Camera	75	633605	6097529	633583	6097485	23	44	49	-153		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	01:41:36	2726	BP23MVEXP-ENV-DC-055			Camera	75	633606	6097529	633583	6097485	23	44	50	-152		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	01:42:18	2727	BP23MVEXP-ENV-DC-055			Camera	75	633606	6097529	633583	6097485	23	44	49	-152		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	01:42:55	2728	BP23MVEXP-ENV-DC-055			Camera	75	633605	6097527	633583	6097485	22	42	47	-152		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	01:43:10	2729	BP23MVEXP-ENV-DC-055			Camera	75	633605	6097526	633583	6097485	22	41	46	-152		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	01:43:55	2730	BP23MVEXP-ENV-DC-055			Camera	75	633602	6097523	633583	6097485	19	38	42	-154		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	01:44:43	2731	BP23MVEXP-ENV-DC-055			Camera	75	633600	6097518	633583	6097485	17	33	37	-153		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	01:46:09	2732	BP23MVEXP-ENV-DC-055			Camera	75	633596	6097511	633583	6097485	13	26	29	-154		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	01:47:17	2733	BP23MVEXP-ENV-DC-055			Camera	75	633593	6097504	633583	6097485	10	20	22	-154		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	01:48:08	2734	BP23MVEXP-ENV-DC-055			Camera	75	633591	6097499	633583	6097485	8	14	16	-152		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	01:49:21	2735	BP23MVEXP-ENV-DC-055			Camera	75	633587	6097493	633583	6097485	4	8	9	-152		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	01:50:12	2736	BP23MVEXP-ENV-DC-055			Camera	75	633586	6097487	633583	6097485	3	2	3	-130		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	01:50:31	2737	BP23MVEXP-ENV-DC-055			Camera	75	633584	6097486	633583	6097485	1	1	1	-117		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	01:51:13	2738	BP23MVEXP-ENV-DC-055			Camera	75	633581	6097483	633583	6097485	-2	-2	3	38		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Jul-2023	01:51:39	2739	BP23MVEXP-ENV-DC-055			Camera	75	633581	6097480	633583	6097485	-2	-5	5	24		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Jul-2023	01:52:04	2740	BP23MVEXP-ENV-DC-055			Camera	75	633580	6097477	633583	6097485	-3	-8	8	18		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Jul-2023	01:52:29	2741	BP23MVEXP-ENV-DC-055			Camera	75	633579	6097474	633583	6097485	-4	-11	11	18		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Jul-2023	01:52:59	2742	BP23MVEXP-ENV-DC-055			Camera	75	633578	6097471	633583	6097485	-5	-14	15	21		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Jul-2023	01:53:25	2743	BP23MVEXP-ENV-DC-055			Camera	75	633576	6097469	633583	6097485	-7	-16	17	23		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	01:53:48	2744	BP23MVEXP-ENV-DC-055			Camera	75	633575	6097467	633583	6097485	-8	-18	19	25		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Jul-2023	01:55:36	2745	BP23MVEXP-ENV-DC-055			Camera	75	633572	6097458	633583	6097485	-12	-27	29	23		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Jul-2023	01:57:31	2746	BP23MVEXP-ENV-DC-055			Camera	75	633566	6097450	633583	6097485	-17	-35	39	26		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Jul-2023	01:58:16	2747	BP23MVEXP-ENV-DC-055			Camera	75	633566	6097446	633583	6097485	-17	-39	43	24		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Jul-2023	01:58:41	2748	BP23MVEXP-ENV-DC-055			Camera	75	633565	6097445	633583	6097485	-18	-40	44	24		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Jul-2023	01:59:20	2749	BP23MVEXP-ENV-DC-055			Camera	75	633563	6097443	633583	6097485	-20	-42	46	25		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Jul-2023	03:04:42	2750	BP23MVEXP-ENV-DC-056			Camera	75	631697	6093853	631745	6093826	-48	27	55	119		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	03:05:58	2751	BP23MVEXP-ENV-DC-056			Camera	75	631698	6093851	631745	6093826	-47	25	53	119		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	03:06:34	2752	BP23MVEXP-ENV-DC-056			Camera	75	631701	6093851	631745	6093826	-44	25	51	119		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	03:07:20	2753	BP23MVEXP-ENV-DC-056			Camera	75	631705	6093849	631745	6093826	-40	23	46	120		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	03:07:51	2754	BP23MVEXP-ENV-DC-056			Camera	75	631708	6093848	631745	6093826	-37	22	43	121		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	03:08:32	2755	BP23MVEXP-ENV-DC-056			Camera	75	631711	6093846	631745	6093826	-34	20	39	121		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	03:08:50	2756	BP23MVEXP-ENV-DC-056			Camera	75	631713	6093845	631745	6093826	-32	19	38	121		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	03:10:06	2757	BP23MVEXP-ENV-DC-056			Camera	75	631720	6093841	631745	6093826	-25	15	29	121		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	03:10:48	2758	BP23MVEXP-ENV-DC-056			Camera	75	631723	6093840	631745	6093826	-22	14	26	122		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	03:11:31	2759	BP23MVEXP-ENV-DC-056			Camera	75	631728	6093838	631745	6093826	-17	12	21	124		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	03:12:10	2760	BP23MVEXP-ENV-DC-056			Camera	75	631732	6093836	631745	6093826	-13	10	17	126		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	03:12:59	2761	BP23MVEXP-ENV-DC-056			Camera	75	631736	6093833	631745	6093826	-9	7	12	128		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	03:13:45	2762	BP23MVEXP-ENV-DC-056			Camera	75	631740	6093832	631745	6093826	-5	6	8	136		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	03:14:35	2763	BP23MVEXP-ENV-DC-056			Camera	75	631744	6093829	631745	6093826	-1	3	3	169		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	03:15:35	2764	BP23MVEXP-ENV-DC-056			Camera	75	631750	6093826	631745	6093826	5	0	5	-94		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	03:16:43	2765	BP23MVEXP-ENV-DC-056			Camera	75	631756	6093824	631745	6093826	11	-2	11	-78		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	03:17:30	2766	BP23MVEXP-ENV-DC-056			Camera	75	631761	6093821	631745	6093826	16	-5	17	-73		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	03:18:08	2767	BP23MVEXP-ENV-DC-056			Camera	75	631765	6093819	631745	6093826	20	-7	21	-71		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	03:19:20	2768	BP23MVEXP-ENV-DC-056			Camera	75	631771	6093816	631745	6093826	26	-10	27	-68		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	03:20:14	2769	BP23MVEXP-ENV-DC-056			Camera	75	631776	6093813	631745	6093826	31	-13	33	-67		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	03:21:09	2770	BP23MVEXP-ENV-DC-056			Camera	75	631780	6093811	631745	6093826	35	-15	38	-67		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	03:21:56	2771	BP23MVEXP-ENV-DC-056			Camera	75	631784	6093809	631745	6093826	39	-17	43	-66		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	03:22:17	2772	BP23MVEXP-ENV-DC-056			Camera	75	631786	6093808	631745	6093826	41	-18	45	-66		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	03:35:30	2773	BP23MVEXP-ENV-DC-056			Camera	76	631766	6093869	631745	6093826	21	43	48	-154		(Raw Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	03:36:21	2774	BP23MVEXP-ENV-DC-056			Camera	76	631765	6093868	631745	6093826	20	42	47	-155		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	03:37:11	2775	BP23MVEXP-ENV-DC-056			Camera	75	631763	6093864	631745	6093826	18	38	42	-155		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	03:37:57	2776	BP23MVEXP-ENV-DC-056			Camera	75	631760	6093860	631745	6093826	15	34	37	-156		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	03:38:52	2777	BP23MVEXP-ENV-DC-056			Camera	75	631758	6093855	631745	6093826	13	29	31	-156		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	03:39:50	2778	BP23MVEXP-ENV-DC-056			Camera	75	631756	6093849	631745	6093826	11	23	26	-155		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	03:40:03	2779	BP23MVEXP-ENV-DC-056			Camera	75	631756	6093848	631745	6093826	11	22	24	-154		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	03:40:56	2780	BP23MVEXP-ENV-DC-056			Camera	75	631754	6093842	631745	6093826	9	16	18	-152		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Jul-2023	03:42:03	2781	BP23MVEXP-ENV-DC-056			Camera	75	631751	6093836	631745	6093826	6	10	11	-149		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	03:43:18	2782	BP23MVEXP-ENV-DC-056			Camera	75	631747	6093828	631745	6093826	2	2	3	-136		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	03:44:18	2783	BP23MVEXP-ENV-DC-056			Camera	75	631744	6093823	631745	6093826	-1	-3	3	11		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	03:44:44	2784	BP23MVEXP-ENV-DC-056			Camera	75	631743	6093820	631745	6093826	-2	-6	6	18		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	03:45:43	2785	BP23MVEXP-ENV-DC-056			Camera	75	631741	6093815	631745	6093826	-4	-11	12	22		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	03:46:24	2786	BP23MVEXP-ENV-DC-056			Camera	75	631739	6093812	631745	6093826	-6	-14	16	24		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	03:47:04	2787	BP23MVEXP-ENV-DC-056			Camera	75	631737	6093808	631745	6093826	-8	-18	20	23		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	03:48:06	2788	BP23MVEXP-ENV-DC-056			Camera	75	631734	6093801	631745	6093826	-11	-25	27	23		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	03:49:24	2789	BP23MVEXP-ENV-DC-056			Camera	75	631731	6093794	631745	6093826	-14	-32	35	23		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	03:49:52	2790	BP23MVEXP-ENV-DC-056			Camera	75	631731	6093791	631745	6093826	-15	-35	37	23		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	03:50:46	2791	BP23MVEXP-ENV-DC-056			Camera	75	631728	6093786	631745	6093826	-17	-40	43	23		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	03:51:13	2792	BP23MVEXP-ENV-DC-056			Camera	75	631728	6093784	631745	6093826	-18	-42	45	23		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	05:08:36	2793	BP23MVEXP-ENV-DC-058			Camera	77	629074	6091044	629040	6091085	34	-41	53	-40		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	05:10:38	2794	BP23MVEXP-ENV-DC-058			Camera	77	629072	6091048	629040	6091085	32	-37	49	-40		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	05:11:46	2795	BP23MVEXP-ENV-DC-058			Camera	77	629068	6091053	629040	6091085	28	-32	43	-41		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	05:13:04	2796	BP23MVEXP-ENV-DC-058			Camera	77	629062	6091058	629040	6091085	22	-27	35	-39		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	05:13:51	2797	BP23MVEXP-ENV-DC-058			Camera	77	629059	6091062	629040	6091085	19	-23	30	-39		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	05:14:51	2798	BP23MVEXP-ENV-DC-058			Camera	77	629055	6091066	629040	6091085	15	-19	24	-38		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	05:15:23	2799	BP23MVEXP-ENV-DC-058			Camera	77	629053	6091070	629040	6091085	13	-15	20	-39		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	05:15:49	2800	BP23MVEXP-ENV-DC-058			Camera	77	629051	6091071	629040	6091085	11	-14	18	-38		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	05:17:11	2801	BP23MVEXP-ENV-DC-058			Camera	78	629045	6091077	629040	6091085	5	-8	10	-35		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	05:18:30	2802	BP23MVEXP-ENV-DC-058			Camera	77	629040	6091083	629040	6091085	0	-2	2	-1		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	05:18:41	2803	BP23MVEXP-ENV-DC-058			Camera	78	629039	6091084	629040	6091085	-1	-1	1	51		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	05:19:47	2804	BP23MVEXP-ENV-DC-058			Camera	77	629034	6091088	629040	6091085	-6	3	7	120		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	05:20:26	2805	BP23MVEXP-ENV-DC-058			Camera	78	629031	6091091	629040	6091085	-9	6	11	125		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	05:20:37	2806	BP23MVEXP-ENV-DC-058			Camera	78	629030	6091092	629040	6091085	-10	7	12	127		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	05:22:10	2807	BP23MVEXP-ENV-DC-058			Camera	78	629024	6091100	629040	6091085	-16	15	21	133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	05:22:56	2808	BP23MVEXP-ENV-DC-058			Camera	78	629021	6091103	629040	6091085	-19	18	26	133		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	05:23:22	2809	BP23MVEXP-ENV-DC-058			Camera	78	629019	6091105	629040	6091085	-21	20	29	134		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	05:23:46	2810	BP23MVEXP-ENV-DC-058			Camera	78	629018	6091108	629040	6091085	-22	23	31	137		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	05:24:08	2811	BP23MVEXP-ENV-DC-058			Camera	78	629017	6091109	629040	6091085	-23	24	33	136		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	05:25:04	2812	BP23MVEXP-ENV-DC-058			Camera	78	629014	6091112	629040	6091085	-26	28	38	136		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	05:25:24	2813	BP23MVEXP-ENV-DC-058			Camera	78	629012	6091114	629040	6091085	-28	29	40	136		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	05:26:38	2814	BP23MVEXP-ENV-DC-058			Camera	78	629007	6091119	629040	6091085	-33	34	48	136		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	05:38:58	2815	BP23MVEXP-ENV-DC-058			Camera	77	629004	6091056	629040	6091085	-36	-29	46	51		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	05:39:21	2816	BP23MVEXP-ENV-DC-058			Camera	77	629004	6091055	629040	6091085	-36	-30	47	50		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	05:40:34	2817	BP23MVEXP-ENV-DC-058			Camera	78	629006	6091056	629040	6091085	-34	-30	45	49		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	05:41:08	2818	BP23MVEXP-ENV-DC-058			Camera	77	629008	6091058	629040	6091085	-32	-28	42	49		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	05:41:22	2819	BP23MVEXP-ENV-DC-058			Camera	78	629010	6091059	629040	6091085	-30	-26	40	49		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	05:41:49	2820	BP23MVEXP-ENV-DC-058			Camera	78	629012	6091061	629040	6091085	-28	-24	37	49		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	05:42:28	2821	BP23MVEXP-ENV-DC-058			Camera	77	629015	6091063	629040	6091085	-26	-22	33	50		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	05:42:59	2822	BP23MVEXP-ENV-DC-058			Camera	78	629016	6091066	629040	6091085	-24	-19	30	51		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	05:43:47	2823	BP23MVEXP-ENV-DC-058			Camera	78	629020	6091069	629040	6091085	-20	-16	25	52		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	05:44:37	2824	BP23MVEXP-ENV-DC-058			Camera	78	629025	6091072	629040	6091085	-15	-13	20	50		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	05:45:09	2825	BP23MVEXP-ENV-DC-058			Camera	78	629027	6091074	629040	6091085	-13	-11	17	49		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	05:45:46	2826	BP23MVEXP-ENV-DC-058			Camera	78	629030	6091077	629040	6091085	-10	-8	13	51		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	05:46:04	2827	BP23MVEXP-ENV-DC-058			Camera	78	629031	6091077	629040	6091085	-9	-8	11	48		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	05:46:35	2828	BP23MVEXP-ENV-DC-058			Camera	78	629034	6091080	629040	6091085	-6	-5	8	47		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	05:47:13	2829	BP23MVEXP-ENV-DC-058			Camera	78	629037	6091083	629040	6091085	-3	-2	4	48		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	05:47:35	2830	BP23MVEXP-ENV-DC-058			Camera	78	629038	6091085	629040	6091085	-2	0	2	77		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	05:47:49	2831	BP23MVEXP-ENV-DC-058			Camera	78	629039	6091086	629040	6091085	-1	1	1	143		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	05:48:24	2832	BP23MVEXP-ENV-DC-058			Camera	77	629042	6091088	629040	6091085	2	3	3	-143		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	05:48:37	2833	BP23MVEXP-ENV-DC-058			Camera	77	629043	6091088	629040	6091085	3	3	4	-133		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	05:50:22	2834	BP23MVEXP-ENV-DC-058			Camera	78	629051	6091096	629040	6091085	11	11	15	-135		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	06:48:10	2835	BP23MVEXP-ENV-DC-060			Camera	72	625917	6088454	625885	6088496	32	-42	53	-38		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	06:49:40	2836	BP23MVEXP-ENV-DC-060			Camera	72	625916	6088454	625885	6088496	31	-42	52	-37		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	06:50:25	2837	BP23MVEXP-ENV-DC-060			Camera	72	625913	6088457	625885	6088496	29	-39	48	-36		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	06:50:54	2838	BP23MVEXP-ENV-DC-060			Camera	72	625912	6088459	625885	6088496	27	-37	46	-36		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	06:51:29	2839	BP23MVEXP-ENV-DC-060			Camera	72	625909	6088462	625885	6088496	24	-34	42	-36		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	06:52:31	2840	BP23MVEXP-ENV-DC-060			Camera	72	625905	6088467	625885	6088496	20	-29	35	-35		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	06:53:17	2841	BP23MVEXP-ENV-DC-060			Camera	72	625902	6088471	625885	6088496	17	-26	31	-34		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	06:53:53	2842	BP23MVEXP-ENV-DC-060			Camera	72	625900	6088473	625885	6088496	15	-23	27	-33		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	06:54:13	2843	BP23MVEXP-ENV-DC-060			Camera	72	625898	6088475	625885	6088496	13	-21	25	-32		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	06:55:05	2844	BP23MVEXP-ENV-DC-060			Camera	72	625895	6088479	625885	6088496	10	-17	20	-30		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	06:55:24	2845	BP23MVEXP-ENV-DC-060			Camera	72	625894	6088480	625885	6088496	9	-16	18	-30		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	06:55:41	2846	BP23MVEXP-ENV-DC-060			Camera	72	625893	6088482	625885	6088496	8	-14	16	-29		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	06:56:04	2847	BP23MVEXP-ENV-DC-060			Camera	72	625891	6088484	625885	6088496	6	-12	14	-27		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	06:57:29	2848	BP23MVEXP-ENV-DC-060			Camera	72	625886	6088490	625885	6088496	1	-6	6	-7		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	06:58:14	2849	BP23MVEXP-ENV-DC-060			Camera	72	625883	6088494	625885	6088496	-2	-2	3	51		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	06:58:55	2850	BP23MVEXP-ENV-DC-060			Camera	72	625880	6088497	625885	6088496	-5	1	5	104		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	06:59:16	2851	BP23MVEXP-ENV-DC-060			Camera	72	625878	6088499	625885	6088496	-7	3	7	112		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	07:00:08	2852	BP23MVEXP-ENV-DC-060			Camera	72	625875	6088503	625885	6088496	-10	7	12	124		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	07:00:48	2853	BP23MVEXP-ENV-DC-060			Camera	72	625873	6088506	625885	6088496	-12	10	16	129		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	07:01:05	2854	BP23MVEXP-ENV-DC-060			Camera	72	625872	6088507	625885	6088496	-13	11	17	130		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	07:02:09	2855	BP23MVEXP-ENV-DC-060			Camera	72	625867	6088513	625885	6088496	-18	17	24	133		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	07:02:22	2856	BP23MVEXP-ENV-DC-060			Camera	72	625866	6088514	625885	6088496	-19	18	26	133		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	07:02:32	2857	BP23MVEXP-ENV-DC-060			Camera	72	625866	6088514	625885	6088496	-19	18	27	134		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	07:03:55	2858	BP23MVEXP-ENV-DC-060			Camera	72	625860	6088520	625885	6088496	-25	24	35	135		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	07:04:59	2859	BP23MVEXP-ENV-DC-060			Camera	72	625856	6088526	625885	6088496	-29	30	41	135		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	07:05:53	2860	BP23MVEXP-ENV-DC-060			Camera	72	625853	6088530	625885	6088496	-33	34	47	136		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	07:06:04	2861	BP23MVEXP-ENV-DC-060			Camera	72	625852	6088530	625885	6088496	-33	34	47	136		(Raw Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	07:06:23	2862	BP23MVEXP-ENV-DC-060			Camera	72	625852	6088531	625885	6088496	-33	35	48	136		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	07:06:38	2863	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088531	625885	6088496	-34	36	49	136		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	07:06:47	2864	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088532	625885	6088496	-34	36	50	136		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	07:06:55	2865	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088532	625885	6088496	-34	36	50	137		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	07:07:03	2866	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088532	625885	6088496	-34	36	50	137		(Raw Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	07:13:03	2867	BP23MVEXP-ENV-DC-060			Camera	72	625861	6088515	625885	6088496	-24	19	30	129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	07:14:01	2868	BP23MVEXP-ENV-DC-060			Camera	72	625860	6088509	625885	6088496	-25	13	29	117		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	07:14:33	2869	BP23MVEXP-ENV-DC-060			Camera	72	625859	6088506	625885	6088496	-26	10	28	110		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	07:16:16	2870	BP23MVEXP-ENV-DC-060			Camera	72	625856	6088495	625885	6088496	-29	-1	29	89		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	07:24:58	2871	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088464	625885	6088496	-34	-32	47	47		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	07:25:34	2872	BP23MVEXP-ENV-DC-060			Camera	72	625853	6088466	625885	6088496	-32	-30	43	47		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	07:26:34	2873	BP23MVEXP-ENV-DC-060			Camera	72	625858	6088471	625885	6088496	-27	-25	37	47		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	07:26:53	2874	BP23MVEXP-ENV-DC-060			Camera	72	625860	6088472	625885	6088496	-26	-24	35	47		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	07:27:33	2875	BP23MVEXP-ENV-DC-060			Camera	72	625863	6088475	625885	6088496	-22	-21	30	47		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	07:28:11	2876	BP23MVEXP-ENV-DC-060			Camera	72	625865	6088478	625885	6088496	-20	-18	27	48		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	07:28:49	2877	BP23MVEXP-ENV-DC-060			Camera	72	625868	6088481	625885	6088496	-17	-15	23	48		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	07:29:26	2878	BP23MVEXP-ENV-DC-060			Camera	72	625871	6088483	625885	6088496	-14	-13	19	47		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Jul-2023	07:29:53	2879	BP23MVEXP-ENV-DC-060			Camera	72	625873	6088485	625885	6088496	-12	-11	16	48		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Jul-2023	07:30:45	2880	BP23MVEXP-ENV-DC-060			Camera	72	625877	6088489	625885	6088496	-8	-7	11	47		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Jul-2023	07:31:59	2881	BP23MVEXP-ENV-DC-060			Camera	72	625882	6088493	625885	6088496	-3	-3	4	44		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Jul-2023	07:32:40	2882	BP23MVEXP-ENV-DC-060			Camera	72	625886	6088496	625885	6088496	1	0	1	-95		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Jul-2023	07:33:45	2883	BP23MVEXP-ENV-DC-060			Camera	72	625891	6088501	625885	6088496	6	5	7	-131		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	07:33:55	2884	BP23MVEXP-ENV-DC-060			Camera	72	625891	6088501	625885	6088496	6	5	8	-131		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Jul-2023	07:35:39	2885	BP23MVEXP-ENV-DC-060			Camera	72	625899	6088508	625885	6088496	15	13	19	-131		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Jul-2023	07:36:23	2886	BP23MVEXP-ENV-DC-060			Camera	72	625903	6088512	625885	6088496	18	16	24	-131		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Jul-2023	07:36:49	2887	BP23MVEXP-ENV-DC-060			Camera	72	625905	6088513	625885	6088496	20	17	26	-130		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Jul-2023	07:37:23	2888	BP23MVEXP-ENV-DC-060			Camera	72	625907	6088516	625885	6088496	22	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Jul-2023	07:38:15	2889	BP23MVEXP-ENV-DC-060			Camera	72	625911	6088519	625885	6088496	26	23	35	-131		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Jul-2023	07:39:08	2890	BP23MVEXP-ENV-DC-060			Camera	72	625915	6088522	625885	6088496	30	27	40	-131		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Jul-2023	07:39:43	2891	BP23MVEXP-ENV-DC-060			Camera	72	625918	6088525	625885	6088496	33	29	44	-131		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Jul-2023	07:40:20	2892	BP23MVEXP-ENV-DC-060			Camera	72	625921	6088527	625885	6088496	36	31	47	-131		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Jul-2023	07:40:47	2893	BP23MVEXP-ENV-DC-060			Camera	72	625921	6088529	625885	6088496	36	33	49	-132		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Jul-2023	18:07:07	2894	BP23MVEXP-ENV-DC-025			Camera	74	659493	6208084	659446	6208080	47	4	47	-95		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	18:08:08	2895	BP23MVEXP-ENV-DC-025			Camera	74	659494	6208084	659446	6208080	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	18:10:59	2896	BP23MVEXP-ENV-DC-025			Camera	74	659494	6208084	659446	6208080	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	18:13:22	2897	BP23MVEXP-ENV-DC-025			Camera	74	659494	6208081	659446	6208080	48	1	48	-91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	18:14:30	2898	BP23MVEXP-ENV-DC-025			Camera	74	659493	6208081	659446	6208080	47	1	47	-92		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	18:15:30	2899	BP23MVEXP-ENV-DC-025			Camera	74	659491	6208081	659446	6208080	45	1	45	-91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	18:15:53	2900	BP23MVEXP-ENV-DC-025			Camera	74	659489	6208081	659446	6208080	43	1	43	-91		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	18:16:44	2901	BP23MVEXP-ENV-DC-025			Camera	74	659484	6208080	659446	6208080	38	0	38	-90		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	18:17:03	2902	BP23MVEXP-ENV-DC-025			Camera	74	659482	6208080	659446	6208080	36	0	36	-90		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	18:17:34	2903	BP23MVEXP-ENV-DC-025			Camera	74	659479	6208080	659446	6208080	33	0	33	-89		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	18:18:04	2904	BP23MVEXP-ENV-DC-025			Camera	74	659475	6208079	659446	6208080	30	-1	29	-89		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	18:19:06	2905	BP23MVEXP-ENV-DC-025			Camera	74	659469	6208079	659446	6208080	23	-1	23	-88		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	18:19:13	2906	BP23MVEXP-ENV-DC-025			Camera	74	659468	6208079	659446	6208080	22	-1	22	-88		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	18:19:37	2907	BP23MVEXP-ENV-DC-025			Camera	74	659466	6208079	659446	6208080	20	-1	20	-87		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	18:20:09	2908	BP23MVEXP-ENV-DC-025			Camera	74	659463	6208079	659446	6208080	17	-1	17	-86		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	18:20:24	2909	BP23MVEXP-ENV-DC-025			Camera	74	659461	6208079	659446	6208080	15	-1	15	-85		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	18:21:14	2910	BP23MVEXP-ENV-DC-025			Camera	74	659456	6208078	659446	6208080	10	-2	10	-80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	18:21:40	2911	BP23MVEXP-ENV-DC-025			Camera	74	659453	6208078	659446	6208080	7	-2	7	-76		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	18:22:24	2912	BP23MVEXP-ENV-DC-025			Camera	74	659449	6208078	659446	6208080	3	-2	3	-53		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	18:23:44	2913	BP23MVEXP-ENV-DC-025			Camera	74	659441	6208076	659446	6208080	-5	-4	6	57		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	18:24:03	2914	BP23MVEXP-ENV-DC-025			Camera	74	659439	6208076	659446	6208080	-7	-4	8	62		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	18:24:35	2915	BP23MVEXP-ENV-DC-025			Camera	74	659435	6208076	659446	6208080	-11	-4	11	68		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	18:24:47	2916	BP23MVEXP-ENV-DC-025			Camera	74	659434	6208076	659446	6208080	-12	-4	13	70		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	18:25:13	2917	BP23MVEXP-ENV-DC-025			Camera	74	659431	6208076	659446	6208080	-15	-4	15	74		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	18:25:59	2918	BP23MVEXP-ENV-DC-025			Camera	74	659427	6208076	659446	6208080	-19	-5	20	77		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	18:26:16	2919	BP23MVEXP-ENV-DC-025			Camera	74	659425	6208075	659446	6208080	-22	-5	22	78		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	18:26:44	2920	BP23MVEXP-ENV-DC-025			Camera	74	659421	6208076	659446	6208080	-25	-4	25	81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	18:27:17	2921	BP23MVEXP-ENV-DC-025			Camera	74	659417	6208076	659446	6208080	-29	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	18:27:50	2922	BP23MVEXP-ENV-DC-025			Camera	74	659414	6208075	659446	6208080	-32	-5	32	82		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	18:29:04	2923	BP23MVEXP-ENV-DC-025			Camera	74	659406	6208075	659446	6208080	-40	-5	40	83		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	18:29:32	2924	BP23MVEXP-ENV-DC-025			Camera	74	659403	6208076	659446	6208080	-43	-4	43	84		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	18:30:41	2925	BP23MVEXP-ENV-DC-025			Camera	74	659396	6208074	659446	6208080	-50	-6	50	84		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	18:40:37	2926	BP23MVEXP-ENV-DC-025			Camera	74	659427	6208113	659446	6208080	-19	33	38	150		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	18:47:27	2927	BP23MVEXP-ENV-DC-025			Camera	74	659442	6208123	659446	6208080	-4	43	43	175		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	18:47:42	2928	BP23MVEXP-ENV-DC-025			Camera	74	659443	6208122	659446	6208080	-3	42	42	175		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	18:48:12	2929	BP23MVEXP-ENV-DC-025			Camera	74	659443	6208118	659446	6208080	-3	39	39	176		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	18:48:51	2930	BP23MVEXP-ENV-DC-025			Camera	74	659444	6208114	659446	6208080	-2	34	34	176		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	18:49:41	2931	BP23MVEXP-ENV-DC-025			Camera	74	659444	6208109	659446	6208080	-2	29	29	176		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	18:50:19	2932	BP23MVEXP-ENV-DC-025			Camera	74	659444	6208105	659446	6208080	-2	25	25	176		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	18:51:05	2933	BP23MVEXP-ENV-DC-025			Camera	74	659445	6208100	659446	6208080	-1	20	20	176		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	18:51:38	2934	BP23MVEXP-ENV-DC-025			Camera	74	659445	6208097	659446	6208080	-1	17	17	177		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	18:52:23	2935	BP23MVEXP-ENV-DC-025			Camera	74	659445	6208093	659446	6208080	-1	13	13	178		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	18:53:13	2936	BP23MVEXP-ENV-DC-025			Camera	74	659447	6208088	659446	6208080	1	8	8	-176		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	18:53:47	2937	BP23MVEXP-ENV-DC-025				74	659447	6208084	659446	6208080	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A) Fix no photo
11-Jul-2023	18:54:49	2938	BP23MVEXP-ENV-DC-025				74	659448	6208078	659446	6208080	2	-2	3	-36		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A) Fix no photo
11-Jul-2023	18:55:19	2939	BP23MVEXP-ENV-DC-025				74	659448	6208074	659446	6208080	2	-6	6	-17		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A) Fix no photo
11-Jul-2023	18:55:47	2940	BP23MVEXP-ENV-DC-025				74	659448	6208072	659446	6208080	2	-8	9	-14		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A) Fix no photo
11-Jul-2023	18:56:14	2941	BP23MVEXP-ENV-DC-025			Camera	74	659449	6208069	659446	6208080	3	-11	11	-13		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Jul-2023	18:56:47	2942	BP23MVEXP-ENV-DC-025			Camera	74	659449	6208066	659446	6208080	3	-14	14	-10		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	18:58:51	2943	BP23MVEXP-ENV-DC-025			Camera	74	659450	6208054	659446	6208080	4	-26	27	-9		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Jul-2023	19:00:26	2944	BP23MVEXP-ENV-DC-025				74	659452	6208043	659446	6208080	6	-37	37	-9		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A) Fix no photo
11-Jul-2023	20:35:09	2945	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212302	659215	6212354	3	-52	52	-3		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	20:37:52	2946	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212306	659215	6212354	3	-48	48	-3		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	20:38:45	2947	BP23MVEXP-ENV-DC-024			Camera	75	659217	6212310	659215	6212354	2	-44	44	-3		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	20:39:02	2948	BP23MVEXP-ENV-DC-024			Camera	74	659217	6212312	659215	6212354	2	-42	42	-3		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	20:39:12	2949	BP23MVEXP-ENV-DC-024			Camera	74	659217	6212313	659215	6212354	2	-41	41	-2		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	20:39:41	2950	BP23MVEXP-ENV-DC-024			Camera	74	659216	6212316	659215	6212354	1	-38	38	-2		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	20:40:11	2951	BP23MVEXP-ENV-DC-024			Camera	74	659216	6212320	659215	6212354	1	-34	34	-2		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	20:41:37	2952	BP23MVEXP-ENV-DC-024			Camera	74	659215	6212329	659215	6212354	0	-25	25	0		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	20:42:36	2953	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212335	659215	6212354	-1	-19	19	2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	20:42:40	2954	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212335	659215	6212354	-1	-19	19	2		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	20:42:57	2955	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212337	659215	6212354	-1	-17	17	3		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	20:44:24	2956	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212346	659215	6212354	-1	-8	8	10		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	20:46:10	2957	BP23MVEXP-ENV-DC-024			Camera	74	659213	6212356	659215	6212354	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	20:46:38	2958	BP23MVEXP-ENV-DC-024			Camera	74	659212	6212359	659215	6212354	-3	5	6	154		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	20:47:41	2959	BP23MVEXP-ENV-DC-024			Camera	74	659211	6212366	659215	6212354	-4	12	13	162		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	20:47:59	2960	BP23MVEXP-ENV-DC-024			Camera	74	659211	6212368	659215	6212354	-4	14	15	163		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	20:49:03	2961	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212375	659215	6212354	-5	21	21	167		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	20:49:25	2962	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212377	659215	6212354	-5	23	23	168		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	20:49:50	2963	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212379	659215	6212354	-5	25	25	169		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	20:49:56	2964	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212380	659215	6212354	-5	26	26	169		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	20:51:22	2965	BP23MVEXP-ENV-DC-024			Camera	74	659209	6212388	659215	6212354	-6	34	35	170		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	20:51:33	2966	BP23MVEXP-ENV-DC-024			Camera	74	659209	6212390	659215	6212354	-6	36	36	170		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	20:51:42	2967	BP23MVEXP-ENV-DC-024			Camera	74	659208	6212391	659215	6212354	-7	37	37	170		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	20:52:56	2968	BP23MVEXP-ENV-DC-024			Camera	74	659208	6212398	659215	6212354	-7	44	45	171		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	20:53:43	2969	BP23MVEXP-ENV-DC-024			Camera	74	659207	6212401	659215	6212354	-8	47	48	171		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	21:01:57	2970	BP23MVEXP-ENV-DC-024			Camera	75	659182	6212369	659215	6212354	-33	15	36	115		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	21:06:19	2971	BP23MVEXP-ENV-DC-024			Camera	75	659168	6212348	659215	6212354	-47	-6	48	83		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	21:07:31	2972	BP23MVEXP-ENV-DC-024			Camera	75	659169	6212347	659215	6212354	-46	-7	46	81		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	21:07:38	2973	BP23MVEXP-ENV-DC-024			Camera	75	659170	6212347	659215	6212354	-45	-7	46	81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	21:08:00	2974	BP23MVEXP-ENV-DC-024			Camera	77	659171	6212347	659215	6212354	44	7	45	81		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:08:11	2975	BP23MVEXP-ENV-DC-024			Camera	77	659172	6212347	659215	6212354	43	7	44	81		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:08:19	2976	BP23MVEXP-ENV-DC-024			Camera	77	659172	6212347	659215	6212354	43	7	43	81		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:08:45	2977	BP23MVEXP-ENV-DC-024			Camera	77	659175	6212348	659215	6212354	40	6	40	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Jul-2023	21:08:56	2978	BP23MVEXP-ENV-DC-024			Camera	77	659176	6212348	659215	6212354	39	6	40	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:09:40	2979	BP23MVEXP-ENV-DC-024			Camera	77	659180	6212349	659215	6212354	35	5	35	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:10:11	2980	BP23MVEXP-ENV-DC-024			Camera	77	659183	6212350	659215	6212354	32	4	32	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:10:35	2981	BP23MVEXP-ENV-DC-024			Camera	77	659186	6212350	659215	6212354	29	4	29	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:10:52	2982	BP23MVEXP-ENV-DC-024			Camera	77	659188	6212350	659215	6212354	27	4	28	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:11:15	2983	BP23MVEXP-ENV-DC-024			Camera	77	659190	6212350	659215	6212354	25	4	25	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:12:01	2984	BP23MVEXP-ENV-DC-024			Camera	77	659195	6212351	659215	6212354	20	3	20	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:12:33	2985	BP23MVEXP-ENV-DC-024			Camera	77	659199	6212352	659215	6212354	16	2	17	84		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:13:00	2986	BP23MVEXP-ENV-DC-024			Camera	77	659201	6212353	659215	6212354	14	1	14	85		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:13:24	2987	BP23MVEXP-ENV-DC-024				74	659203	6212353	659215	6212354	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A) No Photo
11-Jul-2023	21:14:11	2988	BP23MVEXP-ENV-DC-024				74	659208	6212354	659215	6212354	-7	0	7	87		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)No PhotoNo Photo
11-Jul-2023	21:14:20	2989	BP23MVEXP-ENV-DC-024				74	659209	6212354	659215	6212354	-6	0	6	87		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A) No Photo
11-Jul-2023	21:14:29	2990	BP23MVEXP-ENV-DC-024				74	659210	6212354	659215	6212354	-5	0	5	86		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A) No Photo
11-Jul-2023	21:14:35	2991	BP23MVEXP-ENV-DC-024				74	659211	6212354	659215	6212354	-4	0	4	85		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A) No Photo
11-Jul-2023	21:14:42	2992	BP23MVEXP-ENV-DC-024				74	659212	6212354	659215	6212354	-3	0	3	85		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A) No Photo
11-Jul-2023	21:14:51	2993	BP23MVEXP-ENV-DC-024				74	659212	6212354	659215	6212354	-3	0	3	85		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A) No Photo
11-Jul-2023	21:14:58	2994	BP23MVEXP-ENV-DC-024				74	659213	6212354	659215	6212354	-2	0	2	85		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A) No Photo
11-Jul-2023	21:15:06	2995	BP23MVEXP-ENV-DC-024				74	659214	6212354	659215	6212354	-1	0	1	86		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A) No Photo
11-Jul-2023	21:15:13	2996	BP23MVEXP-ENV-DC-024				74	659215	6212354	659215	6212354	0	0	0	98		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A) No Photo
11-Jul-2023	21:15:21	2997	BP23MVEXP-ENV-DC-024				74	659216	6212354	659215	6212354	1	0	1	-106		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A) No Photo
11-Jul-2023	21:15:28	2998	BP23MVEXP-ENV-DC-024				74	659216	6212354	659215	6212354	1	0	1	-102		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A) No Photo
11-Jul-2023	21:15:36	2999	BP23MVEXP-ENV-DC-024				74	659217	6212354	659215	6212354	2	0	2	-101		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A) No Photo
11-Jul-2023	21:15:43	3000	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212355	659215	6212354	3	1	3	-101		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Jul-2023	21:15:49	3001	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212355	659215	6212354	3	1	3	-100		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Jul-2023	21:16:03	3002	BP23MVEXP-ENV-DC-024			Camera	74	659220	6212355	659215	6212354	5	1	5	-100		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Jul-2023	21:16:16	3003	BP23MVEXP-ENV-DC-024			Camera	74	659221	6212355	659215	6212354	6	1	6	-100		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Jul-2023	21:16:25	3004	BP23MVEXP-ENV-DC-024			Camera	74	659222	6212355	659215	6212354	7	1	7	-100		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
11-Jul-2023	21:16:32	3005	BP23MVEXP-ENV-DC-024			Camera	74	659222	6212355	659215	6212354	7	1	8	-100		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
11-Jul-2023	21:16:42	3006	BP23MVEXP-ENV-DC-024			Camera	74	659223	6212355	659215	6212354	8	1	9	-100		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
11-Jul-2023	21:16:48	3007	BP23MVEXP-ENV-DC-024			Camera	74	659224	6212356	659215	6212354	9	2	9	-99		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
11-Jul-2023	21:17:05	3008	BP23MVEXP-ENV-DC-024			Camera	74	659226	6212356	659215	6212354	11	2	11	-99		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
11-Jul-2023	21:17:12	3009	BP23MVEXP-ENV-DC-024			Camera	74	659226	6212356	659215	6212354	11	2	12	-98		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
11-Jul-2023	21:17:40	3010	BP23MVEXP-ENV-DC-024			Camera	74	659229	6212356	659215	6212354	14	2	14	-97		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
11-Jul-2023	21:17:47	3011	BP23MVEXP-ENV-DC-024			Camera	74	659230	6212356	659215	6212354	15	2	15	-97		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
11-Jul-2023	21:17:59	3012	BP23MVEXP-ENV-DC-024			Camera	74	659231	6212356	659215	6212354	16	2	16	-98		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
11-Jul-2023	21:18:06	3013	BP23MVEXP-ENV-DC-024			Camera	74	659232	6212356	659215	6212354	17	2	17	-98		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
11-Jul-2023	21:18:16	3014	BP23MVEXP-ENV-DC-024			Camera	74	659233	6212356	659215	6212354	18	2	18	-97		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
11-Jul-2023	21:18:30	3015	BP23MVEXP-ENV-DC-024			Camera	74	659235	6212357	659215	6212354	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
11-Jul-2023	21:18:41	3016	BP23MVEXP-ENV-DC-024			Camera	74	659236	6212357	659215	6212354	21	3	21	-98		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
11-Jul-2023	21:18:55	3017	BP23MVEXP-ENV-DC-024			Camera	74	659237	6212357	659215	6212354	22	3	22	-98		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
11-Jul-2023	21:19:59	3018	BP23MVEXP-ENV-DC-024			Camera	74	659244	6212358	659215	6212354	29	4	29	-98		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
11-Jul-2023	21:23:04	3019	BP23MVEXP-ENV-DC-024			Camera	74	659263	6212361	659215	6212354	48	7	48	-98		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
11-Jul-2023		3020	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3021	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3022	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3023	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3024	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3025	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3026	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3027	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3028	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3029	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3030	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3031	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3032	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
12-Jul-2023	19:35:29	3020	BP23MVEXP-ENV-DC-071			Camera	68	617188	6281100	617141	6281096	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Jul-2023	19:37:34	3021	BP23MVEXP-ENV-DC-071			Camera	68	617184	6281100	617141	6281096	43	4	43	-96		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Jul-2023	19:38:03	3022	BP23MVEXP-ENV-DC-071			Camera	68	617181	6281100	617141	6281096	40	4	40	-95		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Jul-2023	19:38:42	3023	BP23MVEXP-ENV-DC-071			Camera	68	617177	6281099	617141	6281096	36	3	36	-94		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Jul-2023	19:39:33	3024	BP23MVEXP-ENV-DC-071			Camera	68	617172	6281098	617141	6281096	31	2	31	-93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Jul-2023	19:41:09	3025	BP23MVEXP-ENV-DC-071			Camera	68	617162	6281096	617141	6281096	21	0	21	-91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Jul-2023	19:42:23	3026	BP23MVEXP-ENV-DC-071			Camera	68	617155	6281095	617141	6281096	14	-1	14	-88		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Jul-2023	19:43:07	3027	BP23MVEXP-ENV-DC-071			Camera	68	617151	6281095	617141	6281096	10	-1	10	-81		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Jul-2023	19:43:35	3028	BP23MVEXP-ENV-DC-071			Camera	68	617148	6281094	617141	6281096	7	-2	7	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Jul-2023	19:43:41	3029	BP23MVEXP-ENV-DC-071			Camera	68	617147	6281094	617141	6281096	6	-2	7	-73		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Jul-2023	19:44:15	3030	BP23MVEXP-ENV-DC-071			Camera	68	617144	6281093	617141	6281096	3	-3	4	-47		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Jul-2023	19:44:55	3031	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281093	617141	6281096	-2	-3	3	30		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Jul-2023	19:45:17	3032	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281093	617141	6281096	-3	-3	5	45		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Jul-2023	19:45:54	3033	BP23MVEXP-ENV-DC-071			Camera	68	617133	6281092	617141	6281096	-8	-4	9	65		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Jul-2023	19:46:32	3034	BP23MVEXP-ENV-DC-071			Camera	68	617129	6281092	617141	6281096	-12	-4	13	71		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Jul-2023	19:47:00	3035	BP23MVEXP-ENV-DC-071			Camera	68	617126	6281091	617141	6281096	-15	-5	15	72		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Jul-2023	19:48:07	3036	BP23MVEXP-ENV-DC-071			Camera	68	617119	6281090	617141	6281096	-22	-6	23	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Jul-2023	19:48:40	3037	BP23MVEXP-ENV-DC-071			Camera	68	617116	6281089	617141	6281096	-25	-7	26	75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Jul-2023	19:49:27	3038	BP23MVEXP-ENV-DC-071			Camera	68	617112	6281088	617141	6281096	-29	-8	30	75		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Jul-2023	19:50:00	3039	BP23MVEXP-ENV-DC-071			Camera	68	617108	6281088	617141	6281096	-33	-8	34	76		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Jul-2023	19:50:33	3040	BP23MVEXP-ENV-DC-071			Camera	68	617104	6281087	617141	6281096	-37	-9	38	77		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Jul-2023	19:51:47	3041	BP23MVEXP-ENV-DC-071			Camera	68	617096	6281086	617141	6281096	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Jul-2023	19:52:18	3042	BP23MVEXP-ENV-DC-071			Camera	68	617093	6281086	617141	6281096	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Jul-2023	19:56:26	3043	BP23MVEXP-ENV-DC-071			Camera	68	617101	6281098	617141	6281096	-40	2	40	93		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Jul-2023	19:56:34	3044	BP23MVEXP-ENV-DC-071			Camera	68	617102	6281099	617141	6281096	-39	3	39	94		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Jul-2023	20:03:31	3045	BP23MVEXP-ENV-DC-071			Camera	68	617125	6281134	617141	6281096	-16	38	41	158		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Jul-2023	20:07:50	3046	BP23MVEXP-ENV-DC-071			Camera	68	617134	6281145	617141	6281096	-7	49	50	172		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Jul-2023	20:08:03	3047	BP23MVEXP-ENV-DC-071			Camera	68	617134	6281145	617141	6281096	-7	49	49	172		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Jul-2023	20:08:17	3048	BP23MVEXP-ENV-DC-071			Camera	68	617134	6281144	617141	6281096	-7	48	48	172		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Jul-2023	20:08:32	3049	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281143	617141	6281096	-6	47	47	172		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Jul-2023	20:08:59	3050	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281141	617141	6281096	-6	45	45	172		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Jul-2023	20:09:07	3051	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281140	617141	6281096	-6	44	44	172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Jul-2023	20:09:30	3052	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281137	617141	6281096	-6	41	42	172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Jul-2023	20:09:58	3053	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281135	617141	6281096	-6	39	39	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Jul-2023	20:10:11	3054	BP23MVEXP-ENV-DC-071			Camera	68	617136	6281133	617141	6281096	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Jul-2023	20:10:49	3055	BP23MVEXP-ENV-DC-071			Camera	68	617137	6281129	617141	6281096	-4	33	33	172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Jul-2023	20:11:01	3056	BP23MVEXP-ENV-DC-071			Camera	68	617137	6281128	617141	6281096	-4	32	32	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Jul-2023	20:11:09	3057	BP23MVEXP-ENV-DC-071			Camera	68	617137	6281127	617141	6281096	-4	31	31	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Jul-2023	20:11:48	3058	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281123	617141	6281096	-3	27	27	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Jul-2023	20:11:59	3059	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281122	617141	6281096	-3	26	26	173		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Jul-2023	20:12:12	3060	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281121	617141	6281096	-3	25	25	174		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Jul-2023	20:12:42	3061	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281117	617141	6281096	-2	21	21	174		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Jul-2023	20:12:49	3062	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281116	617141	6281096	-2	21	21	174		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Jul-2023	20:13:01	3063	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281115	617141	6281096	-2	19	19	173		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Jul-2023	20:13:08	3064	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281114	617141	6281096	-2	18	18	173		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Jul-2023	20:13:20	3065	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281113	617141	6281096	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Jul-2023	20:13:39	3066	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281111	617141	6281096	-2	15	15	173		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Jul-2023	20:13:46	3067	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281110	617141	6281096	-2	15	15	173		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Jul-2023	20:14:25	3068	BP23MVEXP-ENV-DC-071			Camera	68	617140	6281107	617141	6281096	-1	11	11	175		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Jul-2023	20:14:45	3069	BP23MVEXP-ENV-DC-071			Camera	68	617141	6281105	617141	6281096	0	9	9	179		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Jul-2023	20:14:53	3070	BP23MVEXP-ENV-DC-071			Camera	68	617141	6281104	617141	6281096	0	8	8	-179		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
12-Jul-2023	20:15:13	3071	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281102	617141	6281096	1	6	6	-174		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
12-Jul-2023	20:15:22	3072	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281101	617141	6281096	1	5	5	-171		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
12-Jul-2023	20:15:35	3073	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281100	617141	6281096	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
12-Jul-2023	20:15:47	3074	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281099	617141	6281096	1	3	3	-154		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
12-Jul-2023	20:16:02	3075	BP23MVEXP-ENV-DC-071			Camera	68	617143	6281097	617141	6281096	2	1	2	-125		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
12-Jul-2023	20:16:55	3076	BP23MVEXP-ENV-DC-071			Camera	68	617144	6281092	617141	6281096	3	-4	5	-33		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
12-Jul-2023	20:18:39	3077	BP23MVEXP-ENV-DC-071			Camera	68	617145	6281081	617141	6281096	4	-15	15	-16		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
12-Jul-2023	20:20:27	3078	BP23MVEXP-ENV-DC-071			Camera	68	617147	6281070	617141	6281096	6	-26	26	-14		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
12-Jul-2023	23:30:44	3079	BP23MVEXP-ENV-DC-072			Camera	75	617676	6277171	617683	6277122	-7	49	50	172		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Jul-2023	23:31:11	3080	BP23MVEXP-ENV-DC-072			Camera	75	617676	6277172	617683	6277122	-7	50	50	172		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Jul-2023	23:33:10	3081	BP23MVEXP-ENV-DC-072			Camera	75	617677	6277168	617683	6277122	-6	46	46	173		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Jul-2023	23:33:25	3082	BP23MVEXP-ENV-DC-072			Camera	75	617678	6277166	617683	6277122	-5	44	45	173		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Jul-2023	23:34:04	3083	BP23MVEXP-ENV-DC-072			Camera	75	617678	6277162	617683	6277122	-5	40	40	173		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Jul-2023	23:34:51	3084	BP23MVEXP-ENV-DC-072			Camera	75	617678	6277156	617683	6277122	-5	34	35	172		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Jul-2023	23:35:39	3085	BP23MVEXP-ENV-DC-072			Camera	75	617679	6277152	617683	6277122	-4	30	30	173		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Jul-2023	23:36:02	3086	BP23MVEXP-ENV-DC-072			Camera	75	617680	6277150	617683	6277122	-3	28	28	174		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Jul-2023	23:36:37	3087	BP23MVEXP-ENV-DC-072			Camera	75	617681	6277146	617683	6277122	-2	24	24	175		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Jul-2023	23:37:06	3088	BP23MVEXP-ENV-DC-072			Camera	75	617682	6277144	617683	6277122	-1	22	22	176		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Jul-2023	23:37:41	3089	BP23MVEXP-ENV-DC-072			Camera	75	617682	6277141	617683	6277122	-1	19	19	178		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Jul-2023	23:38:07	3090	BP23MVEXP-ENV-DC-072			Camera	75	617683	6277138	617683	6277122	0	16	16	180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Jul-2023	23:39:26	3091	BP23MVEXP-ENV-DC-072			Camera	75	617683	6277129	617683	6277122	0	7	7	180		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Jul-2023	23:40:21	3092	BP23MVEXP-ENV-DC-072			Camera	75	617684	6277123	617683	6277122	1	1	2	-134		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Jul-2023	23:41:08	3093	BP23MVEXP-ENV-DC-072			Camera	75	617685	6277119	617683	6277122	2	-3	4	-24		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Jul-2023	23:41:51	3094	BP23MVEXP-ENV-DC-072			Camera	75	617685	6277114	617683	6277122	2	-8	8	-14		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Jul-2023	23:42:43	3095	BP23MVEXP-ENV-DC-072			Camera	75	617686	6277109	617683	6277122	3	-13	14	-11		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Jul-2023	23:43:26	3096	BP23MVEXP-ENV-DC-072			Camera	75	617686	6277105	617683	6277122	3	-18	18	-9		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Jul-2023	23:44:26	3097	BP23MVEXP-ENV-DC-072			Camera	75	617687	6277098	617683	6277122	4	-25	25	-10		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Jul-2023	23:45:12	3098	BP23MVEXP-ENV-DC-072			Camera	75	617688	6277093	617683	6277122	5	-29	29	-10		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Jul-2023	23:45:36	3099	BP23MVEXP-ENV-DC-072			Camera	75	617688	6277091	617683	6277122	5	-31	31	-9		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Jul-2023	23:46:19	3100	BP23MVEXP-ENV-DC-072			Camera	75	617688	6277086	617683	6277122	5	-36	36	-8		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Jul-2023	23:46:42	3101	BP23MVEXP-ENV-DC-072			Camera	75	617689	6277084	617683	6277122	6	-38	38	-9		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Jul-2023	23:47:42	3102	BP23MVEXP-ENV-DC-072			Camera	75	617690	6277078	617683	6277122	7	-44	44	-9		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	00:01:15	3103	BP23MVEXP-ENV-DC-072			Camera	75	617730	6277131	617683	6277122	47	9	48	-101		(Raw Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	00:02:42	3104	BP23MVEXP-ENV-DC-072			Camera	75	617728	6277130	617683	6277122	45	8	46	-101		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	00:04:17	3105	BP23MVEXP-ENV-DC-072			Camera	75	617723	6277129	617683	6277122	40	7	40	-101		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	00:04:57	3106	BP23MVEXP-ENV-DC-072			Camera	75	617719	6277129	617683	6277122	36	7	36	-101		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	00:06:04	3107	BP23MVEXP-ENV-DC-072			Camera	75	617712	6277127	617683	6277122	29	5	30	-99		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	00:07:04	3108	BP23MVEXP-ENV-DC-072			Camera	75	617708	6277125	617683	6277122	25	3	26	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	00:08:52	3109	BP23MVEXP-ENV-DC-072			Camera	75	617704	6277123	617683	6277122	21	1	21	-92		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	00:10:55	3110	BP23MVEXP-ENV-DC-072			Camera	75	617696	6277123	617683	6277122	13	1	13	-93		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	00:12:22	3111	BP23MVEXP-ENV-DC-072			Camera	75	617692	6277121	617683	6277122	9	-1	9	-83		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	00:12:42	3112	BP23MVEXP-ENV-DC-072			Camera	75	617690	6277121	617683	6277122	7	-1	7	-81		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	00:13:30	3113	BP23MVEXP-ENV-DC-072			Camera	75	617685	6277120	617683	6277122	2	-2	3	-56		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	00:14:13	3114	BP23MVEXP-ENV-DC-072			Camera	75	617681	6277120	617683	6277122	-2	-2	3	44		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	00:15:16	3115	BP23MVEXP-ENV-DC-072			Camera	75	617674	6277118	617683	6277122	-9	-4	9	68		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	00:15:31	3116	BP23MVEXP-ENV-DC-072			Camera	75	617673	6277118	617683	6277122	-10	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	00:16:13	3117	BP23MVEXP-ENV-DC-072			Camera	76	617669	6277117	617683	6277122	-14	-5	15	72		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	00:16:27	3118	BP23MVEXP-ENV-DC-072			Camera	76	617668	6277117	617683	6277122	-16	-5	16	72		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	00:16:51	3119	BP23MVEXP-ENV-DC-072			Camera	75	617665	6277117	617683	6277122	-18	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	00:19:52	3120	BP23MVEXP-ENV-DC-072			Camera	76	617646	6277113	617683	6277122	-37	-9	38	77		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	00:20:45	3121	BP23MVEXP-ENV-DC-072			Camera	76	617641	6277113	617683	6277122	-42	-9	43	77		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	00:21:21	3122	BP23MVEXP-ENV-DC-072			Camera	75	617638	6277112	617683	6277122	-45	-10	47	77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	02:43:24	3123	BP23MVEXP-ENV-DC-073			Camera	71	618224	6273191	618229	6273143	-5	48	48	174		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	02:43:40	3124	BP23MVEXP-ENV-DC-073			Camera	73	618223.1	6273191.1	618229	6273143	6	-48	48	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:44:50	3125	BP23MVEXP-ENV-DC-073			Camera	73	618222.9	6273190.0	618229	6273143	6	-47	47	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:45:31	3126	BP23MVEXP-ENV-DC-073			Camera	73	618223.4	6273187.6	618229	6273143	6	-45	45	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:46:00	3127	BP23MVEXP-ENV-DC-073			Camera	73	618224.1	6273184.4	618229	6273143	5	-41	42	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:46:45	3128	BP23MVEXP-ENV-DC-073			Camera	72	618224.2	6273179.6	618229	6273143	5	-37	37	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:47:40	3129	BP23MVEXP-ENV-DC-073			Camera	71	618225	6273174	618229	6273143	-4	31	32	172		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	02:47:54	3130	BP23MVEXP-ENV-DC-073			Camera	71	618225	6273173	618229	6273143	-4	30	30	173		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	02:48:10	3131	BP23MVEXP-ENV-DC-073			Camera	71	618225	6273171	618229	6273143	-4	29	29	173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	02:48:32	3132	BP23MVEXP-ENV-DC-073			Camera	71	618226	6273169	618229	6273143	-3	26	26	173		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	02:48:58	3133	BP23MVEXP-ENV-DC-073			Camera	71	618226	6273167	618229	6273143	-3	24	24	173		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	02:50:08	3134	BP23MVEXP-ENV-DC-073			Camera	71	618228	6273159	618229	6273143	-1	16	16	175		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	02:50:16	3135	BP23MVEXP-ENV-DC-073			Camera	71	618228	6273158	618229	6273143	-1	16	16	175		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	02:51:11	3136	BP23MVEXP-ENV-DC-073			Camera	71	618229	6273153	618229	6273143	0	10	10	177		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	02:51:28	3137	BP23MVEXP-ENV-DC-073			Camera	71	618229	6273151	618229	6273143	0	8	8	178		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	02:52:33	3138	BP23MVEXP-ENV-DC-073			Camera	71	618230	6273145	618229	6273143	1	2	2	-158		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	02:52:48	3139	BP23MVEXP-ENV-DC-073			Camera	71	618230	6273143	618229	6273143	1	0	1	-98		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	02:53:48	3140	BP23MVEXP-ENV-DC-073			Camera	71	618231	6273137	618229	6273143	2	-6	7	-19		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	02:54:32	3141	BP23MVEXP-ENV-DC-073			Camera	71	618232	6273132	618229	6273143	3	-11	11	-15		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	02:55:14	3142	BP23MVEXP-ENV-DC-073			Camera	71	618233	6273128	618229	6273143	4	-15	15	-14		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	02:56:29	3143	BP23MVEXP-ENV-DC-073			Camera	71	618233	6273120	618229	6273143	4	-23	23	-11		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	02:57:12	3144	BP23MVEXP-ENV-DC-073			Camera	71	618234	6273116	618229	6273143	5	-27	28	-10		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	02:57:50	3145	BP23MVEXP-ENV-DC-073			Camera	71	618235	6273112	618229	6273143	6	-31	31	-10		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	02:58:46	3146	BP23MVEXP-ENV-DC-073			Camera	71	618235	6273106	618229	6273143	6	-37	37	-10		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	02:59:45	3147	BP23MVEXP-ENV-DC-073			Camera	71	618237	6273100	618229	6273143	8	-43	43	-10		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	03:00:12	3148	BP23MVEXP-ENV-DC-073			Camera	71	618237	6273098	618229	6273143	8	-45	46	-10		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	03:12:17	3149	BP23MVEXP-ENV-DC-073			Camera	70	618274	6273147	618229	6273143	45	4	45	-95		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	03:12:44	3150	BP23MVEXP-ENV-DC-073			Camera	70	618275	6273150	618229	6273143	46	7	47	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	03:12:54	3151	BP23MVEXP-ENV-DC-073			Camera	70	618276	6273150	618229	6273143	47	7	47	-98		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	03:13:31	3152	BP23MVEXP-ENV-DC-073			Camera	70	618276	6273151	618229	6273143	47	8	47	-100		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	03:14:44	3153	BP23MVEXP-ENV-DC-073			Camera	70	618271	6273150	618229	6273143	42	7	43	-100		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	03:15:23	3154	BP23MVEXP-ENV-DC-073			Camera	70	618266	6273150	618229	6273143	38	7	38	-100		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	03:15:36	3155	BP23MVEXP-ENV-DC-073			Camera	70	618265	6273149	618229	6273143	36	6	37	-100		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	03:16:28	3156	BP23MVEXP-ENV-DC-073			Camera	70	618260	6273148	618229	6273143	31	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	03:17:08	3157	BP23MVEXP-ENV-DC-073			Camera	70	618255	6273148	618229	6273143	26	5	27	-100		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	03:18:09	3158	BP23MVEXP-ENV-DC-073			Camera	71	618249	6273147	618229	6273143	20	4	21	-101		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	03:18:47	3159	BP23MVEXP-ENV-DC-073			Camera	71	618245	6273146	618229	6273143	16	3	17	-102		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	03:19:31	3160	BP23MVEXP-ENV-DC-073			Camera	71	618241	6273145	618229	6273143	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	03:19:53	3161	BP23MVEXP-ENV-DC-073			Camera	71	618239	6273145	618229	6273143	10	2	10	-99		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	03:20:52	3162	BP23MVEXP-ENV-DC-073			Camera	71	618233	6273143	618229	6273143	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	03:21:20	3163	BP23MVEXP-ENV-DC-073			Camera	71	618230	6273143	618229	6273143	1	0	1	-83		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	03:21:44	3164	BP23MVEXP-ENV-DC-073			Camera	71	618228	6273142	618229	6273143	-1	-1	1	62		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	03:22:31	3165	BP23MVEXP-ENV-DC-073			Camera	71	618223	6273142	618229	6273143	-6	-1	6	83		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	03:23:37	3166	BP23MVEXP-ENV-DC-073			Camera	71	618216	6273141	618229	6273143	-13	-2	13	83		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	03:24:16	3167	BP23MVEXP-ENV-DC-073			Camera	71	618212	6273140	618229	6273143	-17	-3	17	81		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	03:25:21	3168	BP23MVEXP-ENV-DC-073			Camera	71	618206	6273139	618229	6273143	-23	-4	24	81		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	03:25:56	3169	BP23MVEXP-ENV-DC-073			Camera	71	618202	6273139	618229	6273143	-27	-4	27	81		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	03:27:16	3170	BP23MVEXP-ENV-DC-073			Camera	71	618194	6273137	618229	6273143	-35	-6	35	81		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	03:28:28	3171	BP23MVEXP-ENV-DC-073			Camera	71	618187	6273136	618229	6273143	-43	-7	43	81		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	03:28:45	3172	BP23MVEXP-ENV-DC-073			Camera	71	618185	6273136	618229	6273143	-44	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	03:29:28	3173	BP23MVEXP-ENV-DC-073			Camera	72	618181	6273135	618229	6273143	-48	-8	49	80		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	06:00:01	3174	BP23MVEXP-ENV-DC-074			Camera	66	618784	6269109	618778	6269161	6	-52	52	-7		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	06:01:48	3175	BP23MVEXP-ENV-DC-074			Camera	66	618784	6269110	618778	6269161	6	-51	52	-6		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	06:02:59	3176	BP23MVEXP-ENV-DC-074			Camera	66	618783	6269114	618778	6269161	5	-47	47	-6		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	06:03:59	3177	BP23MVEXP-ENV-DC-074			Camera	66	618781	6269121	618778	6269161	3	-40	41	-5		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	06:04:06	3178	BP23MVEXP-ENV-DC-074			Camera	66	618781	6269121	618778	6269161	3	-40	40	-4		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	06:07:00	3179	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269130	618778	6269161	2	-31	31	-4		(Raw Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	06:09:34	3180	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269130	618778	6269161	2	-31	31	-4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	06:09:43	3181	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269130	618778	6269161	2	-31	31	-4		(Raw Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	06:17:21	3182	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269121	618778	6269161	-6	-40	40	9		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	06:22:19	3183	BP23MVEXP-ENV-DC-074			Camera	66	618777	6269136	618778	6269161	-1	-25	25	3		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	06:22:28	3184	BP23MVEXP-ENV-DC-074			Camera	66	618776	6269136	618778	6269161	-2	-25	25	4		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	06:23:09	3185	BP23MVEXP-ENV-DC-074			Camera	66	618776	6269141	618778	6269161	-2	-21	21	7		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	06:23:37	3186	BP23MVEXP-ENV-DC-074			Camera	66	618775	6269144	618778	6269161	-3	-17	18	8		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	06:24:21	3187	BP23MVEXP-ENV-DC-074			Camera	66	618775	6269148	618778	6269161	-3	-13	14	12		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	06:25:45	3188	BP23MVEXP-ENV-DC-074			Camera	66	618774	6269156	618778	6269161	-4	-5	6	38		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	06:26:30	3189	BP23MVEXP-ENV-DC-074			Camera	66	618774	6269161	618778	6269161	-4	0	4	86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	06:27:33	3190	BP23MVEXP-ENV-DC-074			Camera	66	618773	6269167	618778	6269161	-5	6	8	140		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	06:28:30	3191	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269173	618778	6269161	-6	12	13	152		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	06:29:18	3192	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269178	618778	6269161	-7	17	18	159		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	06:30:24	3193	BP23MVEXP-ENV-DC-074			Camera	66	618771	6269184	618778	6269161	-7	23	24	163		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	06:31:44	3194	BP23MVEXP-ENV-DC-074			Camera	66	618770	6269193	618778	6269161	-8	32	33	165		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	06:31:55	3195	BP23MVEXP-ENV-DC-074			Camera	66	618770	6269193	618778	6269161	-8	32	33	166		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	06:32:26	3196	BP23MVEXP-ENV-DC-074			Camera	66	618769	6269197	618778	6269161	-9	36	37	166		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	06:33:09	3197	BP23MVEXP-ENV-DC-074			Camera	66	618769	6269201	618778	6269161	-9	40	41	167		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	06:34:25	3198	BP23MVEXP-ENV-DC-074			Camera	66	618768	6269209	618778	6269161	-10	48	49	168		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	06:46:56	3199	BP23MVEXP-ENV-DC-074			Camera	65	618824	6269172	618778	6269161	46	11	48	-103		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	06:48:23	3200	BP23MVEXP-ENV-DC-074			Camera	65	618829	6269169	618778	6269161	51	8	52	-99		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	06:48:35	3201	BP23MVEXP-ENV-DC-074			Camera	65	618829	6269169	618778	6269161	51	8	51	-99		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	06:48:43	3202	BP23MVEXP-ENV-DC-074			Camera	66	618828	6269169	618778	6269161	50	8	51	-99		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	06:49:08	3203	BP23MVEXP-ENV-DC-074			Camera	66	618826	6269168	618778	6269161	48	7	48	-99		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	06:49:38	3204	BP23MVEXP-ENV-DC-074			Camera	66	618823	6269168	618778	6269161	45	7	46	-98		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	06:49:49	3205	BP23MVEXP-ENV-DC-074			Camera	66	618822	6269167	618778	6269161	44	6	45	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	06:51:28	3206	BP23MVEXP-ENV-DC-074			Camera	66	618811	6269166	618778	6269161	33	5	34	-98		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	06:52:09	3207	BP23MVEXP-ENV-DC-074			Camera	66	618807	6269165	618778	6269161	30	4	30	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	06:52:36	3208	BP23MVEXP-ENV-DC-074			Camera	66	618805	6269164	618778	6269161	27	3	27	-97		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	06:53:50	3209	BP23MVEXP-ENV-DC-074			Camera	66	618798	6269163	618778	6269161	20	2	20	-95		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	06:55:00	3210	BP23MVEXP-ENV-DC-074			Camera	66	618790	6269161	618778	6269161	12	0	12	-91		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	06:55:52	3211	BP23MVEXP-ENV-DC-074			Camera	66	618785	6269160	618778	6269161	7	-1	7	-86		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	06:56:44	3212	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269159	618778	6269161	2	-2	2	-47		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	06:57:02	3213	BP23MVEXP-ENV-DC-074			Camera	66	618778	6269159	618778	6269161	0	-2	2	8		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	06:57:57	3214	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269159	618778	6269161	-6	-2	6	66		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	06:58:48	3215	BP23MVEXP-ENV-DC-074			Camera	66	618767	6269157	618778	6269161	-11	-4	11	72		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	06:59:38	3216	BP23MVEXP-ENV-DC-074			Camera	66	618762	6269157	618778	6269161	-16	-4	16	74		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	07:00:36	3217	BP23MVEXP-ENV-DC-074			Camera	66	618756	6269156	618778	6269161	-22	-5	23	77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	07:01:37	3218	BP23MVEXP-ENV-DC-074			Camera	66	618750	6269155	618778	6269161	-28	-6	29	77		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	07:03:03	3219	BP23MVEXP-ENV-DC-074			Camera	66	618741	6269153	618778	6269161	-37	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	07:03:12	3220	BP23MVEXP-ENV-DC-074			Camera	66	618740	6269153	618778	6269161	-38	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	07:04:26	3221	BP23MVEXP-ENV-DC-074			Camera	66	618733	6269151	618778	6269161	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	07:04:51	3222	BP23MVEXP-ENV-DC-074			Camera	66	618730	6269151	618778	6269161	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	08:52:01	3223	BP23MVEXP-ENV-DC-075			Camera	65	619261	6265226	619313	6265236	-52	-11	53	79		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	08:53:38	3224	BP23MVEXP-ENV-DC-075			Camera	65	619261	6265226	619313	6265236	-52	-10	53	79		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	08:55:08	3225	BP23MVEXP-ENV-DC-075			Camera	65	619268	6265226	619313	6265236	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	08:55:32	3226	BP23MVEXP-ENV-DC-075			Camera	65	619270	6265226	619313	6265236	-43	-10	44	77		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	08:56:12	3227	BP23MVEXP-ENV-DC-075			Camera	65	619274	6265226	619313	6265236	-39	-10	40	76		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	08:57:09	3228	BP23MVEXP-ENV-DC-075			Camera	65	619280	6265227	619313	6265236	-33	-9	34	75		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	08:57:27	3229	BP23MVEXP-ENV-DC-075			Camera	65	619282	6265227	619313	6265236	-31	-9	32	75		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	08:57:40	3230	BP23MVEXP-ENV-DC-075			Camera	65	619283	6265228	619313	6265236	-30	-8	31	74		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	08:58:03	3231	BP23MVEXP-ENV-DC-075			Camera	65	619286	6265228	619313	6265236	-28	-8	29	75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	08:58:56	3232	BP23MVEXP-ENV-DC-075			Camera	65	619290	6265229	619313	6265236	-23	-7	24	73		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	08:59:10	3233	BP23MVEXP-ENV-DC-075			Camera	65	619292	6265230	619313	6265236	-21	-6	22	74		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	08:59:47	3234	BP23MVEXP-ENV-DC-075			Camera	65	619295	6265231	619313	6265236	-18	-5	18	73		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	09:00:01	3235	BP23MVEXP-ENV-DC-075			Camera	65	619297	6265231	619313	6265236	-16	-5	17	72		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	09:00:08	3236	BP23MVEXP-ENV-DC-075			Camera	65	619298	6265231	619313	6265236	-15	-5	16	72		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	09:00:48	3237	BP23MVEXP-ENV-DC-075			Camera	65	619302	6265232	619313	6265236	-11	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	09:01:47	3238	BP23MVEXP-ENV-DC-075			Camera	65	619309	6265233	619313	6265236	-4	-3	5	51		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	09:01:59	3239	BP23MVEXP-ENV-DC-075			Camera	65	619310	6265233	619313	6265236	-3	-3	4	42		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	09:02:21	3240	BP23MVEXP-ENV-DC-075			Camera	65	619312	6265233	619313	6265236	-1	-3	3	16		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	09:02:27	3241	BP23MVEXP-ENV-DC-075			Camera	65	619313	6265233	619313	6265236	0	-3	3	6		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	09:03:07	3242	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265234	619313	6265236	3	-2	4	-54		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	09:03:52	3243	BP23MVEXP-ENV-DC-075			Camera	65	619321	6265234	619313	6265236	8	-2	8	-78		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	09:04:12	3244	BP23MVEXP-ENV-DC-075			Camera	65	619323	6265235	619313	6265236	10	-1	10	-83		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	09:05:04	3245	BP23MVEXP-ENV-DC-075			Camera	64	619329	6265236	619313	6265236	16	0	16	-90		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	09:05:10	3246	BP23MVEXP-ENV-DC-075			Camera	64	619330	6265236	619313	6265236	17	0	17	-91		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	09:05:24	3247	BP23MVEXP-ENV-DC-075			Camera	64	619331	6265236	619313	6265236	18	0	18	-92		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	09:06:35	3248	BP23MVEXP-ENV-DC-075			Camera	65	619338	6265237	619313	6265236	25	1	25	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	09:07:18	3249	BP23MVEXP-ENV-DC-075			Camera	65	619342	6265238	619313	6265236	29	2	29	-93		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	09:07:56	3250	BP23MVEXP-ENV-DC-075			Camera	64	619346	6265239	619313	6265236	33	3	33	-95		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	09:09:42	3251	BP23MVEXP-ENV-DC-075			Camera	65	619357	6265240	619313	6265236	44	4	44	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	09:10:17	3252	BP23MVEXP-ENV-DC-075			Camera	64	619360	6265241	619313	6265236	47	5	47	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	09:22:48	3253	BP23MVEXP-ENV-DC-075			Camera	64	619306	6265283	619313	6265236	-7	47	48	172		(Raw Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	09:23:16	3254	BP23MVEXP-ENV-DC-075			Camera	64	619306	6265284	619313	6265236	-7	48	49	172		(Raw Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	09:24:11	3255	BP23MVEXP-ENV-DC-075			Camera	64	619306	6265283	619313	6265236	-7	47	48	172		(Raw Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	09:25:00	3256	BP23MVEXP-ENV-DC-075			Camera	64	619307	6265279	619313	6265236	-6	43	44	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	09:25:30	3257	BP23MVEXP-ENV-DC-075			Camera	64	619307	6265277	619313	6265236	-6	41	41	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	09:26:07	3258	BP23MVEXP-ENV-DC-075			Camera	64	619308	6265273	619313	6265236	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	09:26:57	3259	BP23MVEXP-ENV-DC-075			Camera	64	619309	6265269	619313	6265236	-4	33	33	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	09:27:39	3260	BP23MVEXP-ENV-DC-075			Camera	64	619310	6265266	619313	6265236	-3	30	31	174		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	09:28:19	3261	BP23MVEXP-ENV-DC-075			Camera	64	619311	6265263	619313	6265236	-2	27	27	175		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	09:29:23	3262	BP23MVEXP-ENV-DC-075			Camera	64	619312	6265256	619313	6265236	-1	20	20	178		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	09:29:57	3263	BP23MVEXP-ENV-DC-075			Camera	64	619313	6265252	619313	6265236	0	16	16	-179		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	09:30:51	3264	BP23MVEXP-ENV-DC-075			Camera	65	619315	6265246	619313	6265236	2	10	10	-170		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	09:32:02	3265	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265239	619313	6265236	3	3	4	-141		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	09:32:39	3266	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265236	619313	6265236	3	0	3	-82		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	09:33:35	3267	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265230	619313	6265236	3	-6	7	-31		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	09:35:02	3268	BP23MVEXP-ENV-DC-075			Camera	65	619319	6265222	619313	6265236	6	-15	16	-21		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	09:36:13	3269	BP23MVEXP-ENV-DC-075			Camera	65	619320	6265214	619313	6265236	7	-22	23	-17		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	09:37:28	3270	BP23MVEXP-ENV-DC-075			Camera	65	619321	6265207	619313	6265236	8	-30	30	-15		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	09:38:05	3271	BP23MVEXP-ENV-DC-075			Camera	65	619321	6265203	619313	6265236	8	-33	34	-14		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	09:39:20	3272	BP23MVEXP-ENV-DC-075			Camera	65	619323	6265195	619313	6265236	10	-41	42	-13		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	09:39:43	3273	BP23MVEXP-ENV-DC-075			Camera	65	619323	6265193	619313	6265236	10	-43	45	-14		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	09:40:43	3274	BP23MVEXP-ENV-DC-075			Camera	65	619324	6265188	619313	6265236	11	-48	50	-13		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
13-Jul-2023	09:41:41	3275	BP23MVEXP-ENV-DC-075			Camera	65	619324	6265187	619313	6265236	11	-49	50	-13		(Raw Nav, Kongsberg 14208, img#53) (B) (T.A)
13-Jul-2023	12:05:32	3277	BP23MVEXP-ENV-DC-076			Camera	59	619791	6261282	619800	6261234	-9	48	49	169		(Raw Nav, Kongsberg 14208, img#54) (B) (T.A)
13-Jul-2023	12:05:47	3278	BP23MVEXP-ENV-DC-076			Camera	59	619791	6261282	619800	6261234	-9	48	48	169		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	12:08:02	3279	BP23MVEXP-ENV-DC-076			Camera	59	619793	6261279	619800	6261234	-7	45	46	169		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	12:08:54	3280	BP23MVEXP-ENV-DC-076			Camera	59	619792	6261276	619800	6261234	-8	42	43	170		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	12:10:20	3281	BP23MVEXP-ENV-DC-076			Camera	59	619794	6261269	619800	6261234	-6	35	36	170		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	12:12:10	3282	BP23MVEXP-ENV-DC-076			Camera	59	619797	6261257	619800	6261234	-3	23	23	173		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	12:13:28	3283	BP23MVEXP-ENV-DC-076			Camera	59	619799	6261248	619800	6261234	-1	14	14	174		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	12:14:02	3284	BP23MVEXP-ENV-DC-076			Camera	59	619799	6261244	619800	6261234	-1	10	10	175		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	12:14:39	3285	BP23MVEXP-ENV-DC-076			Camera	59	619800	6261241	619800	6261234	0	7	7	179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	12:15:29	3286	BP23MVEXP-ENV-DC-076			Camera	59	619800	6261237	619800	6261234	0	3	3	-175		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	12:18:01	3287	BP23MVEXP-ENV-DC-076			Camera	59	619804	6261221	619800	6261234	4	-13	14	-16		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	12:18:35	3288	BP23MVEXP-ENV-DC-076			Camera	59	619804	6261217	619800	6261234	4	-17	17	-14		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	12:19:02	3289	BP23MVEXP-ENV-DC-076			Camera	59	619805	6261214	619800	6261234	5	-20	20	-14		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	12:20:11	3290	BP23MVEXP-ENV-DC-076			Camera	59	619806	6261208	619800	6261234	6	-27	27	-14		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	12:20:28	3291	BP23MVEXP-ENV-DC-076			Camera	59	619806	6261206	619800	6261234	6	-28	29	-13		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	12:21:05	3292	BP23MVEXP-ENV-DC-076			Camera	60	619807	6261202	619800	6261234	7	-32	32	-13		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	12:22:11	3293	BP23MVEXP-ENV-DC-076			Camera	60	619808	6261195	619800	6261234	8	-39	40	-12		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	12:22:54	3294	BP23MVEXP-ENV-DC-076			Camera	60	619809	6261192	619800	6261234	9	-42	43	-12		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	12:23:05	3295	BP23MVEXP-ENV-DC-076			Camera	60	619809	6261191	619800	6261234	9	-43	44	-12		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	12:23:53	3296	BP23MVEXP-ENV-DC-076			Camera	60	619810	6261187	619800	6261234	10	-48	48	-12		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	12:34:07	3297	BP23MVEXP-ENV-DC-076			Camera	59	619836	6261223	619800	6261234	36	-11	38	-73		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	12:38:11	3298	BP23MVEXP-ENV-DC-076			Camera	59	619848	6261242	619800	6261234	48	8	49	-99		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	12:39:32	3299	BP23MVEXP-ENV-DC-076			Camera	59	619846	6261242	619800	6261234	46	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	12:39:57	3300	BP23MVEXP-ENV-DC-076			Camera	59	619844	6261242	619800	6261234	44	8	45	-100		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	12:40:04	3301	BP23MVEXP-ENV-DC-076			Camera	59	619844	6261242	619800	6261234	44	8	44	-100		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	12:40:19	3302	BP23MVEXP-ENV-DC-076			Camera	59	619843	6261241	619800	6261234	43	7	43	-99		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	12:40:41	3303	BP23MVEXP-ENV-DC-076			Camera	59	619841	6261239	619800	6261234	41	5	42	-97		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	12:41:04	3304	BP23MVEXP-ENV-DC-076			Camera	59	619840	6261238	619800	6261234	40	4	40	-96		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	12:41:15	3305	BP23MVEXP-ENV-DC-076			Camera	59	619840	6261238	619800	6261234	40	4	40	-96		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	12:41:22	3306	BP23MVEXP-ENV-DC-076			Camera	59	619839	6261238	619800	6261234	39	4	39	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	12:42:16	3307	BP23MVEXP-ENV-DC-076			Camera	59	619836	6261238	619800	6261234	36	4	36	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	12:42:53	3308	BP23MVEXP-ENV-DC-076			Camera	59	619832	6261238	619800	6261234	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	12:43:03	3309	BP23MVEXP-ENV-DC-076			Camera	59	619831	6261238	619800	6261234	31	4	32	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	12:43:09	3310	BP23MVEXP-ENV-DC-076			Camera	59	619831	6261239	619800	6261234	31	5	31	-99		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	12:43:16	3311	BP23MVEXP-ENV-DC-076			Camera	59	619830	6261238	619800	6261234	30	4	30	-98		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	12:43:43	3312	BP23MVEXP-ENV-DC-076			Camera	59	619827	6261238	619800	6261234	27	4	27	-98		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	12:44:00	3313	BP23MVEXP-ENV-DC-076			Camera	59	619825	6261238	619800	6261234	25	4	25	-99		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	12:44:22	3314	BP23MVEXP-ENV-DC-076			Camera	59	619823	6261237	619800	6261234	23	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	12:44:33	3315	BP23MVEXP-ENV-DC-076			Camera	59	619822	6261237	619800	6261234	22	3	22	-97		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	12:45:13	3316	BP23MVEXP-ENV-DC-076			Camera	59	619817	6261236	619800	6261234	17	2	18	-95		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	12:45:31	3317	BP23MVEXP-ENV-DC-076			Camera	59	619816	6261235	619800	6261234	16	1	16	-94		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	12:45:37	3318	BP23MVEXP-ENV-DC-076			Camera	59	619815	6261235	619800	6261234	15	1	15	-94		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	12:46:27	3319	BP23MVEXP-ENV-DC-076			Camera	59	619811	6261234	619800	6261234	11	0	11	-91		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	12:46:38	3320	BP23MVEXP-ENV-DC-076			Camera	59	619810	6261234	619800	6261234	10	0	10	-91		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	12:47:11	3321	BP23MVEXP-ENV-DC-076			Camera	59	619807	6261233	619800	6261234	7	-1	7	-85		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	12:47:20	3322	BP23MVEXP-ENV-DC-076			Camera	59	619805	6261233	619800	6261234	5	-1	5	-83		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	12:47:45	3323	BP23MVEXP-ENV-DC-076			Camera	59	619803	6261233	619800	6261234	3	-1	3	-66		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	12:47:51	3324	BP23MVEXP-ENV-DC-076			Camera	59	619802	6261233	619800	6261234	2	-1	2	-59		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	12:48:03	3325	BP23MVEXP-ENV-DC-076			Camera	59	619801	6261233	619800	6261234	1	-1	1	-31		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	12:48:18	3326	BP23MVEXP-ENV-DC-076			Camera	59	619800	6261232	619800	6261234	0	-2	2	18		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	12:48:25	3327	BP23MVEXP-ENV-DC-076			Camera	59	619799	6261232	619800	6261234	-1	-2	2	32		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	12:48:41	3328	BP23MVEXP-ENV-DC-076			Camera	59	619797	6261232	619800	6261234	-3	-2	4	51		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	12:49:07	3329	BP23MVEXP-ENV-DC-076			Camera	59	619795	6261231	619800	6261234	-5	-3	6	65		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
13-Jul-2023	12:50:01	3330	BP23MVEXP-ENV-DC-076			Camera	59	619789	6261230	619800	6261234	-11	-4	12	71		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
13-Jul-2023	12:50:17	3331	BP23MVEXP-ENV-DC-076			Camera	59	619787	6261230	619800	6261234	-13	-4	13	71		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
13-Jul-2023	12:53:02	3332	BP23MVEXP-ENV-DC-076			Camera	59	619770	6261227	619800	6261234	-30	-7	30	77		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
13-Jul-2023	12:56:08	3333	BP23MVEXP-ENV-DC-076			Camera	59	619752	6261224	619800	6261234	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
13-Jul-2023	12:58:52	3334	BP23MVEXP-ENV-DC-076			Camera	59	619751	6261223	619800	6261234	-49	-11	50	78		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
13-Jul-2023	14:52:21	3335	BP23MVEXP-ENV-DC-077			Camera	61	620309	6257305	620314	6257253	-5	52	52	175		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	14:54:25	3336	BP23MVEXP-ENV-DC-077			Camera	61	620309	6257304	620314	6257253	-5	51	51	175		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	14:55:02	3337	BP23MVEXP-ENV-DC-077			Camera	61	620310	6257301	620314	6257253	-4	48	48	175		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	14:55:18	3338	BP23MVEXP-ENV-DC-077			Camera	61	620311	6257299	620314	6257253	-3	46	47	176		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	14:55:44	3339	BP23MVEXP-ENV-DC-077			Camera	61	620312	6257297	620314	6257253	-2	44	44	177		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	14:56:48	3340	BP23MVEXP-ENV-DC-077			Camera	61	620312	6257290	620314	6257253	-2	37	37	176		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	14:56:58	3341	BP23MVEXP-ENV-DC-077			Camera	61	620311	6257289	620314	6257253	-3	36	36	176		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	14:58:47	3342	BP23MVEXP-ENV-DC-077			Camera	61	620312	6257278	620314	6257253	-2	25	25	176		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	14:59:23	3343	BP23MVEXP-ENV-DC-077			Camera	61	620313	6257275	620314	6257253	-1	22	22	178		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	14:59:38	3344	BP23MVEXP-ENV-DC-077			Camera	61	620313	6257273	620314	6257253	-1	20	20	179		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	15:01:40	3345	BP23MVEXP-ENV-DC-077			Camera	61	620315	6257261	620314	6257253	1	8	8	-170		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	15:01:51	3346	BP23MVEXP-ENV-DC-077			Camera	61	620315	6257259	620314	6257253	1	6	7	-167		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	15:02:02	3347	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257258	620314	6257253	2	5	5	-163		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	15:02:13	3348	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257257	620314	6257253	2	4	5	-157		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	15:02:25	3349	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257256	620314	6257253	2	3	4	-148		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	15:02:31	3350	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257255	620314	6257253	2	2	3	-139		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	15:02:38	3351	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257254	620314	6257253	2	1	2	-125		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	15:02:45	3352	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257254	620314	6257253	2	1	2	-113		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	15:02:53	3353	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257253	620314	6257253	2	0	2	-88		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	15:03:04	3354	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257252	620314	6257253	2	-1	3	-63		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	15:03:16	3355	BP23MVEXP-ENV-DC-077			Camera	61	620317	6257251	620314	6257253	3	-2	4	-47		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	15:03:42	3356	BP23MVEXP-ENV-DC-077			Camera	61	620317	6257248	620314	6257253	3	-5	6	-31		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	15:04:27	3357	BP23MVEXP-ENV-DC-077			Camera	61	620318	6257243	620314	6257253	4	-10	10	-21		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	15:04:37	3358	BP23MVEXP-ENV-DC-077			Camera	61	620318	6257242	620314	6257253	4	-11	11	-20		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	15:06:27	3359	BP23MVEXP-ENV-DC-077			Camera	61	620319	6257231	620314	6257253	5	-22	22	-14		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	15:08:35	3360	BP23MVEXP-ENV-DC-077			Camera	61	620321	6257219	620314	6257253	7	-34	35	-12		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	15:24:37	3361	BP23MVEXP-ENV-DC-077			Camera	61	620266	6257248	620314	6257253	-48	-5	49	84		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	15:25:17	3362	BP23MVEXP-ENV-DC-077			Camera	61	620269	6257249	620314	6257253	-45	-4	46	85		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	15:26:46	3363	BP23MVEXP-ENV-DC-077			Camera	61	620278	6257251	620314	6257253	-36	-2	36	86		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	15:28:11	3364	BP23MVEXP-ENV-DC-077			Camera	61	620286	6257252	620314	6257253	-28	-1	28	87		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	15:28:18	3365	BP23MVEXP-ENV-DC-077			Camera	61	620287	6257252	620314	6257253	-27	-1	27	87		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	15:29:24	3366	BP23MVEXP-ENV-DC-077			Camera	61	620294	6257252	620314	6257253	-20	-1	20	88		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	15:31:06	3367	BP23MVEXP-ENV-DC-077			Camera	61	620304	6257254	620314	6257253	-10	1	10	95		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	15:32:09	3368	BP23MVEXP-ENV-DC-077			Camera	61	620310	6257255	620314	6257253	-4	2	4	121		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	15:33:08	3369	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257257	620314	6257253	2	4	4	-150		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	15:33:22	3370	BP23MVEXP-ENV-DC-077			Camera	61	620318	6257257	620314	6257253	4	4	5	-138		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	15:34:08	3371	BP23MVEXP-ENV-DC-077			Camera	61	620322	6257257	620314	6257253	8	4	9	-117		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	15:35:01	3372	BP23MVEXP-ENV-DC-077			Camera	61	620327	6257258	620314	6257253	13	5	14	-111		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	15:35:57	3373	BP23MVEXP-ENV-DC-077			Camera	61	620333	6257259	620314	6257253	19	6	20	-109		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	15:36:37	3374	BP23MVEXP-ENV-DC-077			Camera	61	620337	6257261	620314	6257253	23	8	24	-108		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	15:37:41	3375	BP23MVEXP-ENV-DC-077			Camera	61	620344	6257261	620314	6257253	30	8	31	-105		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	15:38:12	3376	BP23MVEXP-ENV-DC-077			Camera	61	620347	6257262	620314	6257253	33	9	34	-105		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	15:39:29	3377	BP23MVEXP-ENV-DC-077			Camera	61	620354	6257263	620314	6257253	40	10	42	-104		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	15:39:55	3378	BP23MVEXP-ENV-DC-077			Camera	61	620357	6257264	620314	6257253	43	11	45	-104		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	15:40:40	3379	BP23MVEXP-ENV-DC-077			Camera	61	620366	6257265	620314	6257253	52	12	53	-103		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	18:20:38	3381	BP23MVEXP-ENV-DC-078			Camera	64	620864	6253292	620873	6253243	-9	49	49	170		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	18:22:58	3382	BP23MVEXP-ENV-DC-078			Camera	64	620865	6253290	620873	6253243	-8	47	48	171		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	18:23:50	3383	BP23MVEXP-ENV-DC-078			Camera	64	620867	6253285	620873	6253243	-6	42	43	172		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	18:24:05	3384	BP23MVEXP-ENV-DC-078			Camera	64	620867	6253283	620873	6253243	-6	40	41	171		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	18:24:50	3385	BP23MVEXP-ENV-DC-078			Camera	64	620868	6253279	620873	6253243	-5	36	36	171		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	18:25:36	3386	BP23MVEXP-ENV-DC-078			Camera	64	620868	6253274	620873	6253243	-5	31	31	171		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	18:25:59	3387	BP23MVEXP-ENV-DC-078			Camera	65	620869	6253272	620873	6253243	-4	29	29	172		(Raw Nav, Kongsberg 14208, img#7) (B)
13-Jul-2023	18:26:49	3387	BP23MVEXP-ENV-DC-078			Camera	65	620870	6253267	620873	6253243	-3	24	24	172		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	18:27:10	3388	BP23MVEXP-ENV-DC-078			Camera	64	620870	6253265	620873	6253243	-3	22	22	173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	18:28:10	3389	BP23MVEXP-ENV-DC-078			Camera	64	620871	6253258	620873	6253243	-2	15	16	173		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	18:28:26	3390	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253257	620873	6253243	-1	14	14	174		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	18:28:37	3391	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253256	620873	6253243	-1	13	13	174		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	18:28:45	3392	BP23MVEXP-ENV-DC-078			Camera	64	620871	6253255	620873	6253243	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	18:28:53	3393	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253254	620873	6253243	-1	11	11	175		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	18:29:02	3394	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253253	620873	6253243	0	10	10	177		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	18:29:35	3395	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253250	620873	6253243	0	7	7	179		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	18:30:00	3396	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253247	620873	6253243	0	4	4	-176		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	18:30:07	3397	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253246	620873	6253243	0	3	3	-175		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	18:30:14	3398	BP23MVEXP-ENV-DC-078			Camera	65	620873	6253245	620873	6253243	0	2	2	-172		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	18:30:25	3399	BP23MVEXP-ENV-DC-078			Camera	65	620874	6253245	620873	6253243	1	2	2	-161		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	18:30:33	3400	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253244	620873	6253243	1	1	1	-140		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	18:31:08	3401	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253241	620873	6253243	1	-2	3	-27		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	18:31:14	3402	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253240	620873	6253243	1	-3	3	-24		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	18:31:53	3403	BP23MVEXP-ENV-DC-078			Camera	64	620875	6253236	620873	6253243	2	-7	8	-18		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	18:33:06	3404	BP23MVEXP-ENV-DC-078			Camera	64	620877	6253229	620873	6253243	4	-15	15	-14		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	18:34:12	3405	BP23MVEXP-ENV-DC-078			Camera	65	620878	6253222	620873	6253243	5	-21	22	-13		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	18:41:27	3406	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253199	620873	6253243	1	-44	44	-2		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	18:53:00	3407	BP23MVEXP-ENV-DC-078			Camera	64	620824	6253235	620873	6253243	-49	-8	50	80		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	18:53:51	3408	BP23MVEXP-ENV-DC-078			Camera	64	620828	6253236	620873	6253243	-45	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	18:54:19	3409	BP23MVEXP-ENV-DC-078			Camera	65	620831	6253237	620873	6253243	-42	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	18:54:49	3410	BP23MVEXP-ENV-DC-078			Camera	64	620834	6253237	620873	6253243	-39	-6	39	82		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	18:56:09	3411	BP23MVEXP-ENV-DC-078			Camera	64	620843	6253238	620873	6253243	-30	-5	30	80		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	18:56:35	3412	BP23MVEXP-ENV-DC-078			Camera	64	620846	6253238	620873	6253243	-27	-5	27	80		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	18:57:30	3413	BP23MVEXP-ENV-DC-078			Camera	64	620853	6253240	620873	6253243	-20	-3	20	80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	18:58:00	3414	BP23MVEXP-ENV-DC-078			Camera	64	620856	6253240	620873	6253243	-17	-3	18	81		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	18:59:00	3415	BP23MVEXP-ENV-DC-078			Camera	64	620862	6253242	620873	6253243	-11	-1	11	85		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	19:00:06	3416	BP23MVEXP-ENV-DC-078			Camera	64	620868	6253243	620873	6253243	-5	0	5	92		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	19:00:41	3417	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253244	620873	6253243	-1	1	1	130		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	19:00:49	3418	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253244	620873	6253243	0	1	1	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	19:01:09	3419	BP23MVEXP-ENV-DC-078			Camera	64	620875	6253244	620873	6253243	2	1	2	-122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	19:01:43	3420	BP23MVEXP-ENV-DC-078			Camera	64	620879	6253245	620873	6253243	6	2	6	-107		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	19:02:44	3421	BP23MVEXP-ENV-DC-078			Camera	64	620885	6253246	620873	6253243	12	3	12	-102		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	19:03:53	3422	BP23MVEXP-ENV-DC-078			Camera	64	620892	6253247	620873	6253243	19	4	19	-102		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	19:04:34	3423	BP23MVEXP-ENV-DC-078			Camera	64	620895	6253247	620873	6253243	22	4	23	-101		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	19:05:41	3424	BP23MVEXP-ENV-DC-078			Camera	64	620902	6253249	620873	6253243	29	6	29	-101		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	19:06:23	3425	BP23MVEXP-ENV-DC-078			Camera	64	620906	6253250	620873	6253243	33	7	34	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	19:07:31	3426	BP23MVEXP-ENV-DC-078			Camera	64	620913	6253251	620873	6253243	40	8	41	-101		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	19:08:17	3427	BP23MVEXP-ENV-DC-078			Camera	65	620918	6253252	620873	6253243	45	9	46	-101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	19:08:44	3428	BP23MVEXP-ENV-DC-078			Camera	65	620921	6253253	620873	6253243	48	10	49	-101		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023		3429A	BP23MVEXP-ENV-DC-078							620873	6253243						Photo no fix
13-Jul-2023	20:58:01	3429	BP23MVEXP-ENV-DC-079			Camera	62	621420	6249328	621428	6249280	-8	48	49	171		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	21:00:21	3430	BP23MVEXP-ENV-DC-079			Camera	62	621423	6249322	621428	6249280	-5	42	43	173		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	21:01:00	3431	BP23MVEXP-ENV-DC-079			Camera	62	621423	6249318	621428	6249280	-5	38	38	173		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	21:01:23	3432	BP23MVEXP-ENV-DC-079			Camera	62	621424	6249315	621428	6249280	-4	35	36	173		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	21:01:51	3433	BP23MVEXP-ENV-DC-079			Camera	62	621424	6249312	621428	6249280	-4	32	33	174		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	21:03:33	3434	BP23MVEXP-ENV-DC-079			Camera	62	621426	6249302	621428	6249280	-2	23	23	175		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	21:04:39	3435	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249300	621428	6249280	3	20	20	-171		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	21:05:32	3436	BP23MVEXP-ENV-DC-079			Camera	62	621428	6249291	621428	6249280	0	11	11	-178		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	21:06:35	3437	BP23MVEXP-ENV-DC-079			Camera	62	621429	6249284	621428	6249280	1	4	4	-160		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	21:06:43	3438	BP23MVEXP-ENV-DC-079			Camera	62	621429	6249283	621428	6249280	1	3	4	-155		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	21:06:57	3439	BP23MVEXP-ENV-DC-079			Camera	62	621430	6249282	621428	6249280	2	2	2	-135		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	21:08:09	3440	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249274	621428	6249280	3	-6	6	-26		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	21:08:17	3441	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249274	621428	6249280	3	-6	7	-24		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	21:09:06	3442	BP23MVEXP-ENV-DC-079			Camera	62	621432	6249268	621428	6249280	4	-12	12	-19		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	21:09:15	3443	BP23MVEXP-ENV-DC-079			Camera	62	621432	6249268	621428	6249280	4	-13	13	-18		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	21:09:56	3444	BP23MVEXP-ENV-DC-079			Camera	62	621433	6249263	621428	6249280	5	-17	17	-17		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	21:10:24	3445	BP23MVEXP-ENV-DC-079			Camera	62	621433	6249261	621428	6249280	5	-19	20	-16		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	21:11:03	3446	BP23MVEXP-ENV-DC-079			Camera	62	621434	6249257	621428	6249280	6	-23	24	-15		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	21:11:27	3447	BP23MVEXP-ENV-DC-079			Camera	62	621435	6249254	621428	6249280	7	-26	27	-14		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	21:11:34	3448	BP23MVEXP-ENV-DC-079			Camera	62	621435	6249253	621428	6249280	7	-27	27	-14		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	21:12:42	3449	BP23MVEXP-ENV-DC-079			Camera	62	621436	6249246	621428	6249280	8	-34	35	-14		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	21:12:56	3450	BP23MVEXP-ENV-DC-079			Camera	62	621436	6249245	621428	6249280	8	-35	36	-13		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	21:13:38	3451	BP23MVEXP-ENV-DC-079			Camera	62	621437	6249241	621428	6249280	9	-39	40	-13		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	21:14:55	3452	BP23MVEXP-ENV-DC-079			Camera	62	621438	6249233	621428	6249280	10	-47	49	-12		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	21:23:38	3453	BP23MVEXP-ENV-DC-079			Camera	62	621400	6249256	621428	6249280	-28	-24	37	50		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	21:29:00	3454	BP23MVEXP-ENV-DC-079			Camera	62	621377	6249271	621428	6249280	-52	-9	52	81		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	21:29:08	3455	BP23MVEXP-ENV-DC-079			Camera	62	621377	6249271	621428	6249280	-51	-9	52	80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	21:29:27	3456	BP23MVEXP-ENV-DC-079			Camera	62	621378	6249271	621428	6249280	-50	-9	51	80		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	21:29:42	3457	BP23MVEXP-ENV-DC-079			Camera	62	621379	6249271	621428	6249280	-49	-9	49	80		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	21:29:52	3458	BP23MVEXP-ENV-DC-079			Camera	62	621380	6249271	621428	6249280	-48	-9	49	80		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	21:30:05	3459	BP23MVEXP-ENV-DC-079			Camera	62	621381	6249271	621428	6249280	-47	-9	48	79		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	21:30:42	3460	BP23MVEXP-ENV-DC-079			Camera	62	621385	6249272	621428	6249280	-43	-8	44	79		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	21:31:36	3461	BP23MVEXP-ENV-DC-079			Camera	62	621391	6249272	621428	6249280	-37	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	21:31:51	3462	BP23MVEXP-ENV-DC-079			Camera	62	621393	6249272	621428	6249280	-35	-8	36	78		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	21:32:35	3463	BP23MVEXP-ENV-DC-079			Camera	62	621399	6249273	621428	6249280	-29	-7	30	77		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	21:33:21	3464	BP23MVEXP-ENV-DC-079			Camera	62	621403	6249275	621428	6249280	-25	-5	25	79		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	21:33:50	3465	BP23MVEXP-ENV-DC-079			Camera	62	621406	6249276	621428	6249280	-22	-4	22	80		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	21:34:36	3466	BP23MVEXP-ENV-DC-079			Camera	62	621410	6249277	621428	6249280	-18	-3	18	79		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	21:35:21	3467	BP23MVEXP-ENV-DC-079			Camera	62	621415	6249277	621428	6249280	-13	-3	13	78		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	21:35:49	3468	BP23MVEXP-ENV-DC-079			Camera	62	621418	6249278	621428	6249280	-10	-2	10	77		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	21:36:06	3469	BP23MVEXP-ENV-DC-079			Camera	62	621420	6249278	621428	6249280	-8	-2	8	74		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	21:37:02	3470	BP23MVEXP-ENV-DC-079			Camera	62	621425	6249279	621428	6249280	-3	-1	3	73		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	21:37:08	3471	BP23MVEXP-ENV-DC-079			Camera	62	621426	6249279	621428	6249280	-2	-1	2	67		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	21:37:20	3472	BP23MVEXP-ENV-DC-079			Camera	62	621427	6249279	621428	6249280	-1	-1	1	56		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	21:37:28	3473	BP23MVEXP-ENV-DC-079			Camera	62	621428	6249280	621428	6249280	0	0	0	28		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	21:37:35	3474	BP23MVEXP-ENV-DC-079			Camera	62	621428	6249280	621428	6249280	0	0	0	-53		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	21:37:47	3475	BP23MVEXP-ENV-DC-079			Camera	62	621429	6249280	621428	6249280	1	0	1	-87		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	21:38:00	3476	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249280	621428	6249280	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	21:38:12	3477	BP23MVEXP-ENV-DC-079			Camera	62	621432	6249280	621428	6249280	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	21:39:48	3478	BP23MVEXP-ENV-DC-079			Camera	62	621442	6249283	621428	6249280	14	3	14	-101		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	21:40:18	3479	BP23MVEXP-ENV-DC-079			Camera	62	621445	6249283	621428	6249280	17	3	17	-100		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	21:40:45	3480	BP23MVEXP-ENV-DC-079			Camera	62	621448	6249284	621428	6249280	20	4	20	-101		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
13-Jul-2023	21:42:24	3481	BP23MVEXP-ENV-DC-079			Camera	62	621458	6249285	621428	6249280	30	5	30	-100		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
13-Jul-2023	21:43:32	3482	BP23MVEXP-ENV-DC-079			Camera	62	621464	6249286	621428	6249280	36	6	37	-100		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
13-Jul-2023	21:43:43	3483	BP23MVEXP-ENV-DC-079			Camera	62	621466	6249287	621428	6249280	38	7	38	-100		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
13-Jul-2023	21:45:27	3484	BP23MVEXP-ENV-DC-079			Camera	62	621476	6249288	621428	6249280	48	8	48	-100		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
14-Jul-2023	00:37:56	3485	BP23MVEXP-ENV-DC-080			Camera	64	621909	6245393	621960	6245400	-51	-7	52	83		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	00:39:08	3486	BP23MVEXP-ENV-DC-080			Camera	64	621910	6245394	621960	6245400	-50	-6	50	83		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	00:39:49	3487	BP23MVEXP-ENV-DC-080			Camera	64	621913	6245394	621960	6245400	-47	-6	47	83		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	00:40:59	3488	BP23MVEXP-ENV-DC-080			Camera	64	621922	6245395	621960	6245400	-38	-5	39	83		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	00:41:22	3489	BP23MVEXP-ENV-DC-080			Camera	64	621923	6245396	621960	6245400	-37	-4	37	83		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	00:41:32	3490	BP23MVEXP-ENV-DC-080			Camera	64	621924	6245396	621960	6245400	-36	-4	36	83		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	00:42:09	3491	BP23MVEXP-ENV-DC-080			Camera	64	621929	6245396	621960	6245400	-31	-4	32	83		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	00:42:56	3492	BP23MVEXP-ENV-DC-080			Camera	64	621933	6245397	621960	6245400	-27	-3	27	83		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	00:44:54	3493	BP23MVEXP-ENV-DC-080			Camera	64	621945	6245399	621960	6245400	-15	-1	15	85		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	00:45:20	3494	BP23MVEXP-ENV-DC-080			Camera	64	621948	6245399	621960	6245400	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	00:46:01	3495	BP23MVEXP-ENV-DC-080			Camera	64	621952	6245400	621960	6245400	-8	0	8	90		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	00:47:17	3496	BP23MVEXP-ENV-DC-080			Camera	64	621960	6245401	621960	6245400	0	1	1	-164		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	00:47:28	3497	BP23MVEXP-ENV-DC-080			Camera	64	621961	6245401	621960	6245400	1	1	2	-128		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	00:49:07	3498	BP23MVEXP-ENV-DC-080			Camera	64	621972	6245403	621960	6245400	12	3	12	-106		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	00:49:45	3499	BP23MVEXP-ENV-DC-080			Camera	64	621975	6245404	621960	6245400	15	4	16	-103		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	00:50:02	3500	BP23MVEXP-ENV-DC-080			Camera	64	621977	6245404	621960	6245400	17	4	18	-103		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	00:50:46	3501	BP23MVEXP-ENV-DC-080			Camera	64	621981	6245405	621960	6245400	21	5	22	-103		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	00:51:27	3502	BP23MVEXP-ENV-DC-080			Camera	64	621985	6245405	621960	6245400	25	5	26	-102		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	00:51:55	3503	BP23MVEXP-ENV-DC-080			Camera	64	621988	6245406	621960	6245400	28	6	29	-102		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	00:52:28	3504	BP23MVEXP-ENV-DC-080			Camera	64	621992	6245406	621960	6245400	32	6	33	-101		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	00:52:52	3505	BP23MVEXP-ENV-DC-080			Camera	64	621995	6245407	621960	6245400	35	7	35	-101		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	00:55:05	3506	BP23MVEXP-ENV-DC-080			Camera	64	622008	6245409	621960	6245400	48	9	48	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	00:55:16	3507	BP23MVEXP-ENV-DC-080			Camera	64	622008	6245409	621960	6245400	49	9	49	-100		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	01:07:47	3508	BP23MVEXP-ENV-DC-080			Camera	64	621970	6245350	621960	6245400	10	-50	51	-11		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	01:09:02	3509	BP23MVEXP-ENV-DC-080			Camera	64	621968	6245347	621960	6245400	8	-53	53	-8		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	01:10:16	3510	BP23MVEXP-ENV-DC-080			Camera	64	621968	6245353	621960	6245400	8	-47	48	-9		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	01:11:37	3511	BP23MVEXP-ENV-DC-080			Camera	64	621966	6245357	621960	6245400	6	-43	43	-9		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	01:12:16	3512	BP23MVEXP-ENV-DC-080			Camera	64	621966	6245360	621960	6245400	6	-40	41	-9		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	01:13:32	3513	BP23MVEXP-ENV-DC-080			Camera	64	621965	6245363	621960	6245400	5	-37	37	-8		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	01:14:08	3514	BP23MVEXP-ENV-DC-080			Camera	64	621965	6245365	621960	6245400	5	-35	35	-8		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	01:15:16	3515	BP23MVEXP-ENV-DC-080			Camera	64	621964	6245368	621960	6245400	4	-32	32	-7		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	01:16:28	3516	BP23MVEXP-ENV-DC-080			Camera	64	621963	6245372	621960	6245400	3	-28	28	-7		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	01:17:07	3517	BP23MVEXP-ENV-DC-080			Camera	64	621963	6245376	621960	6245400	3	-24	24	-6		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	01:17:37	3518	BP23MVEXP-ENV-DC-080			Camera	64	621962	6245379	621960	6245400	2	-21	21	-6		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	01:18:02	3519	BP23MVEXP-ENV-DC-080			Camera	64	621962	6245382	621960	6245400	2	-18	19	-5		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	01:18:36	3520	BP23MVEXP-ENV-DC-080			Camera	64	621961	6245385	621960	6245400	1	-15	15	-4		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	01:20:24	3521	BP23MVEXP-ENV-DC-080			Camera	64	621959	6245396	621960	6245400	-1	-4	4	21		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	01:21:09	3522	BP23MVEXP-ENV-DC-080			Camera	64	621958	6245401	621960	6245400	-2	1	2	112		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	01:21:46	3523	BP23MVEXP-ENV-DC-080			Camera	64	621958	6245404	621960	6245400	-2	4	5	151		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	01:22:28	3524	BP23MVEXP-ENV-DC-080			Camera	64	621957	6245409	621960	6245400	-3	9	10	161		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	01:22:37	3525	BP23MVEXP-ENV-DC-080			Camera	64	621957	6245410	621960	6245400	-3	10	10	161		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	01:23:55	3526	BP23MVEXP-ENV-DC-080			Camera	64	621956	6245416	621960	6245400	-4	16	16	164		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	01:25:46	3527	BP23MVEXP-ENV-DC-080			Camera	64	621954	6245423	621960	6245400	-6	23	24	165		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	01:26:31	3528	BP23MVEXP-ENV-DC-080			Camera	64	621953	6245428	621960	6245400	-7	28	29	165		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	01:27:51	3529	BP23MVEXP-ENV-DC-080			Camera	64	621951	6245435	621960	6245400	-9	35	36	166		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	01:28:35	3530	BP23MVEXP-ENV-DC-080			Camera	64	621951	6245440	621960	6245400	-9	40	41	167		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	01:29:56	3531	BP23MVEXP-ENV-DC-080			Camera	64	621949	6245448	621960	6245400	-11	48	49	167		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	03:21:28	3532	BP23MVEXP-ENV-DC-081			Camera	67	622515	6241397	622506	6241445	9	-48	49	-11		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	03:23:49	3533	BP23MVEXP-ENV-DC-081			Camera	67	622514	6241404	622506	6241445	8	-42	42	-11		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	03:24:21	3534	BP23MVEXP-ENV-DC-081			Camera	67	622513	6241407	622506	6241445	7	-38	39	-10		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	03:24:51	3535	BP23MVEXP-ENV-DC-081			Camera	67	622511	6241410	622506	6241445	5	-35	35	-9		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	03:25:30	3536	BP23MVEXP-ENV-DC-081			Camera	67	622510	6241414	622506	6241445	4	-31	31	-8		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	03:26:02	3537	BP23MVEXP-ENV-DC-081			Camera	67	622510	6241418	622506	6241445	4	-27	28	-8		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	03:26:09	3538	BP23MVEXP-ENV-DC-081			Camera	67	622510	6241418	622506	6241445	4	-27	27	-8		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	03:26:35	3539	BP23MVEXP-ENV-DC-081			Camera	67	622509	6241421	622506	6241445	3	-24	24	-8		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	03:27:08	3540	BP23MVEXP-ENV-DC-081			Camera	67	622509	6241424	622506	6241445	3	-21	21	-7		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	03:27:41	3541	BP23MVEXP-ENV-DC-081			Camera	67	622508	6241428	622506	6241445	2	-17	17	-6		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	03:27:50	3542	BP23MVEXP-ENV-DC-081			Camera	67	622507	6241429	622506	6241445	1	-16	16	-5		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	03:28:00	3543	BP23MVEXP-ENV-DC-081			Camera	67	622507	6241430	622506	6241445	1	-15	15	-5		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	03:28:29	3544	BP23MVEXP-ENV-DC-081			Camera	67	622507	6241432	622506	6241445	1	-13	13	-4		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	03:28:56	3545	BP23MVEXP-ENV-DC-081			Camera	67	622506	6241435	622506	6241445	0	-10	10	-2		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	03:29:14	3546	BP23MVEXP-ENV-DC-081			Camera	67	622506	6241437	622506	6241445	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	03:29:35	3547	BP23MVEXP-ENV-DC-081			Camera	67	622506	6241439	622506	6241445	0	-6	6	3		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	03:29:58	3548	BP23MVEXP-ENV-DC-081			Camera	67	622505	6241441	622506	6241445	-1	-4	4	11		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	03:30:28	3549	BP23MVEXP-ENV-DC-081			Camera	67	622505	6241444	622506	6241445	-1	-1	1	57		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	03:31:10	3550	BP23MVEXP-ENV-DC-081			Camera	67	622504	6241449	622506	6241445	-2	4	4	149		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	03:31:16	3551	BP23MVEXP-ENV-DC-081			Camera	67	622504	6241449	622506	6241445	-2	4	5	152		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	03:31:42	3552	BP23MVEXP-ENV-DC-081			Camera	67	622503	6241452	622506	6241445	-3	7	7	159		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	03:32:15	3553	BP23MVEXP-ENV-DC-081			Camera	67	622503	6241455	622506	6241445	-3	10	11	163		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	03:33:45	3554	BP23MVEXP-ENV-DC-081			Camera	67	622501	6241464	622506	6241445	-5	19	20	165		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	03:34:02	3555	BP23MVEXP-ENV-DC-081			Camera	67	622501	6241466	622506	6241445	-5	21	22	166		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	03:34:34	3556	BP23MVEXP-ENV-DC-081			Camera	67	622500	6241469	622506	6241445	-6	24	25	166		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	03:35:00	3557	BP23MVEXP-ENV-DC-081			Camera	67	622500	6241472	622506	6241445	-6	27	28	167		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	03:35:42	3558	BP23MVEXP-ENV-DC-081			Camera	67	622499	6241476	622506	6241445	-7	31	32	167		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	03:36:16	3559	BP23MVEXP-ENV-DC-081			Camera	67	622498	6241479	622506	6241445	-8	34	35	167		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	03:36:45	3560	BP23MVEXP-ENV-DC-081			Camera	67	622498	6241483	622506	6241445	-8	38	38	167		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	03:37:26	3561	BP23MVEXP-ENV-DC-081				67	622497	6241487	622506	6241445	-9	42	43	168		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A) Fix no photo
14-Jul-2023	03:37:47	3562	BP23MVEXP-ENV-DC-081			Camera	67	622496	6241489	622506	6241445	-10	44	45	168		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	03:37:55	3563	BP23MVEXP-ENV-DC-081			Camera	67	622496	6241489	622506	6241445	-10	44	45	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	03:53:12	3564	BP23MVEXP-ENV-DC-081			Camera	67	622551	6241453	622506	6241445	45	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	03:53:50	3565	BP23MVEXP-ENV-DC-081			Camera	67	622547	6241453	622506	6241445	41	8	41	-101		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	03:54:25	3566	BP23MVEXP-ENV-DC-081			Camera	67	622542	6241452	622506	6241445	37	7	37	-101		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	03:54:58	3567	BP23MVEXP-ENV-DC-081			Camera	67	622539	6241451	622506	6241445	33	6	33	-101		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	03:55:27	3568	BP23MVEXP-ENV-DC-081			Camera	67	622536	6241451	622506	6241445	30	6	30	-101		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	03:55:51	3569	BP23MVEXP-ENV-DC-081			Camera	67	622533	6241450	622506	6241445	27	5	28	-101		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	03:56:27	3570	BP23MVEXP-ENV-DC-081			Camera	67	622530	6241449	622506	6241445	24	4	24	-101		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	03:56:52	3571	BP23MVEXP-ENV-DC-081			Camera	67	622528	6241449	622506	6241445	22	4	22	-101		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	03:57:35	3572	BP23MVEXP-ENV-DC-081			Camera	68	622523	6241448.2	622506.0	6241445.0	-17	-3	18	260		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:58:14	3573	BP23MVEXP-ENV-DC-081			Camera	68	622519	6241447.2	622506.0	6241445.0	-13	-2	13	261		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:58:48	3574	BP23MVEXP-ENV-DC-081			Camera	68	622516	6241446.6	622506.0	6241445.0	-10	-2	10	261		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:59:16	3575	BP23MVEXP-ENV-DC-081			Camera	68	622514	6241445.9	622506.0	6241445.0	-8	-1	8	263		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:59:43	3576	BP23MVEXP-ENV-DC-081			Camera	68	622511	6241445.3	622506.0	6241445.0	-5	0	5	267		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:00:12	3577	BP23MVEXP-ENV-DC-081			Camera	68	622508	6241444.7	622506.0	6241445.0	-2	0	2	277		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:00:44	3578	BP23MVEXP-ENV-DC-081			Camera	68	622505	6241443.9	622506.0	6241445.0	1	1	2	49		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:01:10	3579	BP23MVEXP-ENV-DC-081			Camera	68	622502	6241443.3	622506.0	6241445.0	4	2	4	67		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:01:43	3580	BP23MVEXP-ENV-DC-081			Camera	68	622499	6241442.8	622506.0	6241445.0	7	2	7	73		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:02:11	3581	BP23MVEXP-ENV-DC-081			Camera	68	622496	6241442.4	622506.0	6241445.0	10	3	10	76		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:02:32	3582	BP23MVEXP-ENV-DC-081			Camera	68	622494	6241441.9	622506.0	6241445.0	12	3	13	76		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:02:51	3583	BP23MVEXP-ENV-DC-081			Camera	68	622492	6241441.4	622506.0	6241445.0	14	4	15	76		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:03:09	3584	BP23MVEXP-ENV-DC-081			Camera	68	622490	6241441.2	622506.0	6241445.0	16	4	17	77		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:03:28	3585	BP23MVEXP-ENV-DC-081			Camera	68	622488	6241440.7	622506.0	6241445.0	18	4	18	77		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:04:14	3586	BP23MVEXP-ENV-DC-081			Camera	68	622483	6241440.0	622506.0	6241445.0	23	5	23	78		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:05:00	3587	BP23MVEXP-ENV-DC-081			Camera	67	622479	6241439	622506	6241445	-27	-6	28	78		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
14-Jul-2023	04:05:33	3588	BP23MVEXP-ENV-DC-081			Camera	67	622475	6241438	622506	6241445	-31	-7	31	78		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
14-Jul-2023	04:05:50	3589	BP23MVEXP-ENV-DC-081			Camera	67	622473	6241438	622506	6241445	-33	-7	33	78		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
14-Jul-2023	04:06:21	3590A	BP23MVEXP-ENV-DC-081			Camera	68	622470	6241437	622506	6241445	-36	-8	37	77		(Raw Nav, Kongsberg 14208, img#59) (B)
14-Jul-2023	04:07:15	3590B	BP23MVEXP-ENV-DC-081			Camera	68	622465	6241436	622506	6241445	-41	-9	42	78		(Raw Nav, Kongsberg 14208, img#60) (B)
14-Jul-2023	04:07:15	3591	BP23MVEXP-ENV-DC-081														(Raw Nav, Kongsberg 14208, img#60) (B) Photo no fix
14-Jul-2023	05:50:19	3590C	BP23MVEXP-ENV-DC-082			Camera	64	623045	6237488	623038	6237536	7	-48	49	-8		(Raw Nav, Kongsberg 14208, img#61) (B) (T.A)
14-Jul-2023	05:51:37	3591	BP23MVEXP-ENV-DC-082			Camera	64	623045	6237488	623038	6237536	7	-48	48	-8		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	05:53:28	3592	BP23MVEXP-ENV-DC-082			Camera	64	623045	6237489	623038	6237536	7	-47	48	-8		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	05:55:35	3593	BP23MVEXP-ENV-DC-082			Camera	64	623043	6237498	623038	6237536	5	-38	38	-7		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	05:55:56	3594	BP23MVEXP-ENV-DC-082			Camera	64	623042	6237500	623038	6237536	4	-36	36	-7		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	05:58:12	3595	BP23MVEXP-ENV-DC-082			Camera	64	623040	6237513	623038	6237536	2	-23	23	-6		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	05:59:14	3596	BP23MVEXP-ENV-DC-082			Camera	64	623040	6237520	623038	6237536	2	-16	16	-6		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	05:59:23	3597	BP23MVEXP-ENV-DC-082			Camera	64	623039	6237521	623038	6237536	1	-15	15	-4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	06:00:09	3598	BP23MVEXP-ENV-DC-082			Camera	64	623039	6237525	623038	6237536	1	-11	11	-4		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	06:00:54	3599	BP23MVEXP-ENV-DC-082			Camera	64	623038	6237529	623038	6237536	0	-7	7	-2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	06:01:22	3600	BP23MVEXP-ENV-DC-082			Camera	64	623037	6237533	623038	6237536	-1	-3	3	15		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	06:02:05	3601	BP23MVEXP-ENV-DC-082			Camera	64	623037	6237538	623038	6237536	-1	2	2	139		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	06:02:18	3602	BP23MVEXP-ENV-DC-082			Camera	64	623036	6237539	623038	6237536	-2	3	3	149		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	06:02:24	3603	BP23MVEXP-ENV-DC-082			Camera	64	623036	6237539	623038	6237536	-2	3	4	152		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	06:03:32	3604	BP23MVEXP-ENV-DC-082			Camera	64	623035	6237547	623038	6237536	-3	11	11	165		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	06:04:51	3605	BP23MVEXP-ENV-DC-082			Camera	64	623033	6237555	623038	6237536	-5	19	19	165		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	06:05:20	3606	BP23MVEXP-ENV-DC-082			Camera	64	623032	6237558	623038	6237536	-6	22	23	166		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	06:05:48	3607	BP23MVEXP-ENV-DC-082			Camera	64	623032	6237561	623038	6237536	-6	25	25	166		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	06:06:04	3608	BP23MVEXP-ENV-DC-082			Camera	64	623032	6237562	623038	6237536	-6	26	27	167		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	06:06:38	3609	BP23MVEXP-ENV-DC-082			Camera	64	623031	6237565	623038	6237536	-7	29	30	167		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	06:07:52	3610	BP23MVEXP-ENV-DC-082			Camera	64	623030	6237573	623038	6237536	-8	37	38	168		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	06:08:29	3611	BP23MVEXP-ENV-DC-082			Camera	64	623030	6237577	623038	6237536	-8	41	42	169		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	06:09:22	3612	BP23MVEXP-ENV-DC-082			Camera	64	623029	6237582	623038	6237536	-9	46	47	168		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	06:09:41	3613	BP23MVEXP-ENV-DC-082			Camera	64	623029	6237583	623038	6237536	-9	47	48	169		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	06:12:29	3614	BP23MVEXP-ENV-DC-082			Camera	64	623027	6237583	623038	6237536	-11	47	48	167		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	06:14:41	3615	BP23MVEXP-ENV-DC-082			Camera	64	623019	6237571	623038	6237536	-19	36	40	152		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	06:15:46	3616	BP23MVEXP-ENV-DC-082			Camera	64	623015	6237566	623038	6237536	-23	30	38	142		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	06:16:30	3617	BP23MVEXP-ENV-DC-082			Camera	64	623012	6237562	623038	6237536	-26	26	37	136		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	06:21:50	3618	BP23MVEXP-ENV-DC-082			Camera	64	622994	6237536	623038	6237536	-45	0	44	89		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	06:23:36	3619	BP23MVEXP-ENV-DC-082			Camera	64	622991	6237529	623038	6237536	-47	-7	48	82		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	06:24:15	3620	BP23MVEXP-ENV-DC-082			Camera	64	622994	6237530	623038	6237536	-44	-6	45	82		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	06:25:02	3621	BP23MVEXP-ENV-DC-082			Camera	64	622999	6237531	623038	6237536	-39	-5	40	82		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	06:25:46	3622	BP23MVEXP-ENV-DC-082			Camera	64	623004	6237531	623038	6237536	-34	-5	35	82		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	06:26:41	3623	BP23MVEXP-ENV-DC-082			Camera	64	623009	6237532	623038	6237536	-29	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	06:27:12	3624	BP23MVEXP-ENV-DC-082			Camera	64	623013	6237532	623038	6237536	-25	-4	26	82		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	06:28:07	3625	BP23MVEXP-ENV-DC-082			Camera	64	623018	6237534	623038	6237536	-20	-2	20	83		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	06:29:08	3626	BP23MVEXP-ENV-DC-082			Camera	64	623025	6237534	623038	6237536	-13	-2	13	83		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	06:29:45	3627	BP23MVEXP-ENV-DC-082			Camera	64	623028	6237535	623038	6237536	-10	-1	10	83		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	06:30:54	3628	BP23MVEXP-ENV-DC-082			Camera	64	623035	6237535	623038	6237536	-3	-1	3	78		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	06:31:15	3629	BP23MVEXP-ENV-DC-082			Camera	64	623037	6237536	623038	6237536	-1	0	1	62		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	06:31:34	3630	BP23MVEXP-ENV-DC-082			Camera	64	623039	6237536	623038	6237536	1	0	1	-94		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	06:31:59	3631	BP23MVEXP-ENV-DC-082			Camera	64	623042	6237537	623038	6237536	4	1	4	-102		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	06:33:02	3632	BP23MVEXP-ENV-DC-082			Camera	64	623048	6237538	623038	6237536	10	2	10	-99		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	06:33:35	3633	BP23MVEXP-ENV-DC-082			Camera	64	623051	6237538	623038	6237536	13	2	13	-99		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	06:34:42	3634	BP23MVEXP-ENV-DC-082			Camera	64	623057	6237539	623038	6237536	20	3	20	-99		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	06:35:22	3635	BP23MVEXP-ENV-DC-082			Camera	64	623062	6237540	623038	6237536	24	4	24	-99		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	06:35:38	3636	BP23MVEXP-ENV-DC-082			Camera	64	623064	6237540	623038	6237536	26	4	26	-98		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	06:35:44	3637	BP23MVEXP-ENV-DC-082			Camera	64	623064	6237540	623038	6237536	26	4	27	-98		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	06:36:13	3638	BP23MVEXP-ENV-DC-082			Camera	64	623067	6237540	623038	6237536	29	4	29	-99		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	06:37:35	3639	BP23MVEXP-ENV-DC-082			Camera	64	623076	6237542	623038	6237536	38	6	38	-99		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	06:37:52	3640	BP23MVEXP-ENV-DC-082			Camera	64	623077	6237542	623038	6237536	40	6	40	-99		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	06:38:03	3641	BP23MVEXP-ENV-DC-082			Camera	64	623079	6237543	623038	6237536	41	7	41	-99		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
14-Jul-2023	06:39:04	3642	BP23MVEXP-ENV-DC-082			Camera	64	623084	6237543	623038	6237536	46	7	47	-99		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
14-Jul-2023	08:50:33	3643	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233448	623635	6233497	7	-49	49	-8		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	08:51:50	3644	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233449	623635	6233497	7	-48	49	-8		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	08:52:17	3645	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233450	623635	6233497	7	-47	47	-8		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	08:52:32	3646	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233452	623635	6233497	6	-46	46	-8		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	08:52:55	3647	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233454	623635	6233497	6	-43	44	-8		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	08:53:08	3648	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233455	623635	6233497	6	-42	42	-8		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	08:53:30	3649	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233457	623635	6233497	6	-40	40	-8		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	08:53:44	3650	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233459	623635	6233497	5	-38	39	-8		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	08:54:03	3651	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233461	623635	6233497	5	-36	37	-8		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	08:54:17	3652	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233462	623635	6233497	5	-35	35	-8		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	08:54:25	3653	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233463	623635	6233497	5	-34	35	-8		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	08:54:54	3654	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233466	623635	6233497	4	-31	32	-7		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	08:55:27	3655	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233469	623635	6233497	4	-28	28	-7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	08:55:37	3656	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233470	623635	6233497	4	-27	27	-7		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	08:56:59	3657	BP23MVEXP-ENV-DC-083			Camera	66	623638	6233479	623635	6233497	3	-18	19	-8		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	08:57:06	3658	BP23MVEXP-ENV-DC-083			Camera	66	623638	6233479	623635	6233497	3	-18	18	-8		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	08:58:22	3659	BP23MVEXP-ENV-DC-083			Camera	66	623635	6233487	623635	6233497	0	-10	10	-2		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	08:58:29	3660	BP23MVEXP-ENV-DC-083			Camera	66	623635	6233488	623635	6233497	0	-10	10	-1		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	08:59:35	3661	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233494	623635	6233497	-1	-3	3	15		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	08:59:58	3662	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233496	623635	6233497	-1	-1	1	60		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	09:00:16	3663	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233498	623635	6233497	-1	1	2	134		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	09:00:52	3664	BP23MVEXP-ENV-DC-083			Camera	66	623633	6233502	623635	6233497	-2	5	5	157		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	09:01:42	3665	BP23MVEXP-ENV-DC-083			Camera	66	623632	6233507	623635	6233497	-3	10	10	164		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	09:01:50	3666	BP23MVEXP-ENV-DC-083			Camera	66	623632	6233508	623635	6233497	-3	11	11	164		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	09:02:38	3667	BP23MVEXP-ENV-DC-083			Camera	66	623631	6233512	623635	6233497	-4	15	16	166		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	09:03:04	3668	BP23MVEXP-ENV-DC-083			Camera	66	623630	6233515	623635	6233497	-5	18	19	166		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	09:03:49	3669	BP23MVEXP-ENV-DC-083			Camera	66	623630	6233520	623635	6233497	-5	23	24	167		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	09:04:19	3670	BP23MVEXP-ENV-DC-083			Camera	66	623629	6233523	623635	6233497	-6	26	27	168		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	09:05:09	3671	BP23MVEXP-ENV-DC-083			Camera	66	623628	6233528	623635	6233497	-7	31	32	168		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	09:06:01	3672	BP23MVEXP-ENV-DC-083			Camera	66	623628	6233534	623635	6233497	-7	37	37	169		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	09:06:14	3673	BP23MVEXP-ENV-DC-083			Camera	66	623627	6233535	623635	6233497	-8	38	39	169		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	09:06:49	3674	BP23MVEXP-ENV-DC-083			Camera	66	623627	6233538	623635	6233497	-9	41	42	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	09:07:36	3675	BP23MVEXP-ENV-DC-083			Camera	66	623626	6233543	623635	6233497	-9	46	47	168		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	09:20:05	3676	BP23MVEXP-ENV-DC-083			Camera	66	623588	6233488	623635	6233497	-48	-9	48	80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	09:22:39	3677	BP23MVEXP-ENV-DC-083			Camera	66	623599	6233490	623635	6233497	-36	-7	37	79		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	09:23:14	3678	BP23MVEXP-ENV-DC-083			Camera	66	623602	6233490	623635	6233497	-33	-7	33	79		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	09:23:50	3679	BP23MVEXP-ENV-DC-083			Camera	66	623606	6233492	623635	6233497	-29	-5	29	79		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	09:24:41	3680	BP23MVEXP-ENV-DC-083			Camera	66	623611	6233492	623635	6233497	-24	-5	25	78		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	09:25:10	3681	BP23MVEXP-ENV-DC-083			Camera	66	623614	6233492	623635	6233497	-22	-5	22	78		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	09:25:41	3682	BP23MVEXP-ENV-DC-083			Camera	66	623617	6233493	623635	6233497	-18	-4	19	77		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	09:26:31	3683	BP23MVEXP-ENV-DC-083			Camera	66	623622	6233493	623635	6233497	-13	-4	13	73		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	09:27:21	3684	BP23MVEXP-ENV-DC-083			Camera	66	623628	6233494	623635	6233497	-7	-3	8	71		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	09:28:01	3685	BP23MVEXP-ENV-DC-083			Camera	66	623632	6233496	623635	6233497	-3	-1	4	66		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	09:28:29	3686	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233496	623635	6233497	-1	-1	1	37		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	09:28:48	3687	BP23MVEXP-ENV-DC-083			Camera	66	623636	6233497	623635	6233497	1	0	1	-75		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	09:29:18	3688	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233498	623635	6233497	4	1	4	-97		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	09:29:47	3689	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233498	623635	6233497	7	1	7	-102		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	09:30:07	3690	BP23MVEXP-ENV-DC-083			Camera	66	623643	6233499	623635	6233497	8	2	9	-103		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	09:30:52	3691	BP23MVEXP-ENV-DC-083			Camera	66	623648	6233499	623635	6233497	13	2	14	-100		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	09:31:10	3692	BP23MVEXP-ENV-DC-083			Camera	66	623650	6233500	623635	6233497	15	3	16	-100		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	09:31:52	3693	BP23MVEXP-ENV-DC-083			Camera	66	623655	6233500	623635	6233497	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
14-Jul-2023	09:32:15	3694	BP23MVEXP-ENV-DC-083			Camera	66	623657	6233500	623635	6233497	22	3	22	-98		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
14-Jul-2023	09:32:44	3695	BP23MVEXP-ENV-DC-083			Camera	66	623660	6233500	623635	6233497	25	3	25	-97		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
14-Jul-2023	09:33:16	3696	BP23MVEXP-ENV-DC-083			Camera	66	623664	6233500	623635	6233497	29	3	29	-97		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
14-Jul-2023	09:33:34	3697	BP23MVEXP-ENV-DC-083			Camera	66	623665	6233501	623635	6233497	30	4	31	-97		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
14-Jul-2023	09:34:01	3698	BP23MVEXP-ENV-DC-083			Camera	66	623668	6233502	623635	6233497	33	5	33	-98		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
14-Jul-2023	09:35:02	3699	BP23MVEXP-ENV-DC-083			Camera	66	623674	6233503	623635	6233497	39	6	39	-99		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
14-Jul-2023	09:35:46	3700	BP23MVEXP-ENV-DC-083			Camera	66	623678	6233504	623635	6233497	43	7	43	-100		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
14-Jul-2023	09:36:28	3701	BP23MVEXP-ENV-DC-083			Camera	66	623682	6233505	623635	6233497	47	8	48	-100		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
14-Jul-2023	09:37:09	3702	BP23MVEXP-ENV-DC-083			Camera	66	623684	6233506	623635	6233497	49	9	50	-100		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
14-Jul-2023	10:52:22	3703	BP23MVEXP-ENV-DC-084			Camera	68	624126	6229590	624135	6229544	-9	46	47	169		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	10:53:07	3704	BP23MVEXP-ENV-DC-084			Camera	68	624127	6229590	624135	6229544	-8	46	47	170		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	10:54:15	3705	BP23MVEXP-ENV-DC-084			Camera	68	624128	6229587	624135	6229544	-7	43	43	171		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	10:55:10	3706	BP23MVEXP-ENV-DC-084			Camera	68	624129	6229580	624135	6229544	-6	37	37	171		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	10:56:08	3707	BP23MVEXP-ENV-DC-084			Camera	68	624131	6229576	624135	6229544	-4	32	32	173		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	10:56:49	3708	BP23MVEXP-ENV-DC-084			Camera	68	624131	6229571	624135	6229544	-4	27	27	172		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	10:57:25	3709	BP23MVEXP-ENV-DC-084			Camera	68	624132	6229567	624135	6229544	-3	23	24	173		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	10:58:24	3710	BP23MVEXP-ENV-DC-084			Camera	68	624134	6229561	624135	6229544	-1	18	18	175		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	10:59:18	3711	BP23MVEXP-ENV-DC-084			Camera	68	624135	6229555	624135	6229544	0	11	11	179		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	11:00:15	3712	BP23MVEXP-ENV-DC-084			Camera	68	624136	6229549	624135	6229544	1	5	5	-173		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	11:00:31	3713	BP23MVEXP-ENV-DC-084			Camera	68	624136	6229548	624135	6229544	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	11:01:30	3714	BP23MVEXP-ENV-DC-084			Camera	68	624137	6229542	624135	6229544	2	-2	3	-45		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	11:02:15	3715	BP23MVEXP-ENV-DC-084			Camera	68	624139	6229538	624135	6229544	4	-6	7	-29		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	11:02:34	3716	BP23MVEXP-ENV-DC-084			Camera	68	624139	6229536	624135	6229544	4	-8	9	-24		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	11:02:54	3717	BP23MVEXP-ENV-DC-084			Camera	68	624139	6229534	624135	6229544	4	-10	11	-21		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	11:03:12	3718	BP23MVEXP-ENV-DC-084			Camera	68	624140	6229532	624135	6229544	5	-13	13	-21		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	11:03:31	3719	BP23MVEXP-ENV-DC-084			Camera	68	624140	6229529	624135	6229544	5	-15	16	-18		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	11:04:29	3720	BP23MVEXP-ENV-DC-084			Camera	68	624141	6229523	624135	6229544	6	-21	21	-16		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	11:04:59	3721	BP23MVEXP-ENV-DC-084			Camera	68	624142	6229521	624135	6229544	7	-23	24	-16		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	11:05:55	3722	BP23MVEXP-ENV-DC-084			Camera	68	624143	6229516	624135	6229544	8	-29	30	-15		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	11:06:11	3723	BP23MVEXP-ENV-DC-084			Camera	68	624143	6229514	624135	6229544	8	-30	31	-15		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	11:06:44	3724	BP23MVEXP-ENV-DC-084			Camera	68	624144	6229510	624135	6229544	9	-34	35	-15		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	11:07:16	3725	BP23MVEXP-ENV-DC-084			Camera	68	624144	6229507	624135	6229544	9	-37	38	-14		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	11:07:53	3726	BP23MVEXP-ENV-DC-084			Camera	68	624145	6229503	624135	6229544	10	-41	42	-14		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	11:08:19	3727	BP23MVEXP-ENV-DC-084			Camera	68	624145	6229501	624135	6229544	10	-43	44	-13		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	11:08:37	3728	BP23MVEXP-ENV-DC-084			Camera	68	624145	6229499	624135	6229544	10	-45	46	-13		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	11:27:16	3729	BP23MVEXP-ENV-DC-084			Camera	68	624083	6229535	624135	6229544	-52	-9	53	80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	11:27:54	3730	BP23MVEXP-ENV-DC-084			Camera	68	624087	6229535	624135	6229544	-48	-9	49	79		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	11:28:45	3731	BP23MVEXP-ENV-DC-084			Camera	68	624092	6229535	624135	6229544	-43	-9	44	79		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	11:28:58	3732	BP23MVEXP-ENV-DC-084			Camera	68	624094	6229536	624135	6229544	-41	-8	42	79		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	11:29:06	3733	BP23MVEXP-ENV-DC-084			Camera	68	624094	6229536	624135	6229544	-41	-8	41	78		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	11:29:33	3734	BP23MVEXP-ENV-DC-084			Camera	68	624097	6229536	624135	6229544	-38	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	11:30:03	3735	BP23MVEXP-ENV-DC-084			Camera	68	624101	6229537	624135	6229544	-34	-7	35	79		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	11:30:40	3736	BP23MVEXP-ENV-DC-084			Camera	68	624105	6229538	624135	6229544	-30	-6	31	79		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	11:31:08	3737	BP23MVEXP-ENV-DC-084			Camera	68	624108	6229539	624135	6229544	-27	-5	28	79		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	11:32:33	3738	BP23MVEXP-ENV-DC-084			Camera	68	624117	6229540	624135	6229544	-18	-4	19	78		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	11:34:07	3739	BP23MVEXP-ENV-DC-084			Camera	68	624126	6229542	624135	6229544	-9	-2	9	80		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	11:34:47	3740	BP23MVEXP-ENV-DC-084			Camera	68	624130	6229543	624135	6229544	-5	-1	5	82		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	11:35:21	3741	BP23MVEXP-ENV-DC-084			Camera	68	624133	6229544	624135	6229544	-2	0	2	87		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	11:35:36	3742	BP23MVEXP-ENV-DC-084			Camera	68	624135	6229544	624135	6229544	0	0	0	111		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	11:35:54	3743	BP23MVEXP-ENV-DC-084			Camera	68	624137	6229544	624135	6229544	2	0	2	-95		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	11:36:09	3744	BP23MVEXP-ENV-DC-084			Camera	68	624138	6229544	624135	6229544	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	11:37:19	3745	BP23MVEXP-ENV-DC-084			Camera	68	624146	6229545	624135	6229544	11	1	11	-97		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	11:37:38	3746	BP23MVEXP-ENV-DC-084			Camera	68	624148	6229546	624135	6229544	13	2	13	-100		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	11:39:25	3747	BP23MVEXP-ENV-DC-084			Camera	68	624158	6229549	624135	6229544	23	5	24	-102		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	11:40:07	3748	BP23MVEXP-ENV-DC-084			Camera	68	624163	6229549	624135	6229544	28	5	28	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	11:41:33	3749	BP23MVEXP-ENV-DC-084			Camera	68	624172	6229551	624135	6229544	37	7	37	-100		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	11:42:25	3750	BP23MVEXP-ENV-DC-084			Camera	68	624177	6229551	624135	6229544	42	7	42	-100		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	11:42:39	3751	BP23MVEXP-ENV-DC-084			Camera	68	624178	6229552	624135	6229544	43	8	44	-100		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	12:39:20	3752	BP23MVEXP-ENV-DC-085			Camera	68	624668	6225616	624677	6225569	-9	47	48	169		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	12:41:28	3753	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225613	624677	6225569	-8	44	44	169		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	12:41:47	3754	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225611	624677	6225569	-8	42	43	169		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	12:42:01	3755	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225609	624677	6225569	-8	40	41	169		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	12:42:39	3756	BP23MVEXP-ENV-DC-085			Camera	68	624670	6225605	624677	6225569	-7	36	36	169		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	12:42:49	3757	BP23MVEXP-ENV-DC-085			Camera	68	624670	6225604	624677	6225569	-7	35	35	169		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	12:43:39	3758	BP23MVEXP-ENV-DC-085			Camera	68	624671	6225599	624677	6225569	-6	30	30	169		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	12:45:58	3759	BP23MVEXP-ENV-DC-085			Camera	68	624674	6225585	624677	6225569	-3	16	17	169		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	12:46:34	3760	BP23MVEXP-ENV-DC-085			Camera	68	624675	6225581	624677	6225569	-2	13	13	170		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	12:47:31	3761	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225576	624677	6225569	-1	7	7	170		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	12:47:38	3762	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225575	624677	6225569	-1	6	6	171		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	12:47:54	3763	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225573	624677	6225569	-1	4	4	170		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	12:48:09	3764	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225572	624677	6225569	-1	3	3	167		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	12:48:20	3765	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225571	624677	6225569	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	12:48:34	3766	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225569	624677	6225569	0	0	0	122		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	12:48:42	3767	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225568	624677	6225569	0	-1	1	20		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	12:48:52	3768	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225567	624677	6225569	0	-2	2	6		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	12:49:15	3769	BP23MVEXP-ENV-DC-085			Camera	68	624678	6225565	624677	6225569	1	-4	4	-7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	12:49:46	3770	BP23MVEXP-ENV-DC-085			Camera	68	624678	6225561	624677	6225569	1	-8	8	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	12:51:21	3771	BP23MVEXP-ENV-DC-085			Camera	68	624680	6225552	624677	6225569	3	-17	17	-9		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	12:52:45	3772	BP23MVEXP-ENV-DC-085			Camera	68	624682	6225543	624677	6225569	5	-26	26	-10		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	12:53:38	3773	BP23MVEXP-ENV-DC-085			Camera	68	624683	6225538	624677	6225569	6	-31	31	-11		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	12:55:10	3774	BP23MVEXP-ENV-DC-085			Camera	68	624684	6225529	624677	6225569	7	-40	41	-10		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	13:10:38	3775	BP23MVEXP-ENV-DC-085			Camera	68	624724	6225573	624677	6225569	47	4	47	-95		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	13:11:00	3776	BP23MVEXP-ENV-DC-085			Camera	68	624723	6225573	624677	6225569	46	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	13:11:36	3777	BP23MVEXP-ENV-DC-085			Camera	68	624719	6225572	624677	6225569	42	3	42	-94		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	13:12:14	3778	BP23MVEXP-ENV-DC-085			Camera	68	624716	6225572	624677	6225569	39	3	39	-95		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	13:12:26	3779	BP23MVEXP-ENV-DC-085			Camera	68	624715	6225572	624677	6225569	38	3	38	-95		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	13:12:35	3780	BP23MVEXP-ENV-DC-085			Camera	68	624714	6225572	624677	6225569	37	3	37	-95		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	13:12:59	3781	BP23MVEXP-ENV-DC-085			Camera	68	624711	6225572	624677	6225569	34	3	34	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	13:13:26	3782	BP23MVEXP-ENV-DC-085			Camera	68	624709	6225573	624677	6225569	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	13:13:51	3783	BP23MVEXP-ENV-DC-085			Camera	68	624705	6225572	624677	6225569	28	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	13:14:36	3784	BP23MVEXP-ENV-DC-085			Camera	68	624700	6225572	624677	6225569	23	3	23	-96		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	13:14:58	3785	BP23MVEXP-ENV-DC-085			Camera	68	624698	6225572	624677	6225569	21	3	21	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	13:15:08	3786	BP23MVEXP-ENV-DC-085			Camera	68	624697	6225572	624677	6225569	20	3	20	-97		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	13:16:18	3787	BP23MVEXP-ENV-DC-085			Camera	68	624689	6225569	624677	6225569	12	0	12	-90		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	13:17:02	3788	BP23MVEXP-ENV-DC-085			Camera	68	624686	6225568	624677	6225569	9	-1	9	-82		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	13:17:39	3789	BP23MVEXP-ENV-DC-085			Camera	68	624682	6225567	624677	6225569	5	-2	5	-70		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	13:17:54	3790	BP23MVEXP-ENV-DC-085			Camera	68	624681	6225567	624677	6225569	4	-2	4	-60		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	13:18:58	3791	BP23MVEXP-ENV-DC-085			Camera	68	624674	6225566	624677	6225569	-3	-3	4	49		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	13:19:02	3792	BP23MVEXP-ENV-DC-085			Camera	68	624674	6225566	624677	6225569	-3	-3	4	54		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	13:19:48	3793	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225566	624677	6225569	-8	-3	9	67		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	13:21:25	3794	BP23MVEXP-ENV-DC-085			Camera	68	624658	6225564	624677	6225569	-19	-5	19	76		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	13:22:15	3795	BP23MVEXP-ENV-DC-085			Camera	68	624653	6225564	624677	6225569	-24	-5	25	77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	13:22:30	3796	BP23MVEXP-ENV-DC-085			Camera	68	624652	6225564	624677	6225569	-25	-5	25	78		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	13:23:22	3797	BP23MVEXP-ENV-DC-085			Camera	68	624647	6225563	624677	6225569	-30	-6	30	79		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	13:24:42	3798	BP23MVEXP-ENV-DC-085			Camera	68	624638	6225561	624677	6225569	-39	-8	40	79		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	13:25:27	3799	BP23MVEXP-ENV-DC-085			Camera	68	624634	6225561	624677	6225569	-43	-9	44	79		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	13:25:52	3800	BP23MVEXP-ENV-DC-085			Camera	68	624632	6225561	624677	6225569	-45	-8	45	79		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	14:48:35	3801	BP23MVEXP-ENV-DC-086			Camera	65	625212	6221669	625218	6221618	-6	52	52	174		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	14:49:10	3802	BP23MVEXP-ENV-DC-086			Camera	65	625213	6221669	625218	6221618	-5	51	51	174		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	14:53:51	3803	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221669	625218	6221618	-8	51	52	171		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	14:54:29	3804	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221666	625218	6221618	-8	48	49	171		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	14:54:57	3805	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221663	625218	6221618	-8	45	46	170		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	14:55:15	3806	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221662	625218	6221618	-8	44	45	170		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	14:56:23	3807	BP23MVEXP-ENV-DC-086			Camera	65	625212	6221654	625218	6221618	-6	36	37	171		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	14:56:58	3808	BP23MVEXP-ENV-DC-086			Camera	65	625213	6221651	625218	6221618	-5	33	34	171		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	14:57:58	3809	BP23MVEXP-ENV-DC-086			Camera	65	625214	6221645	625218	6221618	-4	27	27	172		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	14:59:36	3810	BP23MVEXP-ENV-DC-086			Camera	65	625216	6221635	625218	6221618	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	15:00:04	3811	BP23MVEXP-ENV-DC-086			Camera	65	625218	6221632	625218	6221618	0	14	14	-178		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	15:00:40	3812	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221627	625218	6221618	2	9	10	-168		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	15:01:08	3813	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221624	625218	6221618	2	6	6	-161		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	15:01:22	3814	BP23MVEXP-ENV-DC-086			Camera	65	625219	6221623	625218	6221618	1	5	5	-168		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	15:01:35	3815	BP23MVEXP-ENV-DC-086			Camera	65	625219	6221622	625218	6221618	1	4	4	-168		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	15:01:56	3816	BP23MVEXP-ENV-DC-086			Camera	65	625219	6221620	625218	6221618	1	2	2	-145		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	15:02:09	3817	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221618	625218	6221618	2	0	2	-100		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	15:02:15	3818	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221618	625218	6221618	2	0	2	-83		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	15:02:24	3819	BP23MVEXP-ENV-DC-086			Camera	65	625221	6221617	625218	6221618	3	-1	3	-66		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	15:02:33	3820	BP23MVEXP-ENV-DC-086			Camera	65	625221	6221616	625218	6221618	3	-2	4	-53		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	15:03:20	3821	BP23MVEXP-ENV-DC-086			Camera	65	625222	6221610	625218	6221618	4	-8	9	-26		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	15:04:42	3822	BP23MVEXP-ENV-DC-086			Camera	65	625221	6221603	625218	6221618	3	-15	16	-13		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	15:05:43	3823	BP23MVEXP-ENV-DC-086			Camera	65	625223	6221597	625218	6221618	5	-21	22	-14		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	15:08:14	3824	BP23MVEXP-ENV-DC-086			Camera	65	625225	6221582	625218	6221618	7	-36	37	-11		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	15:29:35	3825	BP23MVEXP-ENV-DC-086			Camera	65	625175	6221611	625218	6221618	-43	-7	44	80		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	15:30:52	3826	BP23MVEXP-ENV-DC-086			Camera	65	625178	6221611	625218	6221618	-40	-7	41	81		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	15:33:19	3827	BP23MVEXP-ENV-DC-086			Camera	65	625187	6221613	625218	6221618	-31	-5	32	80		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	15:37:51	3828	BP23MVEXP-ENV-DC-086			Camera	65	625200	6221615	625218	6221618	-18	-3	18	79		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	15:39:51	3829	BP23MVEXP-ENV-DC-086			Camera	65	625205	6221617	625218	6221618	-13	-1	13	86		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	15:40:14	3830	BP23MVEXP-ENV-DC-086			Camera	65	625205	6221618	625218	6221618	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	15:41:34	3831	BP23MVEXP-ENV-DC-086			Camera	65	625211	6221618	625218	6221618	-7	0	7	89		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	15:42:56	3832	BP23MVEXP-ENV-DC-086			Camera	65	625215	6221618	625218	6221618	-3	0	3	98		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	15:43:13	3833	BP23MVEXP-ENV-DC-086			Camera	65	625216	6221619	625218	6221618	-2	1	2	107		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	15:43:55	3834	BP23MVEXP-ENV-DC-086			Camera	65	625218	6221620	625218	6221618	0	2	2	173		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	15:44:38	3835	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221620	625218	6221618	2	2	3	-125		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	15:45:09	3836	BP23MVEXP-ENV-DC-086			Camera	65	625222	6221620	625218	6221618	4	2	5	-115		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	15:45:52	3837	BP23MVEXP-ENV-DC-086			Camera	65	625223	6221620	625218	6221618	5	2	5	-112		(Raw Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	15:46:47	3838	BP23MVEXP-ENV-DC-086			Camera	65	625227	6221621	625218	6221618	9	3	9	-108		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	15:47:14	3839	BP23MVEXP-ENV-DC-086			Camera	65	625228	6221621	625218	6221618	10	3	10	-107		(Raw Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	15:47:56	3840	BP23MVEXP-ENV-DC-086			Camera	65	625230	6221621	625218	6221618	12	3	13	-104		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	15:50:11	3841	BP23MVEXP-ENV-DC-086			Camera	65	625237	6221622	625218	6221618	19	4	20	-103		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	15:51:15	3842	BP23MVEXP-ENV-DC-086			Camera	65	625240	6221623	625218	6221618	23	5	23	-102		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	15:51:46	3843	BP23MVEXP-ENV-DC-086			Camera	65	625241	6221623	625218	6221618	23	5	24	-103		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	15:52:10	3844	BP23MVEXP-ENV-DC-086			Camera	65	625242	6221624	625218	6221618	24	6	25	-104		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	15:53:07	3845	BP23MVEXP-ENV-DC-086			Camera	65	625245	6221624	625218	6221618	27	6	28	-103		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	15:54:12	3846	BP23MVEXP-ENV-DC-086			Camera	65	625249	6221625	625218	6221618	31	7	32	-102		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	15:54:50	3847	BP23MVEXP-ENV-DC-086			Camera	65	625251	6221625	625218	6221618	33	7	34	-102		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	15:55:21	3848	BP23MVEXP-ENV-DC-086			Camera	65	625252	6221625	625218	6221618	35	7	35	-102		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	15:56:23	3849	BP23MVEXP-ENV-DC-086			Camera	65	625256	6221625	625218	6221618	38	7	39	-101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	15:57:19	3850	BP23MVEXP-ENV-DC-086			Camera	65	625258	6221626	625218	6221618	40	8	40	-102		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	15:58:50	3851	BP23MVEXP-ENV-DC-086			Camera	65	625264	6221627	625218	6221618	46	9	47	-101		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	15:59:23	3852	BP23MVEXP-ENV-DC-086			Camera	65	625265	6221627	625218	6221618	47	9	48	-101		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
30-Jul-2023	18:43:14	3853	BP23MVEXP-ENV-DC-087			Camera	64	625735	6217722	625786	6217725	-51	-3	51	87		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
30-Jul-2023	18:45:04	3854	BP23MVEXP-ENV-DC-087			Camera	64	625737	6217724	625786	6217725	-49	-1	49	88		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
30-Jul-2023	18:45:54	3855	BP23MVEXP-ENV-DC-087			Camera	64	625740	6217725	625786	6217725	-46	0	46	89		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
30-Jul-2023	18:46:20	3856	BP23MVEXP-ENV-DC-087			Camera	64	625743	6217725	625786	6217725	-43	0	43	90		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
30-Jul-2023	18:46:44	3857	BP23MVEXP-ENV-DC-087			Camera	64	625746	6217725	625786	6217725	-40	0	40	90		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
30-Jul-2023	18:47:39	3858	BP23MVEXP-ENV-DC-087			Camera	64	625753	6217726	625786	6217725	-33	1	33	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
30-Jul-2023	18:48:01	3859	BP23MVEXP-ENV-DC-087			Camera	64	625756	6217727	625786	6217725	-30	2	30	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
30-Jul-2023	18:49:07	3860	BP23MVEXP-ENV-DC-087			Camera	64	625762	6217725	625786	6217725	-24	0	24	90		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
30-Jul-2023	18:50:24	3861	BP23MVEXP-ENV-DC-087			Camera	64	625767	6217725	625786	6217725	-19	0	19	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
30-Jul-2023	18:50:45	3862	BP23MVEXP-ENV-DC-087			Camera	64	625769	6217726	625786	6217725	-17	1	17	92		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
30-Jul-2023	18:51:16	3863	BP23MVEXP-ENV-DC-087			Camera	65	625773	6217726	625786	6217725	-13	1	13	95		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
30-Jul-2023	18:51:36	3864	BP23MVEXP-ENV-DC-087			Camera	65	625775	6217726	625786	6217725	-11	1	11	98		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
30-Jul-2023	18:52:29	3865	BP23MVEXP-ENV-DC-087			Camera	65	625780	6217727	625786	6217725	-6	2	6	113		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
30-Jul-2023	18:52:57	3866	BP23MVEXP-ENV-DC-087			Camera	65	625783	6217728	625786	6217725	-3	3	5	138		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
30-Jul-2023	18:53:10	3867	BP23MVEXP-ENV-DC-087			Camera	64	625785	6217729	625786	6217725	-1	4	4	164		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
30-Jul-2023	18:53:16	3868	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217729	625786	6217725	0	4	4	176		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
30-Jul-2023	18:53:26	3869	BP23MVEXP-ENV-DC-087			Camera	64	625787	6217729	625786	6217725	1	4	5	-168		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
30-Jul-2023	18:54:21	3870	BP23MVEXP-ENV-DC-087			Camera	64	625794	6217731	625786	6217725	8	6	10	-126		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
30-Jul-2023	18:54:42	3871	BP23MVEXP-ENV-DC-087			Camera	64	625796	6217730	625786	6217725	10	5	11	-118		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
30-Jul-2023	18:55:31	3872	BP23MVEXP-ENV-DC-087			Camera	64	625800	6217731	625786	6217725	14	6	15	-112		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
30-Jul-2023	18:55:57	3873	BP23MVEXP-ENV-DC-087			Camera	64	625803	6217731	625786	6217725	17	6	18	-109		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
30-Jul-2023	18:56:29	3874	BP23MVEXP-ENV-DC-087			Camera	64	625807	6217731	625786	6217725	21	6	22	-106		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
30-Jul-2023	18:57:20	3875	BP23MVEXP-ENV-DC-087			Camera	65	625812	6217731	625786	6217725	26	6	27	-104		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
30-Jul-2023	18:57:31	3876	BP23MVEXP-ENV-DC-087			Camera	65	625813	6217731	625786	6217725	27	6	28	-103		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
30-Jul-2023	18:57:55	3877	BP23MVEXP-ENV-DC-087			Camera	65	625816	6217732	625786	6217725	30	7	30	-103		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
30-Jul-2023	18:58:35	3878	BP23MVEXP-ENV-DC-087			Camera	65	625819	6217732	625786	6217725	33	7	33	-102		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
30-Jul-2023	18:59:02	3879	BP23MVEXP-ENV-DC-087			Camera	65	625821	6217732	625786	6217725	35	7	36	-102		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
30-Jul-2023	18:59:27	3880	BP23MVEXP-ENV-DC-087			Camera	65	625824	6217733	625786	6217725	38	8	39	-102		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
30-Jul-2023	18:59:53	3881	BP23MVEXP-ENV-DC-087			Camera	65	625827	6217734	625786	6217725	41	9	41	-102		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
30-Jul-2023	19:00:10	3882	BP23MVEXP-ENV-DC-087			Camera	65	625829	6217734	625786	6217725	43	9	43	-102		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
30-Jul-2023	19:00:58	3883	BP23MVEXP-ENV-DC-087			Camera	65	625834	6217734	625786	6217725	48	9	49	-101		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
30-Jul-2023	19:16:29	3884	BP23MVEXP-ENV-DC-087			Camera	64	625775	6217773	625786	6217725	-11	48	50	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
30-Jul-2023	19:17:04	3885	BP23MVEXP-ENV-DC-087			Camera	64	625775	6217771	625786	6217725	-11	46	47	167		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
30-Jul-2023	19:17:27	3886	BP23MVEXP-ENV-DC-087			Camera	64	625776	6217769	625786	6217725	-10	44	45	167		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
30-Jul-2023	19:18:15	3887	BP23MVEXP-ENV-DC-087			Camera	64	625778	6217763	625786	6217725	-8	38	39	168		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
30-Jul-2023	19:18:21	3888	BP23MVEXP-ENV-DC-087			Camera	64	625778	6217763	625786	6217725	-8	38	38	168		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
30-Jul-2023	19:19:12	3889	BP23MVEXP-ENV-DC-087			Camera	64	625779	6217756	625786	6217725	-7	31	32	168		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
30-Jul-2023	19:19:28	3890	BP23MVEXP-ENV-DC-087			Camera	64	625779	6217755	625786	6217725	-7	30	31	167		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
30-Jul-2023	19:19:57	3891	BP23MVEXP-ENV-DC-087			Camera	64	625779	6217752	625786	6217725	-7	27	28	166		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
30-Jul-2023	19:20:32	3892	BP23MVEXP-ENV-DC-087			Camera	64	625780	6217749	625786	6217725	-6	24	25	166		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
30-Jul-2023	19:20:59	3893	BP23MVEXP-ENV-DC-087			Camera	64	625780	6217746	625786	6217725	-6	22	22	165		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
30-Jul-2023	19:21:54	3894	BP23MVEXP-ENV-DC-087			Camera	64	625782	6217741	625786	6217725	-4	16	17	167		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
30-Jul-2023	19:22:44	3895	BP23MVEXP-ENV-DC-087			Camera	64	625784	6217736	625786	6217725	-3	11	11	167		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
30-Jul-2023	19:23:38	3896	BP23MVEXP-ENV-DC-087			Camera	64	625785	6217730	625786	6217725	-1	5	6	168		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
30-Jul-2023	19:23:52	3897	BP23MVEXP-ENV-DC-087			Camera	65	625785	6217729	625786	6217725	-1	4	4	170		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
30-Jul-2023	19:24:18	3898	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217726	625786	6217725	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
30-Jul-2023	19:24:43	3899	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217723	625786	6217725	0	-2	2	1		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
30-Jul-2023	19:25:25	3900	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217719	625786	6217725	0	-6	6	-3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
30-Jul-2023	19:25:56	3901	BP23MVEXP-ENV-DC-087			Camera	65	625788	6217716	625786	6217725	2	-9	9	-11		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
30-Jul-2023	19:26:24	3902	BP23MVEXP-ENV-DC-087			Camera	65	625788	6217713	625786	6217725	2	-12	12	-8		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
30-Jul-2023	19:27:00	3903	BP23MVEXP-ENV-DC-087			Camera	65	625788	6217709	625786	6217725	2	-16	16	-6		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
30-Jul-2023	19:28:09	3904	BP23MVEXP-ENV-DC-087			Camera	65	625789	6217702	625786	6217725	3	-23	23	-7		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
30-Jul-2023	19:28:57	3905	BP23MVEXP-ENV-DC-087			Camera	65	625791	6217698	625786	6217725	5	-27	27	-10		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
30-Jul-2023	19:29:36	3906	BP23MVEXP-ENV-DC-087			Camera	65	625792	6217694	625786	6217725	6	-31	31	-11		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
30-Jul-2023	19:30:18	3907	BP23MVEXP-ENV-DC-087			Camera	64	625792	6217689	625786	6217725	7	-36	36	-10		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
30-Jul-2023	19:30:28	3908	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217688	625786	6217725	7	-37	37	-10		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
30-Jul-2023	19:30:59	3909	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217685	625786	6217725	7	-40	41	-10		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
30-Jul-2023	19:31:33	3910	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217681	625786	6217725	7	-44	44	-9		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
30-Jul-2023	19:31:44	3911	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217680	625786	6217725	7	-45	45	-9		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
30-Jul-2023	19:32:06	3912	BP23MVEXP-ENV-DC-087			Camera	64	625794	6217678	625786	6217725	8	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
30-Jul-2023	21:21:29	3913	BP23MVEXP-ENV-DC-088			Camera	62	626248	6213723	626296	6213734	-48	-11	49	77		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
30-Jul-2023	21:24:49	3914	BP23MVEXP-ENV-DC-088			Camera	62	626252	6213723	626296	6213734	-44	-11	45	76		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
30-Jul-2023	21:25:05	3915	BP23MVEXP-ENV-DC-088			Camera	62	626254	6213724	626296	6213734	-42	-10	43	76		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
30-Jul-2023	21:25:25	3916	BP23MVEXP-ENV-DC-088			Camera	62	626256	6213724	626296	6213734	-40	-10	41	76		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
30-Jul-2023	21:25:37	3917	BP23MVEXP-ENV-DC-088			Camera	62	626258	6213724	626296	6213734	-38	-10	40	75		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
30-Jul-2023	21:25:49	3918	BP23MVEXP-ENV-DC-088			Camera	62	626259	6213724	626296	6213734	-37	-10	38	75		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
30-Jul-2023	21:26:05	3919	BP23MVEXP-ENV-DC-088			Camera	62	626261	6213725	626296	6213734	-35	-9	36	75		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
30-Jul-2023	21:26:15	3920	BP23MVEXP-ENV-DC-088			Camera	62	626263	6213725	626296	6213734	-33	-9	35	75		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
30-Jul-2023	21:26:32	3921	BP23MVEXP-ENV-DC-088			Camera	62	626264	6213725	626296	6213734	-32	-9	33	74		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
30-Jul-2023	21:26:57	3922	BP23MVEXP-ENV-DC-088			Camera	61	626267	6213726	626296	6213734	-29	-8	30	74		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
30-Jul-2023	21:27:10	3923	BP23MVEXP-ENV-DC-088			Camera	61	626268	6213726	626296	6213734	-28	-8	29	75		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
30-Jul-2023	21:27:23	3924	BP23MVEXP-ENV-DC-088			Camera	62	626270	6213727	626296	6213734	-26	-7	27	74		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
30-Jul-2023	21:27:43	3925	BP23MVEXP-ENV-DC-088			Camera	61	626272	6213727	626296	6213734	-24	-7	25	74		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
30-Jul-2023	21:28:03	3926	BP23MVEXP-ENV-DC-088			Camera	61	626274	6213727	626296	6213734	-22	-7	23	73		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
30-Jul-2023	21:28:21	3927	BP23MVEXP-ENV-DC-088			Camera	61	626276	6213728	626296	6213734	-21	-6	21	73		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
30-Jul-2023	21:28:31	3928	BP23MVEXP-ENV-DC-088			Camera	61	626276	6213728	626296	6213734	-20	-6	21	73		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
30-Jul-2023	21:28:47	3929	BP23MVEXP-ENV-DC-088			Camera	61	626277	6213729	626296	6213734	-19	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
30-Jul-2023	21:28:54	3930	BP23MVEXP-ENV-DC-088			Camera	61	626278	6213729	626296	6213734	-18	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
30-Jul-2023	21:29:08	3931	BP23MVEXP-ENV-DC-088			Camera	61	626279	6213729	626296	6213734	-17	-5	18	74		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
30-Jul-2023	21:29:18	3932	BP23MVEXP-ENV-DC-088			Camera	61	626280	6213729	626296	6213734	-16	-5	17	73		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
30-Jul-2023	21:29:27	3933	BP23MVEXP-ENV-DC-088			Camera	61	626281	6213729	626296	6213734	-15	-5	16	73		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
30-Jul-2023	21:29:49	3934	BP23MVEXP-ENV-DC-088			Camera	61	626284	6213730	626296	6213734	-12	-4	13	71		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
30-Jul-2023	21:30:32	3935	BP23MVEXP-ENV-DC-088			Camera	61	626288	6213730	626296	6213734	-8	-4	9	66		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
30-Jul-2023	21:31:01	3936	BP23MVEXP-ENV-DC-088			Camera	61	626291	6213731	626296	6213734	-5	-3	6	59		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
30-Jul-2023	21:31:45	3937	BP23MVEXP-ENV-DC-088			Camera	61	626296	6213733	626296	6213734	0	-1	1	-9		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
30-Jul-2023	21:32:28	3938	BP23MVEXP-ENV-DC-088			Camera	61	626300	6213734	626296	6213734	4	0	4	-89		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
30-Jul-2023	21:33:31	3939	BP23MVEXP-ENV-DC-088			Camera	61	626306	6213735	626296	6213734	10	1	10	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
30-Jul-2023	21:34:27	3940	BP23MVEXP-ENV-DC-088			Camera	61	626312	6213736	626296	6213734	16	2	16	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
30-Jul-2023	21:35:50	3941	BP23MVEXP-ENV-DC-088			Camera	61	626320	6213737	626296	6213734	24	3	24	-98		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
30-Jul-2023	21:37:52	3942	BP23MVEXP-ENV-DC-088			Camera	61	626333	6213740	626296	6213734	37	6	38	-100		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
30-Jul-2023	21:55:03	3943	BP23MVEXP-ENV-DC-088			Camera	61	626286	6213780	626296	6213734	-10	46	47	167		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
30-Jul-2023	21:55:50	3944	BP23MVEXP-ENV-DC-088			Camera	61	626287	6213775	626296	6213734	-9	41	42	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
30-Jul-2023	21:56:15	3945	BP23MVEXP-ENV-DC-088			Camera	61	626289	6213772	626296	6213734	-7	38	39	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
30-Jul-2023	21:57:37	3946	BP23MVEXP-ENV-DC-088			Camera	61	626292	6213764	626296	6213734	-4	30	30	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
30-Jul-2023	21:58:02	3947	BP23MVEXP-ENV-DC-088			Camera	61	626292	6213760	626296	6213734	-4	26	27	171		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
30-Jul-2023	21:58:43	3948	BP23MVEXP-ENV-DC-088			Camera	61	626292	6213756	626296	6213734	-4	22	22	171		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
30-Jul-2023	21:59:32	3949	BP23MVEXP-ENV-DC-088			Camera	61	626293	6213751	626296	6213734	-3	17	18	170		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
30-Jul-2023	22:00:18	3950	BP23MVEXP-ENV-DC-088			Camera	61	626294	6213747	626296	6213734	-2	13	13	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
30-Jul-2023	22:01:01	3951	BP23MVEXP-ENV-DC-088			Camera	61	626295	6213743	626296	6213734	-1	9	9	175		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
30-Jul-2023	22:01:33	3952	BP23MVEXP-ENV-DC-088			Camera	61	626296	6213740	626296	6213734	0	6	6	-179		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
30-Jul-2023	22:02:07	3953	BP23MVEXP-ENV-DC-088			Camera	61	626297	6213737	626296	6213734	1	3	3	-169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
30-Jul-2023	22:02:47	3954	BP23MVEXP-ENV-DC-088			Camera	61	626297	6213732	626296	6213734	1	-2	2	-29		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
30-Jul-2023	22:03:20	3955	BP23MVEXP-ENV-DC-088			Camera	61	626297	6213728	626296	6213734	1	-6	6	-14		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
30-Jul-2023	22:03:50	3956	BP23MVEXP-ENV-DC-088			Camera	61	626299	6213725	626296	6213734	3	-9	9	-17		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
30-Jul-2023	22:04:54	3957	BP23MVEXP-ENV-DC-088			Camera	61	626301	6213719	626296	6213734	5	-15	15	-18		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
30-Jul-2023	22:05:28	3958	BP23MVEXP-ENV-DC-088			Camera	61	626302	6213716	626296	6213734	6	-18	19	-18		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
30-Jul-2023	22:06:14	3959	BP23MVEXP-ENV-DC-088			Camera	61	626303	6213711	626296	6213734	7	-23	24	-17		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
30-Jul-2023	22:06:35	3960	BP23MVEXP-ENV-DC-088			Camera	61	626303	6213709	626296	6213734	7	-25	26	-15		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
30-Jul-2023	22:07:01	3961	BP23MVEXP-ENV-DC-088			Camera	61	626303	6213707	626296	6213734	7	-27	28	-15		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
30-Jul-2023	22:07:15	3962	BP23MVEXP-ENV-DC-088			Camera	61	626304	6213706	626296	6213734	8	-29	29	-15		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
30-Jul-2023	22:07:52	3963	BP23MVEXP-ENV-DC-088			Camera	61	626304	6213701	626296	6213734	8	-33	34	-14		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
30-Jul-2023	22:08:34	3964	BP23MVEXP-ENV-DC-088			Camera	61	626305	6213697	626296	6213734	9	-37	38	-13		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
30-Jul-2023	22:09:03	3965	BP23MVEXP-ENV-DC-088			Camera	61	626305	6213694	626296	6213734	9	-40	41	-13		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
30-Jul-2023	22:10:00	3966	BP23MVEXP-ENV-DC-088			Camera	61	626307	6213689	626296	6213734	11	-45	47	-14		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
30-Jul-2023	22:10:40	3967	BP23MVEXP-ENV-DC-088			Camera	61	626307	6213685	626296	6213734	12	-49	50	-13		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
30-Jul-2023	23:36:48	3968	BP23MVEXP-ENV-DC-089			Camera	63	626890	6209728	626842	6209725	48	3	48	-93		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
30-Jul-2023	23:38:37	3969	BP23MVEXP-ENV-DC-089			Camera	63	626887	6209727	626842	6209725	45	2	45	-93		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
30-Jul-2023	23:38:57	3970	BP23MVEXP-ENV-DC-089			Camera	63	626886	6209727	626842	6209725	44	2	44	-92		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
30-Jul-2023	23:40:20	3971	BP23MVEXP-ENV-DC-089			Camera	63	626876	6209726	626842	6209725	34	1	34	-92		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
30-Jul-2023	23:40:48	3972	BP23MVEXP-ENV-DC-089			Camera	63	626874	6209726	626842	6209725	32	1	32	-92		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
30-Jul-2023	23:41:20	3973	BP23MVEXP-ENV-DC-089			Camera	63	626871	6209726	626842	6209725	29	1	29	-91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
30-Jul-2023	23:41:48	3974	BP23MVEXP-ENV-DC-089			Camera	63	626868	6209725	626842	6209725	26	0	26	-91		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
30-Jul-2023	23:42:12	3975	BP23MVEXP-ENV-DC-089			Camera	63	626865	6209725	626842	6209725	23	0	23	-91		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
30-Jul-2023	23:42:26	3976	BP23MVEXP-ENV-DC-089			Camera	63	626864	6209725	626842	6209725	22	0	22	-90		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
30-Jul-2023	23:43:04	3977	BP23MVEXP-ENV-DC-089			Camera	63	626860	6209725	626842	6209725	18	0	18	-91		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
30-Jul-2023	23:43:32	3978	BP23MVEXP-ENV-DC-089			Camera	63	626858	6209725	626842	6209725	16	0	16	-89		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
30-Jul-2023	23:43:57	3979	BP23MVEXP-ENV-DC-089			Camera	63	626855	6209724	626842	6209725	13	-1	13	-88		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
30-Jul-2023	23:44:36	3980	BP23MVEXP-ENV-DC-089			Camera	63	626851	6209724	626842	6209725	9	-1	9	-84		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
30-Jul-2023	23:45:18	3981	BP23MVEXP-ENV-DC-089			Camera	63	626846	6209724	626842	6209725	4	-1	5	-72		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
30-Jul-2023	23:45:40	3982	BP23MVEXP-ENV-DC-089			Camera	63	626844	6209723	626842	6209725	2	-2	3	-54		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
30-Jul-2023	23:45:49	3983	BP23MVEXP-ENV-DC-089			Camera	63	626843	6209723	626842	6209725	1	-2	2	-32		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
30-Jul-2023	23:45:55	3984	BP23MVEXP-ENV-DC-089			Camera	63	626842	6209723	626842	6209725	0	-2	2	-10		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
30-Jul-2023	23:46:15	3985	BP23MVEXP-ENV-DC-089			Camera	63	626840	6209723	626842	6209725	-2	-2	3	35		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
30-Jul-2023	23:46:41	3986	BP23MVEXP-ENV-DC-089			Camera	63	626838	6209723	626842	6209725	-4	-2	4	57		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
30-Jul-2023	23:47:54	3987	BP23MVEXP-ENV-DC-089			Camera	63	626832	6209721	626842	6209725	-10	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
30-Jul-2023	23:48:56	3988	BP23MVEXP-ENV-DC-089			Camera	63	626825	6209720	626842	6209725	-17	-5	18	75		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
30-Jul-2023	23:49:25	3989	BP23MVEXP-ENV-DC-089			Camera	63	626821	6209721	626842	6209725	-21	-4	21	78		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
30-Jul-2023	23:50:06	3990	BP23MVEXP-ENV-DC-089			Camera	63	626817	6209720	626842	6209725	-25	-5	25	78		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
30-Jul-2023	23:50:25	3991	BP23MVEXP-ENV-DC-089			Camera	63	626815	6209720	626842	6209725	-27	-5	27	79		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
30-Jul-2023	23:51:33	3992	BP23MVEXP-ENV-DC-089			Camera	63	626809	6209720	626842	6209725	-33	-5	33	81		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
30-Jul-2023	23:52:04	3993	BP23MVEXP-ENV-DC-089			Camera	63	626805	6209719	626842	6209725	-37	-6	38	81		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
30-Jul-2023	23:52:10	3994	BP23MVEXP-ENV-DC-089			Camera	63	626804	6209719	626842	6209725	-38	-6	38	81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
30-Jul-2023	23:53:01	3995	BP23MVEXP-ENV-DC-089			Camera	63	626799	6209718	626842	6209725	-43	-7	43	81		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
30-Jul-2023	23:53:17	3996	BP23MVEXP-ENV-DC-089			Camera	63	626797	6209718	626842	6209725	-45	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	00:04:24	3997	BP23MVEXP-ENV-DC-089			Camera	63	626838	6209687	626842	6209725	-4	-38	38	6		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	00:10:37	3998	BP23MVEXP-ENV-DC-089			Camera	63	626849	6209684	626842	6209725	7	-41	42	-10		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	00:11:08	3999	BP23MVEXP-ENV-DC-089			Camera	63	626849	6209687	626842	6209725	7	-38	38	-10		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	00:11:25	4000	BP23MVEXP-ENV-DC-089			Camera	63	626848	6209689	626842	6209725	6	-36	37	-10		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	00:11:40	4001	BP23MVEXP-ENV-DC-089			Camera	63	626848	6209690	626842	6209725	6	-35	35	-10		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	00:12:20	4002	BP23MVEXP-ENV-DC-089			Camera	63	626848	6209695	626842	6209725	6	-30	31	-11		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	00:12:38	4003	BP23MVEXP-ENV-DC-089			Camera	63	626847	6209697	626842	6209725	5	-28	29	-11		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	00:12:51	4004	BP23MVEXP-ENV-DC-089			Camera	63	626847	6209698	626842	6209725	5	-27	27	-12		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	00:13:22	4005	BP23MVEXP-ENV-DC-089			Camera	63	626847	6209702	626842	6209725	5	-23	24	-12		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	00:13:56	4006	BP23MVEXP-ENV-DC-089			Camera	63	626846	6209705	626842	6209725	4	-20	21	-11		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	00:14:23	4007	BP23MVEXP-ENV-DC-089			Camera	63	626844	6209707	626842	6209725	2	-18	18	-8		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	00:15:03	4008	BP23MVEXP-ENV-DC-089			Camera	63	626843	6209711	626842	6209725	1	-14	14	-5		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	00:15:40	4009	BP23MVEXP-ENV-DC-089			Camera	63	626842	6209716	626842	6209725	0	-9	9	-2		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	00:16:29	4010	BP23MVEXP-ENV-DC-089			Camera	63	626842	6209721	626842	6209725	0	-4	4	5		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	00:16:51	4011	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209723	626842	6209725	-1	-2	2	20		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	00:17:00	4012	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209724	626842	6209725	-1	-1	1	37		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	00:17:41	4013	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209728	626842	6209725	-1	3	3	166		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	00:18:36	4014	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209734	626842	6209725	-1	9	9	171		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	00:19:32	4015	BP23MVEXP-ENV-DC-089			Camera	63	626838	6209739	626842	6209725	-4	15	15	166		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	00:20:20	4016	BP23MVEXP-ENV-DC-089			Camera	63	626837	6209744	626842	6209725	-5	19	20	164		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	00:21:01	4017	BP23MVEXP-ENV-DC-089			Camera	63	626836	6209748	626842	6209725	-6	23	24	165		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	00:21:42	4018	BP23MVEXP-ENV-DC-089			Camera	63	626835	6209752	626842	6209725	-7	27	28	166		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	00:22:38	4019	BP23MVEXP-ENV-DC-089			Camera	63	626834	6209758	626842	6209725	-8	33	34	167		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	00:23:00	4020	BP23MVEXP-ENV-DC-089			Camera	63	626834	6209760	626842	6209725	-8	35	36	168		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	00:24:22	4021	BP23MVEXP-ENV-DC-089			Camera	63	626833	6209768	626842	6209725	-9	43	44	168		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	00:24:54	4022	BP23MVEXP-ENV-DC-089			Camera	63	626832	6209772	626842	6209725	-10	47	48	168		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
31-Jul-2023	02:12:26	4023	BP23MVEXP-ENV-DC-090			Camera	63	627332	6205760	627380	6205770	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	02:12:45	4024	BP23MVEXP-ENV-DC-090			Camera	63	627333	6205760	627380	6205770	-47	-10	48	78		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	02:13:32	4025	BP23MVEXP-ENV-DC-090			Camera	63	627334	6205760	627380	6205770	-46	-10	47	78		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	02:13:44	4026	BP23MVEXP-ENV-DC-090			Camera	63	627335	6205760	627380	6205770	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	02:14:08	4027	BP23MVEXP-ENV-DC-090			Camera	63	627336	6205760	627380	6205770	-44	-10	45	78		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	02:14:15	4028	BP23MVEXP-ENV-DC-090			Camera	63	627337	6205761	627380	6205770	-43	-9	44	78		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	02:14:28	4029	BP23MVEXP-ENV-DC-090			Camera	63	627338	6205761	627380	6205770	-42	-9	43	78		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	02:14:39	4030	BP23MVEXP-ENV-DC-090			Camera	63	627339	6205761	627380	6205770	-41	-9	42	78		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	02:14:59	4031	BP23MVEXP-ENV-DC-090			Camera	63	627342	6205762	627380	6205770	-38	-8	39	78		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	02:15:17	4032	BP23MVEXP-ENV-DC-090			Camera	63	627343	6205762	627380	6205770	-37	-8	37	78		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	02:15:23	4033	BP23MVEXP-ENV-DC-090			Camera	63	627344	6205762	627380	6205770	-36	-8	37	78		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	02:15:43	4034	BP23MVEXP-ENV-DC-090			Camera	63	627346	6205763	627380	6205770	-34	-7	35	78		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	02:16:40	4035	BP23MVEXP-ENV-DC-090			Camera	63	627352	6205764	627380	6205770	-28	-6	29	78		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	02:17:16	4036	BP23MVEXP-ENV-DC-090			Camera	63	627356	6205765	627380	6205770	-24	-5	25	79		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	02:17:31	4037	BP23MVEXP-ENV-DC-090			Camera	63	627357	6205766	627380	6205770	-23	-4	23	79		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	02:17:43	4038	BP23MVEXP-ENV-DC-090			Camera	63	627358	6205766	627380	6205770	-22	-4	22	80		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	02:18:02	4039	BP23MVEXP-ENV-DC-090			Camera	63	627360	6205766	627380	6205770	-20	-4	20	80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	02:18:18	4040	BP23MVEXP-ENV-DC-090			Camera	63	627362	6205767	627380	6205770	-18	-3	19	80		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	02:18:29	4041	BP23MVEXP-ENV-DC-090			Camera	63	627363	6205767	627380	6205770	-17	-3	17	80		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	02:18:41	4042	BP23MVEXP-ENV-DC-090			Camera	63	627365	6205767	627380	6205770	-15	-3	16	80		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	02:19:26	4043	BP23MVEXP-ENV-DC-090			Camera	63	627369	6205768	627380	6205770	-11	-2	11	80		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	02:20:31	4044	BP23MVEXP-ENV-DC-090			Camera	63	627375	6205770	627380	6205770	-5	0	5	84		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	02:21:00	4045	BP23MVEXP-ENV-DC-090			Camera	63	627378	6205770	627380	6205770	-2	0	2	93		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	02:21:24	4046	BP23MVEXP-ENV-DC-090			Camera	63	627381	6205771	627380	6205770	1	1	1	-117		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	02:21:38	4047	BP23MVEXP-ENV-DC-090			Camera	63	627383	6205771	627380	6205770	3	1	3	-108		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	02:22:16	4048	BP23MVEXP-ENV-DC-090			Camera	63	627386	6205772	627380	6205770	6	2	6	-105		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	02:22:31	4049	BP23MVEXP-ENV-DC-090			Camera	63	627388	6205772	627380	6205770	8	2	8	-104		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	02:23:33	4050	BP23MVEXP-ENV-DC-090			Camera	63	627394	6205774	627380	6205770	14	4	15	-104		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	02:24:15	4051	BP23MVEXP-ENV-DC-090			Camera	63	627398	6205774	627380	6205770	18	4	19	-104		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	02:25:06	4052	BP23MVEXP-ENV-DC-090			Camera	63	627403	6205775	627380	6205770	23	5	24	-103		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	02:25:34	4053	BP23MVEXP-ENV-DC-090			Camera	63	627406	6205776	627380	6205770	26	6	27	-103		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	02:26:21	4054	BP23MVEXP-ENV-DC-090			Camera	63	627411	6205777	627380	6205770	31	7	32	-103		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	02:26:59	4055	BP23MVEXP-ENV-DC-090			Camera	63	627415	6205778	627380	6205770	35	8	35	-102		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	02:27:32	4056	BP23MVEXP-ENV-DC-090			Camera	63	627418	6205778	627380	6205770	38	8	39	-102		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	02:28:04	4057	BP23MVEXP-ENV-DC-090			Camera	63	627421	6205778	627380	6205770	41	8	42	-102		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	02:29:05	4058	BP23MVEXP-ENV-DC-090			Camera	63	627428	6205780	627380	6205770	48	10	49	-102		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	02:29:23	4059	BP23MVEXP-ENV-DC-090			Camera	63	627429	6205780	627380	6205770	49	10	50	-102		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	02:29:43	4060	BP23MVEXP-ENV-DC-090			Camera	63	627429	6205780	627380	6205770	49	10	50	-102		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	02:37:52	4061	BP23MVEXP-ENV-DC-090			Camera	63	627371	6205819	627380	6205770	-9	49	50	169		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	02:38:14	4062	BP23MVEXP-ENV-DC-090			Camera	63	627371	6205818	627380	6205770	-9	48	49	169		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	02:39:04	4063	BP23MVEXP-ENV-DC-090			Camera	63	627371	6205814	627380	6205770	-9	44	45	169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	02:39:20	4064	BP23MVEXP-ENV-DC-090			Camera	63	627372	6205813	627380	6205770	-8	43	44	169		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	02:39:48	4065	BP23MVEXP-ENV-DC-090			Camera	63	627372	6205810	627380	6205770	-8	40	41	169		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	02:40:45	4066	BP23MVEXP-ENV-DC-090			Camera	63	627373	6205804	627380	6205770	-7	34	35	169		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	02:41:19	4067	BP23MVEXP-ENV-DC-090			Camera	63	627374	6205800	627380	6205770	-6	30	31	169		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	02:41:47	4068	BP23MVEXP-ENV-DC-090			Camera	63	627375	6205797	627380	6205770	-5	27	28	170		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	02:42:14	4069	BP23MVEXP-ENV-DC-090			Camera	63	627376	6205794	627380	6205770	-4	24	24	170		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	02:42:57	4070	BP23MVEXP-ENV-DC-090			Camera	63	627377	6205789	627380	6205770	-3	19	20	170		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	02:43:19	4071	BP23MVEXP-ENV-DC-090			Camera	63	627377	6205787	627380	6205770	-3	17	17	171		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	02:44:17	4072	BP23MVEXP-ENV-DC-090			Camera	63	627378	6205781	627380	6205770	-2	11	11	170		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	02:45:01	4073	BP23MVEXP-ENV-DC-090			Camera	63	627379	6205777	627380	6205770	-1	7	7	173		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	02:45:54	4074	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205771	627380	6205770	0	1	1	-173		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	02:46:00	4075	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205771	627380	6205770	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	02:46:10	4076	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205770	627380	6205770	0	0	0	-95		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	02:46:17	4077	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205769	627380	6205770	0	-1	1	-24		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
31-Jul-2023	02:46:38	4078	BP23MVEXP-ENV-DC-090			Camera	63	627381	6205767	627380	6205770	1	-3	4	-18		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
31-Jul-2023	02:47:11	4079	BP23MVEXP-ENV-DC-090			Camera	63	627382	6205763	627380	6205770	2	-7	7	-17		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
31-Jul-2023	02:48:25	4080	BP23MVEXP-ENV-DC-090			Camera	63	627383	6205756	627380	6205770	3	-14	15	-12		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
31-Jul-2023	02:48:50	4081	BP23MVEXP-ENV-DC-090			Camera	63	627384	6205754	627380	6205770	4	-16	17	-13		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
31-Jul-2023	02:49:09	4082	BP23MVEXP-ENV-DC-090			Camera	63	627384	6205752	627380	6205770	4	-18	19	-12		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
31-Jul-2023	02:49:19	4083	BP23MVEXP-ENV-DC-090			Camera	63	627384	6205751	627380	6205770	4	-19	19	-12		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
31-Jul-2023	02:50:19	4084	BP23MVEXP-ENV-DC-090			Camera	63	627385	6205746	627380	6205770	5	-24	25	-12		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
31-Jul-2023	02:51:56	4085	BP23MVEXP-ENV-DC-090			Camera	63	627387	6205735	627380	6205770	7	-35	36	-11		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
31-Jul-2023	02:52:33	4086	BP23MVEXP-ENV-DC-090			Camera	63	627388	6205731	627380	6205770	8	-39	40	-11		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
31-Jul-2023	02:53:16	4087	BP23MVEXP-ENV-DC-090			Camera	63	627388	6205727	627380	6205770	8	-43	44	-11		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
31-Jul-2023	02:53:46	4088	BP23MVEXP-ENV-DC-090			Camera	63	627389	6205724	627380	6205770	9	-46	47	-11		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
31-Jul-2023	02:54:04	4089	BP23MVEXP-ENV-DC-090			Camera	63	627389	6205722	627380	6205770	9	-48	49	-10		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
31-Jul-2023	04:06:29	4090	BP23MVEXP-ENV-DC-091			Camera	67	627985	6201742	627934	6201734	51	8	52	-99		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	04:06:46	4091	BP23MVEXP-ENV-DC-091			Camera	67	627985	6201742	627934	6201734	51	8	51	-99		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	04:08:02	4092	BP23MVEXP-ENV-DC-091			Camera	67	627983	6201743	627934	6201734	49	9	50	-100		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	04:08:42	4093	BP23MVEXP-ENV-DC-091			Camera	67	627980	6201742	627934	6201734	46	8	47	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	04:08:56	4094	BP23MVEXP-ENV-DC-091			Camera	67	627978	6201741	627934	6201734	44	7	45	-99		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	04:09:07	4095	BP23MVEXP-ENV-DC-091			Camera	67	627977	6201741	627934	6201734	43	7	44	-99		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	04:09:40	4096	BP23MVEXP-ENV-DC-091			Camera	67	627974	6201740	627934	6201734	40	6	40	-99		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	04:10:13	4097	BP23MVEXP-ENV-DC-091			Camera	67	627970	6201740	627934	6201734	36	6	37	-99		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	04:10:41	4098	BP23MVEXP-ENV-DC-091			Camera	67	627967	6201740	627934	6201734	33	6	34	-100		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	04:11:03	4099	BP23MVEXP-ENV-DC-091			Camera	67	627965	6201740	627934	6201734	31	6	32	-100		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	04:12:25	4100	BP23MVEXP-ENV-DC-091			Camera	67	627957	6201737	627934	6201734	23	3	24	-98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	04:13:09	4101	BP23MVEXP-ENV-DC-091			Camera	67	627952	6201736	627934	6201734	18	2	19	-97		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	04:14:11	4102	BP23MVEXP-ENV-DC-091			Camera	67	627946	6201736	627934	6201734	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	04:14:40	4103	BP23MVEXP-ENV-DC-091			Camera	67	627944	6201736	627934	6201734	10	2	10	-100		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	04:15:07	4104	BP23MVEXP-ENV-DC-091			Camera	67	627942	6201735	627934	6201734	8	1	8	-95		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	04:15:33	4105	BP23MVEXP-ENV-DC-091			Camera	67	627939	6201734	627934	6201734	5	0	5	-86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	04:15:59	4106	BP23MVEXP-ENV-DC-091			Camera	67	627935	6201733	627934	6201734	1	-1	2	-55		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	04:16:12	4107	BP23MVEXP-ENV-DC-091			Camera	67	627934	6201733	627934	6201734	0	-1	1	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	04:17:17	4108	BP23MVEXP-ENV-DC-091			Camera	67	627927	6201732	627934	6201734	-7	-2	7	77		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	04:17:33	4109	BP23MVEXP-ENV-DC-091			Camera	67	627926	6201732	627934	6201734	-8	-2	9	79		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	04:18:21	4110	BP23MVEXP-ENV-DC-091			Camera	67	627921	6201731	627934	6201734	-13	-3	13	79		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	04:18:38	4111	BP23MVEXP-ENV-DC-091			Camera	67	627919	6201731	627934	6201734	-15	-3	15	78		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	04:19:59	4112	BP23MVEXP-ENV-DC-091			Camera	67	627911	6201729	627934	6201734	-23	-5	23	78		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	04:21:52	4113	BP23MVEXP-ENV-DC-091			Camera	67	627900	6201727	627934	6201734	-34	-7	35	79		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	04:22:11	4114	BP23MVEXP-ENV-DC-091			Camera	67	627898	6201727	627934	6201734	-36	-7	37	79		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	04:22:37	4115	BP23MVEXP-ENV-DC-091			Camera	67	627895	6201726	627934	6201734	-39	-8	40	79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	04:23:10	4116	BP23MVEXP-ENV-DC-091			Camera	67	627891	6201725	627934	6201734	-43	-9	43	78		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	04:23:29	4117	BP23MVEXP-ENV-DC-091			Camera	67	627890	6201725	627934	6201734	-45	-9	45	79		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	04:23:42	4118	BP23MVEXP-ENV-DC-091			Camera	67	627888	6201725	627934	6201734	-46	-9	47	79		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	04:24:09	4119	BP23MVEXP-ENV-DC-091			Camera	67	627886	6201724	627934	6201734	-49	-10	49	79		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	04:39:23	4120	BP23MVEXP-ENV-DC-091			Camera	67	627926	6201786	627934	6201734	-8	52	52	171		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	04:42:27	4121	BP23MVEXP-ENV-DC-091			Camera	67	627926	6201784	627934	6201734	-8	50	50	171		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	04:42:48	4122	BP23MVEXP-ENV-DC-091			Camera	67	627927	6201782	627934	6201734	-7	48	48	171		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	04:43:07	4123A	BP23MVEXP-ENV-DC-091			Camera	68	627927	6201780	627934	6201734	-7	46	47	171		(Raw Nav, Kongsberg 14208, img#34) (B)
31-Jul-2023	04:43:20	4123B	BP23MVEXP-ENV-DC-091			Camera	67	627928	6201779	627934	6201734	-6	45	45	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	04:43:46	4124	BP23MVEXP-ENV-DC-091			Camera	67	627929	6201776	627934	6201734	-5	42	43	173		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	04:44:13	4125	BP23MVEXP-ENV-DC-091			Camera	67	627929	6201773	627934	6201734	-5	39	40	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	04:44:38	4126	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201771	627934	6201734	-4	37	37	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	04:45:07	4127	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201768	627934	6201734	-4	34	34	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	04:45:24	4128	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201766	627934	6201734	-4	32	33	173		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	04:45:59	4129	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201763	627934	6201734	-4	29	29	173		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	04:46:25	4130	BP23MVEXP-ENV-DC-091			Camera	67	627931	6201760	627934	6201734	-3	26	26	173		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	04:47:02	4131	BP23MVEXP-ENV-DC-091			Camera	67	627932	6201756	627934	6201734	-2	23	23	174		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	04:47:19	4132	BP23MVEXP-ENV-DC-091			Camera	67	627932	6201755	627934	6201734	-2	21	21	175		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	04:47:41	4133	BP23MVEXP-ENV-DC-091			Camera	67	627933	6201752	627934	6201734	-1	18	18	176		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	04:47:55	4134	BP23MVEXP-ENV-DC-091			Camera	67	627933	6201750	627934	6201734	-1	16	16	177		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	04:48:45	4135	BP23MVEXP-ENV-DC-091			Camera	67	627933	6201746	627934	6201734	-1	12	12	176		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	04:49:26	4136	BP23MVEXP-ENV-DC-091			Camera	67	627934	6201742	627934	6201734	0	8	8	178		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	04:50:27	4137	BP23MVEXP-ENV-DC-091			Camera	67	627935	6201736	627934	6201734	1	2	2	-154		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	04:50:44	4138	BP23MVEXP-ENV-DC-091			Camera	67	627935	6201734	627934	6201734	1	0	1	-96		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	04:51:04	4139	BP23MVEXP-ENV-DC-091			Camera	67	627936	6201732	627934	6201734	2	-2	2	-43		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	04:51:48	4140	BP23MVEXP-ENV-DC-091			Camera	67	627936	6201728	627934	6201734	2	-6	7	-22		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	04:52:03	4141	BP23MVEXP-ENV-DC-091			Camera	67	627937	6201726	627934	6201734	3	-8	8	-21		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	04:52:23	4142	BP23MVEXP-ENV-DC-091			Camera	67	627937	6201724	627934	6201734	3	-10	11	-19		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	04:52:39	4143	BP23MVEXP-ENV-DC-091			Camera	67	627938	6201722	627934	6201734	4	-12	12	-17		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	04:53:20	4144	BP23MVEXP-ENV-DC-091			Camera	67	627938	6201718	627934	6201734	4	-16	17	-14		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
31-Jul-2023	04:53:29	4145	BP23MVEXP-ENV-DC-091			Camera	67	627938	6201717	627934	6201734	4	-17	18	-14		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
31-Jul-2023	04:54:12	4146	BP23MVEXP-ENV-DC-091			Camera	67	627939	6201713	627934	6201734	5	-21	22	-13		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
31-Jul-2023	04:54:57	4147	BP23MVEXP-ENV-DC-091			Camera	67	627940	6201709	627934	6201734	6	-25	26	-12		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
31-Jul-2023	04:55:24	4148	BP23MVEXP-ENV-DC-091			Camera	67	627940	6201706	627934	6201734	6	-28	29	-12		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
31-Jul-2023	04:55:57	4149	BP23MVEXP-ENV-DC-091			Camera	67	627940	6201702	627934	6201734	6	-32	32	-12		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
31-Jul-2023	04:56:24	4150	BP23MVEXP-ENV-DC-091			Camera	67	627941	6201700	627934	6201734	7	-34	35	-11		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
31-Jul-2023	04:56:52	4151	BP23MVEXP-ENV-DC-091			Camera	67	627941	6201697	627934	6201734	7	-37	38	-10		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
31-Jul-2023	04:57:44	4152	BP23MVEXP-ENV-DC-091			Camera	67	627941	6201692	627934	6201734	7	-42	43	-10		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
31-Jul-2023	04:58:18	4153	BP23MVEXP-ENV-DC-091			Camera	67	627942	6201689	627934	6201734	8	-45	46	-10		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
31-Jul-2023	04:58:38	4154	BP23MVEXP-ENV-DC-091			Camera	67	627942	6201687	627934	6201734	8	-47	48	-10		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
31-Jul-2023	06:53:09	4155	BP23MVEXP-ENV-DC-092			Camera	61	628406	6197867	628458	6197868	-52	-1	52	89		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	06:53:56	4156	BP23MVEXP-ENV-DC-092			Camera	61	628407	6197867	628458	6197868	-51	-1	51	89		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	06:55:12	4157	BP23MVEXP-ENV-DC-092			Camera	61	628408	6197868	628458	6197868	-50	0	50	90		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	06:55:41	4158	BP23MVEXP-ENV-DC-092			Camera	61	628411	6197869	628458	6197868	-47	1	47	91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	06:56:02	4159	BP23MVEXP-ENV-DC-092			Camera	61	628413	6197869	628458	6197868	-45	1	45	91		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	06:56:23	4160	BP23MVEXP-ENV-DC-092			Camera	61	628415	6197869	628458	6197868	-43	1	43	92		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	06:56:41	4161	BP23MVEXP-ENV-DC-092			Camera	61	628417	6197870	628458	6197868	-41	2	41	92		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	06:56:59	4162	BP23MVEXP-ENV-DC-092			Camera	61	628419	6197870	628458	6197868	-39	2	39	93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	06:57:20	4163	BP23MVEXP-ENV-DC-092			Camera	61	628421	6197870	628458	6197868	-37	2	37	93		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	06:58:07	4164	BP23MVEXP-ENV-DC-092			Camera	61	628426	6197871	628458	6197868	-32	3	33	95		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	06:58:55	4165	BP23MVEXP-ENV-DC-092			Camera	61	628431	6197872	628458	6197868	-27	4	28	98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	06:59:06	4166	BP23MVEXP-ENV-DC-092			Camera	61	628432	6197872	628458	6197868	-26	4	27	98		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	07:01:02	4167	BP23MVEXP-ENV-DC-092			Camera	62	628444	6197872	628458	6197868	-14	4	15	105		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	07:02:34	4168	BP23MVEXP-ENV-DC-092			Camera	62	628453	6197873	628458	6197868	-5	5	8	136		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	07:02:49	4169	BP23MVEXP-ENV-DC-092			Camera	62	628454	6197874	628458	6197868	-4	6	7	147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	07:03:09	4170	BP23MVEXP-ENV-DC-092			Camera	62	628456	6197874	628458	6197868	-2	6	6	160		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	07:03:29	4171	BP23MVEXP-ENV-DC-092			Camera	62	628458	6197874	628458	6197868	0	6	6	177		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	07:03:52	4172	BP23MVEXP-ENV-DC-092			Camera	62	628460	6197874	628458	6197868	2	6	7	-162		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	07:04:44	4173	BP23MVEXP-ENV-DC-092			Camera	62	628466	6197875	628458	6197868	8	7	11	-131		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	07:05:16	4174	BP23MVEXP-ENV-DC-092			Camera	62	628470	6197875	628458	6197868	12	7	14	-122		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	07:05:36	4175	BP23MVEXP-ENV-DC-092			Camera	62	628472	6197875	628458	6197868	14	7	15	-118		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	07:06:14	4176	BP23MVEXP-ENV-DC-092			Camera	62	628475	6197876	628458	6197868	17	8	19	-114		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	07:06:41	4177	BP23MVEXP-ENV-DC-092			Camera	62	628478	6197876	628458	6197868	20	8	21	-111		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	07:07:03	4178	BP23MVEXP-ENV-DC-092			Camera	62	628480	6197876	628458	6197868	22	8	23	-110		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	07:07:52	4179	BP23MVEXP-ENV-DC-092			Camera	62	628485	6197876	628458	6197868	27	8	28	-106		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	07:08:38	4180	BP23MVEXP-ENV-DC-092			Camera	62	628489	6197877	628458	6197868	32	9	33	-105		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	07:09:29	4181	BP23MVEXP-ENV-DC-092			Camera	62	628494	6197877	628458	6197868	36	9	38	-104		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	07:10:10	4182	BP23MVEXP-ENV-DC-092			Camera	62	628499	6197878	628458	6197868	41	10	42	-104		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	07:10:48	4183	BP23MVEXP-ENV-DC-092			Camera	62	628503	6197878	628458	6197868	45	10	46	-103		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	07:11:21	4184	BP23MVEXP-ENV-DC-092			Camera	62	628506	6197878	628458	6197868	48	10	49	-102		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	07:26:14	4185	BP23MVEXP-ENV-DC-092			Camera	62	628450	6197916	628458	6197868	-8	48	49	171		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	07:27:52	4186	BP23MVEXP-ENV-DC-092			Camera	62	628451	6197914	628458	6197868	-7	46	47	172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	07:28:00	4187	BP23MVEXP-ENV-DC-092			Camera	62	628451	6197914	628458	6197868	-7	46	46	172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	07:28:37	4188	BP23MVEXP-ENV-DC-092			Camera	62	628452	6197910	628458	6197868	-6	42	42	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	07:29:43	4189	BP23MVEXP-ENV-DC-092			Camera	62	628453	6197902	628458	6197868	-5	34	35	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	07:30:38	4190	BP23MVEXP-ENV-DC-092			Camera	62	628454	6197897	628458	6197868	-4	29	29	172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	07:31:58	4191	BP23MVEXP-ENV-DC-092			Camera	62	628455	6197888	628458	6197868	-3	20	20	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	07:32:18	4192	BP23MVEXP-ENV-DC-092			Camera	62	628456	6197886	628458	6197868	-2	18	18	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	07:32:52	4193	BP23MVEXP-ENV-DC-092			Camera	62	628456	6197883	628458	6197868	-2	15	15	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	07:34:30	4194	BP23MVEXP-ENV-DC-092			Camera	62	628458	6197873	628458	6197868	0	5	5	177		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	07:34:47	4195	BP23MVEXP-ENV-DC-092			Camera	62	628458	6197871	628458	6197868	0	3	3	-179		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	07:35:06	4196	BP23MVEXP-ENV-DC-092			Camera	61	628458	6197869	628458	6197868	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	07:35:23	4197	BP23MVEXP-ENV-DC-092			Camera	61	628458	6197867	628458	6197868	0	-1	1	-12		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	07:35:38	4198	BP23MVEXP-ENV-DC-092			Camera	61	628458	6197866	628458	6197868	0	-2	2	-10		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	07:35:57	4199	BP23MVEXP-ENV-DC-092			Camera	61	628459	6197864	628458	6197868	1	-4	4	-10		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	07:37:14	4200	BP23MVEXP-ENV-DC-092			Camera	61	628461	6197856	628458	6197868	3	-12	12	-12		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	07:37:48	4201	BP23MVEXP-ENV-DC-092			Camera	61	628461	6197852	628458	6197868	3	-16	16	-11		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	07:38:12	4202	BP23MVEXP-ENV-DC-092			Camera	61	628461	6197850	628458	6197868	3	-18	19	-11		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	07:38:46	4203	BP23MVEXP-ENV-DC-092			Camera	61	628462	6197846	628458	6197868	4	-22	22	-10		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	07:39:31	4204	BP23MVEXP-ENV-DC-092			Camera	61	628463	6197841	628458	6197868	5	-27	27	-10		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	07:40:06	4205	BP23MVEXP-ENV-DC-092			Camera	61	628463	6197837	628458	6197868	5	-31	31	-9		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	07:40:55	4206	BP23MVEXP-ENV-DC-092			Camera	61	628464	6197833	628458	6197868	6	-35	35	-9		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	07:41:54	4207	BP23MVEXP-ENV-DC-092			Camera	61	628465	6197828	628458	6197868	7	-40	41	-10		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	07:42:54	4208	BP23MVEXP-ENV-DC-092			Camera	61	628466	6197821	628458	6197868	8	-47	48	-10		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	07:43:28	4209	BP23MVEXP-ENV-DC-092			Camera	61	628467	6197819	628458	6197868	9	-49	50	-10		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
31-Jul-2023	09:01:46	4210	BP23MVEXP-ENV-DC-093			Camera	66	629002	6193874	629054	6193880	-52	-6	52	83		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	09:01:59	4211	BP23MVEXP-ENV-DC-093			Camera	66	629003	6193873	629054	6193880	-52	-7	52	83		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	09:03:51	4212	BP23MVEXP-ENV-DC-093			Camera	66	629003	6193874	629054	6193880	-51	-6	51	83		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	09:04:12	4213	BP23MVEXP-ENV-DC-093			Camera	66	629005	6193874	629054	6193880	-49	-6	50	84		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	09:05:28	4214	BP23MVEXP-ENV-DC-093			Camera	66	629012	6193876	629054	6193880	-42	-4	42	85		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	09:05:56	4215	BP23MVEXP-ENV-DC-093			Camera	66	629015	6193877	629054	6193880	-39	-3	39	85		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	09:06:33	4216	BP23MVEXP-ENV-DC-093			Camera	66	629019	6193877	629054	6193880	-35	-3	35	85		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	09:06:46	4217	BP23MVEXP-ENV-DC-093			Camera	66	629020	6193877	629054	6193880	-34	-3	34	85		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	09:07:26	4218	BP23MVEXP-ENV-DC-093			Camera	66	629025	6193878	629054	6193880	-29	-2	30	86		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	09:08:11	4219	BP23MVEXP-ENV-DC-093			Camera	66	629029	6193878	629054	6193880	-25	-2	25	86		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	09:09:25	4220	BP23MVEXP-ENV-DC-093			Camera	66	629037	6193880	629054	6193880	-17	0	17	88		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	09:10:19	4221	BP23MVEXP-ENV-DC-093			Camera	66	629043	6193880	629054	6193880	-11	0	11	91		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	09:11:06	4222	BP23MVEXP-ENV-DC-093			Camera	66	629048	6193881	629054	6193880	-6	1	7	99		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	09:11:34	4223	BP23MVEXP-ENV-DC-093			Camera	66	629050	6193881	629054	6193880	-4	1	4	113		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	09:11:50	4224	BP23MVEXP-ENV-DC-093			Camera	66	629052	6193882	629054	6193880	-2	2	3	133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	09:12:06	4225	BP23MVEXP-ENV-DC-093			Camera	66	629054	6193882	629054	6193880	0	2	2	172		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	09:12:17	4226	BP23MVEXP-ENV-DC-093			Camera	66	629055	6193882	629054	6193880	1	2	2	-158		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	09:12:40	4227	BP23MVEXP-ENV-DC-093			Camera	66	629057	6193882	629054	6193880	3	2	4	-127		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	09:13:12	4228	BP23MVEXP-ENV-DC-093			Camera	66	629060	6193883	629054	6193880	6	3	7	-114		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	09:14:06	4229	BP23MVEXP-ENV-DC-093			Camera	66	629066	6193884	629054	6193880	12	4	12	-107		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	09:14:29	4230	BP23MVEXP-ENV-DC-093			Camera	66	629068	6193884	629054	6193880	14	4	15	-105		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	09:15:58	4231	BP23MVEXP-ENV-DC-093			Camera	66	629077	6193885	629054	6193880	23	5	24	-103		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	09:16:43	4232	BP23MVEXP-ENV-DC-093			Camera	66	629082	6193886	629054	6193880	28	6	29	-101		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	09:17:47	4233	BP23MVEXP-ENV-DC-093			Camera	66	629088	6193887	629054	6193880	34	7	35	-101		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	09:18:24	4234	BP23MVEXP-ENV-DC-093			Camera	66	629092	6193887	629054	6193880	38	7	39	-101		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	09:20:03	4235	BP23MVEXP-ENV-DC-093			Camera	66	629102	6193889	629054	6193880	48	9	49	-100		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	09:21:13	4236	BP23MVEXP-ENV-DC-093			Camera	66	629104	6193889	629054	6193880	50	9	51	-100		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	09:24:15	4237	BP23MVEXP-ENV-DC-093			Camera	66	629095	6193896	629054	6193880	41	16	44	-112		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	09:28:18	4238	BP23MVEXP-ENV-DC-093			Camera	66	629073	6193911	629054	6193880	19	31	36	-148		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	09:35:08	4239	BP23MVEXP-ENV-DC-093			Camera	66	629046	6193929	629054	6193880	-8	49	49	170		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	09:36:43	4240	BP23MVEXP-ENV-DC-093			Camera	66	629046	6193925	629054	6193880	-8	45	46	170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	09:37:02	4241	BP23MVEXP-ENV-DC-093			Camera	66	629046	6193923	629054	6193880	-8	43	44	169		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	09:37:42	4242	BP23MVEXP-ENV-DC-093			Camera	66	629047	6193919	629054	6193880	-7	39	39	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	09:38:22	4243	BP23MVEXP-ENV-DC-093			Camera	66	629047	6193914	629054	6193880	-7	34	35	169		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	09:38:36	4244	BP23MVEXP-ENV-DC-093			Camera	66	629048	6193913	629054	6193880	-6	33	34	170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	09:39:23	4245	BP23MVEXP-ENV-DC-093			Camera	66	629049	6193908	629054	6193880	-5	28	29	169		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	09:40:28	4246	BP23MVEXP-ENV-DC-093			Camera	66	629050	6193902	629054	6193880	-4	22	22	169		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	09:42:06	4247	BP23MVEXP-ENV-DC-093			Camera	66	629051	6193892	629054	6193880	-3	12	12	168		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	09:43:28	4248	BP23MVEXP-ENV-DC-093			Camera	66	629053	6193883	629054	6193880	-1	3	3	164		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	09:43:38	4249	BP23MVEXP-ENV-DC-093			Camera	66	629053	6193882	629054	6193880	-1	2	2	163		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	09:44:05	4250	BP23MVEXP-ENV-DC-093			Camera	66	629054	6193879	629054	6193880	0	-1	1	9		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	09:44:43	4251	BP23MVEXP-ENV-DC-093			Camera	66	629055	6193876	629054	6193880	1	-4	4	-12		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	09:45:09	4252	BP23MVEXP-ENV-DC-093			Camera	66	629055	6193873	629054	6193880	1	-7	7	-12		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	09:45:26	4253	BP23MVEXP-ENV-DC-093			Camera	66	629056	6193871	629054	6193880	2	-9	9	-12		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	09:45:57	4254	BP23MVEXP-ENV-DC-093			Camera	66	629056	6193868	629054	6193880	2	-12	12	-12		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	09:46:52	4255	BP23MVEXP-ENV-DC-093			Camera	66	629058	6193862	629054	6193880	4	-18	18	-12		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	09:47:40	4256	BP23MVEXP-ENV-DC-093			Camera	66	629058	6193858	629054	6193880	4	-23	23	-11		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	09:48:40	4257	BP23MVEXP-ENV-DC-093			Camera	66	629059	6193851	629054	6193880	5	-29	29	-10		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	09:49:36	4258	BP23MVEXP-ENV-DC-093			Camera	66	629060	6193846	629054	6193880	6	-34	35	-10		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	09:50:03	4259	BP23MVEXP-ENV-DC-093			Camera	66	629060	6193843	629054	6193880	6	-37	38	-10		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	09:50:53	4260	BP23MVEXP-ENV-DC-093			Camera	66	629061	6193838	629054	6193880	7	-42	43	-9		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	09:51:38	4261	BP23MVEXP-ENV-DC-093			Camera	66	629062	6193833	629054	6193880	8	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	09:52:02	4262	BP23MVEXP-ENV-DC-093			Camera	66	629062	6193831	629054	6193880	8	-49	50	-9		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	11:31:05	4623	BP23MVEXP-ENV-DC-094			Camera	72	628537	6190278	628588	6190282	-51	-4	51	86		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	11:32:13	4624	BP23MVEXP-ENV-DC-094			Camera	72	628538	6190278	628588	6190282	-50	-4	50	85		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	11:32:34	4625	BP23MVEXP-ENV-DC-094			Camera	72	628540	6190278	628588	6190282	-48	-4	48	85		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	11:32:50	4626	BP23MVEXP-ENV-DC-094			Camera	72	628542	6190278	628588	6190282	-46	-4	46	85		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	11:33:17	4627	BP23MVEXP-ENV-DC-094			Camera	72	628545	6190278	628588	6190282	-43	-4	43	85		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	11:33:47	4628	BP23MVEXP-ENV-DC-094			Camera	72	628548	6190278	628588	6190282	-40	-4	40	85		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	11:34:26	4629	BP23MVEXP-ENV-DC-094			Camera	72	628552	6190278	628588	6190282	-36	-4	36	84		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	11:34:57	4630	BP23MVEXP-ENV-DC-094			Camera	72	628555	6190279	628588	6190282	-33	-3	33	84		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	11:35:14	4631	BP23MVEXP-ENV-DC-094			Camera	72	628557	6190279	628588	6190282	-31	-3	31	84		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	11:36:06	4632	BP23MVEXP-ENV-DC-094			Camera	72	628562	6190279	628588	6190282	-26	-3	26	83		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	11:36:27	4633	BP23MVEXP-ENV-DC-094			Camera	72	628564	6190279	628588	6190282	-24	-3	24	83		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	11:36:48	4634	BP23MVEXP-ENV-DC-094			Camera	72	628566	6190279	628588	6190282	-22	-3	22	81		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	11:37:32	4635	BP23MVEXP-ENV-DC-094			Camera	72	628571	6190279	628588	6190282	-17	-3	17	79		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	11:38:34	4636	BP23MVEXP-ENV-DC-094			Camera	72	628577	6190280	628588	6190282	-11	-2	11	77		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	11:39:00	4637	BP23MVEXP-ENV-DC-094			Camera	72	628580	6190280	628588	6190282	-8	-2	8	74		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	11:39:34	4638	BP23MVEXP-ENV-DC-094			Camera	72	628584	6190280	628588	6190282	-4	-2	5	63		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	11:39:40	4639	BP23MVEXP-ENV-DC-094			Camera	72	628584	6190280	628588	6190282	-4	-2	4	59		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	11:40:11	4640	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190280	628588	6190282	0	-2	2	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	11:40:33	4641	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190280	628588	6190282	2	-2	3	-39		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	11:41:32	4642	BP23MVEXP-ENV-DC-094			Camera	72	628595	6190281	628588	6190282	7	-1	8	-80		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	11:41:53	4643	BP23MVEXP-ENV-DC-094			Camera	72	628598	6190281	628588	6190282	10	-1	10	-84		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	11:42:23	4644	BP23MVEXP-ENV-DC-094			Camera	72	628601	6190281	628588	6190282	13	-1	13	-85		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	11:43:02	4645	BP23MVEXP-ENV-DC-094			Camera	72	628605	6190281	628588	6190282	17	-1	17	-86		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	11:44:03	4646	BP23MVEXP-ENV-DC-094			Camera	72	628611	6190281	628588	6190282	23	-1	23	-87		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	11:44:24	4647	BP23MVEXP-ENV-DC-094			Camera	72	628614	6190281	628588	6190282	26	-1	26	-88		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	11:46:00	4648	BP23MVEXP-ENV-DC-094			Camera	72	628623	6190282	628588	6190282	35	0	35	-90		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	11:46:47	4649	BP23MVEXP-ENV-DC-094			Camera	73	628628	6190282	628588	6190282	40	0	40	-90		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	11:48:10	4650	BP23MVEXP-ENV-DC-094			Camera	73	628637	6190282	628588	6190282	49	0	49	-90		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	11:56:28	4651	BP23MVEXP-ENV-DC-094			Camera	72	628587	6190330	628588	6190282	-1	48	48	179		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	11:57:59	4652	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190327	628588	6190282	0	45	45	180		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	11:58:27	4653	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190324	628588	6190282	0	42	42	180		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	11:58:48	4654	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190321	628588	6190282	0	39	39	180		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	11:59:28	4655	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190317	628588	6190282	0	35	35	180		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	11:59:56	4656	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190314	628588	6190282	0	32	32	180		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	12:00:30	4657	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190310	628588	6190282	0	28	28	-180		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	12:00:39	4658	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190309	628588	6190282	0	27	27	-180		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	12:01:03	4659	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190307	628588	6190282	0	25	25	-179		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	12:02:40	4660	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190297	628588	6190282	0	15	15	-179		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	12:04:26	4661	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190286	628588	6190282	1	4	4	-171		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	12:04:48	4662	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190284	628588	6190282	1	2	2	-157		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	12:05:02	4663	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190282	628588	6190282	1	0	1	-93		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	12:05:27	4664	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190279	628588	6190282	1	-3	3	-18		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	12:05:48	4665	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190277	628588	6190282	1	-5	5	-10		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	12:06:01	4666	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190276	628588	6190282	1	-6	6	-8		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	12:06:26	4667	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190274	628588	6190282	1	-8	8	-6		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	12:07:27	4668	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190267	628588	6190282	1	-15	15	-4		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	12:08:33	4669	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190261	628588	6190282	1	-21	21	-3		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	12:09:13	4670	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190256	628588	6190282	1	-26	26	-3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	12:09:41	4671	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190254	628588	6190282	1	-28	28	-2		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	12:10:30	4672	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190249	628588	6190282	1	-34	34	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	12:11:12	4673	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190244	628588	6190282	2	-38	38	-2		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	12:11:56	4674	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190240	628588	6190282	2	-42	42	-2		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	12:12:44	4675	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190235	628588	6190282	2	-47	47	-2		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	12:13:26	4676	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190232	628588	6190282	2	-50	50	-2		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	12:59:25	4677	BP23MVEXP-ENV-DC-095			Camera	69	630139	6190131	630186	6190154	-47	-23	53	64		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	13:01:05	4678	BP23MVEXP-ENV-DC-095			Camera	69	630142	6190132	630186	6190154	-44	-22	49	63		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	13:01:17	4679	BP23MVEXP-ENV-DC-095			Camera	69	630143	6190132	630186	6190154	-43	-22	48	63		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	13:01:34	4680	BP23MVEXP-ENV-DC-095			Camera	69	630145	6190132	630186	6190154	-41	-22	47	62		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	13:01:52	4681	BP23MVEXP-ENV-DC-095			Camera	69	630147	6190133	630186	6190154	-39	-21	45	62		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	13:02:38	4682	BP23MVEXP-ENV-DC-095			Camera	69	630151	6190135	630186	6190154	-35	-19	40	62		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	13:03:07	4683	BP23MVEXP-ENV-DC-095			Camera	70	630153	6190136	630186	6190154	-33	-18	37	61		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	13:04:07	4684	BP23MVEXP-ENV-DC-095			Camera	70	630160	6190139	630186	6190154	-26	-15	30	60		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	13:05:01	4685	BP23MVEXP-ENV-DC-095			Camera	70	630166	6190141	630186	6190154	-21	-13	24	57		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	13:05:57	4686	BP23MVEXP-ENV-DC-095			Camera	70	630171	6190142	630186	6190154	-15	-12	19	51		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	13:07:04	4687	BP23MVEXP-ENV-DC-095			Camera	70	630177	6190145	630186	6190154	-9	-9	13	42		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	13:07:30	4688	BP23MVEXP-ENV-DC-095			Camera	70	630180	6190146	630186	6190154	-6	-8	10	35		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	13:08:24	4689	BP23MVEXP-ENV-DC-095			Camera	70	630185	6190147	630186	6190154	-1	-7	7	12		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	13:08:48	4690	BP23MVEXP-ENV-DC-095			Camera	70	630187	6190148	630186	6190154	1	-6	6	-12		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	13:09:06	4691	BP23MVEXP-ENV-DC-095			Camera	70	630189	6190149	630186	6190154	3	-5	6	-31		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	13:09:40	4692	BP23MVEXP-ENV-DC-095			Camera	70	630192	6190150	630186	6190154	6	-4	7	-60		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	13:10:29	4693	BP23MVEXP-ENV-DC-095			Camera	70	630198	6190152	630186	6190154	12	-2	12	-80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	13:10:53	4694	BP23MVEXP-ENV-DC-095			Camera	70	630200	6190153	630186	6190154	14	-1	14	-87		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	13:11:37	4695	BP23MVEXP-ENV-DC-095			Camera	70	630204	6190155	630186	6190154	18	1	18	-93		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	13:11:45	4696	BP23MVEXP-ENV-DC-095			Camera	70	630205	6190155	630186	6190154	19	1	19	-93		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	13:12:55	4697	BP23MVEXP-ENV-DC-095			Camera	70	630211	6190158	630186	6190154	26	4	26	-98		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	13:14:21	4698	BP23MVEXP-ENV-DC-095			Camera	70	630220	6190160	630186	6190154	34	6	34	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	13:15:00	4699	BP23MVEXP-ENV-DC-095			Camera	70	630223	6190162	630186	6190154	37	8	38	-102		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	13:15:37	4700	BP23MVEXP-ENV-DC-095			Camera	70	630227	6190163	630186	6190154	41	9	42	-103		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	13:24:41	4701	BP23MVEXP-ENV-DC-095			Camera	70	630170	6190196	630186	6190154	-16	42	45	160		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	13:26:45	4702	BP23MVEXP-ENV-DC-095			Camera	70	630171	6190195	630186	6190154	-15	42	44	160		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	13:27:34	4703	BP23MVEXP-ENV-DC-095			Camera	70	630173	6190190	630186	6190154	-13	36	39	160		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	13:28:11	4704	BP23MVEXP-ENV-DC-095			Camera	70	630174	6190186	630186	6190154	-12	32	34	159		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	13:29:16	4705	BP23MVEXP-ENV-DC-095			Camera	70	630177	6190181	630186	6190154	-9	27	29	161		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	13:30:13	4706	BP23MVEXP-ENV-DC-095			Camera	70	630179	6190176	630186	6190154	-7	22	23	163		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	13:31:17	4707	BP23MVEXP-ENV-DC-095			Camera	70	630181	6190170	630186	6190154	-5	16	16	163		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	13:31:58	4708	BP23MVEXP-ENV-DC-095			Camera	70	630183	6190166	630186	6190154	-3	12	13	166		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	13:32:31	4709	BP23MVEXP-ENV-DC-095			Camera	70	630184	6190163	630186	6190154	-2	9	9	170		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	13:33:00	4710	BP23MVEXP-ENV-DC-095			Camera	70	630185	6190160	630186	6190154	-1	6	6	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	13:33:39	4711	BP23MVEXP-ENV-DC-095			Camera	70	630186	6190156	630186	6190154	0	2	2	-165		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	13:33:56	4712	BP23MVEXP-ENV-DC-095			Camera	70	630187	6190154	630186	6190154	1	0	1	-93		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	13:34:34	4713	BP23MVEXP-ENV-DC-095			Camera	70	630189	6190150	630186	6190154	3	-4	4	-36		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	13:34:58	4714	BP23MVEXP-ENV-DC-095			Camera	70	630190	6190148	630186	6190154	4	-6	7	-30		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	13:35:34	4715	BP23MVEXP-ENV-DC-095			Camera	70	630191	6190145	630186	6190154	5	-9	10	-30		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	13:36:34	4716	BP23MVEXP-ENV-DC-095			Camera	70	630194	6190139	630186	6190154	8	-15	16	-28		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	13:36:50	4717	BP23MVEXP-ENV-DC-095			Camera	70	630194	6190138	630186	6190154	8	-16	18	-26		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	13:37:37	4718	BP23MVEXP-ENV-DC-095			Camera	70	630195	6190133	630186	6190154	9	-21	23	-24		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	13:38:01	4719	BP23MVEXP-ENV-DC-095			Camera	70	630196	6190131	630186	6190154	10	-23	25	-24		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	13:38:43	4720	BP23MVEXP-ENV-DC-095			Camera	69	630198	6190127	630186	6190154	12	-27	29	-25		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	13:38:49	4721	BP23MVEXP-ENV-DC-095			Camera	70	630199	6190127	630186	6190154	13	-27	30	-25		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	13:39:05	4722	BP23MVEXP-ENV-DC-095			Camera	69	630199	6190125	630186	6190154	14	-29	32	-25		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	13:40:27	4723	BP23MVEXP-ENV-DC-095			Camera	69	630202	6190118	630186	6190154	16	-36	40	-24		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	13:40:51	4724	BP23MVEXP-ENV-DC-095			Camera	69	630203	6190116	630186	6190154	17	-38	42	-24		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	13:41:13	4725	BP23MVEXP-ENV-DC-095			Camera	69	630204	6190113	630186	6190154	18	-41	44	-24		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	13:41:28	4726	BP23MVEXP-ENV-DC-095			Camera	69	630204	6190112	630186	6190154	18	-42	46	-23		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	13:41:57	4727	BP23MVEXP-ENV-DC-095			Camera	69	630205	6190109	630186	6190154	19	-45	49	-23		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	14:51:07	4728	BP23MVEXP-ENV-DC-097			Camera	69	631417	6186277	631463	6186300	-46	-23	51	63		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	14:53:58	4729	BP23MVEXP-ENV-DC-097			Camera	69	631421	6186281	631463	6186300	-42	-19	46	66		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	14:54:30	4730	BP23MVEXP-ENV-DC-097			Camera	69	631424	6186282	631463	6186300	-39	-18	43	65		(Raw Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	14:55:04	4731	BP23MVEXP-ENV-DC-097			Camera	69	631426	6186283	631463	6186300	-37	-17	41	65		(Raw Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	14:55:18	4732	BP23MVEXP-ENV-DC-097			Camera	69	631428	6186284	631463	6186300	-35	-16	38	65		(Raw Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	14:55:44	4733	BP23MVEXP-ENV-DC-097			Camera	69	631430	6186285	631463	6186300	-33	-15	36	66		(Raw Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	14:56:31	4734	BP23MVEXP-ENV-DC-097			Camera	69	631435	6186287	631463	6186300	-28	-13	31	65		(Raw Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	14:56:50	4735	BP23MVEXP-ENV-DC-097			Camera	69	631437	6186288	631463	6186300	-26	-12	29	65		(Raw Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	14:57:35	4736	BP23MVEXP-ENV-DC-097			Camera	69	631441	6186289	631463	6186300	-22	-11	25	63		(Raw Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	14:58:56	4737	BP23MVEXP-ENV-DC-097			Camera	69	631448	6186293	631463	6186300	-15	-7	17	65		(Raw Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	14:59:44	4738	BP23MVEXP-ENV-DC-097			Camera	70	631452	6186296	631463	6186300	-11	-4	12	70		(Raw Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	15:00:47	4739	BP23MVEXP-ENV-DC-097			Camera	70	631459	6186299	631463	6186300	-4	-1	4	76		(Raw Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	15:01:18	4740	BP23MVEXP-ENV-DC-097			Camera	70	631461	6186301	631463	6186300	-2	1	2	117		(Raw Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	15:01:30	4741	BP23MVEXP-ENV-DC-097			Camera	70	631464	6186300	631463	6186300	1	0	1	-90		(Raw Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	15:02:07	4742	BP23MVEXP-ENV-DC-097			Camera	70	631466	6186303	631463	6186300	3	3	4	-135		(Raw Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	15:02:34	4743	BP23MVEXP-ENV-DC-097			Camera	70	631470	6186304	631463	6186300	7	4	8	-120		(Raw Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	15:02:56	4744	BP23MVEXP-ENV-DC-097			Camera	70	631472	6186304	631463	6186300	9	4	10	-114		(Raw Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	15:03:44	4745	BP23MVEXP-ENV-DC-097			Camera	70	631476	6186306	631463	6186300	13	6	14	-115		(Raw Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	15:04:23	4746	BP23MVEXP-ENV-DC-097			Camera	70	631480	6186308	631463	6186300	17	8	19	-115		(Raw Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	15:04:36	4747	BP23MVEXP-ENV-DC-097			Camera	70	631481	6186308	631463	6186300	18	8	20	-114		(Raw Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	15:04:57	4748	BP23MVEXP-ENV-DC-097			Camera	70	631483	6186308	631463	6186300	20	8	22	-112		(Raw Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	15:05:15	4749	BP23MVEXP-ENV-DC-097			Camera	70	631485	6186310	631463	6186300	22	10	24	-114		(Raw Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	15:05:53	4750	BP23MVEXP-ENV-DC-097			Camera	70	631488	6186311	631463	6186300	25	11	27	-114		(Raw Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	15:06:04	4751	BP23MVEXP-ENV-DC-097			Camera	70	631489	6186312	631463	6186300	26	12	29	-115		(Raw Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	15:06:39	4752	BP23MVEXP-ENV-DC-097			Camera	70	631492	6186313	631463	6186300	29	13	32	-114		(Raw Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	15:07:43	4753	BP23MVEXP-ENV-DC-097			Camera	70	631498	6186316	631463	6186300	35	16	38	-115		(Raw Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	15:08:51	4754	BP23MVEXP-ENV-DC-097			Camera	70	631504	6186319	631463	6186300	41	19	45	-115		(Raw Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	15:09:46	4755	BP23MVEXP-ENV-DC-097			Camera	70	631508	6186321	631463	6186300	45	21	50	-115		(Raw Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	15:18:52	4756	BP23MVEXP-ENV-DC-097			Camera	70	631493	6186284	631463	6186300	30	-16	34	-62		(Raw Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	15:24:42	4757	BP23MVEXP-ENV-DC-097			Camera	70	631480	6186253	631463	6186300	17	-47	50	-20		(Raw Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	15:25:56	4758	BP23MVEXP-ENV-DC-097			Camera	70	631481	6186255	631463	6186300	18	-45	48	-22		(Raw Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	15:26:23	4759	BP23MVEXP-ENV-DC-097			Camera	70	631480	6186258	631463	6186300	17	-42	45	-22		(Raw Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	15:27:06	4760	BP23MVEXP-ENV-DC-097			Camera	70	631477	6186261	631463	6186300	14	-39	41	-20		(Raw Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	15:28:09	4761	BP23MVEXP-ENV-DC-097			Camera	70	631474	6186267	631463	6186300	11	-33	35	-18		(Raw Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	15:28:40	4762	BP23MVEXP-ENV-DC-097			Camera	70	631473	6186270	631463	6186300	10	-30	32	-18		(Raw Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	15:29:14	4763	BP23MVEXP-ENV-DC-097			Camera	70	631471	6186272	631463	6186300	8	-28	29	-16		(Raw Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	15:29:49	4764	BP23MVEXP-ENV-DC-097			Camera	70	631470	6186276	631463	6186300	7	-24	25	-16		(Raw Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	15:30:39	4765	BP23MVEXP-ENV-DC-097			Camera	70	631468	6186281	631463	6186300	5	-19	20	-15		(Raw Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	15:31:34	4766	BP23MVEXP-ENV-DC-097			Camera	70	631466	6186287	631463	6186300	3	-13	13	-13		(Raw Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	15:32:52	4767	BP23MVEXP-ENV-DC-097			Camera	70	631463	6186294	631463	6186300	0	-6	6	0		(Raw Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	15:33:37	4768	BP23MVEXP-ENV-DC-097			Camera	70	631461	6186298	631463	6186300	-2	-2	3	45		(Raw Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	15:33:56	4769	BP23MVEXP-ENV-DC-097			Camera	70	631460	6186300	631463	6186300	-3	0	3	90		(Raw Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	15:34:24	4770	BP23MVEXP-ENV-DC-097			Camera	70	631459	6186303	631463	6186300	-4	3	5	127		(Raw Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	15:34:55	4771	BP23MVEXP-ENV-DC-097			Camera	70	631458	6186306	631463	6186300	-5	6	8	140		(Raw Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	15:35:49	4772	BP23MVEXP-ENV-DC-097			Camera	70	631456	6186312	631463	6186300	-7	12	14	150		(Raw Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	15:36:27	4773	BP23MVEXP-ENV-DC-097			Camera	70	631454	6186316	631463	6186300	-9	16	18	151		(Raw Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	15:37:27	4774	BP23MVEXP-ENV-DC-097			Camera	70	631453	6186321	631463	6186300	-10	21	23	155		(Raw Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	15:37:58	4775	BP23MVEXP-ENV-DC-097			Camera	70	631452	6186325	631463	6186300	-11	25	27	156		(Raw Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	15:38:48	4776	BP23MVEXP-ENV-DC-097			Camera	70	631450	6186330	631463	6186300	-13	30	33	157		(Raw Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	15:40:15	4777	BP23MVEXP-ENV-DC-097			Camera	69	631446	6186338	631463	6186300	-17	38	42	156		(Raw Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	15:40:52	4778	BP23MVEXP-ENV-DC-097			Camera	69	631445	6186342	631463	6186300	-18	42	46	157		(Raw Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	15:41:49	4779	BP23MVEXP-ENV-DC-097			Camera	70	631442	6186350	631463	6186300	-21	50	54	157		(Raw Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	17:16:00	4780	BP23MVEXP-ENV-DC-096			Camera	79	628434	6186334	628432	6186279	2	55	55	-178		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	17:17:42	4781	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186332	628432	6186279	2	53	53	-178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	17:18:11	4782	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186330	628432	6186279	3	51	51	-177		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	17:18:53	4783	BP23MVEXP-ENV-DC-096			Camera	80	628435	6186325	628432	6186279	3	46	46	-177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	17:19:32	4784	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186321	628432	6186279	2	43	43	-178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	17:20:14	4785	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186318	628432	6186279	1	40	40	-178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	17:21:59	4786	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186307	628432	6186279	2	29	29	-176		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	17:22:43	4787	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186303	628432	6186279	1	24	24	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	17:23:28	4788	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186298	628432	6186279	2	20	20	-174		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	17:24:29	4789	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186291	628432	6186279	2	12	12	-171		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	17:24:48	4790	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186289	628432	6186279	1	10	10	-172		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	17:25:43	4791	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186284	628432	6186279	2	5	6	-165		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	17:25:52	4792	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186284	628432	6186279	2	5	5	-161		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	17:26:01	4793	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186283	628432	6186279	2	4	4	-154		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	17:26:19	4794	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186281	628432	6186279	2	2	3	-130		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	17:26:40	4795	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186279	628432	6186279	2	0	2	-79		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	17:27:09	4796	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186275	628432	6186279	2	-4	4	-27		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	17:27:48	4797	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186272	628432	6186279	1	-7	7	-8		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	17:28:38	4798	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186267	628432	6186279	2	-12	12	-9		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	17:30:45	4799	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186254	628432	6186279	1	-25	25	-2		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	17:31:42	4800	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186248	628432	6186279	1	-31	31	-2		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	17:33:10	4801	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186239	628432	6186279	2	-40	40	-3		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	17:50:01	4802	BP23MVEXP-ENV-DC-096			Camera	80	628382	6186280	628432	6186279	-50	1	50	92		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	17:50:40	4803	BP23MVEXP-ENV-DC-096			Camera	80	628386	6186280	628432	6186279	-46	1	46	92		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	17:51:15	4804	BP23MVEXP-ENV-DC-096			Camera	80	628390	6186280	628432	6186279	-42	1	42	92		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	17:51:37	4805	BP23MVEXP-ENV-DC-096			Camera	80	628392	6186281	628432	6186279	-40	2	40	93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	17:51:48	4806	BP23MVEXP-ENV-DC-096			Camera	80	628393	6186281	628432	6186279	-39	2	39	93		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	17:52:29	4807	BP23MVEXP-ENV-DC-096			Camera	80	628397	6186281	628432	6186279	-35	2	35	93		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	17:52:56	4808	BP23MVEXP-ENV-DC-096			Camera	80	628400	6186281	628432	6186279	-32	2	32	94		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	17:53:16	4809	BP23MVEXP-ENV-DC-096			Camera	80	628402	6186281	628432	6186279	-30	2	30	94		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	17:53:23	4810	BP23MVEXP-ENV-DC-096			Camera	80	628403	6186281	628432	6186279	-29	2	29	95		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	17:55:35	4811	BP23MVEXP-ENV-DC-096			Camera	80	628417	6186281	628432	6186279	-15	2	15	96		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	17:55:49	4812	BP23MVEXP-ENV-DC-096			Camera	80	628418	6186281	628432	6186279	-14	2	14	97		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	17:56:30	4813	BP23MVEXP-ENV-DC-096			Camera	80	628422	6186281	628432	6186279	-10	2	10	100		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	17:57:13	4814	BP23MVEXP-ENV-DC-096			Camera	80	628426	6186281	628432	6186279	-6	2	6	112		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	17:58:15	4815	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186282	628432	6186279	1	3	3	-165		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	17:58:38	4816	BP23MVEXP-ENV-DC-096			Camera	80	628435	6186281	628432	6186279	3	2	4	-127		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	17:59:16	4817	BP23MVEXP-ENV-DC-096			Camera	80	628439	6186281	628432	6186279	7	2	8	-106		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	17:59:53	4818	BP23MVEXP-ENV-DC-096			Camera	80	628443	6186281	628432	6186279	11	2	11	-99		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	18:00:07	4819	BP23MVEXP-ENV-DC-096			Camera	80	628444	6186281	628432	6186279	12	2	13	-99		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	18:00:52	4820	BP23MVEXP-ENV-DC-096			Camera	80	628449	6186282	628432	6186279	17	3	17	-98		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	18:02:34	4821	BP23MVEXP-ENV-DC-096			Camera	80	628459	6186281	628432	6186279	27	2	28	-95		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	18:03:19	4822	BP23MVEXP-ENV-DC-096			Camera	80	628464	6186281	628432	6186279	32	2	32	-94		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	18:04:52	4823	BP23MVEXP-ENV-DC-096			Camera	80	628474	6186281	628432	6186279	42	2	42	-93		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	18:05:34	4824	BP23MVEXP-ENV-DC-096			Camera	80	628478	6186282	628432	6186279	46	3	46	-94		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	18:05:42	4825	BP23MVEXP-ENV-DC-096			Camera	80	628478	6186282	628432	6186279	46	3	46	-94		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	18:06:16	4826	BP23MVEXP-ENV-DC-096			Camera	80	628482	6186282	628432	6186279	50	3	50	-94		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	19:42:48	4827	BP23MVEXP-ENV-DC-098			Camera	90	628211	6182336	628264	6182327	-53	9	53	100		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	19:46:20	4828	BP23MVEXP-ENV-DC-098			Camera	90	628219	6182337	628264	6182327	-45	10	46	102		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	19:46:39	4829	BP23MVEXP-ENV-DC-098			Camera	90	628221	6182337	628264	6182327	-43	10	44	103		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	19:47:14	4830	BP23MVEXP-ENV-DC-098			Camera	90	628224	6182336	628264	6182327	-40	9	41	103		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	19:47:29	4831	BP23MVEXP-ENV-DC-098			Camera	90	628226	6182336	628264	6182327	-38	9	39	104		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	19:48:42	4832	BP23MVEXP-ENV-DC-098			Camera	90	628234	6182336	628264	6182327	-30	9	31	107		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	19:50:10	4833	BP23MVEXP-ENV-DC-098			Camera	90	628243	6182336	628264	6182327	-21	9	23	113		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	19:50:43	4834	BP23MVEXP-ENV-DC-098			Camera	90	628246	6182336	628264	6182327	-18	9	20	116		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	19:51:28	4835	BP23MVEXP-ENV-DC-098			Camera	90	628251	6182335	628264	6182327	-13	8	15	121		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	19:51:44	4836	BP23MVEXP-ENV-DC-098			Camera	90	628253	6182335	628264	6182327	-12	8	14	123		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	19:51:53	4837	BP23MVEXP-ENV-DC-098			Camera	90	628254	6182334	628264	6182327	-11	7	13	125		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	19:52:18	4838	BP23MVEXP-ENV-DC-098			Camera	89	628256	6182334	628264	6182327	-8	7	11	132		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	19:52:56	4839	BP23MVEXP-ENV-DC-098			Camera	89	628259	6182334	628264	6182327	-5	7	8	146		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	19:53:35	4840	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182334	628264	6182327	-1	7	7	174		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	19:54:06	4841	BP23MVEXP-ENV-DC-098			Camera	89	628267	6182334	628264	6182327	3	7	7	-157		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	19:54:22	4842	BP23MVEXP-ENV-DC-098			Camera	89	628269	6182333	628264	6182327	5	6	8	-144		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	19:54:50	4843	BP23MVEXP-ENV-DC-098			Camera	89	628272	6182333	628264	6182327	8	6	10	-129		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	19:55:26	4844	BP23MVEXP-ENV-DC-098			Camera	89	628275	6182333	628264	6182327	11	6	13	-118		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	19:55:41	4845	BP23MVEXP-ENV-DC-098			Camera	89	628277	6182333	628264	6182327	13	6	14	-115		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	19:57:04	4846	BP23MVEXP-ENV-DC-098			Camera	89	628285	6182332	628264	6182327	21	5	22	-104		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	19:57:30	4847	BP23MVEXP-ENV-DC-098			Camera	89	628288	6182332	628264	6182327	24	5	24	-102		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	19:58:11	4848	BP23MVEXP-ENV-DC-098			Camera	89	628292	6182332	628264	6182327	28	5	29	-99		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	19:58:43	4849	BP23MVEXP-ENV-DC-098			Camera	89	628296	6182331	628264	6182327	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	19:59:22	4850	BP23MVEXP-ENV-DC-098			Camera	89	628300	6182331	628264	6182327	36	4	36	-96		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	20:00:52	4851	BP23MVEXP-ENV-DC-098			Camera	89	628308	6182331	628264	6182327	44	4	44	-95		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	20:01:30	4852	BP23MVEXP-ENV-DC-098			Camera	89	628312	6182330	628264	6182327	48	3	48	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	20:09:37	4853	BP23MVEXP-ENV-DC-098			Camera	90	628289	6182350	628264	6182327	25	23	34	-132		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	20:17:51	4854	BP23MVEXP-ENV-DC-098			Camera	90	628261	6182376	628264	6182327	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	20:18:38	4855	BP23MVEXP-ENV-DC-098			Camera	90	628260	6182374	628264	6182327	-4	47	47	176		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	20:19:24	4856	BP23MVEXP-ENV-DC-098			Camera	90	628260	6182370	628264	6182327	-4	43	43	174		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	20:19:46	4857	BP23MVEXP-ENV-DC-098			Camera	90	628260	6182368	628264	6182327	-4	41	41	174		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	20:20:38	4858	BP23MVEXP-ENV-DC-098			Camera	89	628261	6182362	628264	6182327	-3	35	35	176		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	20:20:58	4859	BP23MVEXP-ENV-DC-098			Camera	89	628262	6182360	628264	6182327	-2	33	33	176		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	20:21:32	4860	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182356	628264	6182327	-1	29	29	177		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	20:22:21	4861	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182350	628264	6182327	-1	23	23	177		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	20:23:06	4862	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182345	628264	6182327	-1	18	18	177		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	20:23:55	4863	BP23MVEXP-ENV-DC-098			Camera	90	628263	6182340	628264	6182327	-1	13	13	178		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	20:24:18	4864	BP23MVEXP-ENV-DC-098			Camera	90	628263	6182338	628264	6182327	-1	11	11	177		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	20:24:41	4865	BP23MVEXP-ENV-DC-098			Camera	90	628263	6182335	628264	6182327	-1	8	8	176		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	20:25:16	4866	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182332	628264	6182327	0	5	5	178		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	20:25:26	4867	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182330	628264	6182327	0	4	4	-180		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	20:25:48	4868	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182328	628264	6182327	0	1	1	-167		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	20:26:14	4869	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182325	628264	6182327	1	-2	2	-19		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	20:26:58	4870	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182321	628264	6182327	0	-6	6	-4		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	20:28:00	4871	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182314	628264	6182327	0	-13	13	-1		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	20:28:49	4872	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182309	628264	6182327	1	-18	18	-2		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	20:29:28	4873	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182305	628264	6182327	1	-22	22	-2		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	20:30:23	4874	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182299	628264	6182327	1	-28	28	-1		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	20:31:41	4875	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182292	628264	6182327	1	-35	35	-2		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	20:32:02	4876	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182289	628264	6182327	1	-38	38	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	20:33:13	4877	BP23MVEXP-ENV-DC-098			Camera	91	628265	6182282	628264	6182327	1	-45	45	-1		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	22:00:30	4878	BP23MVEXP-ENV-DC-099			Camera	80	632702	6182592	632746	6182610	-44	-18	48	67		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	22:02:17	4879	BP23MVEXP-ENV-DC-099			Camera	80	632704	6182593	632746	6182610	-42	-18	45	67		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	22:03:06	4880	BP23MVEXP-ENV-DC-099			Camera	80	632709	6182594	632746	6182610	-37	-16	41	67		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	22:03:46	4881	BP23MVEXP-ENV-DC-099			Camera	79	632712	6182596	632746	6182610	-34	-14	36	67		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	22:04:00	4882	BP23MVEXP-ENV-DC-099			Camera	79	632714	6182596	632746	6182610	-32	-14	35	67		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	22:04:47	4883	BP23MVEXP-ENV-DC-099			Camera	79	632718	6182598	632746	6182610	-28	-12	30	67		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	22:04:59	4884	BP23MVEXP-ENV-DC-099			Camera	79	632720	6182599	632746	6182610	-26	-11	29	67		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	22:05:32	4885	BP23MVEXP-ENV-DC-099			Camera	79	632722	6182600	632746	6182610	-24	-10	26	67		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	22:06:15	4886	BP23MVEXP-ENV-DC-099			Camera	79	632726	6182601	632746	6182610	-20	-9	21	66		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	22:07:09	4887	BP23MVEXP-ENV-DC-099			Camera	79	632732	6182604	632746	6182610	-14	-6	16	65		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	22:07:59	4888	BP23MVEXP-ENV-DC-099			Camera	79	632737	6182606	632746	6182610	-9	-4	10	64		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	22:08:41	4889	BP23MVEXP-ENV-DC-099			Camera	79	632741	6182607	632746	6182610	-5	-3	6	63		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	22:08:55	4890	BP23MVEXP-ENV-DC-099			Camera	79	632742	6182608	632746	6182610	-4	-2	5	60		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	22:09:53	4891	BP23MVEXP-ENV-DC-099			Camera	79	632748	6182610	632746	6182610	2	0	2	-102		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	22:10:26	4892	BP23MVEXP-ENV-DC-099			Camera	79	632751	6182612	632746	6182610	5	2	5	-109		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	22:11:17	4893	BP23MVEXP-ENV-DC-099			Camera	79	632756	6182614	632746	6182610	10	4	10	-111		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	22:11:42	4894	BP23MVEXP-ENV-DC-099			Camera	79	632758	6182614	632746	6182610	12	4	13	-110		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	22:12:58	4895	BP23MVEXP-ENV-DC-099			Camera	79	632765	6182618	632746	6182610	19	8	21	-112		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	22:13:36	4896	BP23MVEXP-ENV-DC-099			Camera	79	632769	6182620	632746	6182610	23	10	25	-113		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	22:14:12	4897	BP23MVEXP-ENV-DC-099			Camera	79	632772	6182621	632746	6182610	26	11	28	-112		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	22:14:54	4898	BP23MVEXP-ENV-DC-099			Camera	79	632776	6182622	632746	6182610	30	12	33	-112		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	22:15:48	4899	BP23MVEXP-ENV-DC-099			Camera	79	632782	6182625	632746	6182610	36	15	39	-112		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	22:16:16	4900	BP23MVEXP-ENV-DC-099			Camera	79	632785	6182626	632746	6182610	39	16	42	-112		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	22:16:44	4901	BP23MVEXP-ENV-DC-099			Camera	79	632787	6182627	632746	6182610	41	17	44	-112		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	22:17:26	4902	BP23MVEXP-ENV-DC-099			Camera	79	632791	6182628	632746	6182610	45	18	48	-112		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	22:18:01	4903	BP23MVEXP-ENV-DC-099			Camera	79	632793	6182629	632746	6182610	47	19	51	-112		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	22:36:38	4904	BP23MVEXP-ENV-DC-099			Camera	79	632738	6182650	632746	6182610	-8	40	41	169		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	22:38:48	4905	BP23MVEXP-ENV-DC-099			Camera	79	632728	6182656	632746	6182610	-18	46	49	159		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	22:39:40	4906	BP23MVEXP-ENV-DC-099			Camera	79	632729	6182653	632746	6182610	-17	43	46	158		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	22:40:25	4907	BP23MVEXP-ENV-DC-099			Camera	79	632731	6182648	632746	6182610	-15	38	41	158		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	22:42:03	4908	BP23MVEXP-ENV-DC-099			Camera	79	632735	6182638	632746	6182610	-11	28	30	158		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	22:42:50	4909	BP23MVEXP-ENV-DC-099			Camera	79	632737	6182634	632746	6182610	-9	24	25	158		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	22:43:12	4910	BP23MVEXP-ENV-DC-099			Camera	79	632739	6182631	632746	6182610	-7	21	22	161		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	22:44:10	4911	BP23MVEXP-ENV-DC-099			Camera	79	632740	6182626	632746	6182610	-6	16	17	160		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	22:44:24	4912	BP23MVEXP-ENV-DC-099			Camera	79	632741	6182625	632746	6182610	-5	15	16	160		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	22:45:31	4913	BP23MVEXP-ENV-DC-099			Camera	79	632743	6182618	632746	6182610	-3	8	8	161		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	22:45:54	4914	BP23MVEXP-ENV-DC-099			Camera	79	632744	6182615	632746	6182610	-2	5	6	159		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	22:46:03	4915	BP23MVEXP-ENV-DC-099			Camera	79	632744	6182615	632746	6182610	-2	5	5	160		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	22:46:23	4916	BP23MVEXP-ENV-DC-099			Camera	79	632745	6182613	632746	6182610	-1	3	3	164		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	22:47:01	4917	BP23MVEXP-ENV-DC-099			Camera	79	632747	6182610	632746	6182610	1	0	1	-49		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	22:47:46	4918	BP23MVEXP-ENV-DC-099			Camera	79	632748	6182605	632746	6182610	2	-5	5	-21		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	22:48:03	4919	BP23MVEXP-ENV-DC-099			Camera	79	632749	6182604	632746	6182610	3	-6	7	-25		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	22:48:49	4920	BP23MVEXP-ENV-DC-099			Camera	80	632750	6182599	632746	6182610	4	-11	12	-20		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	22:49:32	4921	BP23MVEXP-ENV-DC-099			Camera	80	632752	6182594	632746	6182610	6	-16	17	-22		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	22:50:04	4922	BP23MVEXP-ENV-DC-099			Camera	80	632754	6182591	632746	6182610	8	-19	20	-23		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	22:50:48	4923	BP23MVEXP-ENV-DC-099			Camera	80	632756	6182587	632746	6182610	10	-23	25	-22		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	22:51:26	4924	BP23MVEXP-ENV-DC-099			Camera	80	632757	6182584	632746	6182610	11	-26	29	-23		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	22:51:43	4925	BP23MVEXP-ENV-DC-099			Camera	80	632758	6182582	632746	6182610	12	-28	30	-23		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	22:52:40	4926	BP23MVEXP-ENV-DC-099			Camera	80	632760	6182576	632746	6182610	14	-34	36	-23		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	22:53:31	4927	BP23MVEXP-ENV-DC-099			Camera	80	632762	6182571	632746	6182610	16	-39	42	-23		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	22:54:17	4928	BP23MVEXP-ENV-DC-099			Camera	80	632764	6182567	632746	6182610	18	-43	46	-22		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	00:00:09	4929	BP23MVEXP-ENV-DC-101			Camera	87	634162	6178820	634211	6178844	-49	-24	54	64		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	00:00:21	4930	BP23MVEXP-ENV-DC-101			Camera	87	634163	6178820	634211	6178844	-48	-24	54	64		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	00:00:50	4931	BP23MVEXP-ENV-DC-101			Camera	87	634163	6178819	634211	6178844	-48	-25	54	63		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	00:02:03	4932	BP23MVEXP-ENV-DC-101			Camera	87	634165	6178819	634211	6178844	-46	-25	52	61		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	00:02:20	4933	BP23MVEXP-ENV-DC-101			Camera	87	634166	6178819	634211	6178844	-45	-25	51	61		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	00:03:45	4934	BP23MVEXP-ENV-DC-101			Camera	87	634174	6178824	634211	6178844	-37	-20	42	62		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	00:04:14	4935	BP23MVEXP-ENV-DC-101			Camera	87	634177	6178825	634211	6178844	-34	-19	39	62		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	00:04:28	4936	BP23MVEXP-ENV-DC-101			Camera	87	634178	6178826	634211	6178844	-33	-18	38	62		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	00:05:48	4937	BP23MVEXP-ENV-DC-101			Camera	87	634186	6178830	634211	6178844	-25	-14	29	61		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	00:06:11	4938	BP23MVEXP-ENV-DC-101			Camera	87	634188	6178831	634211	6178844	-23	-13	26	61		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	00:06:53	4939	BP23MVEXP-ENV-DC-101			Camera	87	634192	6178833	634211	6178844	-19	-11	22	60		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	00:07:34	4940	BP23MVEXP-ENV-DC-101			Camera	87	634196	6178834	634211	6178844	-15	-10	18	57		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	00:09:25	4941	BP23MVEXP-ENV-DC-101			Camera	88	634206	6178839	634211	6178844	-5	-5	8	45		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	00:10:08	4942	BP23MVEXP-ENV-DC-101			Camera	88	634210	6178841	634211	6178844	-1	-3	4	12		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	00:10:39	4943	BP23MVEXP-ENV-DC-101			Camera	88	634213	6178842	634211	6178844	2	-2	3	-48		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	00:10:52	4944	BP23MVEXP-ENV-DC-101			Camera	88	634215	6178843	634211	6178844	4	-2	4	-67		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	00:11:49	4945	BP23MVEXP-ENV-DC-101			Camera	88	634220	6178845	634211	6178844	9	1	9	-97		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	00:12:04	4946	BP23MVEXP-ENV-DC-101			Camera	88	634221	6178846	634211	6178844	10	2	11	-100		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	00:12:14	4947	BP23MVEXP-ENV-DC-101			Camera	88	634222	6178846	634211	6178844	11	2	12	-101		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	00:14:37	4948	BP23MVEXP-ENV-DC-101			Camera	88	634235	6178852	634211	6178844	24	8	25	-108		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	00:14:50	4949A	BP23MVEXP-ENV-DC-101			Camera	91	634236	6178852	634211	6178844	25	8	26	-108		(Raw Nav, Kongsberg 14208, img#21) (B)
01-Aug-2023	00:15:20	4949B	BP23MVEXP-ENV-DC-101			Camera	88	634239	6178854	634211	6178844	28	10	30	-109		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	00:15:29	4950	BP23MVEXP-ENV-DC-101			Camera	88	634240	6178854	634211	6178844	29	10	31	-110		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	00:15:45	4951	BP23MVEXP-ENV-DC-101			Camera	88	634242	6178855	634211	6178844	31	11	33	-110		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	00:16:02	4952	BP23MVEXP-ENV-DC-101			Camera	88	634243	6178856	634211	6178844	32	12	34	-111		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	00:16:29	4953	BP23MVEXP-ENV-DC-101			Camera	88	634246	6178857	634211	6178844	35	13	37	-111		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	00:17:04	4954	BP23MVEXP-ENV-DC-101			Camera	88	634249	6178859	634211	6178844	38	15	41	-111		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	00:17:59	4955	BP23MVEXP-ENV-DC-101			Camera	88	634255	6178861	634211	6178844	44	17	47	-111		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	00:18:08	4956	BP23MVEXP-ENV-DC-101			Camera	88	634256	6178861	634211	6178844	45	17	48	-111		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	00:18:37	4957	BP23MVEXP-ENV-DC-101			Camera	88	634257	6178862	634211	6178844	46	18	50	-111		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	00:29:51	4958	BP23MVEXP-ENV-DC-101			Camera	87	634196	6178889	634211	6178844	-15	45	47	161		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	00:30:04	4959	BP23MVEXP-ENV-DC-101			Camera	87	634196	6178890	634211	6178844	-15	46	48	161		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	00:30:26	4960	BP23MVEXP-ENV-DC-101			Camera	87	634195	6178891	634211	6178844	-16	47	49	161		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	00:33:08	4961	BP23MVEXP-ENV-DC-101			Camera	87	634199	6178882	634211	6178844	-12	38	40	163		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	00:35:57	4962	BP23MVEXP-ENV-DC-101			Camera	87	634205	6178866	634211	6178844	-6	23	23	166		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	00:36:44	4963	BP23MVEXP-ENV-DC-101			Camera	87	634208	6178861	634211	6178844	-3	17	18	170		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	00:37:30	4964	BP23MVEXP-ENV-DC-101			Camera	87	634208	6178857	634211	6178844	-3	13	13	166		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	00:39:15	4965	BP23MVEXP-ENV-DC-101			Camera	87	634213	6178847	634211	6178844	2	3	3	-150		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	00:39:32	4966	BP23MVEXP-ENV-DC-101			Camera	87	634213	6178845	634211	6178844	2	1	2	-118		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	00:40:03	4967	BP23MVEXP-ENV-DC-101			Camera	87	634213	6178842	634211	6178844	2	-2	3	-43		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	00:40:26	4968	BP23MVEXP-ENV-DC-101			Camera	87	634214	6178840	634211	6178844	3	-4	5	-39		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	00:40:41	4969	BP23MVEXP-ENV-DC-101			Camera	87	634215	6178839	634211	6178844	4	-5	6	-38		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	00:41:46	4970	BP23MVEXP-ENV-DC-101			Camera	87	634218	6178832	634211	6178844	7	-12	13	-31		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	00:43:16	4971	BP23MVEXP-ENV-DC-101			Camera	87	634221	6178824	634211	6178844	10	-20	22	-26		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	00:45:02	4972	BP23MVEXP-ENV-DC-101			Camera	88	634224	6178813	634211	6178844	13	-31	33	-23		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	00:45:11	4973	BP23MVEXP-ENV-DC-101			Camera	88	634224	6178812	634211	6178844	13	-32	34	-22		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	00:46:13	4974	BP23MVEXP-ENV-DC-101			Camera	88	634227	6178807	634211	6178844	16	-37	40	-24		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	00:46:28	4975	BP23MVEXP-ENV-DC-101			Camera	88	634228	6178806	634211	6178844	17	-39	42	-24		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	00:46:48	4976	BP23MVEXP-ENV-DC-101			Camera	88	634229	6178803	634211	6178844	18	-41	44	-24		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	00:46:58	4977	BP23MVEXP-ENV-DC-101			Camera	88	634229	6178803	634211	6178844	18	-41	45	-23		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	00:47:28	4978	BP23MVEXP-ENV-DC-101			Camera	88	634227	6178800	634211	6178844	16	-44	47	-20		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	02:37:17	4979	BP23MVEXP-ENV-DC-100			Camera	91	628118	6178332	628064	6178337	54	-5	55	-85		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	02:38:10	4980	BP23MVEXP-ENV-DC-100			Camera	91	628118	6178332	628064	6178337	54	-5	54	-85		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	02:38:58	4981	BP23MVEXP-ENV-DC-100			Camera	91	628117	6178332	628064	6178337	53	-5	53	-85		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	02:39:12	4982	BP23MVEXP-ENV-DC-100			Camera	91	628116	6178332	628064	6178337	52	-5	52	-84		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	02:39:52	4983	BP23MVEXP-ENV-DC-100			Camera	91	628113	6178331	628064	6178337	49	-6	50	-83		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	02:41:13	4984	BP23MVEXP-ENV-DC-100			Camera	91	628105	6178332	628064	6178337	41	-5	41	-83		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	02:41:34	4985	BP23MVEXP-ENV-DC-100			Camera	91	628102	6178332	628064	6178337	38	-5	39	-83		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	02:41:59	4986	BP23MVEXP-ENV-DC-100			Camera	91	628100	6178332	628064	6178337	36	-5	36	-82		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	02:42:18	4987	BP23MVEXP-ENV-DC-100			Camera	91	628098	6178333	628064	6178337	34	-4	34	-83		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	02:42:33	4988	BP23MVEXP-ENV-DC-100			Camera	91	628096	6178333	628064	6178337	32	-4	32	-83		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	02:43:23	4989	BP23MVEXP-ENV-DC-100			Camera	91	628091	6178333	628064	6178337	27	-4	28	-81		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	02:43:54	4990	BP23MVEXP-ENV-DC-100			Camera	91	628088	6178333	628064	6178337	25	-4	25	-81		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	02:46:33	4991	BP23MVEXP-ENV-DC-100			Camera	91	628072	6178334	628064	6178337	8	-3	8	-71		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	02:46:51	4992	BP23MVEXP-ENV-DC-100			Camera	91	628070	6178334	628064	6178337	6	-3	7	-66		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	02:48:09	4993	BP23MVEXP-ENV-DC-100			Camera	91	628062	6178336	628064	6178337	-2	-1	3	57		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	02:48:15	4994	BP23MVEXP-ENV-DC-100			Camera	91	628061	6178336	628064	6178337	-3	-1	3	63		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	02:48:21	4995	BP23MVEXP-ENV-DC-100			Camera	91	628061	6178336	628064	6178337	-3	-1	4	67		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	02:49:16	4996	BP23MVEXP-ENV-DC-100			Camera	91	628055	6178336	628064	6178337	-9	-1	9	85		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	02:49:58	4997	BP23MVEXP-ENV-DC-100			Camera	91	628051	6178336	628064	6178337	-13	-1	13	87		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	02:52:23	4998	BP23MVEXP-ENV-DC-100			Camera	91	628036	6178337	628064	6178337	-28	0	28	90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	02:52:51	4999	BP23MVEXP-ENV-DC-100			Camera	91	628033	6178337	628064	6178337	-31	0	31	91		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	02:54:03	5000	BP23MVEXP-ENV-DC-100			Camera	91	628027	6178338	628064	6178337	-37	1	37	91		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	02:54:41	5001	BP23MVEXP-ENV-DC-100			Camera	91	628022	6178338	628064	6178337	-42	1	42	91		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	02:55:04	5002	BP23MVEXP-ENV-DC-100			Camera	91	628020	6178338	628064	6178337	-44	1	44	91		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	02:55:19	5003	BP23MVEXP-ENV-DC-100			Camera	91	628018	6178338	628064	6178337	-46	1	46	91		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	03:03:49	5004	BP23MVEXP-ENV-DC-100			Camera	90	628064	6178388	628064	6178337	0	51	51	180		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	03:04:28	5005	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178388	628064	6178337	-1	51	51	179		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	03:05:10	5006	BP23MVEXP-ENV-DC-100			Camera	91	628062	6178386	628064	6178337	-2	49	49	178		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	03:06:55	5007	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178376	628064	6178337	-1	39	39	179		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	03:07:37	5008	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178371	628064	6178337	-1	34	34	179		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	03:08:10	5009	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178368	628064	6178337	-1	31	31	178		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	03:08:29	5010	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178366	628064	6178337	-1	29	29	178		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	03:09:17	5011	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178361	628064	6178337	0	24	24	179		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	03:09:52	5012	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178357	628064	6178337	0	20	20	179		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	03:11:11	5013	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178349	628064	6178337	0	12	12	179		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	03:11:42	5014	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178346	628064	6178337	0	9	9	179		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	03:12:23	5015	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178342	628064	6178337	0	5	5	-178		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	03:12:38	5016	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178341	628064	6178337	0	4	4	-175		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	03:13:00	5017	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178338	628064	6178337	0	1	1	-159		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	03:13:10	5018	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178337	628064	6178337	0	0	1	-112		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	03:13:29	5019	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178335	628064	6178337	1	-2	2	-19		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	03:14:32	5020	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178329	628064	6178337	1	-8	8	-7		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	03:15:14	5021	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178324	628064	6178337	1	-13	13	-4		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	03:16:15	5022	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178318	628064	6178337	1	-19	19	-3		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	03:17:08	5023	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178313	628064	6178337	1	-24	24	-3		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	03:18:09	5024	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178307	628064	6178337	2	-30	30	-3		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	03:18:51	5025	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178302	628064	6178337	2	-35	35	-3		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	03:19:09	5026	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178300	628064	6178337	2	-37	37	-3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	03:19:31	5027	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178298	628064	6178337	2	-39	39	-3		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	03:20:13	5028	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178294	628064	6178337	1	-43	43	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	03:20:26	5029	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178293	628064	6178337	1	-44	44	-2		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	03:21:02	5030	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178290	628064	6178337	2	-47	47	-2		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	05:00:16	5031	BP23MVEXP-ENV-DC-102			Camera	84	627801	6174330	627849	6174330	-48	0	48	90		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	05:02:21	5032	BP23MVEXP-ENV-DC-102			Camera	84	627804	6174330	627849	6174330	-45	0	45	90		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	05:02:41	5033	BP23MVEXP-ENV-DC-102			Camera	84	627806	6174330	627849	6174330	-44	0	43	90		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	05:03:16	5034	BP23MVEXP-ENV-DC-102			Camera	84	627809	6174331	627849	6174330	-40	1	40	91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	05:03:53	5035	BP23MVEXP-ENV-DC-102			Camera	83	627813	6174331	627849	6174330	-36	1	36	91		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	05:04:20	5036	BP23MVEXP-ENV-DC-102			Camera	83	627817	6174331	627849	6174330	-32	1	32	91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	05:05:14	5037	BP23MVEXP-ENV-DC-102			Camera	83	627822	6174331	627849	6174330	-27	1	27	91		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	05:06:27	5038	BP23MVEXP-ENV-DC-102			Camera	83	627830	6174331	627849	6174330	-19	1	19	93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	05:06:47	5039	BP23MVEXP-ENV-DC-102			Camera	83	627832	6174331	627849	6174330	-17	1	17	94		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	05:07:20	5040	BP23MVEXP-ENV-DC-102			Camera	83	627835	6174331	627849	6174330	-14	1	14	95		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	05:07:54	5041	BP23MVEXP-ENV-DC-102			Camera	83	627839	6174332	627849	6174330	-10	2	10	101		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	05:08:43	5042	BP23MVEXP-ENV-DC-102			Camera	83	627844	6174331	627849	6174330	-5	1	6	103		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	05:09:06	5043	BP23MVEXP-ENV-DC-102			Camera	83	627846	6174331	627849	6174330	-3	1	3	107		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	05:09:25	5044	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174330	627849	6174330	-1	0	1	130		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	05:09:43	5045	BP23MVEXP-ENV-DC-102			Camera	83	627850	6174330	627849	6174330	1	0	1	-102		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	05:10:14	5046	BP23MVEXP-ENV-DC-102			Camera	83	627853	6174330	627849	6174330	4	0	4	-91		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	05:10:41	5047	BP23MVEXP-ENV-DC-102			Camera	83	627856	6174330	627849	6174330	7	0	7	-92		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	05:11:01	5048	BP23MVEXP-ENV-DC-102			Camera	83	627858	6174330	627849	6174330	9	0	9	-92		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	05:11:27	5049	BP23MVEXP-ENV-DC-102			Camera	83	627861	6174330	627849	6174330	12	0	12	-91		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	05:11:58	5050	BP23MVEXP-ENV-DC-102			Camera	83	627864	6174330	627849	6174330	15	0	15	-91		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	05:12:54	5051	BP23MVEXP-ENV-DC-102			Camera	83	627870	6174331	627849	6174330	21	1	21	-93		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	05:13:55	5052	BP23MVEXP-ENV-DC-102			Camera	83	627876	6174332	627849	6174330	27	2	27	-94		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	05:14:36	5053	BP23MVEXP-ENV-DC-102			Camera	83	627880	6174332	627849	6174330	31	2	32	-94		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	05:15:06	5054	BP23MVEXP-ENV-DC-102			Camera	83	627884	6174332	627849	6174330	35	2	35	-94		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	05:15:30	5055	BP23MVEXP-ENV-DC-102			Camera	83	627886	6174332	627849	6174330	37	2	37	-94		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	05:16:15	5056	BP23MVEXP-ENV-DC-102			Camera	83	627889	6174332	627849	6174330	40	2	40	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	05:17:08	5057	BP23MVEXP-ENV-DC-102			Camera	83	627895	6174332	627849	6174330	46	2	46	-92		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	05:20:03	5058	BP23MVEXP-ENV-DC-102			Camera	83	627896	6174327	627849	6174330	47	-3	47	-87		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	05:36:11	5059	BP23MVEXP-ENV-DC-102			Camera	84	627852	6174282	627849	6174330	3	-48	48	-4		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	05:38:12	5060	BP23MVEXP-ENV-DC-102			Camera	84	627849	6174281	627849	6174330	0	-50	49	0		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	05:38:47	5061	BP23MVEXP-ENV-DC-102			Camera	84	627849	6174284	627849	6174330	0	-46	46	0		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	05:39:17	5062	BP23MVEXP-ENV-DC-102			Camera	84	627848	6174288	627849	6174330	-1	-42	42	1		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	05:39:56	5063	BP23MVEXP-ENV-DC-102			Camera	84	627849	6174293	627849	6174330	0	-37	37	1		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	05:40:30	5064	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174296	627849	6174330	-1	-34	34	1		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	05:41:09	5065	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174301	627849	6174330	-1	-29	29	2		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	05:41:35	5066	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174304	627849	6174330	-1	-26	26	2		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	05:42:13	5067	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174309	627849	6174330	-1	-21	21	1		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	05:42:50	5068	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174312	627849	6174330	0	-18	18	1		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	05:43:20	5069	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174315	627849	6174330	-1	-15	15	2		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	05:44:39	5070	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174321	627849	6174330	-1	-9	9	5		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	05:45:31	5071	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174325	627849	6174330	0	-5	5	3		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	05:45:41	5072	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174326	627849	6174330	0	-4	4	2		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	05:45:55	5073	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174328	627849	6174330	-1	-2	2	16		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	05:46:20	5074	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174331	627849	6174330	0	1	1	160		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	05:46:42	5075	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174333	627849	6174330	0	3	3	179		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	05:47:52	5076	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174341	627849	6174330	0	11	11	178		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	05:49:11	5077	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174350	627849	6174330	-1	20	20	177		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	05:50:01	5078	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174356	627849	6174330	-2	26	26	176		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	05:50:42	5079	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174360	627849	6174330	-1	30	30	177		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	05:51:24	5080	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174365	627849	6174330	-2	35	35	177		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	05:52:15	5081	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174370	627849	6174330	-2	40	40	177		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	05:52:23	5082	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174371	627849	6174330	-2	41	41	177		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	05:52:47	5083	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174374	627849	6174330	-2	44	44	178		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
01-Aug-2023	05:53:54	5084	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174379	627849	6174330	-2	49	49	178		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
01-Aug-2023	07:27:26	5085	BP23MVEXP-ENV-DC-103			Camera	84	635596	6175119	635613	6175059	-17	60	62	164		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	07:30:48	5086	BP23MVEXP-ENV-DC-103			Camera	84	635591	6175112	635613	6175059	-22	53	57	158		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	07:31:37	5087	BP23MVEXP-ENV-DC-103			Camera	83	635590	6175107	635613	6175059	-23	49	54	154		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	07:35:51	5088	BP23MVEXP-ENV-DC-103			Camera	83	635585	6175085	635613	6175059	-28	26	38	133		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	07:44:32	5089	BP23MVEXP-ENV-DC-103			Camera	83	635599	6175104	635613	6175059	-15	45	47	162		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	07:45:24	5090	BP23MVEXP-ENV-DC-103			Camera	83	635601	6175100	635613	6175059	-12	41	43	163		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	07:45:50	5091	BP23MVEXP-ENV-DC-103			Camera	83	635602	6175098	635613	6175059	-11	39	41	164		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	07:46:56	5092	BP23MVEXP-ENV-DC-103			Camera	83	635604	6175091	635613	6175059	-9	32	34	164		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	07:47:49	5093	BP23MVEXP-ENV-DC-103			Camera	83	635604	6175086	635613	6175059	-9	27	28	162		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	07:48:34	5094	BP23MVEXP-ENV-DC-103			Camera	83	635605	6175082	635613	6175059	-8	23	24	161		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	07:49:14	5095	BP23MVEXP-ENV-DC-103			Camera	83	635607	6175078	635613	6175059	-6	19	20	163		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	07:49:26	5096	BP23MVEXP-ENV-DC-103			Camera	83	635608	6175077	635613	6175059	-5	18	19	164		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	07:49:34	5097	BP23MVEXP-ENV-DC-103			Camera	83	635608	6175076	635613	6175059	-5	17	18	165		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	07:50:18	5098	BP23MVEXP-ENV-DC-103			Camera	83	635610	6175072	635613	6175059	-3	13	13	168		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	07:51:04	5099	BP23MVEXP-ENV-DC-103			Camera	83	635612	6175068	635613	6175059	-1	9	9	172		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	07:51:21	5100	BP23MVEXP-ENV-DC-103			Camera	83	635613	6175066	635613	6175059	0	7	7	176		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	07:51:57	5101	BP23MVEXP-ENV-DC-103			Camera	83	635614	6175063	635613	6175059	1	4	4	-169		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	07:52:08	5102	BP23MVEXP-ENV-DC-103			Camera	83	635614	6175062	635613	6175059	1	3	4	-158		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	07:52:21	5103	BP23MVEXP-ENV-DC-103			Camera	83	635615	6175061	635613	6175059	2	2	3	-136		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	07:52:36	5104	BP23MVEXP-ENV-DC-103			Camera	83	635615	6175059	635613	6175059	2	0	2	-90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	07:53:05	5105	BP23MVEXP-ENV-DC-103			Camera	83	635617	6175056	635613	6175059	4	-3	5	-51		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	07:53:37	5106	BP23MVEXP-ENV-DC-103			Camera	83	635617	6175053	635613	6175059	4	-6	7	-34		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	07:54:23	5107	BP23MVEXP-ENV-DC-103			Camera	83	635619	6175048	635613	6175059	6	-11	12	-28		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	07:55:03	5108	BP23MVEXP-ENV-DC-103			Camera	83	635620	6175045	635613	6175059	7	-14	16	-26		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	07:55:45	5109	BP23MVEXP-ENV-DC-103			Camera	83	635621	6175041	635613	6175059	8	-18	20	-24		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	07:56:32	5110	BP23MVEXP-ENV-DC-103			Camera	83	635623	6175036	635613	6175059	10	-23	25	-24		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	07:58:53	5111	BP23MVEXP-ENV-DC-103			Camera	83	635629	6175023	635613	6175059	16	-36	40	-23		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	07:59:03	5112	BP23MVEXP-ENV-DC-103			Camera	83	635629	6175022	635613	6175059	16	-37	41	-23		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	07:59:09	5113	BP23MVEXP-ENV-DC-103			Camera	83	635629	6175021	635613	6175059	16	-38	41	-23		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	08:00:28	5114	BP23MVEXP-ENV-DC-103			Camera	83	635632	6175015	635613	6175059	19	-44	48	-24		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	08:15:15	5115	BP23MVEXP-ENV-DC-103			Camera	83	635658	6175074	635613	6175059	45	15	47	-109		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	08:16:12	5116	BP23MVEXP-ENV-DC-103			Camera	83	635654	6175073	635613	6175059	41	14	43	-109		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	08:16:32	5117	BP23MVEXP-ENV-DC-103			Camera	83	635652	6175072	635613	6175059	39	13	41	-108		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	08:17:09	5118	BP23MVEXP-ENV-DC-103			Camera	83	635648	6175070	635613	6175059	35	11	36	-108		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	08:17:43	5119	BP23MVEXP-ENV-DC-103			Camera	83	635644	6175070	635613	6175059	31	11	33	-110		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	08:18:11	5120	BP23MVEXP-ENV-DC-103			Camera	83	635641	6175068	635613	6175059	28	9	30	-109		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	08:18:43	5121	BP23MVEXP-ENV-DC-103			Camera	83	635638	6175067	635613	6175059	25	8	26	-108		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	08:18:57	5122	BP23MVEXP-ENV-DC-103			Camera	83	635637	6175067	635613	6175059	24	8	25	-108		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	08:19:30	5123	BP23MVEXP-ENV-DC-103			Camera	83	635634	6175065	635613	6175059	21	6	22	-106		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	08:20:56	5124	BP23MVEXP-ENV-DC-103			Camera	83	635625	6175062	635613	6175059	12	3	13	-103		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	08:22:04	5125	BP23MVEXP-ENV-DC-103			Camera	83	635619	6175060	635613	6175059	6	1	6	-101		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	08:22:38	5126	BP23MVEXP-ENV-DC-103			Camera	83	635615	6175058	635613	6175059	2	-1	2	-78		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	08:22:54	5127	BP23MVEXP-ENV-DC-103			Camera	83	635614	6175058	635613	6175059	1	-1	2	-35		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	08:23:16	5128	BP23MVEXP-ENV-DC-103			Camera	83	635612	6175057	635613	6175059	-1	-2	3	29		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	08:23:30	5129	BP23MVEXP-ENV-DC-103			Camera	83	635610	6175056	635613	6175059	-3	-3	4	39		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	08:23:55	5130	BP23MVEXP-ENV-DC-103			Camera	83	635608	6175055	635613	6175059	-5	-4	6	47		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	08:24:34	5131	BP23MVEXP-ENV-DC-103			Camera	83	635604	6175053	635613	6175059	-9	-6	10	56		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	08:24:57	5132	BP23MVEXP-ENV-DC-103			Camera	83	635602	6175053	635613	6175059	-11	-6	12	60		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	08:25:36	5133	BP23MVEXP-ENV-DC-103			Camera	83	635598	6175052	635613	6175059	-15	-7	16	64		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	08:26:13	5134	BP23MVEXP-ENV-DC-103			Camera	83	635595	6175052	635613	6175059	-18	-7	20	68		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	08:26:51	5135	BP23MVEXP-ENV-DC-103			Camera	83	635591	6175050	635613	6175059	-22	-9	24	68		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	08:27:39	5136	BP23MVEXP-ENV-DC-103			Camera	83	635587	6175048	635613	6175059	-26	-11	29	68		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	08:28:35	5137	BP23MVEXP-ENV-DC-103			Camera	83	635581	6175046	635613	6175059	-32	-13	35	68		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
01-Aug-2023	08:29:20	5138	BP23MVEXP-ENV-DC-103			Camera	83	635577	6175044	635613	6175059	-36	-15	39	67		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
01-Aug-2023	08:30:09	5139	BP23MVEXP-ENV-DC-103			Camera	83	635572	6175042	635613	6175059	-41	-17	44	68		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
01-Aug-2023	08:30:50	5140	BP23MVEXP-ENV-DC-103			Camera	83	635568	6175041	635613	6175059	-45	-18	49	68		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
01-Aug-2023	09:32:54	5141	BP23MVEXP-ENV-DC-105			Camera	84	635689	6171964	635667	6171916	22	48	52	-155		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	09:35:02	5142	BP23MVEXP-ENV-DC-105			Camera	84	635687	6171960	635667	6171916	20	45	49	-156		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	09:35:14	5143	BP23MVEXP-ENV-DC-105			Camera	84	635686	6171960	635667	6171916	19	44	48	-156		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	09:35:42	5144	BP23MVEXP-ENV-DC-105			Camera	84	635685	6171957	635667	6171916	18	41	45	-156		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	09:36:17	5145	BP23MVEXP-ENV-DC-105			Camera	84	635684	6171954	635667	6171916	17	38	42	-156		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	09:36:27	5146	BP23MVEXP-ENV-DC-105			Camera	84	635683	6171953	635667	6171916	16	37	41	-157		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	09:36:55	5147	BP23MVEXP-ENV-DC-105			Camera	84	635681	6171951	635667	6171916	14	35	38	-157		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	09:37:06	5148	BP23MVEXP-ENV-DC-105			Camera	84	635681	6171949	635667	6171916	14	34	36	-158		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	09:37:51	5149	BP23MVEXP-ENV-DC-105			Camera	84	635678	6171945	635667	6171916	11	29	31	-159		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	09:38:22	5150	BP23MVEXP-ENV-DC-105			Camera	84	635677	6171942	635667	6171916	10	26	28	-159		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	09:38:37	5151	BP23MVEXP-ENV-DC-105			Camera	84	635676	6171940	635667	6171916	9	25	26	-159		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	09:39:34	5152	BP23MVEXP-ENV-DC-105			Camera	84	635674	6171935	635667	6171916	7	19	20	-160		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	09:41:21	5153	BP23MVEXP-ENV-DC-105			Camera	84	635669	6171926	635667	6171916	2	10	10	-166		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	09:41:28	5154	BP23MVEXP-ENV-DC-105			Camera	84	635669	6171925	635667	6171916	2	9	9	-166		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	09:42:07	5155	BP23MVEXP-ENV-DC-105			Camera	84	635667	6171921	635667	6171916	0	5	5	-176		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	09:42:22	5156	BP23MVEXP-ENV-DC-105			Camera	84	635667	6171919	635667	6171916	0	3	3	173		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	09:42:43	5157	BP23MVEXP-ENV-DC-105			Camera	84	635666	6171917	635667	6171916	-1	1	2	135		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	09:43:04	5158	BP23MVEXP-ENV-DC-105			Camera	84	635665	6171915	635667	6171916	-2	-1	3	69		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	09:44:23	5159	BP23MVEXP-ENV-DC-105			Camera	85	635660	6171908	635667	6171916	-7	-8	11	40		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	09:44:46	5160	BP23MVEXP-ENV-DC-105			Camera	85	635659	6171905	635667	6171916	-8	-11	13	37		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	09:44:51	5161	BP23MVEXP-ENV-DC-105			Camera	85	635659	6171905	635667	6171916	-8	-11	14	37		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	09:45:50	5162	BP23MVEXP-ENV-DC-105			Camera	85	635656	6171900	635667	6171916	-11	-16	20	34		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	09:45:59	5163	BP23MVEXP-ENV-DC-105			Camera	85	635655	6171898	635667	6171916	-12	-18	22	34		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	09:46:15	5164	BP23MVEXP-ENV-DC-105			Camera	85	635655	6171897	635667	6171916	-12	-19	23	33		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	09:46:56	5165	BP23MVEXP-ENV-DC-105			Camera	85	635653	6171893	635667	6171916	-14	-23	27	31		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	09:48:33	5166	BP23MVEXP-ENV-DC-105			Camera	85	635649	6171885	635667	6171916	-18	-31	36	30		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	09:49:04	5167	BP23MVEXP-ENV-DC-105			Camera	85	635647	6171883	635667	6171916	-20	-34	39	30		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	09:50:47	5168	BP23MVEXP-ENV-DC-105			Camera	85	635643	6171873	635667	6171916	-24	-43	49	29		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	09:51:02	5169	BP23MVEXP-ENV-DC-105			Camera	85	635643	6171872	635667	6171916	-24	-44	50	29		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	10:01:37	5170	BP23MVEXP-ENV-DC-105			Camera	84	635629	6171927	635667	6171916	-38	11	39	106		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	10:04:20	5171	BP23MVEXP-ENV-DC-105			Camera	84	635625	6171940	635667	6171916	-42	24	49	120		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	10:05:28	5172	BP23MVEXP-ENV-DC-105			Camera	84	635626	6171940	635667	6171916	-41	24	48	120		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	10:05:55	5173	BP23MVEXP-ENV-DC-105			Camera	84	635627	6171939	635667	6171916	-40	23	46	120		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	10:07:22	5174	BP23MVEXP-ENV-DC-105			Camera	84	635635	6171935	635667	6171916	-32	19	37	121		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	10:07:51	5175	BP23MVEXP-ENV-DC-105			Camera	84	635638	6171933	635667	6171916	-29	17	34	121		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	10:08:19	5176	BP23MVEXP-ENV-DC-105			Camera	84	635640	6171932	635667	6171916	-27	16	31	120		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	10:08:37	5177	BP23MVEXP-ENV-DC-105			Camera	84	635642	6171930	635667	6171916	-25	14	29	120		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	10:09:04	5178	BP23MVEXP-ENV-DC-105			Camera	84	635644	6171929	635667	6171916	-23	13	26	119		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	10:10:06	5179	BP23MVEXP-ENV-DC-105			Camera	84	635650	6171926	635667	6171916	-17	10	20	122		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	10:10:33	5180	BP23MVEXP-ENV-DC-105			Camera	84	635653	6171925	635667	6171916	-14	9	17	122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	10:10:51	5181	BP23MVEXP-ENV-DC-105			Camera	84	635654	6171924	635667	6171916	-13	8	15	122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	10:12:17	5182	BP23MVEXP-ENV-DC-105			Camera	84	635662	6171919	635667	6171916	-5	3	6	121		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	10:12:41	5183	BP23MVEXP-ENV-DC-105			Camera	84	635664	6171918	635667	6171916	-3	2	3	121		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	10:13:23	5184	BP23MVEXP-ENV-DC-105			Camera	84	635668	6171916	635667	6171916	1	0	1	-66		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	10:13:37	5185	BP23MVEXP-ENV-DC-105			Camera	84	635669	6171915	635667	6171916	2	-1	2	-68		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	10:15:11	5186	BP23MVEXP-ENV-DC-105			Camera	84	635676	6171909	635667	6171916	9	-7	12	-54		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	10:15:51	5187	BP23MVEXP-ENV-DC-105			Camera	84	635680	6171907	635667	6171916	13	-9	16	-55		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	10:16:29	5188	BP23MVEXP-ENV-DC-105			Camera	84	635684	6171905	635667	6171916	17	-11	20	-58		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	10:16:54	5189	BP23MVEXP-ENV-DC-105			Camera	84	635686	6171904	635667	6171916	19	-12	23	-58		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	10:17:37	5190	BP23MVEXP-ENV-DC-105			Camera	84	635690	6171902	635667	6171916	23	-14	27	-58		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	10:18:52	5191	BP23MVEXP-ENV-DC-105			Camera	84	635697	6171898	635667	6171916	30	-18	35	-60		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	10:20:22	5192	BP23MVEXP-ENV-DC-105			Camera	84	635705	6171893	635667	6171916	38	-24	45	-58		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	10:21:12	5193	BP23MVEXP-ENV-DC-105			Camera	84	635708	6171889	635667	6171916	41	-27	48	-57		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
01-Aug-2023	12:04:05	5194	BP23MVEXP-ENV-DC-107			Camera	90	633390	6168530	633418	6168578	-28	-48	55	30		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	12:05:55	5195	BP23MVEXP-ENV-DC-107			Camera	89	633391	6168532	633418	6168578	-27	-46	53	31		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	12:06:13	5196	BP23MVEXP-ENV-DC-107			Camera	89	633392	6168533	633418	6168578	-27	-45	52	31		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	12:07:17	5197	BP23MVEXP-ENV-DC-107			Camera	89	633395	6168539	633418	6168578	-23	-39	45	31		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	12:08:16	5198	BP23MVEXP-ENV-DC-107			Camera	89	633398	6168545	633418	6168578	-20	-33	38	32		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	12:08:43	5199	BP23MVEXP-ENV-DC-107			Camera	89	633399	6168548	633418	6168578	-19	-30	35	32		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	12:09:05	5200	BP23MVEXP-ENV-DC-107			Camera	89	633401	6168550	633418	6168578	-17	-28	33	32		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	12:10:03	5201	BP23MVEXP-ENV-DC-107			Camera	89	633403	6168554	633418	6168578	-15	-24	28	32		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	12:10:56	5202	BP23MVEXP-ENV-DC-107			Camera	89	633406	6168559	633418	6168578	-12	-19	22	33		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	12:11:13	5203	BP23MVEXP-ENV-DC-107			Camera	89	633407	6168561	633418	6168578	-11	-17	20	33		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	12:11:39	5204	BP23MVEXP-ENV-DC-107			Camera	89	633408	6168563	633418	6168578	-10	-15	18	33		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	12:12:53	5205	BP23MVEXP-ENV-DC-107			Camera	89	633413	6168570	633418	6168578	-5	-8	10	31		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	12:14:13	5206	BP23MVEXP-ENV-DC-107			Camera	89	633417	6168576	633418	6168578	-1	-2	2	17		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	12:14:37	5207	BP23MVEXP-ENV-DC-107			Camera	89	633419	6168578	633418	6168578	1	0	1	-101		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	12:14:54	5208	BP23MVEXP-ENV-DC-107			Camera	89	633420	6168580	633418	6168578	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	12:15:07	5209	BP23MVEXP-ENV-DC-107			Camera	89	633421	6168581	633418	6168578	3	3	4	-140		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	12:15:49	5210	BP23MVEXP-ENV-DC-107			Camera	89	633422	6168585	633418	6168578	4	7	8	-148		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	12:16:11	5211	BP23MVEXP-ENV-DC-107			Camera	88	633423	6168586	633418	6168578	5	8	10	-150		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	12:17:07	5212	BP23MVEXP-ENV-DC-107			Camera	88	633425	6168590	633418	6168578	7	12	14	-149		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	12:18:14	5213	BP23MVEXP-ENV-DC-107			Camera	88	633430	6168596	633418	6168578	12	18	22	-147		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	12:18:53	5214	BP23MVEXP-ENV-DC-107			Camera	88	633432	6168600	633418	6168578	14	22	26	-148		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	12:20:13	5215	BP23MVEXP-ENV-DC-107			Camera	88	633436	6168607	633418	6168578	18	29	34	-149		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	12:20:35	5216	BP23MVEXP-ENV-DC-107			Camera	88	633437	6168609	633418	6168578	19	31	36	-149		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	12:20:48	5217	BP23MVEXP-ENV-DC-107			Camera	88	633437	6168610	633418	6168578	19	32	37	-149		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	12:21:39	5218	BP23MVEXP-ENV-DC-107			Camera	88	633440	6168614	633418	6168578	22	37	43	-149		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	12:22:08	5219	BP23MVEXP-ENV-DC-107			Camera	88	633442	6168617	633418	6168578	24	40	46	-148		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	12:38:42	5220	BP23MVEXP-ENV-DC-107			Camera	87	633458	6168548	633418	6168578	40	-30	50	-53		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	12:39:25	5221	BP23MVEXP-ENV-DC-107			Camera	87	633458	6168547	633418	6168578	40	-31	51	-53		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	12:40:30	5222	BP23MVEXP-ENV-DC-107			Camera	87	633454	6168548	633418	6168578	36	-30	47	-51		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	12:41:10	5223	BP23MVEXP-ENV-DC-107			Camera	88	633451	6168551	633418	6168578	33	-27	43	-51		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	12:41:34	5224	BP23MVEXP-ENV-DC-107			Camera	87	633450	6168552	633418	6168578	32	-26	41	-51		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	12:42:17	5225	BP23MVEXP-ENV-DC-107			Camera	88	633447	6168554	633418	6168578	29	-24	37	-50		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	12:42:54	5226	BP23MVEXP-ENV-DC-107			Camera	88	633444	6168556	633418	6168578	26	-22	34	-50		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	12:43:35	5227	BP23MVEXP-ENV-DC-107			Camera	88	633440	6168558	633418	6168578	22	-20	30	-48		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	12:45:07	5228	BP23MVEXP-ENV-DC-107			Camera	88	633432	6168564	633418	6168578	14	-14	20	-45		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	12:45:52	5229	BP23MVEXP-ENV-DC-107			Camera	88	633429	6168566	633418	6168578	11	-12	16	-43		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	12:46:43	5230	BP23MVEXP-ENV-DC-107			Camera	88	633425	6168569	633418	6168578	7	-9	11	-36		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	12:47:29	5231	BP23MVEXP-ENV-DC-107			Camera	88	633420	6168572	633418	6168578	2	-6	7	-22		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	12:48:26	5232	BP23MVEXP-ENV-DC-107			Camera	88	633416	6168575	633418	6168578	-2	-3	3	39		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	12:48:36	5233	BP23MVEXP-ENV-DC-107			Camera	88	633415	6168576	633418	6168578	-3	-2	4	54		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	12:48:59	5234	BP23MVEXP-ENV-DC-107			Camera	88	633413	6168577	633418	6168578	-5	-1	5	75		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	12:49:33	5235	BP23MVEXP-ENV-DC-107			Camera	88	633410	6168579	633418	6168578	-8	1	8	95		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	12:50:04	5236	BP23MVEXP-ENV-DC-107			Camera	88	633407	6168581	633418	6168578	-11	3	11	104		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	12:50:23	5237	BP23MVEXP-ENV-DC-107			Camera	88	633406	6168582	633418	6168578	-12	4	13	107		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	12:52:41	5238	BP23MVEXP-ENV-DC-107			Camera	88	633394	6168589	633418	6168578	-24	11	26	114		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	12:53:06	5239	BP23MVEXP-ENV-DC-107			Camera	88	633392	6168591	633418	6168578	-26	13	29	116		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	12:53:18	5240	BP23MVEXP-ENV-DC-107			Camera	88	633391	6168591	633418	6168578	-27	14	30	117		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	12:53:44	5241	BP23MVEXP-ENV-DC-107			Camera	88	633390	6168593	633418	6168578	-29	15	32	117		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	12:54:20	5242	BP23MVEXP-ENV-DC-107			Camera	88	633387	6168595	633418	6168578	-31	17	36	118		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	12:54:27	5243	BP23MVEXP-ENV-DC-107			Camera	88	633386	6168595	633418	6168578	-32	17	36	118		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	12:57:52	5244	BP23MVEXP-ENV-DC-107			Camera	88	633377	6168601	633418	6168578	-41	23	47	120		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	14:12:03	5245	BP23MVEXP-ENV-DC-104			Camera	81	627638	6170306	627686	6170307	-48	-1	48	88		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	14:14:32	5246	BP23MVEXP-ENV-DC-104			Camera	81	627641	6170307	627686	6170307	-45	0	45	90		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	14:15:04	5247	BP23MVEXP-ENV-DC-104			Camera	81	627644	6170308	627686	6170307	-42	1	42	91		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	14:15:47	5248	BP23MVEXP-ENV-DC-104			Camera	81	627648	6170308	627686	6170307	-38	1	38	92		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	14:16:06	5249	BP23MVEXP-ENV-DC-104			Camera	81	627650	6170308	627686	6170307	-36	1	36	91		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	14:17:09	5250	BP23MVEXP-ENV-DC-104			Camera	81	627657	6170308	627686	6170307	-29	1	29	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	14:17:55	5251	BP23MVEXP-ENV-DC-104			Camera	81	627663	6170308	627686	6170307	-23	1	23	94		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	14:18:37	5252	BP23MVEXP-ENV-DC-104			Camera	81	627667	6170309	627686	6170307	-19	2	19	96		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	14:19:33	5253	BP23MVEXP-ENV-DC-104			Camera	82	627672	6170309	627686	6170307	-14	2	14	98		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	14:19:52	5254	BP23MVEXP-ENV-DC-104			Camera	81	627674	6170309	627686	6170307	-12	2	12	100		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	14:20:14	5255	BP23MVEXP-ENV-DC-104			Camera	82	627677	6170309	627686	6170307	-9	2	9	102		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	14:21:15	5256	BP23MVEXP-ENV-DC-104			Camera	82	627683	6170308	627686	6170307	-3	1	3	115		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	14:21:24	5257	BP23MVEXP-ENV-DC-104			Camera	82	627684	6170308	627686	6170307	-2	1	2	123		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	14:21:44	5258	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170308	627686	6170307	0	1	1	-176		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	14:21:55	5259	BP23MVEXP-ENV-DC-104			Camera	82	627687	6170308	627686	6170307	1	1	2	-133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	14:22:02	5260	BP23MVEXP-ENV-DC-104			Camera	82	627688	6170308	627686	6170307	2	1	2	-121		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	14:22:23	5261	BP23MVEXP-ENV-DC-104			Camera	82	627690	6170308	627686	6170307	4	1	4	-109		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	14:23:37	5262	BP23MVEXP-ENV-DC-104			Camera	82	627697	6170309	627686	6170307	11	2	12	-101		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	14:24:11	5263	BP23MVEXP-ENV-DC-104			Camera	82	627701	6170310	627686	6170307	15	3	15	-100		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	14:24:49	5264	BP23MVEXP-ENV-DC-104			Camera	82	627705	6170310	627686	6170307	19	3	19	-98		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	14:26:17	5265	BP23MVEXP-ENV-DC-104			Camera	82	627714	6170309	627686	6170307	28	2	28	-95		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	14:27:43	5266	BP23MVEXP-ENV-DC-104			Camera	82	627723	6170309	627686	6170307	37	2	37	-93		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	14:28:35	5267	BP23MVEXP-ENV-DC-104			Camera	82	627728	6170308	627686	6170307	42	1	42	-91		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	14:39:52	5268	BP23MVEXP-ENV-DC-104			Camera	82	627688	6170356	627686	6170307	2	49	49	-178		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	14:40:05	5269	BP23MVEXP-ENV-DC-104			Camera	82	627688	6170356	627686	6170307	2	49	49	-178		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	14:42:08	5270	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170352	627686	6170307	0	45	45	180		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	14:42:42	5271	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170348	627686	6170307	0	41	41	-180		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	14:43:24	5272	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170344	627686	6170307	0	37	37	-180		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	14:44:07	5273	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170339	627686	6170307	0	32	32	180		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	14:44:28	5274	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170337	627686	6170307	0	30	30	179		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	14:45:16	5275	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170332	627686	6170307	-1	25	25	179		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	14:45:50	5276	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170329	627686	6170307	-1	22	22	178		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	14:46:44	5277	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170323	627686	6170307	-1	16	16	177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	14:48:08	5278	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170314	627686	6170307	-1	7	7	173		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	14:48:26	5278	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170312	627686	6170307	-1	5	5	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	14:48:46	5280	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170310	627686	6170307	-1	3	3	167		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	14:49:07	5281	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170308	627686	6170307	-1	1	2	146		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	14:49:18	5282	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170307	627686	6170307	-1	0	1	99		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	14:49:32	5283	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170306	627686	6170307	-1	-1	2	34		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	14:49:58	5284	BP23MVEXP-ENV-DC-104			Camera	81	627686	6170303	627686	6170307	0	-4	4	4		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	14:50:30	5285	BP23MVEXP-ENV-DC-104			Camera	81	627686	6170299	627686	6170307	0	-8	8	2		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	14:51:27	5286	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170293	627686	6170307	-1	-14	14	4		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	14:51:55	5287	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170291	627686	6170307	-1	-16	16	5		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	14:52:56	5288	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170285	627686	6170307	-1	-22	22	4		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	14:53:30	5289	BP23MVEXP-ENV-DC-104			Camera	81	627684	6170282	627686	6170307	-2	-26	26	4		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	14:53:54	5290	BP23MVEXP-ENV-DC-104			Camera	81	627684	6170279	627686	6170307	-2	-28	28	3		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	14:54:29	5291	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170275	627686	6170307	-1	-32	32	1		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	14:54:58	5292	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170272	627686	6170307	-1	-35	35	1		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	14:55:36	5293	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170268	627686	6170307	-1	-39	39	2		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	14:56:53	5294	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170263	627686	6170307	-1	-44	44	1		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	14:57:48	5295	BP23MVEXP-ENV-DC-104			Camera	81	627686	6170261	627686	6170307	0	-46	46	0		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	15:00:44	5296	BP23MVEXP-ENV-DC-104			Camera	85	627686	6170256	627686	6170307	0	-51	51	0		(Raw Nav, Kongsberg 14208, img#52) (B)
01-Aug-2023	16:33:17	5296	BP23MVEXP-ENV-DC-106			Camera	70	627455	6166333	627403	6166336	52	-3	52	-86		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	16:34:40	5297	BP23MVEXP-ENV-DC-106			Camera	70	627453	6166333	627403	6166336	50	-3	50	-87		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	16:35:14	5298	BP23MVEXP-ENV-DC-106			Camera	71	627450	6166334	627403	6166336	47	-2	47	-87		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	16:36:05	5299	BP23MVEXP-ENV-DC-106			Camera	71	627445	6166333	627403	6166336	42	-3	42	-85		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	16:37:20	5300	BP23MVEXP-ENV-DC-106			Camera	71	627437	6166332	627403	6166336	34	-4	34	-83		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	16:38:03	5301	BP23MVEXP-ENV-DC-106			Camera	70	627434	6166331	627403	6166336	31	-5	31	-81		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	16:39:30	5302	BP23MVEXP-ENV-DC-106			Camera	70	627426	6166332	627403	6166336	23	-4	23	-79		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	16:40:02	5303	BP23MVEXP-ENV-DC-106			Camera	71	627423	6166332	627403	6166336	20	-4	20	-78		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	16:40:45	5304	BP23MVEXP-ENV-DC-106			Camera	70	627418	6166332	627403	6166336	16	-4	16	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	16:41:21	5305	BP23MVEXP-ENV-DC-106			Camera	70	627414	6166332	627403	6166336	11	-4	12	-70		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	16:41:36	5306	BP23MVEXP-ENV-DC-106			Camera	70	627412	6166332	627403	6166336	9	-4	10	-68		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	16:42:00	5307	BP23MVEXP-ENV-DC-106			Camera	70	627409	6166332	627403	6166336	6	-4	7	-58		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	16:42:36	5308	BP23MVEXP-ENV-DC-106			Camera	70	627405	6166332	627403	6166336	2	-4	5	-23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	16:42:48	5309	BP23MVEXP-ENV-DC-106			Camera	70	627403	6166332	627403	6166336	0	-4	4	-3		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	16:43:39	5310	BP23MVEXP-ENV-DC-106			Camera	70	627399	6166331	627403	6166336	-4	-5	7	42		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	16:44:00	5311	BP23MVEXP-ENV-DC-106			Camera	70	627397	6166331	627403	6166336	-6	-5	8	51		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	16:44:42	5312	BP23MVEXP-ENV-DC-106			Camera	71	627393	6166331	627403	6166336	-10	-5	11	65		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	16:44:55	5313	BP23MVEXP-ENV-DC-106			Camera	70	627392	6166331	627403	6166336	-11	-5	12	68		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	16:45:36	5314	BP23MVEXP-ENV-DC-106			Camera	70	627388	6166332	627403	6166336	-15	-4	16	77		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	16:45:47	5315	BP23MVEXP-ENV-DC-106			Camera	70	627387	6166333	627403	6166336	-16	-3	17	78		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	16:46:37	5316	BP23MVEXP-ENV-DC-106			Camera	70	627381	6166333	627403	6166336	-22	-3	22	83		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	16:47:16	5317	BP23MVEXP-ENV-DC-106			Camera	70	627377	6166333	627403	6166336	-26	-3	26	84		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	16:48:13	5318	BP23MVEXP-ENV-DC-106			Camera	70	627371	6166334	627403	6166336	-32	-2	32	86		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	16:48:34	5319	BP23MVEXP-ENV-DC-106			Camera	71	627369	6166334	627403	6166336	-34	-2	34	86		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	16:49:19	5320	BP23MVEXP-ENV-DC-106			Camera	71	627364	6166334	627403	6166336	-39	-2	39	86		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	16:50:18	5321	BP23MVEXP-ENV-DC-106			Camera	71	627359	6166334	627403	6166336	-45	-2	45	88		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	16:50:33	5322	BP23MVEXP-ENV-DC-106			Camera	71	627357	6166334	627403	6166336	-46	-2	46	88		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	16:57:08	5323	BP23MVEXP-ENV-DC-106			Camera	70	627377	6166313	627403	6166336	-27	-23	35	49		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	17:04:02	5324	BP23MVEXP-ENV-DC-106			Camera	71	627405	6166289	627403	6166336	2	-47	47	-2		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	17:04:44	5325	BP23MVEXP-ENV-DC-106			Camera	71	627403	6166294	627403	6166336	0	-42	42	0		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	17:05:00	5326	BP23MVEXP-ENV-DC-106			Camera	71	627403	6166297	627403	6166336	0	-39	39	0		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	17:05:39	5327	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166302	627403	6166336	-1	-34	34	2		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	17:06:41	5328	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166310	627403	6166336	-1	-26	26	2		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	17:07:28	5329	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166315	627403	6166336	-1	-21	21	4		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	17:08:37	5330	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166321	627403	6166336	-2	-15	15	9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	17:09:15	5331	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166325	627403	6166336	-1	-11	11	7		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	17:09:45	5332	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166328	627403	6166336	-1	-8	8	6		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	17:10:55	5333	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166334	627403	6166336	-1	-2	2	32		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	17:11:21	5334	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166337	627403	6166336	-1	1	1	146		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	17:11:33	5335	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166339	627403	6166336	-1	3	3	161		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	17:12:02	5336	BP23MVEXP-ENV-DC-106			Camera	70	627402	6166342	627403	6166336	-1	6	6	169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	17:13:15	5337	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166349	627403	6166336	-2	13	13	173		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	17:14:03	5338	BP23MVEXP-ENV-DC-106			Camera	70	627401	6166354	627403	6166336	-2	18	18	175		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	17:14:34	5339	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166357	627403	6166336	-1	21	21	177		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	17:14:51	5340	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166359	627403	6166336	-1	23	23	177		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	17:16:11	5341	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166367	627403	6166336	-2	31	31	177		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	17:16:24	5342	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166368	627403	6166336	-2	32	32	176		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	17:17:41	5343	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166377	627403	6166336	-3	41	41	176		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	17:18:22	5344	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166380	627403	6166336	-3	44	44	176		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	17:18:35	5345	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166382	627403	6166336	-3	46	46	176		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	17:19:01	5346	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166384	627403	6166336	-3	48	48	176		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	17:19:33	5347	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166387	627403	6166336	-3	51	51	177		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	18:20:32	5348	BP23MVEXP-ENV-DC-109			Camera	93	631250	6165266	631206	6165285	44	-20	48	-66		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	18:22:35	5349	BP23MVEXP-ENV-DC-109			Camera	93	631251	6165266	631206	6165285	45	-19	49	-67		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	18:23:51	5349	BP23MVEXP-ENV-DC-109			Camera	93	631246	6165268	631206	6165285	40	-17	43	-67		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	18:24:25	5351	BP23MVEXP-ENV-DC-109			Camera	93	631244	6165268	631206	6165285	38	-17	42	-66		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	18:24:49	5352	BP23MVEXP-ENV-DC-109			Camera	93	631243	6165269	631206	6165285	37	-16	41	-66		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	18:26:10	5353	BP23MVEXP-ENV-DC-109			Camera	93	631238	6165273	631206	6165285	32	-12	34	-69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	18:27:17	5354	BP23MVEXP-ENV-DC-109			Camera	93	631232	6165276	631206	6165285	26	-9	27	-70		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	18:28:35	5355	BP23MVEXP-ENV-DC-109			Camera	93	631225	6165280	631206	6165285	19	-5	20	-74		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	18:29:00	5356	BP23MVEXP-ENV-DC-109			Camera	93	631222	6165281	631206	6165285	16	-4	16	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	18:29:59	5357	BP23MVEXP-ENV-DC-109			Camera	93	631215	6165282	631206	6165285	9	-3	9	-71		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	18:30:22	5358	BP23MVEXP-ENV-DC-109			Camera	93	631213	6165283	631206	6165285	7	-2	7	-73		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	18:31:12	5359	BP23MVEXP-ENV-DC-109			Camera	93	631207	6165285	631206	6165285	1	0	1	-94		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	18:32:44	5360	BP23MVEXP-ENV-DC-109			Camera	93	631199	6165289	631206	6165285	-7	4	8	122		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	18:33:28	5361	BP23MVEXP-ENV-DC-109			Camera	93	631196	6165292	631206	6165285	-10	7	12	123		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	18:34:34	5362	BP23MVEXP-ENV-DC-109			Camera	93	631191	6165296	631206	6165285	-15	11	19	125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	18:35:01	5363	BP23MVEXP-ENV-DC-109			Camera	93	631189	6165297	631206	6165285	-18	12	21	124		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	18:35:28	5364	BP23MVEXP-ENV-DC-109			Camera	93	631187	6165298	631206	6165285	-20	13	23	124		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	18:35:59	5365	BP23MVEXP-ENV-DC-109			Camera	92	631184	6165300	631206	6165285	-22	15	27	124		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	18:37:03	5366	BP23MVEXP-ENV-DC-109			Camera	92	631178	6165303	631206	6165285	-28	18	34	123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	18:38:14	5367	BP23MVEXP-ENV-DC-109			Camera	92	631171	6165307	631206	6165285	-35	22	41	122		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	18:39:50	5368	BP23MVEXP-ENV-DC-109			Camera	92	631163	6165311	631206	6165285	-43	26	51	121		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	18:44:30	5369	BP23MVEXP-ENV-DC-109			Camera	92	631168	6165297	631206	6165285	-38	12	40	107		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	18:46:27	5370	BP23MVEXP-ENV-DC-109			Camera	92	631171	6165285	631206	6165285	-36	0	35	89		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	18:58:14	5371	BP23MVEXP-ENV-DC-109			Camera	91	631178	6165243	631206	6165285	-28	-42	50	34		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	18:59:18	5372	BP23MVEXP-ENV-DC-109			Camera	91	631179	6165245	631206	6165285	-27	-40	48	34		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	18:59:53	5373	BP23MVEXP-ENV-DC-109			Camera	91	631181	6165247	631206	6165285	-25	-38	45	33		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	19:00:15	5374	BP23MVEXP-ENV-DC-109			Camera	91	631182	6165249	631206	6165285	-24	-36	43	33		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	19:01:34	5375	BP23MVEXP-ENV-DC-109			Camera	92	631187	6165256	631206	6165285	-19	-29	35	33		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	19:02:19	5376	BP23MVEXP-ENV-DC-109			Camera	92	631190	6165260	631206	6165285	-16	-25	30	33		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	19:03:21	5377	BP23MVEXP-ENV-DC-109			Camera	92	631193	6165265	631206	6165285	-13	-20	24	33		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	19:04:00	5378	BP23MVEXP-ENV-DC-109			Camera	92	631195	6165269	631206	6165285	-11	-16	19	35		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	19:04:51	5379	BP23MVEXP-ENV-DC-109			Camera	92	631197	6165273	631206	6165285	-9	-12	15	36		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	19:05:14	5380	BP23MVEXP-ENV-DC-109			Camera	92	631199	6165276	631206	6165285	-7	-9	12	38		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	19:05:40	5381	BP23MVEXP-ENV-DC-109			Camera	92	631201	6165278	631206	6165285	-5	-7	9	38		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	19:06:07	5382	BP23MVEXP-ENV-DC-109			Camera	92	631202	6165281	631206	6165285	-4	-4	6	39		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	19:06:28	5383	BP23MVEXP-ENV-DC-109			Camera	92	631204	6165283	631206	6165285	-2	-2	3	42		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	19:06:38	5384	BP23MVEXP-ENV-DC-109			Camera	92	631204	6165283	631206	6165285	-2	-2	2	44		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	19:06:52	5385	BP23MVEXP-ENV-DC-109			Camera	92	631205	6165284	631206	6165285	-1	-1	2	56		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	19:08:37	5386	BP23MVEXP-ENV-DC-109			Camera	92	631210	6165293	631206	6165285	4	8	9	-154		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	19:09:18	5387	BP23MVEXP-ENV-DC-109			Camera	92	631212	6165297	631206	6165285	6	12	14	-153		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	19:09:46	5388	BP23MVEXP-ENV-DC-109			Camera	93	631214	6165300	631206	6165285	8	15	17	-152		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	19:10:17	5389	BP23MVEXP-ENV-DC-109			Camera	93	631216	6165302	631206	6165285	10	17	20	-149		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	19:11:10	5390	BP23MVEXP-ENV-DC-109			Camera	93	631219	6165306	631206	6165285	13	21	25	-149		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	19:12:10	5391	BP23MVEXP-ENV-DC-109			Camera	93	631221	6165311	631206	6165285	15	27	31	-150		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	19:12:26	5392	BP23MVEXP-ENV-DC-109			Camera	93	631222	6165313	631206	6165285	16	28	32	-150		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	19:13:07	5393	BP23MVEXP-ENV-DC-109			Camera	93	631224	6165316	631206	6165285	18	31	36	-150		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	19:13:50	5394	BP23MVEXP-ENV-DC-109			Camera	93	631227	6165321	631206	6165285	21	36	41	-149		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	19:14:24	5395	BP23MVEXP-ENV-DC-109			Camera	93	631229	6165323	631206	6165285	23	39	45	-149		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	21:14:29	5396	BP23MVEXP-ENV-DC-110			Camera	85	628973	6161976	628946	6161934	27	42	50	-147		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	21:16:02	5397	BP23MVEXP-ENV-DC-110			Camera	85	628973	6161975	628946	6161934	27	41	49	-147		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	21:16:38	5398	BP23MVEXP-ENV-DC-110			Camera	85	628971	6161973	628946	6161934	25	39	47	-148		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	21:17:25	5399	BP23MVEXP-ENV-DC-110			Camera	85	628968	6161970	628946	6161934	22	36	42	-148		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	21:18:52	5400	BP23MVEXP-ENV-DC-110			Camera	85	628963	6161963	628946	6161934	17	29	34	-150		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	21:19:25	5401	BP23MVEXP-ENV-DC-110			Camera	85	628961	6161960	628946	6161934	15	26	30	-151		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	21:20:45	5402	BP23MVEXP-ENV-DC-110			Camera	84	628957	6161953	628946	6161934	11	19	22	-151		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	21:21:36	5403	BP23MVEXP-ENV-DC-110			Camera	84	628953	6161948	628946	6161934	7	14	16	-152		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	21:21:55	5404	BP23MVEXP-ENV-DC-110			Camera	84	628953	6161946	628946	6161934	7	12	14	-152		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	21:22:41	5405	BP23MVEXP-ENV-DC-110			Camera	84	628950	6161942	628946	6161934	4	8	9	-153		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	21:23:15	5406	BP23MVEXP-ENV-DC-110			Camera	84	628948	6161939	628946	6161934	2	5	5	-153		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	21:24:02	5407	BP23MVEXP-ENV-DC-110			Camera	84	628946	6161934	628946	6161934	0	0	0	180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	21:24:23	5408	BP23MVEXP-ENV-DC-110			Camera	84	628945	6161933	628946	6161934	-1	-1	2	30		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	21:24:49	5409	BP23MVEXP-ENV-DC-110			Camera	84	628944	6161930	628946	6161934	-2	-4	4	25		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	21:25:17	5410	BP23MVEXP-ENV-DC-110			Camera	84	628942	6161927	628946	6161934	-4	-7	8	27		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	21:25:49	5411	BP23MVEXP-ENV-DC-110			Camera	84	628941	6161924	628946	6161934	-5	-10	12	28		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	21:26:11	5412	BP23MVEXP-ENV-DC-110			Camera	84	628939	6161922	628946	6161934	-7	-12	14	29		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	21:26:23	5413	BP23MVEXP-ENV-DC-110			Camera	84	628939	6161921	628946	6161934	-7	-13	15	30		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	21:26:52	5414	BP23MVEXP-ENV-DC-110			Camera	84	628937	6161919	628946	6161934	-9	-16	18	30		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	21:27:39	5415	BP23MVEXP-ENV-DC-110			Camera	84	628935	6161915	628946	6161934	-11	-19	23	30		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	21:27:58	5416	BP23MVEXP-ENV-DC-110			Camera	84	628933	6161913	628946	6161934	-13	-21	24	32		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	21:28:54	5417	BP23MVEXP-ENV-DC-110			Camera	84	628930	6161909	628946	6161934	-16	-25	30	33		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	21:29:54	5418	BP23MVEXP-ENV-DC-110			Camera	84	628927	6161903	628946	6161934	-19	-31	36	31		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	21:30:20	5419	BP23MVEXP-ENV-DC-110			Camera	84	628926	6161901	628946	6161934	-20	-33	39	31		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	21:31:22	5420	BP23MVEXP-ENV-DC-110			Camera	84	628922	6161895	628946	6161934	-24	-39	46	31		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	21:31:44	5421	BP23MVEXP-ENV-DC-110			Camera	84	628921	6161893	628946	6161934	-25	-41	48	31		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	21:46:51	5422	BP23MVEXP-ENV-DC-110			Camera	84	628905	6161960	628946	6161934	-41	27	49	123		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	21:48:34	5423	BP23MVEXP-ENV-DC-110			Camera	84	628905	6161961	628946	6161934	-41	27	49	124		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	21:48:45	5424	BP23MVEXP-ENV-DC-110			Camera	84	628906	6161961	628946	6161934	-40	27	48	124		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	21:48:58	5425	BP23MVEXP-ENV-DC-110			Camera	84	628906	6161961	628946	6161934	-40	27	48	124		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	21:49:31	5426	BP23MVEXP-ENV-DC-110			Camera	84	628909	6161960	628946	6161934	-38	26	45	125		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	21:49:59	5427	BP23MVEXP-ENV-DC-110			Camera	84	628911	6161959	628946	6161934	-35	25	43	125		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	21:50:20	5428	BP23MVEXP-ENV-DC-110			Camera	84	628913	6161958	628946	6161934	-33	24	41	125		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	21:50:36	5429	BP23MVEXP-ENV-DC-110			Camera	84	628914	6161957	628946	6161934	-32	23	39	125		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	21:50:52	5430	BP23MVEXP-ENV-DC-110			Camera	84	628916	6161955	628946	6161934	-30	21	37	125		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	21:51:32	5431	BP23MVEXP-ENV-DC-110			Camera	84	628919	6161953	628946	6161934	-27	19	33	125		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	21:52:33	5432	BP23MVEXP-ENV-DC-110			Camera	84	628925	6161949	628946	6161934	-21	15	26	126		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	21:53:32	5433	BP23MVEXP-ENV-DC-110			Camera	84	628930	6161946	628946	6161934	-16	12	20	126		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	21:54:58	5434	BP23MVEXP-ENV-DC-110			Camera	84	628937	6161941	628946	6161934	-9	7	11	128		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	21:55:32	5435	BP23MVEXP-ENV-DC-110			Camera	84	628940	6161939	628946	6161934	-6	5	8	131		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	21:56:01	5436	BP23MVEXP-ENV-DC-110			Camera	84	628942	6161938	628946	6161934	-4	4	5	134		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	21:56:13	5437	BP23MVEXP-ENV-DC-110			Camera	84	628943	6161937	628946	6161934	-3	3	4	134		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	21:56:23	5438	BP23MVEXP-ENV-DC-110			Camera	84	628944	6161936	628946	6161934	-2	2	3	134		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	21:56:53	5439	BP23MVEXP-ENV-DC-110			Camera	84	628946	6161935	628946	6161934	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	21:57:03	5440	BP23MVEXP-ENV-DC-110			Camera	84	628947	6161934	628946	6161934	1	0	1	-108		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	21:57:44	5441	BP23MVEXP-ENV-DC-110			Camera	84	628951	6161932	628946	6161934	5	-2	6	-70		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	21:58:14	5442	BP23MVEXP-ENV-DC-110			Camera	84	628954	6161930	628946	6161934	8	-4	9	-66		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	21:59:48	5443	BP23MVEXP-ENV-DC-110			Camera	84	628962	6161925	628946	6161934	16	-9	19	-60		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	22:00:37	5444	BP23MVEXP-ENV-DC-110			Camera	84	628967	6161921	628946	6161934	21	-13	25	-59		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	22:01:38	5445	BP23MVEXP-ENV-DC-110			Camera	84	628972	6161918	628946	6161934	26	-16	31	-59		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	22:56:29	5446	BP23MVEXP-ENV-DC-108			Camera	89	627132	6162324	627184	6162321	-52	3	52	93		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	22:56:42	5447	BP23MVEXP-ENV-DC-108			Camera	89	627131	6162323	627184	6162321	-53	2	53	92		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	22:57:00	5448	BP23MVEXP-ENV-DC-108			Camera	89	627131	6162324	627184	6162321	-53	3	53	93		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	23:01:11	5449	BP23MVEXP-ENV-DC-108			Camera	89	627150	6162323	627184	6162321	-34	2	34	93		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	23:01:38	5450	BP23MVEXP-ENV-DC-108			Camera	89	627152	6162323	627184	6162321	-32	2	32	93		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	23:01:49	5451	BP23MVEXP-ENV-DC-108			Camera	89	627154	6162323	627184	6162321	-30	2	30	93		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	23:02:04	5452	BP23MVEXP-ENV-DC-108			Camera	89	627155	6162323	627184	6162321	-29	2	29	93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	23:02:14	5453	BP23MVEXP-ENV-DC-108			Camera	89	627156	6162322	627184	6162321	-28	1	28	92		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	23:03:40	5454	BP23MVEXP-ENV-DC-108			Camera	89	627165	6162322	627184	6162321	-19	1	19	94		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	23:03:49	5455	BP23MVEXP-ENV-DC-108			Camera	89	627166	6162322	627184	6162321	-18	1	18	94		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	23:04:00	5456	BP23MVEXP-ENV-DC-108			Camera	89	627167	6162322	627184	6162321	-17	1	17	95		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	23:04:36	5457	BP23MVEXP-ENV-DC-108			Camera	89	627171	6162322	627184	6162321	-13	1	13	95		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	23:05:17	5458	BP23MVEXP-ENV-DC-108			Camera	88	627175	6162322	627184	6162321	-9	1	9	94		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	23:05:27	5459	BP23MVEXP-ENV-DC-108			Camera	88	627177	6162322	627184	6162321	-7	1	7	98		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	23:05:41	5460	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162322	627184	6162321	-6	1	6	97		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	23:06:19	5461	BP23MVEXP-ENV-DC-108			Camera	88	627182	6162322	627184	6162321	-2	1	2	108		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	23:06:34	5462	BP23MVEXP-ENV-DC-108			Camera	88	627184	6162322	627184	6162321	0	1	1	149		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	23:07:07	5463	BP23MVEXP-ENV-DC-108			Camera	88	627187	6162322	627184	6162321	3	1	3	-103		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	23:07:35	5464	BP23MVEXP-ENV-DC-108			Camera	88	627189	6162322	627184	6162321	5	1	5	-100		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	23:10:25	5465	BP23MVEXP-ENV-DC-108			Camera	88	627207	6162321	627184	6162321	23	0	23	-89		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	23:10:54	5466	BP23MVEXP-ENV-DC-108			Camera	88	627210	6162321	627184	6162321	26	0	26	-89		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	23:11:40	5467	BP23MVEXP-ENV-DC-108			Camera	88	627214	6162320	627184	6162321	30	-1	30	-88		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	23:11:53	5468	BP23MVEXP-ENV-DC-108			Camera	88	627216	6162320	627184	6162321	32	-1	32	-88		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	23:13:08	5469	BP23MVEXP-ENV-DC-108			Camera	88	627224	6162320	627184	6162321	40	-1	40	-88		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	23:13:53	5470	BP23MVEXP-ENV-DC-108			Camera	88	627229	6162320	627184	6162321	45	-1	45	-89		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	23:14:10	5471	BP23MVEXP-ENV-DC-108			Camera	88	627230	6162320	627184	6162321	46	-1	46	-89		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	23:14:33	5472	BP23MVEXP-ENV-DC-108			Camera	88	627232	6162319	627184	6162321	48	-2	48	-88		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	23:26:05	5473	BP23MVEXP-ENV-DC-108			Camera	88	627181	6162266	627184	6162321	-3	-55	55	3		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	23:26:46	5474	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162266	627184	6162321	-5	-55	55	5		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	23:27:04	5475	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162266	627184	6162321	-5	-55	55	5		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	23:27:53	5476	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162269	627184	6162321	-5	-52	52	5		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	23:28:48	5477	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162276	627184	6162321	-6	-45	45	7		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	23:29:25	5478	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162280	627184	6162321	-6	-41	41	8		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	23:30:07	5479	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162284	627184	6162321	-6	-37	37	9		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	23:30:35	5480	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162287	627184	6162321	-5	-34	34	9		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	23:30:55	5481	BP23MVEXP-ENV-DC-108			Camera	87	627179	6162289	627184	6162321	-5	-32	32	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	23:31:28	5482	BP23MVEXP-ENV-DC-108			Camera	87	627179	6162292	627184	6162321	-5	-29	29	9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	23:32:10	5483	BP23MVEXP-ENV-DC-108			Camera	87	627180	6162296	627184	6162321	-4	-25	26	10		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	23:33:46	5484	BP23MVEXP-ENV-DC-108			Camera	87	627181	6162306	627184	6162321	-3	-15	15	12		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	23:35:04	5485	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162314	627184	6162321	-2	-7	7	14		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	23:35:50	5486	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162319	627184	6162321	-2	-2	3	50		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	23:36:11	5487	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162321	627184	6162321	-2	0	2	88		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	23:36:44	5488	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162324	627184	6162321	-2	3	4	147		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	23:36:53	5489	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162325	627184	6162321	-2	4	5	155		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	23:37:27	5490	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162329	627184	6162321	-2	8	8	169		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	23:38:11	5491	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162333	627184	6162321	-2	12	12	169		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	23:38:42	5492	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162335	627184	6162321	-2	15	15	172		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	23:39:40	5493	BP23MVEXP-ENV-DC-108			Camera	87	627183	6162341	627184	6162321	-1	21	20	178		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	23:40:03	5494	BP23MVEXP-ENV-DC-108			Camera	87	627183	6162344	627184	6162321	-1	23	23	177		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	23:41:07	5495	BP23MVEXP-ENV-DC-108			Camera	87	627184	6162350	627184	6162321	0	29	29	179		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	23:41:59	5496	BP23MVEXP-ENV-DC-108			Camera	86	627184	6162356	627184	6162321	0	35	35	-180		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	23:42:31	5497	BP23MVEXP-ENV-DC-108			Camera	86	627184	6162359	627184	6162321	0	38	38	-180		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	23:43:11	5498	BP23MVEXP-ENV-DC-108			Camera	86	627185	6162363	627184	6162321	1	42	42	-179		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	23:43:24	5499	BP23MVEXP-ENV-DC-108			Camera	86	627185	6162364	627184	6162321	1	44	44	-179		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	23:43:54	5500	BP23MVEXP-ENV-DC-108			Camera	86	627185	6162368	627184	6162321	1	47	47	-179		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	01:31:45	5501	BP23MVEXP-ENV-DC-111			Camera	94	626972	6158485	626978	6158542	-6	-57	57	6		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	01:34:50	5502	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158491	626978	6158542	-3	-51	51	4		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	01:34:59	5503	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158492	626978	6158542	-3	-50	50	4		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	01:35:31	5504	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158496	626978	6158542	-3	-46	46	4		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	01:35:42	5505	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158497	626978	6158542	-3	-46	46	4		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	01:36:21	5506	BP23MVEXP-ENV-DC-111			Camera	93	626975	6158501	626978	6158542	-3	-41	41	4		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	01:37:03	5507	BP23MVEXP-ENV-DC-111			Camera	93	626976	6158505	626978	6158542	-2	-37	37	4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	01:37:16	5508	BP23MVEXP-ENV-DC-111			Camera	93	626976	6158506	626978	6158542	-2	-36	36	3		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	01:38:09	5509	BP23MVEXP-ENV-DC-111			Camera	93	626977	6158512	626978	6158542	-1	-30	30	2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	01:39:18	5510	BP23MVEXP-ENV-DC-111			Camera	93	626977	6158519	626978	6158542	-1	-23	23	3		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	01:40:27	5511	BP23MVEXP-ENV-DC-111			Camera	93	626978	6158526	626978	6158542	0	-16	16	-1		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	01:40:53	5512	BP23MVEXP-ENV-DC-111			Camera	93	626978	6158529	626978	6158542	0	-13	13	-2		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	01:41:30	5513	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158532	626978	6158542	1	-10	10	-4		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	01:41:55	5514	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158535	626978	6158542	1	-7	7	-7		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	01:42:10	5515	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158536	626978	6158542	1	-6	6	-11		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	01:42:55	5516	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158541	626978	6158542	1	-1	1	-63		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	01:43:09	5517	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158543	626978	6158542	1	1	2	-129		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	01:43:53	5518	BP23MVEXP-ENV-DC-111			Camera	93	626980	6158547	626978	6158542	2	5	6	-162		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	01:46:09	5519	BP23MVEXP-ENV-DC-111			Camera	93	626980	6158562	626978	6158542	2	20	20	-173		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	01:46:16	5520	BP23MVEXP-ENV-DC-111			Camera	93	626981	6158563	626978	6158542	3	21	21	-172		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	01:46:32	5521	BP23MVEXP-ENV-DC-111			Camera	93	626981	6158564	626978	6158542	3	22	23	-171		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	01:47:29	5522	BP23MVEXP-ENV-DC-111			Camera	93	626983	6158570	626978	6158542	5	28	29	-169		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	01:47:50	5523	BP23MVEXP-ENV-DC-111			Camera	93	626984	6158572	626978	6158542	6	30	31	-169		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	01:48:14	5524	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158575	626978	6158542	6	33	33	-169		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	01:49:48	5525	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158584	626978	6158542	6	42	42	-171		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	01:50:08	5526	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158586	626978	6158542	6	44	44	-172		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	01:50:28	5527	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158587	626978	6158542	6	45	45	-172		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	02:00:42	5528	BP23MVEXP-ENV-DC-111			Camera	93	627032	6158534	626978	6158542	54	-8	55	-82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	02:01:06	5529	BP23MVEXP-ENV-DC-111			Camera	93	627033	6158533	626978	6158542	55	-9	55	-81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	02:02:55	5530	BP23MVEXP-ENV-DC-111			Camera	93	627024	6158531	626978	6158542	46	-11	47	-76		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	02:03:33	5531	BP23MVEXP-ENV-DC-111			Camera	93	627019	6158531	626978	6158542	41	-11	42	-75		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	02:03:59	5532	BP23MVEXP-ENV-DC-111			Camera	93	627016	6158532	626978	6158542	38	-10	39	-75		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	02:04:25	5533	BP23MVEXP-ENV-DC-111			Camera	93	627013	6158533	626978	6158542	35	-9	36	-75		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	02:04:47	5534	BP23MVEXP-ENV-DC-111			Camera	93	627011	6158533	626978	6158542	33	-9	34	-75		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	02:05:37	5535	BP23MVEXP-ENV-DC-111			Camera	93	627005	6158535	626978	6158542	27	-7	28	-75		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	02:06:11	5536	BP23MVEXP-ENV-DC-111			Camera	93	627002	6158535	626978	6158542	24	-7	25	-74		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	02:06:44	5537	BP23MVEXP-ENV-DC-111			Camera	93	626998	6158535	626978	6158542	21	-7	22	-72		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	02:07:45	5538	BP23MVEXP-ENV-DC-111			Camera	93	626993	6158536	626978	6158542	15	-7	16	-66		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	02:08:25	5539	BP23MVEXP-ENV-DC-111			Camera	93	626989	6158536	626978	6158542	11	-6	12	-62		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	02:09:46	5540	BP23MVEXP-ENV-DC-111			Camera	93	626981	6158537	626978	6158542	3	-5	6	-29		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	02:10:14	5541	BP23MVEXP-ENV-DC-111			Camera	93	626978	6158538	626978	6158542	0	-4	4	3		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	02:10:25	5542	BP23MVEXP-ENV-DC-111			Camera	93	626977	6158538	626978	6158542	-1	-4	4	15		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	02:10:37	5543	BP23MVEXP-ENV-DC-111			Camera	93	626976	6158538	626978	6158542	-2	-4	5	30		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	02:11:15	5544	BP23MVEXP-ENV-DC-111			Camera	93	626972	6158539	626978	6158542	-6	-3	7	61		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	02:11:56	5545	BP23MVEXP-ENV-DC-111			Camera	93	626968	6158539	626978	6158542	-10	-3	11	73		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	02:12:17	5546	BP23MVEXP-ENV-DC-111			Camera	93	626965	6158539	626978	6158542	-13	-3	13	78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	02:12:26	5547	BP23MVEXP-ENV-DC-111			Camera	93	626964	6158539	626978	6158542	-14	-3	14	79		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	02:13:44	5548	BP23MVEXP-ENV-DC-111			Camera	94	626957	6158541	626978	6158542	-21	-1	21	87		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	02:14:14	5549	BP23MVEXP-ENV-DC-111			Camera	94	626954	6158541	626978	6158542	-24	-1	24	88		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	02:14:59	5550	BP23MVEXP-ENV-DC-111			Camera	94	626949	6158541	626978	6158542	-29	-1	29	88		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	02:17:38	5551	BP23MVEXP-ENV-DC-111			Camera	94	626933	6158543	626978	6158542	-45	1	45	91		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	02:18:02	5552	BP23MVEXP-ENV-DC-111			Camera	94	626931	6158544	626978	6158542	-47	2	47	93		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
02-Aug-2023	02:18:18	5553	BP23MVEXP-ENV-DC-111			Camera	94	626929	6158545	626978	6158542	-49	3	49	93		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	03:37:26	5554	BP23MVEXP-ENV-DC-112			Camera	103	626336	6154429	626284	6154439	52	-10	53	-79		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
02-Aug-2023	03:37:46	5555	BP23MVEXP-ENV-DC-112			Camera	103	626336	6154430	626284	6154439	52	-9	52	-80		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	03:40:17	5556	BP23MVEXP-ENV-DC-112			Camera	102	626333	6154430	626284	6154439	49	-9	50	-80		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	03:40:52	5557	BP23MVEXP-ENV-DC-112			Camera	102	626331	6154430	626284	6154439	47	-9	48	-79		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	03:41:09	5558	BP23MVEXP-ENV-DC-112			Camera	102	626330	6154429	626284	6154439	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	03:41:52	5559	BP23MVEXP-ENV-DC-112			Camera	102	626326	6154428	626284	6154439	42	-11	43	-76		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	03:42:00	5560A	BP23MVEXP-ENV-DC-112				102	626325	6154429	626284	6154439	41	-11	42	-76		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A) Fix no photo
02-Aug-2023	03:42:04	5560B	BP23MVEXP-ENV-DC-112			Camera	105	626325	6154428	626284	6154439	41	-11	42	-75		(Raw Nav, Kongsberg 14208, img#7) (B)
02-Aug-2023	03:43:01	5561	BP23MVEXP-ENV-DC-112			Camera	102	626319	6154431	626284	6154439	35	-8	36	-77		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	03:43:48	5562	BP23MVEXP-ENV-DC-112			Camera	102	626315	6154432	626284	6154439	31	-7	32	-77		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	03:44:16	5563	BP23MVEXP-ENV-DC-112			Camera	102	626312	6154433	626284	6154439	28	-6	29	-77		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	03:44:42	5564	BP23MVEXP-ENV-DC-112			Camera	102	626310	6154433	626284	6154439	26	-6	26	-77		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	03:46:07	5565	BP23MVEXP-ENV-DC-112			Camera	102	626301	6154435	626284	6154439	17	-4	17	-75		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	03:46:42	5566	BP23MVEXP-ENV-DC-112			Camera	102	626297	6154436	626284	6154439	13	-3	13	-76		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	03:46:52	5567	BP23MVEXP-ENV-DC-112			Camera	101	626296	6154436	626284	6154439	12	-3	13	-76		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	03:47:42	5568	BP23MVEXP-ENV-DC-112			Camera	101	626292	6154436	626284	6154439	8	-3	9	-73		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	03:48:21	5569	BP23MVEXP-ENV-DC-112			Camera	101	626288	6154437	626284	6154439	4	-2	5	-69		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	03:48:52	5570	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154438	626284	6154439	1	-1	2	-50		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	03:49:33	5571	BP23MVEXP-ENV-DC-112			Camera	101	626281	6154439	626284	6154439	-3	0	3	84		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	03:49:42	5572	BP23MVEXP-ENV-DC-112			Camera	101	626280	6154439	626284	6154439	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	03:50:21	5573	BP23MVEXP-ENV-DC-112			Camera	101	626276	6154439	626284	6154439	-8	0	8	90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	03:50:28	5574	BP23MVEXP-ENV-DC-112			Camera	101	626275	6154439	626284	6154439	-9	0	9	91		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	03:51:07	5575	BP23MVEXP-ENV-DC-112			Camera	101	626271	6154440	626284	6154439	-13	1	13	93		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	03:52:14	5576	BP23MVEXP-ENV-DC-112			Camera	101	626263	6154441	626284	6154439	-21	2	21	96		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	03:53:22	5577	BP23MVEXP-ENV-DC-112			Camera	101	626256	6154442	626284	6154439	-28	3	28	96		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	03:54:25	5578	BP23MVEXP-ENV-DC-112			Camera	101	626250	6154444	626284	6154439	-35	5	35	98		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	03:55:17	5579	BP23MVEXP-ENV-DC-112			Camera	101	626244	6154444	626284	6154439	-40	5	40	98		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	03:56:58	5580	BP23MVEXP-ENV-DC-112			Camera	101	626235	6154445	626284	6154439	-49	6	49	97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	03:59:24	5581	BP23MVEXP-ENV-DC-112			Camera	101	626235	6154444	626284	6154439	-49	5	49	95		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	04:12:32	5582	BP23MVEXP-ENV-DC-112			Camera	101	626275	6154391	626284	6154439	-9	-48	49	11		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	04:12:49	5583	BP23MVEXP-ENV-DC-112			Camera	101	626275	6154390	626284	6154439	-9	-49	50	11		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	04:15:45	5584	BP23MVEXP-ENV-DC-112			Camera	101	626279	6154401	626284	6154439	-5	-38	38	8		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	04:16:08	5585	BP23MVEXP-ENV-DC-112			Camera	101	626279	6154403	626284	6154439	-5	-36	36	8		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	04:16:37	5586	BP23MVEXP-ENV-DC-112			Camera	101	626280	6154407	626284	6154439	-4	-32	33	7		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	04:17:40	5587	BP23MVEXP-ENV-DC-112			Camera	101	626281	6154413	626284	6154439	-3	-26	26	7		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	04:18:34	5588	BP23MVEXP-ENV-DC-112			Camera	101	626281	6154419	626284	6154439	-3	-20	21	9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	04:18:58	5589	BP23MVEXP-ENV-DC-112			Camera	101	626282	6154421	626284	6154439	-2	-18	18	8		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	04:19:38	5590	BP23MVEXP-ENV-DC-112			Camera	101	626282	6154425	626284	6154439	-2	-14	14	9		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	04:21:04	5591	BP23MVEXP-ENV-DC-112			Camera	101	626284	6154434	626284	6154439	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	04:21:35	5592	BP23MVEXP-ENV-DC-112			Camera	101	626284	6154437	626284	6154439	0	-2	2	-8		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	04:21:44	5593	BP23MVEXP-ENV-DC-112			Camera	101	626284	6154438	626284	6154439	0	-1	1	-13		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	04:22:27	5594	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154442	626284	6154439	1	3	3	-170		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	04:22:37	5595	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154443	626284	6154439	1	4	4	-172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	04:22:56	5596	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154446	626284	6154439	1	7	7	-173		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	04:23:48	5597	BP23MVEXP-ENV-DC-112			Camera	101	626286	6154451	626284	6154439	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	04:24:20	5598	BP23MVEXP-ENV-DC-112			Camera	101	626286	6154454	626284	6154439	2	15	16	-171		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	04:25:00	5599	BP23MVEXP-ENV-DC-112			Camera	101	626287	6154459	626284	6154439	3	20	20	-171		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	04:25:38	5600	BP23MVEXP-ENV-DC-112			Camera	102	626287	6154463	626284	6154439	3	24	24	-172		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	04:26:43	5601	BP23MVEXP-ENV-DC-112			Camera	102	626288	6154470	626284	6154439	4	31	31	-173		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	04:26:53	5602	BP23MVEXP-ENV-DC-112			Camera	102	626288	6154471	626284	6154439	4	32	32	-174		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	04:27:17	5603	BP23MVEXP-ENV-DC-112			Camera	102	626287	6154473	626284	6154439	3	34	34	-174		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	04:28:17	5604	BP23MVEXP-ENV-DC-112			Camera	102	626289	6154480	626284	6154439	5	41	41	-173		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	04:28:40	5605	BP23MVEXP-ENV-DC-112			Camera	102	626289	6154482	626284	6154439	5	43	44	-173		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
02-Aug-2023	04:29:13	5606	BP23MVEXP-ENV-DC-112			Camera	102	626290	6154486	626284	6154439	6	47	47	-173		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	06:04:48	5607	BP23MVEXP-ENV-DC-113			Camera	97	625600	6150634	625643	6150623	-43	11	45	104		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	06:07:38	5608	BP23MVEXP-ENV-DC-113			Camera	97	625600	6150634	625643	6150623	-43	12	45	105		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	06:08:23	5609	BP23MVEXP-ENV-DC-113			Camera	97	625604	6150634	625643	6150623	-39	11	40	105		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	06:08:38	5610	BP23MVEXP-ENV-DC-113			Camera	97	625606	6150634	625643	6150623	-37	11	39	106		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	06:09:10	5611	BP23MVEXP-ENV-DC-113			Camera	97	625609	6150633	625643	6150623	-34	10	35	106		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	06:09:49	5612	BP23MVEXP-ENV-DC-113			Camera	97	625613	6150632	625643	6150623	-30	9	31	106		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	06:10:15	5613	BP23MVEXP-ENV-DC-113			Camera	97	625615	6150631	625643	6150623	-28	8	29	107		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	06:10:57	5614	BP23MVEXP-ENV-DC-113			Camera	97	625620	6150631	625643	6150623	-23	8	25	109		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	06:11:17	5615	BP23MVEXP-ENV-DC-113			Camera	97	625622	6150632	625643	6150623	-21	9	23	112		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	06:12:04	5616	BP23MVEXP-ENV-DC-113			Camera	97	625628	6150631	625643	6150623	-15	8	17	118		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	06:13:21	5617	BP23MVEXP-ENV-DC-113			Camera	97	625635	6150629	625643	6150623	-8	6	10	125		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	06:13:43	5618	BP23MVEXP-ENV-DC-113			Camera	97	625637	6150629	625643	6150623	-6	6	8	135		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	06:13:55	5619	BP23MVEXP-ENV-DC-113			Camera	97	625638	6150628	625643	6150623	-5	5	7	137		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	06:14:53	5620	BP23MVEXP-ENV-DC-113			Camera	97	625645	6150626	625643	6150623	2	3	4	-143		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	06:15:34	5621	BP23MVEXP-ENV-DC-113			Camera	97	625649	6150626	625643	6150623	6	3	7	-120		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	06:15:46	5622	BP23MVEXP-ENV-DC-113			Camera	97	625650	6150626	625643	6150623	7	3	8	-111		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	06:16:00	5623	BP23MVEXP-ENV-DC-113			Camera	97	625652	6150625	625643	6150623	9	2	9	-106		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	06:16:47	5624	BP23MVEXP-ENV-DC-113			Camera	97	625657	6150625	625643	6150623	14	2	14	-96		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	06:17:05	5625	BP23MVEXP-ENV-DC-113			Camera	97	625658	6150624	625643	6150623	15	1	15	-93		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	06:17:19	5626	BP23MVEXP-ENV-DC-113			Camera	97	625659	6150623	625643	6150623	16	0	16	-92		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	06:17:50	5627	BP23MVEXP-ENV-DC-113			Camera	97	625663	6150623	625643	6150623	20	0	20	-89		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	06:18:31	5628	BP23MVEXP-ENV-DC-113			Camera	97	625667	6150621	625643	6150623	24	-2	24	-86		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	06:19:50	5629	BP23MVEXP-ENV-DC-113			Camera	97	625674	6150620	625643	6150623	31	-3	31	-85		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	06:20:38	5630	BP23MVEXP-ENV-DC-113			Camera	97	625679	6150620	625643	6150623	36	-3	36	-86		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	06:21:59	5631	BP23MVEXP-ENV-DC-113			Camera	97	625687	6150619	625643	6150623	44	-4	44	-85		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	06:22:11	5632	BP23MVEXP-ENV-DC-113			Camera	97	625688	6150619	625643	6150623	46	-4	46	-85		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	06:35:27	5633	BP23MVEXP-ENV-DC-113			Camera	97	625648	6150672	625643	6150623	5	49	49	-174		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	06:37:39	5634	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150669	625643	6150623	4	46	46	-175		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	06:38:12	5635	BP23MVEXP-ENV-DC-113			Camera	97	625646	6150666	625643	6150623	3	43	43	-175		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	06:39:04	5636	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150661	625643	6150623	4	38	39	-174		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	06:39:53	5637	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150656	625643	6150623	4	33	33	-173		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	06:40:37	5638	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150652	625643	6150623	4	30	30	-173		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	06:41:41	5639	BP23MVEXP-ENV-DC-113			Camera	97	625644	6150645	625643	6150623	1	22	22	-177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	06:42:29	5640	BP23MVEXP-ENV-DC-113			Camera	97	625645	6150641	625643	6150623	2	18	18	-173		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	06:44:20	5641	BP23MVEXP-ENV-DC-113			Camera	97	625644	6150629	625643	6150623	1	6	6	-174		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	06:44:43	5642	BP23MVEXP-ENV-DC-113			Camera	97	625644	6150627	625643	6150623	1	4	4	-172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	06:45:13	5643	BP23MVEXP-ENV-DC-113			Camera	97	625643	6150624	625643	6150623	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	06:45:24	5644	BP23MVEXP-ENV-DC-113			Camera	97	625643	6150623	625643	6150623	0	0	0	47		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	06:46:12	5645	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150618	625643	6150623	-2	-5	6	19		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	06:47:19	5646	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150611	625643	6150623	-2	-12	12	7		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	06:47:38	5647	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150610	625643	6150623	-2	-13	13	7		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	06:47:49	5648	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150609	625643	6150623	-2	-14	15	8		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	06:48:33	5649	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150605	625643	6150623	-3	-18	19	9		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	06:49:07	5650	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150601	625643	6150623	-3	-22	22	7		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	06:49:20	5651	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150600	625643	6150623	-3	-24	24	7		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	06:49:58	5652	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150595	625643	6150623	-3	-28	28	7		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	06:50:57	5653	BP23MVEXP-ENV-DC-113			Camera	97	625639	6150590	625643	6150623	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	06:51:13	5654	BP23MVEXP-ENV-DC-113			Camera	97	625639	6150588	625643	6150623	-4	-35	35	7		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	06:52:13	5655	BP23MVEXP-ENV-DC-113			Camera	98	625638	6150582	625643	6150623	-5	-41	41	7		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	06:53:03	5656	BP23MVEXP-ENV-DC-113			Camera	98	625637	6150577	625643	6150623	-6	-46	47	7		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	06:53:27	5657	BP23MVEXP-ENV-DC-113			Camera	98	625637	6150574	625643	6150623	-6	-49	49	7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	08:20:57	5658	BP23MVEXP-ENV-DC-114			Camera	93	624928	6146684	624983	6146663	-55	21	59	111		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	08:26:42	5659	BP23MVEXP-ENV-DC-114			Camera	93	624933	6146673	624983	6146663	-50	10	51	101		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	08:28:55	5660	BP23MVEXP-ENV-DC-114			Camera	93	624938	6146669	624983	6146663	-45	6	46	98		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	08:29:40	5661	BP23MVEXP-ENV-DC-114			Camera	93	624939	6146668	624983	6146663	-44	5	44	97		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	08:30:58	5662	BP23MVEXP-ENV-DC-114			Camera	93	624943	6146668	624983	6146663	-40	5	40	97		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	08:31:16	5663	BP23MVEXP-ENV-DC-114			Camera	93	624944	6146667	624983	6146663	-39	4	39	96		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	08:32:40	5664	BP23MVEXP-ENV-DC-114			Camera	93	624949	6146666	624983	6146663	-34	3	34	96		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	08:32:52	5665	BP23MVEXP-ENV-DC-114			Camera	93	624950	6146666	624983	6146663	-33	3	33	95		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	08:33:44	5666	BP23MVEXP-ENV-DC-114			Camera	93	624953	6146665	624983	6146663	-30	2	30	94		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	08:34:35	5667	BP23MVEXP-ENV-DC-114			Camera	93	624955	6146664	624983	6146663	-28	1	28	92		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	08:35:33	5668	BP23MVEXP-ENV-DC-114			Camera	93	624958	6146664	624983	6146663	-25	1	25	92		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	08:36:46	5669	BP23MVEXP-ENV-DC-114			Camera	93	624962	6146664	624983	6146663	-21	1	21	92		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	08:37:32	5670	BP23MVEXP-ENV-DC-114			Camera	93	624964	6146663	624983	6146663	-19	0	19	90		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	08:39:45	5671	BP23MVEXP-ENV-DC-114			Camera	93	624971	6146662	624983	6146663	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	08:43:16	5672	BP23MVEXP-ENV-DC-114			Camera	93	624978	6146660	624983	6146663	-5	-3	6	58		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	08:44:29	5673	BP23MVEXP-ENV-DC-114			Camera	93	624981	6146660	624983	6146663	-2	-3	4	29		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	08:44:39	5674	BP23MVEXP-ENV-DC-114			Camera	93	624982	6146660	624983	6146663	-1	-3	4	22		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	08:44:53	5675	BP23MVEXP-ENV-DC-114			Camera	93	624983	6146660	624983	6146663	0	-3	3	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	08:45:12	5676	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146660	624983	6146663	1	-3	3	-18		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	08:46:08	5677	BP23MVEXP-ENV-DC-114			Camera	93	624989	6146660	624983	6146663	6	-3	7	-63		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	08:47:14	5678	BP23MVEXP-ENV-DC-114			Camera	93	624996	6146660	624983	6146663	13	-3	14	-78		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	08:48:48	5679	BP23MVEXP-ENV-DC-114			Camera	93	625006	6146659	624983	6146663	23	-4	24	-80		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	08:49:03	5680	BP23MVEXP-ENV-DC-114			Camera	93	625008	6146658	624983	6146663	25	-5	26	-80		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	08:49:35	5681	BP23MVEXP-ENV-DC-114			Camera	93	625012	6146657	624983	6146663	29	-6	29	-79		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	08:50:05	5682	BP23MVEXP-ENV-DC-114			Camera	93	625015	6146657	624983	6146663	32	-6	32	-79		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	08:51:33	5683	BP23MVEXP-ENV-DC-114			Camera	93	625024	6146655	624983	6146663	41	-8	42	-79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	08:52:39	5684	BP23MVEXP-ENV-DC-114			Camera	93	625031	6146655	624983	6146663	48	-8	49	-80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	09:02:31	5685	BP23MVEXP-ENV-DC-114			Camera	93	625002	6146693	624983	6146663	19	30	36	-148		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	09:06:40	5686	BP23MVEXP-ENV-DC-114			Camera	93	624991	6146711	624983	6146663	8	48	49	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	09:07:59	5687	BP23MVEXP-ENV-DC-114			Camera	93	624988	6146713	624983	6146663	5	50	50	-175		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	09:09:16	5688	BP23MVEXP-ENV-DC-114			Camera	93	624986	6146707	624983	6146663	3	44	44	-176		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	09:09:46	5689	BP23MVEXP-ENV-DC-114			Camera	93	624985	6146703	624983	6146663	2	40	41	-177		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	09:10:15	5690	BP23MVEXP-ENV-DC-114			Camera	93	624985	6146700	624983	6146663	2	37	37	-177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	09:10:49	5691	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146697	624983	6146663	1	34	34	-178		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	09:10:59	5692	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146696	624983	6146663	1	33	33	-178		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	09:11:45	5693	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146691	624983	6146663	1	28	28	-179		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	09:12:33	5694	BP23MVEXP-ENV-DC-114			Camera	93	624983	6146687	624983	6146663	0	24	24	179		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	09:14:38	5695	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146676	624983	6146663	-3	13	13	167		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	09:15:04	5696	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146672	624983	6146663	-3	9	10	164		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	09:15:53	5697	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146668	624983	6146663	-3	5	5	148		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	09:16:09	5698	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146665	624983	6146663	-3	2	4	128		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	09:16:32	5699	BP23MVEXP-ENV-DC-114			Camera	93	624979	6146663	624983	6146663	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	09:16:46	5700	BP23MVEXP-ENV-DC-114			Camera	93	624979	6146661	624983	6146663	-4	-2	4	65		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	09:17:04	5701	BP23MVEXP-ENV-DC-114			Camera	93	624979	6146659	624983	6146663	-4	-4	6	43		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	09:17:43	5702	BP23MVEXP-ENV-DC-114			Camera	93	624978	6146655	624983	6146663	-5	-8	9	30		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	09:18:28	5703	BP23MVEXP-ENV-DC-114			Camera	93	624978	6146650	624983	6146663	-6	-13	14	23		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	09:19:10	5704	BP23MVEXP-ENV-DC-114			Camera	93	624977	6146646	624983	6146663	-6	-17	18	20		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	09:19:50	5705	BP23MVEXP-ENV-DC-114			Camera	93	624976	6146642	624983	6146663	-7	-21	22	18		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	09:21:01	5706	BP23MVEXP-ENV-DC-114			Camera	93	624975	6146635	624983	6146663	-8	-28	29	16		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	09:21:51	5707	BP23MVEXP-ENV-DC-114			Camera	93	624974	6146631	624983	6146663	-9	-32	34	16		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	09:23:04	5708	BP23MVEXP-ENV-DC-114			Camera	93	624972	6146624	624983	6146663	-11	-39	40	16		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	09:23:23	5709	BP23MVEXP-ENV-DC-114			Camera	93	624972	6146623	624983	6146663	-11	-40	41	15		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
02-Aug-2023	09:23:59	5710	BP23MVEXP-ENV-DC-114			Camera	93	624973	6146621	624983	6146663	-10	-42	43	14		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	11:52:44	5711	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158491	626978	6158542	-12	-51	52	13		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	11:54:47	5712	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158495	626978	6158542	-12	-47	49	15		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	11:55:02	5713	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158496	626978	6158542	-12	-46	47	15		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	11:55:36	5714	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158500	626978	6158542	-12	-43	44	15		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	11:55:51	5715	BP23MVEXP-ENV-DC-111A			Camera	93	626967	6158501	626978	6158542	-11	-41	42	16		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	11:57:00	5716	BP23MVEXP-ENV-DC-111A			Camera	93	626967	6158508	626978	6158542	-11	-34	36	17		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	11:57:14	5717	BP23MVEXP-ENV-DC-111A			Camera	93	626967	6158509	626978	6158542	-11	-33	35	18		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	11:57:50	5718	BP23MVEXP-ENV-DC-111A			Camera	93	626968	6158512	626978	6158542	-10	-30	32	18		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	11:58:21	5719	BP23MVEXP-ENV-DC-111A			Camera	93	626969	6158515	626978	6158542	-9	-27	28	18		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	11:59:20	5720	BP23MVEXP-ENV-DC-111A			Camera	93	626971	6158522	626978	6158542	-7	-20	22	18		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	12:00:14	5721	BP23MVEXP-ENV-DC-111A			Camera	93	626972	6158527	626978	6158542	-6	-15	16	23		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	12:00:30	5722	BP23MVEXP-ENV-DC-111A			Camera	93	626972	6158528	626978	6158542	-6	-14	15	23		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	12:01:10	5723	BP23MVEXP-ENV-DC-111A			Camera	93	626973	6158533	626978	6158542	-5	-9	11	27		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	12:01:28	5724	BP23MVEXP-ENV-DC-111A			Camera	93	626974	6158534	626978	6158542	-4	-8	9	28		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	12:01:54	5725	BP23MVEXP-ENV-DC-111A			Camera	93	626975	6158537	626978	6158542	-3	-5	6	35		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	12:02:16	5726	BP23MVEXP-ENV-DC-111A			Camera	93	626975	6158539	626978	6158542	-3	-3	4	44		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	12:02:39	5727	BP23MVEXP-ENV-DC-111A			Camera	93	626976	6158542	626978	6158542	-2	0	2	80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	12:02:50	5728	BP23MVEXP-ENV-DC-111A			Camera	93	626976	6158543	626978	6158542	-2	1	2	111		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	12:03:26	5729	BP23MVEXP-ENV-DC-111A			Camera	93	626977	6158547	626978	6158542	-1	5	5	169		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	12:03:52	5730	BP23MVEXP-ENV-DC-111A			Camera	93	626977	6158549	626978	6158542	-1	7	7	176		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	12:04:08	5731	BP23MVEXP-ENV-DC-111A			Camera	93	626978	6158551	626978	6158542	0	9	9	178		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	12:04:55	5732	BP23MVEXP-ENV-DC-111A			Camera	93	626978	6158556	626978	6158542	0	14	14	-179		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	12:05:53	5733	BP23MVEXP-ENV-DC-111A			Camera	93	626980	6158561	626978	6158542	2	19	19	-175		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	12:06:19	5734	BP23MVEXP-ENV-DC-111A			Camera	93	626981	6158563	626978	6158542	3	21	21	-173		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	12:06:39	5735	BP23MVEXP-ENV-DC-111A			Camera	93	626981	6158565	626978	6158542	3	23	23	-173		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	12:07:14	5736	BP23MVEXP-ENV-DC-111A			Camera	93	626982	6158568	626978	6158542	4	26	26	-172		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	12:08:17	5737	BP23MVEXP-ENV-DC-111A			Camera	92	626982	6158574	626978	6158542	4	32	32	-173		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	12:08:34	5738	BP23MVEXP-ENV-DC-111A			Camera	92	626983	6158576	626978	6158542	5	34	34	-172		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	12:09:12	5739	BP23MVEXP-ENV-DC-111A			Camera	92	626984	6158580	626978	6158542	6	38	38	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	12:09:50	5740	BP23MVEXP-ENV-DC-111A			Camera	92	626986	6158583	626978	6158542	8	41	42	-169		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	12:21:23	5741	BP23MVEXP-ENV-DC-111A			Camera	93	626932	6158548	626978	6158542	-47	6	47	98		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	12:22:02	5742	BP23MVEXP-ENV-DC-111A			Camera	93	626936	6158547	626978	6158542	-42	5	42	97		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	12:22:21	5743	BP23MVEXP-ENV-DC-111A			Camera	93	626938	6158546	626978	6158542	-40	4	40	96		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	12:22:47	5744	BP23MVEXP-ENV-DC-111A			Camera	93	626940	6158545	626978	6158542	-38	3	38	94		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	12:23:35	5745	BP23MVEXP-ENV-DC-111A			Camera	93	626945	6158544	626978	6158542	-33	2	33	94		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	12:24:31	5746	BP23MVEXP-ENV-DC-111A			Camera	93	626951	6158543	626978	6158542	-27	1	27	93		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	12:25:11	5747	BP23MVEXP-ENV-DC-111A			Camera	93	626955	6158543	626978	6158542	-23	1	23	93		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	12:25:54	5748	BP23MVEXP-ENV-DC-111A			Camera	93	626959	6158543	626978	6158542	-19	1	19	92		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	12:27:01	5749	BP23MVEXP-ENV-DC-111A			Camera	93	626965	6158541	626978	6158542	-13	-1	13	86		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	12:27:22	5750	BP23MVEXP-ENV-DC-111A			Camera	93	626968	6158541	626978	6158542	-11	-1	11	84		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	12:28:17	5751	BP23MVEXP-ENV-DC-111A			Camera	93	626973	6158539	626978	6158542	-5	-3	6	62		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	12:29:08	5752	BP23MVEXP-ENV-DC-111A			Camera	93	626978	6158539	626978	6158542	0	-3	3	-3		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	12:29:48	5753	BP23MVEXP-ENV-DC-111A			Camera	93	626983	6158539	626978	6158542	5	-3	5	-59		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	12:30:19	5754	BP23MVEXP-ENV-DC-111A			Camera	93	626985	6158539	626978	6158542	7	-3	8	-66		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	12:31:16	5755	BP23MVEXP-ENV-DC-111A			Camera	93	626992	6158538	626978	6158542	14	-4	14	-72		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	12:31:50	5756	BP23MVEXP-ENV-DC-111A			Camera	93	626995	6158537	626978	6158542	17	-5	18	-75		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	12:32:30	5757	BP23MVEXP-ENV-DC-111A			Camera	93	626999	6158537	626978	6158542	21	-5	22	-76		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	12:34:00	5758	BP23MVEXP-ENV-DC-111A			Camera	93	627008	6158535	626978	6158542	30	-7	31	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	12:34:44	5759	BP23MVEXP-ENV-DC-111A			Camera	93	627013	6158535	626978	6158542	35	-7	36	-78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	12:35:53	5760	BP23MVEXP-ENV-DC-111A			Camera	93	627021	6158533	626978	6158542	43	-9	44	-79		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	12:36:34	5761	BP23MVEXP-ENV-DC-111A			Camera	93	627025	6158533	626978	6158542	47	-9	48	-79		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Aug-2023	04:44:31	5762	BP23MVEXP-ENV-DC-070			Camera	21	611209	6076884	611157	6076873	52	11	53	-102		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Aug-2023	04:45:42	5763	BP23MVEXP-ENV-DC-070			Camera	21	611208	6076883	611157	6076873	51	10	52	-101		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Aug-2023	04:46:20	5764	BP23MVEXP-ENV-DC-070			Camera	21	611208	6076884	611157	6076873	52	11	53	-102		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Aug-2023	04:47:45	5765	BP23MVEXP-ENV-DC-070			Camera	21	611204	6076881	611157	6076873	47	8	48	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Aug-2023	04:48:09	5766	BP23MVEXP-ENV-DC-070			Camera	21	611202	6076880	611157	6076873	45	7	45	-99		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Aug-2023	04:48:40	5767	BP23MVEXP-ENV-DC-070			Camera	21	611197	6076880	611157	6076873	41	7	41	-100		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Aug-2023	04:49:41	5768	BP23MVEXP-ENV-DC-070			Camera	21	611192	6076878	611157	6076873	35	5	35	-98		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Aug-2023	04:50:20	5769	BP23MVEXP-ENV-DC-070			Camera	21	611188	6076876	611157	6076873	31	3	31	-96		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Aug-2023	04:51:27	5770	BP23MVEXP-ENV-DC-070			Camera	21	611182	6076875	611157	6076873	25	2	25	-94		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Aug-2023	04:51:47	5771	BP23MVEXP-ENV-DC-070			Camera	20	611180	6076875	611157	6076873	23	2	23	-94		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Aug-2023	04:52:37	5772	BP23MVEXP-ENV-DC-070			Camera	21	611175	6076873	611157	6076873	18	0	18	-90		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Aug-2023	04:55:08	5773	BP23MVEXP-ENV-DC-070			Camera	20	611160	6076870	611157	6076873	3	-3	4	-45		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Aug-2023	04:55:32	5774	BP23MVEXP-ENV-DC-070			Camera	20	611158	6076870	611157	6076873	1	-3	3	-9		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Aug-2023	04:55:54	5775	BP23MVEXP-ENV-DC-070			Camera	20	611155	6076869	611157	6076873	-2	-4	5	20		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Aug-2023	04:56:29	5776	BP23MVEXP-ENV-DC-070			Camera	20	611152	6076867	611157	6076873	-5	-6	8	43		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Aug-2023	04:57:44	5777	BP23MVEXP-ENV-DC-070			Camera	20	611144	6076866	611157	6076873	-13	-7	15	62		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Aug-2023	04:58:07	5778	BP23MVEXP-ENV-DC-070			Camera	20	611142	6076865	611157	6076873	-15	-8	17	62		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Aug-2023	04:59:29	5779	BP23MVEXP-ENV-DC-070			Camera	20	611134	6076864	611157	6076873	-23	-9	25	68		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Aug-2023	04:59:51	5780	BP23MVEXP-ENV-DC-070			Camera	20	611132	6076863	611157	6076873	-25	-10	27	69		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Aug-2023	05:00:50	5781	BP23MVEXP-ENV-DC-070			Camera	20	611126	6076862	611157	6076873	-31	-11	33	70		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Aug-2023	05:01:35	5782	BP23MVEXP-ENV-DC-070			Camera	20	611121	6076860	611157	6076873	-36	-13	38	70		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Aug-2023	05:02:08	5783	BP23MVEXP-ENV-DC-070			Camera	20	611118	6076860	611157	6076873	-39	-14	41	71		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Aug-2023	05:02:35	5784	BP23MVEXP-ENV-DC-070			Camera	20	611115	6076859	611157	6076873	-42	-14	44	72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Aug-2023	05:03:07	5785	BP23MVEXP-ENV-DC-070			Camera	20	611113	6076857	611157	6076873	-44	-16	47	70		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Aug-2023	05:16:31	5786	BP23MVEXP-ENV-DC-070			Camera	21	611171	6076825	611157	6076873	14	-48	50	-16		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Aug-2023	05:17:14	5787	BP23MVEXP-ENV-DC-070			Camera	21	611171	6076827	611157	6076873	14	-47	48	-16		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Aug-2023	05:17:33	5788	BP23MVEXP-ENV-DC-070			Camera	21	611170	6076828	611157	6076873	13	-45	47	-16		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Aug-2023	05:18:16	5789	BP23MVEXP-ENV-DC-070			Camera	21	611169	6076832	611157	6076873	12	-41	42	-16		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Aug-2023	05:18:46	5790	BP23MVEXP-ENV-DC-070			Camera	21	611168	6076835	611157	6076873	11	-38	39	-16		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Aug-2023	05:19:25	5791	BP23MVEXP-ENV-DC-070			Camera	21	611166	6076839	611157	6076873	9	-34	36	-15		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Aug-2023	05:19:52	5792	BP23MVEXP-ENV-DC-070			Camera	21	611165	6076842	611157	6076873	8	-31	32	-15		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Aug-2023	05:20:27	5793	BP23MVEXP-ENV-DC-070			Camera	21	611165	6076846	611157	6076873	8	-27	28	-15		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Aug-2023	05:21:18	5794	BP23MVEXP-ENV-DC-070			Camera	21	611162	6076850	611157	6076873	5	-23	23	-13		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Aug-2023	05:21:51	5795	BP23MVEXP-ENV-DC-070			Camera	21	611161	6076854	611157	6076873	4	-19	20	-13		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Aug-2023	05:22:47	5796	BP23MVEXP-ENV-DC-070			Camera	21	611160	6076860	611157	6076873	3	-13	13	-13		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Aug-2023	05:23:33	5797	BP23MVEXP-ENV-DC-070			Camera	20	611159	6076865	611157	6076873	2	-8	8	-15		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Aug-2023	05:24:12	5798	BP23MVEXP-ENV-DC-070			Camera	20	611158	6076869	611157	6076873	1	-4	4	-11		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Aug-2023	05:24:35	5799	BP23MVEXP-ENV-DC-070			Camera	20	611157	6076871	611157	6076873	0	-2	2	1		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Aug-2023	05:24:58	5800	BP23MVEXP-ENV-DC-070			Camera	20	611157	6076873	611157	6076873	0	0	1	64		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Aug-2023	05:25:40	5801	BP23MVEXP-ENV-DC-070			Camera	20	611155	6076877	611157	6076873	-2	4	5	155		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Aug-2023	05:26:38	5802	BP23MVEXP-ENV-DC-070			Camera	20	611153	6076882	611157	6076873	-4	9	10	157		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Aug-2023	05:27:23	5803	BP23MVEXP-ENV-DC-070			Camera	20	611151	6076887	611157	6076873	-6	14	15	156		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Aug-2023	05:27:56	5804	BP23MVEXP-ENV-DC-070			Camera	20	611151	6076890	611157	6076873	-6	17	18	159		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Aug-2023	05:28:13	5805	BP23MVEXP-ENV-DC-070			Camera	20	611150	6076892	611157	6076873	-7	19	20	160		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Aug-2023	05:28:40	5806	BP23MVEXP-ENV-DC-070			Camera	20	611149	6076896	611157	6076873	-8	23	24	160		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Aug-2023	05:29:29	5807	BP23MVEXP-ENV-DC-070			Camera	20	611148	6076901	611157	6076873	-9	28	29	161		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Aug-2023	05:30:23	5808	BP23MVEXP-ENV-DC-070			Camera	20	611146	6076906	611157	6076873	-11	33	35	162		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Aug-2023	05:30:50	5809	BP23MVEXP-ENV-DC-070			Camera	20	611145	6076908	611157	6076873	-12	35	37	161		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Aug-2023	05:31:58	5810	BP23MVEXP-ENV-DC-070			Camera	20	611143	6076915	611157	6076873	-14	42	44	161		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Aug-2023	05:32:41	5811	BP23MVEXP-ENV-DC-070			Camera	20	611141	6076919	611157	6076873	-16	46	48	161		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Aug-2023	06:22:13	5812	BP23MVEXP-ENV-DC-068			Camera	30	613785	6077999	613813	6078042	-28	-43	52	33		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Aug-2023	06:23:29	5813	BP23MVEXP-ENV-DC-068			Camera	30	613788	6078003	613813	6078042	-25	-39	47	32		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Aug-2023	06:24:40	5814	BP23MVEXP-ENV-DC-068			Camera	30	613792	6078008	613813	6078042	-21	-34	40	31		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Aug-2023	06:25:06	5815	BP23MVEXP-ENV-DC-068			Camera	30	613794	6078011	613813	6078042	-19	-31	37	32		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Aug-2023	06:25:31	5816	BP23MVEXP-ENV-DC-068			Camera	30	613795	6078013	613813	6078042	-18	-29	34	31		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Aug-2023	06:26:24	5817	BP23MVEXP-ENV-DC-068			Camera	30	613799	6078018	613813	6078042	-14	-24	28	31		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Aug-2023	06:26:48	5818	BP23MVEXP-ENV-DC-068			Camera	30	613800	6078020	613813	6078042	-13	-22	25	31		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Aug-2023	06:27:18	5819	BP23MVEXP-ENV-DC-068			Camera	31	613802	6078022	613813	6078042	-12	-20	23	30		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Aug-2023	06:28:00	5820	BP23MVEXP-ENV-DC-068			Camera	31	613804	6078026	613813	6078042	-9	-16	18	30		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Aug-2023	06:28:28	5821	BP23MVEXP-ENV-DC-068			Camera	31	613805	6078029	613813	6078042	-8	-13	15	32		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Aug-2023	06:29:11	5822	BP23MVEXP-ENV-DC-068			Camera	31	613807	6078032	613813	6078042	-6	-10	12	31		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Aug-2023	06:29:31	5823	BP23MVEXP-ENV-DC-068			Camera	31	613808	6078034	613813	6078042	-5	-8	9	31		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Aug-2023	06:29:51	5824	BP23MVEXP-ENV-DC-068			Camera	31	613810	6078036	613813	6078042	-3	-6	7	29		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Aug-2023	06:30:49	5825	BP23MVEXP-ENV-DC-068			Camera	31	613813	6078041	613813	6078042	0	-1	1	-10		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Aug-2023	06:30:59	5826	BP23MVEXP-ENV-DC-068			Camera	31	613814	6078042	613813	6078042	1	0	1	-67		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Aug-2023	06:31:16	5827	BP23MVEXP-ENV-DC-068			Camera	31	613814	6078043	613813	6078042	1	1	1	-133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Aug-2023	06:31:47	5828	BP23MVEXP-ENV-DC-068			Camera	31	613816	6078046	613813	6078042	3	4	5	-146		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Aug-2023	06:32:09	5829	BP23MVEXP-ENV-DC-068			Camera	31	613817	6078048	613813	6078042	4	6	7	-145		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Aug-2023	06:32:55	5830	BP23MVEXP-ENV-DC-068			Camera	31	613820	6078052	613813	6078042	7	10	12	-146		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Aug-2023	06:33:28	5831	BP23MVEXP-ENV-DC-068			Camera	31	613821	6078055	613813	6078042	8	13	16	-147		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Aug-2023	06:34:42	5832	BP23MVEXP-ENV-DC-068			Camera	31	613824	6078063	613813	6078042	11	21	24	-153		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Aug-2023	06:35:04	5833	BP23MVEXP-ENV-DC-068			Camera	31	613826	6078065	613813	6078042	13	23	27	-151		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Aug-2023	06:35:47	5834	BP23MVEXP-ENV-DC-068			Camera	31	613829	6078068	613813	6078042	16	26	31	-148		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Aug-2023	06:36:30	5835	BP23MVEXP-ENV-DC-068			Camera	31	613832	6078071	613813	6078042	19	29	35	-147		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Aug-2023	06:38:00	5836	BP23MVEXP-ENV-DC-068			Camera	31	613835	6078081	613813	6078042	22	39	44	-151		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Aug-2023	06:53:26	5837	BP23MVEXP-ENV-DC-068			Camera	31	613855	6078012	613813	6078042	42	-30	51	-55		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Aug-2023	06:53:59	5838	BP23MVEXP-ENV-DC-068			Camera	31	613851	6078014	613813	6078042	38	-28	47	-54		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Aug-2023	06:54:14	5839	BP23MVEXP-ENV-DC-068			Camera	31	613849	6078015	613813	6078042	37	-27	45	-54		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Aug-2023	06:54:50	5840	BP23MVEXP-ENV-DC-068			Camera	31	613847	6078018	613813	6078042	34	-24	41	-55		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Aug-2023	06:55:16	5841	BP23MVEXP-ENV-DC-068			Camera	31	613845	6078020	613813	6078042	32	-22	39	-55		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Aug-2023	06:55:47	5842	BP23MVEXP-ENV-DC-068			Camera	31	613842	6078021	613813	6078042	29	-21	36	-55		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Aug-2023	06:56:42	5843	BP23MVEXP-ENV-DC-068			Camera	31	613838	6078024	613813	6078042	25	-18	31	-54		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Aug-2023	06:58:06	5844	BP23MVEXP-ENV-DC-068			Camera	31	613830	6078028	613813	6078042	17	-14	22	-52		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Aug-2023	06:58:40	5845	BP23MVEXP-ENV-DC-068			Camera	31	613828	6078030	613813	6078042	15	-12	19	-51		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Aug-2023	06:59:15	5846	BP23MVEXP-ENV-DC-068			Camera	31	613825	6078033	613813	6078042	12	-9	15	-51		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Aug-2023	07:00:07	5847	BP23MVEXP-ENV-DC-068			Camera	31	613820	6078035	613813	6078042	7	-7	10	-46		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Aug-2023	07:00:46	5848	BP23MVEXP-ENV-DC-068			Camera	31	613817	6078038	613813	6078042	4	-4	6	-44		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Aug-2023	07:01:07	5849	BP23MVEXP-ENV-DC-068			Camera	31	613815	6078039	613813	6078042	2	-3	4	-36		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Aug-2023	07:01:28	5850	BP23MVEXP-ENV-DC-068			Camera	31	613814	6078040	613813	6078042	1	-2	2	-23		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Aug-2023	07:01:42	5851	BP23MVEXP-ENV-DC-068			Camera	31	613813	6078041	613813	6078042	0	-1	1	18		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Aug-2023	07:02:19	5852	BP23MVEXP-ENV-DC-068			Camera	31	613810	6078043	613813	6078042	-3	1	3	100		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Aug-2023	07:02:46	5853	BP23MVEXP-ENV-DC-068			Camera	31	613807	6078044	613813	6078042	-6	2	6	108		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Aug-2023	07:03:52	5854	BP23MVEXP-ENV-DC-068			Camera	31	613800	6078047	613813	6078042	-13	5	14	113		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Aug-2023	07:04:38	5855	BP23MVEXP-ENV-DC-068			Camera	31	613796	6078051	613813	6078042	-17	9	19	117		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Aug-2023	07:05:28	5856	BP23MVEXP-ENV-DC-068			Camera	31	613793	6078053	613813	6078042	-20	11	23	119		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Aug-2023	07:05:51	5857	BP23MVEXP-ENV-DC-068			Camera	31	613791	6078054	613813	6078042	-22	12	25	119		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Aug-2023	07:06:24	5858	BP23MVEXP-ENV-DC-068			Camera	31	613787	6078056	613813	6078042	-26	14	29	119		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Aug-2023	07:06:54	5859	BP23MVEXP-ENV-DC-068			Camera	31	613784	6078058	613813	6078042	-29	16	33	119		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Aug-2023	07:08:06	5860	BP23MVEXP-ENV-DC-068			Camera	31	613779	6078062	613813	6078042	-34	20	39	120		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Aug-2023	07:08:38	5861	BP23MVEXP-ENV-DC-068			Camera	30	613776	6078063	613813	6078042	-37	21	43	120		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Aug-2023	07:10:05	5862	BP23MVEXP-ENV-DC-068			Camera	31	613769	6078068	613813	6078042	-44	26	51	121		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Aug-2023	07:17:41	5863	BP23MVEXP-ENV-DC-057			Camera	79	628583	6091634	628558	6091692	26	-58	63	-24		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Aug-2023	07:22:24	5864	BP23MVEXP-ENV-DC-057			Camera	79	628578	6091648	628558	6091692	20	-44	48	-24		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Aug-2023	07:23:07	5865	BP23MVEXP-ENV-DC-057			Camera	79	628576	6091652	628558	6091692	18	-40	44	-24		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Aug-2023	07:23:32	5866	BP23MVEXP-ENV-DC-057			Camera	79	628574	6091655	628558	6091692	16	-37	40	-24		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Aug-2023	07:24:10	5867	BP23MVEXP-ENV-DC-057			Camera	79	628573	6091658	628558	6091692	16	-34	37	-25		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Aug-2023	07:24:59	5868	BP23MVEXP-ENV-DC-057			Camera	79	628570	6091663	628558	6091692	12	-29	31	-22		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Aug-2023	07:25:27	5869	BP23MVEXP-ENV-DC-057			Camera	79	628569	6091665	628558	6091692	11	-28	30	-22		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Aug-2023	07:25:55	5870	BP23MVEXP-ENV-DC-057			Camera	79	628568	6091668	628558	6091692	10	-24	26	-23		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Aug-2023	07:26:40	5871	BP23MVEXP-ENV-DC-057			Camera	79	628567	6091672	628558	6091692	9	-20	22	-23		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Aug-2023	07:27:13	5872	BP23MVEXP-ENV-DC-057			Camera	79	628566	6091674	628558	6091692	8	-18	19	-24		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Aug-2023	07:27:55	5873	BP23MVEXP-ENV-DC-057			Camera	79	628563	6091678	628558	6091692	5	-14	14	-20		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Aug-2023	07:28:27	5874	BP23MVEXP-ENV-DC-057			Camera	79	628562	6091682	628558	6091692	4	-10	11	-21		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Aug-2023	07:29:35	5875	BP23MVEXP-ENV-DC-057			Camera	79	628559	6091688	628558	6091692	1	-4	4	-20		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Aug-2023	07:30:30	5876	BP23MVEXP-ENV-DC-057			Camera	79	628557	6091693	628558	6091692	-1	1	1	119		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Aug-2023	07:31:01	5877	BP23MVEXP-ENV-DC-057			Camera	79	628554	6091696	628558	6091692	-4	4	5	138		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Aug-2023	07:31:28	5878	BP23MVEXP-ENV-DC-057			Camera	79	628554	6091699	628558	6091692	-4	7	8	151		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Aug-2023	07:31:46	5879	BP23MVEXP-ENV-DC-057			Camera	79	628553	6091701	628558	6091692	-5	9	10	151		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Aug-2023	07:32:16	5880	BP23MVEXP-ENV-DC-057			Camera	79	628551	6091704	628558	6091692	-7	12	14	149		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Aug-2023	07:33:32	5881	BP23MVEXP-ENV-DC-057			Camera	79	628548	6091711	628558	6091692	-10	19	21	152		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Aug-2023	07:33:50	5882	BP23MVEXP-ENV-DC-057			Camera	79	628548	6091712	628558	6091692	-10	20	23	153		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Aug-2023	07:34:18	5883	BP23MVEXP-ENV-DC-057			Camera	79	628547	6091715	628558	6091692	-11	23	26	154		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Aug-2023	07:35:16	5884	BP23MVEXP-ENV-DC-057			Camera	79	628545	6091719	628558	6091692	-14	27	30	154		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Aug-2023	07:35:34	5885	BP23MVEXP-ENV-DC-057			Camera	79	628544	6091721	628558	6091692	-15	29	33	154		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Aug-2023	07:36:40	5886	BP23MVEXP-ENV-DC-057			Camera	79	628541	6091728	628558	6091692	-17	36	40	155		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Aug-2023	07:53:10	5887	BP23MVEXP-ENV-DC-057			Camera	79	628517	6091672	628558	6091692	-41	-20	46	64		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Aug-2023	07:54:18	5888	BP23MVEXP-ENV-DC-057			Camera	79	628524	6091674	628558	6091692	-34	-18	38	62		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Aug-2023	07:54:48	5889	BP23MVEXP-ENV-DC-057			Camera	79	628527	6091677	628558	6091692	-31	-15	34	64		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Aug-2023	07:55:17	5890	BP23MVEXP-ENV-DC-057			Camera	79	628530	6091679	628558	6091692	-28	-13	31	65		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Aug-2023	07:55:42	5891	BP23MVEXP-ENV-DC-057			Camera	79	628533	6091680	628558	6091692	-26	-12	28	65		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Aug-2023	07:56:50	5892	BP23MVEXP-ENV-DC-057			Camera	79	628538	6091682	628558	6091692	-20	-10	22	63		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Aug-2023	07:57:32	5893	BP23MVEXP-ENV-DC-057			Camera	79	628542	6091684	628558	6091692	-16	-8	18	63		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Aug-2023	07:58:08	5894	BP23MVEXP-ENV-DC-057			Camera	79	628545	6091686	628558	6091692	-13	-6	14	67		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Aug-2023	07:59:08	5895	BP23MVEXP-ENV-DC-057			Camera	79	628551	6091690	628558	6091692	-7	-2	8	72		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Aug-2023	07:59:50	5896	BP23MVEXP-ENV-DC-057			Camera	79	628555	6091691	628558	6091692	-3	-1	4	71		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Aug-2023	08:00:11	5897	BP23MVEXP-ENV-DC-057			Camera	79	628556	6091691	628558	6091692	-2	-1	2	70		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Aug-2023	08:00:36	5898	BP23MVEXP-ENV-DC-057			Camera	79	628559	6091692	628558	6091692	1	0	1	-104		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Aug-2023	08:01:31	5899	BP23MVEXP-ENV-DC-057				79	628563	6091694	628558	6091692	5	2	6	-111		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A) Fix no photo
07-Aug-2023	08:01:38	5900	BP23MVEXP-ENV-DC-057			Camera	79	628564	6091694	628558	6091692	6	2	7	-112		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Aug-2023	08:02:31	5901	BP23MVEXP-ENV-DC-057			Camera	79	628569	6091698	628558	6091692	12	6	13	-116		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Aug-2023	08:03:38	5902	BP23MVEXP-ENV-DC-057				79	628575	6091701	628558	6091692	17	9	20	-118		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A) Fix no photo
07-Aug-2023	08:03:47	5903	BP23MVEXP-ENV-DC-057			Camera	79	628576	6091702	628558	6091692	18	10	21	-119		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Aug-2023	08:04:34	5904	BP23MVEXP-ENV-DC-057			Camera	79	628580	6091705	628558	6091692	22	13	25	-120		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Aug-2023	08:05:34	5905	BP23MVEXP-ENV-DC-057			Camera	79	628586	6091707	628558	6091692	28	15	31	-119		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Aug-2023	08:06:52	5906	BP23MVEXP-ENV-DC-057			Camera	79	628593	6091711	628558	6091692	35	19	40	-118		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Aug-2023	08:07:32	5907	BP23MVEXP-ENV-DC-057			Camera	79	628596	6091712	628558	6091692	38	20	43	-118		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Aug-2023	08:08:18	5908	BP23MVEXP-ENV-DC-057			Camera	79	628601	6091713	628558	6091692	43	21	48	-116		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	08:11:03	5909	BP23MVEXP-ENV-DC-126			Camera	80	621019	6099966	621032	6100018	-13	-52	53	14		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	08:13:52	5910	BP23MVEXP-ENV-DC-126			Camera	80	621022	6099974	621032	6100018	-10	-45	46	13		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	08:14:09	5911	BP23MVEXP-ENV-DC-126			Camera	80	621022	6099975	621032	6100018	-10	-43	44	13		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	08:14:50	5912	BP23MVEXP-ENV-DC-126			Camera	80	621023	6099979	621032	6100018	-9	-39	40	13		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	08:15:03	5913	BP23MVEXP-ENV-DC-126			Camera	80	621023	6099980	621032	6100018	-9	-38	39	13		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	08:16:01	5914	BP23MVEXP-ENV-DC-126			Camera	80	621025	6099987	621032	6100018	-7	-31	32	13		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	08:16:58	5915	BP23MVEXP-ENV-DC-126			Camera	80	621027	6099992	621032	6100018	-5	-26	26	11		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	08:17:18	5916	BP23MVEXP-ENV-DC-126			Camera	80	621027	6099994	621032	6100018	-5	-24	24	11		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	08:18:01	5917	BP23MVEXP-ENV-DC-126			Camera	80	621028	6099998	621032	6100018	-4	-20	21	10		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	08:18:33	5918	BP23MVEXP-ENV-DC-126			Camera	80	621029	6100000	621032	6100018	-3	-18	18	10		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	08:18:50	5919	BP23MVEXP-ENV-DC-126			Camera	80	621029	6100002	621032	6100018	-3	-16	16	11		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	08:19:08	5920	BP23MVEXP-ENV-DC-126			Camera	80	621029	6100004	621032	6100018	-3	-14	14	12		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	08:19:44	5921	BP23MVEXP-ENV-DC-126			Camera	80	621030	6100008	621032	6100018	-2	-10	10	11		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	08:20:12	5922	BP23MVEXP-ENV-DC-126			Camera	80	621031	6100011	621032	6100018	-1	-7	7	9		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	08:20:33	5923	BP23MVEXP-ENV-DC-126			Camera	80	621032	6100013	621032	6100018	0	-5	5	5		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	08:21:27	5924	BP23MVEXP-ENV-DC-126			Camera	80	621033	6100018	621032	6100018	1	0	1	-106		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	08:21:36	5925	BP23MVEXP-ENV-DC-126			Camera	80	621033	6100019	621032	6100018	1	1	2	-142		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	08:21:59	5926	BP23MVEXP-ENV-DC-126			Camera	80	621033	6100022	621032	6100018	1	4	4	-159		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	08:22:25	5927	BP23MVEXP-ENV-DC-126			Camera	80	621034	6100024	621032	6100018	2	6	6	-162		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	08:22:59	5928	BP23MVEXP-ENV-DC-126			Camera	80	621035	6100028	621032	6100018	3	10	10	-163		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	08:23:36	5929	BP23MVEXP-ENV-DC-126			Camera	80	621036	6100031	621032	6100018	4	13	13	-162		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	08:24:41	5930	BP23MVEXP-ENV-DC-126			Camera	80	621037	6100038	621032	6100018	5	20	21	-165		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	08:25:18	5931	BP23MVEXP-ENV-DC-126			Camera	80	621038	6100042	621032	6100018	6	24	25	-165		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	08:26:04	5932	BP23MVEXP-ENV-DC-126			Camera	80	621040	6100047	621032	6100018	8	29	30	-165		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	08:26:48	5933	BP23MVEXP-ENV-DC-126			Camera	80	621041	6100051	621032	6100018	9	33	34	-165		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	08:27:14	5934	BP23MVEXP-ENV-DC-126			Camera	80	621042	6100053	621032	6100018	10	35	36	-165		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	08:28:25	5935	BP23MVEXP-ENV-DC-126			Camera	80	621043	6100059	621032	6100018	11	42	43	-165		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	08:42:40	5936	BP23MVEXP-ENV-DC-126			Camera	80	620989	6100030	621032	6100018	-43	12	45	105		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	08:43:56	5937	BP23MVEXP-ENV-DC-126			Camera	80	620997	6100027	621032	6100018	-35	9	36	104		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	08:44:14	5938	BP23MVEXP-ENV-DC-126			Camera	80	620999	6100027	621032	6100018	-33	9	35	105		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	08:44:28	5939	BP23MVEXP-ENV-DC-126			Camera	80	621000	6100027	621032	6100018	-32	9	33	106		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	08:45:01	5940	BP23MVEXP-ENV-DC-126			Camera	80	621004	6100027	621032	6100018	-29	9	30	107		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	08:45:47	5941	BP23MVEXP-ENV-DC-126			Camera	80	621008	6100026	621032	6100018	-24	8	25	108		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	08:46:03	5942	BP23MVEXP-ENV-DC-126			Camera	80	621010	6100025	621032	6100018	-22	7	23	107		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	08:48:02	5943	BP23MVEXP-ENV-DC-126			Camera	80	621022	6100022	621032	6100018	-10	4	11	112		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	08:49:03	5944	BP23MVEXP-ENV-DC-126			Camera	80	621028	6100020	621032	6100018	-4	2	4	114		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	08:50:19	5945	BP23MVEXP-ENV-DC-126			Camera	80	621036	6100019	621032	6100018	4	1	4	-104		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	08:50:51	5946	BP23MVEXP-ENV-DC-126			Camera	80	621039	6100018	621032	6100018	7	0	7	-91		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	08:51:33	5947	BP23MVEXP-ENV-DC-126			Camera	80	621043	6100017	621032	6100018	11	-1	11	-84		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	08:52:08	5948	BP23MVEXP-ENV-DC-126			Camera	80	621046	6100016	621032	6100018	14	-2	14	-83		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	08:52:50	5949	BP23MVEXP-ENV-DC-126			Camera	80	621051	6100015	621032	6100018	19	-3	19	-80		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	08:53:44	5950	BP23MVEXP-ENV-DC-126			Camera	80	621056	6100013	621032	6100018	24	-5	25	-78		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	08:54:02	5951	BP23MVEXP-ENV-DC-126			Camera	80	621058	6100012	621032	6100018	26	-6	27	-77		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	08:54:21	5952	BP23MVEXP-ENV-DC-126			Camera	80	621060	6100012	621032	6100018	28	-6	28	-77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	08:55:45	5953	BP23MVEXP-ENV-DC-126			Camera	80	621068	6100011	621032	6100018	36	-7	37	-78		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	08:56:06	5954	BP23MVEXP-ENV-DC-126			Camera	80	621070	6100010	621032	6100018	38	-8	39	-78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	08:56:29	5955	BP23MVEXP-ENV-DC-126			Camera	80	621073	6100009	621032	6100018	41	-9	42	-77		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	08:57:20	5956	BP23MVEXP-ENV-DC-126			Camera	80	621078	6100008	621032	6100018	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	08:57:29	5957	BP23MVEXP-ENV-DC-126			Camera	80	621079	6100008	621032	6100018	47	-10	48	-78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	10:01:31	5958	BP23MVEXP-ENV-DC-127			Camera	70	619943	6096222	619930	6096179	13	43	45	-164		(Corr'd Nav, Kongsberg 14208, img#50) (B)
10-Aug-2023	10:02:53	5959	BP23MVEXP-ENV-DC-127			Camera	70	619941	6096221	619930	6096179	11	42	43	-165		(Corr'd Nav, Kongsberg 14208, img#1) (B)
10-Aug-2023	10:03:26	5960	BP23MVEXP-ENV-DC-127			Camera	70	619940	6096218	619930	6096179	10	39	41	-166		(Corr'd Nav, Kongsberg 14208, img#2) (B)
10-Aug-2023	10:05:00	5961	BP23MVEXP-ENV-DC-127			Camera	70	619939	6096209	619930	6096179	9	30	31	-164		(Corr'd Nav, Kongsberg 14208, img#3) (B)
10-Aug-2023	10:05:34	5962	BP23MVEXP-ENV-DC-127			Camera	69	619938	6096205	619930	6096179	8	26	27	-163		(Corr'd Nav, Kongsberg 14208, img#4) (B)
10-Aug-2023	10:06:26	5963	BP23MVEXP-ENV-DC-127			Camera	70	619936	6096200	619930	6096179	6	21	22	-164		(Corr'd Nav, Kongsberg 14208, img#5) (B)
10-Aug-2023	10:07:08	5964	BP23MVEXP-ENV-DC-127			Camera	70	619935	6096196	619930	6096179	5	17	18	-164		(Corr'd Nav, Kongsberg 14208, img#6) (B)
10-Aug-2023	10:07:22	5965	BP23MVEXP-ENV-DC-127			Camera	71	619934	6096194	619930	6096179	4	15	16	-164		(Corr'd Nav, Kongsberg 14208, img#7) (B)
10-Aug-2023	10:08:40	5966	BP23MVEXP-ENV-DC-127			Camera	70	619933	6096187	619930	6096179	3	8	8	-160		(Corr'd Nav, Kongsberg 14208, img#8) (B)
10-Aug-2023	10:09:14	5967	BP23MVEXP-ENV-DC-127			Camera	70	619932	6096183	619930	6096179	2	4	5	-153		(Corr'd Nav, Kongsberg 14208, img#9) (B)
10-Aug-2023	10:10:05	5968	BP23MVEXP-ENV-DC-127			Camera	70	619931	6096179	619930	6096179	1	0	1	-65		(Corr'd Nav, Kongsberg 14208, img#10) (B)
10-Aug-2023	10:11:09	5969	BP23MVEXP-ENV-DC-127			Camera	69	619929	6096172	619930	6096179	-1	-7	7	10		(Corr'd Nav, Kongsberg 14208, img#11) (B)
10-Aug-2023	10:11:29	5970	BP23MVEXP-ENV-DC-127			Camera	70	619928	6096170	619930	6096179	-2	-9	9	11		(Corr'd Nav, Kongsberg 14208, img#12) (B)
10-Aug-2023	10:12:14	5971	BP23MVEXP-ENV-DC-127			Camera	70	619927	6096166	619930	6096179	-3	-13	13	13		(Corr'd Nav, Kongsberg 14208, img#13) (B)
10-Aug-2023	10:12:27	5972	BP23MVEXP-ENV-DC-127			Camera	70	619927	6096165	619930	6096179	-3	-14	15	12		(Corr'd Nav, Kongsberg 14208, img#14) (B)
10-Aug-2023	10:13:21	5973	BP23MVEXP-ENV-DC-127				70	619926	6096159	619930	6096179	-4	-20	20	12		(Corr'd Nav, Kongsberg 14208, img#15) (B) Fix no photo
10-Aug-2023	10:13:33	5974	BP23MVEXP-ENV-DC-127			Camera	70	619925	6096159	619930	6096179	-5	-21	21	13		(Corr'd Nav, Kongsberg 14208, img#16) (B)
10-Aug-2023	10:14:00	5975	BP23MVEXP-ENV-DC-127			Camera	70	619925	6096156	619930	6096179	-5	-23	24	13		(Corr'd Nav, Kongsberg 14208, img#17) (B)
10-Aug-2023	10:14:51	5976	BP23MVEXP-ENV-DC-127			Camera	69	619923	6096150	619930	6096179	-7	-29	30	13		(Corr'd Nav, Kongsberg 14208, img#18) (B)
10-Aug-2023	10:15:42	5977	BP23MVEXP-ENV-DC-127			Camera	70	619922	6096145	619930	6096179	-8	-34	35	13		(Corr'd Nav, Kongsberg 14208, img#19) (B)
10-Aug-2023	10:16:01	5978	BP23MVEXP-ENV-DC-127			Camera	70	619922	6096143	619930	6096179	-8	-36	37	13		(Corr'd Nav, Kongsberg 14208, img#20) (B)
10-Aug-2023	10:16:19	5979	BP23MVEXP-ENV-DC-127			Camera	70	619921	6096142	619930	6096179	-9	-37	38	14		(Corr'd Nav, Kongsberg 14208, img#21) (B)
10-Aug-2023	10:16:39	5980	BP23MVEXP-ENV-DC-127			Camera	70	619920	6096139	619930	6096179	-10	-40	41	14		(Corr'd Nav, Kongsberg 14208, img#22) (B)
10-Aug-2023	10:17:55	5981	BP23MVEXP-ENV-DC-127			Camera	70	619919	6096132	619930	6096179	-11	-47	48	13		(Corr'd Nav, Kongsberg 14208, img#23) (B)
10-Aug-2023	10:31:43	5982	BP23MVEXP-ENV-DC-127			Camera	70	619883	6096190	619930	6096179	-47	11	48	103		(Corr'd Nav, Kongsberg 14208, img#24) (B)
10-Aug-2023	10:32:54	5983	BP23MVEXP-ENV-DC-127			Camera	70	619890	6096188	619930	6096179	-40	9	41	103		(Corr'd Nav, Kongsberg 14208, img#25) (B)
10-Aug-2023	10:35:07	5984	BP23MVEXP-ENV-DC-127			Camera	69	619904	6096186	619930	6096179	-26	7	27	105		(Corr'd Nav, Kongsberg 14208, img#26) (B)
10-Aug-2023	10:35:18	5985	BP23MVEXP-ENV-DC-127			Camera	70	619905	6096186	619930	6096179	-25	7	26	105		(Corr'd Nav, Kongsberg 14208, img#27) (B)
10-Aug-2023	10:36:19	5986	BP23MVEXP-ENV-DC-127			Camera	69	619912	6096184	619930	6096179	-18	5	19	106		(Corr'd Nav, Kongsberg 14208, img#28) (B)
10-Aug-2023	10:37:13	5987	BP23MVEXP-ENV-DC-127			Camera	69	619917	6096183	619930	6096179	-13	4	14	108		(Corr'd Nav, Kongsberg 14208, img#29) (B)
10-Aug-2023	10:37:58	5988	BP23MVEXP-ENV-DC-127			Camera	70	619921	6096183	619930	6096179	-9	4	9	112		(Corr'd Nav, Kongsberg 14208, img#30) (B)
10-Aug-2023	10:39:37	5989	BP23MVEXP-ENV-DC-127			Camera	70	619931	6096180	619930	6096179	1	1	2	-128		(Corr'd Nav, Kongsberg 14208, img#31) (B)
10-Aug-2023	10:39:47	5990	BP23MVEXP-ENV-DC-127			Camera	70	619932	6096180	619930	6096179	2	1	2	-108		(Corr'd Nav, Kongsberg 14208, img#32) (B)
10-Aug-2023	10:40:49	5991	BP23MVEXP-ENV-DC-127			Camera	70	619938	6096179	619930	6096179	8	0	8	-91		(Corr'd Nav, Kongsberg 14208, img#33) (B)
10-Aug-2023	10:41:09	5992	BP23MVEXP-ENV-DC-127			Camera	70	619940	6096179	619930	6096179	10	0	10	-90		(Corr'd Nav, Kongsberg 14208, img#34) (B)
10-Aug-2023	10:42:06	5993	BP23MVEXP-ENV-DC-127			Camera	70	619946	6096178	619930	6096179	16	-1	16	-86		(Corr'd Nav, Kongsberg 14208, img#35) (B)
10-Aug-2023	10:43:21	5994	BP23MVEXP-ENV-DC-127			Camera	70	619953	6096177	619930	6096179	23	-2	23	-84		(Corr'd Nav, Kongsberg 14208, img#36) (B)
10-Aug-2023	10:43:33	5995	BP23MVEXP-ENV-DC-127			Camera	70	619954	6096176	619930	6096179	24	-3	24	-84		(Corr'd Nav, Kongsberg 14208, img#37) (B)
10-Aug-2023	10:44:50	5996	BP23MVEXP-ENV-DC-127			Camera	70	619962	6096174	619930	6096179	32	-5	33	-82		(Corr'd Nav, Kongsberg 14208, img#38) (B)
10-Aug-2023	10:45:47	5997	BP23MVEXP-ENV-DC-127			Camera	71	619969	6096173	619930	6096179	39	-6	39	-81		(Corr'd Nav, Kongsberg 14208, img#39) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	10:46:31	5998	BP23MVEXP-ENV-DC-127			Camera	71	619973	6096172	619930	6096179	43	-7	43	-81		(Corr'd Nav, Kongsberg 14208, img#40) (B)
10-Aug-2023	10:46:38	5999	BP23MVEXP-ENV-DC-127			Camera	70	619973	6096172	619930	6096179	43	-7	44	-81		(Corr'd Nav, Kongsberg 14208, img#41) (B)
10-Aug-2023	10:47:49	6000	BP23MVEXP-ENV-DC-127			Camera	70	619978	6096171	619930	6096179	48	-8	49	-80		(Corr'd Nav, Kongsberg 14208, img#42) (B)
10-Aug-2023	11:48:13	6001	BP23MVEXP-ENV-DC-128			Camera	56	618878	6092320	618835	6092326	43	-6	43	-83		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	11:48:45	6002	BP23MVEXP-ENV-DC-128			Camera	56	618884	6092315	618835	6092326	49	-11	50	-78		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	11:49:45	6003	BP23MVEXP-ENV-DC-128			Camera	56	618879	6092317	618835	6092326	44	-9	45	-78		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	11:49:57	6004	BP23MVEXP-ENV-DC-128			Camera	56	618878	6092317	618835	6092326	43	-9	44	-78		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	11:50:56	6005	BP23MVEXP-ENV-DC-128			Camera	56	618871	6092318	618835	6092326	36	-8	37	-78		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	11:51:39	6006	BP23MVEXP-ENV-DC-128			Camera	56	618867	6092319	618835	6092326	32	-7	33	-77		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	11:52:44	6007	BP23MVEXP-ENV-DC-128			Camera	56	618860	6092320	618835	6092326	25	-6	26	-77		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	11:54:26	6008	BP23MVEXP-ENV-DC-128			Camera	56	618850	6092323	618835	6092326	15	-3	16	-79		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	11:54:36	6009	BP23MVEXP-ENV-DC-128			Camera	56	618849	6092323	618835	6092326	14	-3	15	-80		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	11:55:01	6010	BP23MVEXP-ENV-DC-128			Camera	56	618847	6092324	618835	6092326	12	-2	12	-79		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	11:55:26	6011	BP23MVEXP-ENV-DC-128			Camera	56	618845	6092324	618835	6092326	10	-2	10	-78		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	11:56:39	6012	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092326	618835	6092326	2	0	2	-81		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	11:56:51	6013	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092326	618835	6092326	0	0	0	-86		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	11:57:04	6014	BP23MVEXP-ENV-DC-128			Camera	56	618834	6092326	618835	6092326	-1	0	1	97		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	11:58:07	6015	BP23MVEXP-ENV-DC-128			Camera	56	618828	6092328	618835	6092326	-7	2	7	103		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	11:59:31	6016	BP23MVEXP-ENV-DC-128			Camera	56	618820	6092330	618835	6092326	-16	4	16	103		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	11:59:50	6017	BP23MVEXP-ENV-DC-128			Camera	56	618817	6092330	618835	6092326	-18	4	18	103		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	12:00:02	6018	BP23MVEXP-ENV-DC-128			Camera	56	618816	6092330	618835	6092326	-19	4	19	103		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	12:00:17	6019	BP23MVEXP-ENV-DC-128			Camera	56	618815	6092331	618835	6092326	-20	5	21	103		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	12:00:37	6020	BP23MVEXP-ENV-DC-128			Camera	56	618813	6092331	618835	6092326	-22	5	23	103		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	12:01:09	6021	BP23MVEXP-ENV-DC-128			Camera	56	618810	6092332	618835	6092326	-25	6	26	103		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	12:02:12	6022	BP23MVEXP-ENV-DC-128			Camera	56	618803	6092332	618835	6092326	-32	6	32	102		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	12:02:40	6023	BP23MVEXP-ENV-DC-128			Camera	56	618801	6092333	618835	6092326	-35	7	35	101		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	12:02:51	6024	BP23MVEXP-ENV-DC-128			Camera	56	618799	6092333	618835	6092326	-36	7	36	101		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	12:03:33	6025	BP23MVEXP-ENV-DC-128			Camera	56	618795	6092334	618835	6092326	-40	8	41	102		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	12:03:56	6026	BP23MVEXP-ENV-DC-128			Camera	56	618793	6092335	618835	6092326	-42	9	43	102		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	12:04:40	6027	BP23MVEXP-ENV-DC-128			Camera	56	618788	6092336	618835	6092326	-47	10	48	103		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	12:04:56	6028	BP23MVEXP-ENV-DC-128			Camera	56	618787	6092337	618835	6092326	-48	11	49	102		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	12:12:18	6029	BP23MVEXP-ENV-DC-128			Camera	56	618824	6092279	618835	6092326	-11	-47	48	14		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	12:12:40	6030A	BP23MVEXP-ENV-DC-128			Camera	58	618823	6092280	618835	6092326	-12	-46	48	15		(Raw Nav, Kongsberg 14208, img#30) (B)
10-Aug-2023	12:13:31	6030B	BP23MVEXP-ENV-DC-128			Camera	56	618824	6092283	618835	6092326	-11	-43	44	14		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	12:14:21	6031	BP23MVEXP-ENV-DC-128			Camera	56	618825	6092288	618835	6092326	-10	-38	39	15		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	12:15:20	6032	BP23MVEXP-ENV-DC-128			Camera	56	618826	6092294	618835	6092326	-9	-32	33	15		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	12:16:25	6033	BP23MVEXP-ENV-DC-128			Camera	56	618828	6092301	618835	6092326	-7	-25	26	16		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	12:18:13	6034	BP23MVEXP-ENV-DC-128			Camera	56	618830	6092312	618835	6092326	-5	-14	15	18		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	12:19:38	6035	BP23MVEXP-ENV-DC-128			Camera	56	618832	6092320	618835	6092326	-3	-6	7	25		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	12:20:04	6036	BP23MVEXP-ENV-DC-128			Camera	56	618833	6092323	618835	6092326	-2	-3	4	33		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	12:20:17	6037	BP23MVEXP-ENV-DC-128			Camera	56	618833	6092324	618835	6092326	-2	-2	3	41		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	12:21:12	6038	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092330	618835	6092326	0	4	4	172		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	12:21:49	6039	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092333	618835	6092326	0	7	7	-177		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	12:22:11	6040	BP23MVEXP-ENV-DC-128			Camera	56	618836	6092335	618835	6092326	1	9	10	-175		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	12:23:04	6041	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092341	618835	6092326	2	15	15	-172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	12:24:00	6042	BP23MVEXP-ENV-DC-128			Camera	56	618838	6092346	618835	6092326	3	20	20	-170		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	12:24:09	6043	BP23MVEXP-ENV-DC-128			Camera	56	618839	6092347	618835	6092326	4	21	21	-170		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	12:25:23	6044	BP23MVEXP-ENV-DC-128			Camera	56	618840	6092354	618835	6092326	5	29	29	-169		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	12:26:15	6045	BP23MVEXP-ENV-DC-128			Camera	56	618842	6092360	618835	6092326	7	34	34	-169		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	12:26:42	6046	BP23MVEXP-ENV-DC-128			Camera	56	618842	6092362	618835	6092326	7	36	37	-169		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	12:26:52	6047	BP23MVEXP-ENV-DC-128			Camera	56	618842	6092363	618835	6092326	7	37	38	-169		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	12:27:53	6048	BP23MVEXP-ENV-DC-128			Camera	56	618844	6092369	618835	6092326	9	43	44	-168		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	12:28:42	6049	BP23MVEXP-ENV-DC-128			Camera	56	618845	6092374	618835	6092326	10	48	49	-168		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	12:38:43	6050	BP23MVEXP-ENV-DC-128			Camera	56	618849	6092373	618835	6092326	14	47	49	-164		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	12:39:52	6051	BP23MVEXP-ENV-DC-128			Camera	56	618847	6092366	618835	6092326	12	40	42	-163		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	12:40:16	6052	BP23MVEXP-ENV-DC-128			Camera	56	618846	6092363	618835	6092326	11	37	39	-163		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Aug-2023	12:40:28	6053	BP23MVEXP-ENV-DC-128			Camera	56	618846	6092362	618835	6092326	11	36	38	-163		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Aug-2023	12:41:08	6054	BP23MVEXP-ENV-DC-128			Camera	56	618845	6092358	618835	6092326	10	32	34	-162		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Aug-2023	12:42:04	6055	BP23MVEXP-ENV-DC-128			Camera	56	618844	6092352	618835	6092326	9	27	28	-162		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
10-Aug-2023	12:42:13	6056	BP23MVEXP-ENV-DC-128			Camera	56	618844	6092352	618835	6092326	9	26	27	-162		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
10-Aug-2023	12:42:49	6057	BP23MVEXP-ENV-DC-128			Camera	56	618843	6092348	618835	6092326	8	22	23	-161		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
10-Aug-2023	12:43:44	6058	BP23MVEXP-ENV-DC-128			Camera	56	618841	6092343	618835	6092326	6	17	18	-159		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
10-Aug-2023	12:44:11	6059	BP23MVEXP-ENV-DC-128			Camera	56	618841	6092340	618835	6092326	6	14	15	-158		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
10-Aug-2023	12:45:01	6060	BP23MVEXP-ENV-DC-128			Camera	56	618840	6092335	618835	6092326	5	9	10	-153		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
10-Aug-2023	12:45:25	6061	BP23MVEXP-ENV-DC-128			Camera	56	618839	6092333	618835	6092326	4	7	8	-150		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
10-Aug-2023	12:46:21	6062	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092327	618835	6092326	2	1	3	-109		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
10-Aug-2023	12:46:31	6063	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092326	618835	6092326	2	0	2	-91		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
10-Aug-2023	12:47:34	6064	BP23MVEXP-ENV-DC-128			Camera	56	618836	6092320	618835	6092326	1	-6	6	-7		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
10-Aug-2023	12:48:10	6065	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092316	618835	6092326	0	-10	10	1		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
10-Aug-2023	12:48:40	6066	BP23MVEXP-ENV-DC-128			Camera	56	618834	6092313	618835	6092326	-1	-13	13	4		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
10-Aug-2023	12:48:51	6067	BP23MVEXP-ENV-DC-128			Camera	56	618834	6092312	618835	6092326	-1	-14	14	5		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
10-Aug-2023	12:49:44	6068	BP23MVEXP-ENV-DC-128			Camera	56	618832	6092307	618835	6092326	-3	-19	19	8		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
10-Aug-2023	12:50:05	6069	BP23MVEXP-ENV-DC-128			Camera	56	618832	6092305	618835	6092326	-3	-21	21	8		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
10-Aug-2023	12:50:55	6070	BP23MVEXP-ENV-DC-128			Camera	56	618830	6092299	618835	6092326	-5	-27	27	10		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
10-Aug-2023	12:51:37	6071	BP23MVEXP-ENV-DC-128			Camera	56	618830	6092295	618835	6092326	-5	-31	31	9		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
10-Aug-2023	12:52:34	6072	BP23MVEXP-ENV-DC-128			Camera	56	618829	6092290	618835	6092326	-6	-36	37	10		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
10-Aug-2023	12:52:57	6073	BP23MVEXP-ENV-DC-128			Camera	56	618828	6092288	618835	6092326	-7	-38	39	10		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
10-Aug-2023	12:53:23	6074	BP23MVEXP-ENV-DC-128			Camera	56	618827	6092285	618835	6092326	-8	-41	41	11		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
10-Aug-2023	12:54:07	6075	BP23MVEXP-ENV-DC-128			Camera	56	618826	6092280	618835	6092326	-9	-46	47	11		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
10-Aug-2023	13:51:30	6076	BP23MVEXP-ENV-DC-129			Camera	50	616350	6089453	616332	6089421	18	32	37	-150		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	13:51:40	6077	BP23MVEXP-ENV-DC-129			Camera	50	616350	6089452	616332	6089421	18	31	36	-150		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	13:51:56	6078	BP23MVEXP-ENV-DC-129			Camera	50	616349	6089451	616332	6089421	17	30	34	-150		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	13:53:07	6079	BP23MVEXP-ENV-DC-129			Camera	50	616346	6089445	616332	6089421	14	24	27	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	13:53:55	6080	BP23MVEXP-ENV-DC-129			Camera	50	616343	6089440	616332	6089421	11	19	22	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	13:54:06	6081	BP23MVEXP-ENV-DC-129			Camera	50	616343	6089439	616332	6089421	11	18	21	-149		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	13:54:56	6082	BP23MVEXP-ENV-DC-129			Camera	50	616341	6089434	616332	6089421	9	13	16	-147		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	13:55:41	6083	BP23MVEXP-ENV-DC-129			Camera	50	616339	6089431	616332	6089421	7	10	12	-146		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	13:56:24	6084	BP23MVEXP-ENV-DC-129			Camera	50	616336	6089427	616332	6089421	4	6	7	-144		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	13:57:01	6085	BP23MVEXP-ENV-DC-129			Camera	50	616334	6089424	616332	6089421	2	3	3	-144		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	13:57:28	6086	BP23MVEXP-ENV-DC-129			Camera	50	616333	6089422	616332	6089421	1	1	1	-132		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	13:57:59	6087	BP23MVEXP-ENV-DC-129			Camera	50	616332	6089419	616332	6089421	0	-2	2	11		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	13:58:21	6088	BP23MVEXP-ENV-DC-129			Camera	50	616330	6089417	616332	6089421	-2	-4	4	23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	13:58:59	6089	BP23MVEXP-ENV-DC-129			Camera	50	616328	6089413	616332	6089421	-4	-8	9	27		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	13:59:25	6090	BP23MVEXP-ENV-DC-129			Camera	50	616327	6089411	616332	6089421	-5	-10	11	27		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	13:59:56	6091	BP23MVEXP-ENV-DC-129			Camera	50	616326	6089408	616332	6089421	-6	-13	14	27		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	14:00:35	6092	BP23MVEXP-ENV-DC-129			Camera	50	616324	6089404	616332	6089421	-8	-17	18	26		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	14:01:32	6093	BP23MVEXP-ENV-DC-129			Camera	50	616321	6089399	616332	6089421	-11	-22	25	27		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	14:02:35	6094	BP23MVEXP-ENV-DC-129			Camera	50	616318	6089394	616332	6089421	-14	-28	31	27		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	14:03:35	6095	BP23MVEXP-ENV-DC-129			Camera	50	616315	6089388	616332	6089421	-17	-33	37	27		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	14:04:22	6096	BP23MVEXP-ENV-DC-129			Camera	50	616312	6089383	616332	6089421	-20	-38	43	28		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	14:05:13	6097	BP23MVEXP-ENV-DC-129			Camera	50	616310	6089379	616332	6089421	-22	-42	47	28		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	14:12:52	6098	BP23MVEXP-ENV-DC-129			Camera	50	616374	6089396	616332	6089421	42	-25	49	-59		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	14:12:59	6099	BP23MVEXP-ENV-DC-129			Camera	50	616374	6089396	616332	6089421	42	-25	49	-59		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	14:14:14	6100	BP23MVEXP-ENV-DC-129			Camera	50	616370	6089398	616332	6089421	39	-23	45	-59		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	14:14:56	6101	BP23MVEXP-ENV-DC-129			Camera	50	616366	6089400	616332	6089421	34	-21	40	-58		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	14:16:09	6102	BP23MVEXP-ENV-DC-129			Camera	50	616358	6089403	616332	6089421	26	-18	32	-56		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	14:17:01	6103	BP23MVEXP-ENV-DC-129			Camera	50	616354	6089405	616332	6089421	22	-16	27	-55		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	14:17:53	6104	BP23MVEXP-ENV-DC-129			Camera	50	616350	6089408	616332	6089421	18	-13	22	-55		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	14:18:55	6105	BP23MVEXP-ENV-DC-129				50	616345	6089412	616332	6089421	13	-9	16	-55		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A) Fix no photo
10-Aug-2023	14:19:42	6106	BP23MVEXP-ENV-DC-129			Camera	50	616341	6089414	616332	6089421	9	-7	11	-53		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	14:21:09	6107	BP23MVEXP-ENV-DC-129			Camera	50	616333	6089420	616332	6089421	1	-1	2	-29		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	14:21:45	6108	BP23MVEXP-ENV-DC-129			Camera	50	616330	6089421	616332	6089421	-2	0	2	94		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	14:23:11	6109	BP23MVEXP-ENV-DC-129			Camera	50	616322	6089425	616332	6089421	-10	5	11	114		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	14:24:47	6110	BP23MVEXP-ENV-DC-129			Camera	50	616314	6089431	616332	6089421	-18	10	21	118		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	14:25:24	6111	BP23MVEXP-ENV-DC-129			Camera	50	616310	6089432	616332	6089421	-22	11	25	117		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	14:26:23	6112	BP23MVEXP-ENV-DC-129			Camera	50	616305	6089435	616332	6089421	-27	14	31	118		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	14:27:12	6113	BP23MVEXP-ENV-DC-129			Camera	50	616301	6089437	616332	6089421	-31	16	35	118		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	14:27:59	6114	BP23MVEXP-ENV-DC-129			Camera	49	616296	6089440	616332	6089421	-36	19	40	118		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	14:28:51	6115	BP23MVEXP-ENV-DC-129			Camera	48	616292	6089443	616332	6089421	-40	22	46	118		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	14:29:38	6116	BP23MVEXP-ENV-DC-129			Camera	47	616289	6089444	616332	6089421	-43	24	49	119		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	15:20:07	6117	BP23MVEXP-ENV-DC-130			Camera	50	617511	6088637	617558	6088614	-47	23	53	116		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	15:21:40	6118	BP23MVEXP-ENV-DC-130			Camera	50	617513	6088637	617558	6088614	-45	23	50	117		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	15:21:55	6119	BP23MVEXP-ENV-DC-130			Camera	50	617514	6088636	617558	6088614	-44	22	49	117		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	15:22:35	6120	BP23MVEXP-ENV-DC-130			Camera	50	617518	6088634	617558	6088614	-40	20	45	117		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	15:23:31	6121	BP23MVEXP-ENV-DC-130			Camera	50	617524	6088632	617558	6088614	-34	18	39	118		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	15:24:08	6122	BP23MVEXP-ENV-DC-130			Camera	50	617528	6088631	617558	6088614	-30	17	35	119		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	15:24:20	6123	BP23MVEXP-ENV-DC-130			Camera	50	617529	6088630	617558	6088614	-29	16	33	119		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	15:25:20	6124	BP23MVEXP-ENV-DC-130			Camera	50	617535	6088627	617558	6088614	-24	13	27	119		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	15:25:38	6125	BP23MVEXP-ENV-DC-130			Camera	50	617536	6088626	617558	6088614	-22	12	25	119		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	15:26:23	6126	BP23MVEXP-ENV-DC-130			Camera	50	617540	6088624	617558	6088614	-18	10	20	119		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	15:26:54	6127	BP23MVEXP-ENV-DC-130			Camera	50	617543	6088623	617558	6088614	-15	9	18	120		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	15:27:17	6128	BP23MVEXP-ENV-DC-130			Camera	50	617545	6088622	617558	6088614	-13	8	16	121		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	15:28:10	6129	BP23MVEXP-ENV-DC-130			Camera	50	617550	6088620	617558	6088614	-8	6	10	124		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	15:28:24	6130	BP23MVEXP-ENV-DC-130			Camera	50	617551	6088619	617558	6088614	-7	5	9	125		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	15:28:52	6131	BP23MVEXP-ENV-DC-130			Camera	50	617554	6088618	617558	6088614	-4	4	6	130		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	15:29:01	6132	BP23MVEXP-ENV-DC-130			Camera	50	617554	6088617	617558	6088614	-4	3	5	132		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	15:29:33	6133	BP23MVEXP-ENV-DC-130			Camera	50	617557	6088616	617558	6088614	-1	2	2	161		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	15:29:52	6134	BP23MVEXP-ENV-DC-130			Camera	50	617559	6088615	617558	6088614	1	1	2	-140		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	15:29:59	6135	BP23MVEXP-ENV-DC-130			Camera	50	617560	6088615	617558	6088614	2	1	2	-123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	15:30:51	6136	BP23MVEXP-ENV-DC-130			Camera	50	617565	6088613	617558	6088614	7	-1	7	-81		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	15:31:11	6137	BP23MVEXP-ENV-DC-130			Camera	50	617566	6088612	617558	6088614	8	-2	8	-78		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	15:31:53	6138	BP23MVEXP-ENV-DC-130			Camera	50	617570	6088611	617558	6088614	12	-3	13	-75		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	15:32:50	6139	BP23MVEXP-ENV-DC-130			Camera	50	617576	6088608	617558	6088614	18	-6	19	-71		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	15:33:01	6140	BP23MVEXP-ENV-DC-130			Camera	50	617577	6088608	617558	6088614	19	-6	20	-71		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	15:34:01	6141	BP23MVEXP-ENV-DC-130			Camera	50	617582	6088605	617558	6088614	24	-9	26	-69		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	15:34:38	6142	BP23MVEXP-ENV-DC-130			Camera	50	617586	6088604	617558	6088614	28	-11	30	-69		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	15:34:51	6143	BP23MVEXP-ENV-DC-130			Camera	50	617587	6088603	617558	6088614	29	-11	31	-69		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	15:36:10	6144	BP23MVEXP-ENV-DC-130			Camera	50	617594	6088599	617558	6088614	36	-15	39	-68		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	15:37:28	6145	BP23MVEXP-ENV-DC-130			Camera	50	617603	6088597	617558	6088614	45	-17	48	-70		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	15:51:44	6146	BP23MVEXP-ENV-DC-130			Camera	50	617535	6088567	617558	6088614	-23	-47	52	27		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	15:52:43	6147	BP23MVEXP-ENV-DC-130			Camera	50	617537	6088571	617558	6088614	-21	-43	48	26		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	15:53:19	6148	BP23MVEXP-ENV-DC-130			Camera	50	617538	6088575	617558	6088614	-20	-39	44	27		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	15:53:53	6149	BP23MVEXP-ENV-DC-130			Camera	50	617540	6088578	617558	6088614	-18	-36	40	26		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	15:54:21	6150	BP23MVEXP-ENV-DC-130			Camera	50	617541	6088580	617558	6088614	-17	-34	38	26		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	15:55:14	6151	BP23MVEXP-ENV-DC-130			Camera	50	617544	6088585	617558	6088614	-15	-29	32	27		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	15:55:59	6152	BP23MVEXP-ENV-DC-130			Camera	50	617545	6088590	617558	6088614	-13	-25	27	27		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	15:56:27	6153	BP23MVEXP-ENV-DC-130			Camera	50	617547	6088592	617558	6088614	-11	-22	25	27		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	15:58:21	6154	BP23MVEXP-ENV-DC-130			Camera	50	617552	6088602	617558	6088614	-6	-12	14	28		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	15:59:34	6155	BP23MVEXP-ENV-DC-130			Camera	50	617555	6088609	617558	6088614	-3	-5	6	34		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	16:00:32	6156	BP23MVEXP-ENV-DC-130			Camera	50	617557	6088614	617558	6088614	-1	0	1	123		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	16:00:53	6157	BP23MVEXP-ENV-DC-130			Camera	50	617558	6088617	617558	6088614	0	3	3	-174		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	16:01:01	6158	BP23MVEXP-ENV-DC-130			Camera	50	617559	6088617	617558	6088614	1	3	3	-168		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	16:02:00	6159	BP23MVEXP-ENV-DC-130			Camera	50	617561	6088622	617558	6088614	3	8	9	-158		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	16:02:32	6160	BP23MVEXP-ENV-DC-130			Camera	50	617562	6088626	617558	6088614	4	12	12	-159		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	16:03:10	6161	BP23MVEXP-ENV-DC-130			Camera	50	617564	6088629	617558	6088614	6	15	16	-158		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	16:03:31	6162	BP23MVEXP-ENV-DC-130			Camera	50	617565	6088631	617558	6088614	7	17	18	-157		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	16:04:04	6163	BP23MVEXP-ENV-DC-130			Camera	50	617566	6088634	617558	6088614	8	20	22	-158		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	16:05:14	6164	BP23MVEXP-ENV-DC-130			Camera	50	617569	6088641	617558	6088614	11	27	29	-157		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	16:06:10	6165	BP23MVEXP-ENV-DC-130			Camera	50	617572	6088646	617558	6088614	14	32	35	-156		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	16:06:37	6166	BP23MVEXP-ENV-DC-130			Camera	50	617573	6088648	617558	6088614	15	34	37	-156		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	16:07:20	6167	BP23MVEXP-ENV-DC-130			Camera	50	617575	6088652	617558	6088614	17	38	42	-156		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	16:08:01	6168	BP23MVEXP-ENV-DC-130			Camera	50	617576	6088656	617558	6088614	18	42	46	-156		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	16:47:47	6169	BP23MVEXP-ENV-DC-063			Camera	48	617551	6086790	617596	6086808	-45	-18	48	69		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	16:48:20	6170	BP23MVEXP-ENV-DC-063			Camera	48	617550	6086790	617596	6086808	-46	-18	49	68		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	16:49:08	6171	BP23MVEXP-ENV-DC-063			Camera	48	617552	6086790	617596	6086808	-44	-18	48	68		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	16:49:34	6172	BP23MVEXP-ENV-DC-063			Camera	48	617553	6086791	617596	6086808	-43	-17	46	68		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	16:49:42	6173	BP23MVEXP-ENV-DC-063			Camera	48	617554	6086792	617596	6086808	-42	-16	45	69		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	16:50:21	6174	BP23MVEXP-ENV-DC-063			Camera	48	617558	6086794	617596	6086808	-38	-14	41	69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	16:51:04	6175	BP23MVEXP-ENV-DC-063			Camera	48	617562	6086795	617596	6086808	-34	-13	36	69		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	16:51:31	6176	BP23MVEXP-ENV-DC-063			Camera	48	617564	6086796	617596	6086808	-32	-12	34	70		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	16:53:02	6177	BP23MVEXP-ENV-DC-063			Camera	48	617573	6086800	617596	6086808	-24	-8	25	71		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	16:53:12	6178	BP23MVEXP-ENV-DC-063			Camera	48	617573	6086800	617596	6086808	-23	-8	24	71		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	16:54:10	6179	BP23MVEXP-ENV-DC-063			Camera	48	617579	6086803	617596	6086808	-17	-5	18	74		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	16:55:41	6180	BP23MVEXP-ENV-DC-063			Camera	48	617588	6086807	617596	6086808	-8	-1	9	80		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	16:56:21	6181	BP23MVEXP-ENV-DC-063			Camera	48	617592	6086808	617596	6086808	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	16:56:38	6182	BP23MVEXP-ENV-DC-063			Camera	48	617593	6086808	617596	6086808	-3	0	3	99		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	16:56:58	6183	BP23MVEXP-ENV-DC-063			Camera	48	617595	6086809	617596	6086808	-1	1	2	133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	16:57:09	6184	BP23MVEXP-ENV-DC-063			Camera	48	617596	6086810	617596	6086808	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	16:57:55	6185	BP23MVEXP-ENV-DC-063			Camera	48	617600	6086812	617596	6086808	4	4	6	-141		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	16:58:22	6186	BP23MVEXP-ENV-DC-063			Camera	48	617602	6086814	617596	6086808	6	6	9	-132		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	16:59:26	6187	BP23MVEXP-ENV-DC-063			Camera	48	617609	6086816	617596	6086808	13	8	15	-123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	17:00:31	6188	BP23MVEXP-ENV-DC-063			Camera	48	617614	6086818	617596	6086808	18	10	21	-120		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	17:01:04	6189	BP23MVEXP-ENV-DC-063			Camera	48	617618	6086820	617596	6086808	22	12	25	-119		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	17:01:24	6190	BP23MVEXP-ENV-DC-063			Camera	48	617619	6086821	617596	6086808	23	13	27	-119		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	17:02:09	6191	BP23MVEXP-ENV-DC-063			Camera	48	617623	6086823	617596	6086808	27	15	31	-119		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	17:03:21	6192	BP23MVEXP-ENV-DC-063			Camera	48	617631	6086826	617596	6086808	35	19	40	-118		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	17:04:04	6193	BP23MVEXP-ENV-DC-063			Camera	48	617636	6086828	617596	6086808	40	20	44	-117		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	17:04:47	6194	BP23MVEXP-ENV-DC-063			Camera	48	617641	6086830	617596	6086808	45	22	50	-116		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	17:21:21	6195	BP23MVEXP-ENV-DC-063			Camera	36	617572	6086855	617596	6086808	-24	47	52	153		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	17:21:41	6196	BP23MVEXP-ENV-DC-063			Camera	36	617573	6086854	617596	6086808	-24	46	51	153		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	17:22:33	6197	BP23MVEXP-ENV-DC-063			Camera	35	617575	6086850	617596	6086808	-21	42	47	153		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	17:22:45	6198	BP23MVEXP-ENV-DC-063			Camera	34	617575	6086849	617596	6086808	-21	41	45	153		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	17:23:09	6199	BP23MVEXP-ENV-DC-063			Camera	34	617577	6086847	617596	6086808	-19	39	43	154		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	17:24:04	6200	BP23MVEXP-ENV-DC-063			Camera	32	617580	6086840	617596	6086808	-16	32	36	153		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	17:24:52	6201	BP23MVEXP-ENV-DC-063			Camera	31	617582	6086835	617596	6086808	-14	27	31	153		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	17:25:47	6202	BP23MVEXP-ENV-DC-063			Camera	30	617584	6086832	617596	6086808	-13	24	27	152		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	17:26:01	6203	BP23MVEXP-ENV-DC-063			Camera	30	617584	6086831	617596	6086808	-12	23	26	152		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	17:26:28	6204	BP23MVEXP-ENV-DC-063			Camera	29	617585	6086828	617596	6086808	-11	20	23	152		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	17:26:44	6205	BP23MVEXP-ENV-DC-063			Camera	29	617586	6086826	617596	6086808	-10	18	21	151		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	17:27:37	6206	BP23MVEXP-ENV-DC-063			Camera	27	617588	6086821	617596	6086808	-8	13	15	146		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	17:28:38	6207	BP23MVEXP-ENV-DC-063			Camera	26	617592	6086815	617596	6086808	-4	7	8	150		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	17:29:33	6208	BP23MVEXP-ENV-DC-063			Camera	24	617594	6086811	617596	6086808	-2	3	4	154		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	17:30:41	6209	BP23MVEXP-ENV-DC-063			Camera	23	617597	6086805	617596	6086808	1	-3	3	-16		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	17:31:14	6210	BP23MVEXP-ENV-DC-063			Camera	22	617599	6086801	617596	6086808	3	-7	7	-23		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	17:31:57	6211	BP23MVEXP-ENV-DC-063			Camera	21	617601	6086797	617596	6086808	5	-11	12	-25		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	17:32:21	6212	BP23MVEXP-ENV-DC-063			Camera	20	617601	6086795	617596	6086808	5	-13	14	-24		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	17:32:35	6213	BP23MVEXP-ENV-DC-063			Camera	20	617603	6086794	617596	6086808	7	-14	15	-26		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	17:33:00	6214	BP23MVEXP-ENV-DC-063			Camera	19	617603	6086793	617596	6086808	7	-15	17	-26		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	17:34:12	6215	BP23MVEXP-ENV-DC-063			Camera	17	617608	6086785	617596	6086808	12	-23	25	-27		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	17:34:28	6216	BP23MVEXP-ENV-DC-063			Camera	17	617608	6086784	617596	6086808	12	-24	27	-27		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	17:34:52	6217	BP23MVEXP-ENV-DC-063			Camera	17	617609	6086782	617596	6086808	13	-26	29	-27		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	17:36:01	6218	BP23MVEXP-ENV-DC-063			Camera	15	617613	6086775	617596	6086808	17	-33	37	-27		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	17:36:48	6219	BP23MVEXP-ENV-DC-063			Camera	14	617615	6086770	617596	6086808	19	-38	42	-27		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	17:37:09	6220	BP23MVEXP-ENV-DC-063			Camera	13	617616	6086769	617596	6086808	20	-39	44	-27		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	17:37:47	6221	BP23MVEXP-ENV-DC-063			Camera	12	617618	6086765	617596	6086808	22	-43	48	-27		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Aug-2023	18:36:56	6222	BP23MVEXP-ENV-DC-061			Camera	58	621193	6088412	621239	6088432	-46	-20	51	67		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	18:38:46	6223	BP23MVEXP-ENV-DC-061			Camera	58	621195	6088414	621239	6088432	-44	-18	48	68		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	18:39:29	6224	BP23MVEXP-ENV-DC-061			Camera	58	621199	6088417	621239	6088432	-40	-15	43	69		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	18:39:55	6225	BP23MVEXP-ENV-DC-061			Camera	58	621202	6088418	621239	6088432	-37	-14	39	69		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	18:40:38	6226	BP23MVEXP-ENV-DC-061			Camera	58	621206	6088420	621239	6088432	-33	-13	35	69		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	18:41:22	6227	BP23MVEXP-ENV-DC-061			Camera	58	621210	6088421	621239	6088432	-29	-11	31	69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	18:42:20	6228	BP23MVEXP-ENV-DC-061			Camera	58	621216	6088424	621239	6088432	-23	-8	25	71		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	18:43:17	6229	BP23MVEXP-ENV-DC-061			Camera	58	621221	6088426	621239	6088432	-18	-6	19	72		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	18:43:39	6230	BP23MVEXP-ENV-DC-061			Camera	58	621223	6088427	621239	6088432	-16	-5	17	74		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	18:44:21	6231	BP23MVEXP-ENV-DC-061			Camera	58	621227	6088429	621239	6088432	-12	-3	13	76		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	18:44:46	6232	BP23MVEXP-ENV-DC-061			Camera	58	621229	6088430	621239	6088432	-10	-2	10	79		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	18:45:32	6233	BP23MVEXP-ENV-DC-061			Camera	58	621233	6088432	621239	6088432	-6	0	6	90		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	18:46:01	6234	BP23MVEXP-ENV-DC-061			Camera	58	621236	6088434	621239	6088432	-3	2	4	116		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	18:46:11	6235	BP23MVEXP-ENV-DC-061			Camera	58	621237	6088434	621239	6088432	-2	2	3	129		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	18:46:46	6236	BP23MVEXP-ENV-DC-061			Camera	58	621240	6088436	621239	6088432	1	4	4	-167		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	18:47:01	6237	BP23MVEXP-ENV-DC-061			Camera	58	621241	6088436	621239	6088432	2	4	5	-152		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	18:47:27	6238	BP23MVEXP-ENV-DC-061			Camera	58	621244	6088438	621239	6088432	5	6	7	-138		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	18:47:38	6239	BP23MVEXP-ENV-DC-061			Camera	58	621245	6088438	621239	6088432	6	6	8	-134		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	18:47:51	6240	BP23MVEXP-ENV-DC-061			Camera	58	621246	6088438	621239	6088432	7	6	10	-131		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	18:48:30	6241	BP23MVEXP-ENV-DC-061			Camera	58	621250	6088440	621239	6088432	11	8	13	-128		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	18:49:29	6242	BP23MVEXP-ENV-DC-061				58	621256	6088443	621239	6088432	17	11	20	-123		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A) Fix no photo
10-Aug-2023	18:49:52	6243	BP23MVEXP-ENV-DC-061			Camera	58	621258	6088444	621239	6088432	19	12	22	-122		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	18:50:54	6244	BP23MVEXP-ENV-DC-061			Camera	58	621264	6088447	621239	6088432	25	15	29	-121		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	18:51:07	6245	BP23MVEXP-ENV-DC-061			Camera	58	621265	6088447	621239	6088432	26	15	30	-120		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	18:51:31	6246	BP23MVEXP-ENV-DC-061			Camera	58	621267	6088448	621239	6088432	28	16	33	-120		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	18:51:39	6247	BP23MVEXP-ENV-DC-061			Camera	58	621268	6088449	621239	6088432	29	17	33	-120		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	18:52:21	6248	BP23MVEXP-ENV-DC-061			Camera	58	621272	6088450	621239	6088432	33	18	37	-119		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	18:53:14	6249	BP23MVEXP-ENV-DC-061			Camera	58	621277	6088453	621239	6088432	38	21	43	-119		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	18:53:52	6250	BP23MVEXP-ENV-DC-061			Camera	58	621281	6088455	621239	6088432	42	23	48	-119		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	18:57:06	6251	BP23MVEXP-ENV-DC-061			Camera	58	621274	6088457	621239	6088432	35	25	44	-126		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	19:08:20	6252	BP23MVEXP-ENV-DC-061			Camera	58	621217	6088475	621239	6088432	-22	43	49	153		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	19:09:13	6253	BP23MVEXP-ENV-DC-061			Camera	58	621219	6088470	621239	6088432	-20	38	43	152		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	19:09:27	6254	BP23MVEXP-ENV-DC-061			Camera	58	621219	6088469	621239	6088432	-20	37	42	152		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	19:10:24	6255	BP23MVEXP-ENV-DC-061			Camera	58	621223	6088464	621239	6088432	-16	32	36	153		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	19:11:26	6256	BP23MVEXP-ENV-DC-061			Camera	58	621226	6088458	621239	6088432	-13	26	30	153		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	19:12:09	6257	BP23MVEXP-ENV-DC-061			Camera	58	621228	6088454	621239	6088432	-11	22	25	153		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	19:12:49	6258	BP23MVEXP-ENV-DC-061			Camera	58	621229	6088451	621239	6088432	-10	19	21	152		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	19:13:51	6259	BP23MVEXP-ENV-DC-061			Camera	58	621232	6088445	621239	6088432	-7	13	14	151		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	19:15:42	6260	BP23MVEXP-ENV-DC-061			Camera	58	621237	6088435	621239	6088432	-2	3	3	140		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	19:16:14	6261	BP23MVEXP-ENV-DC-061			Camera	58	621238	6088432	621239	6088432	-1	0	1	55		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	19:18:17	6262	BP23MVEXP-ENV-DC-061			Camera	58	621243	6088420	621239	6088432	4	-12	12	-20		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	19:19:55	6263	BP23MVEXP-ENV-DC-061			Camera	58	621248	6088411	621239	6088432	9	-21	23	-24		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	19:20:57	6264	BP23MVEXP-ENV-DC-061			Camera	58	621251	6088405	621239	6088432	12	-27	29	-25		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	19:21:46	6265	BP23MVEXP-ENV-DC-061			Camera	58	621253	6088401	621239	6088432	14	-31	34	-25		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	19:22:29	6266	BP23MVEXP-ENV-DC-061			Camera	58	621255	6088397	621239	6088432	16	-35	39	-24		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	19:22:49	6267	BP23MVEXP-ENV-DC-061			Camera	58	621256	6088395	621239	6088432	17	-37	40	-24		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	19:23:07	6268	BP23MVEXP-ENV-DC-061			Camera	58	621256	6088394	621239	6088432	18	-38	42	-24		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	19:23:18	6269	BP23MVEXP-ENV-DC-061			Camera	58	621257	6088392	621239	6088432	18	-40	44	-24		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	19:23:37	6270	BP23MVEXP-ENV-DC-061			Camera	58	621258	6088391	621239	6088432	19	-41	45	-25		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	19:23:51	6271	BP23MVEXP-ENV-DC-061			Camera	58	621258	6088389	621239	6088432	19	-43	47	-24		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	20:27:09	6272	BP23MVEXP-ENV-DC-059			Camera	73	624843	6090039	624889	6090061	-46	-22	51	64		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	20:28:38	6273	BP23MVEXP-ENV-DC-059			Camera	73	624845	6090039	624889	6090061	-44	-22	49	64		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	20:28:57	6274	BP23MVEXP-ENV-DC-059			Camera	73	624846	6090040	624889	6090061	-43	-22	48	63		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	20:29:29	6275	BP23MVEXP-ENV-DC-059			Camera	73	624849	6090041	624889	6090061	-40	-20	44	63		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	20:29:59	6276	BP23MVEXP-ENV-DC-059			Camera	73	624852	6090042	624889	6090061	-37	-19	41	63		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	20:30:32	6277	BP23MVEXP-ENV-DC-059			Camera	73	624855	6090044	624889	6090061	-34	-18	38	63		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	20:30:44	6278	BP23MVEXP-ENV-DC-059			Camera	73	624856	6090044	624889	6090061	-33	-17	37	63		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	20:31:17	6279	BP23MVEXP-ENV-DC-059			Camera	73	624859	6090045	624889	6090061	-30	-16	34	62		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	20:31:45	6280	BP23MVEXP-ENV-DC-059			Camera	73	624862	6090047	624889	6090061	-28	-14	31	63		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	20:32:23	6281	BP23MVEXP-ENV-DC-059			Camera	73	624865	6090049	624889	6090061	-24	-12	26	63		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	20:32:55	6282	BP23MVEXP-ENV-DC-059			Camera	73	624869	6090051	624889	6090061	-20	-10	23	63		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	20:34:15	6283	BP23MVEXP-ENV-DC-059			Camera	73	624876	6090055	624889	6090061	-13	-6	15	65		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	20:35:05	6284	BP23MVEXP-ENV-DC-059			Camera	73	624881	6090057	624889	6090061	-8	-4	9	63		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	20:35:29	6285	BP23MVEXP-ENV-DC-059			Camera	73	624883	6090058	624889	6090061	-6	-3	7	63		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	20:35:49	6286	BP23MVEXP-ENV-DC-059			Camera	73	624885	6090059	624889	6090061	-4	-2	5	59		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	20:35:59	6287	BP23MVEXP-ENV-DC-059			Camera	74	624886	6090059	624889	6090061	-3	-2	4	59		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	20:36:17	6288	BP23MVEXP-ENV-DC-059			Camera	74	624888	6090060	624889	6090061	-1	-1	2	52		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	20:36:53	6289	BP23MVEXP-ENV-DC-059			Camera	74	624891	6090061	624889	6090061	2	0	2	-100		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	20:37:44	6290	BP23MVEXP-ENV-DC-059			Camera	74	624896	6090063	624889	6090061	7	2	7	-104		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	20:39:08	6291	BP23MVEXP-ENV-DC-059			Camera	74	624902	6090066	624889	6090061	13	5	14	-111		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	20:39:23	6292	BP23MVEXP-ENV-DC-059			Camera	74	624904	6090067	624889	6090061	15	6	16	-111		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	20:40:42	6293	BP23MVEXP-ENV-DC-059			Camera	74	624912	6090071	624889	6090061	23	10	25	-114		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	20:41:41	6294	BP23MVEXP-ENV-DC-059			Camera	74	624917	6090074	624889	6090061	29	13	31	-115		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	20:42:50	6295	BP23MVEXP-ENV-DC-059			Camera	74	624924	6090077	624889	6090061	35	16	39	-114		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	20:43:59	6296	BP23MVEXP-ENV-DC-059			Camera	74	624930	6090079	624889	6090061	41	19	45	-114		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	20:58:35	6297	BP23MVEXP-ENV-DC-059			Camera	73	624912	6090012	624889	6090061	23	-49	54	-25		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	20:59:15	6298	BP23MVEXP-ENV-DC-059			Camera	73	624911	6090014	624889	6090061	22	-47	52	-25		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	21:00:14	6299	BP23MVEXP-ENV-DC-059			Camera	73	624910	6090018	624889	6090061	21	-43	47	-26		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	21:00:55	6300	BP23MVEXP-ENV-DC-059			Camera	73	624908	6090022	624889	6090061	19	-39	43	-26		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	21:01:55	6301	BP23MVEXP-ENV-DC-059			Camera	73	624905	6090029	624889	6090061	16	-33	36	-27		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	21:02:20	6302	BP23MVEXP-ENV-DC-059			Camera	73	624904	6090031	624889	6090061	15	-30	33	-27		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	21:02:49	6303	BP23MVEXP-ENV-DC-059			Camera	73	624903	6090034	624889	6090061	14	-27	30	-28		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	21:03:04	6304	BP23MVEXP-ENV-DC-059			Camera	73	624902	6090036	624889	6090061	13	-26	29	-27		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	21:03:38	6305	BP23MVEXP-ENV-DC-059			Camera	73	624901	6090039	624889	6090061	12	-22	25	-27		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	21:04:34	6306	BP23MVEXP-ENV-DC-059			Camera	73	624898	6090045	624889	6090061	9	-16	19	-28		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	21:05:16	6307	BP23MVEXP-ENV-DC-059			Camera	73	624896	6090049	624889	6090061	7	-12	14	-30		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	21:06:01	6308	BP23MVEXP-ENV-DC-059			Camera	73	624894	6090053	624889	6090061	5	-8	9	-31		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	21:06:27	6309	BP23MVEXP-ENV-DC-059			Camera	73	624893	6090055	624889	6090061	4	-6	7	-34		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	21:06:53	6310	BP23MVEXP-ENV-DC-059			Camera	73	624891	6090057	624889	6090061	2	-4	4	-32		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	21:07:18	6311	BP23MVEXP-ENV-DC-059			Camera	73	624890	6090060	624889	6090061	1	-1	2	-41		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	21:07:47	6312	BP23MVEXP-ENV-DC-059			Camera	73	624890	6090062	624889	6090061	1	1	1	-154		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	21:08:11	6313	BP23MVEXP-ENV-DC-059			Camera	73	624889	6090065	624889	6090061	0	4	4	172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	21:08:55	6314	BP23MVEXP-ENV-DC-059			Camera	73	624887	6090068	624889	6090061	-2	7	8	163		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	21:09:41	6315	BP23MVEXP-ENV-DC-059			Camera	73	624885	6090073	624889	6090061	-4	12	13	160		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	21:09:59	6316	BP23MVEXP-ENV-DC-059			Camera	73	624884	6090075	624889	6090061	-5	14	15	159		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	21:10:33	6317	BP23MVEXP-ENV-DC-059			Camera	73	624882	6090078	624889	6090061	-7	17	19	157		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	21:10:47	6318	BP23MVEXP-ENV-DC-059			Camera	73	624881	6090079	624889	6090061	-8	18	20	158		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	21:11:45	6319	BP23MVEXP-ENV-DC-059			Camera	73	624879	6090085	624889	6090061	-11	24	26	156		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	21:12:11	6320	BP23MVEXP-ENV-DC-059			Camera	73	624877	6090087	624889	6090061	-12	26	29	156		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	21:12:38	6321	BP23MVEXP-ENV-DC-059			Camera	73	624876	6090090	624889	6090061	-13	29	32	155		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	21:13:28	6322	BP23MVEXP-ENV-DC-059			Camera	74	624874	6090094	624889	6090061	-15	33	36	156		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	21:14:04	6323	BP23MVEXP-ENV-DC-059			Camera	73	624873	6090097	624889	6090061	-16	36	40	156		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	21:14:20	6324	BP23MVEXP-ENV-DC-059			Camera	73	624872	6090098	624889	6090061	-17	37	41	155		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Aug-2023	21:14:50	6325	BP23MVEXP-ENV-DC-059			Camera	74	624871	6090101	624889	6090061	-18	40	44	156		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Aug-2023	22:32:52	6326	BP23MVEXP-ENV-DC-062				58	622756	6085919	622796	6085952	-40	-34	52	50		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A) Fix no photo
10-Aug-2023	22:33:03	6327	BP23MVEXP-ENV-DC-062			Camera	58	622756	6085918	622796	6085952	-40	-34	52	50		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	22:34:43	6328	BP23MVEXP-ENV-DC-062			Camera	58	622758	6085919	622796	6085952	-38	-33	50	49		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	22:35:39	6329	BP23MVEXP-ENV-DC-062			Camera	58	622762	6085922	622796	6085952	-34	-30	45	48		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	22:36:32	6330	BP23MVEXP-ENV-DC-062			Camera	58	622767	6085926	622796	6085952	-29	-26	39	48		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	22:37:00	6331	BP23MVEXP-ENV-DC-062			Camera	58	622769	6085928	622796	6085952	-27	-24	36	48		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	22:37:20	6332	BP23MVEXP-ENV-DC-062			Camera	58	622771	6085929	622796	6085952	-25	-23	34	47		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	22:38:01	6333	BP23MVEXP-ENV-DC-062			Camera	58	622774	6085932	622796	6085952	-22	-21	30	47		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	22:39:11	6334	BP23MVEXP-ENV-DC-062			Camera	58	622780	6085937	622796	6085952	-16	-16	23	47		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	22:39:48	6335	BP23MVEXP-ENV-DC-062			Camera	58	622783	6085939	622796	6085952	-13	-13	19	45		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	22:40:28	6336	BP23MVEXP-ENV-DC-062			Camera	58	622785	6085941	622796	6085952	-11	-11	15	44		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	22:40:55	6337	BP23MVEXP-ENV-DC-062			Camera	58	622788	6085943	622796	6085952	-8	-9	12	41		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	22:41:28	6338	BP23MVEXP-ENV-DC-062			Camera	58	622790	6085945	622796	6085952	-6	-7	9	39		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	22:41:49	6339	BP23MVEXP-ENV-DC-062			Camera	58	622792	6085946	622796	6085952	-4	-6	7	36		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	22:42:12	6340	BP23MVEXP-ENV-DC-062			Camera	58	622794	6085948	622796	6085952	-2	-4	5	29		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	22:42:21	6341	BP23MVEXP-ENV-DC-062			Camera	58	622794	6085948	622796	6085952	-2	-4	4	25		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	22:42:44	6342	BP23MVEXP-ENV-DC-062			Camera	58	622796	6085950	622796	6085952	0	-2	2	-4		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	22:43:04	6343	BP23MVEXP-ENV-DC-062			Camera	58	622798	6085952	622796	6085952	2	-1	2	-75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	22:43:36	6344	BP23MVEXP-ENV-DC-062			Camera	58	622800	6085954	622796	6085952	4	2	5	-111		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	22:44:28	6345	BP23MVEXP-ENV-DC-062			Camera	58	622804	6085957	622796	6085952	8	5	10	-123		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	22:45:04	6346	BP23MVEXP-ENV-DC-062			Camera	58	622807	6085960	622796	6085952	11	8	14	-124		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	22:45:26	6347	BP23MVEXP-ENV-DC-062			Camera	58	622809	6085961	622796	6085952	13	9	16	-124		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	22:46:00	6348	BP23MVEXP-ENV-DC-062			Camera	58	622811	6085963	622796	6085952	15	11	19	-126		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	22:46:16	6349	BP23MVEXP-ENV-DC-062			Camera	58	622813	6085965	622796	6085952	17	13	21	-127		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	22:47:01	6350	BP23MVEXP-ENV-DC-062			Camera	58	622816	6085967	622796	6085952	20	15	25	-127		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	22:47:55	6351	BP23MVEXP-ENV-DC-062			Camera	58	622821	6085971	622796	6085952	25	19	31	-127		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	22:48:08	6352	BP23MVEXP-ENV-DC-062			Camera	58	622822	6085972	622796	6085952	26	20	33	-128		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	22:48:40	6353	BP23MVEXP-ENV-DC-062			Camera	58	622824	6085974	622796	6085952	28	22	36	-128		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	22:48:56	6354	BP23MVEXP-ENV-DC-062			Camera	58	622825	6085975	622796	6085952	29	23	37	-128		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	22:49:22	6355	BP23MVEXP-ENV-DC-062			Camera	58	622827	6085977	622796	6085952	31	25	40	-129		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	22:49:47	6356	BP23MVEXP-ENV-DC-062			Camera	58	622829	6085979	622796	6085952	33	27	43	-129		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	22:50:09	6357	BP23MVEXP-ENV-DC-062			Camera	58	622831	6085980	622796	6085952	35	29	45	-129		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	23:00:11	6358	BP23MVEXP-ENV-DC-062			Camera	58	622765	6085984	622796	6085952	-31	32	45	135		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	23:01:08	6359	BP23MVEXP-ENV-DC-062			Camera	58	622770	6085980	622796	6085952	-26	28	38	136		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	23:02:08	6360	BP23MVEXP-ENV-DC-062			Camera	58	622775	6085975	622796	6085952	-21	23	31	138		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	23:02:59	6361	BP23MVEXP-ENV-DC-062			Camera	58	622779	6085971	622796	6085952	-17	20	26	139		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	23:03:10	6362	BP23MVEXP-ENV-DC-062			Camera	58	622780	6085971	622796	6085952	-16	19	25	139		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	23:03:36	6363	BP23MVEXP-ENV-DC-062			Camera	58	622781	6085969	622796	6085952	-15	17	22	139		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	23:04:33	6364	BP23MVEXP-ENV-DC-062			Camera	58	622786	6085964	622796	6085952	-11	12	16	140		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	23:04:45	6365	BP23MVEXP-ENV-DC-062			Camera	58	622786	6085964	622796	6085952	-10	12	15	140		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	23:05:44	6366	BP23MVEXP-ENV-DC-062			Camera	58	622790	6085959	622796	6085952	-6	7	9	142		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	23:06:02	6367	BP23MVEXP-ENV-DC-062			Camera	58	622791	6085958	622796	6085952	-5	6	8	144		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	23:06:31	6368	BP23MVEXP-ENV-DC-062			Camera	58	622794	6085956	622796	6085952	-2	4	5	151		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	23:07:25	6369	BP23MVEXP-ENV-DC-062			Camera	58	622797	6085953	622796	6085952	1	1	1	-117		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	23:08:38	6370	BP23MVEXP-ENV-DC-062			Camera	58	622803	6085947	622796	6085952	7	-5	8	-52		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	23:10:11	6371	BP23MVEXP-ENV-DC-062			Camera	58	622809	6085940	622796	6085952	13	-12	18	-48		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	23:12:05	6372	BP23MVEXP-ENV-DC-062			Camera	58	622817	6085931	622796	6085952	21	-21	29	-46		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	23:13:00	6373	BP23MVEXP-ENV-DC-062			Camera	58	622821	6085928	622796	6085952	25	-24	34	-46		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	23:13:31	6374	BP23MVEXP-ENV-DC-062			Camera	58	622823	6085926	622796	6085952	27	-26	38	-46		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	23:14:07	6375	BP23MVEXP-ENV-DC-062			Camera	58	622825	6085923	622796	6085952	30	-29	41	-46		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	23:15:15	6376	BP23MVEXP-ENV-DC-062			Camera	58	622829	6085918	622796	6085952	33	-34	48	-44		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	23:15:29	6377	BP23MVEXP-ENV-DC-062			Camera	58	622829	6085917	622796	6085952	33	-35	49	-43		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	23:17:06	6378	BP23MVEXP-ENV-DC-062				58	622830	6085911	622796	6085952	34	-41	53	-40		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A) Fix no photo
10-Aug-2023	23:17:10	6379	BP23MVEXP-ENV-DC-062			Camera	58	622831	6085911	622796	6085952	35	-41	53	-40		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Aug-2023	23:17:43	6380	BP23MVEXP-ENV-DC-062			Camera	58	622831	6085910	622796	6085952	36	-42	55	-41		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Aug-2023	23:17:50	6381	BP23MVEXP-ENV-DC-062			Camera	58	622832	6085911	622796	6085952	36	-41	55	-41		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	00:19:55	6382	BP23MVEXP-ENV-DC-064			Camera	49	619776	6083456	619737	6083425	39	31	49	-128		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	00:20:40	6383	BP23MVEXP-ENV-DC-064			Camera	49	619776	6083456	619737	6083425	39	31	50	-128		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	00:21:31	6384	BP23MVEXP-ENV-DC-064			Camera	49	619775	6083455	619737	6083425	38	30	48	-129		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	00:22:11	6385	BP23MVEXP-ENV-DC-064			Camera	49	619772	6083453	619737	6083425	35	28	45	-128		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	00:22:41	6386	BP23MVEXP-ENV-DC-064			Camera	49	619770	6083450	619737	6083425	33	25	41	-128		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	00:23:05	6387	BP23MVEXP-ENV-DC-064			Camera	49	619767	6083448	619737	6083425	30	23	38	-127		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	00:24:46	6388	BP23MVEXP-ENV-DC-064			Camera	49	619758	6083440	619737	6083425	21	15	26	-125		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	00:26:40	6389	BP23MVEXP-ENV-DC-064			Camera	49	619752	6083434	619737	6083425	15	9	18	-122		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	00:27:54	6390	BP23MVEXP-ENV-DC-064			Camera	49	619746	6083429	619737	6083425	9	4	10	-116		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	00:28:59	6391	BP23MVEXP-ENV-DC-064			Camera	49	619741	6083425	619737	6083425	4	0	4	-83		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	00:29:46	6392	BP23MVEXP-ENV-DC-064			Camera	49	619737	6083422	619737	6083425	0	-3	3	2		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	00:31:56	6393	BP23MVEXP-ENV-DC-064			Camera	48	619727	6083413	619737	6083425	-10	-12	16	42		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	00:33:05	6394	BP23MVEXP-ENV-DC-064			Camera	48	619721	6083408	619737	6083425	-16	-17	23	45		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	00:33:33	6395	BP23MVEXP-ENV-DC-064			Camera	48	619718	6083407	619737	6083425	-19	-18	26	46		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	00:34:20	6396	BP23MVEXP-ENV-DC-064			Camera	48	619715	6083404	619737	6083425	-22	-21	30	48		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	00:35:27	6397	BP23MVEXP-ENV-DC-064			Camera	48	619709	6083400	619737	6083425	-28	-25	37	48		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	00:36:22	6398	BP23MVEXP-ENV-DC-064			Camera	48	619705	6083397	619737	6083425	-32	-28	42	49		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	00:36:34	6399	BP23MVEXP-ENV-DC-064			Camera	48	619704	6083397	619737	6083425	-33	-28	43	49		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	00:36:45	6400	BP23MVEXP-ENV-DC-064			Camera	48	619703	6083396	619737	6083425	-34	-29	45	49		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	00:37:02	6401	BP23MVEXP-ENV-DC-064			Camera	48	619701	6083395	619737	6083425	-36	-30	47	49		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	00:37:37	6402	BP23MVEXP-ENV-DC-064			Camera	48	619699	6083392	619737	6083425	-38	-33	50	49		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	00:37:54	6403	BP23MVEXP-ENV-DC-064			Camera	48	619698	6083392	619737	6083425	-39	-33	51	49		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	00:51:36	6404	BP23MVEXP-ENV-DC-064			Camera	49	619763	6083390	619737	6083425	27	-35	44	-37		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	00:52:18	6405	BP23MVEXP-ENV-DC-064			Camera	49	619760	6083393	619737	6083425	23	-32	39	-36		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	00:52:35	6406	BP23MVEXP-ENV-DC-064			Camera	49	619759	6083394	619737	6083425	22	-31	38	-35		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	00:52:57	6407	BP23MVEXP-ENV-DC-064			Camera	48	619757	6083396	619737	6083425	20	-29	35	-35		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	00:53:15	6408	BP23MVEXP-ENV-DC-064			Camera	48	619756	6083397	619737	6083425	19	-28	34	-34		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	00:53:55	6409	BP23MVEXP-ENV-DC-064			Camera	48	619753	6083400	619737	6083425	16	-25	30	-32		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	00:54:34	6410	BP23MVEXP-ENV-DC-064			Camera	48	619750	6083403	619737	6083425	13	-22	26	-30		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	00:54:47	6411	BP23MVEXP-ENV-DC-064			Camera	48	619749	6083404	619737	6083425	12	-21	24	-31		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	00:55:37	6412	BP23MVEXP-ENV-DC-064			Camera	48	619746	6083409	619737	6083425	9	-16	19	-29		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	00:56:39	6413	BP23MVEXP-ENV-DC-064			Camera	49	619743	6083414	619737	6083425	6	-11	12	-26		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	00:56:47	6414	BP23MVEXP-ENV-DC-064			Camera	49	619742	6083415	619737	6083425	5	-10	12	-25		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	00:57:10	6415	BP23MVEXP-ENV-DC-064			Camera	48	619741	6083416	619737	6083425	4	-9	9	-23		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	00:58:02	6416	BP23MVEXP-ENV-DC-064			Camera	49	619737	6083421	619737	6083425	0	-4	4	-1		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	00:59:24	6417	BP23MVEXP-ENV-DC-064			Camera	49	619732	6083427	619737	6083425	-5	2	6	115		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	00:59:48	6418	BP23MVEXP-ENV-DC-064			Camera	48	619730	6083429	619737	6083425	-7	4	8	120		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	01:00:31	6419	BP23MVEXP-ENV-DC-064			Camera	49	619727	6083432	619737	6083425	-10	7	12	126		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	01:01:11	6420	BP23MVEXP-ENV-DC-064			Camera	48	619725	6083435	619737	6083425	-12	10	16	130		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	01:01:21	6421	BP23MVEXP-ENV-DC-064			Camera	48	619724	6083436	619737	6083425	-13	11	17	130		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	01:02:08	6422	BP23MVEXP-ENV-DC-064			Camera	48	619721	6083440	619737	6083425	-16	15	22	133		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	01:02:38	6423	BP23MVEXP-ENV-DC-064			Camera	48	619719	6083442	619737	6083425	-18	17	25	133		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	01:03:16	6424	BP23MVEXP-ENV-DC-064			Camera	48	619717	6083445	619737	6083425	-21	20	29	135		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	01:03:52	6425	BP23MVEXP-ENV-DC-064			Camera	48	619714	6083448	619737	6083425	-23	23	33	135		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	01:04:29	6426	BP23MVEXP-ENV-DC-064			Camera	49	619712	6083451	619737	6083425	-26	26	36	136		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	01:04:59	6427	BP23MVEXP-ENV-DC-064			Camera	48	619710	6083453	619737	6083425	-27	28	39	136		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	01:05:59	6428	BP23MVEXP-ENV-DC-064			Camera	49	619706	6083458	619737	6083425	-31	33	46	137		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	01:06:31	6429	BP23MVEXP-ENV-DC-064			Camera	49	619704	6083461	619737	6083425	-33	36	49	137		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	01:06:42	6430	BP23MVEXP-ENV-DC-064			Camera	49	619703	6083462	619737	6083425	-34	37	50	137		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	02:08:01	6431	BP23MVEXP-ENV-DC-131			Camera	45	615625	6085194	615581	6085218	44	-24	51	-62		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	02:09:34	6432	BP23MVEXP-ENV-DC-131			Camera	45	615621	6085196	615581	6085218	40	-22	46	-62		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	02:10:06	6433	BP23MVEXP-ENV-DC-131			Camera	45	615619	6085198	615581	6085218	38	-20	43	-62		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	02:10:20	6434	BP23MVEXP-ENV-DC-131			Camera	45	615618	6085198	615581	6085218	37	-20	41	-62		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	02:10:41	6435	BP23MVEXP-ENV-DC-131			Camera	45	615616	6085200	615581	6085218	35	-18	39	-62		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	02:11:19	6436	BP23MVEXP-ENV-DC-131			Camera	45	615612	6085202	615581	6085218	31	-16	35	-62		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	02:11:55	6437	BP23MVEXP-ENV-DC-131			Camera	45	615608	6085204	615581	6085218	27	-14	31	-62		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	02:12:05	6438	BP23MVEXP-ENV-DC-131			Camera	45	615607	6085204	615581	6085218	27	-14	30	-62		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	02:12:47	6439	BP23MVEXP-ENV-DC-131			Camera	45	615604	6085206	615581	6085218	23	-12	26	-62		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	02:13:30	6440	BP23MVEXP-ENV-DC-131			Camera	45	615600	6085208	615581	6085218	19	-10	22	-62		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	02:14:38	6441	BP23MVEXP-ENV-DC-131			Camera	45	615594	6085212	615581	6085218	13	-6	14	-63		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	02:15:46	6442	BP23MVEXP-ENV-DC-131			Camera	45	615588	6085215	615581	6085218	7	-3	7	-63		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	02:16:15	6443	BP23MVEXP-ENV-DC-131			Camera	45	615585	6085216	615581	6085218	4	-2	4	-62		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	02:16:37	6444	BP23MVEXP-ENV-DC-131			Camera	45	615583	6085217	615581	6085218	2	-1	2	-66		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	02:16:47	6445	BP23MVEXP-ENV-DC-131			Camera	45	615582	6085218	615581	6085218	1	0	1	-70		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	02:17:26	6446	BP23MVEXP-ENV-DC-131			Camera	45	615579	6085220	615581	6085218	-2	2	3	128		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	02:17:44	6447	BP23MVEXP-ENV-DC-131			Camera	45	615577	6085221	615581	6085218	-4	3	5	125		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	02:18:03	6448	BP23MVEXP-ENV-DC-131			Camera	45	615575	6085222	615581	6085218	-6	4	7	123		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	02:18:23	6449	BP23MVEXP-ENV-DC-131			Camera	45	615573	6085222	615581	6085218	-8	5	9	120		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	02:18:29	6450	BP23MVEXP-ENV-DC-131			Camera	45	615573	6085223	615581	6085218	-8	5	9	120		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	02:19:21	6451	BP23MVEXP-ENV-DC-131			Camera	45	615568	6085225	615581	6085218	-13	7	15	118		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	02:19:35	6452	BP23MVEXP-ENV-DC-131			Camera	45	615567	6085226	615581	6085218	-14	8	16	118		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	02:20:47	6453	BP23MVEXP-ENV-DC-131			Camera	45	615561	6085230	615581	6085218	-20	12	23	120		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	02:21:16	6454	BP23MVEXP-ENV-DC-131			Camera	45	615558	6085231	615581	6085218	-23	13	26	120		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	02:22:22	6455	BP23MVEXP-ENV-DC-131			Camera	45	615552	6085234	615581	6085218	-29	16	33	119		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	02:24:09	6456	BP23MVEXP-ENV-DC-131			Camera	45	615542	6085239	615581	6085218	-39	21	44	119		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	02:24:58	6457	BP23MVEXP-ENV-DC-131			Camera	45	615538	6085241	615581	6085218	-43	23	49	119		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	02:32:55	6458	BP23MVEXP-ENV-DC-131			Camera	45	615558	6085175	615581	6085218	-23	-43	49	29		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	02:34:19	6459	BP23MVEXP-ENV-DC-131			Camera	45	615560	6085182	615581	6085218	-21	-36	42	30		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	02:34:41	6460	BP23MVEXP-ENV-DC-131			Camera	45	615561	6085184	615581	6085218	-20	-34	39	30		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	02:35:11	6461	BP23MVEXP-ENV-DC-131			Camera	45	615563	6085187	615581	6085218	-18	-31	36	30		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	02:36:18	6462	BP23MVEXP-ENV-DC-131			Camera	45	615566	6085193	615581	6085218	-15	-25	29	31		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	02:36:50	6463	BP23MVEXP-ENV-DC-131			Camera	45	615568	6085196	615581	6085218	-13	-22	26	31		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	02:37:27	6464	BP23MVEXP-ENV-DC-131			Camera	45	615570	6085199	615581	6085218	-11	-19	22	31		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	02:38:28	6465	BP23MVEXP-ENV-DC-131			Camera	45	615573	6085205	615581	6085218	-8	-14	16	31		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	02:39:19	6466	BP23MVEXP-ENV-DC-131			Camera	45	615575	6085209	615581	6085218	-6	-9	11	32		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	02:40:17	6467	BP23MVEXP-ENV-DC-131			Camera	45	615579	6085214	615581	6085218	-2	-4	4	30		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	02:41:02	6468	BP23MVEXP-ENV-DC-131			Camera	45	615581	6085218	615581	6085218	0	0	0	-96		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	02:41:43	6469	BP23MVEXP-ENV-DC-131			Camera	45	615582	6085222	615581	6085218	1	4	4	-159		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	02:43:16	6470	BP23MVEXP-ENV-DC-131			Camera	45	615587	6085231	615581	6085218	6	13	14	-154		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	02:44:10	6471	BP23MVEXP-ENV-DC-131			Camera	45	615590	6085235	615581	6085218	9	18	20	-153		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	02:44:43	6472	BP23MVEXP-ENV-DC-131			Camera	45	615592	6085238	615581	6085218	11	20	23	-152		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	02:45:14	6473	BP23MVEXP-ENV-DC-131			Camera	45	615593	6085241	615581	6085218	12	23	26	-152		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	02:45:40	6474	BP23MVEXP-ENV-DC-131			Camera	45	615595	6085244	615581	6085218	14	26	29	-152		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	02:45:54	6475	BP23MVEXP-ENV-DC-131			Camera	45	615595	6085245	615581	6085218	14	27	30	-152		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	02:46:32	6476	BP23MVEXP-ENV-DC-131			Camera	45	615597	6085248	615581	6085218	16	30	34	-151		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	02:47:03	6477	BP23MVEXP-ENV-DC-131			Camera	45	615599	6085251	615581	6085218	18	33	37	-152		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	02:47:13	6478	BP23MVEXP-ENV-DC-131			Camera	45	615599	6085252	615581	6085218	18	34	38	-152		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	02:47:48	6479	BP23MVEXP-ENV-DC-131			Camera	45	615601	6085255	615581	6085218	20	37	42	-152		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	02:48:03	6480	BP23MVEXP-ENV-DC-131			Camera	45	615602	6085257	615581	6085218	21	39	44	-152		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	02:48:32	6481	BP23MVEXP-ENV-DC-131			Camera	45	615603	6085259	615581	6085218	22	41	46	-152		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	03:27:04	6482	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085762	614050	6085716	26	46	53	-150		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	03:27:47	6483	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085762	614050	6085716	26	46	53	-150		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	03:28:20	6484	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085762	614050	6085716	26	46	52	-151		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	03:29:29	6485	BP23MVEXP-ENV-DC-065			Camera	44	614072	6085756	614050	6085716	22	40	46	-152		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	03:29:39	6486	BP23MVEXP-ENV-DC-065			Camera	44	614071	6085755	614050	6085716	21	39	45	-151		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	03:30:09	6487	BP23MVEXP-ENV-DC-065			Camera	44	614070	6085752	614050	6085716	20	36	41	-151		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	03:31:07	6488	BP23MVEXP-ENV-DC-065			Camera	44	614068	6085746	614050	6085716	18	30	35	-150		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	03:31:15	6489	BP23MVEXP-ENV-DC-065			Camera	44	614067	6085745	614050	6085716	17	29	34	-150		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	03:31:38	6490	BP23MVEXP-ENV-DC-065			Camera	44	614066	6085743	614050	6085716	16	27	32	-150		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	03:32:22	6491	BP23MVEXP-ENV-DC-065			Camera	44	614064	6085739	614050	6085716	14	23	27	-149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	03:32:44	6492	BP23MVEXP-ENV-DC-065			Camera	44	614063	6085737	614050	6085716	13	21	25	-149		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	03:32:54	6493	BP23MVEXP-ENV-DC-065			Camera	44	614063	6085737	614050	6085716	13	21	24	-149		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	03:33:36	6494	BP23MVEXP-ENV-DC-065			Camera	44	614061	6085733	614050	6085716	11	17	20	-148		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	03:33:55	6495	BP23MVEXP-ENV-DC-065			Camera	44	614060	6085731	614050	6085716	10	15	18	-147		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	03:34:07	6496	BP23MVEXP-ENV-DC-065			Camera	44	614059	6085730	614050	6085716	9	14	16	-147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	03:34:37	6497	BP23MVEXP-ENV-DC-065			Camera	44	614058	6085727	614050	6085716	8	11	14	-146		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	03:34:47	6498	BP23MVEXP-ENV-DC-065			Camera	44	614057	6085726	614050	6085716	7	10	13	-146		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	03:35:12	6499	BP23MVEXP-ENV-DC-065			Camera	44	614056	6085724	614050	6085716	6	8	10	-144		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	03:35:33	6500	BP23MVEXP-ENV-DC-065			Camera	44	614055	6085722	614050	6085716	5	6	8	-141		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	03:36:09	6501	BP23MVEXP-ENV-DC-065			Camera	44	614053	6085719	614050	6085716	3	3	4	-132		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	03:37:17	6502	BP23MVEXP-ENV-DC-065			Camera	44	614050	6085713	614050	6085716	0	-3	3	4		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	03:37:58	6503	BP23MVEXP-ENV-DC-065			Camera	44	614047	6085709	614050	6085716	-3	-7	7	20		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	03:38:19	6504	BP23MVEXP-ENV-DC-065			Camera	43	614047	6085707	614050	6085716	-3	-9	9	21		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	03:38:32	6505	BP23MVEXP-ENV-DC-065			Camera	43	614046	6085706	614050	6085716	-4	-10	11	22		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	03:38:55	6506	BP23MVEXP-ENV-DC-065			Camera	44	614045	6085704	614050	6085716	-5	-12	13	24		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	03:40:07	6507	BP23MVEXP-ENV-DC-065			Camera	44	614041	6085697	614050	6085716	-9	-19	21	25		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	03:40:33	6508	BP23MVEXP-ENV-DC-065			Camera	43	614040	6085695	614050	6085716	-10	-21	23	25		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	03:41:07	6509	BP23MVEXP-ENV-DC-065			Camera	43	614039	6085692	614050	6085716	-12	-24	27	26		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	03:41:19	6510	BP23MVEXP-ENV-DC-065			Camera	43	614038	6085691	614050	6085716	-12	-25	28	25		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	03:41:48	6511	BP23MVEXP-ENV-DC-065			Camera	43	614036	6085688	614050	6085716	-14	-28	31	26		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	03:42:49	6512	BP23MVEXP-ENV-DC-065			Camera	43	614033	6085682	614050	6085716	-17	-34	38	27		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	03:43:44	6513	BP23MVEXP-ENV-DC-065			Camera	43	614030	6085679	614050	6085716	-20	-38	42	28		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	03:44:06	6514	BP23MVEXP-ENV-DC-065			Camera	43	614029	6085676	614050	6085716	-21	-40	45	28		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	03:44:29	6515	BP23MVEXP-ENV-DC-065			Camera	43	614028	6085674	614050	6085716	-22	-42	47	28		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	03:45:06	6516	BP23MVEXP-ENV-DC-065			Camera	43	614027	6085671	614050	6085716	-23	-45	51	28		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	03:57:58	6517	BP23MVEXP-ENV-DC-065			Camera	44	614005	6085741	614050	6085716	-45	26	52	119		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	03:59:28	6518	BP23MVEXP-ENV-DC-065			Camera	43	614006	6085745	614050	6085716	-44	29	52	123		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	04:00:13	6519	BP23MVEXP-ENV-DC-065			Camera	43	614010	6085742	614050	6085716	-40	26	48	123		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	04:00:55	6520	BP23MVEXP-ENV-DC-065			Camera	44	614013	6085740	614050	6085716	-37	24	44	123		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	04:02:09	6521	BP23MVEXP-ENV-DC-065			Camera	43	614020	6085736	614050	6085716	-30	20	36	124		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	04:02:57	6522	BP23MVEXP-ENV-DC-065			Camera	44	614025	6085733	614050	6085716	-25	18	31	124		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	04:03:48	6523	BP23MVEXP-ENV-DC-065			Camera	44	614029	6085730	614050	6085716	-21	14	25	125		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	04:04:12	6524	BP23MVEXP-ENV-DC-065			Camera	43	614032	6085729	614050	6085716	-18	13	23	126		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	04:04:50	6525	BP23MVEXP-ENV-DC-065			Camera	44	614036	6085727	614050	6085716	-14	11	18	128		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	04:05:16	6526	BP23MVEXP-ENV-DC-065			Camera	44	614038	6085726	614050	6085716	-12	10	15	131		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	04:05:28	6527	BP23MVEXP-ENV-DC-065			Camera	44	614039	6085726	614050	6085716	-11	10	15	131		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	04:05:54	6528	BP23MVEXP-ENV-DC-065			Camera	44	614040	6085725	614050	6085716	-10	9	13	134		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	04:06:29	6529	BP23MVEXP-ENV-DC-065			Camera	44	614043	6085724	614050	6085716	-7	8	10	140		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	04:07:25	6530	BP23MVEXP-ENV-DC-065			Camera	44	614048	6085721	614050	6085716	-2	5	6	159		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	04:08:09	6531	BP23MVEXP-ENV-DC-065			Camera	44	614053	6085718	614050	6085716	3	2	3	-128		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	04:08:41	6532	BP23MVEXP-ENV-DC-065			Camera	44	614056	6085716	614050	6085716	6	0	6	-89		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	04:09:59	6533	BP23MVEXP-ENV-DC-065			Camera	44	614062	6085712	614050	6085716	12	-4	13	-71		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Aug-2023	04:10:41	6534	BP23MVEXP-ENV-DC-065			Camera	44	614065	6085710	614050	6085716	15	-6	16	-69		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Aug-2023	04:11:06	6535	BP23MVEXP-ENV-DC-065			Camera	44	614067	6085709	614050	6085716	18	-7	19	-69		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Aug-2023	04:11:31	6536	BP23MVEXP-ENV-DC-065			Camera	44	614070	6085708	614050	6085716	20	-8	21	-68		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Aug-2023	04:12:21	6537	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085706	614050	6085716	26	-10	27	-68		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	04:12:42	6538	BP23MVEXP-ENV-DC-065			Camera	44	614078	6085705	614050	6085716	28	-11	30	-68		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Aug-2023	04:13:40	6539	BP23MVEXP-ENV-DC-065			Camera	44	614083	6085702	614050	6085716	33	-14	36	-67		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Aug-2023	04:14:18	6540	BP23MVEXP-ENV-DC-065			Camera	44	614086	6085700	614050	6085716	36	-16	39	-66		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Aug-2023	04:15:18	6541	BP23MVEXP-ENV-DC-065			Camera	44	614091	6085695	614050	6085716	41	-21	46	-63		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
11-Aug-2023	04:15:37	6542	BP23MVEXP-ENV-DC-065			Camera	44	614093	6085694	614050	6085716	43	-22	48	-63		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
11-Aug-2023	04:15:55	6543	BP23MVEXP-ENV-DC-065			Camera	44	614093	6085693	614050	6085716	43	-23	49	-63		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
11-Aug-2023	05:12:35	6544	BP23MVEXP-ENV-DC-067				28	611427	6082655	611447	6082612	-20	43	47	155		(Raw Nav, Kongsberg 14208, img#63) (B) Fix no photo
11-Aug-2023	05:13:11	6545	BP23MVEXP-ENV-DC-067				28	611430	6082651	611447	6082612	-17	39	43	156		(Raw Nav, Kongsberg 14208, img#64) (B) Fix no photo
11-Aug-2023	05:14:13	6546	BP23MVEXP-ENV-DC-067				28	611431	6082645	611447	6082612	-16	33	37	154		(Raw Nav, Kongsberg 14208, img#65) (B) Fix no photo
11-Aug-2023	06:21:49	6547	BP23MVEXP-ENV-DC-066			Camera	42	616589	6080843	616631	6080874	-42	-31	52	53		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
11-Aug-2023	06:23:23	6548	BP23MVEXP-ENV-DC-066			Camera	42	616590	6080844	616631	6080874	-41	-30	51	53		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	06:23:49	6549	BP23MVEXP-ENV-DC-066			Camera	42	616592	6080845	616631	6080874	-39	-29	49	53		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	06:24:45	6550	BP23MVEXP-ENV-DC-066			Camera	42	616597	6080849	616631	6080874	-34	-25	42	53		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	06:24:59	6551	BP23MVEXP-ENV-DC-066			Camera	42	616598	6080849	616631	6080874	-33	-25	41	53		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	06:25:25	6552	BP23MVEXP-ENV-DC-066			Camera	42	616600	6080851	616631	6080874	-31	-23	39	53		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	06:25:50	6553	BP23MVEXP-ENV-DC-066			Camera	42	616602	6080853	616631	6080874	-29	-21	36	54		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	06:26:34	6554	BP23MVEXP-ENV-DC-066			Camera	42	616605	6080856	616631	6080874	-26	-18	32	55		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	06:27:22	6555	BP23MVEXP-ENV-DC-066			Camera	42	616609	6080859	616631	6080874	-22	-15	26	55		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	06:27:31	6556	BP23MVEXP-ENV-DC-066			Camera	42	616610	6080860	616631	6080874	-21	-14	25	55		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	06:27:45	6557	BP23MVEXP-ENV-DC-066			Camera	42	616611	6080860	616631	6080874	-20	-14	24	56		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	06:28:25	6558	BP23MVEXP-ENV-DC-066			Camera	42	616614	6080863	616631	6080874	-17	-11	20	57		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	06:28:57	6559	BP23MVEXP-ENV-DC-066			Camera	42	616617	6080865	616631	6080874	-14	-9	17	59		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	06:29:07	6560	BP23MVEXP-ENV-DC-066			Camera	42	616617	6080866	616631	6080874	-14	-8	16	60		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	06:29:35	6561	BP23MVEXP-ENV-DC-066			Camera	42	616620	6080868	616631	6080874	-12	-6	13	62		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	06:30:14	6562	BP23MVEXP-ENV-DC-066			Camera	42	616623	6080870	616631	6080874	-8	-4	9	66		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	06:30:21	6563	BP23MVEXP-ENV-DC-066			Camera	42	616624	6080871	616631	6080874	-7	-3	8	67		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	06:31:13	6564	BP23MVEXP-ENV-DC-066			Camera	42	616628	6080874	616631	6080874	-3	0	3	93		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	06:31:38	6565	BP23MVEXP-ENV-DC-066			Camera	42	616630	6080876	616631	6080874	-1	2	2	146		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	06:32:28	6566	BP23MVEXP-ENV-DC-066			Camera	42	616634	6080879	616631	6080874	3	5	6	-154		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	06:32:51	6567	BP23MVEXP-ENV-DC-066			Camera	42	616635	6080881	616631	6080874	4	7	8	-150		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	06:33:10	6568	BP23MVEXP-ENV-DC-066			Camera	42	616636	6080882	616631	6080874	5	8	10	-147		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	06:33:48	6569	BP23MVEXP-ENV-DC-066			Camera	42	616639	6080885	616631	6080874	8	11	13	-142		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	06:34:30	6570	BP23MVEXP-ENV-DC-066			Camera	42	616643	6080887	616631	6080874	12	14	18	-139		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	06:35:30	6571	BP23MVEXP-ENV-DC-066			Camera	42	616648	6080891	616631	6080874	17	17	24	-136		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	06:36:03	6572	BP23MVEXP-ENV-DC-066			Camera	42	616651	6080894	616631	6080874	20	20	28	-135		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	06:36:48	6573	BP23MVEXP-ENV-DC-066			Camera	42	616654	6080897	616631	6080874	23	23	32	-134		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	06:37:30	6574	BP23MVEXP-ENV-DC-066			Camera	42	616657	6080899	616631	6080874	26	25	37	-134		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	06:39:39	6575	BP23MVEXP-ENV-DC-066			Camera	42	616667	6080908	616631	6080874	36	35	50	-134		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	06:53:43	6576	BP23MVEXP-ENV-DC-066			Camera	42	616599	6080910	616631	6080874	-32	36	48	138		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	06:55:06	6577	BP23MVEXP-ENV-DC-066			Camera	42	616603	6080906	616631	6080874	-28	32	43	139		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	06:55:29	6578	BP23MVEXP-ENV-DC-066			Camera	42	616605	6080904	616631	6080874	-26	30	40	139		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	06:56:07	6579	BP23MVEXP-ENV-DC-066			Camera	42	616607	6080901	616631	6080874	-24	27	36	138		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	06:56:46	6580	BP23MVEXP-ENV-DC-066			Camera	42	616610	6080897	616631	6080874	-21	23	32	137		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	06:57:07	6581	BP23MVEXP-ENV-DC-066			Camera	42	616611	6080896	616631	6080874	-20	22	30	137		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	06:57:51	6582	BP23MVEXP-ENV-DC-066			Camera	42	616614	6080893	616631	6080874	-17	19	25	138		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	06:58:37	6583	BP23MVEXP-ENV-DC-066			Camera	42	616617	6080889	616631	6080874	-14	15	20	138		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	07:00:14	6584	BP23MVEXP-ENV-DC-066			Camera	42	616624	6080882	616631	6080874	-7	8	11	137		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	07:01:24	6585	BP23MVEXP-ENV-DC-066			Camera	42	616628	6080876	616631	6080874	-3	2	3	129		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	07:01:46	6586	BP23MVEXP-ENV-DC-066			Camera	42	616630	6080875	616631	6080874	-1	1	1	117		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	07:02:18	6587	BP23MVEXP-ENV-DC-066			Camera	42	616632	6080872	616631	6080874	1	-2	2	-33		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	07:02:47	6588	BP23MVEXP-ENV-DC-066			Camera	42	616634	6080870	616631	6080874	3	-4	5	-39		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	07:03:33	6589	BP23MVEXP-ENV-DC-066			Camera	42	616638	6080867	616631	6080874	7	-7	10	-43		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	07:04:49	6590	BP23MVEXP-ENV-DC-066			Camera	42	616642	6080861	616631	6080874	12	-13	17	-42		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	07:05:15	6591	BP23MVEXP-ENV-DC-066			Camera	42	616644	6080859	616631	6080874	13	-15	20	-42		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	07:05:56	6592	BP23MVEXP-ENV-DC-066			Camera	42	616648	6080856	616631	6080874	17	-18	24	-43		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	07:06:40	6593	BP23MVEXP-ENV-DC-066			Camera	42	616651	6080852	616631	6080874	20	-22	29	-42		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	07:06:53	6594	BP23MVEXP-ENV-DC-066			Camera	42	616651	6080851	616631	6080874	21	-23	31	-42		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	07:07:31	6595	BP23MVEXP-ENV-DC-066			Camera	42	616654	6080848	616631	6080874	23	-26	34	-42		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	07:09:05	6596	BP23MVEXP-ENV-DC-066			Camera	42	616661	6080841	616631	6080874	30	-33	44	-42		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	07:09:57	6597	BP23MVEXP-ENV-DC-066			Camera	42	616664	6080838	616631	6080874	33	-36	49	-42		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	08:06:08	6598	BP23MVEXP-ENV-DC-132			Camera	38	613304	6081547	613334	6081592	-30	-45	54	34		(Raw Nav, Kongsberg 14208, img#1) (B)
11-Aug-2023	08:06:17	6599	BP23MVEXP-ENV-DC-132			Camera	38	613305	6081547	613334	6081592	-29	-45	54	33		(Raw Nav, Kongsberg 14208, img#2) (B)
11-Aug-2023	08:07:05	6600	BP23MVEXP-ENV-DC-132			Camera	38	613306	6081549	613334	6081592	-28	-43	51	33		(Raw Nav, Kongsberg 14208, img#3) (B)
11-Aug-2023	08:07:45	6601	BP23MVEXP-ENV-DC-132			Camera	38	613309	6081552	613334	6081592	-25	-40	47	32		(Raw Nav, Kongsberg 14208, img#4) (B)
11-Aug-2023	08:08:16	6602	BP23MVEXP-ENV-DC-132			Camera	38	613311	6081555	613334	6081592	-23	-37	44	32		(Raw Nav, Kongsberg 14208, img#5) (B)
11-Aug-2023	08:09:02	6603	BP23MVEXP-ENV-DC-132			Camera	38	613312	6081559	613334	6081592	-22	-33	40	34		(Raw Nav, Kongsberg 14208, img#6) (B)
11-Aug-2023	08:09:48	6604	BP23MVEXP-ENV-DC-132			Camera	38	613315	6081563	613334	6081592	-19	-29	35	33		(Raw Nav, Kongsberg 14208, img#7) (B)
11-Aug-2023	08:10:29	6605	BP23MVEXP-ENV-DC-132			Camera	38	613316	6081567	613334	6081592	-18	-25	31	36		(Raw Nav, Kongsberg 14208, img#8) (B)
11-Aug-2023	08:11:09	6606	BP23MVEXP-ENV-DC-132			Camera	39	613317	6081571	613334	6081592	-17	-21	27	39		(Raw Nav, Kongsberg 14208, img#9) (B)
11-Aug-2023	08:11:29	6607	BP23MVEXP-ENV-DC-132			Camera	38	613319	6081572	613334	6081592	-15	-20	25	37		(Raw Nav, Kongsberg 14208, img#10) (B)
11-Aug-2023	08:12:08	6608	BP23MVEXP-ENV-DC-132			Camera	38	613321	6081575	613334	6081592	-13	-17	21	37		(Raw Nav, Kongsberg 14208, img#11) (B)
11-Aug-2023	08:12:34	6609	BP23MVEXP-ENV-DC-132			Camera	38	613323	6081577	613334	6081592	-11	-15	19	36		(Raw Nav, Kongsberg 14208, img#12) (B)
11-Aug-2023	08:12:39	6610	BP23MVEXP-ENV-DC-132				38	613323	6081578	613334	6081592	-11	-14	18	38		(Raw Nav, Kongsberg 14208, img#13) (B) Fix no photo
11-Aug-2023	08:13:06	6611	BP23MVEXP-ENV-DC-132			Camera	38	613324	6081580	613334	6081592	-10	-12	16	40		(Raw Nav, Kongsberg 14208, img#14) (B)
11-Aug-2023	08:13:28	6612	BP23MVEXP-ENV-DC-132			Camera	38	613325	6081582	613334	6081592	-9	-10	13	42		(Raw Nav, Kongsberg 14208, img#15) (B)
11-Aug-2023	08:14:05	6613	BP23MVEXP-ENV-DC-132			Camera	38	613327	6081585	613334	6081592	-7	-7	10	45		(Raw Nav, Kongsberg 14208, img#16) (B)
11-Aug-2023	08:15:04	6614	BP23MVEXP-ENV-DC-132			Camera	38	613330	6081590	613334	6081592	-4	-2	4	63		(Raw Nav, Kongsberg 14208, img#17) (B)
11-Aug-2023	08:15:56	6615	BP23MVEXP-ENV-DC-132			Camera	38	613334	6081595	613334	6081592	0	3	3	180		(Raw Nav, Kongsberg 14208, img#18) (B)
11-Aug-2023	08:16:11	6616	BP23MVEXP-ENV-DC-132			Camera	38	613334	6081596	613334	6081592	0	4	4	180		(Raw Nav, Kongsberg 14208, img#19) (B)
11-Aug-2023	08:17:24	6617	BP23MVEXP-ENV-DC-132			Camera	38	613338	6081603	613334	6081592	4	11	12	-160		(Raw Nav, Kongsberg 14208, img#20) (B)
11-Aug-2023	08:17:48	6618	BP23MVEXP-ENV-DC-132			Camera	38	613339	6081605	613334	6081592	5	13	14	-159		(Raw Nav, Kongsberg 14208, img#21) (B)
11-Aug-2023	08:18:27	6619	BP23MVEXP-ENV-DC-132			Camera	38	613341	6081609	613334	6081592	7	17	18	-158		(Raw Nav, Kongsberg 14208, img#22) (B)
11-Aug-2023	08:18:35	6620	BP23MVEXP-ENV-DC-132			Camera	38	613341	6081610	613334	6081592	7	18	19	-159		(Raw Nav, Kongsberg 14208, img#23) (B)
11-Aug-2023	08:19:25	6621	BP23MVEXP-ENV-DC-132			Camera	38	613344	6081614	613334	6081592	10	22	24	-156		(Raw Nav, Kongsberg 14208, img#24) (B)
11-Aug-2023	08:19:33	6622	BP23MVEXP-ENV-DC-132			Camera	38	613344	6081614	613334	6081592	10	22	24	-156		(Raw Nav, Kongsberg 14208, img#25) (B)
11-Aug-2023	08:19:51	6623	BP23MVEXP-ENV-DC-132			Camera	38	613345	6081616	613334	6081592	11	24	26	-155		(Raw Nav, Kongsberg 14208, img#26) (B)
11-Aug-2023	08:20:27	6624	BP23MVEXP-ENV-DC-132			Camera	38	613347	6081619	613334	6081592	13	27	30	-154		(Raw Nav, Kongsberg 14208, img#27) (B)
11-Aug-2023	08:21:23	6625	BP23MVEXP-ENV-DC-132			Camera	38	613350	6081624	613334	6081592	16	32	36	-153		(Raw Nav, Kongsberg 14208, img#28) (B)
11-Aug-2023	08:21:46	6626	BP23MVEXP-ENV-DC-132			Camera	38	613352	6081627	613334	6081592	18	35	39	-153		(Raw Nav, Kongsberg 14208, img#29) (B)
11-Aug-2023	08:21:53	6627	BP23MVEXP-ENV-DC-132			Camera	38	613352	6081627	613334	6081592	18	35	39	-153		(Raw Nav, Kongsberg 14208, img#30) (B)
11-Aug-2023	08:22:44	6628	BP23MVEXP-ENV-DC-132			Camera	38	613355	6081632	613334	6081592	21	40	45	-152		(Raw Nav, Kongsberg 14208, img#31) (B)
11-Aug-2023	09:03:37	6629	BP23MVEXP-ENV-DC-132A			Camera	36	613291	6081616	613334	6081592	-43	24	49	119		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	09:03:58	6630	BP23MVEXP-ENV-DC-132A			Camera	36	613291	6081616	613334	6081592	-43	24	49	119		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	09:04:58	6631	BP23MVEXP-ENV-DC-132A			Camera	36	613292	6081615	613334	6081592	-42	23	48	118		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	09:05:26	6632	BP23MVEXP-ENV-DC-132A			Camera	36	613294	6081613	613334	6081592	-40	22	45	119		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	09:06:13	6633	BP23MVEXP-ENV-DC-132A			Camera	36	613298	6081611	613334	6081592	-36	19	41	118		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	09:06:39	6634	BP23MVEXP-ENV-DC-132A			Camera	36	613301	6081610	613334	6081592	-33	18	38	119		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	09:07:33	6635	BP23MVEXP-ENV-DC-132A			Camera	36	613306	6081608	613334	6081592	-28	16	32	120		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	09:08:07	6636	BP23MVEXP-ENV-DC-132A			Camera	36	613309	6081606	613334	6081592	-25	14	29	119		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	09:08:45	6637	BP23MVEXP-ENV-DC-132A			Camera	36	613313	6081604	613334	6081592	-21	12	24	119		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	09:09:38	6638	BP23MVEXP-ENV-DC-132A			Camera	36	613318	6081601	613334	6081592	-16	9	18	119		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	09:10:30	6639	BP23MVEXP-ENV-DC-132A			Camera	36	613323	6081599	613334	6081592	-11	7	13	121		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	09:11:15	6640	BP23MVEXP-ENV-DC-132A			Camera	36	613327	6081596	613334	6081592	-7	4	8	121		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	09:11:36	6641	BP23MVEXP-ENV-DC-132A			Camera	36	613328	6081595	613334	6081592	-6	3	7	118		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	09:12:40	6642	BP23MVEXP-ENV-DC-132A			Camera	36	613334	6081592	613334	6081592	0	0	0	-150		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	09:13:13	6643	BP23MVEXP-ENV-DC-132A			Camera	36	613337	6081590	613334	6081592	3	-2	4	-63		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	09:13:32	6644	BP23MVEXP-ENV-DC-132A			Camera	36	613339	6081589	613334	6081592	5	-3	6	-61		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	09:14:54	6645	BP23MVEXP-ENV-DC-132A			Camera	36	613347	6081585	613334	6081592	13	-7	14	-62		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	09:16:26	6646	BP23MVEXP-ENV-DC-132A			Camera	36	613355	6081580	613334	6081592	21	-12	24	-61		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	09:16:54	6647	BP23MVEXP-ENV-DC-132A			Camera	36	613358	6081579	613334	6081592	24	-13	27	-62		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	09:17:23	6648	BP23MVEXP-ENV-DC-132A			Camera	36	613361	6081578	613334	6081592	27	-14	30	-62		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	09:17:34	6649	BP23MVEXP-ENV-DC-132A			Camera	36	613361	6081577	613334	6081592	27	-15	31	-61		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	09:18:00	6650	BP23MVEXP-ENV-DC-132A			Camera	36	613364	6081576	613334	6081592	30	-16	34	-61		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	09:18:23	6651	BP23MVEXP-ENV-DC-132A			Camera	36	613366	6081575	613334	6081592	32	-17	36	-61		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	09:18:40	6652	BP23MVEXP-ENV-DC-132A			Camera	36	613367	6081574	613334	6081592	33	-18	38	-61		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	09:19:29	6653	BP23MVEXP-ENV-DC-132A			Camera	36	613371	6081571	613334	6081592	38	-21	43	-61		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	09:19:40	6654	BP23MVEXP-ENV-DC-132A			Camera	36	613372	6081571	613334	6081592	38	-21	44	-61		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	09:20:21	6655	BP23MVEXP-ENV-DC-132A			Camera	36	613377	6081569	613334	6081592	43	-23	48	-62		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	09:20:41	6656	BP23MVEXP-ENV-DC-132A			Camera	36	613378	6081569	613334	6081592	44	-23	50	-62		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	09:34:01	6657	BP23MVEXP-ENV-DC-132A			Camera	36	613357	6081634	613334	6081592	23	42	48	-151		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	09:34:55	6658	BP23MVEXP-ENV-DC-132A			Camera	36	613355	6081631	613334	6081592	21	39	45	-151		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	09:35:26	6659	BP23MVEXP-ENV-DC-132A			Camera	36	613353	6081628	613334	6081592	19	36	41	-152		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	09:37:06	6660	BP23MVEXP-ENV-DC-132A			Camera	36	613349	6081618	613334	6081592	15	26	30	-151		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	09:38:05	6661	BP23MVEXP-ENV-DC-132A			Camera	36	613345	6081613	613334	6081592	11	21	24	-152		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	09:38:25	6662	BP23MVEXP-ENV-DC-132A			Camera	36	613344	6081611	613334	6081592	10	19	22	-152		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	09:39:09	6663	BP23MVEXP-ENV-DC-132A			Camera	36	613342	6081607	613334	6081592	8	15	17	-153		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	09:40:16	6664	BP23MVEXP-ENV-DC-132A			Camera	36	613339	6081602	613334	6081592	5	10	11	-155		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	09:40:59	6665	BP23MVEXP-ENV-DC-132A			Camera	36	613337	6081598	613334	6081592	3	6	6	-157		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	09:41:44	6666	BP23MVEXP-ENV-DC-132A			Camera	36	613334	6081593	613334	6081592	0	1	1	-180		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	09:42:54	6667	BP23MVEXP-ENV-DC-132A			Camera	36	613331	6081587	613334	6081592	-3	-5	6	35		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	09:43:41	6668	BP23MVEXP-ENV-DC-132A			Camera	36	613328	6081584	613334	6081592	-6	-8	10	36		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	09:44:49	6669	BP23MVEXP-ENV-DC-132A			Camera	36	613325	6081578	613334	6081592	-9	-14	17	33		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	09:45:40	6670	BP23MVEXP-ENV-DC-132A			Camera	36	613322	6081572	613334	6081592	-12	-20	23	31		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	09:45:54	6671	BP23MVEXP-ENV-DC-132A			Camera	36	613322	6081571	613334	6081592	-12	-21	24	31		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	09:46:40	6672	BP23MVEXP-ENV-DC-132A			Camera	36	613319	6081567	613334	6081592	-15	-25	29	31		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	09:48:32	6673	BP23MVEXP-ENV-DC-132A			Camera	36	613313	6081558	613334	6081592	-21	-35	40	31		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	10:47:07	6674	BP23MVEXP-ENV-DC-133			Camera	24	611128	6078394	611083	6078422	45	-28	53	-58		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	10:48:07	6675	BP23MVEXP-ENV-DC-133			Camera	24	611127	6078394	611083	6078422	45	-28	52	-58		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	10:48:27	6676	BP23MVEXP-ENV-DC-133			Camera	24	611127	6078395	611083	6078422	44	-27	52	-58		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	10:49:25	6677	BP23MVEXP-ENV-DC-133			Camera	24	611124	6078398	611083	6078422	41	-24	47	-59		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	10:49:52	6678	BP23MVEXP-ENV-DC-133			Camera	24	611121	6078399	611083	6078422	38	-23	44	-59		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	10:50:42	6679	BP23MVEXP-ENV-DC-133			Camera	24	611115	6078402	611083	6078422	32	-21	38	-58		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	10:50:52	6680	BP23MVEXP-ENV-DC-133			Camera	24	611115	6078402	611083	6078422	32	-20	37	-57		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	10:51:24	6681	BP23MVEXP-ENV-DC-133			Camera	24	611112	6078404	611083	6078422	29	-18	34	-58		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	10:51:43	6682	BP23MVEXP-ENV-DC-133			Camera	24	611110	6078405	611083	6078422	27	-17	32	-57		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	10:53:01	6683	BP23MVEXP-ENV-DC-133			Camera	24	611103	6078408	611083	6078422	20	-14	25	-55		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	10:53:59	6684	BP23MVEXP-ENV-DC-133			Camera	23	611099	6078411	611083	6078422	16	-11	19	-56		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	10:54:38	6685	BP23MVEXP-ENV-DC-133			Camera	23	611096	6078413	611083	6078422	13	-9	15	-56		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	10:55:01	6686	BP23MVEXP-ENV-DC-133			Camera	23	611094	6078415	611083	6078422	11	-7	13	-56		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	10:55:25	6687	BP23MVEXP-ENV-DC-133			Camera	23	611092	6078416	611083	6078422	9	-6	11	-53		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	10:55:45	6688	BP23MVEXP-ENV-DC-133			Camera	23	611090	6078417	611083	6078422	7	-5	9	-52		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	10:56:14	6689	BP23MVEXP-ENV-DC-133			Camera	23	611087	6078418	611083	6078422	4	-4	6	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	10:56:41	6690	BP23MVEXP-ENV-DC-133			Camera	23	611084	6078419	611083	6078422	1	-3	3	-27		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	10:57:15	6691	BP23MVEXP-ENV-DC-133			Camera	23	611081	6078421	611083	6078422	-2	-1	2	60		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	10:57:43	6692	BP23MVEXP-ENV-DC-133			Camera	23	611078	6078423	611083	6078422	-5	1	5	95		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	10:58:27	6693	BP23MVEXP-ENV-DC-133			Camera	23	611074	6078425	611083	6078422	-9	3	10	108		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	10:59:05	6694	BP23MVEXP-ENV-DC-133			Camera	23	611071	6078427	611083	6078422	-12	5	13	112		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	11:00:06	6695	BP23MVEXP-ENV-DC-133			Camera	23	611065	6078431	611083	6078422	-18	9	20	116		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	11:01:02	6696	BP23MVEXP-ENV-DC-133			Camera	23	611062	6078434	611083	6078422	-21	12	24	119		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	11:01:57	6697	BP23MVEXP-ENV-DC-133			Camera	23	611057	6078436	611083	6078422	-26	14	29	118		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	11:02:39	6698	BP23MVEXP-ENV-DC-133			Camera	23	611053	6078437	611083	6078422	-30	15	33	116		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	11:03:24	6699	BP23MVEXP-ENV-DC-133			Camera	23	611047	6078438	611083	6078422	-36	16	39	114		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	11:04:01	6700	BP23MVEXP-ENV-DC-133			Camera	23	611043	6078440	611083	6078422	-40	18	43	114		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	11:04:47	6701	BP23MVEXP-ENV-DC-133			Camera	23	611040	6078444	611083	6078422	-43	22	48	117		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	11:05:18	6702	BP23MVEXP-ENV-DC-133			Camera	23	611038	6078445	611083	6078422	-45	23	50	117		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	11:14:23	6703	BP23MVEXP-ENV-DC-133			Camera	23	611058	6078377	611083	6078422	-25	-45	51	29		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	11:15:34	6704	BP23MVEXP-ENV-DC-133			Camera	23	611061	6078383	611083	6078422	-22	-39	45	29		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	11:15:54	6705	BP23MVEXP-ENV-DC-133			Camera	23	611062	6078384	611083	6078422	-21	-38	43	29		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	11:16:32	6706	BP23MVEXP-ENV-DC-133			Camera	23	611064	6078388	611083	6078422	-19	-34	39	29		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	11:16:49	6707	BP23MVEXP-ENV-DC-133			Camera	23	611065	6078389	611083	6078422	-18	-33	37	29		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	11:17:10	6708	BP23MVEXP-ENV-DC-133			Camera	23	611066	6078391	611083	6078422	-17	-31	35	29		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	11:17:32	6709	BP23MVEXP-ENV-DC-133			Camera	23	611067	6078393	611083	6078422	-16	-29	33	29		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	11:17:59	6710	BP23MVEXP-ENV-DC-133			Camera	24	611069	6078396	611083	6078422	-14	-26	30	29		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	11:18:31	6711	BP23MVEXP-ENV-DC-133			Camera	24	611070	6078399	611083	6078422	-13	-23	26	29		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	11:19:09	6712	BP23MVEXP-ENV-DC-133			Camera	24	611072	6078402	611083	6078422	-11	-20	23	30		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	11:19:54	6713	BP23MVEXP-ENV-DC-133			Camera	23	611074	6078406	611083	6078422	-9	-16	19	30		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	11:20:03	6714	BP23MVEXP-ENV-DC-133			Camera	23	611074	6078407	611083	6078422	-9	-15	18	30		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	11:20:49	6715	BP23MVEXP-ENV-DC-133			Camera	23	611076	6078411	611083	6078422	-7	-11	13	31		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	11:21:19	6716	BP23MVEXP-ENV-DC-133			Camera	24	611078	6078414	611083	6078422	-5	-8	9	31		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	11:22:23	6717	BP23MVEXP-ENV-DC-133			Camera	24	611081	6078420	611083	6078422	-2	-2	3	50		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	11:22:51	6718	BP23MVEXP-ENV-DC-133			Camera	24	611082	6078422	611083	6078422	-1	0	1	79		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	11:23:00	6719	BP23MVEXP-ENV-DC-133			Camera	24	611082	6078423	611083	6078422	-1	1	1	140		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	11:24:18	6720	BP23MVEXP-ENV-DC-133			Camera	24	611087	6078429	611083	6078422	4	7	8	-154		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	11:24:32	6721	BP23MVEXP-ENV-DC-133			Camera	24	611088	6078431	611083	6078422	5	9	10	-152		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	11:25:10	6722	BP23MVEXP-ENV-DC-133			Camera	24	611090	6078435	611083	6078422	7	13	14	-153		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	11:25:24	6723	BP23MVEXP-ENV-DC-133			Camera	24	611090	6078436	611083	6078422	7	14	16	-153		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	11:26:33	6724	BP23MVEXP-ENV-DC-133			Camera	24	611094	6078442	611083	6078422	11	20	23	-151		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	11:27:22	6725	BP23MVEXP-ENV-DC-133			Camera	24	611096	6078448	611083	6078422	14	26	29	-152		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Aug-2023	11:27:39	6726	BP23MVEXP-ENV-DC-133			Camera	24	611097	6078450	611083	6078422	14	28	31	-153		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Aug-2023	11:28:23	6727	BP23MVEXP-ENV-DC-133			Camera	24	611098	6078454	611083	6078422	15	32	35	-155		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Aug-2023	11:28:49	6728	BP23MVEXP-ENV-DC-133			Camera	24	611099	6078455	611083	6078422	16	34	37	-155		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Aug-2023	11:29:37	6729	BP23MVEXP-ENV-DC-133			Camera	24	611101	6078460	611083	6078422	18	38	42	-154		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	11:29:59	6730	BP23MVEXP-ENV-DC-133			Camera	24	611103	6078462	611083	6078422	20	40	44	-154		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Aug-2023	12:36:42	6731	BP23MVEXP-ENV-DC-069			Camera	21	609910	6081805	609888	6081851	22	-46	51	-25		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	12:39:23	6732	BP23MVEXP-ENV-DC-069			Camera	21	609911	6081806	609888	6081851	23	-45	51	-26		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	12:39:56	6733	BP23MVEXP-ENV-DC-069			Camera	21	609909	6081808	609888	6081851	21	-43	48	-26		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	12:40:08	6734	BP23MVEXP-ENV-DC-069			Camera	21	609909	6081808	609888	6081851	21	-43	47	-26		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	12:40:51	6735	BP23MVEXP-ENV-DC-069			Camera	21	609906	6081812	609888	6081851	18	-39	43	-25		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	12:41:32	6736	BP23MVEXP-ENV-DC-069			Camera	21	609904	6081816	609888	6081851	16	-35	39	-24		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	12:42:02	6737	BP23MVEXP-ENV-DC-069			Camera	21	609903	6081819	609888	6081851	15	-32	35	-25		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	12:42:15	6738	BP23MVEXP-ENV-DC-069			Camera	21	609902	6081820	609888	6081851	14	-31	34	-25		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	12:43:07	6739	BP23MVEXP-ENV-DC-069			Camera	21	609900	6081825	609888	6081851	12	-26	29	-24		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	12:43:34	6740	BP23MVEXP-ENV-DC-069			Camera	20	609899	6081827	609888	6081851	11	-24	26	-24		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	12:44:31	6741	BP23MVEXP-ENV-DC-069			Camera	21	609897	6081832	609888	6081851	9	-19	21	-25		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	12:44:45	6742	BP23MVEXP-ENV-DC-069			Camera	21	609896	6081834	609888	6081851	8	-17	19	-24		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	12:45:19	6743	BP23MVEXP-ENV-DC-069			Camera	21	609894	6081837	609888	6081851	6	-14	15	-23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	12:46:01	6744	BP23MVEXP-ENV-DC-069			Camera	21	609892	6081841	609888	6081851	4	-10	11	-21		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	12:46:31	6745	BP23MVEXP-ENV-DC-069			Camera	21	609891	6081844	609888	6081851	3	-7	8	-23		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	12:46:51	6746	BP23MVEXP-ENV-DC-069			Camera	21	609890	6081846	609888	6081851	2	-5	6	-22		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	12:47:12	6747	BP23MVEXP-ENV-DC-069			Camera	21	609889	6081848	609888	6081851	1	-3	4	-19		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	12:47:23	6748	BP23MVEXP-ENV-DC-069			Camera	20	609889	6081849	609888	6081851	1	-2	3	-14		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	12:47:37	6749	BP23MVEXP-ENV-DC-069			Camera	20	609888	6081849	609888	6081851	0	-2	2	-6		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	12:48:22	6750	BP23MVEXP-ENV-DC-069			Camera	20	609885	6081853	609888	6081851	-3	2	4	131		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	12:49:00	6751	BP23MVEXP-ENV-DC-069			Camera	20	609884	6081857	609888	6081851	-4	6	7	145		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	12:50:09	6752	BP23MVEXP-ENV-DC-069			Camera	20	609880	6081864	609888	6081851	-8	13	15	148		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	12:50:29	6753	BP23MVEXP-ENV-DC-069			Camera	20	609880	6081865	609888	6081851	-8	15	17	150		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	12:50:36	6754	BP23MVEXP-ENV-DC-069			Camera	20	609880	6081866	609888	6081851	-9	15	17	151		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	12:51:02	6755	BP23MVEXP-ENV-DC-069			Camera	20	609878	6081869	609888	6081851	-10	18	21	152		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	12:51:09	6756	BP23MVEXP-ENV-DC-069			Camera	20	609878	6081870	609888	6081851	-10	19	22	152		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	12:52:07	6757	BP23MVEXP-ENV-DC-069			Camera	20	609876	6081875	609888	6081851	-13	24	27	153		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	12:53:05	6758	BP23MVEXP-ENV-DC-069			Camera	20	609874	6081881	609888	6081851	-15	30	33	154		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	12:54:31	6759	BP23MVEXP-ENV-DC-069			Camera	20	609869	6081889	609888	6081851	-19	38	42	153		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	12:54:50	6760	BP23MVEXP-ENV-DC-069			Camera	20	609868	6081890	609888	6081851	-20	39	44	153		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	12:55:25	6761	BP23MVEXP-ENV-DC-069			Camera	20	609867	6081893	609888	6081851	-21	42	46	154		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	13:03:43	6762	BP23MVEXP-ENV-DC-069			Camera	20	609844	6081829	609888	6081851	-44	-22	50	63		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	13:04:44	6763	BP23MVEXP-ENV-DC-069			Camera	20	609846	6081830	609888	6081851	-42	-21	47	63		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	13:05:25	6764	BP23MVEXP-ENV-DC-069			Camera	21	609851	6081832	609888	6081851	-37	-19	42	63		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	13:06:15	6765	BP23MVEXP-ENV-DC-069			Camera	21	609855	6081835	609888	6081851	-33	-16	37	64		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	13:06:46	6766	BP23MVEXP-ENV-DC-069			Camera	21	609858	6081836	609888	6081851	-30	-15	33	64		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	13:07:42	6767	BP23MVEXP-ENV-DC-069			Camera	21	609863	6081839	609888	6081851	-25	-12	28	64		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	13:09:23	6768	BP23MVEXP-ENV-DC-069			Camera	21	609872	6081844	609888	6081851	-16	-7	17	67		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	13:09:50	6769	BP23MVEXP-ENV-DC-069			Camera	21	609875	6081845	609888	6081851	-13	-6	14	67		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	13:10:37	6770	BP23MVEXP-ENV-DC-069			Camera	21	609879	6081847	609888	6081851	-9	-4	9	68		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	13:11:49	6771	BP23MVEXP-ENV-DC-069			Camera	21	609886	6081850	609888	6081851	-2	-1	2	77		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	13:12:12	6772	BP23MVEXP-ENV-DC-069			Camera	21	609888	6081852	609888	6081851	0	1	1	-176		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	13:12:42	6773	BP23MVEXP-ENV-DC-069			Camera	21	609891	6081854	609888	6081851	3	3	4	-134		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	13:13:44	6774	BP23MVEXP-ENV-DC-069			Camera	21	609896	6081856	609888	6081851	8	5	9	-123		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	13:14:26	6775	BP23MVEXP-ENV-DC-069			Camera	21	609900	6081858	609888	6081851	12	7	14	-123		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	13:15:09	6776	BP23MVEXP-ENV-DC-069			Camera	21	609904	6081860	609888	6081851	16	9	18	-121		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	13:15:43	6777	BP23MVEXP-ENV-DC-069			Camera	21	609907	6081861	609888	6081851	19	10	22	-119		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	13:16:59	6778	BP23MVEXP-ENV-DC-069			Camera	21	609914	6081865	609888	6081851	26	14	30	-118		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	13:18:10	6779	BP23MVEXP-ENV-DC-069			Camera	21	609921	6081869	609888	6081851	33	18	37	-118		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	13:18:57	6780	BP23MVEXP-ENV-DC-069			Camera	21	609925	6081871	609888	6081851	37	20	42	-118		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	13:20:01	6781	BP23MVEXP-ENV-DC-069			Camera	21	609930	6081874	609888	6081851	42	23	48	-118		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	13:20:20	6782	BP23MVEXP-ENV-DC-069			Camera	21	609932	6081875	609888	6081851	44	24	49	-118		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Aug-2023	14:58:46	6783	BP23MVEXP-ENV-DC-067A			Camera	29	611744	6082753	611697	6082732	47	20	51	-113		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Aug-2023	14:59:43	6784	BP23MVEXP-ENV-DC-067A			Camera	29	611743	6082753	611697	6082732	46	21	51	-114		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Aug-2023	15:00:49	6785	BP23MVEXP-ENV-DC-067A			Camera	29	611738	6082751	611697	6082732	41	18	45	-114		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Aug-2023	15:01:29	6786	BP23MVEXP-ENV-DC-067A			Camera	29	611736	6082750	611697	6082732	39	18	43	-114		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	15:02:35	6787	BP23MVEXP-ENV-DC-067A			Camera	29	611734	6082748	611697	6082732	37	16	40	-113		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Aug-2023	15:03:10	6788	BP23MVEXP-ENV-DC-067A			Camera	29	611731	6082747	611697	6082732	34	15	37	-113		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Aug-2023	15:03:31	6789	BP23MVEXP-ENV-DC-067A			Camera	29	611727	6082745	611697	6082732	30	13	32	-114		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Aug-2023	15:04:19	6790	BP23MVEXP-ENV-DC-067A			Camera	29	611730	6082746	611697	6082732	32	14	35	-113		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
11-Aug-2023	15:04:51	6791	BP23MVEXP-ENV-DC-067A			Camera	29	611727	6082745	611697	6082732	29	12	32	-113		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
11-Aug-2023	15:05:14	6792	BP23MVEXP-ENV-DC-067A			Camera	29	611727	6082745	611697	6082732	30	12	32	-112		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
11-Aug-2023	15:06:15	6793	BP23MVEXP-ENV-DC-067A			Camera	29	611723	6082743	611697	6082732	26	11	28	-113		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	15:07:43	6794	BP23MVEXP-ENV-DC-067A			Camera	29	611718	6082742	611697	6082732	21	9	23	-114		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
11-Aug-2023	15:11:28	6795	BP23MVEXP-ENV-DC-067A			Camera	29	611711	6082735	611697	6082732	13	3	14	-102		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
11-Aug-2023	15:11:38	6796	BP23MVEXP-ENV-DC-067A			Camera	29	611710	6082735	611697	6082732	13	3	13	-101		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
11-Aug-2023	15:11:47	6797	BP23MVEXP-ENV-DC-067A			Camera	29	611709	6082735	611697	6082732	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
11-Aug-2023	15:15:10	6798	BP23MVEXP-ENV-DC-067A			Camera	29	611699	6082731	611697	6082732	2	-2	3	-47		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
11-Aug-2023	15:16:50	6799	BP23MVEXP-ENV-DC-067A			Camera	29	611694	6082729	611697	6082732	-3	-4	5	39		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
11-Aug-2023	15:17:40	6800	BP23MVEXP-ENV-DC-067A			Camera	29	611692	6082728	611697	6082732	-6	-4	7	54		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
11-Aug-2023	15:18:01	6801	BP23MVEXP-ENV-DC-067A			Camera	29	611691	6082728	611697	6082732	-7	-4	8	59		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
11-Aug-2023	15:18:26	6802	BP23MVEXP-ENV-DC-067A			Camera	29	611690	6082728	611697	6082732	-8	-5	9	57		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
11-Aug-2023	15:19:13	6803	BP23MVEXP-ENV-DC-067A			Camera	29	611687	6082726	611697	6082732	-10	-7	12	56		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
11-Aug-2023	15:20:07	6804	BP23MVEXP-ENV-DC-067A			Camera	29	611685	6082724	611697	6082732	-13	-8	15	57		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
11-Aug-2023	15:20:50	6805	BP23MVEXP-ENV-DC-067A			Camera	29	611684	6082723	611697	6082732	-14	-9	17	57		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
11-Aug-2023	15:20:59	6806	BP23MVEXP-ENV-DC-067A			Camera	29	611683	6082723	611697	6082732	-14	-9	17	57		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
11-Aug-2023	15:21:21	6807	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082721	611697	6082732	-16	-11	20	55		(Corr'd Nav, Kongsberg 14208, img#77) (B) (T.A)
11-Aug-2023	15:21:43	6808	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082721	611697	6082732	-16	-12	20	55		(Corr'd Nav, Kongsberg 14208, img#78) (B) (T.A)
11-Aug-2023	15:21:57	6809	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082721	611697	6082732	-17	-11	20	56		(Corr'd Nav, Kongsberg 14208, img#79) (B) (T.A)
11-Aug-2023	15:22:28	6810	BP23MVEXP-ENV-DC-067A			Camera	29	611678	6082721	611697	6082732	-19	-12	22	59		(Corr'd Nav, Kongsberg 14208, img#80) (B) (T.A)
11-Aug-2023	15:25:10	6811	BP23MVEXP-ENV-DC-067A			Camera	29	611671	6082718	611697	6082732	-26	-15	30	60		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	15:25:26	6812	BP23MVEXP-ENV-DC-067A			Camera	29	611671	6082717	611697	6082732	-27	-16	31	60		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	15:25:36	6813	BP23MVEXP-ENV-DC-067A			Camera	29	611670	6082717	611697	6082732	-27	-16	31	60		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	15:26:11	6814	BP23MVEXP-ENV-DC-067A			Camera	29	611668	6082715	611697	6082732	-29	-17	34	59		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	15:26:40	6815	BP23MVEXP-ENV-DC-067A			Camera	29	611668	6082715	611697	6082732	-30	-17	34	60		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	15:27:15	6816	BP23MVEXP-ENV-DC-067A			Camera	29	611666	6082714	611697	6082732	-32	-19	37	60		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	15:27:48	6817	BP23MVEXP-ENV-DC-067A			Camera	29	611664	6082713	611697	6082732	-33	-19	38	60		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	15:28:21	6818	BP23MVEXP-ENV-DC-067A			Camera	29	611662	6082713	611697	6082732	-35	-20	40	61		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	15:29:35	6819	BP23MVEXP-ENV-DC-067A			Camera	29	611659	6082711	611697	6082732	-39	-21	44	61		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	15:30:27	6820	BP23MVEXP-ENV-DC-067A			Camera	29	611656	6082710	611697	6082732	-41	-22	47	61		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	15:36:34	6821	BP23MVEXP-ENV-DC-067A			Camera	29	611657	6082725	611697	6082732	-41	-7	41	80		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	15:37:48	6822	BP23MVEXP-ENV-DC-067A			Camera	29	611660	6082732	611697	6082732	-37	-1	37	89		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	15:38:34	6823	BP23MVEXP-ENV-DC-067A			Camera	29	611661	6082736	611697	6082732	-36	4	36	96		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	15:41:00	6824	BP23MVEXP-ENV-DC-067A			Camera	29	611666	6082750	611697	6082732	-31	17	36	119		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	15:44:46	6825	BP23MVEXP-ENV-DC-067A			Camera	29	611673	6082773	611697	6082732	-24	40	47	149		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	15:45:44	6826	BP23MVEXP-ENV-DC-067A			Camera	29	611674	6082779	611697	6082732	-23	46	52	153		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	15:47:39	6827	BP23MVEXP-ENV-DC-067A			Camera	29	611676	6082778	611697	6082732	-21	46	50	155		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	15:49:25	6828	BP23MVEXP-ENV-DC-067A			Camera	29	611677	6082772	611697	6082732	-21	40	45	153		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	15:51:11	6829	BP23MVEXP-ENV-DC-067A			Camera	29	611678	6082767	611697	6082732	-19	35	40	151		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	15:51:50	6830	BP23MVEXP-ENV-DC-067A			Camera	29	611679	6082765	611697	6082732	-19	33	38	150		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	15:54:52	6831	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082756	611697	6082732	-17	24	29	145		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	16:00:48	6832	BP23MVEXP-ENV-DC-067A			Camera	29	611684	6082739	611697	6082732	-13	6	14	116		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	16:01:11	6833	BP23MVEXP-ENV-DC-067A			Camera	29	611685	6082738	611697	6082732	-12	5	13	113		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	16:01:31	6834	BP23MVEXP-ENV-DC-067A			Camera	29	611685	6082736	611697	6082732	-12	4	13	108		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	16:01:48	6835	BP23MVEXP-ENV-DC-067A			Camera	29	611686	6082736	611697	6082732	-12	4	12	107		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	16:02:27	6836	BP23MVEXP-ENV-DC-067A			Camera	29	611686	6082734	611697	6082732	-11	1	11	95		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	16:02:35	6837	BP23MVEXP-ENV-DC-067A			Camera	29	611686	6082733	611697	6082732	-11	1	11	94		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	16:03:41	6838	BP23MVEXP-ENV-DC-067A			Camera	29	611687	6082730	611697	6082732	-11	-2	11	77		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	16:06:31	6839	BP23MVEXP-ENV-DC-067A			Camera	29	611689	6082722	611697	6082732	-9	-10	13	40		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	16:06:48	6840	BP23MVEXP-ENV-DC-067A			Camera	29	611689	6082722	611697	6082732	-8	-11	13	38		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	16:08:24	6841	BP23MVEXP-ENV-DC-067A			Camera	29	611690	6082716	611697	6082732	-8	-17	18	25		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	16:09:56	6842	BP23MVEXP-ENV-DC-067A			Camera	29	611691	6082711	611697	6082732	-6	-21	22	17		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	16:11:47	6843	BP23MVEXP-ENV-DC-067A			Camera	29	611692	6082706	611697	6082732	-5	-26	27	11		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	16:12:28	6844	BP23MVEXP-ENV-DC-067A			Camera	29	611693	6082704	611697	6082732	-5	-29	29	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	16:13:51	6845	BP23MVEXP-ENV-DC-067A			Camera	29	611693	6082700	611697	6082732	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	16:14:07	6846	BP23MVEXP-ENV-DC-067A			Camera	29	611693	6082700	611697	6082732	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	16:15:07	6847	BP23MVEXP-ENV-DC-067A			Camera	29	611695	6082696	611697	6082732	-3	-36	36	4		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	16:15:55	6848	BP23MVEXP-ENV-DC-067A			Camera	29	611695	6082693	611697	6082732	-2	-39	39	4		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	16:16:32	6849	BP23MVEXP-ENV-DC-067A			Camera	29	611695	6082692	611697	6082732	-2	-40	40	3		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	16:17:08	6850	BP23MVEXP-ENV-DC-067A			Camera	29	611696	6082691	611697	6082732	-1	-42	42	2		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	17:03:40	6851	BP23MVEXP-ENV-DC-067B			Camera	30	611717	6082689	611697	6082732	20	-44	48	-24		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	17:05:02	6852	BP23MVEXP-ENV-DC-067B			Camera	30	611718	6082689	611697	6082732	21	-44	48	-25		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	17:06:37	6853	BP23MVEXP-ENV-DC-067B			Camera	30	611715	6082695	611697	6082732	18	-37	41	-25		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	17:06:57	6854	BP23MVEXP-ENV-DC-067B			Camera	30	611714	6082697	611697	6082732	17	-35	39	-26		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	17:07:38	6855	BP23MVEXP-ENV-DC-067B			Camera	30	611712	6082701	611697	6082732	15	-31	34	-25		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	17:08:27	6856	BP23MVEXP-ENV-DC-067B			Camera	30	611709	6082706	611697	6082732	12	-27	29	-24		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	17:08:36	6857	BP23MVEXP-ENV-DC-067B			Camera	30	611709	6082707	611697	6082732	12	-26	28	-24		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	17:09:29	6858	BP23MVEXP-ENV-DC-067B			Camera	30	611706	6082712	611697	6082732	9	-21	22	-23		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	17:10:27	6859	BP23MVEXP-ENV-DC-067B			Camera	29	611703	6082718	611697	6082732	6	-15	16	-21		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	17:11:13	6860	BP23MVEXP-ENV-DC-067B			Camera	29	611701	6082723	611697	6082732	3	-10	10	-18		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	17:12:04	6861	BP23MVEXP-ENV-DC-067B			Camera	29	611698	6082728	611697	6082732	0	-5	5	-2		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	17:12:32	6862	BP23MVEXP-ENV-DC-067B			Camera	29	611696	6082731	611697	6082732	-1	-2	2	29		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	17:12:54	6863	BP23MVEXP-ENV-DC-067B			Camera	29	611695	6082733	611697	6082732	-2	0	2	96		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	17:13:53	6864	BP23MVEXP-ENV-DC-067B			Camera	29	611693	6082738	611697	6082732	-5	5	7	139		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	17:14:53	6865	BP23MVEXP-ENV-DC-067B			Camera	29	611691	6082743	611697	6082732	-7	11	13	147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	17:15:31	6866	BP23MVEXP-ENV-DC-067B			Camera	29	611689	6082746	611697	6082732	-9	14	16	148		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	17:16:25	6867	BP23MVEXP-ENV-DC-067B			Camera	29	611687	6082751	611697	6082732	-10	19	22	152		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	17:17:52	6868	BP23MVEXP-ENV-DC-067B			Camera	29	611683	6082760	611697	6082732	-15	27	31	152		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	17:18:14	6869	BP23MVEXP-ENV-DC-067B			Camera	29	611682	6082762	611697	6082732	-16	29	33	152		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	17:19:02	6870	BP23MVEXP-ENV-DC-067B			Camera	29	611679	6082766	611697	6082732	-18	33	38	152		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	17:19:46	6871	BP23MVEXP-ENV-DC-067B			Camera	29	611678	6082770	611697	6082732	-20	37	42	152		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	17:40:04	6872	BP23MVEXP-ENV-DC-067B			Camera	29	611658	6082714	611697	6082732	-40	-18	44	65		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	17:40:12	6873	BP23MVEXP-ENV-DC-067B			Camera	29	611659	6082715	611697	6082732	-39	-18	43	65		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	17:40:23	6874	BP23MVEXP-ENV-DC-067B			Camera	29	611660	6082715	611697	6082732	-38	-17	42	66		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	17:40:47	6875	BP23MVEXP-ENV-DC-067B			Camera	29	611662	6082716	611697	6082732	-35	-16	39	65		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	17:41:34	6876	BP23MVEXP-ENV-DC-067B			Camera	29	611667	6082718	611697	6082732	-31	-14	34	65		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	17:42:56	6877	BP23MVEXP-ENV-DC-067B			Camera	29	611674	6082722	611697	6082732	-23	-11	26	66		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	17:43:33	6878	BP23MVEXP-ENV-DC-067B			Camera	29	611677	6082723	611697	6082732	-20	-9	22	66		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	17:43:56	6879	BP23MVEXP-ENV-DC-067B			Camera	29	611680	6082724	611697	6082732	-18	-8	19	66		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	17:44:36	6880	BP23MVEXP-ENV-DC-067B			Camera	29	611683	6082726	611697	6082732	-15	-6	16	67		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	17:45:13	6881	BP23MVEXP-ENV-DC-067B			Camera	29	611686	6082728	611697	6082732	-11	-4	12	69		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	17:45:20	6882	BP23MVEXP-ENV-DC-067B			Camera	29	611687	6082728	611697	6082732	-11	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	17:45:55	6883	BP23MVEXP-ENV-DC-067B			Camera	29	611691	6082730	611697	6082732	-7	-2	7	73		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	17:46:09	6884	BP23MVEXP-ENV-DC-067B			Camera	29	611692	6082731	611697	6082732	-5	-1	6	76		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	17:46:21	6885	BP23MVEXP-ENV-DC-067B			Camera	29	611693	6082732	611697	6082732	-4	-1	5	80		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	17:46:56	6886	BP23MVEXP-ENV-DC-067B			Camera	29	611696	6082733	611697	6082732	-1	0	1	110		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	17:47:04	6887	BP23MVEXP-ENV-DC-067B			Camera	29	611697	6082733	611697	6082732	0	1	1	149		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	17:47:54	6888	BP23MVEXP-ENV-DC-067B			Camera	29	611701	6082736	611697	6082732	4	3	5	-128		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	17:48:28	6889	BP23MVEXP-ENV-DC-067B			Camera	29	611704	6082737	611697	6082732	7	5	9	-124		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	17:49:18	6890	BP23MVEXP-ENV-DC-067B			Camera	29	611708	6082739	611697	6082732	11	7	13	-122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	17:50:54	6891	BP23MVEXP-ENV-DC-067B			Camera	29	611718	6082743	611697	6082732	21	11	23	-118		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	17:51:13	6892	BP23MVEXP-ENV-DC-067B			Camera	29	611719	6082744	611697	6082732	22	12	25	-118		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	17:52:22	6893	BP23MVEXP-ENV-DC-067B			Camera	29	611726	6082748	611697	6082732	28	15	32	-119		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	17:52:44	6894	BP23MVEXP-ENV-DC-067B			Camera	29	611727	6082749	611697	6082732	30	16	34	-119		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	17:54:27	6895	BP23MVEXP-ENV-DC-067B			Camera	29	611737	6082754	611697	6082732	39	21	45	-118		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	17:54:47	6896	BP23MVEXP-ENV-DC-067B			Camera	29	611739	6082755	611697	6082732	41	22	47	-118		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	20:50:04	6897	BP23MVEXP-ENV-DC-125			Camera	82	622032	6103882	622083	6103872	-51	11	52	102		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	20:54:32	6898	BP23MVEXP-ENV-DC-125			Camera	82	622029	6103882	622083	6103872	-54	10	55	101		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	20:55:58	6899	BP23MVEXP-ENV-DC-125			Camera	82	622037	6103882	622083	6103872	-46	10	47	102		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	20:56:17	6900	BP23MVEXP-ENV-DC-125			Camera	82	622039	6103881	622083	6103872	-44	9	45	102		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	20:56:55	6901	BP23MVEXP-ENV-DC-125			Camera	82	622044	6103880	622083	6103872	-39	8	40	102		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	20:57:17	6902	BP23MVEXP-ENV-DC-125			Camera	82	622046	6103880	622083	6103872	-37	8	37	102		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	20:57:42	6903	BP23MVEXP-ENV-DC-125			Camera	82	622049	6103879	622083	6103872	-34	7	35	102		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	20:58:21	6904	BP23MVEXP-ENV-DC-125			Camera	82	622053	6103879	622083	6103872	-30	7	31	103		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	20:58:48	6905	BP23MVEXP-ENV-DC-125			Camera	82	622056	6103878	622083	6103872	-27	6	28	103		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	20:59:17	6906	BP23MVEXP-ENV-DC-125			Camera	82	622059	6103878	622083	6103872	-24	6	25	104		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	20:59:44	6907	BP23MVEXP-ENV-DC-125			Camera	82	622062	6103877	622083	6103872	-21	5	22	104		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	21:00:28	6908	BP23MVEXP-ENV-DC-125			Camera	82	622066	6103876	622083	6103872	-17	4	17	104		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	21:01:30	6909	BP23MVEXP-ENV-DC-125			Camera	82	622072	6103875	622083	6103872	-11	3	11	106		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	21:02:13	6910	BP23MVEXP-ENV-DC-125			Camera	82	622077	6103873	622083	6103872	-6	1	6	104		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	21:02:40	6911	BP23MVEXP-ENV-DC-125			Camera	82	622080	6103872	622083	6103872	-3	0	3	95		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	21:02:57	6912	BP23MVEXP-ENV-DC-125			Camera	82	622081	6103872	622083	6103872	-2	0	2	86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	21:03:07	6913	BP23MVEXP-ENV-DC-125			Camera	82	622082	6103872	622083	6103872	-1	0	1	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	21:03:15	6914	BP23MVEXP-ENV-DC-125			Camera	82	622083	6103872	622083	6103872	0	0	0	-12		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	21:04:43	6915	BP23MVEXP-ENV-DC-125			Camera	82	622092	6103870	622083	6103872	9	-2	9	-79		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	21:05:57	6916	BP23MVEXP-ENV-DC-125			Camera	82	622099	6103868	622083	6103872	17	-4	17	-78		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	21:07:00	6917	BP23MVEXP-ENV-DC-125			Camera	82	622106	6103867	622083	6103872	23	-5	23	-79		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	21:08:17	6918	BP23MVEXP-ENV-DC-125			Camera	82	622114	6103866	622083	6103872	31	-6	31	-79		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	21:08:44	6919	BP23MVEXP-ENV-DC-125			Camera	82	622116	6103865	622083	6103872	33	-7	34	-79		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	21:24:53	6920	BP23MVEXP-ENV-DC-125			Camera	82	622093	6103919	622083	6103872	10	47	48	-168		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	21:25:49	6921	BP23MVEXP-ENV-DC-125			Camera	82	622091	6103916	622083	6103872	8	44	45	-170		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	21:26:30	6922	BP23MVEXP-ENV-DC-125			Camera	82	622090	6103913	622083	6103872	7	41	41	-170		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	21:27:07	6923	BP23MVEXP-ENV-DC-125			Camera	82	622090	6103908	622083	6103872	7	36	37	-169		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	21:27:28	6924	BP23MVEXP-ENV-DC-125			Camera	82	622090	6103906	622083	6103872	7	34	35	-168		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	21:28:50	6925	BP23MVEXP-ENV-DC-125			Camera	82	622089	6103896	622083	6103872	6	24	25	-166		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	21:29:46	6926	BP23MVEXP-ENV-DC-125			Camera	82	622087	6103891	622083	6103872	4	19	19	-167		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	21:31:14	6927	BP23MVEXP-ENV-DC-125				82	622085	6103883	622083	6103872	2	11	11	-170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A) Fix no photo
11-Aug-2023	21:31:27	6928	BP23MVEXP-ENV-DC-125			Camera	82	622085	6103882	622083	6103872	2	10	10	-170		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	21:32:03	6929	BP23MVEXP-ENV-DC-125			Camera	82	622084	6103878	622083	6103872	1	6	6	-172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	21:35:05	6930	BP23MVEXP-ENV-DC-125			Camera	82	622080	6103859	622083	6103872	-3	-13	13	14		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	21:35:22	6931	BP23MVEXP-ENV-DC-125			Camera	82	622079	6103857	622083	6103872	-4	-15	15	14		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	21:36:44	6932	BP23MVEXP-ENV-DC-125			Camera	82	622077	6103850	622083	6103872	-6	-22	23	16		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	21:38:01	6933	BP23MVEXP-ENV-DC-125			Camera	82	622075	6103842	622083	6103872	-8	-30	31	15		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	21:38:30	6934	BP23MVEXP-ENV-DC-125			Camera	82	622075	6103839	622083	6103872	-8	-34	34	14		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	21:38:41	6935	BP23MVEXP-ENV-DC-125			Camera	82	622074	6103837	622083	6103872	-9	-35	36	14		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	21:38:50	6936	BP23MVEXP-ENV-DC-125			Camera	82	622074	6103836	622083	6103872	-9	-36	37	14		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	21:40:24	6937	BP23MVEXP-ENV-DC-125			Camera	82	622072	6103827	622083	6103872	-11	-45	46	14		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	22:45:10	6938	BP23MVEXP-ENV-DC-124			Camera	89	623041	6107650	623089	6107641	-48	9	49	100		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	22:46:56	6939	BP23MVEXP-ENV-DC-124			Camera	89	623045	6107649	623089	6107641	-44	8	45	100		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	22:47:26	6940	BP23MVEXP-ENV-DC-124			Camera	89	623047	6107649	623089	6107641	-42	8	43	101		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	22:47:43	6941	BP23MVEXP-ENV-DC-124			Camera	89	623049	6107649	623089	6107641	-40	8	41	101		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	22:48:32	6942	BP23MVEXP-ENV-DC-124			Camera	88	623055	6107648	623089	6107641	-34	7	35	102		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	22:49:00	6943	BP23MVEXP-ENV-DC-124			Camera	88	623059	6107647	623089	6107641	-30	6	31	101		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	22:49:23	6944	BP23MVEXP-ENV-DC-124			Camera	89	623061	6107646	623089	6107641	-28	5	28	100		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	22:49:47	6945	BP23MVEXP-ENV-DC-124			Camera	88	623064	6107645	623089	6107641	-25	4	25	99		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	22:50:13	6946	BP23MVEXP-ENV-DC-124			Camera	88	623066	6107644	623089	6107641	-23	3	23	97		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	22:50:35	6947	BP23MVEXP-ENV-DC-124			Camera	88	623068	6107644	623089	6107641	-21	3	21	97		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	22:51:01	6948	BP23MVEXP-ENV-DC-124			Camera	88	623070	6107643	623089	6107641	-19	2	19	96		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	22:51:16	6949	BP23MVEXP-ENV-DC-124			Camera	88	623072	6107643	623089	6107641	-17	2	17	96		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	22:52:13	6950	BP23MVEXP-ENV-DC-124			Camera	88	623078	6107640	623089	6107641	-11	-1	11	87		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	22:52:37	6951	BP23MVEXP-ENV-DC-124			Camera	88	623080	6107640	623089	6107641	-9	-1	9	83		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	22:53:11	6952	BP23MVEXP-ENV-DC-124			Camera	88	623083	6107639	623089	6107641	-6	-2	6	74		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	22:53:29	6953	BP23MVEXP-ENV-DC-124			Camera	88	623085	6107639	623089	6107641	-4	-2	4	61		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	22:54:08	6954	BP23MVEXP-ENV-DC-124			Camera	88	623089	6107638	623089	6107641	0	-3	3	-2		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	22:54:45	6955	BP23MVEXP-ENV-DC-124			Camera	88	623093	6107637	623089	6107641	4	-4	5	-46		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	22:55:21	6956	BP23MVEXP-ENV-DC-124			Camera	88	623097	6107637	623089	6107641	8	-4	9	-63		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	22:55:45	6957	BP23MVEXP-ENV-DC-124			Camera	88	623099	6107636	623089	6107641	10	-5	11	-65		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	22:56:39	6958	BP23MVEXP-ENV-DC-124			Camera	88	623105	6107635	623089	6107641	16	-6	17	-68		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	22:57:01	6959	BP23MVEXP-ENV-DC-124			Camera	88	623107	6107634	623089	6107641	18	-7	19	-69		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	22:57:46	6960	BP23MVEXP-ENV-DC-124			Camera	88	623111	6107634	623089	6107641	22	-7	23	-72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	22:58:04	6961	BP23MVEXP-ENV-DC-124			Camera	88	623112	6107634	623089	6107641	24	-7	25	-72		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	22:59:44	6962	BP23MVEXP-ENV-DC-124			Camera	88	623123	6107632	623089	6107641	34	-9	35	-75		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	23:00:08	6963	BP23MVEXP-ENV-DC-124			Camera	88	623125	6107631	623089	6107641	36	-10	38	-75		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	23:01:04	6964	BP23MVEXP-ENV-DC-124			Camera	88	623131	6107630	623089	6107641	42	-11	44	-75		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	23:01:36	6965	BP23MVEXP-ENV-DC-124			Camera	88	623135	6107629	623089	6107641	46	-12	48	-75		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	23:09:15	6966	BP23MVEXP-ENV-DC-124			Camera	88	623078	6107591	623089	6107641	-11	-51	52	12		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	23:10:30	6967	BP23MVEXP-ENV-DC-124			Camera	88	623079	6107594	623089	6107641	-10	-47	48	12		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	23:11:03	6968	BP23MVEXP-ENV-DC-124			Camera	88	623080	6107598	623089	6107641	-9	-43	44	11		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	23:11:42	6969	BP23MVEXP-ENV-DC-124			Camera	88	623082	6107602	623089	6107641	-7	-39	40	10		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	23:13:30	6970	BP23MVEXP-ENV-DC-124			Camera	88	623084	6107613	623089	6107641	-5	-28	28	10		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	23:14:33	6971	BP23MVEXP-ENV-DC-124			Camera	88	623085	6107619	623089	6107641	-4	-22	22	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	23:15:10	6972	BP23MVEXP-ENV-DC-124			Camera	88	623086	6107623	623089	6107641	-3	-18	19	10		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	23:16:50	6973	BP23MVEXP-ENV-DC-124			Camera	88	623088	6107632	623089	6107641	-1	-9	9	6		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	23:17:54	6974	BP23MVEXP-ENV-DC-124			Camera	88	623090	6107639	623089	6107641	1	-2	2	-21		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	23:18:34	6975	BP23MVEXP-ENV-DC-124			Camera	89	623091	6107643	623089	6107641	2	2	3	-139		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	23:19:17	6976	BP23MVEXP-ENV-DC-124			Camera	89	623092	6107648	623089	6107641	3	7	8	-158		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	23:19:43	6977	BP23MVEXP-ENV-DC-124			Camera	89	623092	6107650	623089	6107641	3	9	10	-161		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	23:21:12	6978	BP23MVEXP-ENV-DC-124			Camera	89	623094	6107659	623089	6107641	5	18	18	-166		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	23:22:02	6979	BP23MVEXP-ENV-DC-124			Camera	89	623095	6107664	623089	6107641	6	23	23	-166		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	23:22:56	6980	BP23MVEXP-ENV-DC-124			Camera	89	623096	6107669	623089	6107641	7	28	29	-166		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	23:23:57	6981	BP23MVEXP-ENV-DC-124			Camera	89	623098	6107675	623089	6107641	9	34	35	-166		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	23:24:28	6982	BP23MVEXP-ENV-DC-124			Camera	89	623098	6107679	623089	6107641	9	38	39	-166		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	23:25:20	6983	BP23MVEXP-ENV-DC-124			Camera	89	623099	6107684	623089	6107641	10	43	44	-167		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	23:25:40	6984	BP23MVEXP-ENV-DC-124			Camera	89	623100	6107686	623089	6107641	11	45	46	-167		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	23:25:58	6985	BP23MVEXP-ENV-DC-124			Camera	89	623099	6107687	623089	6107641	10	46	47	-167		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	00:30:21	6986	BP23MVEXP-ENV-DC-123			Camera	93	624140	6111562	624150	6111614	-10	-52	53	11		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	00:34:38	6987	BP23MVEXP-ENV-DC-123			Camera	93	624139	6111562	624150	6111614	-11	-52	53	11		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	00:35:38	6988	BP23MVEXP-ENV-DC-123			Camera	93	624140	6111564	624150	6111614	-10	-50	51	12		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	00:36:54	6989	BP23MVEXP-ENV-DC-123			Camera	93	624142	6111572	624150	6111614	-8	-42	43	11		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	00:37:16	6990	BP23MVEXP-ENV-DC-123			Camera	93	624142	6111574	624150	6111614	-8	-40	41	11		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	00:37:56	6991	BP23MVEXP-ENV-DC-123			Camera	93	624144	6111578	624150	6111614	-6	-36	36	10		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	00:38:44	6992	BP23MVEXP-ENV-DC-123			Camera	93	624146	6111584	624150	6111614	-4	-30	31	8		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	00:39:15	6993	BP23MVEXP-ENV-DC-123			Camera	93	624146	6111587	624150	6111614	-4	-27	28	7		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	00:39:46	6994	BP23MVEXP-ENV-DC-123			Camera	93	624147	6111590	624150	6111614	-3	-24	24	7		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	00:40:05	6995	BP23MVEXP-ENV-DC-123			Camera	93	624148	6111592	624150	6111614	-2	-22	23	6		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	00:40:42	6996	BP23MVEXP-ENV-DC-123			Camera	93	624148	6111595	624150	6111614	-2	-19	19	5		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	00:41:26	6997	BP23MVEXP-ENV-DC-123			Camera	93	624149	6111600	624150	6111614	-1	-14	14	3		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	00:42:31	6998	BP23MVEXP-ENV-DC-123			Camera	93	624151	6111606	624150	6111614	1	-8	8	-5		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	00:43:11	6999	BP23MVEXP-ENV-DC-123			Camera	93	624152	6111610	624150	6111614	2	-4	4	-23		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	00:43:43	7000	BP23MVEXP-ENV-DC-123			Camera	93	624153	6111613	624150	6111614	3	-1	3	-75		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	00:44:21	7001	BP23MVEXP-ENV-DC-123			Camera	93	624154	6111617	624150	6111614	4	3	5	-130		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	00:44:58	7002	BP23MVEXP-ENV-DC-123			Camera	93	624155	6111621	624150	6111614	5	7	8	-144		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	00:45:33	7003	BP23MVEXP-ENV-DC-123			Camera	93	624155	6111624	624150	6111614	5	10	11	-152		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	00:45:51	7004	BP23MVEXP-ENV-DC-123			Camera	93	624156	6111626	624150	6111614	6	12	13	-155		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	00:46:10	7005	BP23MVEXP-ENV-DC-123			Camera	93	624156	6111628	624150	6111614	6	14	15	-157		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	00:46:46	7006	BP23MVEXP-ENV-DC-123			Camera	93	624157	6111631	624150	6111614	7	17	19	-159		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	00:47:31	7007	BP23MVEXP-ENV-DC-123			Camera	93	624158	6111635	624150	6111614	8	22	23	-160		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	00:47:55	7008	BP23MVEXP-ENV-DC-123			Camera	93	624158	6111638	624150	6111614	8	24	25	-161		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	00:48:48	7009	BP23MVEXP-ENV-DC-123			Camera	93	624160	6111644	624150	6111614	10	30	31	-162		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	00:50:38	7010	BP23MVEXP-ENV-DC-123			Camera	93	624162	6111655	624150	6111614	12	41	42	-163		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	00:51:42	7011	BP23MVEXP-ENV-DC-123			Camera	93	624164	6111661	624150	6111614	14	47	49	-164		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	01:00:16	7012	BP23MVEXP-ENV-DC-123			Camera	93	624200	6111603	624150	6111614	50	-11	51	-78		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	01:02:04	7013	BP23MVEXP-ENV-DC-123			Camera	93	624193	6111604	624150	6111614	43	-10	44	-77		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	01:02:32	7014	BP23MVEXP-ENV-DC-123			Camera	93	624191	6111605	624150	6111614	41	-9	42	-77		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	01:03:04	7015	BP23MVEXP-ENV-DC-123			Camera	93	624187	6111606	624150	6111614	37	-8	38	-77		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	01:03:27	7016	BP23MVEXP-ENV-DC-123			Camera	93	624185	6111606	624150	6111614	35	-8	36	-78		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	01:03:58	7017	BP23MVEXP-ENV-DC-123			Camera	93	624182	6111607	624150	6111614	32	-7	33	-78		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	01:04:46	7018	BP23MVEXP-ENV-DC-123			Camera	93	624177	6111608	624150	6111614	27	-6	27	-77		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	01:05:09	7019	BP23MVEXP-ENV-DC-123			Camera	93	624174	6111608	624150	6111614	24	-6	25	-77		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	01:05:58	7020	BP23MVEXP-ENV-DC-123			Camera	93	624170	6111610	624150	6111614	20	-4	20	-77		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	01:06:54	7021	BP23MVEXP-ENV-DC-123			Camera	93	624164	6111610	624150	6111614	14	-4	14	-76		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	01:08:06	7022	BP23MVEXP-ENV-DC-123			Camera	93	624156	6111612	624150	6111614	6	-2	6	-71		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	01:08:59	7023	BP23MVEXP-ENV-DC-123			Camera	93	624151	6111613	624150	6111614	1	-1	1	-35		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	01:09:39	7024	BP23MVEXP-ENV-DC-123			Camera	93	624146	6111614	624150	6111614	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	01:10:28	7025	BP23MVEXP-ENV-DC-123			Camera	93	624141	6111615	624150	6111614	-9	1	9	97		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	01:11:47	7026	BP23MVEXP-ENV-DC-123			Camera	93	624133	6111617	624150	6111614	-17	3	17	100		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	01:12:33	7027	BP23MVEXP-ENV-DC-123			Camera	93	624128	6111617	624150	6111614	-22	3	22	99		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	01:13:06	7028	BP23MVEXP-ENV-DC-123			Camera	93	624125	6111618	624150	6111614	-25	4	26	99		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	01:13:27	7029	BP23MVEXP-ENV-DC-123			Camera	93	624123	6111619	624150	6111614	-27	5	28	99		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	01:14:17	7030	BP23MVEXP-ENV-DC-123			Camera	93	624118	6111620	624150	6111614	-32	6	33	101		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	01:15:10	7031	BP23MVEXP-ENV-DC-123			Camera	93	624113	6111621	624150	6111614	-37	7	38	101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	01:16:04	7032	BP23MVEXP-ENV-DC-123			Camera	93	624107	6111622	624150	6111614	-43	8	44	101		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	01:16:22	7033	BP23MVEXP-ENV-DC-123			Camera	93	624105	6111623	624150	6111614	-45	9	46	101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	01:16:39	7034	BP23MVEXP-ENV-DC-123			Camera	93	624104	6111623	624150	6111614	-46	9	47	101		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	02:16:06	7035	BP23MVEXP-ENV-DC-122			Camera	97	624621	6115454	624665	6115470	-44	-17	47	70		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	02:17:15	7036	BP23MVEXP-ENV-DC-122			Camera	97	624622	6115454	624665	6115470	-43	-16	46	70		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	02:17:45	7037	BP23MVEXP-ENV-DC-122			Camera	97	624624	6115454	624665	6115470	-41	-16	44	69		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	02:18:48	7038	BP23MVEXP-ENV-DC-122			Camera	97	624630	6115456	624665	6115470	-35	-14	38	68		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	02:19:12	7039	BP23MVEXP-ENV-DC-122			Camera	97	624632	6115457	624665	6115470	-33	-13	35	69		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	02:19:39	7040	BP23MVEXP-ENV-DC-122			Camera	97	624635	6115459	624665	6115470	-30	-11	32	69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	02:20:48	7041	BP23MVEXP-ENV-DC-122			Camera	97	624642	6115461	624665	6115470	-23	-9	25	69		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	02:22:29	7042	BP23MVEXP-ENV-DC-122			Camera	97	624652	6115464	624665	6115470	-13	-6	14	67		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	02:23:49	7043	BP23MVEXP-ENV-DC-122			Camera	97	624659	6115467	624665	6115470	-6	-3	7	65		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	02:24:57	7044	BP23MVEXP-ENV-DC-122			Camera	97	624666	6115469	624665	6115470	1	-1	1	-50		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	02:25:32	7045	BP23MVEXP-ENV-DC-122			Camera	97	624669	6115470	624665	6115470	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	02:25:54	7046	BP23MVEXP-ENV-DC-122			Camera	97	624671	6115471	624665	6115470	6	1	6	-101		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	02:26:39	7047	BP23MVEXP-ENV-DC-122			Camera	97	624676	6115473	624665	6115470	11	3	11	-104		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	02:27:16	7048	BP23MVEXP-ENV-DC-122			Camera	97	624679	6115474	624665	6115470	14	4	15	-106		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	02:27:57	7049	BP23MVEXP-ENV-DC-122			Camera	97	624684	6115475	624665	6115470	19	5	19	-106		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	02:28:39	7050	BP23MVEXP-ENV-DC-122			Camera	98	624687	6115477	624665	6115470	22	7	23	-107		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	02:29:22	7051	BP23MVEXP-ENV-DC-122			Camera	97	624692	6115478	624665	6115470	27	8	28	-107		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	02:29:44	7052	BP23MVEXP-ENV-DC-122			Camera	97	624693	6115479	624665	6115470	28	9	30	-107		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	02:30:10	7053	BP23MVEXP-ENV-DC-122			Camera	98	624696	6115479	624665	6115470	31	9	33	-107		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	02:31:46	7054	BP23MVEXP-ENV-DC-122			Camera	98	624706	6115483	624665	6115470	41	13	43	-108		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	02:32:04	7055	BP23MVEXP-ENV-DC-122			Camera	98	624708	6115484	624665	6115470	43	14	45	-108		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	02:32:36	7056	BP23MVEXP-ENV-DC-122			Camera	98	624710	6115484	624665	6115470	45	14	47	-108		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	02:33:03	7057	BP23MVEXP-ENV-DC-122			Camera	98	624713	6115486	624665	6115470	48	16	51	-108		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	02:33:26	7058	BP23MVEXP-ENV-DC-122			Camera	98	624714	6115487	624665	6115470	49	17	52	-109		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	02:42:31	7059	BP23MVEXP-ENV-DC-122			Camera	97	624649	6115512	624665	6115470	-16	42	45	159		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	02:42:43	7060	BP23MVEXP-ENV-DC-122			Camera	97	624649	6115511	624665	6115470	-16	41	44	159		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	02:43:18	7061	BP23MVEXP-ENV-DC-122			Camera	97	624650	6115508	624665	6115470	-15	38	41	159		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	02:43:59	7062	BP23MVEXP-ENV-DC-122			Camera	97	624652	6115505	624665	6115470	-13	36	38	160		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	02:44:34	7063	BP23MVEXP-ENV-DC-122			Camera	97	624654	6115502	624665	6115470	-12	32	34	160		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	02:45:36	7064	BP23MVEXP-ENV-DC-122			Camera	97	624656	6115496	624665	6115470	-9	26	28	160		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	02:45:47	7065	BP23MVEXP-ENV-DC-122			Camera	97	624656	6115495	624665	6115470	-9	25	26	160		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	02:46:34	7066	BP23MVEXP-ENV-DC-122			Camera	97	624658	6115489	624665	6115470	-7	19	21	160		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	02:47:43	7067	BP23MVEXP-ENV-DC-122			Camera	97	624660	6115481	624665	6115470	-5	11	12	157		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	02:48:45	7068	BP23MVEXP-ENV-DC-122			Camera	97	624662	6115474	624665	6115470	-3	4	5	143		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	02:49:43	7069	BP23MVEXP-ENV-DC-122			Camera	97	624663	6115469	624665	6115470	-2	-1	2	52		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	02:50:11	7070	BP23MVEXP-ENV-DC-122			Camera	98	624664	6115466	624665	6115470	-1	-4	4	17		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	02:50:17	7071	BP23MVEXP-ENV-DC-122			Camera	98	624664	6115466	624665	6115470	-1	-4	5	17		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	02:50:36	7072	BP23MVEXP-ENV-DC-122			Camera	98	624664	6115464	624665	6115470	-1	-6	6	7		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	02:51:16	7073	BP23MVEXP-ENV-DC-122			Camera	98	624665	6115460	624665	6115470	0	-10	10	0		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	02:51:33	7074	BP23MVEXP-ENV-DC-122			Camera	98	624666	6115459	624665	6115470	1	-11	11	-5		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	02:52:39	7075	BP23MVEXP-ENV-DC-122			Camera	98	624670	6115453	624665	6115470	5	-17	18	-16		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	02:52:56	7076	BP23MVEXP-ENV-DC-122			Camera	98	624671	6115451	624665	6115470	6	-19	20	-16		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	02:53:17	7077	BP23MVEXP-ENV-DC-122			Camera	98	624672	6115449	624665	6115470	7	-21	22	-18		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	02:53:37	7078	BP23MVEXP-ENV-DC-122			Camera	98	624672	6115447	624665	6115470	7	-23	24	-18		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	02:53:46	7079	BP23MVEXP-ENV-DC-122			Camera	98	624673	6115446	624665	6115470	8	-24	25	-18		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	02:54:44	7080	BP23MVEXP-ENV-DC-122			Camera	98	624674	6115441	624665	6115470	9	-29	31	-17		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	02:55:09	7081	BP23MVEXP-ENV-DC-122			Camera	98	624676	6115438	624665	6115470	11	-32	34	-19		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	02:55:26	7082	BP23MVEXP-ENV-DC-122			Camera	98	624676	6115437	624665	6115470	11	-33	35	-18		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	02:55:55	7083	BP23MVEXP-ENV-DC-122			Camera	98	624677	6115434	624665	6115470	12	-36	38	-19		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	02:56:31	7084	BP23MVEXP-ENV-DC-122			Camera	97	624678	6115431	624665	6115470	13	-39	41	-18		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	02:57:16	7085	BP23MVEXP-ENV-DC-122			Camera	98	624680	6115426	624665	6115470	15	-44	46	-19		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
12-Aug-2023	03:57:02	7086	BP23MVEXP-ENV-DC-121			Camera	97	623463	6119286	623511	6119299	-48	-13	49	75		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	03:58:24	7087	BP23MVEXP-ENV-DC-121			Camera	97	623464	6119287	623511	6119299	-47	-12	48	76		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	03:59:00	7088	BP23MVEXP-ENV-DC-121			Camera	97	623467	6119289	623511	6119299	-44	-10	45	77		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	03:59:43	7089	BP23MVEXP-ENV-DC-121			Camera	97	623472	6119290	623511	6119299	-39	-9	40	77		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	04:00:25	7090	BP23MVEXP-ENV-DC-121			Camera	97	623475	6119291	623511	6119299	-36	-8	37	77		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	04:01:21	7091	BP23MVEXP-ENV-DC-121			Camera	97	623481	6119293	623511	6119299	-30	-6	31	78		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	04:02:16	7092	BP23MVEXP-ENV-DC-121			Camera	97	623486	6119294	623511	6119299	-25	-5	25	79		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	04:03:13	7093	BP23MVEXP-ENV-DC-121			Camera	97	623491	6119296	623511	6119299	-20	-3	20	83		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	04:04:47	7094	BP23MVEXP-ENV-DC-121			Camera	97	623502	6119299	623511	6119299	-9	0	9	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	04:05:18	7095	BP23MVEXP-ENV-DC-121			Camera	97	623505	6119300	623511	6119299	-6	1	6	97		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	04:05:52	7096	BP23MVEXP-ENV-DC-121			Camera	97	623508	6119301	623511	6119299	-3	2	4	115		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	04:06:59	7097	BP23MVEXP-ENV-DC-121			Camera	97	623515	6119303	623511	6119299	4	4	6	-137		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	04:07:49	7098	BP23MVEXP-ENV-DC-121			Camera	97	623520	6119304	623511	6119299	9	5	11	-120		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	04:08:08	7099	BP23MVEXP-ENV-DC-121			Camera	97	623522	6119305	623511	6119299	11	6	12	-117		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	04:09:13	7100	BP23MVEXP-ENV-DC-121			Camera	97	623528	6119307	623511	6119299	17	8	19	-114		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	04:10:04	7101	BP23MVEXP-ENV-DC-121			Camera	97	623534	6119308	623511	6119299	23	9	25	-113		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	04:11:10	7102	BP23MVEXP-ENV-DC-121			Camera	97	623540	6119310	623511	6119299	29	11	31	-111		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	04:12:06	7103	BP23MVEXP-ENV-DC-121			Camera	97	623546	6119312	623511	6119299	35	13	37	-110		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	04:12:22	7104	BP23MVEXP-ENV-DC-121			Camera	97	623547	6119312	623511	6119299	36	13	39	-110		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	04:13:01	7105	BP23MVEXP-ENV-DC-121			Camera	97	623550	6119313	623511	6119299	40	14	42	-110		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	04:13:53	7106	BP23MVEXP-ENV-DC-121			Camera	97	623556	6119315	623511	6119299	45	16	48	-110		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	04:14:07	7107	BP23MVEXP-ENV-DC-121			Camera	97	623558	6119316	623511	6119299	47	17	50	-109		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	04:28:13	7108	BP23MVEXP-ENV-DC-121			Camera	97	623496	6119349	623511	6119299	-15	50	52	163		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	04:29:20	7109	BP23MVEXP-ENV-DC-121			Camera	97	623498	6119344	623511	6119299	-13	45	47	164		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	04:29:38	7110	BP23MVEXP-ENV-DC-121			Camera	97	623499	6119342	623511	6119299	-12	43	45	164		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	04:29:47	7111	BP23MVEXP-ENV-DC-121			Camera	97	623499	6119341	623511	6119299	-12	42	44	164		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	04:30:20	7112	BP23MVEXP-ENV-DC-121			Camera	97	623500	6119337	623511	6119299	-11	38	40	165		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	04:30:50	7113	BP23MVEXP-ENV-DC-121			Camera	97	623501	6119334	623511	6119299	-10	35	37	165		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	04:31:17	7114	BP23MVEXP-ENV-DC-121			Camera	97	623502	6119332	623511	6119299	-9	33	34	165		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	04:32:15	7115	BP23MVEXP-ENV-DC-121			Camera	97	623504	6119326	623511	6119299	-7	27	28	166		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	04:32:52	7116	BP23MVEXP-ENV-DC-121			Camera	97	623505	6119322	623511	6119299	-6	23	24	166		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	04:33:24	7117	BP23MVEXP-ENV-DC-121			Camera	97	623506	6119319	623511	6119299	-5	20	21	167		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	04:34:05	7118	BP23MVEXP-ENV-DC-121			Camera	97	623508	6119315	623511	6119299	-3	16	17	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	04:34:49	7119	BP23MVEXP-ENV-DC-121			Camera	97	623509	6119311	623511	6119299	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	04:36:19	7120	BP23MVEXP-ENV-DC-121			Camera	97	623512	6119302	623511	6119299	1	3	3	-159		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	04:36:53	7121	BP23MVEXP-ENV-DC-121			Camera	97	623513	6119299	623511	6119299	2	0	2	-83		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	04:37:03	7122	BP23MVEXP-ENV-DC-121			Camera	97	623513	6119298	623511	6119299	2	-1	3	-64		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	04:37:12	7123	BP23MVEXP-ENV-DC-121			Camera	97	623514	6119297	623511	6119299	3	-2	3	-53		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	04:37:49	7124	BP23MVEXP-ENV-DC-121			Camera	97	623515	6119293	623511	6119299	4	-6	7	-35		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	04:38:32	7125	BP23MVEXP-ENV-DC-121			Camera	97	623516	6119289	623511	6119299	5	-10	11	-29		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	04:39:13	7126	BP23MVEXP-ENV-DC-121			Camera	97	623518	6119285	623511	6119299	7	-14	16	-26		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	04:40:18	7127	BP23MVEXP-ENV-DC-121			Camera	97	623520	6119279	623511	6119299	9	-20	22	-24		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	04:40:56	7128	BP23MVEXP-ENV-DC-121			Camera	97	623521	6119275	623511	6119299	10	-24	26	-23		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	04:41:40	7129	BP23MVEXP-ENV-DC-121			Camera	97	623522	6119271	623511	6119299	11	-28	30	-22		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	04:42:12	7130	BP23MVEXP-ENV-DC-121			Camera	97	623524	6119268	623511	6119299	13	-31	34	-22		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	04:42:41	7131	BP23MVEXP-ENV-DC-121			Camera	97	623525	6119265	623511	6119299	14	-34	37	-22		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	04:43:12	7132	BP23MVEXP-ENV-DC-121			Camera	97	623526	6119262	623511	6119299	15	-37	40	-22		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	04:43:44	7133	BP23MVEXP-ENV-DC-121			Camera	97	623527	6119258	623511	6119299	16	-41	44	-21		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	04:44:03	7134	BP23MVEXP-ENV-DC-121			Camera	97	623528	6119257	623511	6119299	17	-42	45	-21		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	04:44:39	7135	BP23MVEXP-ENV-DC-121			Camera	97	623529	6119253	623511	6119299	18	-46	49	-21		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	05:45:12	7136	BP23MVEXP-ENV-DC-120			Camera	94	622336	6123204	622353	6123151	-17	53	55	162		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	05:48:16	7137	BP23MVEXP-ENV-DC-120			Camera	94	622340	6123194	622353	6123151	-13	43	45	164		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	05:48:58	7138	BP23MVEXP-ENV-DC-120			Camera	94	622342	6123190	622353	6123151	-11	39	41	165		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	05:49:37	7139	BP23MVEXP-ENV-DC-120			Camera	94	622344	6123186	622353	6123151	-9	35	36	165		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	05:50:07	7140	BP23MVEXP-ENV-DC-120			Camera	94	622344	6123183	622353	6123151	-9	32	33	165		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	05:50:38	7141	BP23MVEXP-ENV-DC-120			Camera	94	622345	6123179	622353	6123151	-8	28	29	164		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	05:51:14	7142	BP23MVEXP-ENV-DC-120			Camera	94	622346	6123176	622353	6123151	-7	25	26	164		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	05:52:13	7143	BP23MVEXP-ENV-DC-120			Camera	94	622348	6123171	622353	6123151	-5	20	20	166		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	05:52:32	7144	BP23MVEXP-ENV-DC-120			Camera	94	622349	6123169	622353	6123151	-4	18	18	167		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	05:53:03	7145	BP23MVEXP-ENV-DC-120			Camera	94	622350	6123166	622353	6123151	-3	15	15	168		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	05:53:35	7146	BP23MVEXP-ENV-DC-120			Camera	94	622351	6123163	622353	6123151	-2	12	12	170		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	05:54:12	7147	BP23MVEXP-ENV-DC-120			Camera	94	622352	6123159	622353	6123151	-1	8	8	176		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	05:54:56	7148	BP23MVEXP-ENV-DC-120			Camera	94	622354	6123155	622353	6123151	1	4	4	-158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	05:55:13	7149	BP23MVEXP-ENV-DC-120			Camera	94	622355	6123153	622353	6123151	2	2	3	-133		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	05:55:24	7150	BP23MVEXP-ENV-DC-120			Camera	94	622355	6123152	622353	6123151	2	1	3	-109		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	05:56:09	7151	BP23MVEXP-ENV-DC-120			Camera	94	622357	6123147	622353	6123151	4	-4	5	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	05:56:49	7152	BP23MVEXP-ENV-DC-120			Camera	94	622358	6123143	622353	6123151	5	-8	9	-34		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	05:57:22	7153	BP23MVEXP-ENV-DC-120			Camera	94	622359	6123140	622353	6123151	6	-11	13	-29		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	05:57:50	7154	BP23MVEXP-ENV-DC-120			Camera	94	622360	6123137	622353	6123151	7	-14	15	-27		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	05:58:33	7155	BP23MVEXP-ENV-DC-120			Camera	94	622361	6123134	622353	6123151	8	-17	19	-25		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	05:59:07	7156	BP23MVEXP-ENV-DC-120			Camera	94	622362	6123131	622353	6123151	9	-21	23	-25		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	05:59:31	7157	BP23MVEXP-ENV-DC-120			Camera	94	622363	6123128	622353	6123151	10	-23	25	-24		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	06:00:00	7158	BP23MVEXP-ENV-DC-120			Camera	94	622365	6123125	622353	6123151	12	-26	28	-24		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	06:00:42	7159	BP23MVEXP-ENV-DC-120			Camera	94	622366	6123121	622353	6123151	13	-30	33	-24		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	06:01:18	7160	BP23MVEXP-ENV-DC-120			Camera	94	622367	6123118	622353	6123151	14	-33	36	-23		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	06:02:12	7161	BP23MVEXP-ENV-DC-120			Camera	94	622370	6123112	622353	6123151	17	-39	42	-23		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	06:02:27	7162	BP23MVEXP-ENV-DC-120			Camera	94	622370	6123110	622353	6123151	17	-41	44	-23		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	06:03:06	7163	BP23MVEXP-ENV-DC-120			Camera	94	622371	6123107	622353	6123151	18	-44	48	-22		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	06:19:50	7164	BP23MVEXP-ENV-DC-120			Camera	94	622304	6123136	622353	6123151	-49	-15	52	73		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	06:20:59	7165	BP23MVEXP-ENV-DC-120			Camera	94	622310	6123139	622353	6123151	-43	-12	45	74		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	06:22:02	7166	BP23MVEXP-ENV-DC-120			Camera	94	622317	6123140	622353	6123151	-36	-12	38	73		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	06:22:41	7167	BP23MVEXP-ENV-DC-120			Camera	94	622320	6123140	622353	6123151	-33	-11	35	72		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	06:23:42	7168	BP23MVEXP-ENV-DC-120			Camera	94	622325	6123143	622353	6123151	-28	-8	29	75		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	06:25:13	7169	BP23MVEXP-ENV-DC-120			Camera	94	622334	6123146	622353	6123151	-19	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	06:25:59	7170	BP23MVEXP-ENV-DC-120			Camera	94	622339	6123147	622353	6123151	-14	-4	14	75		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	06:27:03	7171	BP23MVEXP-ENV-DC-120			Camera	94	622345	6123149	622353	6123151	-8	-2	8	79		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	06:27:45	7172	BP23MVEXP-ENV-DC-120			Camera	94	622349	6123151	622353	6123151	-4	0	4	91		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	06:28:43	7173	BP23MVEXP-ENV-DC-120			Camera	94	622355	6123153	622353	6123151	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	06:29:14	7174	BP23MVEXP-ENV-DC-120			Camera	94	622358	6123154	622353	6123151	5	3	6	-119		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	06:30:13	7175	BP23MVEXP-ENV-DC-120			Camera	94	622364	6123156	622353	6123151	11	5	12	-114		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	06:30:48	7176	BP23MVEXP-ENV-DC-120			Camera	94	622367	6123157	622353	6123151	14	6	15	-113		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	06:31:40	7177	BP23MVEXP-ENV-DC-120			Camera	94	622372	6123159	622353	6123151	19	8	21	-112		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	06:32:51	7178	BP23MVEXP-ENV-DC-120			Camera	94	622379	6123161	622353	6123151	26	10	28	-111		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	06:33:41	7179	BP23MVEXP-ENV-DC-120			Camera	94	622384	6123163	622353	6123151	31	12	33	-111		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	06:34:35	7180	BP23MVEXP-ENV-DC-120			Camera	94	622390	6123164	622353	6123151	37	13	39	-110		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	06:35:35	7181	BP23MVEXP-ENV-DC-120			Camera	94	622395	6123166	622353	6123151	42	15	45	-110		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	06:36:12	7182	BP23MVEXP-ENV-DC-120			Camera	94	622399	6123167	622353	6123151	46	16	48	-110		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	07:39:37	7183	BP23MVEXP-ENV-DC-119			Camera	91	621552	6126991	621603	6126979	-51	12	53	103		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	07:41:30	7184	BP23MVEXP-ENV-DC-119			Camera	91	621556	6126990	621603	6126979	-47	12	49	104		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	07:42:02	7185	BP23MVEXP-ENV-DC-119			Camera	91	621559	6126990	621603	6126979	-44	11	46	104		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	07:42:32	7186	BP23MVEXP-ENV-DC-119			Camera	91	621562	6126990	621603	6126979	-41	11	43	105		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	07:43:06	7187	BP23MVEXP-ENV-DC-119			Camera	91	621565	6126990	621603	6126979	-38	11	40	106		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	07:43:50	7188	BP23MVEXP-ENV-DC-119			Camera	91	621570	6126989	621603	6126979	-33	10	34	107		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	07:44:17	7189	BP23MVEXP-ENV-DC-119			Camera	91	621573	6126988	621603	6126979	-30	9	31	107		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	07:44:56	7190	BP23MVEXP-ENV-DC-119			Camera	91	621578	6126987	621603	6126979	-25	8	27	107		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	07:45:25	7191	BP23MVEXP-ENV-DC-119			Camera	91	621581	6126986	621603	6126979	-22	7	23	108		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	07:45:49	7192	BP23MVEXP-ENV-DC-119			Camera	91	621583	6126986	621603	6126979	-20	7	21	109		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	07:46:38	7193	BP23MVEXP-ENV-DC-119			Camera	91	621588	6126985	621603	6126979	-15	6	16	112		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	07:47:13	7194	BP23MVEXP-ENV-DC-119			Camera	91	621592	6126984	621603	6126979	-11	5	12	115		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	07:48:13	7195	BP23MVEXP-ENV-DC-119			Camera	91	621598	6126983	621603	6126979	-5	4	7	127		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	07:48:56	7196	BP23MVEXP-ENV-DC-119			Camera	91	621602	6126982	621603	6126979	-1	3	4	161		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	07:49:10	7197	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126982	621603	6126979	0	3	3	-174		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	07:49:58	7198	BP23MVEXP-ENV-DC-119			Camera	91	621609	6126981	621603	6126979	6	2	6	-111		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	07:50:45	7199	BP23MVEXP-ENV-DC-119			Camera	91	621614	6126980	621603	6126979	11	1	11	-98		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	07:51:02	7200	BP23MVEXP-ENV-DC-119			Camera	91	621615	6126980	621603	6126979	12	1	12	-95		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	07:51:46	7201	BP23MVEXP-ENV-DC-119			Camera	91	621619	6126979	621603	6126979	17	0	16	-90		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	07:52:04	7202	BP23MVEXP-ENV-DC-119			Camera	91	621621	6126979	621603	6126979	18	0	18	-89		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	07:52:31	7203	BP23MVEXP-ENV-DC-119			Camera	91	621624	6126978	621603	6126979	21	-1	21	-88		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	07:52:55	7204	BP23MVEXP-ENV-DC-119			Camera	91	621627	6126978	621603	6126979	24	-1	24	-87		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	07:53:41	7205	BP23MVEXP-ENV-DC-119			Camera	91	621631	6126977	621603	6126979	28	-2	28	-86		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	07:53:51	7206	BP23MVEXP-ENV-DC-119			Camera	91	621632	6126977	621603	6126979	29	-2	29	-86		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	07:54:41	7207	BP23MVEXP-ENV-DC-119			Camera	91	621637	6126977	621603	6126979	34	-2	34	-86		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	07:56:06	7208	BP23MVEXP-ENV-DC-119			Camera	91	621646	6126975	621603	6126979	43	-4	43	-85		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	07:57:11	7209	BP23MVEXP-ENV-DC-119			Camera	91	621652	6126974	621603	6126979	49	-5	50	-84		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	08:05:03	7210	BP23MVEXP-ENV-DC-119			Camera	91	621626	6127006	621603	6126979	23	27	36	-139		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	08:09:25	7211	BP23MVEXP-ENV-DC-119			Camera	91	621611	6127026	621603	6126979	8	47	48	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	08:11:30	7212	BP23MVEXP-ENV-DC-119			Camera	91	621609	6127020	621603	6126979	6	41	41	-171		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	08:11:54	7213	BP23MVEXP-ENV-DC-119			Camera	91	621608	6127017	621603	6126979	5	38	39	-172		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	08:12:28	7214	BP23MVEXP-ENV-DC-119			Camera	91	621608	6127014	621603	6126979	5	35	35	-172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	08:13:18	7215	BP23MVEXP-ENV-DC-119			Camera	91	621608	6127009	621603	6126979	5	30	30	-171		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	08:13:40	7216	BP23MVEXP-ENV-DC-119			Camera	91	621607	6127006	621603	6126979	4	27	28	-171		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	08:14:26	7217	BP23MVEXP-ENV-DC-119			Camera	91	621607	6127001	621603	6126979	4	22	23	-170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	08:14:36	7218	BP23MVEXP-ENV-DC-119			Camera	91	621607	6127000	621603	6126979	4	21	22	-170		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	08:15:54	7219	BP23MVEXP-ENV-DC-119			Camera	91	621605	6126993	621603	6126979	2	14	14	-170		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	08:16:25	7220	BP23MVEXP-ENV-DC-119			Camera	91	621605	6126990	621603	6126979	2	11	11	-170		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	08:17:33	7221	BP23MVEXP-ENV-DC-119			Camera	91	621604	6126982	621603	6126979	1	3	4	-160		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	08:17:57	7222	BP23MVEXP-ENV-DC-119			Camera	91	621604	6126980	621603	6126979	1	1	1	-127		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	08:18:23	7223	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126977	621603	6126979	0	-2	2	-13		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	08:18:53	7224	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126974	621603	6126979	0	-5	5	0		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	08:19:10	7225	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126972	621603	6126979	0	-7	7	2		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	08:19:57	7226	BP23MVEXP-ENV-DC-119			Camera	91	621602	6126968	621603	6126979	-1	-11	11	5		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	08:20:34	7227	BP23MVEXP-ENV-DC-119			Camera	91	621602	6126964	621603	6126979	-1	-15	15	5		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	08:21:40	7228	BP23MVEXP-ENV-DC-119			Camera	91	621601	6126957	621603	6126979	-2	-22	22	5		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	08:22:45	7229	BP23MVEXP-ENV-DC-119			Camera	91	621600	6126950	621603	6126979	-3	-29	29	6		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	08:23:00	7230	BP23MVEXP-ENV-DC-119			Camera	91	621600	6126948	621603	6126979	-3	-31	31	6		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	08:23:30	7231	BP23MVEXP-ENV-DC-119			Camera	91	621599	6126945	621603	6126979	-4	-34	34	7		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	08:23:55	7232	BP23MVEXP-ENV-DC-119			Camera	91	621599	6126943	621603	6126979	-4	-36	36	7		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	08:24:20	7233	BP23MVEXP-ENV-DC-119			Camera	91	621598	6126940	621603	6126979	-5	-39	39	7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
12-Aug-2023	08:25:04	7234	BP23MVEXP-ENV-DC-119			Camera	91	621597	6126936	621603	6126979	-6	-43	43	8		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
12-Aug-2023	08:25:43	7235	BP23MVEXP-ENV-DC-119			Camera	91	621597	6126932	621603	6126979	-6	-47	48	8		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
12-Aug-2023	08:26:02	7236	BP23MVEXP-ENV-DC-119			Camera	91	621597	6126930	621603	6126979	-6	-49	49	8		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
12-Aug-2023	09:29:03	7237	BP23MVEXP-ENV-DC-118			Camera	91	622226	6130923	622273	6130918	-47	5	48	96		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	09:30:37	7238	BP23MVEXP-ENV-DC-118			Camera	91	622229	6130924	622273	6130918	-44	6	44	97		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	09:31:18	7239	BP23MVEXP-ENV-DC-118			Camera	91	622231	6130924	622273	6130918	-42	6	42	99		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	09:32:21	7240	BP23MVEXP-ENV-DC-118			Camera	91	622235	6130923	622273	6130918	-38	5	38	98		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	09:32:54	7241	BP23MVEXP-ENV-DC-118			Camera	91	622238	6130922	622273	6130918	-35	4	35	97		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	09:33:48	7242	BP23MVEXP-ENV-DC-118			Camera	91	622243	6130921	622273	6130918	-30	3	30	96		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	09:34:23	7243	BP23MVEXP-ENV-DC-118			Camera	91	622246	6130920	622273	6130918	-27	2	27	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	09:34:58	7244	BP23MVEXP-ENV-DC-118			Camera	91	622248	6130917	622273	6130918	-25	-1	25	88		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	09:35:07	7245	BP23MVEXP-ENV-DC-118			Camera	91	622249	6130917	622273	6130918	-24	-1	24	87		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	09:35:48	7246	BP23MVEXP-ENV-DC-118			Camera	91	622253	6130916	622273	6130918	-20	-2	21	84		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	09:36:20	7247	BP23MVEXP-ENV-DC-118			Camera	91	622256	6130916	622273	6130918	-17	-2	17	83		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	09:36:52	7248	BP23MVEXP-ENV-DC-118			Camera	91	622260	6130916	622273	6130918	-13	-2	13	83		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	09:37:22	7249	BP23MVEXP-ENV-DC-118			Camera	91	622263	6130916	622273	6130918	-10	-2	10	81		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	09:37:57	7250	BP23MVEXP-ENV-DC-118			Camera	91	622267	6130916	622273	6130918	-6	-2	6	71		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	09:38:07	7251	BP23MVEXP-ENV-DC-118			Camera	91	622268	6130916	622273	6130918	-5	-2	5	66		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	09:38:34	7252	BP23MVEXP-ENV-DC-118			Camera	91	622271	6130916	622273	6130918	-2	-2	3	47		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	09:38:49	7253	BP23MVEXP-ENV-DC-118			Camera	91	622273	6130916	622273	6130918	0	-2	2	10		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	09:39:01	7254	BP23MVEXP-ENV-DC-118			Camera	91	622274	6130916	622273	6130918	1	-2	2	-22		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	09:39:18	7255	BP23MVEXP-ENV-DC-118			Camera	91	622276	6130915	622273	6130918	3	-3	4	-43		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	09:39:35	7256	BP23MVEXP-ENV-DC-118			Camera	91	622277	6130915	622273	6130918	4	-3	5	-54		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	09:40:26	7257	BP23MVEXP-ENV-DC-118			Camera	91	622282	6130915	622273	6130918	9	-3	9	-69		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	09:41:03	7258	BP23MVEXP-ENV-DC-118			Camera	91	622285	6130913	622273	6130918	12	-5	13	-69		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	09:41:20	7259	BP23MVEXP-ENV-DC-118			Camera	91	622287	6130913	622273	6130918	15	-5	15	-73		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	09:42:28	7260	BP23MVEXP-ENV-DC-118			Camera	91	622294	6130913	622273	6130918	21	-5	22	-77		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	09:42:47	7261	BP23MVEXP-ENV-DC-118			Camera	91	622296	6130913	622273	6130918	23	-5	23	-78		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	09:43:53	7262	BP23MVEXP-ENV-DC-118			Camera	91	622303	6130912	622273	6130918	31	-6	31	-79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	09:44:43	7263	BP23MVEXP-ENV-DC-118			Camera	91	622309	6130912	622273	6130918	36	-6	36	-81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	09:45:42	7264	BP23MVEXP-ENV-DC-118			Camera	91	622314	6130911	622273	6130918	41	-7	42	-80		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	09:58:35	7265	BP23MVEXP-ENV-DC-118			Camera	91	622281	6130967	622273	6130918	8	49	50	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	09:59:36	7266	BP23MVEXP-ENV-DC-118			Camera	91	622281	6130965	622273	6130918	8	47	48	-170		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	10:00:26	7267	BP23MVEXP-ENV-DC-118			Camera	91	622281	6130959	622273	6130918	8	41	42	-170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	10:01:01	7268	BP23MVEXP-ENV-DC-118			Camera	91	622280	6130955	622273	6130918	7	37	37	-170		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	10:01:10	7269	BP23MVEXP-ENV-DC-118			Camera	91	622279	6130954	622273	6130918	6	36	36	-170		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	10:01:42	7270	BP23MVEXP-ENV-DC-118			Camera	91	622279	6130950	622273	6130918	6	32	33	-170		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	10:02:18	7271	BP23MVEXP-ENV-DC-118			Camera	91	622278	6130947	622273	6130918	5	29	29	-170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	10:03:31	7272	BP23MVEXP-ENV-DC-118			Camera	91	622278	6130940	622273	6130918	5	22	23	-168		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	10:04:20	7273	BP23MVEXP-ENV-DC-118			Camera	91	622277	6130935	622273	6130918	4	17	18	-166		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	10:04:57	7274	BP23MVEXP-ENV-DC-118			Camera	91	622277	6130932	622273	6130918	4	14	14	-164		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	10:06:00	7275	BP23MVEXP-ENV-DC-118			Camera	91	622276	6130925	622273	6130918	3	7	8	-156		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	10:06:42	7276	BP23MVEXP-ENV-DC-118			Camera	91	622275	6130921	622273	6130918	2	3	4	-140		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	10:07:26	7277	BP23MVEXP-ENV-DC-118			Camera	91	622275	6130916	622273	6130918	2	-2	3	-50		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	10:07:43	7278	BP23MVEXP-ENV-DC-118			Camera	91	622275	6130914	622273	6130918	2	-4	4	-27		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	10:09:16	7279	BP23MVEXP-ENV-DC-118			Camera	91	622274	6130905	622273	6130918	1	-13	13	-3		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	10:10:19	7280	BP23MVEXP-ENV-DC-118			Camera	91	622273	6130899	622273	6130918	0	-19	19	0		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	10:11:11	7281	BP23MVEXP-ENV-DC-118			Camera	91	622272	6130893	622273	6130918	-1	-25	25	1		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	10:11:57	7282	BP23MVEXP-ENV-DC-118			Camera	91	622272	6130889	622273	6130918	-1	-29	29	2		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	10:12:57	7283	BP23MVEXP-ENV-DC-118			Camera	91	622271	6130883	622273	6130918	-2	-35	35	3		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	10:13:12	7284	BP23MVEXP-ENV-DC-118			Camera	91	622271	6130881	622273	6130918	-2	-37	37	3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	10:14:30	7285	BP23MVEXP-ENV-DC-118			Camera	91	622270	6130873	622273	6130918	-3	-45	45	4		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	10:14:58	7286	BP23MVEXP-ENV-DC-118			Camera	91	622269	6130870	622273	6130918	-4	-48	48	4		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	11:16:40	7287	BP23MVEXP-ENV-DC-117			Camera	91	622896	6134916	622943	6134912	-47	4	48	95		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	11:17:33	7288	BP23MVEXP-ENV-DC-117			Camera	91	622896	6134916	622943	6134912	-47	4	48	95		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	11:18:27	7289	BP23MVEXP-ENV-DC-117			Camera	91	622899	6134916	622943	6134912	-44	4	44	95		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	11:18:54	7290	BP23MVEXP-ENV-DC-117			Camera	91	622903	6134915	622943	6134912	-40	3	40	94		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	11:19:12	7291	BP23MVEXP-ENV-DC-117			Camera	91	622906	6134915	622943	6134912	-37	3	37	94		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	11:19:40	7292	BP23MVEXP-ENV-DC-117			Camera	91	622910	6134914	622943	6134912	-33	2	33	94		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	11:19:56	7293	BP23MVEXP-ENV-DC-117			Camera	91	622912	6134914	622943	6134912	-31	2	31	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	11:20:28	7294	BP23MVEXP-ENV-DC-117			Camera	91	622915	6134913	622943	6134912	-28	1	28	93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	11:21:10	7295	BP23MVEXP-ENV-DC-117			Camera	91	622918	6134913	622943	6134912	-25	1	25	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	11:22:00	7296	BP23MVEXP-ENV-DC-117			Camera	91	622923	6134912	622943	6134912	-20	0	20	90		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	11:22:46	7297	BP23MVEXP-ENV-DC-117			Camera	91	622929	6134912	622943	6134912	-14	0	14	88		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	11:23:05	7298	BP23MVEXP-ENV-DC-117			Camera	91	622931	6134912	622943	6134912	-12	0	12	88		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	11:23:49	7299	BP23MVEXP-ENV-DC-117			Camera	91	622934	6134912	622943	6134912	-9	0	9	88		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	11:24:49	7300	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134911	622943	6134912	-2	-1	3	65		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	11:25:13	7301	BP23MVEXP-ENV-DC-117			Camera	91	622943	6134910	622943	6134912	0	-2	2	-13		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	11:26:17	7302	BP23MVEXP-ENV-DC-117			Camera	91	622950	6134909	622943	6134912	7	-3	8	-71		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	11:26:24	7303	BP23MVEXP-ENV-DC-117			Camera	91	622951	6134909	622943	6134912	8	-3	8	-72		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	11:26:46	7304	BP23MVEXP-ENV-DC-117			Camera	91	622953	6134909	622943	6134912	10	-3	10	-75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	11:27:25	7305	BP23MVEXP-ENV-DC-117			Camera	92	622957	6134909	622943	6134912	14	-3	14	-77		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	11:28:40	7306	BP23MVEXP-ENV-DC-117			Camera	92	622964	6134909	622943	6134912	21	-3	21	-81		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	11:29:10	7307	BP23MVEXP-ENV-DC-117			Camera	92	622967	6134908	622943	6134912	24	-4	24	-81		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	11:29:54	7308	BP23MVEXP-ENV-DC-117			Camera	92	622972	6134908	622943	6134912	29	-4	29	-82		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	11:30:05	7309	BP23MVEXP-ENV-DC-117			Camera	92	622973	6134908	622943	6134912	30	-4	30	-82		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	11:30:35	7310	BP23MVEXP-ENV-DC-117			Camera	92	622976	6134908	622943	6134912	33	-5	33	-82		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	11:31:20	7311	BP23MVEXP-ENV-DC-117			Camera	92	622981	6134907	622943	6134912	38	-5	38	-83		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	11:31:45	7312	BP23MVEXP-ENV-DC-117			Camera	92	622983	6134907	622943	6134912	40	-5	41	-83		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	11:32:43	7313	BP23MVEXP-ENV-DC-117			Camera	92	622990	6134906	622943	6134912	47	-6	47	-82		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	11:40:03	7314	BP23MVEXP-ENV-DC-117			Camera	91	622937	6134862	622943	6134912	-6	-50	51	6		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	11:42:16	7315	BP23MVEXP-ENV-DC-117			Camera	91	622936	6134865	622943	6134912	-7	-47	48	9		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	11:42:26	7316	BP23MVEXP-ENV-DC-117			Camera	91	622936	6134866	622943	6134912	-7	-46	47	9		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	11:43:20	7317	BP23MVEXP-ENV-DC-117			Camera	91	622937	6134871	622943	6134912	-6	-41	41	8		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	11:43:46	7318	BP23MVEXP-ENV-DC-117			Camera	91	622938	6134874	622943	6134912	-5	-38	38	8		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	11:44:30	7319	BP23MVEXP-ENV-DC-117			Camera	91	622939	6134879	622943	6134912	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	11:45:29	7320	BP23MVEXP-ENV-DC-117			Camera	91	622940	6134884	622943	6134912	-3	-28	28	5		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	11:46:00	7321	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134888	622943	6134912	-2	-25	25	5		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	11:46:23	7322	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134890	622943	6134912	-2	-22	22	4		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	11:47:26	7323	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134896	622943	6134912	-2	-16	16	6		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	11:49:17	7324	BP23MVEXP-ENV-DC-117			Camera	91	622943	6134908	622943	6134912	0	-4	4	5		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	11:49:34	7325	BP23MVEXP-ENV-DC-117			Camera	92	622943	6134910	622943	6134912	0	-2	2	-5		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	11:50:05	7326	BP23MVEXP-ENV-DC-117			Camera	92	622944	6134913	622943	6134912	1	1	1	-129		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	11:50:40	7327	BP23MVEXP-ENV-DC-117			Camera	92	622944	6134916	622943	6134912	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	11:51:25	7328	BP23MVEXP-ENV-DC-117			Camera	92	622944	6134921	622943	6134912	1	9	9	-174		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	11:51:51	7329	BP23MVEXP-ENV-DC-117			Camera	92	622945	6134923	622943	6134912	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	11:53:32	7330	BP23MVEXP-ENV-DC-117			Camera	92	622946	6134933	622943	6134912	3	21	21	-172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	11:54:24	7331	BP23MVEXP-ENV-DC-117			Camera	92	622946	6134938	622943	6134912	3	27	27	-174		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	11:55:45	7332	BP23MVEXP-ENV-DC-117			Camera	92	622948	6134947	622943	6134912	5	35	36	-172		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	11:57:11	7333	BP23MVEXP-ENV-DC-117			Camera	92	622950	6134955	622943	6134912	7	43	44	-170		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	11:57:45	7334	BP23MVEXP-ENV-DC-117			Camera	92	622951	6134958	622943	6134912	8	46	47	-171		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	11:58:08	7335	BP23MVEXP-ENV-DC-117			Camera	92	622951	6134959	622943	6134912	8	47	47	-171		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	12:58:22	7336	BP23MVEXP-ENV-DC-116			Camera	87	623653	6138791	623603	6138802	50	-11	51	-77		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	13:00:24	7337	BP23MVEXP-ENV-DC-116			Camera	87	623648	6138793	623603	6138802	45	-9	46	-78		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	13:01:06	7338	BP23MVEXP-ENV-DC-116			Camera	87	623644	6138792	623603	6138802	41	-10	42	-76		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	13:01:42	7339	BP23MVEXP-ENV-DC-116			Camera	87	623640	6138793	623603	6138802	37	-9	38	-77		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	13:02:48	7340	BP23MVEXP-ENV-DC-116			Camera	87	623632	6138794	623603	6138802	29	-8	30	-75		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	13:03:38	7341	BP23MVEXP-ENV-DC-116			Camera	87	623627	6138796	623603	6138802	24	-6	24	-76		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	13:04:00	7342	BP23MVEXP-ENV-DC-116			Camera	87	623625	6138796	623603	6138802	22	-6	22	-76		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	13:04:25	7343	BP23MVEXP-ENV-DC-116			Camera	87	623622	6138797	623603	6138802	19	-5	20	-75		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	13:05:47	7344	BP23MVEXP-ENV-DC-116			Camera	87	623613	6138797	623603	6138802	10	-5	11	-65		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	13:05:57	7345	BP23MVEXP-ENV-DC-116			Camera	86	623612	6138798	623603	6138802	9	-4	10	-64		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	13:06:21	7346	BP23MVEXP-ENV-DC-116			Camera	86	623609	6138799	623603	6138802	6	-3	7	-64		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	13:07:09	7347	BP23MVEXP-ENV-DC-116			Camera	86	623605	6138800	623603	6138802	2	-2	3	-54		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	13:07:28	7348	BP23MVEXP-ENV-DC-116			Camera	86	623604	6138800	623603	6138802	1	-2	2	-24		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	13:07:45	7349	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138801	623603	6138802	-1	-1	2	30		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	13:08:00	7350	BP23MVEXP-ENV-DC-116			Camera	86	623601	6138801	623603	6138802	-2	-1	3	59		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	13:08:51	7351	BP23MVEXP-ENV-DC-116			Camera	86	623596	6138801	623603	6138802	-7	-1	7	80		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	13:09:37	7352	BP23MVEXP-ENV-DC-116			Camera	86	623591	6138802	623603	6138802	-12	0	12	90		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	13:10:13	7353	BP23MVEXP-ENV-DC-116			Camera	86	623588	6138803	623603	6138802	-15	1	15	93		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	13:10:37	7354	BP23MVEXP-ENV-DC-116			Camera	86	623586	6138803	623603	6138802	-17	1	17	93		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	13:11:39	7355	BP23MVEXP-ENV-DC-116			Camera	86	623579	6138804	623603	6138802	-24	2	24	94		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	13:12:41	7356	BP23MVEXP-ENV-DC-116			Camera	86	623571	6138806	623603	6138802	-32	4	32	96		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	13:13:00	7357	BP23MVEXP-ENV-DC-116			Camera	86	623569	6138806	623603	6138802	-34	4	34	97		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	13:13:35	7358	BP23MVEXP-ENV-DC-116			Camera	86	623566	6138806	623603	6138802	-37	4	37	97		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	13:14:06	7359	BP23MVEXP-ENV-DC-116			Camera	86	623564	6138807	623603	6138802	-39	5	39	97		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	13:14:21	7360	BP23MVEXP-ENV-DC-116			Camera	86	623563	6138807	623603	6138802	-40	5	40	97		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	13:14:47	7361	BP23MVEXP-ENV-DC-116			Camera	86	623561	6138807	623603	6138802	-42	5	43	96		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	13:15:21	7362	BP23MVEXP-ENV-DC-116			Camera	86	623558	6138807	623603	6138802	-45	5	46	97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	13:23:48	7363	BP23MVEXP-ENV-DC-116			Camera	86	623597	6138754	623603	6138802	-6	-48	49	7		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	13:24:44	7364	BP23MVEXP-ENV-DC-116			Camera	86	623598	6138758	623603	6138802	-5	-44	44	7		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	13:25:04	7365	BP23MVEXP-ENV-DC-116			Camera	86	623598	6138761	623603	6138802	-5	-41	42	7		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	13:25:17	7366	BP23MVEXP-ENV-DC-116			Camera	86	623598	6138762	623603	6138802	-5	-40	40	7		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	13:26:33	7367	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138771	623603	6138802	-4	-31	32	7		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	13:26:59	7368	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138773	623603	6138802	-4	-29	29	8		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	13:27:12	7369	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138774	623603	6138802	-4	-28	28	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	13:28:11	7370	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138781	623603	6138802	-4	-21	22	11		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	13:29:22	7371	BP23MVEXP-ENV-DC-116			Camera	86	623600	6138789	623603	6138802	-3	-13	14	12		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	13:30:22	7372	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138794	623603	6138802	-1	-8	8	9		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	13:31:11	7373	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138799	623603	6138802	-1	-3	3	12		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	13:31:20	7374	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138800	623603	6138802	-1	-2	2	16		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	13:31:34	7375	BP23MVEXP-ENV-DC-116			Camera	86	623603	6138801	623603	6138802	0	-1	1	37		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	13:32:21	7376	BP23MVEXP-ENV-DC-116			Camera	86	623603	6138806	623603	6138802	0	4	4	177		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	13:33:26	7377	BP23MVEXP-ENV-DC-116			Camera	86	623604	6138814	623603	6138802	1	12	12	-176		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	13:33:59	7378	BP23MVEXP-ENV-DC-116			Camera	86	623605	6138817	623603	6138802	2	15	15	-173		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	13:35:06	7379	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138823	623603	6138802	3	21	21	-172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	13:36:07	7380	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138829	623603	6138802	3	27	27	-173		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	13:37:02	7381	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138835	623603	6138802	3	33	34	-174		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	13:37:42	7382	BP23MVEXP-ENV-DC-116			Camera	86	623607	6138840	623603	6138802	4	38	38	-174		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	13:38:25	7383	BP23MVEXP-ENV-DC-116			Camera	86	623607	6138844	623603	6138802	4	42	42	-174		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	13:39:42	7384	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138851	623603	6138802	3	49	49	-176		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	14:37:33	7385	BP23MVEXP-ENV-DC-115			Camera	95	624288	6142824	624293	6142873	-5	-49	50	6		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	14:38:25	7386	BP23MVEXP-ENV-DC-115			Camera	95	624288	6142825	624293	6142873	-5	-48	48	6		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	14:38:58	7387	BP23MVEXP-ENV-DC-115			Camera	95	624289	6142827	624293	6142873	-4	-46	47	5		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	14:39:21	7388	BP23MVEXP-ENV-DC-115			Camera	95	624289	6142829	624293	6142873	-4	-44	44	5		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	14:40:12	7389	BP23MVEXP-ENV-DC-115			Camera	95	624290	6142835	624293	6142873	-3	-38	38	5		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	14:40:53	7390	BP23MVEXP-ENV-DC-115			Camera	95	624290	6142838	624293	6142873	-3	-35	35	6		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	14:41:21	7391	BP23MVEXP-ENV-DC-115			Camera	95	624291	6142841	624293	6142873	-2	-32	32	4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	14:42:00	7392	BP23MVEXP-ENV-DC-115			Camera	95	624291	6142845	624293	6142873	-2	-28	28	3		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	14:42:38	7393	BP23MVEXP-ENV-DC-115			Camera	95	624292	6142849	624293	6142873	-1	-24	24	2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	14:43:06	7394	BP23MVEXP-ENV-DC-115			Camera	95	624292	6142852	624293	6142873	-1	-21	21	2		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	14:43:17	7395	BP23MVEXP-ENV-DC-115			Camera	95	624293	6142854	624293	6142873	0	-20	19	1		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	14:44:09	7396	BP23MVEXP-ENV-DC-115			Camera	95	624294	6142859	624293	6142873	1	-14	14	-4		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	14:44:34	7397	BP23MVEXP-ENV-DC-115			Camera	95	624294	6142862	624293	6142873	1	-11	11	-7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	14:45:04	7398	BP23MVEXP-ENV-DC-115			Camera	95	624295	6142865	624293	6142873	2	-8	8	-14		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	14:45:31	7399	BP23MVEXP-ENV-DC-115			Camera	95	624295	6142867	624293	6142873	2	-6	6	-19		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	14:45:53	7400	BP23MVEXP-ENV-DC-115			Camera	95	624295	6142870	624293	6142873	2	-3	4	-34		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	14:46:09	7401	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142871	624293	6142873	3	-2	3	-56		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	14:46:21	7402	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142873	624293	6142873	3	0	3	-80		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	14:46:51	7403	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142876	624293	6142873	3	3	4	-133		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	14:47:35	7404	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142880	624293	6142873	3	7	8	-157		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	14:48:22	7405	BP23MVEXP-ENV-DC-115			Camera	95	624297	6142885	624293	6142873	4	12	12	-163		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	14:49:35	7406	BP23MVEXP-ENV-DC-115			Camera	95	624297	6142892	624293	6142873	4	19	19	-167		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	14:50:33	7407	BP23MVEXP-ENV-DC-115			Camera	95	624298	6142898	624293	6142873	5	26	26	-168		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	14:51:26	7408	BP23MVEXP-ENV-DC-115			Camera	95	624299	6142904	624293	6142873	6	31	31	-169		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	14:52:24	7409	BP23MVEXP-ENV-DC-115			Camera	95	624300	6142909	624293	6142873	7	36	37	-170		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	14:53:56	7410	BP23MVEXP-ENV-DC-115			Camera	95	624300	6142919	624293	6142873	7	46	46	-171		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	15:02:55	7411	BP23MVEXP-ENV-DC-115			Camera	95	624342	6142866	624293	6142873	49	-7	49	-82		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	15:03:05	7412	BP23MVEXP-ENV-DC-115			Camera	95	624341	6142867	624293	6142873	48	-7	48	-82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	15:03:48	7413	BP23MVEXP-ENV-DC-115			Camera	95	624336	6142867	624293	6142873	43	-6	43	-82		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	15:04:56	7414	BP23MVEXP-ENV-DC-115			Camera	95	624328	6142868	624293	6142873	35	-5	35	-82		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	15:05:41	7415	BP23MVEXP-ENV-DC-115			Camera	95	624323	6142869	624293	6142873	30	-4	30	-81		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	15:06:02	7416	BP23MVEXP-ENV-DC-115			Camera	95	624321	6142869	624293	6142873	28	-4	28	-81		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	15:06:44	7417	BP23MVEXP-ENV-DC-115			Camera	95	624315	6142869	624293	6142873	22	-4	22	-81		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	15:08:19	7418	BP23MVEXP-ENV-DC-115			Camera	95	624307	6142871	624293	6142873	14	-2	14	-80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	15:08:55	7419	BP23MVEXP-ENV-DC-115			Camera	95	624303	6142871	624293	6142873	10	-2	10	-80		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	15:10:06	7420	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142872	624293	6142873	3	-1	3	-65		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	15:10:19	7421	BP23MVEXP-ENV-DC-115			Camera	95	624294	6142872	624293	6142873	1	-1	1	-51		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	15:10:35	7422	BP23MVEXP-ENV-DC-115			Camera	95	624292	6142872	624293	6142873	-1	-1	1	44		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	15:10:52	7423	BP23MVEXP-ENV-DC-115			Camera	95	624291	6142872	624293	6142873	-2	-1	2	70		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	15:11:36	7424	BP23MVEXP-ENV-DC-115			Camera	95	624286	6142873	624293	6142873	-7	0	7	92		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	15:12:05	7425	BP23MVEXP-ENV-DC-115			Camera	95	624285	6142874	624293	6142873	-8	1	8	96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	15:12:52	7426	BP23MVEXP-ENV-DC-115			Camera	95	624279	6142874	624293	6142873	-14	1	14	96		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	15:13:15	7427	BP23MVEXP-ENV-DC-115			Camera	95	624275	6142875	624293	6142873	-18	2	18	95		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	15:13:52	7428	BP23MVEXP-ENV-DC-115			Camera	95	624273	6142876	624293	6142873	-21	3	21	97		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	15:16:10	7429	BP23MVEXP-ENV-DC-115			Camera	95	624259	6142877	624293	6142873	-34	4	34	97		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-001	04-Jul-2023	22:02:18	22:41:58	54027_BP23MVEXPENV001_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV001_2023-07-04_220218_Ch1/Ch2_00	Fine sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes)	MB, AA, JO	51	1	51	
BP23MVEXP-ENV-DC-002	05-Jul-2023	01:31:06	02:10:49	54027_BP23MVEXPENV002_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV002_2023-07-05_013106_Ch1/Ch2_00	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes)	MB, CD, MD	42	52	94	Fix #92 has no photo
BP23MVEXP-ENV-DC-003	05-Jul-2023	03:28:39	04:17:06	54027_BP23MVEXPENV003_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV003_2023-07-05_032839_Ch1/Ch2_00	Rippled sand with shell fragments	Annelida (Polychaeta), Chordata (Pleuronectiformes), Echinodermata (Asteroidea), Mollusca (Scaphopoda)	CD, MD	52	95	145	Fix #132 repeated
BP23MVEXP-ENV-DC-004	05-Jul-2023	06:58:02	07:41:32	54027_BP23MVEXPENV004_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV004_2023-07-05_065802_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	CD, MD, DP	52	146	199	Fixes #163 and #167 have no photos
BP23MVEXP-ENV-DC-005	05-Jul-2023	08:57:32	09:50:14	54027_BP23MVEXPENV005_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV005_2023-07-05_085732_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea), Mollusca (Bivalvia)	CD, MD, DP	55	200	256	Fixes #211 and #234 have no photos
BP23MVEXP-ENV-DC-006	05-Jul-2023	11:36:06	12:36:03	54027_BP23MVEXPENV006_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV006_2023-07-05_113606_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Pagaroidea), Bryozoa (Flustridae), Echinodermata (Asteroidea, Ophiuroidea)	CD, MD, DP	70	257	327	Fix #282 has no photo
BP23MVEXP-ENV-DC-007	05-Jul-2023	13:43:55	14:48:07	54027_BP23MVEXPENV007_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV007_2023-07-05_134355_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthopoda (Paguoridea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Pennatuloidea, Hydrozoa), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	MB, AA, JO, DP	55	328	383	Fix #345 has no photo
BP23MVEXP-ENV-DC-008	05-Jul-2023	16:48:03	17:47:07	54027_BP23MVEXPENV008_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV008_2023-07-05_164803_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Echinoidea), Mollusca (Bivalvia)	MB, AA, JO, DP	51	384	434	Strong current
BP23MVEXP-ENV-DC-009	05-Jul-2023	19:00:44	19:53:58	54027_BP23MVEXPENV009_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV009_2023-07-05_190044_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Echinoidea, Ophiuroidea), Molusca (Gastropoda)	MB, AA, JO	56	435	490	
BP23MVEXP-ENV-DC-010	05-Jul-2023	21:51:05	22:45:40	54027_BP23MVEXPENV010_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV010_2023-07-05_215405_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Caridea, Decapoda, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea), Mollusca (*Arctica islandica* , Bivalvia, Scaphopoda)	MB, AA, JO	50	491	541	
BP23MVEXP-ENV-DC-011	06-Jul-2023	00:13:32	01:08:22	54027_BP23MVEXPENV011_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV011_2023-07-06_001332_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea) Mollusca (*Arctica islandica* , Bivalvia, Gastropoda)	CD, MD	43	542	585	Fix #582 has no photo
BP23MVEXP-ENV-DC-012	06-Jul-2023	02:51:58	03:40:31	54027_BP23MVEXPENV012_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV012_2023-07-06_025138_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Scaphopoda)	CD, MD	47	586	632	
BP23MVEXP-ENV-DC-013	06-Jul-2023	04:42:06	05:31:42	54027_BP23MVEXPENV013_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV013_2023-07-06_044206_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (Bivalvia, Scaphopoda)	CD, MD	54	633	686	
BP23MVEXP-ENV-DC-014	06-Jul-2023	07:26:36	08:17:53	54027_BP23MVEXPENV014_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV014_2023-07-06_072636_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (*Arctica islandica* , Scaphopoda)	CD, MD, DP	54	687	740	
BP23MVEXP-ENV-DC-015	06-Jul-2023	09:29:30	10:18:50	54027_BP23MVEXPENV015_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV015_2023-07-06_092930_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea, Opiuroidea), Mollusca (*Arctica islandica* , Bivalvia)	CD, MD, DP	44	741	784	
BP23MVEXP-ENV-DC-016	06-Jul-2023	12:02:13	12:32:12	54027_BP23MVEXPENV016_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV016_2023-07-06_120213_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Lophiidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hexacorallia, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	51	785	835	
BP23MVEXP-ENV-DC-017	06-Jul-2023	13:57:17	14:52:50	54027_BP23MVEXPENV017_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV017_2023-07-06_135717_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum* , Pennatuloidea), Echinodermata (Asteroidea), Mollusca (*Arctica islandica* , Bivalvia)	MB, AA, JO, DP	55	836	890	
BP23MVEXP-ENV-DC-018	06-Jul-2023	16:24:31	17:24:15	54027_BP23MVEXPENV018_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV018_2023-07-06_162431_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Caridea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	51	891	940	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-019	06-Jul-2023	18:34:00	19:25:05	54027_BP23MVEXPENV019_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV019_2023-07-06_183400_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	MB, AA, JO	52	941	992	
BP23MVEXP-ENV-DC-020	06-Jul-2023	20:56:25	21:47:12	54027_BP23MVEXPENV020_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV020_2023-07-06_205625_Ch1/Ch2_00	Rippled sand with shell and shell fragments, pebbles, cobbles, and boulders	Annelida (Serpulidae), Arthropoda (Majidae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Crossaster papposus*), Mollusca (Bivalvia, Scaphopoda), Porifera	MB, AA, JO	68	993	1060	
BP23MVEXP-ENV-DC-021	06-Jul-2023	23:08:04	23:52:19	54027_BP23MVEXPENV021_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV021/021C_2023-07-06_230804_Ch1/Ch2_00	Rippled sand with shell and shell fragments, pebbles and cobbles	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum* , Pennatuloidea)	CD, MD	23	1061	1083	1st transect only, recovered due to bad weather
BP23MVEXP-ENV-DC-21A	07-Jul-2023	01:11:20	01:34:26	54027_BP23MVEXPENV021_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV021/021C_2023-07-06_230804_Ch1/Ch2_00	Rippled sand with shell fragments	No video	CD, MD	22	1084	1105	2nd transect - No HD Video recorded
BP23MVEXP-ENV-DC-21B	07-Jul-2023	01:38:51	01:46:58	54027_BP23MVEXPENV021_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV021/021C_2023-07-06_230804_Ch1/Ch2_00	No new sediment descriptors	Echinodermata (Ophiuroidea)	CD, MD	18	1106	1123	2nd transect re-run
BP23MVEXP-ENV-DC-022	07-Jul-2023	03:42:33	04:48:58	54027_BP23MVEXPENV022_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV022_2023-07-07_034233_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Echinodermata (Ophiuroidea)	CD, MD	48	1124	1172	Fix #1152 has no photo
BP23MVEXP-ENV-DC-023	07-Jul-2023	13:50:07	14:44:11	54027_BP23MVEXPENV023_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV023_2023-07-07_135007_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Scaphopoda)	MB, AA, JO, DP	53	1173	1225	
BP23MVEXP-ENV-DC-026	07-Jul-2023	18:26:05	19:16:49	54027_BP23MVEXPENV026_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV026_2023-07-07_182605_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Pennatuloidea), Mollusca (Scaphopoda)	MB, AA, JO	53	1231	1282	
BP23MVEXP-ENV-DC-027	07-Jul-2023	20:18:37	22:07:04	54027_BP23MVEXPENV027_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV027_2023-07-07_205836_Ch1/Ch2_01	Sand with shell and shell fragments	Annelida (Aphrodita aculeata), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Alcyonium digitatum, Hydrozoa,Pennatuloidea), Mollusca (Scaphopoda)	AA, JO	84	1283	1366	No HD video recorded for fixes #1283 to #1308
BP23MVEXP-ENV-DC-028	08-Jul-2023	00:24:44	01:25:17	54027_BP23MVEXPENV028_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV028_2023-07-08_002404_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Polychaeta, Serpulidae), Arthropoda (Decapoda), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes) Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Ophiuroidea), Mollusca (Gastropoda), Porifera	CD, MD	45	1367	1411	Anthropogenic debris
BP23MVEXP-ENV-DC-029	08-Jul-2023	02:26:56	03:19:48	54027_BP23MVEXPENV029_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV029_2023-07-08_022856_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Brachyura, Paguroidea), Chordata (Gadidae, Lophiiformes, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Gastropoda)	CD, MD	44	1412	1455	
BP23MVEXP-ENV-DC-030	08-Jul-2023	05:01:34	05:52:05	54027_BP23MVEXPENV030_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV30_2023-07-08_050134_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actinaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	CD, MD, DP	39	1456	1494	
BP23MVEXP-ENV-DC-31A	08-Jul-2023	08:04:16	08:23:28	54027_BP23MVEXPENV031A/B_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV31/B_2023-07-08_080416_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Pagauroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Pectinidae)	CD, MD, DP	21	1495	1515	Station abandoned after 1st transect due to bad weather
BP23MVEXP-ENV-DC-31B	08-Jul-2023	17:21:40	17:44:13	54027_BP23MVEXPENV031A/B_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV31/B_2023-07-08_080416_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Decapoda), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, DP	26	1516	1541	2nd transect
BP23MVEXP-ENV-DC-032	08-Jul-2023	19:15:39	20:07:03	54027_BP23MVEXPENV032_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV32_2023-07-08_191539_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes, Triglide), Cnidaria (Pennatuloidea),Echinodermata (Asteroidea)	MB, AA, JO	48	1542	1589	
BP23MVEXP-ENV-DC-033	08-Jul-2023	22:12:36	23:03:24	54027_BP23MVEXPENV033_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV33_2023-07-08_221236_Ch1/Ch2_00	Fine sand with shell fragments and cobbles	Annelida (Serpulidae), Arthropoda (Caridea, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, *Alcyonium digitatum* , Pennatuloidea), Echinodermata (Asteroidea, *Crossaster papposus*), Mollusca (Gastropoda, Pectinidae)	MB, AA, JO	54	1590	1643	
BP23MVEXP-ENV-DC-034	09-Jul-2023	01:04:00	01:53:21	54027_BP23MVEXPENV034_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV34_2023-07-09_010400_Ch1/Ch2_00	Sand w/ shell andshell fragments	Annelida (Aphrodita aculeata), Arthropoda (Brachyura, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, Hydrozoa),Echinodermata (Asteroidea, *Porania pulvillus*), Mollusca (Bivalvia, Gastropoda, Pectinidae), Porifera	CD, MD	41	1644	1685	
BP23MVEXP-ENV-DC-035	09-Jul-2023	03:27:51	04:16:45	54027_BP23MVEXPENV035_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV35_2023-07-09_032751_Ch1/Ch2_00	Sand, pebble, cobble, shell and shell fragments	Annelida (Serpulidae), Arthropoda (Brachyura, Caridea, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes) Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea), Mollusca (Bivalvia, Pectinidae, Scaphopoda), Porifera	CD, MD	48	1686	1733	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-036	09-Jul-2023	05:11:42	05:59:45	54027_BP23MVEXPENV036_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV36_2023-07-09_051142_Ch1/Ch2_00	Sand with shell, shell fragments, and cobbles	Arthropoda (Brachyura, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Lophiiformes, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata *(Asterias rubens,* Asteroidea*),* Mollusca (Bivalvia, Scaphopoda)	CD, MD, DP	42	1734	1775	
BP23MVEXP-ENV-DC-037	09-Jul-2023	07:29:54	08:19:47	54027_BP23MVEXPENV037_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV37_2023-07-09_072954_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea), Mollusca (Pectinidae)	CD, MD, DP	38	1776	1814	
BP23MVEXP-ENV-DC-038	09-Jul-2023	10:57:27	11:52:45	54027_BP23MVEXPENV038_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV38_2023-07-09_105727_Ch1/Ch2_00	Sand with shell and shell fragments, cobbles, and boulders	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Lophiiformes, Pleuronectiformes) Cnidaria (Actiniaria, Hydrozoa), Echinodermata (*Astropecten irregularis*), Mollusca (Pectinidae, Scaphopoda)	MB, AA, JO, DP	55	1816	1870	
BP23MVEXP-ENV-DC-039	09-Jul-2023	13:12:25	14:06:06	54027_BP23MVEXPENV040_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV39_2023-07-09_131225_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria,Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	57	1871	1927	
BP23MVEXP-ENV-DC-040	09-Jul-2023	15:14:37	16:05:55	54027_BP23MVEXPENV040_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV40_2023-07-09_151437_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	51	1928	1978	
BP23MVEXP-ENV-DC-041	09-Jul-2023	17:41:17	18:30:35	54027_BP23MVEXPENV041_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV41_2023-07-09_174117_Ch1/Ch2_00	Sand with shell and shell fragments, and fauna burrows	Arthropoda (Caridae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Pectinidae, Scaphopoda), Porifera	AA, JO	49	1979	2027	
BP23MVEXP-ENV-DC-042	09-Jul-2023	19:33:32	20:24:18	54027_BP23MVEXPENV042_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV42_2023-07-09_193332_Ch1/Ch2_00	Sand withshell and shell fragments, and fauna burrows	Arthropoda (*Lithodes* sp., Nephropidae, Paguroidea), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Mollusc (Bivalvia), Porifera	AA, JO	51	2028	2078	
BP23MVEXP-ENV-DC-043	09-Jul-2023	21:59:20	22:49:37	54027_BP23MVEXPENV043_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV43_2023-07-09_215920_Ch1/Ch2_00	Sand with shell and shell fragments, and fauna burrows	Arthropoda (Caridea, Nephropidae, Paguroidea), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, Pennatuloidea)	AA, JO	53	2079	2130	
BP23MVEXP-ENV-DC-044	10-Jul-2023	00:00:13	00:51:44	54027_BP23MVEXPENV044_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV44_2023-07-10_000013_Ch1/Ch2_00	Sand with shell and shell fragments, and fauna burrows	Annelida, Arthropoda (Caridea, Nephropidae), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	CD, MD	49	2131	2179	
BP23MVEXP-ENV-DC-045	10-Jul-2023	02:18:46	03:12:34	54027_BP23MVEXPENV045_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV45_2023-07-10_021846_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Nephropidae), Chordata (Actinopterygii, Mixinidae), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea)	CD, MD	46	2180	2226	Fix #2216 has no photo
BP23MVEXP-ENV-DC-046	10-Jul-2023	04:09:00	04:55:49	54027_BP23MVEXPENV046_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV46_2023-07-10_040900_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes), Cnidaria (Cerianthidae, Hydrozoa, Pennatuloidea), Mollusca (Gastropoda)	CD, MD	50	2227	2277	
BP23MVEXP-ENV-DC-047	10-Jul-2023	06:22:48	07:15:47	54027_BP23MVEXPENV047_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV47_2023-07-10_062248_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Mollusca (Gastropoda)	CD, MD, DP	46	2278	2323	
BP23MVEXP-ENV-DC-048	10-Jul-2023	08:09:54	09:03:09	54027_BP23MVEXPENV048_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV48_2023-07-10_080954_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Nephropidae), Chordata (Myxinidae, Pleuronectiformes),Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (*Hippasteria phrygiana* , Ophiuroidea)	CD, MD, DP	53	2324	2377	Fix #2357 has no photo
BP23MVEXP-ENV-DC-049	10-Jul-2023	10:22:58	11:14:35	54027_BP23MVEXPENV049_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV49_2023-07-10_102258_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (*Asterias rubens* , Asteroidea), Mollusca (Scaphopoda, Gastropoda)	CD, MD, DP	53	2378	2430	
BP23MVEXP-ENV-DC-050	10-Jul-2023	12:36:54	13:29:36	54027_BP23MVEXPENV050_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV50_2023-07-10_123654_Ch1/Ch2_00	Sand with shell fragmentscobbles and boulders	Annelida (Serpulidae), Arthropoda (Caridea, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actinaria, Hydrozoan), Echinodermata (Asteroidea, Echinoidea), Mollusc (Pectinidae)	MB, AA, JO, DP	47	2431	2477	
BP23MVEXP-ENV-DC-051	10-Jul-2023	15:05:36	15:57:40	54027_BP23MVEXPENV051_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV51_2023-07-10_150536_Ch1/Ch2_00	Sand with shell fragmentscobbles and boulders	Bryozoa (Flustridae), Chordata (Callionymidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Porifera	MB, AA, JO, DP	52	2478	2529	
BP23MVEXP-ENV-DC-052	10-Jul-2023	16:56:01	17:44:56	54027_BP23MVEXPENV052_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV52_2023-07-10_165601_Ch1/Ch2_00	Sand with shell fragmentscobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura, Caridea, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes, Rajiidae), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (*Asterias rubens,* Asteroidea, Echinoidea)	MB, AA, JO, DP	63	2530	2592	
BP23MVEXP-ENV-DC-053	10-Jul-2023	20:28:42	21:17:04	54027_BP23MVEXPENV053_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV53_2023-07-10_202842_Ch1/Ch2_00	Sand with shell fragments	Arthropoda (Amphipoda, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Porifera	MB, AA, JO	53	2593	2645	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-054	10-Jul-2023	22:18:02	23:08:36	54027_BP23MVEXPENV054_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV54_2023-07-10_221802_Ch1/Ch2_00	Sand with shell fragments	Arthropoda (Caridea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actinaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	AA, JO, CD, MD	49	2646	2694	
BP23MVEXP-ENV-DC-055	11-Jul-2023	01:06:44	01:59:38	54027_BP23MVEXPENV055_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV55_2023-07-11_010644_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Cerianthidae, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	CD, MD	55	2695	2749	
BP23MVEXP-ENV-DC-056	11-Jul-2023	03:04:15	03:51:43	54027_BP23MVEXPENV056_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV56_2023-07-11_030415_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	CD,MD	43	2750	2792	
BP23MVEXP-ENV-DC-058	11-Jul-2023	05:07:49	05:51:33	54027_BP23MVEXPENV058_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV58_2023-07-11_050749_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Annelida, Arthropoda (Caridea), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Pennatuloidea)	CD, MD	42	2793	2834	Reduced visibility due to suspended sediment
BP23MVEXP-ENV-DC-060	11-Jul-2023	06:47:39	07:41:11	54027_BP23MVEXPENV060_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV60_2023-07-11_064739_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Annelida, Arthropoda (Paguroidea), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea)	CD, MD	59	2835	2893	Reduced visibility due to suspended sediment
BP23MVEXP-ENV-DC-025	11-Jul-2023	18:12:47	19:02:58	54027_BP23MVEXPENV025_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV025_2023-07-11_181247_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (Gastropoda)	AA, JO	46	2894	2943	Fixes #2940 and 2944 have no photos
BP23MVEXP-ENV-DC-024	11-Jul-2023	20:34:51	21:24:05	54027_BP23MVEXPENV024_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV024_2023-07-11_203451_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Polychaeta, Serpulidae), Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (*Astropecten irregularis* , Ophiuroidea), Mollusca (Bivalvia, Pectinidae)	AA, JO	75	2945	3019	
BP23MVEXP-ENV-DC-071	12-Jul-2023	19:34:03	20:24:47	54027_BP23MVEXPENV071_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV071_2023-07-12_193403_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa *(Flustridae*), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Echiniodea, Ophiuroidea), Mollusca (Gastropoda)	AA, JO	59	3020	3078	
BP23MVEXP-ENV-DC-072	12-Jul-2023	23:29:59	00:21:34	54027_BP23MVEXPENV072_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV072_2023-07-12_232959_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, *Alcyonium digitatum,* Hydrozoa), Echinodermata (Asteroidea, *Echinocardium cordatum,* Ophiuroidea), Mollusca (Scaphopoda)	CD, MD	44	3079	3122	
BP23MVEXP-ENV-DC-073	13-Jul-2023	02:42:46	03:29:52	54027_BP23MVEXPENV073_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV073_2023-07-13_024246_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Asterias rubens* , *Astropecten irregularis* , Ophiuroidea)	CD, MD	51	3123	3173	
BP23MVEXP-ENV-DC-074	13-Jul-2023	05:59:12	07:05:38	54027_BP23MVEXPENV074_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV074_2023-07-13_055912_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (*Aphrodita aculeata* , Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Cephalopoda)	CD, MD, DP	49	3174	3222	
BP23MVEXP-ENV-DC-075	13-Jul-2023	08:51:18	09:42:04	54027_BP23MVEXPENV075_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV075_2023-07-13_085118_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (Actiniaria, *Alcyonium digitatum,* Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea, *Astropecten irregularis,* Ophiuroidea)	CD, MD, DP	53	3223	3275	
BP23MVEXP-ENV-DC-076	13-Jul-2023	12:04:28	13:00:42	54027_BP23MVEXPENV076_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV076_2023-07-13_120428_Ch1/Ch2_00	Sand with shell fragments, pebbles and cobbles	Annelida (Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum,* Hydrozoa), Echinodermata (Asteroidea, *Crossaster papposus, Hippasteria phrygiana* , Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	58	3277	3334	
BP23MVEXP-ENV-DC-077	13-Jul-2023	14:51:21	15:42:22	54027_BP23MVEXPENV077_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV077_2023-07-13_145121_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	45	3335	3379	
BP23MVEXP-ENV-DC-078	13-Jul-2023	18:19:44	19:10:28	54027_BP23MVEXPENV078_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV078_2023-07-13_181944_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea, *Astropecten irregularis,* Ophiuroidea)	AA, JO	49	3381	3428	
BP23MVEXP-ENV-DC-079	13-Jul-2023	20:57:32	21:47:12	54027_BP23MVEXPENV079_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV079_2023-07-13_205732_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae),Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (*Asterias rubens* , Asteroidea, *Astropecten irregularis* , Ophiuroidea), Mollusca (Bivalvia, Gastropoda, Pectinidae,Scaphopoda)	AA, JO	56	3429	3484	
BP23MVEXP-ENV-DC-080	14-Jul-2023	00:36:08	01:30:22	54027_BP23MVEXPENV080_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV080_2023-07-14_003608_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida, Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea, Astropecten irregularis, Ophiuroidea), Mollusca (Pectinidae)	CD, MD	47	3485	3531	
BP23MVEXP-ENV-DC-081	14-Jul-2023	03:20:48	04:08:31	54027_BP23MVEXPENV081_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV081_2023-07-14_032048_Ch1/Ch2_00	Sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Astropecten irregularis* , Ophiuroidea), Mollusca (Gastropoda)	CD, MD	59	3532	3590B	Fix #3561 has no photo Fix #3590 repeated

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-082	14-Jul-2023	05:49:33	06:39:26	54027_BP23MVEXPENV082_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV082_2023-07-14_054933_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropodoa (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Astropecten irregularis* , Ophiuroidea)	DP, MD	53	3590C	3642	Fix #3590 repeated
BP23MVEXP-ENV-DC-083	14-Jul-2023	08:49:39	09:37:30	54027_BP23MVEXPENV083_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV083_2023-07-14_084939_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea)	MB, DP, MD	60	3643	3702	
BP23MVEXP-ENV-DC-084	14-Jul-2023	10:51:44	11:44:59	54027_BP23MVEXPENV084_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV084_2023-07-14_105144_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, Alcyonium digitatum, Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (*Arctica islandica* , Bivalvia)	MB, DP, MD	49	3703	3751	
BP23MVEXP-ENV-DC-085	14-Jul-2023	12:38:21	13:26:37	54027_BP23MVEXPENV085_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV085_2023-07-14_123821_Ch1/Ch2_00	Fine sand with shell and shell fragments	Arthropoda (Paguroidea, Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	49	3752	3800	
BP23MVEXP-ENV-DC-086	14-Jul-2023	14:48:04	16:00:01	54027_BP23MVEXPENV086_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV086_2023-07-14_144804_Ch1/Ch2_00	Fine sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Gastropoda)	MB, AA, JO, DP	52	3801	3852	
BP23MVEXP-ENV-DC-087	30-Jul-2023	18:42:14	19:33:21	54027_BP23MVEXPENV087_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV087_2023-07-30_184214_Ch1/Ch2_00	Mixed sediment with shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (*Flustridae*), Chordata (Actinopterygii), Cnidaria (Actiniaria, Hydrozoa, *Nemertesia antennina*), Echinodermata (Asteroidea, Ophiuroidea, *Porania pulvillus*), Mollusca (Gastropoda, Pectinidae)	MB, AA, JO	60	3853	3912	
BP23MVEXP-ENV-DC-088	30-Jul-2023	21:20:24	22:11:36	54027_BP23MVEXPENV088_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV088_2023-07-30_212024_Ch1/Ch2_00.mp4	Fine sand with shell fragments	Annelida (Polychaeta, Serpulidae), Arthropoda (*Cancer pagurus* , Caridea, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum,* Hydrozoa, *Nemertesia antennina*), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia, Pectinidae)	AA, JO	55	3913	3967	
BP23MVEXP-ENV-DC-089	30-Jul-2023	23:36:12	00:25:59	54027_BP23MVEXPENV089_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV089_2023-07-30_233612_Ch1/Ch2_00.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum*), Echinodermata (*Asterias rubens* , Asteroidea)	MB, MM, JH	55	3968	4022	
BP23MVEXP-ENV-DC-090	31-Jul-2023	02:11:40	02:54:36	54027_BP23MVEXPENV090_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV090_2023-07-31_021140_Ch1/Ch2.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, *Luidia ciliaris,* Ophiuroidea)	MB, MM, JH	67	4023	4089	
BP23MVEXP-ENV-DC-091	31-Jul-2023	04:05:23	04:59:18	54027_BP23MVEXPENV091_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV091_2023-07-31_040523_Ch1/Ch2.mp4	Fine sand with shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Ophiuroidea)	MM, JH	66	4090	4154	Fix #4123 repeated
BP23MVEXP-ENV-DC-092	31-Jul-2023	06:52:12	07:44:00	54027_BP23MVEXPENV092_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV092_2023-07-31_065212_Ch1/Ch2.mp4	Fine sand with shell fragments and gravel	Annelida (Polychaeta), Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea)	MM, JH, NW	55	4155	4209	
BP23MVEXP-ENV-DC-093	31-Jul-2023	09:00:30	09:54:44	54027_BP23MVEXPENV093_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV093_2023-07-31_090030_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Echinoidea)	MM, JH, NW	53	4210	4262	
BP23MVEXP-ENV-DC-094	31-Jul-2023	11:29:40	12:13:43	54027_BP23MVEXPENV094_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV094_2023-07-31_112940_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (*Cancer pagurus* , Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoan, Pennatuloidea)	MB, AA, JO, NW	54	4623	4676	Starting fix number used is incorrect
BP23MVEXP-ENV-DC-095	31-Jul-2023	12:58:27	13:42:19	54027_BP23MVEXPENV095_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV095_2023-07-31_125827_Ch1/Ch2.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (*Asterias rubens* , Asteroidea), Mollusca (Bivalvia)	MB, AA, JO, NW	51	4677	4727	
BP23MVEXP-ENV-DC-097	31-Jul-2023	14:50:30	15:42:23	54027_BP23MVEXPENV097_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV097_2023-07-31_145030_Ch1/Ch2.mp4	Fine sand with shell fragments and gravel	Annelida (Polychaeta), Arthropoda (*Cancer pagurus* , Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Bivalvia)	MB, AA, JO, NW	52	4728	4779	
BP23MVEXP-ENV-DC-096	31-Jul-2023	17:14:30	18:06:40	54027_BP23MVEXPENV096_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV096_2023-07-31_171430_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (*Cancer pagurus* , Paguroidea), Cnidaria (Hydrozoa, Pennatuloidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea, *Crossaster papposus*)	MB, AA, JO	47	4780	4826	
BP23MVEXP-ENV-DC-098	31-Jul-2023	19:41:55	20:34:10	54027_BP23MVEXPENV098_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV098_2023-07-31_194155_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea)	AA, JO	51	4827	4877	
BP23MVEXP-ENV-DC-099	31-Jul-2023	21:58:49	22:55:22	54027_BP23MVEXPENV099_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV099_2023-07-31_215849_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (Bivalvia)	AA, JO	51	4878	4928	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-101	31-Jul-2023	23:58:19	00:48:12	54027_BP23MVEXPENV101_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV101_2023-07-31_235819_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Galatheoidea, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MM, JH	51	4929	4978	Fix #4949 repeated
BP23MVEXP-ENV-DC-100	01-Aug-2023	02:36:13	03:22:48	54027_BP23MVEXPENV100_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV100_2023-08-01_023613_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Chordata (Actinopterigyii, Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum* , Pennatuloidea), Echiondermata (Asteroidea)	MM, JH	52	4979	5030	
BP23MVEXP-ENV-DC-102	01-Aug-2023	04:49:55	05:54:24	54027_BP23MVEXPENV102_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV102_2023-08-01_045945_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MM, JH	54	5031	5084	
BP23MVEXP-ENV-DC-103	01-Aug-2023	07:24:53	08:31:02	54027_BP23MVEXPENV103_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV103_2023-08-01_072453_Ch1/Ch2.mp4	Fine sand with faunal burrows, cobbles and boulders	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria), Echinodermata (Asteroidea)	MM, JH, NW	56	5085	5140	
BP23MVEXP-ENV-DC-105	01-Aug-2023	09:32:01	10:21:22	54027_BP23MVEXPENV105_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV105_2023-08-01_093201_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroideae)	MM,JH, NW	53	5141	5193	FIXES 5155 and 5183 boulders in these areas, near center of station
BP23MVEXP-ENV-DC-107	01-Aug-2023	12:03:16	12:58:02	54027_BP23MVEXPENV107_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV107_2023-08-01_120316_Ch1/Ch2.mp4	Fine sand	Arthropoda (Brachyura), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, NW	51	5194	5244	
BP23MVEXP-ENV-DC-104	01-Aug-2023	14:10:00	15:01:55	54027_BP23MVEXPENV104_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV104_2023-08-01_141000_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, NW	52	5245	5296	
BP23MVEXP-ENV-DC-106	01-Aug-2023	16:32:06	17:20:14	54027_BP23MVEXPENV106_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV106_2023-08-01_163206_Ch1/Ch2.mp4	Rippled sand with shell fragments, cobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura, Paguiroidea), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, NW	52	5296	5347	FIX 5325 Tie Line (?)
BP23MVEXP-ENV-DC-109	01-Aug-2023	18:19:26	19:15:03	54027_BP23MVEXPENV109_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV109_2023-08-01_181926_Ch1/Ch2.mp4	Rippled sand with faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	AA, JO	48	5348	5395	
BP23MVEXP-ENV-DC-110	01-Aug-2023	21:13:24	22:09:22	54027_BP23MVEXPENV110_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV110_2023-08-01_211324_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida, Arthropoda (Decapoda, Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (Hydrozoa, Pennatuloidea)	AA, JO	50	5396	5445	
BP23MVEXP-ENV-DC-108	01-Aug-2023	22:55:33	23:44:31	54027_BP23MVEXPENV108_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV108_2023-08-01_225533_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	MM, JH	55	5446	5500	
BP23MVEXP-ENV-DC-111	02-Aug-2023	01:30:56	02:18:44	54027_BP&EnBW_MorvenECR_ENV111_2023-08-02_013056_Ch1/2	Rippled sand with faunal burrows	Annelida (Polychaeta), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	MM, JH	53	5501	5553	No HD Video recorded
BP23MVEXP-ENV-DC-11A	02-Aug-2023	11:52:44	12:36:34	54027_BP23MVEXPENV111A_1CAMHD 54027_BP&EnBW_MorvenECR_ENV111A_2023-08-02_122145_Ch1/2	Rippled sand with faunal burrows	Annelida (Polychaeta), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	MM, JH	51	5711	5761	Station re-run
BP23MVEXP-ENV-DC-112	02-Aug-2023	03:36:35	04:29:40	54027_BP23MVEXPENV112_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV112_2023-08-02_033635_Ch1/Ch2.mp4	Rippled sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Brachyura), Chordata (Actinopterygii), Cnidaria (Pennatuloidea)	MM, JH	53	5554	5606	Fix #5560A has no photo. Turbid
BP23MVEXP-ENV-DC-113	02-Aug-2023	06:04:04	06:53:35	54027_BP23MVEXPENV113_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV113_2023-08-02_060404_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Nephropidae), Chordata (Actinopterygii, Myxinidae), Cnidaria (*Alcyonium digitatum* , Pennatuloidea), Echinodermata (Asteroidea)	MM, JH, NW	51	5607	5657	
BP23MVEXP-ENV-DC-114	02-Aug-2023	08:19:40	09:23:19	54027_BP23MVEXPENV114_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV114_2023-08-02_081940_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*)	MB, MM, JH, NW	53	5658	5710	Strong current, turbid
BP23MVEXP-ENV-DC-11A	02-Aug-2023	11:51:46	12:36:54	54027_BP23MVEXPENV111A_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV111A_2023-08-02_115146_Ch1/Ch2.mp4	Rippled sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Brachyura, Nephropidae), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	51	5711	5761	
BP23MVEXP-ENV-DC-070	05-Aug-2023	04:45:25	05:33:17	54027_BP23MVEXPENV070_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV070_2023-08-05_044525_Ch1/Ch2.mp4	Coarse sand with gravel, cobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura, Caridea, Galatheoidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, *Crossasster pappossus* , Echinoidea, Ophiuroidea), Mollusca (Cephalopoda), Porifera	MM, JH, NW	50	5762	5811	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-068	05-Aug-2023	06:21:23	07:10:15	54027_BP23MVEXPENV068_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV068_2023-08-05_062123_Ch1/Ch2.mp4	Coarse sand with gravel, cobbles and boulders	Annelida (Serpulidae), Arthropoda (Caridea, Paguroidea), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	MM, JH, NW	51	5812	5862	
BP23MVEXP-ENV-DC-057	07-Aug-2023	07:16:51	08:08:40	54027_BP23MVEXPENV057_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV057_2023-08-07_071651_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MB, MM, JH, NW	44	5863	5908	Large swell and high turbidity Fixes #5899 and #5902 have no photos
BP23MVEXP-ENV-DC-126	10-Aug-2023	08:10:30	08:57:54	54027_BP23MVEXPENV126_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV126_2023-08-10_081030_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (*Aphrodita aculeata* , Polychaeta), Chordata (Gadidae, Myxinidae), Cnidaria (Pennatuloidea)	MB, MM, JH, NW	49	5909	5957	Large swell - reduced visibility
BP23MVEXP-ENV-DC-127	10-Aug-2023	10:00:44	10:48:14	54027_BP23MVEXPENV127_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV127_2023-08-10_100044_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Decapoda), Chordata (Actinopterygii), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MB, MM, JH, NW	42	5958	6000	Large swell - reduced visibility Fix #5973 has no photo
BP23MVEXP-ENV-DC-128	10-Aug-2023	11:47:11	12:29:09	54027_BP23MVEXPENV128_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV128_2023-08-10_114711_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Pleuronectiformes, Triglidae), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	50	6001	6049	Large swell - reduced visibility Fix #4030 repeated
BP23MVEXP-ENV-DC-128	10-Aug-2023	12:35:39	12:54:25	54027_BP23MVEXPENV128_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV128_2023-08-10_114711_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Pleuronectiformes, Triglidae)	MB, AA, JO, NW	27	6050	6075	Large swell - reduced visibility Re-run of second transect
BP23MVEXP-ENV-DC-129	10-Aug-2023	13:47:12	14:30:10	54027_BP23MVEXPENV129_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV129_2023-08-10_134712_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Nephropidae), Chordata (Gadidae, Myxinidae)	MB, AA, JO, NW	40	6076	6116	Large swell - reduced visibility
BP23MVEXP-ENV-DC-130	10-Aug-2023	15:17:57	16:08:54	54027_BP23MVEXPENV130_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV130_2023-08-10_151757_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Mollusca (Scaphopoda)	MB, AA, JO, NW	52	6117	6168	Large swell - reduced visibility
BP23MVEXP-ENV-DC-063	10-Aug-2023	16:47:05	17:40:19	54027_BP23MVEXPENV063_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV063_2023-08-10_164705_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Chordata (Gadidae), Echinodermata (Asteroidea)	MB, AA, JO	53	6169	6221	
BP23MVEXP-ENV-DC-061	10-Aug-2023	18:35:39	19:24:27	54027_BP23MVEXPENV061_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV061_2023-08-10_183539_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Gadidae, Myxinidae)	AA, JO	49	6222	6271	
BP23MVEXP-ENV-DC-059	10-Aug-2023	20:25:17	21:15:35	54027_BP23MVEXPENV059_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV059_2023-08-10_202517_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	AA, JO	54	6272	6325	
BP23MVEXP-ENV-DC-062	10-Aug-2023	22:32:39	23:18:46	54027_BP23MVEXPENV062_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV062_2023-08-10_223139_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Gadidae, Myxinidae)	AA, JO	54	6327	6381	Fixes #6378 and #6326 have no photos
BP23MVEXP-ENV-DC-064	11-Aug-2023	00:18:52	01:07:07	54027_BP23MVEXPENV064_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV064_2023-08-11_001852_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Cnidaria (Pennatuloidea)	MM, JH	49	6382	6430	
BP23MVEXP-ENV-DC-131	11-Aug-2023	02:06:35	02:49:53	54027_BP23MVEXPENV131_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV131_2023-08-11_020635_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthopoda (Caridea, Paguroidea), Chordata (Gadidae, Triglidae), Cnidaria (Actiniaria), Echinodermata (Asteroidea)	MM, JH	51	6431	6481	Low visibility and large swell
BP23MVEXP-ENV-DC-065	11-Aug-2023	03:25:46	04:16:15	54027_BP23MVEXPENV065_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV065_2023-08-11_032546_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	MM, JH	62	6482	6543	Low visibility and large swell
BP23MVEXP-ENV-DC-066	11-Aug-2023	06:21:25	07:09:54	54027_BP23MVEXPENV066_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV066_2023-08-11_062125_Ch1/Ch2.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (Actiniaria), Mollusca (Bivalvia)	MB, MM, JH, NW	51	6547	6597	
BP23MVEXP-ENV-DC-132	11-Aug-2023	08:05:28	08:36:15	54027_BP&EnBW_MorvenECR_ENV132_2023-08-11_080528_Ch2.mp4	Fine sand	Echinodermata (Asteroidea)	MB, MM, JH, NW	30	6598	6628	Run with FWL - aborted due to low image quality Fix #6110 has no photo
BP23MVEXP-ENV-DC-132A	11-Aug-2023	09:03:14	09:50:35	54027_BP23MVEXPENV132A_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV132A_2023-08-11_090314_Ch1/Ch2.mp4	Fine sand with shell fragments and cobbles	Annelida (Polychaeta, Serpulidae), Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (Actinaria, *Alyconium digitatum*), Echinodermata (Ophiuroidea)	MB, MM, JH, NW	45	6629	6673	Re-run with shallow water camera, low visibility

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-133	11-Aug-2023	10:46:11	11:30:49	54027_BP23MVEXPENV133_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV133_2023-08-11_104611_Ch1/Ch2.mp4	Rippled sand with shell fragments	Arthropoda (Brachyura), Echinodermata (Asteroidea)	MB, MM, JH, NW	57	6674	6730	
BP23MVEXP-ENV-DC-069	11-Aug-2023	12:35:39	13:20:39	54027_BP23MVEXPENV069_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV069_2023-08-11_123539_Ch1/Ch2.mp4	Fine sand with cobbles and boulders	Annelida (Polychaeta, Serpulidae), Arthropoda (Decapoda, Galatheoidea), Bryozoa (Flustridae), Cnidaria (Actinaria, *Alyconium digitatum* , Hydrozoa) Echinodermata (Asteroidea, *Crossasster pappossus*), Mollusca (Gastropoda)	MB, AA, JO, NW	54	6731	6782	Low visibility
BP23MVEXP-ENV-DC-67A	11-Aug-2023	14:58:13	16:21:17	54027_BP&EnBW_MorvenECR_ENV067A__2023-08-11_162306_Ch2.mp4	Fine sand with cobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura), Bryozoa (Flustridae), Cnidaria (*Alyconium digitatum*), Echinodermata (Asteroidea, Echinoidea)	MB, AA, JO, NW	68	6783	6850	Run with FWL - bad image quality
BP23MVEXP-ENV-DC-67B	11-Aug-2023	17:03:01	17:55:42	54027_BP23MVEXPENV067B_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV067B_2023-08-11_170301_Ch1.mp4	Fine sand with cobbles and boulders	Annelida (Serpulidae), Arthropoda (Galatheoidea, Paguroidea), Chordata (Actinopterygii, Myxinidae), Cnidaria (*Alyconium digitatum*), Echinodermata (Asteroidea, *Crossasster pappossus* , Echinoidea)	MB, AA, JO	46	6851	6896	Re-run with shallow water camera Low visibility
BP23MVEXP-ENV-DC-125	11-Aug-2023	20:48:53	21:40:54	54027_BP23MVEXPENV125_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV125_2023-08-11_204853_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	AA, JO	40	6897	6937	Low visibility
BP23MVEXP-ENV-DC-124	11-Aug-2023	22:43:49	23:26:32	54027_BP23MVEXPENV124_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV124_2023-08-11_224349_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	AA, JO	48	6938	6985	Low visibility
BP23MVEXP-ENV-DC-123	12-Aug-2023	00:27:43	01:17:47	54027_BP23MVEXPENV123_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV123_2023-08-12_002743_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MM, JH	49	6986	7034	Low visibility
BP23MVEXP-ENV-DC-122	12-Aug-2023	02:15:05	02:58:18	54027_BP23MVEXPENV122_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV122_2023-08-12_021505_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida, (Polychaeta), Chordata (Gadidae, Myxinidae), Cnidaria (Pennatuloidea)	MM, JH	51	7035	7085	
BP23MVEXP-ENV-DC-121	12-Aug-2023	03:56:28	04:45:18	54027_BP23MVEXPENV121_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV121_2023-08-12_035628_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MM, JH	50	7086	7135	
BP23MVEXP-ENV-DC-120	12-Aug-2023	05:43:53	06:38:33	54027_BP23MVEXPENV120_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV120_2023-08-12_054353_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Bryozoa (Flustridae), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MM, JH, NW	47	7136	7182	
BP23MVEXP-ENV-DC-119	12-Aug-2023	07:39:05	08:25:58	54027_BP23MVEXPENV119_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV119_2023-08-12_073905_Ch1/Ch2.mp4	Fine sand with faunal burrows	Chordata (Gadidae, Triglidae), Cnidaria (*Alyconium digitatum* , Pennatuloidea)	MB, MM, JH, NW	54	7183	7236	
BP23MVEXP-ENV-DC-118	12-Aug-2023	09:28:29	10:15:14	54027_BP23MVEXPENV118_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV118_2023-08-12_092829_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae), Chordata (Gadidae), Cnidaria (Pennatuloidea),	MB, MM, JH, NW	50	7237	7286	
BP23MVEXP-ENV-DC-117	12-Aug-2023	11:15:32	11:58:15	54027_BP23MVEXPENV117_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV117_2023-08-12_111532_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea), Mollusca	MB, AA, JO, NW	49	7287	7335	
BP23MVEXP-ENV-DC-116	12-Aug-2023	12:57:27	13:39:47	54027_BP23MVEXPENV116_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV116_2023-08-12_125727_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	49	7336	7384	
BP23MVEXP-ENV-DC-115	12-Aug-2023	14:36:56	15:18:26	54027_BP23MVEXPENV115_1CAMHD.MTS54027_BP&EnBW_MorvenECR_ENV115_2023-08-12_143656_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	45	7385	7429	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG							
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location							
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Jul-2023	01:44	1	BP23MVEXP-ENV-GS-011	85%	MFA	DG	74	656159	6264036	656157	6264039	-2	3	4	319	HS	
12-Jul-2023	01:59	2	BP23MVEXP-ENV-GS-011	70%	MFB	DG	74	656159	6264037	656157	6264039	-2	2	3	324	HS	
12-Jul-2023	02:10	3	BP23MVEXP-ENV-GS-011	50%	CHEM1	DG	74	656158	6264037	656157	6264039	-1	2	2	32	HS	
12-Jul-2023	02:29	4	BP23MVEXP-ENV-GS-011	60%	CHEM2	DG	74	656159	6264038	656157	6264039	-2	1	2	52	HS	
12-Jul-2023	03:27	5	BP23MVEXP-ENV-GS-010	70%	MFA	DG	75	653552	6267077	653551	6267079	-1	2	2	15	HS	
12-Jul-2023	03:41	6	BP23MVEXP-ENV-GS-010	65%	MFB	DG	75	653552	6267078	653551	6267079	-1	1	1	34	HS	
12-Jul-2023	03:50	7	BP23MVEXP-ENV-GS-010	65%	PSA	DG	75	653552	6267077	653551	6267079	-1	2	2	37	HS	
12-Jul-2023	04:41	8	BP23MVEXP-ENV-GS-009	50%	MFA	DG	75	650936	6270129	650936	6270129	0	0	0	18	HS	
12-Jul-2023	04:54	9	BP23MVEXP-ENV-GS-009	70%	MFB	DG	75	650937	6270129	650936	6270129	-1	0	1	66	HS	
12-Jul-2023	05:03	10	BP23MVEXP-ENV-GS-009	65%	CHEM1	DG	75	650936	6270129	650936	6270129	0	0	1	55	HS	
12-Jul-2023	05:22	11	BP23MVEXP-ENV-GS-009	60%	CHEM2	DG	75	650937	6270129	650936	6270129	-1	0	1	74	HS	
12-Jul-2023	06:15	12	BP23MVEXP-ENV-GS-008	80%	MFA	DG	78	648376	6273115	648378	6273115	2	0	2	81	VP	
12-Jul-2023	06:23	13	BP23MVEXP-ENV-GS-008	80%	MFB	DG	74	648377	6273113	648378	6273115	1	2	2	35	VP	
12-Jul-2023	06:32	14	BP23MVEXP-ENV-GS-008	70%	PSA	DG	74	648378	6273114	648378	6273115	1	1	1	38	VP	
12-Jul-2023	07:24	15	BP23MVEXP-ENV-GS-007	65%	MFA	DG	75	645744	6276186	645743	6276186	-1	0	1	69	VP	
12-Jul-2023	07:33	16	BP23MVEXP-ENV-GS-007	60%	MFB	DG	75	645743	6276187	645743	6276186	0	-1	1	5	VP	
12-Jul-2023	07:41	17	BP23MVEXP-ENV-GS-007	55%	CHEM1	DG	75	645744	6276185	645743	6276186	-1	1	1	38	VP	
12-Jul-2023	07:54	18	BP23MVEXP-ENV-GS-007	50%	CHEM2	DG	75	645744	6276185	645743	6276186	-1	1	1	63	VP	
12-Jul-2023	08:53	19	BP23MVEXP-ENV-GS-006	55%	MFA	DG	76	643128	6279226	643128	6279228	0	2	2	3	VP	
12-Jul-2023	09:02	20	BP23MVEXP-ENV-GS-006	80%	MFB	DG	76	643128	6279227	643128	6279228	0	1	1	22	VP	
12-Jul-2023	09:09	21	BP23MVEXP-ENV-GS-006	70%	PSA	DG	76	643128	6279228	643128	6279228	0	0	1	36	VP	
12-Jul-2023	10:07	22	BP23MVEXP-ENV-GS-005	70%	MFA	DG	78	640532	6282261	640532	6282261	0	0	0	23	AC	
12-Jul-2023	10:17	23	BP23MVEXP-ENV-GS-005	70%	No Sample	DG	78	640532	6282261	640532	6282261	0	0	0	39	AC	Misfire
12-Jul-2023	10:26	24	BP23MVEXP-ENV-GS-005	65%	MFB	DG	78	640532	6282261	640532	6282261	0	0	0	9	AC	
12-Jul-2023	10:44	25	BP23MVEXP-ENV-GS-005	55%	CHEM1	DG	78	640532	6282261	640532	6282261	0	0	0	22	AC	
12-Jul-2023	11:03	26	BP23MVEXP-ENV-GS-005	70%	CHEM2	DG	78	640532	6282261	640532	6282261	0	0	0	69	AC	
12-Jul-2023	12:09	27	BP23MVEXP-ENV-GS-004	60%	MFA	DG	72	637940	6285279	637941	6285279	1	0	1	80	AC	
12-Jul-2023	12:23	28	BP23MVEXP-ENV-GS-004	65%	MFB	DG	72	637941	6285279	637941	6285279	0	0	0	52	AC	
12-Jul-2023	12:33	29	BP23MVEXP-ENV-GS-004	60%	PSA	DG	71	637941	6285279	637941	6285279	0	0	0	88	AC	
12-Jul-2023	13:30	30	BP23MVEXP-ENV-GS-003	60%	MFA	DG	70	635280	6288301	635281	6288299	1	-2	2	24	AC	
12-Jul-2023	13:42	31	BP23MVEXP-ENV-GS-003	70%	MFB	DG	70	635280	6288301	635281	6288299	1	-2	3	28	AC	
12-Jul-2023	13:52	32	BP23MVEXP-ENV-GS-003	60%	CHEM1	DG	70	635280	6288301	635281	6288299	1	-2	2	21	AC	
12-Jul-2023	14:11	33	BP23MVEXP-ENV-GS-003	75%	CHEM2	DG	70	635280	6288301	635281	6288299	1	-2	2	16	AC	
12-Jul-2023	15:12	34	BP23MVEXP-ENV-GS-002	75%	MFA	DG	67	632683	6291341	632683	6291340	0	-1	1	10	AC	
12-Jul-2023	15:24	35	BP23MVEXP-ENV-GS-002	80%	MFB	DG	67	632683	6291341	632683	6291340	0	-1	1	16	AC	
12-Jul-2023	15:40	36	BP23MVEXP-ENV-GS-002	90%	PSA	DG	67	632683	6291340	632683	6291340	0	0	0	51	AC	
12-Jul-2023	16:31	37	BP23MVEXP-ENV-GS-001	60%	MFA	DG	68	630090	6294366	630092	6294363	2	-3	3	40	AC	
12-Jul-2023	16:46	38	BP23MVEXP-ENV-GS-001	75%	MFB	DG	68	630091	6294364	630092	6294363	1	-1	2	49	AC	
12-Jul-2023	17:01	39	BP23MVEXP-ENV-GS-001	60%	CHEM1	DG	68	630091	6294364	630092	6294363	1	-1	2	57	HS	
12-Jul-2023	17:16	40	BP23MVEXP-ENV-GS-001	70%	CHEM2	DG	68	630090	6294364	630092	6294363	2	-1	2	62	HS	
12-Jul-2023	21:29	41	BP23MVEXP-ENV-GS-071	85%	MFA	DG	71	617141	6281096	617141	6281096	0	0	1	40	HS	
12-Jul-2023	21:52	42	BP23MVEXP-ENV-GS-071	85%	MFB	DG	71	617141	6281096	617141	6281096	0	0	0	20	HS	
12-Jul-2023	22:09	43	BP23MVEXP-ENV-GS-071	70%	CHEM1	DG	71	617141	6281096	617141	6281096	0	0	0	48	HS	
12-Jul-2023	22:26	44	BP23MVEXP-ENV-GS-071	70%	CHEM2	DG	71	617141	6281096	617141	6281096	0	0	0	39	HS	
13-Jul-2023	01:12	45	BP23MVEXP-ENV-GS-072	40%	MFA	DG	77	617683	6277122	617683	6277122	0	0	0	79	HS	
13-Jul-2023	01:27	46	BP23MVEXP-ENV-GS-072	45%	MFB	DG	77	617684	6277121	617683	6277122	-1	1	1	37	HS	
13-Jul-2023	01:38	47	BP23MVEXP-ENV-GS-072	45%	PSA	DG	77	617684	6277121	617683	6277122	-1	1	1	37	HS	
13-Jul-2023	04:19	48	BP23MVEXP-ENV-GS-073	60%	MFA	DG	72	618229	6273145	618229	6273143	0	-2	2	3	HS	
13-Jul-2023	04:28	49	BP23MVEXP-ENV-GS-073	55%	MFB	DG	72	618229	6273144	618229	6273143	0	-1	1	8	HS	
13-Jul-2023	04:37	50	BP23MVEXP-ENV-GS-073	75%	CHEM1	DG	72	618228	6273145	618229	6273143	1	-2	2	20	HS	
13-Jul-2023	04:50	51	BP23MVEXP-ENV-GS-073	50%	CHEM2	DG	72	618229	6273144	618229	6273143	0	-1	1	12	HS	
13-Jul-2023	07:32	52	BP23MVEXP-ENV-GS-074	55%	MFA	DG	68	618778	6269161	618778	6269161	0	0	0	72	VP	
13-Jul-2023	07:43	53	BP23MVEXP-ENV-GS-074	75%	MFB	DG	68	618778	6269160	618778	6269161	0	1	1	15	VP	
13-Jul-2023	07:51	54	BP23MVEXP-ENV-GS-074	75%	PSA	DG	68	618778	6269160	618778	6269161	0	1	1	21	VP	
13-Jul-2023	10:22	55	BP23MVEXP-ENV-GS-075	75%	MFA	DG	68	619314	6265236	619313	6265236	-1	0	1	89	VP	
13-Jul-2023	10:33	56	BP23MVEXP-ENV-GS-075	75%	MFB	DG	68	619313	6265236	619313	6265236	0	0	1	24	VP	
13-Jul-2023	10:42	57	BP23MVEXP-ENV-GS-075	65%	CHEM1	DG	68	619314	6265236	619313	6265236	-1	0	1	86	VP	
13-Jul-2023	11:05	58	BP23MVEXP-ENV-GS-075	60%	CHEM2	DG	68	619314	6265236	619313	6265236	-1	0	1	69	AC	
13-Jul-2023	13:19	59	BP23MVEXP-ENV-GS-076	55%	MFA	DG	61	619800	6261235	619800	6261234	0	-1	1	11	AC	
13-Jul-2023	13:34	60	BP23MVEXP-ENV-GS-076	55%	MFB	DG	61	619800	6261235	619800	6261234	0	-1	1	18	AC	
13-Jul-2023	13:43	61	BP23MVEXP-ENV-GS-076	40%	No Sample	DG	61	619800	6261235	619800	6261234	0	-1	1	347	AC	Low retention
13-Jul-2023	13:50	62	BP23MVEXP-ENV-GS-076	50%	PSA	DG	61	619800	6261236	619800	6261234	0	-2	2	17	AC	
13-Jul-2023	16:23	63	BP23MVEXP-ENV-GS-077	65%	MFA	DG	62	620314	6257251	620314	6257253	0	2	2	192	AC	
13-Jul-2023	16:41	64	BP23MVEXP-ENV-GS-077	40%	MFB	DG	62	620314	6257252	620314	6257253	0	1	1	7	AC	
13-Jul-2023	16:55	65	BP23MVEXP-ENV-GS-077	40%	CHEM1	DG	62	620314	6257252	620314	6257253	0	1	1	6	HS	
13-Jul-2023	17:11	66	BP23MVEXP-ENV-GS-077	20%	No Sample	DG	62	620314	6257252	620314	6257253	0	1	2	14	HS	Low retention
13-Jul-2023	17:17	67	BP23MVEXP-ENV-GS-077	70%	CHEM2	DG	62	620314	6257252	620314	6257253	0	1	1	11	HS	
13-Jul-2023	19:31	68	BP23MVEXP-ENV-GS-078	75%	MFA	DG	66	620874	6253241	620873	6253243	-1	2	2	17	HS	
13-Jul-2023	19:47	69	BP23MVEXP-ENV-GS-078	70%	MFB	DG	66	620874	6253241	620873	6253243	-1	2	2	35	HS	
13-Jul-2023	20:00	70	BP23MVEXP-ENV-GS-078	70%	PSA	DG	66	620874	6253241	620873	6253243	-1	2	2	32	HS	
13-Jul-2023	22:42	71	BP23MVEXP-ENV-GS-079	75%	MFA	DG	65	621429	6249278	621428	6249280	-1	2	2	18	HS	
13-Jul-2023	22:58	72	BP23MVEXP-ENV-GS-079	65%	MFB	DG	65	621428	6249279	621428	6249280	0	1	1	5	HS	
13-Jul-2023	23:14	73	BP23MVEXP-ENV-GS-079	75%	CHEM1	DG	65	621428	6249279	621428	6249280	0	1	2	10	HS	
13-Jul-2023	23:28	74	BP23MVEXP-ENV-GS-079	45%	CHEM2	DG	65	621428	6249279	621428	6249280	0	1	1	2	HS	
14-Jul-2023	01:49	75	BP23MVEXP-ENV-GS-080	70%	MFA	DG	66	621961	6245401	621960	6245400	-1	-1	1	35	HS	
14-Jul-2023	01:58	76	BP23MVEXP-ENV-GS-080	60%	MFB	DG	66	621961	6245403	621960	6245400	-1	-3	3	14	HS	
14-Jul-2023	02:06	77	BP23MVEXP-ENV-GS-080	65%	PSA	DG	66	621961	6245401	621960	6245400	-1	-1	1	41	HS	
22-Oct-2023	21:38	78	BP23MVEXP-ENV-GS-081	40%	CHEM1	DG	69	622508	6241445	622506	6241445	-2	0	2	274	SP	
22-Oct-2023	22:02	79	BP23MVEXP-ENV-GS-081	60%	MFA	DG	69	622507	6241446	622506	6241445	-1	-1	2	249	SP	
22-Oct-2023	22:12	80	BP23MVEXP-ENV-GS-081	50%	MFB	DG	69	622506	6241444	622506	6241445	0	1	1	318	SP	
22-Oct-2023	22:25	81	BP23MVEXP-ENV-GS-081	50%	CHEM2	DG	69	622507	6241446	622506	6241445	-1	-1	1	248	SP	
22-Oct-2023	23:37	82	BP23MVEXP-ENV-GS-082	90%	MFA	DG	66	623038	6237535	623038	6237536	0	1	1	16	AN	
23-Oct-2023	00:06	83	BP23MVEXP-ENV-GS-082	70%	MFB	DG	66	623038	6237535	623038	6237536	0	1	1	17	AN	
23-Oct-2023	00:25	84	BP23MVEXP-ENV-GS-082	60%	PSA	DG	66	623038	6237535	623038	6237536	0	1	1	355	AN	
23-Oct-2023	01:29	85	BP23MVEXP-ENV-GS-083	60%	CHEM1	DG	67	623635	6233497	623635	6233497	0	0	0	171	AN	
23-Oct-2023	01:54	86	BP23MVEXP-ENV-GS-083	40%	MFA	DG	67	623635	6233496	623635	6233497	0	1	1	1	AN	
23-Oct-2023	02:08	87	BP23MVEXP-ENV-GS-083	70%	MFB	DG	67	623635	6233497	623635	6233497	0	0	0	171	AN	
23-Oct-2023	02:22	88	BP23MVEXP-ENV-GS-083	30%	No Sample	DG	67	623634	6233497	623635	6233497	1	0	1	74	AN	Low retention
23-Oct-2023	02:34	89	BP23MVEXP-ENV-GS-083	66%	CHEM2	DG	67	623635	6233498	623635	6233497	0	-1	1	194	AN	
23-Oct-2023	03:31	90	BP23MVEXP-ENV-GS-084	40%	MFA	DG	69	624135	6229543	624135	6229544	0	1	1	338	AN	
23-Oct-2023	03:46	91	BP23MVEXP-ENV-GS-084	50%	MFB	DG	69	624136	6229543	624135	6229544	-1	1	1	314	AN	
23-Oct-2023	03:59	92	BP23MVEXP-ENV-GS-084	60%	PSA	DG	69	624135	6229543	624135	6229544	0	1	1	343	AN	
23-Oct-2023	04:59	93	BP23MVEXP-ENV-GS-085	40%	CHEM1	DG	70	624677	6225569	624677	6225569	0	0	0	341	AN	
23-Oct-2023	05:19	94	BP23MVEXP-ENV-GS-085	50%	MFA	DG	70	624676	6225568	624677	6225569	1	1	1	30	AN	
23-Oct-2023	05:42	95	BP23MVEXP-ENV-GS-085	60%	MFB	DG	70	624676	6225569	624677	6225569	1	0	1	97	AR	
23-Oct-2023	05:59	96	BP23MVEXP-ENV-GS-085	60%	CHEM2	DG	70	624676	6225568	624677	6225569	1	1	1	52	AR	
23-Oct-2023	06:56	97	BP23MVEXP-ENV-GS-086	60%	MFA	DG	68	625218	6221618	625218	6221618	0	0	0	210	AR	
23-Oct-2023	07:14	98	BP23MVEXP-ENV-GS-086	80%	MFB	DG	68	625217	6221618	625218	6221618	1	0	1	73	AR	
23-Oct-2023	07:27	99	BP23MVEXP-ENV-GS-086	50%	PSA	DG	68	625218	6221618	625218	6221618	0	0	0	265	AR	
23-Oct-2023	08:21	100	BP23MVEXP-ENV-GS-087	90%	CHEM1	DG	68	625785	6217724	625786	6217725	1	1	1	26	AR	
23-Oct-2023	08:37	101	BP23MVEXP-ENV-GS-087	50%	MFA	DG	68	625785	6217724	625786	6217725	1	1	2	40	AR	
23-Oct-2023	08:52	102	BP23MVEXP-ENV-GS-087	0%	No Sample	DG	68	625786	6217724	625786	6217725	0	1	1	11	AR	Misfire
23-Oct-2023	09:01	103	BP23MVEXP-ENV-GS-087	0%	No Sample	DG	68	625785	6217723	625786	6217725	1	2	2	27	AR	Misfire
23-Oct-2023	09:17	104	BP23MVEXP-ENV-GS-087	70%	MFB	DG	68	625785	6217724	625786	6217725	1	1	2	36	AR	
23-Oct-2023	09:34	105	BP23MVEXP-ENV-GS-087	60%	CHEM2	DG	68	625785	6217724	625786	6217725	1	1	2	26	AR	
23-Oct-2023	16:57	106	BP23MVEXP-ENV-GS-088	60%	MFA	DG	63	626296	6213735	626296	6213734	0	-1	1	182	AR	
23-Oct-2023	17:06	107	BP23MVEXP-ENV-GS-088	70%	MFB	DG	63	626296	6213735	626296	6213734	0	-1	1	205	AR	
23-Oct-2023	17:15	108	BP23MVEXP-ENV-GS-088	40%	PSA	DG	63	626296	6213735	626296	6213734	0	-1	1	161	AR	
23-Oct-2023	18:03	109	BP23MVEXP-ENV-GS-089	70%	CHEM1	DG	65	626842	6209725	626842	6209725	0	0	1	58	SP	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
23-Oct-2023	18:15	110	BP23MVEXP-ENV-GS-089	50%	MFA	DG	65	626842	6209725	626842	6209725	0	0	0	284	SP	
23-Oct-2023	18:28	111	BP23MVEXP-ENV-GS-089	40%	MFB	DG	65	626842	6209725	626842	6209725	0	0	0	292	SP	
23-Oct-2023	18:39	112	BP23MVEXP-ENV-GS-089	40%	CHEM2	DG	65	626842	6209725	626842	6209725	0	0	0	326	SP	
23-Oct-2023	19:34	113	BP23MVEXP-ENV-GS-090	40%	MFA	DG	66	627380	6205770	627380	6205770	0	0	0	344	SP	
23-Oct-2023	19:43	114	BP23MVEXP-ENV-GS-090	60%	MFB	DG	66	627380	6205770	627380	6205770	0	0	0	348	SP	
23-Oct-2023	19:52	115	BP23MVEXP-ENV-GS-090	40%	PSA	DG	66	627380	6205769	627380	6205770	0	1	1	326	SP	
23-Oct-2023	20:48	116	BP23MVEXP-ENV-GS-091	40%	CHEM1	DG	70	627933	6201732	627934	6201734	1	2	2	13	SP	
23-Oct-2023	21:00	117	BP23MVEXP-ENV-GS-091	40%	MFA	DG	70	627934	6201733	627934	6201734	0	1	1	10	SP	
23-Oct-2023	21:11	118	BP23MVEXP-ENV-GS-091	50%	MFB	DG	70	627934	6201733	627934	6201734	0	1	2	10	SP	
23-Oct-2023	21:20	119	BP23MVEXP-ENV-GS-091	50%	CHEM2	DG	70	627933	6201732	627934	6201734	1	2	2	20	SP	
23-Oct-2023	22:13	120	BP23MVEXP-ENV-GS-092	0%	No Sample	DG	65	628458	6197868	628458	6197868	0	0	0	75	SP	Rock in jaws
23-Oct-2023	22:19	121	BP23MVEXP-ENV-GS-092	40%	MFA	DG	65	628457	6197868	628458	6197868	1	0	1	107	SP	
23-Oct-2023	22:27	122	BP23MVEXP-ENV-GS-092	30%	No Sample	DG	65	628457	6197869	628458	6197868	1	-1	1	138	SP	Low retention
23-Oct-2023	22:33	123	BP23MVEXP-ENV-GS-092	40%	MFB	DG	65	628457	6197868	628458	6197868	1	0	1	79	SP	
23-Oct-2023	22:41	124	BP23MVEXP-ENV-GS-092	0%	No Sample	DG	65	628457	6197868	628458	6197868	1	0	1	84	SP	Misfire
23-Oct-2023	22:46	125	BP23MVEXP-ENV-GS-092	0%	No Sample	DG	65	628457	6197868	628458	6197868	1	0	1	87	SP	Rock in jaws
23-Oct-2023	22:51	126	BP23MVEXP-ENV-GS-092	40%	PSA	DG	65	628457	6197868	628458	6197868	1	0	1	84	SP	
23-Oct-2023	23:50	127	BP23MVEXP-ENV-GS-093	40%	CHEM1	DG	68	629054	6193879	629054	6193880	0	1	1	19	AN	
24-Oct-2023	00:09	128	BP23MVEXP-ENV-GS-093	60%	MFA	DG	68	629054	6193878	629054	6193880	0	2	2	6	AN	
24-Oct-2023	00:24	129	BP23MVEXP-ENV-GS-093	70%	MFB	DG	68	629054	6193878	629054	6193880	0	2	2	347	AN	
24-Oct-2023	00:38	130	BP23MVEXP-ENV-GS-093	70%	CHEM2	DG	68	629054	6193878	629054	6193880	0	2	2	14	AN	
24-Oct-2023	01:42	131	BP23MVEXP-ENV-GS-094	40%	MFA	DG	74	628589	6190284	628588	6190282	-1	-2	2	201	AN	
24-Oct-2023	01:58	132	BP23MVEXP-ENV-GS-094	40%	MFB	DG	74	628589	6190284	628588	6190282	-1	-2	2	210	AN	
24-Oct-2023	02:17	133	BP23MVEXP-ENV-GS-094	40%	PSA	DG	74	628591	6190284	628588	6190282	-3	-2	4	238	AN	
24-Oct-2023	03:04	134	BP23MVEXP-ENV-GS-095	0%	No Sample	DG	71	630188	6190157	630186	6190154	-2	-3	4	215	AN	Rock in jaws
24-Oct-2023	03:15	135	BP23MVEXP-ENV-GS-095	40%	MFA	DG	71	630187	6190153	630186	6190154	-1	1	1	304	AN	
24-Oct-2023	03:29	136	BP23MVEXP-ENV-GS-095	60%	MFB	DG	71	630186	6190154	630186	6190154	0	0	0	11	AN	
24-Oct-2023	03:41	137	BP23MVEXP-ENV-GS-095	40%	PSA	DG	71	630188	6190154	630186	6190154	-2	0	2	281	AN	
24-Oct-2023	04:48	138	BP23MVEXP-ENV-GS-096	40%	CHEM1	DG	82	628432	6186279	628432	6186279	0	0	0	14	AN	
24-Oct-2023	05:04	139	BP23MVEXP-ENV-GS-096	60%	MFA	DG	82	628433	6186280	628432	6186279	-1	-1	1	232	AN	
24-Oct-2023	05:20	140	BP23MVEXP-ENV-GS-096	70%	MFB	DG	82	628433	6186279	628432	6186279	-1	0	1	266	AN	
24-Oct-2023	05:35	141	BP23MVEXP-ENV-GS-096	40%	CHEM2	DG	82	628433	6186279	628432	6186279	-1	0	1	268	AN	
24-Oct-2023	06:35	142	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	71	631464	6186301	631463	6186300	-1	-1	1	210	AR	Rock in jaws
24-Oct-2023	06:46	143	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	71	631464	6186302	631463	6186300	-1	-2	2	200	AR	Rock in jaws
24-Oct-2023	06:59	144	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	72	631464	6186301	631463	6186300	-1	-1	1	220	AR	Rock in jaws, moved 10m east
24-Oct-2023	07:12	145	BP23MVEXP-ENV-GS-097	50%	CHEM1	DG	72	631471	6186296	631463	6186300	-8	4	9	294	AR	
24-Oct-2023	07:30	146	BP23MVEXP-ENV-GS-097	50%	MFA	DG	72	631473	6186297	631463	6186300	-10	3	11	287	AR	
24-Oct-2023	07:43	147	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	72	631473	6186297	631463	6186300	-10	3	11	285	AR	Rock in jaws
24-Oct-2023	07:54	148	BP23MVEXP-ENV-GS-097	80%	MFB	DG	72	631472	6186297	631463	6186300	-9	3	10	288	AR	
24-Oct-2023	08:07	149	BP23MVEXP-ENV-GS-097	70%	CHEM2	DG	72	631472	6186297	631463	6186300	-9	3	10	291	AR	
24-Oct-2023	09:05	150	BP23MVEXP-ENV-GS-099	80%	MFA	DG	82	632743	6182609	632746	6182610	3	1	3	76	AR	
24-Oct-2023	09:21	151	BP23MVEXP-ENV-GS-099	50%	MFB	DG	82	632743	6182610	632746	6182610	3	0	3	81	AR	
24-Oct-2023	09:33	152	BP23MVEXP-ENV-GS-099	0%	No Sample	DG	82	632741	6182610	632746	6182610	5	0	5	86	AR	Rock in jaws
24-Oct-2023	09:41	153	BP23MVEXP-ENV-GS-099	80%	PSA	DG	82	632744	6182609	632746	6182610	2	1	2	71	AR	
24-Oct-2023	10:34	154	BP23MVEXP-ENV-GS-098	50%	MFA	DG	94	628262	6182324	628264	6182327	2	3	3	31	AR	
24-Oct-2023	10:48	155	BP23MVEXP-ENV-GS-098	50%	MFB	DG	94	628262	6182324	628264	6182327	2	4	4	24	AR	
24-Oct-2023	11:02	156	BP23MVEXP-ENV-GS-098	60%	PSA	DG	94	628263	6182324	628264	6182327	1	3	3	23	SP	
24-Oct-2023	11:55	157	BP23MVEXP-ENV-GS-100	70%	CHEM1	DG	95	628062	6178340	628064	6178337	2	-3	3	144	AR	
24-Oct-2023	12:06	158	BP23MVEXP-ENV-GS-100	70%	MFA	DG	95	628062	6178339	628064	6178337	2	-2	3	134	AR	
24-Oct-2023	12:16	159	BP23MVEXP-ENV-GS-100	70%	MFB	DG	95	628062	6178339	628064	6178337	2	-2	3	133	AR	
24-Oct-2023	12:25	160	BP23MVEXP-ENV-GS-100	70%	CHEM2	DG	95	628061	6178339	628064	6178337	3	-2	3	121	AR	
24-Oct-2023	13:37	161	BP23MVEXP-ENV-GS-101	70%	CHEM1	DG	91	634212	6178844	634211	6178844	-1	0	1	271	AR	
24-Oct-2023	13:48	162	BP23MVEXP-ENV-GS-101	60%	MFA	DG	90	634213	6178844	634211	6178844	-2	0	2	262	AR	
24-Oct-2023	14:01	163	BP23MVEXP-ENV-GS-101	60%	MFB	DG	90	634213	6178844	634211	6178844	-2	0	2	270	AR	
24-Oct-2023	14:09	164	BP23MVEXP-ENV-GS-101	50%	CHEM2	DG	90	634212	6178845	634211	6178844	-1	-1	1	245	AR	
24-Oct-2023	15:09	165	BP23MVEXP-ENV-GS-103	50%	MFA	DG	86	635614	6175058	635613	6175059	-1	1	1	329	AR	
24-Oct-2023	15:18	166	BP23MVEXP-ENV-GS-103	50%	MFB	DG	86	635614	6175058	635613	6175059	-1	1	2	320	AR	
24-Oct-2023	15:25	167	BP23MVEXP-ENV-GS-103	50%	PSA	DG	86	635613	6175059	635613	6175059	0	0	1	319	AR	
24-Oct-2023	16:19	168	BP23MVEXP-ENV-GS-105	40%	CHEM1	DG	86	635666	6171915	635667	6171916	1	1	1	29	SP	
24-Oct-2023	16:29	169	BP23MVEXP-ENV-GS-105	0%	No Sample	DG	86	635669	6171915	635667	6171916	-2	1	3	297	SP	Rock in jaws
24-Oct-2023	16:36	170	BP23MVEXP-ENV-GS-105	20%	No Sample	DG	86	635667	6171916	635667	6171916	0	0	0	8	SP	Low retention
24-Oct-2023	16:43	171	BP23MVEXP-ENV-GS-105	20%	No Sample	DG	86	635669	6171916	635667	6171916	-2	0	2	278	SP	Low retention
24-Oct-2023	16:51	172	BP23MVEXP-ENV-GS-105	60%	MFA	DG	86	635659	6171917	635667	6171916	8	-1	8	94	SP	
24-Oct-2023	17:00	173	BP23MVEXP-ENV-GS-105	50%	MFB	DG	86	635659	6171916	635667	6171916	8	0	8	88	SP	
24-Oct-2023	17:10	174	BP23MVEXP-ENV-GS-105	50%	CHEM2	DG	86	635659	6171917	635667	6171916	8	-1	8	98	SP	
24-Oct-2023	18:07	175	BP23MVEXP-ENV-GS-107	60%	MFA	DG	90	633418	6168577	633418	6168578	0	1	1	20	SP	
24-Oct-2023	18:16	176	BP23MVEXP-ENV-GS-107	40%	MFB	DG	90	633418	6168577	633418	6168578	0	1	1	344	SP	
24-Oct-2023	18:24	177	BP23MVEXP-ENV-GS-107	50%	PSA	DG	90	633418	6168578	633418	6168578	0	0	0	303	SP	
24-Oct-2023	19:48	178	BP23MVEXP-ENV-GS-102	60%	MFA	DG	86	627847	6174325	627849	6174330	2	5	6	23	SP	
24-Oct-2023	19:55	179	BP23MVEXP-ENV-GS-102	40%	MFB	DG	86	627848	6174325	627849	6174330	1	5	5	9	SP	
24-Oct-2023	20:02	180	BP23MVEXP-ENV-GS-102	50%	PSA	DG	86	627848	6174330	627849	6174330	1	0	1	90	SP	
24-Oct-2023	21:05	181	BP23MVEXP-ENV-GS-104	40%	CHEM1	DG	85	627687	6170306	627686	6170307	-1	1	2	311	SP	
24-Oct-2023	21:15	182	BP23MVEXP-ENV-GS-104	40%	MFA	DG	85	627687	6170305	627686	6170307	-1	2	2	331	SP	
24-Oct-2023	21:25	183	BP23MVEXP-ENV-GS-104	40%	MFB	DG	85	627687	6170306	627686	6170307	-1	1	2	316	SP	
24-Oct-2023	21:32	184	BP23MVEXP-ENV-GS-104	40%	CHEM2	DG	85	627687	6170305	627686	6170307	-1	2	2	328	SP	
24-Oct-2023	22:29	185	BP23MVEXP-ENV-GS-106	50%	MFA	DG	74	627404	6166334	627403	6166336	-1	2	2	326	SP	
24-Oct-2023	22:38	186	BP23MVEXP-ENV-GS-106	0%	No Sample	DG	75	627405	6166335	627403	6166336	-2	1	2	302	SP	Misfire
24-Oct-2023	22:43	187	BP23MVEXP-ENV-GS-106	0%	No Sample	DG	74	627404	6166335	627403	6166336	-1	1	2	300	SP	Rock in jaws
24-Oct-2023	22:51	188	BP23MVEXP-ENV-GS-106	40%	MFB	DG	75	627405	6166335	627403	6166336	-2	1	3	293	SP	
24-Oct-2023	22:59	189	BP23MVEXP-ENV-GS-106	40%	PSA	DG	75	627405	6166335	627403	6166336	-2	1	2	313	AN	
31-Oct-2023	19:48	190	BP23MVEXP-ENV-GS-109	90%	CHEM1	DG	95	631206	6165284	631206	6165285	0	1	1	347	SP	
31-Oct-2023	20:00	191	BP23MVEXP-ENV-GS-109	90%	MFA	DG	95	631206	6165285	631206	6165285	0	0	0	13	SP	
31-Oct-2023	20:10	192	BP23MVEXP-ENV-GS-109	60%	MFB	DG	95	631206	6165285	631206	6165285	0	0	0	236	SP	
31-Oct-2023	20:18	193	BP23MVEXP-ENV-GS-109	70%	CHEM2	DG	94	631206	6165284	631206	6165285	0	1	1	20	SP	
31-Oct-2023	21:17	194	BP23MVEXP-ENV-GS-110	60%	MFA	DG	86	628946	6161937	628946	6161934	0	-3	3	170	SP	
31-Oct-2023	21:24	195	BP23MVEXP-ENV-GS-110	60%	MFB	DG	86	628946	6161938	628946	6161934	0	-4	4	181	SP	
31-Oct-2023	21:30	196	BP23MVEXP-ENV-GS-110	70%	PSA	DG	86	628946	6161937	628946	6161934	0	-3	3	172	SP	
31-Oct-2023	22:22	197	BP23MVEXP-ENV-GS-108	70%	CHEM1	DG	88	627179	6162320	627184	6162321	5	1	5	77	SP	
31-Oct-2023	22:32	198	BP23MVEXP-ENV-GS-108	70%	MFA	DG	88	627179	6162320	627184	6162321	5	1	5	74	SP	
31-Oct-2023	22:41	199	BP23MVEXP-ENV-GS-108	70%	MFB	DG	88	627179	6162319	627184	6162321	5	2	5	72	SP	
31-Oct-2023	22:49	200	BP23MVEXP-ENV-GS-108	70%	CHEM2	DG	88	627179	6162320	627184	6162321	5	1	5	73	SP	
31-Oct-2023	23:51	201	BP23MVEXP-ENV-GS-111	0%	No Sample	DG	94	626976	6158543	626978	6158542	2	-1	2	107	SP	Hagfish
01-Nov-2023	00:02	202	BP23MVEXP-ENV-GS-111	90%	MFA	DG	94	626977	6158543	626978	6158542	1	-1	1	114	AN	
01-Nov-2023	00:16	203	BP23MVEXP-ENV-GS-111	90%	MFB	DG	94	626977	6158543	626978	6158542	1	-1	2	119	AN	
01-Nov-2023	00:28	204	BP23MVEXP-ENV-GS-111	90%	PSA	DG	95	626977	6158542	626978	6158542	1	0	1	96	AN	
01-Nov-2023	01:25	205	BP23MVEXP-ENV-GS-112	90%	CHEM1	DG	104	626283	6154436	626284	6154439	1	3	4	20	AN	
01-Nov-2023	01:43	206	BP23MVEXP-ENV-GS-112	90%	MFA	DG	104	626284	6154438	626284	6154439	0	1	1	10	AN	
01-Nov-2023	01:57	207	BP23MVEXP-ENV-GS-112	90%	MFB	DG	104	626284	6154437	626284	6154439	0	2	2	359	AN	
01-Nov-2023	02:09	208	BP23MVEXP-ENV-GS-112	90%	CHEM2	DG	104	626284	6154437	626284	6154439	0	2	2	10	AN	
01-Nov-2023	03:07	209	BP23MVEXP-ENV-GS-113	90%	MFA	DG	101	625643	6150622	625643	6150623	0	1	1	343	AN	
01-Nov-2023	03:21	210	BP23MVEXP-ENV-GS-113	90%	MFB	DG	101	625644	6150622	625643	6150623	-1	1	1	329	AN	
01-Nov-2023	03:33	211	BP23MVEXP-ENV-GS-113	90%	PSA	DG	101	625644	6150621	625643	6150623	-1	2	2	318	AN	
01-Nov-2023	04:26	212	BP23MVEXP-ENV-GS-114	90%	CHEM1	DG	98	624981	6146662	624983	6146663	2	1	2	52	AN	
01-Nov-2023	04:42	213	BP23MVEXP-ENV-GS-114	90%	MFA	DG	98	624982	6146665	624983	6146663	1	-2	2	154	AN	
01-Nov-2023	04:55	214	BP23MVEXP-ENV-GS-114	90%	MFB	DG	98	624982	6146663	624983	6146663	1	0	1	92	AN	
01-Nov-2023	05:07	215	BP23MVEXP-ENV-GS-114	90%	CHEM2	DG	98	624983	6146663	624983	6146663	0	0	0	307	AN	
01-Nov-2023	06:07	216	BP23MVEXP-ENV-GS-115	90%	MFA	DG	99	624294	6142874	624293	6142873	-1	-1	1	227	AN	
01-Nov-2023	06:22	217	BP23MVEXP-ENV-GS-115	90%	MFB	DG	100	624294	6142874	624293	6142873	-1	-1	1	229	AR	
01-Nov-2023	06:36	218	BP23MVEXP-ENV-GS-115	90%	PSA	DG	100	624294	6142873	624293	6142873	-1	0	1	261	AR	
01-Nov-2023	07:37	219	BP23MVEXP-ENV-GS-116	90%	CHEM1	DG	90	623603	6138801	623603	6138802	0	1	1	337	AR	
01-Nov-2023	07:53	220	BP23MVEXP-ENV-GS-116	90%	MFA	DG	90	623604	6138799	623603	6138802	-1	3	3	341	AR	
01-Nov-2023	08:05	221	BP23MVEXP-ENV-GS-116	90%	MFB	DG	89	623603	6138801	623603	6138802	1	1	1	40	AR	
01-Nov-2023	08:15	222	BP23MVEXP-ENV-GS-116	90%	CHEM2	DG	89	623603	6138801	623603	6138802	0	1	1	345	AR	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Nov-2023	09:25	223	BP23MVEXP-ENV-GS-117	90%	MFA	DG	93	622944	6134913	622943	6134912	-1	-1	2	206	AR	
01-Nov-2023	09:37	224	BP23MVEXP-ENV-GS-117	90%	MFB	DG	93	622943	6134912	622943	6134912	0	0	1	211	AR	
01-Nov-2023	09:47	225	BP23MVEXP-ENV-GS-117	90%	PSA	DG	93	622945	6134912	622943	6134912	-2	0	2	267	AR	
04-Nov-2023	05:17	226	BP23MVEXP-ENV-GS-026	40%	MFA	DG	75	659652	6204209	659653	6204210	1	1	1	30	AN	
04-Nov-2023	05:27	227	BP23MVEXP-ENV-GS-026	40%	MFB	DG	75	659653	6204210	659653	6204210	0	0	0	21	AN	
04-Nov-2023	05:38	228	BP23MVEXP-ENV-GS-026	50%	PSA	DG	75	659652	6204208	659653	6204210	1	2	2	38	AN	
04-Nov-2023	06:20	229	BP23MVEXP-ENV-GS-027	0%	No Sample	DG	74	659868	6200219	659868	6200219	0	0	0	22	AR	Misfire
04-Nov-2023	06:29	230	BP23MVEXP-ENV-GS-027	0%	No Sample	DG	74	659869	6200220	659868	6200219	-1	-1	1	216	AR	Rock in jaws
04-Nov-2023	06:39	231	BP23MVEXP-ENV-GS-027	50%	CHEM1	DG	74	659868	6200219	659868	6200219	0	0	1	144	AR	
04-Nov-2023	06:53	232	BP23MVEXP-ENV-GS-027	40%	MFA	DG	74	659868	6200219	659868	6200219	0	0	0	326	AR	
04-Nov-2023	07:04	233	BP23MVEXP-ENV-GS-027	60%	MFB	DG	74	659869	6200220	659868	6200219	-1	-1	1	235	AR	
04-Nov-2023	07:16	234	BP23MVEXP-ENV-GS-027	50%	CHEM2	DG	74	659868	6200219	659868	6200219	0	0	0	322	AR	
04-Nov-2023	08:10	235	BP23MVEXP-ENV-GS-028	50%	MFA	DG	77	660086	6196218	660086	6196220	0	2	2	9	AR	
04-Nov-2023	08:21	236	BP23MVEXP-ENV-GS-028	40%	MFB	DG	77	660086	6196219	660086	6196220	0	1	1	11	AR	
04-Nov-2023	08:30	237	BP23MVEXP-ENV-GS-028	40%	PSA	DG	77	660086	6196219	660086	6196220	0	1	1	2	AR	
04-Nov-2023	09:15	238	BP23MVEXP-ENV-GS-029	50%	CHEM1	DG	79	660305	6192231	660307	6192230	2	-1	2	119	AR	
04-Nov-2023	09:31	239	BP23MVEXP-ENV-GS-029	50%	MFA	DG	79	660307	6192231	660307	6192230	0	-1	1	177	AR	
04-Nov-2023	09:43	240	BP23MVEXP-ENV-GS-029	50%	MFB	DG	79	660308	6192231	660307	6192230	-1	-1	2	211	AR	
04-Nov-2023	09:53	241	BP23MVEXP-ENV-GS-029	30%	No Sample	DG	79	660308	6192230	660307	6192230	-1	0	1	227	AR	Low retention
04-Nov-2023	10:02	242	BP23MVEXP-ENV-GS-029	60%	CHEM2	DG	79	660307	6192231	660307	6192230	0	-1	1	172	AR	
04-Nov-2023	10:53	243	BP23MVEXP-ENV-GS-030	40%	CHEM1	DG	76	660578	6188237	660581	6188239	3	2	4	61	AR	
04-Nov-2023	11:06	244	BP23MVEXP-ENV-GS-030	60%	MFA	DG	76	660579	6188237	660581	6188239	2	2	3	45	AR	
04-Nov-2023	11:18	245	BP23MVEXP-ENV-GS-030	60%	MFB	DG	76	660577	6188237	660581	6188239	4	2	4	56	AR	
04-Nov-2023	11:28	246	BP23MVEXP-ENV-GS-030	60%	CHEM2	DG	76	660578	6188237	660581	6188239	3	2	4	58	AR	
04-Nov-2023	12:17	247	BP23MVEXP-ENV-GS-031	30%	No Sample	DG	75	660799	6184245	660798	6184246	-1	1	1	302	AR	Low retention
04-Nov-2023	12:28	248	BP23MVEXP-ENV-GS-031	40%	CHEM1	DG	75	660798	6184245	660798	6184246	0	1	1	4	AR	
04-Nov-2023	12:37	249	BP23MVEXP-ENV-GS-031	40%	MFA	DG	75	660797	6184245	660798	6184246	1	1	1	37	AR	
04-Nov-2023	12:46	250	BP23MVEXP-ENV-GS-031	30%	No Sample	DG	75	660798	6184245	660798	6184246	0	1	1	355	AR	Low retention
04-Nov-2023	12:54	251	BP23MVEXP-ENV-GS-031	40%	MFB	DG	75	660798	6184245	660798	6184246	0	1	1	8	AR	
04-Nov-2023	13:02	252	BP23MVEXP-ENV-GS-031	40%	CHEM2	DG	75	660798	6184244	660798	6184246	0	2	2	5	AR	
04-Nov-2023	13:46	253	BP23MVEXP-ENV-GS-032	30%	No Sample	DG	71	661014	6180250	661016	6180251	2	1	2	62	AR	Low retention
04-Nov-2023	13:51	254	BP23MVEXP-ENV-GS-032	30%	No Sample	DG	71	661013	6180250	661016	6180251	3	1	3	76	AR	Low retention
04-Nov-2023	13:56	255	BP23MVEXP-ENV-GS-032	30%	No Sample	DG	71	661014	6180249	661016	6180251	2	2	3	47	AR	Low retention, moved 10m north
04-Nov-2023	14:03	256	BP23MVEXP-ENV-GS-032	40%	CHEM1	DG	71	661013	6180259	661016	6180251	3	-8	8	161	AR	
04-Nov-2023	14:12	257	BP23MVEXP-ENV-GS-032	40%	MFA	DG	71	661014	6180258	661016	6180251	2	-7	7	165	AR	
04-Nov-2023	14:21	258	BP23MVEXP-ENV-GS-032	40%	MFB	DG	71	661014	6180256	661016	6180251	2	-5	5	153	AR	
04-Nov-2023	14:29	259	BP23MVEXP-ENV-GS-032	0%	No Sample	DG	71	661014	6180257	661016	6180251	2	-6	6	161	AR	Rock in jaws
04-Nov-2023	14:34	260	BP23MVEXP-ENV-GS-032	0%	No Sample	DG	71	661013	6180256	661016	6180251	3	-5	6	149	AR	Rock in jaws
04-Nov-2023	14:39	261	BP23MVEXP-ENV-GS-032	30%	CHEM2	DG	71	661014	6180256	661016	6180251	2	-5	6	156	AR	
04-Nov-2023	15:19	262	BP23MVEXP-ENV-GS-033	40%	CHEM1	DG	69	661235	6176268	661235	6176269	0	1	1	9	AR	
04-Nov-2023	15:29	263	BP23MVEXP-ENV-GS-033	40%	MFA	DG	69	661235	6176269	661235	6176269	0	0	0	309	AR	
04-Nov-2023	15:35	264	BP23MVEXP-ENV-GS-033	30%	No Sample	DG	69	661235	6176268	661235	6176269	0	1	1	344	AR	Low retention
04-Nov-2023	15:41	265	BP23MVEXP-ENV-GS-033	0%	No Sample	DG	69	661235	6176269	661235	6176269	0	0	0	331	AR	Rock in jaws
05-Nov-2023	15:45	266	BP23MVEXP-ENV-GS-033	40%	MFB	DG	69	661236	6176268	661235	6176269	-1	1	1	84	AR	
04-Nov-2023	15:53	267	BP23MVEXP-ENV-GS-033	20%	No Sample	DG	69	661236	6176268	661235	6176269	-1	1	1	82	AR	Low retention, moved 10m west
04-Nov-2023	16:00	268	BP23MVEXP-ENV-GS-033	10%	No Sample	DG	69	661226	6176268	661235	6176269	9	1	10	357	AR	Low retention
04-Nov-2023	16:05	269	BP23MVEXP-ENV-GS-033	50%	CHEM2	DG	69	661226	6176268	661235	6176269	9	1	9	357	AR	
04-Nov-2023	16:45	270	BP23MVEXP-ENV-GS-034	70%	CHEM1	DG	67	661477	6172274	661478	6172275	1	1	1	31	AR	
04-Nov-2023	16:55	271	BP23MVEXP-ENV-GS-034	60%	MFA	DG	67	661478	6172275	661478	6172275	0	0	0	194	AR	
04-Nov-2023	17:02	272	BP23MVEXP-ENV-GS-034	50%	MFB	DG	67	661478	6172276	661478	6172275	0	-1	1	149	AR	
04-Nov-2023	17:12	273	BP23MVEXP-ENV-GS-034	60%	CHEM2	DG	67	661478	6172275	661478	6172275	0	0	0	77	AR	
04-Nov-2023	17:59	274	BP23MVEXP-ENV-GS-035	0%	No Sample	DG	67	661225	6168223	661223	6168222	-2	-1	2	252	SP	Rock in jaws
04-Nov-2023	18:04	275	BP23MVEXP-ENV-GS-035	0%	No Sample	DG	67	661225	6168221	661223	6168222	-2	1	2	298	SP	Rock in jaws
04-Nov-2023	18:09	276	BP23MVEXP-ENV-GS-035	0%	No Sample	DG	67	661225	6168222	661223	6168222	-2	0	2	272	SP	Rock in jaws
04-Nov-2023	18:16	277	BP23MVEXP-ENV-GS-035	10%	No Sample	DG	67	661235	6168223	661223	6168222	-12	-1	12	263	SP	Low retention
04-Nov-2023	18:30	278	BP23MVEXP-ENV-GS-035	0%	No Sample	HG	67	661235	6168222	661223	6168222	-12	0	12	269	SP	Low retention
04-Nov-2023	18:53	279	BP23MVEXP-ENV-GS-035	20%	No Sample	HG	67	661235	6168222	661223	6168222	-12	0	12	268	SP	Low retention, station abandoned
04-Nov-2023	19:31	280	BP23MVEXP-ENV-GS-036	0%	No Sample	DG	69	658815	6165337	658815	6165338	0	1	1	337	SP	Rock in jaws
04-Nov-2023	19:35	281	BP23MVEXP-ENV-GS-036	40%	CHEM1	DG	69	658816	6165337	658815	6165338	-1	1	1	331	SP	
04-Nov-2023	19:45	282	BP23MVEXP-ENV-GS-036	40%	MFA	DG	69	658816	6165337	658815	6165338	-1	1	1	326	SP	
04-Nov-2023	19:53	283	BP23MVEXP-ENV-GS-036	50%	MFB	DG	69	658816	6165338	658815	6165338	-1	0	1	249	SP	
04-Nov-2023	19:59	284	BP23MVEXP-ENV-GS-036	40%	CHEM2	DG	69	658816	6165337	658815	6165338	-1	1	1	316	SP	
04-Nov-2023	20:54	285	BP23MVEXP-ENV-GS-037	40%	MFA	DG	67	656202	6162208	656204	6162209	2	1	2	60	SP	
04-Nov-2023	21:00	286	BP23MVEXP-ENV-GS-037	50%	MFB	DG	67	656203	6162207	656204	6162209	1	2	3	18	SP	
04-Nov-2023	21:06	287	BP23MVEXP-ENV-GS-037	50%	PSA	DG	67	656203	6162207	656204	6162209	1	2	2	36	SP	
04-Nov-2023	21:57	288	BP23MVEXP-ENV-GS-038	50%	CHEM1	DG	68	653641	6159135	653638	6159136	-3	1	3	293	SP	
04-Nov-2023	22:06	289	BP23MVEXP-ENV-GS-038	50%	MFA	DG	68	653642	6159135	653638	6159136	-4	2	4	292	SP	
04-Nov-2023	22:16	290	BP23MVEXP-ENV-GS-038	0%	No Sample	DG	68	653640	6159133	653638	6159136	-2	3	4	334	SP	Misfire
04-Nov-2023	22:20	291	BP23MVEXP-ENV-GS-038	40%	MFB	DG	67	653641	6159133	653638	6159136	-3	3	4	309	SP	
04-Nov-2023	22:27	292	BP23MVEXP-ENV-GS-038	60%	CHEM2	DG	67	653641	6159134	653638	6159136	-3	2	3	313	SP	
04-Nov-2023	23:16	293	BP23MVEXP-ENV-GS-039	40%	MFA	DG	73	651095	6156058	651097	6156056	2	-2	3	133	SP	
04-Nov-2023	23:24	294	BP23MVEXP-ENV-GS-039	20%	No Sample	DG	73	651097	6156056	651097	6156056	0	0	0	77	SP	Low retention
04-Nov-2023	23:29	295	BP23MVEXP-ENV-GS-039	30%	No Sample	DG	73	651095	6156056	651097	6156056	2	0	2	96	SP	Low retention
04-Nov-2023	23:35	296	BP23MVEXP-ENV-GS-039	40%	MFB	DG	73	651097	6156057	651097	6156056	0	-1	1	170	SP	
04-Nov-2023	23:41	297	BP23MVEXP-ENV-GS-039	40%	PSA	DG	73	651096	6156057	651097	6156056	1	-1	1	152	SP	
05-Nov-2023	00:33	298	BP23MVEXP-ENV-GS-040	90%	CHEM1	DG	88	648723	6152680	648723	6152682	0	2	2	360	AN	
05-Nov-2023	00:50	299	BP23MVEXP-ENV-GS-040	60%	MFA	DG	88	648724	6152680	648723	6152682	-1	2	2	335	AN	
05-Nov-2023	01:02	300	BP23MVEXP-ENV-GS-040	80%	MFB	DG	88	648724	6152680	648723	6152682	-1	2	2	336	AN	
05-Nov-2023	01:12	301	BP23MVEXP-ENV-GS-040	90%	CHEM2	DG	88	648724	6152680	648723	6152682	-1	2	2	343	AN	
05-Nov-2023	02:07	302	BP23MVEXP-ENV-GS-041	90%	MFA	DG	90	646686	6149424	646687	6149423	1	-1	1	132	AN	
05-Nov-2023	02:17	303	BP23MVEXP-ENV-GS-041	70%	MFB	DG	90	646687	6149423	646687	6149423	1	0	1	74	AN	
05-Nov-2023	02:29	304	BP23MVEXP-ENV-GS-041	90%	PSA	DG	90	646687	6149423	646687	6149423	0	0	0	60	AN	
05-Nov-2023	03:20	305	BP23MVEXP-ENV-GS-042	80%	CHEM1	DG	91	645394	6145646	645395	6145643	1	-3	3	155	AN	
05-Nov-2023	03:33	306	BP23MVEXP-ENV-GS-042	0%	No Sample	DG	91	645396	6145644	645395	6145643	-1	-1	1	234	AN	Misfire
05-Nov-2023	03:42	307	BP23MVEXP-ENV-GS-042	80%	MFA	DG	91	645393	6145646	645395	6145643	2	-3	3	137	AN	
05-Nov-2023	03:54	308	BP23MVEXP-ENV-GS-042	70%	MFB	DG	91	645399	6145646	645395	6145643	-4	-3	5	231	AN	
05-Nov-2023	05:29	309	BP23MVEXP-ENV-GS-042	90%	CHEM2	DG	91	645396	6145644	645395	6145643	-1	-1	1	246	AN	
05-Nov-2023	06:23	310	BP23MVEXP-ENV-GS-043	90%	MFA	DG	90	644054	6141779	644054	6141780	0	1	1	1	AR	
05-Nov-2023	06:37	311	BP23MVEXP-ENV-GS-043	50%	MFB	DG	90	644055	6141780	644054	6141780	-1	0	1	241	AR	
05-Nov-2023	06:49	312	BP23MVEXP-ENV-GS-043	70%	PSA	DG	90	644054	6141779	644054	6141780	0	1	1	29	AR	
05-Nov-2023	07:41	313	BP23MVEXP-ENV-GS-044	0%	No Sample	DG	96	642775	6138053	642775	6138054	0	1	1	320	AR	Misfire
05-Nov-2023	07:48	314	BP23MVEXP-ENV-GS-044	90%	CHEM1	DG	96	642774	6138053	642775	6138054	1	1	1	48	AR	
05-Nov-2023	08:03	315	BP23MVEXP-ENV-GS-044	90%	MFA	DG	96	642774	6138054	642775	6138054	1	0	1	55	AR	
05-Nov-2023	08:17	316	BP23MVEXP-ENV-GS-044	90%	MFB	DG	96	642775	6138053	642775	6138054	0	1	1	16	AR	
05-Nov-2023	08:28	317	BP23MVEXP-ENV-GS-044	90%	CHEM2	DG	96	642776	6138053	642775	6138054	-1	1	1	321	AR	
05-Nov-2023	09:22	318	BP23MVEXP-ENV-GS-045	90%	MFA	DG	95	641484	6134299	641483	6134299	-1	0	1	274	AR	
05-Nov-2023	09:35	319	BP23MVEXP-ENV-GS-045	90%	MFB	DG	95	641485	6134299	641483	6134299	-2	0	2	281	AR	
05-Nov-2023	09:46	320	BP23MVEXP-ENV-GS-045	90%	PSA	DG	95	641485	6134298	641483	6134299	-2	1	2	292	AR	
05-Nov-2023	10:44	321	BP23MVEXP-ENV-GS-046	90%	CHEM1	DG	90	640072	6130539	640073	6130539	1	1	1	59	AR	
05-Nov-2023	10:58	322	BP23MVEXP-ENV-GS-046	90%	MFA	DG	89	640074	6130539	640073	6130539	-1	0	1	307	AR	
05-Nov-2023	11:08	323	BP23MVEXP-ENV-GS-046	90%	MFB	DG	89	640073	6130538	640073	6130539	0	1	1	354	AR	
05-Nov-2023	11:18	324	BP23MVEXP-ENV-GS-046	90%	CHEM2	DG	89	640073	6130538	640073	6130539	0	1	1	359	AR	
05-Nov-2023	12:45	325	BP23MVEXP-ENV-GS-048	60%	CHEM1	DG	81	640644	6122943	640642	6122945	-2	2	2	317	AR	
05-Nov-2023	12:54	326	BP23MVEXP-ENV-GS-048	60%	MFA	DG	81	640644	6122943	640642	6122945	-2	2	2	310	AR	
05-Nov-2023	13:02	327	BP23MVEXP-ENV-GS-048	50%	MFB	DG	81	640643	6122944	640642	6122945	-1	1	1	313	AR	
05-Nov-2023	13:10	328	BP23MVEXP-ENV-GS-048	60%	CHEM2	DG	81	640645	6122944	640642	6122945	-3	1	3	282	AR	
05-Nov-2023	14:22	329	BP23MVEXP-ENV-GS-050	50%	CHEM1	DG	68	642448	6115177	642446	6115178	-2	1	2	301	AR	
05-Nov-2023	14:32	330	BP23MVEXP-ENV-GS-050	50%	MFA	DG	68	642448	6115178	642446	6115178	-2	0	2	282	AR	
05-Nov-2023	14:40	331	BP23MVEXP-ENV-GS-050	40%	MFB	DG	68	642448	6115177	642446	6115178	-2	1	2	290	AR	
05-Nov-2023	14:47	332	BP23MVEXP-ENV-GS-050	40%	CHEM2	DG	68	642448	6115176	642446	6115178	-2	2	2	308	AR	
05-Nov-2023	15:56	333	BP23MVEXP-ENV-GS-052	10%	No Sample	DG	66	638951	6108154	638949	6108153	-2	-1	2	250	AR	Low retention
05-Nov-2023	16:02	334	BP23MVEXP-ENV-GS-052	20%	No Sample	DG	66	638953	6108153	638949	6108153	-4	0	4	273	AR	Low retention
05-Nov-2023	16:07	335	BP23MVEXP-ENV-GS-052	20%	No Sample	DG	66	638952	6108153	638949	6108153	-3	0	3	279	AR	Low retention, moved 10m west

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR			Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924	Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Nov-2023	16:13	336	BP23MVEXP-ENV-GS-052	10%	No Sample	DG	66	638942	6108153	638949	6108153	7	0	7	93	AR	Low retention
05-Nov-2023	16:18	337	BP23MVEXP-ENV-GS-052	40%	CHEM1	DG	67	638942	6108154	638949	6108153	7	-1	7	103	AR	
05-Nov-2023	16:27	338	BP23MVEXP-ENV-GS-052	20%	No Sample	DG	67	638942	6108154	638949	6108153	7	-1	7	97	AR	Low retention
05-Nov-2023	16:33	339	BP23MVEXP-ENV-GS-052	10%	No Sample	DG	67	638942	6108154	638949	6108153	7	-1	7	97	AR	Low retention, station abandoned
05-Nov-2023	17:37	340	BP23MVEXP-ENV-GS-054	60%	CHEM1	DG	71	635347	6100991	635346	6100990	-1	-1	1	225	AR	
05-Nov-2023	17:45	341	BP23MVEXP-ENV-GS-054	40%	MFA	DG	71	635348	6100991	635346	6100990	-2	-1	2	245	SP	
05-Nov-2023	17:54	342	BP23MVEXP-ENV-GS-054	70%	MFB	DG	71	635347	6100991	635346	6100990	-1	-1	1	232	SP	
05-Nov-2023	18:01	343	BP23MVEXP-ENV-GS-054	40%	CHEM2	DG	71	635347	6100991	635346	6100990	-1	-1	1	226	SP	
05-Nov-2023	19:19	344	BP23MVEXP-ENV-GS-056	80%	CHEM1	DG	80	631745	6093825	631745	6093826	0	2	2	2	SP	
05-Nov-2023	19:29	345	BP23MVEXP-ENV-GS-056	60%	MFA	DG	80	631745	6093825	631745	6093826	0	1	1	354	SP	
05-Nov-2023	19:38	346	BP23MVEXP-ENV-GS-056	70%	MFB	DG	80	631745	6093825	631745	6093826	0	1	1	323	SP	
05-Nov-2023	19:45	347	BP23MVEXP-ENV-GS-056	80%	CHEM2	DG	80	631745	6093826	631745	6093826	0	0	0	286	SP	
05-Nov-2023	20:35	348	BP23MVEXP-ENV-GS-057	90%	MFA	DG	83	628561	6091689	628558	6091692	-3	3	4	313	SP	
05-Nov-2023	20:41	349	BP23MVEXP-ENV-GS-057	90%	MFB	DG	83	628561	6091689	628558	6091692	-3	3	4	313	SP	
05-Nov-2023	20:49	350	BP23MVEXP-ENV-GS-057	0%	No Sample	DG	83	628561	6091689	628558	6091692	-3	3	4	311	SP	Misfire
05-Nov-2023	20:53	351	BP23MVEXP-ENV-GS-057	90%	PSA	DG	83	628560	6091690	628558	6091692	-2	2	3	314	SP	
05-Nov-2023	21:28	352	BP23MVEXP-ENV-GS-058	90%	MFA	DG	82	629040	6091086	629040	6091085	0	-1	1	160	SP	
05-Nov-2023	21:35	353	BP23MVEXP-ENV-GS-058	90%	MFB	DG	82	629039	6091086	629040	6091085	1	-1	2	153	SP	
05-Nov-2023	21:43	354	BP23MVEXP-ENV-GS-058	90%	PSA	DG	82	629039	6091086	629040	6091085	1	-1	1	154	SP	
05-Nov-2023	22:35	355	BP23MVEXP-ENV-GS-059	90%	MFA	DG	77	624892	6090059	624889	6090061	-3	2	4	296	SP	
05-Nov-2023	22:44	356	BP23MVEXP-ENV-GS-059	90%	MFB	DG	77	624892	6090059	624889	6090061	-3	2	4	299	SP	
05-Nov-2023	22:54	357	BP23MVEXP-ENV-GS-059	90%	CHEM1	DG	77	624893	6090059	624889	6090061	-4	2	4	297	SP	
05-Nov-2023	23:03	358	BP23MVEXP-ENV-GS-059	90%	CHEM2	DG	77	624893	6090060	624889	6090061	-4	1	4	287	SP	
05-Nov-2023	23:39	359	BP23MVEXP-ENV-GS-060	90%	CHEM1	DG	75	625886	6088497	625885	6088496	-1	-1	1	229	SP	
05-Nov-2023	23:49	360	BP23MVEXP-ENV-GS-060	90%	MFA	DG	75	625888	6088496	625885	6088496	-3	0	3	274	SP	
06-Nov-2023	00:00	361	BP23MVEXP-ENV-GS-060	90%	MFB	DG	75	625887	6088497	625885	6088496	-2	-1	2	236	AN	
06-Nov-2023	00:09	362	BP23MVEXP-ENV-GS-060	90%	CHEM2	DG	75	625887	6088497	625885	6088496	-2	-1	3	244	AN	
06-Nov-2023	00:59	363	BP23MVEXP-ENV-GS-061	90%	MFA	DG	61	621238	6088431	621239	6088432	1	1	1	41	AN	
06-Nov-2023	01:07	364	BP23MVEXP-ENV-GS-061	90%	MFB	DG	61	621240	6088431	621239	6088432	-1	1	1	325	AN	
06-Nov-2023	01:14	365	BP23MVEXP-ENV-GS-061	90%	PSA	DG	61	621238	6088431	621239	6088432	1	1	1	34	AN	
06-Nov-2023	01:55	366	BP23MVEXP-ENV-GS-062	90%	MFA	DG	61	622796	6085954	622796	6085952	0	-2	2	189	AN	
06-Nov-2023	02:03	367	BP23MVEXP-ENV-GS-062	90%	MFB	DG	61	622797	6085954	622796	6085952	-1	-2	2	205	AN	
06-Nov-2023	02:11	368	BP23MVEXP-ENV-GS-062	90%	PSA	DG	60	622797	6085955	622796	6085952	-1	-3	3	193	AN	
06-Nov-2023	03:08	369	BP23MVEXP-ENV-GS-063	80%	CHEM1	DG	50	617596	6086807	617596	6086808	0	1	1	10	AN	
06-Nov-2023	03:18	370	BP23MVEXP-ENV-GS-063	50%	MFA	DG	50	617596	6086808	617596	6086808	0	0	0	20	AN	
06-Nov-2023	03:24	371	BP23MVEXP-ENV-GS-063	50%	MFB	DG	50	617596	6086808	617596	6086808	0	0	0	327	AN	
06-Nov-2023	03:32	372	BP23MVEXP-ENV-GS-063	50%	CHEM2	DG	50	617597	6086808	617596	6086808	-1	0	1	268	AN	
06-Nov-2023	04:18	373	BP23MVEXP-ENV-GS-064	40%	CHEM1	DG	51	619738	6083423	619737	6083425	-1	2	2	326	AN	
06-Nov-2023	04:30	374	BP23MVEXP-ENV-GS-064	40%	MFA	DG	51	619738	6083423	619737	6083425	-1	2	3	324	AN	
06-Nov-2023	04:36	375	BP23MVEXP-ENV-GS-064	40%	MFB	DG	51	619738	6083423	619737	6083425	-1	2	2	325	AN	
06-Nov-2023	04:44	376	BP23MVEXP-ENV-GS-064	30%	No Sample	DG	51	619738	6083423	619737	6083425	-1	2	2	342	AN	Low retention
06-Nov-2023	04:51	377	BP23MVEXP-ENV-GS-064	80%	CHEM2	DG	51	619738	6083424	619737	6083425	-1	1	2	315	AN	
06-Nov-2023	05:37	378	BP23MVEXP-ENV-GS-066	90%	MFA	DG	45	616632	6080873	616631	6080874	-1	1	2	338	AN	
06-Nov-2023	05:47	379	BP23MVEXP-ENV-GS-066	90%	MFB	DG	45	616631	6080873	616631	6080874	0	1	1	351	AN	
06-Nov-2023	05:56	380	BP23MVEXP-ENV-GS-066	90%	PSA	DG	45	616631	6080874	616631	6080874	0	0	0	12	AN	
06-Nov-2023	07:43	381	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613814	6078040	613813	6078042	-1	2	2	346	AR	Rock in jaws
06-Nov-2023	07:47	382	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613814	6078041	613813	6078042	-1	1	1	336	AR	Rock in jaws
06-Nov-2023	07:52	383	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613814	6078041	613813	6078042	-1	1	1	336	AR	Rock in jaws, moved 10m south
06-Nov-2023	07:57	384	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	55	AR	Rock in jaws
06-Nov-2023	08:02	385	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	53	AR	Misfire
06-Nov-2023	08:04	386	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	54	AR	Rock in jaws
06-Nov-2023	08:09	387	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	52	AR	Rock in jaws, station abandoned
06-Nov-2023	08:55	388	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611156	6076874	611157	6076873	1	-1	1	137	AR	Rock in jaws
06-Nov-2023	08:59	389	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611156	6076873	611157	6076873	1	0	1	110	AR	Rock in jaws
06-Nov-2023	09:04	390	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611156	6076874	611157	6076873	1	-1	2	121	AR	Rock in jaws, moved 10m east
06-Nov-2023	09:12	391	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	263	AR	Misfire
06-Nov-2023	09:14	392	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611165	6076874	611157	6076873	-8	-1	8	264	AR	Misfire
06-Nov-2023	09:19	393	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	265	AR	Misfire
06-Nov-2023	09:21	394	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	264	AR	Rock in jaws
06-Nov-2023	09:26	395	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	263	AR	Rock in jaws
06-Nov-2023	09:29	396	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	263	AR	Misfire
06-Nov-2023	09:31	397	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	264	AR	Rock in jaws, station abandoned
06-Nov-2023	10:03	398	BP23MVEXP-ENV-GS-133	90%	MFA	DG	27	611081	6078425	611083	6078422	2	-3	3	140	AR	
06-Nov-2023	10:13	399	BP23MVEXP-ENV-GS-133	90%	CHEM1	DG	27	611081	6078425	611083	6078422	3	-3	4	139	AR	
06-Nov-2023	10:26	400	BP23MVEXP-ENV-GS-133	60%	MFB	DG	27	611081	6078425	611083	6078422	2	-3	4	142	AR	
06-Nov-2023	10:33	401	BP23MVEXP-ENV-GS-133	80%	CHEM2	DG	27	611081	6078425	611083	6078422	2	-3	4	144	AR	
06-Nov-2023	11:19	402	BP23MVEXP-ENV-GS-069	40%	MFA	DG	24	609888	6081850	609888	6081851	0	1	1	342	AR	
06-Nov-2023	11:25	403	BP23MVEXP-ENV-GS-069	70%	MFB	DG	24	609887	6081850	609888	6081851	1	1	2	41	AR	
06-Nov-2023	11:33	404	BP23MVEXP-ENV-GS-069	60%	PSA	DG	24	609887	6081850	609888	6081851	1	1	1	39	AR	
06-Nov-2023	12:06	405	BP23MVEXP-ENV-GS-67A	0%	No Sample	DG	33	611697	6082732	611697	6082732	0	0	1	135	AR	Rock in jaws
06-Nov-2023	12:09	406	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082733	611697	6082732	0	-1	1	205	AR	Low retention
06-Nov-2023	12:13	407	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082733	611697	6082732	0	-1	1	181	AR	Low retention
06-Nov-2023	12:18	408	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082723	611697	6082732	0	9	9	357	AR	Low retention
06-Nov-2023	12:21	409	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082723	611697	6082732	0	9	9	358	AR	Low retention
06-Nov-2023	12:25	410	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082722	611697	6082732	0	10	10	359	AR	Low retention, station abandoned
06-Nov-2023	12:59	411	BP23MVEXP-ENV-GS-132	60%	MFA	DG	39	613335	6081592	613334	6081592	-1	0	1	264	AR	
06-Nov-2023	13:06	412	BP23MVEXP-ENV-GS-132	50%	MFB	DG	39	613335	6081591	613334	6081592	-1	1	1	303	AR	
06-Nov-2023	13:11	413	BP23MVEXP-ENV-GS-132	40%	PSA	DG	39	613335	6081592	613334	6081592	-1	0	1	292	AR	
06-Nov-2023	13:55	414	BP23MVEXP-ENV-GS-065	90%	MFA	DG	47	614050	6085715	614050	6085716	0	1	1	13	AR	
06-Nov-2023	14:02	415	BP23MVEXP-ENV-GS-065	90%	MFB	DG	47	614050	6085715	614050	6085716	0	1	1	10	AR	
06-Nov-2023	14:08	416	BP23MVEXP-ENV-GS-065	90%	PSA	DG	47	614050	6085715	614050	6085716	0	1	1	359	AR	
06-Nov-2023	14:43	417	BP23MVEXP-ENV-GS-131	80%	CHEM1	DG	48	615581	6085219	615581	6085218	0	-1	1	150	AR	
06-Nov-2023	14:49	418	BP23MVEXP-ENV-GS-131	70%	MFA	DG	48	615581	6085219	615581	6085218	0	-1	1	172	AR	
06-Nov-2023	15:00	419	BP23MVEXP-ENV-GS-131	50%	MFB	DG	47	615581	6085219	615581	6085218	0	-1	1	163	AR	
06-Nov-2023	15:05	420	BP23MVEXP-ENV-GS-131	60%	CHEM2	DG	47	615581	6085219	615581	6085218	0	-1	1	175	AR	
06-Nov-2023	15:54	421	BP23MVEXP-ENV-GS-130	80%	MFA	DG	53	617558	6088614	617558	6088614	0	0	0	323	AR	
06-Nov-2023	16:00	422	BP23MVEXP-ENV-GS-130	80%	MFB	DG	53	617557	6088613	617558	6088614	1	1	1	53	AR	
06-Nov-2023	16:06	423	BP23MVEXP-ENV-GS-130	80%	PSA	DG	53	617557	6088614	617558	6088614	1	0	1	71	AR	
06-Nov-2023	16:35	424	BP23MVEXP-ENV-GS-129	90%	MFA	DG	53	616334	6089421	616332	6089421	-2	0	2	265	AR	
06-Nov-2023	16:42	425	BP23MVEXP-ENV-GS-129	90%	MFB	DG	53	616334	6089421	616332	6089421	-2	0	2	281	AR	
06-Nov-2023	16:47	426	BP23MVEXP-ENV-GS-129	70%	PSA	DG	53	616334	6089422	616332	6089421	-2	-1	2	256	AR	
06-Nov-2023	17:33	427	BP23MVEXP-ENV-GS-128	80%	CHEM1	DG	59	618834	6092325	618835	6092326	1	1	1	34	SP	
06-Nov-2023	17:41	428	BP23MVEXP-ENV-GS-128	90%	MFA	DG	59	618835	6092325	618835	6092326	0	1	1	29	SP	
06-Nov-2023	17:48	429	BP23MVEXP-ENV-GS-128	80%	MFB	DG	59	618835	6092325	618835	6092326	0	1	1	12	SP	
06-Nov-2023	17:56	430	BP23MVEXP-ENV-GS-128	80%	CHEM2	DG	59	618836	6092326	618835	6092326	-1	0	1	303	SP	
06-Nov-2023	18:41	431	BP23MVEXP-ENV-GS-127	90%	MFA	DG	69	619929	6096179	619930	6096179	1	0	1	117	SP	
06-Nov-2023	18:48	432	BP23MVEXP-ENV-GS-127	90%	MFB	DG	69	619929	6096180	619930	6096179	1	-1	2	141	SP	
06-Nov-2023	18:55	433	BP23MVEXP-ENV-GS-127	90%	PSA	DG	69	619929	6096179	619930	6096179	1	0	1	94	SP	
06-Nov-2023	19:41	434	BP23MVEXP-ENV-GS-126	90%	MFA	DG	83	621032	6100018	621032	6100018	0	0	0	175	SP	
06-Nov-2023	19:50	435	BP23MVEXP-ENV-GS-126	90%	CHEM1	DG	83	621032	6100019	621032	6100018	0	-1	1	210	SP	
06-Nov-2023	20:02	436	BP23MVEXP-ENV-GS-126	90%	MFB	DG	83	621032	6100018	621032	6100018	0	0	1	226	SP	
06-Nov-2023	20:11	437	BP23MVEXP-ENV-GS-126	90%	CHEM2	DG	83	621032	6100018	621032	6100018	0	0	0	162	SP	
06-Nov-2023	21:01	438	BP23MVEXP-ENV-GS-125	90%	MFA	DG	85	622081	6103873	622083	6103872	2	-1	2	106	SP	
06-Nov-2023	21:09	439	BP23MVEXP-ENV-GS-125	90%	MFB	DG	85	622081	6103871	622083	6103872	2	1	3	65	SP	
06-Nov-2023	21:17	440	BP23MVEXP-ENV-GS-125	90%	PSA	DG	86	622080	6103870	622083	6103872	3	2	4	54	SP	
06-Nov-2023	22:10	441	BP23MVEXP-ENV-GS-124	90%	CHEM1	DG	92	623088	6107643	623089	6107641	1	-2	2	148	SP	
06-Nov-2023	22:22	442	BP23MVEXP-ENV-GS-124	90%	MFA	DG	92	623088	6107642	623089	6107641	1	-1	2	143	SP	
06-Nov-2023	22:30	443	BP23MVEXP-ENV-GS-124	90%	MFB	DG	92	623088	6107642	623089	6107641	1	-1	2	119	SP	
06-Nov-2023	22:39	444	BP23MVEXP-ENV-GS-124	90%	CHEM2	DG	92	623088	6107642	623089	6107641	2	-1	2	132	SP	
06-Nov-2023	23:36	445	BP23MVEXP-ENV-GS-123	90%	MFA	DG	96	624149	6111616	624150	6111614	1	-2	2	139	SP	
06-Nov-2023	23:44	446	BP23MVEXP-ENV-GS-123	90%	MFB	DG	96	624149	6111615	624150	6111614	1	-1	1	131	SP	
06-Nov-2023	23:53	447	BP23MVEXP-ENV-GS-123	90%	PSA	DG	96	624149	6111616	624150	6111614	1	-2	2	149	SP	
07-Nov-2023	00:43	448	BP23MVEXP-ENV-GS-122	90%	CHEM1	DG	101	624665	6115469	624665	6115470	0	1	1	343	AN	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Nov-2023	00:56	449	BP23MVEXP-ENV-GS-122	90%	MFA	DG	101	624666	6115468	624665	6115470	-1	2	2	334	AN	
07-Nov-2023	01:06	450	BP23MVEXP-ENV-GS-122	90%	MFB	DG	100	624666	6115468	624665	6115470	-1	2	2	330	AN	
07-Nov-2023	01:16	451	BP23MVEXP-ENV-GS-122	90%	CHEM2	DG	100	624666	6115468	624665	6115470	-1	2	2	326	AN	
07-Nov-2023	02:06	452	BP23MVEXP-ENV-GS-121	90%	MFA	DG	99	623511	6119296	623511	6119299	0	3	3	352	AN	
07-Nov-2023	02:17	453	BP23MVEXP-ENV-GS-121	90%	MFB	DG	99	623512	6119297	623511	6119299	-1	2	2	342	AN	
07-Nov-2023	02:26	454	BP23MVEXP-ENV-GS-121	90%	PSA	DG	99	623512	6119297	623511	6119299	-1	2	2	344	AN	
07-Nov-2023	03:18	455	BP23MVEXP-ENV-GS-120	90%	CHEM1	DG	96	622353	6123150	622353	6123151	0	1	1	347	AN	
07-Nov-2023	03:29	456	BP23MVEXP-ENV-GS-120	90%	MFA	DG	96	622354	6123150	622353	6123151	-1	1	1	325	AN	
07-Nov-2023	03:42	457	BP23MVEXP-ENV-GS-120	90%	MFB	DG	96	622353	6123150	622353	6123151	0	1	1	335	AN	
07-Nov-2023	03:52	458	BP23MVEXP-ENV-GS-120	90%	CHEM2	DG	95	622354	6123150	622353	6123151	-1	1	1	322	AN	
07-Nov-2023	04:36	459	BP23MVEXP-ENV-GS-119	90%	MFA	DG	93	621603	6126980	621603	6126979	0	-1	1	200	AN	
07-Nov-2023	04:46	460	BP23MVEXP-ENV-GS-119	90%	No Sample	DG	93	621603	6126979	621603	6126979	0	0	0	200	AN	Hagfish
07-Nov-2023	04:55	461	BP23MVEXP-ENV-GS-119	90%	PSA	DG	93	621604	6126979	621603	6126979	-1	0	1	230	AN	
07-Nov-2023	05:07	462	BP23MVEXP-ENV-GS-119	90%	MFB	DG	93	621604	6126979	621603	6126979	-1	0	1	242	AN	
07-Nov-2023	05:58	463	BP23MVEXP-ENV-GS-118	90%	CHEM1	DG	92	622272	6130919	622273	6130918	1	-1	1	130	AN	
07-Nov-2023	06:09	464	BP23MVEXP-ENV-GS-118	90%	MFA	DG	92	622272	6130919	622273	6130918	1	-1	1	131	AN	
07-Nov-2023	06:17	465	BP23MVEXP-ENV-GS-118	90%	MFB	DG	92	622272	6130919	622273	6130918	1	-1	1	123	AN	
07-Nov-2023	06:29	466	BP23MVEXP-ENV-GS-118	90%	CHEM2	DG	92	622272	6130919	622273	6130918	1	-1	1	146	AN	
07-Nov-2023	08:46	467	BP23MVEXP-ENV-GS-047	90%	MFA	DG	88	639530	6126759	639530	6126759	0	0	0	358	AR	
07-Nov-2023	08:54	468	BP23MVEXP-ENV-GS-047	90%	MFB	DG	88	639530	6126758	639530	6126759	0	1	1	349	AR	
07-Nov-2023	09:03	469	BP23MVEXP-ENV-GS-047	90%	PSA	DG	88	639530	6126758	639530	6126759	0	1	1	359	AR	
07-Nov-2023	10:13	470	BP23MVEXP-ENV-GS-049	50%	MFA	DG	78	641832	6119158	641831	6119158	-1	0	1	279	AR	
07-Nov-2023	10:24	471	BP23MVEXP-ENV-GS-049	30%	No Sample	DG	78	641833	6119158	641831	6119158	-2	0	2	273	AR	Low retention
07-Nov-2023	10:32	472	BP23MVEXP-ENV-GS-049	50%	MFB	DG	78	641833	6119158	641831	6119158	-2	0	2	261	AR	
07-Nov-2023	10:40	473	BP23MVEXP-ENV-GS-049	50%	PSA	DG	78	641833	6119158	641831	6119158	-2	0	2	271	AR	
07-Nov-2023	11:42	474	BP23MVEXP-ENV-GS-051	40%	MFA	DG	69	640671	6111632	640672	6111630	1	-2	2	157	AR	
07-Nov-2023	11:51	475	BP23MVEXP-ENV-GS-051	70%	MFB	DG	69	640671	6111631	640672	6111630	1	-1	1	140	AR	
07-Nov-2023	12:01	476	BP23MVEXP-ENV-GS-051	80%	PSA	DG	69	640671	6111631	640672	6111630	1	-1	2	142	AR	
07-Nov-2023	13:24	477	BP23MVEXP-ENV-GS-053	90%	MFA	DG	69	637136	6104543	637135	6104545	-1	2	2	328	AR	
07-Nov-2023	13:30	478	BP23MVEXP-ENV-GS-053	90%	MFB	DG	69	637136	6104544	637135	6104545	-1	1	1	330	AR	
07-Nov-2023	13:36	479	BP23MVEXP-ENV-GS-053	90%	PSA	DG	69	637135	6104545	637135	6104545	0	0	1	297	AR	
07-Nov-2023	14:52	480	BP23MVEXP-ENV-GS-055	90%	No Sample	DG	78	633585	6097485	633583	6097485	-2	0	2	263	AR	Hagfish
07-Nov-2023	15:00	481	BP23MVEXP-ENV-GS-055	80%	MFA	DG	78	633585	6097485	633583	6097485	-2	0	2	284	AR	
07-Nov-2023	15:07	482	BP23MVEXP-ENV-GS-055	80%	MFB	DG	78	633584	6097485	633583	6097485	-1	0	1	251	AR	
07-Nov-2023	15:14	483	BP23MVEXP-ENV-GS-055	90%	PSA	DG	78	633584	6097486	633583	6097485	-1	-1	1	245	AR	
08-Nov-2023	00:56	484	BP23MVEXP-ENV-GS-012	40%	MFA	DG	75	656656	6260133	656656	6260131	0	-2	2	179	AN	
08-Nov-2023	01:03	485	BP23MVEXP-ENV-GS-012	40%	MFB	DG	75	656656	6260133	656656	6260131	0	-2	2	183	AN	
08-Nov-2023	01:10	486	BP23MVEXP-ENV-GS-012	50%	PSA	DG	75	656656	6260132	656656	6260131	0	-1	1	194	AN	
08-Nov-2023	01:59	487	BP23MVEXP-ENV-GS-013	40%	CHEM1	DG	76	656879	6256139	656877	6256136	-2	-3	3	217	AN	
08-Nov-2023	02:09	488	BP23MVEXP-ENV-GS-013	40%	MFA	DG	76	656879	6256139	656877	6256136	-2	-3	3	214	AN	
08-Nov-2023	02:17	489	BP23MVEXP-ENV-GS-013	40%	MFB	DG	76	656879	6256139	656877	6256136	-2	-3	3	212	AN	
08-Nov-2023	02:24	490	BP23MVEXP-ENV-GS-013	50%	CHEM2	DG	76	656879	6256139	656877	6256136	-2	-3	3	211	AN	
08-Nov-2023	03:11	491	BP23MVEXP-ENV-GS-014	40%	MFA	DG	76	657094	6252145	657092	6252144	-2	-1	2	238	AN	
08-Nov-2023	03:18	492	BP23MVEXP-ENV-GS-014	40%	MFB	DG	76	657093	6252144	657092	6252144	-1	0	1	250	AN	
08-Nov-2023	03:24	493	BP23MVEXP-ENV-GS-014	40%	PSA	DG	76	657093	6252145	657092	6252144	-1	-1	2	242	AN	
08-Nov-2023	04:10	494	BP23MVEXP-ENV-GS-015	40%	CHEM1	DG	73	657314	6248187	657314	6248185	0	-2	2	187	AN	
08-Nov-2023	04:20	495	BP23MVEXP-ENV-GS-015	60%	MFA	DG	73	657315	6248186	657314	6248185	-1	-1	1	213	AN	
08-Nov-2023	04:27	496	BP23MVEXP-ENV-GS-015	50%	MFB	DG	73	657315	6248186	657314	6248185	-1	-1	1	208	AN	
08-Nov-2023	04:34	497	BP23MVEXP-ENV-GS-015	40%	CHEM2	DG	73	657315	6248186	657314	6248185	-1	-1	2	209	AN	
08-Nov-2023	05:19	498	BP23MVEXP-ENV-GS-016	40%	MFA	DG	71	657528	6244154	657529	6244154	1	0	1	125	AN	
08-Nov-2023	05:25	499	BP23MVEXP-ENV-GS-016	40%	MFB	DG	71	657530	6244154	657529	6244154	-1	0	1	269	AN	
08-Nov-2023	05:32	500	BP23MVEXP-ENV-GS-016	40%	PSA	DG	71	657530	6244154	657529	6244154	-1	0	1	256	AN	
08-Nov-2023	06:12	501	BP23MVEXP-ENV-GS-017	60%	CHEM1	DG	69	657757	6240165	657756	6240164	-1	-1	1	220	AR	
08-Nov-2023	06:22	502	BP23MVEXP-ENV-GS-017	30%	No Sample	DG	69	657757	6240164	657756	6240164	-1	0	1	253	AR	Low retention
08-Nov-2023	06:28	503	BP23MVEXP-ENV-GS-017	60%	MFA	DG	69	657756	6240165	657756	6240164	0	-1	1	207	AR	
08-Nov-2023	06:35	504	BP23MVEXP-ENV-GS-017	60%	MFB	DG	69	657757	6240165	657756	6240164	-1	-1	1	207	AR	
08-Nov-2023	06:42	505	BP23MVEXP-ENV-GS-017	30%	No Sample	DG	69	657756	6240165	657756	6240164	0	-1	1	208	AR	Low retention
08-Nov-2023	06:48	506	BP23MVEXP-ENV-GS-017	50%	CHEM2	DG	69	657756	6240164	657756	6240164	0	0	0	128	AR	
08-Nov-2023	07:31	507	BP23MVEXP-ENV-GS-018	40%	MFA	DG	63	657940	6236202	657939	6236203	-1	1	1	329	AR	
08-Nov-2023	07:38	508	BP23MVEXP-ENV-GS-018	40%	MFB	DG	63	657939	6236202	657939	6236203	0	1	1	329	AR	
08-Nov-2023	07:45	509	BP23MVEXP-ENV-GS-018	50%	PSA	DG	63	657940	6236202	657939	6236203	-1	1	1	328	AR	
08-Nov-2023	08:29	510	BP23MVEXP-ENV-GS-019	60%	CHEM1	DG	61	658157	6232175	658157	6232173	0	-2	2	174	AR	
08-Nov-2023	08:39	511	BP23MVEXP-ENV-GS-019	50%	MFA	DG	61	658157	6232176	658157	6232173	0	-3	3	171	AR	
08-Nov-2023	08:46	512	BP23MVEXP-ENV-GS-019	50%	MFB	DG	61	658156	6232175	658157	6232173	1	-2	3	158	AR	
08-Nov-2023	08:53	513	BP23MVEXP-ENV-GS-019	40%	CHEM2	DG	61	658156	6232176	658157	6232173	1	-3	3	154	AR	
08-Nov-2023	18:26	514	BP23MVEXP-ENV-GS-025	20%	No Sample	DG	76	659449	6208081	659446	6208080	-3	-1	3	248	SP	Low retention
09-Nov-2023	04:29	515	BP23MVEXP-ENV-GS-025	40%	CHEM1	DG	76	659445	6208079	659446	6208080	1	1	2	32	AN	
09-Nov-2023	04:41	516	BP23MVEXP-ENV-GS-025	40%	MFA	DG	76	659445	6208080	659446	6208080	1	0	1	84	AN	
09-Nov-2023	04:49	517	BP23MVEXP-ENV-GS-025	30%	No Sample	DG	76	659445	6208079	659446	6208080	1	1	2	63	AN	Low retention
09-Nov-2023	04:55	518	BP23MVEXP-ENV-GS-025	40%	MFB	DG	76	659446	6208080	659446	6208080	0	0	1	51	AN	
09-Nov-2023	05:03	519	BP23MVEXP-ENV-GS-025	50%	CHEM2	DG	76	659446	6208079	659446	6208080	0	1	1	18	AN	
09-Nov-2023	05:48	520	BP23MVEXP-ENV-GS-024	50%	MFA	DG	76	659215	6212354	659215	6212354	0	0	1	36	AN	
09-Nov-2023	05:55	521	BP23MVEXP-ENV-GS-024	40%	MFB	DG	76	659216	6212356	659215	6212354	-1	-2	2	212	AN	
09-Nov-2023	06:03	522	BP23MVEXP-ENV-GS-024	40%	PSA	DG	76	659216	6212353	659215	6212354	-1	1	1	320	AN	
09-Nov-2023	06:45	523	BP23MVEXP-ENV-GS-023	50%	CHEM1	DG	82	659017	6216190	659015	6216191	-2	1	2	290	AN	
09-Nov-2023	06:55	524	BP23MVEXP-ENV-GS-023	40%	MFA	DG	82	659016	6216190	659015	6216191	-1	1	2	300	AR	
09-Nov-2023	07:02	525	BP23MVEXP-ENV-GS-023	50%	MFB	DG	82	659016	6216190	659015	6216191	-1	1	1	317	AR	
09-Nov-2023	07:09	526	BP23MVEXP-ENV-GS-023	50%	CHEM2	DG	82	659016	6216190	659015	6216191	-1	1	2	307	AR	
09-Nov-2023	07:56	527	BP23MVEXP-ENV-GS-022	50%	MFA	DG	78	658789	6220189	658789	6220190	0	1	1	348	AR	
09-Nov-2023	08:04	528	BP23MVEXP-ENV-GS-022	50%	MFB	DG	78	658789	6220189	658789	6220190	0	1	1	350	AR	
09-Nov-2023	08:11	529	BP23MVEXP-ENV-GS-022	40%	PSA	DG	78	658790	6220189	658789	6220190	-1	1	1	314	AR	
09-Nov-2023	08:57	530	BP23MVEXP-ENV-GS-021	40%	CHEM1	DG	74	658585	6224181	658588	6224181	3	0	3	83	AR	
09-Nov-2023	09:06	531	BP23MVEXP-ENV-GS-021	60%	MFA	DG	74	658586	6224181	658588	6224181	2	0	2	80	AR	
09-Nov-2023	09:14	532	BP23MVEXP-ENV-GS-021	50%	MFB	DG	74	658586	6224180	658588	6224181	2	1	2	71	AR	
09-Nov-2023	09:20	533	BP23MVEXP-ENV-GS-021	50%	CHEM2	DG	74	658586	6224180	658588	6224181	2	1	2	66	AR	
09-Nov-2023	10:09	534	BP23MVEXP-ENV-GS-020		No Sample	DG	63	658372	6228182	658374	6228181	2	-1	2	106	AR	Misfire
09-Nov-2023	10:12	535	BP23MVEXP-ENV-GS-020		No Sample	DG	63	658371	6228182	658374	6228181	3	-1	3	105	AR	Rock in jaws
09-Nov-2023	10:18	536	BP23MVEXP-ENV-GS-020	10%	No Sample	DG	64	658373	6228180	658374	6228181	1	1	2	52	AR	Low retention
09-Nov-2023	10:24	537	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658373	6228180	658374	6228181	1	1	2	60	AR	Low retention. Moved 10m SW
09-Nov-2023	10:32	538	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658365	6228173	658374	6228181	9	8	12	48	AR	Misfire
09-Nov-2023	10:37	539	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658365	6228173	658374	6228181	9	8	12	50	AR	Rock in jaws
09-Nov-2023	10:43	540	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658365	6228174	658374	6228181	9	7	12	51	AR	Rock in jaws
09-Nov-2023	10:49	541	BP23MVEXP-ENV-GS-020	80%	MFA	DG	64	658365	6228174	658374	6228181	9	7	11	51	AR	
09-Nov-2023	10:56	542	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658364	6228173	658374	6228181	10	8	13	50	AR	Misfire
09-Nov-2023	11:00	543	BP23MVEXP-ENV-GS-020	10%	No Sample	DG	64	658365	6228173	658374	6228181	9	8	12	51	AR	Low retention, station abandoned

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
1	BP23MVEXP-ENV-GS-011	12-Jul-2023	01:44	85%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	MB,CD,MD	
2	BP23MVEXP-ENV-GS-011	12-Jul-2023	01:59	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)	MB,CD,MD	
3	BP23MVEXP-ENV-GS-011	12-Jul-2023	02:10	50%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	MB,CD,MD	Redox: 1cm (6.10pH, 10.4˚C, 460mV), 10cm (6.12pH, 10.1˚C, 404mV)
4	BP23MVEXP-ENV-GS-011	12-Jul-2023	02:29	60%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	MB,CD,MD	
5	BP23MVEXP-ENV-GS-010	12-Jul-2023	03:27	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	CD, MD	
6	BP23MVEXP-ENV-GS-010	12-Jul-2023	03:41	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polchaeta)	CD, MD	
7	BP23MVEXP-ENV-GS-010	12-Jul-2023	03:50	65%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	CD, MD	Redox: 1cm (6.35pH, 10.2˚C, 235mV), 10cm (6.30pH, 9.3˚C, 222mV)
8	BP23MVEXP-ENV-GS-009	12-Jul-2023	04:41	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Cnidaria (Anthozoa), Mollusca (Bivalvia, Gastropoda)	CD, MD	
9	BP23MVEXP-ENV-GS-009	12-Jul-2023	04:54	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	CD, MD	
10	BP23MVEXP-ENV-GS-009	12-Jul-2023	05:03	65%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.35pH, 10.2˚C, 235mV), 10cm (6.30pH, 9.3˚C, 222mV)
11	BP23MVEXP-ENV-GS-009	12-Jul-2023	05:22	60%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	CD, MD, DP	
12	BP23MVEXP-ENV-GS-008	12-Jul-2023	06:15	80%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta)	CD, MD, DP	
13	BP23MVEXP-ENV-GS-008	12-Jul-2023	06:23	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta), Mollusca (Bivalvia)	CD, MD, DP	
14	BP23MVEXP-ENV-GS-008	12-Jul-2023	06:32	70%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 4/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.36pH, 10.6˚C, 266mV), 10cm (6.33pH, 10.3˚C, 256mV)
15	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:24	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	CD, MD, DP	
16	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:33	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta)	CD, MD, DP	
17	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:41	65%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 4/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.32pH, 11.2˚C, 234mV), 10cm (6.34pH, 10.5˚C, 214mV)
18	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:54	50%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 4/1	No visible fauna	CD, MD, DP	
19	BP23MVEXP-ENV-GS-006	12-Jul-2023	08:53	55%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/2	Annelida (Polychaeta)	CD, MD, DP	
20	BP23MVEXP-ENV-GS-006	12-Jul-2023	09:02	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/2	Annelida (Polychaeta)	CD, MD, DP	
21	BP23MVEXP-ENV-GS-006	12-Jul-2023	09:09	70%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 4/2	No visible fauna	CD, MD, DP	Redox: 1cm (6.5pH, 11.3˚C, 251mV), 10cm (6.45pH, 10.4˚C, 251mV)
22	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:07	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 5/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	CD, MD, DP	
23	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:17	0%	No Sample				CD, MD, DP	Misfire
24	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:26	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 5/1	Annelida (Polychaeta), Mollusca (Bivalvia)	CD, MD, DP	
25	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:44	55%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 5/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.24pH, 12.7˚C, 213mV), 10cm (6.18pH, 11.6˚C, 204mV)
26	BP23MVEXP-ENV-GS-005	12-Jul-2023	11:03	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 5/1	No visible fauna	MB, AA, JO, DP	
27	BP23MVEXP-ENV-GS-004	12-Jul-2023	12:09	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/4	Annelida (Polychaeta)	MB, AA, JO, DP	
28	BP23MVEXP-ENV-GS-004	12-Jul-2023	12:23	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/4	Echinodermata (Ophiuroidea)	MB, AA, JO, DP	
29	BP23MVEXP-ENV-GS-004	12-Jul-2023	12:33	60%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 4/4	No visible fauna	MB, AA, JO, DP	Redox: 1cm (7.34pH, 13.4˚C, 254mV), 10cm (7.17pH, 12.1˚C, 232mV)
30	BP23MVEXP-ENV-GS-003	12-Jul-2023	13:30	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Mollusca (Gastropoda)	MB, AA, JO, DP	
31	BP23MVEXP-ENV-GS-003	12-Jul-2023	13:42	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	MB, AA, JO, DP	
32	BP23MVEXP-ENV-GS-003	12-Jul-2023	13:52	60%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	MB, AA, JO, DP	Redox: 1cm (7.58pH, 13.5˚C, 142mV) 10cm (7.55pH, 13.1˚C, 118mV)
33	BP23MVEXP-ENV-GS-003	12-Jul-2023	14:11	75%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	MB, AA, JO, DP	
34	BP23MVEXP-ENV-GS-002	12-Jul-2023	15:12	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Mollusca (Bivalvia)	MB, AA, JO, DP	
35	BP23MVEXP-ENV-GS-002	12-Jul-2023	15:24	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	MB, AA, JO, DP	
36	BP23MVEXP-ENV-GS-002	12-Jul-2023	15:40	90%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 10YR 3/4	No visible fauna	MB, AA, JO, DP	Redox: 1cm (7.00pH, 11.5˚C, 267mV), 10cm (6.90pH, 11.1˚C, 116mV)
37	BP23MVEXP-ENV-GS-001	12-Jul-2023	16:31	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	
38	BP23MVEXP-ENV-GS-001	12-Jul-2023	16:46	75%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	MB, AA, JO, DP	
39	BP23MVEXP-ENV-GS-001	12-Jul-2023	17:01	60%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 4/4	No visible fauna	AA, JO	Redox: 1cm (6.69pH, 11.8˚C, 198mV), 10cm (6.67pH, 11.7˚C, 186mV)
40	BP23MVEXP-ENV-GS-001	12-Jul-2023	17:16	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 4/4	No visible fauna	AA, JO	
41	BP23MVEXP-ENV-GS-071	12-Jul-2023	21:29	85%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	AA, JO	
42	BP23MVEXP-ENV-GS-071	12-Jul-2023	21:52	85%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AA, JO	
43	BP23MVEXP-ENV-GS-071	12-Jul-2023	22:09	70%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	AA, JO	Redox: 1cm (5.73pH, 10.8˚C, 243mV), 10cm (5.75pH, 10.7˚C, 96mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
44	BP23MVEXP-ENV-GS-071	12-Jul-2023	22:26	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	AA, JO	
45	BP23MVEXP-ENV-GS-072	13-Jul-2023	01:12	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	CD, MD	
46	BP23MVEXP-ENV-GS-072	13-Jul-2023	01:27	45%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta)	CD, MD	
47	BP23MVEXP-ENV-GS-072	13-Jul-2023	01:38	45%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 10YR 3/2	No visible fauna	CD, MD	Redox: 1cm (5.76pH, 9.9˚C, 62mV), 10cm (5.74pH, 9.6˚C, 60mV)
48	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:19	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta)	CD, MD	
49	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:28	55%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)	CD, MD	
50	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:37	75%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/2	No visible fauna	CD, MD	Redox: 1cm (6.30pH, 10.8˚C, 335mV), 10cm (6.30pH, 9.1˚C, 218mV)
51	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:50	50%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/2	No visible fauna	CD, MD	
52	BP23MVEXP-ENV-GS-074	13-Jul-2023	07:32	55%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/6	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	CD, MD, DP	
53	BP23MVEXP-ENV-GS-074	13-Jul-2023	07:43	75%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/6	Annelida (Polychaeta)	CD, MD, DP	
54	BP23MVEXP-ENV-GS-074	13-Jul-2023	07:51	75%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 10YR 4/6	No visible fauna	CD, MD, DP	Redox: 1cm (5.79pH, 10.1˚C, 208mV), 10cm (5.75pH, 9.6˚C, 209mV)
55	BP23MVEXP-ENV-GS-075	13-Jul-2023	10:22	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 4/2	Annelida (Polychaeta), Mollusca (Scaphopoda), Cnidaria (Hydrozoa)	CD, MD, DP	
56	BP23MVEXP-ENV-GS-075	13-Jul-2023	10:33	75%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 4/2	Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Scaphopoda), Cnidaria (Hydrozoa)	CD, MD, DP	
57	BP23MVEXP-ENV-GS-075	13-Jul-2023	10:42	65%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 4/2	No visible fauna	CD, MD, DP	Redox: 1cm (6.14pH, 12.1˚C, 30mV), 10cm (6.07pH, 10.3˚C, 47mV)
58	BP23MVEXP-ENV-GS-075	13-Jul-2023	11:05	60%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 4/2	No visible fauna	MB, AA, JO, DP	
59	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:19	55%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse gravelly sand with shelll fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	
60	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:34	55%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse gravelly sand with shelll fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Gastropoda, Scaphopoda), Cnidaria (Hydrozoa)	MB, AA, JO, DP	
61	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:43	0%	No Sample					Low retention
62	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:50	50%	PSA	2 x Ziploc bags	Coarse gravelly sand with shelll fragments Munsell: 10YR 4/4	No visible fauna	MB, AA, JO, DP	Redox: 1cm (6.07pH, 12.4˚C, 239mV), 10cm (6.01pH, 11.5˚C, 179mV)
63	BP23MVEXP-ENV-GS-077	13-Jul-2023	16:23	65%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Mollusca (Bivalvia)	MB, AA, JO, DP	
64	BP23MVEXP-ENV-GS-077	13-Jul-2023	16:41	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta)	MB, AA, JO, DP	
65	BP23MVEXP-ENV-GS-077	13-Jul-2023	16:55	40%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/4	No visible fauna	MB, AA, JO, DP	
66	BP23MVEXP-ENV-GS-077	13-Jul-2023	17:11	20%	No Sample					Low retention
67	BP23MVEXP-ENV-GS-077	13-Jul-2023	17:17	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/4	No visible fauna	AA, JO	Redox: 1cm (6.03pH, 12.0˚C, 220mV), 10cm (5.90pH, 11.2˚C, 183mV)
68	BP23MVEXP-ENV-GS-078	13-Jul-2023	19:31	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 4/3	Annelida (Polychaeta)	AA, JO	
69	BP23MVEXP-ENV-GS-078	13-Jul-2023	19:47	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AA, JO	
70	BP23MVEXP-ENV-GS-078	13-Jul-2023	20:00	70%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 4/3	No visible fauna	AA, JO	Redox: 1cm (5.96pH, 11.6˚C, 213mV), 10cm (6.00pH, 11.1˚C,193mV)
71	BP23MVEXP-ENV-GS-079	13-Jul-2023	22:42	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine to medium sand with shell fragments Munsell: 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AA, JO	
72	BP23MVEXP-ENV-GS-079	13-Jul-2023	22:58	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine to medium sand with shell fragments Munsell: 4/4	Annelida (Polychaeta),Cnidaria (Hydrozoa), Mollusca (Bivalvia, Scaphopoda)	CD, MD	
73	BP23MVEXP-ENV-GS-079	13-Jul-2023	23:14	75%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine to medium sand with shell fragments Munsell: 4/4	No visible fauna	CD, MD	
74	BP23MVEXP-ENV-GS-079	13-Jul-2023	23:28	45%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine to medium sand with shell fragments Munsell: 4/4	No visible fauna	CD, MD	Redox: 1cm (5.62pH, 10.0˚C, 212mV), 10cm (5.62pH, 10.3˚C, 215mV
75	BP23MVEXP-ENV-GS-080	14-Jul-2023	01:49	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 5/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	CD, MD	
76	BP23MVEXP-ENV-GS-080	14-Jul-2023	01:58	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 5/2	Annelida (Polychaeta), Cnidaria (Hydrozoa), Mollusca (Bivalvia, Scaphopoda)	CD, MD	
77	BP23MVEXP-ENV-GS-080	14-Jul-2023	02:06	65%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 5/2	No visible fauna	CD, MD	Redox: 1cm (5.62pH, 11.5˚C, 196mV), 10cm (5.62pH, 11.0˚C, 171mV)
78	BP23MVEXP-ENV-GS-081	22-Oct-2023	21:38	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
79	BP23MVEXP-ENV-GS-081	22-Oct-2023	22:02	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (6.87pH, 10.2˚C, 240mV), 10cm (7.18pH, 10.5˚C, 207mV)
80	BP23MVEXP-ENV-GS-081	22-Oct-2023	22:12	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
81	BP23MVEXP-ENV-GS-081	22-Oct-2023	22:25	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
82	BP23MVEXP-ENV-GS-082	23-Oct-2023	23:37	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (7.54pH, 10.4˚C, 248mV), 10cm (7.65pH, 10.8˚C, 248mV)
83	BP23MVEXP-ENV-GS-082	23-Oct-2023	00:06	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, EG	
84	BP23MVEXP-ENV-GS-082	23-Oct-2023	00:25	60%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, EG	
85	BP23MVEXP-ENV-GS-083	23-Oct-2023	01:29	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 3/1	No visible fauna	JH, CA, EG	
86	BP23MVEXP-ENV-GS-083	23-Oct-2023	01:54	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (7.91pH, 10.5˚C, 237mV), 10cm (7.96pH, 10.8˚C, 225mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
87	BP23MVEXP-ENV-GS-083	23-Oct-2023	02:08	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Echinodermata (Asteroidea), Mollusca (Bivalvia)	JH, CA, EG	
88	BP23MVEXP-ENV-GS-083	23-Oct-2023	02:22	30%	No Sample					Low retention
89	BP23MVEXP-ENV-GS-083	23-Oct-2023	02:34	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 3/1	No visible fauna	JH, CA, EG	
90	BP23MVEXP-ENV-GS-084	23-Oct-2023	03:31	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/2	Mollusca (Bivalvia, Scaphopoda)	JH, CA, EG	
91	BP23MVEXP-ENV-GS-084	23-Oct-2023	03:46	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/2	No visible fauna	JH, CA, EG	
92	BP23MVEXP-ENV-GS-084	23-Oct-2023	03:59	60%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5Y 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (7.61pH, 10.6˚C, 234mV), 10cm (7.67pH, 10.9˚C, 270mV)
93	BP23MVEXP-ENV-GS-085	23-Oct-2023	04:59	40%	CHEM1	1 x Ziploc bags 1 x 1L Jar	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	JH, CA, RR	No PSA collected
94	BP23MVEXP-ENV-GS-085	23-Oct-2023	05:19	50%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (6.35pH, 10.5˚C, 283mV), 10cm (7.67pH, 10.7˚C, 240mV)
95	BP23MVEXP-ENV-GS-085	23-Oct-2023	05:42	60%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/3	Echinodermata (Asteroidea)	JH, CA, RR	PSA collected
96	BP23MVEXP-ENV-GS-085	23-Oct-2023	05:59	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	JH, CA, RR	
97	BP23MVEXP-ENV-GS-086	23-Oct-2023	06:56	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	Redox: 1cm (7.60pH, 10.7˚C, 247mV), 10cm (7.96pH, 10.7˚C, 215mV)
98	BP23MVEXP-ENV-GS-086	23-Oct-2023	07:14	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)	JH, CA, RR	
99	BP23MVEXP-ENV-GS-086	23-Oct-2023	07:27	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
100	BP23MVEXP-ENV-GS-087	23-Oct-2023	08:21	90%	CHEM1	1 x Ziploc bags 1 x 1L Jar	Coarse sand with shell fragments Munsell: 10YR 4/3	No visible fauna	JH, CA, RR	
101	BP23MVEXP-ENV-GS-087	23-Oct-2023	08:37	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10YR 4/3	No visible fauna	JH, CA, RR	
102	BP23MVEXP-ENV-GS-087	23-Oct-2023	08:52	0%	No Sample					Misfire
103	BP23MVEXP-ENV-GS-087	23-Oct-2023	09:01	0%	No Sample					Misfire
104	BP23MVEXP-ENV-GS-087	23-Oct-2023	09:17	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10YR 4/3	Mollusca (Bivalvia)	JH, CA, RR	Redox: 1cm (7.18pH, 10.7˚C, 263mV), 10cm (7.50pH, 10.8˚C, 245mV)
105	BP23MVEXP-ENV-GS-087	23-Oct-2023	09:34	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10YR 4/3	No visible fauna	JH, CA, RR	
106	BP23MVEXP-ENV-GS-088	23-Oct-2023	16:57	60%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
107	BP23MVEXP-ENV-GS-088	23-Oct-2023	17:06	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta), Mollusca (*Arctica islandica*)	RH, NW, EG	*Arctica islandica* - L: 65.68mm; H: 57.39mm; W: 34.62mm; Mass: 80.01g Redox: 1cm (7.74pH, 10.9˚C, 219mV), 10cm (7.72pH, 10.8˚C, 218mV)
108	BP23MVEXP-ENV-GS-088	23-Oct-2023	17:15	40%	PSA	2 x Ziploc bags	Coarse sand with shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	
109	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:03	70%	CHEM1	2x Ziploc bags 1 x 1L Jar	Coarse sand with shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, EG	
110	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:15	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (7.4pH, 10.8˚C, 201mV) 10cm (7.5pH, 10.0˚C, 216mV)
111	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:28	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Echinoidea)	RH, NW, EG	
112	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:39	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, EG	
113	BP23MVEXP-ENV-GS-090	23-Oct-2023	19:34	40%	MFA	1 x 5L Bucket 1 x Ziploc bags	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta)	RH, NW, EG	
114	BP23MVEXP-ENV-GS-090	23-Oct-2023	19:43	60%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
115	BP23MVEXP-ENV-GS-090	23-Oct-2023	19:52	40%	PSA	2 x Ziploc bags	Coarse sand with shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, EG	Redox: 1cm (7.83pH, 10.8˚C, 178mV) 10cm (7.62pH, 10.8˚C, 201mV)
116	BP23MVEXP-ENV-GS-091	23-Oct-2023	20:48	40%	CHEM1	1 x 1L Jar 2x Ziploc bags	Fine sand with shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	
117	BP23MVEXP-ENV-GS-091	23-Oct-2023	21:00	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, EG	Redox: 1cm (7.49pH, 10.7˚C, 195mV) 10cm (7.46pH, 10.7˚C, 205mV)
118	BP23MVEXP-ENV-GS-091	23-Oct-2023	21:11	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
119	BP23MVEXP-ENV-GS-091	23-Oct-2023	21:20	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	
120	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:13	0%	No Sample				RH, NW, EG	Rock in jaws
121	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:19	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand, gravel and shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta), Echinodermata (Asteroidea), Mollusca (Scaphopoda)	RH, NW, EG	
122	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:27	30%	No Sample				RH, NW, EG	Low retention
123	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:33	40%	MFB	2 x 5L Bucket 1 x Ziploc bag	Coarse sand, gravel and shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
124	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:41	0%	No Sample				RH, NW, EG	Misfire
125	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:46	0%	No Sample				RH, NW, EG	Rock in jaws
126	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:51	40%	PSA	2 x Ziploc bags	Coarse sand, gravel and shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (7.84pH, 10.8˚C, 217mV) 10cm (7.70pH, 10.8˚C, 230mV)
127	BP23MVEXP-ENV-GS-093	24-Oct-2023	23:50	40%	CHEM1	2x Ziploc bags 1 x 1L Jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, EG	
128	BP23MVEXP-ENV-GS-093	24-Oct-2023	00:09	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, EG	Redox: 1cm (7.55pH, 10.9˚C, 197mV) 10cm (7.52pH, 10.7˚C, 189mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
129	BP23MVEXP-ENV-GS-093	24-Oct-2023	00:24:00	70%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoiodea)	JH, CA, EG	
130	BP23MVEXP-ENV-GS-093	24-Oct-2023	00:38	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, EG	
131	BP23MVEXP-ENV-GS-094	24-Oct-2023	01:42	40%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Mollusca (Scaphopoda)	JH, CA, EG	
132	BP23MVEXP-ENV-GS-094	24-Oct-2023	01:58	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta)	JH, CA, EG	
133	BP23MVEXP-ENV-GS-094	24-Oct-2023	02:17	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, EG	Redox: 1cm (7.45pH, 10.7˚C, 213mV) 10cm (7.53pH, 10.2˚C, 156mV)
134	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:04	0%	No Sample				JH, CA, RR	Rock in jaws
135	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:15	40%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Echinodermata (Asteroidea)	JH, CA, RR	
136	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:29	60%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta, Serpulidae), Cnidaria (Hydrozoa)	JH, CA, RR	
137	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:41	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, RR	Redox: 1cm (7.4pH, 10.7˚C, 142mV) 10cm (7.43pH, 10.5˚C, 88mV)
138	BP23MVEXP-ENV-GS-096	24-Oct-2023	04:48	40%	CHEM1	2x Ziploc bags 1 x 1L Jar	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, RR	
139	BP23MVEXP-ENV-GS-096	24-Oct-2023	05:04	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (7.5pH, 11.2˚C, 115mV) 10cm (7.42pH, 10.1˚C, 117mV)
140	BP23MVEXP-ENV-GS-096	24-Oct-2023	05:20	70%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea)	JH, CA, RR	
141	BP23MVEXP-ENV-GS-096	24-Oct-2023	05:35	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	06:35	0%	No Sample		Large shells and cobbles		JH, CA, RR	Rock in jaws
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	06:46	0%	No Sample		Sand and shells		JH, CA, RR	Rock in jaws
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	06:59	0%	No Sample		Sand, and shell fragments		JH, CA, RR	Rock in jaws
145	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:12	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell and shell fragments Munsell: 10YR 4/2	No visible fauna	JH, CA, RR	Moved 10m from target
146	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:30	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Sand with shell and shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, RR	Redox: 1cm (7.18pH, 11.2˚C, 163mV) 10cm (7.15pH, 10.3˚C, 173mV)
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:43	0%	No Sample		Sand and shells		JH, CA, RR	Rock in jaws
148	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:54	80%	MFB	1 x 5L Bucket 1 x Ziploc bag	Sand with shell and shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroiodea)	JH, CA, RR	
149	BP23MVEXP-ENV-GS-097	24-Oct-2023	08:07	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Sand with shell and shell fragments Munsell: 10YR 4/2	No visible fauna	JH, CA, RR	
150	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:05	80%	MFA	1 x 1L Pot 1 x Ziploc bags	Sand with shell and shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (8.51pH, 10.7˚C, -60mV) 10cm (7.64pH, 10.0˚C, -09mV)
151	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:21	50%	MFB	1 x 1L Pot 1 x Ziploc bags	Sand with shell and shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea)	JH, CA, RR	
152	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:33	0%	No Sample		Sand and shells		JH, CA, RR	Rock in jaws
153	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:41	80%	PSA	2 x Ziploc bags	Sand with shell and shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
154	BP23MVEXP-ENV-GS-098	24-Oct-2023	10:34	50%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	JH, CA, RR	Redox: 1cm (7.98pH, 10.1˚C, 6mV) 10cm (7.91pH, 9.7˚C, -39mV)
155	BP23MVEXP-ENV-GS-098	24-Oct-2023	10:48	50%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, RR	
156	BP23MVEXP-ENV-GS-098	24-Oct-2023	11:02	60%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
157	BP23MVEXP-ENV-GS-100	24-Oct-2023	11:55	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 2/2	No visible fauna	RH, NW, RR	Redox: 1cm (7.7pH, 10.5˚C, 55mV) 10cm (7.56pH, 9.8˚C, 16mV)
158	BP23MVEXP-ENV-GS-100	24-Oct-2023	12:06	70%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 2/2	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	RH, NW, RR	
159	BP23MVEXP-ENV-GS-100	24-Oct-2023	12:16	70%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 2/2	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, RR	
160	BP23MVEXP-ENV-GS-100	24-Oct-2023	12:25	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 2/2	No visible fauna	RH, NW, RR	
161	BP23MVEXP-ENV-GS-101	24-Oct-2023	13:37	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, RR	
162	BP23MVEXP-ENV-GS-101	24-Oct-2023	13:48	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, RR	Redox: 1cm (7.6pH, 10.1˚C, -39mV) 10cm (7.7pH, 9.9˚C, 20mV)
163	BP23MVEXP-ENV-GS-101	24-Oct-2023	14:01	60%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, RR	
164	BP23MVEXP-ENV-GS-101	24-Oct-2023	14:09	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, RR	
165	BP23MVEXP-ENV-GS-103	24-Oct-2023	15:09	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell, shell fragments, gravel Munsell: 10YR 3/3	Annelida (Polychaeta)	RH, NW, RR	
166	BP23MVEXP-ENV-GS-103	24-Oct-2023	15:18	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell and shell fragments Munsell: 10YR 3/3	No visible fauna	RH, NW, RR	
167	BP23MVEXP-ENV-GS-103	24-Oct-2023	15:25	50%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/3	No visible fauna	RH, NW, RR	Redox: 1cm (7.2pH, 10.4˚C, -32mV) 10cm (8.26pH, 9.9˚C, 25mV)
168	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:19	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, RR	
169	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:29	0%	No Sample				RH, NW, RR	Rock in jaws
170	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:36	20%	No Sample				RH, NW, RR	Low retention
171	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:43	20%	No Sample				RH, NW, RR	Low retention

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
172	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:51	60%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	RH, NW, RR	Moved 10m from target Redox: 1cm (7.66pH, 10.2˚C, 47mV) 10cm (7.6pH, 9.9˚C, -69mV)
173	BP23MVEXP-ENV-GS-105	24-Oct-2023	17:00	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, RR	
174	BP23MVEXP-ENV-GS-105	24-Oct-2023	17:10	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, RR	
175	BP23MVEXP-ENV-GS-107	24-Oct-2023	18:07	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (7.58pH, 10.2˚C, -37mV) 10cm (7.87pH, 9.8˚C, -66mV)
176	BP23MVEXP-ENV-GS-107	24-Oct-2023	18:16	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
177	BP23MVEXP-ENV-GS-107	24-Oct-2023	18:24	50%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
178	BP23MVEXP-ENV-GS-102	24-Oct-2023	19:48	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuoroidea), Mollusca (Scaphopoda)	RH, NW, EG	
179	BP23MVEXP-ENV-GS-102	24-Oct-2023	19:55	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	RH, NW, EG	
180	BP23MVEXP-ENV-GS-102	24-Oct-2023	20:02	50%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/1	No visible fauna	RH, NW, EG	Redox: 1cm (7.51pH, 10.2˚C, 18mV) 10cm (7.35pH, 9.8˚C, 36mV)
181	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:05	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
182	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:15	40%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Echinodermata (Ophiuroidea)	RH, NW, EG	Redox: 1cm (7.83pH, 10.2˚C, 24mV) 10cm (7.74pH, 10.0˚C, 34mV)
183	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:25	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, EG	
184	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:32	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
185	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:29	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, EG	
186	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:38	0%	No Sample				RH, NW, EG	Misfire
187	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:43	0%	No Sample				RH, NW, EG	Rock in jaws
188	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:51	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta)	RH, NW, EG	
189	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:59	40%	PSA	2 x Ziploc bags	Coarse sand with shell and shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, EG	Redox: 1cm (8.61pH, 10.2˚C, 49mV) 10cm (8.45pH, 10.3˚C, 73mV)
190	BP23MVEXP-ENV-GS-109	31-Oct-2023	19:48	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
191	BP23MVEXP-ENV-GS-109	31-Oct-2023	20:00	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.88pH, 10.4˚C, -74mV) 10cm (6.87pH, 10.2˚C, -8.5mV)
192	BP23MVEXP-ENV-GS-109	31-Oct-2023	20:10	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea),	RH, NW, EG	
193	BP23MVEXP-ENV-GS-109	31-Oct-2023	20:18	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
194	BP23MVEXP-ENV-GS-110	31-Oct-2023	21:17	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
195	BP23MVEXP-ENV-GS-110	31-Oct-2023	21:24	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, EG	
196	BP23MVEXP-ENV-GS-110	31-Oct-2023	21:30	70%	PSA	2 x Ziploc bags	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	Redox: 1cm (6.88pH, 9.6˚C, -20mV) 10cm (6.90pH, 10.1˚C, -18mV)
197	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:22	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
198	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:32	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (6.90pH, 10.1˚C, -36mV) 10cm (6.92pH, 10.1˚C, -38mV)
199	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:41	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
200	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:49	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
201	BP23MVEXP-ENV-GS-111	31-Oct-2023	23:51	0%	No Sample				RH, NW, EG	Hagfish
202	BP23MVEXP-ENV-GS-111	01-Nov-2023	00:02	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (9.95pH, 9.9˚C, -67mV) 10cm (6.98pH, 10.0˚C, -76mV)
203	BP23MVEXP-ENV-GS-111	01-Nov-2023	00:16	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, EG	
204	BP23MVEXP-ENV-GS-111	01-Nov-2023	00:28	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, EG	
205	BP23MVEXP-ENV-GS-112	01-Nov-2023	01:25	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
206	BP23MVEXP-ENV-GS-112	01-Nov-2023	01:43	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)	JH, CA, EG	Redox: 1cm (6.94pH, 9.9˚C, -91mV) 10cm (6.94pH, 10.1˚C, -93mV)
207	BP23MVEXP-ENV-GS-112	01-Nov-2023	01:57	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
208	BP23MVEXP-ENV-GS-112	01-Nov-2023	02:09	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
209	BP23MVEXP-ENV-GS-113	01-Nov-2023	03:07	90%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.91pH, 9.6˚C, -161mV) 10cm (6.87pH, 10.0˚C, -178mV)
210	BP23MVEXP-ENV-GS-113	01-Nov-2023	03:21	90%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
211	BP23MVEXP-ENV-GS-113	01-Nov-2023	03:33	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
212	BP23MVEXP-ENV-GS-114	01-Nov-2023	04:26	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (6.76pH, 9.6˚C, -52mV) 10cm (6.73pH, 10.2˚C, -65mV)
213	BP23MVEXP-ENV-GS-114	01-Nov-2023	04:42	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
214	BP23MVEXP-ENV-GS-114	01-Nov-2023	04:55	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
215	BP23MVEXP-ENV-GS-114	01-Nov-2023	05:07	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 3/2	No visible fauna	JH, CA, EG	
216	BP23MVEXP-ENV-GS-115	01-Nov-2023	06:07	90%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, RR	Redox: 1cm (6.85pH, 10.1˚C, 63mV) 10cm (6.80pH, 10.4˚C, 31mV)
217	BP23MVEXP-ENV-GS-115	01-Nov-2023	06:22	90%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, RR	
218	BP23MVEXP-ENV-GS-115	01-Nov-2023	06:36	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, RR	
219	BP23MVEXP-ENV-GS-116	01-Nov-2023	07:37	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, RR	
220	BP23MVEXP-ENV-GS-116	01-Nov-2023	07:53	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	JH, CA, RR	Redox: 1cm (6.90pH, 10.7˚C, 171mV) 10cm (6.89pH, 10.7˚C, 78mV)
221	BP23MVEXP-ENV-GS-116	01-Nov-2023	08:05	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
222	BP23MVEXP-ENV-GS-116	01-Nov-2023	08:15	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, RR	
223	BP23MVEXP-ENV-GS-117	01-Nov-2023	09:25	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca	JH, CA, RR	
224	BP23MVEXP-ENV-GS-117	01-Nov-2023	09:37	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	JH, CA, RR	
225	BP23MVEXP-ENV-GS-117	01-Nov-2023	09:47	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, RR	Redox: 1cm (6.54pH, 10.9˚C, -48mV) 10cm (6.53pH, 10.9˚C, 153mV)
226	BP23MVEXP-ENV-GS-026	04-Nov-2023	05:17	40%	MFA	1 x Ziploc bags 1 x 1L pot	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
227	BP23MVEXP-ENV-GS-026	04-Nov-2023	05:27	40%	MFB	1 x Ziploc bags 1 x 1L pot	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (6.56pH, 10.5˚C, 150mV) 10cm (6.55pH, 10.7˚C, 179mV)
228	BP23MVEXP-ENV-GS-026	04-Nov-2023	05:38	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, EG	
229	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:20	0%	No Sample				JH, CA, RR	Miss fire
230	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:29	0%	No Sample				JH, CA, RR	Shell in jaws
231	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:39	50%	CHEM1	1 x Ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
232	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:53	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	Bryozoa (Flustridae), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	
233	BP23MVEXP-ENV-GS-027	04-Nov-2023	07:04	60%	MFB	2 x Ziploc bag 1 x 5L bucket	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida, Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (6.53pH, 10.4˚C, 213mV) 10cm (6.53pH, 10.6˚C, 198mV)
234	BP23MVEXP-ENV-GS-027	04-Nov-2023	07:15	50%	CHEM2	1 x Ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
235	BP23MVEXP-ENV-GS-028	04-Nov-2023	08:10	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.53pH, 10.3˚C, 202mV) 10cm (6.53pH, 10.6˚C, 118mV)
236	BP23MVEXP-ENV-GS-028	04-Nov-2023	08:21	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychatea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	
237	BP23MVEXP-ENV-GS-028	04-Nov-2023	08:30	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	JH, CA, RR	
238	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:15	50%	CHEM1	1 x Ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
239	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:31	50%	MFA	1 x Ziploc bag 1 x 1L pot	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, RR	Redox: 1cm (6.43pH, 10.4˚C, 164mV) 10cm (6.45pH, 10.5˚C, 94mV)
240	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:43	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	
241	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:53	30%	No Sample				JH, CA, RR	Low retention
242	BP23MVEXP-ENV-GS-029	04-Nov-2023	10:02	60%	CHEM2	1 x ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
243	BP23MVEXP-ENV-GS-030	04-Nov-2023	10:53	40%	CHEM1	2 x Ziploc bag 1 x 1L jar	Sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
244	BP23MVEXP-ENV-GS-030	04-Nov-2023	11:06	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (6.48pH, 10.6˚C, 158mV) 10cm (6.5pH, 10.5˚C, 48mV)
245	BP23MVEXP-ENV-GS-030	04-Nov-2023	11:18	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta)	JH, CA, RR	
246	BP23MVEXP-ENV-GS-030	04-Nov-2023	11:28	60%	CHEM2	2 x Ziploc bag 1 x 1L jar	Sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
247	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:17	30%	No Sample				RH, NW, RR	Low retention
248	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:28	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 2/3	No visible fauna	RH, NW, RR	
249	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:37	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 2/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
250	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:46	30%	No Sample				RH, NW, RR	Low retention
251	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:54	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 2/3	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)	RH, NW, RR	
252	BP23MVEXP-ENV-GS-031	04-Nov-2023	13:02	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 2/3	No visible fauna	RH, NW, RR	
253	BP23MVEXP-ENV-GS-032	04-Nov-2023	13:46	30%	No Sample				RH, NW, RR	
254	BP23MVEXP-ENV-GS-032	04-Nov-2023	13:51	20%	No Sample				RH, NW, RR	
255	BP23MVEXP-ENV-GS-032	04-Nov-2023	13:56	20%	No Sample				RH, NW, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
256	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:03	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
257	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:12	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Gastropoda,Scaphopoda)	RH, NW, RR	Redox: 1cm (6.72pH, 10.4˚C, 185mV) 10cm (6.71pH, 10.5˚C, 208mV)
258	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:21	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Serpulidae), Mollusca (Gastropoda)	RH, NW, RR	
259	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:29	0%	No Sample				RH, NW, RR	
260	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:34	20%	No Sample				RH, NW, RR	
261	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:39	30%	CHEM2	2 x Ziploc bag 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	No PSA spare collected due to low retention
262	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:19	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
263	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:29	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
264	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:35	30%	No Sample				RH, NW, RR	Low retention
265	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:41	0%	No Sample				RH, NW, RR	Rock in jaws
266	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:45	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	Redox: 1cm (6.83pH, 10.3˚C, 221mV) 10cm (6.82pH, 10.5˚C, 216mV)
267	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:53	20%	No Sample				RH, NW, RR	Low retention
268	BP23MVEXP-ENV-GS-033	04-Nov-2023	16:00	10%	No Sample				RH, NW, RR	Low retention
269	BP23MVEXP-ENV-GS-033	04-Nov-2023	16:05	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
270	BP23MVEXP-ENV-GS-034	04-Nov-2023	16:45	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, RR	
271	BP23MVEXP-ENV-GS-034	04-Nov-2023	16:55	60%	MFA	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polycheata)	RH, NW, RR	Redox: 1cm (6.79pH, 10.0˚C, 231mV) 10cm (6.79pH, 10.2˚C, 238mV)
272	BP23MVEXP-ENV-GS-034	04-Nov-2023	17:02	60%	MFB	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polycheata)	RH, NW, RR	
273	BP23MVEXP-ENV-GS-034	04-Nov-2023	17:12	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, RR	
274	BP23MVEXP-ENV-GS-035	04-Nov-2023	17:59	0%	No Sample				RH, NW, EG	Rock in jaws
275	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:04	0%	No Sample				RH, NW, EG	Rock in jaws
276	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:09	0%	No Sample				RH, NW, EG	Rock in jaws
277	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:16	0%	No Sample				RH, NW, EG	Rock in jaws
278	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:30	0%	No Sample				RH, NW, EG	Rock in jaws
279	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:53	20%	No Sample				RH, NW, EG	Low retention
280	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:31		No Sample				RH, NW, EG	Rock in jaws
281	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:35	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, EG	
282	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:45	40%	MFA	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.93pH, 10.1˚C, 244mV) 10cm (6.95pH, 10.3˚C, 214mV)
283	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:53	40%	MFB	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polychaeta)	RH, NW, EG	
284	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:59	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, EG	
285	BP23MVEXP-ENV-GS-037	04-Nov-2023	20:54	40%	MFA	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/6	Annelida (Polychaeta)	RH, NW, EG	
286	BP23MVEXP-ENV-GS-037	04-Nov-2023	21:00	50%	MFB	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/6	Annelida (Polychaeta)	RH, NW, EG	
287	BP23MVEXP-ENV-GS-037	04-Nov-2023	21:06	50%	PSA	2 x Ziploc bags	Coarse sand with shell fragments Munsell: 10 YR 4/6	No visible fauna	RH, NW, EG	Redox: 1cm (6.90pH, 10.2˚C, 235mV) 10cm (6.90pH, 10.2˚C, 245mV)
288	BP23MVEXP-ENV-GS-038	04-Nov-2023	21:57	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 4/3	No visible fauna	RH, NW, EG	
289	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:06	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	RH, NW, EG	Redox: 1cm (7.12pH, 10˚C, 236mV) 10cm (7.11pH, 10.1˚C, 235mV)
290	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:16	0%	No Sample				RH, NW, EG	Misfire
291	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:20	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
292	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:27	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 4/3	No visible fauna	RH, NW, EG	
293	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:16	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 2/2	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	RH, NW, EG	
294	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:24	20%	No Sample				RH, NW, EG	Low retention
295	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:29	30%	No Sample				RH, NW, EG	Low retention
296	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:35	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 2/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	RH, NW, EG	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
297	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:41	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10 YR 2/2	No visible fauna	RH, NW, EG	Redox: 1cm (6.96pH, 10.1˚C, 140mV) 10cm (6.97pH, 10.1˚C, 82mV)
298	BP23MVEXP-ENV-GS-040	05-Nov-2023	00:33	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	JH, CA, EG	
299	BP23MVEXP-ENV-GS-040	05-Nov-2023	00:50	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (7.01pH, 10.0˚C, 150mV) 10cm (7.01pH, 10.0˚C, 171mV)
300	BP23MVEXP-ENV-GS-040	05-Nov-2023	01:02	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia)	JH, CA, EG	
301	BP23MVEXP-ENV-GS-040	05-Nov-2023	01:12	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	JH, CA, EG	
302	BP23MVEXP-ENV-GS-041	05-Nov-2023	02:07	90%	MFA	1 x 5L Bucket 1 x Ziploc bags	Sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
303	BP23MVEXP-ENV-GS-041	05-Nov-2023	02:17	70%	MFB	1 x 5L Bucket 1 x Ziploc bags	Sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, EG	Redox: 1cm (6.87pH, 10.1˚C, 217mV) 10cm (6.87pH, 10.2˚C, 206mV)
304	BP23MVEXP-ENV-GS-041	05-Nov-2023	02:29	90%	PSA	2 x Ziploc bags	Sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
305	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:20	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
306	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:33	0%	No Sample				JH, CA, EG	Misfire
307	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:42	80%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, EG	Redox: 1cm (6.81pH, 10.1˚C, 94mV) 10cm (6.32pH, 10.1˚C, 20mV)
308	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:54	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
309	BP23MVEXP-ENV-GS-042	05-Nov-2023	05:29	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
310	BP23MVEXP-ENV-GS-043	05-Nov-2023	06:23	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.74pH, 10.1˚C, 229mV) 10cm (6.71pH, 10.2˚C, 93mV)
311	BP23MVEXP-ENV-GS-043	05-Nov-2023	06:37	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, RR	
312	BP23MVEXP-ENV-GS-043	05-Nov-2023	06:49	70%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
313	BP23MVEXP-ENV-GS-044	05-Nov-2023	07:41	0%	No Sample				JH, CA, RR	Misfire
314	BP23MVEXP-ENV-GS-044	05-Nov-2023	07:48	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
315	BP23MVEXP-ENV-GS-044	05-Nov-2023	08:03	90%	MFA	1 x 5L Bucket 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.56pH, 10.2˚C, 118mV) 10cm (6.57pH, 10.2˚C, -29mV)
316	BP23MVEXP-ENV-GS-044	05-Nov-2023	08:17	90%	MFB	1 x 5L Bucket 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
317	BP23MVEXP-ENV-GS-044	05-Nov-2023	08:28	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
318	BP23MVEXP-ENV-GS-045	05-Nov-2023	09:22	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	JH, CA, RR	Redox: 1cm (6.78pH, 10.6˚C, 178mV) 10cm (6.76pH, 10.7˚C, -28mV)
319	BP23MVEXP-ENV-GS-045	05-Nov-2023	09:35	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, RR	
320	BP23MVEXP-ENV-GS-045	05-Nov-2023	09:46	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/2	No visible fauna	JH, CA, RR	
321	BP23MVEXP-ENV-GS-046	05-Nov-2023	10:44	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
322	BP23MVEXP-ENV-GS-046	05-Nov-2023	10:58	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, RR	Redox: 1cm (6.69pH, 10.9˚C, 195mV) 10cm (6.69pH, 11.0˚C, 193mV)
323	BP23MVEXP-ENV-GS-046	05-Nov-2023	11:08	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	JH, CA, RR	
324	BP23MVEXP-ENV-GS-046	05-Nov-2023	11:18	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
325	BP23MVEXP-ENV-GS-048	05-Nov-2023	12:45	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
326	BP23MVEXP-ENV-GS-048	05-Nov-2023	12:54	60%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	RH, NW, RR	Redox: 1cm (6.72pH, 10.6˚C, 230mV) 10cm (6.70pH, 11.0˚C, 187mV)
327	BP23MVEXP-ENV-GS-048	05-Nov-2023	13:02	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, RR	
328	BP23MVEXP-ENV-GS-048	05-Nov-2023	13:10	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
329	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:22	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
330	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:32	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Asteroidea)	RH, NW, RR	Redox: 1cm (6.69pH, 10.9˚C, 192mV) 10cm (6.69pH, 11.0˚C, 36mV)
331	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:40	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	RH, NW, RR	
332	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:47	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
333	BP23MVEXP-ENV-GS-052	05-Nov-2023	15:56	10%	No Sample				RH, NW, RR	Low retention
334	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:02	20%	No Sample				RH, NW, RR	Low retention
335	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:07	20%	No Sample				RH, NW, RR	Low retention, moved 10m west
336	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:13	10%	No Sample				RH, NW, RR	Low retention
337	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:18	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
338	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:27	20%	No Sample				RH, NW, RR	Low retention
339	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:33	10%	No Sample				RH, NW, RR	Low retention, station abandoned
340	BP23MVEXP-ENV-GS-054	05-Nov-2023	17:37	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/2	No visible fauna	RH, NW, RR	
341	BP23MVEXP-ENV-GS-054	05-Nov-2023	17:45	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta)	RH, NW, RR	Redox: 1cm (6.55pH, 10.5˚C, 230mV) 10cm (6.64pH, 10.8˚C, 118mV)
342	BP23MVEXP-ENV-GS-054	05-Nov-2023	17:54	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	RH, NW, RR	
343	BP23MVEXP-ENV-GS-054	05-Nov-2023	18:01	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/2	No visible fauna	RH, NW, RR	
344	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:19	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/4	No visible fauna	RH, NW, EG	
345	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:29	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, EG	Redox: 1cm (6.19pH, 10.5˚C, 83mV) 10cm (6.19pH, 10.0˚C, -90mV)
346	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:38	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
347	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:45	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/4	No visible fauna	RH, NW, EG	
348	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:35	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Mollusca (Gastropoda)	RH, NW, EG	Redox: 1cm (6.16pH, 10.5˚C, 118mV) 10cm (6.16pH, 10.0˚C, -14mV)
349	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:41	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, EG	
350	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:49	0%	No Sample				RH, NW, EG	Misfire
351	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:53	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10 YR 3/4	No visible fauna	RH, NW, EG	
352	BP23MVEXP-ENV-GS-058	05-Nov-2023	21:28	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.99.pH, 10.4˚C, 125mV) 10cm (6.99pH, 10.7˚C, 140mV)
353	BP23MVEXP-ENV-GS-058	05-Nov-2023	21:35	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
354	BP23MVEXP-ENV-GS-058	05-Nov-2023	21:43	90%	PSA	2 x Ziploc bags	Fine sand Munsell: 10 YR 3/1	No visible fauna	RH, NW, EG	
355	BP23MVEXP-ENV-GS-059	05-Nov-2023	22:35	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.94.pH, 10.2˚C, -66mV) 10cm (6.95pH, 10.7˚C, -163mV)
356	BP23MVEXP-ENV-GS-059	05-Nov-2023	22:44	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta), Arthropoda	RH, NW, EG	
357	BP23MVEXP-ENV-GS-059	05-Nov-2023	22:54	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10 YR 3/1	No visible fauna	RH, NW, EG	
358	BP23MVEXP-ENV-GS-059	05-Nov-2023	23:03	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10 YR 3/1	No visible fauna	RH, NW, EG	
359	BP23MVEXP-ENV-GS-060	05-Nov-2023	23:39	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/3	No visible fauna	RH, NW, EG	
360	BP23MVEXP-ENV-GS-060	05-Nov-2023	23:49	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta), Arthropoda (*Nephrops* sp.), Echinodermata (*Echinocardium cordatum*)	RH, NW, EG	Redox: 1cm (6.79.pH, 10.5˚C, -20mV) 10cm (6.83pH, 10.8˚C, -91mV)
361	BP23MVEXP-ENV-GS-060	05-Nov-2023	00:00	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta)	RH, NW, EG	
362	BP23MVEXP-ENV-GS-060	06-Nov-2023	00:09	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/3	No visible fauna	JH, CA, EG	
363	BP23MVEXP-ENV-GS-061	06-Nov-2023	00:59	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
364	BP23MVEXP-ENV-GS-061	06-Nov-2023	01:07	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta)	JH, CA, EG	
365	BP23MVEXP-ENV-GS-061	06-Nov-2023	01:14	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10 YR 3/3	No visible fauna	JH, CA, EG	Redox: 1cm (6.82.pH, 10.6˚C, 22mV) 10cm (6.82pH, 10.1˚C, 88mV)
366	BP23MVEXP-ENV-GS-062	06-Nov-2023	01:55	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
367	BP23MVEXP-ENV-GS-062	06-Nov-2023	02:03	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Paguroidea)	JH, CA, EG	
368	BP23MVEXP-ENV-GS-062	06-Nov-2023	02:11	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (6.82.pH, 10.7˚C, -138mV) 10cm (6.82pH, 10.9˚C, -154mV)
369	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:08	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/2	No visible fauna	JH, CA, EG	
370	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:18	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (6.03.pH, 9.5˚C, 194mV) 10cm (6.04pH, 10.3˚C, 183mV)
371	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:24	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta)	JH, CA, EG	
372	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:32	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/2	No visible fauna	JH, CA, EG	
373	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:18	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	No visible fauna	JH, CA, EG	
374	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:30	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.16.pH, 10.7˚C, 132mV) 10cm (6.18pH, 10.7˚C, 148mV)
375	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:36	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
376	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:44	30%	No Sample				JH, CA, EG	Low retention
377	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:51	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	No visible fauna	JH, CA, EG	
378	BP23MVEXP-ENV-GS-066	06-Nov-2023	05:37	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 3/1	Annelida (Polychaeta)	JH, CA, EG	Redox: 1cm (6.46.pH, 10.7˚C, -144mV) 10cm (6.43pH, 10.7˚C, -180mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
379	BP23MVEXP-ENV-GS-066	06-Nov-2023	05:47	90%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
380	BP23MVEXP-ENV-GS-066	06-Nov-2023	05:56	90%	PSA	2 x Ziploc bags	Fine sand with gravel and shell fragments Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
381	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:43	0%	No Sample				JH, CA, RR	Rock in jaws
382	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:47	0%	No Sample				JH, CA, RR	Rock in jaws
383	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:52	0%	No Sample				JH, CA, RR	Rock in jaws, moved 10m south
384	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:57	0%	No Sample				JH, CA, RR	Rock in jaws
385	BP23MVEXP-ENV-GS-068	06-Nov-2023	08:02	0%	No Sample				JH, CA, RR	Misfire
386	BP23MVEXP-ENV-GS-068	06-Nov-2023	08:04	0%	No Sample				JH, CA, RR	Rock in jaws
387	BP23MVEXP-ENV-GS-068	06-Nov-2023	08:09	0%	No Sample				JH, CA, RR	Rock in jaws, station abandoned
388	BP23MVEXP-ENV-GS-070	06-Nov-2023	08:55	0%	No Sample				JH, CA, RR	Rock in jaws
389	BP23MVEXP-ENV-GS-070	06-Nov-2023	08:59	0%	No Sample				JH, CA, RR	Rock in jaws
390	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:04	0%	No Sample				JH, CA, RR	Rock in jaws, moved 10m east
391	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:12	0%	No Sample				JH, CA, RR	Misfire
392	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:14	0%	No Sample				JH, CA, RR	Misfire
393	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:19	0%	No Sample				JH, CA, RR	Misfire
394	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:21	0%	No Sample				JH, CA, RR	Rock in jaws
395	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:26	0%	No Sample				JH, CA, RR	Rock in jaws
396	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:29	0%	No Sample				JH, CA, RR	Misfire
397	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:31	0%	No Sample				JH, CA, RR	Rock in jaws, station abandoned
398	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:03	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/2	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.66.pH, 10.5˚C, -112mV) 10cm (6.56pH, 10.7˚C, -129mV)
399	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:13	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/2	No visible fauna	JH, CA, RR	
400	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:26	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/2	Annelida (Polychaeta)	JH, CA, RR	
401	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:33	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/2	No visible fauna	JH, CA, RR	
402	BP23MVEXP-ENV-GS-069	06-Nov-2023	11:19	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.83.pH, 10.6˚C, 34mV) 10cm (6.64pH, 10.7˚C, 198mV)
403	BP23MVEXP-ENV-GS-069	06-Nov-2023	11:25	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
404	BP23MVEXP-ENV-GS-069	06-Nov-2023	11:33	60%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
405	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:06	0%	No Sample				RH, NW, RR	Rock in jaws
406	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:09	10%	No Sample				RH, NW, RR	Low retention
407	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:13	10%	No Sample				RH, NW, RR	Low retention, moved 10m south
408	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:18	10%	No Sample				RH, NW, RR	Low retention
409	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:21	10%	No Sample				RH, NW, RR	Low retention
410	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:25	10%	No Sample				RH, NW, RR	Low retention, station abandoned
411	BP23MVEXP-ENV-GS-132	06-Nov-2023	12:59	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta)	RH, NW, RR	Redox: 1cm (6.60.pH, 11.0˚C, 72mV) 10cm (6.60pH, 11.0˚C, 108mV)
412	BP23MVEXP-ENV-GS-132	06-Nov-2023	13:06	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Arthropoda (*Nephrops* sp.), Echinodermata (*Echinocardium cordatum* , Ophiuroidea)	RH, NW, RR	
413	BP23MVEXP-ENV-GS-132	06-Nov-2023	13:11	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	RH, NW, RR	
414	BP23MVEXP-ENV-GS-065	06-Nov-2023	13:55	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
415	BP23MVEXP-ENV-GS-065	06-Nov-2023	14:02	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	RH, NW, RR	
416	BP23MVEXP-ENV-GS-065	06-Nov-2023	14:08	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	Redox: 1cm (6.57.pH, 11.1˚C, -114mV) 10cm (6.57pH, 11.1˚C, -183mV)
417	BP23MVEXP-ENV-GS-131	06-Nov-2023	14:43	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/3	No visible fauna	RH, NW, RR	
418	BP23MVEXP-ENV-GS-131	06-Nov-2023	14:49	70%	MFA	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Mollusca (Gastropoda)	RH, NW, RR	Redox: 1cm (6.40.pH, 11.1˚C, -36mV) 10cm (6.65pH, 11.1˚C, -24mV)
419	BP23MVEXP-ENV-GS-131	06-Nov-2023	15:00	50%	MFB	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Ophiuroidea)	RH, NW, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
420	BP23MVEXP-ENV-GS-131	06-Nov-2023	15:05	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/3	No visible fauna	RH, NW, RR	
421	BP23MVEXP-ENV-GS-130	06-Nov-2023	15:54	80%	MFA	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)	RH, NW, RR	
422	BP23MVEXP-ENV-GS-130	06-Nov-2023	16:00	80%	MFB	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, RR	
423	BP23MVEXP-ENV-GS-130	06-Nov-2023	16:06	80%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/3	No visible fauna	RH, NW, RR	Redox: 1cm (7.21.pH, 11.0˚C, -82mV) 10cm (7.15pH, 11.0˚C, -72mV)
424	BP23MVEXP-ENV-GS-129	06-Nov-2023	16:35	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
425	BP23MVEXP-ENV-GS-129	06-Nov-2023	16:42	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Arthropoda (*Nephrops* sp.)	RH, NW, RR	
426	BP23MVEXP-ENV-GS-129	06-Nov-2023	16:47	70%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	RH, NW, RR	Redox: 1cm (7.15.pH, 10.5˚C, -88mV) 10cm (7.18pH, 11.0˚C, -95mV)
427	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:33	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
428	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:41	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Brachyura)	RH, NW, RR	Redox: 1cm (7.25.pH, 11.5˚C, -70mV) 10cm (7.33pH, 11.5˚C, -79mV)
429	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:48	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta)	RH, NW, RR	
430	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:56	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
431	BP23MVEXP-ENV-GS-127	06-Nov-2023	18:41	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
432	BP23MVEXP-ENV-GS-127	06-Nov-2023	18:48	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta)	RH, NW, EG	
433	BP23MVEXP-ENV-GS-127	06-Nov-2023	18:55	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (7.36.pH, 10.1˚C, -120mV) 10cm (7.43pH, 10.1˚C, -131mV)
434	BP23MVEXP-ENV-GS-126	06-Nov-2023	19:41	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
435	BP23MVEXP-ENV-GS-126	06-Nov-2023	19:50	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
436	BP23MVEXP-ENV-GS-126	06-Nov-2023	20:02	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	Redox: 1cm (7.48.pH, 10.0˚C, -134mV) 10cm (7.68pH, 10.0˚C, -153mV)
437	BP23MVEXP-ENV-GS-126	06-Nov-2023	20:11	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
438	BP23MVEXP-ENV-GS-125	06-Nov-2023	21:01	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
439	BP23MVEXP-ENV-GS-125	06-Nov-2023	21:09	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	RH, NW, EG	
440	BP23MVEXP-ENV-GS-125	06-Nov-2023	21:17	90%	PSA	2 x Ziploc bags	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (7.60.pH, 10.1˚C, -91mV) 10cm (7.62pH, 10.3˚C, -95mV)
441	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:10	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
442	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:22	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, EG	Redox: 1cm (7.26.pH, 10.0˚C, -63mV) 10cm (7.35pH, 10.8˚C, -108mV)
443	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:30	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea)	RH, NW, EG	
444	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:39	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
445	BP23MVEXP-ENV-GS-123	06-Nov-2023	23:36	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea)	RH, NW, EG	
446	BP23MVEXP-ENV-GS-123	06-Nov-2023	23:44	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
447	BP23MVEXP-ENV-GS-123	06-Nov-2023	23:53	90%	PSA	2 x Ziploc bags	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (6.93.pH, 10.0˚C, -18mV) 10cm (6.95pH, 11.0˚C, -59mV)
448	BP23MVEXP-ENV-GS-122	07-Nov-2023	00:43	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
449	BP23MVEXP-ENV-GS-122	07-Nov-2023	00:56	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.94.pH, 11.0˚C, 312mV) 10cm (6.85pH, 11.0˚C, 361mV)
450	BP23MVEXP-ENV-GS-122	07-Nov-2023	01:06	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
451	BP23MVEXP-ENV-GS-122	07-Nov-2023	01:16	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
452	BP23MVEXP-ENV-GS-121	07-Nov-2023	02:06	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
453	BP23MVEXP-ENV-GS-121	07-Nov-2023	02:17	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
454	BP23MVEXP-ENV-GS-121	07-Nov-2023	02:26	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (6.85.pH, 10.0˚C, 312mV) 10cm (6.60pH, 10.0˚C, 161mV)
455	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:18	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/3	No visible fauna	JH, CA, EG	
456	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:29	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.92.pH, 10.1˚C, 313mV) 10cm (6.92pH, 10.1˚C, 310mV)
457	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:42	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
458	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:52	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/3	No visible fauna	JH, CA, EG	
459	BP23MVEXP-ENV-GS-119	07-Nov-2023	04:36	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Arthropoda (Nephrops *sp.*), Echinodermata (Ophiuroidea)	JH, CA, EG	
460	BP23MVEXP-ENV-GS-119	07-Nov-2023	04:46	90%	No Sample				JH, CA, EG	Hagfish

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
461	BP23MVEXP-ENV-GS-119	07-Nov-2023	04:55	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 3/3	No visible fauna	JH, CA, EG	Redox: 1cm (6.87.pH, 10.0˚C, 198mV) 10cm (6.87pH, 10.0˚C, 127mV)
462	BP23MVEXP-ENV-GS-119	07-Nov-2023	05:07	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
463	BP23MVEXP-ENV-GS-118	07-Nov-2023	05:58	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/1	No visible fauna	JH, CA, EG	
464	BP23MVEXP-ENV-GS-118	07-Nov-2023	06:09	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
465	BP23MVEXP-ENV-GS-118	07-Nov-2023	06:17	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
466	BP23MVEXP-ENV-GS-118	07-Nov-2023	06:29	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/1	No visible fauna	JH, CA, RR	
467	BP23MVEXP-ENV-GS-047	07-Nov-2023	08:46	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
468	BP23MVEXP-ENV-GS-047	07-Nov-2023	08:54	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	JH, CA, RR	
469	BP23MVEXP-ENV-GS-047	07-Nov-2023	09:03	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	Redox: 1cm (6.90.pH, 10.0˚C, 71mV) 10cm (6.92pH, 10.1˚C, 52mV)
470	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:13	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/3	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, RR	
471	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:24	30%	No Sample				JH, CA, RR	Low retention
472	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:32	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	JH, CA, RR	
473	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:40	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 5/3	No visible fauna	JH, CA, RR	Redox: 1cm (6.54.pH, 11.0˚C, 138mV) 10cm (6.68pH, 11.0˚C, 175mV)
474	BP23MVEXP-ENV-GS-051	07-Nov-2023	11:42	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	JH, CA, RR	
475	BP23MVEXP-ENV-GS-051	07-Nov-2023	11:51	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta)	JH, CA, RR	
476	BP23MVEXP-ENV-GS-051	07-Nov-2023	12:01	80%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 3/1	No visible fauna	RH, NW, RR	
477	BP23MVEXP-ENV-GS-053	07-Nov-2023	13:24	90%	MFA	2 x 5L Buckets 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	RH, NW, RR	
478	BP23MVEXP-ENV-GS-053	07-Nov-2023	13:30	90%	MFB	2 x 5L Buckets 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, RR	
479	BP23MVEXP-ENV-GS-053	07-Nov-2023	13:36	90%	PSA	2 x Ziploc bags	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/1	No visible fauna	RH, NW, RR	
480	BP23MVEXP-ENV-GS-055	07-Nov-2023	14:52	90%	No Sample				RH, NW, RR	Hagfish
481	BP23MVEXP-ENV-GS-055	07-Nov-2023	15:00	80%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, RR	
482	BP23MVEXP-ENV-GS-055	07-Nov-2023	15:07	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, RR	
483	BP23MVEXP-ENV-GS-055	07-Nov-2023	15:14	90%	PSA	2 x Ziploc bags	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/3	No visible fauna	RH, NW, RR	
484	BP23MVEXP-ENV-GS-012	08-Nov-2023	00:56	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
485	BP23MVEXP-ENV-GS-012	08-Nov-2023	01:03	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, EG	
486	BP23MVEXP-ENV-GS-012	08-Nov-2023	01:10	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/4	No visible fauna	JH, CA, EG	
487	BP23MVEXP-ENV-GS-013	08-Nov-2023	01:59	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
488	BP23MVEXP-ENV-GS-013	08-Nov-2023	02:09	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Mollusca (Scaphopoda)	JH, CA, EG	
489	BP23MVEXP-ENV-GS-013	08-Nov-2023	02:17	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
490	BP23MVEXP-ENV-GS-013	08-Nov-2023	02:24	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
491	BP23MVEXP-ENV-GS-014	08-Nov-2023	03:11	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
492	BP23MVEXP-ENV-GS-014	08-Nov-2023	03:18	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta)	JH, CA, EG	
493	BP23MVEXP-ENV-GS-014	08-Nov-2023	03:24	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/4	No visible fauna	JH, CA, EG	
494	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:10	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
495	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:20	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta)	JH, CA, EG	
496	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:27	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	JH, CA, EG	
497	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:34	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
498	BP23MVEXP-ENV-GS-016	08-Nov-2023	05:19	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, EG	
499	BP23MVEXP-ENV-GS-016	08-Nov-2023	05:25	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, EG	
500	BP23MVEXP-ENV-GS-016	08-Nov-2023	05:32	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
501	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:12	40%	Chem1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
502	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:22	30%	No Sample				JH, CA, RR	Low retention
503	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:28	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia)	JH, CA, RR	
504	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:35	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
505	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:42	30%	No Sample				JH, CA, RR	Low retention
506	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:48	50%	Chem2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, RR	
507	BP23MVEXP-ENV-GS-018	08-Nov-2023	07:31	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Scaphopoda)	JH, CA, RR	
508	BP23MVEXP-ENV-GS-018	08-Nov-2023	07:38	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, RR	
509	BP23MVEXP-ENV-GS-018	08-Nov-2023	07:45	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, RR	
510	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:29	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
511	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:39	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 YR 4/4	Annelida (Polychaeta)	JH, CA, RR	
512	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:46	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, RR	
513	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:53	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 YR 4/4	No visible fauna	JH, CA, RR	
514	BP23MVEXP-ENV-GS-025	08-Nov-2023	18:26	20%	No Sample				RH, NW, EG	Low retention
515	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:29	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
516	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:41	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia, Scaphopoda)	JH, CA, EG	
517	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:49	30%	No Sample				JH, CA, EG	Low retention
518	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:55	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Scaphopoda)	JH, CA, EG	
519	BP23MVEXP-ENV-GS-025	09-Nov-2023	05:03	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
520	BP23MVEXP-ENV-GS-024	09-Nov-2023	05:48	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (*Echinocardium cordatum*)	JH, CA, EG	
521	BP23MVEXP-ENV-GS-024	09-Nov-2023	05:55	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Molluca (Bivalvia, Scaphopoda)	JH, CA, EG	
522	BP23MVEXP-ENV-GS-024	09-Nov-2023	06:03	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/4	No visible fauna	JH, CA, EG	
523	BP23MVEXP-ENV-GS-023	09-Nov-2023	06:45	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/3	No visible fauna	JH, CA, EG	
524	BP23MVEXP-ENV-GS-023	09-Nov-2023	06:55	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia, Gastropoda)	JH, CA, EG	
525	BP23MVEXP-ENV-GS-023	09-Nov-2023	07:02	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/3	Annelida (Polychaeta)	JH, CA, EG	
526	BP23MVEXP-ENV-GS-023	09-Nov-2023	07:09	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/3	No visible fauna	JH, CA, EG	
527	BP23MVEXP-ENV-GS-022	09-Nov-2023	07:56	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Arthropoda (Amphipoda), Molluca (Bivalvia, Gastropoda)	JH, CA, EG	
528	BP23MVEXP-ENV-GS-022	09-Nov-2023	08:04	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
529	BP23MVEXP-ENV-GS-022	09-Nov-2023	08:11	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, EG	
530	BP23MVEXP-ENV-GS-021	09-Nov-2023	08:57	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, EG	
531	BP23MVEXP-ENV-GS-021	09-Nov-2023	09:06	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, EG	
532	BP23MVEXP-ENV-GS-021	09-Nov-2023	09:14	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Molluca (Bivalvia)	JH, CA, EG	
533	BP23MVEXP-ENV-GS-021	09-Nov-2023	09:20	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, EG	
534	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:09	0%	No Sample				JH, CA, EG	Misfire
535	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:12	0%	No Sample				JH, CA, EG	Rock in jaws
536	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:18	10%	No Sample				JH, CA, EG	Low retention, moved 10 SW
537	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:24	10%	No Sample				JH, CA, EG	Low retention
538	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:32	0%	No Sample				JH, CA, EG	Misfire
539	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:37	0%	No Sample				JH, CA, EG	Rock in jaws
540	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:43	0%	No Sample				JH, CA, EG	Rock in jaws
541	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:49	80%	MFA	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 5 Y 5/4	Molluca (Scaphopoda)	JH, CA, EG	
542	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:56	0%	No Sample				JH, CA, EG	Misfire

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54027		Area:	North Sea				Sieve Size:	0.5mm	
Project:	Morven Offshore Wind Limited							Equipment:	Day Grab/Mini-Hamon Grab	
Client:	bp and EnBW							Vessel:	*Ocean Geograph*	
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
543	BP23MVEXP-ENV-GS-020	09-Nov-2023	11:00	10%	No Sample				JH, CA, EG	Low retention, station abandoned

APPENDIX A FIELD SAMPLING LOGS

Water Sampling Positioning Summary

Job No	54027					Vessel	*Ocean Geograph*				
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG				
Project Name	Morven ECR					Deployment Location	Camera Deployment	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1					Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	ED50		Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Jul-2023	23:55	1	BP23MVEXP-ENV-WS-001				69	630087	6294348	630092	6294363	5	15	16	20	VP	5m below sea surface
04-Jul-2023	23:56	2	BP23MVEXP-ENV-WS-001				69	630087	6294348	630092	6294363	5	15	16	19	HS	5m above seafloor
05-Jul-2023	05:12	3	BP23MVEXP-ENV-WS-003				71	635283	6288300	635281	6288299	-2	-1	3	247	HS	5m below sea surface
05-Jul-2023	05:12	4	BP23MVEXP-ENV-WS-003				71	635283	6288300	635281	6288299	-2	-1	2	246	HS	No Sample
05-Jul-2023	05:32	5	BP23MVEXP-ENV-WS-003				70	635286	6288304	635281	6288299	-5	-5	7	221	VP	No Sample
05-Jul-2023	05:46	6	BP23MVEXP-ENV-WS-003				70	635285	6288307	635281	6288299	-4	-8	9	203	VP	5m above seafloor
05-Jul-2023	10:26	7	BP23MVEXP-ENV-WS-005				76	640527	6282266	640532	6282261	5	-5	7	137	VP	5m below sea surface
05-Jul-2023	10:26	8	BP23MVEXP-ENV-WS-005				76	640528	6282266	640532	6282261	4	-5	7	142	VP	5m above seafloor
05-Jul-2023	15:37	9	BP23MVEXP-ENV-WS-007				75	645741	6276167	645743	6276186	2	19	19	5	AC	5m below sea surface
05-Jul-2023	15:37	10	BP23MVEXP-ENV-WS-007				75	645741	6276167	645743	6276186	2	19	19	6	AC	5m above seafloor
05-Jul-2023	20:40	11	BP23MVEXP-ENV-WS-009				74	650935	6270125	650936	6270129	1	4	4	15	AC	5m below sea surface
05-Jul-2023	20:40	12	BP23MVEXP-ENV-WS-009				74	650935	6270125	650936	6270129	1	4	4	13	AC	5m above seafloor
06-Jul-2023	01:45	13	BP23MVEXP-ENV-WS-011				75	656152	6264021	656157	6264039	5	18	19	15	HS	5m below sea surface
06-Jul-2023	01:45	14	BP23MVEXP-ENV-WS-011				75	656151	6264021	656157	6264039	6	18	19	18	HS	5m above seafloor
06-Jul-2023	05:59	15	BP23MVEXP-ENV-WS-013				77	656879	6256134	656877	6256136	-2	2	3	311	HS	5m below sea surface
06-Jul-2023	06:00	16	BP23MVEXP-ENV-WS-013				77	656879	6256134	656877	6256136	-2	2	3	317	HS	No Sample
06-Jul-2023	06:08	17	BP23MVEXP-ENV-WS-013				76	656878	6256135	656877	6256136	-1	1	1	322	HS	No Sample
06-Jul-2023	06:13	18	BP23MVEXP-ENV-WS-013				76	656881	6256135	656877	6256136	-4	1	4	288	VP	5m above seafloor
06-Jul-2023	10:56	19	BP23MVEXP-ENV-WS-015				72	657314	6248197	657314	6248185	0	-12	12	178	AC	5m below sea surface
06-Jul-2023	10:56	20	BP23MVEXP-ENV-WS-015				72	657314	6248197	657314	6248185	0	-12	12	178	AC	5m above seafloor
06-Jul-2023	15:27	21	BP23MVEXP-ENV-WS-017				70	657754	6240160	657756	6240164	2	4	4	26	AC	5m below sea surface
06-Jul-2023	15:27	22	BP23MVEXP-ENV-WS-017				70	657754	6240162	657756	6240164	2	2	3	46	AC	5m above seafloor
06-Jul-2023	19:56	23	BP23MVEXP-ENV-WS-019				61	658161	6232177	658157	6232173	-4	-4	5	221	HS	5m below sea surface
06-Jul-2023	19:56	24	BP23MVEXP-ENV-WS-019				61	658161	6232177	658157	6232173	-4	-4	6	221	HS	5m above seafloor
07-Jul-2023	02:31	25	BP23MVEXP-ENV-WS-021				73	658587	6224169	658588	6224181	1	12	12	6	HS	5m below sea surface
07-Jul-2023	02:32	26	BP23MVEXP-ENV-WS-021				73	658588	6224170	658588	6224181	0	11	11	358	HS	5m above seafloor
07-Jul-2023	15:20	27	BP23MVEXP-ENV-WS-023				82	659008	6216179	659015	6216191	7	12	14	31	AC	5m below sea surface
07-Jul-2023	15:20	28	BP23MVEXP-ENV-WS-023				82	659008	6216181	659015	6216191	7	10	12	34	AC	5m above seafloor
07-Jul-2023	22:48	29	BP23MVEXP-ENV-WS-027				72	659868	6200221	659868	6200219	0	-2	2	180	HS	5m below sea surface
07-Jul-2023	22:49	30	BP23MVEXP-ENV-WS-027				72	659868	6200220	659868	6200219	0	-1	1	167	HS	No Sample
07-Jul-2023	23:05	31	BP23MVEXP-ENV-WS-027				72	659867	6200220	659868	6200219	1	-1	1	127	HS	5m above seafloor
08-Jul-2023	03:52	32	BP23MVEXP-ENV-WS-029				79	660306	6192218	660307	6192230	1	12	12	3	HS	5m below sea surface
08-Jul-2023	03:53	33	BP23MVEXP-ENV-WS-029				79	660306	6192218	660307	6192230	1	12	12	4	HS	5m above seafloor
08-Jul-2023	06:30	34	BP23MVEXP-ENV-WS-030				77	660584	6188234	660581	6188239	-3	5	6	332	VP	5m below sea surface
08-Jul-2023	06:30	35	BP23MVEXP-ENV-WS-030				77	660584	6188234	660581	6188239	-3	5	6	330	VP	5m above seafloor
08-Jul-2023	18:12	36	BP23MVEXP-ENV-WS-031				77	660795	6184234	660798	6184246	3	12	12	14	HS	5m below sea surface
08-Jul-2023	18:12	37	BP23MVEXP-ENV-WS-031				77	660795	6184235	660798	6184246	3	11	12	15	HS	5m above seafloor
08-Jul-2023	20:38	38	BP23MVEXP-ENV-WS-032				72	661019	6180249	661016	6180251	-3	2	4	301	HS	5m below sea surface
08-Jul-2023	20:38	39	BP23MVEXP-ENV-WS-032				72	661020	6180249	661016	6180251	-4	3	4	304	HS	No Sample
08-Jul-2023	20:56	40	BP23MVEXP-ENV-WS-032				72	661019	6180249	661016	6180251	-3	2	4	310	HS	5m above seafloor
08-Jul-2023	23:33	41	BP23MVEXP-ENV-WS-033				67	661237	6176277	661235	6176269	-2	-8	8	197	HS	5m below sea surface
08-Jul-2023	23:34	42	BP23MVEXP-ENV-WS-033				67	661238	6176274	661235	6176269	-3	-5	6	212	HS	5m above seafloor
09-Jul-2023	02:20	43	BP23MVEXP-ENV-WS-034				65	661449	6172274	661451	6172274	2	0	2	79	HS	5m below sea surface
09-Jul-2023	02:20	44	BP23MVEXP-ENV-WS-034				65	661449	6172273	661451	6172274	2	1	2	78	HS	5m above seafloor
09-Jul-2023	06:27	45	BP23MVEXP-ENV-WS-036				69	658815	6165331	658815	6165338	1	7	7	4	VP	5m below sea surface
09-Jul-2023	06:27	46	BP23MVEXP-ENV-WS-036				69	658815	6165331	658815	6165338	0	7	7	4	VP	5m above seafloor
09-Jul-2023	12:15	47	BP23MVEXP-ENV-WS-038				65	653637	6159149	653638	6159136	1	-13	13	178	AC	5m below sea surface
09-Jul-2023	12:16	48	BP23MVEXP-ENV-WS-038				65	653638	6159148	653638	6159136	0	-12	12	178	AC	5m above seafloor
09-Jul-2023	16:40	49	BP23MVEXP-ENV-WS-040				88	648733	6152697	648733	6152697	1	0	1	72	AC	5m below sea surface
09-Jul-2023	16:40	50	BP23MVEXP-ENV-WS-040				88	648733	6152697	648733	6152697	0	0	0	20	AC	5m above seafloor
09-Jul-2023	20:55	51	BP23MVEXP-ENV-WS-042				92	645402	6145636	645395	6145643	-7	7	10	315	HS	5m below sea surface
09-Jul-2023	20:55	52	BP23MVEXP-ENV-WS-042				92	645402	6145637	645395	6145643	-7	6	9	314	HS	5m above seafloor
10-Jul-2023	01:18	53	BP23MVEXP-ENV-WS-044				93	642774	6138064	642775	6138054	1	-10	10	174	HS	5m below sea surface
10-Jul-2023	01:20	54	BP23MVEXP-ENV-WS-044				93	642774	6138064	642775	6138054	1	-10	10	173	HS	5m above seafloor
10-Jul-2023	05:24	55	BP23MVEXP-ENV-WS-046				89	640074	6130530	640073	6130539	-1	9	9	356	HS	5m below sea surface
10-Jul-2023	05:26	56	BP23MVEXP-ENV-WS-046				89	640074	6130530	640073	6130539	-1	9	9	351	HS	5m above seafloor
10-Jul-2023	09:24	57	BP23MVEXP-ENV-WS-048				82	640649	6122938	640642	6122945	-7	7	10	317	VP	5m below sea surface
10-Jul-2023	09:24	58	BP23MVEXP-ENV-WS-048				83	640649	6122938	640642	6122945	-7	7	10	317	VP	5m above seafloor
10-Jul-2023	13:57	59	BP23MVEXP-ENV-WS-050				67	642445	6115181	642446	6115177	1	-4	4	168	AC	5m below sea surface
10-Jul-2023	13:58	60	BP23MVEXP-ENV-WS-050				67	642445	6115180	642446	6115177	1	-3	3	164	AC	5m above seafloor
10-Jul-2023	18:07	61	BP23MVEXP-ENV-WS-052				66	638948	6108150	638949	6108153	1	3	4	20	HS	5m below sea surface
10-Jul-2023	18:08	62	BP23MVEXP-ENV-WS-052				66	638948	6108150	638949	6108153	1	3	3	17	HS	5m above seafloor
10-Jul-2023	23:36	63	BP23MVEXP-ENV-WS-054				72	635347	6100984	635346	6100990	-1	6	7	355	HS	5m below sea surface
10-Jul-2023	23:36	64	BP23MVEXP-ENV-WS-054				72	635346	6100985	635346	6100990	0	5	5	1	HS	5m above seafloor
11-Jul-2023	04:13	65	BP23MVEXP-ENV-WS-056				77	631743	6093829	631745	6093826	2	-3	4	150	HS	5m below sea surface
11-Jul-2023	04:14	66	BP23MVEXP-ENV-WS-056				77	631744	6093829	631745	6093826	1	-3	3	165	HS	5m above seafloor
11-Jul-2023	08:04	67	BP23MVEXP-ENV-WS-060				76	625893	6088483	625885	6088496	-8	13	15	328	VP	5m below sea surface
11-Jul-2023	08:04	68	BP23MVEXP-ENV-WS-060				76	625893	6088483	625885	6088496	-8	13	15	327	VP	5m above seafloor
11-Jul-2023	19:28	69	BP23MVEXP-ENV-WS-025				76	659446	6208075	659446	6208080	0	5	5	3	HS	5m below sea surface
11-Jul-2023	19:28	70	BP23MVEXP-ENV-WS-025				76	659446	6208075	659446	6208080	0	5	5	358	HS	5m above seafloor
12-Jul-2023	20:52	71	BP23MVEXP-ENV-WS-071				71	617142	6281086	617141	6281096	-1	10	10	355	HS	5m below sea surface
12-Jul-2023	20:52	72	BP23MVEXP-ENV-WS-071				71	617142	6281086	617141	6281096	-1	10	10	353	HS	5m above seafloor
13-Jul-2023	03:52	73	BP23MVEXP-ENV-WS-073				72	618230	6273147	618229	6273143	-1	-4	4	197	HS	5m below sea surface
13-Jul-2023	03:53	74	BP23MVEXP-ENV-WS-073				72	618230	6273147	618229	6273143	-1	-4	4	199	HS	5m above seafloor
13-Jul-2023	10:03	75	BP23MVEXP-ENV-WS-075				68	619311	6265229	619313	6265236	2	7	7	19	VP	5m below sea surface
13-Jul-2023	10:04	76	BP23MVEXP-ENV-WS-075				68	619310	6265229	619313	6265236	3	7	7	22	VP	5m above seafloor
13-Jul-2023	16:05	77	BP23MVEXP-ENV-WS-077				62	620314	6257252	620314	6257253	0	1	1	7	AC	5m below sea surface
13-Jul-2023	16:06	78	BP23MVEXP-ENV-WS-077				62	620314	6257251	620314	6257253	0	2	2	8	AC	5m above seafloor
13-Jul-2023	22:13	79	BP23MVEXP-ENV-WS-079				65	621427	6249272	621428	6249280	1	8	8	5	HS	5m below sea surface
13-Jul-2023	22:13	80	BP23MVEXP-ENV-WS-079				65	621428	6249272	621428	6249280	0	8	8	360	HS	5m above seafloor
14-Jul-2023	04:44	81	BP23MVEXP-ENV-WS-081				68	622509	6241451	622506	6241445	-3	-6	7	207	HS	5m below sea surface
14-Jul-2023	04:45	82	BP23MVEXP-ENV-WS-081				68	622509	6241451	622506	6241445	-3	-6	6	209	HS	5m above seafloor
14-Jul-2023	10:03	83	BP23MVEXP-ENV-WS-083				69	623636	6233496	623635	6233497	-1	1	1	305	VP	5m below sea surface
14-Jul-2023	10:03	84	BP23MVEXP-ENV-WS-083				69	623636	6233496	623635	6233497	-1	1	1	305	VP	5m above seafloor
14-Jul-2023	13:49	85	BP23MVEXP-ENV-WS-085				71	624678	6225570	624677	6225569	-1	-1	2	220	AC	5m below sea surface
14-Jul-2023	13:49	86	BP23MVEXP-ENV-WS-085				71	624678	6225570	624677	6225569	-1	-1	1	226	AC	5m above seafloor
30-Jul-2023	20:11	87	BP23MVEXP-ENV-WS-087				66	625785	6217724	625786	6217725	1	1	1	60	AC	5m below sea surface
30-Jul-2023	20:12	88	BP23MVEXP-ENV-WS-087				66	625785	6217724	625786	6217725	1	1	1	41	AC	5m above seafloor
31-Jul-2023	00:58	89	BP23MVEXP-ENV-WS-089				66	626843	6209716	626842	6209725	-1	9	9	355	HS	5m below sea surface
31-Jul-2023	00:59	90	BP23MVEXP-ENV-WS-089				66	626843	6209716	626842	6209725	-1	9	9	351	HS	5m above seafloor
31-Jul-2023	05:27	91	BP23MVEXP-ENV-WS-091				68	627933	6201740	627934	6201734	1	-6	6	167	SP	5m below sea surface
31-Jul-2023	05:28	92	BP23MVEXP-ENV-WS-091				68	627933	6201739	627934	6201734	1	-5	5	166	SP	No Sample
31-Jul-2023	05:34	93	BP23MVEXP-ENV-WS-091				68	627931	6201741	627934	6201734	3	-7	7	159	SP	No Sample
31-Jul-2023	05:41	94	BP23MVEXP-ENV-WS-091				68	627930	6201741	627934	6201734	4	-7	8	154	SP	5m above seafloor
31-Jul-2023	10:23	95	BP23MVEXP-ENV-WS-093				68	629052	6193876	629054	6193880	2	4	4	20	SP	5m below sea surface
31-Jul-2023	10:24	96	BP23MVEXP-ENV-WS-093				68	629053	6193876	629054	6193880	1	4	4	13	SP	No Sample
31-Jul-2023	10:33	97	BP23MVEXP-ENV-WS-093				68	629052	6193874	629054	6193880	2	6	6	19	SP	5m above seafloor
31-Jul-2023	16:12	98	BP23MVEXP-ENV-WS-097				72	631465	6186303	631463	6186300	-2	-3	4	216	AC	5m below sea surface
31-Jul-2023	16:13	99	BP23MVEXP-ENV-WS-097				72	631465	6186303	631463	6186300	-2	-3	4	211	AC	5m above seafloor
31-Jul-2023	18:39	100	BP23MVEXP-ENV-WS-096				81	628432	6186280	628432	6186279	0	-1	1	159	HS	5m below sea surface
31-Jul-2023	18:39	101	BP23MVEXP-ENV-WS-096				81	628432	6186279	628432	6186279	0	0	1	136	HS	5m above seafloor
01-Aug-2023	01:14	102	BP23MVEXP-ENV-WS-101				91	634215	6178823	634211	6178844	-4	21	21	350	HS	5m below sea surface
01-Aug-2023	01:15	103	BP23MVEXP-ENV-WS-101				91	634215	6178823	634211	6178844	-4	21	21	350	HS	5m above seafloor
01-Aug-2023	03:50	104	BP23MVEXP-ENV-WS-100				94	628068	6178333	628064	6178337	-4	4	6	319	HS	5m below sea surface
01-Aug-2023	03:50	105	BP23MVEXP-ENV-WS-100				94	628067	6178333	628064	6178337	-3	4	5	319	HS	5m above seafloor
01-Aug-2023	10:51	106	BP23MVEXP-ENV-WS-105				86	635666	6171914	635667	6171916	1	2	2	20	SP	5m below sea surface
01-Aug-2023	10:51	107	BP23MVEXP-ENV-WS-105				86	635667	6171914	635667	6171916	0	2	2	357	SP	5m above seafloor
01-Aug-2023	15:32	108	BP23MVEXP-ENV-WS-104				85	627693	6170295	627686	6170307	-7	12	14	331	AC	5m below sea surface
01-Aug-2023	15:32	109	BP23MVEXP-ENV-WS-104				85	627692	6170296	627686	6170307	-6	11	13	331	AC	5m above seafloor
01-Aug-2023	20:00	110	BP23MVEXP-ENV-WS-109				93	631203	6165308	631206	6165285	3	-23	23	172	HS	5m below sea surface
01-Aug-2023	20:00	111	BP23MVEXP-ENV-WS-109				93	631203	6165307	631206	6165285	3	-22	22	172	HS	5m above seafloor
02-Aug-2023	00:19	112	BP23MVEXP-ENV-WS-108				90	627183	6162314	627184	6162321	1	7	7	7	HS	5m below sea surface
02-Aug-2023	00:19	113	BP23MVEXP-ENV-WS-108				90	627183	6162314	627184	6162321	1	7	7	10	HS	5m above seafloor
02-Aug-2023	04:58	114	BP23MVEXP-ENV-WS-112				105	626291	6154434	626284	6154439	-7	5	9	305	SP	5m below sea surface

APPENDIX A FIELD SAMPLING LOGS

Water Sampling Positioning Summary

Job No	54027					Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR					Deployment Location	Camera Deployment	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1					Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	ED50		Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	04:59	115	BP23MVEXP-ENV-WS-112				105	626291	6154434	626284	6154439	-7	5	8	305	SP	5m above seafloor
02-Aug-2023	09:56	116	BP23MVEXP-ENV-WS-114				94	624973	6146683	624983	6146663	10	-20	23	153	SP	5m below sea surface
02-Aug-2023	09:57	117	BP23MVEXP-ENV-WS-114				94	624972	6146683	624983	6146663	11	-20	23	151	SP	5m above seafloor
05-Aug-2023	07:33	118	BP23MVEXP-ENV-WS-068				35	613814	6078045	613813	6078042	-1	-3	3	194	SP	5m below sea surface
05-Aug-2023	07:33	119	BP23MVEXP-ENV-WS-068				35	613813	6078045	613813	6078042	0	-3	3	188	SP	5m above seafloor
07-Aug-2023	09:29	120	BP23MVEXP-ENV-WS-059				78	624891	6090062	624889	6090061	-2	-1	2	234	SP	5m below sea surface
07-Aug-2023	09:29	121	BP23MVEXP-ENV-WS-059				78	624891	6090062	624889	6090061	-2	-1	2	232	SP	5m above seafloor
07-Aug-2023	10:44	122	BP23MVEXP-ENV-WS-063				51	617599	6086814	617596	6086808	-3	-6	6	203	SP	5m below sea surface
07-Aug-2023	10:45	123	BP23MVEXP-ENV-WS-063				51	617599	6086814	617596	6086808	-3	-6	6	204	SP	5m above seafloor
07-Aug-2023	11:37	124	BP23MVEXP-ENV-WS-064				51	619737	6083435	619737	6083425	0	-10	10	183	AC	5m below sea surface
07-Aug-2023	11:37	125	BP23MVEXP-ENV-WS-064				50	619738	6083434	619737	6083425	-1	-9	9	183	AC	5m above seafloor
07-Aug-2023	13:17	126	BP23MVEXP-ENV-WS-067				26	611446	6082611	611447	6082612	1	1	2	41	AC	5m below sea surface
07-Aug-2023	13:18	127	BP23MVEXP-ENV-WS-067				26	611446	6082610	611447	6082612	1	2	2	29	AC	5m above seafloor
07-Aug-2023	14:23	128	BP23MVEXP-ENV-WS-133				24	611083	6078424	611083	6078422	0	-2	2	169	AC	5m below sea surface
07-Aug-2023	14:23	129	BP23MVEXP-ENV-WS-133				24	611083	6078423	611083	6078422	0	-1	1	190	AC	5m above seafloor
07-Aug-2023	15:46	130	BP23MVEXP-ENV-WS-131				47	615578	6085213	615581	6085218	3	5	6	26	AC	5m below sea surface
07-Aug-2023	15:47	131	BP23MVEXP-ENV-WS-131				47	615578	6085213	615581	6085218	3	5	6	29	AC	5m above seafloor
07-Aug-2023	17:08	132	BP23MVEXP-ENV-WS-128				59	618836	6092320	618835	6092326	-1	6	7	348	AC	5m below sea surface
07-Aug-2023	17:09	133	BP23MVEXP-ENV-WS-128				59	618838	6092320	618835	6092326	-3	6	7	333	AC	5m above seafloor
07-Aug-2023	18:39	134	BP23MVEXP-ENV-WS-126				84	621034	6100004	621032	6100018	-2	14	14	351	AC	5m below sea surface
07-Aug-2023	18:40	135	BP23MVEXP-ENV-WS-126				84	621037	6100003	621032	6100018	-5	15	16	341	AC	5m above seafloor
07-Aug-2023	20:27	136	BP23MVEXP-ENV-WS-124				93	623094	6107631	623089	6107641	-5	10	12	332	AC	5m below sea surface
07-Aug-2023	20:28	137	BP23MVEXP-ENV-WS-124				93	623094	6107631	623089	6107641	-5	10	11	332	AC	5m above seafloor
07-Aug-2023	22:02	138	BP23MVEXP-ENV-WS-122				101	624663	6115469	624665	6115470	2	1	2	57	AC	5m below sea surface
07-Aug-2023	22:04	139	BP23MVEXP-ENV-WS-122				101	624664	6115469	624665	6115470	1	1	1	44	AC	No Sample
07-Aug-2023	22:10	140	BP23MVEXP-ENV-WS-122				101	624664	6115470	624665	6115470	1	0	2	83	AC	No Sample
07-Aug-2023	22:11	141	BP23MVEXP-ENV-WS-122				101	624663	6115469	624665	6115470	2	1	2	63	AC	5m above seafloor
07-Aug-2023	23:40	142	BP23MVEXP-ENV-WS-120				96	622353	6123154	622353	6123151	0	-3	3	183	SP	5m below sea surface
07-Aug-2023	23:41	143	BP23MVEXP-ENV-WS-120				96	622354	6123154	622353	6123151	-1	-3	3	192	SP	5m above seafloor
08-Aug-2023	01:03	144	BP23MVEXP-ENV-WS-118				92	622269	6130927	622273	6130918	4	-9	9	157	SP	5m below sea surface
08-Aug-2023	01:04	145	BP23MVEXP-ENV-WS-118				92	622270	6130926	622273	6130918	3	-8	9	158	SP	5m above seafloor
08-Aug-2023	02:39	146	BP23MVEXP-ENV-WS-116				88	623598	6138808	623603	6138802	5	-6	7	141	SP	5m below sea surface
08-Aug-2023	02:40	147	BP23MVEXP-ENV-WS-116				88	623598	6138807	623603	6138802	5	-5	7	135	SP	5m above seafloor

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck) **FOR-ENV-0540**

Job No:	54027	Area:	North Sea	Volume:	2 litres
Project:	Morven ECR			Equipment:	Niskin Bottles
Client:	Morven Offshore Wind Limited			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Load	Overall Station Depth (m)	Sample Depth (m)	Sample Analysis	Operator(s)	Comments
1	BP23MVEXP-ENV-WS-001	04-Jul-2023	23:55	5L Niskin	69	5	2 litres filtered, 5m below sea surface	MB, CD, MD	PSI-01-02380
2	BP23MVEXP-ENV-WS-001	04-Jul-2023	23:56	5L Niskin	69	64	2 litres filtered, 5m above seabed	MB, CD, MD	PSI-01-02418
3	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:12	5L Niskin	71	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02430
4	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:12	5L Niskin	71	66	No sample	CD, MD	Misfire
5	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:32	5L Niskin	71	66	No sample	CD, MD	Misfire
6	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:46	5L Niskin	71	66	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02404
7	BP23MVEXP-ENV-WS-005	05-Jul-2023	10:26	5L Niskin	76	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02429
8	BP23MVEXP-ENV-WS-005	05-Jul-2023	10:26	5L Niskin	76	71	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02346
9	BP23MVEXP-ENV-WS-007	05-Jul-2023	15:37	5L Niskin	75	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02427
10	BP23MVEXP-ENV-WS-007	05-Jul-2023	15:37	5L Niskin	75	70	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02417
11	BP23MVEXP-ENV-WS-009	05-Jul-2023	20:40	5L Niskin	75	5	2 litres filtered, 5m below sea surface	MB, AA, JO	PSI-01-02428
12	BP23MVEXP-ENV-WS-009	05-Jul-2023	20:40	5L Niskin	75	70	2 litres filtered, 5m above seabed	MB, AA, JO	PSI-01-02410
13	BP23MVEXP-ENV-WS-011	05-Jul-2023	01:45	5L Niskin	75	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02471
14	BP23MVEXP-ENV-WS-011	05-Jul-2023	01:45	5L Niskin	75	70	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02426
15	BP23MVEXP-ENV-WS-013	06-Jul-2023	05:59	5L Niskin	77	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02423
16	BP23MVEXP-ENV-WS-013	06-Jul-2023	06:00	5L Niskin	77	72	No sample	CD, MD, DP	Misfire
17	BP23MVEXP-ENV-WS-013	06-Jul-2023	06:08	5L Niskin	77	72	No sample	CD, MD, DP	Misfire
18	BP23MVEXP-ENV-WS-013	06-Jul-2023	06:13	5L Niskin	77	72	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02461
19	BP23MVEXP-ENV-WS-015	06-Jul-2023	10:56	5L Niskin	72	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02486
20	BP23MVEXP-ENV-WS-015	06-Jul-2023	10:56	5L Niskin	72	67	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02488
21	BP23MVEXP-ENV-WS-017	06-Jul-2023	15:27	5L Niskin	70	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02480
22	BP23MVEXP-ENV-WS-017	06-Jul-2023	15:27	5L Niskin	70	65	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02447
23	BP23MVEXP-ENV-WS-019	06-Jul-2023	19:56	5L Niskin	61	5	2 litres filtered, 5m below sea surface	MB, AA, JO	PSI-01-02198
24	BP23MVEXP-ENV-WS-019	06-Jul-2023	19:56	5L Niskin	61	66	2 litres filtered, 5m above seabed	MB, AA, JO	PSI-01-02495
25	BP23MVEXP-ENV-WS-021	07-Jul-2023	02:31	5L Niskin	73	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02472
26	BP23MVEXP-ENV-WS-021	07-Jul-2023	02:32	5L Niskin	73	68	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02497
27	BP23MVEXP-ENV-WS-023	07-Jul-2023	15:20	5L Niskin	82	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02476
28	BP23MVEXP-ENV-WS-023	07-Jul-2023	15:20	5L Niskin	82	77	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02485
29	BP23MVEXP-ENV-WS-027	07-Jul-2023	22:48	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02493
30	BP23MVEXP-ENV-WS-027	07-Jul-2023	22:49	5L Niskin	72	67	No sample	AA, JO	Misfire
31	BP23MVEXP-ENV-WS-027	07-Jul-2023	23:05	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02467
32	BP23MVEXP-ENV-WS-029	08-Jul-2023	03:52	5L Niskin	79	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02412
33	BP23MVEXP-ENV-WS-029	08-Jul-2023	03:53	5L Niskin	79	74	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02228
34	BP23MVEXP-ENV-WS-030	08-Jul-2023	06:30	5L Niskin	77	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02437
35	BP23MVEXP-ENV-WS-030	08-Jul-2023	06:30	5L Niskin	77	72	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02375
36	BP23MVEXP-ENV-WS-031	08-Jul-2023	18:12	5L Niskin	77	5	2 litres filtered, 5m below sea surface	MB, AA, JO	PSI-01-02473
37	BP23MVEXP-ENV-WS-031	08-Jul-2023	18:12	5L Niskin	77	72	2 litres filtered, 5m above seabed	MB, AA, JO	PSI-01-02475
38	BP23MVEXP-ENV-WS-032	08-Jul-2023	20:38	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02491
39	BP23MVEXP-ENV-WS-032	08-Jul-2023	20:38	5L Niskin	72	67	No sample	AA, JO	Misfire
40	BP23MVEXP-ENV-WS-032	08-Jul-2023	20:56	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02327
41	BP23MVEXP-ENV-WS-033	08-Jul-2023	23:33	5L Niskin	67	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02432
42	BP23MVEXP-ENV-WS-033	08-Jul-2023	23:34	5L Niskin	67	62	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02413
43	BP23MVEXP-ENV-WS-034	09-Jul-2023	02:20	5L Niskin	65	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02434
44	BP23MVEXP-ENV-WS-034	09-Jul-2023	02:20	5L Niskin	65	60	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02462
45	BP23MVEXP-ENV-WS-036	09-Jul-2023	06:27	5L Niskin	69	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02483
46	BP23MVEXP-ENV-WS-036	09-Jul-2023	06:27	5L Niskin	69	64	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02494
47	BP23MVEXP-ENV-WS-038	09-Jul-2023	12:15	5L Niskin	65	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02489
48	BP23MVEXP-ENV-WS-038	09-Jul-2023	12:15	5L Niskin	65	60	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02438
49	BP23MVEXP-ENV-WS-040	09-Jul-2023	16:40	5L Niskin	88	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02490
50	BP23MVEXP-ENV-WS-040	09-Jul-2023	16:40	5L Niskin	88	83	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02325
51	BP23MVEXP-ENV-WS-042	09-Jul-2023	20:55	5L Niskin	92	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02330
52	BP23MVEXP-ENV-WS-042	09-Jul-2023	20:55	5L Niskin	92	87	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02376
53	BP23MVEXP-ENV-WS-044	10-Jul-2023	01:18	5L Niskin	93	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02383
54	BP23MVEXP-ENV-WS-044	10-Jul-2023	01:20	5L Niskin	93	88	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02308
55	BP23MVEXP-ENV-WS-046	10-Jul-2023	05:24	5L Niskin	67	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02324
56	BP23MVEXP-ENV-WS-046	10-Jul-2023	05:26	5L Niskin	67	62	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02229
57	BP23MVEXP-ENV-WS-048	10-Jul-2023	09:24	5L Niskin	82	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02374
58	BP23MVEXP-ENV-WS-048	10-Jul-2023	09:24	5L Niskin	83	78	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02323
59	BP23MVEXP-ENV-WS-050	10-Jul-2023	13:57	5L Niskin	67	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02465
60	BP23MVEXP-ENV-WS-050	10-Jul-2023	13:58	5L Niskin	67	52	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02326
61	BP23MVEXP-ENV-WS-052	10-Jul-2023	18:07	5L Niskin	66	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02347
62	BP23MVEXP-ENV-WS-052	10-Jul-2023	18:08	5L Niskin	66	61	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02321
63	BP23MVEXP-ENV-WS-054	10-Jul-2023	23:36	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02378
64	BP23MVEXP-ENV-WS-054	10-Jul-2023	23:36	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02377
65	BP23MVEXP-ENV-WS-056	11-Jul-2023	04:13	5L Niskin	77	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02496
66	BP23MVEXP-ENV-WS-056	11-Jul-2023	04:14	5L Niskin	77	72	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02492
67	BP23MVEXP-ENV-WS-060	11-Jul-2023	08:04	5L Niskin	76	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02435
68	BP23MVEXP-ENV-WS-060	11-Jul-2023	08:04	5L Niskin	76	71	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02487
69	BP23MVEXP-ENV-WS-025	11-Jul-2023	19:28	5L Niskin	76	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02373
70	BP23MVEXP-ENV-WS-025	11-Jul-2023	19:28	5L Niskin	76	71	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02394
71	BP23MVEXP-ENV-WS-071	12-Jul-2023	20:52	5L Niskin	71	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02396
72	BP23MVEXP-ENV-WS-071	12-Jul-2023	20:52	5L Niskin	71	66	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02415
73	BP23MVEXP-ENV-WS-073	13-Jul-2023	03:52	5L Niskin	72	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02381
74	BP23MVEXP-ENV-WS-073	13-Jul-2023	03:52	5L Niskin	72	67	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02392
75	BP23MVEXP-ENV-WS-075	13-Jul-2023	10:03	5L Niskin	68	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02436
76	BP23MVEXP-ENV-WS-075	13-Jul-2023	10:04	5L Niskin	68	63	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02456
77	BP23MVEXP-ENV-WS-077	13-Jul-2023	16:05	5L Niskin	62	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02468
78	BP23MVEXP-ENV-WS-077	13-Jul-2023	16:05	5L Niskin	62	57	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02384
79	BP23MVEXP-ENV-WS-079	13-Jul-2023	22:13	5L Niskin	65	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02463
80	BP23MVEXP-ENV-WS-079	13-Jul-2023	22:13	5L Niskin	65	60	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02446
81	BP23MVEXP-ENV-WS-081	14-Jul-2023	04:44	5L Niskin	68	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02450
82	BP23MVEXP-ENV-WS-081	14-Jul-2023	04:45	5L Niskin	68	63	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02393
83	BP23MVEXP-ENV-WS-083	14-Jul-2023	10:03	5L Niskin	69	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02474
84	BP23MVEXP-ENV-WS-083	14-Jul-2023	10:03	5L Niskin	69	64	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02479
85	BP23MVEXP-ENV-WS-085	14-Jul-2023	13:49	5L Niskin	71	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02482
86	BP23MVEXP-ENV-WS-085	14-Jul-2023	13:49	5L Niskin	71	66	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02341
87	BP23MVEXP-ENV-WS-087	30-Jul-2023	20:12	5L Niskin	66	61	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02276
88	BP23MVEXP-ENV-WS-087	30-Jul-2023	20:11	5L Niskin	66	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02319
89	BP23MVEXP-ENV-WS-089	31-Jul-2023	00:59	5L Niskin	66	61	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02320
90	BP23MVEXP-ENV-WS-089	31-Jul-2023	00:58	5L Niskin	66	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02303
91	BP23MVEXP-ENV-WS-091	31-Jul-2023	05:41	5L Niskin	68	63	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02213
92	BP23MVEXP-ENV-WS-091	31-Jul-2023	05:27	5L Niskin	68	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02187
93	BP23MVEXP-ENV-WS-091	31-Jul-2023	10:33	5L Niskin	68	63	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02222
94	BP23MVEXP-ENV-WS-091	31-Jul-2023	10:23	5L Niskin	68	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02209
95	BP23MVEXP-ENV-WS-093	31-Jul-2023	16:13	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02302
96	BP23MVEXP-ENV-WS-093	31-Jul-2023	16:12	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02300
97	BP23MVEXP-ENV-WS-093	31-Jul-2023	18:39	5L Niskin	81	76	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02298
98	BP23MVEXP-ENV-WS-097	31-Jul-2023	18:39	5L Niskin	81	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02305
99	BP23MVEXP-ENV-WS-097	01-Aug-2023	01:14	5L Niskin	91	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02304
100	BP23MVEXP-ENV-WS-096	01-Aug-2023	01:15	5L Niskin	91	86	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02207
101	BP23MVEXP-ENV-WS-096	01-Aug-2023	03:50	5L Niskin	94	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02297
102	BP23MVEXP-ENV-WS-101	01-Aug-2023	03:50	5L Niskin	94	89	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02240
103	BP23MVEXP-ENV-WS-101	01-Aug-2023	10:51	5L Niskin	86	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02210
104	BP23MVEXP-ENV-WS-100	01-Aug-2023	10:51	5L Niskin	86	81	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02227
105	BP23MVEXP-ENV-WS-100	01-Aug-2023	15:32	5L Niskin	85	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02274
106	BP23MVEXP-ENV-WS-105	01-Aug-2023	15:32	5L Niskin	85	80	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02295
107	BP23MVEXP-ENV-WS-105	01-Aug-2023	20:00	5L Niskin	93	88	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02285

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck) **FOR-ENV-0540**

Job No:	54027	Area:	North Sea	Volume:	2 litres
Project:	Morven ECR			Equipment:	Niskin Bottles
Client:	Morven Offshore Wind Limited			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Load	Overall Station Depth (m)	Sample Depth (m)	Sample Analysis	Operator(s)	Comments
108	BP23MVEXP-ENV-WS-104	01-Aug-2023	20:00	5L Niskin	93	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02282
109	BP23MVEXP-ENV-WS-104	02-Aug-2023	00:19	5L Niskin	90	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02235
110	BP23MVEXP-ENV-WS-109	02-Aug-2023	00:19	5L Niskin	90	85	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02214
111	BP23MVEXP-ENV-WS-109	02-Aug-2023	04:58	5L Niskin	105	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02221
112	BP23MVEXP-ENV-WS-108	02-Aug-2023	04:59	5L Niskin	105	100	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02234
113	BP23MVEXP-ENV-WS-108	02-Aug-2023	09:57	5L Niskin	94	89	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02238
114	BP23MVEXP-ENV-WS-112	02-Aug-2023	09:56	5L Niskin	94	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02247
115	BP23MVEXP-ENV-WS-112	05-Aug-2023	07:33	5L Niskin	35	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02469
116	BP23MVEXP-ENV-WS-114	05-Aug-2023	07:33	5L Niskin	35	30	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02464
117	BP23MVEXP-ENV-WS-114	07-Aug-2023	09:29	5L Niskin	78	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02477
118	BP23MVEXP-ENV-WS-068	07-Aug-2023	09:29	5L Niskin	78	73	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02481
119	BP23MVEXP-ENV-WS-068	07-Aug-2023	10:44	5L Niskin	51	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02470
120	BP23MVEXP-ENV-WS-059	07-Aug-2023	10:45	5L Niskin	51	46	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02382
121	BP23MVEXP-ENV-WS-059	07-Aug-2023	11:37	5L Niskin	51	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02478
122	BP23MVEXP-ENV-WS-063	07-Aug-2023	11:37	5L Niskin	51	46	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02440
123	BP23MVEXP-ENV-WS-063	07-Aug-2023	13:17	5L Niskin	26	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02217
124	BP23MVEXP-ENV-WS-064	07-Aug-2023	13:18	5L Niskin	26	21	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02236
125	BP23MVEXP-ENV-WS-064	07-Aug-2023	14:23	5L Niskin	24	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02452
126	BP23MVEXP-ENV-WS-067	07-Aug-2023	14:23	5L Niskin	24	19	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02451
127	BP23MVEXP-ENV-WS-067	07-Aug-2023	15:46	5L Niskin	47	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02249
128	BP23MVEXP-ENV-WS-133	07-Aug-2023	15:47	5L Niskin	47	42	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02241
129	BP23MVEXP-ENV-WS-133	07-Aug-2023	17:08	5L Niskin	59	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02200
130	BP23MVEXP-ENV-WS-131	07-Aug-2023	17:09	5L Niskin	59	54	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02281
131	BP23MVEXP-ENV-WS-131	07-Aug-2023	18:39	5L Niskin	84	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02239
132	BP23MVEXP-ENV-WS-128	07-Aug-2023	18:40	5L Niskin	84	79	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02286
133	BP23MVEXP-ENV-WS-128	07-Aug-2023	20:27	5L Niskin	93	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02219
134	BP23MVEXP-ENV-WS-126	07-Aug-2023	20:28	5L Niskin	93	88	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02232
135	BP23MVEXP-ENV-WS-126	07-Aug-2023	22:02	5L Niskin	101	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02208
136	BP23MVEXP-ENV-WS-124	07-Aug-2023	22:11	5L Niskin	101	96	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02194
137	BP23MVEXP-ENV-WS-124	08-Aug-2023	23:40	5L Niskin	96	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02230
138	BP23MVEXP-ENV-WS-122	08-Aug-2023	23:41	5L Niskin	96	91	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02216
139	BP23MVEXP-ENV-WS-122	08-Aug-2023	01:03	5L Niskin	92	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02211
140	BP23MVEXP-ENV-WS-122	08-Aug-2023	01:04	5L Niskin	92	87	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02275
141	BP23MVEXP-ENV-WS-122	08-Aug-2023	02:39	5L Niskin	88	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02484
142	BP23MVEXP-ENV-WS-120	08-Aug-2023	02:40	5L Niskin	88	83	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02387

APPENDIX B METHODS

APPENDIX B METHODS

B.1 Seabed Sampling

Benthic samples were recovered using a stainless-steel, 0.1m^2 Day grab which had been modified in-house. The modification, shown in Figure B.1 incorporated guides for the cables to prevent them becoming trapped during triggering. Low-slung pad feet when in contact with the seabed trigger the instrument. On recovery (once triggered) the weight of the instrument is transferred along the warp wires, closing the jaws of the grab. The grab carried extra weights to aid penetration on recovery and an extended bucket lip to reduce sediment washout. Storm feet and elastic straps were used to reduce the likelihood of the instrument pre-triggering in the water column during deployment.

A USBL positioning beacon was attached to the deployment cable immediately above the grab.

Figure B.1 Modified Day Grab



Left: The modified 0.1m^2 Day grab.

Above (inset): The modification to the grab incorporated guides for the cables to prevent them from becoming trapped as the grab triggers.

Grab sampling operational procedures were as follows:

The vessel's sampling area was pre-cleaned using a powerful deck fire-hose and seawater. The Day grab was washed thoroughly using pentane prior to deployment at every station to prevent hydrocarbon cross contamination. A 13mm, dry-core, galvanised-steel cable was used to lower the Day grab to the seabed.

All containers were thoroughly washed with appropriate solvents and labelled externally prior to use. Biology samples were placed in 1-litre polypropylene, screw-top, squat jars and 5 litre buckets and provided with an additional internal waterproof label. Hydrocarbon samples were placed in 120ml glass jars, whilst the remaining samples (metals and particle size) were placed in double-lined zip-lock bags.

For accuracy of grab sampling in deeper waters, the Day grab is winched down so that it was approximately 10-15m from the seabed prior to release to sea floor. Communication between the deck, bridge crew and the surveyors was conducted by means of VHF radio. When directly over the sampling station the grab was

APPENDIX B METHODS

winched to the seabed and recovered so that the sample could be obtained, and the apparatus prepared for the next deployment.

Positional fixes were taken for each grab sample immediately following the grab reaching the sea floor. The precise time that the grab reached the seabed was determined by observations of the tension on the winch cable.

On recovery of a sample, the grab would first be examined for acceptability following strict quality assurance criteria. In the following cases, a grab sample would be rejected and the instrument returned to the pre-deployment position:

1. Jammed sample closure due to entrapment of a large stone, shell or other objects allowing surface sediment washout.
2. Accidental premature opening of sampler on recovery, causing possible surface washout.
3. Half sample obtained where the grab had not struck a flat area of bottom, or not hit true, causing a side or half bite of sediment;
4. Disruption of the sample by obvious shaking or contamination (these can occur when a sample is badly handled or if the grab strikes the side of the vessel during operations);
5. The sample represents less than 40% of the grab's total capacity (*i.e.* less than 6 litres) or totally fills the grab. The latter potentially allowing the sample to overflow the grab or for the surface sediments to come into contact with the lids.
6. Sample was acquired more than 10m from the target (as determined by the onboard surveyors, environmentalist and client representative, with consideration of survey objectives);
7. The presence of exopolymeric substances, mucus coagulants and/or fauna that generate them *i.e.,* Myxinidae.

Brief descriptions of the collected sediments were made at the time of sampling. These were recorded in the environmentalist's log sheets and are presented in Appendix A.

Sediment samples collected for physico-chemical analysis (CHEM) were sub-sampled into the relevant containers. All containers were thoroughly washed with the appropriate solvents and labelled externally prior to use. Where sediment samples were collected to be processed using MMO (2023) methodology chemical analysis was sub-sampled into a 1 litre glass jar along with a spare. Particle size analysis (PSA), and a spare sample were collected at all stations using a plastic scoop and stored in double-lined zip-lock bags. Where additional analysis was required (Scottish waters) two surficial sediment (<2cm) sub-samples were scooped into 120ml glass jars using a stainless-steel spoon; one of these was intended for hydrocarbon determinations, the other was retained as a spare. A plastic scoop was then used to obtain two further sub-samples: one for analysis of metals, and a spare sample. These were placed in double-lined zip-lock bags. All physico-chemical samples were transferred to an onboard freezer for storage at less than -18ºC.

Sediment eDNA was collected from each faunal sample analyses and stored in a double lined zip-lock bag and transferred to an onboard freezer for storage. Following this samples were thoroughly washed from the grab into a plastic tray. Once all of the equipment was washed free of sediment, the sediment sample was transferred to a sieving machine where it was broken down using a low powered seawater spray. All materials retained by the 500µm mesh sieve were transferred to a squat jar or bucket by means of a scoop and funnel, making sure that none of the sample was lost or trapped in the mesh. The sample was fixed with a pre-buffered <10% formalin solution of known concentration, then subsequently diluted to a final concentration of approximately 4% formalin. Biological samples were placed in 1 litre polypropylene screw-top squat jars or 5 litre buckets, depending on sample size, and provided with an additional internal waterproof label.

APPENDIX B METHODS

B.2 Water Sampling

Niskin bottles were mounted directly to a 10mm dry-core galvanised-steel deployment cable along with a 25kg purse weight to maintain vertical transit. Messenger weights were affixed to allow acquisition of the samples. A depth enabled USBL beacon was attached below the deepest Niskin bottles prior to the release of the top messenger and used to determine depth and location prior to release of the messenger. Positional fixes were taken immediately after release of the messenger and prior to recovery.

On recovery of the water sample the Niskin bottle was examined for acceptability following strict quality assurance criteria. In the following cases, a Niskin bottle sample would be rejected and the instrument returned to the pre-deployment position:

1. One or both ends had not released and the sampler had failed to trigger.
2. One or both ends had failed to seal the sampler and water had leaked out
3. Disruption of the sample by obvious shaking or contamination
4. Sample was taken from and unacceptable depth or more than 10m from the target.

Water samples were taken at two depths per station: five metres below water surface and five metres above the seabed. Two litres of water were filtered through a 0.8µm pore size CN filter and transferred to an onboard freezer for storage at less than -18°C.

B.3 Sample Analysis

At the end of the survey all the retained samples for analysis were delivered directly to their respective analytical sub-contractor laboratories. The remaining samples were delivered to Gardline's Great Yarmouth office. All chemical, PSA, sediment and water eDNA sub-samples were kept frozen and biological samples stored at room temperature. Spare samples are stored for at least six months after which time the client is contacted to advise on appropriate disposal, continued storage or dispatch to a destination of the client's choice.

Sediment, water and faunal samples were analysed by the following laboratories:

- Sediment hydrocarbon, metals, TOM, OCPs and organotins analyses were carried out by SOCOTEC, Burton-on Trent, Staffordshire, UK.
- Benthic macrofaunal identification and PSA was undertaken by Thomson Environmental Consultants Limited, Guildford, UK.
- Sediment and water metabarcoding was carried out by Nature Metrics Ltd, Egham, UK.

The laboratories detailed above meet quality control requirements exacted by Gardline's internal procedures (BS/EN/ISO 9001:2015; BSI, 2008).

B.4 Particle Size Analysis

Particle size analysis (PSA) was carried out by Thomson Environmental Consultants Limited in accordance with NMBAQC methods for diamictons (Mason, 2016).

No dispersants were used and the sediment was not treated to remove carbonates or organic matter prior to analysis. The range of sieve sizes, together with their Wentworth classifications (Wentworth, 1922), is given in Table B.1.

APPENDIX B METHODS

The results, given in Appendix D and summarised in Section 2.4.1, present particle size distributions in terms of mean phi, fraction percentages (*i.e.*, gravel, sand and fines), sorting (mixture of sediment sizes) and skewness (weighting of sediment fractions above and below the mean sediment size) and kurtosis (degree of peakedness) (Folk & Ward, 1957). These indices are described below:

1. Graphic Mean - a measure of average particle size in phi units (-log2(diamm), Folk & Ward, 1957).

$$M_z = \frac{\emptyset 16 + \emptyset 84 + \emptyset 50}{3}$$

where M_z= The graphic mean particle size in phi
$\emptyset$ = the phi size of the nth percentile of the sample

2. Sorting – the inclusive graphic standard deviation of the sample is a measure of the degree of sorting. Sorting classifications are presented in Table B.2.

$$\sigma_1 = \frac{\emptyset 84 - \emptyset 16}{4} + \frac{\emptyset 95 - \emptyset 5}{6.6}$$

where σ_1 = the inclusive graphic standard deviation

3. Inclusive Graphic Skewness – the degree of asymmetry of a frequency or cumulative curve, Skewness classification are presented in Table B.3.

$$S = \frac{\emptyset 16 + \emptyset 84 - 2(\emptyset 50)}{2(\emptyset 84 - \emptyset 16)} + \frac{\emptyset 5 + \emptyset 95 - 2(\emptyset 50)}{2(\emptyset 95 - \emptyset 5)}$$

where S = the skewness of the sample

4 Graphic Kurtosis – The degree of peakdness or departure from a 'normal' frequency or cumulative curve. Kurtosis classifications are presented in Table B.4.

$$K = \frac{\emptyset 95 - \emptyset 5}{2.44(\emptyset 75 - \emptyset 25)}$$

where K= Kurtosis

The sediment samples were additionally classified using the modified Folk triangle classification and the EUNIS classification (Figure B.2), with results presented in 1Appendix D. These classifications use the sand:mud ratio and the percentage of gravel (Folk, 1954; Parry, 2019).

APPENDIX B METHODS

Table B.1 Phi and Sieve Aperture with Wentworth Classifications

Aperture in microns	Aperture in Phi Unit	Sediment Description	
<63000 to 45000	>-6 to -5.5	Pebble	GRAVEL
<45000 to 32000	>-5.5 to -5		
<32000 to 22600	>-5 to -4.5		
<22600 to 16000	>-4.5 to -4		
<16000 to 11200	>-4 to -3.5		
<11200 to 8000	>-3.5 to -3		
<8000 to 5600	>-3 to -2.5		
<5600 to 4000	>-2.5 to -2		
<4000 to 2800	>-2 to -1.5	Granule	
<2800 to 2000	>-1.5 to -1		
<2000 to 1400	>-1 to -0.5	Very Coarse Sand	SAND
<1400 to 1000	>-0.5 to 0		
<1000 to 710	>0 to 0.5	Coarse Sand	
<710 to 500	>0.5 to 1		
<500 to 355	>1 to 1.5	Medium Sand	
<355 to 250	>1.5 to 2		
<250 to 180	>2 to 2.5	Fine Sand	
<180 to 125	>2.5 to 3		
<125 to 90	>3 to 3.5	Very Fine Sand	
<90 to 63	>3.5 to 4		
<63 to 44	>4 to 4.5	Coarse Silt	FINES
<44 to 31.5	>4.5 to 5		
<31.5 to 22	>5 to 5.5	Medium Silt	
<22 to 15.6	>5.5 to 6		
<15.6 to 11	>6 to 6.5	Fine Silt	
<11 to 7.8	>6.5 to 7		
<7.8 to 5.5	>7 to 7.5	Very Fine Silt	
<5.5 to 3.9	>7.5 to 8		
<3.9 to 2.8	>8 to 8.5	Clay	
<2.8 to 2	>8.5 to 9		
<2 to 1.4	>9 to 9.5		
<1.4 to 1	>9.5 to 10		
<1	>10		

APPENDIX B METHODS

Table B.2 Sorting Classifications

Sorting Coefficient (Graphical Standard Deviation)	Sorting Classifications
0 < 0.35	Very well sorted
0.35 < 0.50	Well sorted
0.50 < 0.71	Moderately well sorted
0.71 < 1.00	Moderately sorted
1.00 < 2.00	Poorly sorted
2.00 < 4.00	Very poorly sorted
4.00	Extremely poorly sorted

Table B.3 Skewness Classification

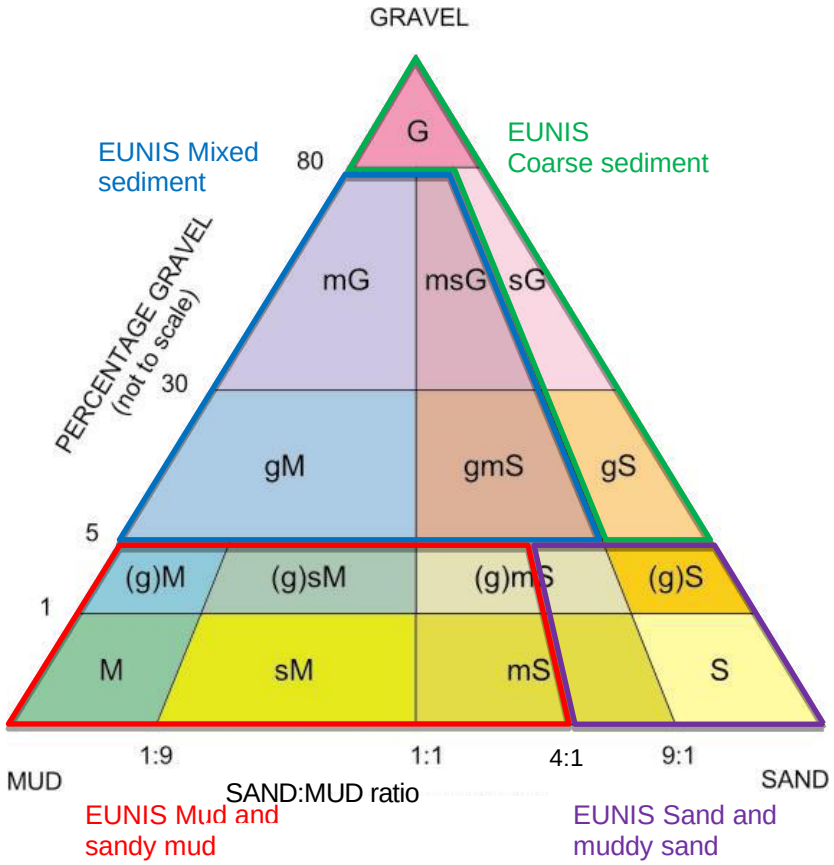
Skewness Coefficient	Mathematical Skewness	Graphical Skewness
1.00 > 0.30	Strongly Positive	Strongly fine skewed
0.30 > 0.10	Positive	Fine skewed
0.10 > -0.10	Near Symmetrical	Symmetrical
-0.10 > -0.30	Negative	Coarse skewed
-0.30 > -1.00	Strongly Negative	Strongly coarse skewed

Table B.4 Kurtosis Classification

Kurtosis Coefficient	Kurtosis Classification	Graphical meaning
≤ 0.67	Very Platykurtic	Flat-peaked; the ends are better sorted than the centre
0.67 < 0.90	Platykurtic	
0.90 < 1.11	Mesokurtic	Normal; bell shaped curve
1.11 < 1.50	Leptokurtic	Curves are excessively peaked; the centre is better sorted than the ends
1.50 < 3.00	Very Leptokurtic	
≥ 3.00	Extremely Leptokurtic	

APPENDIX B METHODS

Figure B.2 Modified Folk Classification and EUNIS Sediment Classes



Code	Modified Folk Classification
G	Gravel
mG	Muddy gravel
msG	Muddy sandy gravel
sG	Sandy gravel
gM	Gravelly mud
gmS	Gravelly muddy sand
gS	Gravelly sand
(g)M	Slightly gravelly mud
(g)sM	Slightly gravelly sandy mud
(g)mS	Slightly gravelly muddy sand
(g)S	Slightly gravelly sand
M	Mud
sM	Sandy mud
mS	Muddy sand
S	Sand

Source: Folk (1954) and Parry (2019)

The results, given in full in Appendix D, and summarised in Section 2.4.1, present the following sample statistics calculated using method of moments (MoM) based on logarithmic grain size (*i.e.*, using the phi scale); mean grain size, sorting (standard deviation), skewness and kurtosis (Krumbein & Pettijohn, 1938). These indices are described below. Mean grain size is also given geometrically (in µm). Size classes, including the mean and mode(s) are named (such as medium sand), according to sediment descriptors given in Table B.5, which are modified from Udden (1914) and Wentworth (1922). Sediment samples are also classified using the Folk triangle classification (presented in Appendix D), which uses the ratio of sand to mud (<63µm, silt and clay) and the percentage of gravel sized-material (>2mm) (Folk, 1954).

1 Mean ($\bar{x}_{\emptyset}$) (First moment) =

$$\sum_{i=1}^{n} f_i M_{i\emptyset}$$

Where f_i = fraction of total weight in each class interval
$M_{i\emptyset}$ = midpoint of each class interval in phi units

2 Standard deviation ($S_{\emptyset}$) (Second moment =

$$\left[\sum_{i=1}^{n} f_i (M_{i\emptyset} - \bar{x}_{\emptyset})\right]^{1/2}$$

APPENDIX B METHODS

The second moment has been used as a measure of the degree of sorting. Sorting statistics are then ascribed physical descriptions (such as moderately sorted), derived from Folk and Ward (1957). Sorting classifications are presented in Table B.6.

3 Skewness ($Sk_{\emptyset}$)(Third moment) =

$$\sum_{i=1}^{n} \frac{f_i(M_{i\emptyset} - \bar{x}_{\emptyset})^3}{S_{\emptyset}^3}$$

The third moment, has been used as a measure of the degree of asymmetry of a frequency or cumulative curve. Positive numbers indicate a fine skewed sediment, while negative numbers indicate a coarse skewed sediment. Skewness classifications are given in Table B.7.

4 Kurtosis ($K_{\emptyset}$) (Fourth moment) =

$$\sum_{i=1}^{n} \frac{f_i(M_{i\emptyset} - \bar{x}_{\emptyset})^4}{S_{\emptyset}^4}$$

The forth moment, has been used as a measure of the 'peakness' of the distribution. When ascribed to statistics calculated by logarithmic MoM, values of <1.7 are considered very platykurtik or flat 'peaked', while values >7.4 are considered very leptokurtic or excessively 'peaked' (Blott, 2010). Kurtosis classifications according to Blott (2010)are given in Table B.8.

APPENDIX B METHODS

Table B.5 Phi and Sieve Aperture with Sediment Descriptions

Aperture in microns	Aperture in Phi Unit	Sediment Description	
<64000 to 45000	>-6 to -5.5	Very Coarse Gravel	GRAVEL
<45000 to 32000	>-5.5 to -5		
<32000 to 26000	>-5 to -4.5	Coarse Gravel	
<26000 to 16000	>-4.5 to-4		
<16000 to 11200	>-4 to -3.5	Medium Gravel	
<11200 to 8000	>-3.5 to -3		
<8000 to 5600	>-3 to -2.5	Fine Gravel	
<5600 to 4000	>-2.5 to -2		
<4000 to 2800	>-2 to -1.5	Very Fine Gravel	
<2800 to 2000	>-1.5 to -1		
<2000 to 1400	>-1 to -0.5	Very Coarse Sand	SAND
<1400 to 1000	>-0.5 to 0		
<1000 to 710	>0 to 0.5	Coarse Sand	
<710 to 500	>0.5 to 1		
<500 to 355	>1 to 1.5	Medium Sand	
<355 to 250	>1.5 to 2		
<250 to 180	>2 to 2.5	Fine Sand	
<180 to 125	>2.5 to 3		
<125 to 90	>3 to 3.5	Very Fine Sand	
<90 to 63	>3.5 to 4		
<63 to 44	>4 to 4.5	Very Coarse Silt	FINES
<44 to 31.5	>4.5 to 5		
<31.5 to 22	>5 to 5.5	Coarse Silt	
<22 to 15.6	>5.5 to 6		
<15.6 to 11	>6 to 6.5	Medium Silt	
<11 to 7.8	>6.5 to 7		
<7.8 to 5.5	>7 to 7.5	Fine Silt	
<5.5 to 3.9	>7.5 to 8		
<3.9 to 2.8	>8 to 8.5	Very Fine Silt	
<2.8 to 2	>8.5 to 9		
<2 to 1.4	>9 to 9.5	Clay	
<1.4 to 1	>9.5 to 10		
<1	>10		

APPENDIX B METHODS

Table B.6 Sorting Classifications for use with Logarithmic Method of Moments

Sorting Coefficient (Graphical Standard Deviation)	Sorting Classifications
0 < 0.35	Very well sorted
0.35 < 0.50	Well sorted
0.50 < 0.71	Moderately well sorted
0.71 < 1.00	Moderately sorted
1.00 < 2.00	Poorly sorted
2.00 < 4.00	Very poorly sorted
4.00	Extremely poorly sorted

Table B.7 Skewness Classification for use with Logarithmic Method of Moments

Skewness Coefficient	Mathematical Skewness	Graphical Skewness
> 1.30	Strongly Positive	Very fine skewed
>0.43 to 1.30	Positive	Fine skewed
>-0.43 to 0.43	Near Symmetrical	Symmetrical
>-1.30 to -0.43	Negative	Coarse skewed
≤-1.30	Strongly Negative	Very coarse skewed

Table B.8 Kurtosis Classification for use with Logarithmic Method of Moments

Kurtosis Coefficient	Kurtosis Classification	Graphical meaning
< 1.70	Very Platykurtic	Flat-peaked; the ends are better sorted than the centre
1.70 to <2.55	Platykurtic	
2.55 to <3.70	Mesokurtic	Normal; bell shaped curve
3.70 to <7.40	Leptokurtic	Curves are excessively peaked; the centre is better sorted than the ends.
≥7.40	Very Leptokurtic	

B.5 Total Organic Carbon

A 1g air-dried and ground (particle size <118µm) sample was placed in a crucible and digested in 10ml of sulphurous acid at a temperature of 40°C overnight to remove carbonate (*e.g.* shell material). Following this, the samples were dried in an oven at 100 ± 5°C until constant weight was achieved. The digested sample was analysed for carbon content using a Eltra induction furnace fitted with a nondispersive infrared (NDIR) cell. The sample was combusted at 1600°C in an oxygen atmosphere, the combustion gases passed through an infra red cell which measured the carbon dioxide concentration. The total quantity of carbon liberated was calculated and reported as a percentage of the original mass of the sample.

The method was calibrated every day and incorporated a three point calibration (including blank) using matrix matched standards sourced from traceable material. The calibration range extended to 4.0%. Any samples that are over-range are re-extracted with reduced sample weight and re-analysed. The method was statistically controlled using both process and instrument quality control samples. Both are sourced independently from the solutions used to calibrate the method. Instrument and blank solutions are also run at regular intervals (with each batch) to monitor potential sources of contamination.

The results are expressed as % w/w of a dry sample and will not include volatile organic carbons, the majority of which are lost during digestions and drying. The upper range limit of this technique has not been investigated,

while the lower limit is dependent on the sensitivity of the furnace and the sample weight taken. In practice, the LOD is 0.02% of sample weight. The standard used was OAS Acetanilide.

B.6 Hydrocarbons

B.6.1 Extraction Procedures

MMO Methodology

Anhydrous sodium sulphate, sodium chloride and DCM was added to a portion of the as received sample and was vigorously agitated. The sample is placed in an ultrasonic bath and then centrifuged.

Total Hydrocarbon Methodology

A 15g sub-sample of the sample was treated with 15ml of methanol and 60ml of dichloromethane (DCM) and mixed on a magnetic stirring plate for one hour (wet vortex extraction). The solvent extract was then chemically dried, water partitioned and then reduced to approximately 1ml using a Kuderna Danish evaporator with micro Snyder. The clean -up stage utilised 1g of activated silica gel along with DCM and pentane, which removes polar organics. One third of the column was made up with the DCM/Silica slurry and then the column was eluted with 9ml of DCM and 3ml of pentane. The 1ml of DCM extract was then eluted through the column with a further 1ml of DCM and 2ml of Pentane giving a final extract of 4ml (DCM:pentane). The samples were then subjected to a further copper clean up stage to remove any sulphur.

A separate sub-sample was taken for analysis of moisture content by drying at 120ºC for 8 hours. The moisture content was later used to convert the hydrocarbon concentrations from wet weight to dry weight.

B.6.2 Analysis

By UV Fluorescence Screening

An aliquot of the extract was taken and analysed for total hydrocarbons by UV fluorescence screening and quantified by comparing the results against a Forties Oil calibration curve.

By Gas Chromatography

An aliquot of the extract was then taken and analysed for total hydrocarbons and individual n-alkanes by large volume injection GC-FID and one taken to be analysed for PAH, DBT and alkylated isomer concentrations by GC-MS selected ion monitoring as specified in DTI (1992).

Appropriate column and GC conditions were used to provide sufficient chromatographic separation of all analytes and required sensitivity. GC chromatograms are presented in Appendix F.

B.6.3 Quality Control Samples

All samples have surrogates and internal standards (heptamethylnonane (A), 1-chlorooctadecane (B) and squalane (C)) added prior to commencement of extraction. Decanoic acid and eicosanoic Acid were added to the sample post extraction but prior to the clean up stage. These are reverse surrogates to measure the clean up. The method was statistically controlled using both process and instrument quality control samples. Both were sourced independently from the solutions used to calibrate the method. Three instrument blanks of 50:50 pentane:DCM were run initially and one after the continuing calibration check (CCC) before any samples. Two method blanks and an in-house prepared reference material were analysed with each batch and process blank solutions were also run at regular intervals (with each batch) to monitor potential sources of contamination.

APPENDIX B METHODS

B.6.4 Calibration and Calculation

Two calibration check standards are measured by GC-FID before and after each batch. The first CCC is a florida mix used to calibrate the individual alkane method and determine retention times and areas for the nC_{10} – nC_{40} alkane groups. The second CCC is a diesel/mineral oil mix which provides the odd alkane group retention times from nC_{11} – nC_{27}, pristane and phytane. The second CCC is used to calibrate the total petroleum hydrocarbons area.

Concentrations of total hydrocarbons from the extract analysed by GC-FID were quantified by comparison with the chromatographic envelopes from the mixed diesel/mineral oil calibration standards. The concentration in the sample was then calculated against the squalene surrogate. The chromatographically resolved individual n-alkane peaks nC_{10}-nC_{37} were quantified using the florida mix standard.

The GC/MS is calibrated initially at four concentrations to confirm linearity of each target compound across the working range. With each batch a calibration check standard is measured before and after each batch and the concentration calculated from the slope of the four point initial calibration. The CCC is used to calibrate the method and samples are quantified using the CCC response factors.

Concentrations of PAH from the extract analysed by GC-MS were determined by referencing individual quantified mass peak areas for each target compound to the appropriate internal standard quantified mass peak area and the relative response factor calculated from the applicable CCC standard.

The analysis detection limits were 1ng g^{-1} for PAHs, 1ng g^{-1} for individual n-alkanes and 100ng g^{-1} for THC.

B.6.5 PCBs

Approximately 5g of the air-dried and sieved sample was spiked with 13C labelled internal standards, ultrasonically solvent extracted and concentrated under nitrogen. A clean-up stage was employed to remove contaminants that may have interfered with the analysis. The sample extract was analysed by gas chromatography coupled to a triple quadrupole mass spectrometer (GC-MS-MS). Quantification was performed by comparison with a solution containing each of the targeted compounds, normalised to the 13C labelled internal standards.

B.6.6 Organotins

Approximately 5g of the sample was digested with hydrochloric acid and methanol before being extracted into toluene. The extract was then derivatized using sodium tetraethylborate (STEB) before concentration and a copper/silica clean-up was performed. The extract was analysed by GC-MS and quantified by comparing the results against a calibration curve for each of the target analytes.

B.7 Metals

B.7.1 Extractions for ICP-OES and ICP-MS Determination

Aqua regia

Approximately 1g of air-dried and ground (particle size <118µm) sediment was digested for 1 hour with aqua regia. Once cooled the sample was then analysed by inductively coupled plasma- optical emission spectrometry (ICP-OES) or inductively coupled plasma-mass spectrometry (ICP-MS).

APPENDIX B METHODS

Hydrofluoric Acid

Approximately 0.5g of air-dried and ground (particle size <118µm) sediment was accurately weighed and placed in a Teflon digestion vessel. The microwave digestion process involves a two stage extraction process. The digest is made up to 100ml in a Gradplex flask. The sample was then analysed by ICP-OES or ICP-MS.

B.7.2 Inductively Coupled Plasma - Optical Emission Spectrometry (ICP-OES)

Ba was determined using ICP-OES. The spectrophotometer was calibrated using five different concentrations of matrix-matched standards made from dilutions of 10g l^{-1} spectroscopic standard solutions. Detection limits and the spectral line emission wavelengths of the various elements analysed are presented in Table B.9.

B.7.3 Inductively Coupled Plasma – Mass Spectrometry (ICP-MS)

As, Cd, Cr, Cu, Hg, Ni, Pb, V and Zn were determined by ICP-MS. The spectrometer was calibrated using seven different concentrations of matrix-matched standards made from dilutions of 10g l^{-1} spectroscopic standard solutions. Target analyte concentrations were measured by direct comparison to the internal standard with the nearest mass ionisation properties, to take into account changes in plasma conditions as a result of matrix differences between standards and samples. Detection limits and the atomic mass units of the various elements analysed are presented in Table B.9.

Table B.9 ICP Detection Limits, Elemental Emission Wavelengths and Atomic Masses

Analysis	ICP-MS	ICP-OES	HF Extraction LOD (µg g^{-1})	Aqua Regia Extraction (µg g^{-1})
Element	Atomic Mass Units	Elemental Wavelengths (nm)		
As	75		0.14	0.5
Ba		455.403	7.2	
Cd	111		0.03	0.04
Cr	52		1	0.5
Cu	65		0.7	0.5
Hg	202		0.01	0.01
Ni	60		0.4	0.5
Pb	208		0.6	0.5
V	51		1	
Zn	66		3.5	2

B.7.4 Quality Control

Quality control consists of running full method blanks together with one in-house reference material or certified reference material (CRM) where required, and one duplicate sample per batch of twenty samples. Instrument performance is monitored by the use of instrument blanks, continuing calibration checks and independent calibration checks.

Instrument and process blank solutions are also run at regular intervals (with each batch) to monitor potential sources of contamination.

APPENDIX B METHODS

B.8 Metabarcoding

B.8.1 DNA Extraction and Sequencing

Sediment

In the laboratory, DNA was extracted from approximately 10g of each sample for bacterial and infaunal analysis. An extraction blank was also processed for each extraction batch.

Additionally, a further 10g of each sample was extracted for fish DNA analysis with an extraction blank processed for each extraction batch.

Water

DNA was extracted from each filter using a commercial DNA extraction kit with a protocol modified to increase the DNA yields. An extraction blank was also processed for each extraction batch. DNA was then purified to remove PCR inhibitors using a commercial purification kit.

B.8.2 Sequencing

DNA were amplified in triplicate PCRs with primers targeting the V4 region of the 16S rRNA gene for bacteria and the V4-V5 region of the 18S rRNA gene for fauna.

DNA were amplified with PCR for a hypervariable region of the 12S rRNA gene to target fish and vertebrates.

B.8.3 Bioinformatics

Sequence data were processed for quality filtering, OTU clustering and taxonomic assignment. Taxonomic assignments were made for each OTU using sequence similarity searched against two reference databases appropriate for the data set regarding the bacterial and infaunal OTUs. Results for searches were combined and assignments made to the lowest possible taxonomic level where there was consistency. Minimum similarity thresholds of 98%, 95%, and 92% were required for species-, genus-, and higher-level assignments. The OTU table was filtered to remove low abundance OTUs from each sample (<0.05% or <10 reads for bacteria and <0.035% or <10 reads for fauna, whichever is the greater threshold for the sample)

The Fish OTU taxonomic assignments were made against the NCBI nt (GenBank) reference database. Assignments were made to the lowest possible taxonomic level where there was consistency in the matches. Conflicts were flagged and resolved manually. Minimum similarity thresholds of 99%, 97%, and 95% were required for species-, genus-, and higher-level assignments. In cases where there were equally good matches to multiple species, public records from OBIS were used to assess which were most likely to be present in the North Sea. The OTU table was filtered to remove low abundance OTUs from each sample (<3.00% or <10 reads, whichever is the greater threshold for the sample).

B.9 Macrofaunal Analysis

B.9.1 Sorting and Identification

In the laboratory, samples were gently washed across a 0.5mm mesh sieve to remove any sediment fines and preservative. The retained material was sorted by hand to extract all macrofauna. The organisms were identified and counted to produce a species list for each grab sample. Sample residues were checked by a second individual to provide a degree of quality control.

APPENDIX B METHODS

B.9.2 Data Set Rationalisation

The faunal data set was rationalised according to the standard Gardline (2018) procedure, which is largely based on British Standard ISO16665:2005 (BSI, 2005) and OSPAR (2017) guidelines. A summary of these methods follows.

Juveniles

The inclusion of juvenile organisms in data sets is a contentious issue, as is the definition of a juvenile. Only when the following conditions were satisfied was an organism recorded as a juvenile:

- Organisms that were too small or immature to be identified to species were identified to the lowest possible taxonomic level and recorded as juveniles.
- The organism was in a pre-adult life stage *e.g.* megalopa, praniza, *etc.*
- For large-bodied (>4cm) species of echinoderm and bivalve, the organism was less than 10% of the maximum body size reported in the literature.

In accordance with ISO16665:2005 guidelines, juveniles are recorded separately in the faunal list in Appendix H. Juveniles were included in the analysed data set at the lowest achievable taxonomic level. In the first instance, statistical analyses were performed after counts of juveniles of known species had been combined with adult records of that same species. In accordance with OSPAR (2017), if one or more of the juvenile taxa, or species that included juvenile records, were among the ten most dominant, then a RELATE analysis was carried out to compare the data sets with and without juveniles to determine if discussion of both sets separately is required. If the two data sets are found to be at least 95% similar, then the juveniles are included in the data set for all further multivariate analyses and discussion. Alternatively, the multivariate analyses are additionally performed following exclusion of all juvenile records in order to illustrate their influence.

Damaged Specimens

Destructive sampling techniques and sieving may damage delicate benthic organisms. It is, therefore, commonplace for fragmented organisms to be found in faunal samples. The following conditions were applied to the recording of damaged specimens and fragments:

- Fragments that constituted a major component of an individual, that unequivocally represented the presence of an entire organism, and that could be identified to species level, were recorded and included with other counts of that species. Examples include: the heads of polychaetes and crustaceans; the complete mouth structure or central disk of brittle stars; the oral area/feeding tentacles of holothurians.
- Fragments that constituted a significant component of an individual, that unequivocally represented the presence of an entire organism, but that could not be identified to species by virtue of their incompleteness, were recorded to the lowest possible taxonomic level.
- Fragments that did not unequivocally represent the presence of an entire organism were ignored when calculating species abundances, but were included in analyses of biomass, *e.g. Ophiura* arms, *Echinocardium* shell fragments, *etc*.

Treatment of Specific Groups of Organisms

Gardline defines macrofauna as organisms that are normally larger that the mesh size of the sieve used to separate them from the sediment (Gardline, 2018). Meiofaunal organisms, such as Ostracoda and Copepoda, which would not be consistently sampled, were not recorded. Due to their generally small size (in fully marine environments), species from Oligochaeta were only enumerated when a sieve with a mesh size of 0.5mm or less was used to separate organisms from sediments; otherwise, these organisms were noted to be present, but not enumerated.

APPENDIX B METHODS

Due to the large abundance of Nematoda in marine samples these were noted as present but not enumerated.

Planktonic organisms, such as Chaetognatha and Mysidacea were recorded but not included in further analysis. The presence of nektonic species, such as fish, were recorded, and were enumerated.

With the exception of discrete sea pen (Pennatuloidea) colonies, only solitary tunicates and cnidarians were enumerated and included in statistical analyses. Colonial tunicates and cnidarians were identified but not enumerated.

Where Gnathiidae were recorded, those individuals not identified to species level were grouped as a single indeterminate Gnathiidae entry.

In accordance with our in-house guidelines the following organisms were not identified to species, but were enumerated and included in the data set for analyses at a higher taxonomic level:

- Nemertea – identified to phylum
- Platyhelminthes – identified to phylum
- Tardigrada – identified to phylum

B.9.3 Biomass

Following identification of the samples, each individual taxa (where required) were biomassed by wet weight. Biomasses were weighted in grams recorded up to 4dp.

B.10 Statistical Analyses

B.10.1 Hydrocarbon Indices

In order to aid the determination of hydrocarbon sources and levels of weathering of recorded hydrocarbons, a number of indices (largely based on n-alkanes) have been developed (Tran *et al.*, 1995). The following indices were calculated from raw data using Microsoft Excel:

Carbon Preference Index (CPI)
The ratio of odd to even numbered alkanes, commonly referred to as the CPI, may provide further insight into the origin of alkanes in marine sediments. Opinions differ as to which is the most informative chain length over which to calculate CPI. Douglas and Eglinton (1966) suggest that the nC_{20} to nC_{36} range is most informative, whilst Farrington and Tripp (1977) suggest CPI calculated using nC_{27} to nC_{33} alkanes is most informative. The basic premise of most CPI calculations is that land-based vegetation predominantly produces alkanes with odd carbon numbers (*i.e.*, nC_{29}), whereas there is no such tendency in alkanes of anthropogenic or marine origin. Therefore, the sum of odd numbered alkanes divided by the sum of even numbered alkanes decreases with increasing petrogenic contamination. Jeng (2006) indicates that the tendency for land-based vegetation to predominantly produce alkanes with odd carbon numbers is most prevalent in the nC_{27} to nC_{33} range.

The carbon preference index of Farrington and Tripp (1977), which is used more often than any other in the literature, is calculated as follows:

$$CPI = \frac{2(nC_{27} + nC_{29})}{nC_{26} + 2(nC_{28}) + nC_{30}}$$

CPI values close to unity suggest that sediments are contaminated with petrogenic material; whereas values of 4 and above suggest a dominance of biogenic material and a virtual absence of petrogenics.

APPENDIX B METHODS

Pristane/Phytane Ratio

Pristane and phytane are both biogenic and petrogenic but their relative abundance may vary greatly. Pristane is primarily biogenic and most commonly originates from the decomposition of a phytol side-chain of chlorophyll (Muniz *et al.*, 2004). Elevated concentrations of pristane in sediments can be indicative of high levels of microbial degradation. Phytane is rarely produced biogenically but is a common component of crude oil (Steinhauer & Boehm, 1992); it is generally absent or found in only small quantities in marine sediments. Concentrations of pristane and phytane, and their ratio to each other have, therefore, been used as an indicator of petrogenic contamination (Berthou & Friocourt, 1981). In samples that are contaminated by petroleum products the concentrations of pristane and phytane are usually nearly equal (pristane/phytane ratio close to unity) (McDougall, 2000).

Molecular weight PAH Indices

Information regarding the possible petrogenic or pyrogenic sources of PAHs in the environment can be derived from the ratio of PAH compounds of the same molecular weight as detailed by Yunker *et al*., (2002) and adopted by Fisner *et al.,* (2013). Fisner *et al.,* (2013) states that the identification of possible sources can be made according to the ratios that are commonly used in studies related to sediment analysis, such as:

- Ratio of 178 Molecular Weight PAHs (Ant/(Ant+Phe)), where Ant=anthracene, Phe=phenanthrene and values ≤0.10 indicate the dominance of petrogenic sources and >0.10 indicate the dominance of pyrogenic sources;
- Ratio of 202 Molecular Weight PAHs (Fluo/(Fluo+Py)), where Fluo=fluoranthene, Py=pyrene and values ≤0.40 indicate the dominance of petrogenic inputs and >0.40 indicated the dominance of pyrogenic sources;
- Ratio of 228 Molecular Weight PAHs (BaA/(BaA+Ch)) where BaA=benz[a]anthracene, Ch=chrysene and values ≤0.20 indicate the dominance of petrogenic PAHs, >0.20 to ≤0.35 a mixture of inputs and >0.35 the dominance of pyrogenic inputs;
- Ratio of 276 Molecular Weight PAHs (IP/(IP+Bghi)) where IP=indeno[1,2,3-cd]pyrene, Bghi=benzo[g,h,i]perylene and values ≤0.2 indicate the dominance of petrogenic sources and >0.50 indicate the dominance of pyrogenic sources.

B.10.2 Univariate Macrofauna Indices

Univariate community analyses were undertaken using the PRIMER (version 7) software package. Univariate indices seek, by means of a single number, to summarise information about some aspect of community structure. The two aspects of community structure contributing to the concept of diversity are species richness (a measure related to the total number of species present) and evenness (a measure relating to the pattern of distribution of individuals among the species present).

Diversity indices, as typified by the Shannon-Wiener index, are considered to be a relatively insensitive measure of anthropogenic disturbance. However, benthic ecologists have been able to demonstrate a clear inverse relationship between diversity and total oil concentrations in sediments (Davies *et al.*, 1984). They are therefore of some practical use for making comparisons between stations and sites.

The following indices were calculated and are presented in the report:

Margalef's Richness Index

Species richness is sometimes given simply as the number of species in a sample but this is of course very dependent upon sample size. Alternatively, Margalef's index (*d*) may be used as this takes account of the number of species present for a given number of individuals. Margalef's richness index is calculated as follows:

APPENDIX B METHODS

$$d = \frac{(S-1)}{\ln N}$$

where d = Margalef's richness
S = total number of species
N = total number of individuals

Shannon-Wiener Diversity Index

This is a widely used measure of diversity providing an integrated index of species richness and relative abundance (Clarke & Warwick, 2006). It is basically a measure of the difficulty of predicting the identity of an individual based on overall community composition. The Shannon-Wiener diversity index is expressed as:

$$H' = -\sum_{i=1}^{s} p_i \log_n p_i$$

where H'= Shannon-Wiener diversity index
p_i = proportion of the total number of individuals from the ith species.
n = log base value (log base 2 is used during this report; Shannon & Weaver, 1949)

H' integrates the number of species and individual abundance to provide a summary value reflecting the diversity of fauna at a station. This index of diversity is influenced by both species richness (*i.e.* the number of species) and evenness (or equitability) of distribution of individuals between species.

Simpson's Dominance Index

Simpson's is a dominance index derived from the probability of picking two individuals from a community at random that are from the same species. Therefore Simpson's dominance index values with be large when a community is dominated by one or a few species but lower when the community is diverse. Simpson's dominance index was calculated as follows:

$$\lambda = \sum {p_i}^2$$

where λ = Simpson's dominance index
p_i = proportion of the total number of individuals from the ith species

Simpson's dominance index ranges from 0 to 1 with values typically reflecting the abundances of the most common species in the samples.

Pielou's Evenness

Evenness (or equitability) is a representation of how uniformly individuals are spread between species in a sample. It is a component of, and calculated using, a theoretical diversity measure (in this instance Shannon-Wiener). Values range from 0 to 1 with high values indicating low dominance and high evenness (*N.B.* the log base that was used to calculate H' must also be used to calculate evenness).

$$J = \frac{H'}{\log_n S}$$

where J= Pielou's evenness
H'= Shannon-Wiener diversity index
S= total number of species in a sample

APPENDIX B METHODS

Rarefraction

Rarefraction calculates the species richness for a given number of individual samples based on the construction of rarefraction curves.

$$fn = E[Xn] = K - \left(\frac{N}{n}\right)^{-1} \sum_{i=1}^{K} \left(\frac{N - N_i}{n}\right)$$

where N = total number of items
K = total number of groups
N_i = the number of items in group i
X_n = the number of groups still present in the subsample of "n" items

Species Accumulation Curves

Species accumulation curves show the increasing total number of different taxa observed as samples are successively pooled. Two versions are plotted in this report; the first (plotted in blue) simply takes the samples in their label order, this is often referred to as the "species observed" (Sobs) curve. The second curve (plotted in red) is smooth as it is an averaged output based on the samples being added in random order 999 times. This is referred to as the UGE (Ugland, Gray, Ellingsen) curve after Ugland *et al.*, (2003).

Species Ranking

A measure of the overall dominance pattern in the sampling area may be achieved by ranking the top species per station according to abundance, giving a rank score of ten to the most abundant species, decreasing to one for the tenth most abundant species, and summing these scores for all stations to provide an overall dominance score for each species (Eleftheriou & Basford, 1989). For those species ranked in the top ten, the fidelity of the species ranking can be assessed by comparing the actual rank score with the maximum possible score (thus ten multiplied by number of stations for the top rank, etc.) for that rank as a proportion; perfect fidelity is equal to one; values lower than 0.8 or higher than 1.2 represent erratic ranking, as in a species with a patchy distribution.

B.10.3 Multivariate Analyses

In addition to univariate analyses, the data were subjected to multivariate analysis using a number of different methods available within the PRIMER package (Clarke & Warwick, 2006). By considering the full data matrix as a whole and comparing each station with every other, multivariate analyses can highlight subtle trends in data sets that are commonly not identified when using univariate techniques. Multivariate techniques are not restricted to use with faunal data sets and if treated appropriately may also be used to compare complex physico-chemical data sets. Multivariate analyses were computed from resemblance or similarity matrices. In the case of faunal abundance data these were constructed using the Bray-Curtis measure of similarity following transformation of the data to down-weight the influence of highly abundant or dominant species. For the purposes of this survey, a fourth-root transformation was utilised due to the high variability of individual species abundances across the survey area. According to Clarke and Warwick (2006), square root transformation allows the intermediately abundant species to contribute to the similarity, while a fourth root takes account of the rarer species. Note that there is rarely any practical difference between fourth root and log transformation for cluster and ordination results of faunal data, although the former is more reliable (use presence/absence rather than log). Chemical data resemblance matrices are computed using Euclidean Distance following transformation (where necessary) and normalisation to standardise measurement scales. Additionally, DNA resemblance matrices are computed using Euclidean Distance following standardisation.

Cluster Analysis and SIMPROF

Cluster analysis groups samples according to their similarity *i.e.*, samples within a group are more like each other than they are to samples in other groups. Clustering was by a hierarchical agglomerative method using group average sorting, and the results are presented as a dendrogram. Using PRIMER v7 it is possible to

APPENDIX B METHODS

perform a SIMPROF (similarity profile) test at the same time as the cluster analysis to determine whether groups of samples are statistically indistinguishable or whether they contain identifiable structure. SIMPROF is an *a priori* test designed to identify groups of samples from unstructured data sets. The test employs a permutation-based analysis to determine whether groups of samples below each successive node of a dendrogram possess identifiable internal structure. If the result of a test at a particular node is not significant there is no identifiable structure within the samples below the node and they might therefore be a uniform group. A significant result indicates that samples within a group (below a particular node in the dendrogram) contain some structure and therefore may not be considered uniform. The analysis therefore identifies groups of samples that are each highly self-similar and also that are distinguishable from each other.

Ordination Analyses using non-Metric Multidimensional Scaling

Non-metric multidimensional scaling (nMDS or MDS) is a type of ordination method which creates a 2- or 3-dimensional 'map' of the samples (or stations) from the similarity matrix. The configuration of the samples on the 'map' is a reflection of their similarity, with distances between samples being representative of their dissimilarity.

It is normal for there to be some distortion (stress) between actual similarity values (in the resemblance matrix) and distance between samples on the ordination plot; perfect solutions are very rarely achieved when dealing with complex data sets. In order to achieve the lowest possible stress PRIMER adopts an iterative approach to ordination, constructing the plot by successively refining the positions of samples until the lowest stress is achieved. In reality the lowest possible stress is not always achieved since data points may become trapped in local minima. It is therefore necessary to re-run the analyses multiple times to ensure that the lowest achievable stress is found. The ordination analysis results reported were the product of a minimum of 25 restarts. In instances where the lowest achieved stress was found for <5 (20%) of the restarts the ordination was repeated with 999 restarts to ensure that a lower stress result could not be found.

The scale and orientation of MDS ordinations are arbitrary so no axes are drawn on the plots. Stress values increase with sample size, and usually also with increasingly severe transformation of the initial data set (due to the increasing influence of rarer species on the outcome of analyses). The stress value may be used as an indication of the usefulness of plots, with a general guide being as follows (Clarke & Warwick, 2006):

<0.05	Almost perfect representation of rank similarities
0.05 to <0.1	Good representation
0.1 to <0.2	Still useful
0.2 to <0.3	Should be treated with caution
>0.3	Little better than random points

BEST (BVSTEP)

Where differences in macrofaunal community structure are found it is acceptable to attempt to link these to abiotic variations in the environment. This may be achieved using multivariate routines in the PRIMER called BVSTEP and BIOENV. In this instance BVSTEP analysis has been used due to the large size of the data sets.

BVSTEP uses a stepwise procedure to search amongst a specified data matrix (normally the transformed and/or normalised data matrix) to find subsets of variables (or species) that best 'fit' the multivariate pattern of a separately specified resemblance matrix. In other words it identifies a subset (or subsets) of variables within one data set that produces the most similar (highest correlation) pattern to the overall multivariate pattern of another data set. From a random starting point the analysis adds and removes variables from the initial data set and assesses whether these improve or worsen the match to the second data set overall. Once the best match is achieved analysis is terminated. The result depends somewhat upon the starting point of the analysis and the test is therefore always used with multiple restarts in order to ensure that that the best fit is found.

APPENDIX B METHODS

Since BVSTEP may be used to compare any two similarly structured data sets it has a variety of applications. These include Bio-Env tests (where the subset of environmental variables that best fit or 'explain' the biotic data are determined), Env-Bio tests (where the subset of species that best fit the environmental data are determined) and Bio-Bio tests (where a subset or subsets of species that most resemble the overall multivariate biotic pattern are determined). The results of these analyses may provide valuable insight into the processes affecting species distributions in survey areas.

ANOSIM

ANOSIM is a multivariate equivalent of an ANOVA test. It is applied to a priori structured data sets to test for differences between pre-selected groups of samples or stations. For instance, ANOSIM may be used to test whether the fauna found <1km of an offshore installation differs from that found at >1km. The result of such an analysis might provide an indication of whether the installation and operation of offshore facilities has affected the benthic community. Results of ANOSIM tests are given as r values that range from 0 (no difference) to 1 (highly different), and the significance is determined by comparison to the randomly permuted distribution of the samples included in the analysis.

SIMPER

Where differences between groups of samples are found, SIMPER may be used to interpret which species, or environmental variables, are principally responsible for the differences between the groups and which are most responsible for the similarities within groups. The SIMPER analysis decomposes differences between all pairs of sample, one from each identified group, into their contributions from each species or variable, and ranks them in decreasing order of their contribution to overall dissimilarity.

RELATE

The RELATE test of PRIMER calculates the rank similarity of two specified data matrices, so, for instance, may be used to provide an indication of the effect of the removal of a subset of taxa (*e.g.*, juveniles) on the structure of the data set overall.

B.10.4 Spearman's Rank Correlation

Spearman's Rank Correlation Co-efficient is a non-parametric correlation analysis that may be used to test for relationships between environmental variables. Significant relationships indicate that environmental variables vary similarly. Large numbers of significant correlations might suggest the presence of an environmental gradient, that in the absence of obvious natural changes in the environment (such a depth gradient), may be attributable to point source pollution or some other form of anthropogenic interference. A matrix of Spearman's rank correlation coefficients, comparing many of the environmental variables, was calculated using Microsoft Excel and is presented in Appendix E.

B.10.5 Grubb's test for Outliers

Within the data set of environmental variables, one or more values may differ considerably from most of the rest. To identify such values for investigation as to whether they are deviant results or indicative of a notable trend at seabed, Grubb's test may be used for data sets containing >25 samples and assumes a normal distribution.

The Grubb's test (also called the extreme studentised deviate) compares each value with the mean and the standard deviation for that variable.

The results of the Grubb's test for both high and low outliers was calculated using Microsoft Excel and is presented in Appendix E.

APPENDIX B METHODS

B.11 EUNIS Habitat Classification

Habitat classification is used to identify different habitats and biotopes based on the biotic and abiotic features of the seabed. Habitat and biotope classifications were conducted on the available survey data, adhering to protocols within the European Union Nature Identification System (EUNIS). The system was developed between 1996 and 2001 by the European Environment Agency (EEA) in collaboration with European experts. The table below gives examples of the five EUNIS levels used to describe the marine environments.

Table B.10 Example EUNIS Habitat Classification Levels

	Detail Covered (EUNIS code)
1. Environment	Marine benthic habitats (M)
2. Broad habitats	Circalittoral biogenic habtiat (MC2)
3. Main habitats	Atlantic circalittoral biogenic habitat (MC22)
4. Biotope complexes	Worm reefs in the Atlantic circalittoral zone (MC221)
5. Biotopes	*Sabellaria spinulosa* on stable Atlantic circalittoral mixed sediment (MC2211)

Development of the EUNIS classification comes from both a top-down and a bottom-up approach. The first division is based on differentiating between major biological zones related to depth (littoral down to abyssal) and differentiation of substrate type *(e.g*. rock, sand, gravel). These high-level divisions can be further subdivided based on the main biogeographical regions of Europe's seas (*e.g*. Arctic, Baltic, Atlantic) with these regional splits being based on a combination of salinity and temperature. Such broad-scale differences in habitat character are readily understood by non-specialists and provide classification types that are easily mapped. However, they also have ecological relevance as they reflect major changes in habitat character upon which species distribution depends (Connor *et al.*, 2004).

Bottom-up classification differentiates between places with different species communities. Relative species composition, diversity and abundance vary from place to place and are dependent both on environmental characteristics and upon interactions between species. Surveyed sites with similar environmental characteristics, such as sediment type and depth, show certain levels of similarity in their species communities.

APPENDIX C BACKGROUND INFORMATION

APPENDIX C BACKGROUND INFORMATION

C.1 Sediment Characteristics

Particle size distributions of sediments in the marine environment are to a large extent determined by hydrodynamic energy at the sediment water interface. Strong currents tend to scour the seabed thereby resuspending fine particles and any material associated with them, whilst the finest sediments predominate in areas with the least hydrodynamic energy.

The role of sediment in the transport and retention of chemical pollutants is tied to both particle size and to the amount of particulate organic carbon associated with the sediment. The chemically active fraction of sediment is usually cited as the organic component and the finest size fractions (smaller than 63µm, silt, clay). The sediment, in particular the organic carbon and finer fractions, acts as a sink for many of the persistent compounds, including metals, hydrocarbons and chlorinated compounds. Many of these persistent substances are also inherently bioaccumulative and toxic. The concentrations of many parameters are typically positively correlated with the proportion of fines found in the sediment as a result of fine particles possessing a relatively large surface area. Fine sediment particles are relatively easily resuspended by waves and currents, and may be transported, along with the materials sorbed to them, over large distances, finally being deposited in areas of lower hydrodynamic energy.

Generally speaking, sands and coarser grained materials are often organically deficient. Strong currents have a tendency to resuspend fine materials and their associated organic matter. Therefore, in an environment that is not nutrient enriched due to anthropogenic discharges, both total organic matter and total organic carbon will normally be lowest at sites with coarse-grained sediment, where currents are often strongest.

Sediment particle size and organic content are also critical measurements for the categorisation of habitat type since to a large extent they control which organisms are capable of living within sediments. Most benthic infaunal organisms exhibit preferences for sediment with particular grain size characteristics. Many organisms live in tubes or burrows constructed from sediment particles; each organism's ability to do this may be limited by the range of different sized particles available. The distribution and abundance of free-living mobile organisms, *i.e.*, those that do not construct tubes or burrows, are also affected by particle sizes, which influence their ability to move within the sediment. Sand grains of inappropriate sizes may be too big to move or, conversely, too small to be stable.

Feeding guilds are groupings of organisms based upon the feeding strategies they employ (US EPA, 2008) and, as such, sediment particle size and organic content can greatly affect which species guilds may dominate in any given area. Many deposit feeding organisms, which process sediment through the alimentary tract to obtain nutrition (Gage & Tyler, 1992), are highly selective of the grain sizes that they will ingest, often preferring finer sediments that possess relatively high organic content. Conversely, resuspension of fine particulate matter may clog delicate filtering apparatus used by suspension feeders to obtain their suspended food particles from seawater (Gibson *et al.*, 2005), resulting in their exclusion from muddy sediments. Additionally, the mixtures of particle sizes determine the ease with which water and oxygen move through the sediment. An abundance of fine particles in a stable environment may lead to the formation of substrata with small interstitial spaces through which oxygen diffusion can be restricted. This may lead to anoxic conditions within the sediment, which further affects the range of species that may be present. Determination of sediment particle sizes and organic content is therefore of critical importance to the interpretation of benthic environmental survey data.

APPENDIX C BACKGROUND INFORMATION

C.2 Sediment Hydrocarbons

The principal sources of hydrocarbons in the marine environment are anthropogenic (McDougall, 2000). However, contamination of the marine environment with crude oils is not a recent phenomenon, nor solely attributable to anthropogenic activities (Douglas *et al.*, 1981). Three general processes can add hydrocarbons to marine environments: biosynthetic, geochemical and anthropogenic (McDougall, 2000).

Oil is a complex mixture of hydrocarbons and other organic compounds. Hydrocarbons are the principal component of oil, usually contributing >75% of the constituents (Laflamme & Hites, 1978). Petroleum hydrocarbons can be divided into the following broad classes according to their structure: saturates (alkanes, isoalkanes and cycloalkanes), olefins (alkenes), aromatics (benzene, toluene, ethylbenzene and xylenes, or BTEX, and polycyclic aromatic hydrocarbons), asphaltenes, polar compounds and resins (Leahy & Colwell, 1990; Wang & Fingas, 2005).

Due to the complex and variable composition of oil in marine sediments, quantification of total hydrocarbons, groups of hydrocarbons and individual hydrocarbons is required to allow identification of the source of oil within the sediments, be it anthropogenic, biogenic or geochemical. The Department of Energy and Climate Change (DECC, formerly BERR and DTI) guidelines (DTI, 1992) call for the following analyses to be conducted for environmental surveys (including baseline surveys): THC concentration, UCM concentration, individual and total n-alkane concentrations, pristane and phytane concentrations; individual and total 2-6 ring PAH concentrations, and those of their respective alkyl derivatives (DTI, 1992).

Total Hydrocarbon Concentration

THC concentration gives an indication of the total hydrocarbon present within a sediment sample; it does not give an indication of the source of contamination. The definition of THC is wholly dependent on the analytical process utilised to quantify it. In this case, THC is equivalent to total n-alkane (nC_{10} to nC_{37}), pristane, phytane, UCM and total PAH (all PAHs including alkylated derivatives) concentrations.

Unresolved Complex Mixture

The UCM consists of a large variety of branched alicyclic hydrocarbons, which are not resolved by conventional capillary gas chromatography (GC) columns and appear as a 'hump' in GC chromatograms (Bouloubassi *et al.*, 2001). These compounds remain after substantial weathering and biodegradation of petrogenic inputs has taken place, with the 'hump' becoming a more predominant feature as resolvable n-alkanes are selectively transformed by weathering. Abundant UCM is ascribed to either degraded or weathered oil residues, and therefore its occurrence in environmental samples is an indicator of oil pollution (Bouloubassi *et al.*, 2001). Notably, a UCM between nC_{20} and nC_{34}, centred on nC_{29} is typical of North Sea sediments, and is generally considered as 'North Sea Background'.

N-alkanes

Alkanes are the simplest aliphatic compounds, containing only carbon and hydrogen held together by single bonds and not containing a ring; they have the general formula C_nH_{2n+2} (Lyons & Plisga, 2005). The n-alkanes are continuous, straight chain alkanes, while branched-chain alkanes are known as isoalkanes or isoprenoids (Lyons & Plisga, 2005). The only isoprenoids quantified in this survey are pristane and phytane, which are isomers of nC_{18} and nC_{19}. These compounds are substantially less susceptible to weathering than their straight chain equivalents and are therefore of use when investigating the degree of weathering of a sample (Tran *et al.*, 1995).

APPENDIX C BACKGROUND INFORMATION

Although generally less harmful to many living organisms than aromatic hydrocarbons, analysis of the aliphatic component (n-alkanes, pristane and phytane) can still provide valuable information to aid in the determination of hydrocarbon sources (Tran *et al.*, 1995). N-alkanes can be derived from a variety of origins, both anthropogenic and natural; it is therefore necessary to distinguish which of these are present, or indeed predominate, in a given environment (Tran *et al.*, 1995). There is a wide range of methods available for this purpose, but those undertaken in this report include: quantification of individual n-alkane concentrations, interpretation of GC chromatograms, the CPI (Farrington & Tripp, 1977) and the pristane:phytane ratio (Berthou & Friocourt, 1981).

Polycyclic Aromatic Hydrocarbons

PAHs and their alkyl derivatives are almost ubiquitous in marine environments (Laflamme & Hites, 1978). Natural sources of PAHs include forest fires (Youngblood & Blumer, 1975), synthesis by plants (Neff, 1979) and oil seeps (Page *et al.*, 1998). However, the largest sources of PAHs are associated with anthropogenic activities, particularly fossil fuel combustion (Neff, 2004; Laflamme & Hites, 1978). Pyrogenic PAHs may be transported long distances through the atmosphere before finally being deposited. Even after deposition, PAHs may undergo further transport, *e.g.* in urban runoff and rivers, before ultimately being deposited in marine sediments, where they sorb to organic matter and sediment particles.

Concentrations of PAHs in marine sediments vary by many orders of magnitude, ranging from less than 1ng g^{-1} in deep-water oceanic sediments up to a few mg g^{-1} in highly contaminated harbours and coastal sediments (Neff, 2004). In enclosed waters subjected to oil exploration and production activity, PAH concentrations tend to be somewhat higher than in the open ocean. Generally speaking, the greatest PAH concentrations are found in coastal sediments. Barring the presence of point sources of hydrocarbon contamination, total PAH concentrations in marine sediments normally decrease with distance from major human population centres (Larsen *et al.*, 1986).

The occurrence and concentration of PAHs in the environment is of concern since many possess mutagenic, carcinogenic and toxic properties (McDougall, 2000; Neff, 2004). Many PAHs are readily bioaccumulated through the food web and higher weight aromatics in particular are persistent. The rate at which PAHs degrade is affected by many factors; in the marine environment photooxidation and biodegradation are considered to be the two most important processes of degradation (Neff, 2004). Therefore, PAHs are likely to be most persistent in cold, high latitude deep-waters where sediments receive little or no light. ESGOSS (1994) estimate the half-lives of 2-ring aromatics to be generally less than 100 days whilst heavier weight 5- and 6-ring aromatics may possess half lives in excess of 10,000 days.

Although found in most marine sediments, petrogenic aromatics are normally less abundant than the pyrogenic, HMW aromatics (Bence *et al.*, 1996). Elevated concentrations of LMW, more volatile, 2 and 3 ring PAHs (NPD) may often be related to the presence of point sources of hydrocarbon input, including oil spills, natural seeps, drilling activity and produced water outfalls (Neff, 2004). A major source of NPD PAHs is the use of oil-based muds during drilling operations and the subsequent discharge of these cuttings on the seabed (Breuer *et al.*, 2004). Pyrogenic PAHs tend to be more widespread, but generally in relatively low concentrations.

The concentrations at which individual PAHs produce toxic effects vary widely (Long *et al.*, 1995) and are dependent on their type and bioavailability. Values for the toxicity of individual aromatics may be misleading since individual PAHs are rarely found in isolation. The best estimates of the potential toxicity of PAHs in marine sediments are ERL and ERM concentrations for total LMW, total HMW and total PAHs (Neff, 2004). Long *et al.* (1995) gives ERL concentrations for LMW and HMW PAHs of 0.55 and 1.70µg g^{-1}, respectively. ERM concentrations are 3.16 and 9.60µg g^{-1} for LMW and HMW PAHs, respectively. The ERL and ERM concentrations for total PAH concentration in sediments are 4.022 and 44.792µg g^{-1}, respectively. These

APPENDIX C BACKGROUND INFORMATION

concentrations are not actual thresholds of toxicity, but delineate concentration ranges with associated probabilities of toxicity. The ERL is the tenth percentile in the PAH effects data provided by Long *et al.* (1995), while the ERM is the median, or 50th percentile. Concentrations below the ERL concentration therefore represent a range in which effects would rarely be observed; concentrations equal to or above the ERL concentration, but below the ERM concentration, represent a range in which effects would occasionally occur and concentrations equalling or exceeding the ERM concentration represent a range within which effects could frequently be expected.

The US EPA identified 16 priority low and higher molecular weight PAHs. Nine of these were selected by OSPAR as the focus for their studies and are the 4 to 6 ring compounds of particular importance due to their toxic nature even at very low concentrations. OSPAR CEMP EAC benchmark concentrations (OSPAR, 2009b) have been developed for the nine OSPAR priority PAHs plus naphthalene and dibenzothiophenes (DBT).

Information on the source of PAHs in sediments may be obtained from a study of the alkyl homologues (*e.g.* methyl, ethyl etc. substitution) and parent compound distributions and concentrations. Sediments contaminated with petrogenic material normally contain a predominance of alkylated PAHs, particularly within the LMW range, whereas pyrogenic PAHs comprise mostly HMW unalkylated parent compounds.

C.3 Sediment Metal Concentrations

Metals are generally persistent and at elevated concentrations most are toxic to varying degrees. Many metals such as copper, zinc and chromium are readily bioaccumulated meaning that they are absorbed and stored in organisms over time leading to potential high concentrations capable of causing lethal and sub-lethal toxic effects in benthic organisms even when found in apparently low concentrations in sediment. Metal concentrations in uncontaminated marine sediments generally exceed those found in overlying seawater by three to five orders of magnitude (Bryan & Langston, 1992), since the buffering effects of saline water cause many metals to be rapidly precipitated. Furthermore, dissolved metals are readily scavenged from the water column by organic coatings and iron and manganese coatings found on the surface of fine sediment particles. Consequently fresh waters that are metal enriched by terrestrial runoff tend to deposit much of their metal load in estuarine or near coastal sediments. Ecological impacts attributable to anthropogenic metal contamination in non-coastal marine environments are often somewhat limited in geographical range close to the point of their origin (Rygg, 1985).

Several metals are found in high concentrations in drilling muds and produced water. Some of these metals are added intentionally to drilling muds as metal salts or organo-metallic compounds whilst others are present as trace impurities in major mud ingredients, particularly barite and clay. Those metals most characteristic of contamination of the sediment with drilling muds or cuttings are barium, chromium, lead and zinc (Neff, 2005), but this may vary depending upon the specific constituents of the muds. By far the most abundant metal in most drilling muds is barium, found in the form of barite ($BaSO_4$). In exceptional cases, fine-grained marine sediments may naturally contain in excess of 1000µg g^{-1} barium, but this figure may be greatly enhanced by contamination of sediments with drilling muds containing up to 450mg g^{-1} barium (Neff, 2005). Due to its low solubility and the fact that it is not toxic in its sulphate form (Gerrard *et al.*, 1999), elevated barium concentrations are rarely of toxicological concern. However, monitoring sediment barium concentrations can provide information regarding the extent to which drill cuttings have been transported from their point of origin.

When considering the results of the sediment metal determinations it should be borne in mind that speciation (the particular forms, or species, of any given metal that exist in a sample), sediment granulometry and partitioning of metals between water and sediment phases all affect bioavailability and therefore toxicity. Even if

APPENDIX C BACKGROUND INFORMATION

a metal is present at above normal concentrations, it does not necessarily follow that the metal will produce ecologically deleterious effects, particularly if it is present in an insoluble or relatively low toxicity form. Historically, a wide range of different extraction techniques have been employed that were intended to provide an estimate of the concentrations of metals in marine sediments that may be available to the biota. One of the most commonly used methods of modelling metal bioavailability is extraction of oxic (surficial) sediments with weak acids (*e.g.* 1M nitric acid) since most anthropogenic metal contaminants show a much higher affinity to fine particulate matter than the coarse fraction by the presence of organic matter and clay minerals. These techniques have been shown to produce results that correlate closely with metal burdens in the tissues of benthic organisms (Luoma & Davis, 1983; Bryan & Langston, 1992). However, the extent to which a particular method of extracting metals from sediments reflects their bioavailability is still not well understood, and the debate regarding which methods may be most appropriate is ongoing.

Total sediment metal concentrations have historically been the preferred measurement for offshore surveys. Whilst these provide little information regarding concentrations of metals that may be bioavailable, since they involve total dissolution of the sediment, they are; however, useful for comparisons between surveys and will give an indication of whether or not sediments are contaminated. There is a growing body of data that provides broad figures for the total concentrations of many metals likely to be found in uncontaminated marine sediments (see OSPAR, 2005). Baseline figures may therefore be compared to these data in order to assess whether sediments in an area may have been anthropogenically contaminated prior to any works being carried out. Where elevated concentrations of metals are found, results may be compared to existing sediment metal toxicity data in order to assess whether particular metals may be exerting a toxicological effect on benthic communities (see Buchman, 2008).

C.4 Macrofaunal Analyses

The macrofaunal investigation in this survey is designed to provide a description of the benthic infauna and how it varies across the survey area. Marine benthic invertebrate communities have been shown to be sensitive to environmental change, particularly environmental degradation as a result of anthropogenic contamination (Davies *et al.*, 1984; Warwick & Clarke, 1991). Analysis of faunal data sets may therefore provide insight into any changes resulting from point source pollutants and disturbance.

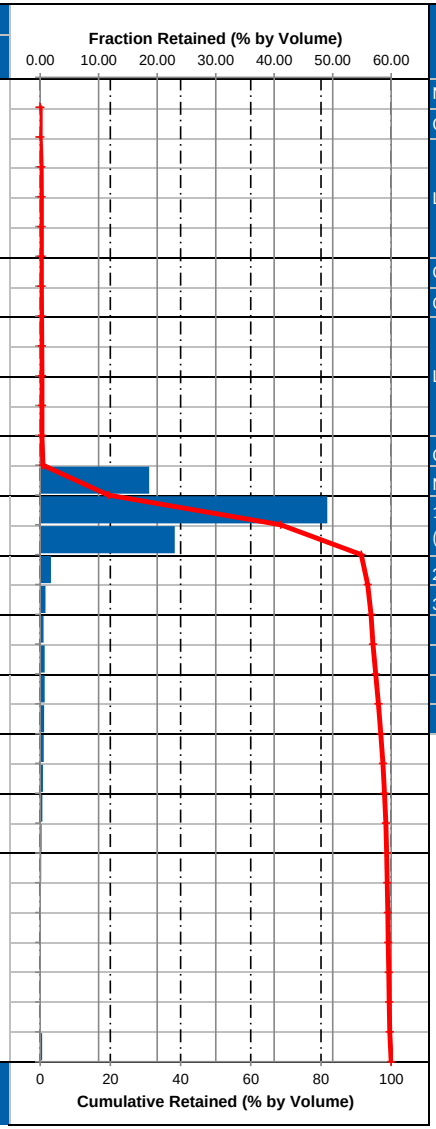
C.5 Sediment Metabarcoding

In addition to traditional methods used for sediment metabarcoding in this survey sediment metabarcoding acts to increase assessments of important components of biodiversity that may be neglected due to the difficulty of taxonomic identification using conventional morphological approaches. DNA biodiversity monitoring provides additional information about the sediment biodiversity of the bacteria and fauna within the survey area. Bacteria are a useful indicator of water quality due to species diversity and ability to respond to changing environmental conditions (Lemke *et al.*, 1997).

APPENDIX D PARTICLE SIZE ANALYSIS

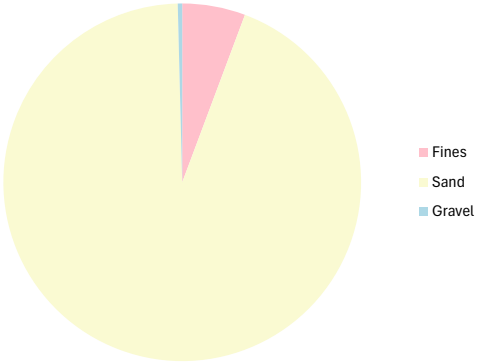
APPENDIX D PARTICLE SIZE ANALYSIS

ENV001				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.26	0.26	Pebble
8000.00	-3.00	0.06	0.32	
5656.85	-2.50	0.00	0.32	
4000.00	-2.00	0.02	0.35	
2828.43	-1.50	0.01	0.36	Granule
2000.00	-1.00	0.04	0.40	
1414.21	-0.50	0.06	0.46	Very coarse sand
1000.00	0.00	0.04	0.50	
707.11	0.50	0.00	0.50	Coarse sand
500.00	1.00	0.00	0.50	
353.55	1.50	0.26	0.77	Medium sand
250.00	2.00	18.63	19.40	
176.78	2.50	49.08	68.48	Fine sand
125.00	3.00	23.00	91.48	
88.39	3.50	1.83	93.31	Very fine sand
62.50	4.00	0.92	94.23	
44.19	4.50	0.59	94.82	Coarse silt
31.25	5.00	0.78	95.60	
22.10	5.50	0.76	96.36	Medium silt
15.63	6.00	0.67	97.03	
11.05	6.50	0.60	97.63	Fine silt
7.81	7.00	0.49	98.12	
5.52	7.50	0.36	98.48	Very fine silt
3.91	8.00	0.25	98.73	
2.76	8.50	0.16	98.89	
1.95	9.00	0.12	99.02	
1.38	9.50	0.14	99.15	
0.98	10.00	0.15	99.30	Clay
0.69	10.50	0.15	99.45	
0.49	11.00	0.14	99.59	
<0.49	>11	0.35	100.00	



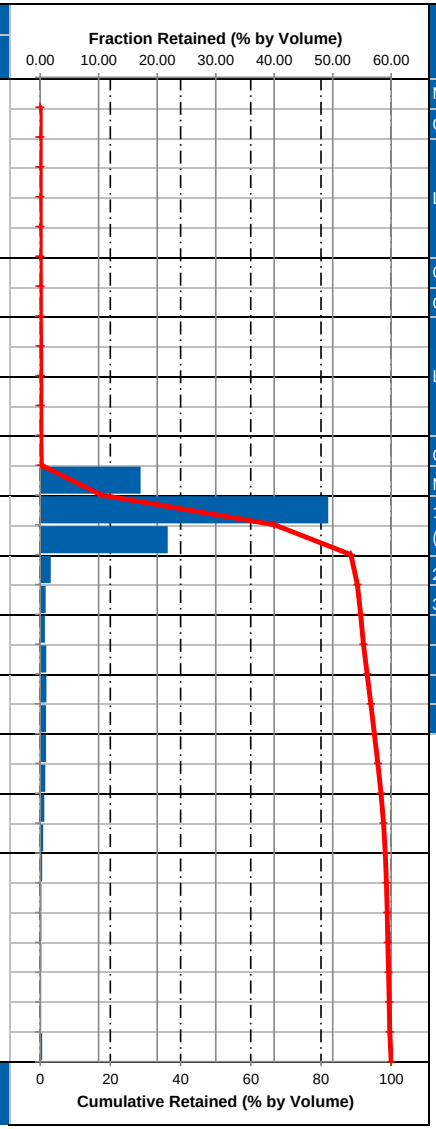
Method of Moments			
Geometric	Mean (µm)	172.89	Wentworth:
Logarithmic	Mean (Phi)	2.53	Fine sand
	Sorting	1.25	Poor
	Skewness	3.51	Very fine
	Kurtosis	25.33	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	195.79	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	0.69	Moderately well
	Skewness	0.33	Very fine
	Kurtosis	2.10	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.31	201.42	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.70%
EUNIS Folk	Sand and muddy sand	Sand	93.80%
Distribution	Unimodal	Gravel	0.40%



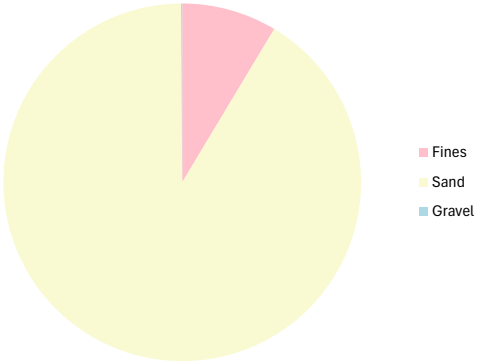
APPENDIX D PARTICLE SIZE ANALYSIS

ENV002				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.04	Granule
2000.00	-1.00	0.03	0.08	
1414.21	-0.50	0.06	0.13	Very coarse sand
1000.00	0.00	0.07	0.20	
707.11	0.50	0.00	0.20	Coarse sand
500.00	1.00	0.00	0.20	
353.55	1.50	0.13	0.33	Medium sand
250.00	2.00	17.15	17.48	
176.78	2.50	49.25	66.73	Fine sand
125.00	3.00	21.80	88.53	
88.39	3.50	1.82	90.35	Very fine sand
62.50	4.00	0.95	91.30	
44.19	4.50	0.80	92.09	Coarse silt
31.25	5.00	1.05	93.14	
22.10	5.50	1.06	94.20	Medium silt
15.63	6.00	1.01	95.22	
11.05	6.50	1.01	96.23	Fine silt
7.81	7.00	0.88	97.10	
5.52	7.50	0.70	97.81	Very fine silt
3.91	8.00	0.51	98.32	
2.76	8.50	0.32	98.64	Clay
1.95	9.00	0.22	98.86	
1.38	9.50	0.20	99.05	
0.98	10.00	0.20	99.25	
0.69	10.50	0.18	99.43	
0.49	11.00	0.16	99.59	
<0.49	>11	0.35	100.00	



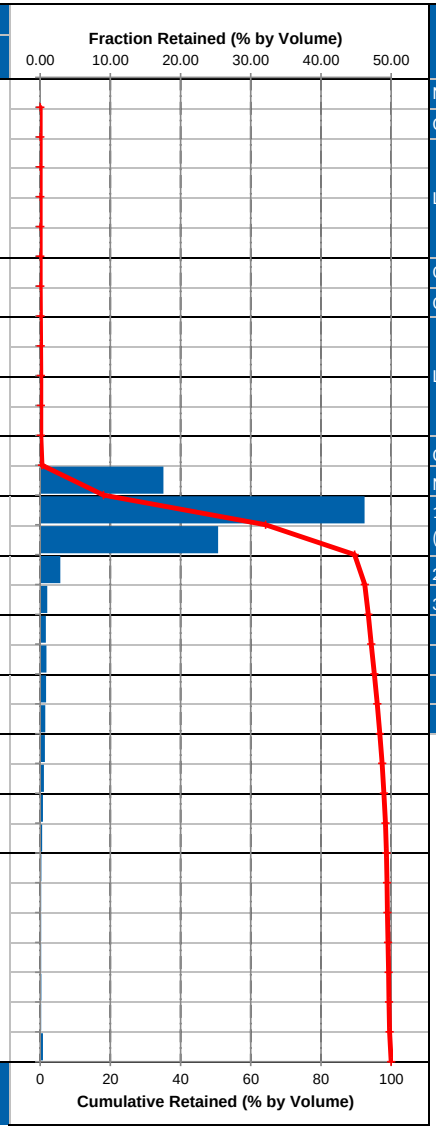
Method of Moments			
Geometric	Mean (µm)	156.18	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.39	Poor
	Skewness	3.49	Very fine
	Kurtosis	17.48	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	190.20	Wentworth:
Logarithmic	Mean (Phi)	2.39	Fine sand
	Sorting	0.88	Moderate
	Skewness	0.44	Very fine
	Kurtosis	2.84	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.33	198.86	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.60%
EUNIS Folk	Sand and muddy sand	Sand	91.20%
Distribution	Bimodal	Gravel	0.10%



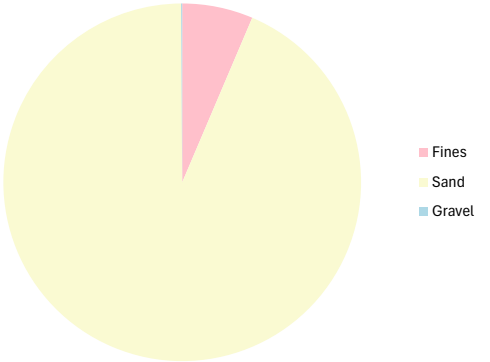
APPENDIX D PARTICLE SIZE ANALYSIS

ENV003				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.04	0.05	
1414.21	-0.50	0.06	0.12	Very coarse sand
1000.00	0.00	0.06	0.18	
707.11	0.50	0.00	0.18	Coarse sand
500.00	1.00	0.00	0.18	
353.55	1.50	0.30	0.48	Medium sand
250.00	2.00	17.54	18.02	
176.78	2.50	46.21	64.24	Fine sand
125.00	3.00	25.36	89.59	
88.39	3.50	2.88	92.47	Very fine sand
62.50	4.00	1.01	93.49	
44.19	4.50	0.80	94.29	Coarse silt
31.25	5.00	0.89	95.18	
22.10	5.50	0.84	96.02	Medium silt
15.63	6.00	0.74	96.76	
11.05	6.50	0.66	97.42	Fine silt
7.81	7.00	0.54	97.95	
5.52	7.50	0.40	98.35	Very fine silt
3.91	8.00	0.27	98.63	
2.76	8.50	0.17	98.80	Clay
1.95	9.00	0.13	98.94	
1.38	9.50	0.14	99.08	
0.98	10.00	0.16	99.23	
0.69	10.50	0.16	99.39	
0.49	11.00	0.15	99.54	
<0.49	>11	0.39	100.00	



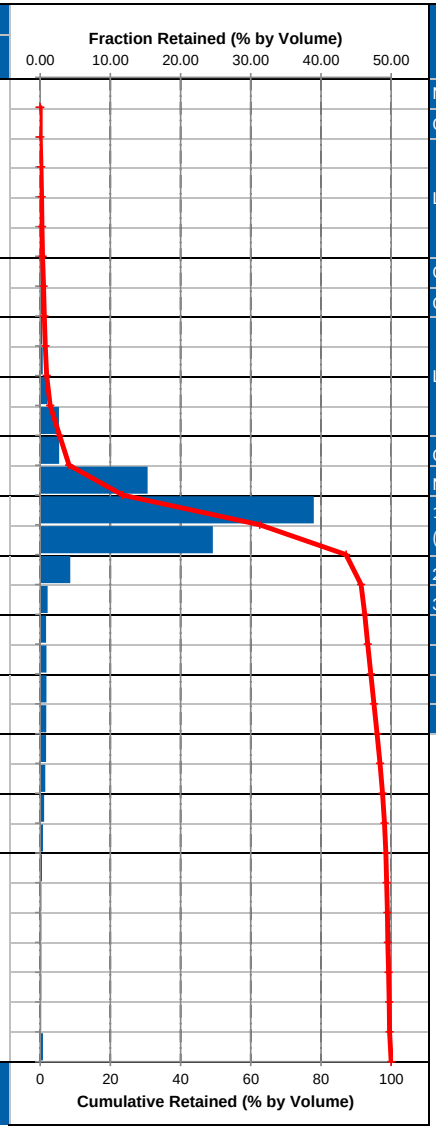
Method of Moments			
Geometric	Mean (µm)	163.97	Wentworth:
Logarithmic	Mean (Phi)	2.60	Fine sand
	Sorting	1.24	Poor
	Skewness	4.18	Very fine
	Kurtosis	25.03	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	190.43	Wentworth:
Logarithmic	Mean (Phi)	2.39	Fine sand
	Sorting	0.73	Moderate
	Skewness	0.35	Very fine
	Kurtosis	2.11	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.35	196.70	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.40%
EUNIS Folk	Sand and muddy sand	Sand	93.40%
Distribution	Unimodal	Gravel	0.10%



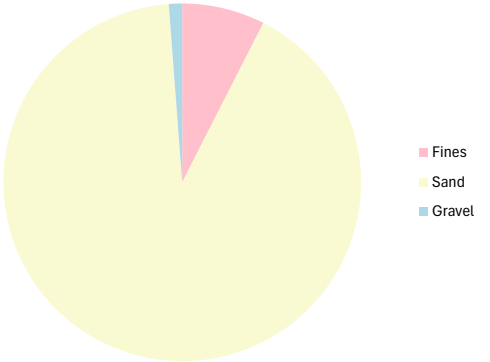
APPENDIX D PARTICLE SIZE ANALYSIS

ENV004				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.25	0.25	Pebble
8000.00	-3.00	0.14	0.39	
5656.85	-2.50	0.12	0.51	
4000.00	-2.00	0.19	0.70	
2828.43	-1.50	0.24	0.94	Granule
2000.00	-1.00	0.25	1.19	
1414.21	-0.50	0.29	1.48	Very coarse sand
1000.00	0.00	0.37	1.84	
707.11	0.50	1.02	2.86	Coarse sand
500.00	1.00	2.67	5.53	
353.55	1.50	2.69	8.22	Medium sand
250.00	2.00	15.31	23.53	
176.78	2.50	38.99	62.51	Fine sand
125.00	3.00	24.61	87.12	
88.39	3.50	4.30	91.42	Very fine sand
62.50	4.00	1.06	92.48	
44.19	4.50	0.82	93.31	Coarse silt
31.25	5.00	0.90	94.21	
22.10	5.50	0.90	95.11	Medium silt
15.63	6.00	0.87	95.98	
11.05	6.50	0.85	96.83	Fine silt
7.81	7.00	0.72	97.55	
5.52	7.50	0.56	98.10	Very fine silt
3.91	8.00	0.39	98.49	
2.76	8.50	0.24	98.73	
1.95	9.00	0.17	98.90	
1.38	9.50	0.16	99.06	
0.98	10.00	0.17	99.24	Clay
0.69	10.50	0.17	99.40	
0.49	11.00	0.15	99.55	
<0.49	>11	0.38	100.00	



Method of Moments			
Geometric	Mean (µm)	173.83	Wentworth:
Logarithmic	Mean (Phi)	2.52	Fine sand
	Sorting	1.50	Poor
	Skewness	2.18	Very fine
	Kurtosis	15.08	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	197.05	Wentworth:
Logarithmic	Mean (Phi)	2.34	Fine sand
	Sorting	0.98	Moderate
	Skewness	0.19	Fine
	Kurtosis	2.53	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.34	197.58	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

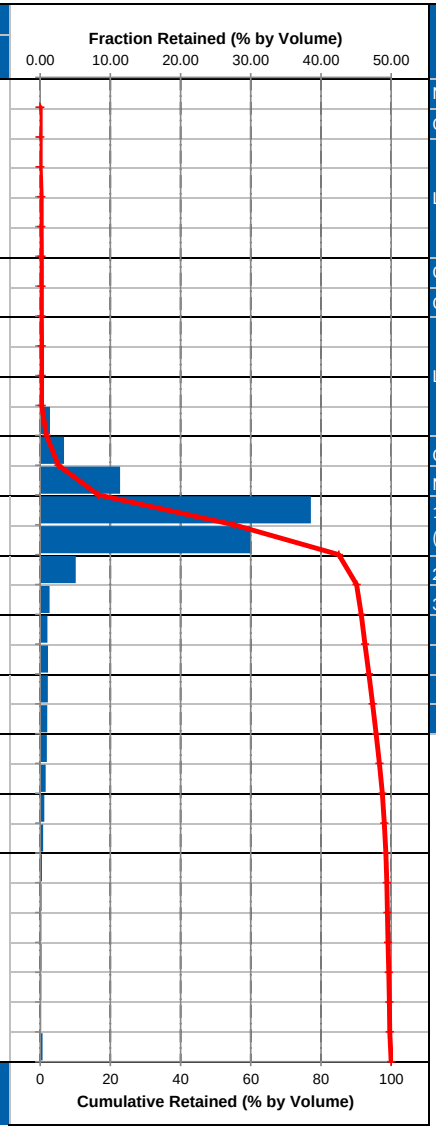
Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	7.50%
EUNIS Folk	Sand and muddy sand	Sand	91.30%
Distribution	Unimodal	Gravel	1.20%



APPENDIX D PARTICLE SIZE ANALYSIS

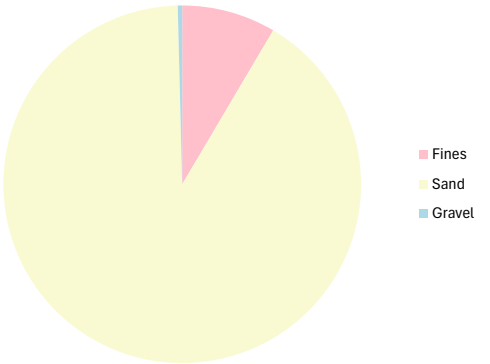
ENV005

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.26	0.26	
5656.85	-2.50	0.05	0.31	
4000.00	-2.00	0.02	0.32	
2828.43	-1.50	0.03	0.35	Granule
2000.00	-1.00	0.01	0.36	
1414.21	-0.50	0.03	0.39	Very coarse sand
1000.00	0.00	0.03	0.41	
707.11	0.50	0.00	0.41	Coarse sand
500.00	1.00	1.39	1.80	
353.55	1.50	3.40	5.20	Medium sand
250.00	2.00	11.39	16.59	
176.78	2.50	38.57	55.16	Fine sand
125.00	3.00	29.93	85.09	
88.39	3.50	5.06	90.15	Very fine sand
62.50	4.00	1.33	91.49	
44.19	4.50	1.04	92.52	Coarse silt
31.25	5.00	1.10	93.63	
22.10	5.50	1.08	94.71	Medium silt
15.63	6.00	1.01	95.72	
11.05	6.50	0.95	96.67	Fine silt
7.81	7.00	0.78	97.45	
5.52	7.50	0.60	98.05	Very fine silt
3.91	8.00	0.42	98.48	
2.76	8.50	0.27	98.74	
1.95	9.00	0.18	98.93	
1.38	9.50	0.18	99.11	
0.98	10.00	0.19	99.29	Clay
0.69	10.50	0.17	99.47	
0.49	11.00	0.15	99.61	
<0.49	>11	0.33	100.00	



Method of Moments			
Geometric	Mean (µm)	154.12	Wentworth:
Logarithmic	Mean (Phi)	2.69	Fine sand
	Sorting	1.40	Poor
	Skewness	2.82	Very fine
	Kurtosis	16.44	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	181.36	Wentworth:
Logarithmic	Mean (Phi)	2.46	Fine sand
	Sorting	0.88	Moderate
	Skewness	0.31	Very fine
	Kurtosis	2.37	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.16	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

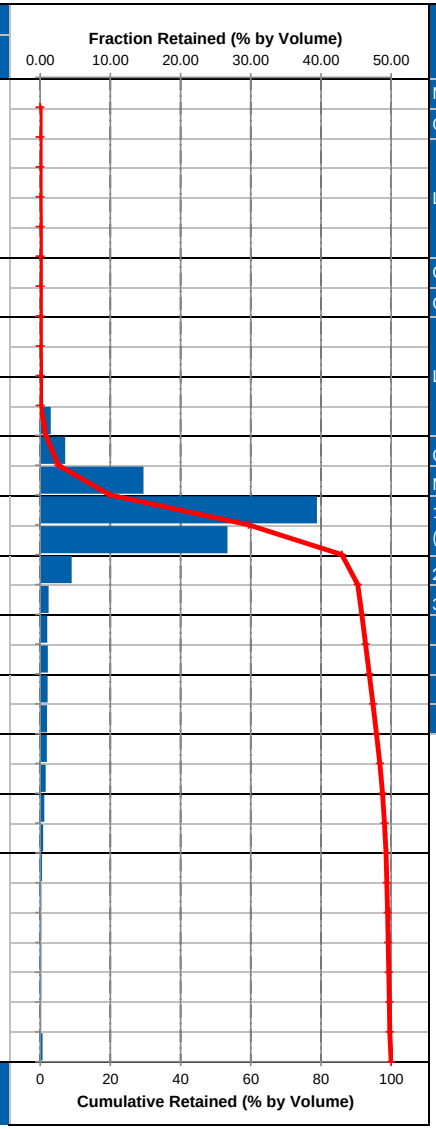
Classification		Composition	
Modified Folk	Sand	Fines	8.50%
EUNIS Folk	Sand and muddy sand	Sand	91.10%
Distribution	Unimodal	Gravel	0.40%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV006

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.01	0.05	
2828.43	-1.50	0.02	0.06	Granule
2000.00	-1.00	0.01	0.07	
1414.21	-0.50	0.01	0.08	Very coarse sand
1000.00	0.00	0.02	0.10	
707.11	0.50	0.00	0.10	Coarse sand
500.00	1.00	1.50	1.60	
353.55	1.50	3.57	5.16	Medium sand
250.00	2.00	14.71	19.87	
176.78	2.50	39.43	59.30	Fine sand
125.00	3.00	26.68	85.98	
88.39	3.50	4.49	90.47	Very fine sand
62.50	4.00	1.20	91.67	
44.19	4.50	1.01	92.68	Coarse silt
31.25	5.00	1.09	93.77	
22.10	5.50	1.05	94.82	Medium silt
15.63	6.00	0.97	95.79	
11.05	6.50	0.94	96.73	Fine silt
7.81	7.00	0.78	97.51	
5.52	7.50	0.60	98.11	Very fine silt
3.91	8.00	0.42	98.52	
2.76	8.50	0.26	98.78	Clay
1.95	9.00	0.18	98.96	
1.38	9.50	0.17	99.13	
0.98	10.00	0.18	99.31	
0.69	10.50	0.17	99.47	
0.49	11.00	0.14	99.62	
<0.49	>11	0.33	100.00	

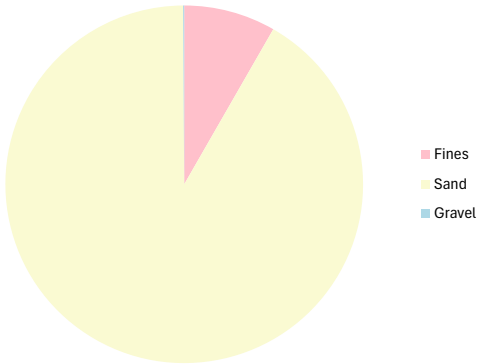


Method of Moments			
Geometric	Mean (µm)	157.94	Wentworth:
Logarithmic	Mean (Phi)	2.66	Fine sand
	Sorting	1.37	Poor
	Skewness	3.27	Very fine
	Kurtosis	17.25	Very leptokurtic

Graphic Folk and Ward			
Geometric	Mean (µm)	188.88	Wentworth:
Logarithmic	Mean (Phi)	2.40	Fine sand
	Sorting	0.90	Moderate
	Skewness	0.31	Very fine
	Kurtosis	2.31	Very leptokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.38	191.83	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

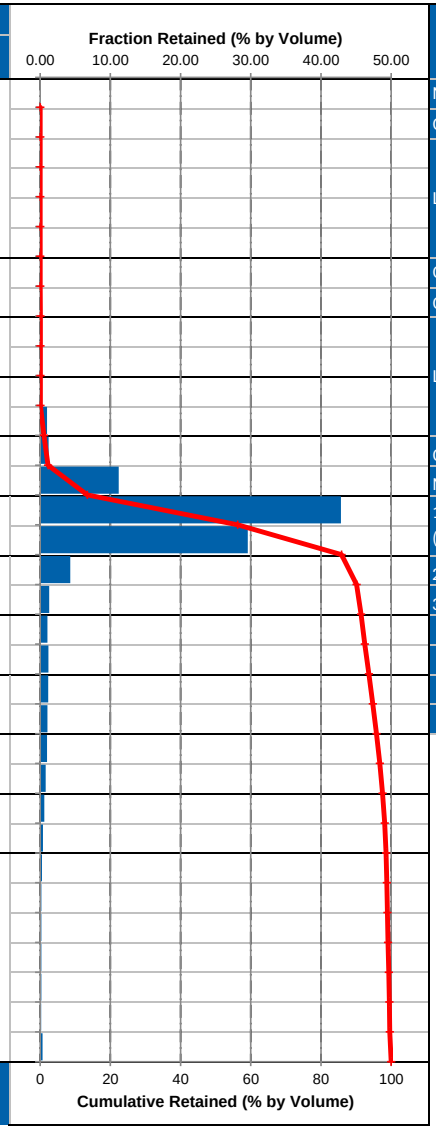
Classification		Composition	
Modified Folk	Sand	Fines	8.30%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

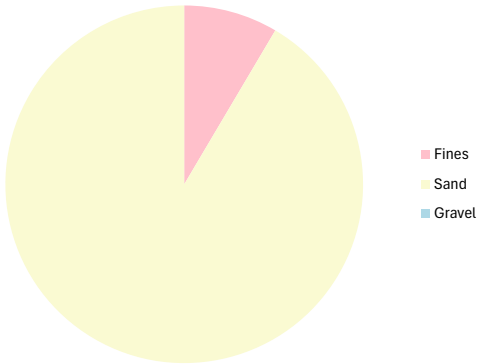
ENV007

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.01	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.02	0.05	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	0.99	1.05	
353.55	1.50	1.19	2.24	Medium sand
250.00	2.00	11.18	13.42	
176.78	2.50	42.84	56.26	Fine sand
125.00	3.00	29.58	85.84	
88.39	3.50	4.30	90.14	Very fine sand
62.50	4.00	1.28	91.41	
44.19	4.50	1.04	92.45	Coarse silt
31.25	5.00	1.17	93.62	
22.10	5.50	1.13	94.75	Medium silt
15.63	6.00	1.04	95.80	
11.05	6.50	0.97	96.77	Fine silt
7.81	7.00	0.78	97.55	
5.52	7.50	0.58	98.14	Very fine silt
3.91	8.00	0.40	98.53	
2.76	8.50	0.25	98.78	Clay
1.95	9.00	0.17	98.95	
1.38	9.50	0.17	99.12	
0.98	10.00	0.18	99.30	
0.69	10.50	0.17	99.46	
0.49	11.00	0.14	99.61	
<0.49	>11	0.34	100.00	



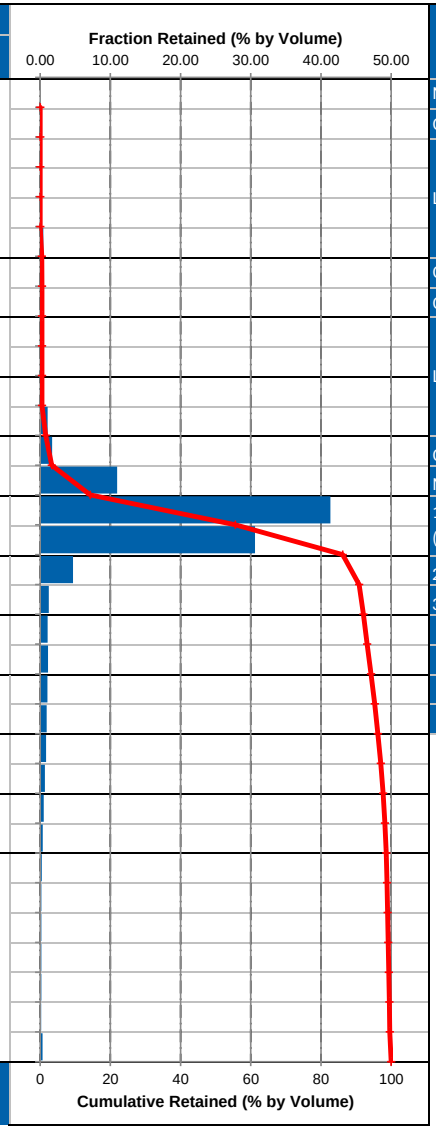
Method of Moments			
Geometric	Mean (µm)	150.31	Wentworth:
Logarithmic	Mean (Phi)	2.73	Fine sand
	Sorting	1.33	Poor
	Skewness	3.46	Very fine
	Kurtosis	18.25	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	179.83	Wentworth:
Logarithmic	Mean (Phi)	2.48	Fine sand
	Sorting	0.84	Moderate
	Skewness	0.38	Very fine
	Kurtosis	2.40	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.96	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.50%
EUNIS Folk	Sand and muddy sand	Sand	91.40%
Distribution	Unimodal	Gravel	0.00%



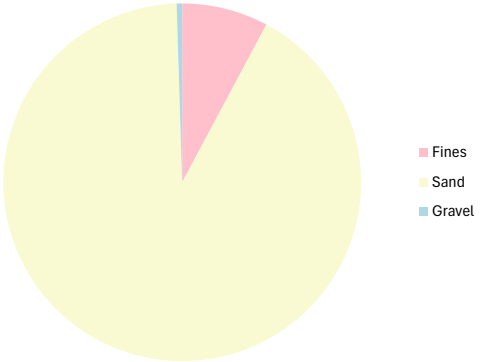
APPENDIX D PARTICLE SIZE ANALYSIS

ENV008				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.45	0.45	
2828.43	-1.50	0.04	0.48	Granule
2000.00	-1.00	0.01	0.49	
1414.21	-0.50	0.01	0.50	Very coarse sand
1000.00	0.00	0.01	0.52	
707.11	0.50	0.00	0.52	Coarse sand
500.00	1.00	1.05	1.57	
353.55	1.50	1.70	3.26	Medium sand
250.00	2.00	10.96	14.22	
176.78	2.50	41.35	55.57	Fine sand
125.00	3.00	30.61	86.18	
88.39	3.50	4.69	90.87	Very fine sand
62.50	4.00	1.23	92.10	
44.19	4.50	1.06	93.15	Coarse silt
31.25	5.00	1.12	94.27	
22.10	5.50	1.03	95.30	Medium silt
15.63	6.00	0.91	96.21	
11.05	6.50	0.83	97.04	Fine silt
7.81	7.00	0.68	97.72	
5.52	7.50	0.51	98.23	Very fine silt
3.91	8.00	0.35	98.58	
2.76	8.50	0.22	98.80	Clay
1.95	9.00	0.16	98.96	
1.38	9.50	0.16	99.13	
0.98	10.00	0.17	99.30	
0.69	10.50	0.16	99.47	
0.49	11.00	0.14	99.61	
<0.49	>11	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	155.09	Wentworth:
Logarithmic	Mean (Phi)	2.68	Fine sand
	Sorting	1.34	Poor
	Skewness	3.10	Very fine
	Kurtosis	18.55	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	180.14	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	0.81	Moderate
	Skewness	0.34	Very fine
	Kurtosis	2.25	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.22	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

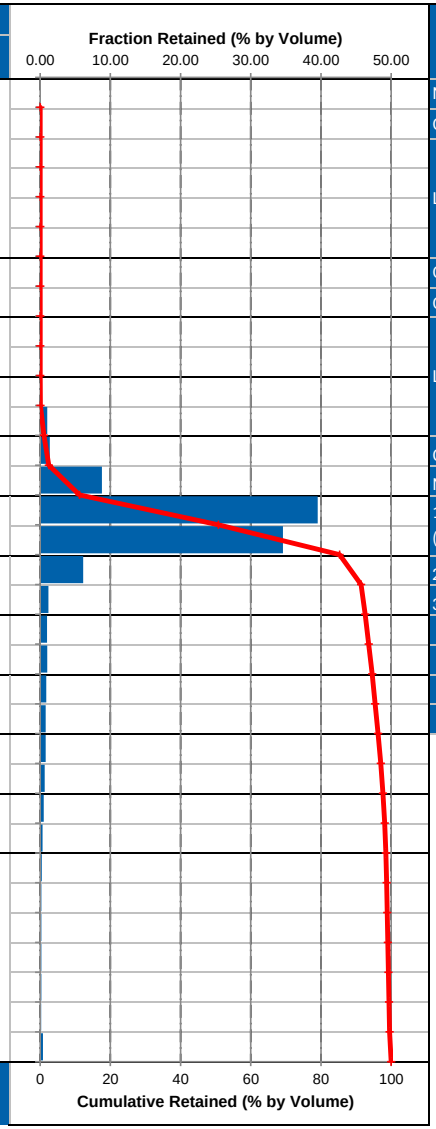
Classification		Composition	
Modified Folk	Sand	Fines	7.80%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.50%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV009

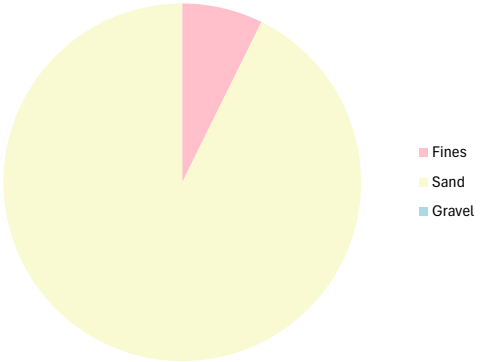
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	1.02	1.05	
353.55	1.50	1.38	2.43	Medium sand
250.00	2.00	8.78	11.22	
176.78	2.50	39.53	50.75	Fine sand
125.00	3.00	34.57	85.32	
88.39	3.50	6.11	91.43	Very fine sand
62.50	4.00	1.17	92.60	
44.19	4.50	0.97	93.57	Coarse silt
31.25	5.00	1.01	94.58	
22.10	5.50	0.87	95.45	Medium silt
15.63	6.00	0.79	96.24	
11.05	6.50	0.78	97.02	Fine silt
7.81	7.00	0.65	97.67	
5.52	7.50	0.49	98.16	Very fine silt
3.91	8.00	0.34	98.50	
2.76	8.50	0.22	98.72	
1.95	9.00	0.16	98.88	
1.38	9.50	0.16	99.05	
0.98	10.00	0.18	99.22	Clay
0.69	10.50	0.17	99.39	
0.49	11.00	0.15	99.55	
<0.49	>11	0.38	100.00	



Method of Moments			
Geometric	Mean (µm)	148.96	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.29	Poor
	Skewness	3.79	Very fine
	Kurtosis	21.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	175.48	Wentworth:
Logarithmic	Mean (Phi)	2.51	Fine sand
	Sorting	0.77	Moderate
	Skewness	0.30	Fine
	Kurtosis	2.18	Very leptokurtic

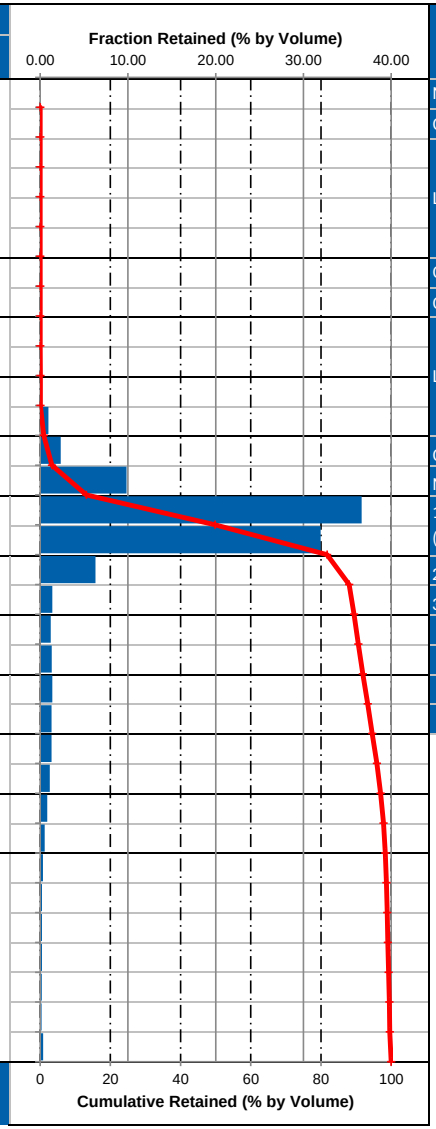
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.49	177.94	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.30%
EUNIS Folk	Sand and muddy sand	Sand	92.60%
Distribution	Unimodal	Gravel	0.00%



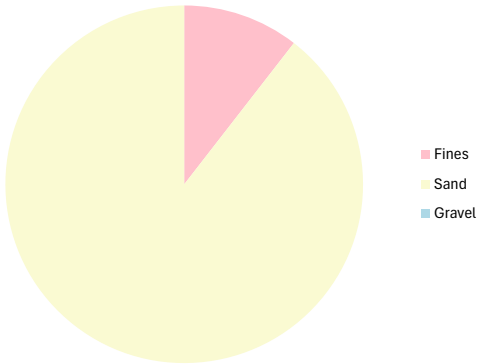
APPENDIX D PARTICLE SIZE ANALYSIS

ENV010				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.02	0.02	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.95	0.99	
353.55	1.50	2.34	3.33	Medium sand
250.00	2.00	9.83	13.16	
176.78	2.50	36.63	49.78	Fine sand
125.00	3.00	31.95	81.74	
88.39	3.50	6.30	88.04	Very fine sand
62.50	4.00	1.39	89.43	
44.19	4.50	1.20	90.63	Coarse silt
31.25	5.00	1.31	91.94	
22.10	5.50	1.37	93.32	Medium silt
15.63	6.00	1.30	94.61	
11.05	6.50	1.29	95.90	Fine silt
7.81	7.00	1.10	97.01	
5.52	7.50	0.81	97.81	Very fine silt
3.91	8.00	0.52	98.33	
2.76	8.50	0.31	98.64	Clay
1.95	9.00	0.21	98.86	
1.38	9.50	0.21	99.06	
0.98	10.00	0.21	99.28	
0.69	10.50	0.19	99.47	
0.49	11.00	0.16	99.62	
<0.49	>11	0.33	100.00	



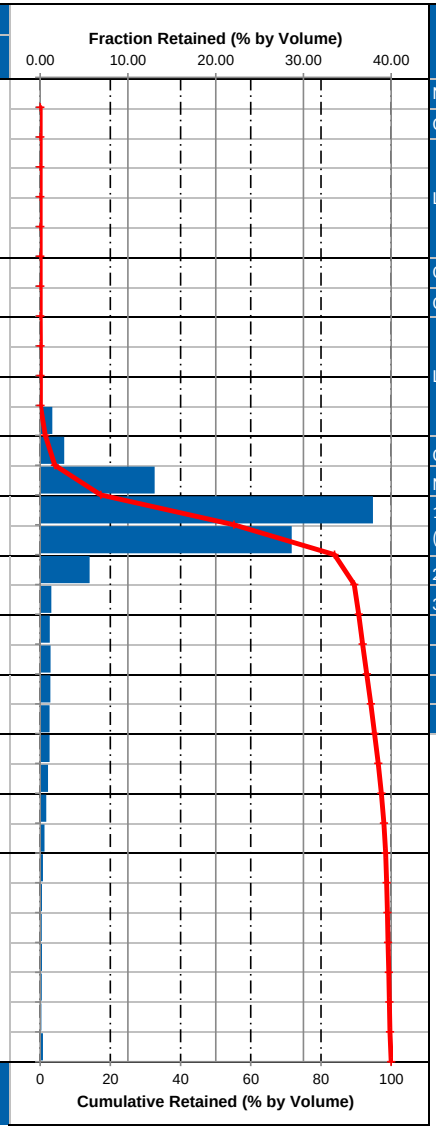
Method of Moments			
Geometric	Mean (µm)	139.10	Wentworth:
Logarithmic	Mean (Phi)	2.84	Fine sand
	Sorting	1.43	Poor
	Skewness	3.00	Very fine
	Kurtosis	14.13	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	167.95	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	0.98	Moderate
	Skewness	0.39	Very fine
	Kurtosis	2.55	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.50	176.36	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.50%
EUNIS Folk	Sand and muddy sand	Sand	89.40%
Distribution	Bimodal	Gravel	0.00%



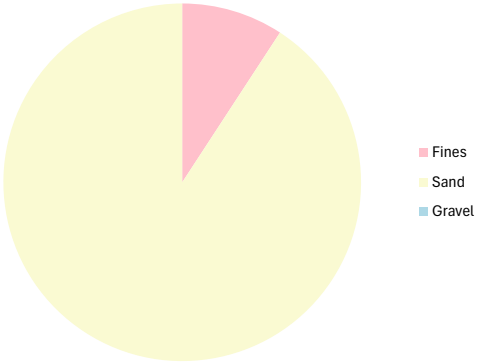
APPENDIX D PARTICLE SIZE ANALYSIS

ENV011				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.01	0.03	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.02	0.06	
707.11	0.50	0.01	0.07	Coarse sand
500.00	1.00	1.39	1.46	
353.55	1.50	2.74	4.21	Medium sand
250.00	2.00	13.05	17.26	
176.78	2.50	37.92	55.18	Fine sand
125.00	3.00	28.67	83.85	
88.39	3.50	5.64	89.49	Very fine sand
62.50	4.00	1.27	90.76	
44.19	4.50	1.09	91.85	Coarse silt
31.25	5.00	1.19	93.03	
22.10	5.50	1.15	94.19	Medium silt
15.63	6.00	1.08	95.26	
11.05	6.50	1.06	96.32	Fine silt
7.81	7.00	0.90	97.22	
5.52	7.50	0.70	97.92	Very fine silt
3.91	8.00	0.50	98.41	
2.76	8.50	0.31	98.72	Clay
1.95	9.00	0.20	98.92	
1.38	9.50	0.19	99.12	
0.98	10.00	0.20	99.31	
0.69	10.50	0.18	99.49	
0.49	11.00	0.15	99.64	
<0.49	>11	0.32	100.00	



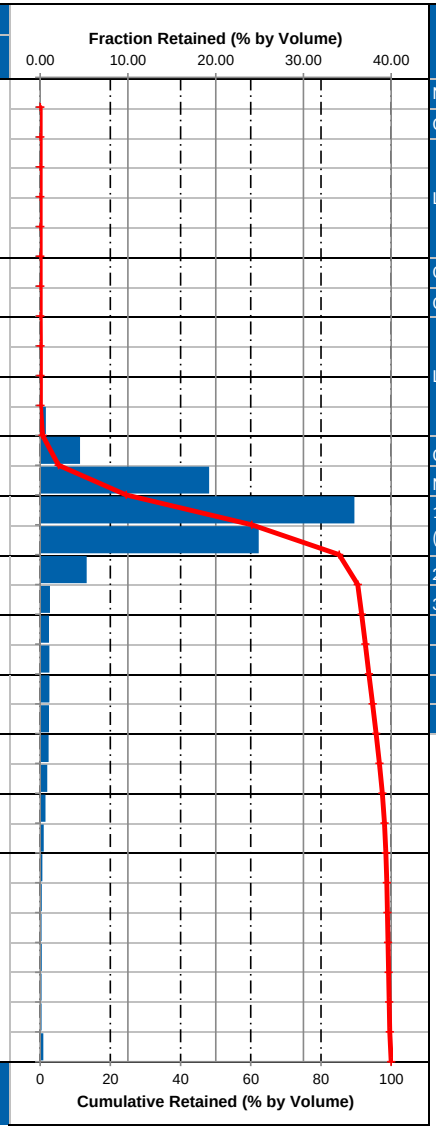
Method of Moments			
Geometric	Mean (µm)	149.46	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.40	Poor
	Skewness	3.14	Very fine
	Kurtosis	15.57	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	181.05	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	0.92	Moderate
	Skewness	0.34	Very fine
	Kurtosis	2.40	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.34	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.20%
EUNIS Folk	Sand and muddy sand	Sand	90.70%
Distribution	Unimodal	Gravel	0.00%



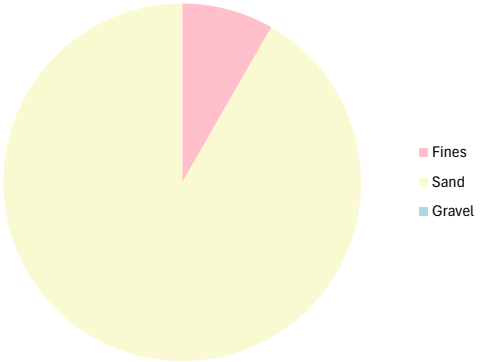
APPENDIX D PARTICLE SIZE ANALYSIS

ENV012				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.02	0.03	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.00	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.64	0.68	
353.55	1.50	4.55	5.23	Medium sand
250.00	2.00	19.24	24.47	
176.78	2.50	35.81	60.29	Fine sand
125.00	3.00	24.90	85.18	
88.39	3.50	5.31	90.49	Very fine sand
62.50	4.00	1.12	91.61	
44.19	4.50	1.01	92.62	Coarse silt
31.25	5.00	1.05	93.67	
22.10	5.50	1.04	94.71	Medium silt
15.63	6.00	0.99	95.71	
11.05	6.50	0.96	96.67	Fine silt
7.81	7.00	0.80	97.47	
5.52	7.50	0.60	98.08	Very fine silt
3.91	8.00	0.41	98.49	
2.76	8.50	0.25	98.74	Clay
1.95	9.00	0.17	98.91	
1.38	9.50	0.16	99.08	
0.98	10.00	0.18	99.25	
0.69	10.50	0.17	99.42	
0.49	11.00	0.15	99.57	
<0.49	>11	0.37	100.00	



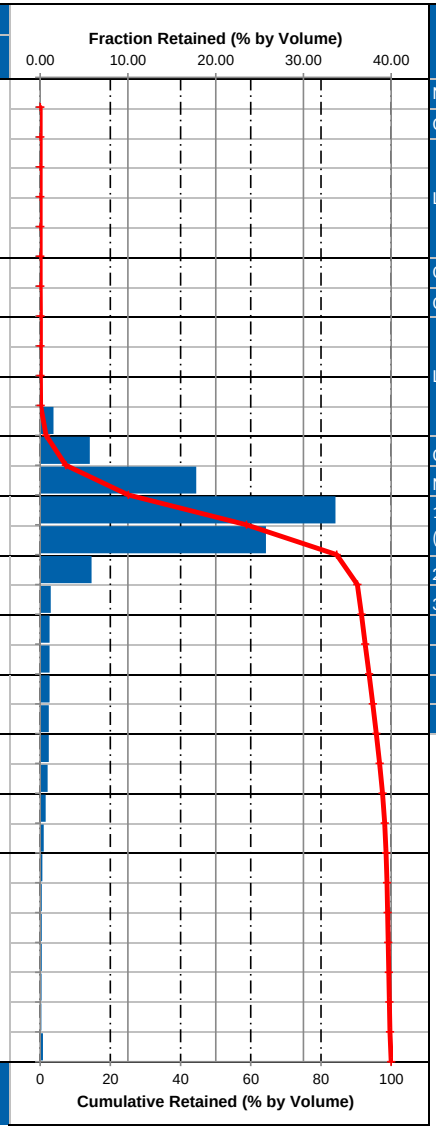
Method of Moments			
Geometric	Mean (µm)	159.45	Wentworth:
Logarithmic	Mean (Phi)	2.64	Fine sand
	Sorting	1.38	Poor
	Skewness	3.34	Very fine
	Kurtosis	17.30	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.33	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	0.93	Moderate
	Skewness	0.31	Very fine
	Kurtosis	2.17	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	195.28	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.30%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.00%



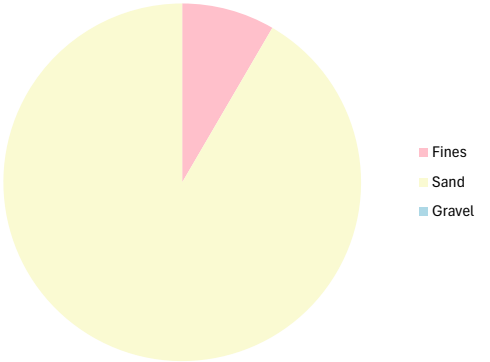
APPENDIX D PARTICLE SIZE ANALYSIS

ENV013				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.03	0.09	
707.11	0.50	0.05	0.13	Coarse sand
500.00	1.00	1.52	1.66	
353.55	1.50	5.65	7.31	Medium sand
250.00	2.00	17.78	25.09	
176.78	2.50	33.65	58.75	Fine sand
125.00	3.00	25.74	84.49	
88.39	3.50	5.86	90.34	Very fine sand
62.50	4.00	1.20	91.54	
44.19	4.50	1.07	92.61	Coarse silt
31.25	5.00	1.08	93.69	
22.10	5.50	1.07	94.76	Medium silt
15.63	6.00	0.97	95.73	
11.05	6.50	0.98	96.71	Fine silt
7.81	7.00	0.84	97.55	
5.52	7.50	0.62	98.17	Very fine silt
3.91	8.00	0.40	98.56	
2.76	8.50	0.24	98.80	Clay
1.95	9.00	0.17	98.97	
1.38	9.50	0.18	99.15	
0.98	10.00	0.18	99.33	
0.69	10.50	0.17	99.50	
0.49	11.00	0.14	99.64	
<0.49	>11	0.31	100.00	



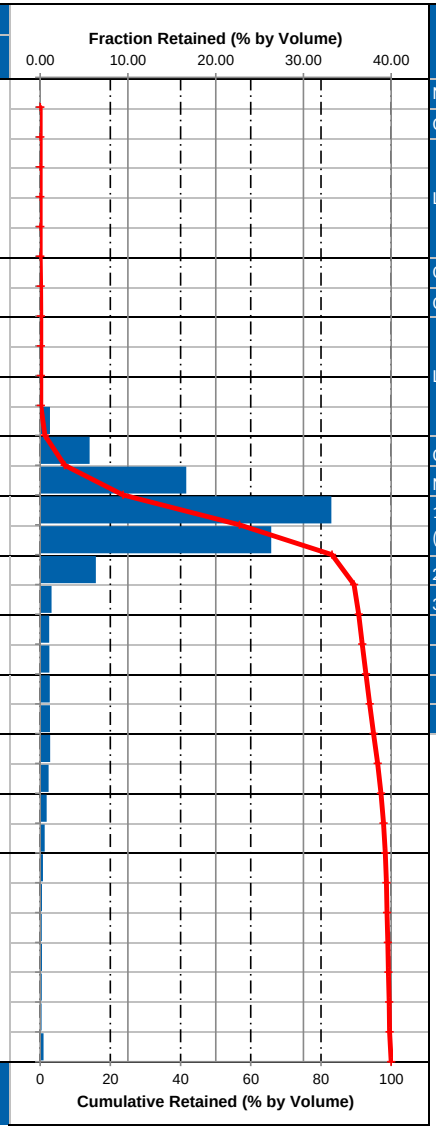
Method of Moments			
Geometric	Mean (µm)	160.68	Wentworth:
Logarithmic	Mean (Phi)	2.63	Fine sand
	Sorting	1.39	Poor
	Skewness	3.14	Very fine
	Kurtosis	16.13	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.67	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	0.97	Moderate
	Skewness	0.25	Fine
	Kurtosis	2.17	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.37	193.44	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.40%
EUNIS Folk	Sand and muddy sand	Sand	91.50%
Distribution	Unimodal	Gravel	0.00%



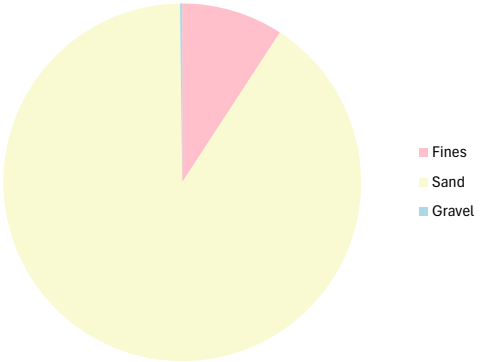
APPENDIX D PARTICLE SIZE ANALYSIS

ENV014				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.13	0.13	Granule
2000.00	-1.00	0.03	0.16	
1414.21	-0.50	0.03	0.18	Very coarse sand
1000.00	0.00	0.02	0.20	
707.11	0.50	0.00	0.20	Coarse sand
500.00	1.00	1.12	1.32	
353.55	1.50	5.63	6.95	Medium sand
250.00	2.00	16.65	23.60	
176.78	2.50	33.18	56.78	Fine sand
125.00	3.00	26.33	83.10	
88.39	3.50	6.34	89.44	Very fine sand
62.50	4.00	1.28	90.72	
44.19	4.50	1.02	91.74	Coarse silt
31.25	5.00	1.05	92.79	
22.10	5.50	1.10	93.89	Medium silt
15.63	6.00	1.11	94.99	
11.05	6.50	1.13	96.12	Fine silt
7.81	7.00	0.96	97.08	
5.52	7.50	0.74	97.82	Very fine silt
3.91	8.00	0.51	98.33	
2.76	8.50	0.31	98.63	Clay
1.95	9.00	0.20	98.83	
1.38	9.50	0.19	99.02	
0.98	10.00	0.20	99.22	
0.69	10.50	0.19	99.41	
0.49	11.00	0.16	99.57	
<0.49	>11	0.37	100.00	



Method of Moments			
Geometric	Mean (µm)	153.87	Wentworth:
Logarithmic	Mean (Phi)	2.69	Fine sand
	Sorting	1.46	Poor
	Skewness	2.97	Very fine
	Kurtosis	14.66	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	187.71	Wentworth:
Logarithmic	Mean (Phi)	2.41	Fine sand
	Sorting	1.03	Poor
	Skewness	0.29	Fine
	Kurtosis	2.32	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	189.75	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

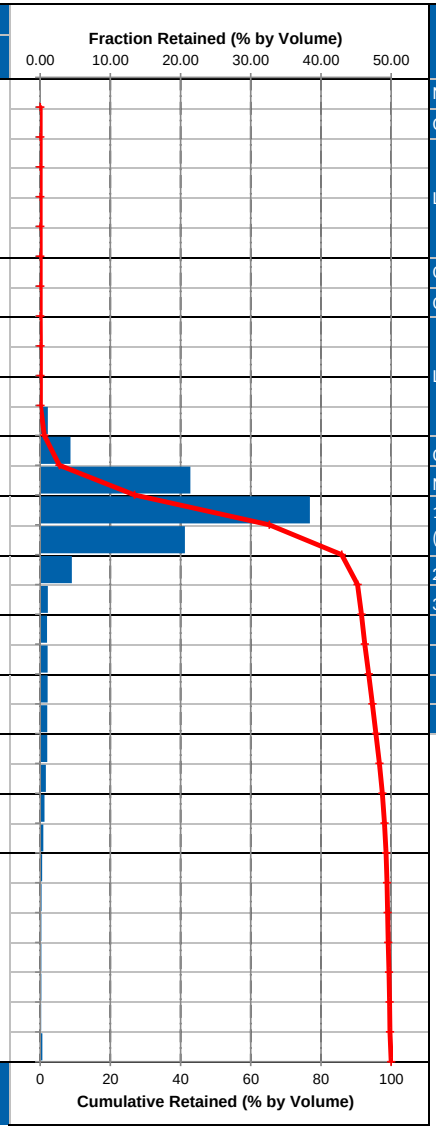
Classification		Composition	
Modified Folk	Sand	Fines	9.20%
EUNIS Folk	Sand and muddy sand	Sand	90.60%
Distribution	Bimodal	Gravel	0.20%



APPENDIX D PARTICLE SIZE ANALYSIS

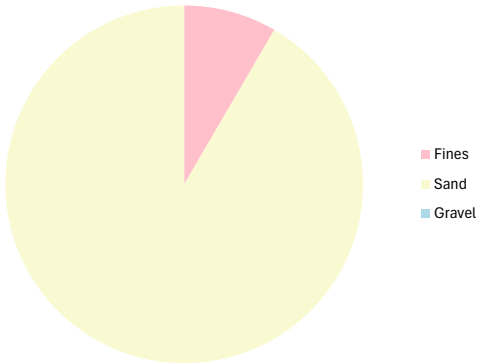
ENV015

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.00	0.01	Granule
2000.00	-1.00	0.02	0.03	
1414.21	-0.50	0.03	0.06	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	1.08	1.16	
353.55	1.50	4.31	5.47	Medium sand
250.00	2.00	21.40	26.87	
176.78	2.50	38.42	65.29	Fine sand
125.00	3.00	20.62	85.91	
88.39	3.50	4.52	90.43	Very fine sand
62.50	4.00	1.09	91.52	
44.19	4.50	0.98	92.50	Coarse silt
31.25	5.00	1.06	93.56	
22.10	5.50	1.07	94.63	Medium silt
15.63	6.00	1.02	95.65	
11.05	6.50	1.00	96.65	Fine silt
7.81	7.00	0.82	97.47	
5.52	7.50	0.62	98.09	Very fine silt
3.91	8.00	0.44	98.53	
2.76	8.50	0.27	98.80	Clay
1.95	9.00	0.19	98.99	
1.38	9.50	0.18	99.17	
0.98	10.00	0.18	99.35	
0.69	10.50	0.17	99.52	
0.49	11.00	0.14	99.65	
<0.49	>11	0.30	100.00	



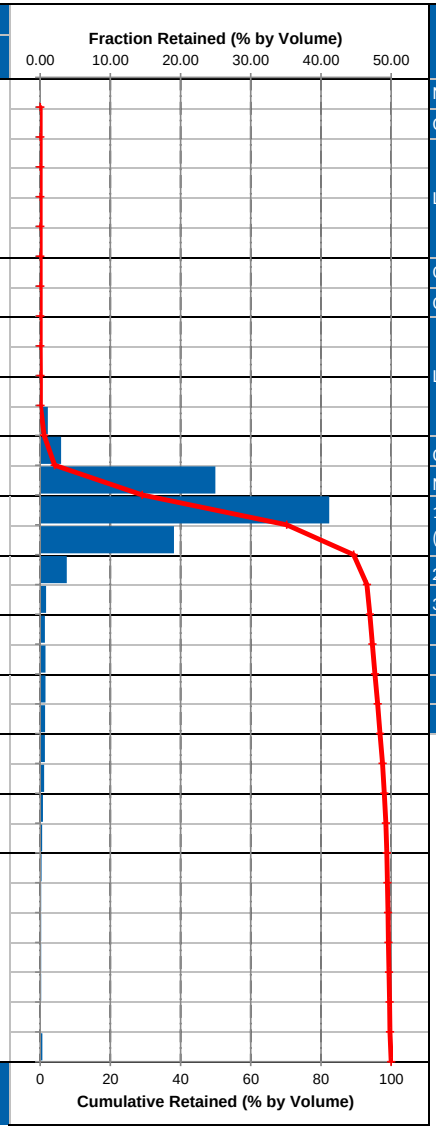
Method of Moments			
Geometric	Mean (µm)	164.50	Wentworth:
Logarithmic	Mean (Phi)	2.60	Fine sand
	Sorting	1.38	Poor
	Skewness	3.25	Very fine
	Kurtosis	16.39	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	198.39	Wentworth:
Logarithmic	Mean (Phi)	2.33	Fine sand
	Sorting	0.94	Moderate
	Skewness	0.34	Very fine
	Kurtosis	2.23	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.30	202.92	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.40%
EUNIS Folk	Sand and muddy sand	Sand	91.50%
Distribution	Bimodal	Gravel	0.00%



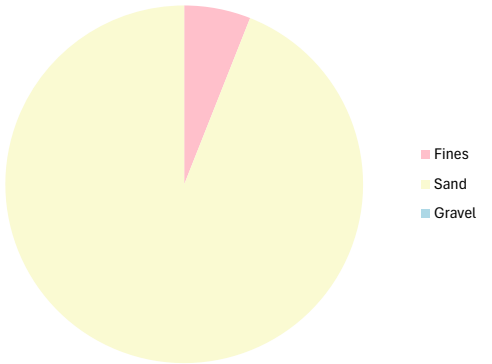
APPENDIX D PARTICLE SIZE ANALYSIS

ENV016				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.00	0.02	
1414.21	-0.50	0.00	0.02	Very coarse sand
1000.00	0.00	0.02	0.04	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	1.08	1.12	
353.55	1.50	2.98	4.11	Medium sand
250.00	2.00	24.94	29.05	
176.78	2.50	41.19	70.23	Fine sand
125.00	3.00	19.06	89.30	
88.39	3.50	3.79	93.09	Very fine sand
62.50	4.00	0.84	93.93	
44.19	4.50	0.68	94.62	Coarse silt
31.25	5.00	0.76	95.38	
22.10	5.50	0.75	96.13	Medium silt
15.63	6.00	0.71	96.83	
11.05	6.50	0.68	97.51	Fine silt
7.81	7.00	0.55	98.06	
5.52	7.50	0.40	98.47	Very fine silt
3.91	8.00	0.29	98.75	
2.76	8.50	0.19	98.94	Clay
1.95	9.00	0.14	99.08	
1.38	9.50	0.15	99.23	
0.98	10.00	0.15	99.38	
0.69	10.50	0.15	99.53	
0.49	11.00	0.13	99.65	
<0.49	>11	0.30	100.00	



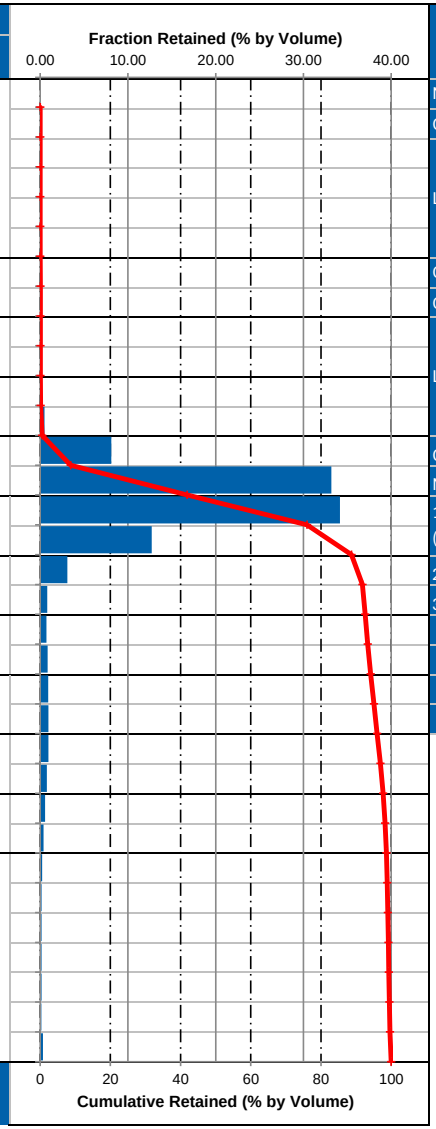
Method of Moments			
Geometric	Mean (µm)	178.20	Wentworth:
Logarithmic	Mean (Phi)	2.48	Fine sand
	Sorting	1.25	Poor
	Skewness	3.93	Very fine
	Kurtosis	23.00	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	205.24	Wentworth:
Logarithmic	Mean (Phi)	2.28	Fine sand
	Sorting	0.77	Moderate
	Skewness	0.31	Very fine
	Kurtosis	1.88	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.25	209.59	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.00%



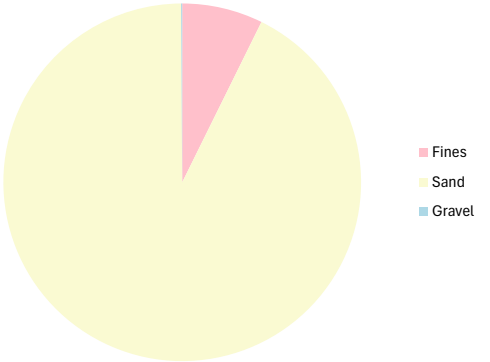
APPENDIX D PARTICLE SIZE ANALYSIS

ENV017				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.04	Granule
2000.00	-1.00	0.04	0.08	
1414.21	-0.50	0.01	0.08	Very coarse sand
1000.00	0.00	0.01	0.09	
707.11	0.50	0.00	0.09	Coarse sand
500.00	1.00	0.49	0.58	
353.55	1.50	8.10	8.67	Medium sand
250.00	2.00	33.17	41.85	
176.78	2.50	34.16	76.01	Fine sand
125.00	3.00	12.70	88.71	
88.39	3.50	3.10	91.80	Very fine sand
62.50	4.00	0.80	92.60	
44.19	4.50	0.70	93.31	Coarse silt
31.25	5.00	0.84	94.15	
22.10	5.50	0.92	95.07	Medium silt
15.63	6.00	0.94	96.01	
11.05	6.50	0.93	96.93	Fine silt
7.81	7.00	0.76	97.70	
5.52	7.50	0.57	98.26	Very fine silt
3.91	8.00	0.38	98.65	
2.76	8.50	0.23	98.88	Clay
1.95	9.00	0.15	99.03	
1.38	9.50	0.15	99.18	
0.98	10.00	0.16	99.34	
0.69	10.50	0.15	99.50	
0.49	11.00	0.13	99.63	
<0.49	>11	0.32	100.00	



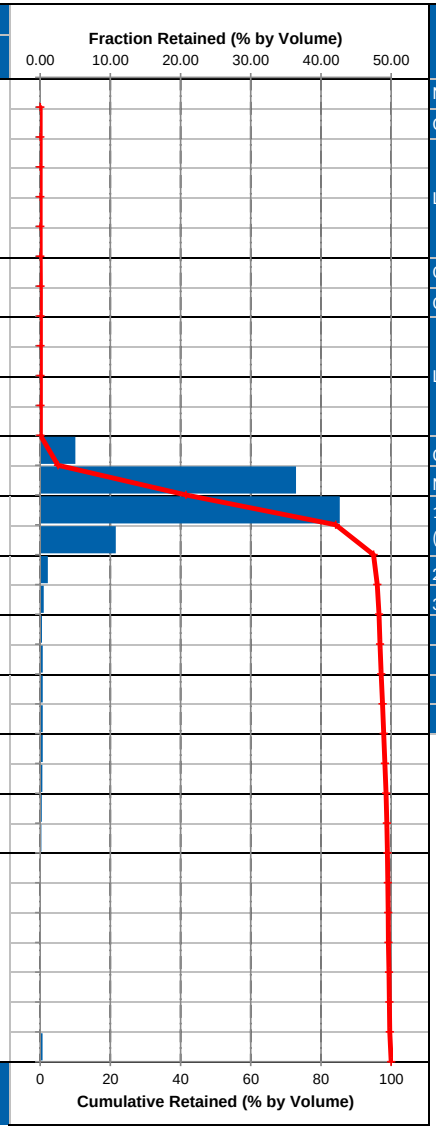
Method of Moments			
Geometric	Mean (µm)	186.87	Wentworth:
Logarithmic	Mean (Phi)	2.41	Fine sand
	Sorting	1.37	Poor
	Skewness	3.48	Very fine
	Kurtosis	18.22	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	220.45	Wentworth:
Logarithmic	Mean (Phi)	2.18	Fine sand
	Sorting	0.94	Moderate
	Skewness	0.38	Very fine
	Kurtosis	2.32	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.12	230.15	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.30%
EUNIS Folk	Sand and muddy sand	Sand	92.50%
Distribution	Unimodal	Gravel	0.10%



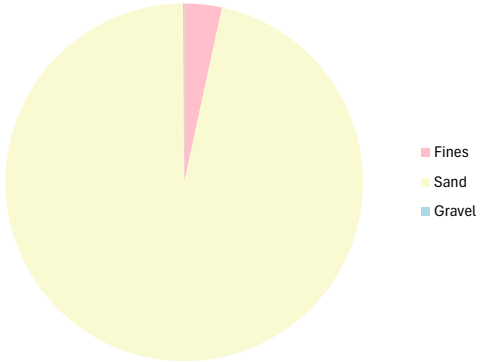
APPENDIX D PARTICLE SIZE ANALYSIS

ENV018				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.04	Granule
2000.00	-1.00	0.02	0.06	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.01	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.00	0.08	
353.55	1.50	5.01	5.09	Medium sand
250.00	2.00	36.45	41.53	
176.78	2.50	42.67	84.20	Fine sand
125.00	3.00	10.76	94.96	
88.39	3.50	1.09	96.05	Very fine sand
62.50	4.00	0.51	96.56	
44.19	4.50	0.25	96.81	Coarse silt
31.25	5.00	0.35	97.16	
22.10	5.50	0.35	97.51	Medium silt
15.63	6.00	0.36	97.87	
11.05	6.50	0.36	98.23	Fine silt
7.81	7.00	0.30	98.53	
5.52	7.50	0.23	98.77	Very fine silt
3.91	8.00	0.16	98.93	
2.76	8.50	0.11	99.04	Clay
1.95	9.00	0.09	99.13	
1.38	9.50	0.10	99.23	
0.98	10.00	0.12	99.35	
0.69	10.50	0.13	99.48	
0.49	11.00	0.12	99.60	
<0.49	>11	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	208.89	Wentworth:
Logarithmic	Mean (Phi)	2.25	Fine sand
	Sorting	1.10	Poor
	Skewness	5.29	Very fine
	Kurtosis	38.57	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	236.16	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	0.44	Well
	Skewness	0.07	Symmetrical
	Kurtosis	1.01	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.10	233.39	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

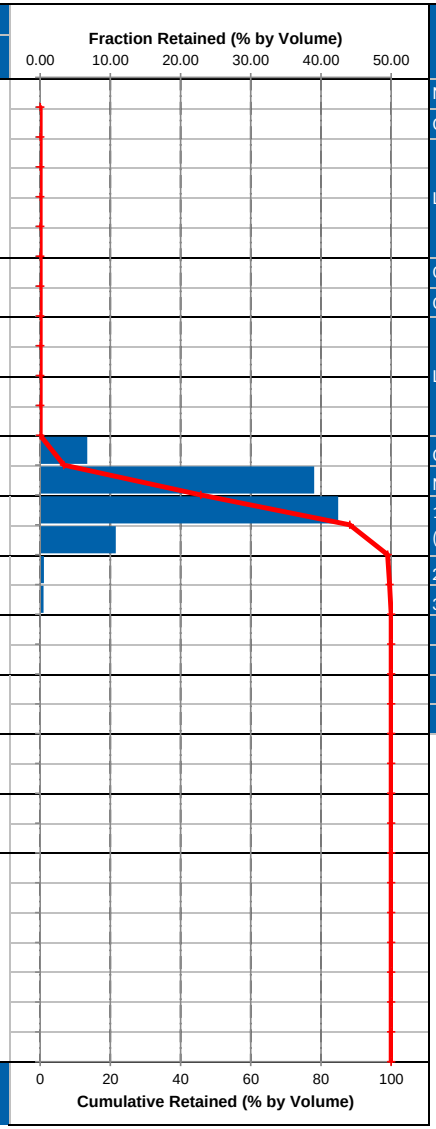
Classification		Composition	
Modified Folk	Sand	Fines	3.40%
EUNIS Folk	Sand and muddy sand	Sand	96.50%
Distribution	Unimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

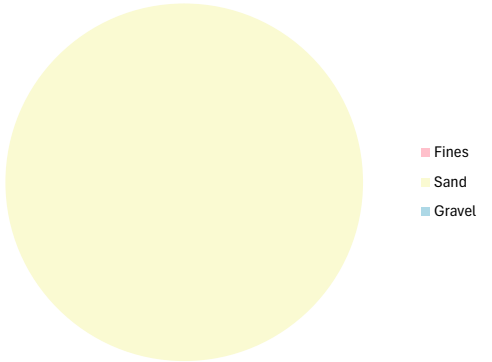
ENV019

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.00	0.02	
353.55	1.50	6.70	6.72	Medium sand
250.00	2.00	39.04	45.76	
176.78	2.50	42.45	88.21	Fine sand
125.00	3.00	10.78	99.00	
88.39	3.50	0.53	99.52	Very fine sand
62.50	4.00	0.48	100.00	
44.19	4.50	0.00	100.00	Coarse silt
31.25	5.00	0.00	100.00	
22.10	5.50	0.00	100.00	Medium silt
15.63	6.00	0.00	100.00	
11.05	6.50	0.00	100.00	Fine silt
7.81	7.00	0.00	100.00	
5.52	7.50	0.00	100.00	Very fine silt
3.91	8.00	0.00	100.00	
2.76	8.50	0.00	100.00	Clay
1.95	9.00	0.00	100.00	
1.38	9.50	0.00	100.00	
0.98	10.00	0.00	100.00	
0.69	10.50	0.00	100.00	
0.49	11.00	0.00	100.00	
<0.49	>11	0.00	100.00	



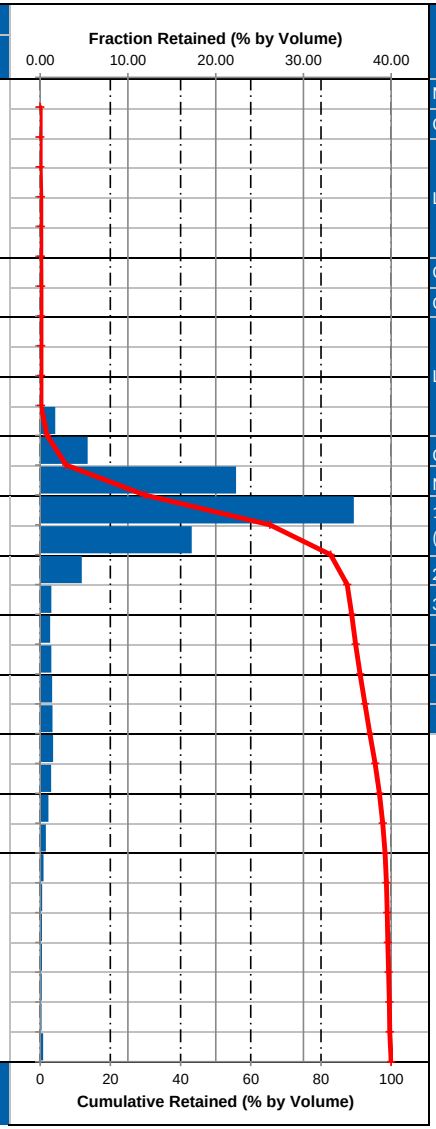
Method of Moments			
Geometric	Mean (µm)	240.91	Wentworth:
Logarithmic	Mean (Phi)	2.05	Fine sand
	Sorting	0.41	Well
	Skewness	0.29	Symmetrical
	Kurtosis	4.27	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	243.21	Wentworth:
Logarithmic	Mean (Phi)	2.04	Fine sand
	Sorting	0.43	Well
	Skewness	0.01	Symmetrical
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.05	241.50	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	0.00%
EUNIS Folk	Sand and muddy sand	Sand	100.00%
Distribution	Unimodal	Gravel	0.00%



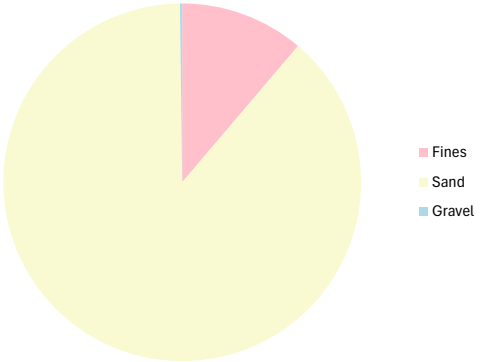
APPENDIX D PARTICLE SIZE ANALYSIS

ENV021				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.20	0.20	
5656.85	-2.50	0.00	0.20	
4000.00	-2.00	0.00	0.20	
2828.43	-1.50	0.01	0.21	Granule
2000.00	-1.00	0.00	0.21	
1414.21	-0.50	0.01	0.23	Very coarse sand
1000.00	0.00	0.02	0.25	
707.11	0.50	0.01	0.26	Coarse sand
500.00	1.00	1.72	1.98	
353.55	1.50	5.41	7.39	Medium sand
250.00	2.00	22.33	29.72	
176.78	2.50	35.73	65.45	Fine sand
125.00	3.00	17.27	82.72	
88.39	3.50	4.73	87.45	Very fine sand
62.50	4.00	1.27	88.73	
44.19	4.50	1.15	89.87	Coarse silt
31.25	5.00	1.28	91.15	
22.10	5.50	1.37	92.52	Medium silt
15.63	6.00	1.41	93.93	
11.05	6.50	1.48	95.42	Fine silt
7.81	7.00	1.25	96.66	
5.52	7.50	0.95	97.61	Very fine silt
3.91	8.00	0.65	98.26	
2.76	8.50	0.37	98.63	
1.95	9.00	0.23	98.86	
1.38	9.50	0.21	99.07	
0.98	10.00	0.21	99.27	Clay
0.69	10.50	0.19	99.46	
0.49	11.00	0.15	99.61	
<0.49	>11	0.33	100.00	



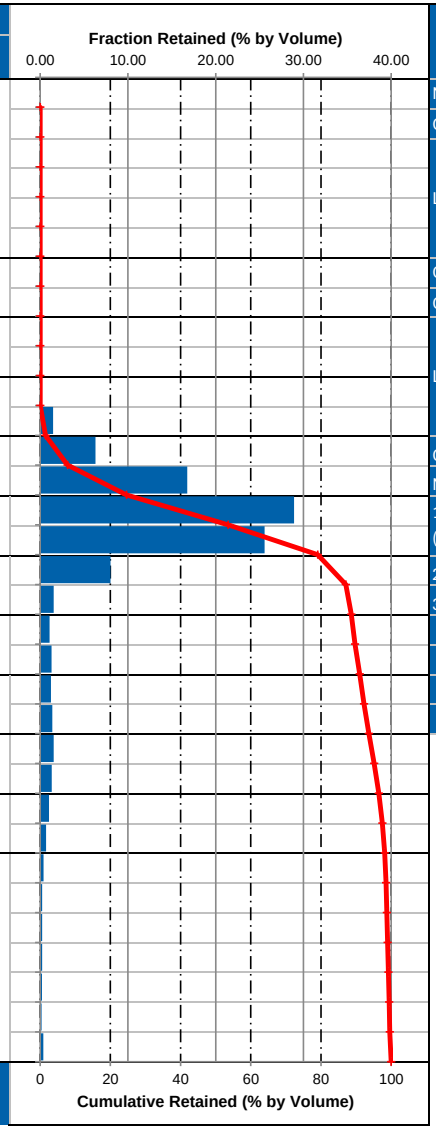
Method of Moments			
Geometric	Mean (µm)	156.71	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.58	Poor
	Skewness	2.53	Very fine
	Kurtosis	11.68	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.35	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	1.13	Poor
	Skewness	0.39	Very fine
	Kurtosis	2.36	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.28	205.35	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.20%
EUNIS Folk	Sand and muddy sand	Sand	88.50%
Distribution	Bimodal	Gravel	0.20%



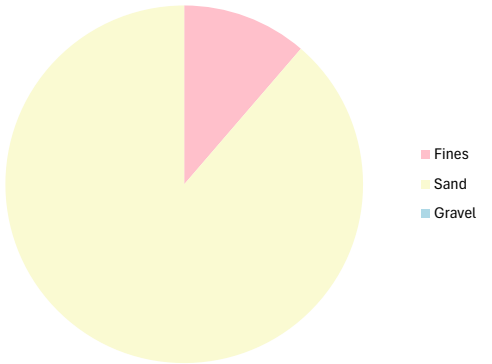
APPENDIX D PARTICLE SIZE ANALYSIS

ENV022				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.01	0.03	Coarse sand
500.00	1.00	1.48	1.51	
353.55	1.50	6.30	7.81	Medium sand
250.00	2.00	16.76	24.57	
176.78	2.50	28.94	53.52	Fine sand
125.00	3.00	25.57	79.09	
88.39	3.50	8.02	87.10	Very fine sand
62.50	4.00	1.53	88.64	
44.19	4.50	1.08	89.71	Coarse silt
31.25	5.00	1.30	91.01	
22.10	5.50	1.23	92.24	Medium silt
15.63	6.00	1.37	93.61	
11.05	6.50	1.54	95.16	Fine silt
7.81	7.00	1.32	96.48	
5.52	7.50	1.00	97.48	Very fine silt
3.91	8.00	0.68	98.16	
2.76	8.50	0.39	98.55	Clay
1.95	9.00	0.24	98.78	
1.38	9.50	0.21	99.00	
0.98	10.00	0.22	99.22	
0.69	10.50	0.20	99.42	
0.49	11.00	0.17	99.58	
<0.49	>11	0.36	100.00	



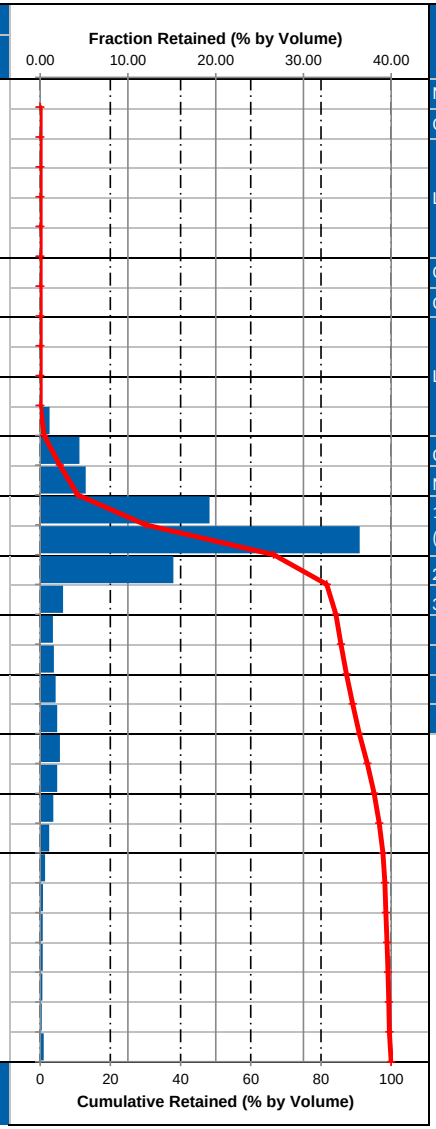
Method of Moments			
Geometric	Mean (µm)	143.80	Wentworth:
Logarithmic	Mean (Phi)	2.79	Fine sand
	Sorting	1.56	Poor
	Skewness	2.63	Very fine
	Kurtosis	11.51	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	177.19	Wentworth:
Logarithmic	Mean (Phi)	2.50	Fine sand
	Sorting	1.17	Poor
	Skewness	0.33	Very fine
	Kurtosis	2.32	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.44	184.38	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.30%
EUNIS Folk	Sand and muddy sand	Sand	88.60%
Distribution	Bimodal	Gravel	0.00%



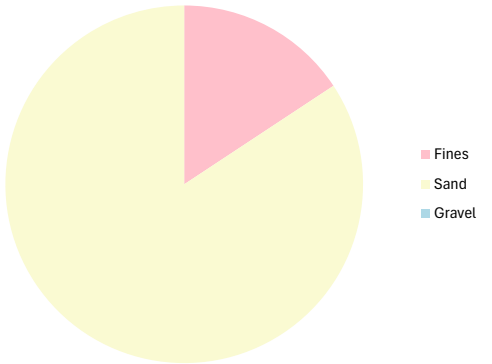
APPENDIX D PARTICLE SIZE ANALYSIS

ENV023				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	1.06	1.10	
353.55	1.50	4.48	5.58	Medium sand
250.00	2.00	5.18	10.76	
176.78	2.50	19.29	30.06	Fine sand
125.00	3.00	36.41	66.46	
88.39	3.50	15.17	81.64	Very fine sand
62.50	4.00	2.61	84.25	
44.19	4.50	1.45	85.69	Coarse silt
31.25	5.00	1.56	87.25	
22.10	5.50	1.75	89.01	Medium silt
15.63	6.00	1.93	90.94	
11.05	6.50	2.25	93.19	Fine silt
7.81	7.00	1.93	95.12	
5.52	7.50	1.49	96.60	Very fine silt
3.91	8.00	1.02	97.62	
2.76	8.50	0.56	98.18	
1.95	9.00	0.32	98.50	
1.38	9.50	0.29	98.80	
0.98	10.00	0.29	99.09	Clay
0.69	10.50	0.24	99.32	
0.49	11.00	0.18	99.51	
<0.49	>11	0.41	100.00	



Method of Moments			
Geometric	Mean (µm)	108.24	Wentworth:
Logarithmic	Mean (Phi)	3.20	Very fine sand
	Sorting	1.66	Poor
	Skewness	2.21	Very fine
	Kurtosis	8.82	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	129.03	Wentworth:
Logarithmic	Mean (Phi)	2.95	Fine sand
	Sorting	1.29	Poor
	Skewness	0.41	Very fine
	Kurtosis	2.49	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.77	146.21	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

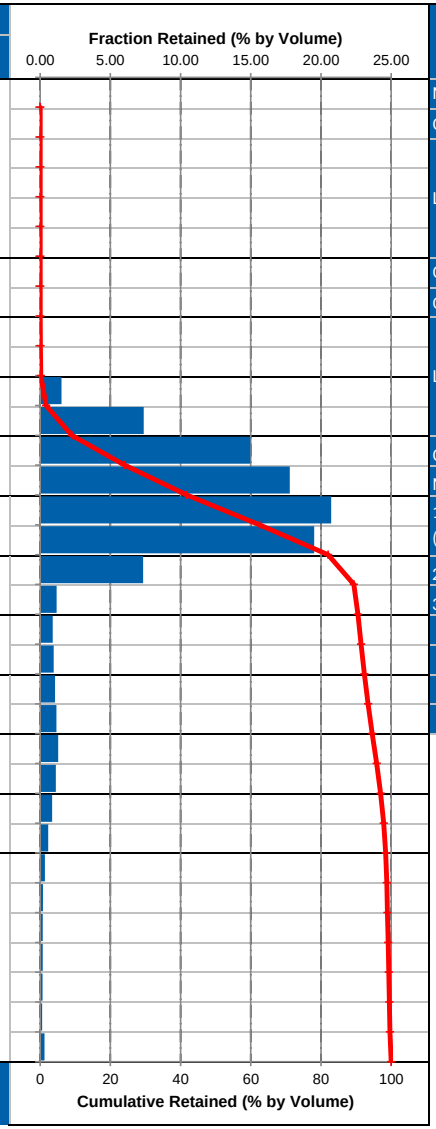
Classification		Composition	
Modified Folk	Muddy sand	Fines	15.70%
EUNIS Folk	Sand and muddy sand	Sand	84.20%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

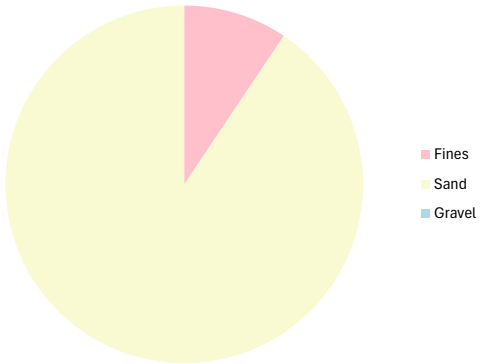
ENV024

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.02	0.04	Very coarse sand
1000.00	0.00	0.11	0.15	
707.11	0.50	1.52	1.67	Coarse sand
500.00	1.00	7.37	9.05	
353.55	1.50	14.97	24.02	Medium sand
250.00	2.00	17.77	41.79	
176.78	2.50	20.73	62.51	Fine sand
125.00	3.00	19.52	82.03	
88.39	3.50	7.33	89.36	Very fine sand
62.50	4.00	1.17	90.53	
44.19	4.50	0.89	91.42	Coarse silt
31.25	5.00	0.96	92.38	
22.10	5.50	1.07	93.44	Medium silt
15.63	6.00	1.15	94.60	
11.05	6.50	1.28	95.88	Fine silt
7.81	7.00	1.11	96.99	
5.52	7.50	0.85	97.84	Very fine silt
3.91	8.00	0.58	98.42	
2.76	8.50	0.33	98.75	Clay
1.95	9.00	0.20	98.95	
1.38	9.50	0.18	99.13	
0.98	10.00	0.19	99.32	
0.69	10.50	0.17	99.49	
0.49	11.00	0.14	99.64	
<0.49	>11	0.31	100.00	



Method of Moments			
Geometric	Mean (µm)	181.26	Wentworth:
Logarithmic	Mean (Phi)	2.46	Fine sand
	Sorting	1.61	Poor
	Skewness	2.41	Very fine
	Kurtosis	10.92	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	219.42	Wentworth:
Logarithmic	Mean (Phi)	2.19	Fine sand
	Sorting	1.30	Poor
	Skewness	0.22	Fine
	Kurtosis	1.72	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	217.92	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

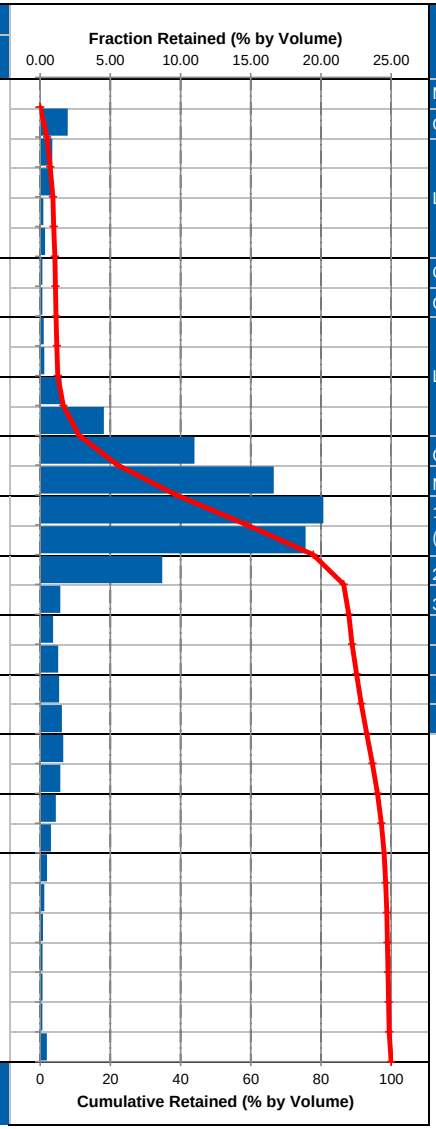
Classification		Composition	
Modified Folk	Sand	Fines	9.40%
EUNIS Folk	Sand and muddy sand	Sand	90.50%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

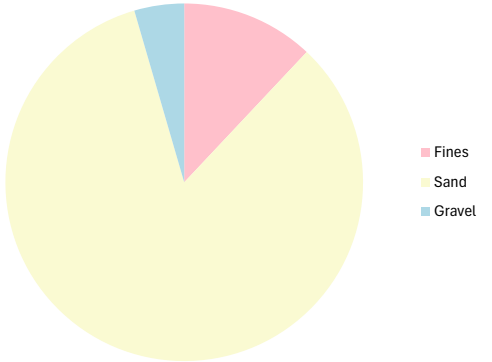
ENV025

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	1.96	1.96	
11313.71	-3.50	0.86	2.82	Pebble
8000.00	-3.00	0.79	3.61	
5656.85	-2.50	0.22	3.83	
4000.00	-2.00	0.34	4.18	
2828.43	-1.50	0.15	4.33	Granule
2000.00	-1.00	0.16	4.49	
1414.21	-0.50	0.25	4.74	Very coarse sand
1000.00	0.00	0.29	5.03	
707.11	0.50	1.52	6.55	Coarse sand
500.00	1.00	4.54	11.09	
353.55	1.50	10.99	22.08	Medium sand
250.00	2.00	16.63	38.71	
176.78	2.50	20.17	58.88	Fine sand
125.00	3.00	18.90	77.79	
88.39	3.50	8.69	86.48	Very fine sand
62.50	4.00	1.44	87.92	
44.19	4.50	0.92	88.83	Coarse silt
31.25	5.00	1.28	90.11	
22.10	5.50	1.35	91.46	Medium silt
15.63	6.00	1.55	93.01	
11.05	6.50	1.64	94.65	Fine silt
7.81	7.00	1.44	96.09	
5.52	7.50	1.11	97.20	Very fine silt
3.91	8.00	0.77	97.97	
2.76	8.50	0.48	98.45	
1.95	9.00	0.29	98.75	
1.38	9.50	0.20	98.95	
0.98	10.00	0.17	99.12	Clay
0.69	10.50	0.16	99.28	
0.49	11.00	0.16	99.44	
<0.49	>11	0.48	100.00	



Method of Moments			
Geometric	Mean (µm)	187.78	Wentworth:
Logarithmic	Mean (Phi)	2.40	Fine sand
	Sorting	2.17	Very poor
	Skewness	0.38	Symmetrical
	Kurtosis	7.34	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	204.91	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.55	Poor
	Skewness	0.16	Fine
	Kurtosis	2.05	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.28	205.92	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-4.00	16000.00	Pebble
3rd Local Maxima	6.50	11.05	Fine silt

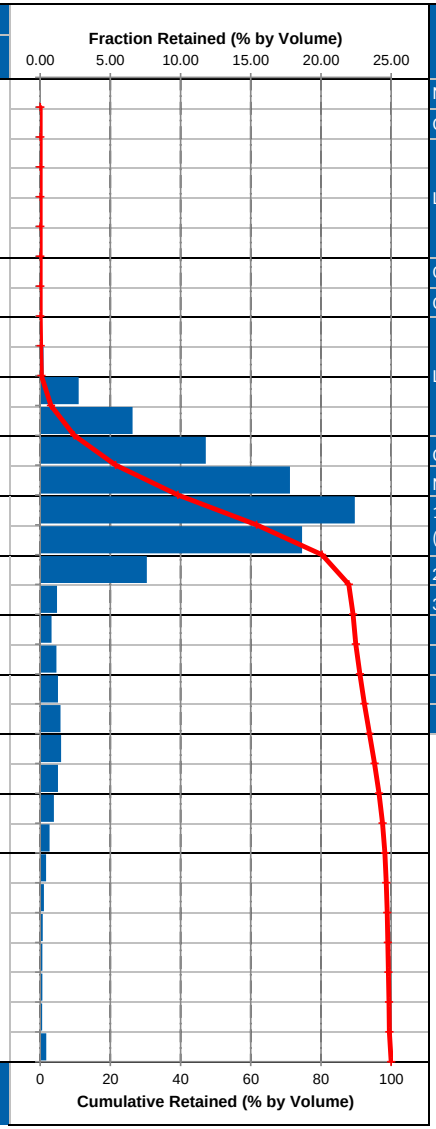
Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	12.00%
EUNIS Folk	Sand and muddy sand	Sand	83.40%
Distribution	Multimodal	Gravel	4.50%



APPENDIX D PARTICLE SIZE ANALYSIS

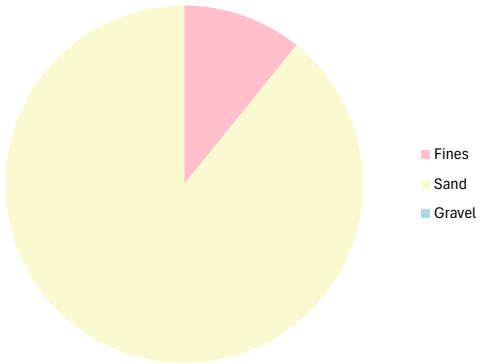
ENV026

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.08	0.11	Very coarse sand
1000.00	0.00	0.23	0.35	
707.11	0.50	2.74	3.08	Coarse sand
500.00	1.00	6.58	9.67	
353.55	1.50	11.79	21.46	Medium sand
250.00	2.00	17.79	39.25	
176.78	2.50	22.41	61.66	Fine sand
125.00	3.00	18.65	80.31	
88.39	3.50	7.60	87.91	Very fine sand
62.50	4.00	1.20	89.11	
44.19	4.50	0.80	89.92	Coarse silt
31.25	5.00	1.15	91.07	
22.10	5.50	1.27	92.34	Medium silt
15.63	6.00	1.45	93.79	
11.05	6.50	1.49	95.28	Fine silt
7.81	7.00	1.27	96.55	
5.52	7.50	0.97	97.52	Very fine silt
3.91	8.00	0.67	98.19	
2.76	8.50	0.42	98.61	Clay
1.95	9.00	0.26	98.87	
1.38	9.50	0.18	99.05	
0.98	10.00	0.15	99.20	
0.69	10.50	0.15	99.35	
0.49	11.00	0.14	99.50	
<0.49	>11	0.43	100.00	



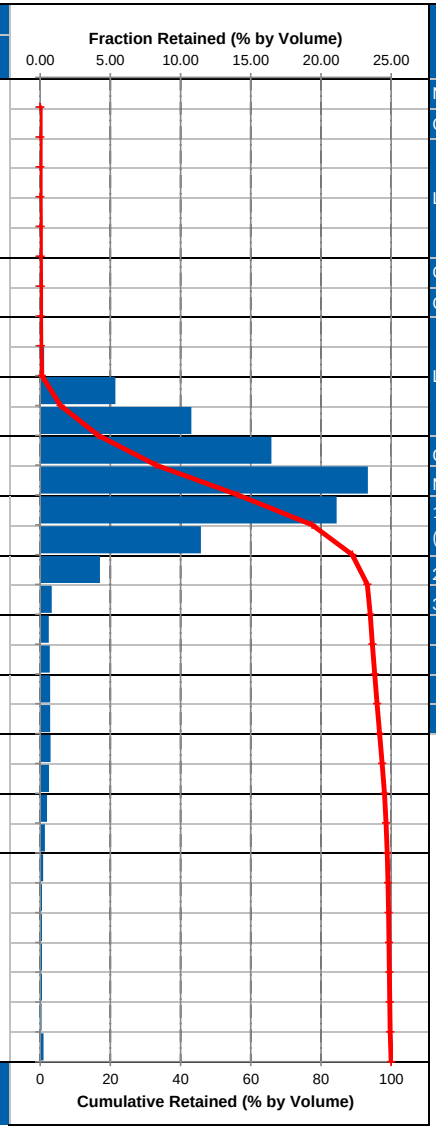
Method of Moments			
Geometric	Mean (µm)	171.84	Wentworth:
Logarithmic	Mean (Phi)	2.53	Fine sand
	Sorting	1.70	Poor
	Skewness	2.26	Very fine
	Kurtosis	9.95	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	210.18	Wentworth:
Logarithmic	Mean (Phi)	2.25	Fine sand
	Sorting	1.37	Poor
	Skewness	0.23	Fine
	Kurtosis	1.88	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.24	211.71	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.80%
EUNIS Folk	Sand and muddy sand	Sand	89.10%
Distribution	Bimodal	Gravel	0.00%



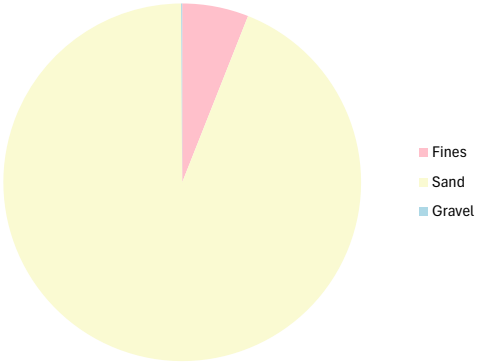
APPENDIX D PARTICLE SIZE ANALYSIS

ENV027				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.01	0.05	
2828.43	-1.50	0.05	0.09	Granule
2000.00	-1.00	0.01	0.11	
1414.21	-0.50	0.05	0.15	Very coarse sand
1000.00	0.00	0.28	0.43	
707.11	0.50	5.36	5.78	Coarse sand
500.00	1.00	10.76	16.55	
353.55	1.50	16.47	33.02	Medium sand
250.00	2.00	23.34	56.35	
176.78	2.50	21.12	77.47	Fine sand
125.00	3.00	11.45	88.92	
88.39	3.50	4.26	93.18	Very fine sand
62.50	4.00	0.82	94.01	
44.19	4.50	0.61	94.62	Coarse silt
31.25	5.00	0.68	95.29	
22.10	5.50	0.70	96.00	Medium silt
15.63	6.00	0.71	96.71	
11.05	6.50	0.74	97.45	Fine silt
7.81	7.00	0.63	98.07	
5.52	7.50	0.49	98.56	Very fine silt
3.91	8.00	0.34	98.90	
2.76	8.50	0.20	99.10	Clay
1.95	9.00	0.13	99.24	
1.38	9.50	0.12	99.36	
0.98	10.00	0.13	99.49	
0.69	10.50	0.12	99.62	
0.49	11.00	0.10	99.72	
<0.49	>11	0.24	100.00	



Method of Moments			
Geometric	Mean (µm)	239.91	Wentworth:
Logarithmic	Mean (Phi)	2.06	Fine sand
	Sorting	1.45	Poor
	Skewness	2.71	Very fine
	Kurtosis	14.53	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	272.72	Wentworth:
Logarithmic	Mean (Phi)	1.87	Medium sand
	Sorting	1.11	Poor
	Skewness	0.18	Fine
	Kurtosis	1.51	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.86	274.73	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

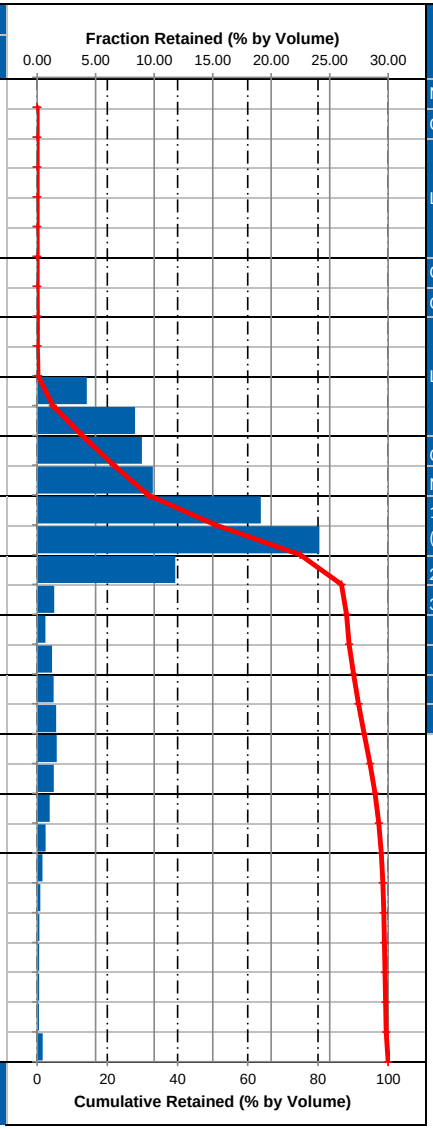
Classification		Composition	
Modified Folk	Sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

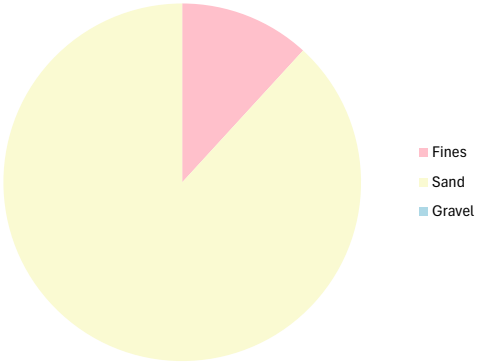
ENV028

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.03	0.04	
1414.21	-0.50	0.02	0.06	Very coarse sand
1000.00	0.00	0.15	0.21	
707.11	0.50	4.24	4.44	Coarse sand
500.00	1.00	8.37	12.81	
353.55	1.50	8.94	21.75	Medium sand
250.00	2.00	9.88	31.63	
176.78	2.50	19.12	50.75	Fine sand
125.00	3.00	24.12	74.87	
88.39	3.50	11.81	86.68	Very fine sand
62.50	4.00	1.45	88.13	
44.19	4.50	0.70	88.84	Coarse silt
31.25	5.00	1.27	90.11	
22.10	5.50	1.40	91.51	Medium silt
15.63	6.00	1.63	93.14	
11.05	6.50	1.67	94.81	Fine silt
7.81	7.00	1.42	96.23	
5.52	7.50	1.07	97.31	Very fine silt
3.91	8.00	0.73	98.03	
2.76	8.50	0.45	98.48	Clay
1.95	9.00	0.27	98.76	
1.38	9.50	0.19	98.95	
0.98	10.00	0.17	99.12	
0.69	10.50	0.16	99.28	
0.49	11.00	0.16	99.44	
<0.49	>11	0.48	100.00	



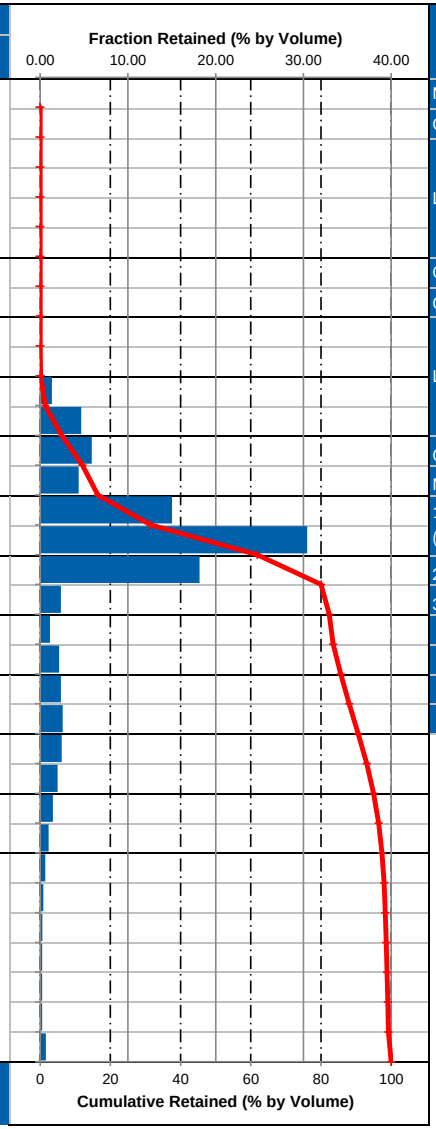
Method of Moments			
Geometric	Mean (µm)	156.58	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.77	Poor
	Skewness	1.97	Very fine
	Kurtosis	8.71	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	196.36	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.47	Poor
	Skewness	0.09	Symmetrical
	Kurtosis	1.84	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.48	179.20	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.80%
EUNIS Folk	Sand and muddy sand	Sand	88.10%
Distribution	Bimodal	Gravel	0.00%



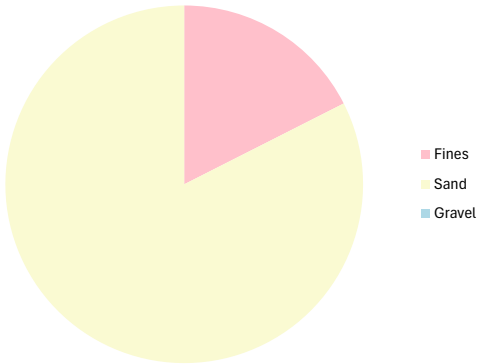
APPENDIX D PARTICLE SIZE ANALYSIS

ENV029				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.03	0.03	Very coarse sand
1000.00	0.00	0.06	0.10	
707.11	0.50	1.34	1.44	Coarse sand
500.00	1.00	4.69	6.13	
353.55	1.50	5.87	12.00	Medium sand
250.00	2.00	4.39	16.39	
176.78	2.50	15.03	31.42	Fine sand
125.00	3.00	30.42	61.84	
88.39	3.50	18.15	79.99	Very fine sand
62.50	4.00	2.36	82.35	
44.19	4.50	1.13	83.48	Coarse silt
31.25	5.00	2.17	85.65	
22.10	5.50	2.37	88.01	Medium silt
15.63	6.00	2.55	90.57	
11.05	6.50	2.44	93.01	Fine silt
7.81	7.00	1.98	94.99	
5.52	7.50	1.44	96.44	Very fine silt
3.91	8.00	0.95	97.39	
2.76	8.50	0.58	97.96	
1.95	9.00	0.35	98.32	
1.38	9.50	0.25	98.57	
0.98	10.00	0.22	98.79	Clay
0.69	10.50	0.22	99.01	
0.49	11.00	0.22	99.23	
<0.49	>11	0.65	100.00	



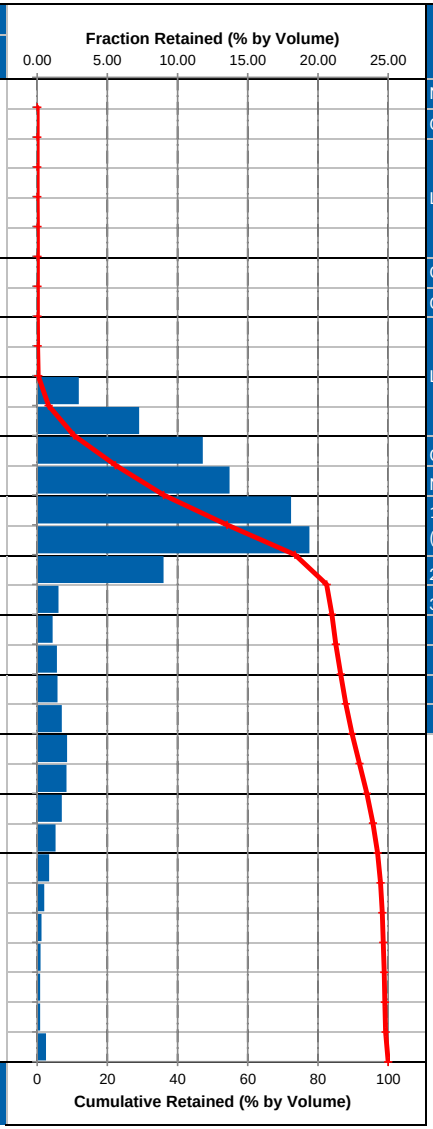
Method of Moments			
Geometric	Mean (µm)	109.81	Wentworth:
Logarithmic	Mean (Phi)	3.18	Very fine sand
	Sorting	1.83	Poor
	Skewness	1.83	Very fine
	Kurtosis	7.62	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	114.47	Wentworth:
Logarithmic	Mean (Phi)	3.13	Very fine sand
	Sorting	1.59	Poor
	Skewness	0.37	Very fine
	Kurtosis	2.33	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.81	143.05	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	6.00	15.63	Medium silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	17.50%
EUNIS Folk	Sand and muddy sand	Sand	82.30%
Distribution	Multimodal	Gravel	0.00%



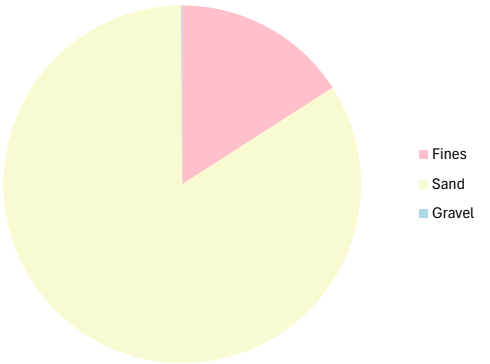
APPENDIX D PARTICLE SIZE ANALYSIS

ENV030				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.06	0.06	
4000.00	-2.00	0.00	0.06	
2828.43	-1.50	0.00	0.06	Granule
2000.00	-1.00	0.01	0.06	
1414.21	-0.50	0.04	0.10	Very coarse sand
1000.00	0.00	0.17	0.27	
707.11	0.50	2.96	3.23	Coarse sand
500.00	1.00	7.26	10.49	
353.55	1.50	11.80	22.28	Medium sand
250.00	2.00	13.70	35.99	
176.78	2.50	18.09	54.07	Fine sand
125.00	3.00	19.39	73.46	
88.39	3.50	9.00	82.46	Very fine sand
62.50	4.00	1.52	83.97	
44.19	4.50	1.11	85.08	Coarse silt
31.25	5.00	1.41	86.49	
22.10	5.50	1.44	87.93	Medium silt
15.63	6.00	1.76	89.69	
11.05	6.50	2.12	91.81	Fine silt
7.81	7.00	2.08	93.90	
5.52	7.50	1.76	95.66	Very fine silt
3.91	8.00	1.30	96.96	
2.76	8.50	0.85	97.81	Clay
1.95	9.00	0.50	98.31	
1.38	9.50	0.31	98.62	
0.98	10.00	0.23	98.85	
0.69	10.50	0.21	99.06	
0.49	11.00	0.20	99.27	
<0.49	>11	0.62	100.00	



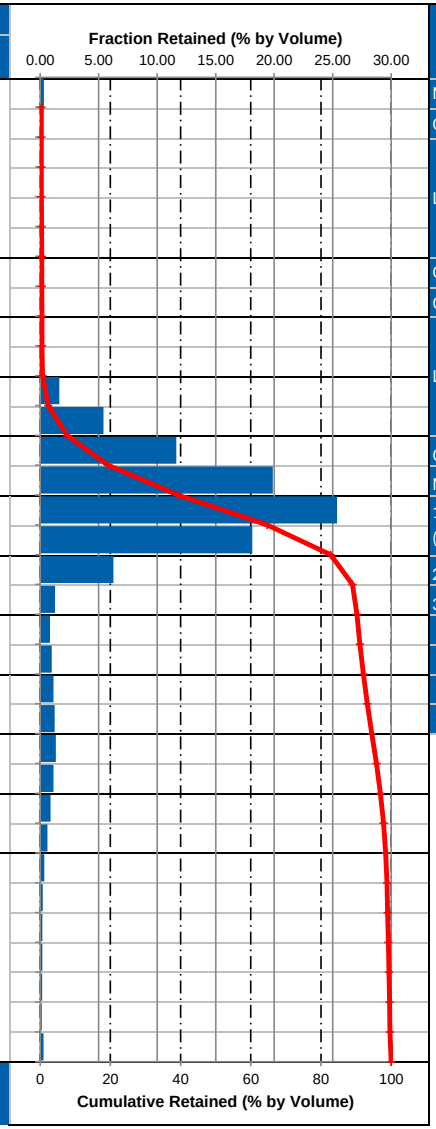
Method of Moments			
Geometric	Mean (µm)	141.35	Wentworth:
Logarithmic	Mean (Phi)	2.81	Fine sand
	Sorting	2.01	Very poor
	Skewness	1.81	Very fine
	Kurtosis	6.76	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	171.44	Wentworth:
Logarithmic	Mean (Phi)	2.54	Fine sand
	Sorting	1.71	Poor
	Skewness	0.32	Very fine
	Kurtosis	1.84	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.39	191.13	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	15.90%
EUNIS Folk	Sand and muddy sand	Sand	83.90%
Distribution	Bimodal	Gravel	0.10%



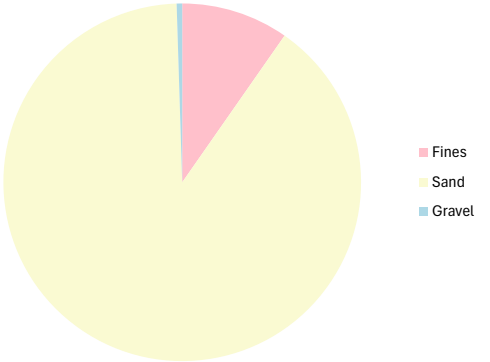
APPENDIX D PARTICLE SIZE ANALYSIS

ENV031				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.32	0.32	Pebble
16000.00	-4.00	0.00	0.32	
11313.71	-3.50	0.00	0.32	
8000.00	-3.00	0.04	0.36	
5656.85	-2.50	0.04	0.40	
4000.00	-2.00	0.04	0.44	
2828.43	-1.50	0.02	0.46	Granule
2000.00	-1.00	0.03	0.49	
1414.21	-0.50	0.04	0.53	Very coarse sand
1000.00	0.00	0.14	0.66	
707.11	0.50	1.63	2.30	Coarse sand
500.00	1.00	5.40	7.70	
353.55	1.50	11.63	19.33	Medium sand
250.00	2.00	19.89	39.22	
176.78	2.50	25.37	64.59	Fine sand
125.00	3.00	18.13	82.72	
88.39	3.50	6.26	88.98	Very fine sand
62.50	4.00	1.27	90.26	
44.19	4.50	0.84	91.09	Coarse silt
31.25	5.00	0.99	92.08	
22.10	5.50	1.14	93.22	Medium silt
15.63	6.00	1.24	94.46	
11.05	6.50	1.35	95.81	Fine silt
7.81	7.00	1.14	96.95	
5.52	7.50	0.88	97.83	Very fine silt
3.91	8.00	0.61	98.44	
2.76	8.50	0.35	98.79	Clay
1.95	9.00	0.21	99.01	
1.38	9.50	0.19	99.19	
0.98	10.00	0.19	99.38	
0.69	10.50	0.16	99.54	
0.49	11.00	0.13	99.67	
<0.49	>11	0.28	100.00	



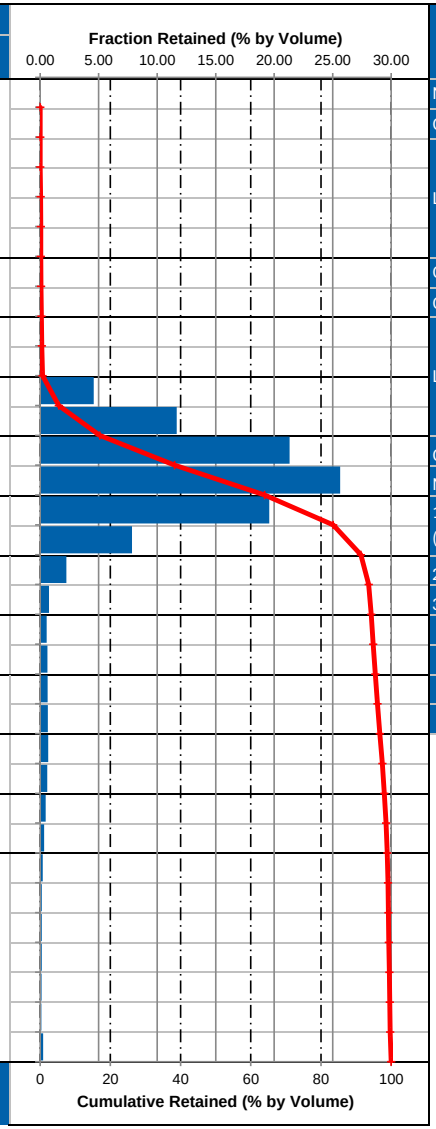
Method of Moments			
Geometric	Mean (µm)	179.65	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	1.65	Poor
	Skewness	1.90	Very fine
	Kurtosis	10.84	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	214.09	Wentworth:
Logarithmic	Mean (Phi)	2.22	Fine sand
	Sorting	1.26	Poor
	Skewness	0.24	Fine
	Kurtosis	1.95	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.21	215.76	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.70%
EUNIS Folk	Sand and muddy sand	Sand	89.80%
Distribution	Bimodal	Gravel	0.50%



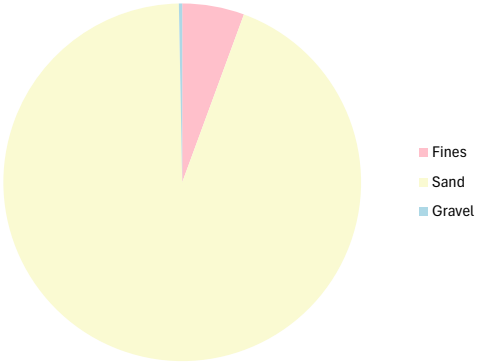
APPENDIX D PARTICLE SIZE ANALYSIS

ENV032				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.12	0.12	
5656.85	-2.50	0.04	0.16	
4000.00	-2.00	0.01	0.17	
2828.43	-1.50	0.05	0.22	Granule
2000.00	-1.00	0.10	0.31	
1414.21	-0.50	0.13	0.45	Very coarse sand
1000.00	0.00	0.25	0.70	
707.11	0.50	4.58	5.28	Coarse sand
500.00	1.00	11.67	16.95	
353.55	1.50	21.32	38.27	Medium sand
250.00	2.00	25.64	63.91	
176.78	2.50	19.58	83.49	Fine sand
125.00	3.00	7.85	91.34	
88.39	3.50	2.23	93.57	Very fine sand
62.50	4.00	0.75	94.32	
44.19	4.50	0.55	94.87	Coarse silt
31.25	5.00	0.61	95.49	
22.10	5.50	0.63	96.12	Medium silt
15.63	6.00	0.65	96.77	
11.05	6.50	0.69	97.46	Fine silt
7.81	7.00	0.60	98.05	
5.52	7.50	0.47	98.52	Very fine silt
3.91	8.00	0.34	98.86	
2.76	8.50	0.21	99.07	Clay
1.95	9.00	0.14	99.21	
1.38	9.50	0.13	99.34	
0.98	10.00	0.13	99.47	
0.69	10.50	0.12	99.60	
0.49	11.00	0.11	99.70	
<0.49	>11	0.26	100.00	



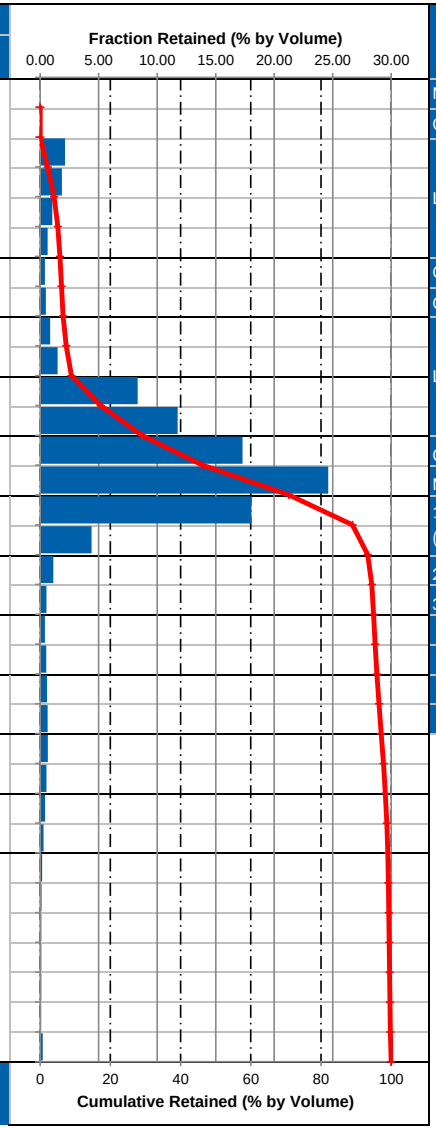
Method of Moments			
Geometric	Mean (µm)	260.26	Wentworth:
Logarithmic	Mean (Phi)	1.94	Medium sand
	Sorting	1.45	Poor
	Skewness	2.89	Very fine
	Kurtosis	16.07	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	299.33	Wentworth:
Logarithmic	Mean (Phi)	1.74	Medium sand
	Sorting	1.02	Poor
	Skewness	0.21	Fine
	Kurtosis	1.55	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.73	301.72	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.60%
EUNIS Folk	Sand and muddy sand	Sand	94.00%
Distribution	Unimodal	Gravel	0.30%



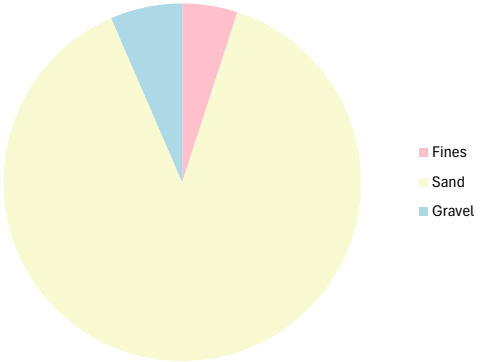
APPENDIX D PARTICLE SIZE ANALYSIS

ENV033				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	2.12	2.12	Pebble
8000.00	-3.00	1.86	3.98	
5656.85	-2.50	1.03	5.01	
4000.00	-2.00	0.64	5.65	
2828.43	-1.50	0.40	6.05	Granule
2000.00	-1.00	0.49	6.54	
1414.21	-0.50	0.86	7.40	Very coarse sand
1000.00	0.00	1.49	8.89	
707.11	0.50	8.33	17.23	Coarse sand
500.00	1.00	11.75	28.98	
353.55	1.50	17.29	46.26	Medium sand
250.00	2.00	24.62	70.89	
176.78	2.50	18.06	88.95	Fine sand
125.00	3.00	4.39	93.34	
88.39	3.50	1.13	94.46	Very fine sand
62.50	4.00	0.53	94.99	
44.19	4.50	0.40	95.40	Coarse silt
31.25	5.00	0.53	95.92	
22.10	5.50	0.59	96.52	Medium silt
15.63	6.00	0.63	97.15	
11.05	6.50	0.65	97.80	Fine silt
7.81	7.00	0.54	98.34	
5.52	7.50	0.41	98.75	Very fine silt
3.91	8.00	0.29	99.04	
2.76	8.50	0.17	99.21	Clay
1.95	9.00	0.11	99.33	
1.38	9.50	0.11	99.43	
0.98	10.00	0.11	99.54	
0.69	10.50	0.10	99.65	
0.49	11.00	0.09	99.74	
<0.49	>11	0.22	100.00	



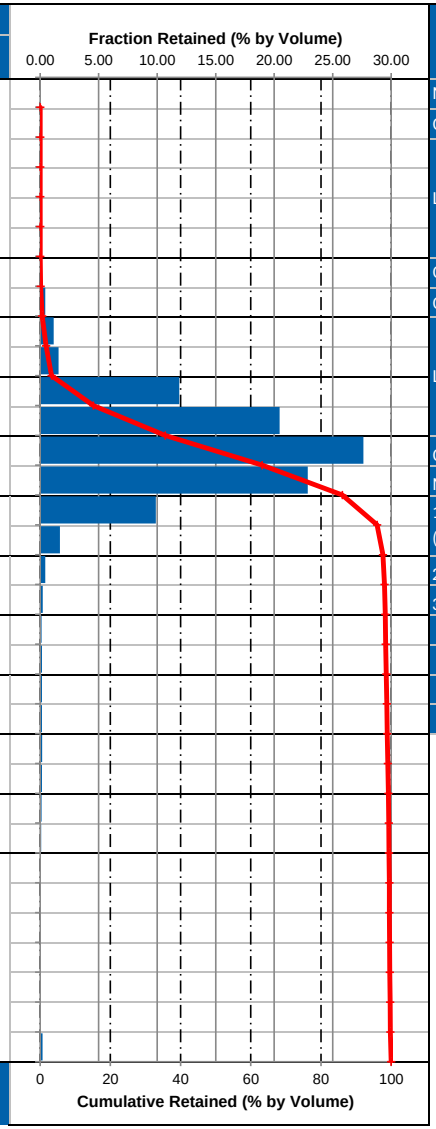
Method of Moments			
Geometric	Mean (µm)	361.49	Wentworth:
Logarithmic	Mean (Phi)	1.46	Medium sand
	Sorting	1.85	Poor
	Skewness	0.61	Fine
	Kurtosis	9.25	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	364.74	Wentworth:
Logarithmic	Mean (Phi)	1.46	Medium sand
	Sorting	1.47	Poor
	Skewness	-0.22	Coarse
	Kurtosis	2.08	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.58	335.44	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-3.50	11313.71	Pebble
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Gravelly sand	Fines	5.00%
EUNIS Folk	Coarse sediments	Sand	88.50%
Distribution	Bimodal	Gravel	6.50%



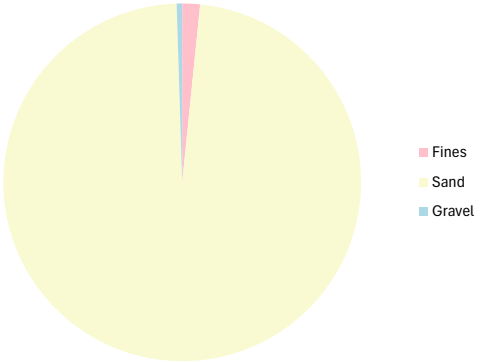
APPENDIX D PARTICLE SIZE ANALYSIS

ENV034				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.01	0.01	
4000.00	-2.00	0.01	0.02	
2828.43	-1.50	0.08	0.11	Granule
2000.00	-1.00	0.44	0.55	
1414.21	-0.50	1.15	1.69	Very coarse sand
1000.00	0.00	1.57	3.26	
707.11	0.50	11.89	15.14	Coarse sand
500.00	1.00	20.46	35.60	
353.55	1.50	27.62	63.22	Medium sand
250.00	2.00	22.88	86.10	
176.78	2.50	9.88	95.98	Fine sand
125.00	3.00	1.68	97.66	
88.39	3.50	0.44	98.10	Very fine sand
62.50	4.00	0.21	98.31	
44.19	4.50	0.11	98.43	Coarse silt
31.25	5.00	0.16	98.58	
22.10	5.50	0.15	98.74	Medium silt
15.63	6.00	0.15	98.89	
11.05	6.50	0.16	99.05	Fine silt
7.81	7.00	0.14	99.20	
5.52	7.50	0.12	99.31	Very fine silt
3.91	8.00	0.09	99.40	
2.76	8.50	0.06	99.46	
1.95	9.00	0.05	99.50	
1.38	9.50	0.05	99.56	
0.98	10.00	0.06	99.62	Clay
0.69	10.50	0.07	99.69	
0.49	11.00	0.07	99.76	
<0.49	>11	0.20	100.00	



Method of Moments			
Geometric	Mean (µm)	398.83	Wentworth:
Logarithmic	Mean (Phi)	1.32	Medium sand
	Sorting	1.11	Poor
	Skewness	3.96	Very fine
	Kurtosis	33.23	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	421.84	Wentworth:
Logarithmic	Mean (Phi)	1.25	Medium sand
	Sorting	0.72	Moderate
	Skewness	-0.02	Symmetrical
	Kurtosis	0.96	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.26	417.36	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

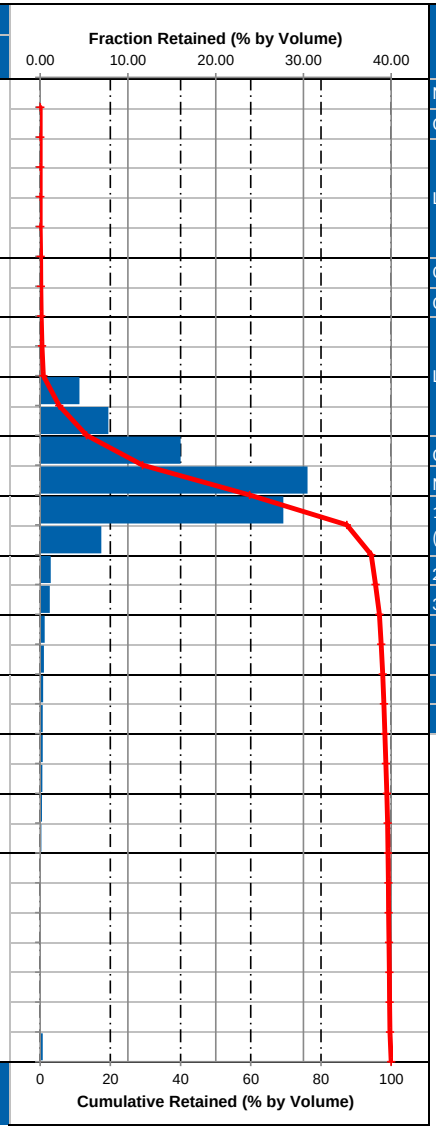
Classification		Composition	
Modified Folk	Sand	Fines	1.60%
EUNIS Folk	Sand and muddy sand	Sand	97.80%
Distribution	Unimodal	Gravel	0.50%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV036

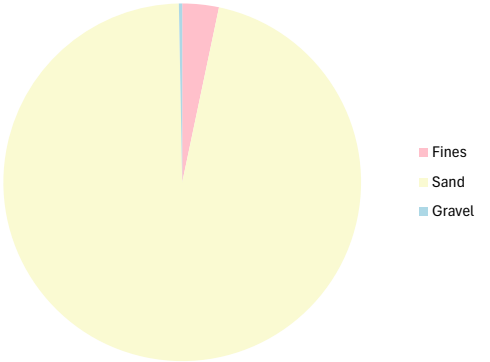
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.10	0.10	
2828.43	-1.50	0.05	0.16	Granule
2000.00	-1.00	0.10	0.26	
1414.21	-0.50	0.27	0.53	Very coarse sand
1000.00	0.00	0.39	0.92	
707.11	0.50	4.48	5.40	Coarse sand
500.00	1.00	7.77	13.17	
353.55	1.50	16.00	29.17	Medium sand
250.00	2.00	30.46	59.64	
176.78	2.50	27.71	87.35	Fine sand
125.00	3.00	6.97	94.32	
88.39	3.50	1.21	95.53	Very fine sand
62.50	4.00	1.10	96.63	
44.19	4.50	0.53	97.15	Coarse silt
31.25	5.00	0.43	97.58	
22.10	5.50	0.33	97.92	Medium silt
15.63	6.00	0.29	98.21	
11.05	6.50	0.29	98.50	Fine silt
7.81	7.00	0.26	98.76	
5.52	7.50	0.20	98.96	Very fine silt
3.91	8.00	0.14	99.11	
2.76	8.50	0.10	99.20	Clay
1.95	9.00	0.08	99.28	
1.38	9.50	0.08	99.36	
0.98	10.00	0.10	99.46	
0.69	10.50	0.10	99.56	
0.49	11.00	0.10	99.66	
<0.49	>11	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	263.96	Wentworth:
Logarithmic	Mean (Phi)	1.92	Medium sand
	Sorting	1.22	Poor
	Skewness	3.57	Very fine
	Kurtosis	25.75	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	289.18	Wentworth:
Logarithmic	Mean (Phi)	1.79	Medium sand
	Sorting	0.77	Moderate
	Skewness	-0.05	Symmetrical
	Kurtosis	1.28	Leptokurtic

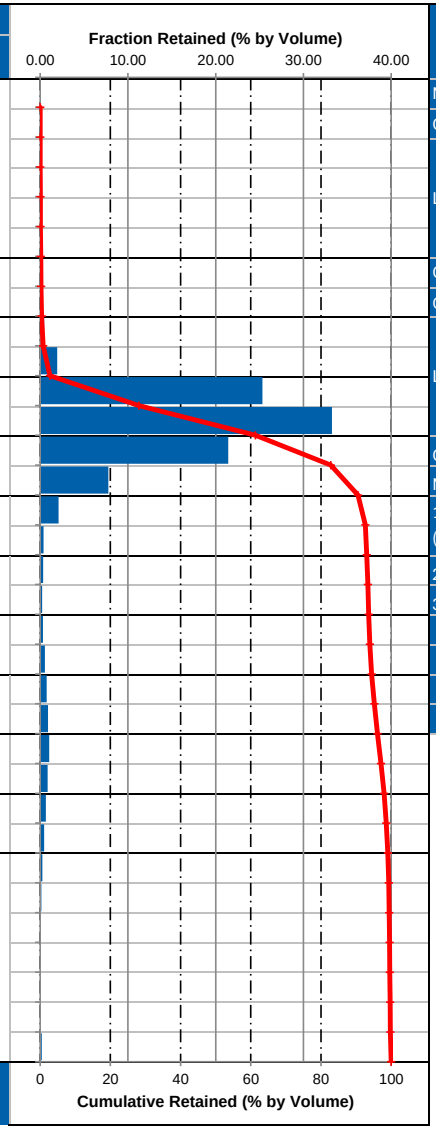
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.84	278.97	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	3.30%
EUNIS Folk	Sand and muddy sand	Sand	96.40%
Distribution	Unimodal	Gravel	0.30%



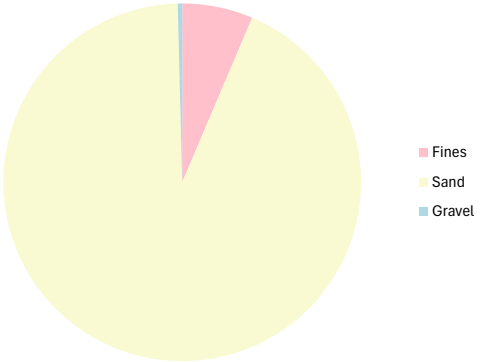
APPENDIX D PARTICLE SIZE ANALYSIS

ENV037				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.08	0.08	
5656.85	-2.50	0.00	0.08	
4000.00	-2.00	0.08	0.16	
2828.43	-1.50	0.09	0.25	Granule
2000.00	-1.00	0.13	0.38	
1414.21	-0.50	0.45	0.83	Very coarse sand
1000.00	0.00	1.94	2.77	
707.11	0.50	25.32	28.09	Coarse sand
500.00	1.00	33.25	61.34	
353.55	1.50	21.43	82.77	Medium sand
250.00	2.00	7.78	90.55	
176.78	2.50	2.10	92.65	Fine sand
125.00	3.00	0.38	93.03	
88.39	3.50	0.33	93.35	Very fine sand
62.50	4.00	0.24	93.59	
44.19	4.50	0.32	93.90	Coarse silt
31.25	5.00	0.54	94.45	
22.10	5.50	0.74	95.19	Medium silt
15.63	6.00	0.89	96.09	
11.05	6.50	1.03	97.11	Fine silt
7.81	7.00	0.86	97.97	
5.52	7.50	0.65	98.62	Very fine silt
3.91	8.00	0.44	99.06	
2.76	8.50	0.24	99.30	
1.95	9.00	0.13	99.42	
1.38	9.50	0.10	99.52	
0.98	10.00	0.10	99.62	Clay
0.69	10.50	0.09	99.71	
0.49	11.00	0.07	99.78	
<0.49	>11	0.18	100.00	



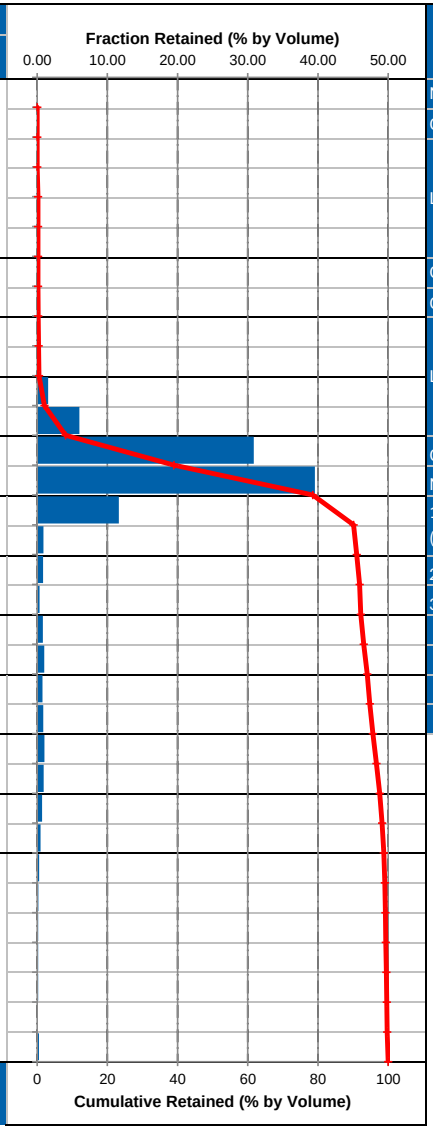
Method of Moments			
Geometric	Mean (µm)	434.51	Wentworth:
Logarithmic	Mean (Phi)	1.20	Medium sand
	Sorting	1.58	Poor
	Skewness	3.22	Very fine
	Kurtosis	15.11	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	539.63	Wentworth:
Logarithmic	Mean (Phi)	0.89	Coarse sand
	Sorting	1.14	Poor
	Skewness	0.42	Very fine
	Kurtosis	2.48	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.83	562.72	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.40%
EUNIS Folk	Sand and muddy sand	Sand	93.20%
Distribution	Bimodal	Gravel	0.40%



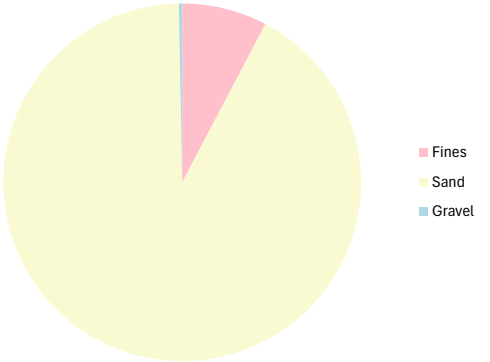
APPENDIX D PARTICLE SIZE ANALYSIS

ENV038				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.21	0.21	
5656.85	-2.50	0.03	0.24	
4000.00	-2.00	0.00	0.24	
2828.43	-1.50	0.00	0.24	Granule
2000.00	-1.00	0.05	0.29	
1414.21	-0.50	0.08	0.37	Very coarse sand
1000.00	0.00	0.14	0.51	
707.11	0.50	1.57	2.08	Coarse sand
500.00	1.00	6.01	8.09	
353.55	1.50	30.86	38.95	Medium sand
250.00	2.00	39.57	78.51	
176.78	2.50	11.64	90.16	Fine sand
125.00	3.00	0.89	91.05	
88.39	3.50	0.84	91.89	Very fine sand
62.50	4.00	0.33	92.22	
44.19	4.50	0.82	93.03	Coarse silt
31.25	5.00	1.00	94.03	
22.10	5.50	0.75	94.78	Medium silt
15.63	6.00	0.86	95.64	
11.05	6.50	1.03	96.67	Fine silt
7.81	7.00	0.91	97.58	
5.52	7.50	0.70	98.27	Very fine silt
3.91	8.00	0.47	98.75	
2.76	8.50	0.27	99.02	Clay
1.95	9.00	0.16	99.18	
1.38	9.50	0.14	99.32	
0.98	10.00	0.14	99.46	
0.69	10.50	0.13	99.59	
0.49	11.00	0.11	99.70	
<0.49	>11	0.26	100.00	



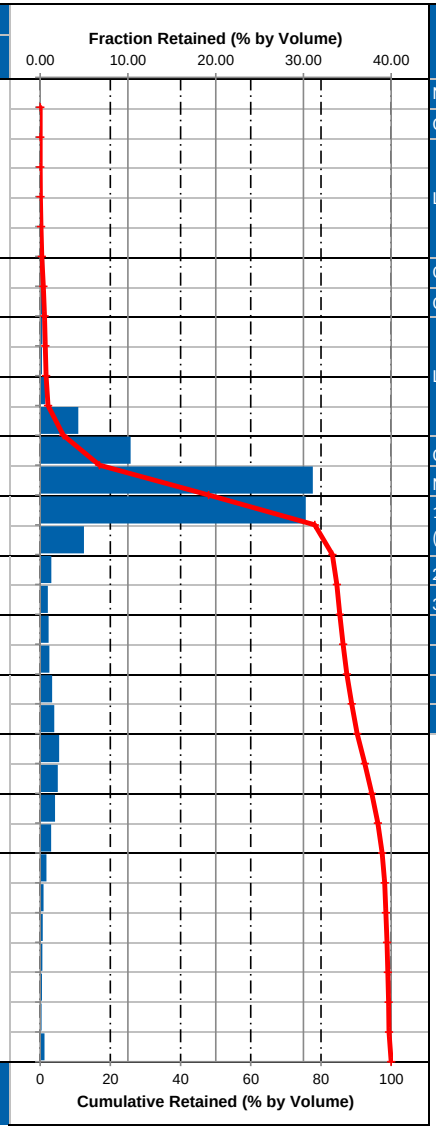
Method of Moments			
Geometric	Mean (µm)	258.71	Wentworth:
Logarithmic	Mean (Phi)	1.95	Medium sand
	Sorting	1.51	Poor
	Skewness	3.11	Very fine
	Kurtosis	15.43	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	314.73	Wentworth:
Logarithmic	Mean (Phi)	1.67	Medium sand
	Sorting	1.02	Poor
	Skewness	0.35	Very fine
	Kurtosis	2.94	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.64	320.93	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.70%
EUNIS Folk	Sand and muddy sand	Sand	91.90%
Distribution	Bimodal	Gravel	0.30%



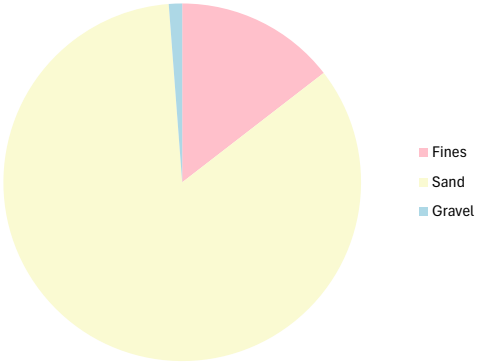
APPENDIX D PARTICLE SIZE ANALYSIS

ENV039				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.07	0.07	
5656.85	-2.50	0.18	0.25	
4000.00	-2.00	0.20	0.45	
2828.43	-1.50	0.45	0.89	Granule
2000.00	-1.00	0.34	1.23	
1414.21	-0.50	0.24	1.47	Very coarse sand
1000.00	0.00	0.20	1.67	
707.11	0.50	0.57	2.24	Coarse sand
500.00	1.00	4.35	6.59	
353.55	1.50	10.30	16.89	Medium sand
250.00	2.00	31.07	47.96	
176.78	2.50	30.28	78.24	Fine sand
125.00	3.00	4.99	83.23	
88.39	3.50	1.27	84.50	Very fine sand
62.50	4.00	0.87	85.36	
44.19	4.50	0.95	86.31	Coarse silt
31.25	5.00	1.04	87.36	
22.10	5.50	1.37	88.72	Medium silt
15.63	6.00	1.61	90.33	
11.05	6.50	2.16	92.49	Fine silt
7.81	7.00	2.01	94.50	
5.52	7.50	1.68	96.18	Very fine silt
3.91	8.00	1.24	97.42	
2.76	8.50	0.70	98.13	
1.95	9.00	0.38	98.51	
1.38	9.50	0.29	98.80	
0.98	10.00	0.25	99.05	Clay
0.69	10.50	0.19	99.24	
0.49	11.00	0.16	99.40	
<0.49	>11	0.50	100.00	



Method of Moments			
Geometric	Mean (µm)	169.04	Wentworth:
Logarithmic	Mean (Phi)	2.55	Fine sand
	Sorting	1.97	Poor
	Skewness	1.95	Very fine
	Kurtosis	7.69	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	208.08	Wentworth:
Logarithmic	Mean (Phi)	2.26	Fine sand
	Sorting	1.42	Poor
	Skewness	0.50	Very fine
	Kurtosis	3.18	Extremely leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.03	244.23	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

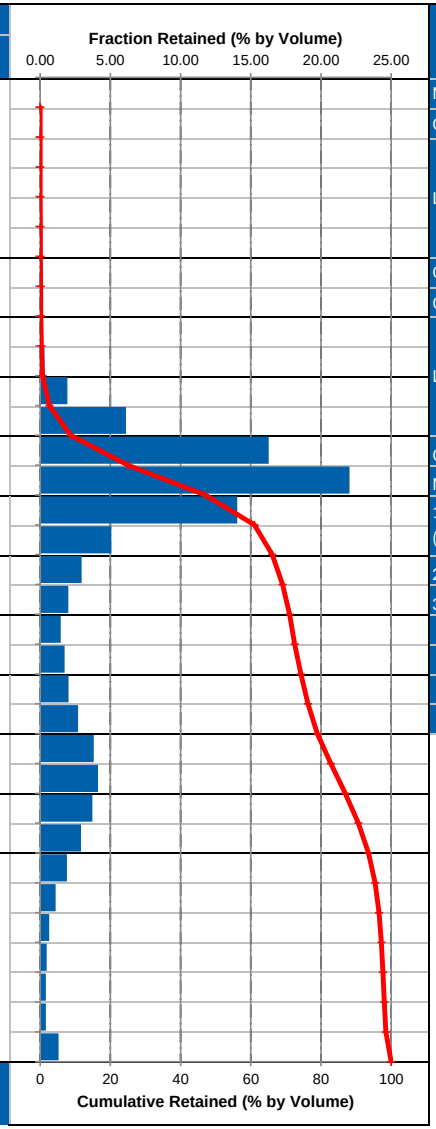
Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	14.50%
EUNIS Folk	Sand and muddy sand	Sand	84.10%
Distribution	Bimodal	Gravel	1.20%



APPENDIX D PARTICLE SIZE ANALYSIS

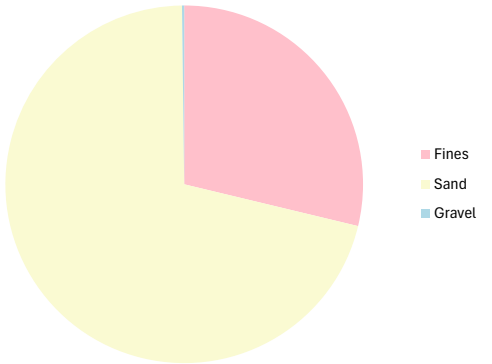
ENV040

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.08	0.08	
4000.00	-2.00	0.00	0.08	
2828.43	-1.50	0.02	0.11	Granule
2000.00	-1.00	0.08	0.19	
1414.21	-0.50	0.17	0.36	Very coarse sand
1000.00	0.00	0.30	0.66	
707.11	0.50	1.94	2.60	Coarse sand
500.00	1.00	6.10	8.70	
353.55	1.50	16.27	24.97	Medium sand
250.00	2.00	22.03	47.01	
176.78	2.50	14.04	61.04	Fine sand
125.00	3.00	5.06	66.10	
88.39	3.50	2.95	69.05	Very fine sand
62.50	4.00	2.01	71.06	
44.19	4.50	1.46	72.53	Coarse silt
31.25	5.00	1.75	74.27	
22.10	5.50	2.01	76.28	Medium silt
15.63	6.00	2.69	78.98	
11.05	6.50	3.82	82.80	Fine silt
7.81	7.00	4.12	86.91	
5.52	7.50	3.72	90.63	Very fine silt
3.91	8.00	2.90	93.54	
2.76	8.50	1.91	95.45	Clay
1.95	9.00	1.10	96.55	
1.38	9.50	0.65	97.20	
0.98	10.00	0.46	97.66	
0.69	10.50	0.41	98.06	
0.49	11.00	0.40	98.46	
<0.49	>11	1.31	100.00	



Method of Moments			
Geometric	Mean (µm)	101.61	Wentworth:
Logarithmic	Mean (Phi)	3.28	Very fine sand
	Sorting	2.64	Very poor
	Skewness	1.21	Fine
	Kurtosis	3.64	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	99.74	Wentworth:
Logarithmic	Mean (Phi)	3.33	Very fine sand
	Sorting	2.52	Very poor
	Skewness	0.65	Very fine
	Kurtosis	0.86	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.11	232.19	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

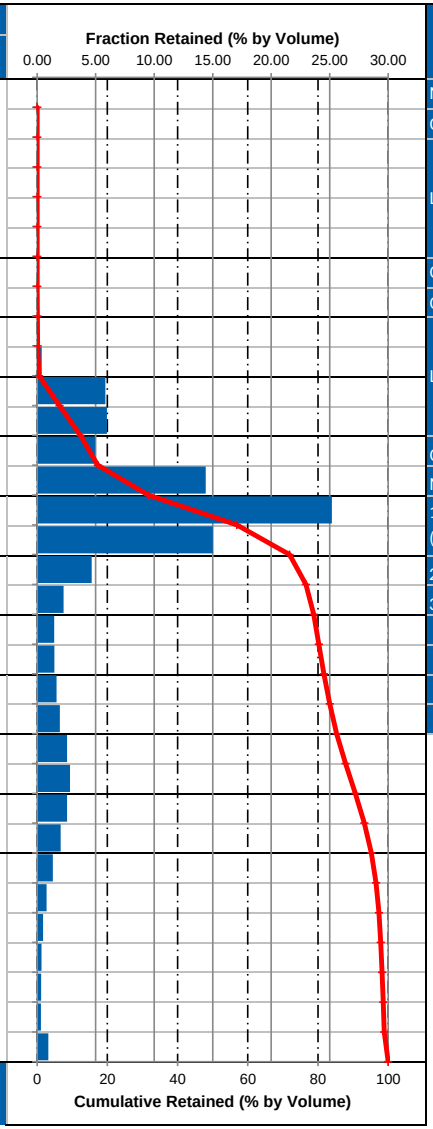
Classification		Composition	
Modified Folk	Muddy sand	Fines	28.70%
EUNIS Folk	Mud and sandy mud	Sand	70.90%
Distribution	Bimodal	Gravel	0.20%



APPENDIX D PARTICLE SIZE ANALYSIS

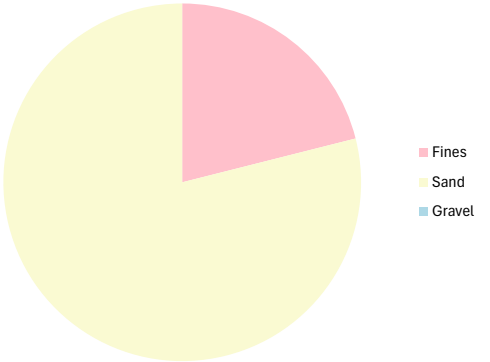
ENV041

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.04	0.04	
1414.21	-0.50	0.10	0.13	Very coarse sand
1000.00	0.00	0.38	0.51	
707.11	0.50	5.82	6.34	Coarse sand
500.00	1.00	5.95	12.29	
353.55	1.50	4.97	17.26	Medium sand
250.00	2.00	14.41	31.67	
176.78	2.50	25.19	56.85	Fine sand
125.00	3.00	15.02	71.87	
88.39	3.50	4.67	76.54	Very fine sand
62.50	4.00	2.25	78.78	
44.19	4.50	1.45	80.24	Coarse silt
31.25	5.00	1.47	81.71	
22.10	5.50	1.65	83.36	Medium silt
15.63	6.00	1.93	85.29	
11.05	6.50	2.56	87.85	Fine silt
7.81	7.00	2.80	90.65	
5.52	7.50	2.56	93.21	Very fine silt
3.91	8.00	2.00	95.21	
2.76	8.50	1.34	96.55	
1.95	9.00	0.81	97.36	
1.38	9.50	0.51	97.86	
0.98	10.00	0.38	98.24	Clay
0.69	10.50	0.33	98.57	
0.49	11.00	0.31	98.89	
<0.49	>11	0.95	100.00	



Method of Moments			
Geometric	Mean (µm)	119.28	Wentworth:
Logarithmic	Mean (Phi)	3.05	Very fine sand
	Sorting	2.31	Very poor
	Skewness	1.53	Very fine
	Kurtosis	5.15	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	113.90	Wentworth:
Logarithmic	Mean (Phi)	3.13	Very fine sand
	Sorting	2.22	Very poor
	Skewness	0.51	Very fine
	Kurtosis	1.98	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	194.26	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	1.00	500.00	Coarse sand
3rd Local Maxima	7.00	7.81	Fine silt

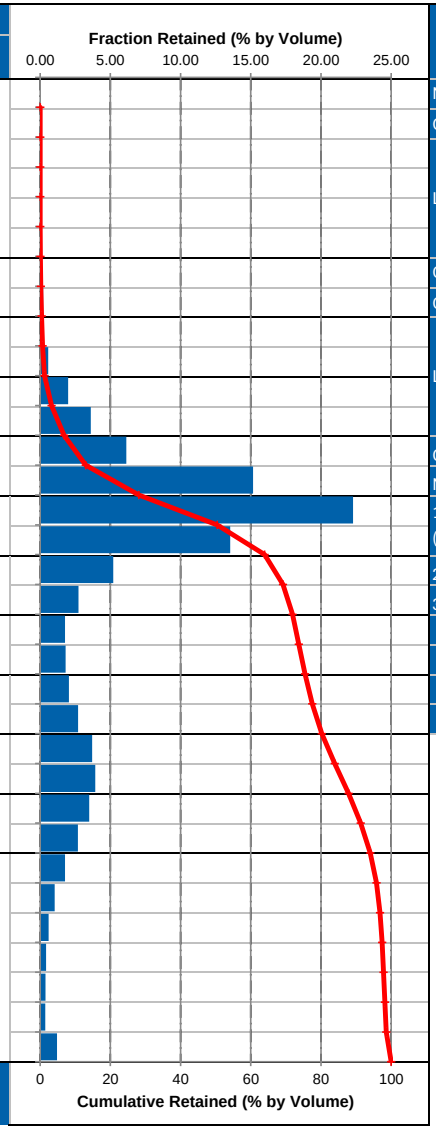
Classification		Composition	
Modified Folk	Muddy sand	Fines	21.00%
EUNIS Folk	Mud and sandy mud	Sand	78.70%
Distribution	Multimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

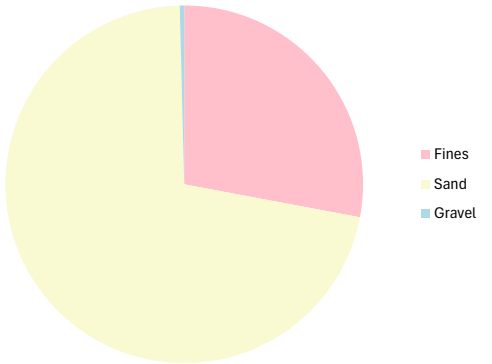
ENV042

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.07	0.07	
2828.43	-1.50	0.13	0.20	Granule
2000.00	-1.00	0.21	0.40	
1414.21	-0.50	0.26	0.66	Very coarse sand
1000.00	0.00	0.57	1.23	
707.11	0.50	2.00	3.23	Coarse sand
500.00	1.00	3.60	6.82	
353.55	1.50	6.14	12.96	Medium sand
250.00	2.00	15.17	28.13	
176.78	2.50	22.29	50.41	Fine sand
125.00	3.00	13.53	63.94	
88.39	3.50	5.21	69.15	Very fine sand
62.50	4.00	2.73	71.89	
44.19	4.50	1.76	73.65	Coarse silt
31.25	5.00	1.82	75.46	
22.10	5.50	2.05	77.52	Medium silt
15.63	6.00	2.69	80.21	
11.05	6.50	3.69	83.90	Fine silt
7.81	7.00	3.93	87.83	
5.52	7.50	3.49	91.33	Very fine silt
3.91	8.00	2.69	94.02	
2.76	8.50	1.77	95.79	Clay
1.95	9.00	1.03	96.82	
1.38	9.50	0.60	97.42	
0.98	10.00	0.42	97.84	
0.69	10.50	0.38	98.22	
0.49	11.00	0.37	98.59	
<0.49	>11	1.20	100.00	



Method of Moments			
Geometric	Mean (µm)	90.45	Wentworth:
Logarithmic	Mean (Phi)	3.45	Very fine sand
	Sorting	2.47	Very poor
	Skewness	1.22	Fine
	Kurtosis	4.01	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	86.31	Wentworth:
Logarithmic	Mean (Phi)	3.53	Very fine sand
	Sorting	2.37	Very poor
	Skewness	0.59	Very fine
	Kurtosis	1.04	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.49	177.91	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

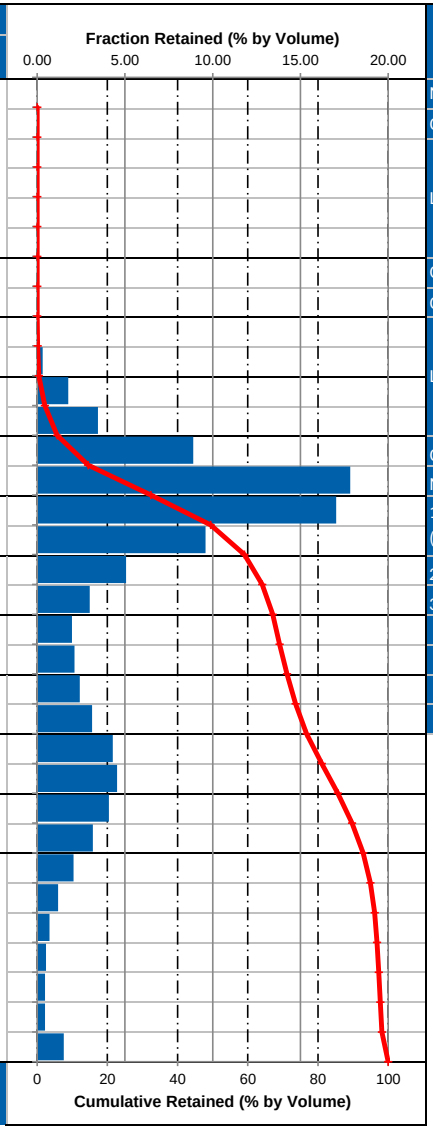
Classification		Composition	
Modified Folk	Muddy sand	Fines	27.90%
EUNIS Folk	Mud and sandy mud	Sand	71.50%
Distribution	Bimodal	Gravel	0.40%



APPENDIX D PARTICLE SIZE ANALYSIS

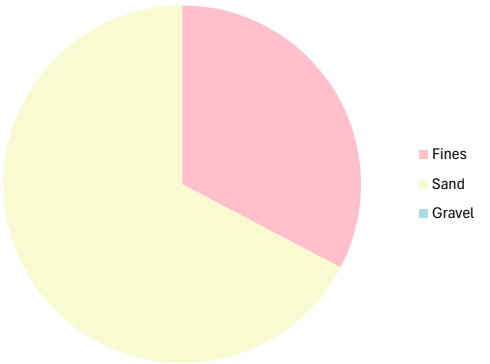
ENV043

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.00	0.02	
1414.21	-0.50	0.10	0.11	Very coarse sand
1000.00	0.00	0.32	0.43	
707.11	0.50	1.77	2.20	Coarse sand
500.00	1.00	3.46	5.66	
353.55	1.50	8.89	14.56	Medium sand
250.00	2.00	17.84	32.39	
176.78	2.50	17.04	49.43	Fine sand
125.00	3.00	9.59	59.02	
88.39	3.50	5.07	64.09	Very fine sand
62.50	4.00	2.99	67.08	
44.19	4.50	1.98	69.06	Coarse silt
31.25	5.00	2.12	71.18	
22.10	5.50	2.43	73.61	Medium silt
15.63	6.00	3.12	76.74	
11.05	6.50	4.31	81.05	Fine silt
7.81	7.00	4.56	85.61	
5.52	7.50	4.08	89.69	Very fine silt
3.91	8.00	3.17	92.86	
2.76	8.50	2.07	94.93	Clay
1.95	9.00	1.19	96.12	
1.38	9.50	0.70	96.83	
0.98	10.00	0.50	97.33	
0.69	10.50	0.44	97.77	
0.49	11.00	0.44	98.21	
<0.49	>11	1.51	100.00	



Method of Moments			
Geometric	Mean (µm)	78.21	Wentworth:
Logarithmic	Mean (Phi)	3.65	Very fine sand
	Sorting	2.60	Very poor
	Skewness	1.09	Fine
	Kurtosis	3.44	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	80.70	Wentworth:
Logarithmic	Mean (Phi)	3.63	Very fine sand
	Sorting	2.48	Very poor
	Skewness	0.60	Very fine
	Kurtosis	0.80	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.53	173.17	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

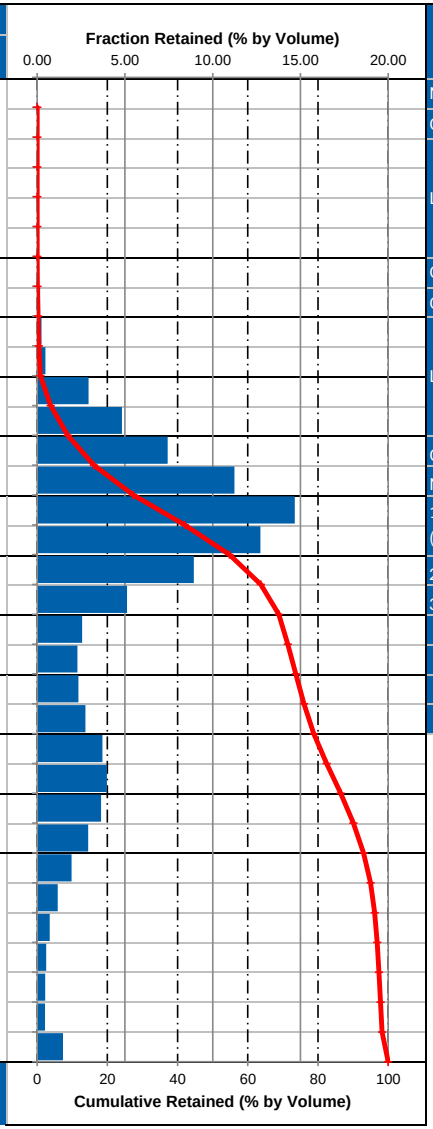
Classification		Composition	
Modified Folk	Muddy sand	Fines	32.60%
EUNIS Folk	Mud and sandy mud	Sand	67.10%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

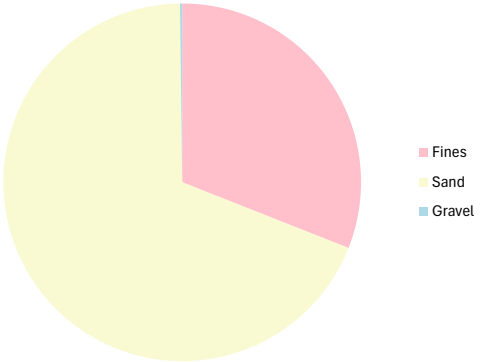
ENV044

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.04	0.04	Granule
2000.00	-1.00	0.17	0.21	
1414.21	-0.50	0.25	0.45	Very coarse sand
1000.00	0.00	0.47	0.92	
707.11	0.50	2.93	3.85	Coarse sand
500.00	1.00	4.83	8.68	
353.55	1.50	7.44	16.12	Medium sand
250.00	2.00	11.24	27.36	
176.78	2.50	14.68	42.04	Fine sand
125.00	3.00	12.72	54.76	
88.39	3.50	8.92	63.68	Very fine sand
62.50	4.00	5.12	68.80	
44.19	4.50	2.57	71.37	Coarse silt
31.25	5.00	2.30	73.66	
22.10	5.50	2.35	76.01	Medium silt
15.63	6.00	2.75	78.77	
11.05	6.50	3.72	82.48	Fine silt
7.81	7.00	3.97	86.45	
5.52	7.50	3.64	90.09	Very fine silt
3.91	8.00	2.91	93.00	
2.76	8.50	1.96	94.96	Clay
1.95	9.00	1.17	96.14	
1.38	9.50	0.72	96.85	
0.98	10.00	0.52	97.37	
0.69	10.50	0.45	97.82	
0.49	11.00	0.44	98.26	
<0.49	>11	1.47	100.00	



Method of Moments			
Geometric	Mean (µm)	79.36	Wentworth:
Logarithmic	Mean (Phi)	3.63	Very fine sand
	Sorting	2.56	Very poor
	Skewness	1.09	Fine
	Kurtosis	3.70	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	78.82	Wentworth:
Logarithmic	Mean (Phi)	3.67	Very fine sand
	Sorting	2.50	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.95	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.81	142.30	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

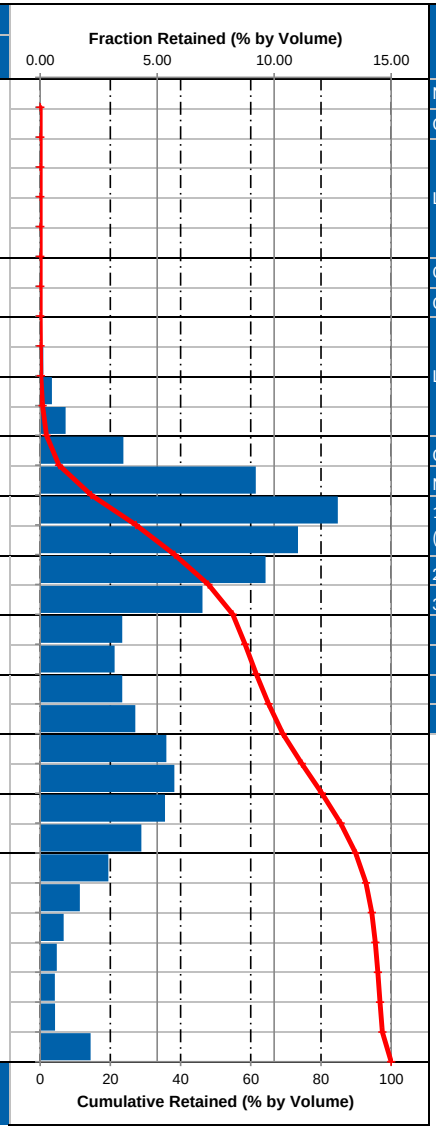
Classification		Composition	
Modified Folk	Muddy sand	Fines	30.90%
EUNIS Folk	Mud and sandy mud	Sand	68.60%
Distribution	Bimodal	Gravel	0.20%



APPENDIX D PARTICLE SIZE ANALYSIS

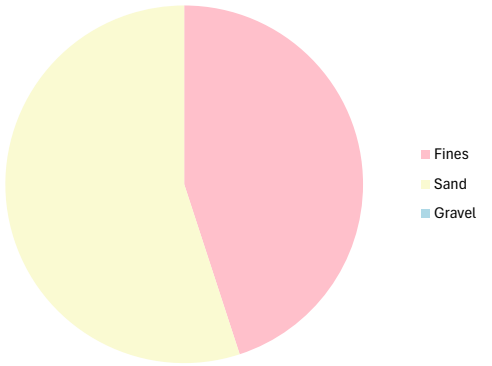
ENV045

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.06	0.06	Very coarse sand
1000.00	0.00	0.13	0.19	
707.11	0.50	0.50	0.69	Coarse sand
500.00	1.00	1.09	1.78	
353.55	1.50	3.55	5.34	Medium sand
250.00	2.00	9.21	14.55	
176.78	2.50	12.72	27.27	Fine sand
125.00	3.00	11.02	38.29	
88.39	3.50	9.63	47.92	Very fine sand
62.50	4.00	6.93	54.85	
44.19	4.50	3.51	58.36	Coarse silt
31.25	5.00	3.18	61.53	
22.10	5.50	3.51	65.04	Medium silt
15.63	6.00	4.06	69.10	
11.05	6.50	5.39	74.49	Fine silt
7.81	7.00	5.74	80.23	
5.52	7.50	5.33	85.56	Very fine silt
3.91	8.00	4.32	89.89	
2.76	8.50	2.91	92.80	Clay
1.95	9.00	1.70	94.49	
1.38	9.50	1.00	95.49	
0.98	10.00	0.71	96.20	
0.69	10.50	0.63	96.83	
0.49	11.00	0.64	97.47	
<0.49	>11	2.15	100.00	



Method of Moments			
Geometric	Mean (µm)	43.67	Wentworth:
Logarithmic	Mean (Phi)	4.48	Coarse silt
	Sorting	2.59	Very poor
	Skewness	0.81	Fine
	Kurtosis	2.99	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	48.91	Wentworth:
Logarithmic	Mean (Phi)	4.35	Coarse silt
	Sorting	2.51	Very poor
	Skewness	0.42	Very fine
	Kurtosis	0.77	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.65	79.64	Very fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

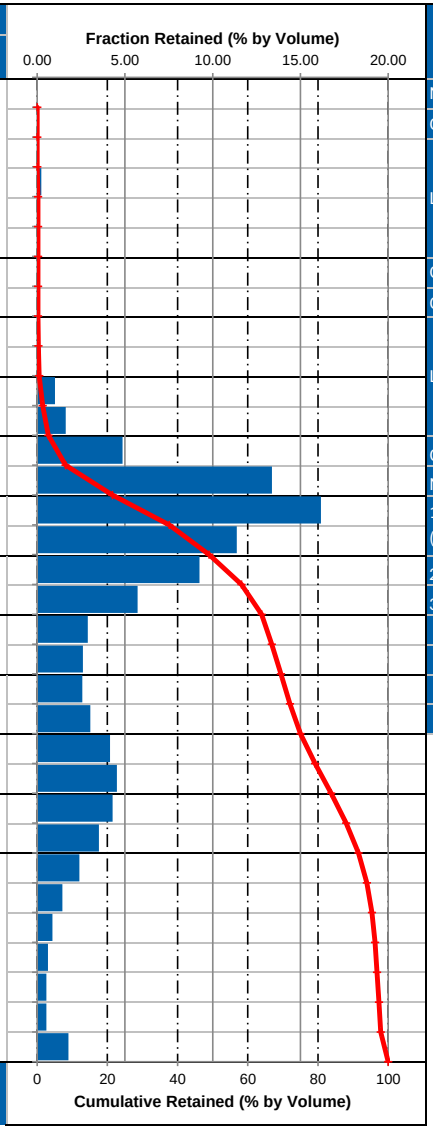
Classification		Composition	
Modified Folk	Muddy sand	Fines	44.80%
EUNIS Folk	Mud and sandy mud	Sand	54.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

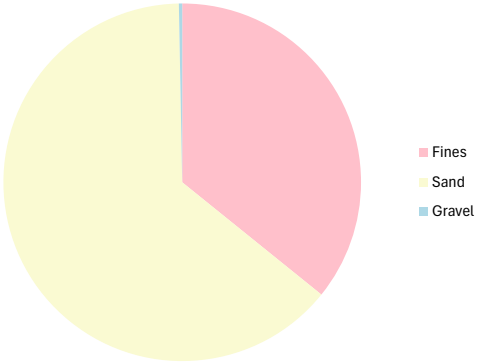
ENV046

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.23	0.23	
5656.85	-2.50	0.00	0.23	
4000.00	-2.00	0.00	0.23	
2828.43	-1.50	0.01	0.25	Granule
2000.00	-1.00	0.01	0.26	
1414.21	-0.50	0.09	0.35	Very coarse sand
1000.00	0.00	0.19	0.54	
707.11	0.50	1.01	1.56	Coarse sand
500.00	1.00	1.62	3.18	
353.55	1.50	4.87	8.05	Medium sand
250.00	2.00	13.38	21.43	
176.78	2.50	16.17	37.60	Fine sand
125.00	3.00	11.38	48.97	
88.39	3.50	9.25	58.22	Very fine sand
62.50	4.00	5.72	63.94	
44.19	4.50	2.89	66.83	Coarse silt
31.25	5.00	2.60	69.43	
22.10	5.50	2.57	72.00	Medium silt
15.63	6.00	3.03	75.03	
11.05	6.50	4.15	79.18	Fine silt
7.81	7.00	4.54	83.72	
5.52	7.50	4.29	88.01	Very fine silt
3.91	8.00	3.52	91.53	
2.76	8.50	2.40	93.93	Clay
1.95	9.00	1.43	95.36	
1.38	9.50	0.87	96.23	
0.98	10.00	0.61	96.84	
0.69	10.50	0.53	97.37	
0.49	11.00	0.52	97.89	
<0.49	>11	1.78	100.00	



Method of Moments			
Geometric	Mean (µm)	61.83	Wentworth:
Logarithmic	Mean (Phi)	3.98	Very fine sand
	Sorting	2.59	Very poor
	Skewness	0.98	Fine
	Kurtosis	3.48	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	64.18	Wentworth:
Logarithmic	Mean (Phi)	3.96	Very fine sand
	Sorting	2.47	Very poor
	Skewness	0.52	Very fine
	Kurtosis	0.81	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.06	120.28	Very fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

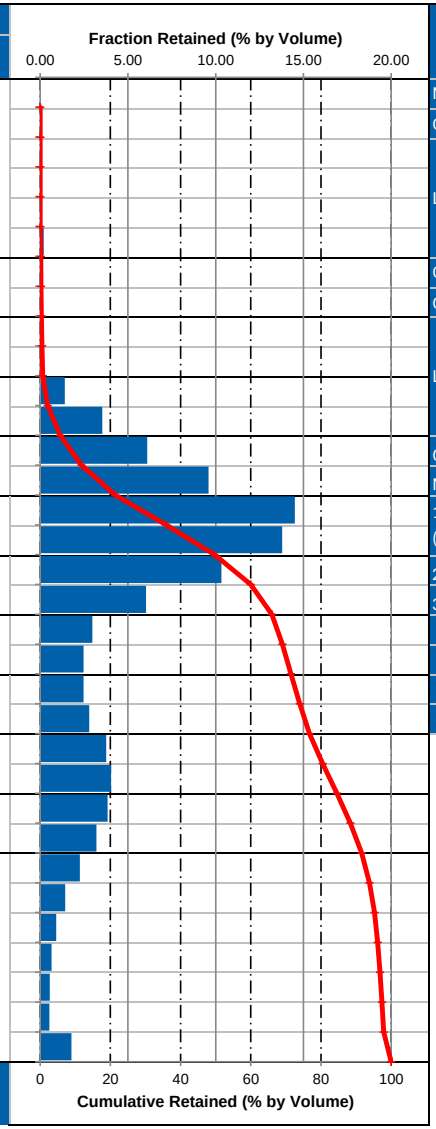
Classification		Composition	
Modified Folk	Muddy sand	Fines	35.70%
EUNIS Folk	Mud and sandy mud	Sand	63.70%
Distribution	Bimodal	Gravel	0.30%



APPENDIX D PARTICLE SIZE ANALYSIS

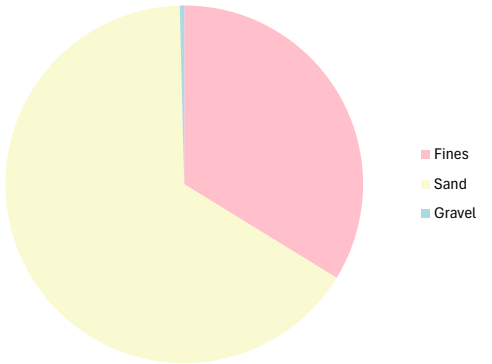
ENV047

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.20	0.20	
2828.43	-1.50	0.03	0.23	Granule
2000.00	-1.00	0.13	0.35	
1414.21	-0.50	0.17	0.52	Very coarse sand
1000.00	0.00	0.20	0.72	
707.11	0.50	1.41	2.12	Coarse sand
500.00	1.00	3.54	5.66	
353.55	1.50	6.10	11.76	Medium sand
250.00	2.00	9.59	21.36	
176.78	2.50	14.52	35.87	Fine sand
125.00	3.00	13.78	49.65	
88.39	3.50	10.33	59.98	Very fine sand
62.50	4.00	6.03	66.02	
44.19	4.50	2.97	68.99	Coarse silt
31.25	5.00	2.47	71.46	
22.10	5.50	2.47	73.93	Medium silt
15.63	6.00	2.79	76.72	
11.05	6.50	3.76	80.48	Fine silt
7.81	7.00	4.04	84.53	
5.52	7.50	3.84	88.36	Very fine silt
3.91	8.00	3.21	91.57	
2.76	8.50	2.26	93.83	Clay
1.95	9.00	1.43	95.26	
1.38	9.50	0.91	96.17	
0.98	10.00	0.65	96.82	
0.69	10.50	0.54	97.36	
0.49	11.00	0.52	97.89	
<0.49	>11	1.79	100.00	



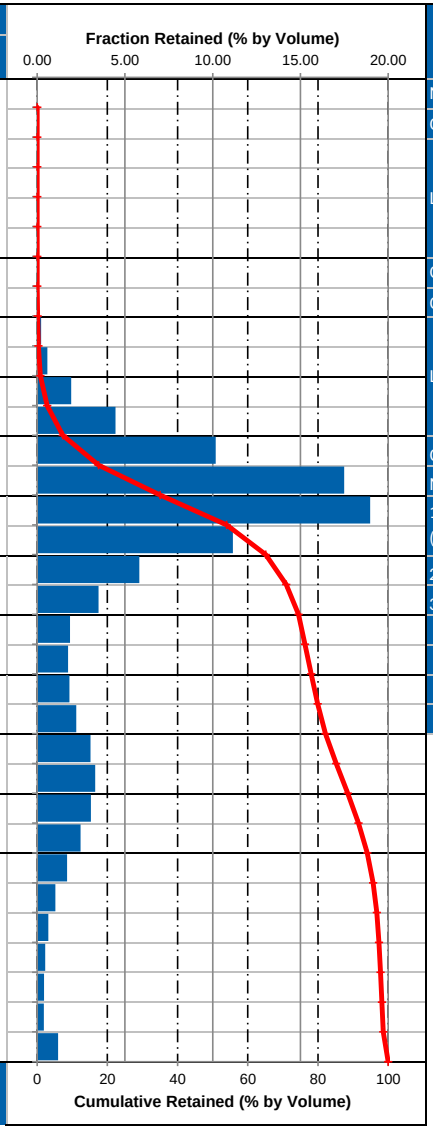
Method of Moments			
Geometric	Mean (µm)	66.13	Wentworth:
Logarithmic	Mean (Phi)	3.89	Very fine sand
	Sorting	2.59	Very poor
	Skewness	1.04	Fine
	Kurtosis	3.62	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	67.41	Wentworth:
Logarithmic	Mean (Phi)	3.89	Very fine sand
	Sorting	2.52	Very poor
	Skewness	0.49	Very fine
	Kurtosis	0.92	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.02	123.56	Very fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	33.70%
EUNIS Folk	Mud and sandy mud	Sand	65.70%
Distribution	Bimodal	Gravel	0.40%



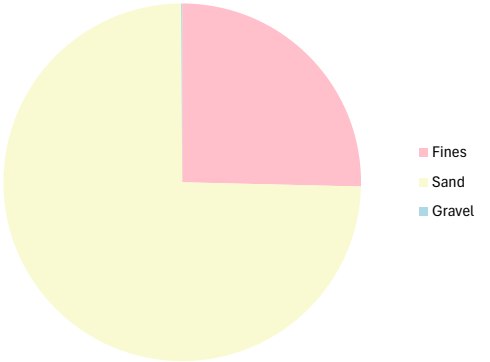
APPENDIX D PARTICLE SIZE ANALYSIS

ENV048				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.09	0.12	
1414.21	-0.50	0.22	0.34	Very coarse sand
1000.00	0.00	0.58	0.92	
707.11	0.50	1.94	2.86	Coarse sand
500.00	1.00	4.46	7.32	
353.55	1.50	10.18	17.50	Medium sand
250.00	2.00	17.49	34.99	
176.78	2.50	18.97	53.97	Fine sand
125.00	3.00	11.15	65.12	
88.39	3.50	5.82	70.94	Very fine sand
62.50	4.00	3.50	74.44	
44.19	4.50	1.87	76.31	Coarse silt
31.25	5.00	1.76	78.06	
22.10	5.50	1.84	79.90	Medium silt
15.63	6.00	2.22	82.13	
11.05	6.50	3.04	85.17	Fine silt
7.81	7.00	3.30	88.47	
5.52	7.50	3.06	91.53	Very fine silt
3.91	8.00	2.47	94.01	
2.76	8.50	1.70	95.70	
1.95	9.00	1.04	96.74	
1.38	9.50	0.63	97.38	
0.98	10.00	0.45	97.83	Clay
0.69	10.50	0.39	98.22	
0.49	11.00	0.37	98.59	
<0.49	>11	1.19	100.00	



Method of Moments			
Geometric	Mean (µm)	100.68	Wentworth:
Logarithmic	Mean (Phi)	3.29	Very fine sand
	Sorting	2.45	Very poor
	Skewness	1.37	Very fine
	Kurtosis	4.36	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	96.28	Wentworth:
Logarithmic	Mean (Phi)	3.38	Very fine sand
	Sorting	2.36	Very poor
	Skewness	0.58	Very fine
	Kurtosis	1.27	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	190.06	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

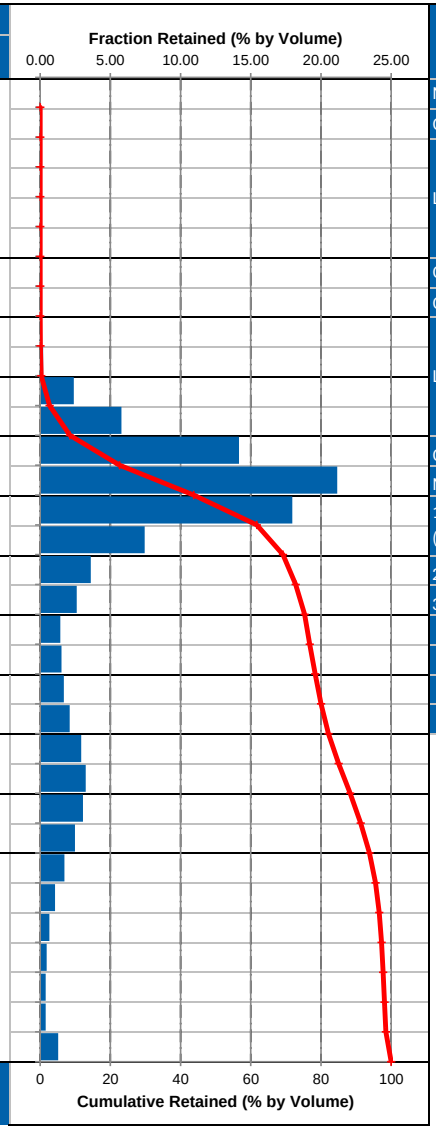
Classification		Composition	
Modified Folk	Muddy sand	Fines	25.30%
EUNIS Folk	Mud and sandy mud	Sand	74.30%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

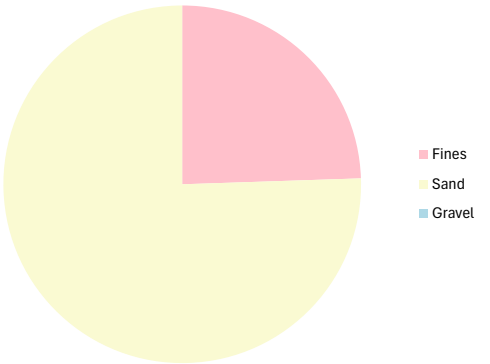
ENV049

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.02	0.03	
1414.21	-0.50	0.03	0.07	Very coarse sand
1000.00	0.00	0.20	0.27	
707.11	0.50	2.39	2.66	Coarse sand
500.00	1.00	5.79	8.45	
353.55	1.50	14.15	22.60	Medium sand
250.00	2.00	21.16	43.76	
176.78	2.50	17.95	61.72	Fine sand
125.00	3.00	7.45	69.16	
88.39	3.50	3.60	72.76	Very fine sand
62.50	4.00	2.60	75.36	
44.19	4.50	1.44	76.80	Coarse silt
31.25	5.00	1.52	78.32	
22.10	5.50	1.68	80.00	Medium silt
15.63	6.00	2.10	82.10	
11.05	6.50	2.93	85.03	Fine silt
7.81	7.00	3.25	88.27	
5.52	7.50	3.04	91.32	Very fine silt
3.91	8.00	2.48	93.80	
2.76	8.50	1.73	95.52	Clay
1.95	9.00	1.06	96.59	
1.38	9.50	0.65	97.24	
0.98	10.00	0.46	97.70	
0.69	10.50	0.40	98.09	
0.49	11.00	0.39	98.48	
<0.49	>11	1.28	100.00	



Method of Moments			
Geometric	Mean (µm)	110.73	Wentworth:
Logarithmic	Mean (Phi)	3.15	Very fine sand
	Sorting	2.51	Very poor
	Skewness	1.46	Very fine
	Kurtosis	4.43	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	104.75	Wentworth:
Logarithmic	Mean (Phi)	3.25	Very fine sand
	Sorting	2.42	Very poor
	Skewness	0.63	Very fine
	Kurtosis	1.32	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.17	221.64	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

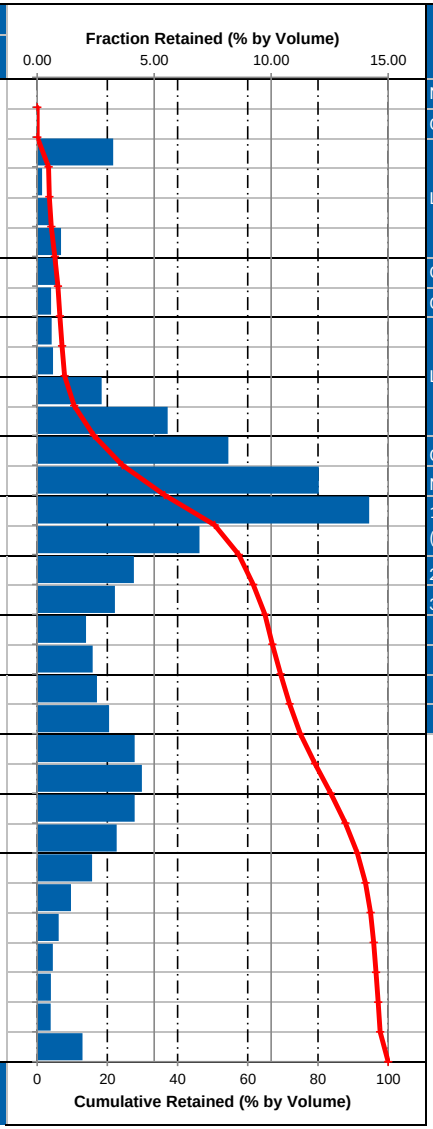
Classification		Composition	
Modified Folk	Muddy sand	Fines	24.40%
EUNIS Folk	Mud and sandy mud	Sand	75.30%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

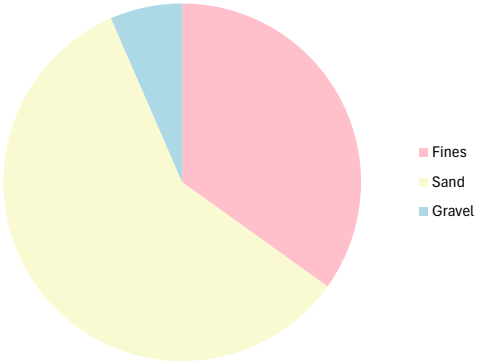
ENV050

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	3.24	3.24	Pebble
8000.00	-3.00	0.21	3.45	
5656.85	-2.50	0.55	4.00	
4000.00	-2.00	1.02	5.01	
2828.43	-1.50	0.87	5.88	Granule
2000.00	-1.00	0.59	6.48	
1414.21	-0.50	0.62	7.10	Very coarse sand
1000.00	0.00	0.67	7.77	
707.11	0.50	2.76	10.53	Coarse sand
500.00	1.00	5.58	16.11	
353.55	1.50	8.17	24.28	Medium sand
250.00	2.00	12.03	36.31	
176.78	2.50	14.19	50.50	Fine sand
125.00	3.00	6.93	57.43	
88.39	3.50	4.13	61.56	Very fine sand
62.50	4.00	3.32	64.88	
44.19	4.50	2.09	66.97	Coarse silt
31.25	5.00	2.37	69.34	
22.10	5.50	2.55	71.89	Medium silt
15.63	6.00	3.07	74.97	
11.05	6.50	4.17	79.13	Fine silt
7.81	7.00	4.47	83.61	
5.52	7.50	4.17	87.78	Very fine silt
3.91	8.00	3.40	91.18	
2.76	8.50	2.35	93.53	Clay
1.95	9.00	1.45	94.97	
1.38	9.50	0.92	95.89	
0.98	10.00	0.67	96.56	
0.69	10.50	0.59	97.15	
0.49	11.00	0.58	97.72	
<0.49	>11	1.93	100.00	



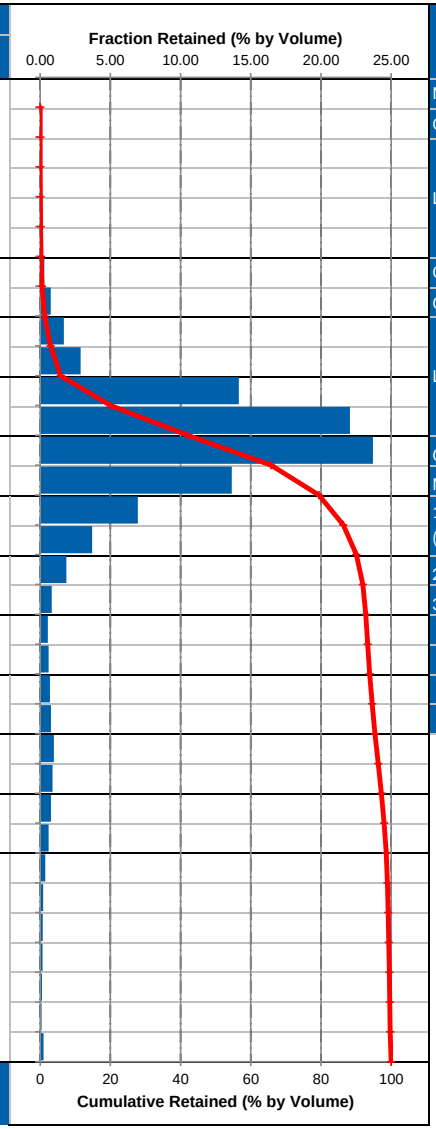
Method of Moments			
Geometric	Mean (µm)	92.64	Wentworth:
Logarithmic	Mean (Phi)	3.40	Very fine sand
	Sorting	3.22	Very poor
	Skewness	0.35	Symmetrical
	Kurtosis	3.14	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	87.98	Wentworth:
Logarithmic	Mean (Phi)	3.51	Very fine sand
	Sorting	3.18	Very poor
	Skewness	0.35	Very fine
	Kurtosis	1.01	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.48	178.94	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-3.50	11313.71	Pebble

Classification		Composition	
Modified Folk	Gravelly muddy sand	Fines	34.80%
EUNIS Folk	Mixed sediments	Sand	58.40%
Distribution	Multimodal	Gravel	6.50%



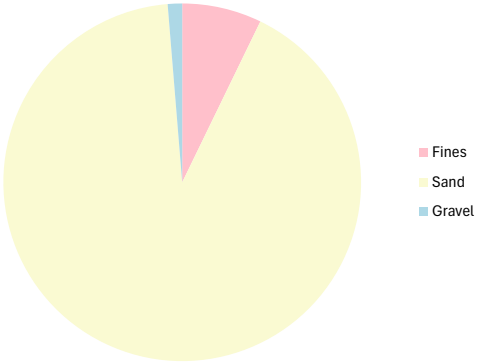
APPENDIX D PARTICLE SIZE ANALYSIS

ENV051				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.04	0.04	
5656.85	-2.50	0.06	0.10	
4000.00	-2.00	0.13	0.23	
2828.43	-1.50	0.29	0.52	Granule
2000.00	-1.00	0.75	1.27	
1414.21	-0.50	1.69	2.96	Very coarse sand
1000.00	0.00	2.89	5.85	
707.11	0.50	14.15	19.99	Coarse sand
500.00	1.00	22.06	42.06	
353.55	1.50	23.71	65.77	Medium sand
250.00	2.00	13.64	79.41	
176.78	2.50	6.96	86.37	Fine sand
125.00	3.00	3.70	90.07	
88.39	3.50	1.87	91.93	Very fine sand
62.50	4.00	0.82	92.75	
44.19	4.50	0.54	93.30	Coarse silt
31.25	5.00	0.59	93.89	
22.10	5.50	0.70	94.59	Medium silt
15.63	6.00	0.76	95.35	
11.05	6.50	0.98	96.33	Fine silt
7.81	7.00	0.88	97.21	
5.52	7.50	0.76	97.98	Very fine silt
3.91	8.00	0.60	98.57	
2.76	8.50	0.36	98.93	
1.95	9.00	0.21	99.14	
1.38	9.50	0.18	99.32	
0.98	10.00	0.17	99.49	Clay
0.69	10.50	0.13	99.62	
0.49	11.00	0.10	99.72	
<0.49	>11	0.23	100.00	



Method of Moments			
Geometric	Mean (µm)	344.60	Wentworth:
Logarithmic	Mean (Phi)	1.53	Medium sand
	Sorting	1.76	Poor
	Skewness	2.46	Very fine
	Kurtosis	11.06	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	410.27	Wentworth:
Logarithmic	Mean (Phi)	1.29	Medium sand
	Sorting	1.39	Poor
	Skewness	0.37	Very fine
	Kurtosis	1.98	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.17	445.18	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

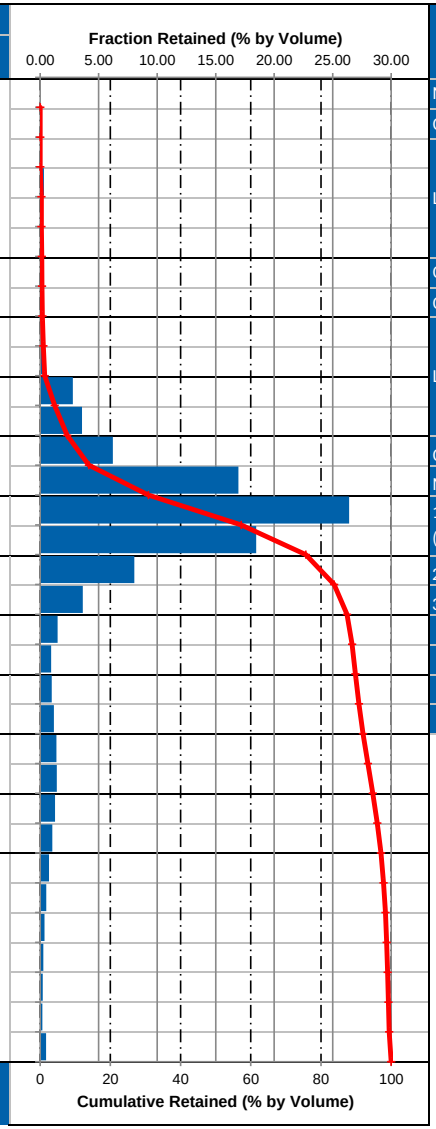
Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	7.20%
EUNIS Folk	Sand and muddy sand	Sand	91.50%
Distribution	Unimodal	Gravel	1.30%



APPENDIX D PARTICLE SIZE ANALYSIS

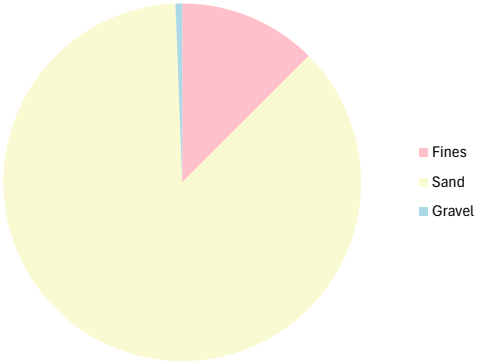
ENV052

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.32	0.32	
5656.85	-2.50	0.00	0.32	
4000.00	-2.00	0.11	0.43	
2828.43	-1.50	0.07	0.50	Granule
2000.00	-1.00	0.12	0.61	
1414.21	-0.50	0.29	0.91	Very coarse sand
1000.00	0.00	0.40	1.31	
707.11	0.50	2.79	4.10	Coarse sand
500.00	1.00	3.57	7.67	
353.55	1.50	6.21	13.88	Medium sand
250.00	2.00	16.95	30.83	
176.78	2.50	26.40	57.23	Fine sand
125.00	3.00	18.46	75.70	
88.39	3.50	8.04	83.74	Very fine sand
62.50	4.00	3.65	87.38	
44.19	4.50	1.49	88.88	Coarse silt
31.25	5.00	0.94	89.82	
22.10	5.50	0.98	90.81	Medium silt
15.63	6.00	1.17	91.97	
11.05	6.50	1.39	93.36	Fine silt
7.81	7.00	1.42	94.78	
5.52	7.50	1.27	96.05	Very fine silt
3.91	8.00	1.03	97.08	
2.76	8.50	0.76	97.84	Clay
1.95	9.00	0.52	98.36	
1.38	9.50	0.36	98.73	
0.98	10.00	0.27	99.00	
0.69	10.50	0.23	99.23	
0.49	11.00	0.19	99.42	
<0.49	>11	0.50	100.00	



Method of Moments			
Geometric	Mean (µm)	148.57	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.88	Poor
	Skewness	1.88	Very fine
	Kurtosis	8.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	178.36	Wentworth:
Logarithmic	Mean (Phi)	2.49	Fine sand
	Sorting	1.47	Poor
	Skewness	0.33	Very fine
	Kurtosis	2.30	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	194.39	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

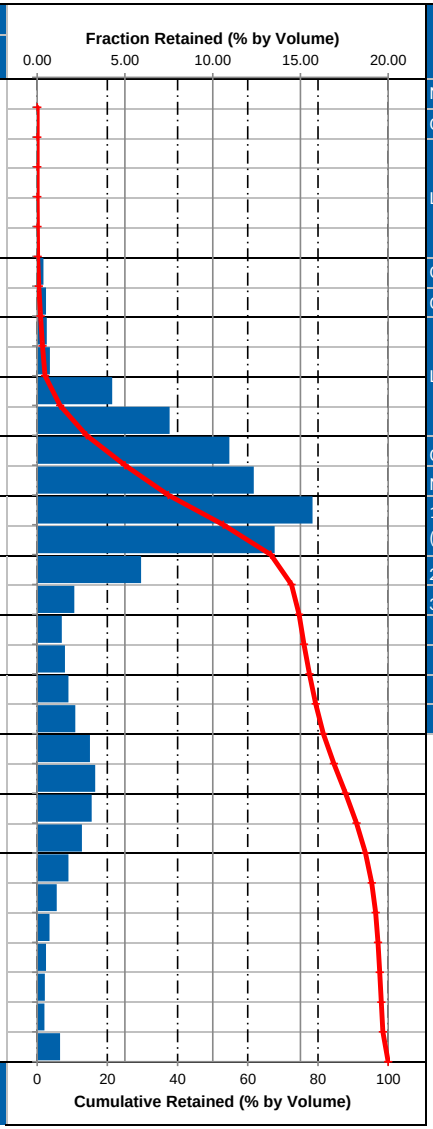
Classification		Composition	
Modified Folk	Muddy sand	Fines	12.50%
EUNIS Folk	Sand and muddy sand	Sand	86.80%
Distribution	Bimodal	Gravel	0.60%



APPENDIX D PARTICLE SIZE ANALYSIS

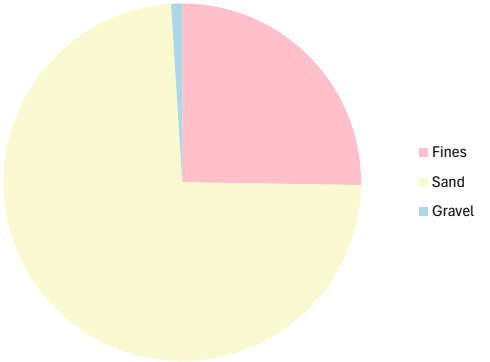
ENV053

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.08	0.11	
2828.43	-1.50	0.35	0.47	Granule
2000.00	-1.00	0.50	0.96	
1414.21	-0.50	0.55	1.51	Very coarse sand
1000.00	0.00	0.73	2.24	
707.11	0.50	4.27	6.51	Coarse sand
500.00	1.00	7.54	14.05	
353.55	1.50	10.95	25.00	Medium sand
250.00	2.00	12.34	37.34	
176.78	2.50	15.69	53.02	Fine sand
125.00	3.00	13.53	66.55	
88.39	3.50	5.92	72.47	Very fine sand
62.50	4.00	2.12	74.59	
44.19	4.50	1.41	76.00	Coarse silt
31.25	5.00	1.58	77.58	
22.10	5.50	1.78	79.36	Medium silt
15.63	6.00	2.17	81.53	
11.05	6.50	3.00	84.53	Fine silt
7.81	7.00	3.31	87.85	
5.52	7.50	3.11	90.96	Very fine silt
3.91	8.00	2.55	93.50	
2.76	8.50	1.78	95.29	Clay
1.95	9.00	1.11	96.40	
1.38	9.50	0.70	97.10	
0.98	10.00	0.51	97.61	
0.69	10.50	0.44	98.05	
0.49	11.00	0.41	98.46	
<0.49	>11	1.31	100.00	



Method of Moments			
Geometric	Mean (µm)	108.06	Wentworth:
Logarithmic	Mean (Phi)	3.19	Very fine sand
	Sorting	2.61	Very poor
	Skewness	1.22	Fine
	Kurtosis	4.06	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	101.45	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	2.56	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.25	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	188.99	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

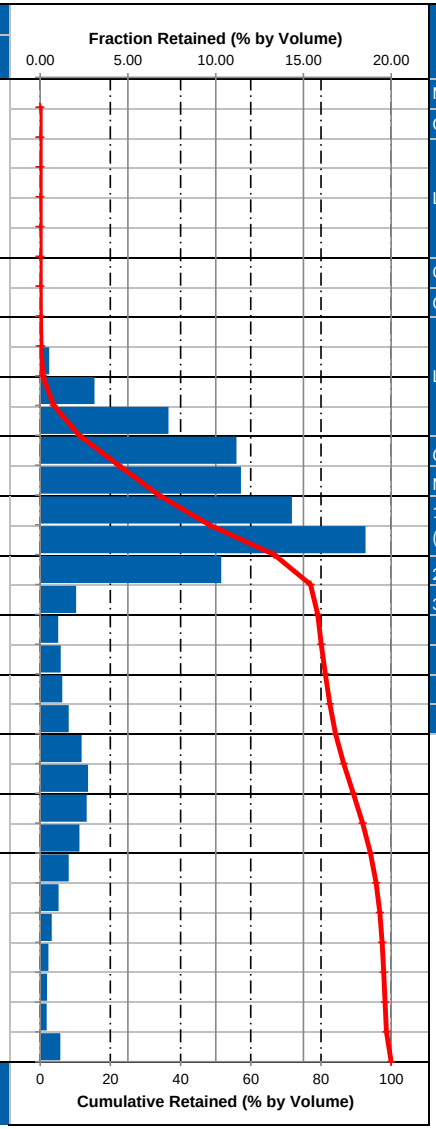
Classification		Composition	
Modified Folk	Muddy sand	Fines	25.20%
EUNIS Folk	Mud and sandy mud	Sand	73.60%
Distribution	Bimodal	Gravel	1.00%



APPENDIX D PARTICLE SIZE ANALYSIS

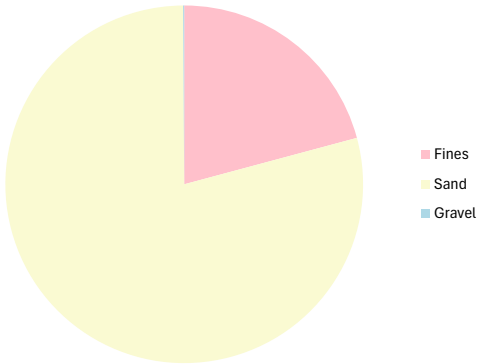
ENV054

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.05	0.08	
1414.21	-0.50	0.16	0.24	Very coarse sand
1000.00	0.00	0.51	0.75	
707.11	0.50	3.09	3.84	Coarse sand
500.00	1.00	7.31	11.16	
353.55	1.50	11.19	22.34	Medium sand
250.00	2.00	11.44	33.79	
176.78	2.50	14.35	48.14	Fine sand
125.00	3.00	18.53	66.67	
88.39	3.50	10.32	76.99	Very fine sand
62.50	4.00	2.05	79.04	
44.19	4.50	1.03	80.07	Coarse silt
31.25	5.00	1.17	81.24	
22.10	5.50	1.26	82.50	Medium silt
15.63	6.00	1.62	84.13	
11.05	6.50	2.36	86.49	Fine silt
7.81	7.00	2.72	89.21	
5.52	7.50	2.65	91.86	Very fine silt
3.91	8.00	2.24	94.09	
2.76	8.50	1.62	95.71	Clay
1.95	9.00	1.04	96.76	
1.38	9.50	0.66	97.42	
0.98	10.00	0.47	97.89	
0.69	10.50	0.40	98.28	
0.49	11.00	0.37	98.65	
<0.49	>11	1.14	100.00	



Method of Moments			
Geometric	Mean (µm)	111.26	Wentworth:
Logarithmic	Mean (Phi)	3.15	Very fine sand
	Sorting	2.40	Very poor
	Skewness	1.50	Very fine
	Kurtosis	4.94	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	105.66	Wentworth:
Logarithmic	Mean (Phi)	3.24	Very fine sand
	Sorting	2.35	Very poor
	Skewness	0.46	Very fine
	Kurtosis	1.77	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.55	170.73	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

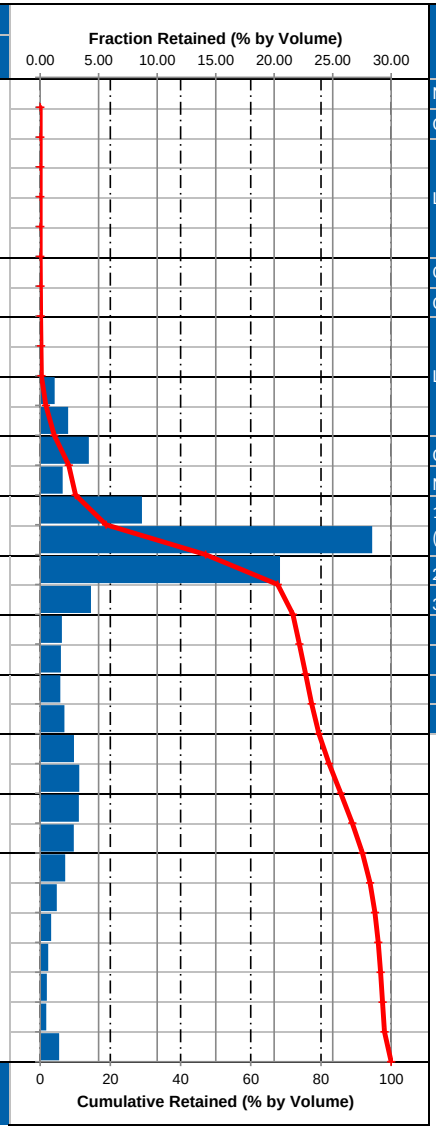
Classification		Composition	
Modified Folk	Muddy sand	Fines	20.80%
EUNIS Folk	Mud and sandy mud	Sand	79.00%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV055

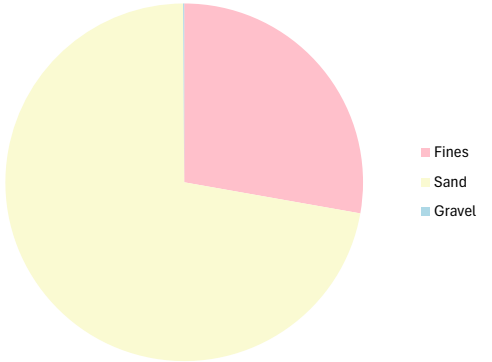
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.06	0.06	Granule
2000.00	-1.00	0.04	0.11	
1414.21	-0.50	0.10	0.20	Very coarse sand
1000.00	0.00	0.15	0.35	
707.11	0.50	1.24	1.59	Coarse sand
500.00	1.00	2.39	3.99	
353.55	1.50	4.16	8.15	Medium sand
250.00	2.00	1.92	10.07	
176.78	2.50	8.69	18.77	Fine sand
125.00	3.00	28.37	47.14	
88.39	3.50	20.50	67.64	Very fine sand
62.50	4.00	4.34	71.98	
44.19	4.50	1.86	73.84	Coarse silt
31.25	5.00	1.77	75.61	
22.10	5.50	1.72	77.33	Medium silt
15.63	6.00	2.07	79.39	
11.05	6.50	2.89	82.28	Fine silt
7.81	7.00	3.33	85.62	
5.52	7.50	3.32	88.93	Very fine silt
3.91	8.00	2.88	91.81	
2.76	8.50	2.14	93.95	Clay
1.95	9.00	1.42	95.37	
1.38	9.50	0.94	96.31	
0.98	10.00	0.68	96.99	
0.69	10.50	0.57	97.56	
0.49	11.00	0.53	98.09	
<0.49	>11	1.62	100.00	



Method of Moments			
Geometric	Mean (µm)	65.10	Wentworth:
Logarithmic	Mean (Phi)	3.91	Very fine sand
	Sorting	2.38	Very poor
	Skewness	1.35	Very fine
	Kurtosis	4.46	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	60.12	Wentworth:
Logarithmic	Mean (Phi)	4.06	Coarse silt
	Sorting	2.28	Very poor
	Skewness	0.58	Very fine
	Kurtosis	1.43	Leptokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.07	119.10	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

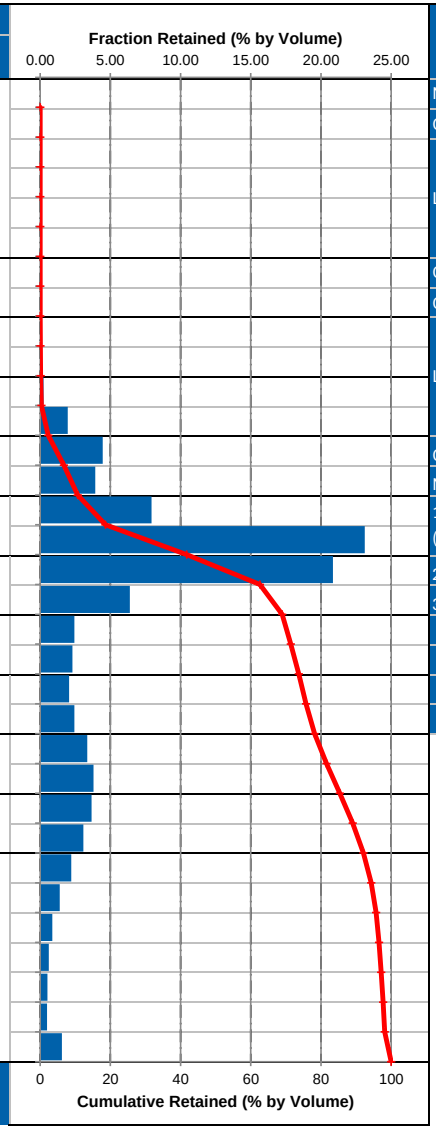
Classification		Composition	
Modified Folk	Muddy sand	Fines	27.70%
EUNIS Folk	Mud and sandy mud	Sand	71.90%
Distribution	Multimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

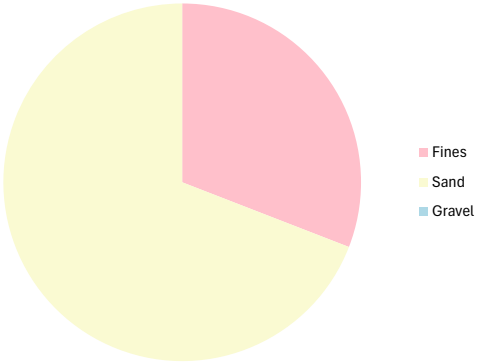
ENV056

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.02	0.04	Very coarse sand
1000.00	0.00	0.07	0.12	
707.11	0.50	0.24	0.35	Coarse sand
500.00	1.00	1.96	2.31	
353.55	1.50	4.45	6.76	Medium sand
250.00	2.00	3.92	10.68	
176.78	2.50	7.93	18.61	Fine sand
125.00	3.00	23.12	41.74	
88.39	3.50	20.85	62.58	Very fine sand
62.50	4.00	6.38	68.97	
44.19	4.50	2.44	71.40	Coarse silt
31.25	5.00	2.29	73.70	
22.10	5.50	2.06	75.75	Medium silt
15.63	6.00	2.43	78.19	
11.05	6.50	3.36	81.55	Fine silt
7.81	7.00	3.79	85.34	
5.52	7.50	3.66	89.00	Very fine silt
3.91	8.00	3.08	92.08	
2.76	8.50	2.21	94.29	Clay
1.95	9.00	1.40	95.69	
1.38	9.50	0.87	96.56	
0.98	10.00	0.61	97.17	
0.69	10.50	0.52	97.69	
0.49	11.00	0.49	98.18	
<0.49	>11	1.54	100.00	



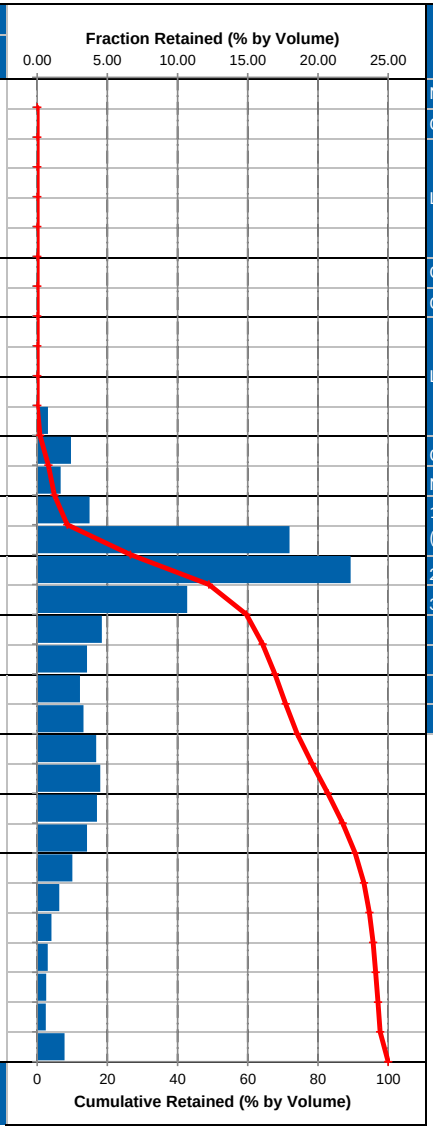
Method of Moments			
Geometric	Mean (µm)	59.85	Wentworth:
Logarithmic	Mean (Phi)	4.03	Coarse silt
	Sorting	2.34	Very poor
	Skewness	1.29	Fine
	Kurtosis	4.24	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	57.55	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	2.25	Very poor
	Skewness	0.55	Very fine
	Kurtosis	1.14	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.20	108.96	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	30.80%
EUNIS Folk	Mud and sandy mud	Sand	68.90%
Distribution	Multimodal	Gravel	0.00%



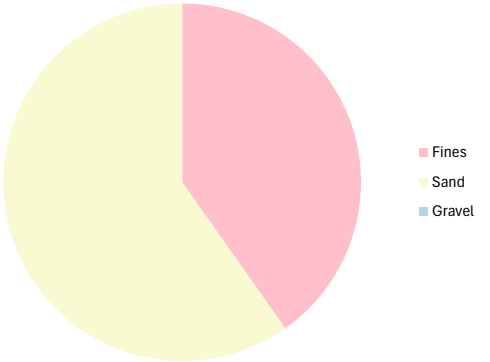
APPENDIX D PARTICLE SIZE ANALYSIS

ENV057				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.01	0.03	Coarse sand
500.00	1.00	0.77	0.80	
353.55	1.50	2.41	3.20	Medium sand
250.00	2.00	1.67	4.88	
176.78	2.50	3.72	8.60	Fine sand
125.00	3.00	17.97	26.57	
88.39	3.50	22.33	48.90	Very fine sand
62.50	4.00	10.68	59.58	
44.19	4.50	4.61	64.19	Coarse silt
31.25	5.00	3.54	67.74	
22.10	5.50	3.04	70.78	Medium silt
15.63	6.00	3.30	74.08	
11.05	6.50	4.21	78.28	Fine silt
7.81	7.00	4.50	82.78	
5.52	7.50	4.26	87.04	Very fine silt
3.91	8.00	3.54	90.59	
2.76	8.50	2.50	93.09	Clay
1.95	9.00	1.58	94.67	
1.38	9.50	1.02	95.69	
0.98	10.00	0.75	96.44	
0.69	10.50	0.65	97.09	
0.49	11.00	0.61	97.70	
<0.49	>11	1.95	100.00	



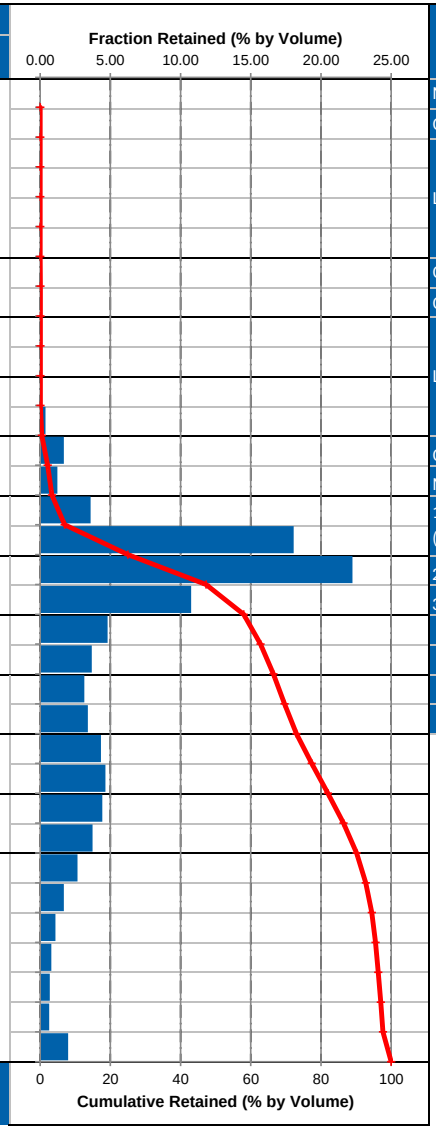
Method of Moments			
Geometric	Mean (µm)	42.86	Wentworth:
Logarithmic	Mean (Phi)	4.51	Coarse silt
	Sorting	2.32	Very poor
	Skewness	1.18	Fine
	Kurtosis	3.95	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	45.22	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.19	Very poor
	Skewness	0.59	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.55	85.29	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	40.10%
EUNIS Folk	Mud and sandy mud	Sand	59.60%
Distribution	Multimodal	Gravel	0.00%



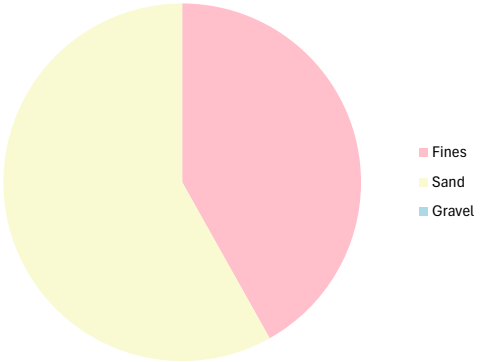
APPENDIX D PARTICLE SIZE ANALYSIS

ENV058				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.04	0.04	Granule
2000.00	-1.00	0.00	0.04	
1414.21	-0.50	0.01	0.05	Very coarse sand
1000.00	0.00	0.03	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.38	0.46	
353.55	1.50	1.68	2.14	Medium sand
250.00	2.00	1.22	3.36	
176.78	2.50	3.58	6.94	Fine sand
125.00	3.00	18.05	24.99	
88.39	3.50	22.24	47.23	Very fine sand
62.50	4.00	10.75	57.98	
44.19	4.50	4.79	62.78	Coarse silt
31.25	5.00	3.67	66.45	
22.10	5.50	3.15	69.59	Medium silt
15.63	6.00	3.40	73.00	
11.05	6.50	4.33	77.32	Fine silt
7.81	7.00	4.64	81.96	
5.52	7.50	4.43	86.39	Very fine silt
3.91	8.00	3.72	90.11	
2.76	8.50	2.65	92.77	Clay
1.95	9.00	1.69	94.46	
1.38	9.50	1.09	95.54	
0.98	10.00	0.80	96.34	
0.69	10.50	0.68	97.02	
0.49	11.00	0.63	97.65	
<0.49	>11	1.99	100.00	



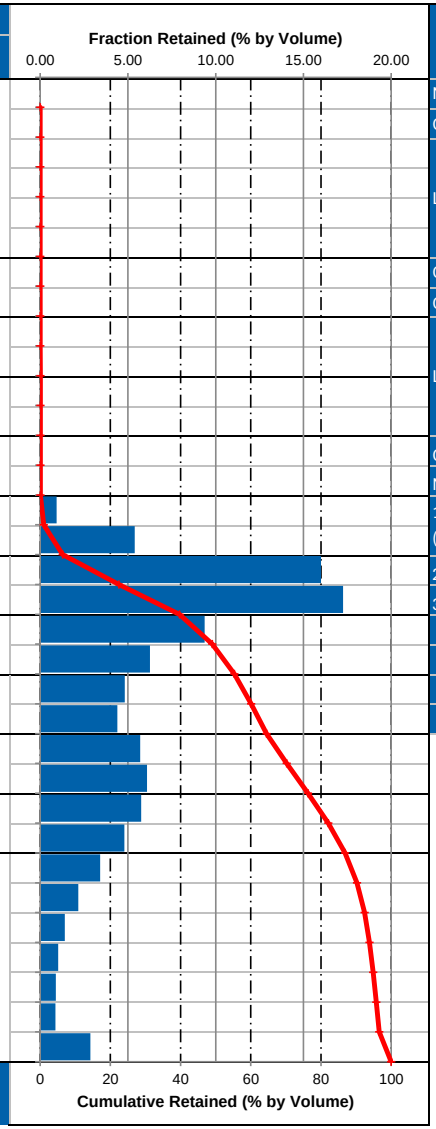
Method of Moments			
Geometric	Mean (µm)	40.26	Wentworth:
Logarithmic	Mean (Phi)	4.60	Coarse silt
	Sorting	2.32	Very poor
	Skewness	1.17	Fine
	Kurtosis	3.86	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	43.09	Wentworth:
Logarithmic	Mean (Phi)	4.54	Coarse silt
	Sorting	2.18	Very poor
	Skewness	0.60	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.63	80.84	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	41.70%
EUNIS Folk	Mud and sandy mud	Sand	57.90%
Distribution	Multimodal	Gravel	0.00%



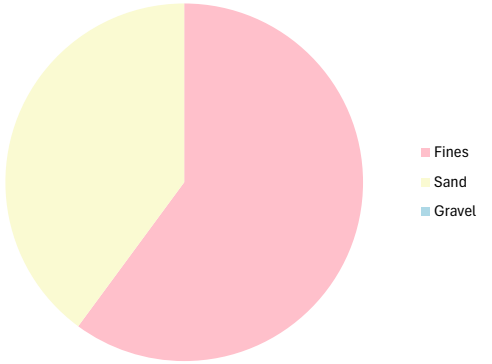
APPENDIX D PARTICLE SIZE ANALYSIS

ENV059				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.00	0.04	
353.55	1.50	0.00	0.04	Medium sand
250.00	2.00	0.05	0.08	
176.78	2.50	0.94	1.02	Fine sand
125.00	3.00	5.39	6.41	
88.39	3.50	16.01	22.42	Very fine sand
62.50	4.00	17.25	39.67	
44.19	4.50	9.37	49.04	Coarse silt
31.25	5.00	6.25	55.29	
22.10	5.50	4.82	60.12	Medium silt
15.63	6.00	4.39	64.51	
11.05	6.50	5.69	70.20	Fine silt
7.81	7.00	6.09	76.30	
5.52	7.50	5.75	82.05	Very fine silt
3.91	8.00	4.80	86.85	
2.76	8.50	3.41	90.26	
1.95	9.00	2.17	92.43	
1.38	9.50	1.40	93.83	
0.98	10.00	1.03	94.86	Clay
0.69	10.50	0.89	95.75	
0.49	11.00	0.87	96.62	
<0.49	>11	2.86	100.00	



Method of Moments			
Geometric	Mean (µm)	24.13	Wentworth:
Logarithmic	Mean (Phi)	5.32	Medium silt
	Sorting	2.25	Very poor
	Skewness	1.06	Fine
	Kurtosis	3.59	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	27.33	Wentworth:
Logarithmic	Mean (Phi)	5.19	Medium silt
	Sorting	2.19	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.58	41.90	Coarse silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

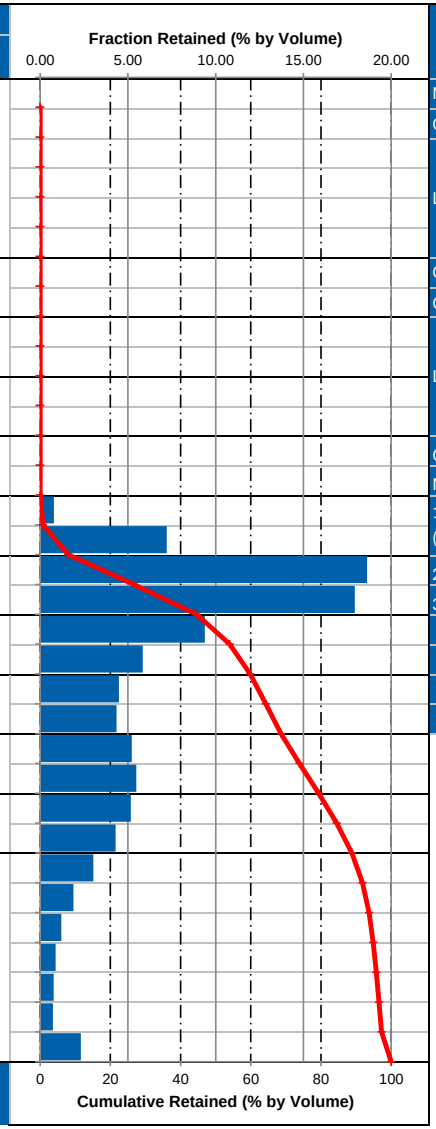
Classification		Composition	
Modified Folk	Sandy mud	Fines	59.80%
EUNIS Folk	Mud and sandy mud	Sand	39.70%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

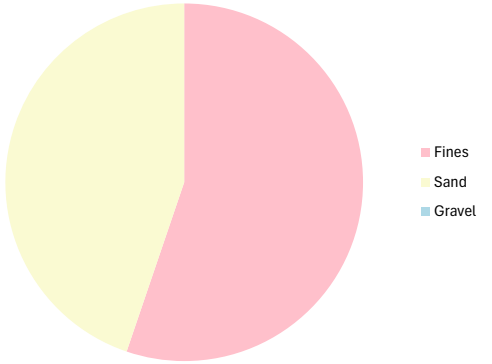
ENV060

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.00	0.01	
176.78	2.50	0.78	0.80	Fine sand
125.00	3.00	7.21	8.01	
88.39	3.50	18.62	26.64	Very fine sand
62.50	4.00	17.93	44.56	
44.19	4.50	9.39	53.95	Coarse silt
31.25	5.00	5.84	59.79	
22.10	5.50	4.49	64.28	Medium silt
15.63	6.00	4.35	68.63	
11.05	6.50	5.22	73.85	Fine silt
7.81	7.00	5.47	79.32	
5.52	7.50	5.16	84.48	Very fine silt
3.91	8.00	4.29	88.77	
2.76	8.50	3.02	91.80	Clay
1.95	9.00	1.89	93.69	
1.38	9.50	1.20	94.89	
0.98	10.00	0.88	95.77	
0.69	10.50	0.77	96.54	
0.49	11.00	0.73	97.27	
<0.49	>11	2.32	100.00	



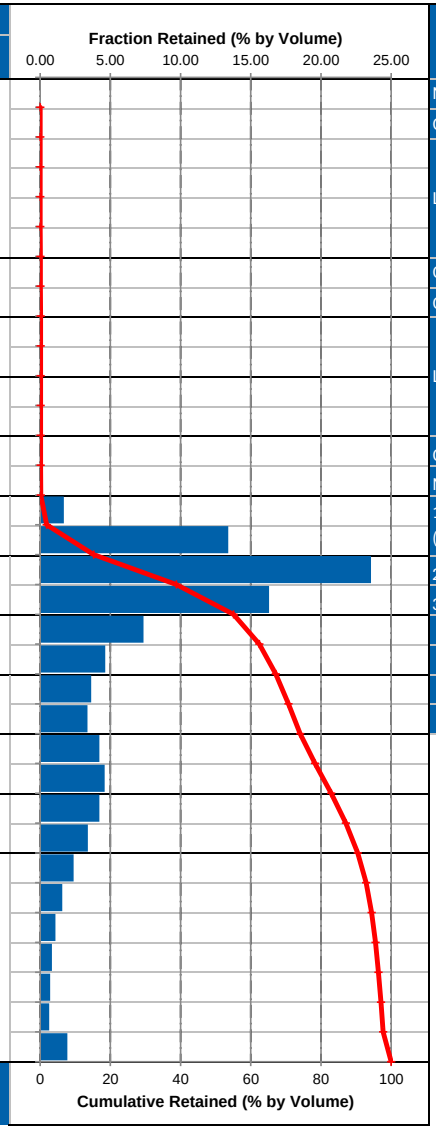
Method of Moments			
Geometric	Mean (µm)	28.28	Wentworth:
Logarithmic	Mean (Phi)	5.10	Medium silt
	Sorting	2.18	Very poor
	Skewness	1.18	Fine
	Kurtosis	3.89	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	31.56	Wentworth:
Logarithmic	Mean (Phi)	4.99	Coarse silt
	Sorting	2.09	Very poor
	Skewness	0.53	Very fine
	Kurtosis	0.88	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.29	51.14	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	55.00%
EUNIS Folk	Mud and sandy mud	Sand	44.60%
Distribution	Bimodal	Gravel	0.00%



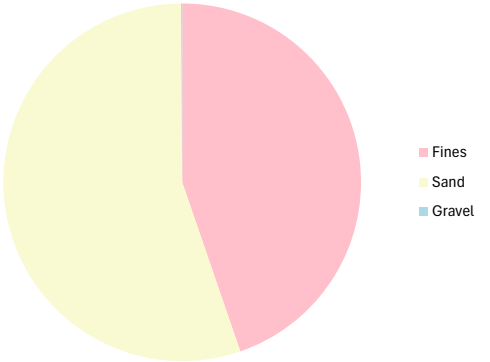
APPENDIX D PARTICLE SIZE ANALYSIS

ENV061				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.00	0.08	Granule
2000.00	-1.00	0.02	0.10	
1414.21	-0.50	0.01	0.12	Very coarse sand
1000.00	0.00	0.02	0.14	
707.11	0.50	0.00	0.14	Coarse sand
500.00	1.00	0.00	0.14	
353.55	1.50	0.00	0.14	Medium sand
250.00	2.00	0.01	0.15	
176.78	2.50	1.69	1.84	Fine sand
125.00	3.00	13.39	15.22	
88.39	3.50	23.56	38.78	Very fine sand
62.50	4.00	16.30	55.09	
44.19	4.50	7.35	62.44	Coarse silt
31.25	5.00	4.63	67.08	
22.10	5.50	3.63	70.71	Medium silt
15.63	6.00	3.37	74.08	
11.05	6.50	4.21	78.29	Fine silt
7.81	7.00	4.59	82.88	
5.52	7.50	4.22	87.09	Very fine silt
3.91	8.00	3.39	90.49	
2.76	8.50	2.38	92.87	Clay
1.95	9.00	1.57	94.44	
1.38	9.50	1.09	95.53	
0.98	10.00	0.84	96.37	
0.69	10.50	0.71	97.08	
0.49	11.00	0.65	97.73	
<0.49	>11	1.93	100.00	



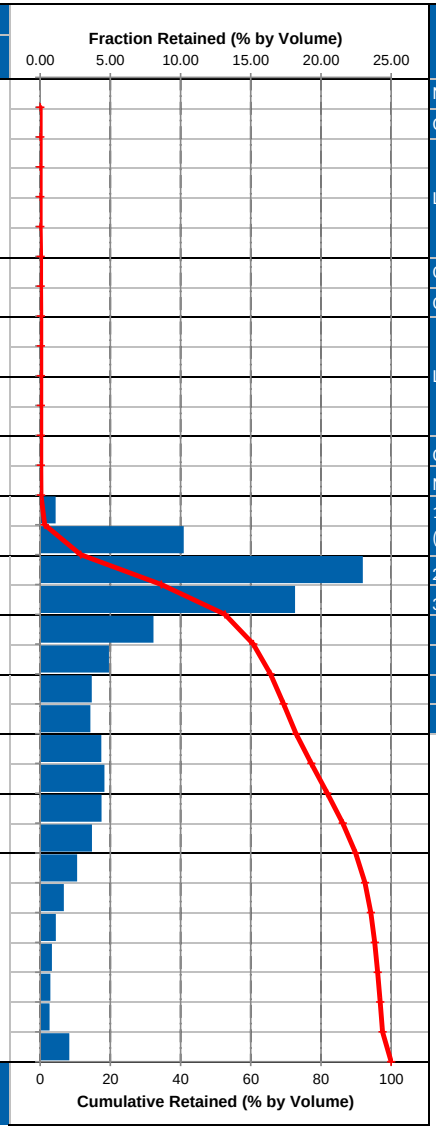
Method of Moments			
Geometric	Mean (µm)	36.84	Wentworth:
Logarithmic	Mean (Phi)	4.73	Coarse silt
	Sorting	2.17	Very poor
	Skewness	1.32	Very fine
	Kurtosis	4.39	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	39.43	Wentworth:
Logarithmic	Mean (Phi)	4.66	Coarse silt
	Sorting	2.03	Very poor
	Skewness	0.61	Very fine
	Kurtosis	0.94	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.84	69.64	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	44.60%
EUNIS Folk	Mud and sandy mud	Sand	55.00%
Distribution	Bimodal	Gravel	0.10%



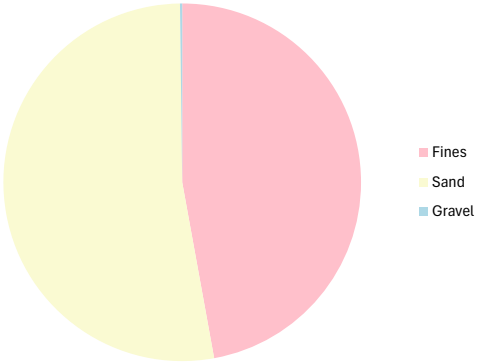
APPENDIX D PARTICLE SIZE ANALYSIS

ENV062				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.10	0.10	
2828.43	-1.50	0.00	0.10	Granule
2000.00	-1.00	0.08	0.17	
1414.21	-0.50	0.01	0.19	Very coarse sand
1000.00	0.00	0.01	0.20	
707.11	0.50	0.00	0.20	Coarse sand
500.00	1.00	0.00	0.20	
353.55	1.50	0.00	0.20	Medium sand
250.00	2.00	0.01	0.21	
176.78	2.50	1.10	1.31	Fine sand
125.00	3.00	10.22	11.53	
88.39	3.50	22.97	34.51	Very fine sand
62.50	4.00	18.15	52.66	
44.19	4.50	8.07	60.73	Coarse silt
31.25	5.00	4.89	65.62	
22.10	5.50	3.68	69.30	Medium silt
15.63	6.00	3.57	72.88	
11.05	6.50	4.35	77.23	Fine silt
7.81	7.00	4.58	81.81	
5.52	7.50	4.37	86.18	Very fine silt
3.91	8.00	3.69	89.87	
2.76	8.50	2.64	92.51	
1.95	9.00	1.69	94.20	
1.38	9.50	1.12	95.32	
0.98	10.00	0.84	96.16	Clay
0.69	10.50	0.72	96.88	
0.49	11.00	0.67	97.55	
<0.49	>11	2.08	100.00	



Method of Moments			
Geometric	Mean (µm)	34.20	Wentworth:
Logarithmic	Mean (Phi)	4.83	Coarse silt
	Sorting	2.18	Very poor
	Skewness	1.27	Fine
	Kurtosis	4.32	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	36.95	Wentworth:
Logarithmic	Mean (Phi)	4.76	Coarse silt
	Sorting	2.05	Very poor
	Skewness	0.61	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.93	65.76	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

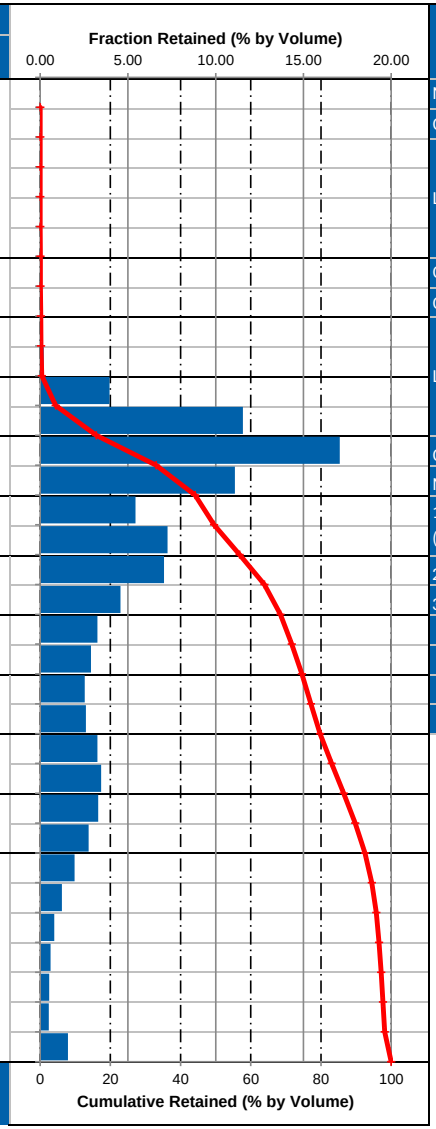
Classification		Composition	
Modified Folk	Muddy sand	Fines	47.00%
EUNIS Folk	Mud and sandy mud	Sand	52.50%
Distribution	Bimodal	Gravel	0.20%



APPENDIX D PARTICLE SIZE ANALYSIS

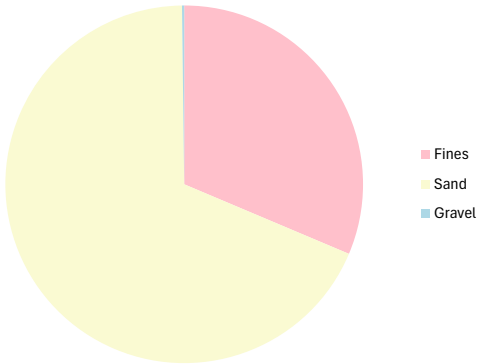
ENV063

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.01	0.05	Granule
2000.00	-1.00	0.11	0.16	
1414.21	-0.50	0.09	0.25	Very coarse sand
1000.00	0.00	0.20	0.45	
707.11	0.50	3.95	4.40	Coarse sand
500.00	1.00	11.55	15.95	
353.55	1.50	17.07	33.02	Medium sand
250.00	2.00	11.09	44.12	
176.78	2.50	5.43	49.54	Fine sand
125.00	3.00	7.26	56.80	
88.39	3.50	7.05	63.85	Very fine sand
62.50	4.00	4.58	68.43	
44.19	4.50	3.26	71.69	Coarse silt
31.25	5.00	2.89	74.58	
22.10	5.50	2.54	77.13	Medium silt
15.63	6.00	2.60	79.73	
11.05	6.50	3.26	82.99	Fine silt
7.81	7.00	3.48	86.47	
5.52	7.50	3.30	89.77	Very fine silt
3.91	8.00	2.77	92.53	
2.76	8.50	1.96	94.49	Clay
1.95	9.00	1.24	95.73	
1.38	9.50	0.80	96.53	
0.98	10.00	0.59	97.13	
0.69	10.50	0.51	97.64	
0.49	11.00	0.49	98.14	
<0.49	>11	1.58	100.00	



Method of Moments			
Geometric	Mean (µm)	94.83	Wentworth:
Logarithmic	Mean (Phi)	3.37	Very fine sand
	Sorting	2.73	Very poor
	Skewness	1.09	Fine
	Kurtosis	3.49	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	95.21	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.65	Very poor
	Skewness	0.48	Very fine
	Kurtosis	0.88	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.53	172.96	Fine sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

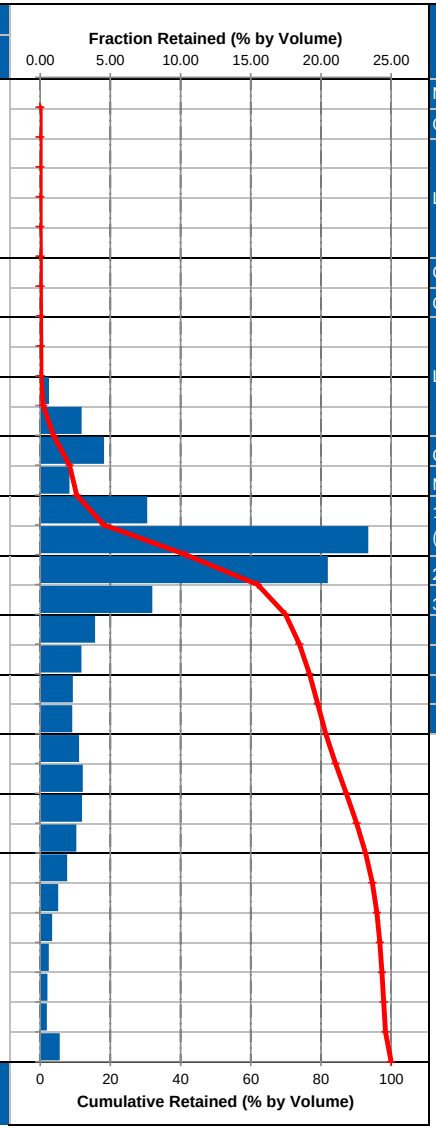
Classification		Composition	
Modified Folk	Muddy sand	Fines	31.30%
EUNIS Folk	Mud and sandy mud	Sand	68.30%
Distribution	Bimodal	Gravel	0.20%



APPENDIX D PARTICLE SIZE ANALYSIS

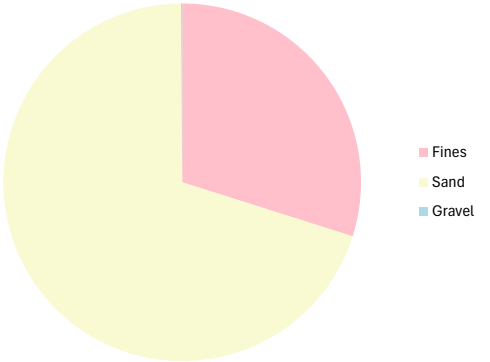
ENV064

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.03	0.07	Granule
2000.00	-1.00	0.03	0.10	
1414.21	-0.50	0.05	0.15	Very coarse sand
1000.00	0.00	0.07	0.22	
707.11	0.50	0.63	0.85	Coarse sand
500.00	1.00	2.95	3.80	
353.55	1.50	4.55	8.36	Medium sand
250.00	2.00	2.08	10.44	
176.78	2.50	7.62	18.06	Fine sand
125.00	3.00	23.37	41.43	
88.39	3.50	20.49	61.92	Very fine sand
62.50	4.00	7.99	69.91	
44.19	4.50	3.90	73.82	Coarse silt
31.25	5.00	2.94	76.75	
22.10	5.50	2.32	79.07	Medium silt
15.63	6.00	2.29	81.36	
11.05	6.50	2.77	84.13	Fine silt
7.81	7.00	3.04	87.16	
5.52	7.50	2.97	90.14	Very fine silt
3.91	8.00	2.58	92.71	
2.76	8.50	1.92	94.63	Clay
1.95	9.00	1.28	95.91	
1.38	9.50	0.84	96.75	
0.98	10.00	0.62	97.37	
0.69	10.50	0.51	97.88	
0.49	11.00	0.47	98.35	
<0.49	>11	1.40	100.00	



Method of Moments			
Geometric	Mean (µm)	64.75	Wentworth:
Logarithmic	Mean (Phi)	3.92	Very fine sand
	Sorting	2.27	Very poor
	Skewness	1.35	Very fine
	Kurtosis	4.73	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	61.77	Wentworth:
Logarithmic	Mean (Phi)	4.02	Coarse silt
	Sorting	2.17	Very poor
	Skewness	0.52	Very fine
	Kurtosis	1.50	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.21	108.13	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

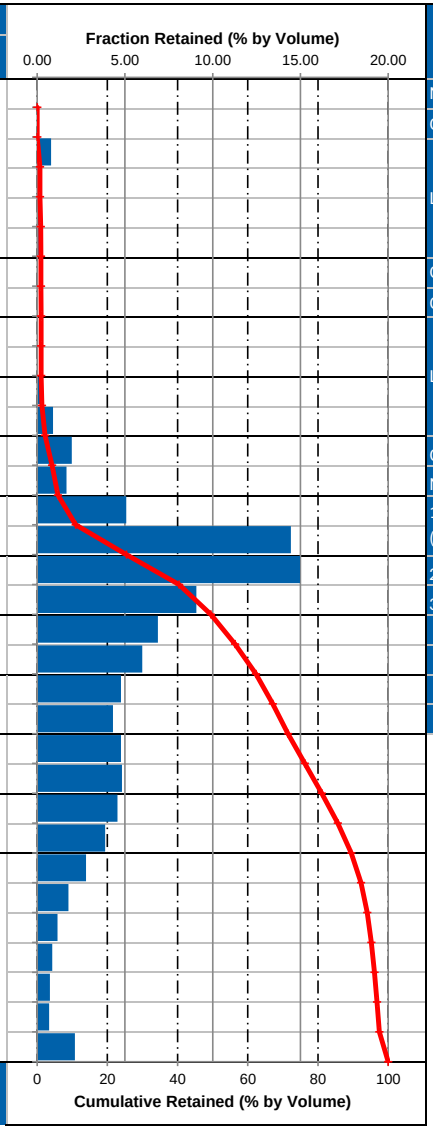
Classification		Composition	
Modified Folk	Muddy sand	Fines	29.80%
EUNIS Folk	Mud and sandy mud	Sand	69.80%
Distribution	Multimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

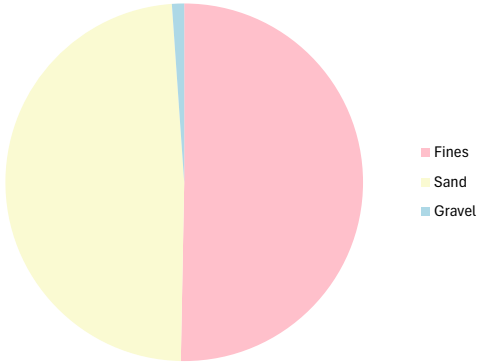
ENV065

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.79	0.79	Pebble
8000.00	-3.00	0.00	0.79	
5656.85	-2.50	0.20	0.98	
4000.00	-2.00	0.09	1.07	
2828.43	-1.50	0.00	1.07	Granule
2000.00	-1.00	0.02	1.10	
1414.21	-0.50	0.01	1.11	Very coarse sand
1000.00	0.00	0.02	1.13	
707.11	0.50	0.21	1.34	Coarse sand
500.00	1.00	0.90	2.24	
353.55	1.50	1.97	4.21	Medium sand
250.00	2.00	1.67	5.88	
176.78	2.50	5.07	10.95	Fine sand
125.00	3.00	14.46	25.41	
88.39	3.50	14.98	40.40	Very fine sand
62.50	4.00	9.07	49.47	
44.19	4.50	6.88	56.35	Coarse silt
31.25	5.00	5.99	62.34	
22.10	5.50	4.78	67.12	Medium silt
15.63	6.00	4.32	71.43	
11.05	6.50	4.78	76.21	Fine silt
7.81	7.00	4.83	81.04	
5.52	7.50	4.57	85.61	Very fine silt
3.91	8.00	3.87	89.49	
2.76	8.50	2.78	92.27	Clay
1.95	9.00	1.78	94.04	
1.38	9.50	1.16	95.21	
0.98	10.00	0.86	96.06	
0.69	10.50	0.72	96.79	
0.49	11.00	0.68	97.46	
<0.49	>11	2.15	100.00	



Method of Moments			
Geometric	Mean (µm)	38.15	Wentworth:
Logarithmic	Mean (Phi)	4.67	Coarse silt
	Sorting	2.51	Very poor
	Skewness	0.52	Fine
	Kurtosis	4.13	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	39.04	Wentworth:
Logarithmic	Mean (Phi)	4.68	Coarse silt
	Sorting	2.33	Very poor
	Skewness	0.41	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.04	60.84	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

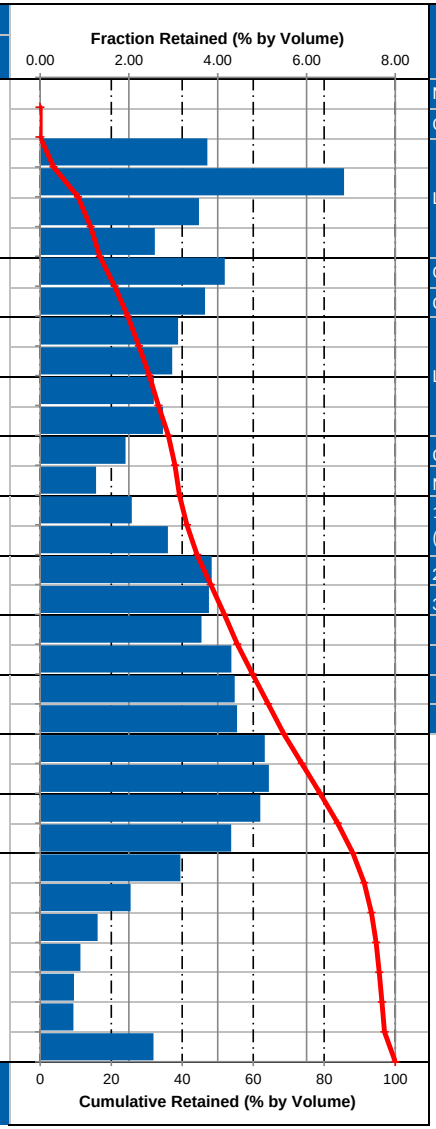
Classification		Composition	
Modified Folk	Slightly gravelly sandy muc	Fines	50.10%
EUNIS Folk	Mud and sandy mud	Sand	48.40%
Distribution	Multimodal	Gravel	1.10%



APPENDIX D PARTICLE SIZE ANALYSIS

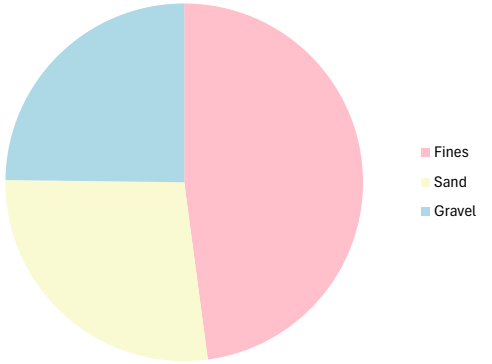
ENV066

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	3.77	3.77	Pebble
8000.00	-3.00	6.85	10.62	
5656.85	-2.50	3.58	14.20	
4000.00	-2.00	2.58	16.78	
2828.43	-1.50	4.16	20.94	Granule
2000.00	-1.00	3.71	24.65	
1414.21	-0.50	3.11	27.76	Very coarse sand
1000.00	0.00	2.97	30.73	
707.11	0.50	2.56	33.29	Coarse sand
500.00	1.00	2.77	36.06	
353.55	1.50	1.92	37.98	Medium sand
250.00	2.00	1.26	39.24	
176.78	2.50	2.07	41.31	Fine sand
125.00	3.00	2.88	44.18	
88.39	3.50	3.86	48.05	Very fine sand
62.50	4.00	3.80	51.85	
44.19	4.50	3.64	55.49	Coarse silt
31.25	5.00	4.31	59.79	
22.10	5.50	4.38	64.18	Medium silt
15.63	6.00	4.43	68.61	
11.05	6.50	5.06	73.67	Fine silt
7.81	7.00	5.15	78.82	
5.52	7.50	4.96	83.78	Very fine silt
3.91	8.00	4.30	88.09	
2.76	8.50	3.16	91.24	Clay
1.95	9.00	2.04	93.28	
1.38	9.50	1.30	94.58	
0.98	10.00	0.91	95.49	
0.69	10.50	0.76	96.25	
0.49	11.00	0.75	97.00	
<0.49	>11	2.55	100.00	



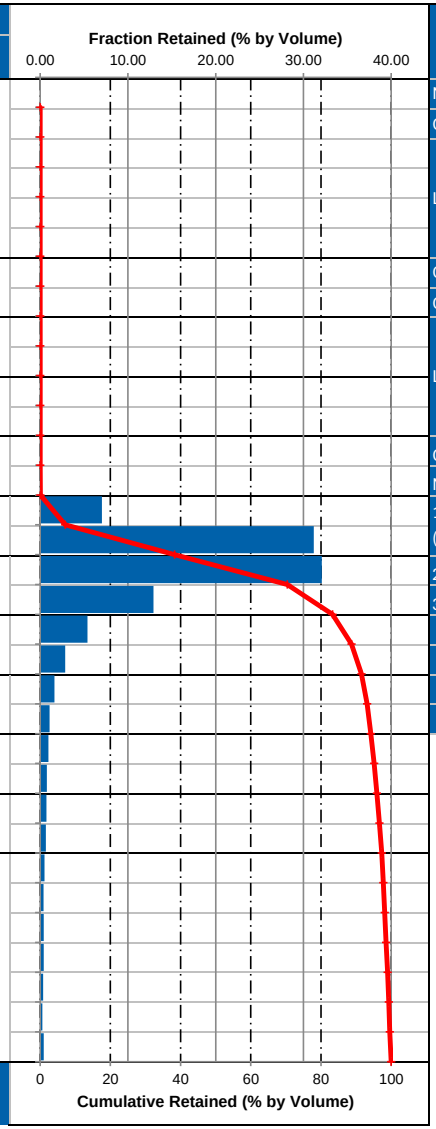
Method of Moments			
Geometric	Mean (µm)	112.45	Wentworth:
Logarithmic	Mean (Phi)	3.11	Very fine sand
	Sorting	4.28	Extremely poor
	Skewness	-0.03	Symmetrical
	Kurtosis	1.92	Platykurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	121.26	Wentworth:
Logarithmic	Mean (Phi)	3.04	Very fine sand
	Sorting	4.41	Extremely poor
	Skewness	-0.16	Coarse
	Kurtosis	0.71	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.76	73.98	Very fine sand
1st Local Maxima (Mode)	-3.00	8000.00	Pebble
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-1.50	2828.43	Granule

Classification		Composition	
Modified Folk	Gravelly mud	Fines	47.70%
EUNIS Folk	Mixed sediments	Sand	27.20%
Distribution	Multimodal	Gravel	24.70%



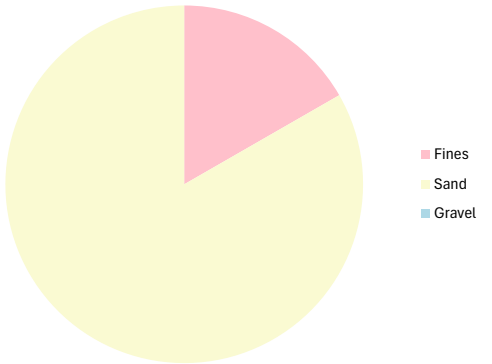
APPENDIX D PARTICLE SIZE ANALYSIS

ENV069				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.02	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.00	0.02	
353.55	1.50	0.00	0.02	Medium sand
250.00	2.00	0.05	0.07	
176.78	2.50	7.04	7.11	Fine sand
125.00	3.00	31.19	38.30	
88.39	3.50	32.09	70.39	Very fine sand
62.50	4.00	12.91	83.29	
44.19	4.50	5.39	88.69	Coarse silt
31.25	5.00	2.86	91.55	
22.10	5.50	1.62	93.17	Medium silt
15.63	6.00	1.06	94.23	
11.05	6.50	0.93	95.16	Fine silt
7.81	7.00	0.76	95.92	
5.52	7.50	0.72	96.64	Very fine silt
3.91	8.00	0.66	97.29	
2.76	8.50	0.48	97.78	Clay
1.95	9.00	0.38	98.16	
1.38	9.50	0.40	98.56	
0.98	10.00	0.41	98.97	
0.69	10.50	0.35	99.32	
0.49	11.00	0.26	99.57	
<0.49	>11	0.39	100.00	



Method of Moments			
Geometric	Mean (µm)	86.56	Wentworth:
Logarithmic	Mean (Phi)	3.53	Very fine sand
	Sorting	1.39	Poor
	Skewness	3.08	Very fine
	Kurtosis	14.32	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	101.76	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	0.97	Moderate
	Skewness	0.42	Very fine
	Kurtosis	1.87	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.18	110.16	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

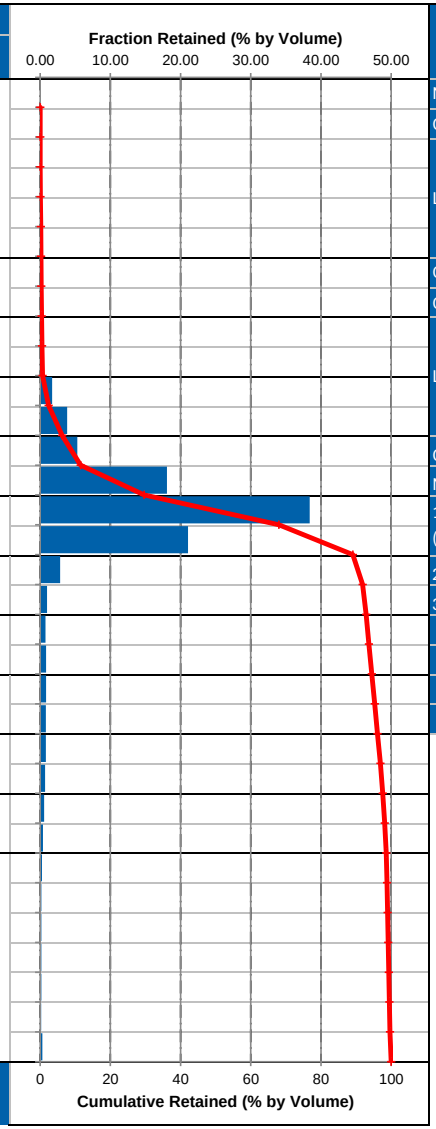
Classification		Composition	
Modified Folk	Muddy sand	Fines	16.70%
EUNIS Folk	Sand and muddy sand	Sand	83.30%
Distribution	Unimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV071

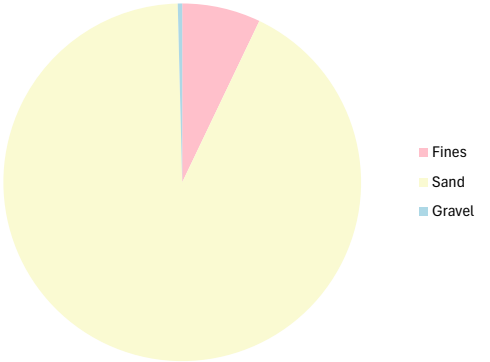
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.04	0.04	
5656.85	-2.50	0.13	0.18	
4000.00	-2.00	0.05	0.22	
2828.43	-1.50	0.05	0.27	Granule
2000.00	-1.00	0.11	0.38	
1414.21	-0.50	0.14	0.52	Very coarse sand
1000.00	0.00	0.18	0.70	
707.11	0.50	1.69	2.40	Coarse sand
500.00	1.00	3.84	6.24	
353.55	1.50	5.30	11.54	Medium sand
250.00	2.00	18.05	29.60	
176.78	2.50	38.40	68.00	Fine sand
125.00	3.00	21.05	89.05	
88.39	3.50	2.83	91.88	Very fine sand
62.50	4.00	0.98	92.86	
44.19	4.50	0.76	93.62	Coarse silt
31.25	5.00	0.84	94.46	
22.10	5.50	0.84	95.30	Medium silt
15.63	6.00	0.81	96.11	
11.05	6.50	0.81	96.92	Fine silt
7.81	7.00	0.70	97.62	
5.52	7.50	0.55	98.17	Very fine silt
3.91	8.00	0.40	98.57	
2.76	8.50	0.25	98.82	
1.95	9.00	0.17	99.00	
1.38	9.50	0.16	99.16	
0.98	10.00	0.17	99.33	Clay
0.69	10.50	0.16	99.49	
0.49	11.00	0.14	99.63	
<0.49	>11	0.32	100.00	



Method of Moments			
Geometric	Mean (µm)	182.92	Wentworth:
Logarithmic	Mean (Phi)	2.45	Fine sand
	Sorting	1.43	Poor
	Skewness	2.81	Very fine
	Kurtosis	16.07	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	209.30	Wentworth:
Logarithmic	Mean (Phi)	2.26	Fine sand
	Sorting	0.99	Moderate
	Skewness	0.17	Fine
	Kurtosis	2.31	Very leptokurtic

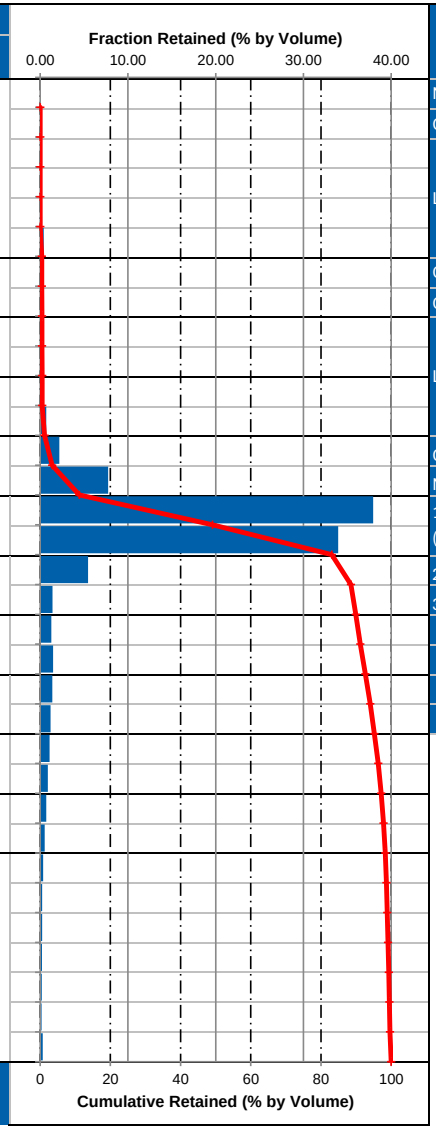
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.27	207.96	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.10%
EUNIS Folk	Sand and muddy sand	Sand	92.50%
Distribution	Unimodal	Gravel	0.40%



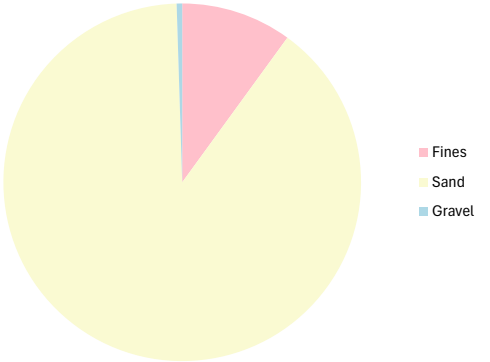
APPENDIX D PARTICLE SIZE ANALYSIS

ENV072				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.02	0.02	
4000.00	-2.00	0.41	0.43	
2828.43	-1.50	0.03	0.46	Granule
2000.00	-1.00	0.02	0.48	
1414.21	-0.50	0.04	0.52	Very coarse sand
1000.00	0.00	0.02	0.54	
707.11	0.50	0.00	0.54	Coarse sand
500.00	1.00	0.69	1.23	
353.55	1.50	2.19	3.42	Medium sand
250.00	2.00	7.74	11.15	
176.78	2.50	37.94	49.09	Fine sand
125.00	3.00	33.95	83.05	
88.39	3.50	5.46	88.51	Very fine sand
62.50	4.00	1.40	89.91	
44.19	4.50	1.28	91.19	Coarse silt
31.25	5.00	1.46	92.65	
22.10	5.50	1.38	94.04	Medium silt
15.63	6.00	1.19	95.22	
11.05	6.50	1.07	96.29	Fine silt
7.81	7.00	0.86	97.15	
5.52	7.50	0.68	97.84	Very fine silt
3.91	8.00	0.51	98.34	
2.76	8.50	0.33	98.67	
1.95	9.00	0.23	98.89	
1.38	9.50	0.21	99.11	
0.98	10.00	0.21	99.32	Clay
0.69	10.50	0.19	99.51	
0.49	11.00	0.15	99.66	
<0.49	>11	0.30	100.00	



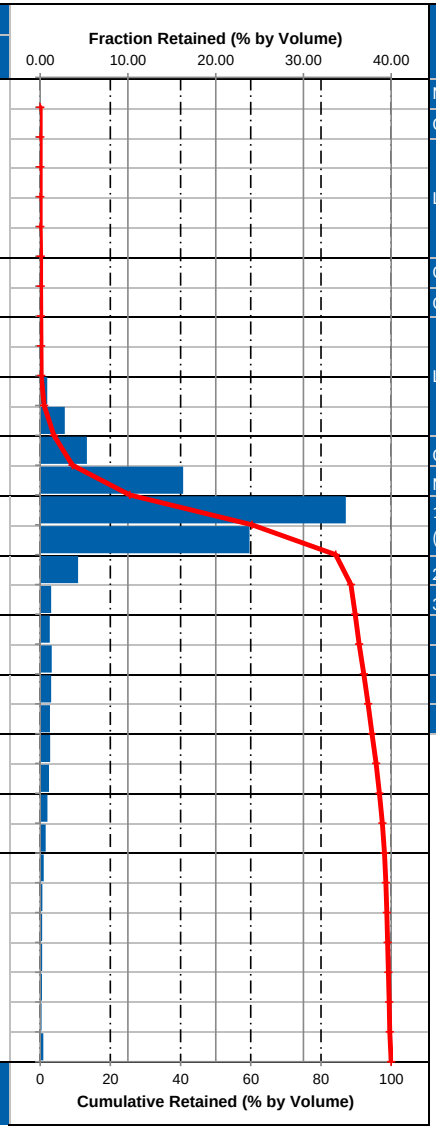
Method of Moments			
Geometric	Mean (µm)	142.11	Wentworth:
Logarithmic	Mean (Phi)	2.81	Fine sand
	Sorting	1.43	Poor
	Skewness	2.72	Very fine
	Kurtosis	14.60	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	170.18	Wentworth:
Logarithmic	Mean (Phi)	2.55	Fine sand
	Sorting	0.91	Moderate
	Skewness	0.35	Very fine
	Kurtosis	2.52	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.51	175.15	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.00%
EUNIS Folk	Sand and muddy sand	Sand	89.40%
Distribution	Bimodal	Gravel	0.50%



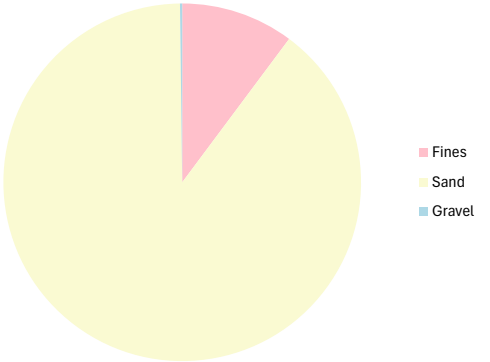
APPENDIX D PARTICLE SIZE ANALYSIS

ENV073				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.09	0.09	
2828.43	-1.50	0.03	0.12	Granule
2000.00	-1.00	0.04	0.16	
1414.21	-0.50	0.06	0.22	Very coarse sand
1000.00	0.00	0.08	0.29	
707.11	0.50	0.80	1.09	Coarse sand
500.00	1.00	2.81	3.90	
353.55	1.50	5.31	9.21	Medium sand
250.00	2.00	16.29	25.51	
176.78	2.50	34.84	60.34	Fine sand
125.00	3.00	23.86	84.20	
88.39	3.50	4.32	88.52	Very fine sand
62.50	4.00	1.24	89.76	
44.19	4.50	1.09	90.86	Coarse silt
31.25	5.00	1.32	92.18	
22.10	5.50	1.26	93.44	Medium silt
15.63	6.00	1.11	94.55	
11.05	6.50	1.13	95.68	Fine silt
7.81	7.00	0.99	96.67	
5.52	7.50	0.82	97.49	Very fine silt
3.91	8.00	0.62	98.11	
2.76	8.50	0.40	98.51	
1.95	9.00	0.26	98.77	
1.38	9.50	0.22	98.99	
0.98	10.00	0.22	99.21	Clay
0.69	10.50	0.20	99.41	
0.49	11.00	0.17	99.57	
<0.49	>11	0.37	100.00	



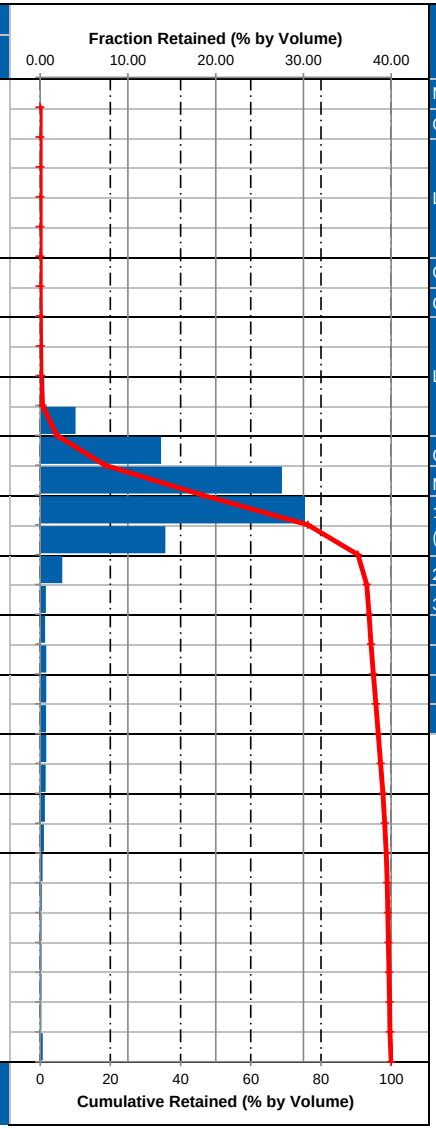
Method of Moments			
Geometric	Mean (µm)	157.44	Wentworth:
Logarithmic	Mean (Phi)	2.66	Fine sand
	Sorting	1.55	Poor
	Skewness	2.69	Very fine
	Kurtosis	12.70	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	195.89	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.09	Poor
	Skewness	0.26	Fine
	Kurtosis	2.54	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.35	195.93	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.20%
EUNIS Folk	Sand and muddy sand	Sand	89.60%
Distribution	Bimodal	Gravel	0.20%



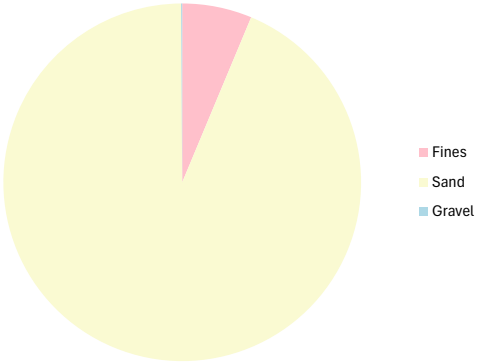
APPENDIX D PARTICLE SIZE ANALYSIS

ENV074				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.03	0.06	
1414.21	-0.50	0.06	0.12	Very coarse sand
1000.00	0.00	0.10	0.23	
707.11	0.50	0.46	0.69	Coarse sand
500.00	1.00	4.04	4.72	
353.55	1.50	13.77	18.50	Medium sand
250.00	2.00	27.56	46.06	
176.78	2.50	30.19	76.24	Fine sand
125.00	3.00	14.26	90.51	
88.39	3.50	2.53	93.03	Very fine sand
62.50	4.00	0.65	93.69	
44.19	4.50	0.56	94.25	Coarse silt
31.25	5.00	0.69	94.94	
22.10	5.50	0.70	95.64	Medium silt
15.63	6.00	0.68	96.32	
11.05	6.50	0.69	97.01	Fine silt
7.81	7.00	0.63	97.63	
5.52	7.50	0.54	98.17	Very fine silt
3.91	8.00	0.42	98.58	
2.76	8.50	0.27	98.86	
1.95	9.00	0.18	99.04	
1.38	9.50	0.16	99.21	
0.98	10.00	0.16	99.37	Clay
0.69	10.50	0.15	99.52	
0.49	11.00	0.13	99.65	
<0.49	>11	0.30	100.00	



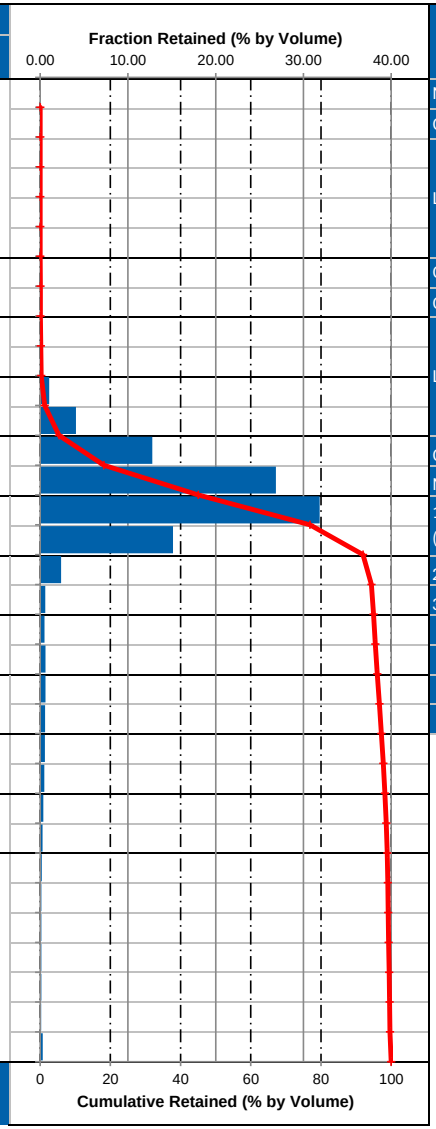
Method of Moments			
Geometric	Mean (µm)	204.37	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.39	Poor
	Skewness	3.36	Very fine
	Kurtosis	18.04	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	236.16	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	0.95	Moderate
	Skewness	0.26	Fine
	Kurtosis	1.92	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.07	238.93	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.30%
EUNIS Folk	Sand and muddy sand	Sand	93.60%
Distribution	Unimodal	Gravel	0.10%



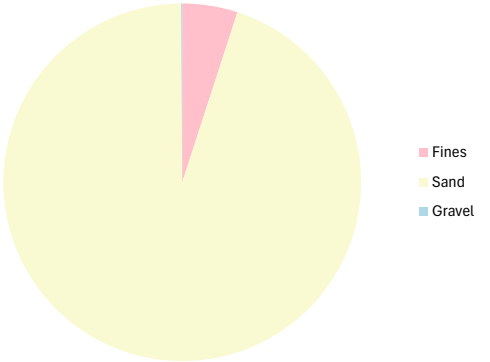
APPENDIX D PARTICLE SIZE ANALYSIS

ENV075				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.05	0.05	Granule
2000.00	-1.00	0.03	0.08	
1414.21	-0.50	0.08	0.16	Very coarse sand
1000.00	0.00	0.11	0.27	
707.11	0.50	1.03	1.30	Coarse sand
500.00	1.00	4.07	5.37	
353.55	1.50	12.77	18.14	Medium sand
250.00	2.00	26.87	45.01	
176.78	2.50	31.85	76.86	Fine sand
125.00	3.00	15.14	92.00	
88.39	3.50	2.38	94.39	Very fine sand
62.50	4.00	0.59	94.97	
44.19	4.50	0.48	95.46	Coarse silt
31.25	5.00	0.59	96.05	
22.10	5.50	0.59	96.64	Medium silt
15.63	6.00	0.56	97.20	
11.05	6.50	0.54	97.75	Fine silt
7.81	7.00	0.46	98.21	
5.52	7.50	0.37	98.58	Very fine silt
3.91	8.00	0.27	98.84	
2.76	8.50	0.17	99.02	
1.95	9.00	0.13	99.14	
1.38	9.50	0.13	99.27	
0.98	10.00	0.13	99.41	Clay
0.69	10.50	0.13	99.54	
0.49	11.00	0.12	99.65	
<0.49	>11	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	212.53	Wentworth:
Logarithmic	Mean (Phi)	2.23	Fine sand
	Sorting	1.29	Poor
	Skewness	3.60	Very fine
	Kurtosis	21.92	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	237.04	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	0.80	Moderate
	Skewness	0.13	Fine
	Kurtosis	1.49	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.08	236.78	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

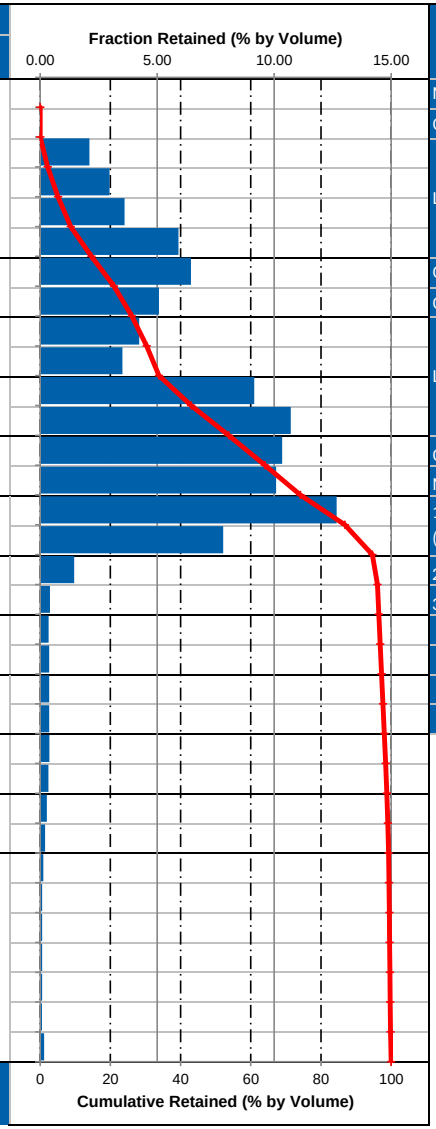
Classification		Composition	
Modified Folk	Sand	Fines	5.00%
EUNIS Folk	Sand and muddy sand	Sand	94.90%
Distribution	Unimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

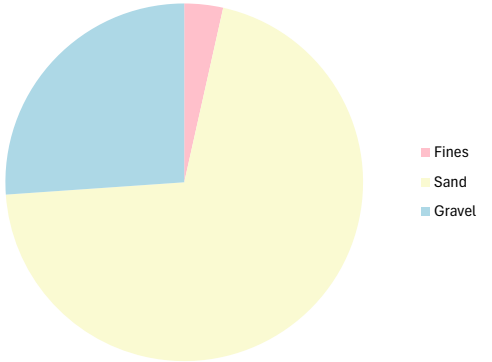
ENV076

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	2.11	2.11	
8000.00	-3.00	2.96	5.07	
5656.85	-2.50	3.60	8.67	
4000.00	-2.00	5.91	14.59	
2828.43	-1.50	6.45	21.04	Granule
2000.00	-1.00	5.08	26.11	
1414.21	-0.50	4.23	30.35	Very coarse sand
1000.00	0.00	3.51	33.86	
707.11	0.50	9.15	43.01	Coarse sand
500.00	1.00	10.71	53.72	
353.55	1.50	10.34	64.06	Medium sand
250.00	2.00	10.09	74.14	
176.78	2.50	12.67	86.81	Fine sand
125.00	3.00	7.82	94.64	
88.39	3.50	1.45	96.09	Very fine sand
62.50	4.00	0.41	96.50	
44.19	4.50	0.36	96.86	Coarse silt
31.25	5.00	0.39	97.25	
22.10	5.50	0.39	97.63	Medium silt
15.63	6.00	0.38	98.01	
11.05	6.50	0.39	98.41	Fine silt
7.81	7.00	0.35	98.76	
5.52	7.50	0.29	99.04	Very fine silt
3.91	8.00	0.21	99.26	
2.76	8.50	0.13	99.39	Clay
1.95	9.00	0.09	99.48	
1.38	9.50	0.08	99.56	
0.98	10.00	0.09	99.65	
0.69	10.50	0.08	99.73	
0.49	11.00	0.07	99.80	
<0.49	>11	0.17	100.00	



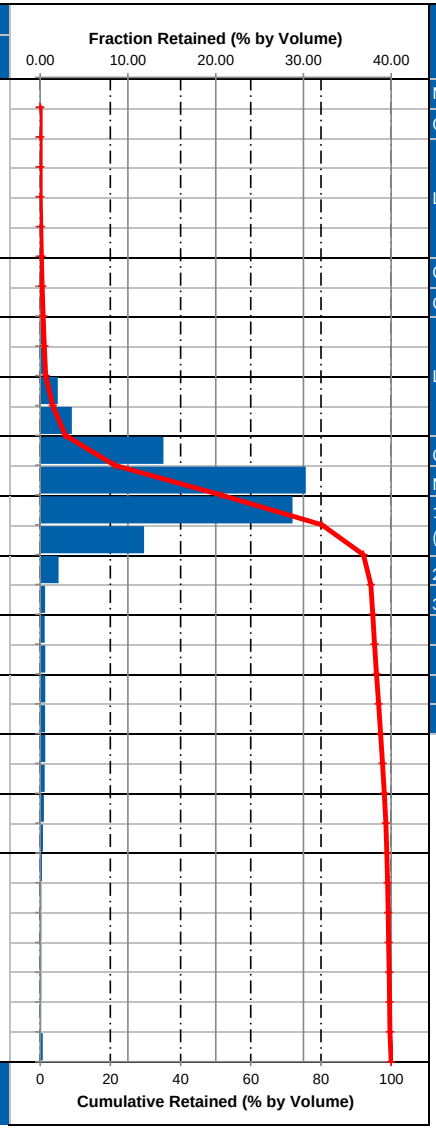
Method of Moments			
Geometric	Mean (µm)	667.67	Wentworth:
Logarithmic	Mean (Phi)	0.58	Coarse sand
	Sorting	2.20	Very poor
	Skewness	0.52	Fine
	Kurtosis	5.04	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	736.30	Wentworth:
Logarithmic	Mean (Phi)	0.44	Coarse sand
	Sorting	2.00	Poor
	Skewness	-0.26	Coarse
	Kurtosis	0.80	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.83	563.91	Coarse sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	1.00	500.00	Coarse sand
3rd Local Maxima	-1.50	2828.43	Granule

Classification		Composition	
Modified Folk	Gravelly sand	Fines	3.50%
EUNIS Folk	Coarse sediments	Sand	70.40%
Distribution	Multimodal	Gravel	26.10%



APPENDIX D PARTICLE SIZE ANALYSIS

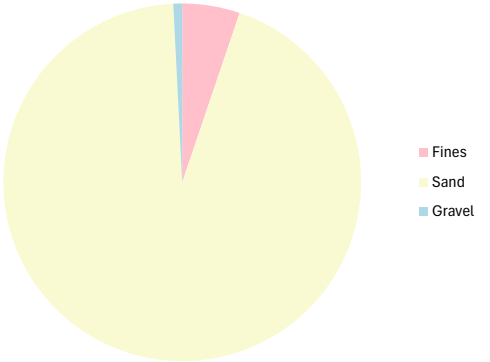
ENV077				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.17	0.17	
4000.00	-2.00	0.17	0.34	
2828.43	-1.50	0.21	0.56	Granule
2000.00	-1.00	0.29	0.85	
1414.21	-0.50	0.35	1.19	Very coarse sand
1000.00	0.00	0.35	1.54	
707.11	0.50	2.01	3.56	Coarse sand
500.00	1.00	3.61	7.17	
353.55	1.50	14.05	21.23	Medium sand
250.00	2.00	30.27	51.49	
176.78	2.50	28.77	80.26	Fine sand
125.00	3.00	11.84	92.10	
88.39	3.50	2.09	94.19	Very fine sand
62.50	4.00	0.56	94.75	
44.19	4.50	0.50	95.26	Coarse silt
31.25	5.00	0.58	95.84	
22.10	5.50	0.57	96.41	Medium silt
15.63	6.00	0.56	96.97	
11.05	6.50	0.57	97.55	Fine silt
7.81	7.00	0.51	98.06	
5.52	7.50	0.42	98.48	Very fine silt
3.91	8.00	0.31	98.79	
2.76	8.50	0.20	98.99	
1.95	9.00	0.14	99.13	
1.38	9.50	0.14	99.26	
0.98	10.00	0.14	99.40	Clay
0.69	10.50	0.14	99.54	
0.49	11.00	0.12	99.66	
<0.49	>11	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	227.26	Wentworth:
Logarithmic	Mean (Phi)	2.13	Fine sand
	Sorting	1.39	Poor
	Skewness	2.94	Very fine
	Kurtosis	18.43	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	253.06	Wentworth:
Logarithmic	Mean (Phi)	1.98	Medium sand
	Sorting	0.87	Moderate
	Skewness	0.15	Fine
	Kurtosis	1.72	Very leptokurtic

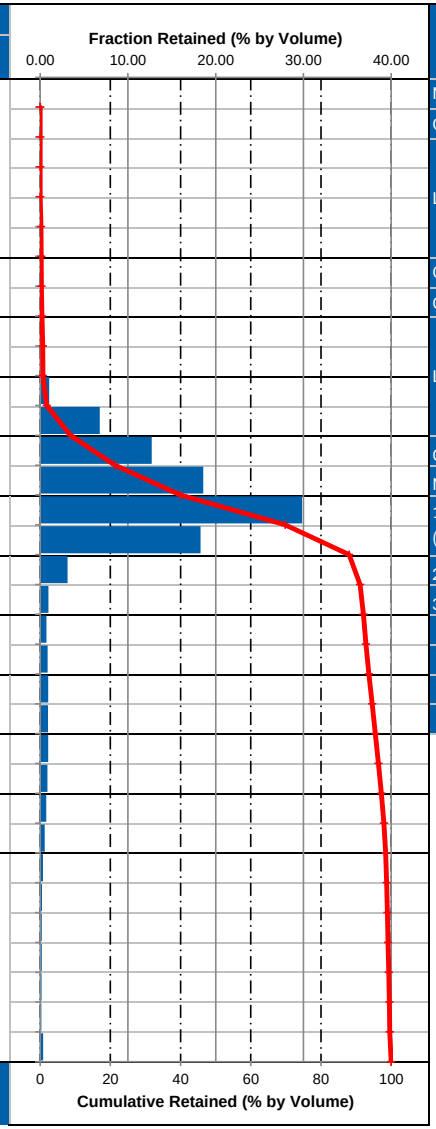
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.98	254.31	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.20%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.80%



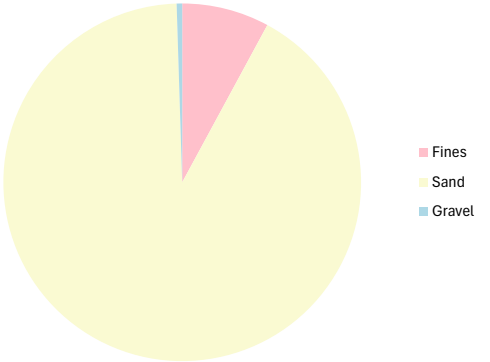
APPENDIX D PARTICLE SIZE ANALYSIS

ENV078				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.21	0.21	
4000.00	-2.00	0.06	0.26	
2828.43	-1.50	0.09	0.35	Granule
2000.00	-1.00	0.16	0.51	
1414.21	-0.50	0.19	0.71	Very coarse sand
1000.00	0.00	0.11	0.81	
707.11	0.50	1.02	1.84	Coarse sand
500.00	1.00	6.79	8.63	
353.55	1.50	12.71	21.34	Medium sand
250.00	2.00	18.58	39.92	
176.78	2.50	29.86	69.77	Fine sand
125.00	3.00	18.27	88.04	
88.39	3.50	3.11	91.15	Very fine sand
62.50	4.00	0.94	92.09	
44.19	4.50	0.71	92.80	Coarse silt
31.25	5.00	0.86	93.66	
22.10	5.50	0.92	94.57	Medium silt
15.63	6.00	0.89	95.46	
11.05	6.50	0.92	96.38	Fine silt
7.81	7.00	0.83	97.21	
5.52	7.50	0.69	97.90	Very fine silt
3.91	8.00	0.51	98.41	
2.76	8.50	0.32	98.73	Clay
1.95	9.00	0.21	98.94	
1.38	9.50	0.18	99.12	
0.98	10.00	0.18	99.30	
0.69	10.50	0.17	99.47	
0.49	11.00	0.14	99.61	
<0.49	>11	0.33	100.00	



Method of Moments			
Geometric	Mean (µm)	194.09	Wentworth:
Logarithmic	Mean (Phi)	2.36	Fine sand
	Sorting	1.55	Poor
	Skewness	2.57	Very fine
	Kurtosis	13.32	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	230.67	Wentworth:
Logarithmic	Mean (Phi)	2.12	Fine sand
	Sorting	1.16	Poor
	Skewness	0.16	Fine
	Kurtosis	1.96	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.17	222.39	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

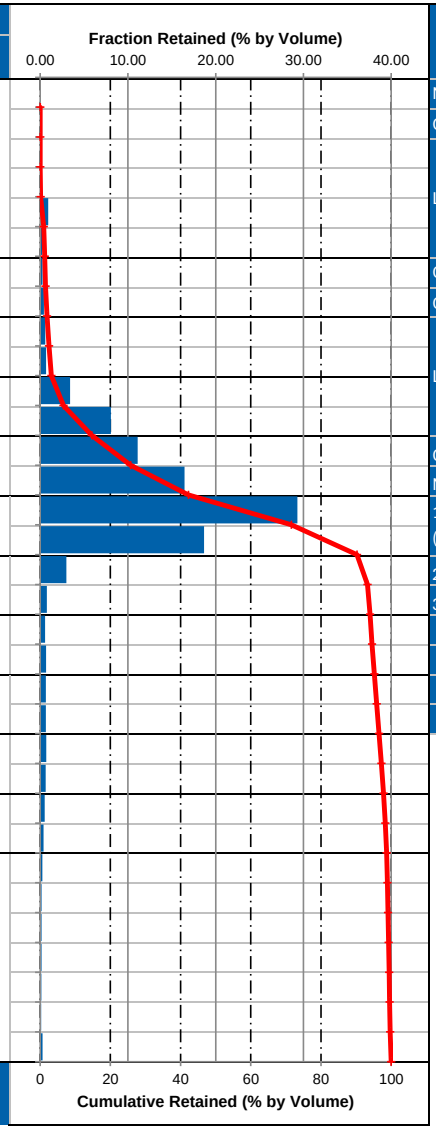
Classification		Composition	
Modified Folk	Sand	Fines	7.90%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.50%



APPENDIX D PARTICLE SIZE ANALYSIS

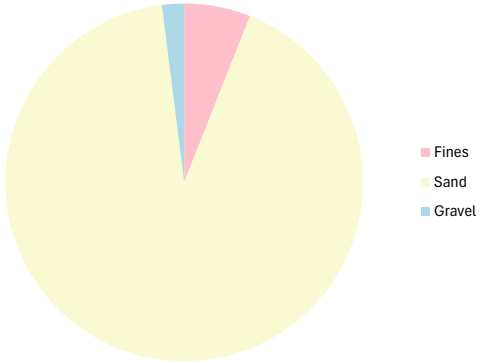
ENV079

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.12	0.12	
5656.85	-2.50	0.91	1.03	
4000.00	-2.00	0.23	1.26	
2828.43	-1.50	0.26	1.52	Granule
2000.00	-1.00	0.43	1.95	
1414.21	-0.50	0.57	2.53	Very coarse sand
1000.00	0.00	0.68	3.20	
707.11	0.50	3.41	6.61	Coarse sand
500.00	1.00	8.06	14.67	
353.55	1.50	11.10	25.78	Medium sand
250.00	2.00	16.46	42.23	
176.78	2.50	29.32	71.55	Fine sand
125.00	3.00	18.68	90.24	
88.39	3.50	2.99	93.23	Very fine sand
62.50	4.00	0.76	93.98	
44.19	4.50	0.56	94.54	Coarse silt
31.25	5.00	0.66	95.21	
22.10	5.50	0.65	95.86	Medium silt
15.63	6.00	0.66	96.51	
11.05	6.50	0.69	97.21	Fine silt
7.81	7.00	0.62	97.83	
5.52	7.50	0.51	98.34	Very fine silt
3.91	8.00	0.38	98.72	
2.76	8.50	0.24	98.95	Clay
1.95	9.00	0.16	99.11	
1.38	9.50	0.15	99.26	
0.98	10.00	0.16	99.42	
0.69	10.50	0.14	99.56	
0.49	11.00	0.12	99.69	
<0.49	>11	0.27	100.00	



Method of Moments			
Geometric	Mean (µm)	225.24	Wentworth:
Logarithmic	Mean (Phi)	2.15	Fine sand
	Sorting	1.57	Poor
	Skewness	1.77	Very fine
	Kurtosis	12.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	248.55	Wentworth:
Logarithmic	Mean (Phi)	2.01	Fine sand
	Sorting	1.14	Poor
	Skewness	-0.01	Symmetrical
	Kurtosis	1.67	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.13	228.07	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

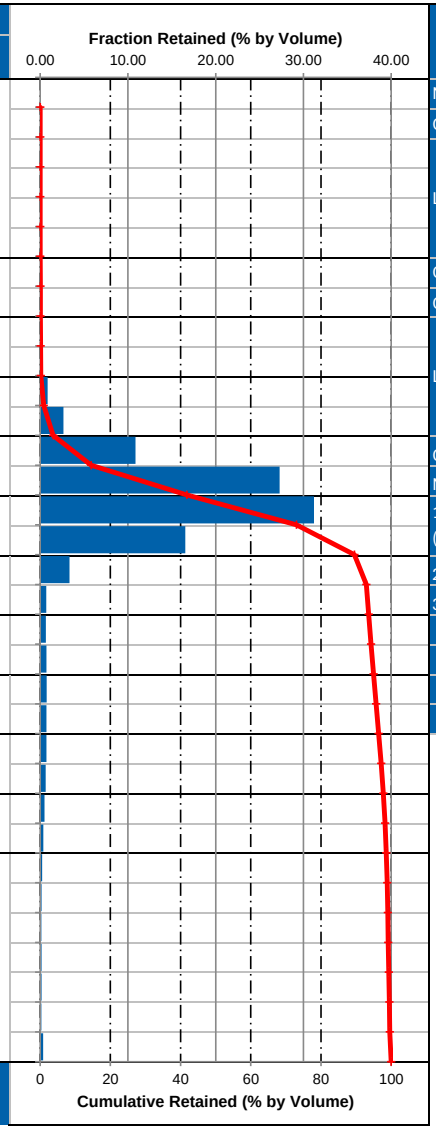
Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	92.00%
Distribution	Unimodal	Gravel	2.00%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV080

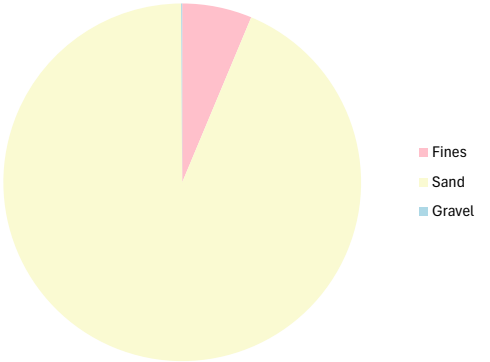
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.05	0.05	Granule
2000.00	-1.00	0.03	0.08	
1414.21	-0.50	0.04	0.12	Very coarse sand
1000.00	0.00	0.05	0.17	
707.11	0.50	0.85	1.02	Coarse sand
500.00	1.00	2.65	3.68	
353.55	1.50	10.86	14.53	Medium sand
250.00	2.00	27.28	41.82	
176.78	2.50	31.19	73.01	Fine sand
125.00	3.00	16.54	89.55	
88.39	3.50	3.35	92.90	Very fine sand
62.50	4.00	0.70	93.60	
44.19	4.50	0.65	94.24	Coarse silt
31.25	5.00	0.72	94.96	
22.10	5.50	0.73	95.70	Medium silt
15.63	6.00	0.72	96.41	
11.05	6.50	0.72	97.13	Fine silt
7.81	7.00	0.63	97.75	
5.52	7.50	0.50	98.25	Very fine silt
3.91	8.00	0.36	98.62	
2.76	8.50	0.23	98.85	Clay
1.95	9.00	0.16	99.01	
1.38	9.50	0.15	99.16	
0.98	10.00	0.15	99.31	
0.69	10.50	0.15	99.46	
0.49	11.00	0.13	99.60	
<0.49	>11	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	195.28	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.38	Poor
	Skewness	3.40	Very fine
	Kurtosis	18.79	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	223.22	Wentworth:
Logarithmic	Mean (Phi)	2.16	Fine sand
	Sorting	0.93	Moderate
	Skewness	0.27	Fine
	Kurtosis	1.87	Very leptokurtic

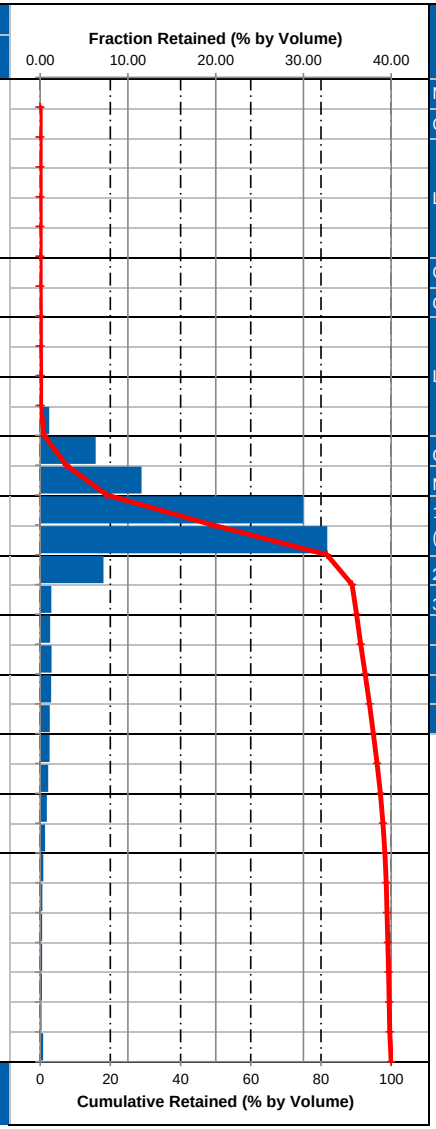
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.13	228.27	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.30%
EUNIS Folk	Sand and muddy sand	Sand	93.50%
Distribution	Unimodal	Gravel	0.10%



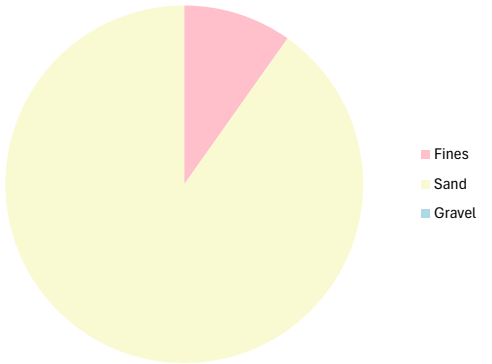
APPENDIX D PARTICLE SIZE ANALYSIS

ENV081				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.03	0.07	Very coarse sand
1000.00	0.00	0.02	0.09	
707.11	0.50	0.00	0.09	Coarse sand
500.00	1.00	1.03	1.12	
353.55	1.50	6.33	7.45	Medium sand
250.00	2.00	11.56	19.00	
176.78	2.50	29.96	48.96	Fine sand
125.00	3.00	32.71	81.67	
88.39	3.50	7.22	88.88	Very fine sand
62.50	4.00	1.28	90.16	
44.19	4.50	1.13	91.29	Coarse silt
31.25	5.00	1.29	92.58	
22.10	5.50	1.24	93.82	Medium silt
15.63	6.00	1.09	94.91	
11.05	6.50	1.06	95.98	Fine silt
7.81	7.00	0.92	96.90	
5.52	7.50	0.75	97.65	Very fine silt
3.91	8.00	0.56	98.22	
2.76	8.50	0.36	98.58	Clay
1.95	9.00	0.24	98.82	
1.38	9.50	0.22	99.04	
0.98	10.00	0.22	99.25	
0.69	10.50	0.19	99.45	
0.49	11.00	0.16	99.61	
<0.49	>11	0.34	100.00	



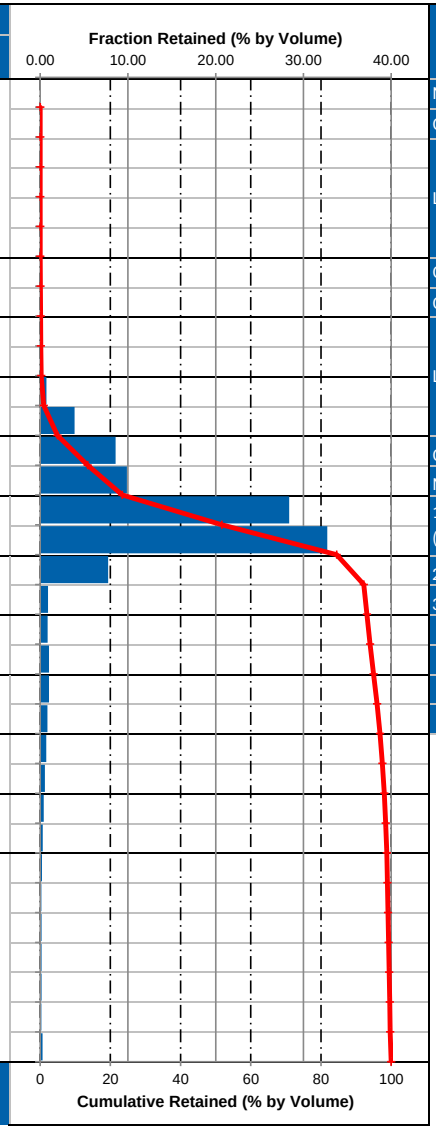
Method of Moments			
Geometric	Mean (µm)	145.29	Wentworth:
Logarithmic	Mean (Phi)	2.78	Fine sand
	Sorting	1.46	Poor
	Skewness	2.92	Very fine
	Kurtosis	14.08	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	174.84	Wentworth:
Logarithmic	Mean (Phi)	2.52	Fine sand
	Sorting	1.04	Poor
	Skewness	0.24	Fine
	Kurtosis	2.43	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.52	174.84	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.80%
EUNIS Folk	Sand and muddy sand	Sand	90.10%
Distribution	Bimodal	Gravel	0.00%



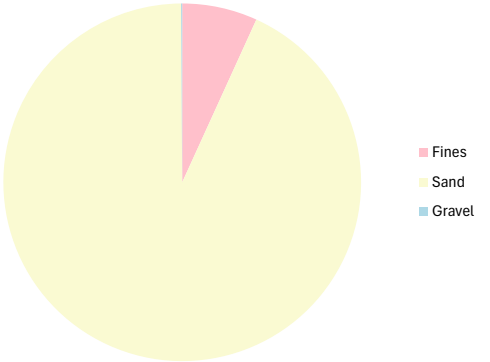
APPENDIX D PARTICLE SIZE ANALYSIS

ENV082				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.01	0.01	
4000.00	-2.00	0.01	0.02	
2828.43	-1.50	0.04	0.06	Granule
2000.00	-1.00	0.03	0.09	
1414.21	-0.50	0.06	0.15	Very coarse sand
1000.00	0.00	0.13	0.28	
707.11	0.50	0.71	0.99	Coarse sand
500.00	1.00	3.92	4.91	
353.55	1.50	8.59	13.50	Medium sand
250.00	2.00	9.89	23.39	
176.78	2.50	28.37	51.76	Fine sand
125.00	3.00	32.72	84.48	
88.39	3.50	7.75	92.22	Very fine sand
62.50	4.00	0.89	93.11	
44.19	4.50	0.86	93.97	Coarse silt
31.25	5.00	1.00	94.97	
22.10	5.50	1.00	95.98	Medium silt
15.63	6.00	0.83	96.81	
11.05	6.50	0.70	97.50	Fine silt
7.81	7.00	0.54	98.04	
5.52	7.50	0.41	98.45	Very fine silt
3.91	8.00	0.30	98.75	
2.76	8.50	0.19	98.94	
1.95	9.00	0.15	99.09	
1.38	9.50	0.16	99.24	
0.98	10.00	0.17	99.41	Clay
0.69	10.50	0.15	99.57	
0.49	11.00	0.13	99.70	
<0.49	>11	0.27	100.00	



Method of Moments			
Geometric	Mean (µm)	167.94	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	1.33	Poor
	Skewness	2.89	Very fine
	Kurtosis	16.82	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	194.42	Wentworth:
Logarithmic	Mean (Phi)	2.36	Fine sand
	Sorting	0.95	Moderate
	Skewness	0.02	Symmetrical
	Kurtosis	1.99	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.47	180.62	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

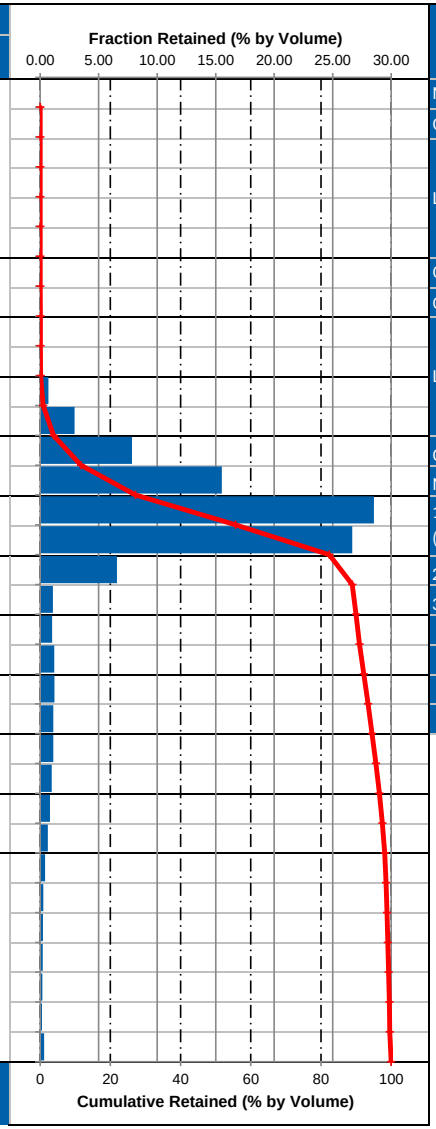
Classification		Composition	
Modified Folk	Sand	Fines	6.80%
EUNIS Folk	Sand and muddy sand	Sand	93.00%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

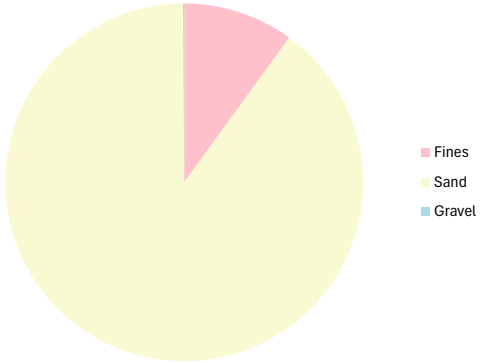
ENV083

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.03	0.06	
1414.21	-0.50	0.02	0.08	Very coarse sand
1000.00	0.00	0.05	0.14	
707.11	0.50	0.70	0.84	Coarse sand
500.00	1.00	2.93	3.77	
353.55	1.50	7.84	11.62	Medium sand
250.00	2.00	15.52	27.14	
176.78	2.50	28.52	55.66	Fine sand
125.00	3.00	26.68	82.33	
88.39	3.50	6.56	88.89	Very fine sand
62.50	4.00	1.08	89.97	
44.19	4.50	1.02	90.99	Coarse silt
31.25	5.00	1.20	92.19	
22.10	5.50	1.23	93.42	Medium silt
15.63	6.00	1.12	94.54	
11.05	6.50	1.12	95.66	Fine silt
7.81	7.00	0.99	96.65	
5.52	7.50	0.84	97.49	Very fine silt
3.91	8.00	0.65	98.14	
2.76	8.50	0.41	98.55	Clay
1.95	9.00	0.27	98.82	
1.38	9.50	0.23	99.05	
0.98	10.00	0.22	99.27	
0.69	10.50	0.19	99.46	
0.49	11.00	0.15	99.62	
<0.49	>11	0.33	100.00	



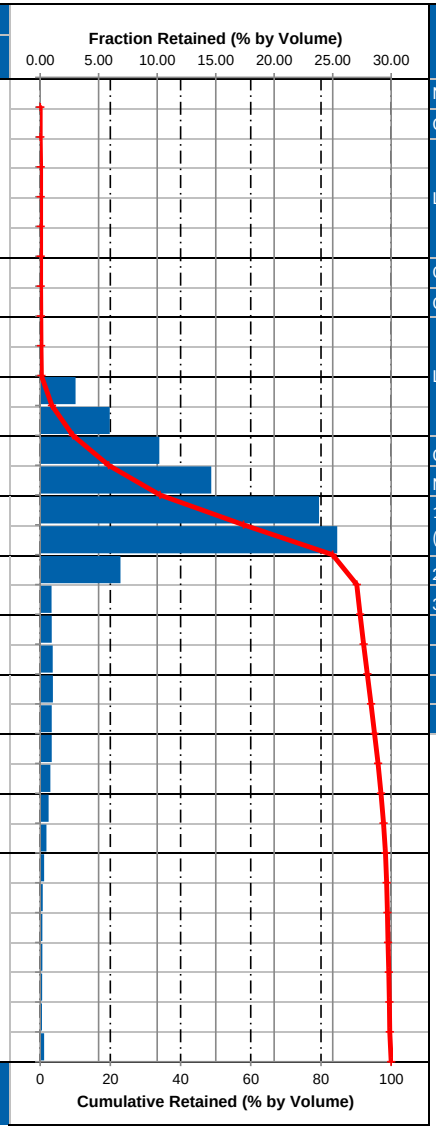
Method of Moments			
Geometric	Mean (µm)	156.12	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.55	Poor
	Skewness	2.64	Very fine
	Kurtosis	12.24	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	190.83	Wentworth:
Logarithmic	Mean (Phi)	2.39	Fine sand
	Sorting	1.15	Poor
	Skewness	0.23	Fine
	Kurtosis	2.26	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	189.36	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	10.00%
EUNIS Folk	Sand and muddy sand	Sand	89.90%
Distribution	Bimodal	Gravel	0.10%



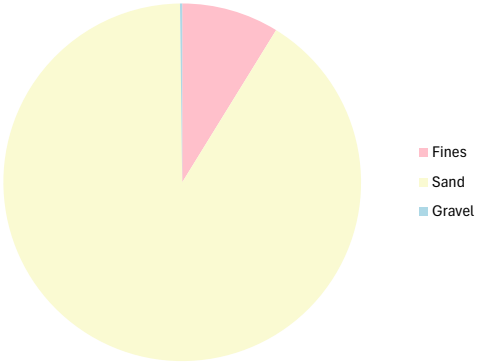
APPENDIX D PARTICLE SIZE ANALYSIS

ENV084				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.14	0.14	Pebble
8000.00	-3.00	0.00	0.14	
5656.85	-2.50	0.00	0.14	
4000.00	-2.00	0.00	0.14	
2828.43	-1.50	0.01	0.14	Granule
2000.00	-1.00	0.03	0.17	
1414.21	-0.50	0.03	0.20	Very coarse sand
1000.00	0.00	0.12	0.32	
707.11	0.50	3.03	3.35	Coarse sand
500.00	1.00	5.94	9.29	
353.55	1.50	10.18	19.47	Medium sand
250.00	2.00	14.62	34.09	
176.78	2.50	23.83	57.93	Fine sand
125.00	3.00	25.39	83.31	
88.39	3.50	6.86	90.17	Very fine sand
62.50	4.00	0.96	91.14	
44.19	4.50	0.98	92.12	Coarse silt
31.25	5.00	1.08	93.20	
22.10	5.50	1.08	94.28	Medium silt
15.63	6.00	0.99	95.26	
11.05	6.50	0.98	96.24	Fine silt
7.81	7.00	0.87	97.11	
5.52	7.50	0.72	97.83	Very fine silt
3.91	8.00	0.53	98.36	
2.76	8.50	0.34	98.70	
1.95	9.00	0.22	98.92	
1.38	9.50	0.19	99.11	
0.98	10.00	0.19	99.30	Clay
0.69	10.50	0.17	99.47	
0.49	11.00	0.15	99.62	
<0.49	>11	0.33	100.00	



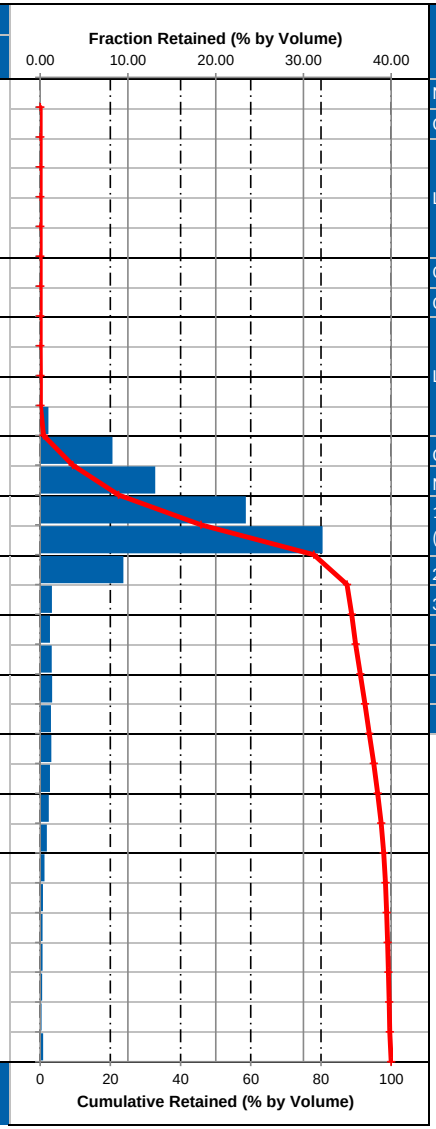
Method of Moments			
Geometric	Mean (µm)	176.42	Wentworth:
Logarithmic	Mean (Phi)	2.50	Fine sand
	Sorting	1.58	Poor
	Skewness	2.31	Very fine
	Kurtosis	11.91	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	212.02	Wentworth:
Logarithmic	Mean (Phi)	2.24	Fine sand
	Sorting	1.22	Poor
	Skewness	0.09	Symmetrical
	Kurtosis	1.87	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.33	198.37	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.80%
EUNIS Folk	Sand and muddy sand	Sand	91.00%
Distribution	Bimodal	Gravel	0.20%



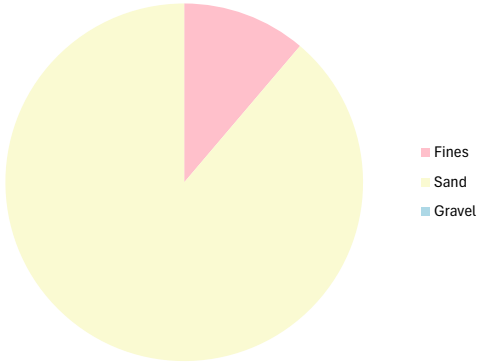
APPENDIX D PARTICLE SIZE ANALYSIS

ENV085				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.00	0.01	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.94	0.98	
353.55	1.50	8.24	9.22	Medium sand
250.00	2.00	13.12	22.33	
176.78	2.50	23.44	45.77	Fine sand
125.00	3.00	32.18	77.94	
88.39	3.50	9.49	87.43	Very fine sand
62.50	4.00	1.33	88.76	
44.19	4.50	1.12	89.88	Coarse silt
31.25	5.00	1.31	91.18	
22.10	5.50	1.35	92.53	Medium silt
15.63	6.00	1.23	93.77	
11.05	6.50	1.27	95.03	Fine silt
7.81	7.00	1.12	96.16	
5.52	7.50	0.97	97.13	Very fine silt
3.91	8.00	0.77	97.90	
2.76	8.50	0.49	98.39	Clay
1.95	9.00	0.31	98.70	
1.38	9.50	0.27	98.97	
0.98	10.00	0.26	99.23	
0.69	10.50	0.22	99.45	
0.49	11.00	0.16	99.61	
<0.49	>11	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	138.82	Wentworth:
Logarithmic	Mean (Phi)	2.84	Fine sand
	Sorting	1.56	Poor
	Skewness	2.61	Very fine
	Kurtosis	11.46	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	171.01	Wentworth:
Logarithmic	Mean (Phi)	2.55	Fine sand
	Sorting	1.18	Poor
	Skewness	0.23	Fine
	Kurtosis	2.39	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.57	168.90	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

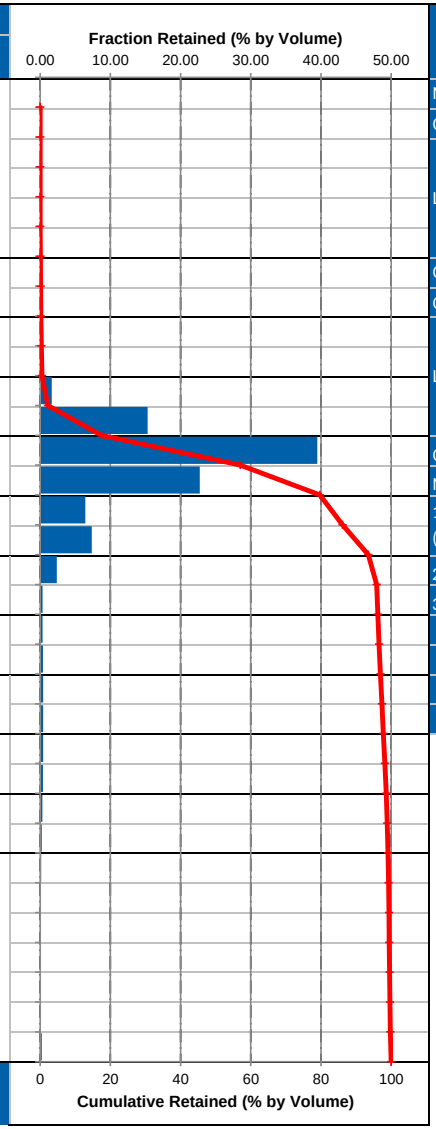
Classification		Composition	
Modified Folk	Muddy sand	Fines	11.20%
EUNIS Folk	Sand and muddy sand	Sand	88.70%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

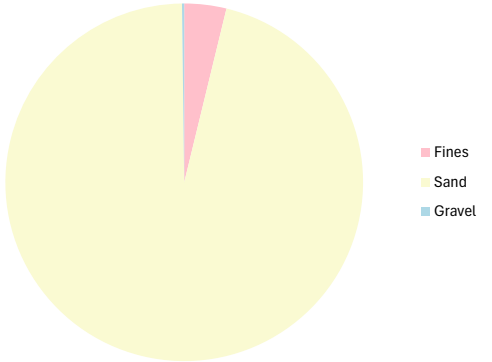
ENV086

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.04	0.12	Granule
2000.00	-1.00	0.07	0.18	
1414.21	-0.50	0.16	0.34	Very coarse sand
1000.00	0.00	0.18	0.52	
707.11	0.50	1.63	2.15	Coarse sand
500.00	1.00	15.31	17.47	
353.55	1.50	39.49	56.96	Medium sand
250.00	2.00	22.74	79.70	
176.78	2.50	6.43	86.13	Fine sand
125.00	3.00	7.34	93.47	
88.39	3.50	2.38	95.85	Very fine sand
62.50	4.00	0.34	96.19	
44.19	4.50	0.35	96.53	Coarse silt
31.25	5.00	0.40	96.94	
22.10	5.50	0.42	97.36	Medium silt
15.63	6.00	0.41	97.77	
11.05	6.50	0.43	98.19	Fine silt
7.81	7.00	0.38	98.57	
5.52	7.50	0.31	98.88	Very fine silt
3.91	8.00	0.23	99.11	
2.76	8.50	0.14	99.25	Clay
1.95	9.00	0.10	99.35	
1.38	9.50	0.10	99.45	
0.98	10.00	0.10	99.55	
0.69	10.50	0.10	99.65	
0.49	11.00	0.09	99.74	
<0.49	>11	0.22	100.00	



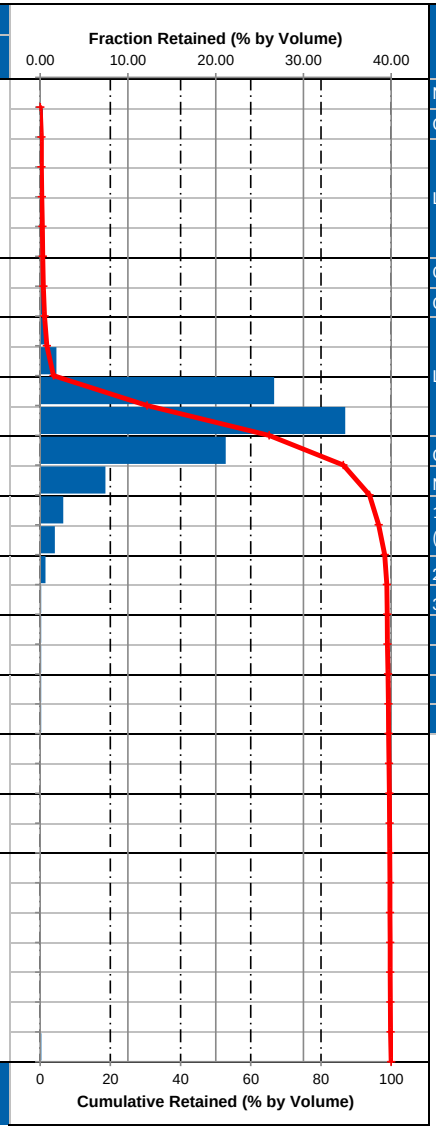
Method of Moments			
Geometric	Mean (µm)	307.07	Wentworth:
Logarithmic	Mean (Phi)	1.70	Medium sand
	Sorting	1.27	Poor
	Skewness	3.78	Very fine
	Kurtosis	23.47	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	337.70	Wentworth:
Logarithmic	Mean (Phi)	1.57	Medium sand
	Sorting	0.76	Moderate
	Skewness	0.37	Very fine
	Kurtosis	1.40	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.41	375.81	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	3.80%
EUNIS Folk	Sand and muddy sand	Sand	96.00%
Distribution	Unimodal	Gravel	0.20%



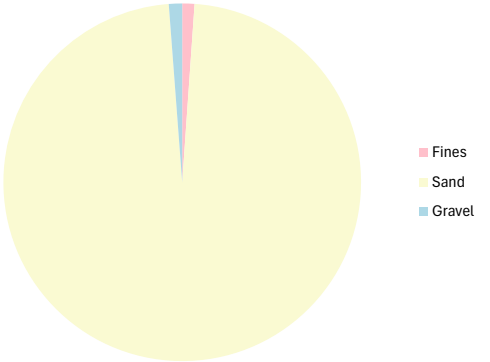
APPENDIX D PARTICLE SIZE ANALYSIS

ENV087				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.32	0.32	
11313.71	-3.50	0.00	0.32	Pebble
8000.00	-3.00	0.15	0.47	
5656.85	-2.50	0.15	0.62	
4000.00	-2.00	0.12	0.74	
2828.43	-1.50	0.15	0.89	Granule
2000.00	-1.00	0.34	1.23	
1414.21	-0.50	0.69	1.92	Very coarse sand
1000.00	0.00	1.85	3.77	
707.11	0.50	26.67	30.44	Coarse sand
500.00	1.00	34.77	65.22	
353.55	1.50	21.15	86.37	Medium sand
250.00	2.00	7.44	93.81	
176.78	2.50	2.64	96.45	Fine sand
125.00	3.00	1.68	98.13	
88.39	3.50	0.61	98.74	Very fine sand
62.50	4.00	0.11	98.85	
44.19	4.50	0.10	98.95	Coarse silt
31.25	5.00	0.12	99.07	
22.10	5.50	0.11	99.18	Medium silt
15.63	6.00	0.11	99.29	
11.05	6.50	0.10	99.39	Fine silt
7.81	7.00	0.09	99.48	
5.52	7.50	0.07	99.55	Very fine silt
3.91	8.00	0.05	99.59	
2.76	8.50	0.03	99.63	
1.95	9.00	0.03	99.66	
1.38	9.50	0.03	99.69	
0.98	10.00	0.04	99.73	Clay
0.69	10.50	0.05	99.78	
0.49	11.00	0.05	99.83	
<0.49	>11	0.14	100.00	



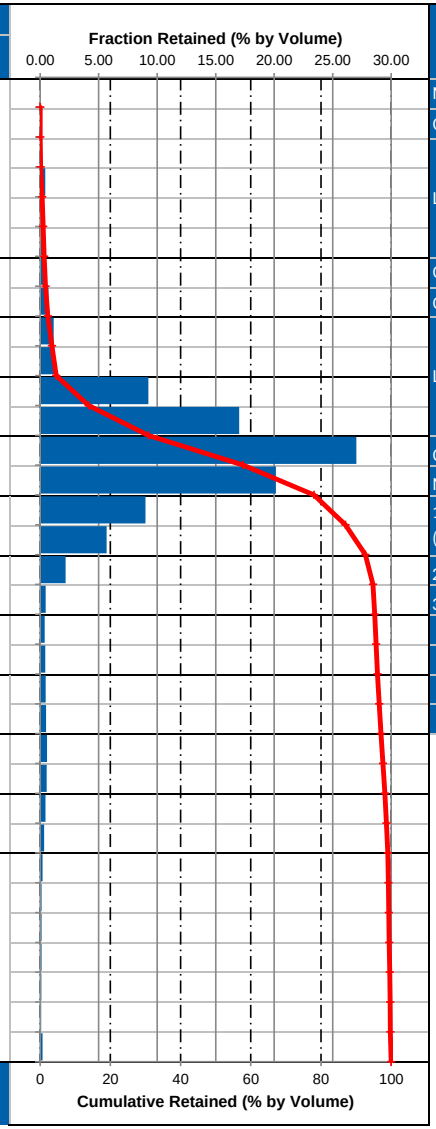
Method of Moments			
Geometric	Mean (µm)	537.74	Wentworth:
Logarithmic	Mean (Phi)	0.89	Coarse sand
	Sorting	1.05	Poor
	Skewness	3.48	Very fine
	Kurtosis	37.37	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	567.17	Wentworth:
Logarithmic	Mean (Phi)	0.82	Coarse sand
	Sorting	0.64	Moderately well
	Skewness	0.20	Fine
	Kurtosis	1.08	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.78	581.89	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	1.10%
EUNIS Folk	Sand and muddy sand	Sand	97.60%
Distribution	Unimodal	Gravel	1.20%



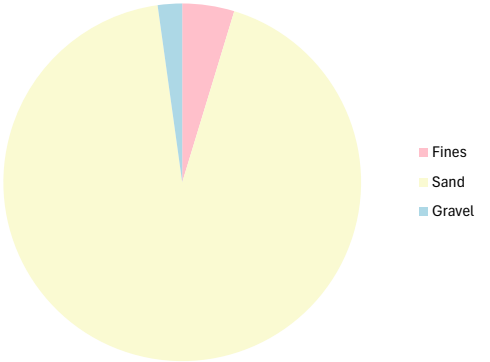
APPENDIX D PARTICLE SIZE ANALYSIS

ENV088				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.12	0.12	Pebble
8000.00	-3.00	0.44	0.56	
5656.85	-2.50	0.30	0.86	
4000.00	-2.00	0.26	1.12	
2828.43	-1.50	0.37	1.48	Granule
2000.00	-1.00	0.71	2.20	
1414.21	-0.50	1.16	3.36	Very coarse sand
1000.00	0.00	1.19	4.54	
707.11	0.50	9.25	13.80	Coarse sand
500.00	1.00	17.01	30.80	
353.55	1.50	27.03	57.83	Medium sand
250.00	2.00	20.15	77.99	
176.78	2.50	9.00	86.98	Fine sand
125.00	3.00	5.68	92.66	
88.39	3.50	2.17	94.83	Very fine sand
62.50	4.00	0.48	95.30	
44.19	4.50	0.38	95.68	Coarse silt
31.25	5.00	0.43	96.11	
22.10	5.50	0.46	96.58	Medium silt
15.63	6.00	0.50	97.07	
11.05	6.50	0.59	97.67	Fine silt
7.81	7.00	0.55	98.22	
5.52	7.50	0.46	98.68	Very fine silt
3.91	8.00	0.34	99.01	
2.76	8.50	0.20	99.22	
1.95	9.00	0.13	99.34	
1.38	9.50	0.11	99.45	
0.98	10.00	0.12	99.57	Clay
0.69	10.50	0.11	99.68	
0.49	11.00	0.09	99.77	
<0.49	>11	0.20	100.00	



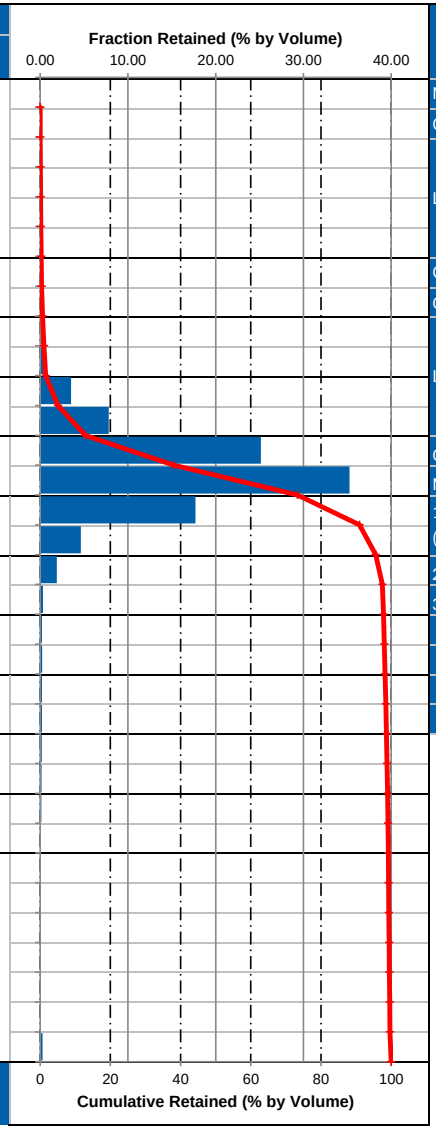
Method of Moments			
Geometric	Mean (µm)	341.90	Wentworth:
Logarithmic	Mean (Phi)	1.55	Medium sand
	Sorting	1.54	Poor
	Skewness	2.22	Very fine
	Kurtosis	13.86	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	374.22	Wentworth:
Logarithmic	Mean (Phi)	1.42	Medium sand
	Sorting	1.00	Moderate
	Skewness	0.19	Fine
	Kurtosis	1.37	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.36	390.91	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	4.70%
EUNIS Folk	Sand and muddy sand	Sand	93.10%
Distribution	Unimodal	Gravel	2.20%



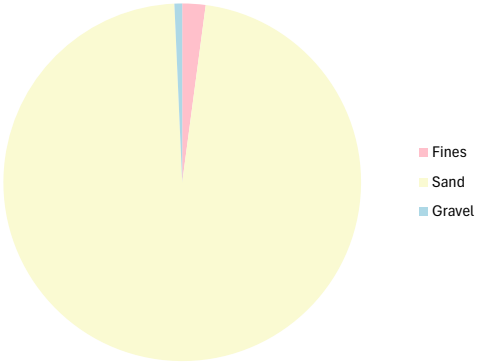
APPENDIX D PARTICLE SIZE ANALYSIS

ENV089				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.07	0.07	Pebble
8000.00	-3.00	0.05	0.12	
5656.85	-2.50	0.05	0.18	
4000.00	-2.00	0.11	0.28	
2828.43	-1.50	0.13	0.41	Granule
2000.00	-1.00	0.26	0.67	
1414.21	-0.50	0.40	1.07	Very coarse sand
1000.00	0.00	0.47	1.54	
707.11	0.50	3.52	5.06	Coarse sand
500.00	1.00	7.82	12.88	
353.55	1.50	25.15	38.03	Medium sand
250.00	2.00	35.26	73.29	
176.78	2.50	17.69	90.98	Fine sand
125.00	3.00	4.63	95.61	
88.39	3.50	1.90	97.51	Very fine sand
62.50	4.00	0.32	97.82	
44.19	4.50	0.20	98.03	Coarse silt
31.25	5.00	0.23	98.25	
22.10	5.50	0.20	98.46	Medium silt
15.63	6.00	0.19	98.65	
11.05	6.50	0.18	98.83	Fine silt
7.81	7.00	0.15	98.98	
5.52	7.50	0.13	99.11	Very fine silt
3.91	8.00	0.10	99.20	
2.76	8.50	0.07	99.27	
1.95	9.00	0.06	99.34	
1.38	9.50	0.07	99.41	
0.98	10.00	0.09	99.49	Clay
0.69	10.50	0.09	99.59	
0.49	11.00	0.09	99.68	
<0.49	>11	0.27	100.00	



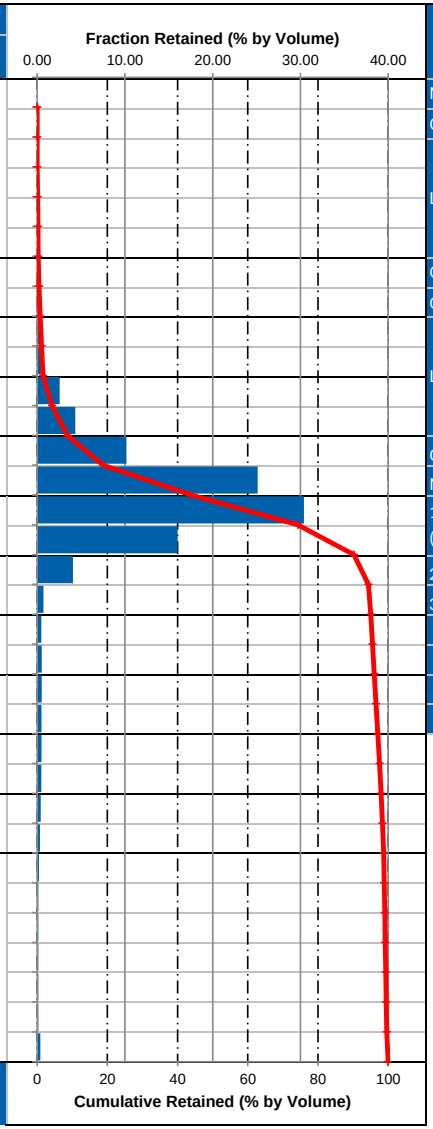
Method of Moments			
Geometric	Mean (µm)	298.96	Wentworth:
Logarithmic	Mean (Phi)	1.74	Medium sand
	Sorting	1.15	Poor
	Skewness	3.78	Very fine
	Kurtosis	32.26	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	312.49	Wentworth:
Logarithmic	Mean (Phi)	1.68	Medium sand
	Sorting	0.68	Moderately well
	Skewness	0.03	Symmetrical
	Kurtosis	1.24	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.67	314.32	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	2.10%
EUNIS Folk	Sand and muddy sand	Sand	97.20%
Distribution	Unimodal	Gravel	0.70%



APPENDIX D PARTICLE SIZE ANALYSIS

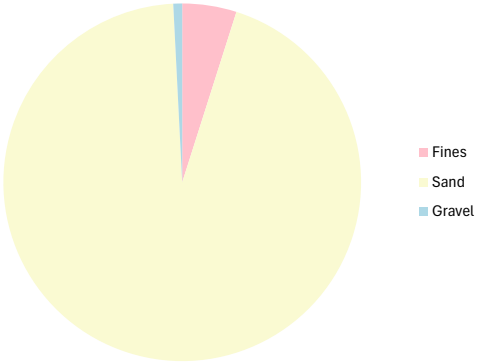
ENV090				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.09	0.09	
5656.85	-2.50	0.12	0.21	
4000.00	-2.00	0.08	0.29	
2828.43	-1.50	0.24	0.53	Granule
2000.00	-1.00	0.28	0.81	
1414.21	-0.50	0.41	1.23	Very coarse sand
1000.00	0.00	0.44	1.67	
707.11	0.50	2.57	4.24	Coarse sand
500.00	1.00	4.34	8.58	
353.55	1.50	10.17	18.75	Medium sand
250.00	2.00	25.12	43.87	
176.78	2.50	30.40	74.27	Fine sand
125.00	3.00	16.00	90.27	
88.39	3.50	4.07	94.34	Very fine sand
62.50	4.00	0.71	95.05	
44.19	4.50	0.46	95.51	Coarse silt
31.25	5.00	0.51	96.03	
22.10	5.50	0.51	96.54	Medium silt
15.63	6.00	0.48	97.02	
11.05	6.50	0.50	97.52	Fine silt
7.81	7.00	0.47	97.99	
5.52	7.50	0.40	98.39	Very fine silt
3.91	8.00	0.30	98.69	
2.76	8.50	0.20	98.89	
1.95	9.00	0.14	99.03	
1.38	9.50	0.13	99.17	
0.98	10.00	0.14	99.31	Clay
0.69	10.50	0.14	99.45	
0.49	11.00	0.13	99.59	
<0.49	>11	0.35	100.00	



Method of Moments			
Geometric	Mean (µm)	215.44	Wentworth:
Logarithmic	Mean (Phi)	2.21	Fine sand
	Sorting	1.41	Poor
	Skewness	2.79	Very fine
	Kurtosis	18.19	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	234.89	Wentworth:
Logarithmic	Mean (Phi)	2.09	Fine sand
	Sorting	0.87	Moderate
	Skewness	0.04	Symmetrical
	Kurtosis	1.54	Very leptokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.10	233.12	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

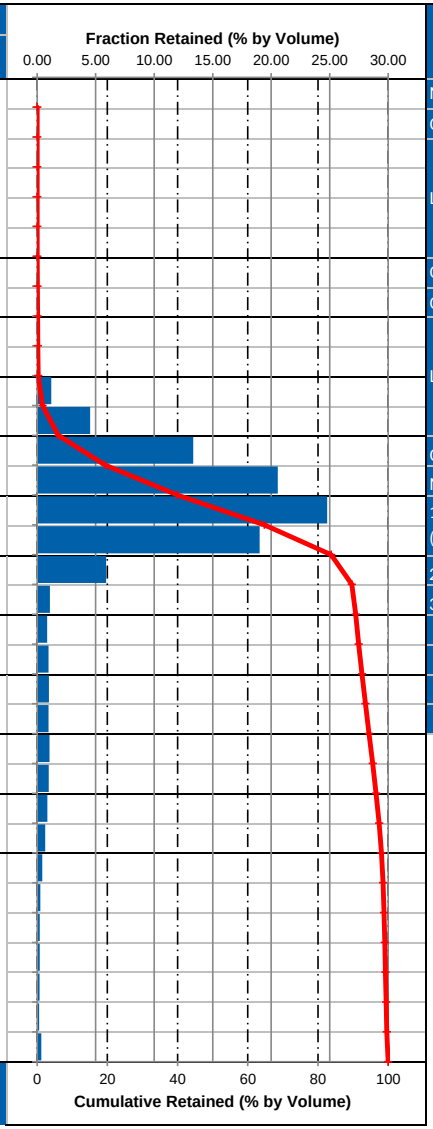
Classification		Composition	
Modified Folk	Sand	Fines	4.90%
EUNIS Folk	Sand and muddy sand	Sand	94.20%
Distribution	Unimodal	Gravel	0.80%



APPENDIX D PARTICLE SIZE ANALYSIS

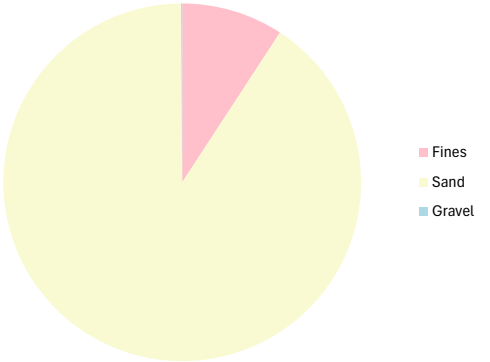
ENV091

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.03	0.03	
2828.43	-1.50	0.05	0.08	Granule
2000.00	-1.00	0.03	0.11	
1414.21	-0.50	0.08	0.19	Very coarse sand
1000.00	0.00	0.11	0.31	
707.11	0.50	1.20	1.50	Coarse sand
500.00	1.00	4.52	6.02	
353.55	1.50	13.34	19.36	Medium sand
250.00	2.00	20.56	39.92	
176.78	2.50	24.79	64.71	Fine sand
125.00	3.00	19.01	83.73	
88.39	3.50	5.90	89.63	Very fine sand
62.50	4.00	1.09	90.72	
44.19	4.50	0.85	91.57	Coarse silt
31.25	5.00	0.97	92.54	
22.10	5.50	1.00	93.54	Medium silt
15.63	6.00	0.97	94.51	
11.05	6.50	1.05	95.57	Fine silt
7.81	7.00	0.98	96.55	
5.52	7.50	0.87	97.42	Very fine silt
3.91	8.00	0.68	98.09	
2.76	8.50	0.43	98.53	Clay
1.95	9.00	0.27	98.79	
1.38	9.50	0.22	99.01	
0.98	10.00	0.22	99.23	
0.69	10.50	0.19	99.42	
0.49	11.00	0.16	99.59	
<0.49	>11	0.36	100.00	



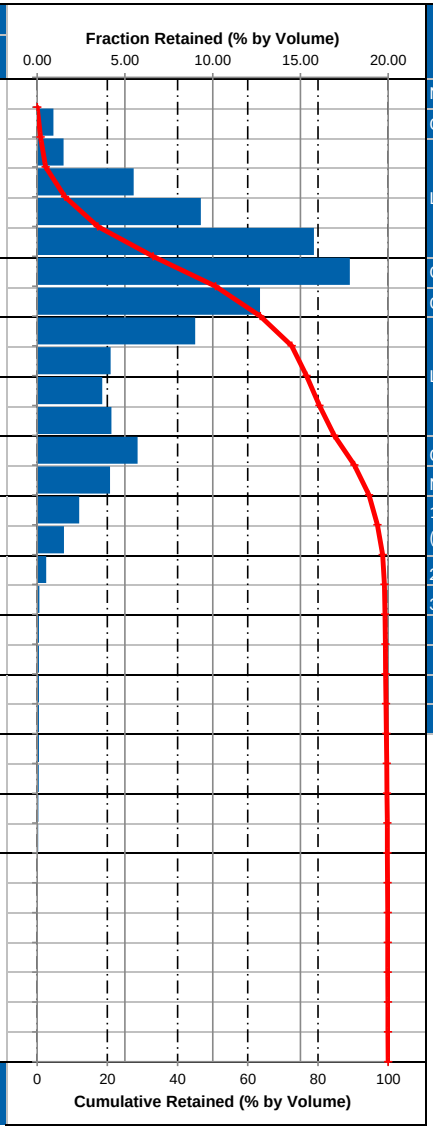
Method of Moments			
Geometric	Mean (µm)	177.03	Wentworth:
Logarithmic	Mean (Phi)	2.49	Fine sand
	Sorting	1.61	Poor
	Skewness	2.59	Very fine
	Kurtosis	11.89	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	217.61	Wentworth:
Logarithmic	Mean (Phi)	2.20	Fine sand
	Sorting	1.22	Poor
	Skewness	0.25	Fine
	Kurtosis	1.93	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	217.15	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	5.50	22.10	Medium silt

Classification		Composition	
Modified Folk	Sand	Fines	9.20%
EUNIS Folk	Sand and muddy sand	Sand	90.60%
Distribution	Multimodal	Gravel	0.10%



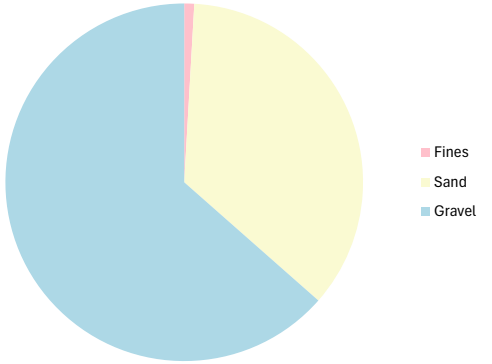
APPENDIX D PARTICLE SIZE ANALYSIS

ENV092				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.93	0.93	
11313.71	-3.50	1.50	2.42	Pebble
8000.00	-3.00	5.50	7.92	
5656.85	-2.50	9.32	17.25	
4000.00	-2.00	15.77	33.01	
2828.43	-1.50	17.82	50.83	Granule
2000.00	-1.00	12.70	63.53	
1414.21	-0.50	9.00	72.53	Very coarse sand
1000.00	0.00	4.19	76.71	
707.11	0.50	3.70	80.42	Coarse sand
500.00	1.00	4.23	84.64	
353.55	1.50	5.73	90.37	Medium sand
250.00	2.00	4.16	94.53	
176.78	2.50	2.39	96.92	Fine sand
125.00	3.00	1.52	98.44	
88.39	3.50	0.51	98.95	Very fine sand
62.50	4.00	0.13	99.08	
44.19	4.50	0.10	99.18	Coarse silt
31.25	5.00	0.10	99.28	
22.10	5.50	0.10	99.38	Medium silt
15.63	6.00	0.10	99.48	
11.05	6.50	0.10	99.58	Fine silt
7.81	7.00	0.09	99.67	
5.52	7.50	0.07	99.74	Very fine silt
3.91	8.00	0.05	99.79	
2.76	8.50	0.03	99.82	
1.95	9.00	0.02	99.85	
1.38	9.50	0.02	99.87	
0.98	10.00	0.03	99.90	Clay
0.69	10.50	0.02	99.92	
0.49	11.00	0.02	99.94	
<0.49	>11	0.05	100.00	



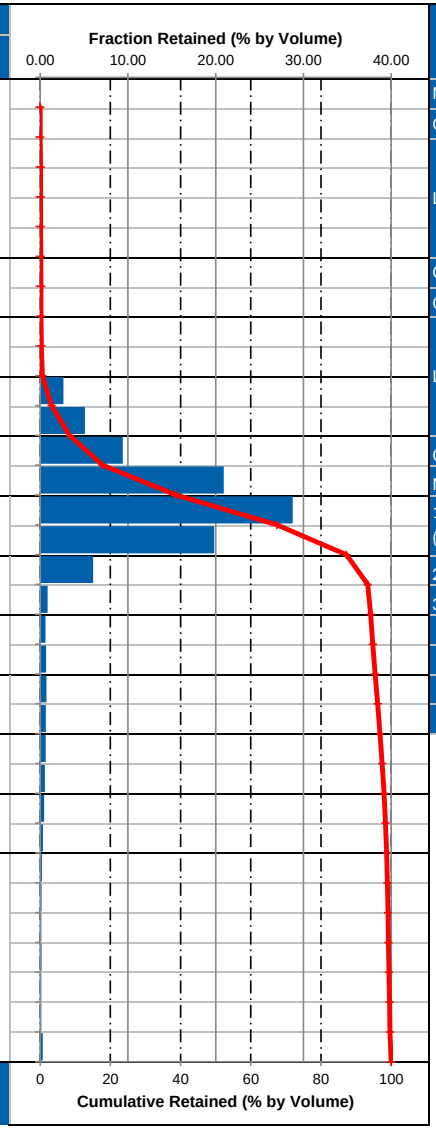
Method of Moments			
Geometric	Mean (µm)	2098.20	Wentworth:
Logarithmic	Mean (Phi)	-1.07	Granule
	Sorting	1.77	Poor
	Skewness	1.40	Very fine
	Kurtosis	7.10	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	2078.29	Wentworth:
Logarithmic	Mean (Phi)	-1.06	Granule
	Sorting	1.69	Poor
	Skewness	0.38	Very fine
	Kurtosis	1.07	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	-1.52	2874.38	Granule
1st Local Maxima (Mode)	-1.50	2828.43	Granule
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy gravel	Fines	0.90%
EUNIS Folk	Coarse sediments	Sand	35.60%
Distribution	Bimodal	Gravel	63.50%



APPENDIX D PARTICLE SIZE ANALYSIS

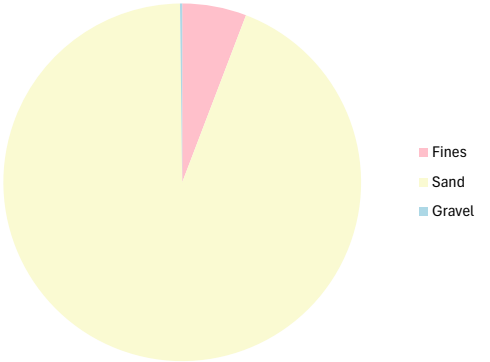
ENV093				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.09	0.09	Pebble
8000.00	-3.00	0.00	0.09	
5656.85	-2.50	0.00	0.09	
4000.00	-2.00	0.07	0.16	
2828.43	-1.50	0.06	0.22	Granule
2000.00	-1.00	0.03	0.25	
1414.21	-0.50	0.07	0.32	Very coarse sand
1000.00	0.00	0.28	0.59	
707.11	0.50	2.64	3.24	Coarse sand
500.00	1.00	5.09	8.33	
353.55	1.50	9.41	17.74	Medium sand
250.00	2.00	20.93	38.67	
176.78	2.50	28.77	67.44	Fine sand
125.00	3.00	19.82	87.27	
88.39	3.50	6.04	93.30	Very fine sand
62.50	4.00	0.84	94.15	
44.19	4.50	0.61	94.75	Coarse silt
31.25	5.00	0.68	95.43	
22.10	5.50	0.71	96.14	Medium silt
15.63	6.00	0.66	96.80	
11.05	6.50	0.63	97.42	Fine silt
7.81	7.00	0.54	97.96	
5.52	7.50	0.44	98.40	Very fine silt
3.91	8.00	0.33	98.72	
2.76	8.50	0.21	98.93	
1.95	9.00	0.15	99.08	
1.38	9.50	0.15	99.23	
0.98	10.00	0.15	99.38	Clay
0.69	10.50	0.15	99.53	
0.49	11.00	0.13	99.66	
<0.49	>11	0.30	100.00	



Method of Moments			
Geometric	Mean (µm)	198.30	Wentworth:
Logarithmic	Mean (Phi)	2.33	Fine sand
	Sorting	1.40	Poor
	Skewness	2.76	Very fine
	Kurtosis	16.63	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	221.59	Wentworth:
Logarithmic	Mean (Phi)	2.17	Fine sand
	Sorting	0.99	Moderate
	Skewness	0.10	Symmetrical
	Kurtosis	1.62	Very leptokurtic

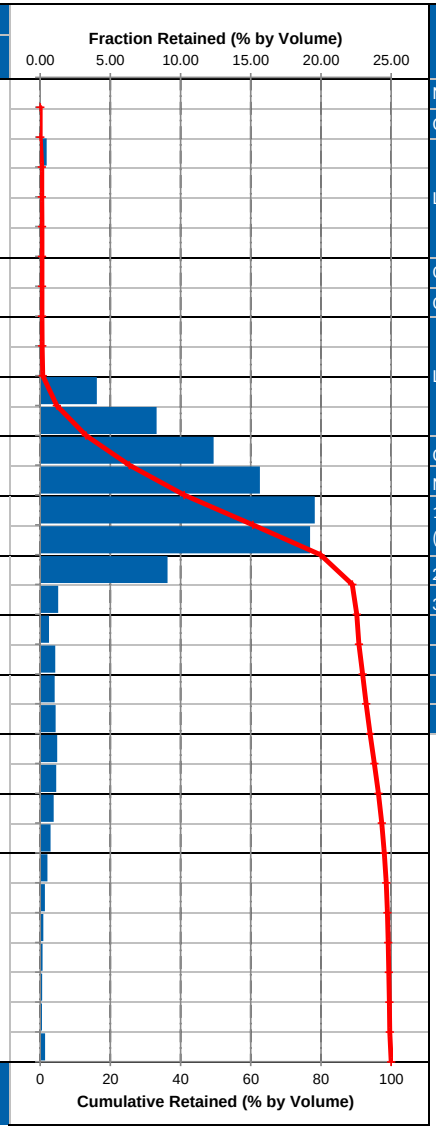
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	218.10	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.80%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.20%



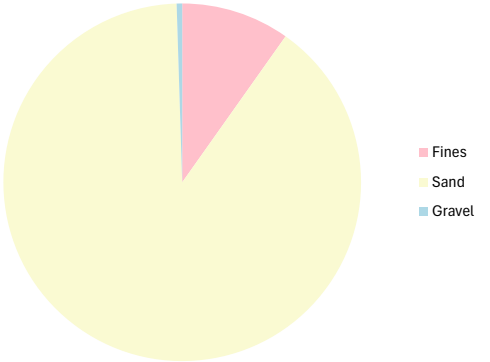
APPENDIX D PARTICLE SIZE ANALYSIS

ENV094				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.46	0.46	Pebble
8000.00	-3.00	0.00	0.46	
5656.85	-2.50	0.06	0.51	
4000.00	-2.00	0.00	0.51	
2828.43	-1.50	0.01	0.52	Granule
2000.00	-1.00	0.01	0.53	
1414.21	-0.50	0.02	0.56	Very coarse sand
1000.00	0.00	0.15	0.71	
707.11	0.50	4.04	4.75	Coarse sand
500.00	1.00	8.29	13.03	
353.55	1.50	12.35	25.38	Medium sand
250.00	2.00	15.65	41.04	
176.78	2.50	19.56	60.60	Fine sand
125.00	3.00	19.22	79.82	
88.39	3.50	9.07	88.89	Very fine sand
62.50	4.00	1.28	90.17	
44.19	4.50	0.63	90.80	Coarse silt
31.25	5.00	1.07	91.87	
22.10	5.50	1.03	92.89	Medium silt
15.63	6.00	1.11	94.00	
11.05	6.50	1.21	95.21	Fine silt
7.81	7.00	1.15	96.36	
5.52	7.50	0.96	97.32	Very fine silt
3.91	8.00	0.74	98.06	
2.76	8.50	0.51	98.57	
1.95	9.00	0.34	98.91	
1.38	9.50	0.23	99.14	
0.98	10.00	0.17	99.31	Clay
0.69	10.50	0.15	99.46	
0.49	11.00	0.13	99.59	
<0.49	>11	0.35	100.00	



Method of Moments			
Geometric	Mean (µm)	182.47	Wentworth:
Logarithmic	Mean (Phi)	2.45	Fine sand
	Sorting	1.76	Poor
	Skewness	1.83	Very fine
	Kurtosis	9.39	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	218.67	Wentworth:
Logarithmic	Mean (Phi)	2.19	Fine sand
	Sorting	1.42	Poor
	Skewness	0.18	Fine
	Kurtosis	1.74	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.23	213.30	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

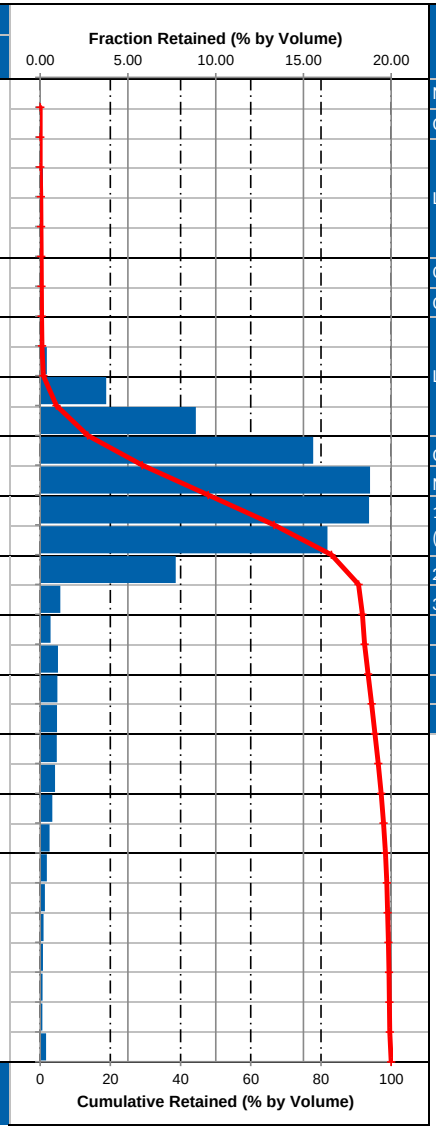
Classification		Composition	
Modified Folk	Sand	Fines	9.80%
EUNIS Folk	Sand and muddy sand	Sand	89.60%
Distribution	Bimodal	Gravel	0.50%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV095

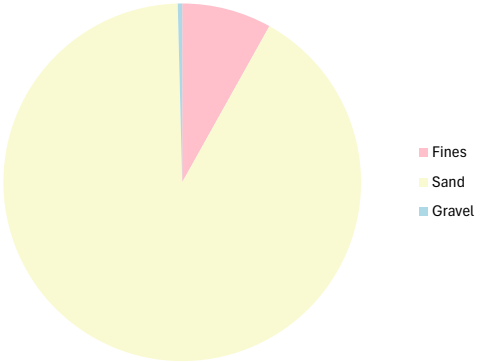
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.16	0.16	
5656.85	-2.50	0.06	0.22	
4000.00	-2.00	0.07	0.29	
2828.43	-1.50	0.04	0.33	Granule
2000.00	-1.00	0.06	0.38	
1414.21	-0.50	0.11	0.49	Very coarse sand
1000.00	0.00	0.38	0.87	
707.11	0.50	3.77	4.64	Coarse sand
500.00	1.00	8.87	13.50	
353.55	1.50	15.56	29.06	Medium sand
250.00	2.00	18.79	47.85	
176.78	2.50	18.74	66.59	Fine sand
125.00	3.00	16.37	82.96	
88.39	3.50	7.72	90.68	Very fine sand
62.50	4.00	1.15	91.82	
44.19	4.50	0.59	92.41	Coarse silt
31.25	5.00	1.01	93.42	
22.10	5.50	0.98	94.40	Medium silt
15.63	6.00	0.96	95.36	
11.05	6.50	0.94	96.30	Fine silt
7.81	7.00	0.84	97.14	
5.52	7.50	0.69	97.84	Very fine silt
3.91	8.00	0.53	98.37	
2.76	8.50	0.38	98.75	
1.95	9.00	0.26	99.01	
1.38	9.50	0.19	99.20	
0.98	10.00	0.16	99.36	Clay
0.69	10.50	0.14	99.49	
0.49	11.00	0.12	99.62	
<0.49	>11	0.33	100.00	



Method of Moments			
Geometric	Mean (µm)	203.22	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.64	Poor
	Skewness	2.22	Very fine
	Kurtosis	11.14	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	238.43	Wentworth:
Logarithmic	Mean (Phi)	2.07	Fine sand
	Sorting	1.30	Poor
	Skewness	0.22	Fine
	Kurtosis	1.56	Very leptokurtic

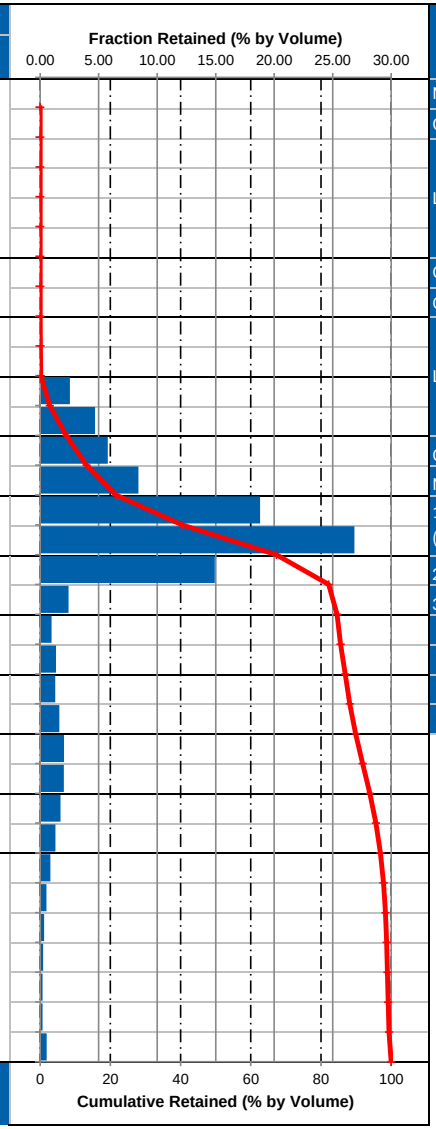
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.06	240.27	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.10%
EUNIS Folk	Sand and muddy sand	Sand	91.40%
Distribution	Unimodal	Gravel	0.40%



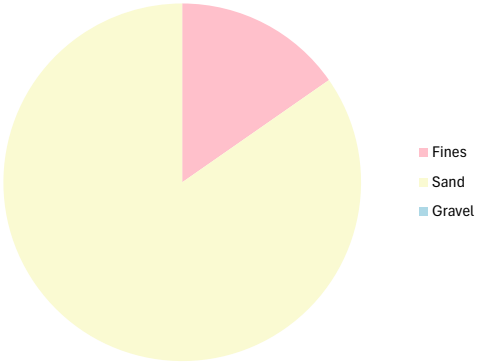
APPENDIX D PARTICLE SIZE ANALYSIS

ENV096				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.04	0.06	Very coarse sand
1000.00	0.00	0.13	0.18	
707.11	0.50	2.53	2.72	Coarse sand
500.00	1.00	4.68	7.40	
353.55	1.50	5.79	13.19	Medium sand
250.00	2.00	8.40	21.59	
176.78	2.50	18.80	40.38	Fine sand
125.00	3.00	26.86	67.25	
88.39	3.50	14.93	82.17	Very fine sand
62.50	4.00	2.43	84.60	
44.19	4.50	0.98	85.58	Coarse silt
31.25	5.00	1.35	86.93	
22.10	5.50	1.29	88.21	Medium silt
15.63	6.00	1.63	89.85	
11.05	6.50	2.03	91.88	Fine silt
7.81	7.00	2.03	93.91	
5.52	7.50	1.73	95.64	Very fine silt
3.91	8.00	1.31	96.95	
2.76	8.50	0.87	97.82	Clay
1.95	9.00	0.54	98.36	
1.38	9.50	0.34	98.70	
0.98	10.00	0.24	98.94	
0.69	10.50	0.21	99.15	
0.49	11.00	0.19	99.35	
<0.49	>11	0.56	100.00	



Method of Moments			
Geometric	Mean (µm)	120.90	Wentworth:
Logarithmic	Mean (Phi)	3.04	Very fine sand
	Sorting	1.89	Poor
	Skewness	1.84	Very fine
	Kurtosis	7.22	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	149.60	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.55	Poor
	Skewness	0.25	Fine
	Kurtosis	2.30	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.68	156.15	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

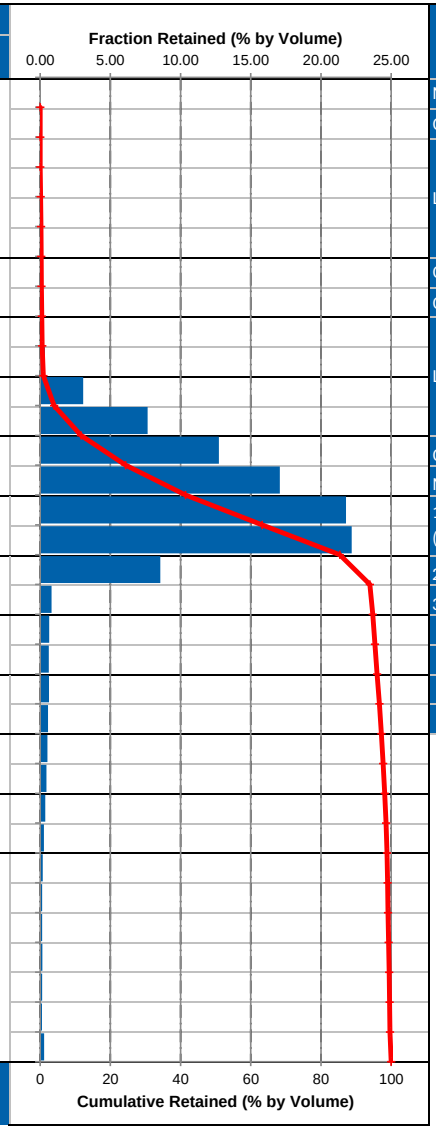
Classification		Composition	
Modified Folk	Muddy sand	Fines	15.30%
EUNIS Folk	Sand and muddy sand	Sand	84.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

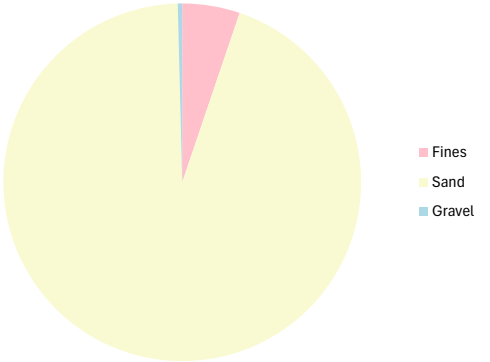
ENV097

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.13	0.13	
5656.85	-2.50	0.08	0.20	
4000.00	-2.00	0.08	0.28	
2828.43	-1.50	0.06	0.34	Granule
2000.00	-1.00	0.08	0.43	
1414.21	-0.50	0.14	0.57	Very coarse sand
1000.00	0.00	0.33	0.90	
707.11	0.50	3.07	3.96	Coarse sand
500.00	1.00	7.66	11.62	
353.55	1.50	12.73	24.35	Medium sand
250.00	2.00	17.06	41.41	
176.78	2.50	21.78	63.19	Fine sand
125.00	3.00	22.19	85.38	
88.39	3.50	8.56	93.94	Very fine sand
62.50	4.00	0.81	94.74	
44.19	4.50	0.64	95.38	Coarse silt
31.25	5.00	0.62	96.00	
22.10	5.50	0.63	96.64	Medium silt
15.63	6.00	0.56	97.20	
11.05	6.50	0.52	97.72	Fine silt
7.81	7.00	0.44	98.16	
5.52	7.50	0.36	98.52	Very fine silt
3.91	8.00	0.27	98.79	
2.76	8.50	0.18	98.97	
1.95	9.00	0.14	99.11	
1.38	9.50	0.14	99.26	
0.98	10.00	0.15	99.41	Clay
0.69	10.50	0.14	99.55	
0.49	11.00	0.12	99.68	
<0.49	>11	0.28	100.00	



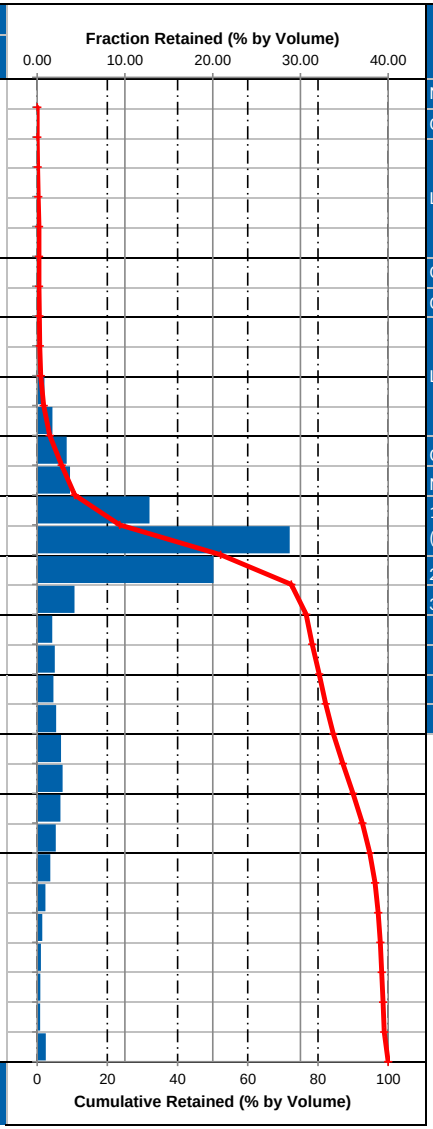
Method of Moments			
Geometric	Mean (µm)	207.05	Wentworth:
Logarithmic	Mean (Phi)	2.27	Fine sand
	Sorting	1.42	Poor
	Skewness	2.44	Very fine
	Kurtosis	15.48	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	231.20	Wentworth:
Logarithmic	Mean (Phi)	2.11	Fine sand
	Sorting	1.00	Moderate
	Skewness	-0.02	Symmetrical
	Kurtosis	1.19	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	218.05	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.20%
EUNIS Folk	Sand and muddy sand	Sand	94.30%
Distribution	Unimodal	Gravel	0.40%



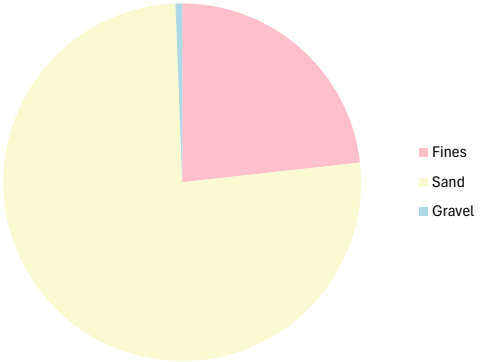
APPENDIX D PARTICLE SIZE ANALYSIS

ENV098				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.09	0.09	Pebble
8000.00	-3.00	0.22	0.31	
5656.85	-2.50	0.18	0.49	
4000.00	-2.00	0.02	0.51	
2828.43	-1.50	0.02	0.53	Granule
2000.00	-1.00	0.08	0.61	
1414.21	-0.50	0.13	0.74	Very coarse sand
1000.00	0.00	0.28	1.02	
707.11	0.50	0.83	1.85	Coarse sand
500.00	1.00	1.74	3.59	
353.55	1.50	3.35	6.94	Medium sand
250.00	2.00	3.74	10.68	
176.78	2.50	12.80	23.49	Fine sand
125.00	3.00	28.77	52.26	
88.39	3.50	20.10	72.36	Very fine sand
62.50	4.00	4.25	76.61	
44.19	4.50	1.72	78.34	Coarse silt
31.25	5.00	2.01	80.34	
22.10	5.50	1.86	82.20	Medium silt
15.63	6.00	2.15	84.35	
11.05	6.50	2.73	87.08	Fine silt
7.81	7.00	2.90	89.98	
5.52	7.50	2.64	92.62	Very fine silt
3.91	8.00	2.12	94.74	
2.76	8.50	1.49	96.23	
1.95	9.00	0.94	97.17	
1.38	9.50	0.59	97.75	
0.98	10.00	0.42	98.17	Clay
0.69	10.50	0.35	98.52	
0.49	11.00	0.33	98.85	
<0.49	>11	0.98	100.00	



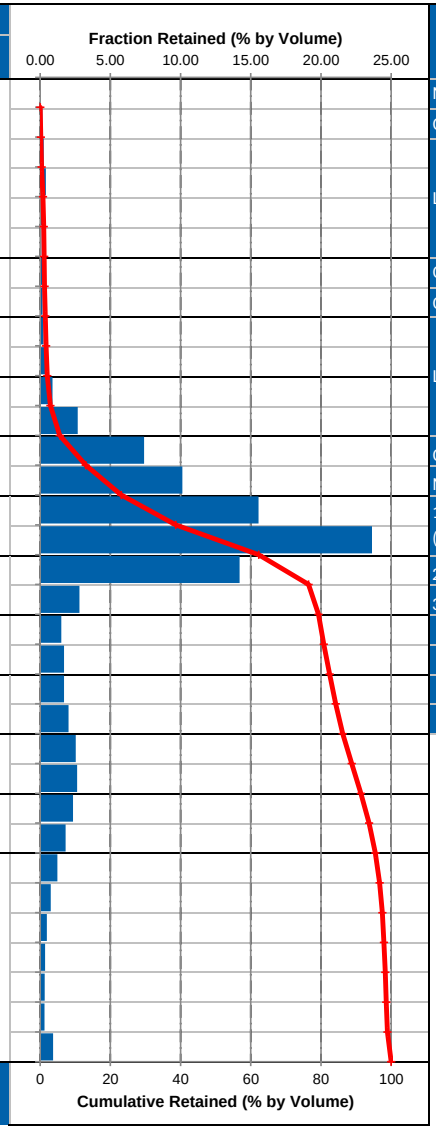
Method of Moments			
Geometric	Mean (µm)	81.80	Wentworth:
Logarithmic	Mean (Phi)	3.59	Very fine sand
	Sorting	2.15	Very poor
	Skewness	1.35	Very fine
	Kurtosis	5.64	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	77.19	Wentworth:
Logarithmic	Mean (Phi)	3.70	Very fine sand
	Sorting	1.97	Poor
	Skewness	0.54	Very fine
	Kurtosis	2.19	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.96	128.45	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	23.20%
EUNIS Folk	Mud and sandy mud	Sand	76.00%
Distribution	Bimodal	Gravel	0.60%



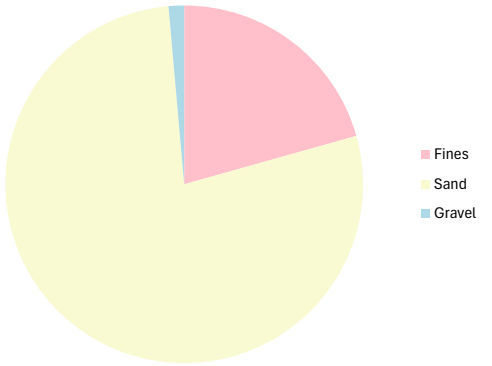
APPENDIX D PARTICLE SIZE ANALYSIS

ENV099				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.16	0.16	
11313.71	-3.50	0.25	0.40	Pebble
8000.00	-3.00	0.41	0.81	
5656.85	-2.50	0.21	1.02	
4000.00	-2.00	0.09	1.11	
2828.43	-1.50	0.15	1.25	Granule
2000.00	-1.00	0.18	1.43	
1414.21	-0.50	0.23	1.66	Very coarse sand
1000.00	0.00	0.34	2.01	
707.11	0.50	0.87	2.88	Coarse sand
500.00	1.00	2.67	5.55	
353.55	1.50	7.41	12.96	Medium sand
250.00	2.00	10.12	23.08	
176.78	2.50	15.56	38.63	Fine sand
125.00	3.00	23.63	62.27	
88.39	3.50	14.20	76.47	Very fine sand
62.50	4.00	2.80	79.28	
44.19	4.50	1.50	80.78	Coarse silt
31.25	5.00	1.69	82.47	
22.10	5.50	1.70	84.17	Medium silt
15.63	6.00	2.02	86.19	
11.05	6.50	2.53	88.72	Fine silt
7.81	7.00	2.62	91.34	
5.52	7.50	2.33	93.68	Very fine silt
3.91	8.00	1.82	95.49	
2.76	8.50	1.23	96.72	
1.95	9.00	0.75	97.47	
1.38	9.50	0.47	97.94	
0.98	10.00	0.36	98.30	Clay
0.69	10.50	0.32	98.61	
0.49	11.00	0.30	98.92	
<0.49	>11	0.92	100.00	



Method of Moments			
Geometric	Mean (µm)	105.48	Wentworth:
Logarithmic	Mean (Phi)	3.23	Very fine sand
	Sorting	2.24	Very poor
	Skewness	1.18	Fine
	Kurtosis	5.78	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	102.95	Wentworth:
Logarithmic	Mean (Phi)	3.28	Very fine sand
	Sorting	2.01	Very poor
	Skewness	0.45	Very fine
	Kurtosis	2.06	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.74	149.64	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

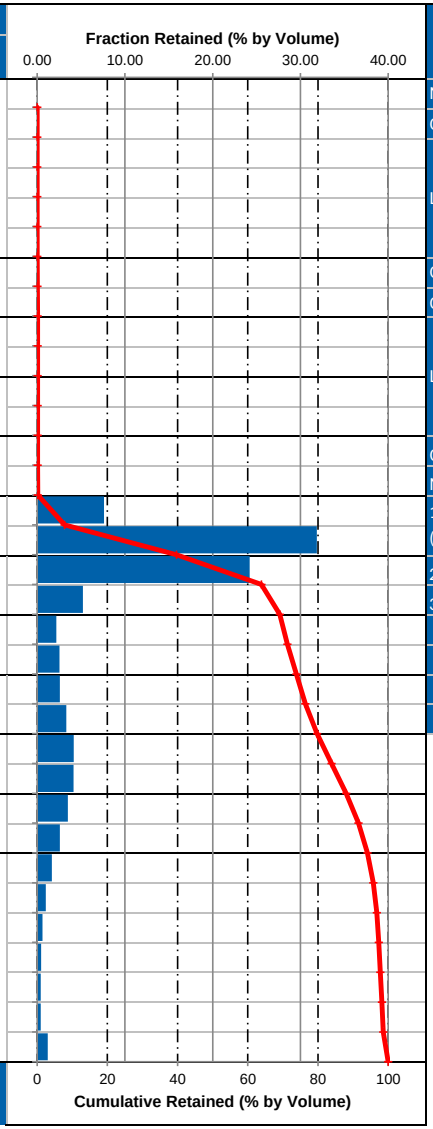
Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	20.60%
EUNIS Folk	Mud and sandy mud	Sand	77.80%
Distribution	Bimodal	Gravel	1.40%



APPENDIX D PARTICLE SIZE ANALYSIS

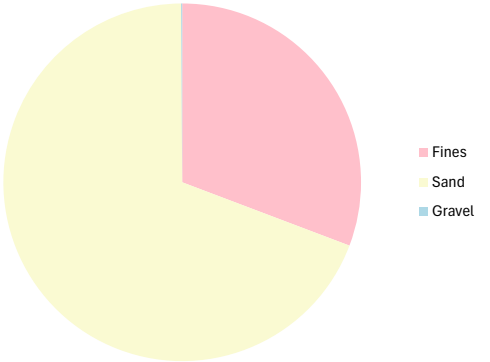
ENV100

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.03	0.03	
2828.43	-1.50	0.02	0.05	Granule
2000.00	-1.00	0.05	0.10	
1414.21	-0.50	0.02	0.12	Very coarse sand
1000.00	0.00	0.02	0.14	
707.11	0.50	0.00	0.14	Coarse sand
500.00	1.00	0.00	0.14	
353.55	1.50	0.00	0.14	Medium sand
250.00	2.00	0.05	0.20	
176.78	2.50	7.61	7.81	Fine sand
125.00	3.00	31.87	39.68	
88.39	3.50	24.21	63.90	Very fine sand
62.50	4.00	5.21	69.10	
44.19	4.50	2.18	71.28	Coarse silt
31.25	5.00	2.55	73.83	
22.10	5.50	2.58	76.40	Medium silt
15.63	6.00	3.31	79.72	
11.05	6.50	4.16	83.88	Fine silt
7.81	7.00	4.14	88.01	
5.52	7.50	3.50	91.51	Very fine silt
3.91	8.00	2.59	94.11	
2.76	8.50	1.67	95.77	Clay
1.95	9.00	0.97	96.75	
1.38	9.50	0.59	97.34	
0.98	10.00	0.44	97.79	
0.69	10.50	0.41	98.19	
0.49	11.00	0.39	98.59	
<0.49	>11	1.20	100.00	



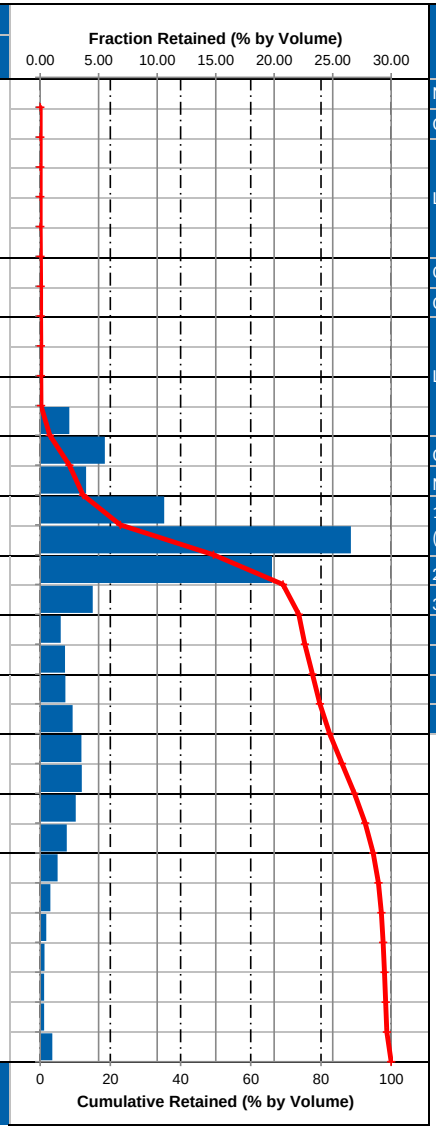
Method of Moments			
Geometric	Mean (µm)	57.06	Wentworth:
Logarithmic	Mean (Phi)	4.11	Coarse silt
	Sorting	2.06	Very poor
	Skewness	1.56	Very fine
	Kurtosis	5.10	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	57.56	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	1.87	Poor
	Skewness	0.70	Very fine
	Kurtosis	0.99	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.21	107.84	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	30.70%
EUNIS Folk	Mud and sandy mud	Sand	69.00%
Distribution	Bimodal	Gravel	0.10%



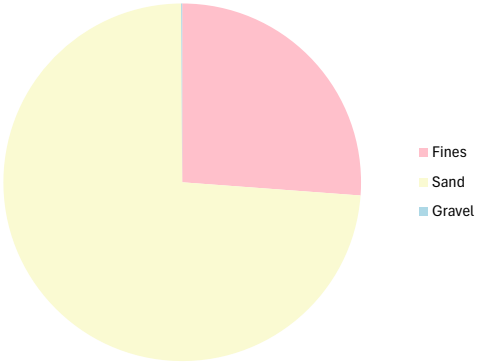
APPENDIX D PARTICLE SIZE ANALYSIS

ENV101				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.02	0.10	Granule
2000.00	-1.00	0.03	0.13	
1414.21	-0.50	0.02	0.15	Very coarse sand
1000.00	0.00	0.02	0.17	
707.11	0.50	0.08	0.25	Coarse sand
500.00	1.00	2.50	2.74	
353.55	1.50	5.53	8.27	Medium sand
250.00	2.00	3.92	12.19	
176.78	2.50	10.61	22.80	Fine sand
125.00	3.00	26.56	49.36	
88.39	3.50	19.81	69.17	Very fine sand
62.50	4.00	4.49	73.66	
44.19	4.50	1.75	75.41	Coarse silt
31.25	5.00	2.13	77.54	
22.10	5.50	2.15	79.69	Medium silt
15.63	6.00	2.77	82.46	
11.05	6.50	3.52	85.99	Fine silt
7.81	7.00	3.55	89.54	
5.52	7.50	3.04	92.58	Very fine silt
3.91	8.00	2.28	94.86	
2.76	8.50	1.48	96.34	
1.95	9.00	0.87	97.21	
1.38	9.50	0.52	97.73	
0.98	10.00	0.37	98.10	Clay
0.69	10.50	0.34	98.44	
0.49	11.00	0.33	98.77	
<0.49	>11	1.04	100.00	



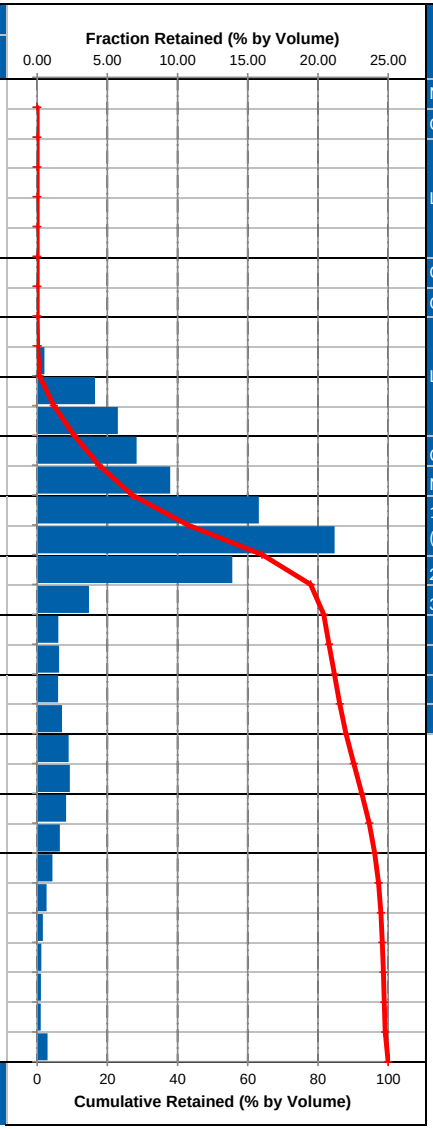
Method of Moments			
Geometric	Mean (µm)	75.06	Wentworth:
Logarithmic	Mean (Phi)	3.72	Very fine sand
	Sorting	2.15	Very poor
	Skewness	1.43	Very fine
	Kurtosis	5.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	71.56	Wentworth:
Logarithmic	Mean (Phi)	3.80	Very fine sand
	Sorting	2.05	Very poor
	Skewness	0.53	Very fine
	Kurtosis	1.52	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.02	123.60	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	26.10%
EUNIS Folk	Mud and sandy mud	Sand	73.50%
Distribution	Multimodal	Gravel	0.10%



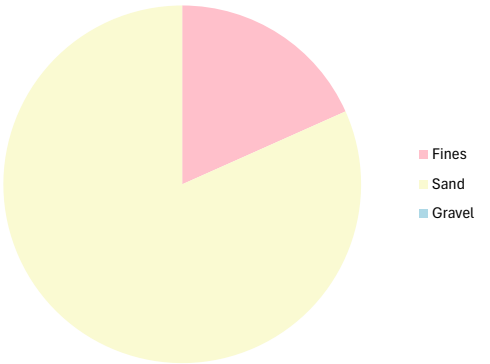
APPENDIX D PARTICLE SIZE ANALYSIS

ENV102				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.00	0.03	
1414.21	-0.50	0.08	0.11	Very coarse sand
1000.00	0.00	0.52	0.63	
707.11	0.50	4.12	4.75	Coarse sand
500.00	1.00	5.75	10.50	
353.55	1.50	7.08	17.58	Medium sand
250.00	2.00	9.47	27.05	
176.78	2.50	15.79	42.84	Fine sand
125.00	3.00	21.18	64.03	
88.39	3.50	13.89	77.92	Very fine sand
62.50	4.00	3.69	81.61	
44.19	4.50	1.51	83.12	Coarse silt
31.25	5.00	1.56	84.68	
22.10	5.50	1.50	86.17	Medium silt
15.63	6.00	1.77	87.95	
11.05	6.50	2.23	90.18	Fine silt
7.81	7.00	2.32	92.50	
5.52	7.50	2.06	94.56	Very fine silt
3.91	8.00	1.61	96.17	
2.76	8.50	1.09	97.26	Clay
1.95	9.00	0.66	97.93	
1.38	9.50	0.41	98.33	
0.98	10.00	0.30	98.63	
0.69	10.50	0.26	98.89	
0.49	11.00	0.25	99.14	
<0.49	>11	0.74	100.00	



Method of Moments			
Geometric	Mean (µm)	117.44	Wentworth:
Logarithmic	Mean (Phi)	3.08	Very fine sand
	Sorting	2.10	Very poor
	Skewness	1.57	Very fine
	Kurtosis	5.90	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	129.70	Wentworth:
Logarithmic	Mean (Phi)	2.95	Fine sand
	Sorting	1.93	Poor
	Skewness	0.32	Very fine
	Kurtosis	1.94	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.67	157.25	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

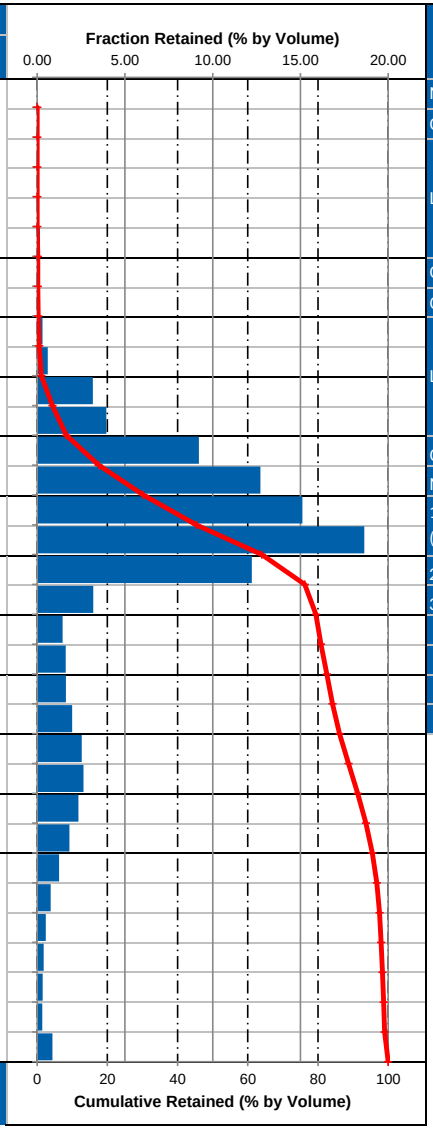
Classification		Composition	
Modified Folk	Muddy sand	Fines	18.30%
EUNIS Folk	Sand and muddy sand	Sand	81.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

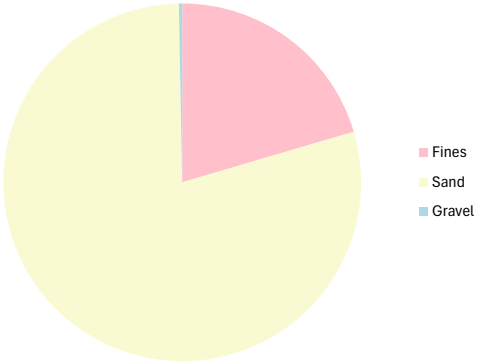
ENV103

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.16	0.16	
2828.43	-1.50	0.03	0.18	Granule
2000.00	-1.00	0.09	0.28	
1414.21	-0.50	0.30	0.58	Very coarse sand
1000.00	0.00	0.61	1.18	
707.11	0.50	3.18	4.36	Coarse sand
500.00	1.00	3.94	8.30	
353.55	1.50	9.22	17.52	Medium sand
250.00	2.00	12.72	30.25	
176.78	2.50	15.11	45.36	Fine sand
125.00	3.00	18.64	64.00	
88.39	3.50	12.23	76.23	Very fine sand
62.50	4.00	3.19	79.42	
44.19	4.50	1.44	80.86	Coarse silt
31.25	5.00	1.63	82.49	
22.10	5.50	1.64	84.13	Medium silt
15.63	6.00	1.99	86.12	
11.05	6.50	2.54	88.67	Fine silt
7.81	7.00	2.64	91.31	
5.52	7.50	2.35	93.66	Very fine silt
3.91	8.00	1.83	95.49	
2.76	8.50	1.25	96.74	Clay
1.95	9.00	0.77	97.51	
1.38	9.50	0.49	98.00	
0.98	10.00	0.36	98.37	
0.69	10.50	0.32	98.69	
0.49	11.00	0.30	98.98	
<0.49	>11	0.87	100.00	



Method of Moments			
Geometric	Mean (µm)	111.92	Wentworth:
Logarithmic	Mean (Phi)	3.14	Very fine sand
	Sorting	2.23	Very poor
	Skewness	1.48	Very fine
	Kurtosis	5.33	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	111.31	Wentworth:
Logarithmic	Mean (Phi)	3.17	Very fine sand
	Sorting	2.11	Very poor
	Skewness	0.42	Very fine
	Kurtosis	1.80	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.62	162.15	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

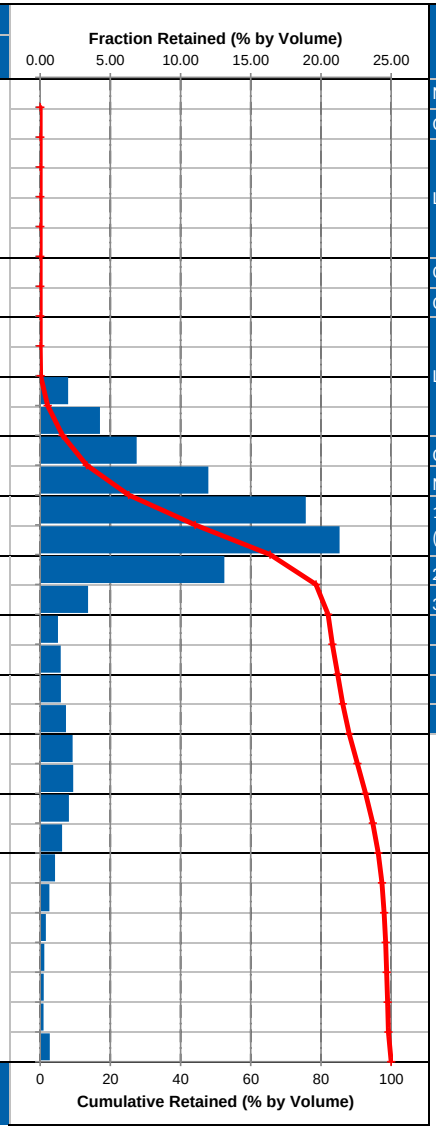
Classification		Composition	
Modified Folk	Muddy sand	Fines	20.40%
EUNIS Folk	Mud and sandy mud	Sand	79.10%
Distribution	Bimodal	Gravel	0.30%



APPENDIX D PARTICLE SIZE ANALYSIS

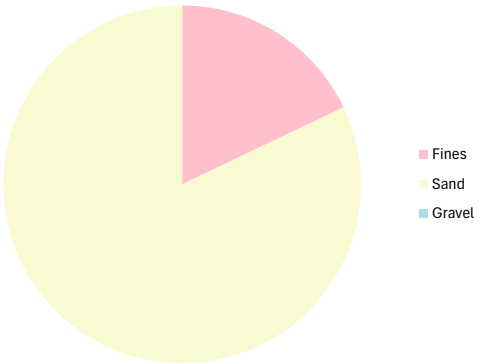
ENV104

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.11	0.13	
707.11	0.50	1.98	2.11	Coarse sand
500.00	1.00	4.25	6.37	
353.55	1.50	6.88	13.24	Medium sand
250.00	2.00	11.98	25.23	
176.78	2.50	18.91	44.14	Fine sand
125.00	3.00	21.33	65.46	
88.39	3.50	13.12	78.58	Very fine sand
62.50	4.00	3.41	81.99	
44.19	4.50	1.26	83.26	Coarse silt
31.25	5.00	1.46	84.72	
22.10	5.50	1.48	86.20	Medium silt
15.63	6.00	1.84	88.03	
11.05	6.50	2.31	90.35	Fine silt
7.81	7.00	2.35	92.70	
5.52	7.50	2.04	94.74	Very fine silt
3.91	8.00	1.56	96.30	
2.76	8.50	1.06	97.36	Clay
1.95	9.00	0.65	98.01	
1.38	9.50	0.41	98.41	
0.98	10.00	0.30	98.71	
0.69	10.50	0.25	98.96	
0.49	11.00	0.24	99.20	
<0.49	>11	0.68	100.00	



Method of Moments			
Geometric	Mean (µm)	114.09	Wentworth:
Logarithmic	Mean (Phi)	3.12	Very fine sand
	Sorting	2.03	Very poor
	Skewness	1.74	Very fine
	Kurtosis	6.31	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	124.80	Wentworth:
Logarithmic	Mean (Phi)	3.00	Very fine sand
	Sorting	1.81	Poor
	Skewness	0.41	Very fine
	Kurtosis	2.01	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.64	160.71	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

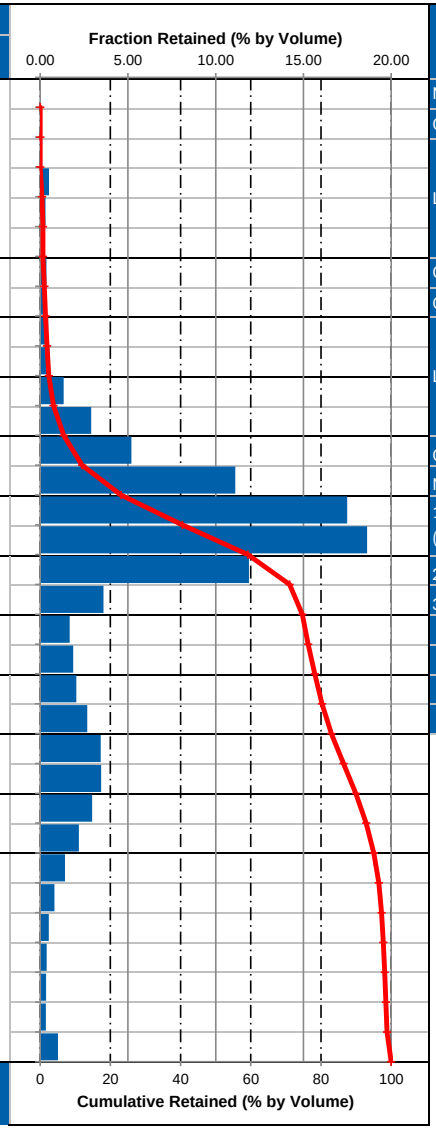
Classification		Composition	
Modified Folk	Muddy sand	Fines	17.90%
EUNIS Folk	Sand and muddy sand	Sand	82.00%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

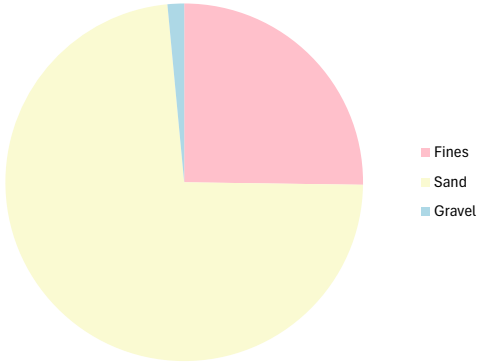
ENV105

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.50	0.50	
5656.85	-2.50	0.30	0.80	
4000.00	-2.00	0.00	0.80	
2828.43	-1.50	0.36	1.16	Granule
2000.00	-1.00	0.32	1.49	
1414.21	-0.50	0.45	1.94	Very coarse sand
1000.00	0.00	0.53	2.47	
707.11	0.50	1.34	3.81	Coarse sand
500.00	1.00	2.90	6.71	
353.55	1.50	5.20	11.91	Medium sand
250.00	2.00	11.12	23.03	
176.78	2.50	17.50	40.52	Fine sand
125.00	3.00	18.63	59.16	
88.39	3.50	11.90	71.06	Very fine sand
62.50	4.00	3.60	74.66	
44.19	4.50	1.68	76.34	Coarse silt
31.25	5.00	1.88	78.22	
22.10	5.50	2.06	80.28	Medium silt
15.63	6.00	2.68	82.97	
11.05	6.50	3.45	86.42	Fine silt
7.81	7.00	3.47	89.89	
5.52	7.50	2.96	92.85	Very fine silt
3.91	8.00	2.20	95.05	
2.76	8.50	1.41	96.46	
1.95	9.00	0.82	97.28	
1.38	9.50	0.50	97.78	
0.98	10.00	0.37	98.15	Clay
0.69	10.50	0.34	98.48	
0.49	11.00	0.33	98.81	
<0.49	>11	1.01	100.00	



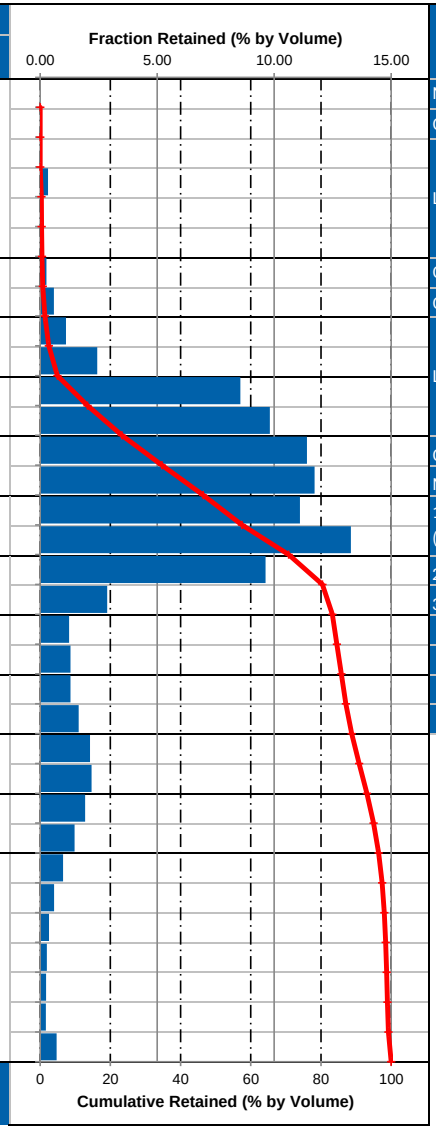
Method of Moments			
Geometric	Mean (µm)	94.12	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.36	Very poor
	Skewness	1.05	Fine
	Kurtosis	4.65	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	86.61	Wentworth:
Logarithmic	Mean (Phi)	3.53	Very fine sand
	Sorting	2.22	Very poor
	Skewness	0.48	Very fine
	Kurtosis	1.46	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.75	148.21	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	25.20%
EUNIS Folk	Mud and sandy mud	Sand	73.20%
Distribution	Bimodal	Gravel	1.50%



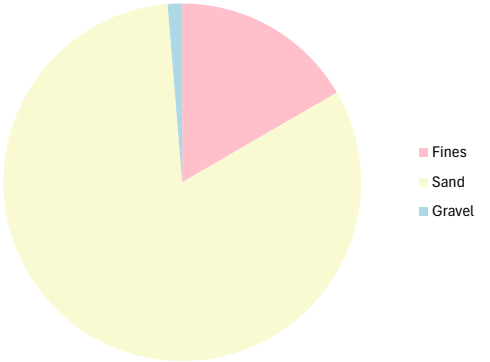
APPENDIX D PARTICLE SIZE ANALYSIS

ENV106				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.33	0.33	
5656.85	-2.50	0.08	0.41	
4000.00	-2.00	0.08	0.49	
2828.43	-1.50	0.27	0.75	Granule
2000.00	-1.00	0.59	1.34	
1414.21	-0.50	1.10	2.44	Very coarse sand
1000.00	0.00	2.44	4.89	
707.11	0.50	8.56	13.44	Coarse sand
500.00	1.00	9.82	23.26	
353.55	1.50	11.40	34.66	Medium sand
250.00	2.00	11.73	46.39	
176.78	2.50	11.10	57.49	Fine sand
125.00	3.00	13.28	70.77	
88.39	3.50	9.63	80.40	Very fine sand
62.50	4.00	2.86	83.27	
44.19	4.50	1.24	84.50	Coarse silt
31.25	5.00	1.29	85.79	
22.10	5.50	1.30	87.09	Medium silt
15.63	6.00	1.65	88.74	
11.05	6.50	2.13	90.87	Fine silt
7.81	7.00	2.20	93.06	
5.52	7.50	1.92	94.98	Very fine silt
3.91	8.00	1.47	96.45	
2.76	8.50	0.98	97.43	
1.95	9.00	0.60	98.02	
1.38	9.50	0.38	98.40	
0.98	10.00	0.29	98.69	Clay
0.69	10.50	0.25	98.94	
0.49	11.00	0.24	99.18	
<0.49	>11	0.70	100.00	



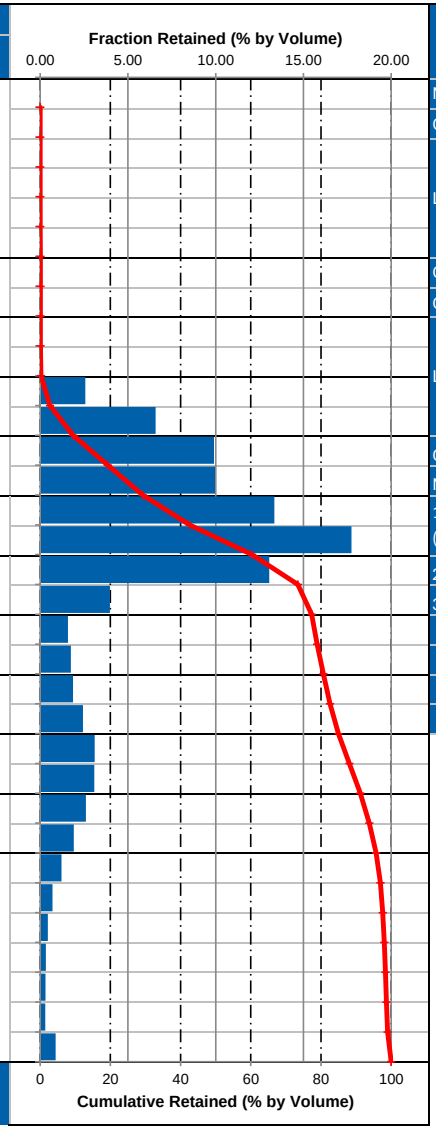
Method of Moments			
Geometric	Mean (µm)	166.03	Wentworth:
Logarithmic	Mean (Phi)	2.58	Fine sand
	Sorting	2.32	Very poor
	Skewness	1.34	Very fine
	Kurtosis	5.30	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	194.35	Wentworth:
Logarithmic	Mean (Phi)	2.36	Fine sand
	Sorting	2.05	Very poor
	Skewness	0.29	Fine
	Kurtosis	1.43	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.16	223.35	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	2.00	250.00	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	16.60%
EUNIS Folk	Sand and muddy sand	Sand	81.90%
Distribution	Multimodal	Gravel	1.30%



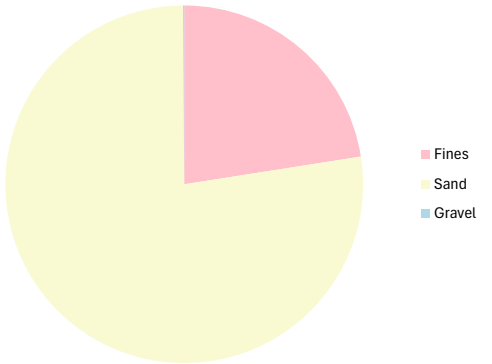
APPENDIX D PARTICLE SIZE ANALYSIS

ENV107				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.03	0.03	
4000.00	-2.00	0.02	0.05	
2828.43	-1.50	0.00	0.05	Granule
2000.00	-1.00	0.02	0.06	
1414.21	-0.50	0.01	0.08	Very coarse sand
1000.00	0.00	0.14	0.22	
707.11	0.50	2.57	2.79	Coarse sand
500.00	1.00	6.57	9.36	
353.55	1.50	9.90	19.26	Medium sand
250.00	2.00	9.96	29.23	
176.78	2.50	13.34	42.57	Fine sand
125.00	3.00	17.74	60.31	
88.39	3.50	13.05	73.36	Very fine sand
62.50	4.00	3.98	77.34	
44.19	4.50	1.58	78.93	Coarse silt
31.25	5.00	1.75	80.68	
22.10	5.50	1.87	82.55	Medium silt
15.63	6.00	2.44	84.99	
11.05	6.50	3.10	88.09	Fine silt
7.81	7.00	3.09	91.17	
5.52	7.50	2.60	93.77	Very fine silt
3.91	8.00	1.91	95.69	
2.76	8.50	1.22	96.90	Clay
1.95	9.00	0.70	97.61	
1.38	9.50	0.43	98.04	
0.98	10.00	0.33	98.37	
0.69	10.50	0.30	98.67	
0.49	11.00	0.29	98.96	
<0.49	>11	0.88	100.00	



Method of Moments			
Geometric	Mean (µm)	104.53	Wentworth:
Logarithmic	Mean (Phi)	3.24	Very fine sand
	Sorting	2.24	Very poor
	Skewness	1.39	Very fine
	Kurtosis	4.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	102.90	Wentworth:
Logarithmic	Mean (Phi)	3.28	Very fine sand
	Sorting	2.20	Very poor
	Skewness	0.41	Very fine
	Kurtosis	1.53	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.71	152.90	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

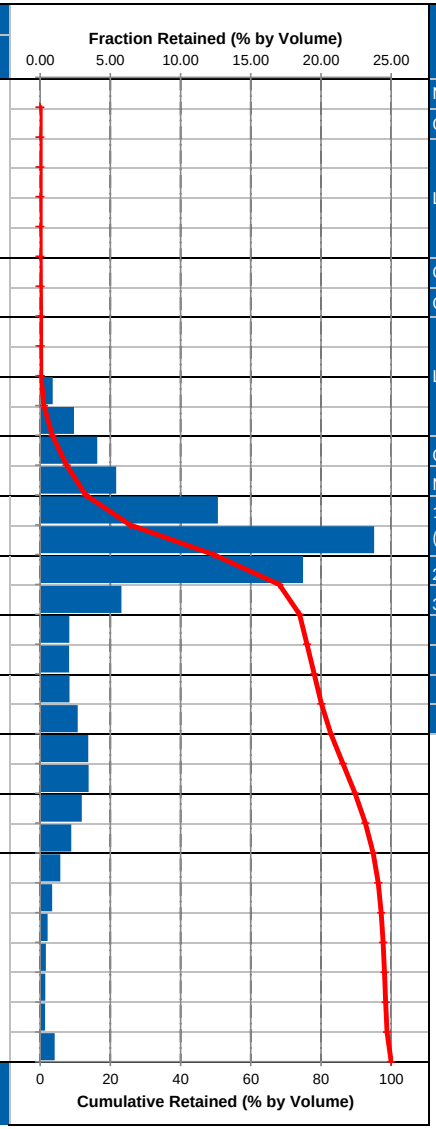
Classification		Composition	
Modified Folk	Muddy sand	Fines	22.50%
EUNIS Folk	Mud and sandy mud	Sand	77.30%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

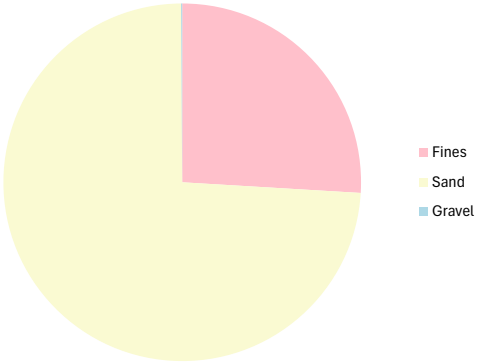
ENV108

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.06	0.07	Granule
2000.00	-1.00	0.02	0.09	
1414.21	-0.50	0.01	0.10	Very coarse sand
1000.00	0.00	0.08	0.19	
707.11	0.50	0.89	1.08	Coarse sand
500.00	1.00	2.40	3.48	
353.55	1.50	4.06	7.54	Medium sand
250.00	2.00	5.41	12.95	
176.78	2.50	12.67	25.62	Fine sand
125.00	3.00	23.78	49.40	
88.39	3.50	18.72	68.12	Very fine sand
62.50	4.00	5.79	73.90	
44.19	4.50	2.08	75.98	Coarse silt
31.25	5.00	2.06	78.04	
22.10	5.50	2.09	80.13	Medium silt
15.63	6.00	2.68	82.81	
11.05	6.50	3.42	86.23	Fine silt
7.81	7.00	3.45	89.68	
5.52	7.50	2.96	92.64	Very fine silt
3.91	8.00	2.22	94.86	
2.76	8.50	1.44	96.30	Clay
1.95	9.00	0.85	97.15	
1.38	9.50	0.53	97.68	
0.98	10.00	0.40	98.08	
0.69	10.50	0.36	98.45	
0.49	11.00	0.35	98.80	
<0.49	>11	1.03	100.00	



Method of Moments			
Geometric	Mean (µm)	76.56	Wentworth:
Logarithmic	Mean (Phi)	3.69	Very fine sand
	Sorting	2.16	Very poor
	Skewness	1.42	Very fine
	Kurtosis	5.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	73.29	Wentworth:
Logarithmic	Mean (Phi)	3.77	Very fine sand
	Sorting	2.05	Very poor
	Skewness	0.51	Very fine
	Kurtosis	1.57	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.02	123.61	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

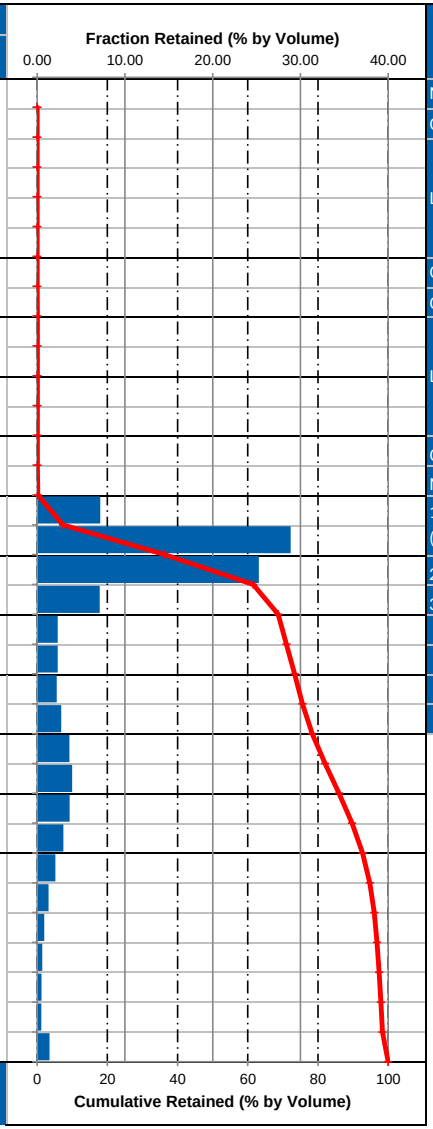
Classification		Composition	
Modified Folk	Muddy sand	Fines	25.90%
EUNIS Folk	Mud and sandy mud	Sand	73.80%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

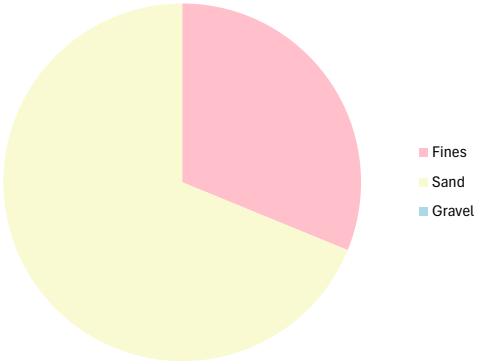
ENV109

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.02	0.04	
1414.21	-0.50	0.01	0.05	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	0.00	0.07	
353.55	1.50	0.00	0.07	Medium sand
250.00	2.00	0.10	0.17	
176.78	2.50	7.20	7.37	Fine sand
125.00	3.00	28.90	36.27	
88.39	3.50	25.26	61.53	Very fine sand
62.50	4.00	7.12	68.65	
44.19	4.50	2.35	71.00	Coarse silt
31.25	5.00	2.34	73.34	
22.10	5.50	2.24	75.58	Medium silt
15.63	6.00	2.75	78.33	
11.05	6.50	3.67	82.00	Fine silt
7.81	7.00	3.99	85.99	
5.52	7.50	3.70	89.68	Very fine silt
3.91	8.00	2.99	92.67	
2.76	8.50	2.08	94.75	Clay
1.95	9.00	1.29	96.04	
1.38	9.50	0.80	96.84	
0.98	10.00	0.57	97.41	
0.69	10.50	0.49	97.90	
0.49	11.00	0.46	98.36	
<0.49	>11	1.40	100.00	



Method of Moments			
Geometric	Mean (µm)	53.12	Wentworth:
Logarithmic	Mean (Phi)	4.21	Coarse silt
	Sorting	2.14	Very poor
	Skewness	1.54	Very fine
	Kurtosis	4.78	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	53.51	Wentworth:
Logarithmic	Mean (Phi)	4.22	Coarse silt
	Sorting	1.97	Poor
	Skewness	0.70	Very fine
	Kurtosis	1.00	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.27	103.53	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

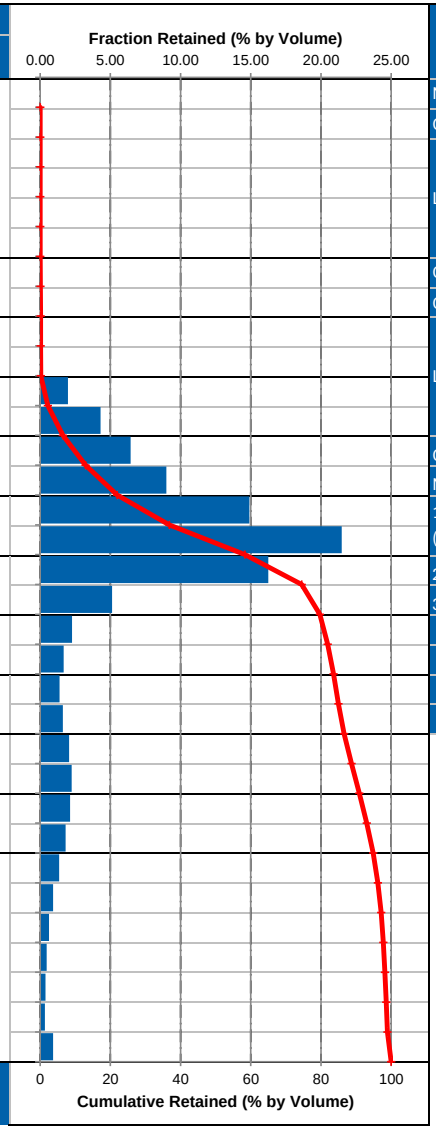
Classification		Composition	
Modified Folk	Muddy sand	Fines	31.10%
EUNIS Folk	Mud and sandy mud	Sand	68.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

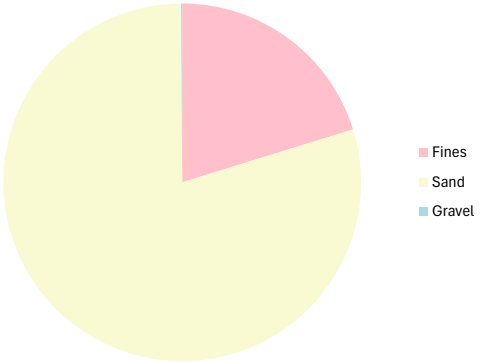
ENV110

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.06	0.07	Granule
2000.00	-1.00	0.03	0.10	
1414.21	-0.50	0.01	0.11	Very coarse sand
1000.00	0.00	0.07	0.19	
707.11	0.50	1.98	2.17	Coarse sand
500.00	1.00	4.30	6.47	
353.55	1.50	6.44	12.91	Medium sand
250.00	2.00	8.99	21.90	
176.78	2.50	14.90	36.81	Fine sand
125.00	3.00	21.48	58.29	
88.39	3.50	16.24	74.53	Very fine sand
62.50	4.00	5.13	79.65	
44.19	4.50	2.27	81.92	Coarse silt
31.25	5.00	1.68	83.60	
22.10	5.50	1.38	84.98	Medium silt
15.63	6.00	1.62	86.60	
11.05	6.50	2.07	88.67	Fine silt
7.81	7.00	2.24	90.91	
5.52	7.50	2.14	93.04	Very fine silt
3.91	8.00	1.82	94.86	
2.76	8.50	1.36	96.22	Clay
1.95	9.00	0.92	97.14	
1.38	9.50	0.62	97.76	
0.98	10.00	0.46	98.22	
0.69	10.50	0.38	98.60	
0.49	11.00	0.33	98.93	
<0.49	>11	0.92	100.00	



Method of Moments			
Geometric	Mean (µm)	99.41	Wentworth:
Logarithmic	Mean (Phi)	3.32	Very fine sand
	Sorting	2.15	Very poor
	Skewness	1.63	Very fine
	Kurtosis	5.82	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	108.22	Wentworth:
Logarithmic	Mean (Phi)	3.21	Very fine sand
	Sorting	1.96	Poor
	Skewness	0.40	Very fine
	Kurtosis	2.05	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.81	142.88	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

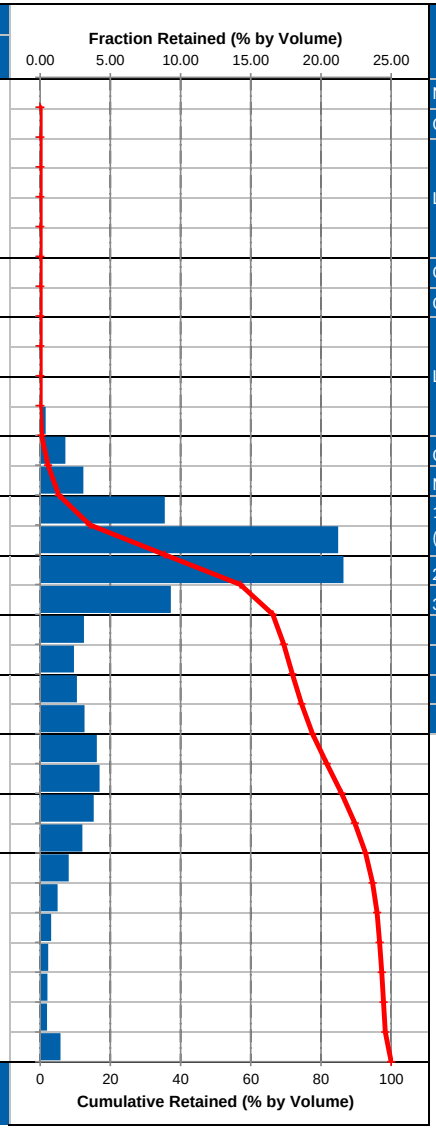
Classification		Composition	
Modified Folk	Muddy sand	Fines	20.20%
EUNIS Folk	Mud and sandy mud	Sand	79.60%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

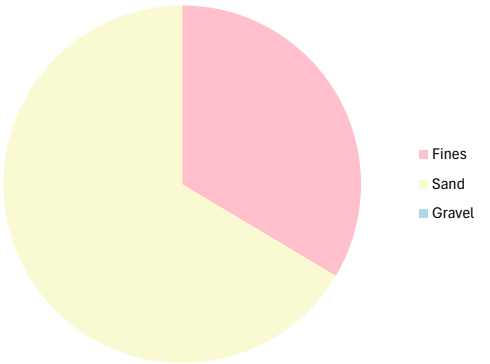
ENV111

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.00	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.38	0.41	
353.55	1.50	1.79	2.21	Medium sand
250.00	2.00	3.08	5.28	
176.78	2.50	8.88	14.16	Fine sand
125.00	3.00	21.23	35.39	
88.39	3.50	21.60	56.98	Very fine sand
62.50	4.00	9.30	66.29	
44.19	4.50	3.11	69.40	Coarse silt
31.25	5.00	2.41	71.81	
22.10	5.50	2.62	74.43	Medium silt
15.63	6.00	3.15	77.58	
11.05	6.50	4.03	81.62	Fine silt
7.81	7.00	4.23	85.85	
5.52	7.50	3.82	89.66	Very fine silt
3.91	8.00	3.01	92.68	
2.76	8.50	2.04	94.71	Clay
1.95	9.00	1.24	95.95	
1.38	9.50	0.78	96.73	
0.98	10.00	0.58	97.31	
0.69	10.50	0.51	97.82	
0.49	11.00	0.48	98.30	
<0.49	>11	1.45	100.00	



Method of Moments			
Geometric	Mean (µm)	53.18	Wentworth:
Logarithmic	Mean (Phi)	4.21	Coarse silt
	Sorting	2.21	Very poor
	Skewness	1.34	Very fine
	Kurtosis	4.37	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	53.62	Wentworth:
Logarithmic	Mean (Phi)	4.22	Coarse silt
	Sorting	2.07	Very poor
	Skewness	0.60	Very fine
	Kurtosis	0.96	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.34	98.87	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

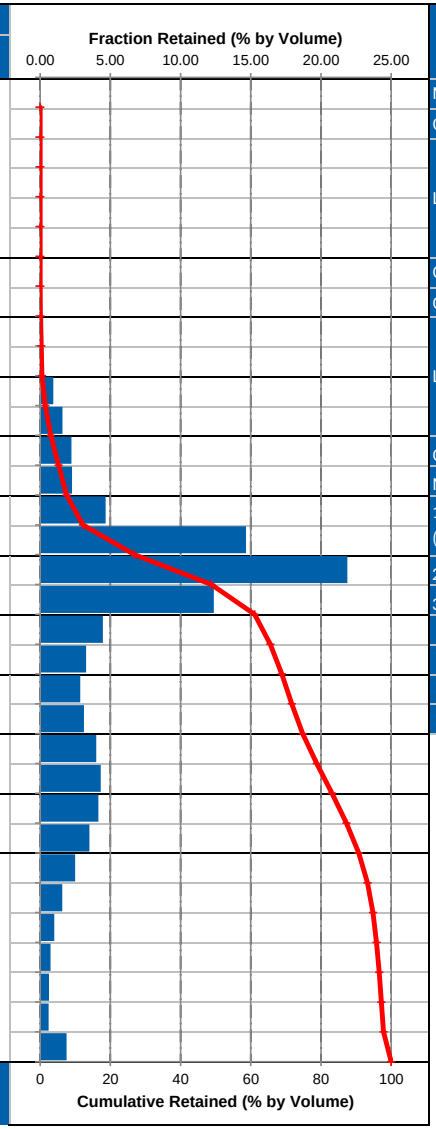
Classification		Composition	
Modified Folk	Muddy sand	Fines	33.50%
EUNIS Folk	Mud and sandy mud	Sand	66.30%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

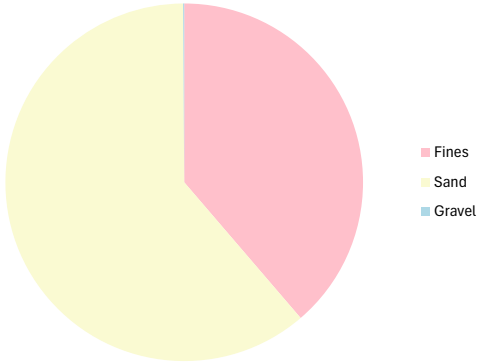
ENV112

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.07	0.07	
1414.21	-0.50	0.21	0.28	Very coarse sand
1000.00	0.00	0.23	0.51	
707.11	0.50	0.93	1.44	Coarse sand
500.00	1.00	1.59	3.02	
353.55	1.50	2.22	5.24	Medium sand
250.00	2.00	2.27	7.52	
176.78	2.50	4.66	12.18	Fine sand
125.00	3.00	14.66	26.84	
88.39	3.50	21.88	48.72	Very fine sand
62.50	4.00	12.37	61.09	
44.19	4.50	4.47	65.56	Coarse silt
31.25	5.00	3.27	68.82	
22.10	5.50	2.85	71.67	Medium silt
15.63	6.00	3.12	74.80	
11.05	6.50	4.00	78.79	Fine silt
7.81	7.00	4.31	83.10	
5.52	7.50	4.15	87.25	Very fine silt
3.91	8.00	3.50	90.76	
2.76	8.50	2.49	93.25	Clay
1.95	9.00	1.57	94.82	
1.38	9.50	1.01	95.83	
0.98	10.00	0.74	96.57	
0.69	10.50	0.63	97.20	
0.49	11.00	0.60	97.80	
<0.49	>11	1.87	100.00	



Method of Moments			
Geometric	Mean (µm)	46.00	Wentworth:
Logarithmic	Mean (Phi)	4.41	Coarse silt
	Sorting	2.38	Very poor
	Skewness	1.05	Fine
	Kurtosis	3.88	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	46.39	Wentworth:
Logarithmic	Mean (Phi)	4.43	Coarse silt
	Sorting	2.28	Very poor
	Skewness	0.52	Very fine
	Kurtosis	1.01	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.55	85.27	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

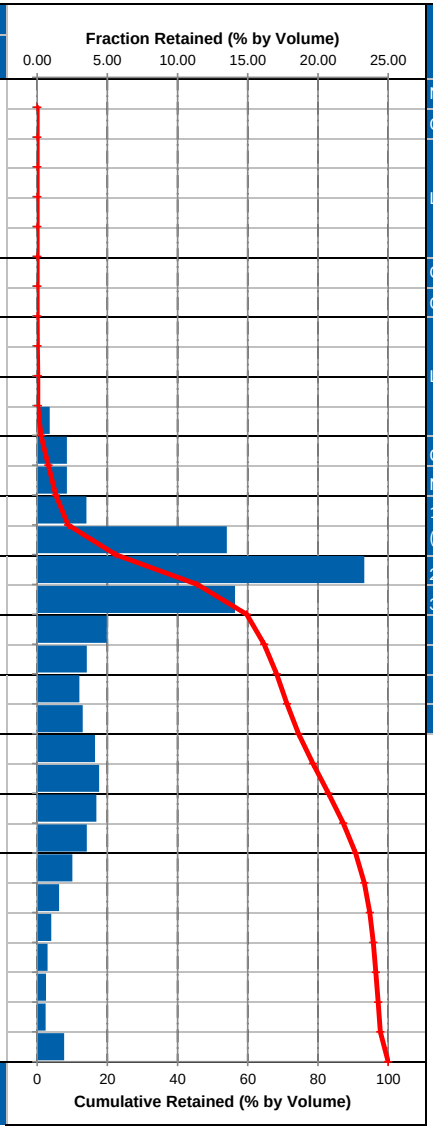
Classification		Composition	
Modified Folk	Muddy sand	Fines	38.60%
EUNIS Folk	Mud and sandy mud	Sand	61.00%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

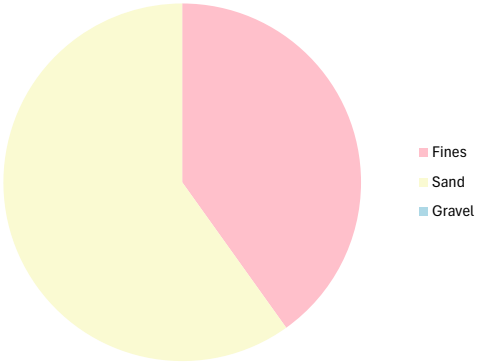
ENV113

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.05	0.08	Very coarse sand
1000.00	0.00	0.08	0.16	
707.11	0.50	0.02	0.18	Coarse sand
500.00	1.00	0.89	1.07	
353.55	1.50	2.12	3.19	Medium sand
250.00	2.00	2.12	5.31	
176.78	2.50	3.50	8.81	Fine sand
125.00	3.00	13.50	22.31	
88.39	3.50	23.30	45.61	Very fine sand
62.50	4.00	14.09	59.70	
44.19	4.50	4.95	64.65	Coarse silt
31.25	5.00	3.54	68.19	
22.10	5.50	3.00	71.19	Medium silt
15.63	6.00	3.24	74.44	
11.05	6.50	4.12	78.55	Fine silt
7.81	7.00	4.41	82.96	
5.52	7.50	4.21	87.17	Very fine silt
3.91	8.00	3.54	90.71	
2.76	8.50	2.50	93.21	Clay
1.95	9.00	1.56	94.77	
1.38	9.50	1.00	95.77	
0.98	10.00	0.73	96.51	
0.69	10.50	0.63	97.14	
0.49	11.00	0.60	97.74	
<0.49	>11	1.92	100.00	



Method of Moments			
Geometric	Mean (µm)	42.37	Wentworth:
Logarithmic	Mean (Phi)	4.53	Coarse silt
	Sorting	2.29	Very poor
	Skewness	1.18	Fine
	Kurtosis	4.04	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	43.73	Wentworth:
Logarithmic	Mean (Phi)	4.52	Coarse silt
	Sorting	2.18	Very poor
	Skewness	0.56	Very fine
	Kurtosis	0.98	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.66	79.33	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

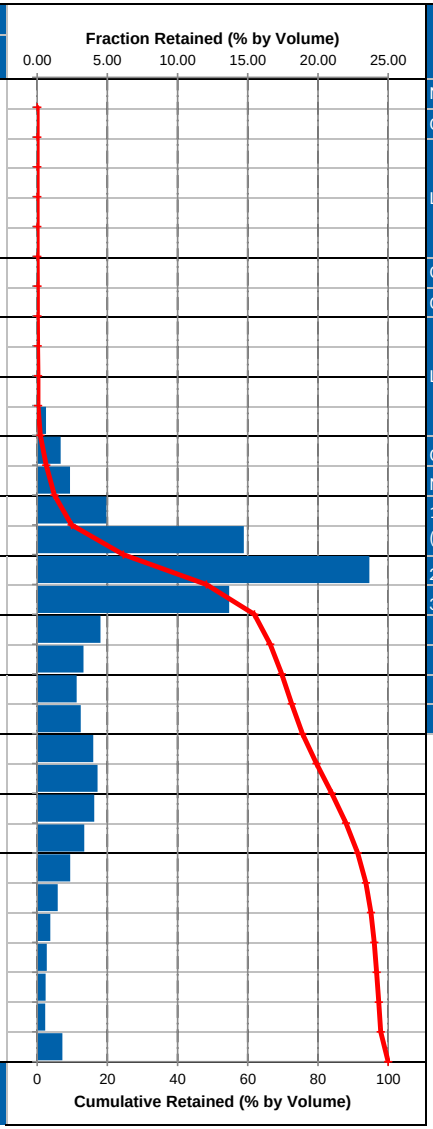
Classification		Composition	
Modified Folk	Muddy sand	Fines	40.00%
EUNIS Folk	Mud and sandy mud	Sand	59.70%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

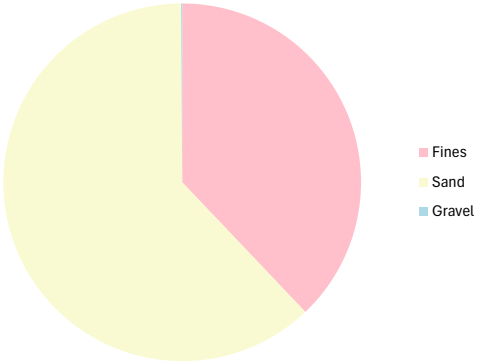
ENV114

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.06	0.06	Granule
2000.00	-1.00	0.00	0.06	
1414.21	-0.50	0.06	0.12	Very coarse sand
1000.00	0.00	0.12	0.24	
707.11	0.50	0.01	0.25	Coarse sand
500.00	1.00	0.63	0.88	
353.55	1.50	1.67	2.55	Medium sand
250.00	2.00	2.34	4.89	
176.78	2.50	4.92	9.81	Fine sand
125.00	3.00	14.72	24.53	
88.39	3.50	23.66	48.19	Very fine sand
62.50	4.00	13.68	61.87	
44.19	4.50	4.51	66.38	Coarse silt
31.25	5.00	3.30	69.67	
22.10	5.50	2.82	72.49	Medium silt
15.63	6.00	3.10	75.59	
11.05	6.50	4.00	79.59	Fine silt
7.81	7.00	4.30	83.88	
5.52	7.50	4.06	87.94	Very fine silt
3.91	8.00	3.36	91.30	
2.76	8.50	2.35	93.65	Clay
1.95	9.00	1.46	95.11	
1.38	9.50	0.93	96.04	
0.98	10.00	0.69	96.73	
0.69	10.50	0.60	97.32	
0.49	11.00	0.57	97.89	
<0.49	>11	1.79	100.00	



Method of Moments			
Geometric	Mean (µm)	45.05	Wentworth:
Logarithmic	Mean (Phi)	4.44	Coarse silt
	Sorting	2.26	Very poor
	Skewness	1.23	Fine
	Kurtosis	4.22	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	46.38	Wentworth:
Logarithmic	Mean (Phi)	4.43	Coarse silt
	Sorting	2.13	Very poor
	Skewness	0.58	Very fine
	Kurtosis	0.98	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.57	84.43	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

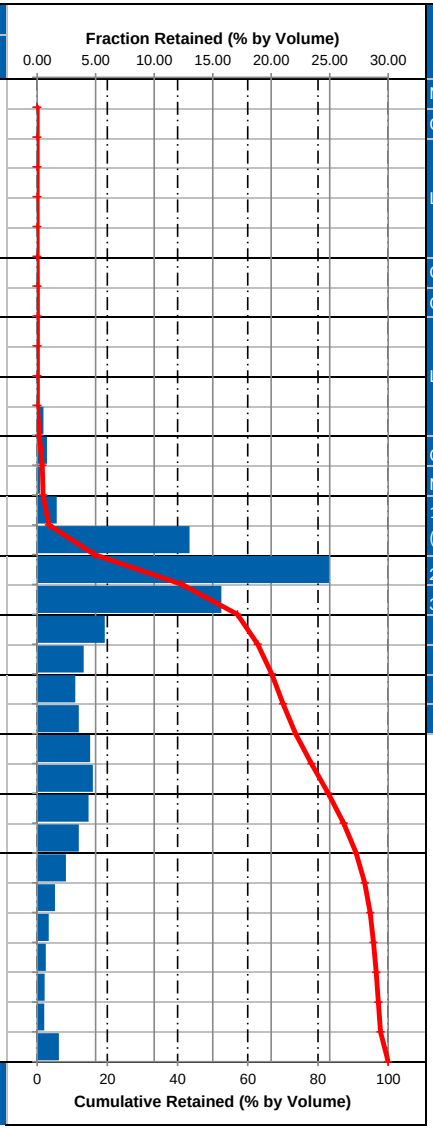
Classification		Composition	
Modified Folk	Muddy sand	Fines	37.80%
EUNIS Folk	Mud and sandy mud	Sand	61.80%
Distribution	Bimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV115

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.04	0.04	Granule
2000.00	-1.00	0.00	0.04	
1414.21	-0.50	0.00	0.04	Very coarse sand
1000.00	0.00	0.01	0.06	
707.11	0.50	0.00	0.06	Coarse sand
500.00	1.00	0.53	0.59	
353.55	1.50	0.84	1.44	Medium sand
250.00	2.00	0.24	1.67	
176.78	2.50	1.68	3.35	Fine sand
125.00	3.00	13.02	16.37	
88.39	3.50	24.93	41.30	Very fine sand
62.50	4.00	15.74	57.04	
44.19	4.50	5.78	62.82	Coarse silt
31.25	5.00	3.98	66.80	
22.10	5.50	3.25	70.05	Medium silt
15.63	6.00	3.56	73.61	
11.05	6.50	4.53	78.14	Fine silt
7.81	7.00	4.76	82.90	
5.52	7.50	4.40	87.30	Very fine silt
3.91	8.00	3.56	90.86	
2.76	8.50	2.46	93.32	Clay
1.95	9.00	1.53	94.85	
1.38	9.50	0.99	95.84	
0.98	10.00	0.74	96.58	
0.69	10.50	0.64	97.22	
0.49	11.00	0.60	97.82	
<0.49	>11	1.85	100.00	

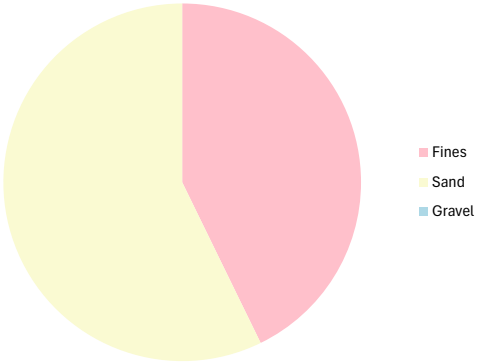


Method of Moments			
Geometric	Mean (µm)	38.28	Wentworth:
Logarithmic	Mean (Phi)	4.67	Coarse silt
	Sorting	2.19	Very poor
	Skewness	1.25	Fine
	Kurtosis	4.20	Leptokurtic

Graphic Folk and Ward			
Geometric	Mean (µm)	40.41	Wentworth:
Logarithmic	Mean (Phi)	4.63	Coarse silt
	Sorting	2.02	Very poor
	Skewness	0.62	Very fine
	Kurtosis	0.90	Platykurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.78	72.98	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

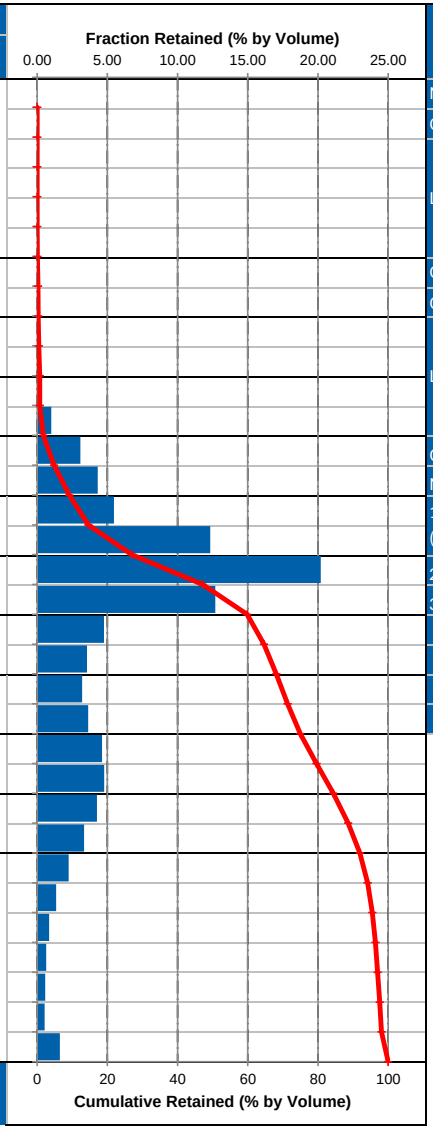
Classification		Composition	
Modified Folk	Muddy sand	Fines	42.60%
EUNIS Folk	Mud and sandy mud	Sand	57.00%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

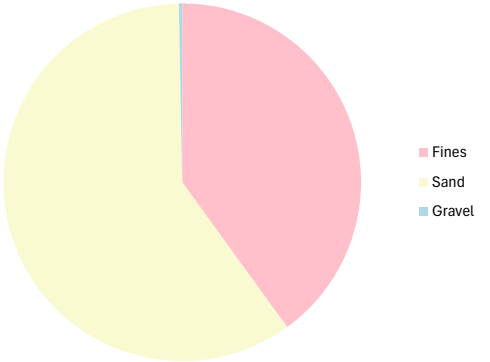
ENV116

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.07	0.07	
2828.43	-1.50	0.14	0.21	Granule
2000.00	-1.00	0.06	0.27	
1414.21	-0.50	0.17	0.44	Very coarse sand
1000.00	0.00	0.27	0.71	
707.11	0.50	0.02	0.74	Coarse sand
500.00	1.00	1.01	1.74	
353.55	1.50	3.08	4.82	Medium sand
250.00	2.00	4.32	9.14	
176.78	2.50	5.46	14.60	Fine sand
125.00	3.00	12.32	26.92	
88.39	3.50	20.20	47.13	Very fine sand
62.50	4.00	12.69	59.82	
44.19	4.50	4.76	64.58	Coarse silt
31.25	5.00	3.54	68.12	
22.10	5.50	3.19	71.32	Medium silt
15.63	6.00	3.63	74.94	
11.05	6.50	4.62	79.56	Fine silt
7.81	7.00	4.77	84.33	
5.52	7.50	4.26	88.58	Very fine silt
3.91	8.00	3.34	91.92	
2.76	8.50	2.24	94.16	Clay
1.95	9.00	1.35	95.51	
1.38	9.50	0.85	96.36	
0.98	10.00	0.64	97.00	
0.69	10.50	0.57	97.57	
0.49	11.00	0.54	98.10	
<0.49	>11	1.62	100.00	



Method of Moments			
Geometric	Mean (µm)	46.92	Wentworth:
Logarithmic	Mean (Phi)	4.39	Coarse silt
	Sorting	2.32	Very poor
	Skewness	0.99	Fine
	Kurtosis	3.90	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	48.08	Wentworth:
Logarithmic	Mean (Phi)	4.38	Coarse silt
	Sorting	2.21	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.61	81.72	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

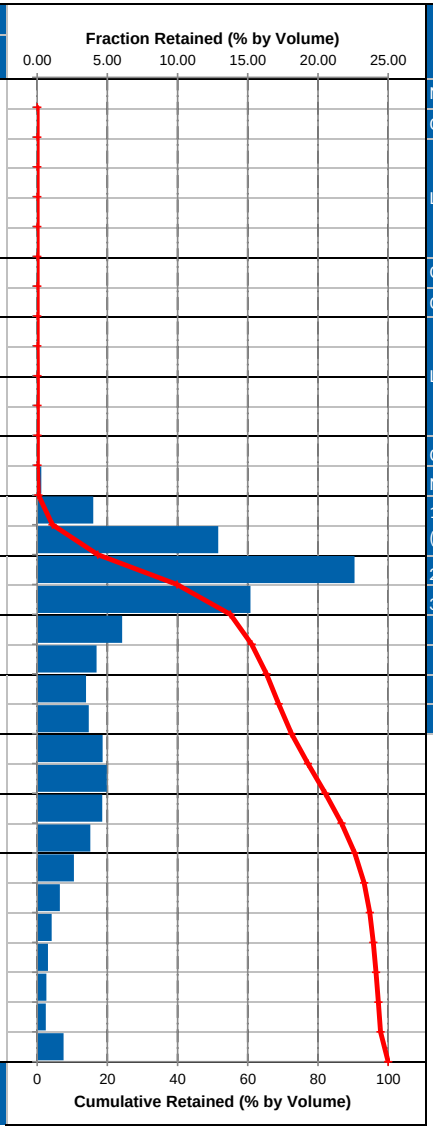
Classification		Composition	
Modified Folk	Muddy sand	Fines	39.90%
EUNIS Folk	Mud and sandy mud	Sand	59.50%
Distribution	Bimodal	Gravel	0.30%



APPENDIX D PARTICLE SIZE ANALYSIS

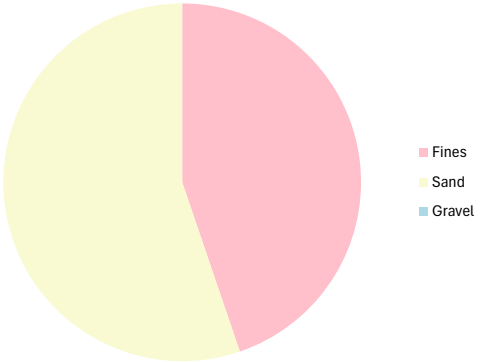
ENV117

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.00	0.02	Very coarse sand
1000.00	0.00	0.03	0.05	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	0.00	0.05	
353.55	1.50	0.00	0.05	Medium sand
250.00	2.00	0.29	0.34	
176.78	2.50	3.99	4.34	Fine sand
125.00	3.00	12.89	17.23	
88.39	3.50	22.60	39.83	Very fine sand
62.50	4.00	15.19	55.02	
44.19	4.50	6.05	61.08	Coarse silt
31.25	5.00	4.23	65.31	
22.10	5.50	3.48	68.79	Medium silt
15.63	6.00	3.67	72.46	
11.05	6.50	4.66	77.13	Fine silt
7.81	7.00	4.96	82.08	
5.52	7.50	4.63	86.71	Very fine silt
3.91	8.00	3.78	90.50	
2.76	8.50	2.62	93.11	Clay
1.95	9.00	1.62	94.74	
1.38	9.50	1.04	95.77	
0.98	10.00	0.76	96.54	
0.69	10.50	0.65	97.19	
0.49	11.00	0.61	97.80	
<0.49	>11	1.87	100.00	



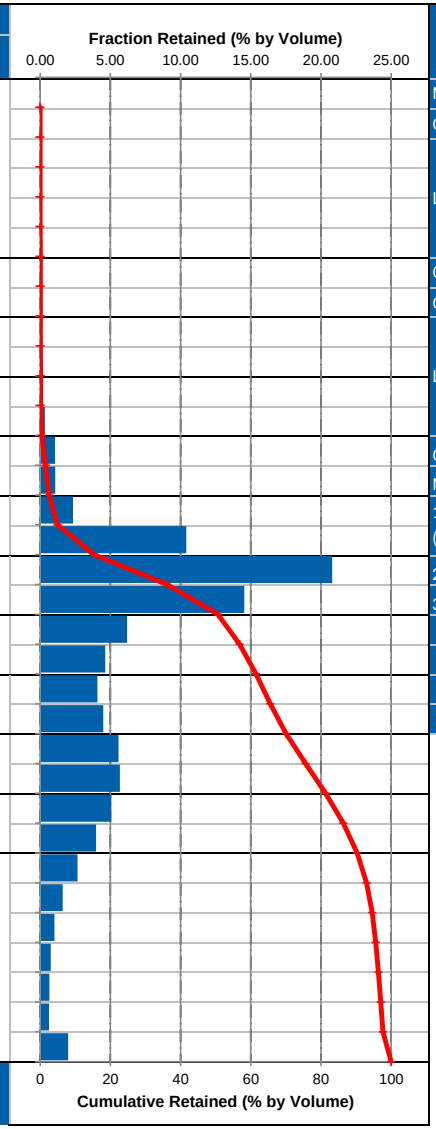
Method of Moments			
Geometric	Mean (µm)	36.48	Wentworth:
Logarithmic	Mean (Phi)	4.74	Coarse silt
	Sorting	2.20	Very poor
	Skewness	1.24	Fine
	Kurtosis	4.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	39.43	Wentworth:
Logarithmic	Mean (Phi)	4.66	Coarse silt
	Sorting	2.06	Very poor
	Skewness	0.59	Very fine
	Kurtosis	0.87	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.83	70.08	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	44.60%
EUNIS Folk	Mud and sandy mud	Sand	55.00%
Distribution	Bimodal	Gravel	0.00%



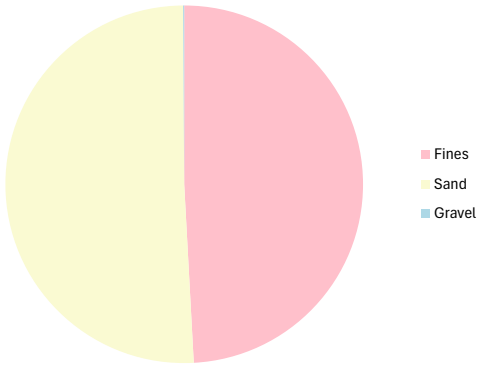
APPENDIX D PARTICLE SIZE ANALYSIS

ENV118				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.00	0.04	Granule
2000.00	-1.00	0.01	0.05	
1414.21	-0.50	0.02	0.07	Very coarse sand
1000.00	0.00	0.02	0.09	
707.11	0.50	0.00	0.09	Coarse sand
500.00	1.00	0.34	0.44	
353.55	1.50	1.06	1.50	Medium sand
250.00	2.00	1.07	2.57	
176.78	2.50	2.34	4.91	Fine sand
125.00	3.00	10.40	15.31	
88.39	3.50	20.80	36.10	Very fine sand
62.50	4.00	14.53	50.64	
44.19	4.50	6.20	56.83	Coarse silt
31.25	5.00	4.63	61.46	
22.10	5.50	4.08	65.54	Medium silt
15.63	6.00	4.49	70.03	
11.05	6.50	5.58	75.62	Fine silt
7.81	7.00	5.67	81.29	
5.52	7.50	5.06	86.35	Very fine silt
3.91	8.00	3.98	90.33	
2.76	8.50	2.66	92.99	Clay
1.95	9.00	1.61	94.60	
1.38	9.50	1.01	95.61	
0.98	10.00	0.75	96.37	
0.69	10.50	0.66	97.03	
0.49	11.00	0.63	97.66	
<0.49	>11	1.99	100.00	



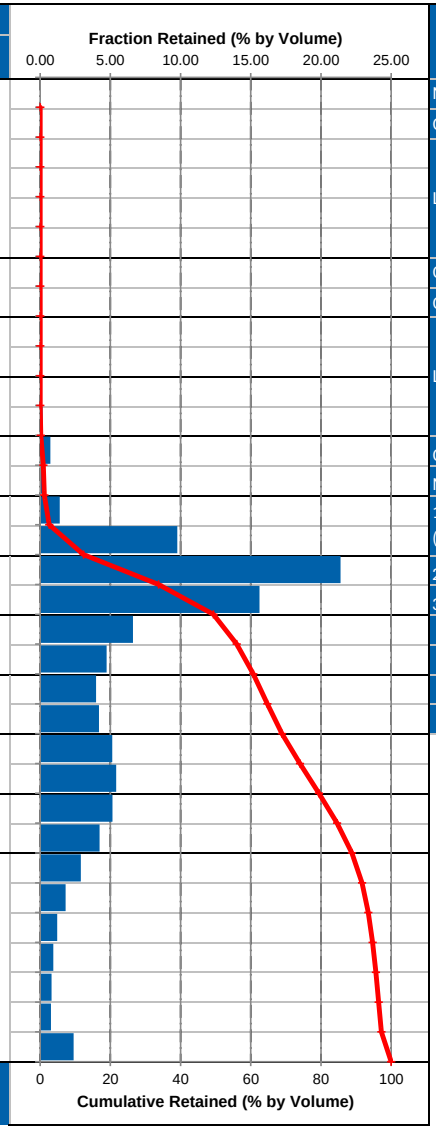
Method of Moments			
Geometric	Mean (µm)	33.71	Wentworth:
Logarithmic	Mean (Phi)	4.86	Coarse silt
	Sorting	2.24	Very poor
	Skewness	1.04	Fine
	Kurtosis	3.79	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	37.05	Wentworth:
Logarithmic	Mean (Phi)	4.75	Coarse silt
	Sorting	2.08	Very poor
	Skewness	0.55	Very fine
	Kurtosis	0.85	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.98	63.45	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	49.00%
EUNIS Folk	Mud and sandy mud	Sand	50.60%
Distribution	Bimodal	Gravel	0.10%



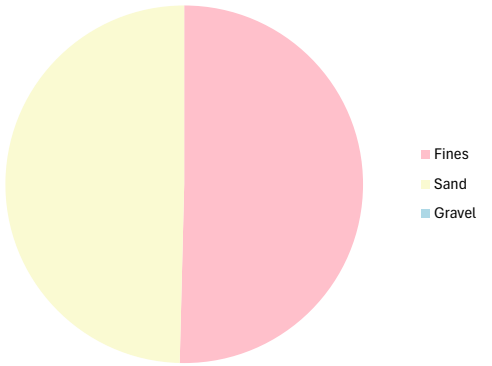
APPENDIX D PARTICLE SIZE ANALYSIS

ENV119				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.17	0.20	
353.55	1.50	0.72	0.92	Medium sand
250.00	2.00	0.28	1.19	
176.78	2.50	1.39	2.58	Fine sand
125.00	3.00	9.77	12.35	
88.39	3.50	21.39	33.74	Very fine sand
62.50	4.00	15.63	49.37	
44.19	4.50	6.61	55.98	Coarse silt
31.25	5.00	4.73	60.71	
22.10	5.50	3.97	64.68	Medium silt
15.63	6.00	4.18	68.87	
11.05	6.50	5.13	74.00	Fine silt
7.81	7.00	5.41	79.41	
5.52	7.50	5.15	84.55	Very fine silt
3.91	8.00	4.23	88.78	
2.76	8.50	2.90	91.68	
1.95	9.00	1.81	93.49	
1.38	9.50	1.21	94.69	
0.98	10.00	0.93	95.63	Clay
0.69	10.50	0.81	96.44	
0.49	11.00	0.77	97.21	
<0.49	>11	2.38	100.00	



Method of Moments			
Geometric	Mean (µm)	30.67	Wentworth:
Logarithmic	Mean (Phi)	4.99	Coarse silt
	Sorting	2.27	Very poor
	Skewness	1.11	Fine
	Kurtosis	3.72	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	34.44	Wentworth:
Logarithmic	Mean (Phi)	4.86	Coarse silt
	Sorting	2.16	Very poor
	Skewness	0.58	Very fine
	Kurtosis	0.88	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.05	60.47	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

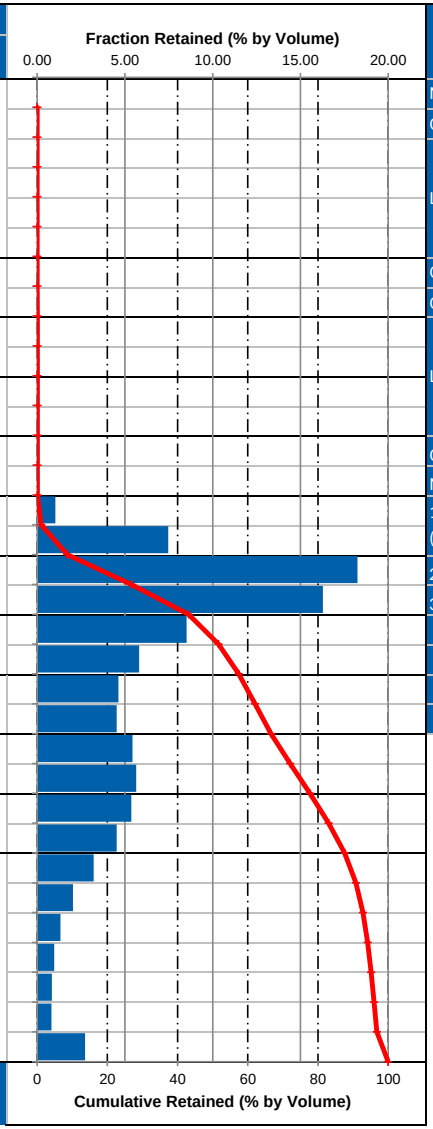
Classification		Composition	
Modified Folk	Sandy mud	Fines	50.20%
EUNIS Folk	Mud and sandy mud	Sand	49.40%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

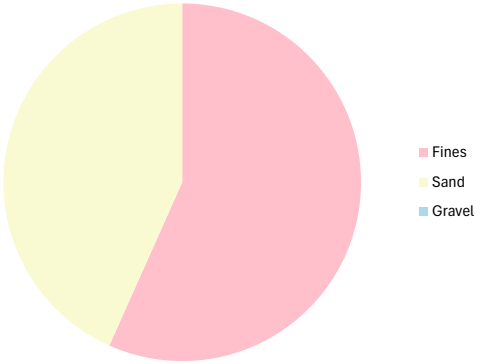
ENV120

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.01	0.05	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	0.00	0.05	
353.55	1.50	0.00	0.05	Medium sand
250.00	2.00	0.02	0.07	
176.78	2.50	1.04	1.11	Fine sand
125.00	3.00	7.47	8.58	
88.39	3.50	18.25	26.83	Very fine sand
62.50	4.00	16.28	43.11	
44.19	4.50	8.51	51.62	Coarse silt
31.25	5.00	5.81	57.43	
22.10	5.50	4.64	62.07	Medium silt
15.63	6.00	4.53	66.60	
11.05	6.50	5.44	72.04	Fine silt
7.81	7.00	5.64	77.68	
5.52	7.50	5.36	83.04	Very fine silt
3.91	8.00	4.53	87.57	
2.76	8.50	3.22	90.79	Clay
1.95	9.00	2.04	92.83	
1.38	9.50	1.32	94.15	
0.98	10.00	0.97	95.13	
0.69	10.50	0.84	95.97	
0.49	11.00	0.81	96.78	
<0.49	>11	2.72	100.00	



Method of Moments			
Geometric	Mean (µm)	26.40	Wentworth:
Logarithmic	Mean (Phi)	5.19	Medium silt
	Sorting	2.26	Very poor
	Skewness	1.10	Fine
	Kurtosis	3.69	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	29.74	Wentworth:
Logarithmic	Mean (Phi)	5.07	Medium silt
	Sorting	2.19	Very poor
	Skewness	0.50	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.40	47.21	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

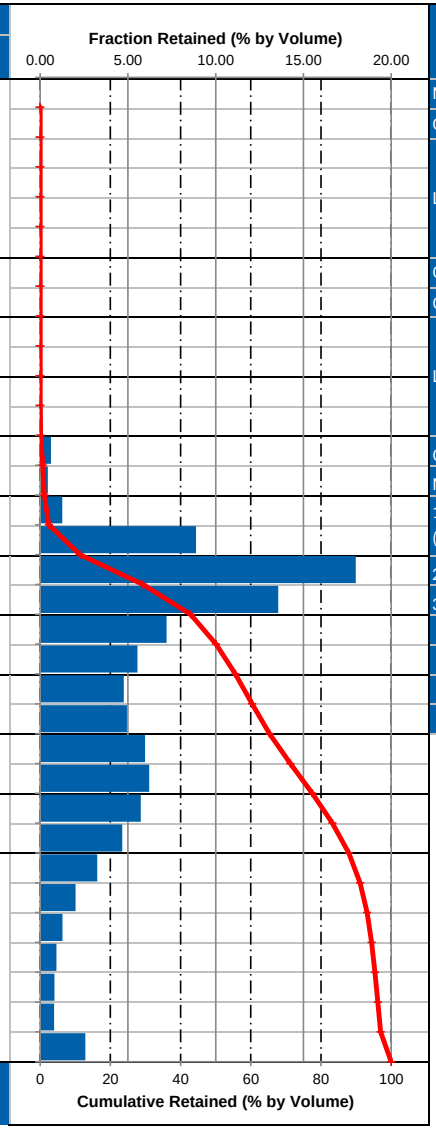
Classification		Composition	
Modified Folk	Sandy mud	Fines	56.40%
EUNIS Folk	Mud and sandy mud	Sand	43.10%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

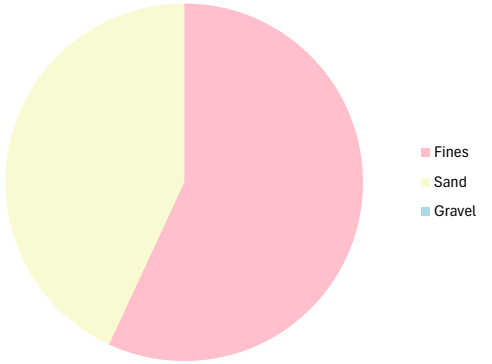
ENV121

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.00	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.12	0.14	
353.55	1.50	0.61	0.75	Medium sand
250.00	2.00	0.43	1.18	
176.78	2.50	1.25	2.44	Fine sand
125.00	3.00	8.88	11.32	
88.39	3.50	17.98	29.30	Very fine sand
62.50	4.00	13.57	42.86	
44.19	4.50	7.21	50.07	Coarse silt
31.25	5.00	5.54	55.61	
22.10	5.50	4.76	60.37	Medium silt
15.63	6.00	4.94	65.30	
11.05	6.50	5.97	71.28	Fine silt
7.81	7.00	6.21	77.49	
5.52	7.50	5.74	83.22	Very fine silt
3.91	8.00	4.68	87.90	
2.76	8.50	3.25	91.15	Clay
1.95	9.00	2.02	93.17	
1.38	9.50	1.27	94.44	
0.98	10.00	0.93	95.37	
0.69	10.50	0.81	96.18	
0.49	11.00	0.79	96.96	
<0.49	>11	2.57	100.00	



Method of Moments			
Geometric	Mean (µm)	26.68	Wentworth:
Logarithmic	Mean (Phi)	5.18	Medium silt
	Sorting	2.28	Very poor
	Skewness	0.97	Fine
	Kurtosis	3.49	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	29.78	Wentworth:
Logarithmic	Mean (Phi)	5.07	Medium silt
	Sorting	2.20	Very poor
	Skewness	0.43	Very fine
	Kurtosis	0.86	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.50	44.34	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

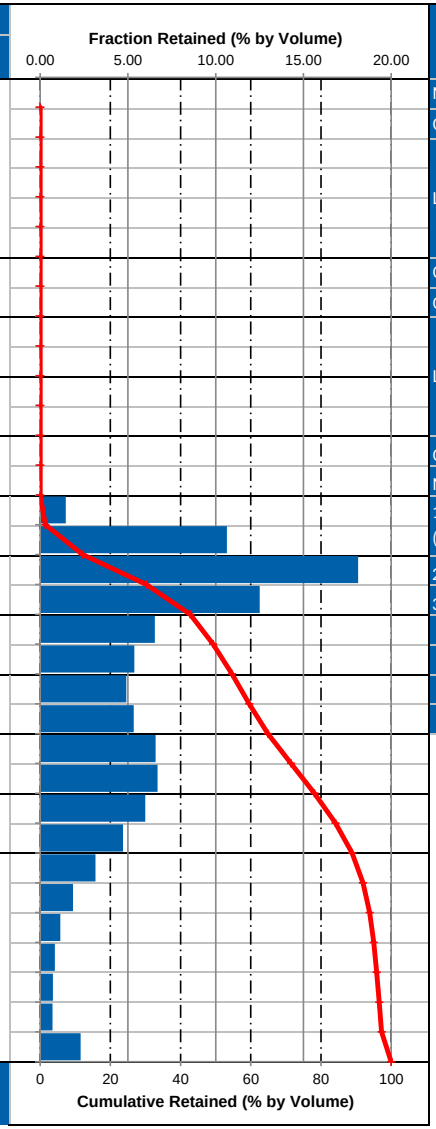
Classification		Composition	
Modified Folk	Sandy mud	Fines	56.70%
EUNIS Folk	Mud and sandy mud	Sand	42.90%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

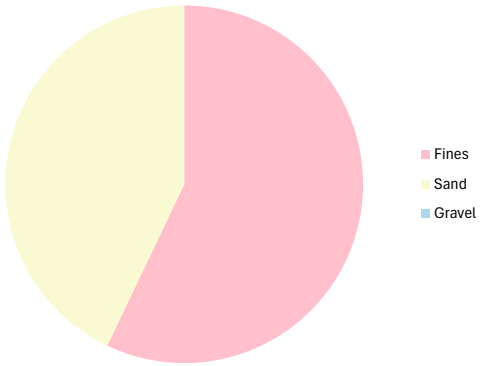
ENV122

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.01	0.01	
176.78	2.50	1.46	1.47	Fine sand
125.00	3.00	10.64	12.11	
88.39	3.50	18.12	30.23	Very fine sand
62.50	4.00	12.50	42.73	
44.19	4.50	6.53	49.27	Coarse silt
31.25	5.00	5.36	54.63	
22.10	5.50	4.91	59.54	Medium silt
15.63	6.00	5.33	64.87	
11.05	6.50	6.57	71.44	Fine silt
7.81	7.00	6.69	78.13	
5.52	7.50	5.99	84.12	Very fine silt
3.91	8.00	4.72	88.84	
2.76	8.50	3.15	91.99	Clay
1.95	9.00	1.87	93.86	
1.38	9.50	1.15	95.01	
0.98	10.00	0.83	95.84	
0.69	10.50	0.73	96.57	
0.49	11.00	0.71	97.28	
<0.49	>11	2.31	100.00	



Method of Moments			
Geometric	Mean (µm)	26.83	Wentworth:
Logarithmic	Mean (Phi)	5.18	Medium silt
	Sorting	2.22	Very poor
	Skewness	0.98	Fine
	Kurtosis	3.49	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	30.08	Wentworth:
Logarithmic	Mean (Phi)	5.06	Medium silt
	Sorting	2.13	Very poor
	Skewness	0.39	Very fine
	Kurtosis	0.82	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.57	42.15	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

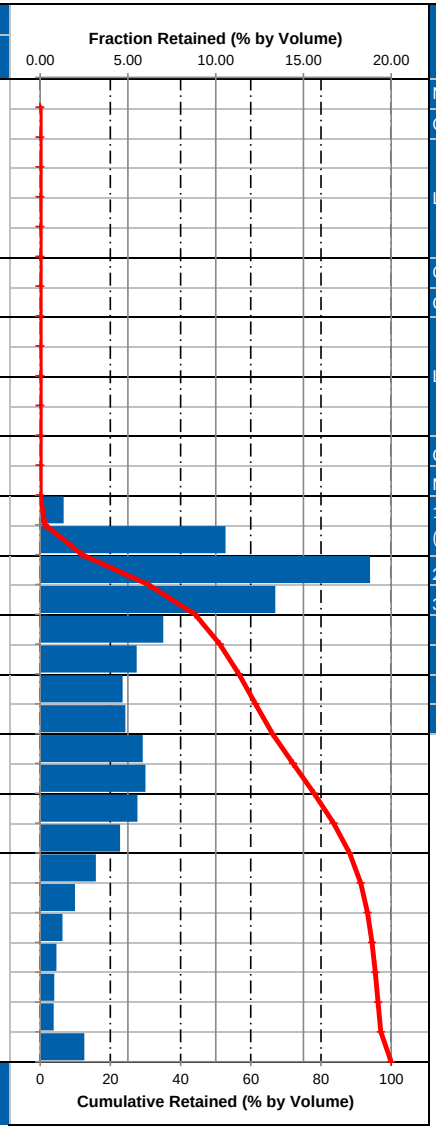
Classification		Composition	
Modified Folk	Sandy mud	Fines	56.80%
EUNIS Folk	Mud and sandy mud	Sand	42.70%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

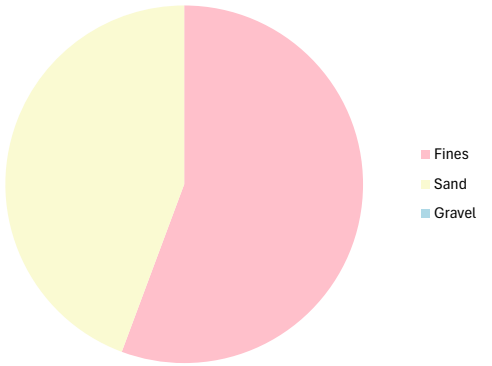
ENV123

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.01	0.01	
176.78	2.50	1.34	1.35	Fine sand
125.00	3.00	10.56	11.91	
88.39	3.50	18.79	30.71	Very fine sand
62.50	4.00	13.40	44.10	
44.19	4.50	7.01	51.11	Coarse silt
31.25	5.00	5.50	56.61	
22.10	5.50	4.70	61.31	Medium silt
15.63	6.00	4.86	66.17	
11.05	6.50	5.84	72.01	Fine silt
7.81	7.00	5.99	78.01	
5.52	7.50	5.55	83.55	Very fine silt
3.91	8.00	4.56	88.11	
2.76	8.50	3.17	91.28	Clay
1.95	9.00	1.98	93.26	
1.38	9.50	1.27	94.53	
0.98	10.00	0.93	95.46	
0.69	10.50	0.80	96.26	
0.49	11.00	0.77	97.03	
<0.49	>11	2.52	100.00	



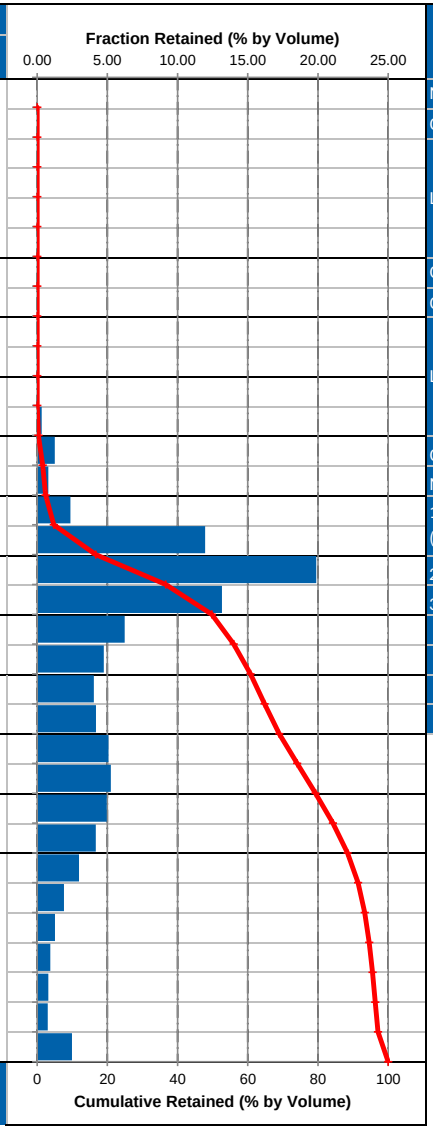
Method of Moments			
Geometric	Mean (µm)	27.27	Wentworth:
Logarithmic	Mean (Phi)	5.15	Medium silt
	Sorting	2.26	Very poor
	Skewness	1.05	Fine
	Kurtosis	3.56	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	30.69	Wentworth:
Logarithmic	Mean (Phi)	5.03	Medium silt
	Sorting	2.18	Very poor
	Skewness	0.46	Very fine
	Kurtosis	0.85	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.42	46.69	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	55.40%
EUNIS Folk	Mud and sandy mud	Sand	44.10%
Distribution	Bimodal	Gravel	0.00%



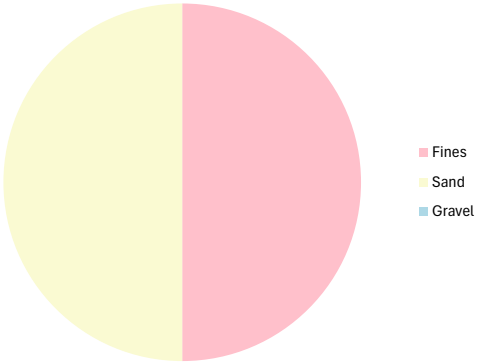
APPENDIX D PARTICLE SIZE ANALYSIS

ENV124				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.00	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.32	0.33	
353.55	1.50	1.25	1.58	Medium sand
250.00	2.00	0.79	2.38	
176.78	2.50	2.37	4.75	Fine sand
125.00	3.00	11.97	16.72	
88.39	3.50	19.88	36.60	Very fine sand
62.50	4.00	13.16	49.76	
44.19	4.50	6.23	55.99	Coarse silt
31.25	5.00	4.74	60.74	
22.10	5.50	4.04	64.78	Medium silt
15.63	6.00	4.19	68.97	
11.05	6.50	5.08	74.04	Fine silt
7.81	7.00	5.24	79.29	
5.52	7.50	4.96	84.25	Very fine silt
3.91	8.00	4.18	88.43	
2.76	8.50	2.98	91.40	Clay
1.95	9.00	1.91	93.31	
1.38	9.50	1.26	94.58	
0.98	10.00	0.94	95.51	
0.69	10.50	0.80	96.31	
0.49	11.00	0.76	97.07	
<0.49	>11	2.48	100.00	



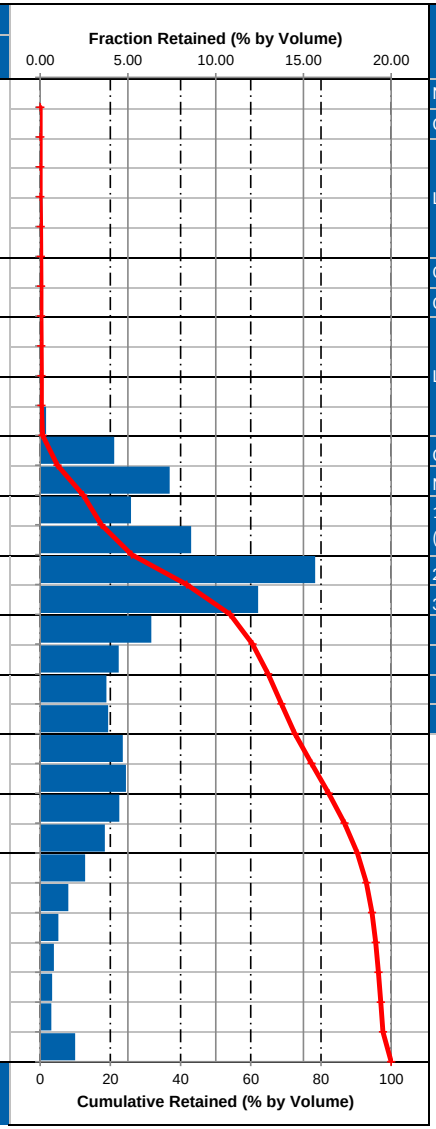
Method of Moments			
Geometric	Mean (µm)	31.76	Wentworth:
Logarithmic	Mean (Phi)	4.93	Coarse silt
	Sorting	2.34	Very poor
	Skewness	1.05	Fine
	Kurtosis	3.60	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	35.37	Wentworth:
Logarithmic	Mean (Phi)	4.82	Coarse silt
	Sorting	2.22	Very poor
	Skewness	0.56	Very fine
	Kurtosis	0.87	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.02	61.67	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	49.80%
EUNIS Folk	Mud and sandy mud	Sand	49.80%
Distribution	Multimodal	Gravel	0.00%



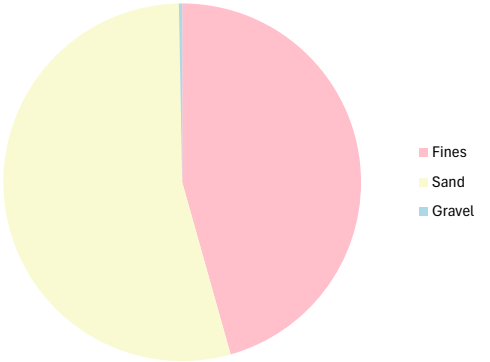
APPENDIX D PARTICLE SIZE ANALYSIS

ENV125				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.12	0.12	
4000.00	-2.00	0.07	0.20	
2828.43	-1.50	0.03	0.22	Granule
2000.00	-1.00	0.03	0.25	
1414.21	-0.50	0.03	0.28	Very coarse sand
1000.00	0.00	0.04	0.33	
707.11	0.50	0.00	0.33	Coarse sand
500.00	1.00	0.33	0.66	
353.55	1.50	4.22	4.88	Medium sand
250.00	2.00	7.38	12.26	
176.78	2.50	5.17	17.43	Fine sand
125.00	3.00	8.61	26.04	
88.39	3.50	15.67	41.71	Very fine sand
62.50	4.00	12.42	54.12	
44.19	4.50	6.33	60.46	Coarse silt
31.25	5.00	4.47	64.93	
22.10	5.50	3.77	68.71	Medium silt
15.63	6.00	3.87	72.58	
11.05	6.50	4.70	77.29	Fine silt
7.81	7.00	4.89	82.17	
5.52	7.50	4.51	86.68	Very fine silt
3.91	8.00	3.68	90.36	
2.76	8.50	2.56	92.92	Clay
1.95	9.00	1.60	94.53	
1.38	9.50	1.04	95.57	
0.98	10.00	0.78	96.35	
0.69	10.50	0.68	97.02	
0.49	11.00	0.64	97.66	
<0.49	>11	1.99	100.00	



Method of Moments			
Geometric	Mean (µm)	41.86	Wentworth:
Logarithmic	Mean (Phi)	4.54	Coarse silt
	Sorting	2.43	Very poor
	Skewness	0.89	Fine
	Kurtosis	3.58	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	45.24	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.38	Very poor
	Skewness	0.39	Very fine
	Kurtosis	0.95	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.83	70.13	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	2.00	250.00	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

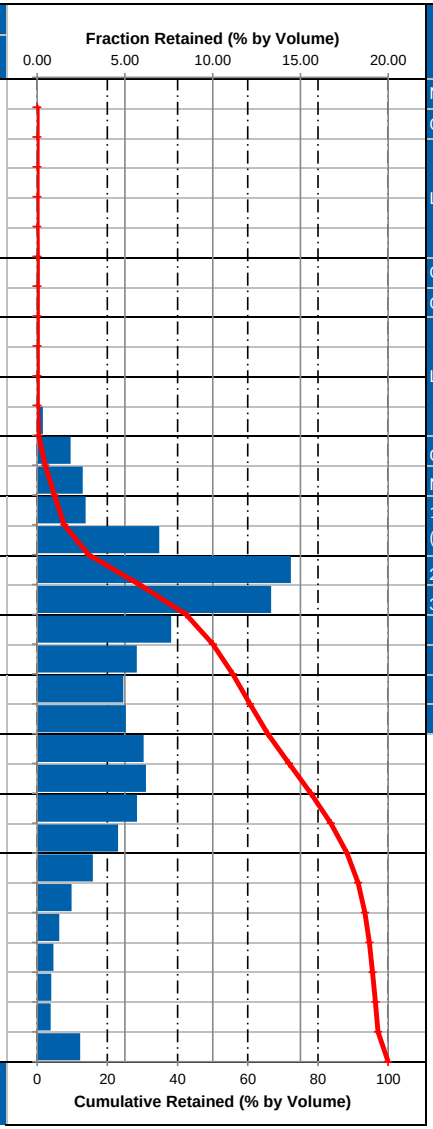
Classification		Composition	
Modified Folk	Muddy sand	Fines	45.50%
EUNIS Folk	Mud and sandy mud	Sand	53.90%
Distribution	Multimodal	Gravel	0.30%



APPENDIX D PARTICLE SIZE ANALYSIS

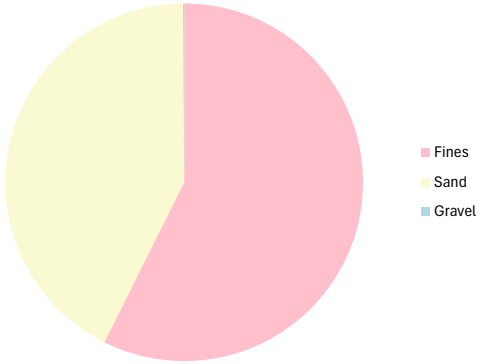
ENV126

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.00	0.05	Granule
2000.00	-1.00	0.00	0.05	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.02	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.33	0.41	
353.55	1.50	1.90	2.31	Medium sand
250.00	2.00	2.60	4.91	
176.78	2.50	2.77	7.67	Fine sand
125.00	3.00	6.95	14.62	
88.39	3.50	14.45	29.08	Very fine sand
62.50	4.00	13.33	42.41	
44.19	4.50	7.63	50.04	Coarse silt
31.25	5.00	5.67	55.71	
22.10	5.50	4.91	60.62	Medium silt
15.63	6.00	5.05	65.67	
11.05	6.50	6.07	71.74	Fine silt
7.81	7.00	6.20	77.94	
5.52	7.50	5.68	83.63	Very fine silt
3.91	8.00	4.61	88.24	
2.76	8.50	3.17	91.41	Clay
1.95	9.00	1.96	93.37	
1.38	9.50	1.25	94.63	
0.98	10.00	0.92	95.55	
0.69	10.50	0.80	96.35	
0.49	11.00	0.77	97.11	
<0.49	>11	2.45	100.00	



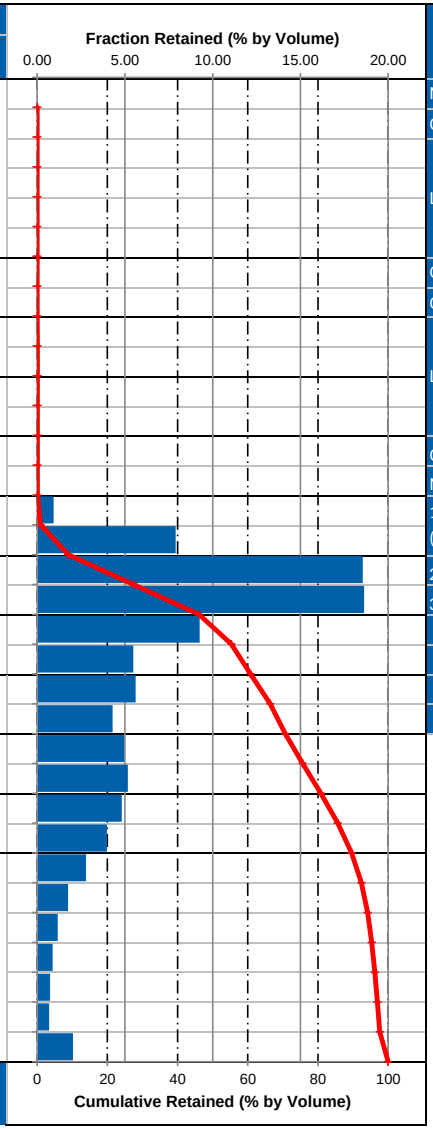
Method of Moments			
Geometric	Mean (µm)	28.33	Wentworth:
Logarithmic	Mean (Phi)	5.10	Medium silt
	Sorting	2.35	Very poor
	Skewness	0.81	Fine
	Kurtosis	3.38	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	30.64	Wentworth:
Logarithmic	Mean (Phi)	5.03	Medium silt
	Sorting	2.29	Very poor
	Skewness	0.35	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.50	44.28	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	57.20%
EUNIS Folk	Mud and sandy mud	Sand	42.40%
Distribution	Bimodal	Gravel	0.10%



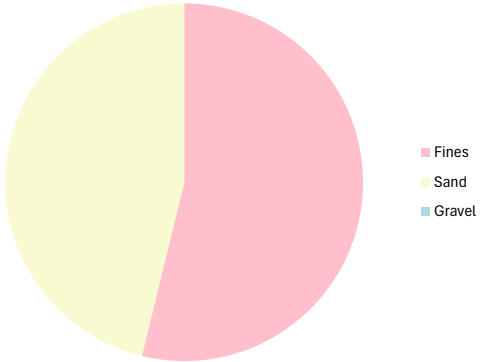
APPENDIX D PARTICLE SIZE ANALYSIS

ENV127				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.00	0.04	
353.55	1.50	0.00	0.04	Medium sand
250.00	2.00	0.01	0.05	
176.78	2.50	0.93	0.98	Fine sand
125.00	3.00	7.89	8.87	
88.39	3.50	18.55	27.42	Very fine sand
62.50	4.00	18.63	46.05	
44.19	4.50	9.25	55.30	Coarse silt
31.25	5.00	5.47	60.78	
22.10	5.50	5.61	66.39	Medium silt
15.63	6.00	4.30	70.68	
11.05	6.50	4.96	75.64	Fine silt
7.81	7.00	5.16	80.80	
5.52	7.50	4.82	85.62	Very fine silt
3.91	8.00	3.97	89.59	
2.76	8.50	2.78	92.37	Clay
1.95	9.00	1.76	94.13	
1.38	9.50	1.17	95.31	
0.98	10.00	0.88	96.19	
0.69	10.50	0.74	96.93	
0.49	11.00	0.68	97.61	
<0.49	>11	2.04	100.00	



Method of Moments			
Geometric	Mean (µm)	30.10	Wentworth:
Logarithmic	Mean (Phi)	5.02	Medium silt
	Sorting	2.14	Very poor
	Skewness	1.21	Fine
	Kurtosis	4.05	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	33.20	Wentworth:
Logarithmic	Mean (Phi)	4.91	Coarse silt
	Sorting	2.04	Very poor
	Skewness	0.53	Very fine
	Kurtosis	0.90	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.21	53.90	Coarse silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

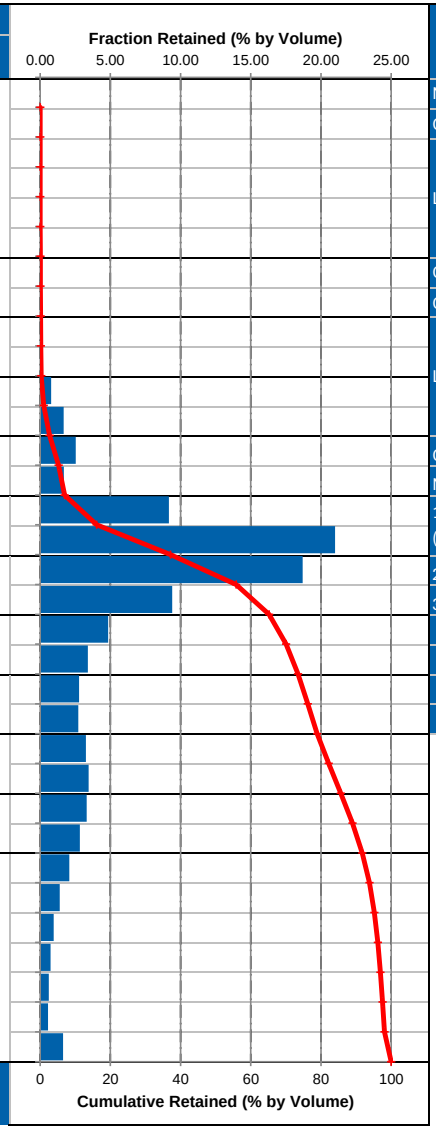
Classification		Composition	
Modified Folk	Sandy mud	Fines	53.60%
EUNIS Folk	Mud and sandy mud	Sand	46.00%
Distribution	Bimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

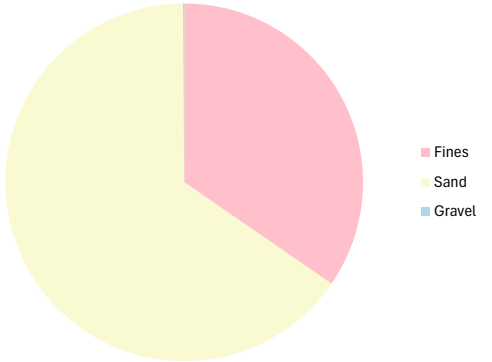
ENV128

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.07	0.07	
2828.43	-1.50	0.01	0.07	Granule
2000.00	-1.00	0.06	0.14	
1414.21	-0.50	0.02	0.16	Very coarse sand
1000.00	0.00	0.10	0.26	
707.11	0.50	0.77	1.03	Coarse sand
500.00	1.00	1.67	2.70	
353.55	1.50	2.54	5.24	Medium sand
250.00	2.00	1.69	6.94	
176.78	2.50	9.17	16.11	Fine sand
125.00	3.00	21.01	37.11	
88.39	3.50	18.69	55.80	Very fine sand
62.50	4.00	9.40	65.20	
44.19	4.50	4.84	70.04	Coarse silt
31.25	5.00	3.39	73.44	
22.10	5.50	2.76	76.20	Medium silt
15.63	6.00	2.72	78.92	
11.05	6.50	3.26	82.18	Fine silt
7.81	7.00	3.45	85.63	
5.52	7.50	3.31	88.94	Very fine silt
3.91	8.00	2.82	91.76	
2.76	8.50	2.07	93.83	Clay
1.95	9.00	1.39	95.22	
1.38	9.50	0.96	96.18	
0.98	10.00	0.73	96.92	
0.69	10.50	0.62	97.54	
0.49	11.00	0.56	98.09	
<0.49	>11	1.63	100.00	



Method of Moments			
Geometric	Mean (µm)	55.25	Wentworth:
Logarithmic	Mean (Phi)	4.15	Coarse silt
	Sorting	2.31	Very poor
	Skewness	1.26	Fine
	Kurtosis	4.39	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	54.38	Wentworth:
Logarithmic	Mean (Phi)	4.20	Coarse silt
	Sorting	2.20	Very poor
	Skewness	0.55	Very fine
	Kurtosis	1.19	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.34	98.43	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

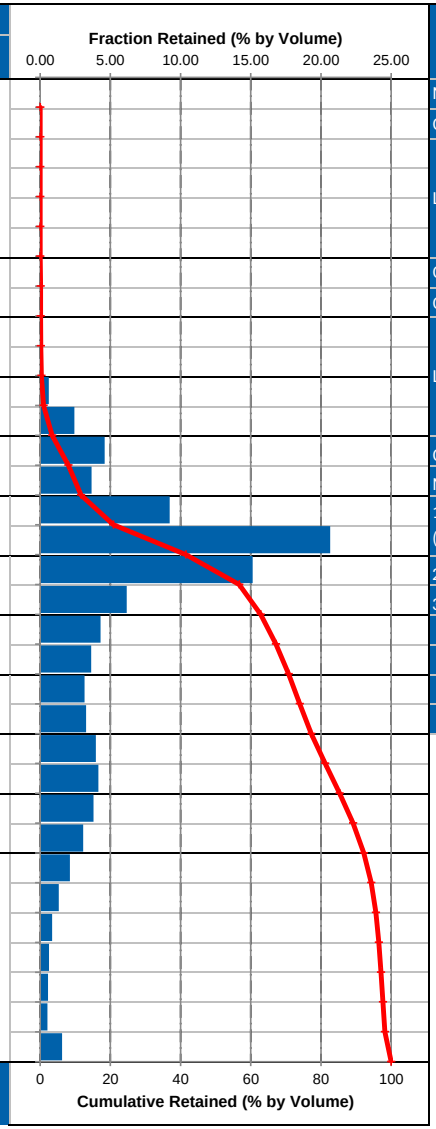
Classification		Composition	
Modified Folk	Muddy sand	Fines	34.50%
EUNIS Folk	Mud and sandy mud	Sand	65.10%
Distribution	Multimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

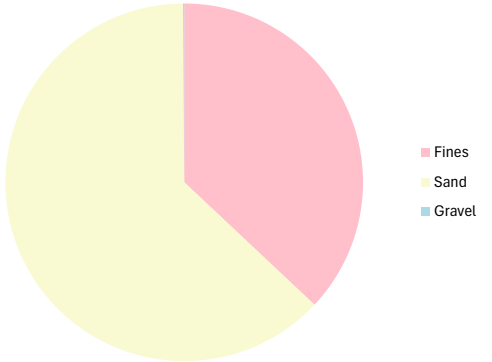
ENV129

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.08	0.11	Granule
2000.00	-1.00	0.03	0.14	
1414.21	-0.50	0.05	0.19	Very coarse sand
1000.00	0.00	0.16	0.35	
707.11	0.50	0.62	0.96	Coarse sand
500.00	1.00	2.44	3.40	
353.55	1.50	4.59	8.00	Medium sand
250.00	2.00	3.67	11.66	
176.78	2.50	9.22	20.88	Fine sand
125.00	3.00	20.65	41.54	
88.39	3.50	15.13	56.67	Very fine sand
62.50	4.00	6.16	62.84	
44.19	4.50	4.30	67.13	Coarse silt
31.25	5.00	3.64	70.77	
22.10	5.50	3.16	73.93	Medium silt
15.63	6.00	3.27	77.21	
11.05	6.50	3.97	81.18	Fine silt
7.81	7.00	4.15	85.32	
5.52	7.50	3.80	89.12	Very fine silt
3.91	8.00	3.07	92.19	
2.76	8.50	2.12	94.31	Clay
1.95	9.00	1.32	95.63	
1.38	9.50	0.84	96.47	
0.98	10.00	0.63	97.10	
0.69	10.50	0.55	97.66	
0.49	11.00	0.52	98.18	
<0.49	>11	1.55	100.00	



Method of Moments			
Geometric	Mean (µm)	56.66	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	2.39	Very poor
	Skewness	1.08	Fine
	Kurtosis	3.87	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	57.57	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	2.30	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.02	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.28	102.98	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

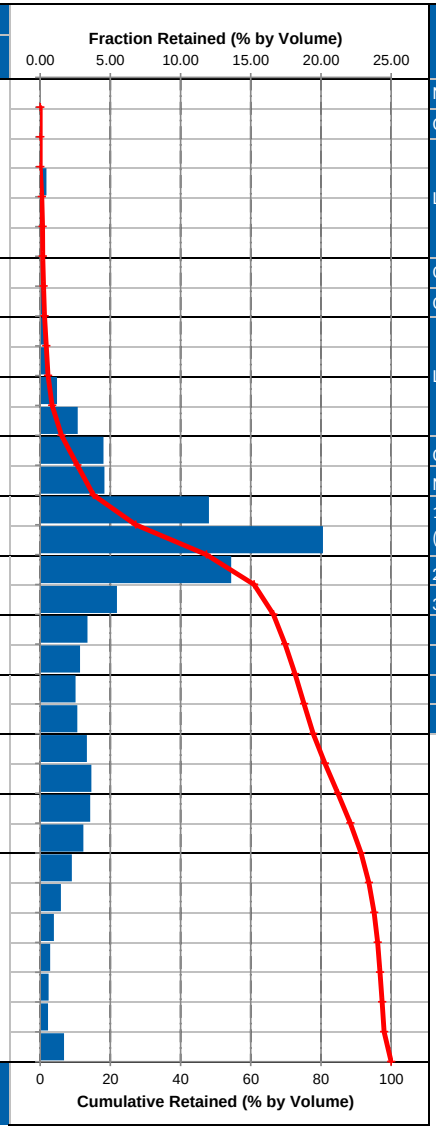
Classification		Composition	
Modified Folk	Muddy sand	Fines	36.90%
EUNIS Folk	Mud and sandy mud	Sand	62.70%
Distribution	Multimodal	Gravel	0.10%



APPENDIX D PARTICLE SIZE ANALYSIS

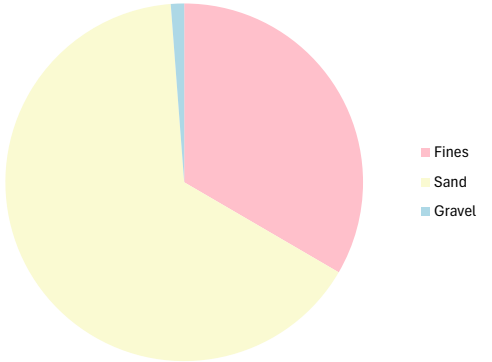
ENV130

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.45	0.45	
5656.85	-2.50	0.24	0.68	
4000.00	-2.00	0.05	0.73	
2828.43	-1.50	0.21	0.94	Granule
2000.00	-1.00	0.31	1.24	
1414.21	-0.50	0.49	1.73	Very coarse sand
1000.00	0.00	0.48	2.21	
707.11	0.50	1.20	3.42	Coarse sand
500.00	1.00	2.68	6.09	
353.55	1.50	4.50	10.60	Medium sand
250.00	2.00	4.58	15.17	
176.78	2.50	12.03	27.20	Fine sand
125.00	3.00	20.15	47.34	
88.39	3.50	13.60	60.95	Very fine sand
62.50	4.00	5.47	66.42	
44.19	4.50	3.37	69.79	Coarse silt
31.25	5.00	2.84	72.63	
22.10	5.50	2.52	75.15	Medium silt
15.63	6.00	2.65	77.80	
11.05	6.50	3.32	81.12	Fine silt
7.81	7.00	3.65	84.77	
5.52	7.50	3.57	88.34	Very fine silt
3.91	8.00	3.07	91.41	
2.76	8.50	2.26	93.67	Clay
1.95	9.00	1.48	95.15	
1.38	9.50	0.97	96.12	
0.98	10.00	0.72	96.84	
0.69	10.50	0.61	97.45	
0.49	11.00	0.56	98.01	
<0.49	>11	1.70	100.00	



Method of Moments			
Geometric	Mean (µm)	65.15	Wentworth:
Logarithmic	Mean (Phi)	3.91	Very fine sand
	Sorting	2.59	Very poor
	Skewness	0.89	Fine
	Kurtosis	3.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	62.12	Wentworth:
Logarithmic	Mean (Phi)	4.01	Coarse silt
	Sorting	2.45	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.09	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.10	116.82	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

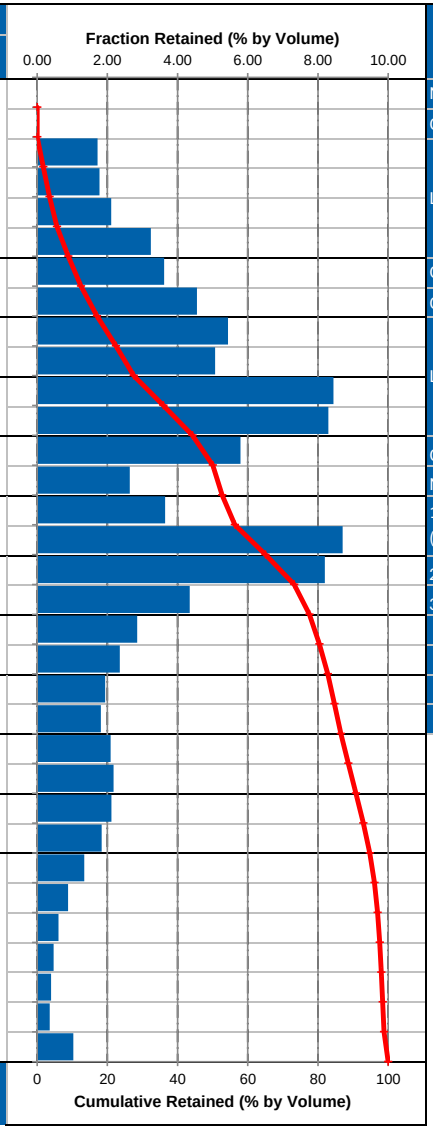
Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	33.30%
EUNIS Folk	Mud and sandy mud	Sand	65.20%
Distribution	Bimodal	Gravel	1.20%



APPENDIX D PARTICLE SIZE ANALYSIS

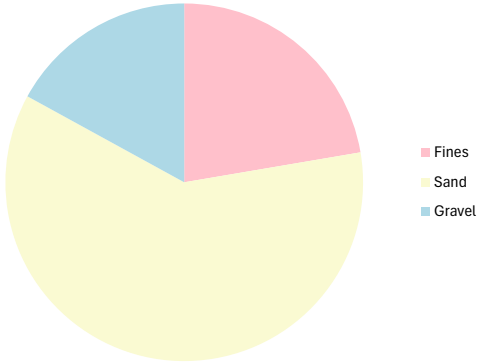
ENV131

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	1.72	1.72	Pebble
8000.00	-3.00	1.78	3.50	
5656.85	-2.50	2.11	5.61	
4000.00	-2.00	3.24	8.84	
2828.43	-1.50	3.62	12.46	Granule
2000.00	-1.00	4.55	17.01	
1414.21	-0.50	5.44	22.45	Very coarse sand
1000.00	0.00	5.07	27.51	
707.11	0.50	8.44	35.95	Coarse sand
500.00	1.00	8.30	44.25	
353.55	1.50	5.79	50.05	Medium sand
250.00	2.00	2.64	52.68	
176.78	2.50	3.64	56.32	Fine sand
125.00	3.00	8.70	65.03	
88.39	3.50	8.20	73.23	Very fine sand
62.50	4.00	4.35	77.57	
44.19	4.50	2.85	80.42	Coarse silt
31.25	5.00	2.35	82.77	
22.10	5.50	1.94	84.71	Medium silt
15.63	6.00	1.82	86.53	
11.05	6.50	2.09	88.62	Fine silt
7.81	7.00	2.17	90.80	
5.52	7.50	2.12	92.91	Very fine silt
3.91	8.00	1.84	94.75	
2.76	8.50	1.34	96.09	
1.95	9.00	0.88	96.97	
1.38	9.50	0.61	97.58	
0.98	10.00	0.47	98.05	Clay
0.69	10.50	0.39	98.44	
0.49	11.00	0.36	98.79	
<0.49	>11	1.03	100.00	



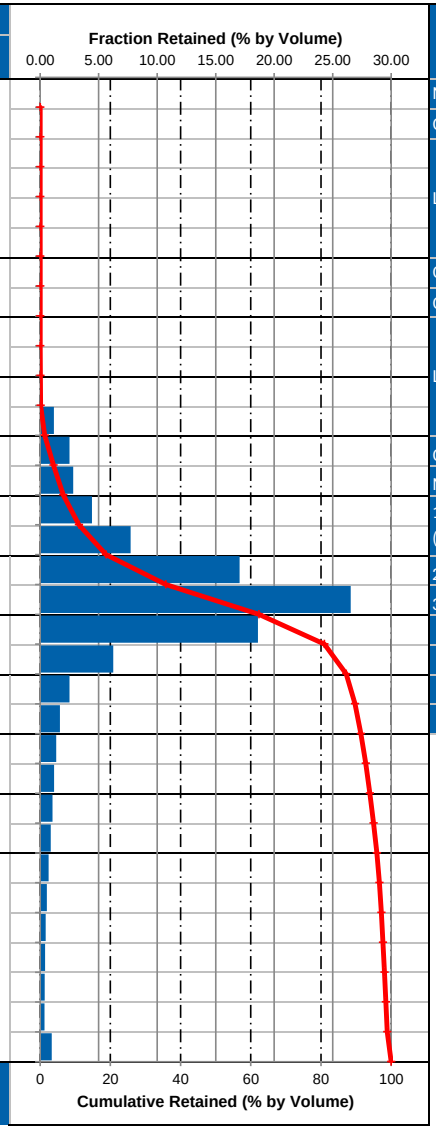
Method of Moments			
Geometric	Mean (µm)	242.11	Wentworth:
Logarithmic	Mean (Phi)	2.03	Fine sand
	Sorting	3.23	Very poor
	Skewness	0.63	Fine
	Kurtosis	3.15	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	267.86	Wentworth:
Logarithmic	Mean (Phi)	1.90	Medium sand
	Sorting	3.23	Very poor
	Skewness	0.21	Fine
	Kurtosis	1.11	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.50	354.51	Medium sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	0.50	707.11	Coarse sand
3rd Local Maxima	-0.50	1414.21	Very coarse sand

Classification		Composition	
Modified Folk	Gravelly muddy sand	Fines	22.30%
EUNIS Folk	Mixed sediments	Sand	60.60%
Distribution	Multimodal	Gravel	17.00%



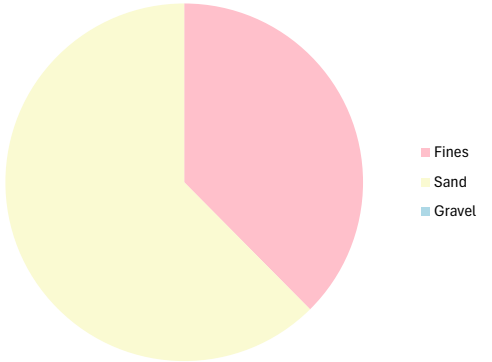
APPENDIX D PARTICLE SIZE ANALYSIS

ENV132				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.03	0.04	
707.11	0.50	0.06	0.10	Coarse sand
500.00	1.00	1.17	1.27	
353.55	1.50	2.50	3.77	Medium sand
250.00	2.00	2.82	6.59	
176.78	2.50	4.42	11.01	Fine sand
125.00	3.00	7.74	18.75	
88.39	3.50	17.04	35.78	Very fine sand
62.50	4.00	26.55	62.33	
44.19	4.50	18.61	80.94	Coarse silt
31.25	5.00	6.24	87.18	
22.10	5.50	2.50	89.68	Medium silt
15.63	6.00	1.69	91.37	
11.05	6.50	1.38	92.75	Fine silt
7.81	7.00	1.19	93.94	
5.52	7.50	1.06	95.00	Very fine silt
3.91	8.00	0.90	95.91	
2.76	8.50	0.72	96.63	Clay
1.95	9.00	0.57	97.19	
1.38	9.50	0.47	97.67	
0.98	10.00	0.42	98.09	
0.69	10.50	0.39	98.49	
0.49	11.00	0.36	98.85	
<0.49	>11	0.99	100.00	



Method of Moments			
Geometric	Mean (µm)	63.05	Wentworth:
Logarithmic	Mean (Phi)	3.97	Very fine sand
	Sorting	1.69	Poor
	Skewness	1.99	Very fine
	Kurtosis	9.40	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	72.87	Wentworth:
Logarithmic	Mean (Phi)	3.78	Very fine sand
	Sorting	1.36	Poor
	Skewness	0.15	Fine
	Kurtosis	2.05	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.77	73.42	Very fine sand
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

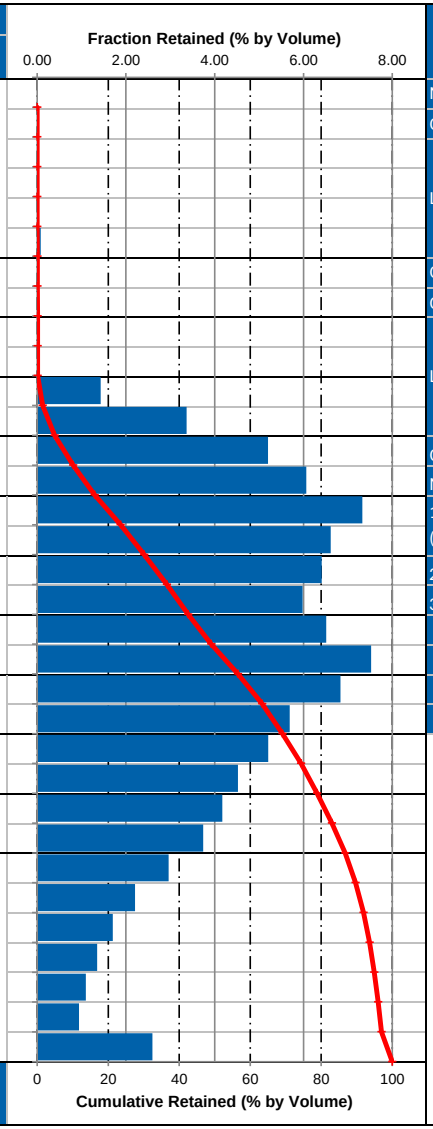
Classification		Composition	
Modified Folk	Muddy sand	Fines	37.50%
EUNIS Folk	Mud and sandy mud	Sand	62.30%
Distribution	Unimodal	Gravel	0.00%



APPENDIX D PARTICLE SIZE ANALYSIS

ENV133

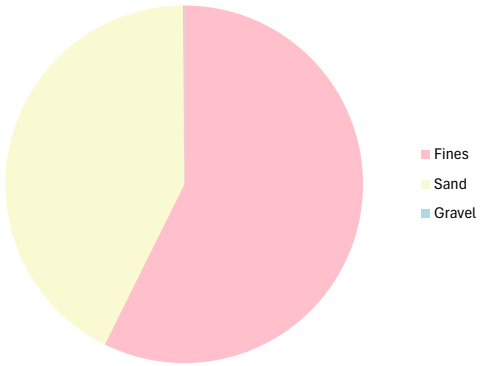
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.00	0.08	Granule
2000.00	-1.00	0.02	0.10	
1414.21	-0.50	0.01	0.10	Very coarse sand
1000.00	0.00	0.02	0.12	
707.11	0.50	1.43	1.55	Coarse sand
500.00	1.00	3.37	4.92	
353.55	1.50	5.20	10.12	Medium sand
250.00	2.00	6.06	16.19	
176.78	2.50	7.33	23.51	Fine sand
125.00	3.00	6.61	30.13	
88.39	3.50	6.41	36.54	Very fine sand
62.50	4.00	5.98	42.52	
44.19	4.50	6.51	49.03	Coarse silt
31.25	5.00	7.52	56.55	
22.10	5.50	6.83	63.39	Medium silt
15.63	6.00	5.69	69.08	
11.05	6.50	5.21	74.28	Fine silt
7.81	7.00	4.52	78.81	
5.52	7.50	4.17	82.98	Very fine silt
3.91	8.00	3.74	86.72	
2.76	8.50	2.96	89.68	Clay
1.95	9.00	2.20	91.88	
1.38	9.50	1.70	93.59	
0.98	10.00	1.35	94.94	
0.69	10.50	1.10	96.04	
0.49	11.00	0.94	96.98	
<0.49	>11	2.60	100.00	



Method of Moments			
Geometric	Mean (µm)	35.62	Wentworth:
Logarithmic	Mean (Phi)	4.77	Coarse silt
	Sorting	2.71	Very poor
	Skewness	0.58	Fine
	Kurtosis	2.87	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	37.72	Wentworth:
Logarithmic	Mean (Phi)	4.73	Coarse silt
	Sorting	2.78	Very poor
	Skewness	0.15	Fine
	Kurtosis	0.93	Mesokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.56	42.26	Coarse silt
1st Local Maxima (Mode)	5.00	31.25	Coarse silt
2nd Local Maxima	2.50	176.78	Fine sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	57.10%
EUNIS Folk	Mud and sandy mud	Sand	42.40%
Distribution	Bimodal	Gravel	0.10%



APPENDIX E SPEARMAN'S RANK CORRELATION

APPENDIX E SPEARMAN'S RANK CORRELATION

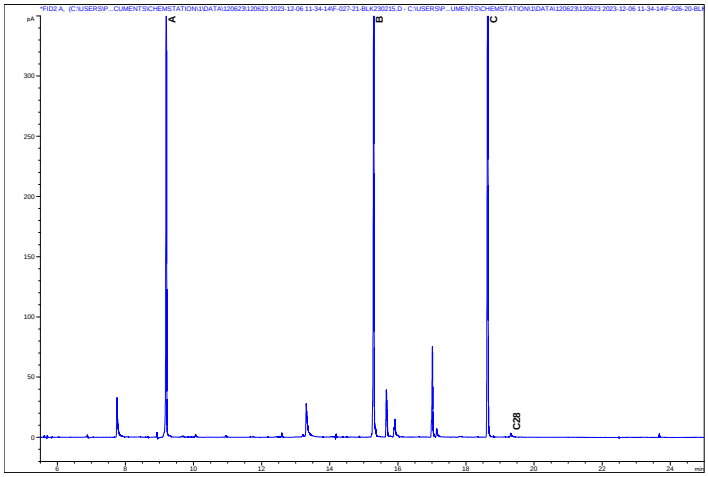
Grubbs' Test for Low Outliers (n>25)	3.57	1.24	1.22	2.27	0.30	0.84	0.67	1.10	0.50	0.95	0.56	0.89	0.20	0.26
Grubbs' Test for High Outliers (n>25)	2.12	3.83	2.32	1.26	7.89	5.25	6.53	4.83	7.25	3.79	7.03	5.25	7.92	7.37
Station	Depth	Mean µm	Fines	Sands	TOC	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Nickel (Ni)	Lead (Pb)	Zinc (Zn)	TOTAL PAH	THC
ENV-001	68	196	6	94	0.22	2.7	0.05	9.2	1.9	3.1	3	8.3	18.71	1
ENV-003	70	190	6	93	0.18	2.9	0.06	10.1	2.4	4	3.5	9.3	12.04	1
ENV-005	78	181	8	91	0.22	2.5	0.05	9.1	2	3.8	3.2	8.7	19.29	1
ENV-007	75	180	9	91	0.23	2.5	0.039	9.5	1.8	3.7	3.3	8.8	20.13	1
ENV-009	75	175	7	93	0.23	2.5	0.06	8.9	1.7	3.5	3.2	8.6	18.91	1
ENV-011	74	181	9	91	0.23	2.6	0.039	9.1	1.8	3.7	3.5	8.9	28.66	1
ENV-013	76	194	8	91	0.20	2.8	0.05	9.1	1.9	3.8	3.2	10.2	9.28	1
ENV-015	73	198	8	91	0.20	2.8	0.05	8.5	1.9	4	3	13.2	16.91	1
ENV-017	69	220	7	93	0.16	3.1	0.05	8.4	2.1	3.2	3.1	13.7	5.23	1
ENV-019	61	243	0	100	0.13	4.5	0.05	7.8	2.1	3.9	4.1	12.7	0.90	1
ENV-021	74	193	11	89	0.19	3.2	0.05	8.9	2.1	3.1	3.4	10.8	11.57	1
ENV-023	82	129	16	84	0.22	2.8	0.07	8.9	2	3.9	4.3	11.7	42.44	1
ENV-025	76	205	12	83	0.20	3.1	0.04	8.9	2.3	4.1	4.3	12	9.91	1
ENV-027	74	273	6	94	0.26	4.6	0.06	12.5	2.2	4.2	5.6	16.4	911.29	1
ENV-029	79	114	18	82	0.22	3	0.039	9.9	2.2	4.5	5.3	14.6	50.67	1
ENV-030	76	171	16	84	0.27	4	0.05	11.8	2.3	4.8	5.4	14.8	131.73	1
ENV-031	75	214	10	90	0.34	4.5	0.07	11.2	2.7	4.9	6.1	14.8	45.21	1
ENV-032	71	299	6	94	0.25	10.1	0.04	13	2.5	4.8	9	17.1	15.00	1
ENV-033	69	365	5	88	0.26	10	0.07	11.6	2.5	5.3	9.6	15.4	7.72	1
ENV-034	67	422	2	98	0.31	12.6	0.08	8.2	2.1	9.3	9.2	15.5	3.15	1
ENV-036	69	289	3	96	0.29	9.7	0.05	7	2	5.1	9	26.4	9.69	1
ENV-038	68	315	8	92	0.23	9.7	0.039	6.9	3.9	5.2	7.9	20.5	14.18	1
ENV-040	88	100	29	71	0.50	4	0.05	10.9	3.2	6.9	8.6	23.4	232.58	2.53
ENV-042	91	86	28	71	0.49	4.3	0.04	13	3	7.5	8.7	28.1	263.54	3.99
ENV-044	96	79	31	69	0.68	8.3	0.06	19.3	4.2	9.3	15.2	32	410.99	5.01
ENV-046	89	64	36	64	0.56	4.2	0.05	13.7	3.1	7.5	8.7	28.8	418.38	8.65
ENV-048	81	96	25	74	0.46	4.4	0.06	15.9	3.8	8.8	10.3	30.5	356.53	5.11
ENV-050	68	88	35	58	0.78	4.7	0.07	16.5	3.8	9.4	10.4	27.2	596.78	6.36
ENV-052	66	178	13	87	0.40	6.8	0.04	14.9	3.4	6.9	10.5	34.2	77.59	1.28
ENV-054	71	106	21	79	0.41	5.8	0.06	14.1	3.3	7.6	10.6	28.6	193.35	5.46
ENV-056	80	58	31	69	0.66	5.2	0.06	15.2	4	9.3	12.2	30.1	676.32	8.64
ENV-059	77	27	60	40	1.50	6.7	0.12	28.1	9	18.8	29.3	54.2	3059.90	31.8
ENV-060	75	32	55	45	1.21	6.6	0.09	25	7.8	16.5	28.2	52	2378.55	23.1
ENV-063	50	95	31	68	0.63	8.3	0.07	13.9	4.2	9	19.5	42	864.16	12.4
ENV-064	51	62	30	70	0.83	6.2	0.06	17.2	6.4	11	19.2	48	1603.41	18.2
ENV-071	71	209	7	92	0.35	3.7	0.039	12.4	3.3	7.2	4.7	15.6	7.50	1
ENV-073	72	196	10	90	0.31	3.1	0.039	12.6	2	4.9	3.7	9.4	6.96	1
ENV-075	68	237	5	95	0.28	4.7	0.039	12.8	2.1	6.5	4.5	14	4.59	1
ENV-077	62	253	5	94	0.28	5.1	0.039	10.3	2.1	4.8	4.3	13.3	0.90	1
ENV-079	65	249	6	92	0.36	4.1	0.039	10.8	2.1	4.3	4.8	14	9.60	1
ENV-081	69	175	10	90	0.27	3.1	0.05	9.8	2.5	4.2	3.3	16.5	6.54	1
ENV-083	67	191	10	90	0.27	3.6	0.039	11.2	2.3	4.4	3.7	13.2	9.71	1
ENV-085	70	171	11	89	0.29	2.7	0.039	9.6	2.6	4.4	3.6	13.4	13.00	1
ENV-087	68	567	1	98	0.23	16	0.07	11.7	2.9	7.8	7.7	22	0.90	1
ENV-089	65	312	2	97	0.27	11.2	0.05	9.4	2.1	4.6	6.7	14.1	0.90	1
ENV-091	70	218	9	91	0.30	4.8	0.05	10	2.2	3.9	4.2	12.8	12.44	4.96
ENV-093	68	222	6	94	0.28	5.3	0.04	10.7	1.9	3.7	4.8	13.8	7.05	1
ENV-096	82	150	15	85	0.39	4.7	0.06	12	2.6	5.3	5.7	18.1	37.53	1
ENV-097	72	231	5	94	0.28	5.5	0.07	12.5	2.4	5.1	6.3	16	9.15	1
ENV-100	95	58	31	69	0.47	3.6	0.08	13.2	3.2	6.6	7.2	18	127.66	1
ENV-101	90	72	26	74	0.56	4.1	0.039	14.8	3.4	8.2	8.4	20.8	148.26	1.97
ENV-104	85	125	18	82	0.39	4.2	0.06	14.9	3.1	9.4	7.9	17.9	70.25	1.02
ENV-105	86	87	25	73	0.30	4.1	0.039	12.6	2.5	7	7.3	15.6	103.80	4.78
ENV-108	88	73	26	74	0.45	5	0.08	17.5	4.1	9.8	10.4	23	162.79	2.67
ENV-109	95	54	31	69	0.64	4.1	0.07	17.3	4	10.5	11.1	24.4	358.31	3.66
ENV-112	104	46	39	61	0.54	4.1	0.06	18.2	4.9	10.8	10.8	25.8	388.60	3.31
ENV-114	98	46	38	62	0.62	4.2	0.05	18.4	5.3	11.8	11.5	29	413.19	8.95
ENV-116	89	48	40	60	0.60	8.6	0.13	45.8	10.9	25.2	27	57.1	370.97	4.66
ENV-118	92	37	49	51	0.87	5	0.05	21.5	5.8	14.2	15.5	35.2	710.93	6.28
ENV-120	96	30	57	43	1.05	4.8	0.06	23.6	6.1	15.3	17.3	38.1	757.91	7.33
ENV-122	100	30	57	43	1.29	5.4	0.08	24.5	7.3	15.4	18.7	60.6	1233.22	9.31
ENV-124	92	35	50	50	0.91	5.3	0.08	22	6.5	13.7	17.6	48.2	1119.58	8.62
ENV-126	83	31	57	42	1.02	5.1	0.1	23.7	7.2	14.9	20.9	50	1608.74	28.1
ENV-128	59	54	35	65	0.71	4.5	0.09	16.2	5	10.8	15.8	38.6	1644.68	33.8
ENV-131	47	268	22	61	1.05	11.7	0.11	16.4	7.4	13.2	27	61.4	3197.00	99.4
ENV-133	27	38	57	42	14.80	24.7	0.29	30.5	37.5	26.8	109	123	40233.00	269
Depth		-0.62	0.56	-0.51	0.29	-0.25	0.13	0.39	0.28	0.29	0.20	0.21	0.41	0.24
Mean µm			-0.94	0.89	-0.71	0.03	-0.39	-0.74	-0.68	-0.65	-0.58	-0.61	-0.80	-0.75
Fines				-0.98	0.80	0.10	0.45	0.79	0.79	0.73	0.69	0.72	0.88	0.84
Sands					-0.81	-0.16	-0.48	-0.80	-0.81	-0.76	-0.73	-0.74	-0.88	-0.85
TOC						0.49	0.51	0.88	0.85	0.90	0.87	0.88	0.78	0.87
Arsenic (As)							0.45	0.44	0.53	0.60	0.73	0.67	0.23	0.42
Cadmium (Cd)								0.52	0.57	0.58	0.62	0.57	0.54	0.52
Chromium (Cr)									0.86	0.88	0.83	0.83	0.77	0.82
Copper (Cu)										0.91	0.89	0.91	0.77	0.83
Nickel (Ni)											0.93	0.91	0.71	0.81
Lead (Pb)												0.94	0.75	0.83
Zinc (Zn)													0.76	0.84
TOTAL PAH														0.85
THC														

Critical Values Outliers Test
p < 0.01 if value >= 3.411
p < 0.05 if value >= 3.025

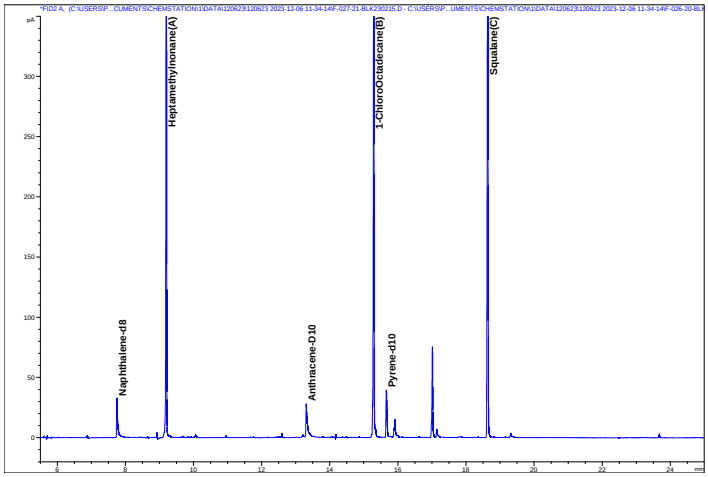
Critical Values Spearmans Test
p < 0.01 if value >= 0.325
p < 0.05 if value >= 0.25

APPENDIX F HYDROCARBON ANALYSIS

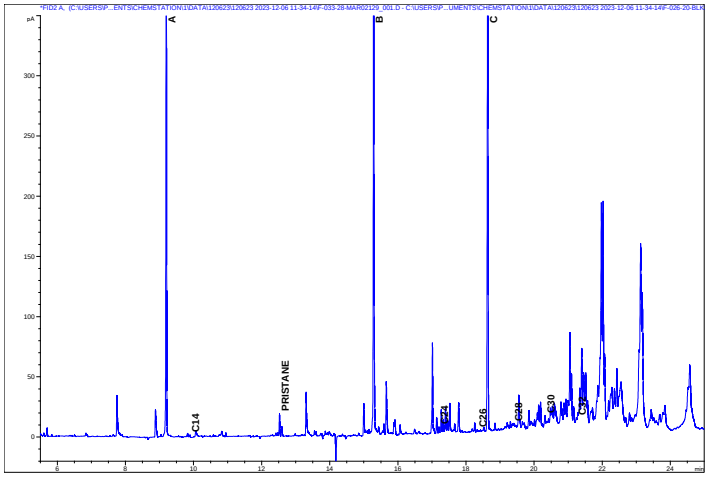
APPENDIX F HYDROCARBON ANALYSIS



BLKS230215

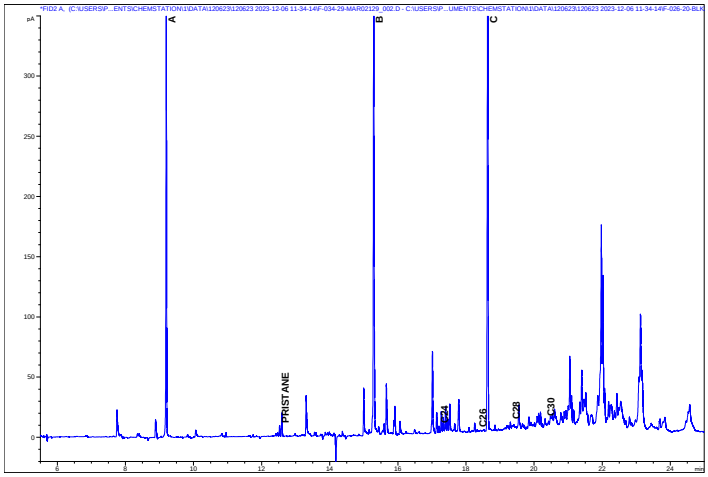


BLKS230215_Labelled

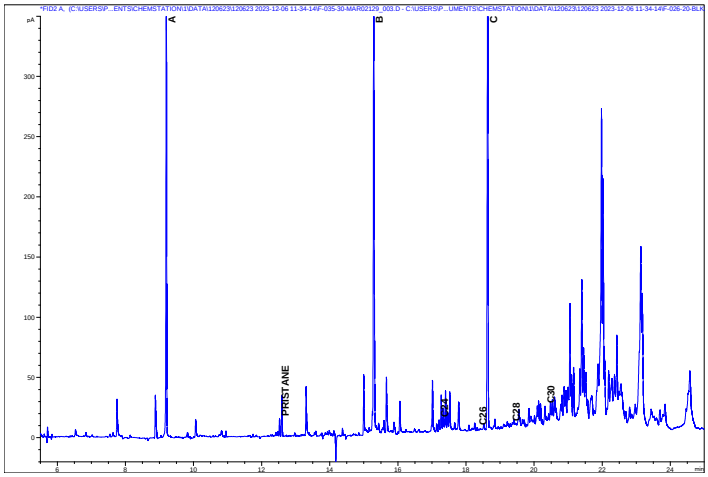


MAR2129_001

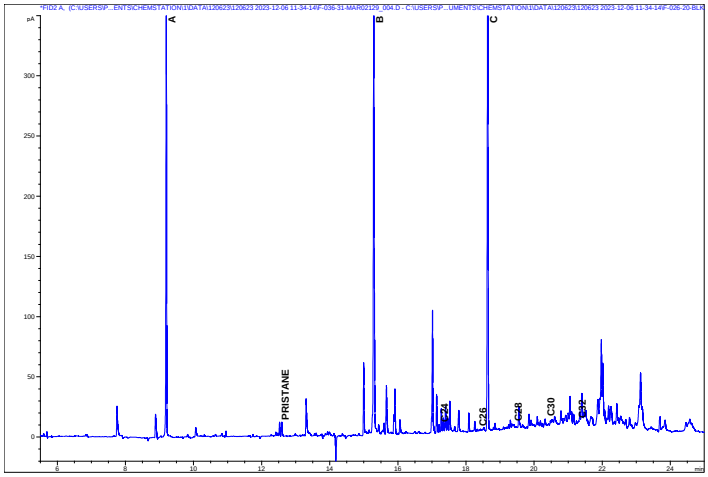
APPENDIX F HYDROCARBON ANALYSIS



MAR2129_002

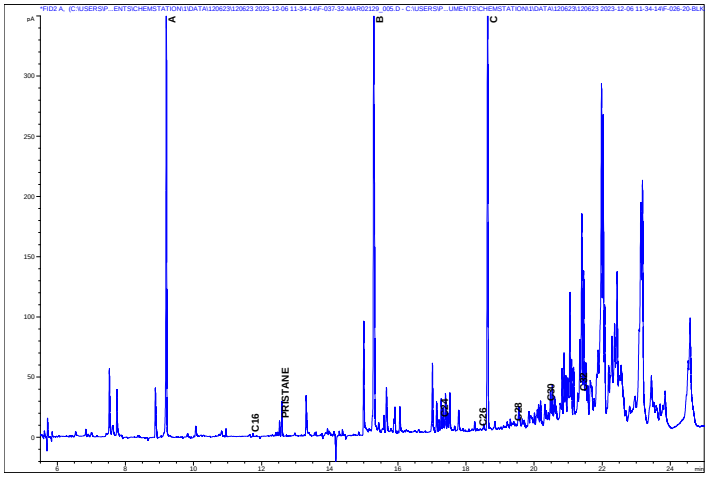


MAR2129_003

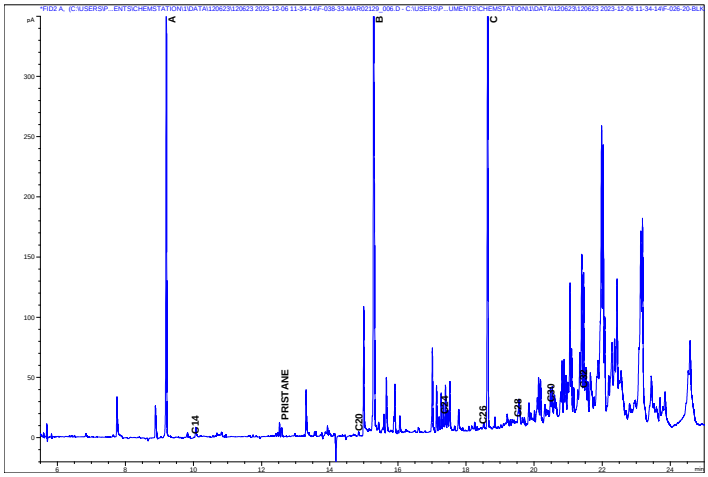


MAR2129_004

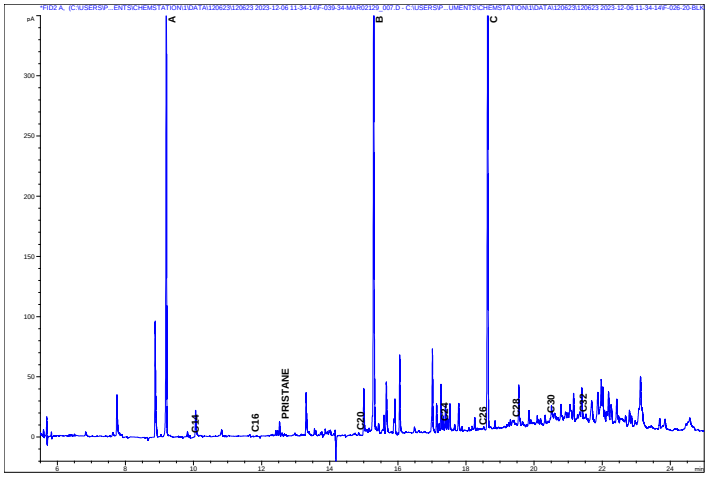
APPENDIX F HYDROCARBON ANALYSIS



MAR2129_005

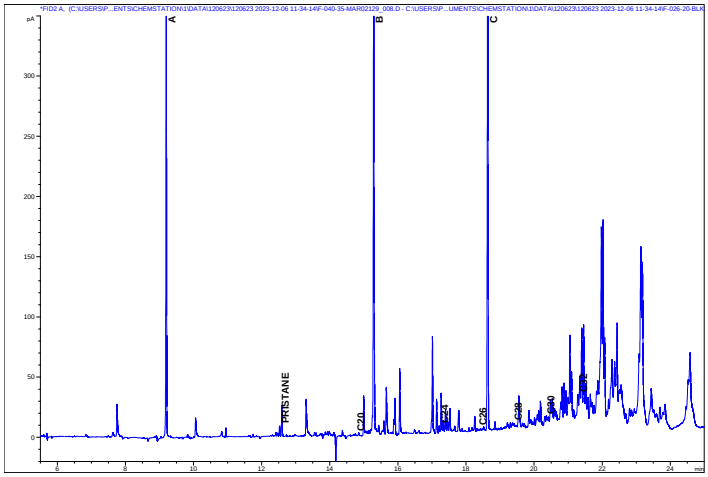


MAR2129_006

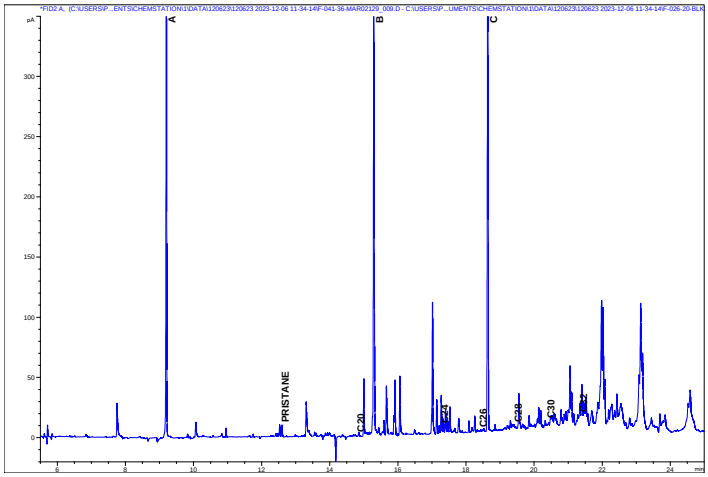


MAR2129_007

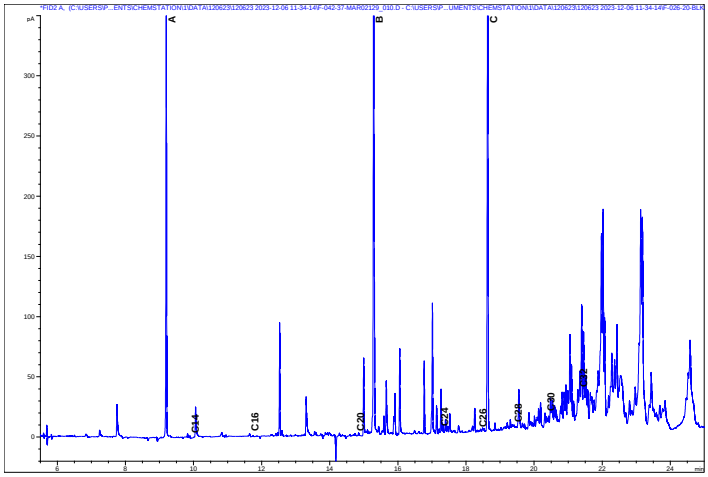
APPENDIX F HYDROCARBON ANALYSIS



MAR2129_008

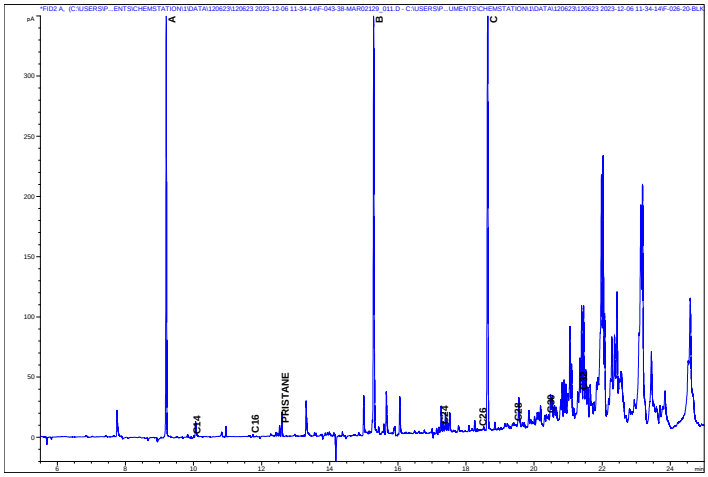


MAR2129_009

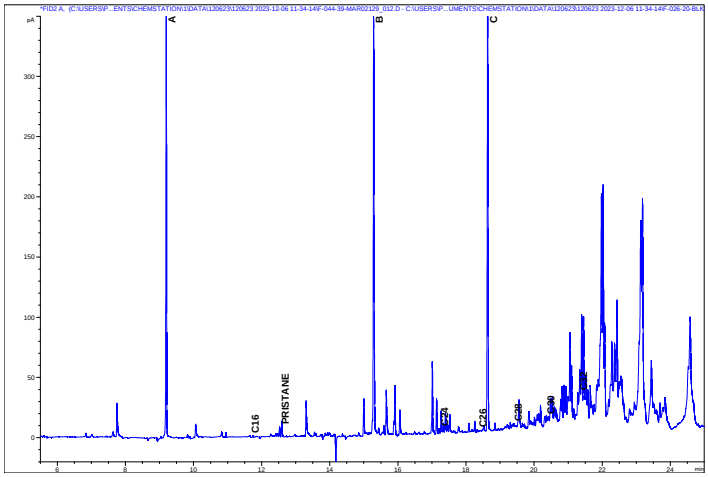


MAR2129_010

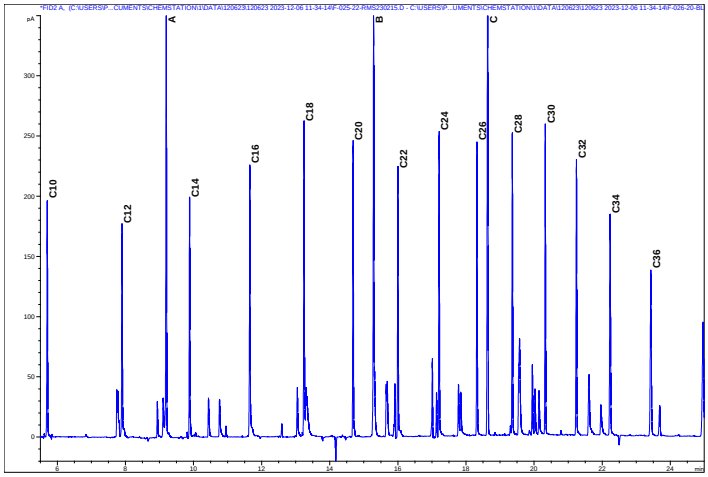
APPENDIX F HYDROCARBON ANALYSIS



MAR2129_011

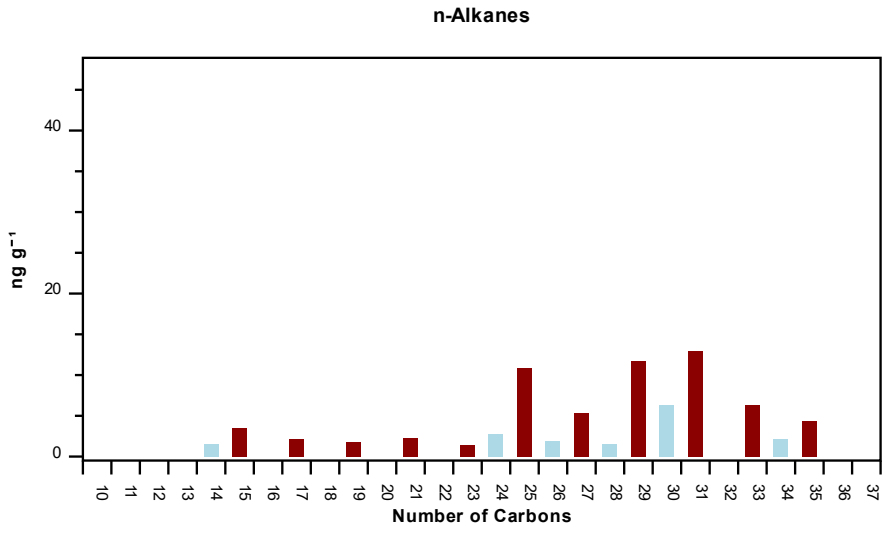


MAR2129_012



RMS230215

APPENDIX F HYDROCARBON ANALYSIS



ENV-001

nC_{10}-nC_{20}: 9ng g^{-1}

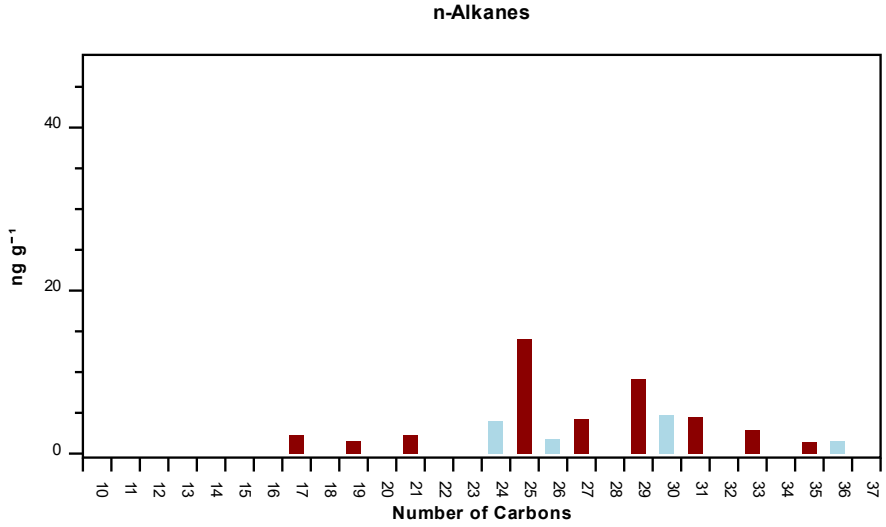
nC_{21}-nC_{37}: 70ng g^{-1}

nC_{10}-nC_{37}: 79ng g^{-1}

Odd Length n-Alkanes: 63ng g^{-1}

Even Length n-Alkanes: 16ng g^{-1}

CPI: 3.0



ENV-003

nC_{10}-nC_{20}: 4ng g^{-1}

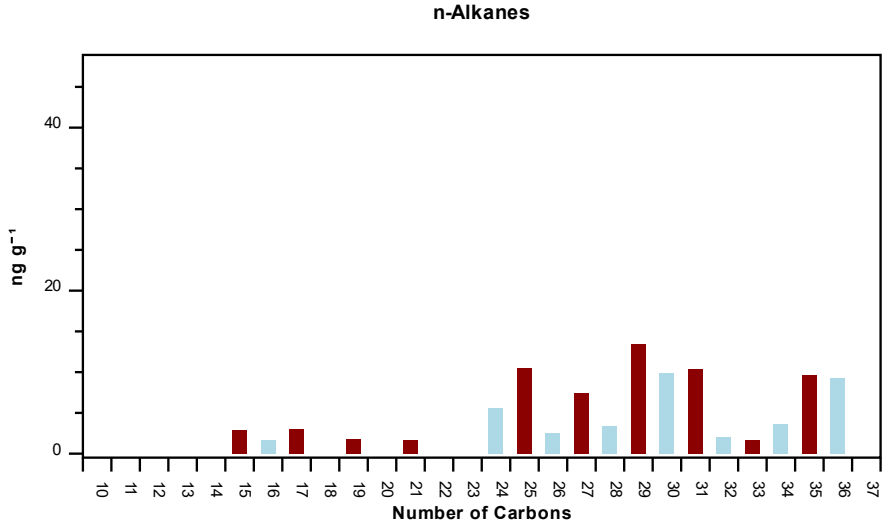
nC_{21}-nC_{37}: 50ng g^{-1}

nC_{10}-nC_{37}: 54ng g^{-1}

Odd Length n-Alkanes: 42ng g^{-1}

Even Length n-Alkanes: 12ng g^{-1}

CPI: 4.1



ENV-005

nC_{10}-nC_{20}: 9ng g^{-1}

nC_{21}-nC_{37}: 91ng g^{-1}

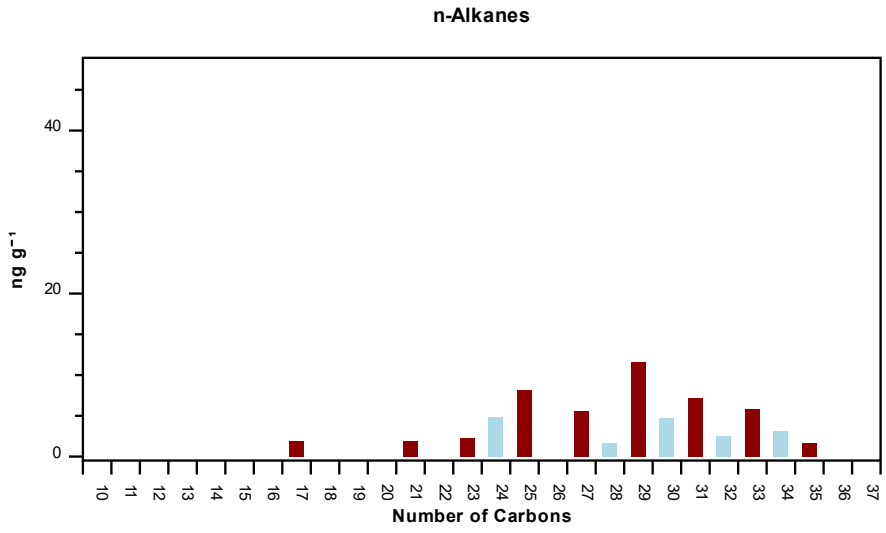
nC_{10}-nC_{37}: 100ng g^{-1}

Odd Length n-Alkanes: 62ng g^{-1}

Even Length n-Alkanes: 38ng g^{-1}

CPI: 2.2

APPENDIX F HYDROCARBON ANALYSIS



ENV-007

nC_{10}-nC_{20}: 2ng g^{-1}

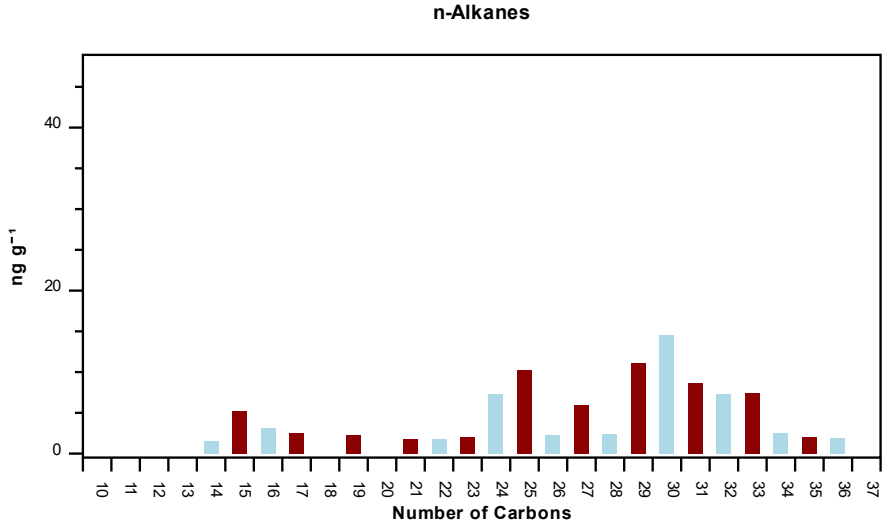
nC_{21}-nC_{37}: 61ng g^{-1}

nC_{10}-nC_{37}: 63ng g^{-1}

Odd Length n-Alkanes: 46ng g^{-1}

Even Length n-Alkanes: 17ng g^{-1}

CPI: 4.2



ENV-009

nC_{10}-nC_{20}: 15ng g^{-1}

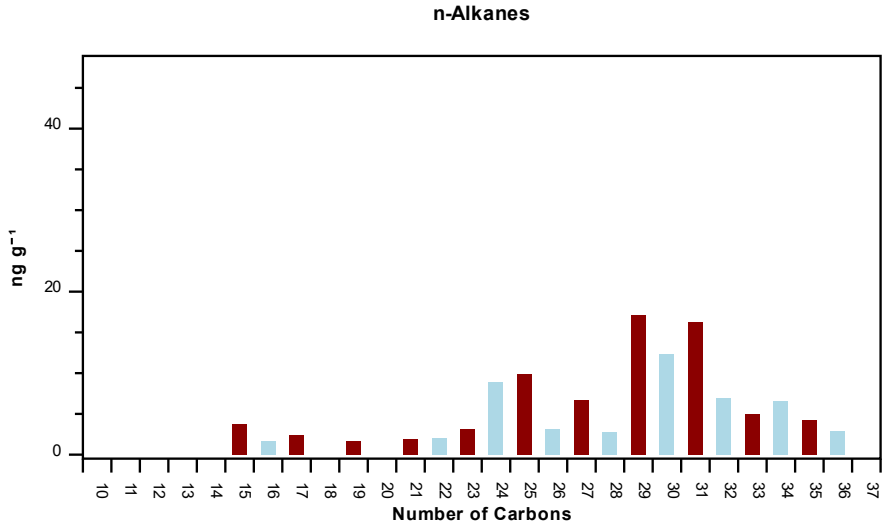
nC_{21}-nC_{37}: 89ng g^{-1}

nC_{10}-nC_{37}: 104ng g^{-1}

Odd Length n-Alkanes: 59ng g^{-1}

Even Length n-Alkanes: 45ng g^{-1}

CPI: 1.6



ENV-011

nC_{10}-nC_{20}: 9ng g^{-1}

nC_{21}-nC_{37}: 109ng g^{-1}

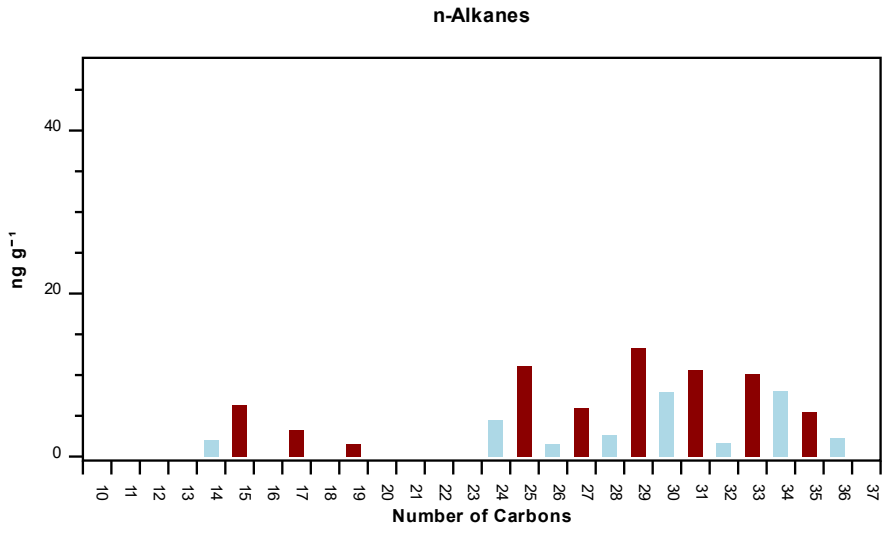
nC_{10}-nC_{37}: 119ng g^{-1}

Odd Length n-Alkanes: 72ng g^{-1}

Even Length n-Alkanes: 47ng g^{-1}

CPI: 2.2

APPENDIX F HYDROCARBON ANALYSIS



ENV-071

nC_{10}-nC_{20}: 13ng g^{-1}

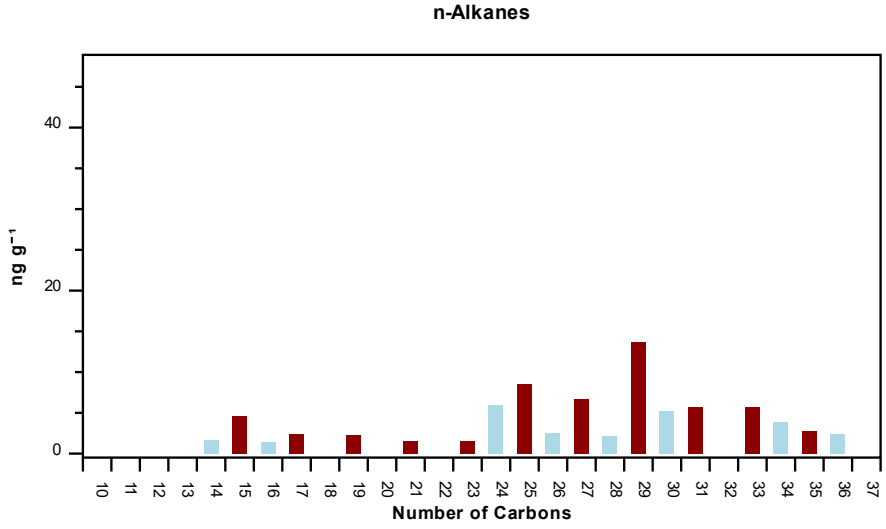
nC_{21}-nC_{37}: 85ng g^{-1}

nC_{10}-nC_{37}: 98ng g^{-1}

Odd Length n-Alkanes: 68ng g^{-1}

Even Length n-Alkanes: 31ng g^{-1}

CPI: 2.6



ENV-073

nC_{10}-nC_{20}: 12ng g^{-1}

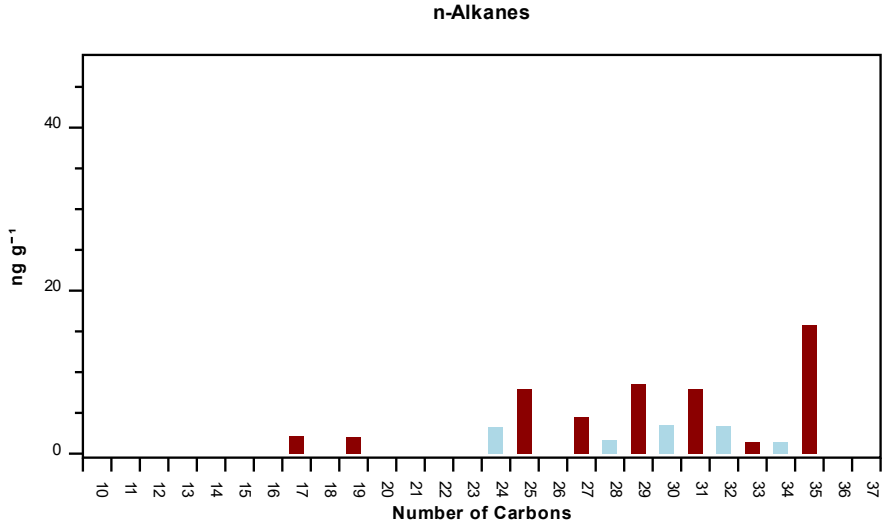
nC_{21}-nC_{37}: 68ng g^{-1}

nC_{10}-nC_{37}: 81ng g^{-1}

Odd Length n-Alkanes: 55ng g^{-1}

Even Length n-Alkanes: 25ng g^{-1}

CPI: 3.4



ENV-075

nC_{10}-nC_{20}: 4ng g^{-1}

nC_{21}-nC_{37}: 59ng g^{-1}

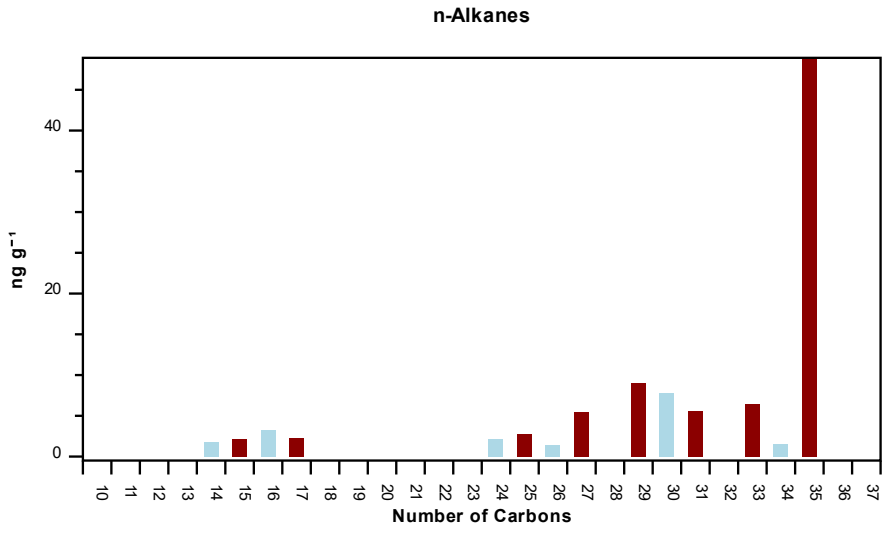
nC_{10}-nC_{37}: 63ng g^{-1}

Odd Length n-Alkanes: 50ng g^{-1}

Even Length n-Alkanes: 13ng g^{-1}

CPI: 3.8

APPENDIX F HYDROCARBON ANALYSIS



ENV-077

nC_{10}-nC_{20}: 9ng g^{-1}

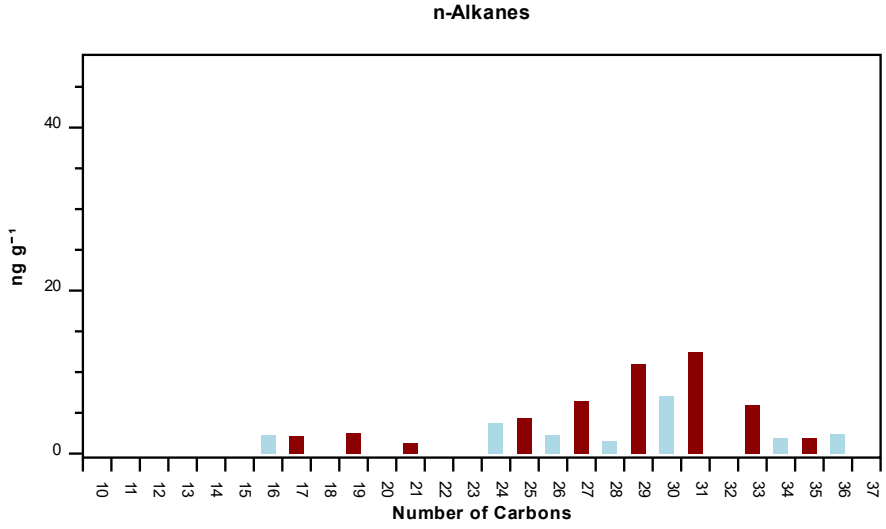
nC_{21}-nC_{37}: 91ng g^{-1}

nC_{10}-nC_{37}: 101ng g^{-1}

Odd Length n-Alkanes: 83ng g^{-1}

Even Length n-Alkanes: 18ng g^{-1}

CPI: 3.1



ENV-079

nC_{10}-nC_{20}: 7ng g^{-1}

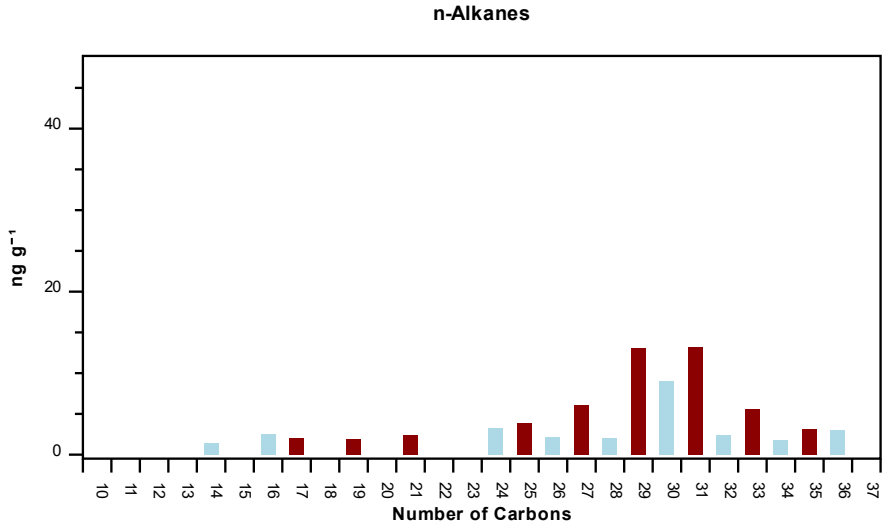
nC_{21}-nC_{37}: 62ng g^{-1}

nC_{10}-nC_{37}: 69ng g^{-1}

Odd Length n-Alkanes: 48ng g^{-1}

Even Length n-Alkanes: 21ng g^{-1}

CPI: 2.8



ENV-079 DUP

nC_{10}-nC_{20}: 8ng g^{-1}

nC_{21}-nC_{37}: 71ng g^{-1}

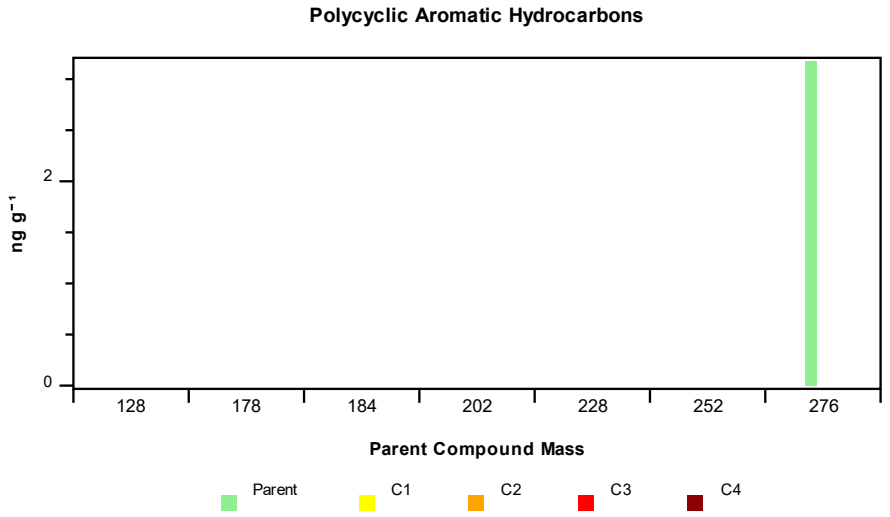
nC_{10}-nC_{37}: 79ng g^{-1}

Odd Length n-Alkanes: 51ng g^{-1}

Even Length n-Alkanes: 28ng g^{-1}

CPI: 2.5

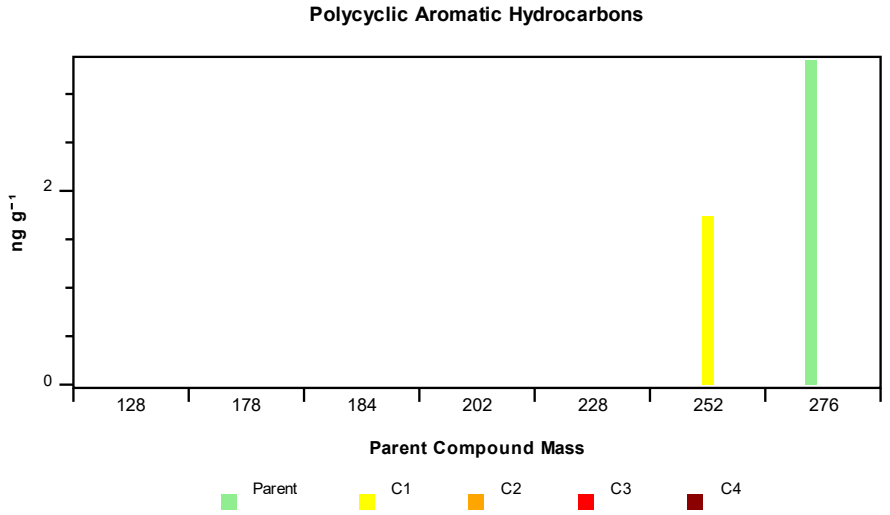
APPENDIX F HYDROCARBON ANALYSIS



ENV-001

Total NPD: NC

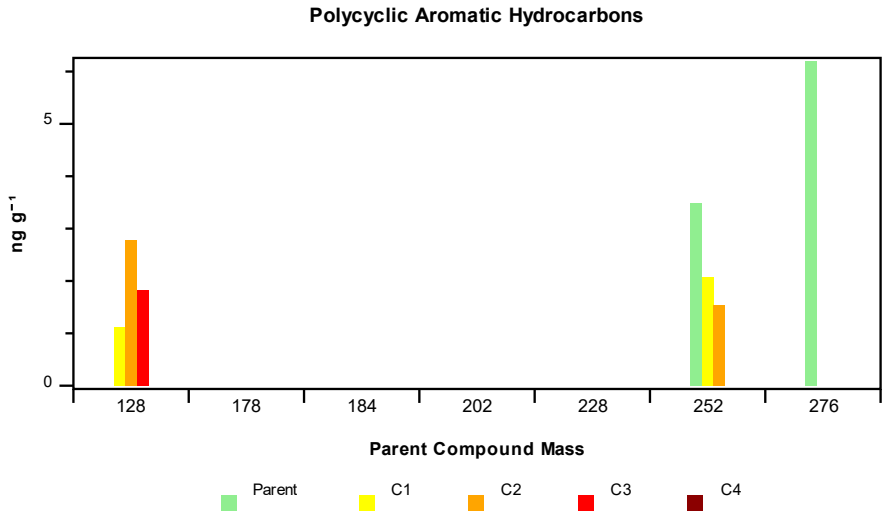
Total PAH: 3ng g^{-1}



ENV-003

Total NPD: NC

Total PAH: 5ng g^{-1}

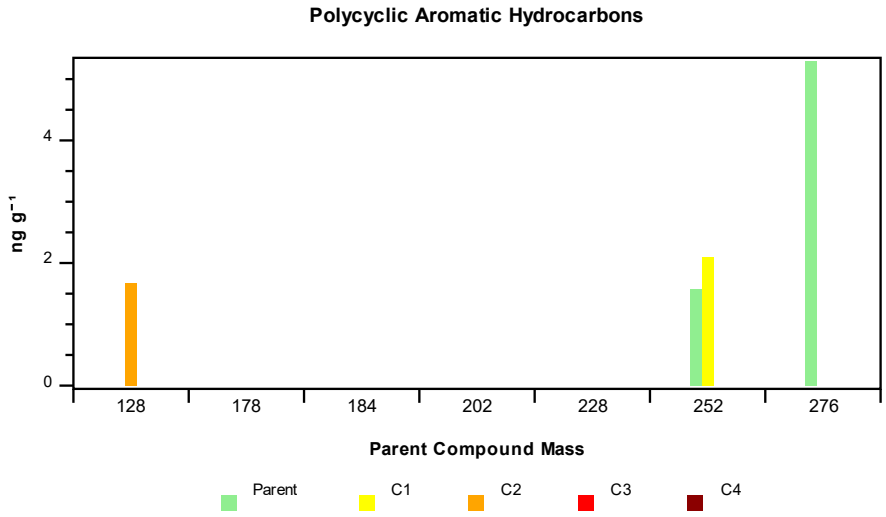


ENV-005

Total NPD: 6ng g^{-1}

Total PAH: 19ng g^{-1}

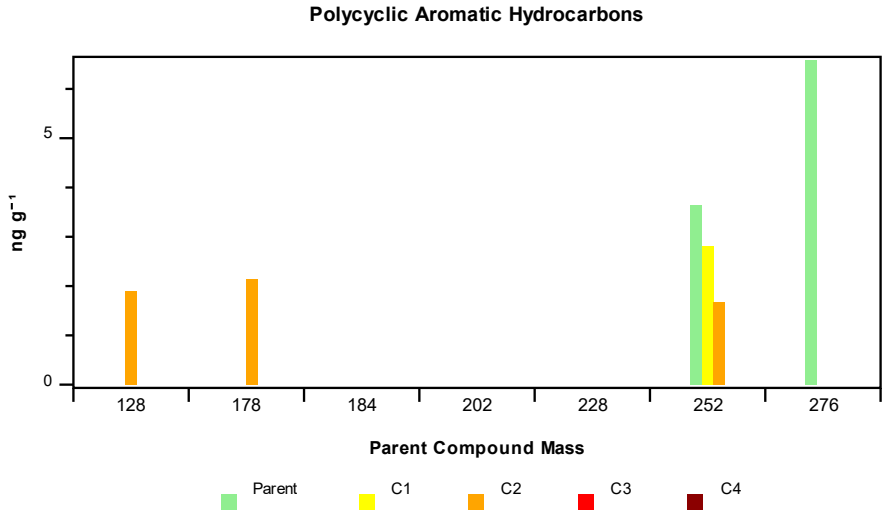
APPENDIX F HYDROCARBON ANALYSIS



ENV-007

Total NPD: 2ng g^{-1}

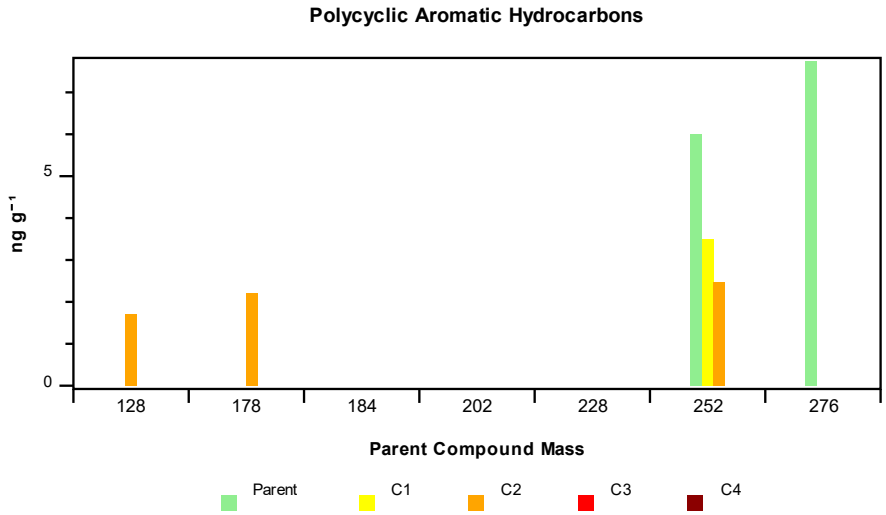
Total PAH: 11ng g^{-1}



ENV-009

Total NPD: 4ng g^{-1}

Total PAH: 19ng g^{-1}

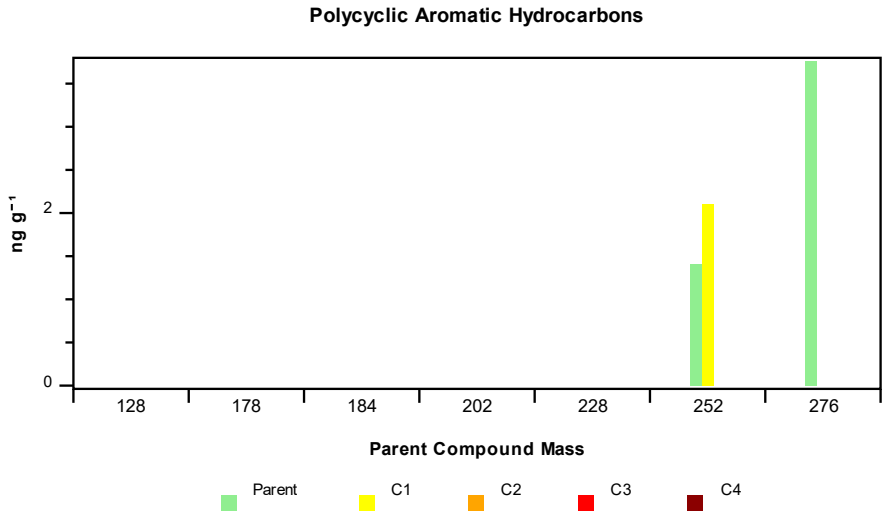


ENV-011

Total NPD: 4ng g^{-1}

Total PAH: 24ng g^{-1}

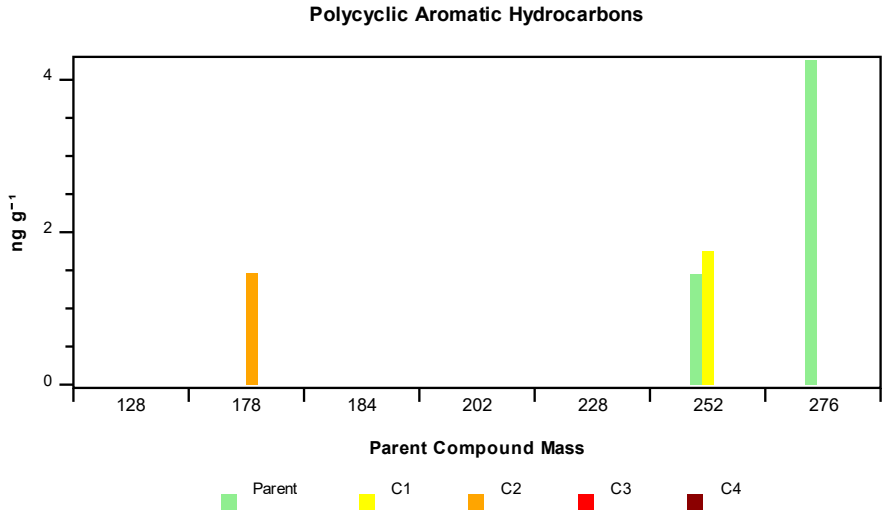
APPENDIX F HYDROCARBON ANALYSIS



ENV-071

Total NPD: NC

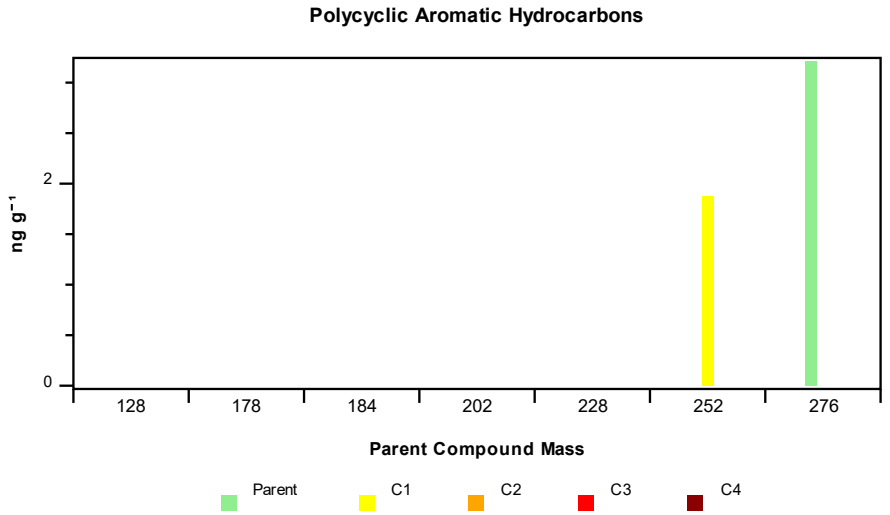
Total PAH: 7ng g^{-1}



ENV-073

Total NPD: 1ng g^{-1}

Total PAH: 9ng g^{-1}

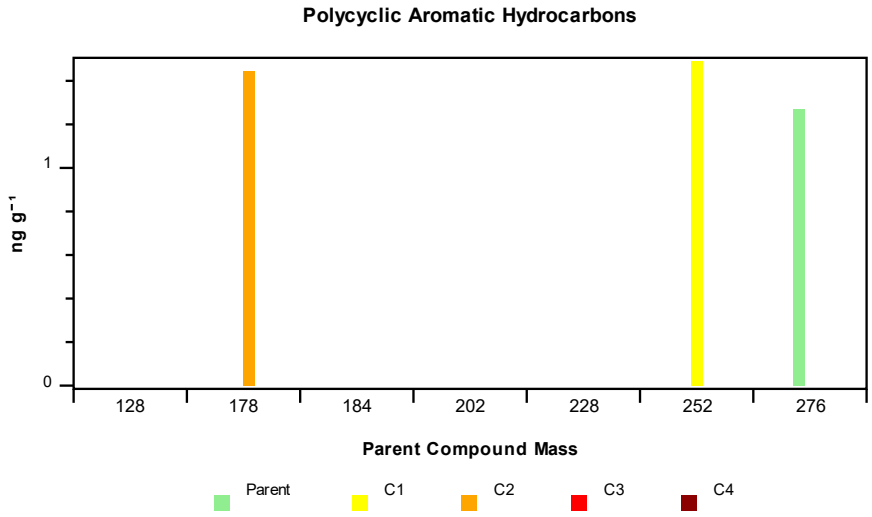


ENV-075

Total NPD: NC

Total PAH: 5ng g^{-1}

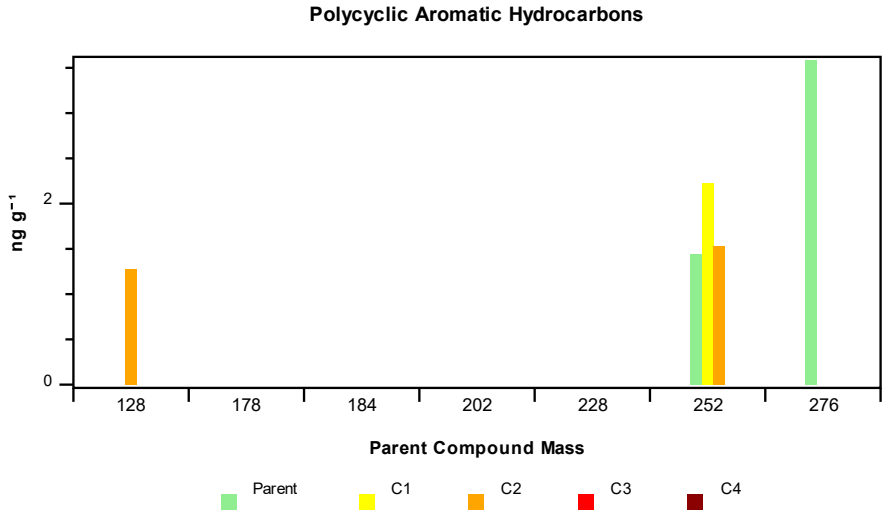
APPENDIX F HYDROCARBON ANALYSIS



ENV-077

Total NPD: 1ng g^{-1}

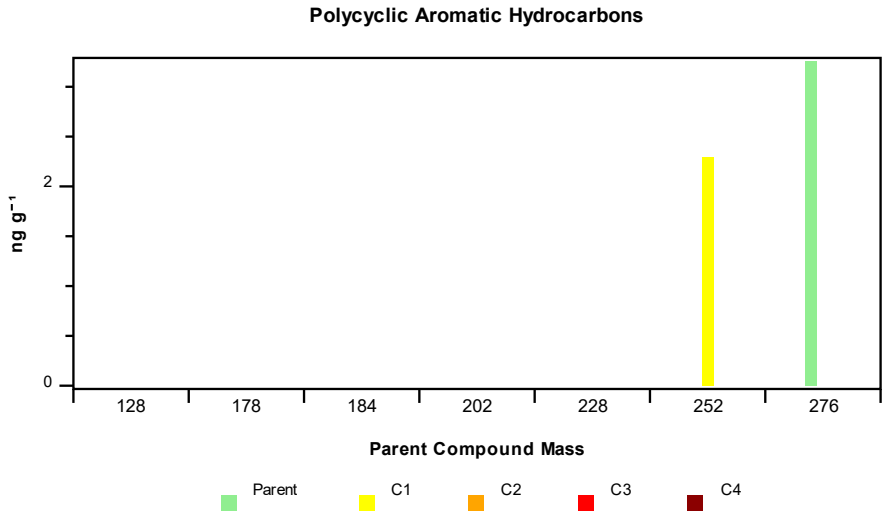
Total PAH: 4ng g^{-1}



ENV-079

Total NPD: 1ng g^{-1}

Total PAH: 10ng g^{-1}



ENV-079 DUP

Total NPD: NC

Total PAH: 6ng g^{-1}

APPENDIX F HYDROCARBON ANALYSIS

Click here to show attachment pane within the pdf

APPENDIX G DNA ANALYSIS

APPENDIX G DNA ANALYSIS

Click here to show attachment pane within the pdf

APPENDIX H MACROFAUNA ANALYSIS

APPENDIX H MACROFAUNA ANALYSIS

Click here to show attachment pane within the pdf

APPENDIX I EUNIS CLASSIFICATION

APPENDIX I EUNIS CLASSIFICATION

Click here to show attachment pane within the pdf

Appendix D Gardline Ltd. (2024) Habitat Assessment Report

Survey Report for:
Morven Offshore Wind Limited

Project:
Morven Export Cable Route 2023

Description:
Habitat Assessment Report

Survey Date:
June 2023 to November 2023

Project Number:
54027

Client Reference:
CW204658

Report Status:
Rev0

REPORT AUTHORISATION AND DISTRIBUTION

Compilation	Geophysics	M Newton
	Surveying	R Grice
	Environmental	M Bishop
	Geotechnical	N Kilburn
Authorisation	Checked	G Allen
	Approved	R Eyley-Roberts

Revision	Date	Title	Description
0	09-May-2024	Draft	pdf

Distribution

Morven Offshore Wind Ltd
Chertsey Road
Sunbury on Thames
TW16 7BP

For attention of:

Simon Dykes
Simon.dykes@se1.bp.com

EXECUTIVE SUMMARY

During June to November 2023, Gardline Limited conducted an integrated survey on behalf of Morven Offshore Wind Limited along the export cable routes (ECRs) of the proposed Morven wind farm, situated approximately 60km southeast of Aberdeen. The survey was conducted onboard the motor vessel *Ocean Geograph* between 19-Jun-2023 and 10-Nov-2023 with the environmental operations undertaken between 04-Jul-2023 and 09-Nov-2023. The current report details the results of the habitat assessment with the results of the geotechnical survey and the environmental baseline survey summarised where relevant and are reported in full separately (Gardline, 2024a; Gardline, 2024c).

The aims of the environmental survey were data collection to support the design of an ECR connecting the proposed Morven wind farm to shore, as well as to determine characteristics of the seabed and benthic communities and to identify any environmentally significant habitats.

A total of 133 stations were pre-selected as part of a benthic survey strategy desktop study of publicly available data prior to survey acquisition (Gardline, 2023). This comprised 56 stations (Stations ENV001 to ENV056) located along the eastern route, 58 stations (Stations ENV071 to ENV128) located along the western route and 19 stations (Stations ENV057 to ENV070 and Stations ENV129 to ENV133) situated across options for landfall. At all 133 stations drop-down camera data were successfully acquired. Sediment sampling was conducted at 133 stations across the survey area, of these the required full suite as per the benthic scoping document (Gardline, 2023) was obtained at 127 stations. All successful samples were acquired using a 0.1m^2 Day grab. Grab samples were acquired every 4km and alternated between three and four samples. Water depth varied between 16m LAT in the nearshore southwestern and 106m LAT across the survey area.

The visible faunal community observed across the survey area was typically sparse with 46% of images containing no visible fauna. Where observed, fauna was characterised by burrows, *Pennatula phosphorea* and faunal turf.

Overall, two species of sea pen (*P. phosphorea* and *Virgularia*) were identified at 84 stations ranging between 0.2cm and 11.4cm and 1cm and 15.3cm respectively, whilst burrows were observed at 73 stations ranging from 0.5cm to 14.9cm. In accordance with the SACFOR classification scale, burrows were classified in a range that encompassed ‘frequent’ at 46 stations. Considering the survey area as a whole, both burrows and sea pens were classified within a range that encompassed ‘frequent’; therefore, the survey area shows some similarity to a ’sea pen and burrowing megafauna communities’ habitat which is on the OSPAR (2008) list of threatened and/or declining species and habitats. This habitat is also listed as a component biotope of the burrowed mud habitat which is a priority marine feature (PMF; NatureScot, 2020). However, burrowing fauna were rarely sighted (only 37 individuals of *Nephrops norvegicus* were observed across the whole survey area); therefore, burrows could not confidently be attributed to any of the classified ‘megafauna’ species within the ‘sea pen and burrowing megafauna communities’ habitat classification. Although this habitat is on the OSPAR (2008) list of threatened and/or declining species or habitats, it is widespread throughout the central North Sea, around the southwest and west coasts of Norway and around the north of the British Isles (OSPAR, 2010; Hill *et al.*, 2022).

Areas of cobbles and boulders were noted during analysis. As such stations were reviewed for their potential to form a stony reef habitat based on the criteria adopted by Irving (2009). Stations ENV020, ENV032, ENV035, ENV038, ENV050, ENV051, ENV052, ENV67b, ENV068, ENV069, ENV070, ENV073, ENV103, ENV105, ENV106 and ENV132a were matrix supported, with little relief overall and often comprised small patchy extents across larger swathes of gravel. None of these stations were classified as having any resemblance to rocky reef.

Station ENV092 recorded sandy gravel which presented the greatest herring spawning potential as this met the 'prime' habitat sediment preference as set out by Reach *et al.* (2013). Station ENV076 recorded gravelly sand which was classified as 'sub-prime' in terms of habitat sediment preference. All remaining stations were deemed unsuitable for herring spawning potential.

Sand eels (Ammodytidae) were observed at one station (Station ENV043) in seabed imagery. One station (Station ENV019) was classified as 'prime' in terms of habitat preference for sand eels spawning based on criteria defined by Latto *et al.* (2013) while seven stations (Stations ENV018, ENV034, ENV036, ENV076, ENV086, ENV087 and ENV089) were classified overall as 'sub-prime'.

A total of 25 pairs of *Arctica islandica* siphons were observed across 10 stations. This species is on the OSPAR (2008) list of threatened and/or declining species and habitats and is listed as a low or limited mobility species under Scotland's PMF (NatureScot, 2020). This species is commonly found within this area of the North Sea A total of 6 individuals of *Glyptoyephalus cynoglossus* were observed at 6 stations along the ECRs survey area and 33 individuals of *Melanogrammus aeglefinus* were observed at 18 stations. These species are both listed as vulnerable on the IUCN Global Red List (2023). There were 32 individuals of *Pleuronectes platessa* observed at 22 stations along the ECRs and 114 observations of *Merlangius merlangus* across 18 stations. These species are both listed on the Scottish Biodiversity List (NatureScot, 2020) and are both classified as a priority marine species under the UK post 2010 Biodiversity Framework (JNCC and Defra, 2012). A single *Modiolus modiolus* was identified in the imagery at Station ENV035. Whilst *M. modiolus* beds are listed under Annex I of the Habitats Directive (1992) and are classified as threatened and/or declining habitats (OSPAR, 2008), the density of individuals observed during the survey do not mee the criteria of this habitat.

Other than those habitats and species listed above, there was no further evidence from seabed imagery of any habitats listed under Annex I of the Habitats Directive (1992); species or habitats selected as PMF's (NatureScot, 2020); those listed on the Scottish Biodiversity List (NatureScot, 2020); species or habitat features of conservation interest (2018); species or habitats on the OSPAR (2008) list of threatened and/or declining species and habitats nor any species on the IUCN (2023) Global Red List of threatened species.

Across the survey area, sediments were recorded as heterogeneous and displayed wide-ranging particle size distributions, ranging from extremely poor to moderately well sorted. Most stations were classified as either fine sand (n=52; 39%), coarse silt (n=28; 21%), or very fine sand (n=26; 20%). When classified under Folk and Ward (1957), sediments were predominantly either muddy sand (n=57; 43%) or sand (n=42; 32%). Mean particle diameter ranged from 27µm to 2078µm with an average diameter of 173µm (±206SD).

With consideration of the PSA and imagery, the heterogenous survey was classified to Level 4 EUNIS habitat codes. A total of 64 stations were classified as MD52 (Atlantic Offshore Circalittoral Sand), 59 stations were classified as MC62 (Atlantic Circalittoral Mud), 8 stations were classified as MD32 (Atlantic Offshore Circalittoral mixed sediment) and 2 stations were classified as MC32 (Atlantic Circalittoral coarse sediment).

Report volumes are as follows:

Report	Report Number
Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical and Environmental Survey Operations report	54027.1
Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume I: Field Operations and Preliminary Results	54027 (Volume 1)
Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume II: Measured and Derived Geotechnical Parameters and Final Results	54027 (Volume 2)
Morven Export Cable Route Benthic Scoping Document	54027.E0
Morven Export Cable Route Environmental Field Report	54027.E1
Morven Export Cable Route Marine Mammal Observation and Passive Acoustic Monitoring Report	54027.E2
Morven Export Cable Route Environmental Baseline Report	54027.E3
Morven Export Cable Route Habitat Assessment Report	54027.E4

USE OF THIS REPORT

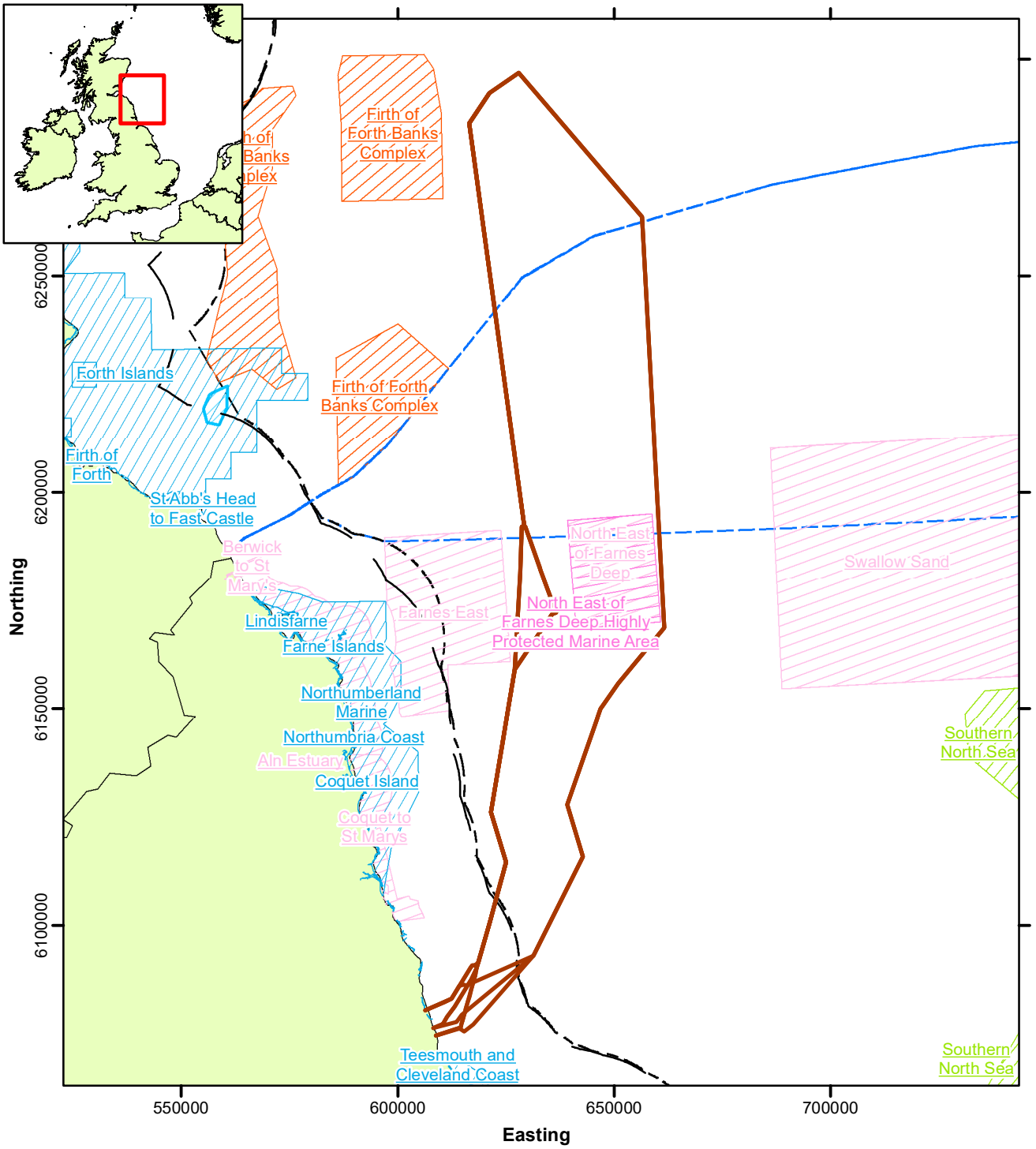
This report has been prepared with due care and diligence and with the skill reasonably expected of a reputable contractor experienced in the types of work carried out under the contract and as such the findings in this report are based on an interpretation of data which is a matter of opinion on which professionals may differ and unless clearly stated is not a recommendation of any course of action.

Gardline Limited has prepared this report for the client identified on the front cover in fulfilment of its contractual obligations under the referenced contract and the only liabilities Gardline Limited accept are those contained therein.

Please be aware that further distribution of this report, in whole or part, or the use of the data for a purpose not expressly stated within the contractual work scope is at the client's sole risk and Gardline Limited recommends that this disclaimer be included in any such distribution.

GARDLINE LIMITED
Endeavour House, Admiralty Road, Great Yarmouth, Norfolk, NR30 3NG, England
Telephone +44 (0) 1493 845600 Fax +44 (0) 1493852106
www.gardline.com

LOCATION MAP



Key

- Morven ECR
- Territorial Sea Limit (UKHO, 2022)
- National Limit (UKHO, 2022)
- Sandy Sediment in less than 20m water (JNCC, 2019)

Offshore MPA (JNCC, 2023)

- Highly Protected Marine Areas (HPMA)
- Marine Conservation Zone (MCZ)
- Nature Conservation Marine Protected Areas (NCMPA)
- Special Areas of Conservation (SAC)
- Special Protected Areas (SPA)

N

Coordinate System: ED 1950 UTM Zone 30N
Projection: Transverse Mercator Datum: European 1950
Central Meridian: 3.0°W

0 20 40 60 80 Kilometres

TABLE OF CONTENTS

REPORT AUTHORISATION AND DISTRIBUTION II
EXECUTIVE SUMMARY III
USE OF THIS REPORT VI
LOCATION MAP VII
TABLE OF CONTENTS VIII
LIST OF FIGURES IX
LIST OF TABLES IX
GLOSSARY OF TERMS AND ABBREVIATIONS IX
1 PROJECT SUMMARY 1
1.1 Scope of Work 1
1.2 Environmental Survey Strategy 2
1.3 Background Habitat Information 8
2 RESULTS AND DISCUSSION 10
2.1 Geophysical Survey Overview 10
2.2 Seabed Imagery Observations 10
2.3 Sea Pen and Burrowing Megafauna Communities Assessment 11
2.4 Stony Reefs 14
2.5 Herring Spawning Ground Potential 16
2.6 Sand Eel Spawning 19
2.7 Other Species of Conservation Interest 22
2.8 Sediment Sampling Observations 22
2.9 Particle Size Analysis 23
2.10 EUNIS Habitat Classification 26
3 BIBLIOGRAPHY 29

APPENDICES
APPENDIX A FIELD SAMPLING LOGS
APPENDIX B DATA ACQUISITION AND PROCESSING
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS
APPENDIX D FAUNAL OBSERVATION SUMMARY
APPENDIX E FAUNAL CATALOGUE
APPENDIX F PARTICLE SIZE ANALYSIS

LIST OF FIGURES

Figure 1.1 Station Overview 3
Figure 2.1 Example Cobble Occurrences along Morven ECRs 14

LIST OF TABLES

Table 1.1 Summary of Environmental Sampling Positions and Samples Acquired 4
Table 2.1 Total Sea Pens and Faunal Burrows Qualification 12
Table 2.2 Application of SACFOR abundance ranges to OSPAR (2010) 'sea pen and burrowing megafauna communities' habitat 13
Table 2.3 Stony Reef Assessment Summary 15
Table 2.4 Summary of Herring Spawning Potential 17
Table 2.5 Summary of Sand Eel Spawning Potential 20
Table 2.6 Sediment Characteristics 24
Table 2.7 EUNIS Habitat Classification 27

GLOSSARY OF TERMS AND ABBREVIATIONS

Anthropogenic	Produced or caused by human activity
Benthic	Relating to the seabed
Biogenic	Produced by living organisms
Cefas	Centre for Environment, Fisheries and Aquaculture Science
Clay	Sediment grains <3.9µm in diameter
CM	Central Meridian
CPT	Cone Penetration Testing
DDC	Drop Down Camera System
Defra	Department for Environment, Food and Rural Affairs
EAC	Environmental Assessment Criteria
EC	European Commission
ECR	Export Cable Route
eDNA	Environmental DNA
EEA	European Environment Agency
EUNIS	European Union Nature Identification System
Fines	Sediment grains <63µm in diameter (same as Mud)
Gravel	Sediment grains ≥2mm in diameter
HPMA	Highly Protected Marine Areas
inc.	*Incerta*. The taxon is identifiable to a certain taxonomic level without certainty.
indet.	*Indeterminabilis*. The taxon is unidentifiable below a certain taxonomic rank.
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature and Conservation Committee
LAT	Lowest Astronomical Tide
Macrofauna	Organisms that are normally larger than the mesh size of the sieve used. In this case 0.5mm.
MBES	Multi-beam Echo Sounder
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MNCR	Marine Nature Conservation Review
MPA	Marine Protected Area
Mud	Sediment grains <63µm (includes Silt and Clay)
NMBAQC	National Marine Biological Association Quality Control
NOAA	National Oceanic and Atmospheric Administration
NSTA	North Sea Transition Authority
OSPAR	Oslo and Paris convention
PMF	Priority Marine Feature
PSA	Particle Size Analysis
SACFOR	JNCC (2013) density scale classification: Superabundant, abundant, common, frequent, occasional and rare
Sand	Sediment grains ≥63µm and <2mm in diameter
SBP	Sub-Bottom Profiler
SD	Standard Deviation
Silt	Sediment grains ≥3.9µm and <63µm in diameter
SOW	Scope of Work
SSS	Side Scan Sonar
stet.	*Stetit*. A taxon is identifiable to a specific taxonomic rank with certainty, but a decision is made to not proceed further.
THC	Total hydrocarbons
UKBAP	United Kingdom Biodiversity Action Plan
UKCS	United Kingdom Continental Shelf
UKOOA	United Kingdom Offshore Operators Association
USBL	Ultra Short Base Line
UTM	Universal Transverse Mercator

1 PROJECT SUMMARY

1.1 Scope of Work

During June to November 2023, Gardline Limited conducted an integrated survey on behalf of Morven Offshore Wind Limited along the export cable routes (ECRs) of the proposed Morven wind farm, situated in the central North Sea approximately 60km southeast of Aberdeen. The survey was conducted onboard the motor vessel *Ocean Geograph* between 19-Jun-2023 to 10-Nov-2023, with environmental operations undertaken between 04-Jul-2023 and 09-Nov-2023, details of the site location are displayed in Figure 1.1.

As detailed in the scope of work (SOW; bp, 2023), the overall survey aims were data collection to support the design of an ECR (approximately 260km in length) connecting the proposed Morven windfarm to shore. Two proposed ECRs joining the proposed wind farm and shore were investigated, as the final route was not yet decided. In order to inform the effective implementation of the ECR and satisfy environmental impact assessment and consenting processes, a multidisciplinary survey was required. The objective of the integrated survey included:

- to determine the characteristics of the seabed
- to characterise benthic communities (infauna and epifauna)
- to identify any environmentally sensitive habitats (*e.g.* potential Habitats Directive Annex I and priority marine features)

To meet the aims of the habitat assessment the presence of the following sensitive species and habitats were assessed:

- habitats, such as biogenic or rocky reefs, listed under Annex I of the Habitats Directive (1992), as implemented by the Conservation of Offshore Marine Habitats and Species Regulations (2019) and as endorsed by the Marine Environment Regulations (2018).
- habitats or species features of conservation importance (FOCI) and broadscale habitats, defined in relation to the Marine Conservation Zone network (Natural England and Joint Nature Conservation Committee, 2010) required under the Marine Conservation Regulations (2018).
- priority habitats or species in England, listed under Section 41 of the NERC Act (2006) and continue to be regarded as conservation priorities in the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012).
- species or habitats selected as PMFs in Scottish offshore waters (NatureScot, 2020) under the Marine Environmental Regulations (2019).
- species listed on the Scottish Biodiversity List (NatureScot, 2020) given credence under the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012).
- species or habitats on the OSPAR (2008) list of threatened and/or declining species and habitats.
- species listed on the IUCN Global Red List of threatened species (2023).

This report presents the results of the habitat assessment. The results of the environmental baseline survey report (Gardline, 2024c) and geotechnical surveys (Gardline, 2024a; Gardline, 2024b) are presented separately, with relevant results highlighted in this report.

All positional information in this report is referenced to International 1924 Ellipsoid, ED 1950. All grid coordinates are projected using UTM Projection, Grid Zone 30N, CM 3°W.

1.2 Environmental Survey Strategy

To enable clear and concise reporting, the naming convention of the stations has been shortened by the removal of the 'BP23MVEXP-ENV-DC/GS/WS-' station identifier. These shortened names have been used throughout the report where possible, though the original full names have been retained in the image file names and on the video overlays. The full and abbreviated station names have been presented in Table 1.1 along with details of the final target coordinates and data acquired. The actual position of the grab samples and seabed imagery, which may be offset from the intended target, are presented in the positional logs within Appendix A and plotted in Appendix C.

In order to meet the objectives of the SOW (bp, 2023), a total of 133 stations were pre-selected as part of a benthic survey desktop study of publicly available data prior to survey acquisition (Gardline, 2023). This comprised 56 stations (ENV001 to ENV056) located along the eastern route, 58 stations (ENV071 to ENV128) along the western route and 19 stations (ENV57 to ENV70 and ENV129 to ENV133) situated across the options for landfall. All stations were selected at approximately 4km intervals, of these stations, 22 were located in Scottish waters and the remainder were located in English waters. To check that the proposed cable routes were clear of archaeological artefacts and UXO for grab sampling operations, MBES, magnetometer and SSS reconnaissance lines were run over each station target. Details of the targets including their reason for selection, relative location and anticipated findings are presented in Table 1.1.

At all 133 stations drop-down camera data were successfully acquired, with seven re-runs conducted across five stations due to bad weather, no HD video being captured or low image quality when using the freshwater lens. Station ENV021 was abandoned due to poor weather, it was then reattempted as Station ENV021a; however, due to equipment issues no HD video was recorded. Imagery acquisition was successfully acquired from another deployment: Station ENV021b. Station ENV031a was abandoned due to bad weather and successfully reattempted as Station ENV031b. Due to turbidity at Station ENV067, imagery acquisition was originally attempted with the use of a freshwater lens (Station ENV067a); however, due to poor quality images the station was successfully reattempted (Station ENV067b) using the shallow water camera system. Due to equipment issues no HD video was recorded at Station ENV111; therefore, the station was successfully reattempted as Station ENV111a. Due to turbidity at Station ENV132, imagery acquisition was originally attempted with the use of a freshwater lens; however, due to poor quality images the station was successfully reattempted (Station ENV132a) using the shallow water camera system. As per the Benthic Scoping Document (Gardline, 2023) all transects were at least 200m in length and arranged in a cruciform arrangement. A deviation from the SOW was approved on the 19-Oct-2023 to allow for drop-down video transects for seabed clearance for CPT and vibrocore sampling. These images were not analysed.

A minimum of three grab samples were proposed every 4km using a 0.1m^2 Day grab for analysis of particle size, environmental DNA (eDNA) and macrofaunal community. An additional grab sample was acquired at 68 stations for chemical analysis including stations ENV030 to ENV035 due to close proximity to the North East of Farnes Deep highly protected marine area (HPMA). Following several unsuccessful attempts, six stations were abandoned due to; misfires of the grab, low sample retention, rocks stuck in the grab jaws or the presence of Myxinidae. Details on grab samples and sub-samples for each station are summarised in Table 1.1.

Figure 1.1 Station Overview

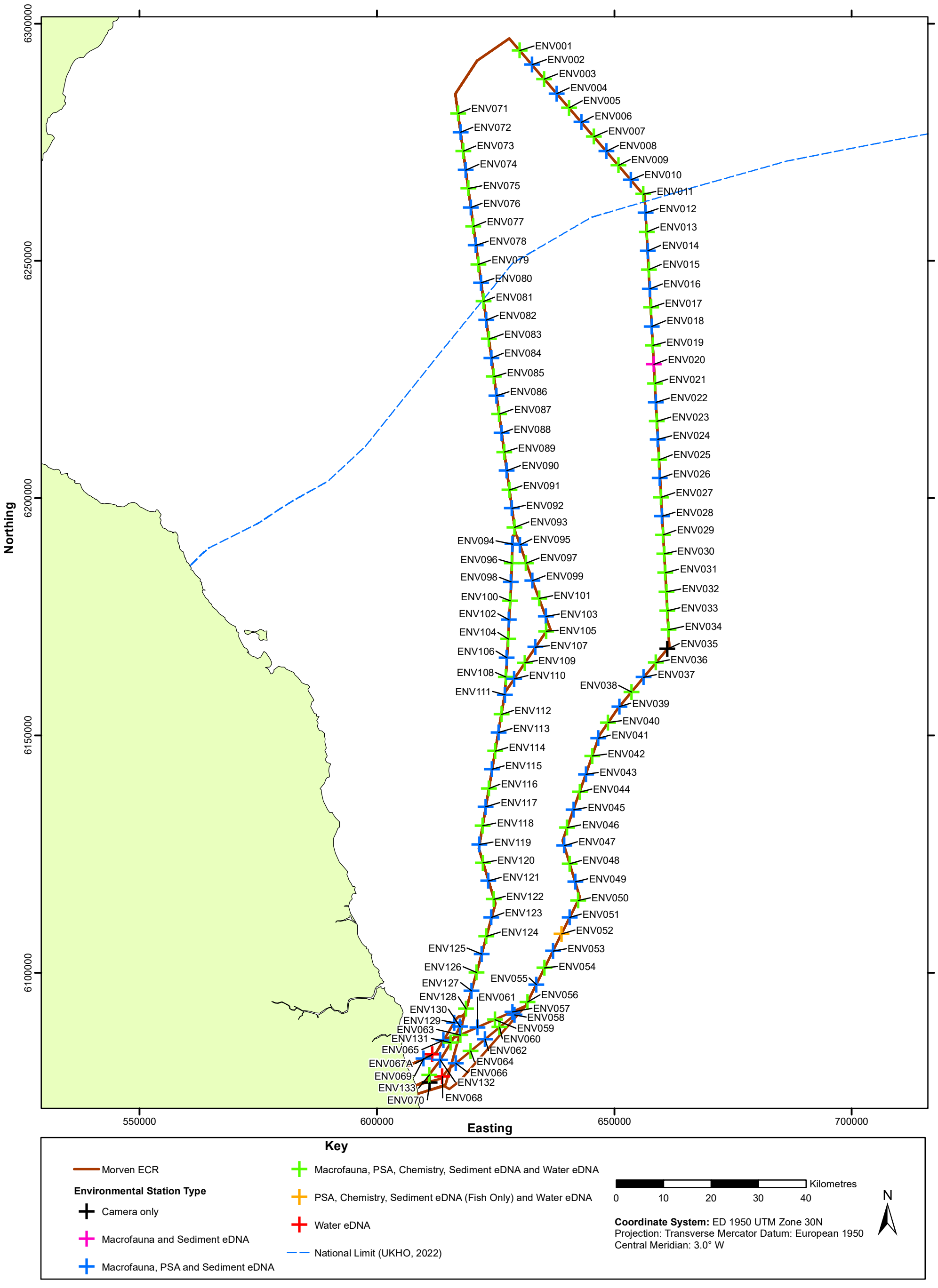


Table 1.1 Summary of Environmental Sampling Positions and Samples Acquired

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Sub-samples[2]							
									Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-001	ENV001	630 092	6 294 363	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	6
BP23MVEXP-ENV-002	ENV002	632 683	6 291 340	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						3
BP23MVEXP-ENV-003	ENV003	635 281	6 288 299	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	6
BP23MVEXP-ENV-004	ENV004	637 941	6 285 279	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						3
BP23MVEXP-ENV-005	ENV005	640 532	6 282 261	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1	1	1	6
BP23MVEXP-ENV-006	ENV006	643 128	6 279 228	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						3
BP23MVEXP-ENV-007	ENV007	645 743	6 276 186	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-008	ENV008	648 378	6 273 115	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-009	ENV009	650 936	6 270 129	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-010	ENV010	653 551	6 267 079	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-011	ENV011	656 157	6 264 039	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-012	ENV012	656 656	6 260 131	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-013	ENV013	656 877	6 256 136	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-014	ENV014	657 092	6 252 144	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-015	ENV015	657 314	6 248 185	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-016	ENV016	657 529	6 244 154	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-017	ENV017	657 756	6 240 164	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-018	ENV018	657 939	6 236 203	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-019	ENV019	658 157	6 232 173	General flat seabed, SSS shows low to high reflectivity seabed, mixed sediments	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-020	ENV020	658 374	6 228 181	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	9	1	1		1						
BP23MVEXP-ENV-021	ENV021	658 588	6 224 181	Base of shoaling seabed, flat seabed, SSS shows low reflectivity, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-022	ENV022	658 789	6 220 190	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-023	ENV023	659 015	6 216 191	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-024	ENV024	659 215	6 212 354	Base of shoaling seabed, flat seabed, SSS shows low reflectivity, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-025	ENV025	659 446	6 208 080	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-026	ENV026	659 653	6 204 210	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-027	ENV027	659 868	6 200 219	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-028	ENV028	660 086	6 196 220	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-029	ENV029	660 307	6 192 230	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-030	ENV030	660 581	6 188 239	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-031	ENV031	660 798	6 184 246	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-032	ENV032	661 016	6 180 251	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediments	Y	3	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-033	ENV033	661 235	6 176 269	General flat seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y	4	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-034	ENV034	661 478	6 172 275	General flat seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-035	ENV035	661 223	6 168 222	General flat seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y	6										
BP23MVEXP-ENV-036	ENV036	658 815	6 165 338	Middle of shoaling seabed, SSS shows low - high reflectivity seabed, sandy sediments	Y	1	4	2	1	1	1	1	1			4

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Sub-samples[2]							
									Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-037	ENV037	656 204	6 162 209	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-038	ENV038	653 638	6 159 136	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-039	ENV039	651 097	6 156 056	General flat seabed, SSS shows low reflectivity seabed. Sandy sediment	Y	2	3	2	1	1						2
BP23MVEXP-ENV-040	ENV040	648 723	6 152 682	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-041	ENV041	646 687	6 149 423	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-042	ENV042	645 395	6 145 643	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-043	ENV043	644 054	6 141 780	Middle of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-044	ENV044	642 775	6 138 054	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-045	ENV045	641 483	6 134 299	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-046	ENV046	640 073	6 130 539	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-047	ENV047	639 530	6 126 759	Base of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-048	ENV048	640 642	6 122 945	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-049	ENV049	641 831	6 119 158	Middle of shoaling seabed, flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-050	ENV050	642 446	6 115 178	General flat seabed, SSS shows low reflectivity seabed. Sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-051	ENV051	640 672	6 111 630	Small ridge to the north, general flat seabed, SSS shows low reflectivity with scattered boulders, Sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-052	ENV052	638 949	6 108 153	General flat seabed, SSS shows medium to high reflectivity seabed with boulders	Y	6					1	1	1			4
BP23MVEXP-ENV-053	ENV053	637 135	6 104 545	Peak of shoaling seabed, flat seabed, SSS shows low reflectivity seabed with scattered boulders, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-054	ENV054	635 346	6 100 990	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediments	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-055	ENV055	633 583	6 097 485	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediments	Y	1	3	2	1	1						2
BP23MVEXP-ENV-056	ENV056	631 745	6 093 826	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-057	ENV057	628 558	6 091 692	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-058	ENV058	629 040	6 091 085	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-059	ENV059	624 889	6 090 061	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-060	ENV060	625 885	6 088 496	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-061	ENV061	621 239	6 088 432	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-062	ENV062	622 796	6 085 952	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-063	ENV063	617 596	6 086 808	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-064	ENV064	619 737	6 083 425	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-065	ENV065	614 050	6 085 716	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-066	ENV066	616 631	6 080 874	General flat seabed, SSS shows low to high reflectivity seabed, mixed sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-067	ENV067A	611 697	6 082 732	General flat seabed, SSS shows high reflectivity seabed, mixed sandy sediment	Y	6						1				
BP23MVEXP-ENV-068	ENV068	613 813	6 078 042	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	7						1				
BP23MVEXP-ENV-069	ENV069	609 888	6 081 851	General flat seabed, SSS shows high reflectivity seabed, mixed sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-070	ENV070	611 157	6 076 873	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	10										
BP23MVEXP-ENV-071	ENV071	617 141	6 281 096	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Sub-samples[2]							
									Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-072	ENV072	617 683	6 277 122	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-073	ENV073	618 229	6 273 143	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-074	ENV074	618 778	6 269 161	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-075	ENV075	619 313	6 265 236	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-076	ENV076	619 800	6 261 234	Peak of shoaling seabed, SSS shows high reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-077	ENV077	620 314	6 257 253	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-078	ENV078	620 873	6 253 243	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-079	ENV079	621 428	6 249 280	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1	1	1	5
BP23MVEXP-ENV-080	ENV080	621 960	6 245 400	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-081	ENV081	622 506	6 241 445	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-082	ENV082	623 038	6 237 536	Peak of shoaling seabed, SSS shows low-high reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-083	ENV083	623 635	6 233 497	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-084	ENV084	624 135	6 229 544	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-085	ENV085	624 677	6 225 569	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-086	ENV086	625 218	6 221 618	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-087	ENV087	625 786	6 217 725	Middle of shoaling seabed, SSS shows low-high reflectivity seabed, rippled sandy sediment	Y	2	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-088	ENV088	626 296	6 213 734	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-089	ENV089	626 842	6 209 725	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-090	ENV090	627 380	6 205 770	Middle of shoaling seabed, general flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-091	ENV091	627 934	6 201 734	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-092	ENV092	628 458	6 197 868	Peak of shoaling seabed, SSS shows low- high reflectivity seabed, sandy sediment	Y	4	3	2	1	1						2
BP23MVEXP-ENV-093	ENV093	629 054	6 193 880	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-094	ENV094	628 588	6 190 282	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-095	ENV095	630 186	6 190 154	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-096	ENV096	628 432	6 186 279	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-097	ENV097	631 463	6 186 300	Peak of shoaling seabed, SSS shows low- high reflectivity seabed, sandy sediment	Y	4	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-098	ENV098	628 264	6 182 327	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-099	ENV099	632 746	6 182 610	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-100	ENV100	628 064	6 178 337	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-101	ENV101	634 211	6 178 844	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-102	ENV102	627 849	6 174 330	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-103	ENV103	635 613	6 175 059	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-104	ENV104	627 686	6 170 307	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-105	ENV105	635 667	6 171 916	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	3	4	2	1	1	1	1	1			4
BP23MVEXP-ENV-106	ENV106	627 403	6 166 336	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment with boulders	Y	2	3	2	1	1						2

Client ID	Stations as Referred to in this Report	Target Easting[1]	Target Northing[1]	Description	Samples Acquired											
					Camera	Unsuccessful grab attempts	Acceptable grab samples	Macrofauna[3]	Sub-samples[2]							
									Particle size	eDNA (Sediment)[4]	Fish eDNA (Sediment)	Fish eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
BP23MVEXP-ENV-107	ENV107	633 418	6 168 578	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-108	ENV108	627 184	6 162 321	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-109	ENV109	631 206	6 165 285	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-110	ENV110	628 946	6 161 934	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-111	ENV111	626 978	6 158 542	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-112	ENV112	626 284	6 154 439	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-113	ENV113	625 643	6 150 623	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-114	ENV114	624 983	6 146 663	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-115	ENV115	624 293	6 142 873	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-116	ENV116	623 603	6 138 802	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-117	ENV117	622 943	6 134 912	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-118	ENV118	622 273	6 130 918	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-119	ENV119	621 603	6 126 979	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y	1	3	2	1	1						2
BP23MVEXP-ENV-120	ENV120	622 353	6 123 151	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-121	ENV121	623 511	6 119 299	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-122	ENV122	624 665	6 115 470	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-123	ENV123	624 150	6 111 614	Base of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-124	ENV124	623 089	6 107 641	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-125	ENV125	622 083	6 103 872	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-126	ENV126	621 032	6 100 018	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-127	ENV127	619 930	6 096 179	Peak of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-128	ENV128	618 835	6 092 326	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-129	ENV129	616 332	6 089 421	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-130	ENV130	617 558	6 088 614	General flat seabed, SSS shows low reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-131	ENV131	615 581	6 085 218	Middle of shoaling seabed, SSS shows low reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4
BP23MVEXP-ENV-132	ENV132	613 334	6 081 592	Middle of shoaling seabed, SSS shows low to high reflectivity seabed, sandy sediment	Y		3	2	1	1						2
BP23MVEXP-ENV-133	ENV133	611 083	6 078 422	Peak of shoaling seabed, SSS shows low to high reflectivity seabed, sandy sediment	Y		4	2	1	1	1	1	1			4

1 Final environmental target locations. Actual sampling positions for each individual grab sample are detailed in Appendix A

2 Sampling was abandoned at Stations ENV020, ENV035, ENV052, ENV067A, ENV068, ENV070 due to low retention, rocks in the jaws and the sampler misfiring.

3 One macrofaunal samples (MFA) sieved through a 0.5mm mesh was sent to be analysed, the other (MFB) kept as a spare at room temperature. Analysis methods are as detailed in Appendix B.

4 Grey text indicates eDNA samples were collected but not analysed.

5 Where available, one spare sub-sample was stored in a 1l glass jar available for chemistry analysis (MMO specification), one sub-sample was stored in a 120ml amber glass jar and available for hydrocarbons, organotin and PCB analysis, up to three sub-samples were stored in double-lined zip-lock bags and available for analysis of metal, particle size, eDNA and fish eDNA if required.

1.3 Background Habitat Information

1.3.1 Overview

This section presents an overview of the habitats and faunal communities expected to occur (or were potentially highlighted in the field report) within UK and Scottish waters in the vicinity of the proposed Morven ECR.

1.3.2 Sea Pen and Burrowing Megafauna Communities

A 'sea pen and burrowing megafauna communities' habitat is classified as a threatened and/or declining habitat (OSPAR, 2008). It is defined by OSPAR (2010) as plains of fine mud, extending over an area of at least 25m^2 and at water depths ranging from 15m to 200m or more. These areas are defined as being heavily bioturbated by burrowing megafauna including *Nephrops norvegicus*, *Calocaris macandreae* or *Callianassa subterranea*, with burrows and mounds typically forming a prominent feature of the sediment surface, and which may include conspicuous populations of sea pens (Pennatuloidea); typically, *Virgularia mirabilis* and *Pennatula phosphorea*. Despite its classification as a threatened and/or declining habitat (OSPAR, 2008); this habitat is widespread throughout the central North Sea, around the south and west coasts of Norway and around the north of the British Isles (OSPAR, 2010).

1.3.3 Rocky Reefs

Reefs are one of the habitats of conservation significance listed under Annex I of the Habitats Directive (1992) for protection within Special Areas of Conservation (SAC). Although there is no definition of reefs in the Habitats Directive itself, European interpretation of the habitat has been discussed and agreed upon as including bedrock, stony and biogenic reefs. Rocky reefs (bedrock and stony) can be extremely variable, both in structure and in the communities they support. A wide range of topographical reef forms meet the European definition of this habitat type, including vertical rock walls, horizontal ledges, sloping or flat bed rock, broken rock, boulder fields and aggregations of cobbles (McLeod *et al.*, 2009).

Stony reefs can comprise areas of boulders or cobbles that stand proud from the seafloor and can provide a suitable substratum for the attachment of benthic communities of algae and marine fauna. Cobbles and boulders are generally considered to be greater than 64mm in diameter and a feature of a stony reef must be that it is topographically distinct from the surrounding seafloor (Irving, 2009).

Bedrock reefs occur where bedrock arises from the surrounding seabed creating a habitat that is colonised by a distinct faunal community (JNCC, 2014a).

1.3.4 Herring Spawning

The Atlantic herring; *Clupea harengus*, is a schooling, coastal pelagic species that inhabits both sides of the Atlantic Ocean (Reid *et al.*, 1999). Herring is one of the most important UK commercial marine species. It is also highly vulnerable to both fishing pressures and activities associated with the renewable industry (Gill *et al.*, 2012; Kikuchi, 2010).

Herring are reported to deposit their sticky demersal eggs on a variety of substrates ranging from boulders, rocks, small stones, coarse sand, shell fragments, macrophytes and man-made structures such as lobster pots. However, gravel is widely considered to be the preferred spawning substrate (Rogers & Stocks, 2001; Ellis *et al.*, 2012). The eggs adhere to the seabed, forming extensive egg beds. According to Reid *et al.* (1999), spawning occurs in areas of well-mixed water with reasonably strong tidal currents (1.5 to 3 knots), often on shoals and banks in relatively shallow water (approximately 15-40m deep). These high-energy environments provide aeration and reduce siltation and accumulation of metabolites (Stevenson & Scott, 2005). The negative

impacts of the oil and gas industry on herring spawning grounds are primarily due to the risk of smothering from drill cuttings and disturbed sediment during installation/drilling.

1.3.5 Sand Eel Spawning

Sand eels are small eel-like fish which swim in large shoals and are an important component of marine food webs providing food for many species of marine predators including seabirds, mammals and commercially important species such as; *Gadus morhua*, and *Melanogrammus aeglefinus* (Holland *et al.*, 2005; Jensen *et al.*, 2010). Of the five species of sand eels inhabiting the North Sea, *Ammodytes marinus* is the most abundant and comprises 90% of sand eel fishery catches (ICES, 1997).

As with other sand eel species *A. maurinus* has a close association with sandy substrates into which they burrow. It is common for sand eels to prefer sandy sediments to those comprised predominately of gravel or silt (Pinto *et al.*, 1984) and they preferentially inhabit the sloping sides of sand banks (Wright *et al.*, 1998). Depth also has an influence; with sand eels being found at depths of 15 to 120m and with greater frequency at 30 to 70m (Wright *et al.*, 2000).

Spawning is suggested to occur between November and February (Coull *et al.*, 1998; Ellis *et al.*, 2010; 2012) where sand eels will spawn on the seabed and the eggs attach themselves to grains of sand (Hassel *et al.*, 2002). Sand eels hibernate in the sand during winter and bury themselves at night, so are most likely to be seen during the day between April and July. Physical disturbance to sand eel habitats may occur during operations including drilling and/or cable laying activities due to the resulting temporary sediment resuspension and increased turbidity (Bat *et al.*, 2013). These activities can therefore result in increased mortality, although it is expected that the population would recover following construction periods (Jensen *et al.*, 2010).

2 RESULTS AND DISCUSSION

2.1 Geophysical Survey Overview

Geophysical data were successfully acquired across the Morven ECR routes, this included an initial geophysical clearance phase of the sampling locations to complete environmental and geotechnical operations.

The geophysical requirement for this project was to acquire 2 lines at 80m spacing along all of the ECR sections with around 1000 line km to be acquired, utilising MBES, SSS and SBP. No final interpretation of the datasets was undertaken.

2.2 Seabed Imagery Observations

A selection of seabed photographs, together with descriptions and positions, are presented in Appendix C, whilst a summary of all taxa identified from each station is presented in Appendix D and example images of each taxa are presented in Appendix E. Seabed imagery across the proposed ECRs confirmed the sediment ranged from muddy sand to coarse sand with gravel and occasional cobbles and boulders in some areas.

Visible fauna identified to the lowest taxonomic level with confidence included:

- Annelida (*Aphrodita aculeata, Hyalinoecia tubicola, Myxicola, Oxydromus flexuosus,* Terebellidae)
- Arthropoda (*Cancer pagurus,* Caridea, Cirripedia, *Corystes cassivelaunus,* Decapoda, *Ebalia,* Galatheoidea*, Liocarcunus depurator, Lithodes maja, Macropodia, Munida rugosa, Necora puber, Nephrops norvegicus,* Paguroidea*, Pagurus prideaux,* Porcellanidae)
- Bryozoa (Flustridae*, Reteporella beaniana*)
- Chordata (Actinopterygii, *Agonus cataphractus, Amblyraja radiata,* Ammodytidae, Ascidiacea, *Callionymus lyra*, *Chelidonichthys cuculus,* Gadidae, *Glytocephalus cynoglossus, Lophius piscatorius,* Lotidae, *Melanogrammus aeglefinus*, *Merlangius merlangus, Myxine glutinosa, Platichthys flesus, Pleuronectes platessa,* Pleuronectiformes*,* Stichaeidae, Trigildae)
- Cnidaria (Actiniaria, *Actinauge richardi, Alcyonium digitatum, Calliactis palliata, Caryophyllia,* Ceriantharia, *Epizoanthus papillosus, Hydractinia echinata,* Hydrozoa, Metridiidae, *Nemertesia, Pennatula phosphorea, Thuiaria thuja, Tubularia indivisa, Urticina eques, Virgularia)*
- Echinodermata (*Asterias rubens,* Asteriodea, *Astropecten irregularis, Crossaster papposus, Echinocardium cordatum, Echinus esculentus, Henricia, Hippasteria phrygiana,* Holothuroidea*, Luidia ciliaris, Luidia sarsii, Ophiothrix fragilis, Ophiura albida, Ophiura ophiura,* Ophiuroidea*, Porania pulvillus, Spatangus purpureus, Stichastrella rosea*)
- Mollusca (*Arctica islandica* siphons, Bivalvia siphons, Buccinidae, Gastropoda, Loliginidae, *Modiolus modiolus,* Naticidae, Nudibranchia, *Pecten maximus,* Pectinidae, Scaphopoda, Sepiida)
- Porifera (Hard substrate sponges)

Additionally, faunal turf, Mollusca eggs and bioturbation in the form of tracks and burrows were observed. Anthropogenic debris was also observed in the form of fishing gear at Station ENV100.

Overall, fauna was typically sparse throughout the survey area, with 46% (n=3173) of stills containing no visible fauna. The most frequently observed taxa and/or features were burrows (present at 70 stations and in 16% of stills; n=1099), *Pennatula phosphorea* (present at 73 stations and in 12% of stills; n=815), faunal turf (present at 95 stations and in 8% of stills; n=545), Flustridae (present at 66 stations and in 7% of stills; n=452) and *Alcyonium digitatum* (present at 94 stations and in 6% of stills; n=404). All other fauna and/or features were observed in less than 5% of stills.

2.3 Sea Pen and Burrowing Megafauna Communities Assessment

Seabed imagery revealed that two species of sea pen (*P. phosphorea* and *Virgularia*) were present at 84 stations and burrows were present at 73 stations. Therefore, a detailed assessment of the 'sea pen and burrowing megafauna community' habitat as identified by OSPAR (2010) was conducted, referring to the MNCR SACFOR abundance scale (JNCC, 2013). Densities of sea pens were categorised using SACFOR classification to assess the similarity of the survey area to a 'sea pen and burrowing megafauna communities' habitat. Sea pen and burrow densities were calculated for each station using the total area covered by the seabed imagery (average swathe width x camera transect length). The results of this assessment are summarised in Table 2.1 and a map spatially illustrating abundance of sea pens and burrows is presented in Appendix C.

A total of 5031 individuals of *Pennatula phosphorea* were observed at 79 stations across the ECRs. Where observed, densities of *P. phosphorea* ranged from 0.005 individuals m^{-2} at Station ENV007 to 1.85 individuals m^{-2} at Station ENV048, with individuals measuring between 0.2cm and 11.4cm. In accordance with SACFOR, *P. phosphorea* were classified in a range that encompassed 'frequent' at 49 stations. Further, a total of 168 individuals of *Virgularia* were observed at 15 stations. The density of *Virgularia* varied between 0.005 individuals m^{-2} at Station ENV113 and 0.56 individuals m^{-2} at Station ENV059, with individuals measuring between 1.0cm and 15.3cm. In accordance with SACFOR, *Vigularia* were classified in a range that encompassed 'frequent' at 2 stations.

A total of 4547 burrows were recorded, with densities ranging from 0.005 burrows m^{-2} to 1.88 burrows m^{-2}. Burrows across the surveyed area were estimated to be between 0.5cm and 14.9cm in diameter. In accordance with the SACFOR classification scale, burrows were classified in a range than encompassed 'frequent' at 46 stations; all of which were in English waters and notably towards the south of the ECRs. Although burrows were present, burrowing fauna were rarely sighted (only 37 individuals of *Nephrops norvegicus* were observed) to confirm the burrow inhabitants; therefore, burrows could not confidently be attributed to any of the classified 'megafauna' species within the 'sea pen and burrowing megafauna community' habitat classification.

The JNCC (2014b) clarification report states that too be considered a 'sea pen and burrowing megafauna communities' habitat, densities of burrows and/or mounds, together with sea pens if present should be classified as 'frequent' or above on the SACFOR scale. The 46 stations, see Table 2.1, which burrows were classified in a range that encompassed 'frequent' can be considered to show some similarity to a 'sea pen and burrowing megafauna communities' habitat as per OSPAR (2010). Whilst this habitat is on the list of threatened and/or declining species and habitats, it is widespread throughout the Central North Sea, around the south and west coasts of Norway and around the north of the British Isles (OSPAR, 2010; Hill *et al.*, 2022). This habitat is also listed as a component biotope of the burrowed mud habitat which is a PMF (NatureScot, 2020); however, no stations in Scottish waters were classified in a range that encompassed 'frequent'.

Table 2.1 Total Sea Pens and Faunal Burrows Qualification

Station	Total Number of Images Assessed	Transect Length (m)	Estimated Area Investigated (m^2)[1]	Burrows				*Pennatula phosphorea*				*Virgularia stet.*			
				Number of Individuals	Density (Indiv. m^2)	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (Indiv. m^2)	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (Indiv. m^2)	Size Range (cm)	SACFOR Range[2]
ENV001	54	287	213	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV002	44	273	172	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV003	52	281	155	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV004	52	288	176	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV005	57	317	191	0	NC	NC	NC	2	0.01	0.7 to 1.8	R to R	0	NC	NC	NC
ENV006	70	284	183	1	0.01	0.7	R	0	NC	NC	NC	0	NC	NC	NC
ENV007	60	1376	1026	0	NC	NC	NC	5	0.005	2.3 to 4.1	R to R	0	NC	NC	NC
ENV008	51	341	220	1	0.005	1.4	R	0	NC	NC	NC	0	NC	NC	NC
ENV009	54	273	176	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV010	51	287	208	1	0.005	3.3	R	0	NC	NC	NC	0	NC	NC	NC
ENV011	46	288	165	0	NC	NC	NC	4	0.02	3.2 to 5.1	O to O	0	NC	NC	NC
ENV012	57	298	162	0	NC	NC	NC	11	0.07	2.8 to 7.1	R to O	0	NC	NC	NC
ENV013	61	295	186	0	NC	NC	NC	8	0.04	3.3 to 6.6	O to O	0	NC	NC	NC
ENV014	67	293	194	1	0.01	1.6	R	26	0.13	1.8 to 7.4	O to F	0	NC	NC	NC
ENV015	70	271	210	1	0.005	1	R	44	0.21	1.7 to 6.7	O to F	0	NC	NC	NC
ENV016	115	275	204	0	NC	NC	NC	83	0.41	0.8 to 8.0	R to F	0	NC	NC	NC
ENV017	65	289	185	0	NC	NC	NC	14	0.08	2.9 to 6.8	R to O	0	NC	NC	NC
ENV018	54	295	172	0	NC	NC	NC	2	0.01	3.0 to 3.5	O to O	0	NC	NC	NC
ENV019	52	285	172	1	0.01	0.8	R	0	NC	NC	NC	0	NC	NC	NC
ENV020	68	594	411	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV021	92	298	196	0	NC	NC	NC	64	0.33	0.3 to 7.7	R to F	0	NC	NC	NC
ENV022	188	280	185	1	0.01	2.2	R	274	1.48	0.3 to 9.4	O to C	0	NC	NC	NC
ENV023	181	283	230	21	0.09	1.7 to 6.9	R to O	256	1.11	0.4 to 7.6	O to C	0	NC	NC	NC
ENV024	87	289	183	0	NC	NC	NC	49	0.27	0.3 to 5.2	R to F	0	NC	NC	NC
ENV025	97	539	385	0	NC	NC	NC	90	0.23	0.2 to 6.2	R to F	0	NC	NC	NC
ENV026	83	288	205	1	0.005	3.8	R	40	0.20	0.7 to 5.1	R to F	0	NC	NC	NC
ENV027	91	464	294	0	NC	NC	NC	8	0.03	1.2 to 5.8	R to O	0	NC	NC	NC
ENV028	86	292	183	0	NC	NC	NC	48	0.26	1.2 to 8.3	O to F	0	NC	NC	NC
ENV029	83	277	173	0	NC	NC	NC	54	0.31	0.5 to 7.7	R to F	1	0.01	6.4	R
ENV030	66	312	186	0	NC	NC	NC	34	0.18	0.6 to 4.4	R to F	0	NC	NC	NC
ENV031	47	220	151	0	NC	NC	NC	15	0.10	0.8 to 3.7	R to O	0	NC	NC	NC
ENV032	51	282	194	0	NC	NC	NC	6	0.03	0.9 to 3.4	R to O	0	NC	NC	NC
ENV033	58	279	241	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV034	43	276	167	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV035	50	283	162	0	NC	NC	NC	2	0.01	1.0 to 2.0	R to R	0	NC	NC	NC
ENV036	46	292	190	0	NC	NC	NC	4	0.02	1.4 to 1.7	R to R	0	NC	NC	NC
ENV037	39	278	172	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV038	56	299	186	0	NC	NC	NC	1	0.01	1.6	R	0	NC	NC	NC
ENV039	187	287	194	0	NC	NC	NC	213	1.10	0.3 to 5.1	O to C	0	NC	NC	NC
ENV040	178	285	183	7	0.04	0.8 to 3.6	R to O	209	1.14	0.5 to 6.8	O to C	0	NC	NC	NC
ENV041	224	279	175	11	0.06	0.7 to 12.3	R to O	302	1.72	0.5 to 7.0	O to C	0	NC	NC	NC
ENV042	185	271	168	26	0.15	0.8 to 10.5	R to F	208	1.23	0.6 to 7.1	O to C	0	NC	NC	NC
ENV043	182	277	151	17	0.11	0.9 to 8.1	R to F	175	1.16	0.4 to 6.1	O to C	0	NC	NC	NC
ENV044	123	280	153	50	0.33	1.1 to 7.9	O to F	70	0.46	0.8 to 10.6	R to F	0	NC	NC	NC
ENV045	156	288	157	102	0.65	0.6 to 13	R to F	96	0.61	0.8 to 8.1	R to F	0	NC	NC	NC
ENV046	159	281	161	32	0.20	1.2 to 7.2	O to F	160	0.99	0.7 to 6.6	R to F	0	NC	NC	NC
ENV047	145	287	161	47	0.29	0.8 to 7.5	R to F	122	0.76	1.1 to 6.2	O to F	0	NC	NC	NC
ENV048	228	304	161	21	0.13	0.7 to 8.5	R to F	298	1.85	0.7 to 7.9	O to C	0	NC	NC	NC
ENV049	147	296	166	12	0.07	0.7 to 7.6	R to O	161	0.97	0.2 to 3.2	R to F	0	NC	NC	NC
ENV050	49	295	173	2	0.01	1.2 to 4.9	R to O	0	NC	NC	NC	0	NC	NC	NC
ENV051	61	475	303	0	NC	NC	NC	13	0.04	0.9 to 5.1	R to O	0	NC	NC	NC
ENV052	64	277	174	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV053	75	285	169	2	0.01	2 to 3	R to O	33	0.19	0.8 to 6.1	R to F	2	0.01	3.6 to 3.7	O to O
ENV054	91	288	177	7	0.04	1.4 to 4.2	R to O	78	0.44	0.2 to 5.2	R to F	1	0.01	1.0	R
ENV055	70	282	180	19	0.11	0.6 to 8	R to F	26	0.14	0.8 to 7.7	R to F	1	0.01	3.2	R
ENV056	104	279	164	81	0.49	0.9 to 8.8	R to F	26	0.16	0.6 to 9.3	R to F	11	0.07	1.9 to 9	R to O
ENV057	84	348	209	76	0.36	0.8 to 7.5	R to F	4	0.02	0.7 to 3.0	R to O	0	NC	NC	NC
ENV058	45	269	137	65	0.48	0.7 to 6.9	R to F	5	0.04	0.7 to 2.4	R to R	0	NC	NC	NC
ENV059	178	292	189	248	1.32	0.6 to 10.6	O to C	0	NC	NC	NC	105	0.56	1.5 to 15.3	O to C
ENV060	92	297	167	242	1.45	0.5 to 9.2	O to C	0	NC	NC	NC	1	0.01	7.2	R
ENV061	96	279	152	162	1.06	0.6 to 9.2	O to C	0	NC	NC	NC	0	NC	NC	NC
ENV062	67	287	147	89	0.61	0.8 to 13.7	R to F	0	NC	NC	NC	1	0.01	7.2	R
ENV063	53	303	127	12	0.09	1 to 5.7	R to O	0	NC	NC	NC	0	NC	NC	NC
ENV064	68	295	135	29	0.22	0.8 to 7.6	R to F	0	NC	NC	NC	24	0.18	4.3 to 11.4	F to F
ENV065	62	292	117	38	0.32	0.9 to 6.8	R to F	0	NC	NC	NC	4	0.03	4.1 to 6.2	O to O
ENV066	58	278	128	9	0.07	1.2 to 4.4	R to O	0	NC	NC	NC	0	NC	NC	NC
ENV067b	50	276	150	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV068	57	292	179	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV069	63	277	131	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV070	89	285	168	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV071	59	284	154	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC

Station	Total Number of Images Assessed	Transect Length (m)	Estimated Area Investigated (m^2)[1]	Burrows				*Pennatula phosphorea*				*Virgularia stet.*			
				Number of Individuals	Density (Indiv. m^2)	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (Indiv. m^2)	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (Indiv. m^2)	Size Range (cm)	SACFOR Range[2]
ENV072	44	291	167	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV073	51	272	151	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV074	49	348	186	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV075	53	268	149	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV076	58	346	226	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV077	46	328	200	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV078	48	284	170	3	0.02	0.8 to 1.2	R to R	0	NC	NC	NC	0	NC	NC	NC
ENV079	59	330	207	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV080	47	303	166	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV081	60	275	137	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV082	53	269	175	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV083	60	269	140	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV084	49	298	163	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV085	49	292	179	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV086	52	315	188	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV087	60	288	184	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV088	55	293	180	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV089	55	280	166	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV090	70	282	149	0	NC	NC	NC	1	0.01	3.6	R	0	NC	NC	NC
ENV091	74	284	164	0	NC	NC	NC	8	0.05	0.7 to 3.2	R to O	0	NC	NC	NC
ENV092	55	278	159	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
ENV093	67	283	173	1	0.01	4.4	R	14	0.08	0.5 to 4.2	R to O	0	NC	NC	NC
ENV094	85	276	183	4	0.02	1.7 to 3.5	R to O	55	0.30	0.5 to 7.1	R to F	0	NC	NC	NC
ENV095	79	280	166	4	0.02	2 to 2.8	R to R	39	0.24	0.5 to 6.5	R to F	0	NC	NC	NC
ENV096	127	288	181	1	0.01	1.3	R	116	0.64	0.5 to 5.9	R to F	0	NC	NC	NC
ENV097	62	467	286	0	NC	NC	NC	18	0.06	0.4 to 5.6	R to O	0	NC	NC	NC
ENV098	166	294	187	59	0.32	0.8 to 8.7	R to F	113	0.60	0.8 to 6.4	R to F	2	0.01	3.5 to 3.8	O to O
ENV099	166	308	201	18	0.09	1.2 to 4.7	R to O	168	0.83	0.4 to 3.7	R to F	0	NC	NC	NC
ENV100	153	280	153	93	0.61	0.6 to 9.1	R to F	138	0.90	0.5 to 6.9	R to F	0	NC	NC	NC
ENV101	100	285	195	29	0.15	1.1 to 8	O to F	73	0.37	0.7 to 11.4	R to F	0	NC	NC	NC
ENV102	171	288	167	34	0.20	0.8 to 10.8	R to F	212	1.27	0.8 to 7.2	O to C	0	NC	NC	NC
ENV103	111	343	217	5	0.02	0.9 to 3.4	R to O	72	0.33	0.6 to 6.4	R to F	0	NC	NC	NC
ENV104	114	285	175	4	0.02	2 to 5.2	R to O	183	1.05	0.3 to 6.9	O to C	0	NC	NC	NC
ENV105	98	288	184	3	0.02	2.9 to 4.4	R to O	56	0.30	1.1 to 4.6	O to F	0	NC	NC	NC
ENV106	66	287	160	0	NC	NC	NC	17	0.11	0.6 to 3.4	R to F	0	NC	NC	NC
ENV107	90	291	176	8	0.05	1.7 to 3.9	R to O	46	0.26	0.8 to 5.4	R to F	0	NC	NC	NC
ENV108	93	304	178	30	0.17	1.6 to 8.2	O to F	24	0.13	1.2 to 6.2	O to F	0	NC	NC	NC
ENV109	97	286	184	60	0.33	0.9 to 9.6	R to F	39	0.21	0.6 to 6.8	R to F	0	NC	NC	NC
ENV110	117	283	180	40	0.22	1.7 to 7.7	O to F	82	0.46	1.0 to 6.5	O to F	0	NC	NC	NC
ENV111a	51	283	155	24	0.15	1.3 to 7.2	O to F	4	0.03	1.7 to 5.0	R to O	0	NC	NC	NC
ENV112	111	285	169	71	0.42	0.9 to 10.7	R to F	43	0.26	1.3 to 6.4	O to F	0	NC	NC	NC
ENV113	102	339	222	88	0.40	0.7 to 9.8	R to F	29	0.13	1.4 to 6.0	O to F	1	0.005	8.5	R
ENV114	86	303	161	81	0.50	1.1 to 10.4	O to F	18	0.11	3.0 to 7.1	F to F	0	NC	NC	NC
ENV115	122	291	172	144	0.84	0.6 to 14.9	R to F	44	0.26	2.4 to 6.7	O to F	0	NC	NC	NC
ENV116	98	274	161	94	0.58	0.9 to 12.3	R to F	24	0.15	2.1 to 9.0	O to F	0	NC	NC	NC
ENV117	131	277	154	170	1.10	0.9 to 13.5	O to C	20	0.13	3.1 to 9.4	F to F	0	NC	NC	NC
ENV118	117	279	161	166	1.03	0.8 to 10.6	O to C	3	0.02	2.0 to 5.3	R to O	0	NC	NC	NC
ENV119	113	274	158	195	1.24	0.6 to 9.8	O to C	9	0.06	2.6 to 9.0	R to O	0	NC	NC	NC
ENV120	100	291	169	168	0.99	0.9 to 8.3	R to F	2	0.01	3.8 to 4.1	O to O	0	NC	NC	NC
ENV121	113	285	173	215	1.25	0.7 to 14.9	O to C	4	0.02	1.5 to 5.2	R to O	9	0.05	3.9 to 8.7	O to O
ENV122	156	291	164	307	1.88	0.8 to 9.9	O to C	3	0.02	2.0 to 2.4	R to R	1	0.01	3.3	R
ENV123	135	290	168	264	1.58	0.9 to 11.8	O to C	2	0.01	1.6 to 3.7	R to O	4	0.02	6.4 to 10.6	O to O
ENV124	95	282	167	155	0.93	0.9 to 12	R to F	6	0.04	2.7 to 4.8	R to O	0	NC	NC	NC
ENV125	63	288	154	74	0.48	1 to 11.2	O to F	2	0.01	3.4 to 8.7	O to O	0	NC	NC	NC
ENV126	60	275	159	128	0.81	0.7 to 10.1	R to F	1	0.01	5.6	R	0	NC	NC	NC
ENV127	60	276	156	142	0.91	0.8 to 14.7	R to F	0	NC	NC	NC	0	NC	NC	NC
ENV128	92	390	187	107	0.57	0.8 to 10.8	R to F	0	NC	NC	NC	0	NC	NC	NC
ENV129	40	272	97	14	0.14	1.4 to 6.1	O to F	0	NC	NC	NC	0	NC	NC	NC
ENV130	62	290	125	38	0.30	1 to 9.3	O to F	0	NC	NC	NC	0	NC	NC	NC
ENV131	68	280	136	60	0.44	0.6 to 10.3	R to F	0	NC	NC	NC	0	NC	NC	NC
ENV132a	45	276	104	11	0.11	0.5 to 4.8	R to F	0	NC	NC	NC	0	NC	NC	NC
ENV133	57	295	154	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC

1 Total area of seabed photographed for station/transect calculated using laser line scaling

2 SACFOR classification scale S=Superabundant, A=Abundant, C=Common, F=Frequent, O=Occasional and R=Rare Classification based on minimum and maximum estimated size of sea pen and burrows and the respective mean density at each station and transect

Table 2.2 Application of SACFOR abundance ranges to OSPAR (2010) 'sea pen and burrowing megafauna communities' habitat

Ranges			
< Frequent No similarity	≤Frequent Some similarity	< and > Frequent Some Similarity	≥Frequent Greatest Similarity

2.4 Stony Reefs

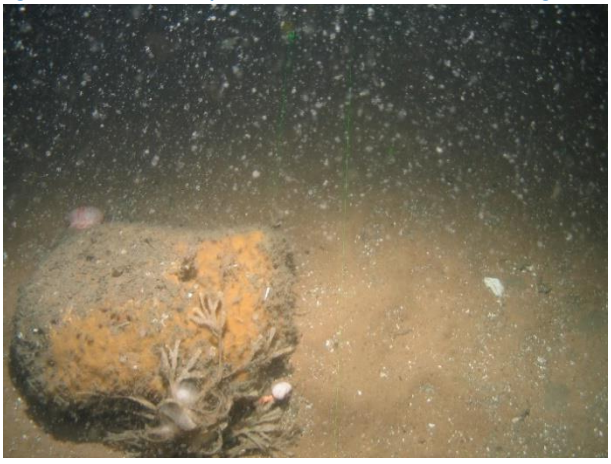
Analysis for stony reef was conducted to determine resemblance, if any, to the protected habitat based on the criteria adopted by Irving (2009) as set out in Appendix B.5.2. Seabed imagery and sediment composition showed evidence of potential stony reef across the ECRs at sixteen stations in the form of isolated cobbles and/or boulders or isolated patches of cobbles or scattered cobbles.

There was little evidence of stony reef resemblance stations containing cobbles or boulders. Stations ENV020, ENV032, ENV035, ENV038, ENV050, ENV051, ENV052, ENV67b, ENV068, ENV069, ENV070, ENV073, ENV103, ENV105, ENV106 and ENV132a were matrix supported, with little relief overall and often comprised small patchy extents across larger swathes of gravel or coarse shell-based material such as examples given in Figure 2.1. At these stations, occurrences of individual images meeting one or more of the criteria were generally only in a few images or with wide separation between images; therefore, all these stations classified as having no resemblance to rocky reef (Table 2.3).

Additionally, at all stations analysed for stony reef, epifaunal coverage showed limited increase in areas of cobbles and boulders than the surrounding area. However, some examples of species known to be strong indicators of reef habitat were observed including *A. digitatum* and *T. indivisa.* However, these species were not limited to the areas of cobbles and/or boulders but rather were seen across all gravelly sediment types observed throughout the survey area.

Further, in an attempt to refine the criteria for defining areas with a 'low resemblance' to Annex I stony reef Golding *et al.* (2020) stated that in order to be regarded as having any resemblance to reef, a 25m^2 area of seabed must be composed of at least 10% cobbles and boulders with the faunal community dominated by epifaunal species. Where an area only meets the criteria for low resemblance (Table B.3), a strong justification would be required to consider the area as Annex I stony reef, further justifying the classification of stations as no having no resemblance to a stony reef.

Figure 2.1 Example Cobble Occurrences along Morven ECRs



Station: ENV020 Fix: 997 Isolated cobble on sand



Station: ENV070 Fix: 5809 Scattered cobbles and boulders on gravelly sand

Table 2.3 Stony Reef Assessment Summary

Station	Total Number of Images Assessed	Estimated Area Investigated (m^2)	Number of Images with Cobbles and/or Boulders	% of Images with Cobbles and/or Boulders	Number of Images with Low Resemblance (10-40% Cover)	% of images with Low Resemblance (10-40% Cover)	Number of Images with Medium Resemblance (40-95% Cover)	% of Images with Medium Resemblance (40-95% Cover)	Max Reef Height (cm)	Mean (and range) of Stony Reef Cover (%)	Estimated Total Reef Area (m^2)[1]	Resemblance to 'Stony Reef'	Comments
ENV020	68	411	31	46	25	37	2	3	6.3	18 (2 - 46)	1.74	None	Isolated cobbles on sand
ENV032	51	194	1	2	1	2	0		7.3	26 (26 - 26)	0.14	None	Isolated boulder on sand
ENV035	50	162	1	2	1	2	0		4.9	9 (9 - 9)	0.02	None	Single scattered cobbles on gravelly sand
ENV038	56	186	1	2	1	2	0		7.3	17 (17 - 17)	0.06	None	Isolated boulder on sand
ENV050	49	173	8	16	7	14	1	2	11	20 (5 - 40)	0.52	None	Isolated cobbles on muddy sand
ENV051	61	303	4	7	4	7	0		2.7	11 (7 - 17)	0.08	None	Isolated patch of cobbles on sand
ENV052	64	174	23	36	19	30	3	5	12.2	26 (8 - 71)	1.77	None	Scattered cobbles/boulders on sand
ENV067b	50	150	46	92	34	68	12	24	15.4	33 (9 - 79)	3.11	None	Scattered cobbles/boulders on gravelly sand
ENV068	57	179	41	72	38	67	2	4	10.7	26 (7 - 51)	2.83	None	Scattered cobbles/boulders on gravelly sand
ENV069	63	131	51	81	38	60	14	22	17.7	35 (8 - 66)	2.84	None	Scattered cobbles/boulders on gravelly muddy sand
ENV070	89	168	76	85	43	48	31	35	24.4	36 (7 - 81)	7.06	None	Scattered cobbles/boulders on gravelly sand
ENV073	51	151	1	2	1	2	0		4.9	47 (47 - 47)	0.21	None	Isolated boulder on muddy sand
ENV103	111	217	2	2	2	2	0		16	19 (8 - 30)	0.11	None	Isolated cobbles on muddy sand
ENV105	98	184	3	3	2	2	0		5.4	14 (8 - 25)	0.13	None	Isolated cobbles on muddy sand
ENV106	66	160	4	6	4	6	0		24.2	21 (12 - 35)	0.27	None	Isolated cobbles on muddy sand
ENV132a	45	104	2	4	2	4	0		0.7	16 (14 - 17)	0.03	None	Isolated patch of cobbles on muddy sand

1 Maximum reef height may be underestimated due to the absence of laser lines in some of images.

2 Stony reef coverage in images with no laser lines present was estimated based on average station image area.

2.5 Herring Spawning Ground Potential

Potential herring spawning grounds reportedly overlap with the Morven ECR survey area (Coull *et al.*, 1998). Consequently, all stations were reviewed for their spawning potential. Water depths across the survey area ranged from 24m to 104m LAT which lies within a suitable depth range for herring spawning (Frost & Diele, 2022).

Based on the criteria by Reach *et al.* (2013), and with consideration of Cefas (2001), as outlined in Appendix B.5.3, the spawning potential of each relevant aspect of each of the 128 stations where particle size analysis (PSA) data were collected, are displayed in Table 2.4. More detailed PSA results are presented in Section 2.9 and Appendix F.

Results of the PSA revealed that although coarse sand to gravel-sized sediment was a component of most stations, it accounted for <20% at most stations, and this was supported by seabed imagery. Six stations (Stations ENV037, ENV051, ENV076, ENV086, ENV092 and ENV131) recorded coarse sand to gravel sized material greater than 40% equating to sub-prime criteria or greater.

Of these six stations, only Stations ENV076 and ENV092 recorded <5% fines. Overall, in terms of habitat sediment preference, Station ENV076 with 26.1% gravel was considered ‘sub-prime’, whilst Station ENV092 with 63.5% gravel was considered ‘prime’. All other stations were considered unsuitable in terms of habitat sediment preference due to >5% fines and/or <10% gravel.

Station ENV092 offered the greatest potential for herring spawning from a habitat sediment classification perspective, being regarded as ‘preferred’ as they recorded a modified Folk (1954) classification of sandy gravel. Two further stations (Stations ENV033 and ENV076) were regarded as ‘marginal’ due to their modified Folk (1954) classification of gravelly sand, while all other stations were considered unsuitable.

In terms of sediment sorting, Stations ENV018 and ENV019 presented well sorted substrate however, these stations were dominated by fine and medium sand with <1% gravel and therefore are unlikely to offer a suitable habitat for herring spawning. A total of 33 stations presented either a moderately well or moderately sorted substrate but once again were dominated by fine to coarse sand with <3% gravel. All remaining stations presented poorly to extremely poorly sorted substrate. The lack of well sorted sediment may be indicative of less oxygenated sediments, which are less favourable conditions for herring spawning.

In summary, it was considered that Station ENV092 presented the greatest herring spawning potential as it met both the ‘prime’ habitat sediment preference and ‘preferred’ sediment classification as set out by Reach *et al.* (2013). This was also the only station to record a sufficiently high percentage of gravel (>50%) in terms of habitat sediment preference for herring spawning.

Table 2.4 Summary of Herring Spawning Potential

Station	Dominant Grain Size			Habitat Sediment Preference[1]			Habitat Sediment Classification[2]	
	Sorting Description (and Coefficient)	Wentworth Classification (Mode)	% Coarse Sand to Gravel	% Fines	% Gravel	Suitability	Modified Folk Classification	Suitability
ENV001	Moderately well, 0.69	Fine sand	0.5	5.7	0.4	Unsuitable	Sand	Unsuitable
ENV002	Moderate, 0.88	Fine sand	0.2	8.7	0.1	Unsuitable	Sand	Unsuitable
ENV003	Moderate, 0.73	Fine sand	0.2	6.5	0.1	Unsuitable	Sand	Unsuitable
ENV004	Moderate, 0.98	Fine sand	5.5	7.5	1.2	Unsuitable	Slightly gravelly sand	Unsuitable
ENV005	Moderate, 0.88	Fine sand	1.8	8.5	0.4	Unsuitable	Sand	Unsuitable
ENV006	Moderate, 0.9	Fine sand	1.6	8.3	0.1	Unsuitable	Sand	Unsuitable
ENV007	Moderate, 0.84	Fine sand	1.1	8.6	0.0	Unsuitable	Sand	Unsuitable
ENV008	Moderate, 0.81	Fine sand	1.6	7.9	0.5	Unsuitable	Sand	Unsuitable
ENV009	Moderate, 0.77	Fine sand	1.1	7.4	0.0	Unsuitable	Sand	Unsuitable
ENV010	Moderate, 0.98	Fine sand	1.0	10.6	0.0	Unsuitable	Muddy sand	Unsuitable
ENV011	Moderate, 0.92	Fine sand	1.5	9.2	0.0	Unsuitable	Sand	Unsuitable
ENV012	Moderate, 0.93	Fine sand	0.7	8.4	0.0	Unsuitable	Sand	Unsuitable
ENV013	Moderate, 0.97	Fine sand	1.7	8.4	0.0	Unsuitable	Sand	Unsuitable
ENV014	Poor, 1.03	Fine sand	1.3	9.3	0.2	Unsuitable	Sand	Unsuitable
ENV015	Moderate, 0.94	Fine sand	1.2	8.5	0.0	Unsuitable	Sand	Unsuitable
ENV016	Moderate, 0.77	Fine sand	1.1	6.0	0.0	Unsuitable	Sand	Unsuitable
ENV017	Moderate, 0.94	Fine sand	0.6	7.4	0.1	Unsuitable	Sand	Unsuitable
ENV018	Well, 0.44	Fine sand	0.1	3.4	0.1	Unsuitable	Sand	Unsuitable
ENV019	Well, 0.43	Fine sand	0.0	0.0	0.0	Unsuitable	Sand	Unsuitable
ENV021	Poor, 1.13	Fine sand	2.0	11.3	0.2	Unsuitable	Muddy sand	Unsuitable
ENV022	Poor, 1.17	Fine sand	1.5	11.3	0.0	Unsuitable	Muddy sand	Unsuitable
ENV023	Poor, 1.29	Fine sand	1.1	15.7	0.0	Unsuitable	Muddy sand	Unsuitable
ENV024	Poor, 1.3	Fine sand	9.0	9.5	0.0	Unsuitable	Sand	Unsuitable
ENV025	Poor, 1.55	Fine sand	11.1	12.1	4.5	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV026	Poor, 1.37	Fine sand	9.7	10.9	0.0	Unsuitable	Muddy sand	Unsuitable
ENV027	Poor, 1.11	Medium sand	16.5	6.0	0.1	Unsuitable	Sand	Unsuitable
ENV028	Poor, 1.47	Fine sand	12.8	11.8	0.0	Unsuitable	Muddy sand	Unsuitable
ENV029	Poor, 1.59	Fine sand	6.1	17.6	0.0	Unsuitable	Muddy sand	Unsuitable
ENV030	Poor, 1.71	Fine sand	10.5	16.0	0.1	Unsuitable	Muddy sand	Unsuitable
ENV031	Poor, 1.26	Fine sand	7.7	9.7	0.5	Unsuitable	Sand	Unsuitable
ENV032	Poor, 1.02	Medium sand	17.0	5.7	0.3	Unsuitable	Sand	Unsuitable
ENV033	Poor, 1.47	Medium sand	29.0	5.0	6.5	Unsuitable	Gravelly sand	Marginal
ENV034	Moderate, 0.72	Medium sand	35.6	1.7	0.5	Unsuitable	Sand	Unsuitable
ENV036	Moderate, 0.77	Medium sand	13.2	3.4	0.3	Unsuitable	Sand	Unsuitable
ENV037	Poor, 1.14	Coarse sand	61.3	6.4	0.4	Unsuitable	Sand	Unsuitable
ENV038	Poor, 1.02	Medium sand	8.1	7.8	0.3	Unsuitable	Sand	Unsuitable
ENV039	Poor, 1.42	Medium sand	6.6	14.6	1.2	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV040	Very poor, 2.52	Medium sand	8.7	28.9	0.2	Unsuitable	Muddy sand	Unsuitable
ENV041	Very poor, 2.22	Fine sand	12.3	21.2	0.0	Unsuitable	Muddy sand	Unsuitable
ENV042	Very poor, 2.37	Fine sand	6.8	28.0	0.4	Unsuitable	Muddy sand	Unsuitable
ENV043	Very poor, 2.48	Medium sand	5.7	32.8	0.0	Unsuitable	Muddy sand	Unsuitable
ENV044	Very poor, 2.5	Fine sand	8.7	31.1	0.2	Unsuitable	Muddy sand	Unsuitable
ENV045	Very poor, 2.51	Fine sand	1.8	45.0	0.0	Unsuitable	Muddy sand	Unsuitable
ENV046	Very poor, 2.47	Fine sand	3.2	36.0	0.3	Unsuitable	Muddy sand	Unsuitable
ENV047	Very poor, 2.52	Fine sand	5.7	33.9	0.4	Unsuitable	Muddy sand	Unsuitable
ENV048	Very poor, 2.36	Fine sand	7.3	25.5	0.1	Unsuitable	Muddy sand	Unsuitable
ENV049	Very poor, 2.42	Medium sand	8.4	24.6	0.0	Unsuitable	Muddy sand	Unsuitable
ENV050	Very poor, 3.18	Fine sand	16.1	35.0	6.5	Unsuitable	Gravelly muddy sand	Unsuitable
ENV051	Poor, 1.39	Medium sand	42.1	7.2	1.3	Unsuitable	Slightly gravelly sand	Unsuitable
ENV052	Poor, 1.47	Fine sand	7.7	12.6	0.6	Unsuitable	Muddy sand	Unsuitable
ENV053	Very poor, 2.56	Fine sand	14.1	25.3	1.0	Unsuitable	Muddy sand	Unsuitable
ENV054	Very poor, 2.35	Fine sand	11.2	20.9	0.1	Unsuitable	Muddy sand	Unsuitable
ENV055	Very poor, 2.28	Fine sand	4.0	27.9	0.1	Unsuitable	Muddy sand	Unsuitable
ENV056	Very poor, 2.25	Fine sand	2.3	30.9	0.0	Unsuitable	Muddy sand	Unsuitable
ENV057	Very poor, 2.19	Very fine sand	0.8	40.3	0.0	Unsuitable	Muddy sand	Unsuitable
ENV058	Very poor, 2.18	Very fine sand	0.5	41.9	0.0	Unsuitable	Muddy sand	Unsuitable
ENV059	Very poor, 2.19	Very fine sand	0.0	60.2	0.0	Unsuitable	Sandy mud	Unsuitable
ENV060	Very poor, 2.09	Very fine sand	0.0	55.3	0.0	Unsuitable	Sandy mud	Unsuitable
ENV061	Very poor, 2.03	Very fine sand	0.1	44.8	0.1	Unsuitable	Muddy sand	Unsuitable
ENV062	Very poor, 2.05	Very fine sand	0.2	47.2	0.2	Unsuitable	Muddy sand	Unsuitable
ENV063	Very poor, 2.65	Medium sand	16.0	31.5	0.2	Unsuitable	Muddy sand	Unsuitable
ENV064	Very poor, 2.17	Fine sand	3.8	30.0	0.1	Unsuitable	Muddy sand	Unsuitable
ENV065	Very poor, 2.33	Very fine sand	2.2	50.4	1.1	Unsuitable	Slightly gravelly sandy mud	Unsuitable
ENV066	Extremely poor, 4.41	Pebble	36.1	48.0	24.7	Unsuitable	Gravelly mud	Unsuitable
ENV069	Moderate, 0.97	Very fine sand	0.0	16.7	0.0	Unsuitable	Muddy sand	Unsuitable
ENV071	Moderate, 0.99	Fine sand	6.2	7.1	0.4	Unsuitable	Sand	Unsuitable
ENV072	Moderate, 0.91	Fine sand	1.2	10.1	0.5	Unsuitable	Muddy sand	Unsuitable
ENV073	Poor, 1.09	Fine sand	3.9	10.2	0.2	Unsuitable	Muddy sand	Unsuitable
ENV074	Moderate, 0.95	Fine sand	4.7	6.3	0.1	Unsuitable	Sand	Unsuitable
ENV075	Moderate, 0.8	Fine sand	5.4	5.0	0.1	Unsuitable	Sand	Unsuitable
ENV076	Poor, 2	Fine sand	53.7	3.5	26.1	Sub-Prime	Gravelly sand	Marginal
ENV077	Moderate, 0.87	Medium sand	7.2	5.2	0.8	Unsuitable	Sand	Unsuitable
ENV078	Poor, 1.16	Fine sand	8.6	7.9	0.5	Unsuitable	Sand	Unsuitable
ENV079	Poor, 1.14	Fine sand	14.7	6.0	2.0	Unsuitable	Slightly gravelly sand	Unsuitable

Station	Dominant Grain Size			Habitat Sediment Preference[1]			Habitat Sediment Classification[2]	
	Sorting Description (and Coefficient)	Wentworth Classification (Mode)	% Coarse Sand to Gravel	% Fines	% Gravel	Suitability	Modified Folk Classification	Suitability
ENV080	Moderate, 0.93	Fine sand	3.7	6.4	0.1	Unsuitable	Sand	Unsuitable
ENV081	Poor, 1.04	Fine sand	1.1	9.8	0.0	Unsuitable	Sand	Unsuitable
ENV082	Moderate, 0.95	Fine sand	4.9	6.9	0.1	Unsuitable	Sand	Unsuitable
ENV083	Poor, 1.15	Fine sand	3.8	10.0	0.1	Unsuitable	Muddy sand	Unsuitable
ENV084	Poor, 1.22	Fine sand	9.3	8.8	0.2	Unsuitable	Sand	Unsuitable
ENV085	Poor, 1.18	Fine sand	1.0	11.2	0.0	Unsuitable	Muddy sand	Unsuitable
ENV086	Moderate, 0.76	Medium sand	17.5	3.8	0.2	Unsuitable	Sand	Unsuitable
ENV087	Moderately well, 0.64	Coarse sand	65.2	1.1	1.2	Unsuitable	Slightly gravelly sand	Unsuitable
ENV088	Moderate, 1	Medium sand	30.8	4.7	2.2	Unsuitable	Slightly gravelly sand	Unsuitable
ENV089	Moderately well, 0.68	Medium sand	12.9	2.2	0.7	Unsuitable	Sand	Unsuitable
ENV090	Moderate, 0.87	Fine sand	8.6	4.9	0.8	Unsuitable	Sand	Unsuitable
ENV091	Poor, 1.22	Fine sand	6.0	9.3	0.1	Unsuitable	Sand	Unsuitable
ENV092	Poor, 1.69	Granule	84.6	0.9	63.5	Prime	Sandy gravel	Preferred
ENV093	Moderate, 0.99	Fine sand	8.3	5.8	0.2	Unsuitable	Sand	Unsuitable
ENV094	Poor, 1.42	Fine sand	13.0	9.8	0.5	Unsuitable	Sand	Unsuitable
ENV095	Poor, 1.3	Medium sand	13.5	8.2	0.4	Unsuitable	Sand	Unsuitable
ENV096	Poor, 1.55	Fine sand	7.4	15.4	0.0	Unsuitable	Muddy sand	Unsuitable
ENV097	Moderate, 1	Fine sand	11.6	5.2	0.4	Unsuitable	Sand	Unsuitable
ENV098	Poor, 1.97	Fine sand	3.6	23.3	0.6	Unsuitable	Muddy sand	Unsuitable
ENV099	Very poor, 2.01	Fine sand	5.6	20.7	1.4	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV100	Poor, 1.87	Fine sand	0.1	30.8	0.1	Unsuitable	Muddy sand	Unsuitable
ENV101	Very poor, 2.05	Fine sand	2.7	26.3	0.1	Unsuitable	Muddy sand	Unsuitable
ENV102	Poor, 1.93	Fine sand	10.5	18.4	0.0	Unsuitable	Muddy sand	Unsuitable
ENV103	Very poor, 2.11	Fine sand	8.3	20.5	0.3	Unsuitable	Muddy sand	Unsuitable
ENV104	Poor, 1.81	Fine sand	6.4	18.0	0.0	Unsuitable	Muddy sand	Unsuitable
ENV105	Very poor, 2.22	Fine sand	6.7	25.3	1.5	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV106	Very poor, 2.05	Fine sand	23.3	16.7	1.3	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV107	Very poor, 2.2	Fine sand	9.4	22.6	0.1	Unsuitable	Muddy sand	Unsuitable
ENV108	Very poor, 2.05	Fine sand	3.5	26.0	0.1	Unsuitable	Muddy sand	Unsuitable
ENV109	Poor, 1.97	Fine sand	0.1	31.3	0.0	Unsuitable	Muddy sand	Unsuitable
ENV110	Poor, 1.96	Fine sand	6.5	20.3	0.1	Unsuitable	Muddy sand	Unsuitable
ENV111	Very poor, 2.07	Very fine sand	0.4	33.6	0.0	Unsuitable	Muddy sand	Unsuitable
ENV112	Very poor, 2.28	Very fine sand	3.0	38.8	0.1	Unsuitable	Muddy sand	Unsuitable
ENV113	Very poor, 2.18	Very fine sand	1.1	40.2	0.0	Unsuitable	Muddy sand	Unsuitable
ENV114	Very poor, 2.13	Very fine sand	0.9	38.0	0.1	Unsuitable	Muddy sand	Unsuitable
ENV115	Very poor, 2.02	Very fine sand	0.6	42.9	0.0	Unsuitable	Muddy sand	Unsuitable
ENV116	Very poor, 2.21	Very fine sand	1.7	40.1	0.3	Unsuitable	Muddy sand	Unsuitable
ENV117	Very poor, 2.06	Very fine sand	0.1	44.9	0.0	Unsuitable	Muddy sand	Unsuitable
ENV118	Very poor, 2.08	Very fine sand	0.4	49.3	0.1	Unsuitable	Muddy sand	Unsuitable
ENV119	Very poor, 2.16	Very fine sand	0.2	50.5	0.0	Unsuitable	Sandy mud	Unsuitable
ENV120	Very poor, 2.19	Very fine sand	0.0	56.7	0.0	Unsuitable	Sandy mud	Unsuitable
ENV121	Very poor, 2.2	Very fine sand	0.1	57.0	0.0	Unsuitable	Sandy mud	Unsuitable
ENV122	Very poor, 2.13	Very fine sand	0.0	57.1	0.0	Unsuitable	Sandy mud	Unsuitable
ENV123	Very poor, 2.18	Very fine sand	0.0	55.7	0.0	Unsuitable	Sandy mud	Unsuitable
ENV124	Very poor, 2.22	Very fine sand	0.3	50.1	0.0	Unsuitable	Sandy mud	Unsuitable
ENV125	Very poor, 2.38	Very fine sand	0.7	45.8	0.3	Unsuitable	Muddy sand	Unsuitable
ENV126	Very poor, 2.29	Very fine sand	0.4	57.4	0.1	Unsuitable	Sandy mud	Unsuitable
ENV127	Very poor, 2.04	Very fine sand	0.0	53.8	0.0	Unsuitable	Sandy mud	Unsuitable
ENV128	Very poor, 2.2	Fine sand	2.7	34.7	0.1	Unsuitable	Muddy sand	Unsuitable
ENV129	Very poor, 2.3	Fine sand	3.4	37.1	0.1	Unsuitable	Muddy sand	Unsuitable
ENV130	Very poor, 2.45	Fine sand	6.1	33.5	1.2	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV131	Very poor, 3.23	Fine sand	44.3	22.4	17.0	Unsuitable	Gravelly muddy sand	Unsuitable
ENV132	Poor, 1.36	Very fine sand	1.3	37.6	0.0	Unsuitable	Muddy sand	Unsuitable
ENV133	Very poor, 2.78	Coarse silt	4.9	57.3	0.1	Unsuitable	Sandy mud	Unsuitable

Classification criteria are detailed in Section B.5.3.

1 Habitat Sediment Preference - Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria were met (Reach *et al.*, 2013).

2 Habitat Sediment Classification - Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria were met (Reach *et al.*, 2013).

2.6 Sand Eel Spawning

The Morven ECRs lie within a low intensity spawning ground and nursery ground for sand eels (Cefas, 2010; Coull *et al.*, 1998) and a single Ammodytidae individual was observed at Station ENV043. Additionally, the water depth for the survey area was between 24m and 104m LAT which is within the sand eels preferred depth range. All stations where PSA samples were acquired have been reviewed for their suitability as a spawning ground for sand eels. Based on criteria defined by Latto *et al.* (2013) as outlined in Appendix B, the sand eel spawning potential of each relevant aspect of the 128 stations where PSA data were collected, is displayed in Table 2.5. More detailed PSA results are presented in Section 2.9 and Appendix F.

A total of 49 stations met at least one of the suitability criteria in that they recorded >50% sand and <10% fine sediment. All these stations met the 'preferred' habitat sediment classification of sand, slightly gravelly sand and gravelly sand. Of these, 41 stations were considered 'suitable' in terms of the sediment preference for spawning and nursery grounds and 7 stations were considered 'Sub-Prime'. Station ENV019 offered the greatest potential for sand eel spawning, being regarded as 'Prime' in terms of habitat sediment preference as it recorded <1% fines and >85% sand.

The remaining stations were all considered 'unsuitable' in terms of habitat sediment preference recording >10% fines. Station ENV092 was considered 'marginal' due to it recording a modified Folk (1954) classification of sandy gravel.

Although the use of imagery alone does not provide sufficient detail to definitively determine sand eel spawning potential, at stations where PSA samples were not successfully collected imagery showed the presence of a high gravel content and potential rocky reef suggesting these stations would likely not meet the requirements to be a suitable spawning ground for sand eels. The survey was conducted between June and November and thus occurred outside of the typical sand eel spawning period of November and February.

Table 2.5 Summary of Sand Eel Spawning Potential

Station	Habitat Sediment Preference[1]			Habitat Sediment Classification[2]	
	% Fines	% Sand	Suitability	Modified Folk Classification	Suitability
ENV001	5.7	93.8	Suitable	Sand	Preferred
ENV002	8.7	91.2	Suitable	Sand	Preferred
ENV003	6.5	93.4	Suitable	Sand	Preferred
ENV004	7.5	91.3	Suitable	Slightly gravelly sand	Preferred
ENV005	8.5	91.1	Suitable	Sand	Preferred
ENV006	8.3	91.6	Suitable	Sand	Preferred
ENV007	8.6	91.4	Suitable	Sand	Preferred
ENV008	7.9	91.6	Suitable	Sand	Preferred
ENV009	7.4	92.6	Suitable	Sand	Preferred
ENV010	10.6	89.4	Unsuitable	Muddy sand	Unsuitable
ENV011	9.2	90.7	Suitable	Sand	Preferred
ENV012	8.4	91.6	Suitable	Sand	Preferred
ENV013	8.4	91.5	Suitable	Sand	Preferred
ENV014	9.3	90.6	Suitable	Sand	Preferred
ENV015	8.5	91.5	Suitable	Sand	Preferred
ENV016	6.0	93.9	Suitable	Sand	Preferred
ENV017	7.4	92.5	Suitable	Sand	Preferred
ENV018	3.4	96.5	Sub-Prime	Sand	Preferred
ENV019	0.0	100.0	Prime	Sand	Preferred
ENV021	11.3	88.5	Unsuitable	Muddy sand	Unsuitable
ENV022	11.3	88.6	Unsuitable	Muddy sand	Unsuitable
ENV023	15.7	84.2	Unsuitable	Muddy sand	Unsuitable
ENV024	9.5	90.5	Suitable	Sand	Preferred
ENV025	12.1	83.4	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV026	10.9	89.1	Unsuitable	Muddy sand	Unsuitable
ENV027	6.0	93.9	Suitable	Sand	Preferred
ENV028	11.8	88.1	Unsuitable	Muddy sand	Unsuitable
ENV029	17.6	82.3	Unsuitable	Muddy sand	Unsuitable
ENV030	16.0	83.9	Unsuitable	Muddy sand	Unsuitable
ENV031	9.7	89.8	Suitable	Sand	Preferred
ENV032	5.7	94.0	Suitable	Sand	Preferred
ENV033	5.0	88.5	Suitable	Gravelly sand	Preferred
ENV034	1.7	97.8	Sub-Prime	Sand	Preferred
ENV036	3.4	96.4	Sub-Prime	Sand	Preferred
ENV037	6.4	93.2	Suitable	Sand	Preferred
ENV038	7.8	91.9	Suitable	Sand	Preferred
ENV039	14.6	84.1	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV040	28.9	70.9	Unsuitable	Muddy sand	Unsuitable
ENV041	21.2	78.7	Unsuitable	Muddy sand	Unsuitable
ENV042	28.0	71.5	Unsuitable	Muddy sand	Unsuitable
ENV043	32.8	67.1	Unsuitable	Muddy sand	Unsuitable
ENV044	31.1	68.6	Unsuitable	Muddy sand	Unsuitable
ENV045	45.0	54.8	Unsuitable	Muddy sand	Unsuitable
ENV046	36.0	63.7	Unsuitable	Muddy sand	Unsuitable
ENV047	33.9	65.7	Unsuitable	Muddy sand	Unsuitable
ENV048	25.5	74.3	Unsuitable	Muddy sand	Unsuitable
ENV049	24.6	75.3	Unsuitable	Muddy sand	Unsuitable
ENV050	35.0	58.4	Unsuitable	Gravelly muddy sand	Unsuitable
ENV051	7.2	91.5	Suitable	Slightly gravelly sand	Preferred
ENV052	12.6	86.8	Unsuitable	Muddy sand	Unsuitable
ENV053	25.3	73.6	Unsuitable	Muddy sand	Unsuitable
ENV054	20.9	79.0	Unsuitable	Muddy sand	Unsuitable
ENV055	27.9	71.9	Unsuitable	Muddy sand	Unsuitable
ENV056	30.9	68.9	Unsuitable	Muddy sand	Unsuitable
ENV057	40.3	59.6	Unsuitable	Muddy sand	Unsuitable
ENV058	41.9	57.9	Unsuitable	Muddy sand	Unsuitable
ENV059	60.2	39.7	Unsuitable	Sandy mud	Unsuitable
ENV060	55.3	44.6	Unsuitable	Sandy mud	Unsuitable
ENV061	44.8	55.0	Unsuitable	Muddy sand	Unsuitable
ENV062	47.2	52.5	Unsuitable	Muddy sand	Unsuitable
ENV063	31.5	68.3	Unsuitable	Muddy sand	Unsuitable
ENV064	30.0	69.8	Unsuitable	Muddy sand	Unsuitable
ENV065	50.4	48.4	Unsuitable	Slightly gravelly sandy mud	Unsuitable
ENV066	48.0	27.2	Unsuitable	Gravelly mud	Unsuitable
ENV069	16.7	83.3	Unsuitable	Muddy sand	Unsuitable
ENV071	7.1	92.5	Suitable	Sand	Preferred
ENV072	10.1	89.4	Unsuitable	Muddy sand	Unsuitable
ENV073	10.2	89.6	Unsuitable	Muddy sand	Unsuitable
ENV074	6.3	93.6	Suitable	Sand	Preferred
ENV075	5.0	94.9	Suitable	Sand	Preferred
ENV076	3.5	70.4	Sub-Prime	Gravelly sand	Preferred
ENV077	5.2	93.9	Suitable	Sand	Preferred
ENV078	7.9	91.6	Suitable	Sand	Preferred
ENV079	6.0	92.0	Suitable	Slightly gravelly sand	Preferred
ENV080	6.4	93.5	Suitable	Sand	Preferred
ENV081	9.8	90.1	Suitable	Sand	Preferred
ENV082	6.9	93.0	Suitable	Sand	Preferred
ENV083	10.0	89.9	Unsuitable	Muddy sand	Unsuitable
ENV084	8.8	91.0	Suitable	Sand	Preferred
ENV085	11.2	88.7	Unsuitable	Muddy sand	Unsuitable

Station	Habitat Sediment Preference[1]			Habitat Sediment Classification[2]	
	% Fines	% Sand	Suitability	Modified Folk Classification	Suitability
ENV086	3.8	96.0	Sub-Prime	Sand	Preferred
ENV087	1.1	97.6	Sub-Prime	Slightly gravelly sand	Preferred
ENV088	4.7	93.1	Suitable	Slightly gravelly sand	Preferred
ENV089	2.2	97.2	Sub-Prime	Sand	Preferred
ENV090	4.9	94.2	Suitable	Sand	Preferred
ENV091	9.3	90.6	Suitable	Sand	Preferred
ENV092	0.9	35.6	Unsuitable	Sandy gravel	Marginal
ENV093	5.8	93.9	Suitable	Sand	Preferred
ENV094	9.8	89.6	Suitable	Sand	Preferred
ENV095	8.2	91.4	Suitable	Sand	Preferred
ENV096	15.4	84.6	Unsuitable	Muddy sand	Unsuitable
ENV097	5.2	94.3	Suitable	Sand	Preferred
ENV098	23.3	76.0	Unsuitable	Muddy sand	Unsuitable
ENV099	20.7	77.8	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV100	30.8	69.0	Unsuitable	Muddy sand	Unsuitable
ENV101	26.3	73.5	Unsuitable	Muddy sand	Unsuitable
ENV102	18.4	81.6	Unsuitable	Muddy sand	Unsuitable
ENV103	20.5	79.1	Unsuitable	Muddy sand	Unsuitable
ENV104	18.0	82.0	Unsuitable	Muddy sand	Unsuitable
ENV105	25.3	73.2	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV106	16.7	81.9	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV107	22.6	77.3	Unsuitable	Muddy sand	Unsuitable
ENV108	26.0	73.8	Unsuitable	Muddy sand	Unsuitable
ENV109	31.3	68.6	Unsuitable	Muddy sand	Unsuitable
ENV110	20.3	79.6	Unsuitable	Muddy sand	Unsuitable
ENV111	33.6	66.3	Unsuitable	Muddy sand	Unsuitable
ENV112	38.8	61.0	Unsuitable	Muddy sand	Unsuitable
ENV113	40.2	59.7	Unsuitable	Muddy sand	Unsuitable
ENV114	38.0	61.8	Unsuitable	Muddy sand	Unsuitable
ENV115	42.9	57.0	Unsuitable	Muddy sand	Unsuitable
ENV116	40.1	59.5	Unsuitable	Muddy sand	Unsuitable
ENV117	44.9	55.0	Unsuitable	Muddy sand	Unsuitable
ENV118	49.3	50.6	Unsuitable	Muddy sand	Unsuitable
ENV119	50.5	49.4	Unsuitable	Sandy mud	Unsuitable
ENV120	56.7	43.1	Unsuitable	Sandy mud	Unsuitable
ENV121	57.0	42.9	Unsuitable	Sandy mud	Unsuitable
ENV122	57.1	42.7	Unsuitable	Sandy mud	Unsuitable
ENV123	55.7	44.1	Unsuitable	Sandy mud	Unsuitable
ENV124	50.1	49.8	Unsuitable	Sandy mud	Unsuitable
ENV125	45.8	53.9	Unsuitable	Muddy sand	Unsuitable
ENV126	57.4	42.4	Unsuitable	Sandy mud	Unsuitable
ENV127	53.8	46.0	Unsuitable	Sandy mud	Unsuitable
ENV128	34.7	65.1	Unsuitable	Muddy sand	Unsuitable
ENV129	37.1	62.7	Unsuitable	Muddy sand	Unsuitable
ENV130	33.5	65.2	Unsuitable	Slightly gravelly muddy sand	Unsuitable
ENV131	22.4	60.6	Unsuitable	Gravelly muddy sand	Unsuitable
ENV132	37.6	62.3	Unsuitable	Muddy sand	Unsuitable
ENV133	57.3	42.4	Unsuitable	Sandy mud	Unsuitable

Classification criteria are detailed in Appendix B.5.4.

1 Habitat Sediment Preference - Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria were met (Latto *et al.*, 2013).

2 Habitat Sediment Classification - Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria were met (Latto *et al.*, 2013) based on either the sand and fines criteria or the generalised criteria.

2.7 Other Species of Conservation Interest

A total of 25 pairs of *A. islandica* siphons and one dead *A. islandica* shell were observed across 10 stations. This species is listed on the OSPAR (2008) list of threatened and/or declining species and habitats. In addition, it is listed as a low or limited mobility species PMF in Scottish offshore waters (NatureScot, 2020) and is a qualifying feature for the Farnes East marine protected area (MPA; JNCC, 2020). However, this species is commonly found within this area of the North Sea.

A total of 33 individuals of *M. aeglefinus* were observed across 18 stations and 6 individuals of *G. cynoglossus* were observed across 6 stations. Both species are listed as vulnerable on the IUCN Global Red List (2023).

Two individuals of *A. radiata* were observed across 2 stations. This species is listed as vulnerable on the IUCN Global Red List (2023); however, it is considered as least concern in European waters.

A total of 31 *P. platessa* individuals were observed across 21 stations. This species is classified as a priority species under the UK Post 2010 Biodiversity Framework (JNCC and Defra, 2012) and is listed on the Scottish Biodiversity List (NatureScot, 2020).

There were 114 observations of *M. merlangus* across 8 stations. This species is listed on the Scottish Biodiversity List (NatureScot, 2020), as well as appearing as a priority marine species under the UK Post 2010 Biodiversity Framework (JNCC and Defra, 2012).

A single *M. modiolus* was identified in the imagery at Station ENV035. Whilst *M. modiolus* beds are listed under Annex I of the Habitats Directive (1992) and are classified as threatened and/or declining habitats (OSPAR, 2008), the density of individuals observed during the survey do not meet the criteria of this habitat.

Other than those habitats and species listed above, there was no further evidence from seabed imagery of any habitats listed under Annex I of the Habitats Directive (1992), any other species or habitats listed as PMFs (NatureScot, 2020). Nor any species listed on the Scottish Biodiversity List (NatureScot, 2020), species or habitats listed on the OSPAR (2008) list of threatened and/or declining species and habitats, nor any species on the IUCN Global Red List (IUCN, 2023).

2.8 Sediment Sampling Observations

Sediment sampling was conducted at 133 stations across the survey area, of these the required full suite was collected at 127 stations. All successful samples were acquired using a 0.1m^2 Day grab. Environmental deck and positioning logs are presented in Appendix A with example images presented in Appendix C.

Across the survey area, areas of heterogeneous sediment which included a high proportion of gravel and cobbles tended to recover smaller samples. Of the six stations (ENV020, ENV035, ENV052, ENV067a, ENV068 and ENV070) where the full suite was not obtained, no successful samples were obtained for four stations (ENV035, ENV067a, ENV068 and ENV070). Multiple attempts were made at all stations to acquire samples and at Station ENV035 after multiple attempts with the Day grab the mini-Hamon grab was deployed but still did not yield a successful sample. At the four stations where no samples were obtained, cobbles and boulders were observed in seabed imagery which impacted sampling attempts.

Overall, a total of 448 grab samples were acquired from 543 attempts (83% success rate). Of these retained samples, 99.6% were acquired within 10m of the target location (n=4446) and the remaining two samples were acquired within 20m of the target. Where sampling attempts failed multiple times, the grab was redeployed 10m

from the original target location. On average, samples were obtained within 1.8m of the target locations (±1.6SD) with the maximum distance between target and sampling location being 11.2m. The 95 unsuccessful sampling attempts were spread across 35 stations and were due to low sample retention (43%), rocks stuck in the grab jaws (36%), misfires of the grab (19%) or the presence of Myxinidae (3%).

Seabed sampling supported the initial interpretation of the seabed imagery findings, confirming that the seabed comprised sandy sediments with varying amounts of fines, shell fragments and occasional areas of sandy or muddy sediments with cobbles and gravels.

Visible fauna observed within the retrieved grab were limited and included:

- Annelida (Polychaeta)
- Arthropoda (Brachyura, Decapoda, *Nephrops norvegicus,* Paguroidea)
- Bryozoa (Flustridae)
- Cnidaria (Hydrozoa, Pennatuloidea)
- Echinodermata (Asteroidea, *Echinocardium cordatum*, Ophiuroidea)
- Mollusca (*A islandica,* Bivalvia, Gastropoda, Scaphopoda).

2.9 Particle Size Analysis

The PSA results, determined using wet and dry sieving, are presented in Table 2.6. Full PSA results from the current survey, including histograms illustrating the particle size distribution at each of the sampled stations are presented in Appendix F. The results of the PSA were consistent with the seabed imagery observations and recovered sediment samples.

Across the survey area, sediments were recorded as heterogeneous and displayed wide-ranging particle size distributions under Folk & Ward (1957), ranging from extremely poor to moderately well sorted. Mean particle size diameter varied from 27µm at Stations ENV059 to 2078µm at Station ENV092. Excluding the four stations that recorded the largest mean grain size (Stations ENV092, ENV076, ENV087 and ENV037), the mean particle diameter varied from 27µm to 422µm. Across the survey area, a significant correlation between increasing water depth (m) and decreasing mean grain size (µm) was observed.

Of the 128 stations where PSA was collected, 12 had negligible (<5%) fines content (<63µm; silt and clay) with a further 38 having fines content >10%. Gravel (>2µm) content was <1% at most stations (n=110) and was >15% at four stations (Stations ENV066, ENV076, ENV092 and ENV037). Most stations were classified as either fine sand (n=52; 39%), coarse silt (n=28; 21%), or very fine sand (n=26; 20%) under Wentworth (1922). Stations were generally poorly sorted (poor to extremely poor; n=83, 62%) and had leptokurtic distributions (leptokurtic to extremely leptokurtic; n=83, 62%). When classified under Folk and Ward (1957) sediments were predominantly either muddy sand (n=57; 43%) or sand (n=42; 32%), these stations recorded modal phi values between 1.0 and 4.0 (Appendix F).

Table 2.6 Sediment Characteristics

Station	Mean Diameter (µm)	Mean Diameter (phi)	Fines %	Sand %	Gravel %	Wentworth Classification of Mean Grain Size	Sorting[1]	Modified Folk Classification
ENV001	196	2.4	5.7	93.8	0.4	Fine sand	Moderately well	Sand
ENV002	190	2.4	8.7	91.2	0.1	Fine sand	Moderate	Sand
ENV003	190	2.4	6.5	93.4	0.1	Fine sand	Moderate	Sand
ENV004	197	2.3	7.5	91.3	1.2	Fine sand	Moderate	Slightly gravelly sand
ENV005	181	2.5	8.5	91.1	0.4	Fine sand	Moderate	Sand
ENV006	189	2.4	8.3	91.6	0.1	Fine sand	Moderate	Sand
ENV007	180	2.5	8.6	91.4	0.0	Fine sand	Moderate	Sand
ENV008	180	2.5	7.9	91.6	0.5	Fine sand	Moderate	Sand
ENV009	175	2.5	7.4	92.6	0.0	Fine sand	Moderate	Sand
ENV010	168	2.6	10.6	89.4	0.0	Fine sand	Moderate	Muddy sand
ENV011	181	2.5	9.2	90.7	0.0	Fine sand	Moderate	Sand
ENV012	193	2.4	8.4	91.6	0.0	Fine sand	Moderate	Sand
ENV013	194	2.4	8.4	91.5	0.0	Fine sand	Moderate	Sand
ENV014	188	2.4	9.3	90.6	0.2	Fine sand	Poor	Sand
ENV015	198	2.3	8.5	91.5	0.0	Fine sand	Moderate	Sand
ENV016	205	2.3	6.0	93.9	0.0	Fine sand	Moderate	Sand
ENV017	220	2.2	7.4	92.5	0.1	Fine sand	Moderate	Sand
ENV018	236	2.1	3.4	96.5	0.1	Fine sand	Well	Sand
ENV019	243	2.0	0.0	100.0	0.0	Fine sand	Well	Sand
ENV021	193	2.4	11.3	88.5	0.2	Fine sand	Poor	Muddy sand
ENV022	177	2.5	11.3	88.6	0.0	Fine sand	Poor	Muddy sand
ENV023	129	3.0	15.7	84.2	0.0	Fine sand	Poor	Muddy sand
ENV024	219	2.2	9.5	90.5	0.0	Fine sand	Poor	Sand
ENV025	205	2.3	12.1	83.4	4.5	Fine sand	Poor	Slightly gravelly muddy sand
ENV026	210	2.3	10.9	89.1	0.0	Fine sand	Poor	Muddy sand
ENV027	273	1.9	6.0	93.9	0.1	Medium sand	Poor	Sand
ENV028	196	2.3	11.8	88.1	0.0	Fine sand	Poor	Muddy sand
ENV029	114	3.1	17.6	82.3	0.0	Very fine sand	Poor	Muddy sand
ENV030	171	2.5	16.0	83.9	0.1	Fine sand	Poor	Muddy sand
ENV031	214	2.2	9.7	89.8	0.5	Fine sand	Poor	Sand
ENV032	299	1.7	5.7	94.0	0.3	Medium sand	Poor	Sand
ENV033	365	1.5	5.0	88.5	6.5	Medium sand	Poor	Gravelly sand
ENV034	422	1.2	1.7	97.8	0.5	Medium sand	Moderate	Sand
ENV036	289	1.8	3.4	96.4	0.3	Medium sand	Moderate	Sand
ENV037	540	0.9	6.4	93.2	0.4	Coarse sand	Poor	Sand
ENV038	315	1.7	7.8	91.9	0.3	Medium sand	Poor	Sand
ENV039	208	2.3	14.6	84.1	1.2	Fine sand	Poor	Slightly gravelly muddy sand
ENV040	100	3.3	28.9	70.9	0.2	Very fine sand	Very poor	Muddy sand
ENV041	114	3.1	21.2	78.7	0.0	Very fine sand	Very poor	Muddy sand
ENV042	86	3.5	28.0	71.5	0.4	Very fine sand	Very poor	Muddy sand
ENV043	81	3.6	32.8	67.1	0.0	Very fine sand	Very poor	Muddy sand
ENV044	79	3.7	31.1	68.6	0.2	Very fine sand	Very poor	Muddy sand
ENV045	49	4.4	45.0	54.8	0.0	Coarse silt	Very poor	Muddy sand
ENV046	64	4.0	36.0	63.7	0.3	Very fine sand	Very poor	Muddy sand
ENV047	67	3.9	33.9	65.7	0.4	Very fine sand	Very poor	Muddy sand
ENV048	96	3.4	25.5	74.3	0.1	Very fine sand	Very poor	Muddy sand
ENV049	105	3.3	24.6	75.3	0.0	Very fine sand	Very poor	Muddy sand
ENV050	88	3.5	35.0	58.4	6.5	Very fine sand	Very poor	Gravelly muddy sand
ENV051	410	1.3	7.2	91.5	1.3	Medium sand	Poor	Slightly gravelly sand
ENV052	178	2.5	12.6	86.8	0.6	Fine sand	Poor	Muddy sand
ENV053	101	3.3	25.3	73.6	1.0	Very fine sand	Very poor	Muddy sand
ENV054	106	3.2	20.9	79.0	0.1	Very fine sand	Very poor	Muddy sand
ENV055	60	4.1	27.9	71.9	0.1	Coarse silt	Very poor	Muddy sand
ENV056	58	4.1	30.9	68.9	0.0	Coarse silt	Very poor	Muddy sand
ENV057	45	4.5	40.3	59.6	0.0	Coarse silt	Very poor	Muddy sand
ENV058	43	4.5	41.9	57.9	0.0	Coarse silt	Very poor	Muddy sand
ENV059	27	5.2	60.2	39.7	0.0	Medium silt	Very poor	Sandy mud
ENV060	32	5.0	55.3	44.6	0.0	Coarse silt	Very poor	Sandy mud
ENV061	39	4.7	44.8	55.0	0.1	Coarse silt	Very poor	Muddy sand
ENV062	37	4.8	47.2	52.5	0.2	Coarse silt	Very poor	Muddy sand
ENV063	95	3.4	31.5	68.3	0.2	Very fine sand	Very poor	Muddy sand
ENV064	62	4.0	30.0	69.8	0.1	Coarse silt	Very poor	Muddy sand
ENV065	39	4.7	50.4	48.4	1.1	Coarse silt	Very poor	Slightly gravelly sandy mud
ENV066	121	3.0	48.0	27.2	24.7	Very fine sand	Extremely poor	Gravelly mud
ENV069	102	3.3	16.7	83.3	0.0	Very fine sand	Moderate	Muddy sand
ENV071	209	2.3	7.1	92.5	0.4	Fine sand	Moderate	Sand
ENV072	170	2.6	10.1	89.4	0.5	Fine sand	Moderate	Muddy sand
ENV073	196	2.4	10.2	89.6	0.2	Fine sand	Poor	Muddy sand
ENV074	236	2.1	6.3	93.6	0.1	Fine sand	Moderate	Sand
ENV075	237	2.1	5.0	94.9	0.1	Fine sand	Moderate	Sand
ENV076	736	0.4	3.5	70.4	26.1	Coarse sand	Poor	Gravelly sand
ENV077	253	2.0	5.2	93.9	0.8	Medium sand	Moderate	Sand
ENV078	231	2.1	7.9	91.6	0.5	Fine sand	Poor	Sand
ENV079	249	2.0	6.0	92.0	2.0	Fine sand	Poor	Slightly gravelly sand
ENV080	223	2.2	6.4	93.5	0.1	Fine sand	Moderate	Sand
ENV081	175	2.5	9.8	90.1	0.0	Fine sand	Poor	Sand
ENV082	194	2.4	6.9	93.0	0.1	Fine sand	Moderate	Sand
ENV083	191	2.4	10.0	89.9	0.1	Fine sand	Poor	Muddy sand

Station	Mean Diameter (µm)	Mean Diameter (phi)	Fines %	Sand %	Gravel %	Wentworth Classification of Mean Grain Size	Sorting[1]	Modified Folk Classification
ENV084	212	2.2	8.8	91.0	0.2	Fine sand	Poor	Sand
ENV085	171	2.5	11.2	88.7	0.0	Fine sand	Poor	Muddy sand
ENV086	338	1.6	3.8	96.0	0.2	Medium sand	Moderate	Sand
ENV087	567	0.8	1.1	97.6	1.2	Coarse sand	Moderately well	Slightly gravelly sand
ENV088	374	1.4	4.7	93.1	2.2	Medium sand	Moderate	Slightly gravelly sand
ENV089	312	1.7	2.2	97.2	0.7	Medium sand	Moderately well	Sand
ENV090	235	2.1	4.9	94.2	0.8	Fine sand	Moderate	Sand
ENV091	218	2.2	9.3	90.6	0.1	Fine sand	Poor	Sand
ENV092	2078	-1.1	0.9	35.6	63.5	Granule	Poor	Sandy gravel
ENV093	222	2.2	5.8	93.9	0.2	Fine sand	Moderate	Sand
ENV094	219	2.2	9.8	89.6	0.5	Fine sand	Poor	Sand
ENV095	238	2.1	8.2	91.4	0.4	Fine sand	Poor	Sand
ENV096	150	2.7	15.4	84.6	0.0	Fine sand	Poor	Muddy sand
ENV097	231	2.1	5.2	94.3	0.4	Fine sand	Moderate	Sand
ENV098	77	3.7	23.3	76.0	0.6	Very fine sand	Poor	Muddy sand
ENV099	103	3.3	20.7	77.8	1.4	Very fine sand	Very poor	Slightly gravelly muddy sand
ENV100	58	4.1	30.8	69.0	0.1	Coarse silt	Poor	Muddy sand
ENV101	72	3.8	26.3	73.5	0.1	Very fine sand	Very poor	Muddy sand
ENV102	130	2.9	18.4	81.6	0.0	Fine sand	Poor	Muddy sand
ENV103	111	3.2	20.5	79.1	0.3	Very fine sand	Very poor	Muddy sand
ENV104	125	3.0	18.0	82.0	0.0	Very fine sand	Poor	Muddy sand
ENV105	87	3.5	25.3	73.2	1.5	Very fine sand	Very poor	Slightly gravelly muddy sand
ENV106	194	2.4	16.7	81.9	1.3	Fine sand	Very poor	Slightly gravelly muddy sand
ENV107	103	3.3	22.6	77.3	0.1	Very fine sand	Very poor	Muddy sand
ENV108	73	3.8	26.0	73.8	0.1	Very fine sand	Very poor	Muddy sand
ENV109	54	4.2	31.3	68.6	0.0	Coarse silt	Poor	Muddy sand
ENV110	108	3.2	20.3	79.6	0.1	Very fine sand	Poor	Muddy sand
ENV111	54	4.2	33.6	66.3	0.0	Coarse silt	Very poor	Muddy sand
ENV112	46	4.4	38.8	61.0	0.1	Coarse silt	Very poor	Muddy sand
ENV113	44	4.5	40.2	59.7	0.0	Coarse silt	Very poor	Muddy sand
ENV114	46	4.4	38.0	61.8	0.1	Coarse silt	Very poor	Muddy sand
ENV115	40	4.6	42.9	57.0	0.0	Coarse silt	Very poor	Muddy sand
ENV116	48	4.4	40.1	59.5	0.3	Coarse silt	Very poor	Muddy sand
ENV117	39	4.7	44.9	55.0	0.0	Coarse silt	Very poor	Muddy sand
ENV118	37	4.8	49.3	50.6	0.1	Coarse silt	Very poor	Muddy sand
ENV119	34	4.9	50.5	49.4	0.0	Coarse silt	Very poor	Sandy mud
ENV120	30	5.1	56.7	43.1	0.0	Medium silt	Very poor	Sandy mud
ENV121	30	5.1	57.0	42.9	0.0	Medium silt	Very poor	Sandy mud
ENV122	30	5.1	57.1	42.7	0.0	Medium silt	Very poor	Sandy mud
ENV123	31	5.0	55.7	44.1	0.0	Medium silt	Very poor	Sandy mud
ENV124	35	4.8	50.1	49.8	0.0	Coarse silt	Very poor	Sandy mud
ENV125	45	4.5	45.8	53.9	0.3	Coarse silt	Very poor	Muddy sand
ENV126	31	5.0	57.4	42.4	0.1	Medium silt	Very poor	Sandy mud
ENV127	33	4.9	53.8	46.0	0.0	Coarse silt	Very poor	Sandy mud
ENV128	54	4.2	34.7	65.1	0.1	Coarse silt	Very poor	Muddy sand
ENV129	58	4.1	37.1	62.7	0.1	Coarse silt	Very poor	Muddy sand
ENV130	62	4.0	33.5	65.2	1.2	Coarse silt	Very poor	Slightly gravelly muddy sand
ENV131	268	1.9	22.4	60.6	17.0	Medium sand	Very poor	Gravelly muddy sand
ENV132	73	3.8	37.6	62.3	0.0	Very fine sand	Poor	Muddy sand
ENV133	38	4.7	57.3	42.4	0.1	Coarse silt	Very poor	Sandy mud
Minimum	27	-1.1	0.0	27.2	0.0	Medium silt to coarse silt	Extremely poor to Moderate	Sandy gravel to sandy mud
Maximum	2078	5.2	60.2	100.0	63.5			
Mean	173	3.0	21.6	76.9	1.4			
±SD	206	1.2	16.9	17.5	6.6			

Sediments were not treated to remove carbonates prior to particle size analyses.

1 Sorting according to Folk and Ward (1957).

2.10 EUNIS Habitat Classification

Each seabed photograph and captured seabed image was assigned a EUNIS habitat code based on depth, sediment type and observed fauna. There results were then reviewed alongside PSA to assign EUNIS habitat code(s) to each station as a whole. Results of the EUNIS habitat classification for each station are summarised in Table 2.7.

All habitats observed related to the EUNIS level one environmental marine habitats (EUNIS habitats type code M).

There were 64 stations with a predominantly sandy soft substrate classified overall as:

- EUNIS habitat code MD5 (Offshore Circalittoral Sand)
- EUNIS biotope complex MD52 (Atlantic Offshore Circalittoral sand)

A further 59 stations with predominantly muddy, soft substrate classified overall as:

- EUNIS habitat code MC6 (Circalittoral Mud)
- EUNIS biotope complex MC62 (Atlantic Circalittoral Mud)

Eight stations consisted of muddy sandy sediment with gravel classified as:

- EUNIS habitat code MD3 (Offshore Circalittoral Mixed sediment)
- EUNIS biotope complex MD32 (Atlantic Offshore Circalittoral Mixed Sediment)

Stations ENV092 and ENV131 both consisted of coarse sediment and where therefore classified as:

- EUNIS habitat code MD4 (Offshore Circalittoral Coarse sediment)
- EUNIS biotope complex MD42 (Atlantic Offshore Circalittoral Coarse sediment)

Table 2.7 EUNIS Habitat Classification

Station	Water Depth (m LAT)	EUNIS Folk Classification[1,2]	EUNIS Habitat Classification	
			Type	Code
ENV001	67.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV002	67.2	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV003	69.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV004	71.5	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV005	78.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV006	76.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV007	74.6	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV008	75.3	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV009	74.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV010	75.3	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV011	74.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV012	74.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV013	75.8	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV014	75.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV015	73.1	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV016	70.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV017	68.6	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV018	62.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV019	61.2	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV020*	63.7	NA	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV021	73.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV022	77.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV023	81.6	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV024	76.4	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV025	75.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV026	75.4	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV027	73.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV028	77.4	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV029	79.0	Sand and muddy sand	Atlantic Circalittoral Mud	MC62
ENV030	75.8	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV031	75.3	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV032	71.2	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV033	68.7	Coarse sediments	Atlantic Offshore Circalittoral Sand	MD52
ENV034	66.8	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV035*	66.6	NA	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV036	68.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV037	66.8	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV038	67.5	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV039	73.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV040	88.2	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV041	89.6	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV042	90.8	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV043	90.1	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV044	95.9	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV045	95.1	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV046	89.5	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV047	87.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV048	81.1	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV049	78.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV050	68.2	Mixed sediments	Atlantic Circalittoral Mud	MC62
ENV051	68.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV052	66.5	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV053	69.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV054	71.4	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV055	77.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV056	79.6	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV057	82.6	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV058	81.9	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV059	77.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV060	75.3	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV061	60.9	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV062	60.5	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV063	50.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV064	50.6	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV065	46.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV066	44.6	Mixed sediments	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV067*	44.6	NA	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV068*	34.1	NA	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV069	24.4	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV070*	24.1	NA	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV071	70.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV072	77.4	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV073	72.1	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV074	67.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV075	67.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV076	61.3	Coarse sediments	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV077	62.1	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV078	66.2	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV079	65.1	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV080	66.2	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52

Station	Water Depth (m LAT)	EUNIS Folk Classification[1,2]	EUNIS Habitat Classification	
			Type	Code
ENV081	69.3	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV082	66.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV083	67.4	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV084	69.1	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV085	70.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV086	67.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV087	67.8	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV088	63.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV089	65.1	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV090	66.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV091	69.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV092	65.3	Coarse sediments	Atlantic Offshore Circalittoral Coarse Sediment	MD32
ENV093	68.3	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV094	73.9	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV095	71.0	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV096	81.6	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV097	71.7	Sand and muddy sand	Atlantic Offshore Circalittoral Sand	MD52
ENV098	93.9	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV099	81.8	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV100	94.5	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV101	90.4	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV102	86.0	Sand and muddy sand	Atlantic Circalittoral Mud	MC62
ENV103	86.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV104	84.9	Sand and muddy sand	Atlantic Circalittoral Mud	MC62
ENV105	86.2	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV106	74.5	Sand and muddy sand	Atlantic Circalittoral Mud	MC62
ENV107	89.9	Mud and sandy mud	Atlantic Offshore Circalittoral Mixed Sediment	MD42
ENV108	87.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV109	94.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV110	86.1	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV111	94.4	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV112	104.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV113	101.2	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV114	98.3	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV115	99.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV116	89.5	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV117	92.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV118	92.4	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV119	92.9	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV120	95.6	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV121	99.4	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV122	100.5	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV123	96.4	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV124	92.2	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV125	85.5	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV126	83.3	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV127	69.3	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV128	58.8	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV129	52.7	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV130	52.6	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV131	47.5	Mixed sediments	Atlantic Offshore Circalittoral Coarse Sediment	MD32
ENV132	39.0	Mud and sandy mud	Atlantic Circalittoral Mud	MC62
ENV133	27.2	Mud and sandy mud	Atlantic Circalittoral Mud	MC62

1 Aggregation of modified Folk classification for defining EUNIS Level 3 sediment types according to Parry (2019).
2 Grey cells indicate where PSA samples were not collected, EUNIS assessment was conducted using imagery only.

3 BIBLIOGRAPHY

Bat, L., Sezgin, M. & Şahin, F., 2013. Impacts of OWF installations on fisheries: A Literature Review. *Journal of Coastal Life Medicine*, 1(3), pp.241-52.

bp, 2023. *Morven – Export Cable Route - 2023 Integrated Survey – Scope of Work*. Scope of work. Rev 03.. Sudbury on Thames: bp Solutions - Survey Team.

Cefas, 2001. *Specifications for herring spawning ground surveys*. Lowestoft: February 2001.

Cefas, 2010. *Spawning and Nursery Grounds Layers for Selected Fish in UK Waters in 2010*. [Shapefile] Available at: http://data.cefas.co.uk/#/View/153 [Accessed 2nd Feb 2023].

Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northern, K.O. & Reker, J.B., 2004. *The Marine Habitat Classification for Britain and Ireland Version 04.05. JNCC, Peterborough ISBN 1 861 07561 8 (internet version)*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1027/04_05_introduction.pdf [Accessed 05 Nov 2021].

Coull, K.A., Johnston, R. & Rogers, S.I., 1998. *Fishery Sensitivity Maps in British Waters.* Published and distributed by UKOOA Ltd. 58pp.

Directive 92/43/EEC, 1992. *Council Directive 92/43/EEC of 21-May-1992, on the conservation of natural habitats and of wild fauna and flora*. [pdf] (Official Journal of the European Communities No. L 206/7. p44) Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1992:206:0007:0050:EN:PDF [Accessed 05 Nov 2021].

Ellis, J.R., Milligan, S., Readdy, L., South, A., Taylor, N. & Brown, M., 2010. *Mapping spawning and nursery areas of species to be considered in Marine Protected Areas (Marine Conservation Zones)*. Cefas.

Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. & Brown, M.J., 2012. *Spawning and Nursery Grounds of Selected Fish Species in UK Waters*. [Online] Lowestoft Available at: http://data.cefas.co.uk/#/View/153 [Accessed 05 Nov 2021].

Folk, R.L., 1954. The distinction between grain size and mineral composition in sedimentary rock nomenclature. *Journal of Geology*, 62, pp.344-59.

Folk, R.L. & Ward, W.C., 1957. Brazos river bar: a study of the significance of grain size parameters. *Journal of Sedimentary Petrology*, 27, pp.3-26.

Frost, M. & Diele, K., 2022. Essential spawning grounds of Scottish herring: current knowledge and future challenges. *Reviews in Fish Biology and Fisheries*, [PDF].09 Apr, 32, pp.721-44. Available at: https://link.springer.com/article/10.1007/s11160-022-09703-0 [Accessed 7th Feb 2023].

Gardline, 2023. *Morven Export Cable Route Benthic Scoping Document*. Final. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gardline, 2024a. *Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume I: Field Operations and Preliminary Results*. Draft. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gardline, 2024b. *Grid Connection One Morven 2023 Export Cable Route Shallow Geotechnical Survey Volume II: Measured and Derived Geotechnical Parameters and Final Results*. Draft. Gardline Ref: 54027. Great Yarmouth, UK: Gardline Limited.

Gardline, 2024c. *Morven Offshore Wind Farm Integrated Survey, Environmental Baseline Survey Report*. Enviornmental Baseline Suvey Report. Gardline Ref: 54027.E3. Great Yarmouth, UK: Gardline Limited.

Gill, A.B., Bartlett, M. & Thomsen, F., 2012. Potential interactions between diadromous fishes of U.K. conservation importance and the electromagnetic fields and subsea noise from marine renewable energy developments. *Journal of Fish Biology*, 81, pp.664-95.

Golding, N., Albrecht, J. & McBreen, F., 2020. ISSN 0963-8091 *Refining criteria for defining areas with a 'low resemblance' to Annex I stony reef; Workshop Report*. JNCC Report No. 656. Peterborough, UK: JNCC.

Hassel, A., Knutsen, T., Dalen, J., Lokkeborg, S., Skaar, K., Ostensen, O., Haugland, E.K., Fonn, M., Hoines, A. & Misund, O.A., 2002. *Reaction of sandeel to seismic shooting: A field experiment and fishery statistics study*. Institute of Marine Research, Bergen, Norway.

Hill, J.M., Tyler-Walters, H. & Garrard, S.L., 2022. *Seapens and burrowing megafauna in circalittoral fine mud. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. [Online] Available at: https://www.marlin.ac.uk/habitats/detail/131 [Accessed 6th Feb 2023].

Holland, G.J., Greenstreet, S.P., Gibb, I.M., Fraser, H.M. & Robertson, M.R., 2005. Identifying sandeel Ammodytes marinus sediment habitat preferences in the marine environment. *Marine Ecology Progress Series*, 303, pp.269-82.

Horton, T., Marsh, L., Bett, B.J., Gates, A.R., Jones, D.O.B., Benoist, N.M.A., Pfeifer, S., Simon-Lledo, E., Durden, J.M., Vandepitte, L. & Appeltans, W., 2021. Recommendations for the Standardisation of Open Taxonomic Nomenclature for Image-Based Identifications. *Frontiers in Marine Science*, 8.

Howell, K.L., Davies, J.S., Allcock, A.L., Braga-Henriques, A., Buhl-Mortensen, P. & Carreiro-Silva, M., 2019. A framework for the development of a global standardised marine taxon reference image database (SMarTaR-ID) to support image-based analyses. *PLoS ONE 14(12): e0218904*, 14(12), p.25. Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0218904 [Accessed 08 January 2020].

ICES, 1997. *ICES working group on the assessment of demersal stocks in the North Sea and Skagerrak*.

ICES, 2011. *Protocols for Assessing the Status of Sea-pen and Burrowing Megafauna Communities.* [pdf] Available at: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2011/Special%20Requests/OSPAR%20Protocols%20for%20assessing%20the%20status.pdf [Accessed 05 Nov 2021].

Irving, R., 2009. *The identification of the main characteristics of stony reef habitats under the Habitats Directive*. Summary report of an inter-agency workshop 26-27 March 2008. JNCC Report No. 432. Peterborough: JNCC JNCC.

IUCN, 2023. *The IUCN Red List of Threatened Species*. [Online] (2022-2) Available at: https://www.iucnredlist.org/ [Accessed 12 April 2023].

Jensen, H., Rindorf, A., Wright, P.J. & Mosegaard, H., 2010. Inferring the location and scale of mixing between habitat areas of lesser sandeel through information from the fishery.. *ICES Journal of Marine Science*, 68(1), pp.43-51.

JNCC and Defra, 2012. *UK Post-2010 Biodiversity Framework*. [pdf] Produced on behalf of the Four Countries' Biodiversity Group Available at: https://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf [Accessed 05 Nov 2021].

JNCC, 2013. *SACFOR abundance scale used for both littoral and sublittoral taxa from 1990 onwards*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1009/sacfor.pdf [Accessed 27 July 2021].

JNCC, 2014a. *Annex I Reefs*. [Online] Available at: http://jncc.defra.gov.uk/PAGE-1448 [Accessed 05 Nov 2021].

JNCC, 2014b. *JNCC clarifications on the habitat definitions of two habitat FOCI.* Peterborough, UK.

JNCC, 2020. *CEND0618 Survey Report: North East of Farnes Deep MCZ and Farnes East MCZ 2020*. [PDF] JNCC (22) Available at: https://hub.jncc.gov.uk/assets/9910b634-47d2-4203-b729-7fe02ef6ade3 [Accessed 12 April 2024].

Joint Nature Conservation Committee, 2012. *Identification of Priority Marine Features in Scotland's seas. JNCC Report No. 462*. Aberdeen.

Kikuchi, R., 2010. Risk Formulation for the sonic effects of offshore wind farms on fish in the EU region. *Marine Pollution Bulletin*, 60, pp.172-77.

Latto, P.L., Reach, I.S., Alexander, D., Backstrom, J., Beagley, E., Murphy, K., Piper, R. & Seiderer, L.J., 2013. *Screening Spatial Interactions between Marine Aggregate Application Areas and Sandeel Habitat.* A Method Statement produced for the BMAPA.

MarineSpace Ltd, ABPmer Ltd, ERM Ltd, Fugro EMU Ltd & Marine Ecological Surveys Ltd, 2013. *Environmental Effect Pathways between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Habitat: Regional Cumulative Impact Assessments. Version 1.0.* A report for the British Marine Aggregates Producers Association.

Mason, C., 2022. *NMBAQC's Best Practice Guidance Particle Size Analysis (PSA) for Supporting Biological Analysis*. [pdf] Lowestoft, UK: Cefas (Version 4, Dated 3-Mar-2022) Available at: https://www.nmbaqcs.org/media/ibzlxdej/psa-guidance_update2022.pdf [Accessed 14 Aug 2023].

McLeod, C.R., Yeo, M., Brown, A.J., Hopkins, J.J. & Way, S.F., 2009. *The Habitats Directive: selection of Special Areas of Conservation in the UK. Version 4*. [pdf] Joint Nature Conservation Committee, Peterborough Available at: https://data.jncc.gov.uk/data/5d20b480-9cc1-490f-9599-da6003928434/sac-selection-background-t37-v4.pdf [Accessed 05 Nov 2021].

MMO, 2023. *Marine Licensing: sediment analysis and sample plans*. [Online] Available at: https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans###Suitability%20of%20material [Accessed 05 Feb 2024].

Natural England and Joint Nature Conservation Committee, 2010. *Marine Conservatoin Zone Project: Ecological Network Guidance*. [pdf] Natural England and Joint Nature Conservation Council (Sheffield and Peterborough, UK.) Available at: https://data.jncc.gov.uk/data/94f961af-0bfc-4787-92d7-0c3bcf0fd083/MCZ-Ecological-Network-Guidance-2010.pdf [Accessed 11 Nov 2021].

Natural Environment and Rural Communities Act, 2006. *Natural Environment and Rural Communities Act 2006*. [Online] Available at: http://www.legislation.gov.uk/ukpga/2006/16/introduction [Accessed 08 Nov 2021].

NatureScot, 2020. *Priority Marine Features in Scotland's Seas - Habitats*. [Online] Available at: https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats [Accessed 17 Aug 2023].

OSPAR, 2008. *OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR Reference Number: 2008-6)*. [Online] Available at: https://www.ospar.org/site/assets/files/1505/08-06e_ospar_list_species_and_habitats.doc [Accessed 27 July 2021].

OSPAR, 2010. *Background Document for Seapen and Burrowing megafauna Communities*. [pdf] Available at: https://www.ospar.org/documents?v=7261 [Accessed 27 July 2021].

Parry, M.E.V., 2019. *Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Revised 2019)*. JNCC Report No. 546. ISSN 0963-8091. Peterborough, UK: JNCC.

Pinto, J.M., Pearson, W.H. & Anderson, J.W., 1984. Sediment preferences and oil contamination in the Pacific sand lance *Ammodytes hexapterus*. *Marine Biology*, 83, pp.193-204.

Reach, I.S., Latto, P., Alexander, D., Alexander, S., Backstrom, J., Beagley, E., Murphy, K., Piper, R. & Seiderer, L.J., 2013. *Screening Spatial Interactions between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Areas.* A Method Statement produced for BMAPA.

Reid, R.N., Cargnelli, L.M., Griesbach, S.J., Packer, D.B., Johnson, D.L., Zetlin, C.A., Morse, W.W. & Berrien, P.L., 1999. *Atlantic Herring, Clupea harengus, Life History and Habitat Characteristics. Essential Fish Habitat Source Document.* National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NMFS-NE-126. 48 p.

Rogers, S. & Stocks, S., 2001. *North Sea Fish and Fisheries*. Technical report for Strategic Environmental Assessment (SEA). 72pp.

Scottish Biodiversity List, 2020. *Scottish Biodiversity List*. [Online] (Version 1.4 (2012)) Available at: https://www.nature.scot/scottish-biodiversity-list [Accessed 27 July 2021].

Stevenson, D.K. & Scott, M.L., 2005. *Atlantic Herring, Clupea harengus, Life History and Habitat Characteristics. Second Edition*. Essential Fish Habitat Source Document. National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NMFS-NE-192.

The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) 2019, 2019. [Online] Available at: https://www.legislation.gov.uk/ssi/2019/113/pdfs/ssi_20190113_en.pdf [Accessed 11 August 2021].

The Marine Environment (Amendment) (EU Exit) Regulations 2018, 2018. *legislation.gov.uk*. [pdf] Available at: https://www.legislation.gov.uk/uksi/2018/1399/pdfs/uksi_20181399_en.pdf [Accessed March 2023].

The Marine Environmnent (EU Exit) (Scotland) (Amendment) Regulations 2019, 2019. *legislation.gov.uk*. [pdf] Available at: https://www.legislation.gov.uk/ssi/2019/55/pdfs/ssi_20190055_en.pdf [Accessed March 2023].

Wakefield, W.W. & Genin, A., 1987. The use of a Canadian (perspective) grid in deep-sea photography. *Depp-Sea Research*, 34(3), pp.469-78.

Wentworth, C.K., 1922. A scale of grade and class terms for clastic sediments. *Journal of Geology*, (30), pp.377-92.

Wright, P., Jensen, H. & Tuck, I., 2000. The influence of sediment type on the distribution of the lesser sandeel, *Ammodytes marinus*. *Journal of Sea Research*, [PDF].10 Jul, 44(3-4), pp.243-56. Available at: https://www.sciencedirect.com/science/article/abs/pii/S1385110100000502 [Accessed 31st Jan 2023].

Wright, P., Verspoor, E., Anderson, C., Donald, L., Kennedy, F., Mitchell, A., Munk, P., Pedersen, S.A., Jensen, H., Gislason, H. & Lewy, P., 1998. *Population structure in the lesser sandeel (Ammodytes marinus) and its implications for fishery-predator interactions.* DG XIV 94/C 144/ 04 Study Proposal No. 94/071. European Commission.

APPENDICES

APPENDIX A FIELD SAMPLING LOGS

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Jul-2023	22:03:25	1	BP23MVEXP-ENV-DC-001			Camera	67	630058	6294402	630092	6294363	-34	39	52	139		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
04-Jul-2023	22:04:39	2	BP23MVEXP-ENV-DC-001			Camera	67	630058	6294402	630092	6294363	-34	39	52	139		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
04-Jul-2023	22:05:41	3	BP23MVEXP-ENV-DC-001			Camera	67	630059	6294402	630092	6294363	-33	39	52	140		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
04-Jul-2023	22:06:07	4	BP23MVEXP-ENV-DC-001			Camera	67	630060	6294400	630092	6294363	-32	37	49	139		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
04-Jul-2023	22:07:11	5	BP23MVEXP-ENV-DC-001			Camera	67	630067	6294393	630092	6294363	-25	30	39	141		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
04-Jul-2023	22:07:55	6	BP23MVEXP-ENV-DC-001			Camera	67	630072	6294388	630092	6294363	-20	25	32	141		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
04-Jul-2023	22:09:04	7	BP23MVEXP-ENV-DC-001			Camera	67	630079	6294380	630092	6294363	-13	17	21	143		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
04-Jul-2023	22:09:33	8	BP23MVEXP-ENV-DC-001			Camera	67	630082	6294376	630092	6294363	-10	13	17	143		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
04-Jul-2023	22:09:44	9	BP23MVEXP-ENV-DC-001			Camera	67	630083	6294375	630092	6294363	-9	12	15	144		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
04-Jul-2023	22:09:53	10	BP23MVEXP-ENV-DC-001			Camera	67	630084	6294375	630092	6294363	-8	12	14	145		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
04-Jul-2023	22:10:16	11	BP23MVEXP-ENV-DC-001			Camera	67	630086	6294371	630092	6294363	-6	8	10	147		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
04-Jul-2023	22:10:57	12	BP23MVEXP-ENV-DC-001			Camera	67	630091	6294367	630092	6294363	-1	4	4	161		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
04-Jul-2023	22:11:15	13	BP23MVEXP-ENV-DC-001			Camera	67	630093	6294365	630092	6294363	1	2	2	-158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
04-Jul-2023	22:11:28	14	BP23MVEXP-ENV-DC-001			Camera	67	630094	6294363	630092	6294363	2	0	2	-93		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
04-Jul-2023	22:11:36	15	BP23MVEXP-ENV-DC-001			Camera	67	630095	6294362	630092	6294363	3	-1	3	-75		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
04-Jul-2023	22:11:56	16	BP23MVEXP-ENV-DC-001			Camera	67	630097	6294360	630092	6294363	5	-3	6	-64		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
04-Jul-2023	22:12:50	17	BP23MVEXP-ENV-DC-001			Camera	67	630103	6294354	630092	6294363	11	-9	14	-50		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
04-Jul-2023	22:13:11	18	BP23MVEXP-ENV-DC-001			Camera	67	630105	6294352	630092	6294363	13	-11	17	-48		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
04-Jul-2023	22:13:38	19	BP23MVEXP-ENV-DC-001			Camera	67	630107	6294348	630092	6294363	15	-15	21	-46		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
04-Jul-2023	22:14:04	20	BP23MVEXP-ENV-DC-001			Camera	67	630110	6294345	630092	6294363	18	-18	25	-45		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
04-Jul-2023	22:14:33	21	BP23MVEXP-ENV-DC-001			Camera	67	630113	6294342	630092	6294363	21	-21	30	-45		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
04-Jul-2023	22:14:50	22	BP23MVEXP-ENV-DC-001			Camera	67	630115	6294340	630092	6294363	23	-23	33	-45		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
04-Jul-2023	22:15:10	23	BP23MVEXP-ENV-DC-001			Camera	67	630117	6294337	630092	6294363	25	-26	36	-44		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
04-Jul-2023	22:15:19	24	BP23MVEXP-ENV-DC-001			Camera	67	630118	6294336	630092	6294363	26	-27	37	-44		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
04-Jul-2023	22:16:03	25	BP23MVEXP-ENV-DC-001			Camera	67	630123	6294332	630092	6294363	31	-31	44	-44		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
04-Jul-2023	22:16:14	26	BP23MVEXP-ENV-DC-001			Camera	67	630124	6294330	630092	6294363	32	-33	46	-44		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
04-Jul-2023	22:29:37	27	BP23MVEXP-ENV-DC-001			Camera	67	630128	6294395	630092	6294363	36	32	48	-131		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
04-Jul-2023	22:29:49	28	BP23MVEXP-ENV-DC-001			Camera	67	630128	6294394	630092	6294363	36	31	48	-131		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
04-Jul-2023	22:30:02	29	BP23MVEXP-ENV-DC-001			Camera	67	630128	6294394	630092	6294363	36	31	48	-131		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
04-Jul-2023	22:31:02	30	BP23MVEXP-ENV-DC-001			Camera	67	630125	6294390	630092	6294363	33	27	42	-130		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
04-Jul-2023	22:31:49	31	BP23MVEXP-ENV-DC-001			Camera	67	630119	6294385	630092	6294363	27	22	35	-129		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
04-Jul-2023	22:32:07	32	BP23MVEXP-ENV-DC-001			Camera	67	630116	6294383	630092	6294363	24	20	31	-130		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
04-Jul-2023	22:32:17	33	BP23MVEXP-ENV-DC-001			Camera	67	630115	6294382	630092	6294363	23	19	30	-129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
04-Jul-2023	22:32:30	34	BP23MVEXP-ENV-DC-001			Camera	67	630114	6294380	630092	6294363	22	17	28	-128		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
04-Jul-2023	22:32:40	35	BP23MVEXP-ENV-DC-001			Camera	67	630113	6294379	630092	6294363	21	16	26	-128		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
04-Jul-2023	22:32:58	36	BP23MVEXP-ENV-DC-001			Camera	67	630110	6294377	630092	6294363	19	14	23	-127		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
04-Jul-2023	22:33:15	37	BP23MVEXP-ENV-DC-001			Camera	67	630108	6294375	630092	6294363	16	12	20	-126		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
04-Jul-2023	22:33:29	38	BP23MVEXP-ENV-DC-001			Camera	67	630106	6294373	630092	6294363	14	10	17	-125		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
04-Jul-2023	22:34:19	39	BP23MVEXP-ENV-DC-001			Camera	67	630101	6294369	630092	6294363	9	6	11	-123		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
04-Jul-2023	22:34:53	40	BP23MVEXP-ENV-DC-001			Camera	67	630097	6294365	630092	6294363	5	2	5	-117		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
04-Jul-2023	22:35:14	41	BP23MVEXP-ENV-DC-001			Camera	67	630095	6294364	630092	6294363	3	1	3	-103		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
04-Jul-2023	22:35:22	42	BP23MVEXP-ENV-DC-001			Camera	67	630094	6294363	630092	6294363	2	0	2	-79		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
04-Jul-2023	22:35:31	43	BP23MVEXP-ENV-DC-001			Camera	67	630093	6294362	630092	6294363	1	-1	1	-34		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
04-Jul-2023	22:36:02	44	BP23MVEXP-ENV-DC-001			Camera	67	630090	6294358	630092	6294363	-2	-5	5	26		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
04-Jul-2023	22:36:24	45	BP23MVEXP-ENV-DC-001			Camera	67	630087	6294356	630092	6294363	-5	-7	9	35		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
04-Jul-2023	22:36:48	46	BP23MVEXP-ENV-DC-001			Camera	67	630084	6294353	630092	6294363	-8	-10	13	37		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
04-Jul-2023	22:37:21	47	BP23MVEXP-ENV-DC-001			Camera	67	630081	6294350	630092	6294363	-11	-13	18	40		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
04-Jul-2023	22:38:31	48	BP23MVEXP-ENV-DC-001			Camera	67	630072	6294342	630092	6294363	-20	-21	29	44		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
04-Jul-2023	22:40:00	49	BP23MVEXP-ENV-DC-001			Camera	67	630062	6294333	630092	6294363	-30	-31	43	45		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
04-Jul-2023	22:41:10	50	BP23MVEXP-ENV-DC-001			Camera	67	630055	6294327	630092	6294363	-37	-36	52	46		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
04-Jul-2023	22:41:25	51	BP23MVEXP-ENV-DC-001			Camera	67	630055	6294327	630092	6294363	-38	-36	52	46		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	01:31:59	52	BP23MVEXP-ENV-DC-002			Camera	66	632648	6291365	632683	6291340	-35	25	43	126		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	01:32:35	53	BP23MVEXP-ENV-DC-002			Camera	66	632648	6291365	632683	6291340	-35	25	43	126		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	01:34:03	54	BP23MVEXP-ENV-DC-002			Camera	66	632649	6291366	632683	6291340	-34	26	43	127		(Raw Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	01:35:24	55	BP23MVEXP-ENV-DC-002			Camera	66	632649	6291365	632683	6291340	-34	25	42	126		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	01:37:33	56	BP23MVEXP-ENV-DC-002			Camera	66	632653	6291362	632683	6291340	-30	22	37	126		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	01:38:28	57	BP23MVEXP-ENV-DC-002			Camera	66	632658	6291356	632683	6291340	-25	16	29	122		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	01:38:57	58	BP23MVEXP-ENV-DC-002			Camera	66	632661	6291352	632683	6291340	-22	12	25	118		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	01:39:49	59	BP23MVEXP-ENV-DC-002			Camera	66	632667	6291347	632683	6291340	-16	7	17	112		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	01:40:38	60	BP23MVEXP-ENV-DC-002			Camera	66	632672	6291342	632683	6291340	-11	2	11	102		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	01:41:30	61	BP23MVEXP-ENV-DC-002			Camera	66	632677	6291337	632683	6291340	-6	-3	6	62		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	01:41:51	62	BP23MVEXP-ENV-DC-002			Camera	66	632680	6291335	632683	6291340	-3	-5	6	31		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	01:42:40	63	BP23MVEXP-ENV-DC-002			Camera	66	632685	6291328	632683	6291340	2	-12	12	-9		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	01:44:10	64	BP23MVEXP-ENV-DC-002			Camera	66	632693	6291317	632683	6291340	10	-23	25	-25		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	01:45:26	65	BP23MVEXP-ENV-DC-002			Camera	66	632701	6291309	632683	6291340	18	-31	36	-31		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	01:46:54	66	BP23MVEXP-ENV-DC-002			Camera	66	632711	6291298	632683	6291340	28	-42	50	-34		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	01:59:31	67	BP23MVEXP-ENV-DC-002			Camera	66	632718	6291358	632683	6291340	35	18	39	-118		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	02:00:22	68	BP23MVEXP-ENV-DC-002			Camera	66	632715	6291357	632683	6291340	32	17	36	-119		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	02:00:40	69	BP23MVEXP-ENV-DC-002			Camera	66	632713	6291356	632683	6291340	30	16	34	-118		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	02:00:47	70	BP23MVEXP-ENV-DC-002			Camera	66	632712	6291355	632683	6291340	29	15	32	-118		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	02:01:04	71	BP23MVEXP-ENV-DC-002			Camera	66	632709	6291353	632683	6291340	26	13	29	-117		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	02:01:31	72	BP23MVEXP-ENV-DC-002			Camera	66	632705	6291351	632683	6291340	22	11	25	-117		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	02:01:45	73	BP23MVEXP-ENV-DC-002			Camera	66	632704	6291350	632683	6291340	21	10	23	-116		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	02:02:22	74	BP23MVEXP-ENV-DC-002			Camera	66	632699	6291346	632683	6291340	16	6	17	-109		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	02:02:35	75	BP23MVEXP-ENV-DC-002			Camera	66	632698	6291344	632683	6291340	15	4	15	-105		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	02:03:03	76	BP23MVEXP-ENV-DC-002			Camera	66	632694	6291341	632683	6291340	11	1	11	-97		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	02:03:41	77	BP23MVEXP-ENV-DC-002			Camera	66	632690	6291337	632683	6291340	7	-3	8	-69		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	02:04:05	78	BP23MVEXP-ENV-DC-002			Camera	66	632688	6291335	632683	6291340	5	-5	7	-42		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	02:04:16	79	BP23MVEXP-ENV-DC-002			Camera	66	632686	6291334	632683	6291340	3	-6	7	-30		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	02:04:26	80	BP23MVEXP-ENV-DC-002			Camera	66	632685	6291333	632683	6291340	2	-7	7	-17		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	02:04:35	81	BP23MVEXP-ENV-DC-002			Camera	66	632684	6291332	632683	6291340	1	-8	8	-10		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	02:04:52	82	BP23MVEXP-ENV-DC-002			Camera	66	632682	6291330	632683	6291340	-1	-10	10	4		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	02:05:01	83	BP23MVEXP-ENV-DC-002			Camera	66	632681	6291329	632683	6291340	-2	-12	12	8		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	02:05:41	84	BP23MVEXP-ENV-DC-002			Camera	66	632677	6291325	632683	6291340	-6	-15	16	21		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	02:06:30	85	BP23MVEXP-ENV-DC-002			Camera	66	632671	6291319	632683	6291340	-12	-21	24	30		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	02:06:39	86	BP23MVEXP-ENV-DC-002			Camera	66	632670	6291318	632683	6291340	-13	-22	25	30		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	02:06:47	87	BP23MVEXP-ENV-DC-002			Camera	66	632670	6291317	632683	6291340	-14	-23	26	31		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	02:07:06	88	BP23MVEXP-ENV-DC-002			Camera	66	632667	6291315	632683	6291340	-16	-25	30	32		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	02:08:17	89	BP23MVEXP-ENV-DC-002			Camera	66	632659	6291308	632683	6291340	-24	-32	40	37		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	02:08:39	90	BP23MVEXP-ENV-DC-002			Camera	66	632657	6291307	632683	6291340	-26	-33	42	38		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	02:08:56	91	BP23MVEXP-ENV-DC-002			Camera	66	632655	6291305	632683	6291340	-28	-35	45	39		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	02:09:50	92	BP23MVEXP-ENV-DC-002				66	632648	6291298	632683	6291340	-35	-42	54	40		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A) Fix no photo
05-Jul-2023	02:10:05	93	BP23MVEXP-ENV-DC-002			Camera	66	632647	6291297	632683	6291340	-36	-43	56	40		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	02:10:18	94	BP23MVEXP-ENV-DC-002			Camera	66	632645	6291295	632683	6291340	-38	-45	58	40		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	03:29:38	95	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288331	635281	6288299	-32	33	46	135		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	03:30:50	96	BP23MVEXP-ENV-DC-003			Camera	68	635248	6288330	635281	6288299	-33	31	45	133		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	03:30:59	97	BP23MVEXP-ENV-DC-003			Camera	68	635248	6288330	635281	6288299	-33	31	45	134		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	03:31:34	98	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288331	635281	6288299	-32	32	45	134		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	03:31:58	99	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288331	635281	6288299	-32	32	45	135		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	03:32:26	100	BP23MVEXP-ENV-DC-003			Camera	68	635251	6288329	635281	6288299	-30	30	43	135		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	03:32:52	101	BP23MVEXP-ENV-DC-003			Camera	68	635253	6288328	635281	6288299	-28	29	40	136		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	03:33:02	102	BP23MVEXP-ENV-DC-003			Camera	68	635253	6288327	635281	6288299	-28	28	40	136		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	03:33:29	103	BP23MVEXP-ENV-DC-003			Camera	69	635255	6288325	635281	6288299	-26	26	37	135		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	03:33:41	104	BP23MVEXP-ENV-DC-003			Camera	69	635256	6288324	635281	6288299	-25	25	35	135		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	03:34:12	105	BP23MVEXP-ENV-DC-003			Camera	69	635258	6288321	635281	6288299	-23	23	32	135		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	03:34:20	106	BP23MVEXP-ENV-DC-003			Camera	68	635259	6288321	635281	6288299	-22	22	31	134		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	03:34:53	107	BP23MVEXP-ENV-DC-003			Camera	69	635261	6288319	635281	6288299	-20	20	28	135		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	03:35:24	108	BP23MVEXP-ENV-DC-003			Camera	69	635263	6288317	635281	6288299	-18	18	25	136		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	03:35:49	109	BP23MVEXP-ENV-DC-003			Camera	69	635265	6288315	635281	6288299	-16	16	23	135		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	03:36:35	110	BP23MVEXP-ENV-DC-003			Camera	68	635268	6288311	635281	6288299	-13	12	18	135		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	03:37:09	111	BP23MVEXP-ENV-DC-003			Camera	68	635271	6288308	635281	6288299	-10	9	14	133		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	03:38:17	112	BP23MVEXP-ENV-DC-003			Camera	68	635276	6288303	635281	6288299	-5	4	7	131		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	03:38:42	113	BP23MVEXP-ENV-DC-003			Camera	68	635278	6288302	635281	6288299	-3	3	4	131		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	03:38:54	114	BP23MVEXP-ENV-DC-003			Camera	68	635279	6288301	635281	6288299	-2	2	3	131		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	03:40:09	115	BP23MVEXP-ENV-DC-003			Camera	68	635284	6288295	635281	6288299	3	-4	5	-35		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	03:40:59	116	BP23MVEXP-ENV-DC-003			Camera	68	635288	6288292	635281	6288299	7	-7	10	-42		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	03:42:29	117	BP23MVEXP-ENV-DC-003			Camera	68	635294	6288286	635281	6288299	13	-13	18	-44		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	03:43:49	118	BP23MVEXP-ENV-DC-003			Camera	68	635300	6288279	635281	6288299	19	-20	27	-44		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	03:44:19	119	BP23MVEXP-ENV-DC-003			Camera	68	635302	6288277	635281	6288299	21	-22	30	-44		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	03:46:12	120	BP23MVEXP-ENV-DC-003			Camera	68	635310	6288268	635281	6288299	29	-31	42	-43		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	03:46:41	121	BP23MVEXP-ENV-DC-003			Camera	69	635312	6288266	635281	6288299	31	-33	45	-43		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	03:59:35	122	BP23MVEXP-ENV-DC-003			Camera	68	635242	6288260	635281	6288299	-39	-39	55	45		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	04:00:30	123	BP23MVEXP-ENV-DC-003			Camera	68	635243	6288262	635281	6288299	-38	-37	54	46		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	04:01:28	124	BP23MVEXP-ENV-DC-003			Camera	69	635247	6288266	635281	6288299	-34	-33	48	46		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	04:01:53	125	BP23MVEXP-ENV-DC-003			Camera	68	635249	6288267	635281	6288299	-32	-32	45	46		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	04:02:56	126	BP23MVEXP-ENV-DC-003			Camera	68	635253	6288272	635281	6288299	-28	-27	39	46		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	04:03:28	127	BP23MVEXP-ENV-DC-003			Camera	68	635256	6288274	635281	6288299	-25	-25	35	46		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	04:04:33	128	BP23MVEXP-ENV-DC-003			Camera	68	635260	6288280	635281	6288299	-21	-19	28	47		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	04:05:40	129	BP23MVEXP-ENV-DC-003			Camera	68	635266	6288285	635281	6288299	-15	-14	20	47		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	04:06:09	130	BP23MVEXP-ENV-DC-003			Camera	68	635269	6288287	635281	6288299	-13	-12	17	47		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	04:06:53	131	BP23MVEXP-ENV-DC-003			Camera	68	635272	6288290	635281	6288299	-9	-9	12	45		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	04:07:11	132A	BP23MVEXP-ENV-DC-003			Camera	71	635274	6288291	635281	6288299	-7	-8	11	41		(Raw Nav, Kongsberg 14208, img#38) (B)
05-Jul-2023	04:07:36	132B	BP23MVEXP-ENV-DC-003			Camera	68	635275	6288293	635281	6288299	-6	-6	8	44		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	04:08:11	133	BP23MVEXP-ENV-DC-003			Camera	68	635278	6288295	635281	6288299	-3	-4	5	43		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	04:08:59	134	BP23MVEXP-ENV-DC-003			Camera	68	635281	6288299	635281	6288299	0	0	0	157		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	04:10:00	135	BP23MVEXP-ENV-DC-003			Camera	68	635286	6288303	635281	6288299	5	4	6	-132		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	04:10:44	136	BP23MVEXP-ENV-DC-003			Camera	68	635289	6288306	635281	6288299	8	7	11	-131		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	04:11:18	137	BP23MVEXP-ENV-DC-003			Camera	69	635292	6288309	635281	6288299	11	10	15	-132		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	04:11:52	138	BP23MVEXP-ENV-DC-003			Camera	69	635294	6288311	635281	6288299	13	12	18	-132		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	04:12:27	139	BP23MVEXP-ENV-DC-003			Camera	69	635296	6288313	635281	6288299	15	14	21	-132		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	04:12:57	140	BP23MVEXP-ENV-DC-003			Camera	69	635298	6288315	635281	6288299	17	16	24	-133		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	04:13:40	141	BP23MVEXP-ENV-DC-003			Camera	69	635302	6288320	635281	6288299	21	21	29	-135		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	04:14:31	142	BP23MVEXP-ENV-DC-003			Camera	69	635305	6288323	635281	6288299	24	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	04:15:12	143	BP23MVEXP-ENV-DC-003			Camera	69	635309	6288326	635281	6288299	28	27	39	-134		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	04:15:33	144	BP23MVEXP-ENV-DC-003			Camera	69	635311	6288327	635281	6288299	30	29	41	-134		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	04:16:28	145	BP23MVEXP-ENV-DC-003			Camera	69	635315	6288331	635281	6288299	34	32	47	-133		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	06:58:31	146	BP23MVEXP-ENV-DC-004			Camera	70	637909	6285325	637941	6285279	-32	46	56	146		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	06:59:41	147	BP23MVEXP-ENV-DC-004			Camera	70	637909	6285326	637941	6285279	-32	47	57	146		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	07:00:52	148	BP23MVEXP-ENV-DC-004			Camera	70	637911	6285325	637941	6285279	-30	46	55	147		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	07:01:24	149	BP23MVEXP-ENV-DC-004			Camera	70	637912	6285323	637941	6285279	-29	44	53	146		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	07:01:59	150	BP23MVEXP-ENV-DC-004			Camera	70	637913	6285321	637941	6285279	-28	42	51	147		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	07:02:28	151	BP23MVEXP-ENV-DC-004			Camera	70	637916	6285319	637941	6285279	-25	40	48	148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	07:03:10	152	BP23MVEXP-ENV-DC-004			Camera	70	637919	6285316	637941	6285279	-22	37	43	149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	07:03:46	153	BP23MVEXP-ENV-DC-004			Camera	70	637921	6285313	637941	6285279	-20	34	39	149		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	07:04:28	154	BP23MVEXP-ENV-DC-004			Camera	70	637924	6285310	637941	6285279	-17	31	35	152		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	07:04:57	155	BP23MVEXP-ENV-DC-004			Camera	70	637927	6285308	637941	6285279	-14	29	32	154		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	07:05:14	156	BP23MVEXP-ENV-DC-004			Camera	70	637928	6285307	637941	6285279	-13	28	31	156		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	07:05:54	157	BP23MVEXP-ENV-DC-004			Camera	70	637931	6285305	637941	6285279	-10	26	28	160		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	07:07:03	158	BP23MVEXP-ENV-DC-004			Camera	70	637935	6285299	637941	6285279	-6	20	21	164		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	07:07:14	159	BP23MVEXP-ENV-DC-004			Camera	70	637936	6285298	637941	6285279	-5	19	20	166		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	07:07:57	160	BP23MVEXP-ENV-DC-004			Camera	70	637939	6285296	637941	6285279	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	07:08:27	161	BP23MVEXP-ENV-DC-004			Camera	70	637942	6285294	637941	6285279	1	15	15	-178		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	07:08:30	162	BP23MVEXP-ENV-DC-004			Camera	70	637942	6285293	637941	6285279	1	14	14	-176		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	07:10:01	163	BP23MVEXP-ENV-DC-004			Camera	70	637947	6285287	637941	6285279	6	8	10	-142		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A) Fix no photo
05-Jul-2023	07:10:43	164	BP23MVEXP-ENV-DC-004			Camera	70	637950	6285283	637941	6285279	9	4	10	-113		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	07:11:59	165	BP23MVEXP-ENV-DC-004			Camera	70	637955	6285277	637941	6285279	14	-2	14	-82		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	07:13:11	166	BP23MVEXP-ENV-DC-004			Camera	70	637961	6285272	637941	6285279	20	-7	21	-71		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	07:13:28	167	BP23MVEXP-ENV-DC-004				70	637962	6285271	637941	6285279	21	-8	23	-69		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A) Fix no photo
05-Jul-2023	07:14:02	168	BP23MVEXP-ENV-DC-004			Camera	70	637965	6285268	637941	6285279	24	-11	26	-66		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	07:14:41	169	BP23MVEXP-ENV-DC-004			Camera	70	637967	6285265	637941	6285279	26	-14	29	-62		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	07:15:06	170	BP23MVEXP-ENV-DC-004			Camera	70	637968	6285263	637941	6285279	27	-16	31	-60		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	07:15:30	171	BP23MVEXP-ENV-DC-004			Camera	70	637970	6285261	637941	6285279	29	-18	34	-58		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	07:25:54	172	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285320	637941	6285279	37	41	56	-138		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	07:26:15	173	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285322	637941	6285279	37	43	57	-139		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	07:26:47	174	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285322	637941	6285279	37	43	57	-139		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	07:27:18	175	BP23MVEXP-ENV-DC-004			Camera	70	637978	6285322	637941	6285279	37	43	57	-140		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	07:27:24	176	BP23MVEXP-ENV-DC-004			Camera	70	637977	6285322	637941	6285279	36	43	56	-140		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	07:27:50	177	BP23MVEXP-ENV-DC-004			Camera	70	637976	6285321	637941	6285279	35	43	55	-141		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	07:28:45	178	BP23MVEXP-ENV-DC-004			Camera	70	637971	6285318	637941	6285279	30	39	50	-143		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	07:29:24	179	BP23MVEXP-ENV-DC-004			Camera	70	637966	6285314	637941	6285279	25	35	43	-145		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	07:29:59	180	BP23MVEXP-ENV-DC-004			Camera	70	637962	6285311	637941	6285279	21	32	38	-146		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	07:30:07	181	BP23MVEXP-ENV-DC-004			Camera	70	637961	6285310	637941	6285279	20	31	37	-147		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	07:30:23	182	BP23MVEXP-ENV-DC-004			Camera	70	637960	6285308	637941	6285279	19	29	34	-147		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	07:30:37	183	BP23MVEXP-ENV-DC-004			Camera	70	637958	6285307	637941	6285279	17	28	33	-149		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	07:31:40	184	BP23MVEXP-ENV-DC-004			Camera	70	637954	6285302	637941	6285279	13	23	26	-151		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	07:32:21	185	BP23MVEXP-ENV-DC-004			Camera	70	637951	6285300	637941	6285279	10	21	23	-154		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	07:32:26	186	BP23MVEXP-ENV-DC-004			Camera	70	637951	6285299	637941	6285279	10	20	23	-153		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	07:32:55	187	BP23MVEXP-ENV-DC-004			Camera	70	637948	6285297	637941	6285279	7	18	19	-158		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	07:33:12	188	BP23MVEXP-ENV-DC-004			Camera	70	637948	6285296	637941	6285279	7	17	18	-159		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	07:33:38	189	BP23MVEXP-ENV-DC-004			Camera	70	637946	6285295	637941	6285279	5	16	16	-163		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	07:33:48	190	BP23MVEXP-ENV-DC-004			Camera	70	637945	6285294	637941	6285279	4	15	15	-165		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	07:34:26	191	BP23MVEXP-ENV-DC-004			Camera	70	637941	6285290	637941	6285279	0	11	11	180		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	07:35:31	192	BP23MVEXP-ENV-DC-004			Camera	70	637936	6285286	637941	6285279	-5	7	8	142		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	07:35:58	193	BP23MVEXP-ENV-DC-004			Camera	70	637934	6285282	637941	6285279	-7	3	8	116		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	07:36:31	194	BP23MVEXP-ENV-DC-004			Camera	70	637932	6285281	637941	6285279	-9	2	9	103		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	07:39:06	195	BP23MVEXP-ENV-DC-004			Camera	69	637921	6285270	637941	6285279	-20	-9	22	66		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	07:39:36	196	BP23MVEXP-ENV-DC-004			Camera	69	637919	6285267	637941	6285279	-22	-12	25	63		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	07:39:40	197	BP23MVEXP-ENV-DC-004			Camera	69	637918	6285267	637941	6285279	-23	-12	26	63		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	07:40:33	198	BP23MVEXP-ENV-DC-004			Camera	69	637914	6285265	637941	6285279	-27	-14	30	62		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	07:41:07	199	BP23MVEXP-ENV-DC-004			Camera	69	637911	6285261	637941	6285279	-30	-18	35	59		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
05-Jul-2023	08:57:55	200	BP23MVEXP-ENV-DC-005			Camera	75	640499	6282311	640532	6282261	-33	50	59	147		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	08:58:16	201	BP23MVEXP-ENV-DC-005			Camera	75	640501	6282310	640532	6282261	-31	49	58	148		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	08:58:47	202	BP23MVEXP-ENV-DC-005			Camera	75	640501	6282311	640532	6282261	-31	51	59	148		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	08:59:38	203	BP23MVEXP-ENV-DC-005			Camera	75	640502	6282309	640532	6282261	-30	48	57	148		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	09:00:15	204	BP23MVEXP-ENV-DC-005			Camera	75	640504	6282307	640532	6282261	-28	46	54	149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	09:00:53	205	BP23MVEXP-ENV-DC-005			Camera	75	640506	6282305	640532	6282261	-26	44	51	150		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	09:01:20	206	BP23MVEXP-ENV-DC-005			Camera	75	640508	6282303	640532	6282261	-24	42	48	150		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	09:01:57	207	BP23MVEXP-ENV-DC-005			Camera	75	640510	6282300	640532	6282261	-22	39	45	150		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	09:02:56	208	BP23MVEXP-ENV-DC-005			Camera	76	640514	6282294	640532	6282261	-18	33	38	152		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	09:03:21	209	BP23MVEXP-ENV-DC-005			Camera	75	640516	6282292	640532	6282261	-16	31	35	152		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	09:03:48	210	BP23MVEXP-ENV-DC-005			Camera	75	640517	6282290	640532	6282261	-15	29	32	153		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	09:04:17	211	BP23MVEXP-ENV-DC-005				75	640519	6282288	640532	6282261	-13	27	30	155		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A) Fix no photo
05-Jul-2023	09:04:30	212	BP23MVEXP-ENV-DC-005			Camera	75	640520	6282287	640532	6282261	-12	26	29	156		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	09:04:59	213	BP23MVEXP-ENV-DC-005			Camera	75	640522	6282284	640532	6282261	-10	23	25	156		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	09:05:23	214	BP23MVEXP-ENV-DC-005			Camera	75	640523	6282282	640532	6282261	-9	21	23	158		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	09:05:49	215	BP23MVEXP-ENV-DC-005			Camera	76	640525	6282281	640532	6282261	-7	20	21	160		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	09:06:11	216	BP23MVEXP-ENV-DC-005			Camera	76	640526	6282278	640532	6282261	-6	17	18	162		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	09:06:40	217	BP23MVEXP-ENV-DC-005			Camera	76	640528	6282276	640532	6282261	-4	15	16	165		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	09:07:01	218	BP23MVEXP-ENV-DC-005			Camera	76	640529	6282275	640532	6282261	-3	14	14	170		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	09:07:17	219	BP23MVEXP-ENV-DC-005			Camera	76	640530	6282273	640532	6282261	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	09:07:31	220	BP23MVEXP-ENV-DC-005			Camera	76	640532	6282272	640532	6282261	0	11	11	-178		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	09:08:32	221	BP23MVEXP-ENV-DC-005			Camera	76	640536	6282267	640532	6282261	4	6	7	-146		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	09:09:02	222	BP23MVEXP-ENV-DC-005			Camera	76	640538	6282265	640532	6282261	6	4	7	-123		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	09:10:01	223	BP23MVEXP-ENV-DC-005			Camera	76	640540	6282260	640532	6282261	8	-1	8	-84		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	09:10:38	224	BP23MVEXP-ENV-DC-005			Camera	76	640543	6282257	640532	6282261	11	-4	12	-70		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	09:10:59	225	BP23MVEXP-ENV-DC-005			Camera	76	640545	6282255	640532	6282261	13	-6	14	-66		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	09:11:18	226	BP23MVEXP-ENV-DC-005			Camera	76	640546	6282254	640532	6282261	14	-7	16	-63		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	09:12:50	227	BP23MVEXP-ENV-DC-005			Camera	76	640552	6282246	640532	6282261	20	-15	25	-54		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	09:13:44	228	BP23MVEXP-ENV-DC-005			Camera	76	640555	6282242	640532	6282261	23	-19	30	-51		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	09:14:39	229	BP23MVEXP-ENV-DC-005			Camera	76	640558	6282238	640532	6282261	26	-23	35	-48		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	09:16:20	230	BP23MVEXP-ENV-DC-005			Camera	76	640565	6282230	640532	6282261	33	-31	45	-46		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	09:30:55	231	BP23MVEXP-ENV-DC-005			Camera	76	640568	6282291	640532	6282261	36	30	47	-130		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	09:32:29	232	BP23MVEXP-ENV-DC-005			Camera	76	640565	6282291	640532	6282261	33	30	44	-132		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	09:32:54	233	BP23MVEXP-ENV-DC-005			Camera	76	640563	6282290	640532	6282261	32	29	43	-132		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	09:33:08	234	BP23MVEXP-ENV-DC-005				76	640562	6282289	640532	6282261	30	28	41	-133		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A) Fix no photo
05-Jul-2023	09:33:50	235	BP23MVEXP-ENV-DC-005			Camera	76	640559	6282287	640532	6282261	27	26	37	-133		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	09:34:16	236	BP23MVEXP-ENV-DC-005			Camera	76	640557	6282284	640532	6282261	25	23	34	-133		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	09:34:59	237	BP23MVEXP-ENV-DC-005			Camera	76	640554	6282281	640532	6282261	22	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	09:35:45	238	BP23MVEXP-ENV-DC-005			Camera	76	640551	6282278	640532	6282261	19	17	26	-132		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	09:36:27	239	BP23MVEXP-ENV-DC-005			Camera	76	640547	6282275	640532	6282261	15	15	21	-133		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	09:36:51	240	BP23MVEXP-ENV-DC-005			Camera	76	640546	6282273	640532	6282261	14	12	18	-131		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	09:37:47	241	BP23MVEXP-ENV-DC-005			Camera	76	640542	6282269	640532	6282261	10	8	12	-129		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	09:38:12	242	BP23MVEXP-ENV-DC-005			Camera	76	640539	6282266	640532	6282261	7	5	9	-126		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	09:38:58	243	BP23MVEXP-ENV-DC-005			Camera	75	640536	6282263	640532	6282261	4	2	4	-117		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	09:39:40	244	BP23MVEXP-ENV-DC-005			Camera	75	640532	6282260	640532	6282261	0	-1	1	-22		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	09:40:56	245	BP23MVEXP-ENV-DC-005			Camera	75	640526	6282255	640532	6282261	-6	-6	9	43		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	09:41:24	246	BP23MVEXP-ENV-DC-005			Camera	75	640524	6282253	640532	6282261	-8	-8	11	43		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	09:42:09	247	BP23MVEXP-ENV-DC-005			Camera	75	640521	6282250	640532	6282261	-11	-11	16	44		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	09:43:06	248	BP23MVEXP-ENV-DC-005			Camera	75	640517	6282246	640532	6282261	-15	-15	21	45		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	09:43:14	249	BP23MVEXP-ENV-DC-005			Camera	75	640516	6282245	640532	6282261	-16	-16	22	45		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	09:43:55	250	BP23MVEXP-ENV-DC-005			Camera	75	640513	6282242	640532	6282261	-19	-19	27	45		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	09:44:50	251	BP23MVEXP-ENV-DC-005			Camera	75	640509	6282239	640532	6282261	-23	-22	32	46		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	09:45:03	252	BP23MVEXP-ENV-DC-005			Camera	75	640508	6282238	640532	6282261	-24	-24	34	46		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	09:45:22	253	BP23MVEXP-ENV-DC-005			Camera	75	640506	6282236	640532	6282261	-26	-25	36	46		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	09:46:20	254	BP23MVEXP-ENV-DC-005			Camera	75	640502	6282232	640532	6282261	-30	-29	42	46		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
05-Jul-2023	09:47:22	255	BP23MVEXP-ENV-DC-005			Camera	75	640497	6282228	640532	6282261	-35	-33	48	47		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	09:48:04	256	BP23MVEXP-ENV-DC-005			Camera	75	640496	6282226	640532	6282261	-36	-35	51	46		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
05-Jul-2023	11:37:44	257	BP23MVEXP-ENV-DC-006			Camera	73	643094	6279265	643128	6279228	-34	37	50	137		(Raw Nav, Kongsberg 14208, img#58) (B) (T.A)
05-Jul-2023	11:38:21	258	BP23MVEXP-ENV-DC-006			Camera	73	643094	6279266	643128	6279228	-34	38	51	138		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
05-Jul-2023	11:38:40	259	BP23MVEXP-ENV-DC-006			Camera	73	643094	6279266	643128	6279228	-34	38	51	138		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
05-Jul-2023	11:39:09	260	BP23MVEXP-ENV-DC-006			Camera	73	643095	6279265	643128	6279228	-33	38	50	138		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
05-Jul-2023	11:40:10	261	BP23MVEXP-ENV-DC-006			Camera	74	643098	6279261	643128	6279228	-30	33	45	138		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
05-Jul-2023	11:40:35	262	BP23MVEXP-ENV-DC-006			Camera	74	643100	6279259	643128	6279228	-28	31	42	138		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
05-Jul-2023	11:40:52	263	BP23MVEXP-ENV-DC-006			Camera	74	643102	6279257	643128	6279228	-26	29	39	138		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
05-Jul-2023	11:41:06	264	BP23MVEXP-ENV-DC-006			Camera	74	643103	6279256	643128	6279228	-25	28	38	138		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
05-Jul-2023	11:41:13	265	BP23MVEXP-ENV-DC-006			Camera	74	643103	6279256	643128	6279228	-25	28	37	138		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
05-Jul-2023	11:41:49	266	BP23MVEXP-ENV-DC-006			Camera	74	643106	6279253	643128	6279228	-22	25	33	138		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
05-Jul-2023	11:42:05	267	BP23MVEXP-ENV-DC-006			Camera	74	643107	6279252	643128	6279228	-21	24	32	138		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
05-Jul-2023	11:42:18	268	BP23MVEXP-ENV-DC-006			Camera	73	643108	6279251	643128	6279228	-20	23	30	138		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
05-Jul-2023	11:42:32	269	BP23MVEXP-ENV-DC-006			Camera	74	643109	6279250	643128	6279228	-19	22	29	139		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
05-Jul-2023	11:43:14	270	BP23MVEXP-ENV-DC-006			Camera	74	643112	6279247	643128	6279228	-16	19	25	140		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
05-Jul-2023	11:43:24	271	BP23MVEXP-ENV-DC-006			Camera	74	643113	6279246	643128	6279228	-15	18	24	140		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
05-Jul-2023	11:43:45	272	BP23MVEXP-ENV-DC-006			Camera	74	643114	6279245	643128	6279228	-14	17	21	140		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
05-Jul-2023	11:43:51	273	BP23MVEXP-ENV-DC-006			Camera	74	643115	6279244	643128	6279228	-13	16	21	140		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
05-Jul-2023	11:44:11	274	BP23MVEXP-ENV-DC-006			Camera	74	643116	6279242	643128	6279228	-12	14	19	141		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
05-Jul-2023	11:44:22	275	BP23MVEXP-ENV-DC-006			Camera	74	643117	6279242	643128	6279228	-11	14	18	140		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
05-Jul-2023	11:44:29	276	BP23MVEXP-ENV-DC-006			Camera	74	643117	6279241	643128	6279228	-11	13	17	140		(Corr'd Nav, Kongsberg 14208, img#77) (B) (T.A)
05-Jul-2023	11:45:18	277	BP23MVEXP-ENV-DC-006			Camera	74	643121	6279237	643128	6279228	-7	9	12	142		(Corr'd Nav, Kongsberg 14208, img#78) (B) (T.A)
05-Jul-2023	11:45:41	278	BP23MVEXP-ENV-DC-006			Camera	74	643123	6279236	643128	6279228	-5	8	9	147		(Corr'd Nav, Kongsberg 14208, img#79) (B) (T.A)
05-Jul-2023	11:45:50	279	BP23MVEXP-ENV-DC-006			Camera	74	643124	6279235	643128	6279228	-4	7	9	149		(Corr'd Nav, Kongsberg 14208, img#80) (B) (T.A)
05-Jul-2023	11:46:00	280	BP23MVEXP-ENV-DC-006			Camera	74	643124	6279235	643128	6279228	-4	7	8	150		(Corr'd Nav, Kongsberg 14208, img#81) (B) (T.A)
05-Jul-2023	11:46:10	281	BP23MVEXP-ENV-DC-006			Camera	74	643124	6279234	643128	6279228	-4	6	7	151		(Corr'd Nav, Kongsberg 14208, img#82) (B) (T.A)
05-Jul-2023	11:46:29	282	BP23MVEXP-ENV-DC-006				74	643125	6279233	643128	6279228	-3	5	6	151		(Corr'd Nav, Kongsberg 14208, img#83) (B) (T.A) Fix no photo
05-Jul-2023	11:46:43	283	BP23MVEXP-ENV-DC-006			Camera	74	643127	6279231	643128	6279228	-1	3	3	158		(Corr'd Nav, Kongsberg 14208, img#84) (B) (T.A)
05-Jul-2023	11:46:50	284	BP23MVEXP-ENV-DC-006			Camera	74	643127	6279230	643128	6279228	-1	2	2	162		(Corr'd Nav, Kongsberg 14208, img#85) (B) (T.A)
05-Jul-2023	11:46:59	285	BP23MVEXP-ENV-DC-006			Camera	74	643128	6279229	643128	6279228	0	1	1	178		(Corr'd Nav, Kongsberg 14208, img#86) (B) (T.A)
05-Jul-2023	11:47:08	286	BP23MVEXP-ENV-DC-006			Camera	74	643129	6279228	643128	6279228	1	0	1	-110		(Corr'd Nav, Kongsberg 14208, img#87) (B) (T.A)
05-Jul-2023	11:47:20	287	BP23MVEXP-ENV-DC-006			Camera	74	643130	6279227	643128	6279228	2	-1	2	-61		(Corr'd Nav, Kongsberg 14208, img#88) (B) (T.A)
05-Jul-2023	11:47:28	288	BP23MVEXP-ENV-DC-006			Camera	74	643130	6279226	643128	6279228	2	-2	3	-54		(Corr'd Nav, Kongsberg 14208, img#89) (B) (T.A)
05-Jul-2023	11:47:41	289	BP23MVEXP-ENV-DC-006			Camera	74	643131	6279226	643128	6279228	3	-2	4	-51		(Corr'd Nav, Kongsberg 14208, img#90) (B) (T.A)
05-Jul-2023	11:47:49	290	BP23MVEXP-ENV-DC-006			Camera	74	643132	6279225	643128	6279228	4	-3	4	-52		(Corr'd Nav, Kongsberg 14208, img#91) (B) (T.A)
05-Jul-2023	11:49:41	291	BP23MVEXP-ENV-DC-006			Camera	74	643140	6279217	643128	6279228	12	-11	16	-48		(Corr'd Nav, Kongsberg 14208, img#92) (B) (T.A)
05-Jul-2023	11:52:17	292	BP23MVEXP-ENV-DC-006			Camera	74	643151	6279206	643128	6279228	23	-22	32	-47		(Corr'd Nav, Kongsberg 14208, img#93) (B) (T.A)
05-Jul-2023	11:54:04	293	BP23MVEXP-ENV-DC-006			Camera	74	643159	6279197	643128	6279228	31	-31	43	-45		(Corr'd Nav, Kongsberg 14208, img#94) (B) (T.A)
05-Jul-2023	11:54:13	294	BP23MVEXP-ENV-DC-006			Camera	74	643159	6279197	643128	6279228	31	-31	44	-45		(Corr'd Nav, Kongsberg 14208, img#95) (B) (T.A)
05-Jul-2023	12:13:56	295	BP23MVEXP-ENV-DC-006			Camera	73	643091	6279194	643128	6279228	-37	-34	50	48		(Corr'd Nav, Kongsberg 14208, img#96) (B) (T.A)
05-Jul-2023	12:14:22	296	BP23MVEXP-ENV-DC-006			Camera	73	643092	6279195	643128	6279228	-36	-33	49	48		(Corr'd Nav, Kongsberg 14208, img#97) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	12:14:40	297	BP23MVEXP-ENV-DC-006			Camera	73	643093	6279196	643128	6279228	-35	-32	47	48		(Corr'd Nav, Kongsberg 14208, img#98) (B) (T.A)
05-Jul-2023	12:15:06	298	BP23MVEXP-ENV-DC-006			Camera	73	643095	6279198	643128	6279228	-33	-30	45	48		(Corr'd Nav, Kongsberg 14208, img#99) (B) (T.A)
05-Jul-2023	12:15:19	299	BP23MVEXP-ENV-DC-006			Camera	73	643096	6279199	643128	6279228	-32	-29	43	48		(Corr'd Nav, Kongsberg 14208, img#100) (B) (T.A)
05-Jul-2023	12:15:46	300	BP23MVEXP-ENV-DC-006			Camera	74	643098	6279202	643128	6279228	-30	-26	40	48		(Corr'd Nav, Kongsberg 14208, img#101) (B) (T.A)
05-Jul-2023	12:15:59	301	BP23MVEXP-ENV-DC-006			Camera	74	643099	6279203	643128	6279228	-29	-26	38	48		(Corr'd Nav, Kongsberg 14208, img#102) (B) (T.A)
05-Jul-2023	12:16:18	302	BP23MVEXP-ENV-DC-006			Camera	73	643101	6279203	643128	6279228	-27	-25	37	48		(Corr'd Nav, Kongsberg 14208, img#103) (B) (T.A)
05-Jul-2023	12:16:44	303	BP23MVEXP-ENV-DC-006			Camera	73	643102	6279205	643128	6279228	-26	-23	35	48		(Corr'd Nav, Kongsberg 14208, img#104) (B) (T.A)
05-Jul-2023	12:17:22	304	BP23MVEXP-ENV-DC-006			Camera	73	643105	6279207	643128	6279228	-23	-21	31	47		(Corr'd Nav, Kongsberg 14208, img#105) (B) (T.A)
05-Jul-2023	12:17:31	305	BP23MVEXP-ENV-DC-006			Camera	73	643106	6279207	643128	6279228	-22	-21	30	47		(Corr'd Nav, Kongsberg 14208, img#106) (B) (T.A)
05-Jul-2023	12:18:01	306	BP23MVEXP-ENV-DC-006			Camera	74	643108	6279210	643128	6279228	-20	-18	27	47		(Corr'd Nav, Kongsberg 14208, img#107) (B) (T.A)
05-Jul-2023	12:18:12	307	BP23MVEXP-ENV-DC-006			Camera	73	643109	6279210	643128	6279228	-19	-18	26	47		(Corr'd Nav, Kongsberg 14208, img#108) (B) (T.A)
05-Jul-2023	12:18:51	308	BP23MVEXP-ENV-DC-006			Camera	74	643112	6279213	643128	6279228	-16	-15	22	48		(Corr'd Nav, Kongsberg 14208, img#109) (B) (T.A)
05-Jul-2023	12:19:56	309	BP23MVEXP-ENV-DC-006			Camera	74	643117	6279218	643128	6279228	-11	-10	15	47		(Corr'd Nav, Kongsberg 14208, img#110) (B) (T.A)
05-Jul-2023	12:20:06	310	BP23MVEXP-ENV-DC-006			Camera	74	643118	6279218	643128	6279228	-10	-10	14	47		(Corr'd Nav, Kongsberg 14208, img#111) (B) (T.A)
05-Jul-2023	12:20:30	311	BP23MVEXP-ENV-DC-006			Camera	74	643120	6279220	643128	6279228	-9	-8	12	47		(Corr'd Nav, Kongsberg 14208, img#112) (B) (T.A)
05-Jul-2023	12:20:46	312	BP23MVEXP-ENV-DC-006			Camera	74	643121	6279221	643128	6279228	-7	-7	10	46		(Corr'd Nav, Kongsberg 14208, img#113) (B) (T.A)
05-Jul-2023	12:21:06	313	BP23MVEXP-ENV-DC-006			Camera	74	643122	6279222	643128	6279228	-6	-6	8	46		(Corr'd Nav, Kongsberg 14208, img#114) (B) (T.A)
05-Jul-2023	12:21:20	314	BP23MVEXP-ENV-DC-006			Camera	74	643123	6279223	643128	6279228	-5	-5	7	44		(Corr'd Nav, Kongsberg 14208, img#115) (B) (T.A)
05-Jul-2023	12:21:44	315	BP23MVEXP-ENV-DC-006			Camera	74	643125	6279224	643128	6279228	-3	-4	5	40		(Corr'd Nav, Kongsberg 14208, img#116) (B) (T.A)
05-Jul-2023	12:21:53	316	BP23MVEXP-ENV-DC-006			Camera	74	643125	6279225	643128	6279228	-3	-3	4	38		(Corr'd Nav, Kongsberg 14208, img#117) (B) (T.A)
05-Jul-2023	12:22:18	317	BP23MVEXP-ENV-DC-006			Camera	74	643127	6279226	643128	6279228	-1	-2	2	25		(Corr'd Nav, Kongsberg 14208, img#118) (B) (T.A)
05-Jul-2023	12:22:32	318	BP23MVEXP-ENV-DC-006			Camera	74	643129	6279228	643128	6279228	1	0	1	-62		(Corr'd Nav, Kongsberg 14208, img#119) (B) (T.A)
05-Jul-2023	12:22:49	319	BP23MVEXP-ENV-DC-006			Camera	74	643130	6279229	643128	6279228	2	1	2	-116		(Corr'd Nav, Kongsberg 14208, img#120) (B) (T.A)
05-Jul-2023	12:23:35	320	BP23MVEXP-ENV-DC-006			Camera	74	643133	6279232	643128	6279228	5	4	7	-129		(Corr'd Nav, Kongsberg 14208, img#121) (B) (T.A)
05-Jul-2023	12:24:32	321	BP23MVEXP-ENV-DC-006			Camera	74	643138	6279237	643128	6279228	10	9	13	-131		(Corr'd Nav, Kongsberg 14208, img#122) (B) (T.A)
05-Jul-2023	12:25:03	322	BP23MVEXP-ENV-DC-006			Camera	74	643140	6279239	643128	6279228	12	11	16	-131		(Corr'd Nav, Kongsberg 14208, img#123) (B) (T.A)
05-Jul-2023	12:26:15	323	BP23MVEXP-ENV-DC-006			Camera	74	643145	6279243	643128	6279228	17	15	22	-131		(Corr'd Nav, Kongsberg 14208, img#124) (B) (T.A)
05-Jul-2023	12:26:25	324	BP23MVEXP-ENV-DC-006			Camera	74	643145	6279243	643128	6279228	18	15	23	-131		(Corr'd Nav, Kongsberg 14208, img#125) (B) (T.A)
05-Jul-2023	12:27:34	325	BP23MVEXP-ENV-DC-006			Camera	74	643151	6279248	643128	6279228	23	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#126) (B) (T.A)
05-Jul-2023	12:30:34	326	BP23MVEXP-ENV-DC-006			Camera	74	643163	6279260	643128	6279228	35	32	48	-133		(Corr'd Nav, Kongsberg 14208, img#127) (B) (T.A)
05-Jul-2023	12:30:44	327	BP23MVEXP-ENV-DC-006			Camera	74	643163	6279261	643128	6279228	35	33	48	-133		(Corr'd Nav, Kongsberg 14208, img#128) (B) (T.A)
05-Jul-2023	13:51:36	328	BP23MVEXP-ENV-DC-007			Camera	72	645706	6276219	645743	6276186	-37	33	50	132		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	13:52:35	329	BP23MVEXP-ENV-DC-007			Camera	72	645710	6276223	645743	6276186	-33	37	50	138		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	13:53:18	330	BP23MVEXP-ENV-DC-007			Camera	72	645710	6276221	645743	6276186	-33	35	48	137		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	13:54:05	331	BP23MVEXP-ENV-DC-007			Camera	72	645714	6276219	645743	6276186	-30	33	44	138		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	13:54:23	332	BP23MVEXP-ENV-DC-007			Camera	72	645715	6276218	645743	6276186	-28	32	42	139		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	13:54:44	333	BP23MVEXP-ENV-DC-007			Camera	72	645717	6276216	645743	6276186	-26	30	40	139		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	13:54:55	334	BP23MVEXP-ENV-DC-007			Camera	72	645718	6276215	645743	6276186	-25	30	39	140		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	13:55:33	335	BP23MVEXP-ENV-DC-007			Camera	72	645721	6276213	645743	6276186	-22	27	35	141		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	13:55:57	336	BP23MVEXP-ENV-DC-007			Camera	72	645722	6276212	645743	6276186	-21	26	34	141		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	13:57:03	337	BP23MVEXP-ENV-DC-007			Camera	72	645726	6276206	645743	6276186	-17	20	27	139		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	13:57:11	338	BP23MVEXP-ENV-DC-007			Camera	72	645726	6276206	645743	6276186	-17	20	26	140		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	13:59:06	339	BP23MVEXP-ENV-DC-007			Camera	72	645735	6276197	645743	6276186	-8	11	14	143		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	13:59:19	340	BP23MVEXP-ENV-DC-007			Camera	72	645736	6276196	645743	6276186	-7	10	13	144		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	14:00:11	341	BP23MVEXP-ENV-DC-007			Camera	72	645740	6276193	645743	6276186	-3	7	8	154		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	14:00:28	342	BP23MVEXP-ENV-DC-007			Camera	72	645741	6276192	645743	6276186	-2	6	7	162		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	14:00:52	343	BP23MVEXP-ENV-DC-007			Camera	72	645743	6276191	645743	6276186	0	5	5	-177		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	14:01:09	344	BP23MVEXP-ENV-DC-007			Camera	72	645745	6276190	645743	6276186	2	4	4	-156		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	14:01:21	345	BP23MVEXP-ENV-DC-007				72	645745	6276188	645743	6276186	2	2	3	-136		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A) Fix no photo
05-Jul-2023	14:01:31	346	BP23MVEXP-ENV-DC-007			Camera	72	645746	6276187	645743	6276186	3	1	3	-116		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	14:01:45	347	BP23MVEXP-ENV-DC-007			Camera	72	645746	6276186	645743	6276186	3	0	3	-90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	14:02:07	348	BP23MVEXP-ENV-DC-007			Camera	72	645748	6276184	645743	6276186	5	-2	5	-65		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	14:02:44	349	BP23MVEXP-ENV-DC-007			Camera	72	645750	6276181	645743	6276186	7	-5	9	-52		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	14:05:17	350	BP23MVEXP-ENV-DC-007			Camera	72	645762	6276171	645743	6276186	19	-15	24	-51		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	14:05:23	351	BP23MVEXP-ENV-DC-007			Camera	72	645762	6276171	645743	6276186	19	-15	25	-51		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	14:06:22	352	BP23MVEXP-ENV-DC-007			Camera	72	645766	6276166	645743	6276186	24	-20	31	-50		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	14:06:34	353	BP23MVEXP-ENV-DC-007			Camera	72	645767	6276165	645743	6276186	24	-21	32	-49		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	14:08:10	354	BP23MVEXP-ENV-DC-007			Camera	72	645774	6276157	645743	6276186	31	-29	43	-47		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	14:17:42	355	BP23MVEXP-ENV-DC-007			Camera	72	645751	6276149	645743	6276186	8	-37	38	-13		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	14:31:23	356	BP23MVEXP-ENV-DC-007			Camera	72	645715	6276156	645743	6276186	-28	-31	42	43		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	14:31:40	357	BP23MVEXP-ENV-DC-007			Camera	72	645710	6276156	645743	6276186	-33	-30	44	48		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	14:32:09	358	BP23MVEXP-ENV-DC-007			Camera	72	645715	6276174	645743	6276186	-28	-12	30	67		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	14:32:37	359	BP23MVEXP-ENV-DC-007			Camera	72	645721	6276160	645743	6276186	-22	-26	34	40		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	14:32:54	360	BP23MVEXP-ENV-DC-007			Camera	72	645722	6276172	645743	6276186	-21	-14	25	57		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	14:33:04	361	BP23MVEXP-ENV-DC-007			Camera	72	645718	6276173	645743	6276186	-25	-13	28	62		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	14:33:19	362	BP23MVEXP-ENV-DC-007			Camera	72	645718	6276163	645743	6276186	-25	-23	34	48		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	14:33:43	363	BP23MVEXP-ENV-DC-007			Camera	72	645729	6276196	645743	6276186	-14	10	17	125		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	14:34:14	364	BP23MVEXP-ENV-DC-007			Camera	72	645724	6276178	645743	6276186	-19	-8	21	67		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	14:34:25	365	BP23MVEXP-ENV-DC-007			Camera	72	645724	6276178	645743	6276186	-19	-8	20	66		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	14:35:14	366	BP23MVEXP-ENV-DC-007			Camera	72	645727	6276179	645743	6276186	-16	-7	17	65		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	14:35:29	367	BP23MVEXP-ENV-DC-007			Camera	72	645727	6276173	645743	6276186	-16	-14	21	50		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	14:36:25	368	BP23MVEXP-ENV-DC-007			Camera	72	645728	6276190	645743	6276186	-15	4	16	104		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	14:37:08	369	BP23MVEXP-ENV-DC-007			Camera	72	645735	6276181	645743	6276186	-8	-5	9	57		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	14:37:20	370	BP23MVEXP-ENV-DC-007			Camera	72	645741	6276208	645743	6276186	-2	22	22	174		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	14:37:59	371	BP23MVEXP-ENV-DC-007			Camera	72	645754	6276217	645743	6276186	11	31	32	-161		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	14:38:08	372	BP23MVEXP-ENV-DC-007			Camera	72	645750	6276205	645743	6276186	7	19	20	-160		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	14:38:19	373	BP23MVEXP-ENV-DC-007			Camera	72	645741	6276186	645743	6276186	-2	0	2	99		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	14:38:51	374	BP23MVEXP-ENV-DC-007			Camera	72	645743	6276213	645743	6276186	0	27	27	-179		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	14:39:04	375	BP23MVEXP-ENV-DC-007			Camera	72	645745	6276209	645743	6276186	2	23	23	-175		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	14:39:18	376	BP23MVEXP-ENV-DC-007			Camera	72	645745	6276190	645743	6276186	2	4	4	-152		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	14:42:23	377	BP23MVEXP-ENV-DC-007			Camera	72	645760	6276210	645743	6276186	17	24	29	-144		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	14:42:34	378	BP23MVEXP-ENV-DC-007			Camera	72	645760	6276209	645743	6276186	17	23	29	-143		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	14:42:56	379	BP23MVEXP-ENV-DC-007			Camera	72	645762	6276213	645743	6276186	19	27	34	-145		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	14:43:40	380	BP23MVEXP-ENV-DC-007			Camera	72	645764	6276208	645743	6276186	21	22	30	-136		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	14:44:15	381	BP23MVEXP-ENV-DC-007			Camera	72	645767	6276210	645743	6276186	24	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	14:45:04	382	BP23MVEXP-ENV-DC-007			Camera	72	645772	6276222	645743	6276186	29	36	46	-141		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
05-Jul-2023	14:45:56	383	BP23MVEXP-ENV-DC-007			Camera	72	645774	6276216	645743	6276186	31	30	43	-134		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	16:50:41	384	BP23MVEXP-ENV-DC-008			Camera	72	648342	6273082	648378	6273115	-36	-33	49	47		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	16:52:31	385	BP23MVEXP-ENV-DC-008			Camera	72	648341	6273081	648378	6273115	-37	-34	50	48		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	16:56:59	386	BP23MVEXP-ENV-DC-008			Camera	72	648345	6273084	648378	6273115	-33	-31	45	46		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	16:57:36	387	BP23MVEXP-ENV-DC-008			Camera	72	648348	6273087	648378	6273115	-30	-28	42	47		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	16:57:45	388	BP23MVEXP-ENV-DC-008			Camera	72	648349	6273087	648378	6273115	-30	-28	41	47		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	16:57:58	389	BP23MVEXP-ENV-DC-008			Camera	72	648349	6273089	648378	6273115	-29	-26	39	47		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	16:58:56	390	BP23MVEXP-ENV-DC-008			Camera	72	648354	6273093	648378	6273115	-24	-22	32	48		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	16:59:28	391	BP23MVEXP-ENV-DC-008			Camera	72	648357	6273095	648378	6273115	-21	-21	30	46		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	16:59:55	392	BP23MVEXP-ENV-DC-008			Camera	72	648358	6273097	648378	6273115	-20	-18	27	48		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	17:00:22	393	BP23MVEXP-ENV-DC-008			Camera	72	648361	6273099	648378	6273115	-17	-16	23	46		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	17:00:33	394	BP23MVEXP-ENV-DC-008			Camera	72	648362	6273100	648378	6273115	-16	-15	22	46		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	17:01:00	395	BP23MVEXP-ENV-DC-008			Camera	72	648363	6273102	648378	6273115	-15	-13	20	48		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	17:01:24	396	BP23MVEXP-ENV-DC-008			Camera	72	648365	6273103	648378	6273115	-13	-12	18	48		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	17:01:43	397	BP23MVEXP-ENV-DC-008			Camera	72	648367	6273104	648378	6273115	-11	-11	15	47		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	17:02:55	398	BP23MVEXP-ENV-DC-008			Camera	72	648373	6273110	648378	6273115	-5	-5	7	49		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	17:03:29	399	BP23MVEXP-ENV-DC-008			Camera	72	648375	6273113	648378	6273115	-3	-2	4	52		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	17:03:39	400	BP23MVEXP-ENV-DC-008			Camera	72	648376	6273113	648378	6273115	-2	-2	3	55		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	17:03:51	401	BP23MVEXP-ENV-DC-008			Camera	72	648376	6273114	648378	6273115	-2	-1	2	64		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	17:04:20	402	BP23MVEXP-ENV-DC-008			Camera	72	648379	6273116	648378	6273115	1	1	1	-145		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	17:06:27	403	BP23MVEXP-ENV-DC-008			Camera	72	648389	6273126	648378	6273115	11	11	15	-134		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	17:07:21	404	BP23MVEXP-ENV-DC-008			Camera	72	648392	6273129	648378	6273115	14	14	19	-134		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	17:07:34	405	BP23MVEXP-ENV-DC-008			Camera	72	648393	6273130	648378	6273115	15	15	21	-134		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	17:08:56	406	BP23MVEXP-ENV-DC-008			Camera	72	648399	6273136	648378	6273115	21	21	30	-135		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	17:09:05	407	BP23MVEXP-ENV-DC-008			Camera	72	648400	6273137	648378	6273115	22	22	31	-135		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	17:09:34	408	BP23MVEXP-ENV-DC-008			Camera	72	648403	6273139	648378	6273115	25	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	17:11:12	409	BP23MVEXP-ENV-DC-008			Camera	72	648409	6273146	648378	6273115	31	31	44	-134		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	17:30:49	410	BP23MVEXP-ENV-DC-008			Camera	72	648347	6273148	648378	6273115	-31	33	45	137		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	17:31:13	411	BP23MVEXP-ENV-DC-008			Camera	72	648349	6273146	648378	6273115	-29	31	42	137		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	17:32:32	412	BP23MVEXP-ENV-DC-008			Camera	72	648355	6273139	648378	6273115	-23	24	33	136		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	17:32:44	413	BP23MVEXP-ENV-DC-008			Camera	72	648356	6273138	648378	6273115	-22	23	32	136		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	17:33:24	414	BP23MVEXP-ENV-DC-008			Camera	72	648359	6273136	648378	6273115	-19	21	28	138		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	17:33:38	415	BP23MVEXP-ENV-DC-008			Camera	72	648360	6273135	648378	6273115	-18	21	27	139		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	17:33:54	416	BP23MVEXP-ENV-DC-008			Camera	72	648361	6273134	648378	6273115	-17	19	25	139		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	17:35:08	417	BP23MVEXP-ENV-DC-008			Camera	72	648367	6273128	648378	6273115	-11	13	17	140		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	17:35:50	418	BP23MVEXP-ENV-DC-008			Camera	72	648370	6273125	648378	6273115	-8	10	13	141		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	17:36:41	419	BP23MVEXP-ENV-DC-008			Camera	72	648374	6273121	648378	6273115	-4	6	7	143		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	17:37:07	420	BP23MVEXP-ENV-DC-008			Camera	72	648375	6273119	648378	6273115	-3	4	5	145		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	17:37:15	421	BP23MVEXP-ENV-DC-008			Camera	72	648376	6273119	648378	6273115	-2	4	4	148		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	17:37:40	422	BP23MVEXP-ENV-DC-008			Camera	72	648378	6273117	648378	6273115	0	2	2	166		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	17:37:45	423	BP23MVEXP-ENV-DC-008			Camera	72	648378	6273116	648378	6273115	0	1	1	-176		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	17:37:55	424	BP23MVEXP-ENV-DC-008			Camera	72	648379	6273116	648378	6273115	1	1	1	-125		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	17:38:19	425	BP23MVEXP-ENV-DC-008			Camera	72	648381	6273114	648378	6273115	3	-1	3	-66		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	17:38:39	426	BP23MVEXP-ENV-DC-008			Camera	72	648382	6273113	648378	6273115	4	-2	5	-58		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	17:39:25	427	BP23MVEXP-ENV-DC-008			Camera	72	648385	6273109	648378	6273115	7	-6	9	-48		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	17:39:41	428	BP23MVEXP-ENV-DC-008			Camera	72	648386	6273108	648378	6273115	8	-7	10	-48		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	17:40:25	429	BP23MVEXP-ENV-DC-008			Camera	72	648389	6273104	648378	6273115	11	-11	15	-46		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	17:41:00	430	BP23MVEXP-ENV-DC-008			Camera	72	648392	6273102	648378	6273115	14	-13	19	-47		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	17:41:06	431	BP23MVEXP-ENV-DC-008			Camera	72	648392	6273102	648378	6273115	14	-13	19	-47		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	17:41:44	432	BP23MVEXP-ENV-DC-008			Camera	72	648395	6273099	648378	6273115	17	-16	23	-47		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	17:43:48	433	BP23MVEXP-ENV-DC-008			Camera	72	648404	6273089	648378	6273115	26	-26	36	-45		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	17:44:37	434	BP23MVEXP-ENV-DC-008			Camera	72	648408	6273086	648378	6273115	30	-29	42	-45		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	19:03:23	435	BP23MVEXP-ENV-DC-009			Camera	73	650905	6270172	650936	6270129	-31	43	53	144		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	19:04:52	436	BP23MVEXP-ENV-DC-009			Camera	73	650905	6270171	650936	6270129	-31	42	52	144		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	19:05:29	437	BP23MVEXP-ENV-DC-009			Camera	74	650906	6270171	650936	6270129	-30	42	51	145		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	19:06:08	438	BP23MVEXP-ENV-DC-009			Camera	73	650909	6270168	650936	6270129	-27	40	48	145		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	19:06:20	439	BP23MVEXP-ENV-DC-009			Camera	73	650910	6270168	650936	6270129	-26	39	47	146		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	19:06:54	440	BP23MVEXP-ENV-DC-009			Camera	73	650912	6270165	650936	6270129	-24	36	44	146		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	19:07:04	441	BP23MVEXP-ENV-DC-009			Camera	73	650913	6270164	650936	6270129	-23	35	42	147		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	19:07:27	442	BP23MVEXP-ENV-DC-009			Camera	73	650915	6270163	650936	6270129	-22	34	40	148		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	19:07:39	443	BP23MVEXP-ENV-DC-009			Camera	73	650915	6270163	650936	6270129	-21	34	39	148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	19:08:37	444	BP23MVEXP-ENV-DC-009			Camera	73	650920	6270156	650936	6270129	-16	27	32	149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	19:08:51	445	BP23MVEXP-ENV-DC-009			Camera	74	650921	6270155	650936	6270129	-15	26	30	150		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	19:09:36	446	BP23MVEXP-ENV-DC-009			Camera	74	650924	6270152	650936	6270129	-13	23	26	151		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	19:11:13	447	BP23MVEXP-ENV-DC-009			Camera	74	650930	6270143	650936	6270129	-6	14	15	158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	19:11:55	448	BP23MVEXP-ENV-DC-009			Camera	74	650933	6270140	650936	6270129	-3	11	11	164		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	19:12:46	449	BP23MVEXP-ENV-DC-009			Camera	74	650936	6270137	650936	6270129	0	8	8	-177		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Jul-2023	19:12:57	450	BP23MVEXP-ENV-DC-009			Camera	74	650937	6270136	650936	6270129	1	7	7	-169		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	19:13:10	451	BP23MVEXP-ENV-DC-009			Camera	74	650938	6270135	650936	6270129	2	6	6	-158		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	19:13:26	452	BP23MVEXP-ENV-DC-009			Camera	74	650939	6270133	650936	6270129	3	4	6	-142		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	19:13:39	453	BP23MVEXP-ENV-DC-009				75	650940.25	6270132.39	650936	6270129	-4	-3	5	231	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:13:48	454	BP23MVEXP-ENV-DC-009				75	650940.25	6270132.39	650936	6270129	-4	-3	5	231	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:11	455	BP23MVEXP-ENV-DC-009			Camera	75	650940.92	6270131.74	650936	6270129	-5	-3	6	241	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:20	456	BP23MVEXP-ENV-DC-009			Camera	75	650942.38	6270130.16	650936	6270129	-6	-1	6	260	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:44	457	BP23MVEXP-ENV-DC-009			Camera	75	650942.95	6270129.61	650936	6270129	-7	-1	7	265	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:14:58	458	BP23MVEXP-ENV-DC-009			Camera	75	650944.53	6270127.26	650936	6270129	-9	2	9	282	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:15:37	459	BP23MVEXP-ENV-DC-009			Camera	75	650945.15	6270126.49	650936	6270129	-9	3	9	285	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:15:57	460	BP23MVEXP-ENV-DC-009			Camera	75	650947.87	6270123.19	650936	6270129	-12	6	13	296	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:16:38	461	BP23MVEXP-ENV-DC-009			Camera	75	650949.04	6270121.86	650936	6270129	-13	7	15	299	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:17:08	462	BP23MVEXP-ENV-DC-009			Camera	75	650951.82	6270118.48	650936	6270129	-16	11	19	304	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:17:30	463	BP23MVEXP-ENV-DC-009			Camera	75	650953.79	6270115.82	650936	6270129	-18	13	22	307	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:17:44	464	BP23MVEXP-ENV-DC-009			Camera	75	650955.09	6270114.82	650936	6270129	-19	14	24	307	AC	(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
05-Jul-2023	19:19:11	465	BP23MVEXP-ENV-DC-009			Camera	74	650962	6270108	650936	6270129	26	-21	33	-52		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	19:20:22	466	BP23MVEXP-ENV-DC-009			Camera	74	650967	6270103	650936	6270129	31	-26	40	-49		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	19:20:43	467	BP23MVEXP-ENV-DC-009			Camera	74	650968	6270101	650936	6270129	32	-28	42	-49		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	19:22:55	468	BP23MVEXP-ENV-DC-009			Camera	74	650972	6270095	650936	6270129	36	-34	50	-47		(Raw Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	19:34:46	469	BP23MVEXP-ENV-DC-009			Camera	74	650971	6270161	650936	6270129	35	32	48	-133		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	19:35:25	470	BP23MVEXP-ENV-DC-009			Camera	74	650971	6270162	650936	6270129	35	33	48	-134		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	19:36:02	471	BP23MVEXP-ENV-DC-009			Camera	74	650969	6270162	650936	6270129	33	33	46	-135		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	19:36:26	472	BP23MVEXP-ENV-DC-009			Camera	74	650967	6270160	650936	6270129	31	31	44	-135		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	19:37:03	473	BP23MVEXP-ENV-DC-009			Camera	74	650965	6270158	650936	6270129	29	29	41	-135		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	19:37:37	474	BP23MVEXP-ENV-DC-009			Camera	74	650962	6270155	650936	6270129	26	26	37	-135		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	19:37:58	475	BP23MVEXP-ENV-DC-009			Camera	74	650960	6270153	650936	6270129	24	24	34	-135		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	19:38:19	476	BP23MVEXP-ENV-DC-009			Camera	74	650959	6270152	650936	6270129	23	23	33	-136		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	19:39:11	477	BP23MVEXP-ENV-DC-009			Camera	74	650955	6270149	650936	6270129	19	20	27	-136		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	19:39:22	478	BP23MVEXP-ENV-DC-009			Camera	74	650954	6270148	650936	6270129	18	19	26	-136		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	19:40:37	479	BP23MVEXP-ENV-DC-009			Camera	74	650949	6270142	650936	6270129	13	13	18	-135		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	19:42:54	480	BP23MVEXP-ENV-DC-009			Camera	74	650939	6270133	650936	6270129	3	4	5	-146		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	19:43:14	481	BP23MVEXP-ENV-DC-009			Camera	74	650937	6270131	650936	6270129	1	2	3	-149		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	19:43:23	482	BP23MVEXP-ENV-DC-009			Camera	74	650937	6270131	650936	6270129	1	2	2	-157		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	19:43:37	483	BP23MVEXP-ENV-DC-009			Camera	74	650936	6270129	650936	6270129	0	0	1	150		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	19:44:03	484	BP23MVEXP-ENV-DC-009			Camera	74	650934	6270128	650936	6270129	-2	-1	2	65		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Jul-2023	19:45:25	485	BP23MVEXP-ENV-DC-009			Camera	74	650928	6270122	650936	6270129	-8	-7	11	50		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Jul-2023	19:47:36	486	BP23MVEXP-ENV-DC-009			Camera	74	650918	6270113	650936	6270129	-18	-16	24	48		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
05-Jul-2023	19:48:23	487	BP23MVEXP-ENV-DC-009			Camera	74	650915	6270111	650936	6270129	-21	-18	27	49		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
05-Jul-2023	19:49:46	488	BP23MVEXP-ENV-DC-009			Camera	74	650908	6270104	650936	6270129	-28	-25	38	48		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
05-Jul-2023	19:50:28	489	BP23MVEXP-ENV-DC-009			Camera	73	650905	6270101	650936	6270129	-31	-28	42	48		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Jul-2023	19:51:17	490	BP23MVEXP-ENV-DC-009			Camera	74	650903	6270099	650936	6270129	-33	-30	45	48		(Raw Nav, Kongsberg 14208, img#56) (B) (T.A)
05-Jul-2023	21:55:24	491	BP23MVEXP-ENV-DC-010			Camera	74	653517	6267123	653551	6267079	-34	44	55	142		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
05-Jul-2023	21:58:15	492	BP23MVEXP-ENV-DC-010			Camera	74	653523	6267119	653551	6267079	-28	40	49	145		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Jul-2023	21:58:40	493	BP23MVEXP-ENV-DC-010			Camera	74	653524	6267117	653551	6267079	-27	38	47	145		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Jul-2023	21:59:17	494	BP23MVEXP-ENV-DC-010			Camera	74	653526	6267114	653551	6267079	-25	35	43	145		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Jul-2023	21:59:36	495	BP23MVEXP-ENV-DC-010			Camera	74	653527	6267113	653551	6267079	-24	34	41	145		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Jul-2023	21:59:50	496	BP23MVEXP-ENV-DC-010			Camera	74	653528	6267112	653551	6267079	-23	33	40	145		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Jul-2023	22:00:00	497	BP23MVEXP-ENV-DC-010			Camera	74	653529	6267111	653551	6267079	-22	32	39	145		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Jul-2023	22:01:11	498	BP23MVEXP-ENV-DC-010			Camera	74	653534	6267105	653551	6267079	-17	26	31	147		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Jul-2023	22:03:12	499	BP23MVEXP-ENV-DC-010			Camera	74	653541	6267095	653551	6267079	-10	16	19	147		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Jul-2023	22:03:39	500	BP23MVEXP-ENV-DC-010			Camera	74	653543	6267092	653551	6267079	-8	13	16	148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Jul-2023	22:04:12	501	BP23MVEXP-ENV-DC-010			Camera	74	653545	6267090	653551	6267079	-6	11	13	150		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Jul-2023	22:04:52	502	BP23MVEXP-ENV-DC-010			Camera	74	653548	6267087	653551	6267079	-3	8	9	158		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Jul-2023	22:05:18	503	BP23MVEXP-ENV-DC-010			Camera	74	653550	6267085	653551	6267079	-1	6	6	168		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Jul-2023	22:05:30	504	BP23MVEXP-ENV-DC-010			Camera	74	653551	6267084	653551	6267079	0	5	5	176		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Jul-2023	22:05:56	505	BP23MVEXP-ENV-DC-010			Camera	74	653553	6267082	653551	6267079	2	3	3	-153		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Jul-2023	22:06:08	506	BP23MVEXP-ENV-DC-010				74	653553	6267081	653551	6267079	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A) Fix no photo
05-Jul-2023	22:06:20	507	BP23MVEXP-ENV-DC-010			Camera	74	653554	6267080	653551	6267079	3	1	3	-117		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Jul-2023	22:06:37	508	BP23MVEXP-ENV-DC-010			Camera	74	653555	6267079	653551	6267079	4	0	4	-86		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Jul-2023	22:06:49	509	BP23MVEXP-ENV-DC-010			Camera	74	653555	6267078	653551	6267079	4	-1	5	-75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Jul-2023	22:07:08	510	BP23MVEXP-ENV-DC-010			Camera	74	653556	6267077	653551	6267079	5	-2	6	-66		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Jul-2023	22:07:37	511	BP23MVEXP-ENV-DC-010			Camera	74	653557	6267075	653551	6267079	6	-4	8	-57		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Jul-2023	22:08:05	512	BP23MVEXP-ENV-DC-010			Camera	74	653559	6267072	653551	6267079	8	-7	11	-51		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Jul-2023	22:08:18	513	BP23MVEXP-ENV-DC-010			Camera	74	653560	6267071	653551	6267079	9	-8	12	-50		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Jul-2023	22:09:44	514	BP23MVEXP-ENV-DC-010			Camera	74	653567	6267065	653551	6267079	16	-14	21	-49		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Jul-2023	22:09:53	515	BP23MVEXP-ENV-DC-010			Camera	74	653567	6267065	653551	6267079	16	-15	22	-48		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Jul-2023	22:10:20	516	BP23MVEXP-ENV-DC-010			Camera	74	653569	6267062	653551	6267079	18	-17	25	-47		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Jul-2023	22:11:19	517	BP23MVEXP-ENV-DC-010			Camera	74	653573	6267058	653551	6267079	22	-21	30	-46		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Jul-2023	22:11:40	518	BP23MVEXP-ENV-DC-010			Camera	74	653575	6267056	653551	6267079	24	-23	33	-46		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Jul-2023	22:12:37	519	BP23MVEXP-ENV-DC-010			Camera	74	653580	6267051	653551	6267079	29	-28	40	-46		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Jul-2023	22:13:07	520	BP23MVEXP-ENV-DC-010			Camera	74	653582	6267049	653551	6267079	31	-30	43	-45		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Jul-2023	22:14:04	521	BP23MVEXP-ENV-DC-010			Camera	74	653585	6267043	653551	6267079	34	-36	49	-44		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Jul-2023	22:23:08	522	BP23MVEXP-ENV-DC-010			Camera	74	653586	6267089	653551	6267079	35	10	37	-105		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Jul-2023	22:27:43	523	BP23MVEXP-ENV-DC-010			Camera	74	653588	6267112	653551	6267079	37	33	50	-131		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Jul-2023	22:28:19	524	BP23MVEXP-ENV-DC-010			Camera	74	653586	6267109	653551	6267079	35	30	46	-131		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Jul-2023	22:28:57	525	BP23MVEXP-ENV-DC-010			Camera	74	653581	6267106	653551	6267079	30	27	41	-132		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Jul-2023	22:29:08	526	BP23MVEXP-ENV-DC-010			Camera	74	653580	6267105	653551	6267079	29	26	39	-132		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Jul-2023	22:30:01	527	BP23MVEXP-ENV-DC-010			Camera	74	653576	6267102	653551	6267079	25	23	34	-132		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Jul-2023	22:30:37	528	BP23MVEXP-ENV-DC-010			Camera	74	653573	6267099	653551	6267079	22	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Jul-2023	22:33:24	529	BP23MVEXP-ENV-DC-010			Camera	74	653560	6267087	653551	6267079	9	8	12	-129		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Jul-2023	22:34:44	530	BP23MVEXP-ENV-DC-010			Camera	74	653554	6267081	653551	6267079	3	2	4	-124		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Jul-2023	22:34:53	531	BP23MVEXP-ENV-DC-010			Camera	74	653554	6267081	653551	6267079	3	2	3	-126		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Jul-2023	22:35:16	532	BP23MVEXP-ENV-DC-010			Camera	74	653552	6267079	653551	6267079	1	0	1	-110		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Jul-2023	22:35:23	533	BP23MVEXP-ENV-DC-010			Camera	74	653551	6267079	653551	6267079	0	0	0	8		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Jul-2023	22:35:35	534	BP23MVEXP-ENV-DC-010			Camera	74	653550	6267078	653551	6267079	-1	-1	1	46		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Jul-2023	22:35:47	535	BP23MVEXP-ENV-DC-010			Camera	74	653549	6267077	653551	6267079	-2	-2	2	48		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Jul-2023	22:36:25	536	BP23MVEXP-ENV-DC-010			Camera	74	653547	6267075	653551	6267079	-4	-4	6	46		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Jul-2023	22:37:10	537	BP23MVEXP-ENV-DC-010			Camera	74	653543	6267071	653551	6267079	-8	-8	11	45		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Jul-2023	22:37:20	538	BP23MVEXP-ENV-DC-010			Camera	74	653543	6267071	653551	6267079	-8	-8	12	46		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Jul-2023	22:38:09	539	BP23MVEXP-ENV-DC-010			Camera	74	653539	6267066	653551	6267079	-12	-13	17	43		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Jul-2023	22:39:16	540	BP23MVEXP-ENV-DC-010			Camera	74	653534	6267062	653551	6267079	-17	-17	24	45		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Jul-2023	22:41:57	541	BP23MVEXP-ENV-DC-010			Camera	74	653522	6267050	653551	6267079	-29	-29	41	45		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	00:14:13	542	BP23MVEXP-ENV-DC-011			Camera	73	656121	6264072	656157	6264039	-37	33	49	132		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	00:14:34	543	BP23MVEXP-ENV-DC-011			Camera	73	656120	6264072	656157	6264039	-37	33	50	132		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	00:15:24	544	BP23MVEXP-ENV-DC-011			Camera	73	656120	6264072	656157	6264039	-37	33	50	132		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	00:16:14	545	BP23MVEXP-ENV-DC-011			Camera	73	656120	6264072	656157	6264039	-37	33	50	132		(Raw Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	00:18:58	546	BP23MVEXP-ENV-DC-011			Camera	73	656125	6264069	656157	6264039	-32	30	44	133		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	00:20:01	547	BP23MVEXP-ENV-DC-011			Camera	73	656129	6264065	656157	6264039	-28	26	38	133		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	00:20:42	548	BP23MVEXP-ENV-DC-011			Camera	73	656133	6264063	656157	6264039	-24	24	34	134		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	00:21:18	549	BP23MVEXP-ENV-DC-011			Camera	73	656136	6264061	656157	6264039	-21	22	30	136		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	00:22:13	550	BP23MVEXP-ENV-DC-011			Camera	73	656139	6264057	656157	6264039	-18	18	25	136		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	00:22:35	551	BP23MVEXP-ENV-DC-011			Camera	73	656141	6264056	656157	6264039	-16	17	23	136		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	00:23:14	552	BP23MVEXP-ENV-DC-011			Camera	73	656144	6264053	656157	6264039	-13	14	19	137		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	00:24:03	553	BP23MVEXP-ENV-DC-011			Camera	73	656147	6264050	656157	6264039	-10	11	14	138		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	00:25:38	554	BP23MVEXP-ENV-DC-011			Camera	73	656155	6264043	656157	6264039	-2	4	5	157		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	00:26:12	555	BP23MVEXP-ENV-DC-011			Camera	73	656158	6264040	656157	6264039	1	1	1	-136		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	00:27:02	556	BP23MVEXP-ENV-DC-011			Camera	73	656162	6264035	656157	6264039	5	-4	6	-52		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	00:27:20	557	BP23MVEXP-ENV-DC-011			Camera	73	656163	6264034	656157	6264039	6	-5	8	-49		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	00:28:05	558	BP23MVEXP-ENV-DC-011			Camera	73	656166	6264032	656157	6264039	9	-7	12	-51		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	00:29:24	559	BP23MVEXP-ENV-DC-011			Camera	73	656172	6264027	656157	6264039	15	-12	19	-50		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	00:29:36	560	BP23MVEXP-ENV-DC-011			Camera	73	656172	6264026	656157	6264039	15	-13	20	-48		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	00:30:45	561	BP23MVEXP-ENV-DC-011			Camera	73	656177	6264021	656157	6264039	20	-18	27	-48		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	00:30:58	562	BP23MVEXP-ENV-DC-011			Camera	73	656178	6264020	656157	6264039	21	-19	29	-48		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	00:32:33	563	BP23MVEXP-ENV-DC-011			Camera	73	656185	6264014	656157	6264039	28	-25	38	-48		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	00:32:50	564	BP23MVEXP-ENV-DC-011			Camera	73	656186	6264013	656157	6264039	30	-26	40	-48		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	00:50:50	565	BP23MVEXP-ENV-DC-011			Camera	73	656192	6264072	656157	6264039	35	33	48	-134		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	00:52:00	566	BP23MVEXP-ENV-DC-011			Camera	73	656190	6264071	656157	6264039	33	32	46	-134		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	00:53:17	567	BP23MVEXP-ENV-DC-011			Camera	73	656187	6264068	656157	6264039	30	29	41	-134		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	00:54:13	568	BP23MVEXP-ENV-DC-011			Camera	73	656184	6264065	656157	6264039	27	26	37	-134		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	00:55:13	569	BP23MVEXP-ENV-DC-011			Camera	73	656178	6264060	656157	6264039	21	21	30	-135		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	00:56:46	570	BP23MVEXP-ENV-DC-011			Camera	73	656171	6264054	656157	6264039	14	15	20	-137		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	00:59:17	571	BP23MVEXP-ENV-DC-011			Camera	73	656161	6264043	656157	6264039	4	4	6	-136		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	01:00:00	572	BP23MVEXP-ENV-DC-011			Camera	73	656157	6264040	656157	6264039	0	1	1	-140		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	01:01:04	573	BP23MVEXP-ENV-DC-011			Camera	73	656152	6264035	656157	6264039	-5	-4	6	50		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	01:01:34	574	BP23MVEXP-ENV-DC-011			Camera	73	656150	6264032	656157	6264039	-7	-7	10	45		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	01:02:24	575	BP23MVEXP-ENV-DC-011			Camera	73	656147	6264029	656157	6264039	-10	-10	14	45		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	01:02:57	576	BP23MVEXP-ENV-DC-011			Camera	73	656145	6264027	656157	6264039	-12	-12	17	46		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	01:03:11	577	BP23MVEXP-ENV-DC-011			Camera	73	656144	6264026	656157	6264039	-13	-13	19	45		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	01:04:24	578	BP23MVEXP-ENV-DC-011			Camera	73	656137	6264020	656157	6264039	-20	-19	27	46		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	01:05:10	579	BP23MVEXP-ENV-DC-011			Camera	73	656134	6264017	656157	6264039	-23	-22	32	46		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	01:05:47	580	BP23MVEXP-ENV-DC-011			Camera	73	656131	6264015	656157	6264039	-26	-24	36	47		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	01:06:27	581	BP23MVEXP-ENV-DC-011			Camera	73	656128	6264012	656157	6264039	-29	-27	40	47		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	01:06:43	582	BP23MVEXP-ENV-DC-011				73	656127	6264010	656157	6264039	-30	-29	41	46		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A) Fix no photo
06-Jul-2023	01:07:12	583	BP23MVEXP-ENV-DC-011			Camera	73	656125	6264008	656157	6264039	-32	-31	45	45		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	01:07:35	584	BP23MVEXP-ENV-DC-011			Camera	73	656123	6264006	656157	6264039	-34	-33	47	45		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	01:07:53	585	BP23MVEXP-ENV-DC-011			Camera	73	656122	6264005	656157	6264039	-35	-34	49	46		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	02:52:22	586	BP23MVEXP-ENV-DC-012			Camera	73	656653	6260180	656656	6260131	-3	49	49	177		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	02:53:35	587	BP23MVEXP-ENV-DC-012			Camera	73	656652	6260181	656656	6260131	-4	50	50	175		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	02:54:58	588	BP23MVEXP-ENV-DC-012			Camera	73	656653	6260180	656656	6260131	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	02:55:45	589	BP23MVEXP-ENV-DC-012			Camera	73	656653	6260176	656656	6260131	-3	45	45	176		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	02:56:10	590	BP23MVEXP-ENV-DC-012			Camera	73	656654	6260173	656656	6260131	-2	42	42	177		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	02:57:08	591	BP23MVEXP-ENV-DC-012			Camera	73	656655	6260168	656656	6260131	-1	37	37	178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	02:57:55	592	BP23MVEXP-ENV-DC-012			Camera	73	656655	6260163	656656	6260131	-1	32	32	178		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	02:58:40	593	BP23MVEXP-ENV-DC-012			Camera	73	656656	6260158	656656	6260131	0	27	27	180		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	02:58:54	594	BP23MVEXP-ENV-DC-012			Camera	73	656656	6260156	656656	6260131	0	25	25	-180		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	02:59:51	595	BP23MVEXP-ENV-DC-012			Camera	73	656657	6260151	656656	6260131	1	20	20	-176		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	03:00:24	596	BP23MVEXP-ENV-DC-012			Camera	73	656657	6260147	656656	6260131	1	16	16	-176		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	03:00:54	597	BP23MVEXP-ENV-DC-012			Camera	73	656658	6260144	656656	6260131	2	13	13	-174		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	03:02:51	598	BP23MVEXP-ENV-DC-012			Camera	73	656659	6260132	656656	6260131	3	1	4	-113		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	03:03:05	599	BP23MVEXP-ENV-DC-012			Camera	73	656659	6260131	656656	6260131	3	0	3	-91		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	03:04:12	600	BP23MVEXP-ENV-DC-012			Camera	73	656661	6260124	656656	6260131	5	-7	9	-36		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	03:04:43	601	BP23MVEXP-ENV-DC-012			Camera	73	656661	6260121	656656	6260131	5	-10	11	-28		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	03:05:43	602	BP23MVEXP-ENV-DC-012			Camera	73	656662	6260115	656656	6260131	6	-16	17	-21		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	03:06:32	603	BP23MVEXP-ENV-DC-012			Camera	73	656662	6260110	656656	6260131	6	-21	22	-17		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	03:07:56	604	BP23MVEXP-ENV-DC-012			Camera	73	656664	6260102	656656	6260131	8	-29	30	-16		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	03:08:21	605	BP23MVEXP-ENV-DC-012			Camera	73	656663	6260099	656656	6260131	7	-32	32	-13		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	03:08:46	606	BP23MVEXP-ENV-DC-012			Camera	73	656664	6260097	656656	6260131	8	-34	35	-13		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	03:09:08	607	BP23MVEXP-ENV-DC-012			Camera	73	656665	6260094	656656	6260131	9	-37	38	-13		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	03:09:44	608	BP23MVEXP-ENV-DC-012			Camera	73	656665	6260090	656656	6260131	9	-41	42	-12		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	03:10:17	609	BP23MVEXP-ENV-DC-012			Camera	73	656665	6260088	656656	6260131	9	-43	44	-12		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	03:24:17	610	BP23MVEXP-ENV-DC-012			Camera	73	656705	6260134	656656	6260131	49	3	49	-93		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	03:25:16	611	BP23MVEXP-ENV-DC-012			Camera	73	656699	6260136	656656	6260131	43	5	44	-96		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	03:25:33	612	BP23MVEXP-ENV-DC-012			Camera	73	656698	6260136	656656	6260131	42	5	43	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	03:26:00	613	BP23MVEXP-ENV-DC-012			Camera	73	656695	6260135	656656	6260131	39	4	39	-97		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	03:26:29	614	BP23MVEXP-ENV-DC-012			Camera	73	656692	6260135	656656	6260131	36	4	36	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	03:27:06	615	BP23MVEXP-ENV-DC-012			Camera	73	656688	6260134	656656	6260131	32	3	32	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	03:27:36	616	BP23MVEXP-ENV-DC-012			Camera	73	656684	6260135	656656	6260131	28	4	29	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	03:28:15	617	BP23MVEXP-ENV-DC-012			Camera	73	656681	6260135	656656	6260131	25	4	25	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	03:29:13	618	BP23MVEXP-ENV-DC-012			Camera	73	656675	6260135	656656	6260131	19	4	19	-101		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	03:29:44	619	BP23MVEXP-ENV-DC-012			Camera	73	656671	6260134	656656	6260131	15	3	16	-102		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	03:30:57	620	BP23MVEXP-ENV-DC-012			Camera	73	656664	6260133	656656	6260131	8	2	8	-104		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	03:31:51	621	BP23MVEXP-ENV-DC-012			Camera	73	656660	6260133	656656	6260131	4	2	4	-117		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	03:32:13	622	BP23MVEXP-ENV-DC-012			Camera	73	656657	6260133	656656	6260131	1	2	2	-154		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	03:32:42	623	BP23MVEXP-ENV-DC-012			Camera	73	656654	6260132	656656	6260131	-2	1	3	121		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	03:33:55	624	BP23MVEXP-ENV-DC-012			Camera	73	656646	6260132	656656	6260131	-10	1	10	98		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	03:34:31	625	BP23MVEXP-ENV-DC-012			Camera	73	656643	6260132	656656	6260131	-13	1	13	94		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	03:35:18	626	BP23MVEXP-ENV-DC-012			Camera	73	656638	6260132	656656	6260131	-18	1	18	94		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	03:35:59	627	BP23MVEXP-ENV-DC-012			Camera	73	656633	6260131	656656	6260131	-23	0	23	90		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	03:36:32	628	BP23MVEXP-ENV-DC-012			Camera	73	656630	6260131	656656	6260131	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	03:37:18	629	BP23MVEXP-ENV-DC-012			Camera	73	656626	6260132	656656	6260131	-30	1	30	91		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	03:38:24	630	BP23MVEXP-ENV-DC-012			Camera	73	656619	6260130	656656	6260131	-37	-1	37	89		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	03:39:30	631	BP23MVEXP-ENV-DC-012			Camera	73	656611	6260129	656656	6260131	-45	-2	45	87		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	03:40:05	632	BP23MVEXP-ENV-DC-012			Camera	73	656608	6260129	656656	6260131	-48	-2	48	88		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	04:43:30	633	BP23MVEXP-ENV-DC-013			Camera	74	656881	6256083	656877	6256136	4	-53	53	-4		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	04:45:13	634	BP23MVEXP-ENV-DC-013			Camera	74	656881	6256084	656877	6256136	4	-52	52	-4		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	04:46:24	635	BP23MVEXP-ENV-DC-013			Camera	74	656880	6256089	656877	6256136	3	-47	47	-4		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	04:46:53	636	BP23MVEXP-ENV-DC-013			Camera	74	656880	6256091	656877	6256136	3	-45	45	-4		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	04:47:45	637	BP23MVEXP-ENV-DC-013			Camera	74	656880	6256097	656877	6256136	3	-39	39	-4		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	04:48:10	638	BP23MVEXP-ENV-DC-013			Camera	74	656879	6256100	656877	6256136	2	-37	37	-4		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	04:48:35	639	BP23MVEXP-ENV-DC-013			Camera	74	656879	6256102	656877	6256136	2	-34	34	-4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	04:49:45	640	BP23MVEXP-ENV-DC-013			Camera	74	656879	6256110	656877	6256136	2	-26	26	-3		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	04:50:32	641	BP23MVEXP-ENV-DC-013			Camera	74	656878	6256115	656877	6256136	1	-21	21	-3		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	04:51:12	642	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256119	656877	6256136	0	-17	17	-1		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	04:52:37	643	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256128	656877	6256136	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	04:53:00	644	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256130	656877	6256136	0	-6	6	3		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	04:53:26	645	BP23MVEXP-ENV-DC-013			Camera	74	656876	6256134	656877	6256136	-1	-2	2	15		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	04:53:54	646	BP23MVEXP-ENV-DC-013			Camera	74	656876	6256137	656877	6256136	-1	1	1	119		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	04:54:26	647	BP23MVEXP-ENV-DC-013			Camera	74	656875	6256140	656877	6256136	-2	4	4	156		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	04:54:52	648	BP23MVEXP-ENV-DC-013			Camera	74	656876	6256142	656877	6256136	-1	6	7	168		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	04:55:07	649	BP23MVEXP-ENV-DC-013			Camera	74	656875	6256144	656877	6256136	-2	8	8	167		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	04:55:34	650	BP23MVEXP-ENV-DC-013			Camera	74	656875	6256146	656877	6256136	-2	10	10	170		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	04:56:18	651	BP23MVEXP-ENV-DC-013			Camera	74	656874	6256151	656877	6256136	-3	15	15	170		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	04:56:48	652	BP23MVEXP-ENV-DC-013			Camera	74	656874	6256154	656877	6256136	-3	18	18	170		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	04:57:20	653	BP23MVEXP-ENV-DC-013			Camera	74	656874	6256158	656877	6256136	-3	22	22	171		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	04:57:47	654	BP23MVEXP-ENV-DC-013			Camera	74	656873	6256161	656877	6256136	-4	25	25	171		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	04:58:14	655	BP23MVEXP-ENV-DC-013			Camera	74	656873	6256163	656877	6256136	-4	27	28	172		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	04:58:59	656	BP23MVEXP-ENV-DC-013			Camera	74	656873	6256168	656877	6256136	-4	32	32	173		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	04:59:50	657	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256173	656877	6256136	-5	37	38	173		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	05:00:33	658	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256178	656877	6256136	-5	42	42	173		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	05:01:14	659	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256182	656877	6256136	-5	46	46	173		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	05:14:45	660	BP23MVEXP-ENV-DC-013			Camera	74	656828	6256131	656877	6256136	-49	-5	49	85		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	05:16:28	661	BP23MVEXP-ENV-DC-013			Camera	74	656832	6256130	656877	6256136	-45	-6	46	83		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	05:16:43	662	BP23MVEXP-ENV-DC-013			Camera	74	656833	6256130	656877	6256136	-44	-6	44	83		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	05:17:04	663	BP23MVEXP-ENV-DC-013			Camera	74	656836	6256131	656877	6256136	-41	-5	41	83		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	05:17:42	664	BP23MVEXP-ENV-DC-013			Camera	74	656840	6256132	656877	6256136	-37	-4	37	84		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	05:18:22	665	BP23MVEXP-ENV-DC-013			Camera	74	656845	6256132	656877	6256136	-32	-4	32	84		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	05:19:57	666	BP23MVEXP-ENV-DC-013			Camera	74	656854	6256134	656877	6256136	-23	-2	23	85		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	05:20:20	667	BP23MVEXP-ENV-DC-013			Camera	74	656856	6256134	656877	6256136	-21	-2	21	85		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	05:20:53	668	BP23MVEXP-ENV-DC-013			Camera	74	656860	6256134	656877	6256136	-17	-2	17	85		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	05:21:06	669	BP23MVEXP-ENV-DC-013			Camera	74	656861	6256135	656877	6256136	-16	-1	16	85		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	05:21:25	670	BP23MVEXP-ENV-DC-013			Camera	74	656863	6256135	656877	6256136	-14	-1	14	85		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	05:22:08	671	BP23MVEXP-ENV-DC-013			Camera	74	656867	6256135	656877	6256136	-10	-1	10	83		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	05:22:41	672	BP23MVEXP-ENV-DC-013			Camera	74	656871	6256136	656877	6256136	-6	0	6	86		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	05:22:47	673	BP23MVEXP-ENV-DC-013			Camera	74	656871	6256136	656877	6256136	-6	0	6	87		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	05:22:54	674	BP23MVEXP-ENV-DC-013			Camera	74	656872	6256136	656877	6256136	-5	0	5	90		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	05:23:39	675	BP23MVEXP-ENV-DC-013			Camera	74	656877	6256136	656877	6256136	0	0	0	121		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	05:25:00	676	BP23MVEXP-ENV-DC-013			Camera	74	656885	6256137	656877	6256136	8	1	8	-100		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	05:25:05	677	BP23MVEXP-ENV-DC-013			Camera	74	656886	6256138	656877	6256136	9	2	9	-100		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	05:25:28	678	BP23MVEXP-ENV-DC-013			Camera	74	656888	6256138	656877	6256136	11	2	11	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	05:26:43	679	BP23MVEXP-ENV-DC-013			Camera	74	656897	6256140	656877	6256136	20	4	20	-101		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	05:27:31	680	BP23MVEXP-ENV-DC-013			Camera	74	656901	6256140	656877	6256136	24	4	24	-101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	05:28:49	681	BP23MVEXP-ENV-DC-013			Camera	74	656909	6256142	656877	6256136	32	6	33	-100		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	05:29:06	682	BP23MVEXP-ENV-DC-013			Camera	74	656911	6256142	656877	6256136	34	6	35	-99		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	05:29:14	683	BP23MVEXP-ENV-DC-013			Camera	74	656912	6256142	656877	6256136	35	6	35	-99		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	05:29:32	684	BP23MVEXP-ENV-DC-013			Camera	74	656914	6256142	656877	6256136	37	6	37	-99		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	05:30:39	685	BP23MVEXP-ENV-DC-013			Camera	74	656920	6256143	656877	6256136	43	7	44	-99		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
06-Jul-2023	05:31:29	686	BP23MVEXP-ENV-DC-013			Camera	74	656926	6256145	656877	6256136	49	9	50	-100		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	07:27:06	687	BP23MVEXP-ENV-DC-014			Camera	74	657142	6252153	657092	6252144	50	9	51	-100		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	07:27:50	688	BP23MVEXP-ENV-DC-014			Camera	74	657142	6252153	657092	6252144	50	9	51	-100		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	07:29:19	689	BP23MVEXP-ENV-DC-014			Camera	74	657137	6252152	657092	6252144	45	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	07:30:10	690	BP23MVEXP-ENV-DC-014			Camera	74	657132	6252151	657092	6252144	40	7	40	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	07:30:16	691	BP23MVEXP-ENV-DC-014			Camera	74	657131	6252151	657092	6252144	39	7	40	-100		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	07:30:59	692	BP23MVEXP-ENV-DC-014			Camera	74	657127	6252151	657092	6252144	35	7	35	-101		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	07:31:32	693	BP23MVEXP-ENV-DC-014			Camera	74	657123	6252151	657092	6252144	31	7	32	-102		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	07:31:50	694	BP23MVEXP-ENV-DC-014			Camera	74	657121	6252150	657092	6252144	29	6	30	-102		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	07:32:02	695	BP23MVEXP-ENV-DC-014			Camera	74	657120	6252150	657092	6252144	28	6	29	-102		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	07:32:32	696	BP23MVEXP-ENV-DC-014			Camera	74	657117	6252150	657092	6252144	25	6	25	-103		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	07:32:47	697	BP23MVEXP-ENV-DC-014			Camera	74	657115	6252149	657092	6252144	23	5	24	-102		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	07:33:46	698	BP23MVEXP-ENV-DC-014			Camera	74	657110	6252148	657092	6252144	18	4	19	-103		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	07:33:52	699	BP23MVEXP-ENV-DC-014			Camera	74	657110	6252148	657092	6252144	18	4	18	-104		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	07:34:57	700	BP23MVEXP-ENV-DC-014			Camera	74	657102	6252147	657092	6252144	10	3	11	-108		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	07:35:30	701	BP23MVEXP-ENV-DC-014			Camera	74	657099	6252147	657092	6252144	7	3	8	-111		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	07:36:06	702	BP23MVEXP-ENV-DC-014			Camera	74	657095	6252146	657092	6252144	3	2	4	-118		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	07:37:10	703	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252145	657092	6252144	-3	1	4	113		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	07:37:22	704	BP23MVEXP-ENV-DC-014			Camera	74	657087	6252145	657092	6252144	-5	1	5	107		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	07:37:59	705	BP23MVEXP-ENV-DC-014			Camera	74	657084	6252145	657092	6252144	-8	1	8	98		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	07:38:37	706	BP23MVEXP-ENV-DC-014			Camera	74	657080	6252144	657092	6252144	-12	0	12	92		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	07:39:19	707	BP23MVEXP-ENV-DC-014			Camera	74	657077	6252145	657092	6252144	-16	1	15	92		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	07:39:36	708	BP23MVEXP-ENV-DC-014			Camera	74	657075	6252144	657092	6252144	-17	0	17	91		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	07:40:04	709	BP23MVEXP-ENV-DC-014			Camera	74	657072	6252144	657092	6252144	-20	0	20	89		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	07:40:13	710	BP23MVEXP-ENV-DC-014			Camera	74	657071	6252143	657092	6252144	-21	-1	21	88		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	07:40:53	711	BP23MVEXP-ENV-DC-014			Camera	74	657066	6252142	657092	6252144	-26	-2	26	87		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	07:41:01	712	BP23MVEXP-ENV-DC-014			Camera	74	657066	6252142	657092	6252144	-26	-2	27	86		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	07:41:10	713	BP23MVEXP-ENV-DC-014			Camera	74	657065	6252142	657092	6252144	-27	-2	27	86		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	07:41:48	714	BP23MVEXP-ENV-DC-014			Camera	74	657061	6252141	657092	6252144	-31	-3	31	85		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	07:42:13	715	BP23MVEXP-ENV-DC-014			Camera	74	657058	6252141	657092	6252144	-34	-3	34	85		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	07:44:02	716	BP23MVEXP-ENV-DC-014			Camera	74	657047	6252140	657092	6252144	-45	-4	45	85		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	07:44:32	717	BP23MVEXP-ENV-DC-014			Camera	74	657044	6252139	657092	6252144	-48	-5	48	84		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	07:59:51	718	BP23MVEXP-ENV-DC-014			Camera	74	657088	6252195	657092	6252144	-4	51	51	175		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	08:01:04	719	BP23MVEXP-ENV-DC-014			Camera	74	657088	6252194	657092	6252144	-4	50	50	176		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	08:01:52	720	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252190	657092	6252144	-3	46	46	176		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	08:02:16	721	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252188	657092	6252144	-3	44	44	176		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	08:02:32	722	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252186	657092	6252144	-3	42	42	176		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	08:02:49	723	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252185	657092	6252144	-3	41	41	176		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	08:03:31	724	BP23MVEXP-ENV-DC-014			Camera	74	657089	6252180	657092	6252144	-3	36	36	176		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	08:03:38	725	BP23MVEXP-ENV-DC-014			Camera	74	657090	6252180	657092	6252144	-2	36	36	176		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	08:04:06	726	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252177	657092	6252144	-1	33	33	178		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	08:04:31	727	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252174	657092	6252144	-1	30	30	179		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	08:04:48	728	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252172	657092	6252144	-1	28	28	179		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	08:05:11	729	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252170	657092	6252144	-1	26	26	178		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	08:05:32	730	BP23MVEXP-ENV-DC-014			Camera	74	657091	6252169	657092	6252144	-1	25	25	179		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	08:06:10	731	BP23MVEXP-ENV-DC-014			Camera	74	657092	6252164	657092	6252144	0	21	20	-180		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	08:07:02	732	BP23MVEXP-ENV-DC-014			Camera	74	657093	6252159	657092	6252144	1	15	15	-177		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	08:07:43	733	BP23MVEXP-ENV-DC-014			Camera	74	657093	6252155	657092	6252144	1	11	11	-175		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	08:08:52	734	BP23MVEXP-ENV-DC-014			Camera	74	657093	6252148	657092	6252144	1	4	4	-161		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	08:11:35	735	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252132	657092	6252144	4	-12	13	-19		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	08:12:46	736	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252124	657092	6252144	4	-20	21	-12		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	08:13:12	737	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252121	657092	6252144	4	-23	23	-10		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	08:13:55	738	BP23MVEXP-ENV-DC-014			Camera	74	657096	6252117	657092	6252144	4	-27	27	-9		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	08:16:08	739	BP23MVEXP-ENV-DC-014			Camera	74	657099	6252104	657092	6252144	7	-40	40	-9		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
06-Jul-2023	08:17:06	740	BP23MVEXP-ENV-DC-014			Camera	74	657099	6252100	657092	6252144	7	-44	45	-9		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	09:31:25	741	BP23MVEXP-ENV-DC-015			Camera	72	657311	6248234	657314	6248185	-3	49	49	177		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	09:33:22	742	BP23MVEXP-ENV-DC-015			Camera	72	657313	6248226	657314	6248185	-1	41	41	178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	09:34:22	743	BP23MVEXP-ENV-DC-015			Camera	72	657313	6248219	657314	6248185	-1	34	34	178		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	09:35:52	744	BP23MVEXP-ENV-DC-015			Camera	72	657314	6248210	657314	6248185	0	25	25	180		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	09:36:22	745	BP23MVEXP-ENV-DC-015			Camera	72	657314	6248207	657314	6248185	0	22	22	-179		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	09:36:51	746	BP23MVEXP-ENV-DC-015			Camera	72	657314	6248204	657314	6248185	0	19	19	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	09:37:55	747	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248196	657314	6248185	1	12	12	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	09:38:05	748	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248195	657314	6248185	1	11	11	-176		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	09:38:13	749	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248195	657314	6248185	1	10	10	-176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	09:39:05	750	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248189	657314	6248185	1	4	4	-166		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	09:39:21	751	BP23MVEXP-ENV-DC-015			Camera	72	657315	6248187	657314	6248185	1	2	3	-151		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	09:39:38	752	BP23MVEXP-ENV-DC-015			Camera	72	657316	6248186	657314	6248185	2	1	2	-121		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	09:39:48	753	BP23MVEXP-ENV-DC-015			Camera	72	657316	6248185	657314	6248185	2	0	2	-103		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	09:40:30	754	BP23MVEXP-ENV-DC-015			Camera	72	657317	6248181	657314	6248185	3	-4	5	-32		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	09:40:44	755	BP23MVEXP-ENV-DC-015			Camera	72	657317	6248179	657314	6248185	3	-6	7	-23		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	09:41:42	756	BP23MVEXP-ENV-DC-015			Camera	72	657317	6248173	657314	6248185	3	-13	13	-13		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	09:43:28	757	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248162	657314	6248185	4	-23	23	-9		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	09:43:47	758	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248160	657314	6248185	4	-25	25	-9		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	09:44:15	759	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248157	657314	6248185	4	-28	28	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	09:44:23	760	BP23MVEXP-ENV-DC-015			Camera	72	657318	6248156	657314	6248185	4	-29	29	-8		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	09:47:04	761	BP23MVEXP-ENV-DC-015			Camera	72	657319	6248140	657314	6248185	5	-45	45	-7		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	09:47:24	762	BP23MVEXP-ENV-DC-015			Camera	72	657319	6248138	657314	6248185	5	-47	47	-6		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	10:01:12	763	BP23MVEXP-ENV-DC-015			Camera	72	657362	6248187	657314	6248185	48	2	48	-92		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	10:03:43	764	BP23MVEXP-ENV-DC-015			Camera	72	657352	6248186	657314	6248185	38	1	38	-91		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	10:03:53	765	BP23MVEXP-ENV-DC-015			Camera	72	657351	6248186	657314	6248185	37	1	37	-91		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	10:03:57	766	BP23MVEXP-ENV-DC-015			Camera	72	657351	6248186	657314	6248185	37	1	37	-91		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	10:04:17	767	BP23MVEXP-ENV-DC-015			Camera	72	657348	6248186	657314	6248185	34	1	34	-91		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	10:04:55	768	BP23MVEXP-ENV-DC-015			Camera	72	657344	6248185	657314	6248185	30	0	30	-90		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	10:05:48	769	BP23MVEXP-ENV-DC-015			Camera	72	657339	6248185	657314	6248185	25	0	25	-90		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	10:06:26	770	BP23MVEXP-ENV-DC-015			Camera	72	657336	6248185	657314	6248185	22	0	22	-89		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	10:07:17	771	BP23MVEXP-ENV-DC-015			Camera	72	657331	6248184	657314	6248185	17	-1	17	-86		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	10:07:36	772	BP23MVEXP-ENV-DC-015			Camera	72	657328	6248183	657314	6248185	14	-2	15	-83		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	10:09:29	773	BP23MVEXP-ENV-DC-015			Camera	72	657316	6248182	657314	6248185	2	-3	3	-40		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	10:11:12	774	BP23MVEXP-ENV-DC-015			Camera	72	657306	6248182	657314	6248185	-8	-3	9	68		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	10:11:17	775	BP23MVEXP-ENV-DC-015			Camera	72	657305	6248182	657314	6248185	-9	-3	9	69		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	10:12:05	776	BP23MVEXP-ENV-DC-015			Camera	72	657301	6248181	657314	6248185	-13	-4	14	73		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	10:14:19	777	BP23MVEXP-ENV-DC-015			Camera	72	657287	6248180	657314	6248185	-27	-5	27	80		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	10:14:43	778	BP23MVEXP-ENV-DC-015			Camera	72	657284	6248180	657314	6248185	-30	-5	30	81		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	10:15:41	779	BP23MVEXP-ENV-DC-015			Camera	72	657278	6248179	657314	6248185	-36	-6	36	81		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	10:17:00	780	BP23MVEXP-ENV-DC-015			Camera	72	657270	6248178	657314	6248185	-44	-7	44	81		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	10:17:12	781	BP23MVEXP-ENV-DC-015			Camera	72	657269	6248178	657314	6248185	-45	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	10:17:24	782	BP23MVEXP-ENV-DC-015			Camera	72	657268	6248178	657314	6248185	-46	-7	46	82		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	10:17:35	783	BP23MVEXP-ENV-DC-015			Camera	72	657267	6248179	657314	6248185	-47	-6	47	82		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	10:18:24	784	BP23MVEXP-ENV-DC-015			Camera	72	657264	6248179	657314	6248185	-50	-6	50	83		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	12:03:20	785	BP23MVEXP-ENV-DC-016			Camera	69	657477	6244152	657529	6244154	-52	-2	52	87		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	12:05:09	786	BP23MVEXP-ENV-DC-016			Camera	69	657478	6244152	657529	6244154	-51	-2	51	88		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	12:05:21	787	BP23MVEXP-ENV-DC-016			Camera	69	657479	6244152	657529	6244154	-50	-2	50	88		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	12:05:53	788	BP23MVEXP-ENV-DC-016			Camera	69	657481	6244153	657529	6244154	-48	-1	48	88		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	12:06:12	789	BP23MVEXP-ENV-DC-016			Camera	69	657483	6244153	657529	6244154	-46	-1	46	88		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	12:06:40	790	BP23MVEXP-ENV-DC-016			Camera	69	657486	6244153	657529	6244154	-43	-1	43	88		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	12:06:53	791	BP23MVEXP-ENV-DC-016			Camera	69	657488	6244153	657529	6244154	-42	-1	41	88		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	12:07:26	792	BP23MVEXP-ENV-DC-016			Camera	69	657491	6244153	657529	6244154	-38	-1	38	88		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	12:07:49	793	BP23MVEXP-ENV-DC-016			Camera	69	657494	6244153	657529	6244154	-36	-1	36	88		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	12:08:03	794	BP23MVEXP-ENV-DC-016			Camera	70	657495	6244153	657529	6244154	-34	-1	34	89		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	12:08:28	795	BP23MVEXP-ENV-DC-016			Camera	69	657498	6244153	657529	6244154	-31	-1	31	89		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	12:09:19	796	BP23MVEXP-ENV-DC-016			Camera	70	657503	6244154	657529	6244154	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	12:10:56	797	BP23MVEXP-ENV-DC-016			Camera	70	657513	6244155	657529	6244154	-16	1	16	93		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	12:12:36	798	BP23MVEXP-ENV-DC-016			Camera	70	657523	6244156	657529	6244154	-6	2	6	108		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	12:13:00	799	BP23MVEXP-ENV-DC-016			Camera	70	657526	6244156	657529	6244154	-3	2	4	125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	12:13:11	800	BP23MVEXP-ENV-DC-016			Camera	70	657527	6244156	657529	6244154	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	12:13:34	801	BP23MVEXP-ENV-DC-016			Camera	70	657530	6244156	657529	6244154	1	2	2	-161		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	12:14:17	802	BP23MVEXP-ENV-DC-016			Camera	70	657534	6244156	657529	6244154	5	2	6	-114		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	12:16:05	803	BP23MVEXP-ENV-DC-016			Camera	70	657545	6244158	657529	6244154	16	4	16	-105		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	12:18:10	804	BP23MVEXP-ENV-DC-016			Camera	70	657558	6244159	657529	6244154	29	5	29	-100		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	12:18:20	805	BP23MVEXP-ENV-DC-016			Camera	70	657559	6244159	657529	6244154	30	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	12:18:31	806	BP23MVEXP-ENV-DC-016			Camera	70	657560	6244159	657529	6244154	31	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	12:18:52	807	BP23MVEXP-ENV-DC-016			Camera	70	657562	6244159	657529	6244154	33	5	33	-99		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	12:19:11	808	BP23MVEXP-ENV-DC-016			Camera	70	657564	6244159	657529	6244154	35	5	35	-99		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	12:19:35	809	BP23MVEXP-ENV-DC-016			Camera	70	657567	6244160	657529	6244154	38	6	38	-98		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	12:37:30	810	BP23MVEXP-ENV-DC-016			Camera	70	657525	6244202	657529	6244154	-4	48	49	175		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	12:38:42	811	BP23MVEXP-ENV-DC-016			Camera	70	657524	6244200	657529	6244154	-5	46	47	173		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	12:39:19	812	BP23MVEXP-ENV-DC-016			Camera	70	657524	6244196	657529	6244154	-5	42	42	173		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	12:39:49	813	BP23MVEXP-ENV-DC-016			Camera	70	657524	6244193	657529	6244154	-5	39	39	173		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	12:40:14	814	BP23MVEXP-ENV-DC-016			Camera	70	657525	6244190	657529	6244154	-4	36	36	173		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	12:41:02	815	BP23MVEXP-ENV-DC-016			Camera	70	657526	6244185	657529	6244154	-3	31	31	174		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	12:43:39	816	BP23MVEXP-ENV-DC-016			Camera	70	657528	6244169	657529	6244154	-1	15	15	177		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	12:44:11	817	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244166	657529	6244154	0	12	12	178		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	12:44:52	818	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244163	657529	6244154	0	9	9	-180		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	12:45:54	819	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244155	657529	6244154	0	1	1	175		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	12:46:02	820	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244154	657529	6244154	0	0	0	-172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	12:46:15	821	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244153	657529	6244154	0	-1	1	-14		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	12:46:28	822	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244152	657529	6244154	0	-2	2	-6		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	12:46:47	823	BP23MVEXP-ENV-DC-016			Camera	70	657529	6244150	657529	6244154	0	-4	4	-5		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	12:47:51	824	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244143	657529	6244154	2	-11	11	-8		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	12:48:03	825	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244142	657529	6244154	2	-12	12	-8		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	12:48:14	826	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244141	657529	6244154	2	-13	13	-9		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	12:48:34	827	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244139	657529	6244154	2	-16	16	-9		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	12:49:03	828	BP23MVEXP-ENV-DC-016			Camera	70	657532	6244135	657529	6244154	3	-19	19	-8		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	12:49:13	829	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244134	657529	6244154	2	-20	20	-7		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	12:49:45	830	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244131	657529	6244154	2	-23	23	-6		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	12:49:54	831	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244131	657529	6244154	2	-24	24	-6		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	12:50:34	832	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244126	657529	6244154	2	-28	28	-5		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	12:50:47	833	BP23MVEXP-ENV-DC-016			Camera	70	657531	6244125	657529	6244154	2	-29	29	-5		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	12:51:38	834	BP23MVEXP-ENV-DC-016			Camera	70	657533	6244120	657529	6244154	4	-34	34	-6		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	12:51:47	835	BP23MVEXP-ENV-DC-016			Camera	70	657533	6244119	657529	6244154	4	-35	35	-6		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	13:58:16	836	BP23MVEXP-ENV-DC-017			Camera	67	657755	6240109	657756	6240164	-1	-55	55	1		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	14:00:55	837	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240114	657756	6240164	-2	-50	50	2		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	14:01:27	838	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240117	657756	6240164	-2	-47	47	3		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	14:01:46	839	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240119	657756	6240164	-2	-45	45	3		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	14:02:25	840	BP23MVEXP-ENV-DC-017			Camera	67	657754	6240123	657756	6240164	-2	-41	41	3		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	14:03:29	841	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240130	657756	6240164	-3	-34	34	4		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	14:04:03	842	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240133	657756	6240164	-3	-31	31	5		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	14:04:32	843	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240136	657756	6240164	-3	-28	28	5		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	14:04:50	844	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240138	657756	6240164	-3	-26	26	6		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	14:05:17	845	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240141	657756	6240164	-3	-23	23	8		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	14:06:17	846	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240147	657756	6240164	-3	-17	17	11		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	14:06:34	847	BP23MVEXP-ENV-DC-017			Camera	67	657753	6240149	657756	6240164	-3	-15	15	13		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	14:07:40	848	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240156	657756	6240164	-4	-8	9	24		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	14:08:09	849	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240159	657756	6240164	-4	-6	7	37		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	14:09:07	850	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240165	657756	6240164	-4	1	4	98		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	14:09:21	851	BP23MVEXP-ENV-DC-017			Camera	67	657752	6240166	657756	6240164	-4	2	4	119		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	14:09:41	852	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240168	657756	6240164	-5	4	6	129		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	14:10:02	853	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240170	657756	6240164	-5	6	8	140		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	14:10:21	854	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240172	657756	6240164	-5	8	9	146		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	14:11:08	855	BP23MVEXP-ENV-DC-017			Camera	67	657751	6240176	657756	6240164	-5	12	14	157		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	14:11:36	856	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240179	657756	6240164	-6	15	16	160		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	14:12:18	857	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240183	657756	6240164	-6	20	20	163		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	14:13:04	858	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240188	657756	6240164	-6	24	25	166		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	14:13:40	859	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240192	657756	6240164	-6	28	29	167		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	14:14:19	860	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240196	657756	6240164	-7	32	32	168		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	14:14:57	861	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240198	657756	6240164	-7	34	35	168		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	14:15:49	862	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240201	657756	6240164	-7	37	38	169		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	14:16:35	863	BP23MVEXP-ENV-DC-017			Camera	67	657749	6240203	657756	6240164	-7	39	40	170		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	14:17:05	864	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240205	657756	6240164	-8	41	42	170		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	14:17:44	865	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240206	657756	6240164	-8	42	43	170		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	14:18:10	866	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240208	657756	6240164	-8	44	44	170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	14:18:35	867	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240209	657756	6240164	-8	45	46	169		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	14:19:04	868	BP23MVEXP-ENV-DC-017			Camera	67	657747	6240210	657756	6240164	-9	46	47	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	14:38:06	869	BP23MVEXP-ENV-DC-017			Camera	67	657716	6240158	657756	6240164	-40	-6	41	81		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	14:39:22	870	BP23MVEXP-ENV-DC-017			Camera	67	657724	6240159	657756	6240164	-32	-5	33	81		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	14:39:41	871	BP23MVEXP-ENV-DC-017			Camera	67	657726	6240159	657756	6240164	-30	-5	31	81		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	14:40:19	872	BP23MVEXP-ENV-DC-017			Camera	67	657730	6240160	657756	6240164	-26	-4	27	82		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	14:40:28	873	BP23MVEXP-ENV-DC-017			Camera	67	657730	6240160	657756	6240164	-26	-4	26	81		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	14:41:17	874	BP23MVEXP-ENV-DC-017			Camera	67	657736	6240161	657756	6240164	-20	-3	21	80		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	14:41:44	875	BP23MVEXP-ENV-DC-017			Camera	67	657738	6240161	657756	6240164	-18	-3	18	80		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	14:42:56	876	BP23MVEXP-ENV-DC-017			Camera	67	657745	6240161	657756	6240164	-11	-3	11	74		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	14:43:21	877	BP23MVEXP-ENV-DC-017			Camera	67	657748	6240162	657756	6240164	-8	-2	9	76		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	14:43:48	878	BP23MVEXP-ENV-DC-017			Camera	67	657750	6240162	657756	6240164	-6	-2	6	73		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	14:44:38	879	BP23MVEXP-ENV-DC-017			Camera	68	657755	6240162	657756	6240164	-1	-2	2	19		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	14:45:11	880	BP23MVEXP-ENV-DC-017			Camera	68	657759	6240163	657756	6240164	3	-1	3	-73		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	14:45:24	881	BP23MVEXP-ENV-DC-017			Camera	68	657760	6240163	657756	6240164	4	-1	4	-81		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	14:45:49	882	BP23MVEXP-ENV-DC-017			Camera	68	657762	6240164	657756	6240164	6	0	6	-93		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	14:46:17	883	BP23MVEXP-ENV-DC-017			Camera	68	657765	6240165	657756	6240164	9	1	9	-95		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	14:47:22	884	BP23MVEXP-ENV-DC-017			Camera	68	657772	6240165	657756	6240164	16	1	16	-95		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	14:47:52	885	BP23MVEXP-ENV-DC-017			Camera	68	657776	6240165	657756	6240164	20	1	20	-94		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	14:48:42	886	BP23MVEXP-ENV-DC-017			Camera	68	657781	6240167	657756	6240164	25	4	25	-98		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	14:49:48	887	BP23MVEXP-ENV-DC-017			Camera	68	657787	6240167	657756	6240164	31	3	32	-96		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	14:50:33	888	BP23MVEXP-ENV-DC-017			Camera	68	657792	6240167	657756	6240164	36	3	36	-95		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	14:51:20	889	BP23MVEXP-ENV-DC-017			Camera	68	657797	6240168	657756	6240164	41	4	41	-95		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	14:52:00	890	BP23MVEXP-ENV-DC-017			Camera	68	657801	6240168	657756	6240164	45	4	45	-96		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
06-Jul-2023	16:25:06	891	BP23MVEXP-ENV-DC-018			Camera	61	657888	6236195	657939	6236203	-51	-8	52	262		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	16:27:11	892	BP23MVEXP-ENV-DC-018			Camera	61	657891	6236196	657939	6236203	-48	-7	49	261		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	16:27:43	893	BP23MVEXP-ENV-DC-018			Camera	61	657892	6236196	657939	6236203	-47	-7	47	262		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	16:28:09	894	BP23MVEXP-ENV-DC-018			Camera	61	657893	6236196	657939	6236203	-46	-7	46	261		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	16:29:37	895	BP23MVEXP-ENV-DC-018			Camera	61	657898	6236196	657939	6236203	-41	-7	42	261		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	16:29:54	896	BP23MVEXP-ENV-DC-018			Camera	61	657899	6236197	657939	6236203	-40	-6	41	261		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	16:30:25	897	BP23MVEXP-ENV-DC-018			Camera	61	657900	6236198	657939	6236203	-39	-5	39	262		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	16:31:43	898	BP23MVEXP-ENV-DC-018			Camera	61	657904	6236198	657939	6236203	-35	-5	35	262		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	16:32:24	899	BP23MVEXP-ENV-DC-018			Camera	61	657906	6236198	657939	6236203	-33	-5	33	261		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	16:34:36	900	BP23MVEXP-ENV-DC-018			Camera	61	657913	6236199	657939	6236203	-26	-4	26	261		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	16:35:37	901	BP23MVEXP-ENV-DC-018			Camera	61	657917	6236200	657939	6236203	-22	-3	22	261		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	16:37:29	902	BP23MVEXP-ENV-DC-018			Camera	61	657923	6236200	657939	6236203	-16	-3	17	260		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	16:37:54	903A	BP23MVEXP-ENV-DC-018			Camera	64	657923	6236200	657939	6236203	-16	-3	16	259		(Raw Nav, Kongsberg 14208, img#13) (B)
06-Jul-2023	16:38:36	903B	BP23MVEXP-ENV-DC-018			Camera	61	657925	6236201	657939	6236203	-14	-2	14	261		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	16:40:30	904	BP23MVEXP-ENV-DC-018			Camera	61	657931	6236202	657939	6236203	-8	-1	8	262		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	16:41:03	905	BP23MVEXP-ENV-DC-018			Camera	61	657933	6236202	657939	6236203	-6	-1	6	261		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	16:41:47	906	BP23MVEXP-ENV-DC-018			Camera	61	657935	6236203	657939	6236203	-4	0	4	270		(Raw Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	16:42:04	907	BP23MVEXP-ENV-DC-018			Camera	61	657936	6236202	657939	6236203	-3	-1	3	255		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	16:42:39	908	BP23MVEXP-ENV-DC-018			Camera	61	657938	6236202	657939	6236203	-1	-1	2	227		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	16:42:57	909	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236202	657939	6236203	0	-1	1	202		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	16:43:11	910	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236202	657939	6236203	0	-1	1	137		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	16:43:52	911	BP23MVEXP-ENV-DC-018			Camera	61	657942	6236202	657939	6236203	3	-1	3	107		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	16:44:09	912	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236202	657939	6236203	4	-1	4	103		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	16:47:14	913	BP23MVEXP-ENV-DC-018			Camera	61	657957	6236205	657939	6236203	18	2	18	85		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	16:47:55	914	BP23MVEXP-ENV-DC-018			Camera	61	657961	6236205	657939	6236203	22	2	22	86		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	16:50:22	915	BP23MVEXP-ENV-DC-018			Camera	62	657976	6236208	657939	6236203	37	5	38	83		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	16:52:01	916	BP23MVEXP-ENV-DC-018			Camera	62	657986	6236208	657939	6236203	47	5	47	83		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	17:07:13	917	BP23MVEXP-ENV-DC-018			Camera	61	657944	6236151	657939	6236203	5	-52	52	175		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	17:09:03	918	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236159	657939	6236203	4	-44	44	175		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	17:09:31	919	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236163	657939	6236203	4	-40	41	174		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	17:10:17	920	BP23MVEXP-ENV-DC-018			Camera	61	657943	6236168	657939	6236203	4	-35	36	174		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	17:11:22	921	BP23MVEXP-ENV-DC-018			Camera	61	657942	6236175	657939	6236203	3	-28	28	174		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	17:11:57	922	BP23MVEXP-ENV-DC-018			Camera	61	657942	6236178	657939	6236203	3	-25	25	174		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	17:13:11	923	BP23MVEXP-ENV-DC-018			Camera	61	657941	6236186	657939	6236203	2	-17	17	174		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	17:14:18	924	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236193	657939	6236203	1	-10	10	175		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	17:14:42	925	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236196	657939	6236203	1	-7	7	174		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	17:15:06	926	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236198	657939	6236203	1	-5	5	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	17:15:13	927	BP23MVEXP-ENV-DC-018			Camera	61	657940	6236199	657939	6236203	1	-4	4	172		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	17:15:32	928	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236201	657939	6236203	0	-2	2	172		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	17:15:49	929	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236202	657939	6236203	0	-1	1	159		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	17:15:59	930	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236203	657939	6236203	0	0	0	17		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	17:16:30	931	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236207	657939	6236203	0	4	4	353		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	17:16:38	932	BP23MVEXP-ENV-DC-018			Camera	61	657939	6236208	657939	6236203	0	5	5	354		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	17:16:57	933	BP23MVEXP-ENV-DC-018			Camera	61	657938	6236209	657939	6236203	-1	6	6	352		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	17:17:18	934	BP23MVEXP-ENV-DC-018			Camera	61	657938	6236211	657939	6236203	-1	8	9	352		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	17:18:22	935	BP23MVEXP-ENV-DC-018			Camera	61	657937	6236218	657939	6236203	-2	15	15	354		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	17:18:53	936	BP23MVEXP-ENV-DC-018			Camera	61	657937	6236221	657939	6236203	-2	18	18	354		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	17:19:38	937	BP23MVEXP-ENV-DC-018			Camera	61	657936	6236226	657939	6236203	-3	23	23	353		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	17:19:45	938	BP23MVEXP-ENV-DC-018			Camera	61	657936	6236226	657939	6236203	-3	23	24	353		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	17:21:29	939	BP23MVEXP-ENV-DC-018			Camera	61	657935	6236237	657939	6236203	-4	34	35	354		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	17:22:29	940	BP23MVEXP-ENV-DC-018			Camera	61	657935	6236244	657939	6236203	-4	41	41	354		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	18:34:29	941	BP23MVEXP-ENV-DC-019			Camera	59	658206	6232176	658157	6232173	49	3	49	-94		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	18:36:18	942	BP23MVEXP-ENV-DC-019			Camera	59	658205	6232176	658157	6232173	48	3	48	-94		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	18:36:37	943	BP23MVEXP-ENV-DC-019			Camera	59	658204	6232176	658157	6232173	47	3	47	-94		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	18:37:15	944	BP23MVEXP-ENV-DC-019			Camera	59	658200	6232176	658157	6232173	43	3	43	-93		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	18:37:49	945	BP23MVEXP-ENV-DC-019			Camera	59	658196	6232175	658157	6232173	39	2	39	-93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	18:38:18	946	BP23MVEXP-ENV-DC-019			Camera	59	658193	6232175	658157	6232173	36	2	36	-93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	18:38:52	947	BP23MVEXP-ENV-DC-019			Camera	59	658189	6232175	658157	6232173	32	2	32	-93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	18:39:19	948	BP23MVEXP-ENV-DC-019			Camera	59	658186	6232174	658157	6232173	29	1	29	-93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	18:39:47	949	BP23MVEXP-ENV-DC-019			Camera	59	658184	6232174	658157	6232173	27	1	27	-93		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	18:40:01	950	BP23MVEXP-ENV-DC-019			Camera	59	658182	6232174	658157	6232173	25	1	25	-93		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	18:40:15	951	BP23MVEXP-ENV-DC-019			Camera	59	658181	6232174	658157	6232173	24	1	24	-93		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	18:40:49	952	BP23MVEXP-ENV-DC-019			Camera	59	658177	6232174	658157	6232173	20	1	20	-92		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	18:41:19	953	BP23MVEXP-ENV-DC-019			Camera	59	658174	6232174	658157	6232173	17	1	17	-92		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	18:42:11	954	BP23MVEXP-ENV-DC-019			Camera	59	658169	6232173	658157	6232173	12	0	12	-91		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	18:42:39	955	BP23MVEXP-ENV-DC-019			Camera	59	658166	6232173	658157	6232173	9	0	9	-90		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	18:43:19	956	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232173	658157	6232173	5	0	5	-87		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	18:43:37	957	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232172	658157	6232173	3	-1	3	-80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	18:43:53	958	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232172	658157	6232173	2	-1	2	-63		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	18:44:03	959	BP23MVEXP-ENV-DC-019			Camera	59	658157	6232172	658157	6232173	0	-1	1	-22		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	18:44:15	960	BP23MVEXP-ENV-DC-019			Camera	59	658156	6232172	658157	6232173	-1	-1	1	36		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	18:44:25	961	BP23MVEXP-ENV-DC-019			Camera	59	658155	6232172	658157	6232173	-2	-1	2	58		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	18:44:36	962	BP23MVEXP-ENV-DC-019			Camera	59	658154	6232172	658157	6232173	-3	-1	3	67		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	18:44:46	963	BP23MVEXP-ENV-DC-019			Camera	59	658153	6232172	658157	6232173	-4	-1	4	72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	18:44:58	964	BP23MVEXP-ENV-DC-019			Camera	59	658152	6232172	658157	6232173	-5	-1	6	75		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	18:45:29	965	BP23MVEXP-ENV-DC-019			Camera	59	658149	6232171	658157	6232173	-8	-2	9	77		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	18:46:08	966	BP23MVEXP-ENV-DC-019			Camera	59	658144	6232171	658157	6232173	-13	-2	13	79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	18:46:35	967	BP23MVEXP-ENV-DC-019			Camera	59	658141	6232170	658157	6232173	-16	-3	16	80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	18:48:45	968	BP23MVEXP-ENV-DC-019			Camera	59	658128	6232169	658157	6232173	-29	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	18:49:45	969	BP23MVEXP-ENV-DC-019			Camera	59	658122	6232169	658157	6232173	-35	-4	35	83		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	19:08:02	970	BP23MVEXP-ENV-DC-019			Camera	59	658154	6232224	658157	6232173	-3	51	51	177		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	19:08:47	971	BP23MVEXP-ENV-DC-019			Camera	59	658154	6232221	658157	6232173	-3	48	48	177		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	19:09:11	972	BP23MVEXP-ENV-DC-019			Camera	59	658155	6232219	658157	6232173	-2	46	46	177		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	19:09:25	973	BP23MVEXP-ENV-DC-019			Camera	59	658155	6232217	658157	6232173	-2	44	44	177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	19:10:19	974	BP23MVEXP-ENV-DC-019			Camera	59	658156	6232211	658157	6232173	-1	38	38	178		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	19:10:48	975	BP23MVEXP-ENV-DC-019			Camera	59	658156	6232208	658157	6232173	-1	35	35	179		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	19:12:38	976	BP23MVEXP-ENV-DC-019			Camera	59	658157	6232197	658157	6232173	0	24	24	-180		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	19:14:11	977	BP23MVEXP-ENV-DC-019			Camera	59	658158	6232187	658157	6232173	1	14	14	-175		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	19:15:06	978	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232182	658157	6232173	2	9	9	-168		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	19:15:26	979	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232180	658157	6232173	2	7	7	-165		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	19:16:08	980	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232176	658157	6232173	2	3	4	-140		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	19:16:19	981	BP23MVEXP-ENV-DC-019			Camera	59	658159	6232175	658157	6232173	3	2	3	-122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	19:17:07	982	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232170	658157	6232173	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	19:17:30	983	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232167	658157	6232173	3	-6	6	-28		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	19:18:14	984	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232163	658157	6232173	3	-10	11	-18		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	19:19:10	985	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232157	658157	6232173	3	-16	17	-12		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	19:19:48	986	BP23MVEXP-ENV-DC-019			Camera	59	658160	6232153	658157	6232173	3	-20	21	-9		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	19:20:28	987	BP23MVEXP-ENV-DC-019			Camera	59	658161	6232149	658157	6232173	4	-24	24	-9		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
06-Jul-2023	19:21:59	988	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232139	658157	6232173	5	-34	34	-9		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	19:22:26	989	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232137	658157	6232173	5	-36	37	-8		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	19:23:15	990	BP23MVEXP-ENV-DC-019			Camera	59	658162	6232132	658157	6232173	5	-41	42	-7		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	19:23:44	991	BP23MVEXP-ENV-DC-019			Camera	59	658163	6232129	658157	6232173	6	-44	45	-7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	19:24:13	992	BP23MVEXP-ENV-DC-019			Camera	59	658163	6232126	658157	6232173	6	-47	47	-7		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	20:55:48	993	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228236	658374	6228181	-2	56	56	178		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
06-Jul-2023	20:58:02	994	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228235	658374	6228181	-2	54	54	178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	20:58:19	995	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228234	658374	6228181	-2	53	53	178		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	20:58:45	996	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228232	658374	6228181	-2	51	51	178		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	20:59:09	997	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228230	658374	6228181	-2	49	49	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	20:59:16	998	BP23MVEXP-ENV-DC-020			Camera	61	658372	6228229	658374	6228181	-2	48	48	178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	21:00:01	999	BP23MVEXP-ENV-DC-020			Camera	61	658373	6228225	658374	6228181	-1	44	44	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	21:00:11	1000	BP23MVEXP-ENV-DC-020			Camera	61	658373	6228224	658374	6228181	-1	43	43	179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	21:00:28	1001	BP23MVEXP-ENV-DC-020			Camera	61	658373	6228222	658374	6228181	-1	41	41	179		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	21:00:45	1002	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228220	658374	6228181	0	39	39	179		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	21:01:02	1003	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228219	658374	6228181	0	38	38	180		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	21:01:15	1004	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228217	658374	6228181	0	36	36	180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	21:01:33	1005	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228216	658374	6228181	0	35	35	-180		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	21:02:08	1006	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228212	658374	6228181	1	31	31	-179		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	21:02:32	1007	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228210	658374	6228181	1	29	29	-178		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	21:02:46	1008	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228208	658374	6228181	1	27	27	-178		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	21:03:11	1009	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228205	658374	6228181	1	25	25	-178		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	21:03:30	1010	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228203	658374	6228181	0	23	22	-179		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	21:03:42	1011	BP23MVEXP-ENV-DC-020			Camera	61	658374	6228202	658374	6228181	0	22	21	-179		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	21:04:18	1012	BP23MVEXP-ENV-DC-020			Camera	61	658375	6228199	658374	6228181	1	18	18	-176		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	21:04:26	1013	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228198	658374	6228181	2	17	17	-175		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	21:04:34	1014	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228197	658374	6228181	2	16	16	-174		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	21:04:55	1015	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228195	658374	6228181	2	14	14	-172		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
06-Jul-2023	21:05:32	1016	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228191	658374	6228181	2	10	10	-168		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
06-Jul-2023	21:05:45	1017	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228189	658374	6228181	2	8	9	-167		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
06-Jul-2023	21:06:32	1018	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228184	658374	6228181	2	3	4	-146		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
06-Jul-2023	21:06:43	1019	BP23MVEXP-ENV-DC-020			Camera	61	658376	6228183	658374	6228181	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
06-Jul-2023	21:06:57	1020	BP23MVEXP-ENV-DC-020			Camera	61	658377	6228182	658374	6228181	3	1	3	-113		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
06-Jul-2023	21:07:40	1021	BP23MVEXP-ENV-DC-020			Camera	61	658377	6228178	658374	6228181	3	-3	4	-49		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
06-Jul-2023	21:08:05	1022	BP23MVEXP-ENV-DC-020			Camera	61	658378	6228175	658374	6228181	4	-6	7	-31		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
06-Jul-2023	21:08:39	1023	BP23MVEXP-ENV-DC-020			Camera	61	658378	6228171	658374	6228181	4	-10	10	-20		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
06-Jul-2023	21:08:52	1024	BP23MVEXP-ENV-DC-020			Camera	61	658377	6228170	658374	6228181	3	-11	12	-17		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
06-Jul-2023	21:10:05	1025	BP23MVEXP-ENV-DC-020			Camera	61	658378	6228163	658374	6228181	4	-18	19	-13		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
06-Jul-2023	21:11:46	1026	BP23MVEXP-ENV-DC-020			Camera	61	658379	6228153	658374	6228181	5	-29	29	-10		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
06-Jul-2023	21:13:18	1027	BP23MVEXP-ENV-DC-020			Camera	61	658380	6228143	658374	6228181	6	-38	38	-9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
06-Jul-2023	21:30:30	1028	BP23MVEXP-ENV-DC-020			Camera	61	658417	6228185	658374	6228181	43	4	44	-95		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
06-Jul-2023	21:30:40	1029	BP23MVEXP-ENV-DC-020			Camera	61	658417	6228185	658374	6228181	43	4	43	-96		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
06-Jul-2023	21:31:00	1030	BP23MVEXP-ENV-DC-020			Camera	61	658415	6228185	658374	6228181	41	4	41	-96		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
06-Jul-2023	21:31:07	1031	BP23MVEXP-ENV-DC-020			Camera	61	658414	6228185	658374	6228181	40	4	40	-96		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
06-Jul-2023	21:31:24	1032	BP23MVEXP-ENV-DC-020			Camera	61	658408	6228182	658374	6228181	34	1	34	-92		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
06-Jul-2023	21:31:56	1033	BP23MVEXP-ENV-DC-020			Camera	61	658409	6228185	658374	6228181	35	4	35	-96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
06-Jul-2023	21:32:10	1034	BP23MVEXP-ENV-DC-020			Camera	61	658407	6228185	658374	6228181	33	4	33	-96		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
06-Jul-2023	21:32:19	1035	BP23MVEXP-ENV-DC-020			Camera	61	658406	6228185	658374	6228181	32	4	32	-96		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
06-Jul-2023	21:32:36	1036	BP23MVEXP-ENV-DC-020			Camera	61	658404	6228184	658374	6228181	30	3	30	-96		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
06-Jul-2023	21:33:13	1037	BP23MVEXP-ENV-DC-020			Camera	61	658400	6228176	658374	6228181	26	-5	26	-79		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
06-Jul-2023	21:33:24	1038	BP23MVEXP-ENV-DC-020			Camera	61	658400	6228173	658374	6228181	26	-8	28	-72		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
06-Jul-2023	21:33:30	1039	BP23MVEXP-ENV-DC-020			Camera	61	658404	6228176	658374	6228181	30	-5	31	-80		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
06-Jul-2023	21:33:44	1040	BP23MVEXP-ENV-DC-020			Camera	61	658397	6228184	658374	6228181	23	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
06-Jul-2023	21:33:51	1041	BP23MVEXP-ENV-DC-020			Camera	61	658396	6228184	658374	6228181	23	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
06-Jul-2023	21:34:09	1042	BP23MVEXP-ENV-DC-020			Camera	61	658395	6228184	658374	6228181	21	3	21	-97		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
06-Jul-2023	21:34:34	1043	BP23MVEXP-ENV-DC-020			Camera	61	658393	6228183	658374	6228181	19	2	19	-96		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
06-Jul-2023	21:34:48	1044	BP23MVEXP-ENV-DC-020			Camera	61	658395	6228178	658374	6228181	21	-3	21	-82		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
06-Jul-2023	21:35:16	1045	BP23MVEXP-ENV-DC-020			Camera	61	658393	6228177	658374	6228181	19	-5	19	-77		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
06-Jul-2023	21:35:25	1046	BP23MVEXP-ENV-DC-020			Camera	61	658388	6228182	658374	6228181	14	1	14	-96		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
06-Jul-2023	21:35:30	1047	BP23MVEXP-ENV-DC-020			Camera	61	658390	6228185	658374	6228181	16	4	16	-102		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
06-Jul-2023	21:38:06	1048	BP23MVEXP-ENV-DC-020			Camera	61	658366	6228173	658374	6228181	-8	-8	12	45		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
06-Jul-2023	21:38:17	1049	BP23MVEXP-ENV-DC-020			Camera	61	658370	6228180	658374	6228181	-4	-1	4	77		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
06-Jul-2023	21:38:54	1050	BP23MVEXP-ENV-DC-020			Camera	61	658366	6228179	658374	6228181	-8	-2	8	79		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
06-Jul-2023	21:39:12	1051	BP23MVEXP-ENV-DC-020			Camera	61	658364	6228179	658374	6228181	-10	-2	10	80		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
06-Jul-2023	21:39:28	1052	BP23MVEXP-ENV-DC-020			Camera	61	658362	6228180	658374	6228181	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
06-Jul-2023	21:39:52	1053	BP23MVEXP-ENV-DC-020			Camera	61	658354	6228190	658374	6228181	-20	9	22	114		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
06-Jul-2023	21:40:08	1054	BP23MVEXP-ENV-DC-020			Camera	61	658356	6228184	658374	6228181	-18	3	18	100		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
06-Jul-2023	21:40:25	1055	BP23MVEXP-ENV-DC-020			Camera	61	658357	6228179	658374	6228181	-17	-2	17	84		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
06-Jul-2023	21:41:07	1056	BP23MVEXP-ENV-DC-020			Camera	61	658352	6228179	658374	6228181	-22	-2	22	84		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
06-Jul-2023	21:41:15	1057	BP23MVEXP-ENV-DC-020			Camera	61	658351	6228179	658374	6228181	-23	-2	23	84		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
06-Jul-2023	21:43:06	1058	BP23MVEXP-ENV-DC-020			Camera	61	658340	6228177	658374	6228181	-34	-4	34	83		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
06-Jul-2023	21:43:15	1059	BP23MVEXP-ENV-DC-020			Camera	61	658339	6228177	658374	6228181	-35	-4	35	83		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
06-Jul-2023	21:45:21	1060	BP23MVEXP-ENV-DC-020			Camera	61	658329	6228178	658374	6228181	-45	-3	45	86		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
06-Jul-2023	23:08:30	1061	BP23MVEXP-ENV-DC-021			Camera	71	658537	6224182	658588	6224181	-51	1	51	91		(Raw Nav, Kongsberg 14208, img#69) (B) (T.A)
06-Jul-2023	23:09:28	1062	BP23MVEXP-ENV-DC-021			Camera	71	658537	6224182	658588	6224181	-51	1	51	91		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
06-Jul-2023	23:10:50	1063	BP23MVEXP-ENV-DC-021			Camera	71	658543	6224183	658588	6224181	-45	2	45	92		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
06-Jul-2023	23:11:10	1064	BP23MVEXP-ENV-DC-021			Camera	71	658545	6224183	658588	6224181	-43	2	43	93		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
06-Jul-2023	23:11:37	1065	BP23MVEXP-ENV-DC-021			Camera	71	658547	6224183	658588	6224181	-41	2	41	93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
06-Jul-2023	23:12:36	1066	BP23MVEXP-ENV-DC-021			Camera	71	658553	6224183	658588	6224181	-35	2	35	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
06-Jul-2023	23:12:47	1067	BP23MVEXP-ENV-DC-021			Camera	71	658554	6224183	658588	6224181	-34	2	34	94		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
06-Jul-2023	23:13:09	1068	BP23MVEXP-ENV-DC-021			Camera	71	658556	6224183	658588	6224181	-32	2	32	94		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
06-Jul-2023	23:13:47	1069	BP23MVEXP-ENV-DC-021			Camera	71	658560	6224184	658588	6224181	-28	3	28	95		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
06-Jul-2023	23:14:10	1070	BP23MVEXP-ENV-DC-021			Camera	71	658563	6224184	658588	6224181	-25	3	25	96		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
06-Jul-2023	23:14:53	1071	BP23MVEXP-ENV-DC-021			Camera	71	658567	6224184	658588	6224181	-21	3	21	98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
06-Jul-2023	23:15:17	1072	BP23MVEXP-ENV-DC-021			Camera	71	658569	6224184	658588	6224181	-19	3	19	99		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
06-Jul-2023	23:15:53	1073	BP23MVEXP-ENV-DC-021			Camera	71	658573	6224184	658588	6224181	-15	3	15	102		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
06-Jul-2023	23:16:24	1074	BP23MVEXP-ENV-DC-021			Camera	71	658577	6224184	658588	6224181	-11	3	12	106		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
06-Jul-2023	23:16:41	1075	BP23MVEXP-ENV-DC-021			Camera	71	658578	6224184	658588	6224181	-10	3	10	109		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
06-Jul-2023	23:18:08	1076	BP23MVEXP-ENV-DC-021			Camera	71	658587	6224185	658588	6224181	-1	4	4	166		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
06-Jul-2023	23:19:10	1077	BP23MVEXP-ENV-DC-021			Camera	71	658594	6224185	658588	6224181	6	4	7	-125		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
06-Jul-2023	23:20:30	1078	BP23MVEXP-ENV-DC-021			Camera	71	658602	6224185	658588	6224181	14	4	14	-106		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
06-Jul-2023	23:21:23	1079	BP23MVEXP-ENV-DC-021			Camera	71	658607	6224186	658588	6224181	19	5	20	-105		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
06-Jul-2023	23:23:09	1080	BP23MVEXP-ENV-DC-021			Camera	71	658618	6224186	658588	6224181	30	5	30	-100		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
06-Jul-2023	23:23:59	1081	BP23MVEXP-ENV-DC-021			Camera	71	658624	6224186	658588	6224181	36	5	36	-99		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
06-Jul-2023	23:47:50	1082	BP23MVEXP-ENV-DC-021			Camera	71	658584	6224225	658588	6224181	-4	44	44	175		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
06-Jul-2023	23:49:13	1083	BP23MVEXP-ENV-DC-021			Camera	71	658584	6224222	658588	6224181	-4	41	41	175		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	01:13:01	1084	BP23MVEXP-ENV-DC-021A			Camera	71	658585	6224230	658588	6224181	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	01:15:06	1085	BP23MVEXP-ENV-DC-021A			Camera	71	658585	6224228	658588	6224181	-3	47	47	176		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	01:15:39	1086	BP23MVEXP-ENV-DC-021A			Camera	71	658585	6224227	658588	6224181	-3	46	46	177		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	01:16:23	1087	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224224	658588	6224181	-2	43	43	177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Jul-2023	01:16:46	1088	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224223	658588	6224181	-2	42	42	177		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	01:18:06	1089	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224219	658588	6224181	-2	38	38	176		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	01:18:44	1090	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224217	658588	6224181	-2	36	36	176		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	01:20:07	1091	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224213	658588	6224181	-2	32	32	176		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	01:20:21	1092	BP23MVEXP-ENV-DC-021A			Camera	71	658586	6224212	658588	6224181	-2	31	31	176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	01:21:57	1093	BP23MVEXP-ENV-DC-021A			Camera	71	658587	6224206	658588	6224181	-1	25	25	177		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	01:23:29	1094	BP23MVEXP-ENV-DC-021A			Camera	71	658587	6224200	658588	6224181	-1	19	19	177		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	01:26:01	1095	BP23MVEXP-ENV-DC-021A			Camera	71	658589	6224184	658588	6224181	1	3	3	-171		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	01:27:26	1096	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224175	658588	6224181	2	-6	6	-17		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	01:27:44	1097	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224174	658588	6224181	2	-7	8	-15		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	01:28:05	1098	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224171	658588	6224181	2	-10	10	-13		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	01:29:32	1099	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224162	658588	6224181	2	-19	19	-6		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	01:29:49	1100	BP23MVEXP-ENV-DC-021A			Camera	71	658590	6224161	658588	6224181	2	-20	20	-5		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	01:30:54	1101	BP23MVEXP-ENV-DC-021A			Camera	71	658591	6224154	658588	6224181	3	-27	27	-6		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	01:31:51	1102	BP23MVEXP-ENV-DC-021A			Camera	71	658591	6224147	658588	6224181	3	-34	34	-6		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	01:32:56	1103	BP23MVEXP-ENV-DC-021A			Camera	72	658592	6224141	658588	6224181	4	-40	40	-5		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	01:33:45	1104	BP23MVEXP-ENV-DC-021A			Camera	72	658592	6224136	658588	6224181	4	-45	45	-6		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	01:34:09	1105	BP23MVEXP-ENV-DC-021A			Camera	72	658592	6224134	658588	6224181	4	-47	47	-5		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	01:39:21	1106	BP23MVEXP-ENV-DC-021B			Camera	72	658592	6224128	658588	6224181	4	-53	53	-5		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	01:40:52	1107	BP23MVEXP-ENV-DC-021B			Camera	72	658592	6224134	658588	6224181	4	-47	47	-5		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	01:42:19	1108	BP23MVEXP-ENV-DC-021B			Camera	72	658590	6224143	658588	6224181	2	-38	38	-3		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	01:42:38	1109	BP23MVEXP-ENV-DC-021B			Camera	72	658590	6224145	658588	6224181	2	-36	36	-3		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	01:43:14	1110	BP23MVEXP-ENV-DC-021B			Camera	72	658589	6224148	658588	6224181	1	-33	33	-2		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	01:43:54	1111	BP23MVEXP-ENV-DC-021B			Camera	72	658589	6224152	658588	6224181	1	-29	29	-2		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	01:44:37	1112	BP23MVEXP-ENV-DC-021B			Camera	71	658588	6224157	658588	6224181	0	-24	24	1		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	01:45:13	1113	BP23MVEXP-ENV-DC-021B			Camera	71	658588	6224160	658588	6224181	0	-21	21	0		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	01:46:04	1114	BP23MVEXP-ENV-DC-021B			Camera	71	658589	6224166	658588	6224181	1	-16	15	-2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	01:46:59	1115	BP23MVEXP-ENV-DC-021B			Camera	71	658587	6224171	658588	6224181	-1	-10	10	3		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	01:48:15	1116	BP23MVEXP-ENV-DC-021B			Camera	71	658587	6224179	658588	6224181	-1	-2	2	36		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	01:48:58	1117	BP23MVEXP-ENV-DC-021B			Camera	71	658586	6224183	658588	6224181	-2	2	3	133		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	01:50:07	1118	BP23MVEXP-ENV-DC-021B			Camera	71	658585	6224190	658588	6224181	-3	9	10	163		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	01:50:28	1119	BP23MVEXP-ENV-DC-021B			Camera	71	658585	6224192	658588	6224181	-3	11	12	165		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	01:51:42	1120	BP23MVEXP-ENV-DC-021B			Camera	71	658584	6224200	658588	6224181	-4	19	20	168		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	01:52:18	1121	BP23MVEXP-ENV-DC-021B			Camera	71	658584	6224204	658588	6224181	-4	23	23	169		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	01:54:40	1122	BP23MVEXP-ENV-DC-021B			Camera	71	658583	6224217	658588	6224181	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	01:56:05	1123	BP23MVEXP-ENV-DC-021B			Camera	71	658582	6224226	658588	6224181	-6	45	46	172		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	03:43:10	1124	BP23MVEXP-ENV-DC-022			Camera	76	658787	6220243	658789	6220190	-2	53	53	178		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	03:43:43	1125	BP23MVEXP-ENV-DC-022			Camera	76	658787	6220243	658789	6220190	-2	53	53	178		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	03:44:18	1126	BP23MVEXP-ENV-DC-022			Camera	76	658788	6220243	658789	6220190	-1	53	53	179		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	03:45:52	1127	BP23MVEXP-ENV-DC-022			Camera	76	658788	6220239	658789	6220190	-1	49	49	179		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	03:47:02	1128	BP23MVEXP-ENV-DC-022			Camera	76	658789	6220232	658789	6220190	0	42	42	180		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	03:48:02	1129	BP23MVEXP-ENV-DC-022			Camera	76	658790	6220226	658789	6220190	1	36	36	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	03:49:01	1130	BP23MVEXP-ENV-DC-022			Camera	76	658791	6220220	658789	6220190	2	30	30	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	03:50:17	1131	BP23MVEXP-ENV-DC-022			Camera	76	658790	6220212	658789	6220190	1	22	22	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	03:51:16	1132	BP23MVEXP-ENV-DC-022			Camera	76	658791	6220206	658789	6220190	2	16	16	-173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	03:53:07	1133	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220195	658789	6220190	3	5	5	-147		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	03:53:32	1134	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220192	658789	6220190	3	2	4	-119		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	03:54:07	1135	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220188	658789	6220190	3	-2	4	-55		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	03:54:56	1136	BP23MVEXP-ENV-DC-022			Camera	76	658792	6220183	658789	6220190	3	-7	8	-27		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	03:56:15	1137	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220175	658789	6220190	5	-15	15	-18		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	03:57:27	1138	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220168	658789	6220190	5	-22	22	-12		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	03:58:09	1139	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220164	658789	6220190	5	-26	26	-10		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	03:59:12	1140	BP23MVEXP-ENV-DC-022			Camera	76	658795	6220159	658789	6220190	6	-31	32	-10		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	04:00:18	1141	BP23MVEXP-ENV-DC-022			Camera	76	658795	6220151	658789	6220190	6	-40	40	-9		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	04:01:08	1142	BP23MVEXP-ENV-DC-022			Camera	76	658795	6220146	658789	6220190	6	-44	45	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	04:01:55	1143	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220143	658789	6220190	5	-47	47	-6		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	04:02:20	1144	BP23MVEXP-ENV-DC-022			Camera	76	658794	6220142	658789	6220190	5	-48	48	-6		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	04:15:44	1145	BP23MVEXP-ENV-DC-022			Camera	76	658836	6220190	658789	6220190	47	0	47	-90		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	04:18:57	1146	BP23MVEXP-ENV-DC-022			Camera	76	658835	6220194	658789	6220190	46	4	47	-95		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	04:19:19	1147	BP23MVEXP-ENV-DC-022			Camera	76	658834	6220194	658789	6220190	45	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	04:21:10	1148	BP23MVEXP-ENV-DC-022			Camera	76	658828	6220194	658789	6220190	39	4	39	-96		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Jul-2023	04:23:17	1149	BP23MVEXP-ENV-DC-022			Camera	76	658821	6220194	658789	6220190	32	4	32	-96		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	04:25:21	1150	BP23MVEXP-ENV-DC-022			Camera	76	658815	6220194	658789	6220190	26	4	27	-100		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	04:25:55	1151	BP23MVEXP-ENV-DC-022			Camera	76	658814	6220194	658789	6220190	25	4	25	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	04:27:35	1152	BP23MVEXP-ENV-DC-022				76	658808	6220191	658789	6220190	19	1	19	-94		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A) Fix no photo
07-Jul-2023	04:28:03	1153	BP23MVEXP-ENV-DC-022			Camera	76	658807	6220192	658789	6220190	18	2	18	-95		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	04:29:12	1154	BP23MVEXP-ENV-DC-022			Camera	3	658803	6220193	658789	6220190	14	3	14	-104		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	04:29:56	1155	BP23MVEXP-ENV-DC-022			Camera	76	658801	6220193	658789	6220190	12	3	13	-104		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	04:31:03	1156	BP23MVEXP-ENV-DC-022			Camera	76	658798	6220194	658789	6220190	9	4	10	-112		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	04:31:40	1157	BP23MVEXP-ENV-DC-022			Camera	76	658796	6220193	658789	6220190	7	3	8	-113		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	04:31:58	1158	BP23MVEXP-ENV-DC-022			Camera	76	658796	6220192	658789	6220190	7	2	7	-110		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	04:33:22	1159	BP23MVEXP-ENV-DC-022			Camera	76	658790	6220190	658789	6220190	1	0	1	-93		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	04:34:28	1160	BP23MVEXP-ENV-DC-022			Camera	76	658786	6220189	658789	6220190	-3	-1	3	77		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	04:35:16	1161	BP23MVEXP-ENV-DC-022			Camera	76	658784	6220190	658789	6220190	-5	0	5	89		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	04:35:44	1162	BP23MVEXP-ENV-DC-022			Camera	76	658783	6220190	658789	6220190	-6	0	6	88		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	04:38:46	1163	BP23MVEXP-ENV-DC-022			Camera	76	658774	6220189	658789	6220190	-15	-1	15	87		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	04:40:04	1164	BP23MVEXP-ENV-DC-022			Camera	76	658771	6220189	658789	6220190	-19	-1	19	88		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	04:41:08	1165	BP23MVEXP-ENV-DC-022			Camera	76	658768	6220189	658789	6220190	-21	-1	21	87		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	04:41:23	1166	BP23MVEXP-ENV-DC-022			Camera	76	658767	6220189	658789	6220190	-22	-1	22	87		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	04:41:46	1167	BP23MVEXP-ENV-DC-022			Camera	76	658766	6220189	658789	6220190	-23	-1	23	87		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	04:43:17	1168	BP23MVEXP-ENV-DC-022			Camera	76	658760	6220188	658789	6220190	-29	-2	29	87		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	04:45:22	1169	BP23MVEXP-ENV-DC-022			Camera	76	658754	6220188	658789	6220190	-35	-2	35	87		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	04:47:15	1170	BP23MVEXP-ENV-DC-022			Camera	76	658749	6220187	658789	6220190	-40	-3	40	85		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	04:47:51	1171	BP23MVEXP-ENV-DC-022			Camera	76	658747	6220186	658789	6220190	-42	-4	42	84		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	04:48:26	1172	BP23MVEXP-ENV-DC-022			Camera	76	658745	6220185	658789	6220190	-44	-5	44	84		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	13:50:27	1173	BP23MVEXP-ENV-DC-023			Camera	80	658962	6216190	659015	6216191	-53	-1	53	89		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	13:50:55	1174	BP23MVEXP-ENV-DC-023			Camera	80	658963	6216190	659015	6216191	-52	-1	52	89		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	13:51:49	1175	BP23MVEXP-ENV-DC-023			Camera	80	658964	6216190	659015	6216191	-51	-1	51	89		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	13:51:58	1176	BP23MVEXP-ENV-DC-023			Camera	80	658965	6216190	659015	6216191	-50	-1	50	89		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	13:52:43	1177	BP23MVEXP-ENV-DC-023			Camera	80	658965	6216191	659015	6216191	-50	0	50	90		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	13:52:57	1178	BP23MVEXP-ENV-DC-023			Camera	80	658966	6216192	659015	6216191	-49	1	49	91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	13:53:06	1179	BP23MVEXP-ENV-DC-023			Camera	80	658966	6216192	659015	6216191	-49	1	49	92		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	13:53:24	1180	BP23MVEXP-ENV-DC-023			Camera	80	658967	6216192	659015	6216191	-48	1	48	91		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	13:53:55	1181	BP23MVEXP-ENV-DC-023			Camera	80	658969	6216192	659015	6216191	-46	1	46	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	13:54:25	1182	BP23MVEXP-ENV-DC-023			Camera	80	658971	6216192	659015	6216191	-44	1	44	91		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	13:55:15	1183	BP23MVEXP-ENV-DC-023			Camera	80	658974	6216192	659015	6216191	-41	1	41	91		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	13:55:45	1184	BP23MVEXP-ENV-DC-023			Camera	80	658977	6216192	659015	6216191	-38	1	38	91		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	13:55:55	1185	BP23MVEXP-ENV-DC-023			Camera	80	658977	6216192	659015	6216191	-38	1	38	91		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	13:58:09	1186	BP23MVEXP-ENV-DC-023			Camera	80	658983	6216192	659015	6216191	-32	1	32	91		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	13:59:20	1187	BP23MVEXP-ENV-DC-023			Camera	80	658990	6216192	659015	6216191	-25	1	25	92		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Jul-2023	14:00:08	1188	BP23MVEXP-ENV-DC-023			Camera	80	658995	6216192	659015	6216191	-20	1	20	93		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	14:00:49	1189	BP23MVEXP-ENV-DC-023			Camera	80	659000	6216191	659015	6216191	-15	0	15	92		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	14:01:40	1190	BP23MVEXP-ENV-DC-023			Camera	80	659005	6216192	659015	6216191	-10	1	10	94		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	14:02:20	1191	BP23MVEXP-ENV-DC-023			Camera	80	659007	6216193	659015	6216191	-8	2	8	106		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	14:03:05	1192	BP23MVEXP-ENV-DC-023			Camera	80	659013	6216193	659015	6216191	-2	2	3	130		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	14:03:29	1193	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216193	659015	6216191	0	2	2	-165		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	14:04:27	1194	BP23MVEXP-ENV-DC-023			Camera	81	659021	6216194	659015	6216191	6	3	7	-118		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	14:04:50	1195	BP23MVEXP-ENV-DC-023			Camera	80	659024	6216193	659015	6216191	9	2	9	-103		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	14:05:14	1196	BP23MVEXP-ENV-DC-023			Camera	80	659027	6216192	659015	6216191	12	1	12	-97		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	14:05:34	1197	BP23MVEXP-ENV-DC-023			Camera	80	659029	6216192	659015	6216191	14	1	14	-96		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Jul-2023	14:06:16	1198	BP23MVEXP-ENV-DC-023			Camera	81	659033	6216193	659015	6216191	18	2	18	-95		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	14:06:32	1199	BP23MVEXP-ENV-DC-023			Camera	81	659035	6216193	659015	6216191	20	2	20	-96		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	14:06:54	1200	BP23MVEXP-ENV-DC-023			Camera	81	659036	6216194	659015	6216191	21	3	21	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	14:08:01	1201	BP23MVEXP-ENV-DC-023			Camera	81	659043	6216194	659015	6216191	29	3	29	-95		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Jul-2023	14:08:07	1202	BP23MVEXP-ENV-DC-023			Camera	81	659044	6216194	659015	6216191	29	3	29	-95		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	14:08:57	1203	BP23MVEXP-ENV-DC-023			Camera	81	659050	6216194	659015	6216191	35	3	35	-94		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	14:10:26	1204	BP23MVEXP-ENV-DC-023			Camera	81	659058	6216195	659015	6216191	43	4	43	-95		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	14:27:00	1205	BP23MVEXP-ENV-DC-023			Camera	80	659009	6216239	659015	6216191	-6	48	48	173		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	14:29:24	1206	BP23MVEXP-ENV-DC-023			Camera	80	659010	6216232	659015	6216191	-5	41	41	174		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	14:30:18	1207	BP23MVEXP-ENV-DC-023			Camera	80	659010	6216227	659015	6216191	-5	36	37	173		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	14:30:53	1208	BP23MVEXP-ENV-DC-023			Camera	80	659011	6216224	659015	6216191	-4	33	33	174		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	14:31:33	1209	BP23MVEXP-ENV-DC-023			Camera	80	659013	6216220	659015	6216191	-2	29	29	176		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	14:32:21	1210	BP23MVEXP-ENV-DC-023			Camera	80	659013	6216215	659015	6216191	-2	24	24	176		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	14:33:39	1211	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216207	659015	6216191	0	16	16	179		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	14:33:48	1212	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216206	659015	6216191	0	15	15	179		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	14:34:14	1213	BP23MVEXP-ENV-DC-023			Camera	80	659015	6216204	659015	6216191	0	13	13	-180		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	14:34:54	1214	BP23MVEXP-ENV-DC-023			Camera	80	659016	6216199	659015	6216191	1	8	8	-175		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	14:36:01	1215	BP23MVEXP-ENV-DC-023			Camera	80	659016	6216193	659015	6216191	1	2	2	-164		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	14:37:44	1216	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216181	659015	6216191	2	-10	10	-11		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	14:37:56	1217	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216180	659015	6216191	2	-11	11	-11		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	14:38:11	1218	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216178	659015	6216191	2	-13	13	-10		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	14:38:36	1219	BP23MVEXP-ENV-DC-023			Camera	80	659017	6216175	659015	6216191	2	-16	16	-9		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	14:39:38	1220	BP23MVEXP-ENV-DC-023			Camera	80	659018	6216171	659015	6216191	3	-21	21	-9		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	14:40:19	1221	BP23MVEXP-ENV-DC-023			Camera	80	659019	6216165	659015	6216191	4	-26	26	-9		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	14:41:27	1222	BP23MVEXP-ENV-DC-023			Camera	80	659020	6216159	659015	6216191	5	-32	32	-9		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Jul-2023	14:42:26	1223	BP23MVEXP-ENV-DC-023			Camera	80	659022	6216152	659015	6216191	7	-39	39	-10		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
07-Jul-2023	14:43:09	1224	BP23MVEXP-ENV-DC-023			Camera	80	659023	6216148	659015	6216191	8	-43	44	-10		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
07-Jul-2023	14:43:53	1225	BP23MVEXP-ENV-DC-023			Camera	80	659023	6216144	659015	6216191	8	-47	48	-10		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
07-Jul-2023	16:57:39	1226	BP23MVEXP-ENV-DC-025				74	659436	6208251	659440	6208210	-4	41	42	174		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A) Fix no photo
07-Jul-2023	16:58:05	1227	BP23MVEXP-ENV-DC-025				74	659435	6208251	659440	6208210	-5	41	41	173		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A) Fix no photo
07-Jul-2023	16:59:51	1228	BP23MVEXP-ENV-DC-025				74	659435	6208252	659440	6208210	-5	42	42	174		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A) Fix no photo
07-Jul-2023	17:00:18	1229	BP23MVEXP-ENV-DC-025				74	659435	6208254	659440	6208210	-5	44	45	173		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A) Fix no photo
07-Jul-2023	17:00:41	1230	BP23MVEXP-ENV-DC-025				74	659435	6208256	659440	6208210	-5	46	47	174		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A) Fix no photo
07-Jul-2023	18:27:21	1231	BP23MVEXP-ENV-DC-026			Camera	73	659601	6204203	659653	6204210	-52	-7	52	82		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	18:30:08	1232	BP23MVEXP-ENV-DC-026			Camera	73	659603	6204203	659653	6204210	-51	-7	51	82		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Jul-2023	18:30:24	1233	BP23MVEXP-ENV-DC-026			Camera	73	659604	6204203	659653	6204210	-49	-7	50	82		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	18:30:33	1234	BP23MVEXP-ENV-DC-026			Camera	73	659605	6204203	659653	6204210	-48	-7	49	82		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	18:30:49	1235	BP23MVEXP-ENV-DC-026			Camera	73	659606	6204203	659653	6204210	-47	-7	47	82		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	18:31:43	1236	BP23MVEXP-ENV-DC-026			Camera	73	659613	6204204	659653	6204210	-40	-6	40	81		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	18:32:12	1237	BP23MVEXP-ENV-DC-026			Camera	73	659616	6204204	659653	6204210	-37	-6	37	81		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	18:32:28	1238	BP23MVEXP-ENV-DC-026			Camera	73	659618	6204205	659653	6204210	-35	-5	36	81		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	18:33:34	1239	BP23MVEXP-ENV-DC-026			Camera	73	659625	6204205	659653	6204210	-28	-5	28	81		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	18:33:45	1240	BP23MVEXP-ENV-DC-026			Camera	73	659626	6204206	659653	6204210	-27	-4	27	81		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	18:33:53	1241	BP23MVEXP-ENV-DC-026			Camera	73	659627	6204206	659653	6204210	-26	-4	26	81		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	18:35:10	1242	BP23MVEXP-ENV-DC-026			Camera	73	659635	6204208	659653	6204210	-18	-2	18	84		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	18:35:31	1243	BP23MVEXP-ENV-DC-026			Camera	73	659637	6204209	659653	6204210	-16	-1	16	86		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	18:35:58	1244	BP23MVEXP-ENV-DC-026			Camera	73	659640	6204209	659653	6204210	-13	-1	13	86		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	18:36:23	1245	BP23MVEXP-ENV-DC-026			Camera	73	659643	6204209	659653	6204210	-10	-1	10	86		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	18:36:41	1246	BP23MVEXP-ENV-DC-026			Camera	73	659645	6204209	659653	6204210	-8	-1	8	86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	18:37:07	1247	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204210	659653	6204210	-5	0	5	87		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	18:37:18	1248	BP23MVEXP-ENV-DC-026			Camera	73	659649	6204210	659653	6204210	-4	0	4	87		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	18:37:34	1249	BP23MVEXP-ENV-DC-026			Camera	73	659651	6204210	659653	6204210	-2	0	2	94		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	18:37:41	1250	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204210	659653	6204210	-2	0	2	101		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	18:37:49	1251	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204210	659653	6204210	-1	0	1	123		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	18:38:01	1252	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204211	659653	6204210	0	1	1	-149		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	18:38:19	1253	BP23MVEXP-ENV-DC-026			Camera	73	659655	6204211	659653	6204210	2	1	2	-118		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	18:38:41	1254	BP23MVEXP-ENV-DC-026			Camera	73	659657	6204211	659653	6204210	4	1	5	-109		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	18:38:59	1255A	BP23MVEXP-ENV-DC-026			Camera	76	659659	6204212	659653	6204210	6	2	6	-108		(Raw Nav, Kongsberg 14208, img#25) (B)
07-Jul-2023	18:39:30	1255B	BP23MVEXP-ENV-DC-026			Camera	73	659662	6204212	659653	6204210	9	2	10	-101		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	18:40:33	1256	BP23MVEXP-ENV-DC-026			Camera	73	659668	6204213	659653	6204210	16	3	16	-101		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	18:42:13	1257	BP23MVEXP-ENV-DC-026			Camera	73	659679	6204215	659653	6204210	26	5	27	-100		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	19:01:05	1258	BP23MVEXP-ENV-DC-026			Camera	73	659646	6204256	659653	6204210	-7	46	47	171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Jul-2023	19:01:26	1259	BP23MVEXP-ENV-DC-026			Camera	73	659646	6204255	659653	6204210	-7	45	45	171		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	19:01:45	1260	BP23MVEXP-ENV-DC-026			Camera	73	659646	6204253	659653	6204210	-7	43	43	171		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	19:02:30	1261	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204247	659653	6204210	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	19:02:37	1262	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204246	659653	6204210	-5	36	37	172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	19:02:47	1263	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204245	659653	6204210	-5	35	35	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	19:03:30	1264	BP23MVEXP-ENV-DC-026			Camera	73	659648	6204239	659653	6204210	-5	29	29	170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	19:04:47	1265	BP23MVEXP-ENV-DC-026			Camera	73	659650	6204231	659653	6204210	-3	21	21	171		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	19:05:22	1266	BP23MVEXP-ENV-DC-026			Camera	73	659650	6204228	659653	6204210	-3	18	18	171		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	19:06:23	1267	BP23MVEXP-ENV-DC-026			Camera	73	659651	6204222	659653	6204210	-2	12	12	172		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	19:06:30	1268	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204222	659653	6204210	-1	12	12	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	19:06:55	1269	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204219	659653	6204210	-1	9	9	172		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	19:07:45	1270	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204213	659653	6204210	-1	3	3	170		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	19:07:54	1271	BP23MVEXP-ENV-DC-026			Camera	73	659652	6204212	659653	6204210	-1	2	2	167		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	19:08:01	1272	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204211	659653	6204210	0	1	1	172		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	19:08:08	1273	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204211	659653	6204210	0	1	1	180		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	19:08:16	1274	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204210	659653	6204210	0	0	0	-109		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	19:08:25	1275	BP23MVEXP-ENV-DC-026			Camera	73	659653	6204209	659653	6204210	0	-1	1	-24		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	19:08:55	1276	BP23MVEXP-ENV-DC-026			Camera	73	659654	6204207	659653	6204210	1	-3	4	-10		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	19:09:33	1277	BP23MVEXP-ENV-DC-026			Camera	73	659654	6204202	659653	6204210	1	-8	8	-5		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	19:11:09	1278	BP23MVEXP-ENV-DC-026			Camera	73	659655	6204193	659653	6204210	2	-17	17	-7		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	19:11:27	1279	BP23MVEXP-ENV-DC-026			Camera	73	659656	6204191	659653	6204210	3	-19	19	-8		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Jul-2023	19:11:39	1280	BP23MVEXP-ENV-DC-026			Camera	73	659656	6204189	659653	6204210	3	-21	21	-7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
07-Jul-2023	19:12:48	1281	BP23MVEXP-ENV-DC-026			Camera	73	659656	6204182	659653	6204210	3	-28	28	-6		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
07-Jul-2023	19:15:42	1282	BP23MVEXP-ENV-DC-026			Camera	73	659660	6204166	659653	6204210	7	-44	45	-9		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
07-Jul-2023	20:28:01	1283	BP23MVEXP-ENV-DC-027			Camera	71	659873	6200170	659868	6200219	5	-49	49	-6		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Jul-2023	20:29:54	1284	BP23MVEXP-ENV-DC-027			Camera	71	659873	6200170	659868	6200219	5	-49	49	-6		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Jul-2023	20:30:35	1285	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200173	659868	6200219	4	-46	46	-5		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Jul-2023	20:31:05	1286	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200176	659868	6200219	4	-43	43	-5		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Jul-2023	20:31:41	1287	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200181	659868	6200219	4	-38	38	-5		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Jul-2023	20:33:01	1288	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200188	659868	6200219	3	-31	31	-5		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Jul-2023	20:33:35	1289	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200192	659868	6200219	2	-27	27	-5		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Jul-2023	20:34:27	1290	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200197	659868	6200219	2	-22	22	-5		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Jul-2023	20:35:11	1291	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200201	659868	6200219	2	-18	18	-5		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Jul-2023	20:36:08	1292	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200207	659868	6200219	1	-12	12	-5		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Jul-2023	20:37:05	1293	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200213	659868	6200219	0	-6	6	0		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Jul-2023	20:37:11	1294	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200214	659868	6200219	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Jul-2023	20:37:27	1295	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200216	659868	6200219	0	-3	4	7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Jul-2023	20:37:50	1296	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200218	659868	6200219	-1	-1	1	27		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Jul-2023	20:38:05	1297	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200219	659868	6200219	-1	0	1	101		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Jul-2023	20:38:25	1298	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200221	659868	6200219	-1	2	3	153		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Jul-2023	20:38:47	1299	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200224	659868	6200219	-1	5	5	164		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Jul-2023	20:39:10	1300	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200226	659868	6200219	-1	7	7	171		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Jul-2023	20:39:24	1301	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200228	659868	6200219	-1	9	9	172		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Jul-2023	20:40:02	1302	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200232	659868	6200219	-2	13	13	172		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Jul-2023	20:40:51	1303	BP23MVEXP-ENV-DC-027			Camera	71	659865	6200237	659868	6200219	-3	18	18	171		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Jul-2023	20:42:30	1304	BP23MVEXP-ENV-DC-027			Camera	71	659864	6200246	659868	6200219	-4	27	27	172		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Jul-2023	20:43:35	1305	BP23MVEXP-ENV-DC-027			Camera	71	659864	6200254	659868	6200219	-4	35	35	173		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Jul-2023	20:43:51	1306	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200255	659868	6200219	-5	36	36	173		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Jul-2023	20:44:12	1307	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200257	659868	6200219	-5	38	38	173		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Jul-2023	20:44:50	1308	BP23MVEXP-ENV-DC-027			Camera	71	659862	6200260	659868	6200219	-6	41	42	172		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Jul-2023	21:19:57	1309	BP23MVEXP-ENV-DC-027			Camera	71	659917	6200225	659868	6200219	49	6	49	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Jul-2023	21:20:04	1310	BP23MVEXP-ENV-DC-027			Camera	71	659916	6200225	659868	6200219	48	6	48	-97		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Jul-2023	21:20:35	1311	BP23MVEXP-ENV-DC-027			Camera	71	659914	6200224	659868	6200219	46	5	46	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Jul-2023	21:21:08	1312	BP23MVEXP-ENV-DC-027			Camera	71	659911	6200224	659868	6200219	43	5	43	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Jul-2023	21:21:14	1313	BP23MVEXP-ENV-DC-027			Camera	71	659910	6200224	659868	6200219	42	5	42	-96		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Jul-2023	21:21:24	1314	BP23MVEXP-ENV-DC-027			Camera	71	659909	6200224	659868	6200219	41	5	41	-96		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Jul-2023	21:21:39	1315	BP23MVEXP-ENV-DC-027			Camera	71	659907	6200224	659868	6200219	39	5	39	-97		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Jul-2023	21:22:21	1316	BP23MVEXP-ENV-DC-027			Camera	71	659902	6200223	659868	6200219	34	4	35	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Jul-2023	21:22:51	1317	BP23MVEXP-ENV-DC-027			Camera	71	659900	6200223	659868	6200219	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Jul-2023	21:23:04	1318	BP23MVEXP-ENV-DC-027			Camera	71	659899	6200222	659868	6200219	31	3	31	-96		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
07-Jul-2023	21:23:20	1319	BP23MVEXP-ENV-DC-027			Camera	71	659897	6200222	659868	6200219	29	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
07-Jul-2023	21:23:32	1320	BP23MVEXP-ENV-DC-027			Camera	71	659896	6200222	659868	6200219	28	3	28	-96		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Jul-2023	21:23:39	1321	BP23MVEXP-ENV-DC-027			Camera	71	659895	6200222	659868	6200219	27	3	27	-96		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Jul-2023	21:23:54	1322	BP23MVEXP-ENV-DC-027			Camera	71	659893	6200222	659868	6200219	25	3	25	-96		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
07-Jul-2023	21:24:22	1323	BP23MVEXP-ENV-DC-027			Camera	71	659890	6200222	659868	6200219	22	3	22	-96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Jul-2023	21:24:40	1324	BP23MVEXP-ENV-DC-027			Camera	71	659888	6200222	659868	6200219	20	3	20	-97		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Jul-2023	21:24:59	1325	BP23MVEXP-ENV-DC-027			Camera	71	659887	6200221	659868	6200219	19	2	19	-97		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Jul-2023	21:25:36	1326	BP23MVEXP-ENV-DC-027			Camera	71	659883	6200221	659868	6200219	15	2	15	-98		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Jul-2023	21:26:03	1327	BP23MVEXP-ENV-DC-027			Camera	71	659880	6200221	659868	6200219	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Jul-2023	21:26:38	1328	BP23MVEXP-ENV-DC-027			Camera	71	659876	6200221	659868	6200219	8	2	8	-103		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
07-Jul-2023	21:26:48	1329	BP23MVEXP-ENV-DC-027			Camera	71	659875	6200221	659868	6200219	7	2	7	-104		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
07-Jul-2023	21:27:23	1330	BP23MVEXP-ENV-DC-027			Camera	71	659872	6200220	659868	6200219	4	1	4	-106		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
07-Jul-2023	21:27:33	1331	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200220	659868	6200219	3	1	3	-109		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
07-Jul-2023	21:27:42	1332	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200220	659868	6200219	2	1	2	-115		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Jul-2023	21:27:54	1333	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200220	659868	6200219	1	1	1	-147		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
07-Jul-2023	21:28:03	1334	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200220	659868	6200219	0	1	1	158		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
07-Jul-2023	21:28:14	1335	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200220	659868	6200219	-2	1	2	129		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
07-Jul-2023	21:28:54	1336	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200220	659868	6200219	-5	1	5	101		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
07-Jul-2023	21:29:25	1337	BP23MVEXP-ENV-DC-027			Camera	71	659860	6200220	659868	6200219	-8	1	8	96		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
07-Jul-2023	21:29:41	1338	BP23MVEXP-ENV-DC-027			Camera	71	659858	6200220	659868	6200219	-10	1	10	95		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
07-Jul-2023	21:29:58	1339	BP23MVEXP-ENV-DC-027			Camera	71	659857	6200219	659868	6200219	-11	0	11	92		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
07-Jul-2023	21:30:17	1340	BP23MVEXP-ENV-DC-027			Camera	71	659855	6200219	659868	6200219	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
07-Jul-2023	21:30:49	1341	BP23MVEXP-ENV-DC-027			Camera	71	659852	6200218	659868	6200219	-16	-1	16	86		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
07-Jul-2023	21:31:09	1342	BP23MVEXP-ENV-DC-027			Camera	71	659850	6200217	659868	6200219	-18	-2	18	85		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
07-Jul-2023	21:31:32	1343	BP23MVEXP-ENV-DC-027			Camera	71	659847	6200217	659868	6200219	-21	-2	21	85		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
07-Jul-2023	21:33:17	1344	BP23MVEXP-ENV-DC-027			Camera	71	659836	6200215	659868	6200219	-32	-4	32	83		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
07-Jul-2023	21:50:25	1345	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200171	659868	6200219	3	-48	48	-4		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
07-Jul-2023	21:50:46	1346	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200173	659868	6200219	3	-46	46	-4		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
07-Jul-2023	21:50:54	1347	BP23MVEXP-ENV-DC-027			Camera	71	659871	6200174	659868	6200219	3	-45	45	-3		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
07-Jul-2023	21:51:02	1348	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200175	659868	6200219	2	-44	44	-3		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
07-Jul-2023	21:51:13	1349	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200176	659868	6200219	2	-43	43	-3		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
07-Jul-2023	21:51:31	1350	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200178	659868	6200219	2	-41	41	-3		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
07-Jul-2023	21:51:40	1351	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200179	659868	6200219	2	-40	40	-3		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
07-Jul-2023	21:52:42	1352	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200185	659868	6200219	2	-34	34	-3		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
07-Jul-2023	21:53:08	1353	BP23MVEXP-ENV-DC-027			Camera	71	659870	6200188	659868	6200219	2	-31	31	-3		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
07-Jul-2023	21:53:23	1354	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200189	659868	6200219	1	-30	30	-3		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
07-Jul-2023	21:53:59	1355	BP23MVEXP-ENV-DC-027			Camera	71	659869	6200193	659868	6200219	1	-26	26	-2		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
07-Jul-2023	21:54:23	1356	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200196	659868	6200219	0	-23	23	-1		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
07-Jul-2023	21:55:44	1357	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200204	659868	6200219	-1	-15	15	2		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
07-Jul-2023	21:56:07	1358	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200207	659868	6200219	0	-12	12	2		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
07-Jul-2023	21:56:14	1359	BP23MVEXP-ENV-DC-027			Camera	71	659868	6200207	659868	6200219	0	-12	12	2		(Corr'd Nav, Kongsberg 14208, img#77) (B) (T.A)
07-Jul-2023	21:57:14	1360	BP23MVEXP-ENV-DC-027			Camera	71	659867	6200214	659868	6200219	-1	-5	5	9		(Corr'd Nav, Kongsberg 14208, img#78) (B) (T.A)
07-Jul-2023	21:57:53	1361	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200218	659868	6200219	-2	-1	2	49		(Corr'd Nav, Kongsberg 14208, img#79) (B) (T.A)
07-Jul-2023	21:58:05	1362	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200219	659868	6200219	-2	0	2	92		(Corr'd Nav, Kongsberg 14208, img#80) (B) (T.A)
07-Jul-2023	21:58:17	1363	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200220	659868	6200219	-2	1	2	129		(Corr'd Nav, Kongsberg 14208, img#81) (B) (T.A)
07-Jul-2023	21:58:27	1364	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200222	659868	6200219	-2	3	3	144		(Corr'd Nav, Kongsberg 14208, img#82) (B) (T.A)
07-Jul-2023	22:00:28	1365	BP23MVEXP-ENV-DC-027			Camera	71	659866	6200233	659868	6200219	-2	14	15	173		(Corr'd Nav, Kongsberg 14208, img#83) (B) (T.A)
07-Jul-2023	22:03:46	1366	BP23MVEXP-ENV-DC-027			Camera	71	659863	6200254	659868	6200219	-5	35	35	172		(Corr'd Nav, Kongsberg 14208, img#84) (B) (T.A)
08-Jul-2023	00:24:59	1367	BP23MVEXP-ENV-DC-028			Camera	74	660083	6196273	660086	6196220	-3	53	53	177		(Corr'd Nav, Kongsberg 14208, img#85) (B) (T.A)
08-Jul-2023	00:27:34	1368	BP23MVEXP-ENV-DC-028			Camera	74	660083	6196270	660086	6196220	-3	50	50	176		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	00:27:53	1369	BP23MVEXP-ENV-DC-028			Camera	74	660083	6196268	660086	6196220	-3	48	48	176		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	00:28:41	1370	BP23MVEXP-ENV-DC-028			Camera	74	660084	6196262	660086	6196220	-2	42	42	177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	00:30:04	1371	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196254	660086	6196220	-1	34	34	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	00:31:16	1372	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196247	660086	6196220	-1	27	27	177		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	00:31:23	1373	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196246	660086	6196220	-1	26	26	177		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	00:32:02	1374	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196242	660086	6196220	-1	22	22	178		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	00:32:29	1375	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196240	660086	6196220	-1	20	20	177		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	00:32:57	1376	BP23MVEXP-ENV-DC-028			Camera	74	660085	6196237	660086	6196220	-1	17	17	178		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	00:33:44	1377	BP23MVEXP-ENV-DC-028			Camera	74	660086	6196231	660086	6196220	0	11	11	-180		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	00:34:18	1378	BP23MVEXP-ENV-DC-028			Camera	74	660086	6196228	660086	6196220	0	8	8	-178		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	00:34:57	1379	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196224	660086	6196220	1	4	4	-173		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	00:35:21	1380	BP23MVEXP-ENV-DC-028			Camera	74	660086	6196222	660086	6196220	0	2	2	-171		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	00:36:04	1381	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196217	660086	6196220	1	-3	3	-18		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	00:36:45	1382	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196212	660086	6196220	1	-8	8	-11		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	00:37:01	1383	BP23MVEXP-ENV-DC-028			Camera	74	660087	6196211	660086	6196220	1	-9	9	-6		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	00:38:22	1384	BP23MVEXP-ENV-DC-028			Camera	74	660088	6196202	660086	6196220	2	-18	18	-8		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Jul-2023	00:39:23	1385	BP23MVEXP-ENV-DC-028			Camera	74	660089	6196195	660086	6196220	3	-25	25	-7		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	00:40:04	1386	BP23MVEXP-ENV-DC-028			Camera	74	660090	6196191	660086	6196220	4	-29	29	-7		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	00:41:07	1387	BP23MVEXP-ENV-DC-028			Camera	74	660089	6196186	660086	6196220	3	-34	35	-5		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	00:41:42	1388	BP23MVEXP-ENV-DC-028			Camera	75	660090	6196182	660086	6196220	4	-38	38	-5		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	00:42:39	1389	BP23MVEXP-ENV-DC-028			Camera	75	660090	6196175	660086	6196220	4	-45	45	-6		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	00:43:08	1390	BP23MVEXP-ENV-DC-028			Camera	75	660091	6196172	660086	6196220	5	-48	48	-6		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	01:07:18	1391	BP23MVEXP-ENV-DC-028			Camera	74	660135	6196224	660086	6196220	49	4	49	-94		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	01:08:48	1392	BP23MVEXP-ENV-DC-028			Camera	74	660134	6196223	660086	6196220	48	3	48	-94		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	01:09:12	1393	BP23MVEXP-ENV-DC-028			Camera	74	660133	6196223	660086	6196220	47	3	47	-94		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	01:11:26	1394	BP23MVEXP-ENV-DC-028			Camera	74	660120	6196221	660086	6196220	34	1	34	-91		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	01:13:12	1395	BP23MVEXP-ENV-DC-028			Camera	74	660108	6196220	660086	6196220	22	0	22	-90		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	01:13:51	1396	BP23MVEXP-ENV-DC-028			Camera	74	660104	6196220	660086	6196220	18	0	18	-91		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	01:15:53	1397	BP23MVEXP-ENV-DC-028			Camera	74	660093	6196217	660086	6196220	7	-3	7	-68		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	01:16:06	1398	BP23MVEXP-ENV-DC-028			Camera	74	660092	6196217	660086	6196220	6	-3	6	-66		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	01:16:39	1399	BP23MVEXP-ENV-DC-028			Camera	74	660088	6196217	660086	6196220	2	-3	4	-34		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	01:18:00	1400	BP23MVEXP-ENV-DC-028			Camera	74	660079	6196216	660086	6196220	-7	-4	8	59		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	01:18:21	1401	BP23MVEXP-ENV-DC-028			Camera	74	660077	6196216	660086	6196220	-9	-4	10	64		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	01:18:57	1402	BP23MVEXP-ENV-DC-028			Camera	74	660073	6196216	660086	6196220	-13	-4	13	74		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	01:19:33	1403	BP23MVEXP-ENV-DC-028			Camera	74	660070	6196216	660086	6196220	-16	-4	16	76		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	01:19:48	1404	BP23MVEXP-ENV-DC-028			Camera	74	660068	6196216	660086	6196220	-18	-4	18	76		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	01:20:41	1405	BP23MVEXP-ENV-DC-028			Camera	74	660063	6196215	660086	6196220	-23	-5	24	78		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	01:21:13	1406	BP23MVEXP-ENV-DC-028			Camera	74	660059	6196215	660086	6196220	-27	-5	27	79		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	01:21:45	1407	BP23MVEXP-ENV-DC-028			Camera	74	660057	6196215	660086	6196220	-30	-5	30	80		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	01:23:05	1408	BP23MVEXP-ENV-DC-028			Camera	74	660048	6196215	660086	6196220	-38	-5	38	82		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	01:23:52	1409	BP23MVEXP-ENV-DC-028			Camera	74	660043	6196214	660086	6196220	-43	-6	43	81		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
08-Jul-2023	01:24:27	1410	BP23MVEXP-ENV-DC-028			Camera	74	660040	6196212	660086	6196220	-46	-8	47	80		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	01:24:47	1411	BP23MVEXP-ENV-DC-028			Camera	74	660038	6196212	660086	6196220	-48	-8	49	81		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
08-Jul-2023	02:29:19	1412	BP23MVEXP-ENV-DC-029			Camera	76	660257	6192227	660307	6192230	-50	-3	50	87		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	02:30:50	1413	BP23MVEXP-ENV-DC-029			Camera	76	660258	6192226	660307	6192230	-49	-4	49	86		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	02:32:40	1414	BP23MVEXP-ENV-DC-029			Camera	76	660266	6192227	660307	6192230	-41	-3	41	86		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	02:33:47	1415	BP23MVEXP-ENV-DC-029			Camera	76	660273	6192228	660307	6192230	-34	-2	34	86		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	02:34:30	1416	BP23MVEXP-ENV-DC-029			Camera	76	660276	6192228	660307	6192230	-31	-2	31	85		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	02:35:09	1417	BP23MVEXP-ENV-DC-029			Camera	76	660281	6192228	660307	6192230	-26	-2	26	86		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	02:35:40	1418	BP23MVEXP-ENV-DC-029			Camera	76	660284	6192229	660307	6192230	-23	-1	23	87		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	02:36:47	1419	BP23MVEXP-ENV-DC-029			Camera	76	660292	6192229	660307	6192230	-15	-1	15	87		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	02:37:29	1420	BP23MVEXP-ENV-DC-029			Camera	76	660297	6192229	660307	6192230	-10	-1	10	85		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	02:38:03	1421	BP23MVEXP-ENV-DC-029			Camera	76	660300	6192230	660307	6192230	-7	0	7	87		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	02:38:12	1422	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192230	660307	6192230	-6	0	6	88		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	02:38:57	1423	BP23MVEXP-ENV-DC-029			Camera	76	660305	6192230	660307	6192230	-2	0	2	92		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	02:39:47	1424	BP23MVEXP-ENV-DC-029			Camera	76	660310	6192230	660307	6192230	3	0	3	-96		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	02:40:10	1425	BP23MVEXP-ENV-DC-029			Camera	76	660313	6192230	660307	6192230	6	0	6	-94		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	02:42:10	1426	BP23MVEXP-ENV-DC-029			Camera	76	660324	6192232	660307	6192230	17	2	17	-96		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	02:42:26	1427	BP23MVEXP-ENV-DC-029			Camera	76	660326	6192232	660307	6192230	19	2	19	-96		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	02:42:56	1428	BP23MVEXP-ENV-DC-029			Camera	76	660329	6192232	660307	6192230	22	2	22	-95		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	02:43:50	1429	BP23MVEXP-ENV-DC-029			Camera	77	660335	6192233	660307	6192230	28	3	28	-96		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	02:44:05	1430	BP23MVEXP-ENV-DC-029			Camera	76	660336	6192233	660307	6192230	29	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	02:44:50	1431	BP23MVEXP-ENV-DC-029			Camera	76	660342	6192233	660307	6192230	35	3	35	-96		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	02:45:38	1432	BP23MVEXP-ENV-DC-029			Camera	77	660346	6192233	660307	6192230	39	3	39	-95		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	02:46:43	1433	BP23MVEXP-ENV-DC-029			Camera	77	660353	6192234	660307	6192230	46	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	03:00:47	1434	BP23MVEXP-ENV-DC-029			Camera	77	660314	6192179	660307	6192230	7	-51	51	-7		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	03:02:28	1435	BP23MVEXP-ENV-DC-029			Camera	77	660310	6192180	660307	6192230	3	-50	50	-3		(Raw Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	03:04:10	1436	BP23MVEXP-ENV-DC-029			Camera	77	660309	6192186	660307	6192230	2	-44	44	-2		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	03:04:44	1437	BP23MVEXP-ENV-DC-029			Camera	77	660308	6192189	660307	6192230	1	-41	41	-2		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	03:05:20	1438	BP23MVEXP-ENV-DC-029			Camera	77	660308	6192193	660307	6192230	1	-37	37	-1		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	03:05:53	1439	BP23MVEXP-ENV-DC-029			Camera	77	660307	6192196	660307	6192230	0	-34	34	0		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	03:06:40	1440	BP23MVEXP-ENV-DC-029			Camera	77	660307	6192201	660307	6192230	0	-29	29	-1		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	03:07:12	1441	BP23MVEXP-ENV-DC-029			Camera	76	660307	6192204	660307	6192230	0	-26	26	0		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	03:08:26	1442	BP23MVEXP-ENV-DC-029			Camera	77	660306	6192211	660307	6192230	-1	-19	19	4		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	03:09:15	1443	BP23MVEXP-ENV-DC-029			Camera	77	660304	6192216	660307	6192230	-3	-14	15	10		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	03:10:20	1444	BP23MVEXP-ENV-DC-029			Camera	76	660303	6192223	660307	6192230	-4	-7	8	27		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	03:11:25	1445	BP23MVEXP-ENV-DC-029			Camera	76	660304	6192230	660307	6192230	-3	0	3	88		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	03:11:52	1446	BP23MVEXP-ENV-DC-029			Camera	76	660304	6192232	660307	6192230	-3	2	4	123		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	03:12:48	1447	BP23MVEXP-ENV-DC-029			Camera	76	660304	6192237	660307	6192230	-3	7	8	154		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	03:13:43	1448	BP23MVEXP-ENV-DC-029			Camera	76	660303	6192243	660307	6192230	-4	13	13	165		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	03:14:17	1449	BP23MVEXP-ENV-DC-029			Camera	76	660303	6192246	660307	6192230	-4	17	17	166		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	03:15:03	1450	BP23MVEXP-ENV-DC-029			Camera	76	660302	6192251	660307	6192230	-5	21	22	167		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	03:16:08	1451	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192258	660307	6192230	-6	28	28	168		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	03:16:57	1452	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192262	660307	6192230	-6	33	33	169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	03:17:54	1453	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192268	660307	6192230	-6	38	39	171		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	03:18:33	1454	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192272	660307	6192230	-6	43	43	172		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
08-Jul-2023	03:19:27	1455	BP23MVEXP-ENV-DC-029			Camera	76	660301	6192277	660307	6192230	-6	47	47	172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	05:02:19	1456	BP23MVEXP-ENV-DC-030			Camera	74	660578	6188291	660581	6188239	-3	52	52	176		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	05:02:47	1457	BP23MVEXP-ENV-DC-030			Camera	74	660578	6188291	660581	6188239	-3	52	52	177		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	05:04:46	1458	BP23MVEXP-ENV-DC-030			Camera	74	660578	6188288	660581	6188239	-3	49	49	177		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	05:05:12	1459	BP23MVEXP-ENV-DC-030			Camera	74	660579	6188286	660581	6188239	-2	47	47	177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	05:06:12	1460	BP23MVEXP-ENV-DC-030			Camera	74	660579	6188279	660581	6188239	-2	40	40	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	05:07:31	1461	BP23MVEXP-ENV-DC-030			Camera	74	660580	6188272	660581	6188239	-1	33	33	178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	05:07:50	1462	BP23MVEXP-ENV-DC-030			Camera	74	660580	6188270	660581	6188239	-1	31	31	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	05:09:24	1463	BP23MVEXP-ENV-DC-030			Camera	74	660581	6188261	660581	6188239	0	22	22	-179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	05:10:26	1464	BP23MVEXP-ENV-DC-030			Camera	74	660582	6188253	660581	6188239	1	14	14	-176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	05:11:43	1465	BP23MVEXP-ENV-DC-030			Camera	74	660583	6188246	660581	6188239	2	7	7	-162		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	05:13:08	1466	BP23MVEXP-ENV-DC-030			Camera	74	660584	6188238	660581	6188239	3	-1	3	-78		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	05:13:26	1467	BP23MVEXP-ENV-DC-030			Camera	74	660584	6188237	660581	6188239	3	-2	4	-56		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	05:14:28	1468	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188230	660581	6188239	4	-9	9	-23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	05:15:23	1469	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188224	660581	6188239	4	-15	15	-16		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	05:15:43	1470	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188222	660581	6188239	4	-17	17	-14		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	05:16:29	1471	BP23MVEXP-ENV-DC-030			Camera	74	660586	6188217	660581	6188239	5	-22	23	-13		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	05:17:37	1472	BP23MVEXP-ENV-DC-030			Camera	74	660587	6188210	660581	6188239	6	-29	30	-11		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	05:18:37	1473	BP23MVEXP-ENV-DC-030			Camera	74	660587	6188203	660581	6188239	6	-36	36	-10		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	05:19:16	1474	BP23MVEXP-ENV-DC-030			Camera	74	660588	6188200	660581	6188239	7	-39	40	-10		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	05:19:43	1475	BP23MVEXP-ENV-DC-030			Camera	74	660589	6188197	660581	6188239	8	-42	42	-10		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	05:20:01	1476	BP23MVEXP-ENV-DC-030			Camera	74	660589	6188196	660581	6188239	8	-43	44	-10		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	05:20:16	1477	BP23MVEXP-ENV-DC-030			Camera	74	660588	6188195	660581	6188239	7	-44	45	-10		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	05:20:43	1478	BP23MVEXP-ENV-DC-030			Camera	74	660588	6188192	660581	6188239	7	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	05:21:25	1479	BP23MVEXP-ENV-DC-030			Camera	74	660587	6188188	660581	6188239	6	-51	51	-7		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	05:35:01	1480	BP23MVEXP-ENV-DC-030			Camera	74	660630	6188244	660581	6188239	49	5	49	-95		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	05:36:06	1481	BP23MVEXP-ENV-DC-030			Camera	74	660630	6188246	660581	6188239	49	7	50	-98		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	05:37:13	1482	BP23MVEXP-ENV-DC-030			Camera	74	660623	6188246	660581	6188239	42	7	43	-100		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	05:38:07	1483	BP23MVEXP-ENV-DC-030			Camera	74	660618	6188245	660581	6188239	37	6	37	-99		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	05:40:18	1484	BP23MVEXP-ENV-DC-030			Camera	74	660605	6188243	660581	6188239	24	4	24	-100		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Jul-2023	05:40:43	1485	BP23MVEXP-ENV-DC-030			Camera	74	660602	6188243	660581	6188239	21	4	22	-102		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	05:41:58	1486	BP23MVEXP-ENV-DC-030			Camera	74	660594	6188243	660581	6188239	13	4	13	-106		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	05:43:28	1487	BP23MVEXP-ENV-DC-030			Camera	74	660585	6188242	660581	6188239	4	3	5	-128		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	05:44:09	1488	BP23MVEXP-ENV-DC-030			Camera	74	660580	6188241	660581	6188239	-1	2	2	168		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	05:45:03	1489	BP23MVEXP-ENV-DC-030			Camera	74	660576	6188240	660581	6188239	-5	1	6	105		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	05:45:37	1490	BP23MVEXP-ENV-DC-030			Camera	74	660572	6188240	660581	6188239	-9	1	9	95		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	05:48:27	1491	BP23MVEXP-ENV-DC-030			Camera	74	660555	6188237	660581	6188239	-26	-2	26	86		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	05:49:41	1492	BP23MVEXP-ENV-DC-030			Camera	74	660547	6188236	660581	6188239	-34	-3	34	85		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	05:51:20	1493	BP23MVEXP-ENV-DC-030			Camera	74	660537	6188234	660581	6188239	-44	-5	44	84		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	05:51:28	1494	BP23MVEXP-ENV-DC-030			Camera	74	660537	6188234	660581	6188239	-45	-5	45	84		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	08:05:27	1495	BP23MVEXP-ENV-DC-031A			Camera	73	660750	6184242	660798	6184246	-48	-4	48	86		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	08:07:03	1496	BP23MVEXP-ENV-DC-031A			Camera	73	660750	6184243	660798	6184246	-48	-3	48	86		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	08:07:22	1497	BP23MVEXP-ENV-DC-031A			Camera	73	660752	6184244	660798	6184246	-46	-2	46	87		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	08:07:59	1498	BP23MVEXP-ENV-DC-031A			Camera	73	660757	6184243	660798	6184246	-41	-3	41	86		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	08:10:07	1499	BP23MVEXP-ENV-DC-031A			Camera	73	660768	6184244	660798	6184246	-30	-2	30	86		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	08:10:20	1500	BP23MVEXP-ENV-DC-031A			Camera	73	660769	6184244	660798	6184246	-29	-2	29	86		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	08:11:24	1501	BP23MVEXP-ENV-DC-031A			Camera	73	660775	6184245	660798	6184246	-23	-1	23	87		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	08:11:58	1502	BP23MVEXP-ENV-DC-031A			Camera	73	660778	6184246	660798	6184246	-20	0	20	90		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	08:12:53	1503	BP23MVEXP-ENV-DC-031A			Camera	73	660783	6184247	660798	6184246	-15	1	15	93		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	08:13:55	1504	BP23MVEXP-ENV-DC-031A			Camera	73	660792	6184247	660798	6184246	-6	1	6	97		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	08:14:02	1505	BP23MVEXP-ENV-DC-031A			Camera	73	660792	6184247	660798	6184246	-6	1	6	98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	08:14:16	1506	BP23MVEXP-ENV-DC-031A			Camera	73	660794	6184247	660798	6184246	-4	1	4	100		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	08:16:33	1507	BP23MVEXP-ENV-DC-031A			Camera	73	660805	6184249	660798	6184246	7	3	7	-111		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	08:17:02	1508	BP23MVEXP-ENV-DC-031A			Camera	73	660807	6184249	660798	6184246	9	3	10	-107		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	08:17:47	1509	BP23MVEXP-ENV-DC-031A			Camera	73	660812	6184249	660798	6184246	14	3	14	-101		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	08:18:54	1510	BP23MVEXP-ENV-DC-031A			Camera	73	660819	6184250	660798	6184246	21	4	21	-101		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	08:19:27	1511	BP23MVEXP-ENV-DC-031A			Camera	73	660823	6184251	660798	6184246	25	5	25	-100		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	08:21:03	1512	BP23MVEXP-ENV-DC-031A			Camera	73	660830	6184253	660798	6184246	32	7	33	-103		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	08:21:22	1513	BP23MVEXP-ENV-DC-031A			Camera	73	660833	6184253	660798	6184246	35	7	36	-102		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	08:22:17	1514	BP23MVEXP-ENV-DC-031A			Camera	73	660839	6184254	660798	6184246	41	8	41	-101		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	08:22:49	1515	BP23MVEXP-ENV-DC-031A			Camera	73	660843	6184254	660798	6184246	45	8	46	-99		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	17:23:13	1516	BP23MVEXP-ENV-DC-031B			Camera	74	660790	6184290	660798	6184246	-8	44	45	170		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	17:26:00	1517	BP23MVEXP-ENV-DC-031B			Camera	74	660793	6184292	660798	6184246	-5	46	47	173		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	17:28:06	1518	BP23MVEXP-ENV-DC-031B			Camera	74	660795	6184295	660798	6184246	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	17:28:33	1519	BP23MVEXP-ENV-DC-031B			Camera	74	660796	6184293	660798	6184246	-2	47	47	178		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	17:29:01	1520	BP23MVEXP-ENV-DC-031B			Camera	74	660797	6184289	660798	6184246	-1	43	43	179		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	17:29:25	1521	BP23MVEXP-ENV-DC-031B			Camera	74	660797	6184287	660798	6184246	-1	41	41	179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	17:30:21	1522	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184281	660798	6184246	0	35	35	180		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	17:30:33	1523	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184279	660798	6184246	0	33	33	180		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	17:31:01	1524	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184277	660798	6184246	0	31	31	-180		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	17:32:22	1525	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184268	660798	6184246	0	22	22	-179		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	17:32:41	1526	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184266	660798	6184246	0	20	20	-179		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	17:32:48	1527	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184266	660798	6184246	0	20	20	-180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	17:33:30	1528	BP23MVEXP-ENV-DC-031B			Camera	74	660798	6184262	660798	6184246	0	16	16	-178		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	17:34:00	1529	BP23MVEXP-ENV-DC-031B			Camera	74	660800	6184258	660798	6184246	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	17:35:17	1530	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184251	660798	6184246	3	5	5	-152		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	17:35:40	1531	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184248	660798	6184246	3	2	3	-133		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	17:35:58	1532	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184247	660798	6184246	3	1	3	-103		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	17:36:32	1533	BP23MVEXP-ENV-DC-031B			Camera	74	660801	6184244	660798	6184246	3	-2	4	-53		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	17:37:44	1534	BP23MVEXP-ENV-DC-031B			Camera	74	660803	6184235	660798	6184246	5	-11	12	-26		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	17:38:15	1535	BP23MVEXP-ENV-DC-031B			Camera	74	660803	6184232	660798	6184246	5	-14	15	-20		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	17:39:11	1536	BP23MVEXP-ENV-DC-031B			Camera	73	660804	6184226	660798	6184246	6	-20	20	-16		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	17:39:38	1537	BP23MVEXP-ENV-DC-031B			Camera	73	660804	6184224	660798	6184246	6	-23	23	-14		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	17:39:53	1538	BP23MVEXP-ENV-DC-031B			Camera	73	660804	6184222	660798	6184246	6	-24	24	-13		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	17:41:12	1539	BP23MVEXP-ENV-DC-031B			Camera	73	660805	6184214	660798	6184246	7	-32	33	-13		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	17:41:33	1540	BP23MVEXP-ENV-DC-031B			Camera	73	660806	6184212	660798	6184246	8	-34	35	-13		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	17:43:21	1541	BP23MVEXP-ENV-DC-031B			Camera	73	660806	6184199	660798	6184246	8	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	19:17:30	1542	BP23MVEXP-ENV-DC-032			Camera	69	661014	6180298	661016	6180251	-2	47	47	178		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	19:18:52	1543	BP23MVEXP-ENV-DC-032			Camera	69	661015	6180298	661016	6180251	-1	47	47	178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	19:20:02	1544	BP23MVEXP-ENV-DC-032			Camera	69	661014	6180294	661016	6180251	-2	43	43	178		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	19:21:00	1545	BP23MVEXP-ENV-DC-032			Camera	69	661015	6180288	661016	6180251	-1	37	37	178		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	19:21:28	1546	BP23MVEXP-ENV-DC-032			Camera	69	661015	6180285	661016	6180251	-1	34	34	178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	19:22:15	1547	BP23MVEXP-ENV-DC-032			Camera	69	661016	6180279	661016	6180251	0	28	28	179		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	19:23:01	1548	BP23MVEXP-ENV-DC-032			Camera	69	661016	6180275	661016	6180251	0	24	24	-179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	19:23:37	1549	BP23MVEXP-ENV-DC-032			Camera	69	661017	6180271	661016	6180251	1	20	20	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	19:24:36	1550	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180265	661016	6180251	2	14	14	-171		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	19:25:03	1551	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180262	661016	6180251	2	11	11	-169		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	19:25:16	1552	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180261	661016	6180251	2	10	10	-168		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	19:26:16	1553	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180254	661016	6180251	2	3	4	-144		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	19:26:45	1554	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180251	661016	6180251	2	0	2	-93		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	19:27:00	1555	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180250	661016	6180251	3	-1	3	-61		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	19:27:18	1556	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180247	661016	6180251	3	-4	4	-38		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	19:28:09	1557	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180243	661016	6180251	3	-8	8	-19		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	19:28:37	1558	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180241	661016	6180251	3	-10	10	-14		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	19:28:46	1559	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180240	661016	6180251	2	-11	11	-13		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	19:29:14	1560	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180238	661016	6180251	2	-13	14	-11		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	19:29:55	1561	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180233	661016	6180251	2	-18	18	-7		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	19:30:12	1562	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180231	661016	6180251	2	-20	20	-7		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	19:30:28	1563	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180230	661016	6180251	2	-21	21	-6		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	19:31:04	1564	BP23MVEXP-ENV-DC-032			Camera	69	661018	6180226	661016	6180251	2	-25	26	-6		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	19:31:29	1565	BP23MVEXP-ENV-DC-032			Camera	69	661019	6180223	661016	6180251	3	-29	29	-6		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	19:31:55	1566	BP23MVEXP-ENV-DC-032			Camera	69	661020	6180219	661016	6180251	4	-32	32	-7		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	19:32:31	1567	BP23MVEXP-ENV-DC-032			Camera	69	661021	6180215	661016	6180251	5	-36	36	-8		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	19:33:15	1568	BP23MVEXP-ENV-DC-032			Camera	69	661022	6180211	661016	6180251	6	-40	41	-8		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	19:35:33	1569	BP23MVEXP-ENV-DC-032			Camera	69	661022	6180201	661016	6180251	6	-50	51	-7		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	19:50:48	1570	BP23MVEXP-ENV-DC-032			Camera	69	660968	6180248	661016	6180251	-48	-3	48	87		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	19:51:36	1571	BP23MVEXP-ENV-DC-032			Camera	69	660973	6180249	661016	6180251	-43	-2	43	87		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	19:52:11	1572	BP23MVEXP-ENV-DC-032			Camera	69	660977	6180249	661016	6180251	-39	-2	39	87		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	19:52:32	1573	BP23MVEXP-ENV-DC-032			Camera	69	660979	6180249	661016	6180251	-37	-2	37	87		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	19:53:44	1574	BP23MVEXP-ENV-DC-032			Camera	69	660987	6180251	661016	6180251	-29	0	29	89		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	19:54:18	1575	BP23MVEXP-ENV-DC-032			Camera	69	660990	6180251	661016	6180251	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	19:55:03	1576	BP23MVEXP-ENV-DC-032			Camera	69	660995	6180251	661016	6180251	-21	0	21	91		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	19:55:26	1577	BP23MVEXP-ENV-DC-032			Camera	69	660997	6180252	661016	6180251	-19	1	19	92		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	19:55:49	1578	BP23MVEXP-ENV-DC-032			Camera	69	660999	6180252	661016	6180251	-17	1	17	93		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	19:56:08	1579	BP23MVEXP-ENV-DC-032			Camera	69	661001	6180252	661016	6180251	-15	1	15	94		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	19:57:19	1580	BP23MVEXP-ENV-DC-032			Camera	69	661008	6180252	661016	6180251	-8	1	8	100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	19:58:04	1581	BP23MVEXP-ENV-DC-032			Camera	69	661012	6180253	661016	6180251	-4	2	5	122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	19:58:22	1582	BP23MVEXP-ENV-DC-032			Camera	69	661014	6180254	661016	6180251	-2	3	4	152		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	19:58:40	1583	BP23MVEXP-ENV-DC-032			Camera	69	661016	6180254	661016	6180251	0	3	3	-172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	19:59:35	1584	BP23MVEXP-ENV-DC-032			Camera	69	661023	6180254	661016	6180251	7	3	8	-115		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Jul-2023	20:00:33	1585	BP23MVEXP-ENV-DC-032			Camera	69	661029	6180255	661016	6180251	13	4	14	-108		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	20:01:27	1586	BP23MVEXP-ENV-DC-032			Camera	69	661033	6180256	661016	6180251	17	5	18	-106		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
08-Jul-2023	20:02:36	1587	BP23MVEXP-ENV-DC-032			Camera	69	661041	6180256	661016	6180251	25	5	26	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
08-Jul-2023	20:03:45	1588	BP23MVEXP-ENV-DC-032			Camera	69	661048	6180256	661016	6180251	33	5	33	-100		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
08-Jul-2023	20:06:34	1589	BP23MVEXP-ENV-DC-032			Camera	69	661065	6180258	661016	6180251	49	7	49	-99		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
08-Jul-2023	22:14:04	1590	BP23MVEXP-ENV-DC-033			Camera	66	661234	6176321	661235	6176269	-1	52	52	179		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
08-Jul-2023	22:16:10	1591	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176318	661235	6176269	0	49	49	-180		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
08-Jul-2023	22:16:32	1592	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176316	661235	6176269	0	47	47	-180		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
08-Jul-2023	22:17:24	1593	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176310	661235	6176269	0	42	41	180		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
08-Jul-2023	22:17:35	1594	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176310	661235	6176269	0	41	41	180		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
08-Jul-2023	22:17:45	1595	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176309	661235	6176269	0	40	40	180		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
08-Jul-2023	22:18:10	1596	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176306	661235	6176269	0	37	37	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
08-Jul-2023	22:18:37	1597	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176304	661235	6176269	0	35	35	-179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
08-Jul-2023	22:18:54	1598	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176302	661235	6176269	1	33	33	-178		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
08-Jul-2023	22:19:08	1599	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176300	661235	6176269	1	31	31	-178		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
08-Jul-2023	22:19:33	1600	BP23MVEXP-ENV-DC-033			Camera	66	661237	6176297	661235	6176269	2	28	28	-176		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
08-Jul-2023	22:20:04	1601	BP23MVEXP-ENV-DC-033			Camera	66	661237	6176294	661235	6176269	2	25	25	-176		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
08-Jul-2023	22:20:36	1602	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176292	661235	6176269	1	23	23	-177		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
08-Jul-2023	22:20:49	1603	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176291	661235	6176269	1	22	22	-178		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
08-Jul-2023	22:21:05	1604	BP23MVEXP-ENV-DC-033			Camera	66	661236	6176290	661235	6176269	1	21	21	-177		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
08-Jul-2023	22:21:36	1605	BP23MVEXP-ENV-DC-033			Camera	66	661237	6176287	661235	6176269	2	18	18	-174		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
08-Jul-2023	22:21:52	1606	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176285	661235	6176269	3	16	16	-171		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
08-Jul-2023	22:22:16	1607	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176282	661235	6176269	3	13	13	-166		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
08-Jul-2023	22:22:38	1608	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176279	661235	6176269	3	10	11	-163		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
08-Jul-2023	22:23:11	1609	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176275	661235	6176269	3	6	7	-156		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
08-Jul-2023	22:23:41	1610	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176273	661235	6176269	3	4	5	-141		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
08-Jul-2023	22:23:54	1611	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176271	661235	6176269	3	2	4	-130		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
08-Jul-2023	22:24:03	1612	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176271	661235	6176269	3	2	4	-116		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
08-Jul-2023	22:24:16	1613	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176269	661235	6176269	4	0	4	-90		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
08-Jul-2023	22:24:28	1614	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176268	661235	6176269	4	-1	4	-72		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
08-Jul-2023	22:25:58	1615	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176258	661235	6176269	4	-11	12	-21		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
08-Jul-2023	22:26:14	1616	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176256	661235	6176269	4	-13	14	-19		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
08-Jul-2023	22:26:35	1617	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176254	661235	6176269	5	-15	16	-17		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
08-Jul-2023	22:26:58	1618	BP23MVEXP-ENV-DC-033			Camera	66	661239	6176251	661235	6176269	4	-18	18	-14		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
08-Jul-2023	22:28:13	1619	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176244	661235	6176269	5	-25	25	-12		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
08-Jul-2023	22:28:24	1620	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176243	661235	6176269	5	-26	26	-12		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
08-Jul-2023	22:28:44	1621	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176241	661235	6176269	5	-28	28	-11		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
08-Jul-2023	22:29:07	1622	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176239	661235	6176269	5	-30	31	-10		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
08-Jul-2023	22:30:05	1623	BP23MVEXP-ENV-DC-033			Camera	66	661241	6176233	661235	6176269	6	-36	36	-10		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
08-Jul-2023	22:30:17	1624	BP23MVEXP-ENV-DC-033			Camera	66	661241	6176232	661235	6176269	6	-37	37	-10		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
08-Jul-2023	22:31:30	1625	BP23MVEXP-ENV-DC-033			Camera	66	661241	6176226	661235	6176269	6	-43	44	-8		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
08-Jul-2023	22:47:13	1626	BP23MVEXP-ENV-DC-033			Camera	66	661283	6176273	661235	6176269	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
08-Jul-2023	22:47:37	1627	BP23MVEXP-ENV-DC-033			Camera	66	661281	6176273	661235	6176269	46	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
08-Jul-2023	22:47:54	1628	BP23MVEXP-ENV-DC-033			Camera	66	661279	6176273	661235	6176269	44	4	44	-96		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
08-Jul-2023	22:48:21	1629	BP23MVEXP-ENV-DC-033			Camera	66	661275	6176273	661235	6176269	40	4	41	-95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
08-Jul-2023	22:48:33	1630	BP23MVEXP-ENV-DC-033			Camera	66	661274	6176273	661235	6176269	39	4	39	-96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
08-Jul-2023	22:49:44	1631	BP23MVEXP-ENV-DC-033			Camera	66	661267	6176272	661235	6176269	32	3	32	-96		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
08-Jul-2023	22:50:21	1632	BP23MVEXP-ENV-DC-033			Camera	66	661264	6176272	661235	6176269	29	3	29	-97		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
08-Jul-2023	22:51:24	1633	BP23MVEXP-ENV-DC-033			Camera	66	661257	6176271	661235	6176269	22	2	22	-96		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
08-Jul-2023	22:52:06	1634	BP23MVEXP-ENV-DC-033			Camera	66	661253	6176271	661235	6176269	18	2	18	-96		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
08-Jul-2023	22:53:31	1635	BP23MVEXP-ENV-DC-033			Camera	66	661244	6176270	661235	6176269	9	1	9	-96		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
08-Jul-2023	22:53:56	1636	BP23MVEXP-ENV-DC-033			Camera	66	661242	6176269	661235	6176269	7	0	7	-93		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
08-Jul-2023	22:54:12	1637	BP23MVEXP-ENV-DC-033			Camera	66	661240	6176269	661235	6176269	5	0	5	-93		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
08-Jul-2023	22:54:30	1638	BP23MVEXP-ENV-DC-033			Camera	66	661238	6176269	661235	6176269	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
08-Jul-2023	22:54:55	1639	BP23MVEXP-ENV-DC-033			Camera	66	661235	6176269	661235	6176269	0	0	0	-79		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
08-Jul-2023	22:55:09	1640	BP23MVEXP-ENV-DC-033			Camera	66	661234	6176269	661235	6176269	-1	0	1	69		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
08-Jul-2023	22:59:00	1641	BP23MVEXP-ENV-DC-033			Camera	66	661210	6176267	661235	6176269	-25	-2	25	85		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
08-Jul-2023	22:59:30	1642	BP23MVEXP-ENV-DC-033			Camera	66	661206	6176267	661235	6176269	-29	-2	29	85		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
08-Jul-2023	22:59:49	1643	BP23MVEXP-ENV-DC-033			Camera	66	661204	6176266	661235	6176269	-31	-3	31	85		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
09-Jul-2023	01:05:13	1644	BP23MVEXP-ENV-DC-034			Camera	64	661401	6172275	661451	6172274	-50	1	50	91		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	01:06:20	1645	BP23MVEXP-ENV-DC-034			Camera	65	661401	6172275	661451	6172274	50	-1	50	91		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
09-Jul-2023	01:06:37	1646	BP23MVEXP-ENV-DC-034			Camera	64	661403	6172274	661451	6172274	-48	0	48	91		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	01:07:03	1647	BP23MVEXP-ENV-DC-034			Camera	64	661406	6172275	661451	6172274	-46	1	45	91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	01:08:24	1648	BP23MVEXP-ENV-DC-034			Camera	64	661415	6172275	661451	6172274	-37	1	37	92		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	01:09:55	1649	BP23MVEXP-ENV-DC-034			Camera	64	661423	6172276	661451	6172274	-28	2	28	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	01:10:49	1650	BP23MVEXP-ENV-DC-034			Camera	64	661428	6172277	661451	6172274	-23	3	23	97		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	01:12:01	1651	BP23MVEXP-ENV-DC-034			Camera	64	661437	6172277	661451	6172274	-14	3	15	102		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	01:13:05	1652	BP23MVEXP-ENV-DC-034			Camera	64	661443	6172277	661451	6172274	-8	3	9	113		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	01:13:58	1653	BP23MVEXP-ENV-DC-034			Camera	64	661449	6172278	661451	6172274	-2	4	4	149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	01:15:23	1654	BP23MVEXP-ENV-DC-034			Camera	64	661457	6172278	661451	6172274	6	4	7	-121		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	01:15:50	1655	BP23MVEXP-ENV-DC-034			Camera	64	661460	6172278	661451	6172274	9	4	10	-112		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	01:16:41	1656	BP23MVEXP-ENV-DC-034			Camera	64	661466	6172279	661451	6172274	15	5	16	-107		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	01:17:55	1657	BP23MVEXP-ENV-DC-034			Camera	64	661473	6172279	661451	6172274	22	5	22	-103		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	01:18:26	1658	BP23MVEXP-ENV-DC-034			Camera	64	661476	6172279	661451	6172274	25	5	26	-102		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	01:19:17	1659	BP23MVEXP-ENV-DC-034			Camera	64	661481	6172279	661451	6172274	30	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	01:19:33	1660	BP23MVEXP-ENV-DC-034			Camera	64	661483	6172280	661451	6172274	32	6	32	-100		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	01:20:36	1661	BP23MVEXP-ENV-DC-034			Camera	64	661490	6172279	661451	6172274	39	5	39	-97		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	01:20:59	1662	BP23MVEXP-ENV-DC-034			Camera	64	661492	6172279	661451	6172274	41	5	41	-97		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	01:21:37	1663	BP23MVEXP-ENV-DC-034			Camera	64	661496	6172279	661451	6172274	45	5	45	-96		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	01:22:08	1664	BP23MVEXP-ENV-DC-034			Camera	64	661499	6172279	661451	6172274	48	5	49	-96		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	01:22:16	1665	BP23MVEXP-ENV-DC-034			Camera	64	661500	6172280	661451	6172274	49	6	49	-96		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	01:36:39	1666	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172320	661451	6172274	-5	46	47	174		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	01:38:15	1667	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172319	661451	6172274	-5	45	45	174		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	01:38:35	1668	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172318	661451	6172274	-5	44	44	174		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	01:39:28	1669	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172313	661451	6172274	-5	39	39	173		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	01:40:32	1670	BP23MVEXP-ENV-DC-034			Camera	64	661446	6172306	661451	6172274	-5	32	32	172		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	01:40:59	1671	BP23MVEXP-ENV-DC-034			Camera	64	661447	6172303	661451	6172274	-4	29	29	172		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	01:41:58	1672	BP23MVEXP-ENV-DC-034			Camera	64	661448	6172297	661451	6172274	-3	23	23	172		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	01:42:52	1673	BP23MVEXP-ENV-DC-034			Camera	64	661449	6172291	661451	6172274	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	01:43:27	1674	BP23MVEXP-ENV-DC-034			Camera	64	661450	6172288	661451	6172274	-1	14	14	175		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	01:44:28	1675	BP23MVEXP-ENV-DC-034			Camera	64	661450	6172281	661451	6172274	-1	7	7	170		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	01:45:07	1676	BP23MVEXP-ENV-DC-034			Camera	64	661449	6172278	661451	6172274	-2	4	4	158		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	01:46:30	1677	BP23MVEXP-ENV-DC-034			Camera	64	661452	6172268	661451	6172274	1	-6	6	-5		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	01:47:46	1678	BP23MVEXP-ENV-DC-034			Camera	64	661452	6172260	661451	6172274	1	-14	14	-5		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	01:48:25	1679	BP23MVEXP-ENV-DC-034			Camera	64	661452	6172257	661451	6172274	1	-17	17	-5		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	01:49:39	1680	BP23MVEXP-ENV-DC-034			Camera	64	661453	6172249	661451	6172274	2	-25	26	-5		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	01:49:57	1681	BP23MVEXP-ENV-DC-034			Camera	64	661453	6172247	661451	6172274	2	-28	28	-5		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	01:50:28	1682	BP23MVEXP-ENV-DC-034			Camera	64	661454	6172243	661451	6172274	3	-31	31	-6		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	01:51:19	1683	BP23MVEXP-ENV-DC-034			Camera	64	661455	6172238	661451	6172274	4	-36	36	-6		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	01:52:33	1684	BP23MVEXP-ENV-DC-034			Camera	64	661456	6172230	661451	6172274	5	-44	44	-6		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	01:52:57	1685	BP23MVEXP-ENV-DC-034			Camera	64	661456	6172228	661451	6172274	5	-46	46	-6		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	03:28:31	1686	BP23MVEXP-ENV-DC-035			Camera	63	661190	6168181	661223	6168222	-33	-41	53	39		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	03:29:57	1687	BP23MVEXP-ENV-DC-035			Camera	63	661191	6168182	661223	6168222	-32	-40	51	38		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	03:30:30	1688	BP23MVEXP-ENV-DC-035			Camera	63	661192	6168184	661223	6168222	-31	-38	49	39		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	03:31:22	1689	BP23MVEXP-ENV-DC-035			Camera	63	661195	6168189	661223	6168222	-28	-33	44	41		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	03:32:41	1690	BP23MVEXP-ENV-DC-035			Camera	63	661201	6168195	661223	6168222	-22	-27	35	40		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	03:33:03	1691	BP23MVEXP-ENV-DC-035			Camera	63	661203	6168197	661223	6168222	-21	-25	33	39		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	03:33:17	1692	BP23MVEXP-ENV-DC-035			Camera	63	661203	6168197	661223	6168222	-20	-25	31	39		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	03:34:21	1693	BP23MVEXP-ENV-DC-035			Camera	63	661207	6168202	661223	6168222	-16	-20	25	39		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	03:34:53	1694	BP23MVEXP-ENV-DC-035			Camera	63	661209	6168205	661223	6168222	-14	-17	22	39		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	03:35:38	1695	BP23MVEXP-ENV-DC-035			Camera	63	661212	6168208	661223	6168222	-11	-14	18	39		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	03:36:21	1696	BP23MVEXP-ENV-DC-035			Camera	63	661214	6168212	661223	6168222	-9	-10	13	41		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	03:37:07	1697	BP23MVEXP-ENV-DC-035			Camera	63	661217	6168216	661223	6168222	-6	-6	9	43		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	03:37:48	1698	BP23MVEXP-ENV-DC-035			Camera	63	661219	6168219	661223	6168222	-4	-3	5	53		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	03:38:29	1699	BP23MVEXP-ENV-DC-035			Camera	63	661222	6168223	661223	6168222	-1	1	1	117		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	03:39:16	1700	BP23MVEXP-ENV-DC-035			Camera	63	661225	6168227	661223	6168222	2	5	6	-156		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	03:41:13	1701	BP23MVEXP-ENV-DC-035			Camera	63	661232	6168236	661223	6168222	9	14	17	-146		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	03:41:39	1702	BP23MVEXP-ENV-DC-035			Camera	63	661233	6168239	661223	6168222	11	17	20	-148		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	03:42:20	1703	BP23MVEXP-ENV-DC-035			Camera	63	661236	6168242	661223	6168222	13	20	24	-146		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	03:43:09	1704	BP23MVEXP-ENV-DC-035			Camera	63	661241	6168245	661223	6168222	18	23	29	-143		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	03:44:20	1705	BP23MVEXP-ENV-DC-035			Camera	63	661244	6168251	661223	6168222	21	29	36	-144		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	03:45:02	1706	BP23MVEXP-ENV-DC-035			Camera	63	661247	6168255	661223	6168222	25	33	41	-143		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	03:45:20	1707	BP23MVEXP-ENV-DC-035			Camera	63	661249	6168256	661223	6168222	26	34	42	-143		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	03:46:06	1708	BP23MVEXP-ENV-DC-035			Camera	63	661251	6168259	661223	6168222	28	37	47	-143		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	03:46:27	1709	BP23MVEXP-ENV-DC-035			Camera	63	661252	6168261	661223	6168222	29	39	49	-143		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	03:59:54	1710	BP23MVEXP-ENV-DC-035			Camera	63	661182	6168251	661223	6168222	-41	29	50	125		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	04:00:28	1711	BP23MVEXP-ENV-DC-035			Camera	63	661183	6168251	661223	6168222	-41	29	50	125		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	04:01:12	1712	BP23MVEXP-ENV-DC-035			Camera	63	661186	6168249	661223	6168222	-37	27	46	126		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	04:01:37	1713	BP23MVEXP-ENV-DC-035			Camera	63	661189	6168248	661223	6168222	-34	26	43	127		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	04:02:44	1714	BP23MVEXP-ENV-DC-035			Camera	63	661195	6168243	661223	6168222	-28	21	35	127		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	04:03:23	1715	BP23MVEXP-ENV-DC-035			Camera	63	661199	6168241	661223	6168222	-24	19	31	127		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	04:03:59	1716	BP23MVEXP-ENV-DC-035			Camera	63	661202	6168238	661223	6168222	-21	16	27	127		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	04:05:15	1717	BP23MVEXP-ENV-DC-035			Camera	63	661207	6168234	661223	6168222	-16	12	20	128		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	04:05:50	1718	BP23MVEXP-ENV-DC-035			Camera	63	661210	6168232	661223	6168222	-13	10	16	129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	04:06:27	1719	BP23MVEXP-ENV-DC-035			Camera	63	661214	6168230	661223	6168222	-9	8	12	130		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	04:07:19	1720	BP23MVEXP-ENV-DC-035			Camera	63	661218	6168226	661223	6168222	-5	4	6	132		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	04:07:54	1721	BP23MVEXP-ENV-DC-035			Camera	63	661221	6168224	661223	6168222	-2	2	3	140		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	04:08:35	1722	BP23MVEXP-ENV-DC-035			Camera	63	661224	6168222	661223	6168222	1	0	1	-91		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	04:09:11	1723	BP23MVEXP-ENV-DC-035			Camera	63	661227	6168220	661223	6168222	4	-2	5	-62		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	04:09:50	1724	BP23MVEXP-ENV-DC-035			Camera	63	661230	6168218	661223	6168222	7	-4	9	-60		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	04:11:15	1725	BP23MVEXP-ENV-DC-035			Camera	63	661238	6168212	661223	6168222	15	-10	18	-57		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	04:11:45	1726	BP23MVEXP-ENV-DC-035			Camera	63	661241	6168211	661223	6168222	18	-12	21	-57		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	04:12:53	1727	BP23MVEXP-ENV-DC-035			Camera	63	661247	6168207	661223	6168222	24	-15	28	-57		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	04:13:11	1728	BP23MVEXP-ENV-DC-035			Camera	63	661248	6168206	661223	6168222	25	-16	30	-57		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	04:14:02	1729	BP23MVEXP-ENV-DC-035			Camera	63	661252	6168203	661223	6168222	29	-20	35	-56		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	04:14:46	1730	BP23MVEXP-ENV-DC-035			Camera	63	661255	6168200	661223	6168222	32	-22	39	-56		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	04:15:29	1731	BP23MVEXP-ENV-DC-035			Camera	63	661259	6168197	661223	6168222	36	-25	44	-56		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	04:15:39	1732	BP23MVEXP-ENV-DC-035			Camera	63	661260	6168197	661223	6168222	37	-25	45	-56		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	04:16:20	1733	BP23MVEXP-ENV-DC-035			Camera	63	661264	6168195	661223	6168222	41	-27	49	-56		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	05:12:00	1734	BP23MVEXP-ENV-DC-036			Camera	65	658853	6165301	658815	6165338	38	-37	53	-46		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	05:13:50	1735	BP23MVEXP-ENV-DC-036			Camera	65	658853	6165302	658815	6165338	38	-36	52	-46		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	05:14:16	1736	BP23MVEXP-ENV-DC-036			Camera	65	658851	6165303	658815	6165338	36	-35	50	-46		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	05:15:43	1737	BP23MVEXP-ENV-DC-036			Camera	65	658844	6165308	658815	6165338	29	-31	42	-44		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	05:16:47	1738	BP23MVEXP-ENV-DC-036			Camera	65	658839	6165312	658815	6165338	24	-26	35	-43		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	05:17:14	1739	BP23MVEXP-ENV-DC-036			Camera	65	658837	6165314	658815	6165338	22	-24	33	-42		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	05:18:13	1740	BP23MVEXP-ENV-DC-036			Camera	65	658832	6165318	658815	6165338	17	-20	27	-40		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	05:18:48	1741	BP23MVEXP-ENV-DC-036			Camera	65	658829	6165320	658815	6165338	14	-18	23	-38		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	05:20:03	1742	BP23MVEXP-ENV-DC-036			Camera	65	658822	6165326	658815	6165338	7	-12	14	-31		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	05:20:40	1743	BP23MVEXP-ENV-DC-036			Camera	65	658819	6165328	658815	6165338	4	-10	11	-23		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	05:21:32	1744	BP23MVEXP-ENV-DC-036			Camera	65	658815	6165331	658815	6165338	0	-7	7	-3		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	05:22:27	1745	BP23MVEXP-ENV-DC-036			Camera	65	658811	6165335	658815	6165338	-4	-3	5	52		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	05:22:58	1746	BP23MVEXP-ENV-DC-036			Camera	65	658809	6165337	658815	6165338	-6	-1	6	81		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	05:23:58	1747	BP23MVEXP-ENV-DC-036			Camera	65	658805	6165341	658815	6165338	-10	3	11	105		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	05:24:53	1748	BP23MVEXP-ENV-DC-036			Camera	65	658800	6165344	658815	6165338	-15	6	16	112		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	05:25:47	1749	BP23MVEXP-ENV-DC-036			Camera	65	658796	6165348	658815	6165338	-19	10	21	117		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	05:26:44	1750	BP23MVEXP-ENV-DC-036			Camera	65	658792	6165351	658815	6165338	-23	13	27	120		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	05:28:07	1751	BP23MVEXP-ENV-DC-036			Camera	65	658785	6165356	658815	6165338	-30	18	35	121		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	05:29:18	1752	BP23MVEXP-ENV-DC-036			Camera	65	658780	6165361	658815	6165338	-35	23	42	123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	05:30:01	1753	BP23MVEXP-ENV-DC-036			Camera	65	658776	6165364	658815	6165338	-39	26	47	124		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	05:30:27	1754	BP23MVEXP-ENV-DC-036			Camera	65	658774	6165366	658815	6165338	-41	28	49	124		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	05:40:43	1755	BP23MVEXP-ENV-DC-036			Camera	65	658847	6165381	658815	6165338	32	43	54	-143		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	05:42:42	1756	BP23MVEXP-ENV-DC-036			Camera	65	658850	6165377	658815	6165338	35	39	53	-139		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	05:43:48	1757	BP23MVEXP-ENV-DC-036			Camera	65	658847	6165375	658815	6165338	32	37	49	-139		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	05:45:41	1758	BP23MVEXP-ENV-DC-036			Camera	65	658841	6165366	658815	6165338	26	28	38	-137		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	05:46:37	1759	BP23MVEXP-ENV-DC-036			Camera	65	658837	6165362	658815	6165338	22	24	33	-137		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	05:46:55	1760	BP23MVEXP-ENV-DC-036			Camera	65	658836	6165361	658815	6165338	21	23	31	-137		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	05:48:12	1761	BP23MVEXP-ENV-DC-036			Camera	65	658831	6165354	658815	6165338	16	16	23	-135		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	05:48:39	1762	BP23MVEXP-ENV-DC-036			Camera	65	658830	6165352	658815	6165338	15	14	20	-134		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	05:50:16	1763	BP23MVEXP-ENV-DC-036			Camera	65	658823	6165344	658815	6165338	8	6	10	-128		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	05:51:23	1764	BP23MVEXP-ENV-DC-036			Camera	65	658819	6165339	658815	6165338	4	1	4	-110		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	05:51:56	1765	BP23MVEXP-ENV-DC-036			Camera	65	658816	6165337	658815	6165338	1	-2	2	-43		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	05:52:49	1766	BP23MVEXP-ENV-DC-036			Camera	65	658813	6165332	658815	6165338	-2	-6	6	18		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	05:53:24	1767	BP23MVEXP-ENV-DC-036			Camera	65	658811	6165329	658815	6165338	-4	-9	10	26		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	05:55:05	1768	BP23MVEXP-ENV-DC-036			Camera	65	658804	6165321	658815	6165338	-11	-17	20	32		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	05:55:54	1769	BP23MVEXP-ENV-DC-036			Camera	65	658801	6165317	658815	6165338	-14	-21	25	33		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	05:56:58	1770	BP23MVEXP-ENV-DC-036			Camera	65	658797	6165312	658815	6165338	-18	-26	32	35		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	05:57:15	1771	BP23MVEXP-ENV-DC-036			Camera	65	658796	6165311	658815	6165338	-19	-27	33	35		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	05:57:34	1772	BP23MVEXP-ENV-DC-036			Camera	65	658795	6165309	658815	6165338	-20	-29	35	34		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	05:58:30	1773	BP23MVEXP-ENV-DC-036			Camera	65	658791	6165304	658815	6165338	-24	-34	41	35		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	05:58:33	1774	BP23MVEXP-ENV-DC-036			Camera	65	658791	6165304	658815	6165338	-24	-34	41	35		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	05:59:31	1775	BP23MVEXP-ENV-DC-036			Camera	65	658787	6165300	658815	6165338	-28	-38	47	36		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	07:31:01	1776	BP23MVEXP-ENV-DC-037			Camera	63	656243	6162175	656204	6162209	39	-34	52	-49		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	07:33:35	1777	BP23MVEXP-ENV-DC-037			Camera	67	656241	6162176	656204	6162209	-37	33	49	311		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
09-Jul-2023	07:34:11	1778	BP23MVEXP-ENV-DC-037			Camera	63	656238	6162178	656204	6162209	34	-31	46	-47		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	07:35:31	1779	BP23MVEXP-ENV-DC-037			Camera	63	656232	6162183	656204	6162209	28	-26	39	-47		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	07:36:05	1780	BP23MVEXP-ENV-DC-037			Camera	63	656229	6162185	656204	6162209	25	-24	34	-47		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	07:36:27	1781	BP23MVEXP-ENV-DC-037			Camera	63	656227	6162187	656204	6162209	23	-22	32	-46		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	07:37:34	1782	BP23MVEXP-ENV-DC-037			Camera	63	656221	6162191	656204	6162209	18	-18	25	-44		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	07:38:56	1783	BP23MVEXP-ENV-DC-037			Camera	63	656215	6162196	656204	6162209	11	-13	17	-41		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	07:40:26	1784	BP23MVEXP-ENV-DC-037			Camera	63	656207	6162203	656204	6162209	3	-6	7	-27		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	07:41:13	1785	BP23MVEXP-ENV-DC-037			Camera	63	656204	6162205	656204	6162209	0	-4	4	0		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	07:42:52	1786	BP23MVEXP-ENV-DC-037			Camera	63	656196	6162212	656204	6162209	-8	3	9	110		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	07:43:13	1787	BP23MVEXP-ENV-DC-037			Camera	63	656195	6162213	656204	6162209	-10	4	10	114		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	07:45:01	1788	BP23MVEXP-ENV-DC-037			Camera	63	656185	6162220	656204	6162209	-19	11	22	119		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	07:46:08	1789	BP23MVEXP-ENV-DC-037			Camera	63	656180	6162224	656204	6162209	-24	15	28	123		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	07:47:14	1790	BP23MVEXP-ENV-DC-037			Camera	63	656176	6162229	656204	6162209	-29	20	35	125		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	07:48:04	1791	BP23MVEXP-ENV-DC-037			Camera	63	656171	6162232	656204	6162209	-33	23	40	125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	07:49:06	1792	BP23MVEXP-ENV-DC-037			Camera	63	656166	6162236	656204	6162209	-38	27	47	126		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	08:01:51	1793	BP23MVEXP-ENV-DC-037			Camera	63	656174	6162172	656204	6162209	-30	-37	48	39		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	08:04:43	1794	BP23MVEXP-ENV-DC-037			Camera	63	656177	6162176	656204	6162209	-27	-33	42	39		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	08:05:19	1795	BP23MVEXP-ENV-DC-037			Camera	63	656180	6162180	656204	6162209	-24	-29	37	40		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	08:06:20	1796	BP23MVEXP-ENV-DC-037			Camera	63	656185	6162187	656204	6162209	-20	-23	30	41		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	08:06:58	1797	BP23MVEXP-ENV-DC-037			Camera	63	656187	6162190	656204	6162209	-17	-19	26	42		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	08:07:58	1798	BP23MVEXP-ENV-DC-037			Camera	63	656190	6162195	656204	6162209	-14	-14	20	44		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	08:08:58	1799	BP23MVEXP-ENV-DC-037			Camera	63	656195	6162199	656204	6162209	-9	-10	13	44		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	08:09:36	1800	BP23MVEXP-ENV-DC-037			Camera	63	656197	6162203	656204	6162209	-7	-6	10	48		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	08:10:27	1801	BP23MVEXP-ENV-DC-037			Camera	63	656200	6162207	656204	6162209	-4	-2	5	59		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	08:11:11	1802	BP23MVEXP-ENV-DC-037			Camera	63	656203	6162210	656204	6162209	-1	1	1	152		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	08:11:56	1803	BP23MVEXP-ENV-DC-037			Camera	63	656206	6162215	656204	6162209	2	6	6	-164		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	08:12:06	1804	BP23MVEXP-ENV-DC-037			Camera	63	656206	6162215	656204	6162209	2	6	7	-162		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	08:13:16	1805	BP23MVEXP-ENV-DC-037			Camera	63	656210	6162221	656204	6162209	6	12	14	-153		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	08:14:36	1806	BP23MVEXP-ENV-DC-037			Camera	63	656215	6162227	656204	6162209	11	18	22	-148		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	08:15:09	1807	BP23MVEXP-ENV-DC-037			Camera	63	656217	6162230	656204	6162209	13	21	25	-147		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	08:15:57	1808	BP23MVEXP-ENV-DC-037			Camera	63	656220	6162234	656204	6162209	16	25	29	-148		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	08:16:56	1809	BP23MVEXP-ENV-DC-037			Camera	63	656223	6162239	656204	6162209	19	30	35	-147		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	08:17:19	1810	BP23MVEXP-ENV-DC-037			Camera	63	656225	6162241	656204	6162209	21	32	38	-147		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	08:18:07	1811	BP23MVEXP-ENV-DC-037			Camera	63	656228	6162245	656204	6162209	25	36	43	-146		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	08:18:31	1812	BP23MVEXP-ENV-DC-037			Camera	63	656230	6162247	656204	6162209	26	38	46	-145		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	08:18:51	1813	BP23MVEXP-ENV-DC-037			Camera	63	656232	6162249	656204	6162209	28	40	48	-145		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	08:19:21	1814	BP23MVEXP-ENV-DC-037			Camera	63	656233	6162251	656204	6162209	29	42	51	-145		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	10:58:10	1816	BP23MVEXP-ENV-DC-038			Camera	64	653673	6159180	653638	6159136	35	44	56	-142		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	10:58:27	1817	BP23MVEXP-ENV-DC-038			Camera	64	653673	6159180	653638	6159136	35	44	56	-141		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	11:00:32	1818	BP23MVEXP-ENV-DC-038			Camera	64	653672	6159177	653638	6159136	34	42	54	-141		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	11:01:26	1819	BP23MVEXP-ENV-DC-038			Camera	64	653669	6159173	653638	6159136	31	37	48	-140		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	11:02:15	1820	BP23MVEXP-ENV-DC-038			Camera	64	653665	6159169	653638	6159136	27	33	43	-141		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	11:02:38	1821	BP23MVEXP-ENV-DC-038			Camera	64	653664	6159167	653638	6159136	26	31	40	-140		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	11:03:15	1822	BP23MVEXP-ENV-DC-038			Camera	64	653661	6159164	653638	6159136	23	28	36	-140		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	11:03:48	1823	BP23MVEXP-ENV-DC-038			Camera	64	653655	6159160	653638	6159136	17	24	29	-145		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	11:04:03	1824	BP23MVEXP-ENV-DC-038			Camera	64	653659	6159160	653638	6159136	21	24	31	-139		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	11:04:56	1825	BP23MVEXP-ENV-DC-038			Camera	64	653656	6159155	653638	6159136	18	20	26	-138		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	11:06:00	1826	BP23MVEXP-ENV-DC-038			Camera	64	653652	6159151	653638	6159136	14	15	20	-137		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	11:06:49	1827	BP23MVEXP-ENV-DC-038			Camera	64	653648	6159147	653638	6159136	10	11	15	-138		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	11:07:10	1828	BP23MVEXP-ENV-DC-038			Camera	64	653646	6159145	653638	6159136	8	9	13	-138		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	11:07:26	1829	BP23MVEXP-ENV-DC-038			Camera	64	653645	6159144	653638	6159136	7	8	11	-138		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	11:08:15	1830	BP23MVEXP-ENV-DC-038			Camera	64	653642	6159140	653638	6159136	4	4	6	-134		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	11:09:05	1831	BP23MVEXP-ENV-DC-038			Camera	64	653639	6159136	653638	6159136	1	0	1	-79		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	11:09:27	1832	BP23MVEXP-ENV-DC-038			Camera	64	653638	6159134	653638	6159136	0	-2	2	-1		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	11:10:54	1833	BP23MVEXP-ENV-DC-038			Camera	64	653632	6159127	653638	6159136	-6	-9	11	33		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	11:11:01	1834	BP23MVEXP-ENV-DC-038			Camera	64	653632	6159126	653638	6159136	-6	-10	12	33		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	11:12:33	1835	BP23MVEXP-ENV-DC-038			Camera	64	653626	6159120	653638	6159136	-12	-16	20	37		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	11:13:12	1836	BP23MVEXP-ENV-DC-038			Camera	64	653623	6159116	653638	6159136	-15	-20	25	37		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	11:13:47	1837	BP23MVEXP-ENV-DC-038			Camera	64	653622	6159113	653638	6159136	-16	-23	28	35		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	11:14:04	1838	BP23MVEXP-ENV-DC-038			Camera	64	653621	6159112	653638	6159136	-17	-24	30	36		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	11:14:41	1839	BP23MVEXP-ENV-DC-038			Camera	64	653618	6159109	653638	6159136	-20	-27	34	37		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	11:14:57	1840	BP23MVEXP-ENV-DC-038			Camera	64	653617	6159108	653638	6159136	-21	-28	35	37		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	11:15:44	1841	BP23MVEXP-ENV-DC-038			Camera	64	653614	6159104	653638	6159136	-24	-32	40	37		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	11:16:28	1842	BP23MVEXP-ENV-DC-038			Camera	64	653612	6159100	653638	6159136	-26	-36	44	36		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	11:16:44	1843	BP23MVEXP-ENV-DC-038			Camera	64	653611	6159099	653638	6159136	-27	-37	46	36		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	11:16:51	1844	BP23MVEXP-ENV-DC-038			Camera	64	653611	6159099	653638	6159136	-27	-37	46	36		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	11:17:11	1845	BP23MVEXP-ENV-DC-038			Camera	64	653609	6159098	653638	6159136	-29	-38	48	37		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	11:35:55	1846	BP23MVEXP-ENV-DC-038			Camera	64	653597	6159167	653638	6159136	-41	31	52	127		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	11:36:32	1847	BP23MVEXP-ENV-DC-038			Camera	64	653600	6159166	653638	6159136	-38	30	48	128		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	11:37:30	1848	BP23MVEXP-ENV-DC-038			Camera	64	653605	6159163	653638	6159136	-33	27	43	129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	11:37:57	1849	BP23MVEXP-ENV-DC-038			Camera	64	653607	6159162	653638	6159136	-31	26	40	130		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	11:38:48	1850	BP23MVEXP-ENV-DC-038			Camera	64	653612	6159159	653638	6159136	-26	23	35	132		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	11:39:09	1851	BP23MVEXP-ENV-DC-038			Camera	64	653614	6159158	653638	6159136	-24	22	32	132		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	11:40:17	1852	BP23MVEXP-ENV-DC-038			Camera	64	653619	6159154	653638	6159136	-19	18	26	134		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	11:41:08	1853	BP23MVEXP-ENV-DC-038			Camera	64	653624	6159151	653638	6159136	-14	15	20	137		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	11:41:36	1854	BP23MVEXP-ENV-DC-038			Camera	64	653626	6159149	653638	6159136	-12	13	18	138		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	11:42:04	1855	BP23MVEXP-ENV-DC-038			Camera	64	653628	6159148	653638	6159136	-10	13	16	141		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	11:42:58	1856	BP23MVEXP-ENV-DC-038			Camera	64	653632	6159145	653638	6159136	-6	9	11	150		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	11:43:35	1857	BP23MVEXP-ENV-DC-038			Camera	64	653636	6159143	653638	6159136	-2	7	8	165		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	11:43:53	1858	BP23MVEXP-ENV-DC-038			Camera	64	653638	6159142	653638	6159136	0	6	6	179		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	11:44:16	1859	BP23MVEXP-ENV-DC-038			Camera	64	653640	6159141	653638	6159136	2	5	6	-155		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	11:44:22	1860	BP23MVEXP-ENV-DC-038			Camera	64	653641	6159141	653638	6159136	3	5	6	-149		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	11:44:36	1861	BP23MVEXP-ENV-DC-038			Camera	64	653642	6159140	653638	6159136	4	4	6	-136		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	11:44:42	1862	BP23MVEXP-ENV-DC-038			Camera	64	653643	6159140	653638	6159136	5	4	6	-130		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	11:44:57	1863	BP23MVEXP-ENV-DC-038			Camera	64	653644	6159139	653638	6159136	6	3	6	-118		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	11:45:17	1864	BP23MVEXP-ENV-DC-038			Camera	64	653645	6159138	653638	6159136	7	2	7	-104		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	11:45:29	1865	BP23MVEXP-ENV-DC-038			Camera	64	653645	6159137	653638	6159136	7	1	7	-98		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	11:45:42	1866	BP23MVEXP-ENV-DC-038			Camera	64	653646	6159136	653638	6159136	8	0	8	-93		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	11:46:22	1867	BP23MVEXP-ENV-DC-038			Camera	64	653649	6159134	653638	6159136	11	-2	11	-80		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
09-Jul-2023	11:47:10	1868	BP23MVEXP-ENV-DC-038			Camera	64	653654	6159131	653638	6159136	16	-5	17	-74		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
09-Jul-2023	11:47:26	1869	BP23MVEXP-ENV-DC-038			Camera	64	653656	6159131	653638	6159136	18	-5	19	-73		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
09-Jul-2023	11:49:02	1870	BP23MVEXP-ENV-DC-038			Camera	64	653664	6159125	653638	6159136	26	-11	29	-67		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
09-Jul-2023	13:13:14	1871	BP23MVEXP-ENV-DC-039			Camera	70	651127	6156103	651097	6156056	30	47	56	-147		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	13:15:45	1872	BP23MVEXP-ENV-DC-039			Camera	70	651126	6156101	651097	6156056	29	45	53	-147		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	13:17:01	1873	BP23MVEXP-ENV-DC-039			Camera	70	651121	6156096	651097	6156056	24	40	46	-149		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	13:17:33	1874	BP23MVEXP-ENV-DC-039			Camera	70	651119	6156093	651097	6156056	22	37	43	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	13:18:16	1875	BP23MVEXP-ENV-DC-039			Camera	71	651117	6156089	651097	6156056	20	33	39	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	13:18:59	1876	BP23MVEXP-ENV-DC-039			Camera	70	651115	6156085	651097	6156056	18	29	34	-149		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	13:19:49	1877	BP23MVEXP-ENV-DC-039			Camera	70	651112	6156080	651097	6156056	15	25	29	-149		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	13:20:06	1878	BP23MVEXP-ENV-DC-039			Camera	70	651111	6156079	651097	6156056	14	23	26	-149		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	13:20:37	1879	BP23MVEXP-ENV-DC-039			Camera	70	651109	6156076	651097	6156056	12	20	23	-149		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	13:20:47	1880	BP23MVEXP-ENV-DC-039			Camera	70	651108	6156075	651097	6156056	11	19	22	-150		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	13:21:33	1881	BP23MVEXP-ENV-DC-039			Camera	70	651105	6156071	651097	6156056	8	15	17	-152		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	13:22:50	1882	BP23MVEXP-ENV-DC-039			Camera	70	651101	6156064	651097	6156056	4	8	9	-153		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	13:23:20	1883	BP23MVEXP-ENV-DC-039			Camera	71	651099	6156062	651097	6156056	2	6	6	-158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	13:23:41	1884	BP23MVEXP-ENV-DC-039			Camera	70	651098	6156060	651097	6156056	1	4	4	-166		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	13:24:04	1885	BP23MVEXP-ENV-DC-039			Camera	70	651096	6156058	651097	6156056	-1	2	2	159		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	13:24:20	1886	BP23MVEXP-ENV-DC-039			Camera	71	651095	6156057	651097	6156056	-2	1	2	110		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	13:24:49	1887	BP23MVEXP-ENV-DC-039			Camera	70	651094	6156054	651097	6156056	-3	-2	4	61		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	13:24:58	1888	BP23MVEXP-ENV-DC-039			Camera	70	651093	6156053	651097	6156056	-4	-3	5	55		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	13:25:09	1889	BP23MVEXP-ENV-DC-039			Camera	70	651093	6156053	651097	6156056	-4	-3	5	51		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	13:25:19	1890	BP23MVEXP-ENV-DC-039			Camera	70	651092	6156052	651097	6156056	-5	-4	6	48		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	13:25:29	1891	BP23MVEXP-ENV-DC-039			Camera	70	651092	6156051	651097	6156056	-5	-5	7	47		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	13:26:02	1892	BP23MVEXP-ENV-DC-039			Camera	70	651090	6156049	651097	6156056	-7	-7	10	45		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	13:26:26	1893	BP23MVEXP-ENV-DC-039			Camera	71	651088	6156047	651097	6156056	-9	-9	13	42		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	13:26:52	1894	BP23MVEXP-ENV-DC-039			Camera	71	651087	6156044	651097	6156056	-10	-12	16	39		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	13:27:42	1895	BP23MVEXP-ENV-DC-039			Camera	71	651084	6156039	651097	6156056	-13	-17	21	38		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	13:28:10	1896	BP23MVEXP-ENV-DC-039			Camera	70	651082	6156037	651097	6156056	-15	-19	24	38		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	13:30:29	1897	BP23MVEXP-ENV-DC-039			Camera	71	651074	6156026	651097	6156056	-23	-30	38	37		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	13:34:37	1898	BP23MVEXP-ENV-DC-039			Camera	70	651068	6156016	651097	6156056	-29	-40	50	36		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	13:47:23	1899	BP23MVEXP-ENV-DC-039			Camera	70	651057	6156087	651097	6156056	-40	31	51	128		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	13:49:58	1900	BP23MVEXP-ENV-DC-039			Camera	70	651060	6156085	651097	6156056	-37	29	47	128		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	13:50:08	1901	BP23MVEXP-ENV-DC-039			Camera	70	651061	6156085	651097	6156056	-36	29	46	129		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	13:51:01	1902	BP23MVEXP-ENV-DC-039			Camera	70	651066	6156083	651097	6156056	-32	27	41	130		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	13:51:37	1903	BP23MVEXP-ENV-DC-039			Camera	70	651069	6156080	651097	6156056	-28	25	37	131		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	13:52:40	1904	BP23MVEXP-ENV-DC-039			Camera	70	651074	6156076	651097	6156056	-23	20	31	131		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	13:52:50	1905	BP23MVEXP-ENV-DC-039			Camera	70	651075	6156076	651097	6156056	-23	20	30	131		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	13:53:46	1906	BP23MVEXP-ENV-DC-039			Camera	70	651079	6156072	651097	6156056	-18	16	24	132		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	13:54:50	1907	BP23MVEXP-ENV-DC-039			Camera	70	651084	6156068	651097	6156056	-13	12	18	135		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	13:54:58	1908	BP23MVEXP-ENV-DC-039			Camera	70	651085	6156068	651097	6156056	-12	12	17	135		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	13:55:13	1909	BP23MVEXP-ENV-DC-039			Camera	70	651086	6156067	651097	6156056	-11	11	16	136		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	13:55:20	1910	BP23MVEXP-ENV-DC-039			Camera	70	651087	6156067	651097	6156056	-10	11	15	136		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	13:55:27	1911	BP23MVEXP-ENV-DC-039			Camera	70	651087	6156066	651097	6156056	-10	10	14	136		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	13:57:28	1912	BP23MVEXP-ENV-DC-039			Camera	70	651098	6156058	651097	6156056	1	2	3	-153		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	13:57:37	1913	BP23MVEXP-ENV-DC-039			Camera	70	651099	6156058	651097	6156056	2	2	3	-137		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	13:57:49	1914	BP23MVEXP-ENV-DC-039			Camera	70	651100	6156057	651097	6156056	3	1	3	-113		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	13:58:12	1915	BP23MVEXP-ENV-DC-039			Camera	70	651101	6156056	651097	6156056	4	0	4	-85		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	13:58:40	1916	BP23MVEXP-ENV-DC-039			Camera	70	651103	6156054	651097	6156056	6	-2	6	-71		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	13:59:12	1917	BP23MVEXP-ENV-DC-039			Camera	70	651106	6156052	651097	6156056	9	-4	10	-65		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	13:59:21	1918	BP23MVEXP-ENV-DC-039			Camera	70	651107	6156051	651097	6156056	10	-5	11	-63		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	14:00:08	1919	BP23MVEXP-ENV-DC-039			Camera	70	651111	6156047	651097	6156056	14	-9	16	-58		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	14:00:42	1920	BP23MVEXP-ENV-DC-039			Camera	70	651113	6156046	651097	6156056	16	-10	19	-57		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	14:00:57	1921	BP23MVEXP-ENV-DC-039			Camera	70	651114	6156045	651097	6156056	17	-11	20	-56		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	14:01:45	1922	BP23MVEXP-ENV-DC-039			Camera	70	651118	6156042	651097	6156056	21	-15	25	-55		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
09-Jul-2023	14:02:06	1923	BP23MVEXP-ENV-DC-039			Camera	70	651119	6156040	651097	6156056	23	-16	27	-55		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
09-Jul-2023	14:02:51	1924	BP23MVEXP-ENV-DC-039			Camera	70	651123	6156038	651097	6156056	26	-18	32	-56		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
09-Jul-2023	14:03:04	1925	BP23MVEXP-ENV-DC-039			Camera	70	651125	6156037	651097	6156056	28	-19	33	-56		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
09-Jul-2023	14:04:32	1926	BP23MVEXP-ENV-DC-039			Camera	70	651133	6156031	651097	6156056	36	-25	43	-55		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
09-Jul-2023	14:05:20	1927	BP23MVEXP-ENV-DC-039			Camera	70	651136	6156029	651097	6156056	39	-27	48	-55		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
09-Jul-2023	15:15:34	1928	BP23MVEXP-ENV-DC-040			Camera	87	648690	6152730	648733	6152697	-43	33	54	128		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	15:16:57	1929	BP23MVEXP-ENV-DC-040			Camera	87	648690	6152729	648733	6152697	-43	32	54	127		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	15:19:02	1930	BP23MVEXP-ENV-DC-040			Camera	87	648696	6152727	648733	6152697	-37	30	48	128		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	15:20:01	1931	BP23MVEXP-ENV-DC-040			Camera	87	648700	6152723	648733	6152697	-33	26	42	129		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	15:21:52	1932	BP23MVEXP-ENV-DC-040			Camera	87	648710	6152717	648733	6152697	-23	20	31	130		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	15:23:47	1933	BP23MVEXP-ENV-DC-040			Camera	87	648720	6152710	648733	6152697	-13	13	18	134		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	15:24:12	1934	BP23MVEXP-ENV-DC-040			Camera	86	648722	6152708	648733	6152697	-11	11	16	135		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	15:25:11	1935	BP23MVEXP-ENV-DC-040			Camera	86	648727	6152705	648733	6152697	-6	8	10	143		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	15:26:20	1936	BP23MVEXP-ENV-DC-040			Camera	86	648733	6152701	648733	6152697	0	4	4	176		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	15:26:38	1937	BP23MVEXP-ENV-DC-040			Camera	86	648734	6152700	648733	6152697	1	3	3	-154		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	15:26:49	1938	BP23MVEXP-ENV-DC-040			Camera	86	648735	6152699	648733	6152697	2	2	3	-128		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	15:27:09	1939	BP23MVEXP-ENV-DC-040			Camera	86	648737	6152697	648733	6152697	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	15:27:34	1940	BP23MVEXP-ENV-DC-040			Camera	86	648739	6152696	648733	6152697	6	-1	6	-80		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	15:28:27	1941	BP23MVEXP-ENV-DC-040			Camera	86	648744	6152693	648733	6152697	11	-4	12	-69		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	15:29:06	1942	BP23MVEXP-ENV-DC-040			Camera	86	648748	6152690	648733	6152697	15	-7	16	-65		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	15:29:36	1943	BP23MVEXP-ENV-DC-040			Camera	86	648751	6152689	648733	6152697	18	-8	20	-65		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	15:30:26	1944	BP23MVEXP-ENV-DC-040			Camera	86	648755	6152686	648733	6152697	22	-11	24	-63		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	15:30:44	1945	BP23MVEXP-ENV-DC-040			Camera	86	648756	6152685	648733	6152697	23	-12	26	-62		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	15:31:01	1946	BP23MVEXP-ENV-DC-040			Camera	86	648757	6152684	648733	6152697	24	-13	28	-62		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	15:31:07	1947	BP23MVEXP-ENV-DC-040			Camera	86	648758	6152684	648733	6152697	25	-14	28	-61		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	15:31:30	1948	BP23MVEXP-ENV-DC-040			Camera	86	648760	6152682	648733	6152697	27	-15	31	-61		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	15:32:00	1949	BP23MVEXP-ENV-DC-040			Camera	86	648762	6152681	648733	6152697	29	-16	33	-61		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	15:32:12	1950	BP23MVEXP-ENV-DC-040			Camera	86	648763	6152680	648733	6152697	30	-17	35	-61		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	15:33:00	1951	BP23MVEXP-ENV-DC-040			Camera	86	648767	6152677	648733	6152697	35	-20	40	-60		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	15:49:22	1952	BP23MVEXP-ENV-DC-040			Camera	86	648707	6152655	648733	6152697	-26	-42	49	31		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	15:49:47	1953	BP23MVEXP-ENV-DC-040			Camera	86	648709	6152657	648733	6152697	-24	-40	47	31		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	15:49:58	1954	BP23MVEXP-ENV-DC-040			Camera	86	648710	6152658	648733	6152697	-23	-39	46	31		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	15:50:30	1955	BP23MVEXP-ENV-DC-040			Camera	86	648711	6152661	648733	6152697	-22	-36	42	31		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	15:51:10	1956	BP23MVEXP-ENV-DC-040			Camera	86	648712	6152664	648733	6152697	-21	-33	39	32		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	15:52:07	1957	BP23MVEXP-ENV-DC-040			Camera	86	648716	6152669	648733	6152697	-17	-28	33	32		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	15:52:20	1958	BP23MVEXP-ENV-DC-040			Camera	86	648716	6152670	648733	6152697	-17	-27	32	32		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	15:52:40	1959	BP23MVEXP-ENV-DC-040			Camera	86	648718	6152671	648733	6152697	-15	-26	30	31		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	15:52:50	1960	BP23MVEXP-ENV-DC-040			Camera	86	648718	6152672	648733	6152697	-15	-25	29	31		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	15:53:12	1961	BP23MVEXP-ENV-DC-040			Camera	86	648719	6152674	648733	6152697	-14	-23	27	31		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	15:53:22	1962	BP23MVEXP-ENV-DC-040			Camera	86	648719	6152675	648733	6152697	-14	-23	26	31		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	15:54:02	1963	BP23MVEXP-ENV-DC-040			Camera	86	648721	6152678	648733	6152697	-12	-19	22	31		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	15:55:03	1964	BP23MVEXP-ENV-DC-040			Camera	86	648725	6152684	648733	6152697	-8	-13	16	32		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	15:55:58	1965	BP23MVEXP-ENV-DC-040			Camera	86	648728	6152689	648733	6152697	-5	-8	10	32		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	15:56:35	1966	BP23MVEXP-ENV-DC-040			Camera	86	648730	6152692	648733	6152697	-3	-5	6	32		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	15:57:04	1967	BP23MVEXP-ENV-DC-040			Camera	86	648731	6152694	648733	6152697	-2	-3	3	34		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	15:57:10	1968	BP23MVEXP-ENV-DC-040			Camera	86	648731	6152695	648733	6152697	-2	-2	3	35		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	15:57:24	1969	BP23MVEXP-ENV-DC-040			Camera	86	648732	6152696	648733	6152697	-1	-1	1	44		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	15:57:33	1970	BP23MVEXP-ENV-DC-040			Camera	86	648733	6152697	648733	6152697	0	0	0	81		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	15:57:46	1971	BP23MVEXP-ENV-DC-040			Camera	86	648733	6152698	648733	6152697	0	1	1	-167		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	15:58:13	1972	BP23MVEXP-ENV-DC-040			Camera	86	648735	6152700	648733	6152697	2	3	4	-154		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	15:58:59	1973	BP23MVEXP-ENV-DC-040			Camera	86	648737	6152704	648733	6152697	4	7	9	-151		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	15:59:24	1974	BP23MVEXP-ENV-DC-040			Camera	86	648739	6152707	648733	6152697	6	10	11	-150		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	15:59:43	1975	BP23MVEXP-ENV-DC-040			Camera	86	648740	6152708	648733	6152697	7	11	13	-149		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	15:59:57	1976	BP23MVEXP-ENV-DC-040			Camera	86	648740	6152709	648733	6152697	7	13	15	-149		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	16:00:48	1977	BP23MVEXP-ENV-DC-040			Camera	86	648743	6152714	648733	6152697	10	17	20	-148		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	16:01:29	1978	BP23MVEXP-ENV-DC-040			Camera	86	648745	6152718	648733	6152697	12	21	24	-149		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	17:42:22	1979	BP23MVEXP-ENV-DC-041			Camera	88	646637	6149439	646687	6149423	-50	16	53	107		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	17:44:29	1980	BP23MVEXP-ENV-DC-041			Camera	88	646639	6149437	646687	6149423	-48	14	49	106		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	17:45:14	1981	BP23MVEXP-ENV-DC-041			Camera	88	646644	6149436	646687	6149423	-44	13	45	106		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	17:45:31	1982	BP23MVEXP-ENV-DC-041			Camera	88	646645	6149435	646687	6149423	-42	13	44	107		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	17:46:07	1983	BP23MVEXP-ENV-DC-041			Camera	88	646649	6149434	646687	6149423	-38	11	39	106		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	17:46:42	1984	BP23MVEXP-ENV-DC-041			Camera	88	646653	6149433	646687	6149423	-34	10	36	107		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	17:47:25	1985	BP23MVEXP-ENV-DC-041			Camera	88	646657	6149432	646687	6149423	-30	9	31	107		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	17:47:56	1986	BP23MVEXP-ENV-DC-041			Camera	88	646660	6149431	646687	6149423	-27	8	28	107		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	17:49:02	1987	BP23MVEXP-ENV-DC-041			Camera	88	646666	6149430	646687	6149423	-21	7	22	108		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	17:49:28	1988	BP23MVEXP-ENV-DC-041			Camera	88	646669	6149429	646687	6149423	-18	6	19	109		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	17:50:15	1989	BP23MVEXP-ENV-DC-041			Camera	88	646673	6149428	646687	6149423	-14	5	14	110		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	17:50:51	1990	BP23MVEXP-ENV-DC-041			Camera	88	646677	6149427	646687	6149423	-10	4	10	111		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	17:51:40	1991	BP23MVEXP-ENV-DC-041			Camera	88	646682	6149425	646687	6149423	-5	2	5	113		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	17:51:54	1992	BP23MVEXP-ENV-DC-041			Camera	88	646684	6149425	646687	6149423	-3	2	4	116		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	17:52:24	1993	BP23MVEXP-ENV-DC-041			Camera	88	646686	6149424	646687	6149423	-1	1	1	139		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	17:52:34	1994	BP23MVEXP-ENV-DC-041			Camera	88	646687	6149424	646687	6149423	0	1	1	-175		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	17:52:42	1995	BP23MVEXP-ENV-DC-041			Camera	88	646688	6149424	646687	6149423	1	1	1	-126		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	17:52:48	1996	BP23MVEXP-ENV-DC-041			Camera	88	646688	6149423	646687	6149423	1	0	2	-108		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	17:53:07	1997	BP23MVEXP-ENV-DC-041			Camera	88	646690	6149423	646687	6149423	3	0	3	-90		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	17:53:36	1998	BP23MVEXP-ENV-DC-041			Camera	88	646694	6149422	646687	6149423	7	-1	7	-82		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	17:54:20	1999	BP23MVEXP-ENV-DC-041			Camera	88	646698	6149420	646687	6149423	11	-3	11	-76		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	17:55:36	2000	BP23MVEXP-ENV-DC-041			Camera	87	646706	6149419	646687	6149423	19	-4	19	-77		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	17:56:28	2001	BP23MVEXP-ENV-DC-041			Camera	88	646711	6149417	646687	6149423	24	-6	25	-76		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	17:57:08	2002	BP23MVEXP-ENV-DC-041			Camera	88	646715	6149416	646687	6149423	28	-7	29	-76		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	17:58:25	2003	BP23MVEXP-ENV-DC-041			Camera	88	646723	6149414	646687	6149423	36	-9	37	-76		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	17:58:59	2004	BP23MVEXP-ENV-DC-041			Camera	88	646726	6149413	646687	6149423	39	-10	40	-76		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	18:12:43	2005	BP23MVEXP-ENV-DC-041			Camera	87	646703	6149464	646687	6149423	16	41	44	-158		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	18:13:35	2006	BP23MVEXP-ENV-DC-041			Camera	87	646701	6149468	646687	6149423	14	45	47	-163		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	18:15:50	2007	BP23MVEXP-ENV-DC-041			Camera	87	646698	6149464	646687	6149423	11	41	42	-165		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	18:16:49	2008	BP23MVEXP-ENV-DC-041			Camera	87	646696	6149457	646687	6149423	9	34	36	-165		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	18:17:26	2009	BP23MVEXP-ENV-DC-041			Camera	88	646695	6149453	646687	6149423	8	30	31	-165		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	18:18:21	2010	BP23MVEXP-ENV-DC-041			Camera	88	646693	6149447	646687	6149423	6	24	25	-165		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	18:20:54	2011	BP23MVEXP-ENV-DC-041			Camera	88	646689	6149433	646687	6149423	2	10	10	-171		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	18:21:36	2012	BP23MVEXP-ENV-DC-041			Camera	88	646688	6149429	646687	6149423	1	6	6	-174		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	18:22:01	2013	BP23MVEXP-ENV-DC-041			Camera	88	646687	6149426	646687	6149423	0	3	3	179		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	18:22:24	2014	BP23MVEXP-ENV-DC-041			Camera	88	646686	6149423	646687	6149423	-1	0	1	106		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	18:23:17	2015	BP23MVEXP-ENV-DC-041			Camera	88	646685	6149417	646687	6149423	-2	-6	6	19		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	18:23:47	2016	BP23MVEXP-ENV-DC-041			Camera	88	646684	6149414	646687	6149423	-3	-9	9	17		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	18:24:57	2017	BP23MVEXP-ENV-DC-041			Camera	88	646682	6149406	646687	6149423	-5	-17	18	17		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	18:25:08	2018	BP23MVEXP-ENV-DC-041			Camera	88	646682	6149405	646687	6149423	-5	-18	19	16		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	18:25:24	2019	BP23MVEXP-ENV-DC-041			Camera	88	646681	6149404	646687	6149423	-6	-19	20	16		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	18:25:59	2020	BP23MVEXP-ENV-DC-041			Camera	88	646681	6149400	646687	6149423	-6	-23	24	16		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	18:27:24	2021	BP23MVEXP-ENV-DC-041			Camera	88	646679	6149391	646687	6149423	-8	-32	33	14		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	18:27:36	2022	BP23MVEXP-ENV-DC-041			Camera	88	646679	6149390	646687	6149423	-8	-33	34	14		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	18:28:29	2023	BP23MVEXP-ENV-DC-041			Camera	88	646678	6149385	646687	6149423	-9	-38	39	14		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	18:28:41	2024	BP23MVEXP-ENV-DC-041			Camera	88	646677	6149384	646687	6149423	-10	-39	41	14		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	18:29:19	2025	BP23MVEXP-ENV-DC-041			Camera	88	646676	6149380	646687	6149423	-11	-43	44	14		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	18:30:03	2026	BP23MVEXP-ENV-DC-041			Camera	88	646675	6149376	646687	6149423	-12	-47	48	15		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	18:30:23	2027	BP23MVEXP-ENV-DC-041			Camera	88	646674	6149374	646687	6149423	-13	-49	50	15		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	19:34:21	2028	BP23MVEXP-ENV-DC-042			Camera	89	645413	6145686	645395	6145643	18	43	47	-157		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	19:36:56	2029	BP23MVEXP-ENV-DC-042			Camera	89	645412	6145682	645395	6145643	17	39	42	-157		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	19:37:49	2030	BP23MVEXP-ENV-DC-042			Camera	89	645410	6145678	645395	6145643	15	35	38	-157		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	19:38:16	2031	BP23MVEXP-ENV-DC-042			Camera	89	645409	6145675	645395	6145643	14	32	35	-157		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	19:39:03	2032	BP23MVEXP-ENV-DC-042			Camera	89	645407	6145669	645395	6145643	12	27	29	-155		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
09-Jul-2023	19:40:14	2033	BP23MVEXP-ENV-DC-042			Camera	88	645405	6145662	645395	6145643	10	19	22	-153		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	19:40:42	2034	BP23MVEXP-ENV-DC-042			Camera	88	645404	6145659	645395	6145643	9	16	18	-151		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	19:41:45	2035	BP23MVEXP-ENV-DC-042			Camera	88	645402	6145653	645395	6145643	7	10	13	-146		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	19:42:24	2036	BP23MVEXP-ENV-DC-042			Camera	88	645401	6145649	645395	6145643	6	6	9	-138		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	19:43:20	2037	BP23MVEXP-ENV-DC-042			Camera	88	645399	6145644	645395	6145643	4	1	4	-101		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	19:43:28	2038	BP23MVEXP-ENV-DC-042			Camera	88	645399	6145643	645395	6145643	4	0	4	-92		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	19:43:43	2039	BP23MVEXP-ENV-DC-042			Camera	88	645398	6145641	645395	6145643	3	-2	3	-58		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	19:44:55	2040	BP23MVEXP-ENV-DC-042			Camera	88	645395	6145635	645395	6145643	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	19:45:55	2041	BP23MVEXP-ENV-DC-042			Camera	88	645393	6145630	645395	6145643	-2	-13	13	9		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	19:46:52	2042	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145624	645395	6145643	-5	-19	19	14		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	19:47:13	2043	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145622	645395	6145643	-5	-21	22	14		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	19:47:58	2044	BP23MVEXP-ENV-DC-042			Camera	88	645389	6145618	645395	6145643	-6	-26	26	14		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	19:50:15	2045	BP23MVEXP-ENV-DC-042			Camera	88	645385	6145605	645395	6145643	-10	-38	39	15		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	19:51:02	2046	BP23MVEXP-ENV-DC-042			Camera	88	645383	6145601	645395	6145643	-12	-42	43	16		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	19:51:49	2047	BP23MVEXP-ENV-DC-042			Camera	88	645382	6145597	645395	6145643	-14	-46	48	16		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	19:59:51	2048	BP23MVEXP-ENV-DC-042			Camera	88	645409	6145610	645395	6145643	14	-33	36	-23		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	20:00:01	2049	BP23MVEXP-ENV-DC-042			Camera	88	645410	6145610	645395	6145643	15	-33	36	-24		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	20:07:08	2050	BP23MVEXP-ENV-DC-042			Camera	88	645441	6145630	645395	6145643	46	-13	48	-74		(Raw Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	20:07:31	2051	BP23MVEXP-ENV-DC-042			Camera	88	645439	6145629	645395	6145643	45	-14	47	-73		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	20:07:53	2052	BP23MVEXP-ENV-DC-042			Camera	88	645438	6145630	645395	6145643	43	-13	45	-73		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	20:08:24	2053	BP23MVEXP-ENV-DC-042			Camera	88	645435	6145631	645395	6145643	40	-12	42	-73		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	20:09:24	2054	BP23MVEXP-ENV-DC-042			Camera	88	645429	6145632	645395	6145643	34	-11	36	-72		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	20:10:02	2055	BP23MVEXP-ENV-DC-042			Camera	88	645426	6145633	645395	6145643	31	-10	32	-72		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	20:10:42	2056	BP23MVEXP-ENV-DC-042			Camera	88	645422	6145634	645395	6145643	27	-9	28	-72		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	20:11:16	2057	BP23MVEXP-ENV-DC-042			Camera	88	645418	6145635	645395	6145643	23	-8	24	-72		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	20:12:23	2058	BP23MVEXP-ENV-DC-042			Camera	88	645411	6145637	645395	6145643	16	-6	17	-71		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	20:12:42	2059	BP23MVEXP-ENV-DC-042			Camera	88	645409	6145638	645395	6145643	14	-5	15	-70		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	20:14:29	2060	BP23MVEXP-ENV-DC-042			Camera	88	645399	6145641	645395	6145643	4	-2	4	-57		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	20:14:39	2061	BP23MVEXP-ENV-DC-042			Camera	88	645398	6145641	645395	6145643	3	-2	4	-52		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	20:14:52	2062	BP23MVEXP-ENV-DC-042			Camera	88	645397	6145641	645395	6145643	2	-2	2	-41		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	20:15:03	2063	BP23MVEXP-ENV-DC-042			Camera	88	645396	6145642	645395	6145643	1	-1	2	-19		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	20:15:16	2064	BP23MVEXP-ENV-DC-042			Camera	88	645394	6145642	645395	6145643	-1	-1	1	27		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	20:15:45	2065	BP23MVEXP-ENV-DC-042			Camera	88	645392	6145643	645395	6145643	-3	0	3	91		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	20:15:58	2066	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145644	645395	6145643	-5	1	5	97		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	20:16:05	2067	BP23MVEXP-ENV-DC-042			Camera	88	645390	6145644	645395	6145643	-5	1	5	99		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	20:16:56	2068	BP23MVEXP-ENV-DC-042			Camera	88	645383	6145645	645395	6145643	-12	2	12	102		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	20:17:03	2069	BP23MVEXP-ENV-DC-042			Camera	88	645382	6145646	645395	6145643	-13	3	13	102		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	20:17:51	2070	BP23MVEXP-ENV-DC-042			Camera	88	645378	6145647	645395	6145643	-17	4	17	102		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	20:18:13	2071	BP23MVEXP-ENV-DC-042			Camera	88	645376	6145647	645395	6145643	-19	4	19	103		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	20:18:55	2072	BP23MVEXP-ENV-DC-042			Camera	88	645372	6145648	645395	6145643	-23	5	23	102		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	20:19:16	2073	BP23MVEXP-ENV-DC-042			Camera	88	645370	6145648	645395	6145643	-25	5	25	102		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	20:20:13	2074	BP23MVEXP-ENV-DC-042			Camera	88	645365	6145650	645395	6145643	-30	7	31	104		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	20:20:28	2075	BP23MVEXP-ENV-DC-042			Camera	88	645363	6145651	645395	6145643	-32	8	32	104		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
09-Jul-2023	20:20:40	2076	BP23MVEXP-ENV-DC-042			Camera	88	645362	6145651	645395	6145643	-33	8	34	104		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	20:21:18	2077	BP23MVEXP-ENV-DC-042			Camera	88	645358	6145652	645395	6145643	-37	9	38	104		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	20:22:44	2078	BP23MVEXP-ENV-DC-042			Camera	88	645350	6145655	645395	6145643	-45	12	46	105		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	22:00:48	2079	BP23MVEXP-ENV-DC-043			Camera	86	644072	6141827	644054	6141780	18	47	51	-160		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
09-Jul-2023	22:02:40	2080	BP23MVEXP-ENV-DC-043			Camera	87	644071	6141827	644054	6141780	18	47	50	-160		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
09-Jul-2023	22:02:59	2081	BP23MVEXP-ENV-DC-043			Camera	86	644071	6141826	644054	6141780	17	46	49	-160		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
09-Jul-2023	22:03:48	2082	BP23MVEXP-ENV-DC-043			Camera	87	644069	6141821	644054	6141780	15	41	44	-160		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
09-Jul-2023	22:04:11	2083	BP23MVEXP-ENV-DC-043			Camera	87	644068	6141819	644054	6141780	14	39	42	-160		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
09-Jul-2023	22:04:38	2084	BP23MVEXP-ENV-DC-043			Camera	87	644068	6141816	644054	6141780	14	36	39	-160		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
09-Jul-2023	22:05:29	2085	BP23MVEXP-ENV-DC-043			Camera	87	644066	6141811	644054	6141780	12	31	33	-159		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
09-Jul-2023	22:06:38	2086	BP23MVEXP-ENV-DC-043			Camera	87	644064	6141805	644054	6141780	10	25	27	-158		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
09-Jul-2023	22:07:12	2087	BP23MVEXP-ENV-DC-043			Camera	87	644064	6141803	644054	6141780	10	23	25	-157		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
09-Jul-2023	22:07:39	2088	BP23MVEXP-ENV-DC-043			Camera	86	644063	6141802	644054	6141780	9	22	23	-158		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
09-Jul-2023	22:08:46	2089	BP23MVEXP-ENV-DC-043			Camera	86	644061	6141796	644054	6141780	7	16	18	-155		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
09-Jul-2023	22:09:44	2090	BP23MVEXP-ENV-DC-043			Camera	86	644059	6141790	644054	6141780	5	10	12	-153		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
09-Jul-2023	22:09:51	2091	BP23MVEXP-ENV-DC-043			Camera	86	644059	6141790	644054	6141780	5	10	11	-153		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
09-Jul-2023	22:10:54	2092	BP23MVEXP-ENV-DC-043			Camera	86	644057	6141783	644054	6141780	3	3	4	-141		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
09-Jul-2023	22:11:17	2093	BP23MVEXP-ENV-DC-043			Camera	87	644056	6141781	644054	6141780	2	1	2	-119		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
09-Jul-2023	22:12:28	2094	BP23MVEXP-ENV-DC-043			Camera	87	644054	6141774	644054	6141780	0	-6	6	4		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
09-Jul-2023	22:13:06	2095	BP23MVEXP-ENV-DC-043			Camera	87	644053	6141770	644054	6141780	-1	-10	10	9		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
09-Jul-2023	22:14:44	2096	BP23MVEXP-ENV-DC-043			Camera	87	644050	6141761	644054	6141780	-4	-19	20	13		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
09-Jul-2023	22:15:31	2097	BP23MVEXP-ENV-DC-043			Camera	87	644048	6141756	644054	6141780	-6	-24	25	14		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
09-Jul-2023	22:17:07	2098	BP23MVEXP-ENV-DC-043			Camera	87	644045	6141747	644054	6141780	-9	-33	34	15		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
09-Jul-2023	22:17:27	2099	BP23MVEXP-ENV-DC-043			Camera	87	644044	6141745	644054	6141780	-10	-35	36	15		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
09-Jul-2023	22:17:52	2100	BP23MVEXP-ENV-DC-043			Camera	87	644044	6141743	644054	6141780	-10	-37	39	16		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
09-Jul-2023	22:18:29	2101	BP23MVEXP-ENV-DC-043			Camera	87	644042	6141739	644054	6141780	-12	-41	43	16		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
09-Jul-2023	22:19:11	2102	BP23MVEXP-ENV-DC-043			Camera	87	644041	6141735	644054	6141780	-13	-45	47	16		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
09-Jul-2023	22:23:52	2103	BP23MVEXP-ENV-DC-043			Camera	87	644030	6141750	644054	6141780	-24	-30	38	38		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
09-Jul-2023	22:24:10	2104	BP23MVEXP-ENV-DC-043			Camera	87	644030	6141751	644054	6141780	-24	-29	38	40		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
09-Jul-2023	22:33:14	2105	BP23MVEXP-ENV-DC-043			Camera	87	644006	6141796	644054	6141780	-48	16	51	109		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
09-Jul-2023	22:33:47	2106	BP23MVEXP-ENV-DC-043			Camera	87	644009	6141795	644054	6141780	-45	15	47	108		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
09-Jul-2023	22:34:20	2107	BP23MVEXP-ENV-DC-043			Camera	87	644012	6141794	644054	6141780	-42	14	44	108		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
09-Jul-2023	22:34:41	2108	BP23MVEXP-ENV-DC-043			Camera	87	644014	6141793	644054	6141780	-40	13	42	108		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
09-Jul-2023	22:35:30	2109	BP23MVEXP-ENV-DC-043			Camera	87	644019	6141791	644054	6141780	-35	11	36	108		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
09-Jul-2023	22:36:00	2110	BP23MVEXP-ENV-DC-043			Camera	87	644023	6141790	644054	6141780	-32	10	33	108		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
09-Jul-2023	22:37:35	2111	BP23MVEXP-ENV-DC-043			Camera	87	644032	6141787	644054	6141780	-22	7	23	109		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
09-Jul-2023	22:38:39	2112	BP23MVEXP-ENV-DC-043			Camera	87	644038	6141785	644054	6141780	-16	5	16	109		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
09-Jul-2023	22:39:33	2113	BP23MVEXP-ENV-DC-043			Camera	87	644044	6141784	644054	6141780	-10	4	11	111		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
09-Jul-2023	22:39:43	2114	BP23MVEXP-ENV-DC-043			Camera	87	644045	6141784	644054	6141780	-9	4	10	112		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
09-Jul-2023	22:40:19	2115	BP23MVEXP-ENV-DC-043			Camera	87	644048	6141782	644054	6141780	-6	2	7	111		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
09-Jul-2023	22:40:47	2116	BP23MVEXP-ENV-DC-043			Camera	87	644050	6141781	644054	6141780	-4	1	4	113		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
09-Jul-2023	22:40:57	2117	BP23MVEXP-ENV-DC-043			Camera	87	644051	6141781	644054	6141780	-3	1	3	115		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
09-Jul-2023	22:41:17	2118	BP23MVEXP-ENV-DC-043			Camera	87	644054	6141781	644054	6141780	0	1	1	144		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
09-Jul-2023	22:41:25	2119	BP23MVEXP-ENV-DC-043			Camera	87	644055	6141780	644054	6141780	1	0	1	-121		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
09-Jul-2023	22:41:34	2120	BP23MVEXP-ENV-DC-043			Camera	87	644055	6141780	644054	6141780	1	0	1	-91		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
09-Jul-2023	22:42:42	2121	BP23MVEXP-ENV-DC-043			Camera	87	644062	6141778	644054	6141780	8	-2	8	-79		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
09-Jul-2023	22:42:51	2122	BP23MVEXP-ENV-DC-043			Camera	87	644063	6141778	644054	6141780	9	-2	10	-78		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
09-Jul-2023	22:42:57	2123	BP23MVEXP-ENV-DC-043			Camera	87	644064	6141778	644054	6141780	10	-2	10	-78		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
09-Jul-2023	22:43:12	2124	BP23MVEXP-ENV-DC-043			Camera	87	644065	6141778	644054	6141780	11	-2	11	-78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
09-Jul-2023	22:43:28	2125	BP23MVEXP-ENV-DC-043			Camera	87	644067	6141777	644054	6141780	13	-3	13	-77		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
09-Jul-2023	22:43:50	2126A	BP23MVEXP-ENV-DC-043			Camera	89	644069	6141777	644054	6141780	15	-3	15	-79		(Raw Nav, Kongsberg 14208, img#48) (B)
09-Jul-2023	22:44:06	2126B	BP23MVEXP-ENV-DC-043			Camera	87	644071	6141776	644054	6141780	17	-4	18	-78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
09-Jul-2023	22:44:44	2127	BP23MVEXP-ENV-DC-043			Camera	87	644075	6141775	644054	6141780	21	-5	21	-76		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
09-Jul-2023	22:45:34	2128	BP23MVEXP-ENV-DC-043			Camera	87	644080	6141773	644054	6141780	26	-7	27	-76		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
09-Jul-2023	22:47:03	2129	BP23MVEXP-ENV-DC-043			Camera	87	644088	6141771	644054	6141780	34	-9	35	-74		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
09-Jul-2023	22:48:20	2130	BP23MVEXP-ENV-DC-043			Camera	87	644096	6141769	644054	6141780	42	-11	43	-75		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	00:01:27	2131	BP23MVEXP-ENV-DC-044			Camera	92	642793	6138105	642775	6138054	18	51	54	-161		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	00:02:34	2132	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138105	642775	6138054	17	51	54	-161		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	00:02:49	2133	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138104	642775	6138054	17	50	53	-161		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	00:03:16	2134	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138103	642775	6138054	17	49	51	-161		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	00:03:45	2135	BP23MVEXP-ENV-DC-044			Camera	92	642792	6138100	642775	6138054	17	46	49	-160		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	00:04:40	2136	BP23MVEXP-ENV-DC-044			Camera	92	642790	6138095	642775	6138054	15	41	43	-160		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	00:05:23	2137	BP23MVEXP-ENV-DC-044			Camera	92	642788	6138091	642775	6138054	13	37	39	-160		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	00:05:59	2138	BP23MVEXP-ENV-DC-044			Camera	92	642787	6138087	642775	6138054	12	33	35	-160		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	00:06:33	2139	BP23MVEXP-ENV-DC-044			Camera	92	642786	6138083	642775	6138054	11	29	31	-159		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	00:07:31	2140	BP23MVEXP-ENV-DC-044			Camera	92	642784	6138078	642775	6138054	9	24	25	-160		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	00:08:19	2141	BP23MVEXP-ENV-DC-044			Camera	92	642782	6138073	642775	6138054	7	19	20	-159		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	00:08:52	2142	BP23MVEXP-ENV-DC-044			Camera	92	642781	6138070	642775	6138054	6	16	17	-159		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	00:09:45	2143	BP23MVEXP-ENV-DC-044			Camera	92	642779	6138065	642775	6138054	4	11	12	-159		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	00:10:22	2144	BP23MVEXP-ENV-DC-044			Camera	92	642779	6138062	642775	6138054	4	8	8	-155		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	00:11:07	2145	BP23MVEXP-ENV-DC-044			Camera	92	642777	6138057	642775	6138054	2	3	4	-147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	00:12:05	2146	BP23MVEXP-ENV-DC-044			Camera	92	642775	6138052	642775	6138054	0	-2	2	1		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	00:12:31	2147	BP23MVEXP-ENV-DC-044			Camera	92	642774	6138049	642775	6138054	-1	-5	5	6		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	00:13:22	2148	BP23MVEXP-ENV-DC-044			Camera	92	642773	6138044	642775	6138054	-2	-10	10	11		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	00:15:22	2149	BP23MVEXP-ENV-DC-044			Camera	92	642770	6138033	642775	6138054	-5	-21	22	15		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	00:15:39	2150	BP23MVEXP-ENV-DC-044			Camera	92	642769	6138031	642775	6138054	-6	-23	23	15		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	00:16:45	2151	BP23MVEXP-ENV-DC-044			Camera	92	642767	6138025	642775	6138054	-8	-29	30	16		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	00:17:24	2152	BP23MVEXP-ENV-DC-044			Camera	91	642766	6138022	642775	6138054	-9	-32	33	16		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	00:18:04	2153	BP23MVEXP-ENV-DC-044			Camera	91	642764	6138018	642775	6138054	-11	-37	38	16		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	00:18:26	2154	BP23MVEXP-ENV-DC-044			Camera	91	642764	6138015	642775	6138054	-11	-39	40	16		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	00:19:00	2155	BP23MVEXP-ENV-DC-044			Camera	91	642763	6138012	642775	6138054	-12	-42	44	16		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	00:19:18	2156	BP23MVEXP-ENV-DC-044			Camera	91	642762	6138010	642775	6138054	-13	-44	46	16		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	00:34:00	2157	BP23MVEXP-ENV-DC-044			Camera	92	642725	6138069	642775	6138054	-50	15	52	107		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	00:35:26	2158	BP23MVEXP-ENV-DC-044			Camera	92	642728	6138070	642775	6138054	-47	16	49	108		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	00:36:29	2159	BP23MVEXP-ENV-DC-044			Camera	92	642734	6138068	642775	6138054	-41	14	43	109		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	00:37:04	2160	BP23MVEXP-ENV-DC-044			Camera	92	642737	6138067	642775	6138054	-38	13	40	109		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	00:38:40	2161	BP23MVEXP-ENV-DC-044			Camera	92	642747	6138065	642775	6138054	-28	11	30	112		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	00:39:05	2162	BP23MVEXP-ENV-DC-044			Camera	92	642749	6138065	642775	6138054	-26	11	28	113		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	00:40:16	2163	BP23MVEXP-ENV-DC-044			Camera	92	642756	6138063	642775	6138054	-19	9	21	116		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	00:41:07	2164	BP23MVEXP-ENV-DC-044			Camera	92	642761	6138062	642775	6138054	-14	8	16	119		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	00:41:49	2165	BP23MVEXP-ENV-DC-044			Camera	92	642766	6138061	642775	6138054	-9	7	11	126		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	00:43:00	2166	BP23MVEXP-ENV-DC-044			Camera	92	642773	6138058	642775	6138054	-2	4	5	153		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	00:43:17	2167	BP23MVEXP-ENV-DC-044			Camera	92	642775	6138058	642775	6138054	0	4	4	172		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	00:43:56	2168	BP23MVEXP-ENV-DC-044			Camera	92	642778	6138056	642775	6138054	3	2	4	-129		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	00:44:36	2169	BP23MVEXP-ENV-DC-044			Camera	92	642782	6138055	642775	6138054	7	1	7	-100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	00:45:01	2170	BP23MVEXP-ENV-DC-044			Camera	92	642785	6138055	642775	6138054	10	1	10	-93		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	00:45:59	2171	BP23MVEXP-ENV-DC-044			Camera	92	642791	6138053	642775	6138054	16	-1	16	-85		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	00:46:39	2172	BP23MVEXP-ENV-DC-044			Camera	92	642795	6138052	642775	6138054	20	-2	20	-83		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	00:47:31	2173	BP23MVEXP-ENV-DC-044			Camera	92	642800	6138050	642775	6138054	25	-4	25	-80		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	00:48:04	2174	BP23MVEXP-ENV-DC-044			Camera	92	642803	6138049	642775	6138054	28	-5	29	-80		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	00:48:54	2175	BP23MVEXP-ENV-DC-044			Camera	92	642808	6138048	642775	6138054	33	-6	34	-79		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	00:50:16	2176	BP23MVEXP-ENV-DC-044			Camera	92	642817	6138045	642775	6138054	42	-9	43	-78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	00:50:40	2177	BP23MVEXP-ENV-DC-044			Camera	92	642819	6138044	642775	6138054	44	-10	45	-78		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	00:50:57	2178	BP23MVEXP-ENV-DC-044			Camera	92	642820	6138044	642775	6138054	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	00:51:14	2179	BP23MVEXP-ENV-DC-044			Camera	92	642822	6138043	642775	6138054	47	-11	48	-77		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	02:22:24	2180	BP23MVEXP-ENV-DC-045			Camera	92	641500	6134347	641483	6134299	17	48	51	-161		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	02:22:57	2181	BP23MVEXP-ENV-DC-045			Camera	92	641501	6134346	641483	6134299	18	47	50	-159		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	02:24:00	2182	BP23MVEXP-ENV-DC-045			Camera	92	641499	6134343	641483	6134299	16	44	47	-160		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	02:24:13	2183	BP23MVEXP-ENV-DC-045			Camera	92	641499	6134342	641483	6134299	16	43	46	-160		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	02:24:48	2184	BP23MVEXP-ENV-DC-045			Camera	92	641497	6134339	641483	6134299	14	40	42	-161		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	02:26:52	2185	BP23MVEXP-ENV-DC-045			Camera	92	641494	6134326	641483	6134299	11	27	29	-159		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	02:27:23	2186	BP23MVEXP-ENV-DC-045			Camera	92	641492	6134323	641483	6134299	9	24	26	-158		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	02:28:02	2187	BP23MVEXP-ENV-DC-045			Camera	92	641491	6134319	641483	6134299	8	20	22	-158		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	02:28:43	2188	BP23MVEXP-ENV-DC-045			Camera	92	641490	6134315	641483	6134299	7	17	18	-157		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	02:29:03	2189	BP23MVEXP-ENV-DC-045			Camera	92	641489	6134313	641483	6134299	6	14	16	-156		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	02:29:24	2190	BP23MVEXP-ENV-DC-045			Camera	92	641489	6134311	641483	6134299	6	12	14	-154		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	02:29:51	2191	BP23MVEXP-ENV-DC-045			Camera	92	641488	6134309	641483	6134299	5	10	11	-152		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	02:30:18	2192	BP23MVEXP-ENV-DC-045			Camera	92	641487	6134306	641483	6134299	4	7	8	-147		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	02:30:58	2193	BP23MVEXP-ENV-DC-045			Camera	92	641486	6134302	641483	6134299	3	3	4	-132		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	02:31:34	2194	BP23MVEXP-ENV-DC-045			Camera	92	641485	6134298	641483	6134299	2	-1	2	-53		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	02:32:05	2195	BP23MVEXP-ENV-DC-045			Camera	92	641484	6134294	641483	6134299	1	-5	5	-10		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	02:32:55	2196	BP23MVEXP-ENV-DC-045			Camera	92	641482	6134289	641483	6134299	-1	-10	10	3		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	02:33:33	2197	BP23MVEXP-ENV-DC-045			Camera	92	641481	6134285	641483	6134299	-2	-14	14	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	02:34:15	2198	BP23MVEXP-ENV-DC-045			Camera	92	641480	6134281	641483	6134299	-3	-18	18	8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	02:34:59	2199	BP23MVEXP-ENV-DC-045			Camera	92	641479	6134277	641483	6134299	-4	-22	22	10		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	02:36:04	2200	BP23MVEXP-ENV-DC-045			Camera	92	641477	6134270	641483	6134299	-6	-29	30	12		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	02:36:49	2201	BP23MVEXP-ENV-DC-045			Camera	92	641476	6134265	641483	6134299	-7	-34	35	12		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	02:37:22	2202	BP23MVEXP-ENV-DC-045			Camera	92	641474	6134262	641483	6134299	-9	-37	38	13		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	02:37:50	2203	BP23MVEXP-ENV-DC-045			Camera	92	641473	6134260	641483	6134299	-10	-40	41	14		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	02:38:26	2204	BP23MVEXP-ENV-DC-045			Camera	92	641472	6134256	641483	6134299	-11	-43	44	14		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	02:38:58	2205	BP23MVEXP-ENV-DC-045			Camera	92	641471	6134253	641483	6134299	-12	-46	47	15		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	02:56:28	2206	BP23MVEXP-ENV-DC-045			Camera	92	641433	6134313	641483	6134299	-50	14	52	106		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	02:57:19	2207	BP23MVEXP-ENV-DC-045			Camera	92	641437	6134312	641483	6134299	-46	13	48	106		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	02:58:09	2208	BP23MVEXP-ENV-DC-045			Camera	92	641441	6134311	641483	6134299	-42	12	43	107		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	02:58:50	2209	BP23MVEXP-ENV-DC-045			Camera	92	641446	6134310	641483	6134299	-37	11	39	106		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	02:59:39	2210	BP23MVEXP-ENV-DC-045			Camera	92	641451	6134309	641483	6134299	-32	10	34	107		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	03:00:54	2211	BP23MVEXP-ENV-DC-045			Camera	92	641458	6134307	641483	6134299	-25	8	26	107		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	03:01:32	2212	BP23MVEXP-ENV-DC-045			Camera	92	641462	6134305	641483	6134299	-21	6	22	107		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	03:02:06	2213	BP23MVEXP-ENV-DC-045			Camera	92	641465	6134304	641483	6134299	-18	5	18	107		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	03:03:08	2214	BP23MVEXP-ENV-DC-045			Camera	92	641471	6134303	641483	6134299	-12	4	12	109		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	03:03:52	2215	BP23MVEXP-ENV-DC-045			Camera	92	641476	6134302	641483	6134299	-7	3	8	115		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	03:04:39	2216	BP23MVEXP-ENV-DC-045				92	641480	6134301	641483	6134299	-3	2	4	131		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A) Fix no photo
10-Jul-2023	03:04:47	2217	BP23MVEXP-ENV-DC-045			Camera	92	641481	6134301	641483	6134299	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	03:05:26	2218	BP23MVEXP-ENV-DC-045			Camera	92	641486	6134299	641483	6134299	3	0	3	-100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	03:06:12	2219	BP23MVEXP-ENV-DC-045			Camera	92	641491	6134298	641483	6134299	8	-1	8	-82		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	03:07:33	2220	BP23MVEXP-ENV-DC-045			Camera	92	641499	6134296	641483	6134299	16	-3	16	-79		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	03:08:05	2221	BP23MVEXP-ENV-DC-045			Camera	92	641502	6134295	641483	6134299	19	-4	19	-78		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	03:09:19	2222	BP23MVEXP-ENV-DC-045			Camera	92	641509	6134293	641483	6134299	26	-6	27	-77		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	03:10:13	2223	BP23MVEXP-ENV-DC-045			Camera	92	641515	6134291	641483	6134299	32	-8	33	-76		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	03:10:40	2224	BP23MVEXP-ENV-DC-045			Camera	92	641518	6134290	641483	6134299	35	-9	36	-76		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	03:11:15	2225	BP23MVEXP-ENV-DC-045			Camera	92	641521	6134289	641483	6134299	38	-10	39	-75		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	03:12:19	2226	BP23MVEXP-ENV-DC-045			Camera	92	641526	6134287	641483	6134299	43	-12	45	-74		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	04:09:32	2227	BP23MVEXP-ENV-DC-046			Camera	86	640057	6130492	640073	6130539	-16	-47	49	19		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	04:10:47	2228	BP23MVEXP-ENV-DC-046			Camera	86	640057	6130493	640073	6130539	-16	-46	49	19		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	04:11:41	2229	BP23MVEXP-ENV-DC-046			Camera	86	640059	6130496	640073	6130539	-14	-43	45	19		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	04:12:35	2230	BP23MVEXP-ENV-DC-046			Camera	86	640059	6130503	640073	6130539	-14	-36	39	21		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	04:13:30	2231	BP23MVEXP-ENV-DC-046			Camera	86	640060	6130508	640073	6130539	-13	-31	34	22		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	04:13:59	2232	BP23MVEXP-ENV-DC-046				86	640061	6130511	640073	6130539	-12	-28	31	22		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A) Fix no photo
10-Jul-2023	04:14:11	2233	BP23MVEXP-ENV-DC-046			Camera	86	640062	6130512	640073	6130539	-11	-27	29	23		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	04:14:32	2234	BP23MVEXP-ENV-DC-046			Camera	86	640062	6130515	640073	6130539	-11	-24	26	24		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	04:15:09	2235	BP23MVEXP-ENV-DC-046			Camera	86	640064	6130518	640073	6130539	-9	-21	23	23		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	04:15:33	2236	BP23MVEXP-ENV-DC-046			Camera	86	640065	6130521	640073	6130539	-8	-19	20	23		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	04:16:00	2237	BP23MVEXP-ENV-DC-046			Camera	86	640066	6130523	640073	6130539	-7	-16	17	25		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	04:16:41	2238	BP23MVEXP-ENV-DC-046			Camera	86	640067	6130527	640073	6130539	-6	-12	14	27		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	04:17:13	2239	BP23MVEXP-ENV-DC-046			Camera	86	640068	6130530	640073	6130539	-5	-9	10	31		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	04:17:58	2240	BP23MVEXP-ENV-DC-046			Camera	86	640069	6130535	640073	6130539	-4	-4	6	44		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	04:18:38	2241	BP23MVEXP-ENV-DC-046			Camera	86	640070	6130538	640073	6130539	-3	-1	3	79		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	04:19:17	2242	BP23MVEXP-ENV-DC-046			Camera	86	640072	6130543	640073	6130539	-1	4	4	169		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	04:19:34	2243	BP23MVEXP-ENV-DC-046			Camera	86	640073	6130544	640073	6130539	0	5	5	178		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	04:20:04	2244	BP23MVEXP-ENV-DC-046			Camera	86	640074	6130547	640073	6130539	1	8	8	-174		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	04:20:27	2245	BP23MVEXP-ENV-DC-046			Camera	86	640074	6130549	640073	6130539	1	10	10	-173		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	04:20:46	2246	BP23MVEXP-ENV-DC-046			Camera	86	640075	6130551	640073	6130539	2	12	13	-171		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	04:21:40	2247	BP23MVEXP-ENV-DC-046			Camera	86	640077	6130556	640073	6130539	4	17	18	-168		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	04:22:19	2248	BP23MVEXP-ENV-DC-046			Camera	86	640078	6130561	640073	6130539	5	22	22	-167		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	04:22:51	2249	BP23MVEXP-ENV-DC-046			Camera	86	640080	6130565	640073	6130539	7	26	26	-166		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	04:23:13	2250	BP23MVEXP-ENV-DC-046			Camera	86	640080	6130566	640073	6130539	7	27	28	-165		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	04:24:03	2251	BP23MVEXP-ENV-DC-046			Camera	86	640082	6130571	640073	6130539	9	32	33	-165		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	04:24:30	2252	BP23MVEXP-ENV-DC-046			Camera	86	640082	6130573	640073	6130539	9	34	35	-165		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	04:25:47	2253	BP23MVEXP-ENV-DC-046			Camera	86	640085	6130580	640073	6130539	12	41	43	-164		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	04:38:33	2254	BP23MVEXP-ENV-DC-046			Camera	87	640027	6130555	640073	6130539	-46	16	49	109		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	04:39:57	2255	BP23MVEXP-ENV-DC-046			Camera	87	640025	6130552	640073	6130539	-48	13	50	105		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	04:40:33	2256	BP23MVEXP-ENV-DC-046			Camera	87	640028	6130551	640073	6130539	-45	12	46	104		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	04:41:14	2257	BP23MVEXP-ENV-DC-046			Camera	87	640033	6130549	640073	6130539	-40	10	41	105		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	04:41:40	2258	BP23MVEXP-ENV-DC-046			Camera	87	640036	6130549	640073	6130539	-37	10	38	104		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	04:42:24	2259	BP23MVEXP-ENV-DC-046			Camera	86	640041	6130548	640073	6130539	-32	9	34	106		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	04:42:54	2260	BP23MVEXP-ENV-DC-046			Camera	86	640043	6130547	640073	6130539	-30	8	31	104		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	04:43:42	2261	BP23MVEXP-ENV-DC-046			Camera	86	640047	6130545	640073	6130539	-26	6	26	103		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	04:44:28	2262	BP23MVEXP-ENV-DC-046			Camera	86	640052	6130544	640073	6130539	-21	5	21	103		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	04:45:18	2263	BP23MVEXP-ENV-DC-046			Camera	86	640056	6130542	640073	6130539	-17	3	17	102		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	04:45:47	2264	BP23MVEXP-ENV-DC-046			Camera	86	640059	6130542	640073	6130539	-14	3	14	102		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	04:46:27	2265	BP23MVEXP-ENV-DC-046			Camera	86	640063	6130541	640073	6130539	-10	2	10	100		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	04:47:12	2266	BP23MVEXP-ENV-DC-046			Camera	86	640067	6130539	640073	6130539	-6	0	6	95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	04:47:36	2267	BP23MVEXP-ENV-DC-046			Camera	86	640070	6130539	640073	6130539	-3	0	3	82		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	04:48:32	2268	BP23MVEXP-ENV-DC-046			Camera	86	640076	6130537	640073	6130539	3	-2	4	-60		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	04:49:12	2269	BP23MVEXP-ENV-DC-046			Camera	86	640080	6130536	640073	6130539	7	-3	7	-68		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	04:50:17	2270	BP23MVEXP-ENV-DC-046			Camera	86	640086	6130534	640073	6130539	13	-5	14	-71		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	04:50:42	2271	BP23MVEXP-ENV-DC-046			Camera	86	640089	6130534	640073	6130539	16	-5	17	-71		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	04:51:42	2272	BP23MVEXP-ENV-DC-046			Camera	86	640094	6130532	640073	6130539	21	-7	23	-71		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	04:52:33	2273	BP23MVEXP-ENV-DC-046			Camera	86	640099	6130530	640073	6130539	27	-9	28	-71		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	04:53:44	2274	BP23MVEXP-ENV-DC-046			Camera	86	640107	6130528	640073	6130539	34	-11	36	-72		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	04:54:21	2275	BP23MVEXP-ENV-DC-046			Camera	86	640110	6130527	640073	6130539	37	-12	39	-72		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	04:55:04	2276	BP23MVEXP-ENV-DC-046			Camera	86	640114	6130526	640073	6130539	41	-13	43	-72		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	04:55:27	2277	BP23MVEXP-ENV-DC-046			Camera	86	640117	6130525	640073	6130539	44	-14	46	-72		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	06:25:03	2278	BP23MVEXP-ENV-DC-047			Camera	85	639544	6126700	639530	6126759	14	-59	61	-13		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	06:27:12	2279	BP23MVEXP-ENV-DC-047			Camera	85	639544	6126702	639530	6126759	15	-57	59	-14		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	06:27:44	2280	BP23MVEXP-ENV-DC-047			Camera	85	639545	6126704	639530	6126759	15	-55	57	-15		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	06:28:39	2281	BP23MVEXP-ENV-DC-047			Camera	85	639544	6126708	639530	6126759	14	-51	53	-15		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	06:29:06	2282	BP23MVEXP-ENV-DC-047			Camera	85	639543	6126710	639530	6126759	13	-49	51	-15		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	06:29:38	2283	BP23MVEXP-ENV-DC-047			Camera	85	639542	6126713	639530	6126759	12	-46	48	-15		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	06:31:51	2284	BP23MVEXP-ENV-DC-047			Camera	85	639539	6126725	639530	6126759	9	-34	35	-14		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	06:32:43	2285	BP23MVEXP-ENV-DC-047			Camera	85	639537	6126730	639530	6126759	7	-29	29	-14		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	06:33:29	2286	BP23MVEXP-ENV-DC-047			Camera	85	639536	6126735	639530	6126759	6	-24	25	-13		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	06:34:27	2287	BP23MVEXP-ENV-DC-047			Camera	85	639534	6126741	639530	6126759	4	-18	18	-13		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	06:35:56	2288	BP23MVEXP-ENV-DC-047			Camera	85	639531	6126750	639530	6126759	1	-9	10	-8		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	06:36:28	2289	BP23MVEXP-ENV-DC-047			Camera	85	639530	6126753	639530	6126759	0	-6	6	0		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	06:36:44	2290	BP23MVEXP-ENV-DC-047			Camera	85	639529	6126755	639530	6126759	-1	-4	4	7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	06:37:52	2291	BP23MVEXP-ENV-DC-047			Camera	85	639528	6126761	639530	6126759	-2	2	3	137		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	06:38:26	2292	BP23MVEXP-ENV-DC-047			Camera	85	639527	6126764	639530	6126759	-3	5	6	150		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	06:40:00	2293	BP23MVEXP-ENV-DC-047			Camera	85	639524	6126773	639530	6126759	-6	14	15	157		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	06:40:17	2294	BP23MVEXP-ENV-DC-047			Camera	85	639524	6126775	639530	6126759	-6	16	17	158		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	06:41:05	2295	BP23MVEXP-ENV-DC-047			Camera	85	639522	6126779	639530	6126759	-8	20	21	158		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	06:41:28	2296	BP23MVEXP-ENV-DC-047			Camera	85	639521	6126781	639530	6126759	-9	22	24	158		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	06:41:56	2297	BP23MVEXP-ENV-DC-047			Camera	85	639520	6126784	639530	6126759	-10	25	27	159		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	06:42:43	2298	BP23MVEXP-ENV-DC-047			Camera	85	639519	6126789	639530	6126759	-12	30	32	159		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	06:43:37	2299	BP23MVEXP-ENV-DC-047			Camera	85	639517	6126794	639530	6126759	-13	36	38	160		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	06:44:48	2300	BP23MVEXP-ENV-DC-047			Camera	85	639515	6126801	639530	6126759	-15	42	45	160		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	06:45:27	2301	BP23MVEXP-ENV-DC-047			Camera	85	639514	6126805	639530	6126759	-16	46	49	161		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	06:45:36	2302	BP23MVEXP-ENV-DC-047			Camera	85	639513	6126806	639530	6126759	-17	47	50	161		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	06:56:41	2303	BP23MVEXP-ENV-DC-047			Camera	85	639488	6126757	639530	6126759	-42	-2	42	88		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	06:57:14	2304	BP23MVEXP-ENV-DC-047			Camera	85	639487	6126755	639530	6126759	-43	-4	44	84		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	06:57:21	2305	BP23MVEXP-ENV-DC-047			Camera	85	639486	6126754	639530	6126759	-44	-5	44	83		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	06:59:39	2306	BP23MVEXP-ENV-DC-047			Camera	85	639485	6126747	639530	6126759	-45	-12	47	75		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	07:00:50	2307	BP23MVEXP-ENV-DC-047			Camera	85	639491	6126749	639530	6126759	-39	-10	41	75		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	07:01:15	2308	BP23MVEXP-ENV-DC-047			Camera	85	639493	6126750	639530	6126759	-37	-9	38	76		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	07:02:09	2309	BP23MVEXP-ENV-DC-047			Camera	85	639499	6126752	639530	6126759	-31	-7	32	76		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	07:02:48	2310	BP23MVEXP-ENV-DC-047			Camera	85	639503	6126753	639530	6126759	-27	-6	28	77		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	07:03:33	2311	BP23MVEXP-ENV-DC-047			Camera	85	639508	6126754	639530	6126759	-22	-5	22	77		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	07:03:43	2312	BP23MVEXP-ENV-DC-047			Camera	85	639509	6126754	639530	6126759	-21	-5	21	76		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	07:04:18	2313	BP23MVEXP-ENV-DC-047			Camera	85	639513	6126755	639530	6126759	-17	-4	18	77		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	07:06:59	2314	BP23MVEXP-ENV-DC-047			Camera	85	639528	6126760	639530	6126759	-2	1	2	109		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	07:07:40	2315	BP23MVEXP-ENV-DC-047			Camera	85	639532	6126761	639530	6126759	2	2	3	-131		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	07:09:15	2316	BP23MVEXP-ENV-DC-047			Camera	85	639541	6126764	639530	6126759	11	5	12	-115		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	07:10:38	2317	BP23MVEXP-ENV-DC-047			Camera	85	639548	6126767	639530	6126759	19	8	20	-114		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	07:12:03	2318	BP23MVEXP-ENV-DC-047			Camera	85	639557	6126769	639530	6126759	27	10	29	-111		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	07:12:32	2319	BP23MVEXP-ENV-DC-047			Camera	85	639560	6126770	639530	6126759	30	11	32	-110		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	07:12:57	2320	BP23MVEXP-ENV-DC-047			Camera	85	639563	6126770	639530	6126759	33	11	35	-109		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	07:14:03	2321	BP23MVEXP-ENV-DC-047			Camera	85	639570	6126772	639530	6126759	40	13	42	-108		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	07:14:31	2322	BP23MVEXP-ENV-DC-047			Camera	85	639572	6126773	639530	6126759	42	14	45	-109		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	07:15:09	2323	BP23MVEXP-ENV-DC-047			Camera	85	639576	6126774	639530	6126759	46	15	48	-109		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	08:10:39	2324	BP23MVEXP-ENV-DC-048			Camera	78	640632	6122986	640642	6122945	-10	41	42	166		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	08:11:36	2325	BP23MVEXP-ENV-DC-048			Camera	78	640632	6122986	640642	6122945	-10	41	43	166		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	08:16:07	2326	BP23MVEXP-ENV-DC-048			Camera	78	640625	6122994	640642	6122945	-17	49	52	161		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	08:17:14	2327	BP23MVEXP-ENV-DC-048			Camera	78	640628	6122987	640642	6122945	-14	42	45	162		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	08:17:53	2328	BP23MVEXP-ENV-DC-048			Camera	78	640629	6122984	640642	6122945	-13	39	41	162		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	08:18:50	2329	BP23MVEXP-ENV-DC-048			Camera	78	640631	6122978	640642	6122945	-11	33	35	162		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	08:19:16	2330	BP23MVEXP-ENV-DC-048			Camera	78	640633	6122975	640642	6122945	-9	30	32	163		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	08:20:16	2331	BP23MVEXP-ENV-DC-048			Camera	78	640635	6122968	640642	6122945	-7	24	24	164		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	08:20:46	2332	BP23MVEXP-ENV-DC-048			Camera	78	640636	6122965	640642	6122945	-6	21	21	164		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	08:21:33	2333	BP23MVEXP-ENV-DC-048			Camera	78	640637	6122961	640642	6122945	-5	16	17	163		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	08:22:14	2334	BP23MVEXP-ENV-DC-048			Camera	78	640639	6122957	640642	6122945	-3	12	13	164		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	08:22:36	2335	BP23MVEXP-ENV-DC-048			Camera	78	640639	6122955	640642	6122945	-3	10	10	164		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	08:23:14	2336	BP23MVEXP-ENV-DC-048			Camera	78	640641	6122951	640642	6122945	-1	6	6	167		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	08:23:38	2337	BP23MVEXP-ENV-DC-048			Camera	78	640642	6122949	640642	6122945	0	4	4	178		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	08:24:11	2338	BP23MVEXP-ENV-DC-048			Camera	78	640643	6122946	640642	6122945	1	1	1	-125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	08:24:25	2339	BP23MVEXP-ENV-DC-048			Camera	78	640643	6122944	640642	6122945	1	-1	2	-48		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	08:24:57	2340	BP23MVEXP-ENV-DC-048			Camera	78	640644	6122941	640642	6122945	2	-4	5	-28		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	08:25:34	2341	BP23MVEXP-ENV-DC-048			Camera	78	640646	6122937	640642	6122945	4	-8	9	-24		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	08:26:14	2342	BP23MVEXP-ENV-DC-048			Camera	78	640647	6122933	640642	6122945	5	-12	12	-22		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	08:26:51	2343	BP23MVEXP-ENV-DC-048			Camera	78	640648	6122930	640642	6122945	6	-15	16	-22		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	08:27:58	2344	BP23MVEXP-ENV-DC-048			Camera	78	640650	6122924	640642	6122945	8	-22	23	-21		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	08:28:26	2345	BP23MVEXP-ENV-DC-048			Camera	78	640651	6122921	640642	6122945	9	-24	26	-21		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	08:28:58	2346	BP23MVEXP-ENV-DC-048			Camera	78	640652	6122917	640642	6122945	10	-28	30	-21		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	08:29:37	2347	BP23MVEXP-ENV-DC-048			Camera	78	640654	6122914	640642	6122945	12	-31	33	-20		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	08:30:41	2348	BP23MVEXP-ENV-DC-048			Camera	78	640656	6122908	640642	6122945	14	-37	40	-20		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	08:31:04	2349	BP23MVEXP-ENV-DC-048			Camera	78	640656	6122905	640642	6122945	14	-40	42	-19		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	08:31:34	2350	BP23MVEXP-ENV-DC-048			Camera	78	640657	6122903	640642	6122945	15	-42	45	-19		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	08:46:04	2351	BP23MVEXP-ENV-DC-048			Camera	78	640592	6122930	640642	6122945	-50	-15	52	73		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	08:46:22	2352	BP23MVEXP-ENV-DC-048			Camera	78	640591	6122930	640642	6122945	-51	-15	53	74		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	08:47:31	2353	BP23MVEXP-ENV-DC-048			Camera	78	640593	6122933	640642	6122945	-49	-12	50	77		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	08:47:48	2354	BP23MVEXP-ENV-DC-048			Camera	78	640595	6122934	640642	6122945	-47	-11	48	77		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	08:48:45	2355	BP23MVEXP-ENV-DC-048			Camera	78	640601	6122937	640642	6122945	-41	-8	42	79		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	08:49:07	2356	BP23MVEXP-ENV-DC-048			Camera	78	640603	6122938	640642	6122945	-39	-7	40	79		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	08:49:52	2357	BP23MVEXP-ENV-DC-048				78	640607	6122939	640642	6122945	-35	-6	35	80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A) Fix no photo
10-Jul-2023	08:50:40	2358	BP23MVEXP-ENV-DC-048			Camera	78	640612	6122940	640642	6122945	-30	-5	30	81		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	08:51:09	2359	BP23MVEXP-ENV-DC-048			Camera	78	640615	6122941	640642	6122945	-27	-4	27	82		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	08:51:58	2360	BP23MVEXP-ENV-DC-048			Camera	78	640620	6122943	640642	6122945	-22	-2	22	85		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	08:52:48	2361	BP23MVEXP-ENV-DC-048			Camera	78	640625	6122945	640642	6122945	-17	0	17	89		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	08:53:09	2362	BP23MVEXP-ENV-DC-048			Camera	78	640627	6122945	640642	6122945	-15	0	15	92		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	08:53:25	2363	BP23MVEXP-ENV-DC-048			Camera	78	640629	6122946	640642	6122945	-13	1	13	95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	08:54:00	2364	BP23MVEXP-ENV-DC-048			Camera	78	640632	6122947	640642	6122945	-10	2	10	103		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	08:54:44	2365	BP23MVEXP-ENV-DC-048			Camera	78	640636	6122949	640642	6122945	-6	4	8	124		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	08:55:29	2366	BP23MVEXP-ENV-DC-048			Camera	78	640640	6122951	640642	6122945	-2	6	6	159		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	08:55:50	2367	BP23MVEXP-ENV-DC-048			Camera	78	640642	6122951	640642	6122945	0	6	6	-179		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	08:56:43	2368	BP23MVEXP-ENV-DC-048			Camera	78	640648	6122953	640642	6122945	6	8	10	-142		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	08:57:43	2369	BP23MVEXP-ENV-DC-048			Camera	78	640654	6122955	640642	6122945	12	10	15	-130		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	08:58:24	2370	BP23MVEXP-ENV-DC-048			Camera	78	640657	6122956	640642	6122945	15	11	19	-127		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	08:58:45	2371	BP23MVEXP-ENV-DC-048			Camera	78	640659	6122957	640642	6122945	17	12	21	-125		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	08:59:39	2372	BP23MVEXP-ENV-DC-048			Camera	78	640664	6122959	640642	6122945	22	14	26	-122		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	09:00:10	2373	BP23MVEXP-ENV-DC-048			Camera	78	640668	6122960	640642	6122945	26	15	30	-120		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	09:00:48	2374	BP23MVEXP-ENV-DC-048			Camera	78	640671	6122961	640642	6122945	29	16	34	-119		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	09:01:44	2375	BP23MVEXP-ENV-DC-048			Camera	78	640676	6122963	640642	6122945	34	18	39	-118		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	09:02:24	2376	BP23MVEXP-ENV-DC-048			Camera	78	640681	6122964	640642	6122945	39	19	43	-117		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	09:02:36	2377	BP23MVEXP-ENV-DC-048			Camera	78	640682	6122965	640642	6122945	40	20	45	-116		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Jul-2023	10:23:53	2378	BP23MVEXP-ENV-DC-049			Camera	76	641817	6119207	641831	6119158	-14	49	51	164		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Jul-2023	10:24:09	2379	BP23MVEXP-ENV-DC-049			Camera	76	641817	6119207	641831	6119158	-14	49	51	164		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	10:25:32	2380	BP23MVEXP-ENV-DC-049			Camera	76	641817	6119207	641831	6119158	-14	49	51	164		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	10:28:34	2381	BP23MVEXP-ENV-DC-049			Camera	76	641823	6119188	641831	6119158	-8	30	30	166		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	10:30:12	2382	BP23MVEXP-ENV-DC-049			Camera	75	641826	6119178	641831	6119158	-5	20	21	166		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	10:30:42	2383	BP23MVEXP-ENV-DC-049			Camera	75	641826	6119176	641831	6119158	-5	18	19	165		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	10:32:17	2384	BP23MVEXP-ENV-DC-049			Camera	75	641830	6119165	641831	6119158	-1	7	7	170		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	10:32:35	2385	BP23MVEXP-ENV-DC-049			Camera	75	641831	6119163	641831	6119158	0	5	5	179		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	10:33:42	2386	BP23MVEXP-ENV-DC-049			Camera	75	641833	6119157	641831	6119158	2	-1	2	-65		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	10:34:42	2387	BP23MVEXP-ENV-DC-049			Camera	75	641834	6119153	641831	6119158	3	-5	6	-29		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	10:36:54	2388	BP23MVEXP-ENV-DC-049			Camera	75	641838	6119139	641831	6119158	7	-19	20	-20		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	10:37:42	2389	BP23MVEXP-ENV-DC-049			Camera	75	641839	6119134	641831	6119158	8	-24	25	-20		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	10:38:33	2390	BP23MVEXP-ENV-DC-049			Camera	75	641841	6119129	641831	6119158	10	-29	30	-19		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	10:40:10	2391	BP23MVEXP-ENV-DC-049			Camera	75	641845	6119119	641831	6119158	14	-39	41	-19		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	10:40:36	2392	BP23MVEXP-ENV-DC-049			Camera	75	641846	6119117	641831	6119158	15	-41	43	-20		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	10:41:00	2393	BP23MVEXP-ENV-DC-049			Camera	75	641846	6119115	641831	6119158	15	-43	46	-20		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	10:53:55	2394	BP23MVEXP-ENV-DC-049			Camera	75	641786	6119142	641831	6119158	-45	-16	48	70		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	10:55:23	2395	BP23MVEXP-ENV-DC-049			Camera	75	641781	6119144	641831	6119158	-50	-15	52	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	10:56:35	2396	BP23MVEXP-ENV-DC-049			Camera	75	641786	6119145	641831	6119158	-46	-13	47	74		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	10:57:48	2397	BP23MVEXP-ENV-DC-049			Camera	75	641793	6119148	641831	6119158	-38	-10	39	75		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	10:57:57	2398	BP23MVEXP-ENV-DC-049			Camera	75	641794	6119148	641831	6119158	-37	-10	38	75		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	10:58:06	2399	BP23MVEXP-ENV-DC-049			Camera	75	641795	6119148	641831	6119158	-36	-10	37	75		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	10:58:22	2400	BP23MVEXP-ENV-DC-049			Camera	75	641796	6119149	641831	6119158	-35	-9	36	76		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	10:58:36	2401	BP23MVEXP-ENV-DC-049			Camera	75	641798	6119150	641831	6119158	-33	-8	34	76		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	11:00:02	2402	BP23MVEXP-ENV-DC-049			Camera	75	641807	6119154	641831	6119158	-24	-4	25	80		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	11:00:53	2403	BP23MVEXP-ENV-DC-049			Camera	75	641812	6119155	641831	6119158	-19	-3	19	80		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	11:01:15	2404	BP23MVEXP-ENV-DC-049			Camera	75	641814	6119155	641831	6119158	-17	-3	17	79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	11:01:22	2405	BP23MVEXP-ENV-DC-049			Camera	75	641815	6119155	641831	6119158	-16	-3	16	81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	11:02:25	2406	BP23MVEXP-ENV-DC-049			Camera	75	641821	6119158	641831	6119158	-10	0	10	88		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	11:02:41	2407	BP23MVEXP-ENV-DC-049			Camera	75	641822	6119158	641831	6119158	-9	0	9	92		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	11:03:23	2408	BP23MVEXP-ENV-DC-049			Camera	75	641827	6119159	641831	6119158	-4	1	5	106		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	11:04:12	2409	BP23MVEXP-ENV-DC-049			Camera	75	641831	6119161	641831	6119158	0	3	3	-177		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	11:04:18	2410	BP23MVEXP-ENV-DC-049			Camera	75	641832	6119161	641831	6119158	1	3	3	-167		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	11:04:25	2411	BP23MVEXP-ENV-DC-049			Camera	75	641832	6119161	641831	6119158	1	3	3	-154		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	11:04:31	2412	BP23MVEXP-ENV-DC-049			Camera	75	641833	6119161	641831	6119158	2	3	4	-148		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	11:04:41	2413	BP23MVEXP-ENV-DC-049			Camera	75	641834	6119162	641831	6119158	3	4	5	-142		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	11:04:49	2414	BP23MVEXP-ENV-DC-049			Camera	75	641835	6119162	641831	6119158	4	4	6	-140		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	11:04:57	2415	BP23MVEXP-ENV-DC-049			Camera	75	641835	6119163	641831	6119158	4	5	6	-136		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	11:05:06	2416	BP23MVEXP-ENV-DC-049			Camera	75	641837	6119163	641831	6119158	6	5	7	-132		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	11:05:13	2417	BP23MVEXP-ENV-DC-049			Camera	75	641837	6119163	641831	6119158	6	5	8	-130		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	11:05:34	2418	BP23MVEXP-ENV-DC-049			Camera	75	641839	6119163	641831	6119158	8	5	10	-124		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	11:05:41	2419	BP23MVEXP-ENV-DC-049			Camera	75	641840	6119164	641831	6119158	9	6	11	-122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	11:05:55	2420	BP23MVEXP-ENV-DC-049			Camera	75	641841	6119164	641831	6119158	10	6	12	-121		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	11:06:37	2421	BP23MVEXP-ENV-DC-049			Camera	75	641845	6119166	641831	6119158	15	8	16	-118		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	11:06:44	2422	BP23MVEXP-ENV-DC-049			Camera	75	641846	6119166	641831	6119158	15	8	17	-117		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	11:07:01	2423	BP23MVEXP-ENV-DC-049			Camera	75	641848	6119166	641831	6119158	17	8	19	-117		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	11:07:08	2424	BP23MVEXP-ENV-DC-049			Camera	75	641848	6119167	641831	6119158	17	9	19	-116		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	11:07:22	2425	BP23MVEXP-ENV-DC-049			Camera	75	641850	6119167	641831	6119158	19	9	21	-116		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	11:07:39	2426	BP23MVEXP-ENV-DC-049			Camera	75	641851	6119168	641831	6119158	20	10	23	-116		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	11:07:49	2427	BP23MVEXP-ENV-DC-049			Camera	75	641852	6119168	641831	6119158	21	10	24	-116		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	11:08:12	2428	BP23MVEXP-ENV-DC-049			Camera	75	641854	6119169	641831	6119158	23	11	26	-115		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	11:08:22	2429	BP23MVEXP-ENV-DC-049			Camera	75	641856	6119169	641831	6119158	25	11	27	-115		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	11:08:56	2430	BP23MVEXP-ENV-DC-049			Camera	76	641859	6119170	641831	6119158	28	12	31	-113		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	12:37:41	2431	BP23MVEXP-ENV-DC-050			Camera	66	642466	6115223	642446	6115177	20	46	50	-157		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	12:39:06	2432	BP23MVEXP-ENV-DC-050			Camera	66	642466	6115222	642446	6115177	20	45	49	-156		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	12:39:31	2433	BP23MVEXP-ENV-DC-050			Camera	66	642464	6115219	642446	6115177	18	42	46	-157		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	12:40:25	2434	BP23MVEXP-ENV-DC-050			Camera	66	642461	6115214	642446	6115177	16	37	40	-157		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	12:40:50	2435	BP23MVEXP-ENV-DC-050			Camera	66	642460	6115212	642446	6115177	14	35	38	-158		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	12:41:38	2436	BP23MVEXP-ENV-DC-050			Camera	66	642459	6115207	642446	6115177	13	30	33	-157		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	12:42:06	2437	BP23MVEXP-ENV-DC-050			Camera	66	642457	6115205	642446	6115177	11	28	30	-158		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	12:43:25	2438	BP23MVEXP-ENV-DC-050			Camera	66	642454	6115197	642446	6115177	8	20	22	-159		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	12:44:04	2439	BP23MVEXP-ENV-DC-050			Camera	66	642452	6115194	642446	6115177	6	17	18	-160		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	12:45:19	2440	BP23MVEXP-ENV-DC-050			Camera	66	642449	6115187	642446	6115177	3	10	10	-161		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	12:45:50	2441	BP23MVEXP-ENV-DC-050			Camera	66	642448	6115184	642446	6115177	2	7	7	-161		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	12:46:40	2442	BP23MVEXP-ENV-DC-050			Camera	66	642446	6115179	642446	6115177	0	2	2	-178		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	12:47:02	2443	BP23MVEXP-ENV-DC-050			Camera	66	642445	6115177	642446	6115177	-1	0	1	117		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	12:47:39	2444	BP23MVEXP-ENV-DC-050			Camera	66	642443	6115174	642446	6115177	-3	-3	4	37		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	12:47:59	2445	BP23MVEXP-ENV-DC-050			Camera	66	642443	6115172	642446	6115177	-3	-5	6	33		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	12:49:18	2446	BP23MVEXP-ENV-DC-050			Camera	66	642439	6115164	642446	6115177	-7	-13	14	27		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	12:49:57	2447	BP23MVEXP-ENV-DC-050			Camera	66	642438	6115161	642446	6115177	-8	-16	18	27		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	12:50:51	2448	BP23MVEXP-ENV-DC-050			Camera	66	642436	6115156	642446	6115177	-10	-21	24	26		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	12:51:21	2449	BP23MVEXP-ENV-DC-050			Camera	66	642434	6115153	642446	6115177	-12	-24	27	26		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	12:51:30	2450	BP23MVEXP-ENV-DC-050			Camera	66	642434	6115152	642446	6115177	-12	-25	28	26		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	12:51:43	2451	BP23MVEXP-ENV-DC-050			Camera	66	642433	6115151	642446	6115177	-13	-26	29	26		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	12:52:58	2452	BP23MVEXP-ENV-DC-050			Camera	66	642431	6115144	642446	6115177	-15	-33	36	25		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	12:53:55	2453	BP23MVEXP-ENV-DC-050			Camera	66	642428	6115139	642446	6115177	-18	-38	42	25		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	12:54:49	2454	BP23MVEXP-ENV-DC-050			Camera	65	642426	6115134	642446	6115177	-20	-43	48	25		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	13:10:14	2455	BP23MVEXP-ENV-DC-050			Camera	65	642397	6115203	642446	6115177	-49	26	56	117		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	13:11:29	2456	BP23MVEXP-ENV-DC-050			Camera	65	642399	6115205	642446	6115177	-47	28	55	121		(Raw Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	13:12:40	2457	BP23MVEXP-ENV-DC-050			Camera	66	642404	6115203	642446	6115177	-42	26	50	121		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	13:13:40	2458	BP23MVEXP-ENV-DC-050			Camera	66	642409	6115200	642446	6115177	-37	24	44	122		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	13:14:40	2459	BP23MVEXP-ENV-DC-050			Camera	66	642413	6115197	642446	6115177	-33	20	39	122		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	13:16:14	2460	BP23MVEXP-ENV-DC-050			Camera	66	642421	6115194	642446	6115177	-25	17	30	123		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	13:17:03	2461	BP23MVEXP-ENV-DC-050			Camera	66	642426	6115192	642446	6115177	-20	15	25	126		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	13:17:59	2462	BP23MVEXP-ENV-DC-050			Camera	66	642430	6115188	642446	6115177	-16	11	19	125		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	13:18:09	2463	BP23MVEXP-ENV-DC-050			Camera	66	642431	6115188	642446	6115177	-15	11	18	125		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	13:19:14	2464	BP23MVEXP-ENV-DC-050			Camera	66	642437	6115185	642446	6115177	-9	8	12	132		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	13:19:47	2465	BP23MVEXP-ENV-DC-050			Camera	66	642440	6115184	642446	6115177	-6	7	9	140		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	13:21:01	2466	BP23MVEXP-ENV-DC-050			Camera	66	642447	6115181	642446	6115177	1	4	4	-169		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	13:21:21	2467	BP23MVEXP-ENV-DC-050			Camera	66	642449	6115180	642446	6115177	3	3	4	-136		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	13:23:04	2468	BP23MVEXP-ENV-DC-050			Camera	66	642459	6115175	642446	6115177	13	-2	13	-82		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	13:23:30	2469	BP23MVEXP-ENV-DC-050			Camera	66	642461	6115174	642446	6115177	15	-3	16	-79		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	13:24:08	2470	BP23MVEXP-ENV-DC-050			Camera	66	642464	6115172	642446	6115177	19	-5	19	-75		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	13:24:42	2471	BP23MVEXP-ENV-DC-050			Camera	66	642468	6115170	642446	6115177	22	-7	23	-73		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	13:24:52	2472	BP23MVEXP-ENV-DC-050			Camera	66	642469	6115170	642446	6115177	23	-7	24	-73		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	13:25:38	2473	BP23MVEXP-ENV-DC-050			Camera	66	642473	6115168	642446	6115177	27	-9	28	-71		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	13:26:41	2474	BP23MVEXP-ENV-DC-050			Camera	66	642479	6115165	642446	6115177	33	-12	35	-70		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	13:27:46	2475	BP23MVEXP-ENV-DC-050			Camera	66	642485	6115162	642446	6115177	39	-15	42	-69		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	13:28:50	2476	BP23MVEXP-ENV-DC-050			Camera	66	642489	6115159	642446	6115177	43	-18	47	-68		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	13:29:11	2477	BP23MVEXP-ENV-DC-050			Camera	66	642490	6115158	642446	6115177	44	-19	48	-67		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	15:06:54	2478	BP23MVEXP-ENV-DC-051			Camera	65	640623	6111654	640669	6111625	-46	29	54	122		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	15:10:21	2479	BP23MVEXP-ENV-DC-051			Camera	65	640626	6111653	640669	6111625	-43	28	51	123		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	15:10:50	2480	BP23MVEXP-ENV-DC-051			Camera	65	640628	6111652	640669	6111625	-41	27	49	123		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	15:11:21	2481	BP23MVEXP-ENV-DC-051			Camera	65	640629	6111651	640669	6111625	-40	26	47	123		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	15:11:48	2482	BP23MVEXP-ENV-DC-051			Camera	65	640631	6111650	640669	6111625	-38	25	46	123		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	15:13:14	2483	BP23MVEXP-ENV-DC-051			Camera	65	640635	6111648	640669	6111625	-34	23	41	124		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	15:15:13	2484	BP23MVEXP-ENV-DC-051			Camera	65	640640	6111646	640669	6111625	-29	21	36	126		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	15:15:49	2485	BP23MVEXP-ENV-DC-051			Camera	65	640642	6111644	640669	6111625	-27	20	33	126		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	15:17:08	2486	BP23MVEXP-ENV-DC-051			Camera	65	640650	6111641	640669	6111625	-19	16	25	130		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	15:18:08	2487	BP23MVEXP-ENV-DC-051			Camera	65	640655	6111638	640669	6111625	-14	13	19	132		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	15:19:07	2488	BP23MVEXP-ENV-DC-051			Camera	65	640660	6111635	640669	6111625	-9	10	14	138		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	15:19:47	2489	BP23MVEXP-ENV-DC-051			Camera	65	640664	6111633	640669	6111625	-5	8	10	149		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	15:21:15	2490	BP23MVEXP-ENV-DC-051			Camera	65	640672	6111629	640669	6111625	3	4	5	-148		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	15:21:28	2491	BP23MVEXP-ENV-DC-051			Camera	65	640673	6111629	640669	6111625	4	4	5	-135		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	15:21:44	2492	BP23MVEXP-ENV-DC-051			Camera	65	640674	6111628	640669	6111625	5	3	6	-117		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	15:22:19	2493	BP23MVEXP-ENV-DC-051			Camera	65	640677	6111626	640669	6111625	8	1	8	-99		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	15:22:42	2494	BP23MVEXP-ENV-DC-051			Camera	65	640679	6111625	640669	6111625	10	0	10	-90		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	15:23:38	2495	BP23MVEXP-ENV-DC-051			Camera	65	640684	6111623	640669	6111625	15	-2	16	-81		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	15:25:15	2496	BP23MVEXP-ENV-DC-051			Camera	65	640694	6111617	640669	6111625	25	-8	26	-72		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	15:25:28	2497	BP23MVEXP-ENV-DC-051			Camera	65	640695	6111617	640669	6111625	26	-8	27	-72		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	15:26:17	2498	BP23MVEXP-ENV-DC-051			Camera	65	640699	6111614	640669	6111625	30	-11	32	-71		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	15:26:40	2499	BP23MVEXP-ENV-DC-051			Camera	65	640701	6111613	640669	6111625	32	-12	34	-70		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	15:27:06	2500	BP23MVEXP-ENV-DC-051			Camera	65	640703	6111612	640669	6111625	35	-13	37	-69		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	15:27:28	2501	BP23MVEXP-ENV-DC-051			Camera	65	640706	6111611	640669	6111625	37	-14	39	-69		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	15:27:36	2502	BP23MVEXP-ENV-DC-051			Camera	65	640706	6111611	640669	6111625	37	-14	40	-69		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	15:27:43	2503	BP23MVEXP-ENV-DC-051			Camera	65	640707	6111610	640669	6111625	38	-15	41	-69		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	15:28:28	2504	BP23MVEXP-ENV-DC-051			Camera	65	640711	6111608	640669	6111625	42	-17	45	-68		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	15:28:48	2505	BP23MVEXP-ENV-DC-051			Camera	65	640713	6111607	640669	6111625	44	-18	47	-68		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	15:31:14	2506	BP23MVEXP-ENV-DC-051			Camera	65	640717	6111604	640669	6111625	48	-21	52	-66		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	15:42:32	2507	BP23MVEXP-ENV-DC-051			Camera	65	640690	6111664	640669	6111625	21	39	45	-152		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	15:42:51	2508	BP23MVEXP-ENV-DC-051			Camera	65	640712	6111643	640669	6111625	43	18	46	-113		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	15:43:09	2509	BP23MVEXP-ENV-DC-051			Camera	65	640688	6111661	640669	6111625	19	36	40	-153		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	15:43:30	2510	BP23MVEXP-ENV-DC-051			Camera	65	640686	6111659	640669	6111625	17	34	38	-153		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	15:43:44	2511	BP23MVEXP-ENV-DC-051			Camera	65	640686	6111657	640669	6111625	17	32	36	-153		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	15:44:38	2512	BP23MVEXP-ENV-DC-051			Camera	65	640683	6111653	640669	6111625	14	28	31	-153		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	15:45:07	2513	BP23MVEXP-ENV-DC-051			Camera	65	640682	6111650	640669	6111625	13	25	28	-152		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	15:45:27	2514	BP23MVEXP-ENV-DC-051			Camera	65	640681	6111648	640669	6111625	12	23	26	-152		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	15:45:46	2515	BP23MVEXP-ENV-DC-051			Camera	65	640688	6111638	640669	6111625	19	13	23	-126		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	15:46:19	2516	BP23MVEXP-ENV-DC-051			Camera	65	640679	6111643	640669	6111625	10	18	20	-151		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	15:46:41	2517	BP23MVEXP-ENV-DC-051			Camera	65	640678	6111641	640669	6111625	9	16	18	-151		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	15:47:27	2518	BP23MVEXP-ENV-DC-051			Camera	65	640676	6111636	640669	6111625	7	11	13	-149		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	15:47:51	2519	BP23MVEXP-ENV-DC-051			Camera	65	640675	6111634	640669	6111625	6	9	11	-147		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	15:48:40	2520	BP23MVEXP-ENV-DC-051			Camera	65	640678	6111624	640669	6111625	9	-1	9	-86		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	15:48:54	2521	BP23MVEXP-ENV-DC-051			Camera	65	640672	6111629	640669	6111625	3	4	5	-143		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	15:49:03	2522	BP23MVEXP-ENV-DC-051			Camera	65	640671	6111628	640669	6111625	2	3	4	-142		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	15:49:07	2523	BP23MVEXP-ENV-DC-051			Camera	65	640671	6111628	640669	6111625	2	3	4	-142		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	15:49:14	2524	BP23MVEXP-ENV-DC-051			Camera	65	640671	6111627	640669	6111625	2	2	3	-141		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	15:49:31	2525	BP23MVEXP-ENV-DC-051			Camera	65	640670	6111626	640669	6111625	1	1	1	-129		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	15:49:40	2526	BP23MVEXP-ENV-DC-051			Camera	65	640669	6111625	640669	6111625	0	0	1	-66		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	15:49:50	2527	BP23MVEXP-ENV-DC-051			Camera	65	640669	6111624	640669	6111625	0	-1	1	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	15:51:21	2528	BP23MVEXP-ENV-DC-051			Camera	65	640666	6111615	640669	6111625	-3	-10	11	18		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	15:55:20	2529	BP23MVEXP-ENV-DC-051			Camera	65	640655	6111593	640669	6111625	-14	-32	35	23		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	16:57:26	2530	BP23MVEXP-ENV-DC-052			Camera	64	638969	6108198	638949	6108153	20	45	49	-156		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	16:59:05	2531	BP23MVEXP-ENV-DC-052			Camera	64	638968	6108197	638949	6108153	19	44	47	-157		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	16:59:19	2532	BP23MVEXP-ENV-DC-052			Camera	64	638967	6108195	638949	6108153	18	42	46	-157		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	16:59:44	2533	BP23MVEXP-ENV-DC-052			Camera	64	638966	6108193	638949	6108153	17	40	43	-157		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	16:59:57	2534	BP23MVEXP-ENV-DC-052			Camera	64	638965	6108192	638949	6108153	16	39	42	-157		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	17:00:08	2535	BP23MVEXP-ENV-DC-052			Camera	64	638965	6108190	638949	6108153	16	38	41	-157		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	17:00:25	2536	BP23MVEXP-ENV-DC-052			Camera	64	638964	6108189	638949	6108153	15	36	39	-157		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	17:00:36	2537	BP23MVEXP-ENV-DC-052			Camera	64	638964	6108188	638949	6108153	15	35	38	-157		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	17:00:55	2538	BP23MVEXP-ENV-DC-052			Camera	64	638963	6108186	638949	6108153	14	33	36	-157		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	17:01:25	2539	BP23MVEXP-ENV-DC-052			Camera	64	638962	6108183	638949	6108153	13	30	33	-157		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	17:01:46	2540	BP23MVEXP-ENV-DC-052			Camera	64	638961	6108181	638949	6108153	12	29	31	-157		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	17:01:57	2541	BP23MVEXP-ENV-DC-052			Camera	64	638961	6108180	638949	6108153	12	27	30	-156		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	17:02:13	2542	BP23MVEXP-ENV-DC-052			Camera	64	638960	6108179	638949	6108153	11	26	28	-156		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	17:02:30	2543	BP23MVEXP-ENV-DC-052			Camera	64	638960	6108177	638949	6108153	11	24	27	-156		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	17:02:54	2544	BP23MVEXP-ENV-DC-052			Camera	64	638959	6108175	638949	6108153	10	22	24	-156		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	17:03:32	2545	BP23MVEXP-ENV-DC-052			Camera	64	638957	6108171	638949	6108153	8	18	20	-156		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	17:03:53	2546	BP23MVEXP-ENV-DC-052			Camera	64	638956	6108169	638949	6108153	7	16	18	-156		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	17:04:32	2547	BP23MVEXP-ENV-DC-052			Camera	64	638955	6108166	638949	6108153	6	13	14	-156		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	17:04:42	2548	BP23MVEXP-ENV-DC-052			Camera	64	638954	6108165	638949	6108153	5	12	13	-155		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	17:05:15	2549	BP23MVEXP-ENV-DC-052			Camera	64	638953	6108162	638949	6108153	4	9	10	-154		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	17:05:33	2550	BP23MVEXP-ENV-DC-052			Camera	64	638952	6108160	638949	6108153	3	7	8	-154		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	17:06:12	2551	BP23MVEXP-ENV-DC-052			Camera	64	638951	6108156	638949	6108153	2	3	4	-151		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	17:06:29	2552	BP23MVEXP-ENV-DC-052			Camera	64	638950	6108154	638949	6108153	1	1	2	-143		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	17:06:51	2553	BP23MVEXP-ENV-DC-052			Camera	64	638949	6108152	638949	6108153	0	-1	1	-10		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	17:07:21	2554	BP23MVEXP-ENV-DC-052			Camera	64	638948	6108150	638949	6108153	-1	-3	4	18		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	17:07:28	2555	BP23MVEXP-ENV-DC-052			Camera	64	638948	6108149	638949	6108153	-1	-4	4	17		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	17:08:00	2556	BP23MVEXP-ENV-DC-052			Camera	64	638947	6108146	638949	6108153	-2	-7	8	18		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	17:08:14	2557	BP23MVEXP-ENV-DC-052			Camera	64	638946	6108144	638949	6108153	-3	-9	9	18		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	17:08:59	2558	BP23MVEXP-ENV-DC-052			Camera	64	638945	6108140	638949	6108153	-4	-13	14	19		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	17:09:12	2559	BP23MVEXP-ENV-DC-052			Camera	64	638944	6108139	638949	6108153	-5	-14	15	19		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	17:09:28	2560	BP23MVEXP-ENV-DC-052			Camera	64	638943	6108137	638949	6108153	-6	-16	17	19		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	17:10:32	2561	BP23MVEXP-ENV-DC-052			Camera	64	638941	6108131	638949	6108153	-8	-22	23	21		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	17:13:03	2562	BP23MVEXP-ENV-DC-052			Camera	64	638934	6108117	638949	6108153	-15	-36	39	22		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	17:13:46	2563	BP23MVEXP-ENV-DC-052			Camera	64	638933	6108113	638949	6108153	-16	-40	43	22		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	17:16:06	2564	BP23MVEXP-ENV-DC-052			Camera	64	638928	6108110	638949	6108153	-21	-44	48	26		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	17:20:36	2565	BP23MVEXP-ENV-DC-052			Camera	64	638918	6108134	638949	6108153	-32	-19	37	59		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	17:23:30	2566	BP23MVEXP-ENV-DC-052			Camera	64	638910	6108151	638949	6108153	-39	-2	39	87		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	17:29:39	2567	BP23MVEXP-ENV-DC-052			Camera	64	638908	6108172	638949	6108153	-41	19	45	115		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	17:29:55	2568	BP23MVEXP-ENV-DC-052			Camera	64	638910	6108171	638949	6108153	-39	18	43	115		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	17:30:02	2569	BP23MVEXP-ENV-DC-052			Camera	64	638910	6108171	638949	6108153	-39	18	43	115		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	17:30:16	2570	BP23MVEXP-ENV-DC-052			Camera	64	638912	6108170	638949	6108153	-37	17	41	115		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	17:30:25	2571	BP23MVEXP-ENV-DC-052			Camera	64	638913	6108170	638949	6108153	-37	17	40	114		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	17:30:40	2572	BP23MVEXP-ENV-DC-052			Camera	64	638914	6108169	638949	6108153	-35	16	39	114		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	17:30:53	2573	BP23MVEXP-ENV-DC-052			Camera	64	638915	6108168	638949	6108153	-34	15	38	114		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	17:31:39	2574	BP23MVEXP-ENV-DC-052			Camera	64	638919	6108167	638949	6108153	-30	14	33	114		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	17:33:23	2575	BP23MVEXP-ENV-DC-052			Camera	64	638929	6108162	638949	6108153	-20	9	22	115		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	17:33:53	2576	BP23MVEXP-ENV-DC-052			Camera	64	638932	6108161	638949	6108153	-17	8	19	115		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	17:35:30	2577	BP23MVEXP-ENV-DC-052			Camera	64	638941	6108157	638949	6108153	-8	4	9	118		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	17:36:00	2578	BP23MVEXP-ENV-DC-052			Camera	64	638944	6108156	638949	6108153	-5	3	6	120		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	17:36:08	2579	BP23MVEXP-ENV-DC-052			Camera	64	638944	6108156	638949	6108153	-5	3	5	121		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	17:36:23	2580	BP23MVEXP-ENV-DC-052			Camera	64	638946	6108155	638949	6108153	-3	2	4	124		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	17:36:48	2581	BP23MVEXP-ENV-DC-052			Camera	64	638948	6108154	638949	6108153	-1	1	1	142		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	17:37:21	2582	BP23MVEXP-ENV-DC-052			Camera	64	638951	6108153	638949	6108153	2	0	2	-81		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	17:38:33	2583	BP23MVEXP-ENV-DC-052			Camera	64	638958	6108150	638949	6108153	9	-3	10	-70		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Jul-2023	17:39:02	2584	BP23MVEXP-ENV-DC-052			Camera	64	638961	6108148	638949	6108153	12	-5	13	-68		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Jul-2023	17:39:34	2585	BP23MVEXP-ENV-DC-052			Camera	64	638965	6108147	638949	6108153	16	-6	17	-68		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
10-Jul-2023	17:40:03	2586	BP23MVEXP-ENV-DC-052			Camera	64	638967	6108145	638949	6108153	18	-8	19	-67		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
10-Jul-2023	17:40:11	2587	BP23MVEXP-ENV-DC-052			Camera	64	638968	6108145	638949	6108153	19	-8	21	-67		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
10-Jul-2023	17:41:26	2588	BP23MVEXP-ENV-DC-052			Camera	64	638975	6108142	638949	6108153	26	-11	28	-67		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
10-Jul-2023	17:42:03	2589	BP23MVEXP-ENV-DC-052			Camera	64	638978	6108141	638949	6108153	29	-13	31	-67		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
10-Jul-2023	17:43:05	2590	BP23MVEXP-ENV-DC-052			Camera	64	638984	6108138	638949	6108153	35	-15	38	-67		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
10-Jul-2023	17:43:59	2591	BP23MVEXP-ENV-DC-052			Camera	64	638989	6108136	638949	6108153	40	-17	44	-67		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
10-Jul-2023	17:44:24	2592	BP23MVEXP-ENV-DC-052			Camera	64	638992	6108135	638949	6108153	43	-18	47	-67		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
10-Jul-2023	20:29:14	2593	BP23MVEXP-ENV-DC-053			Camera	65	637158	6104586	637135	6104545	23	41	47	-151		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	20:30:23	2594	BP23MVEXP-ENV-DC-053			Camera	65	637157	6104585	637135	6104545	22	40	46	-151		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	20:30:38	2595	BP23MVEXP-ENV-DC-053			Camera	65	637157	6104585	637135	6104545	22	40	45	-151		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	20:30:58	2596	BP23MVEXP-ENV-DC-053			Camera	65	637156	6104583	637135	6104545	22	38	44	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	20:31:56	2597	BP23MVEXP-ENV-DC-053			Camera	65	637154	6104578	637135	6104545	19	33	38	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	20:32:26	2598	BP23MVEXP-ENV-DC-053			Camera	65	637153	6104574	637135	6104545	18	29	34	-148		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	20:33:01	2599	BP23MVEXP-ENV-DC-053			Camera	65	637151	6104571	637135	6104545	16	27	31	-149		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	20:33:30	2600	BP23MVEXP-ENV-DC-053			Camera	65	637149	6104569	637135	6104545	14	24	28	-149		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	20:34:02	2601	BP23MVEXP-ENV-DC-053			Camera	65	637148	6104566	637135	6104545	13	21	24	-147		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	20:34:35	2602	BP23MVEXP-ENV-DC-053			Camera	65	637147	6104562	637135	6104545	12	17	21	-144		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	20:35:07	2603	BP23MVEXP-ENV-DC-053			Camera	65	637146	6104560	637135	6104545	11	15	18	-142		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	20:35:20	2604	BP23MVEXP-ENV-DC-053			Camera	65	637146	6104558	637135	6104545	11	13	17	-141		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	20:35:54	2605	BP23MVEXP-ENV-DC-053			Camera	65	637144	6104554	637135	6104545	9	9	13	-135		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	20:36:27	2606	BP23MVEXP-ENV-DC-053			Camera	65	637142	6104552	637135	6104545	7	7	10	-132		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	20:36:48	2607	BP23MVEXP-ENV-DC-053			Camera	65	637141	6104549	637135	6104545	6	4	8	-125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	20:37:39	2608	BP23MVEXP-ENV-DC-053			Camera	65	637139	6104544	637135	6104545	4	-1	4	-71		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	20:37:55	2609	BP23MVEXP-ENV-DC-053			Camera	65	637138	6104542	637135	6104545	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	20:38:26	2610	BP23MVEXP-ENV-DC-053			Camera	65	637135	6104539	637135	6104545	0	-6	6	-2		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	20:38:38	2611	BP23MVEXP-ENV-DC-053			Camera	65	637134	6104538	637135	6104545	-1	-7	8	5		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	20:38:46	2612	BP23MVEXP-ENV-DC-053			Camera	65	637134	6104537	637135	6104545	-1	-8	8	8		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	20:39:45	2613	BP23MVEXP-ENV-DC-053			Camera	65	637131	6104533	637135	6104545	-4	-12	12	18		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	20:39:53	2614	BP23MVEXP-ENV-DC-053			Camera	65	637131	6104533	637135	6104545	-4	-12	13	18		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	20:40:02	2615	BP23MVEXP-ENV-DC-053			Camera	65	637131	6104532	637135	6104545	-4	-13	14	18		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	20:40:17	2616	BP23MVEXP-ENV-DC-053			Camera	65	637130	6104530	637135	6104545	-5	-15	15	18		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	20:40:49	2617	BP23MVEXP-ENV-DC-053			Camera	66	637129	6104527	637135	6104545	-6	-18	19	18		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	20:41:22	2618	BP23MVEXP-ENV-DC-053			Camera	66	637128	6104525	637135	6104545	-7	-21	22	19		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	20:41:58	2619	BP23MVEXP-ENV-DC-053			Camera	66	637126	6104521	637135	6104545	-9	-24	25	21		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	20:43:15	2620	BP23MVEXP-ENV-DC-053			Camera	65	637122	6104515	637135	6104545	-13	-30	33	24		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	20:59:58	2621	BP23MVEXP-ENV-DC-053			Camera	65	637089	6104566	637135	6104545	-46	21	50	115		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	21:00:29	2622	BP23MVEXP-ENV-DC-053			Camera	66	637089	6104567	637135	6104545	-46	22	51	115		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	21:01:06	2623	BP23MVEXP-ENV-DC-053			Camera	66	637091	6104566	637135	6104545	-44	21	48	116		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	21:01:31	2624	BP23MVEXP-ENV-DC-053			Camera	65	637094	6104565	637135	6104545	-41	20	46	116		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	21:02:58	2625	BP23MVEXP-ENV-DC-053			Camera	65	637103	6104561	637135	6104545	-32	16	36	116		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	21:03:51	2626	BP23MVEXP-ENV-DC-053			Camera	65	637108	6104559	637135	6104545	-27	14	30	117		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	21:05:07	2627	BP23MVEXP-ENV-DC-053			Camera	65	637115	6104555	637135	6104545	-20	10	22	117		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Jul-2023	21:05:18	2628	BP23MVEXP-ENV-DC-053			Camera	65	637116	6104555	637135	6104545	-19	10	21	117		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	21:05:50	2629	BP23MVEXP-ENV-DC-053			Camera	65	637119	6104553	637135	6104545	-16	8	18	118		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	21:06:08	2630	BP23MVEXP-ENV-DC-053			Camera	65	637121	6104553	637135	6104545	-14	8	16	118		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	21:06:59	2631	BP23MVEXP-ENV-DC-053			Camera	65	637126	6104550	637135	6104545	-9	5	10	122		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	21:07:35	2632	BP23MVEXP-ENV-DC-053			Camera	65	637129	6104549	637135	6104545	-6	4	7	122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	21:08:13	2633	BP23MVEXP-ENV-DC-053			Camera	65	637132	6104547	637135	6104545	-3	2	3	129		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	21:08:53	2634	BP23MVEXP-ENV-DC-053			Camera	65	637137	6104545	637135	6104545	2	0	2	-99		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	21:09:03	2635	BP23MVEXP-ENV-DC-053			Camera	65	637138	6104545	637135	6104545	3	0	3	-89		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	21:10:06	2636	BP23MVEXP-ENV-DC-053			Camera	65	637143	6104542	637135	6104545	8	-3	9	-72		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	21:10:16	2637	BP23MVEXP-ENV-DC-053			Camera	65	637144	6104542	637135	6104545	9	-3	10	-72		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	21:10:50	2638	BP23MVEXP-ENV-DC-053			Camera	65	637148	6104541	637135	6104545	13	-4	13	-73		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	21:11:44	2639	BP23MVEXP-ENV-DC-053			Camera	65	637152	6104539	637135	6104545	17	-6	18	-71		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	21:13:28	2640	BP23MVEXP-ENV-DC-053			Camera	65	637162	6104535	637135	6104545	27	-10	29	-70		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	21:14:07	2641	BP23MVEXP-ENV-DC-053			Camera	65	637165	6104534	637135	6104545	30	-12	32	-69		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Jul-2023	21:14:17	2642	BP23MVEXP-ENV-DC-053			Camera	65	637166	6104533	637135	6104545	31	-12	33	-69		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Jul-2023	21:14:43	2643	BP23MVEXP-ENV-DC-053			Camera	65	637169	6104532	637135	6104545	34	-13	37	-69		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Jul-2023	21:15:42	2644	BP23MVEXP-ENV-DC-053			Camera	65	637175	6104529	637135	6104545	40	-16	44	-68		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Jul-2023	21:16:10	2645	BP23MVEXP-ENV-DC-053			Camera	65	637179	6104528	637135	6104545	44	-17	47	-68		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Jul-2023	22:19:06	2646	BP23MVEXP-ENV-DC-054			Camera	69	635371	6101033	635346	6100990	25	43	50	-150		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Jul-2023	22:21:26	2647	BP23MVEXP-ENV-DC-054			Camera	69	635370	6101030	635346	6100990	24	40	46	-149		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Jul-2023	22:21:42	2648	BP23MVEXP-ENV-DC-054			Camera	68	635369	6101029	635346	6100990	23	39	45	-150		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Jul-2023	22:22:54	2649	BP23MVEXP-ENV-DC-054			Camera	68	635365	6101023	635346	6100990	19	33	38	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Jul-2023	22:23:50	2650	BP23MVEXP-ENV-DC-054			Camera	68	635363	6101018	635346	6100990	17	28	33	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Jul-2023	22:23:57	2651	BP23MVEXP-ENV-DC-054			Camera	68	635363	6101017	635346	6100990	17	27	32	-148		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Jul-2023	22:24:11	2652	BP23MVEXP-ENV-DC-054			Camera	68	635362	6101016	635346	6100990	16	26	31	-148		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Jul-2023	22:24:17	2653	BP23MVEXP-ENV-DC-054			Camera	68	635362	6101015	635346	6100990	16	26	30	-148		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Jul-2023	22:25:57	2654	BP23MVEXP-ENV-DC-054			Camera	68	635358	6101009	635346	6100990	12	19	22	-148		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Jul-2023	22:26:28	2655	BP23MVEXP-ENV-DC-054			Camera	68	635356	6101006	635346	6100990	10	16	19	-147		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Jul-2023	22:26:52	2656	BP23MVEXP-ENV-DC-054			Camera	68	635355	6101004	635346	6100990	9	14	16	-146		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Jul-2023	22:28:56	2657	BP23MVEXP-ENV-DC-054			Camera	68	635350	6100992	635346	6100990	4	2	5	-116		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Jul-2023	22:29:03	2658	BP23MVEXP-ENV-DC-054			Camera	68	635350	6100991	635346	6100990	4	1	4	-108		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Jul-2023	22:29:41	2659	BP23MVEXP-ENV-DC-054			Camera	68	635348	6100988	635346	6100990	2	-2	3	-37		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Jul-2023	22:30:09	2660	BP23MVEXP-ENV-DC-054			Camera	68	635346	6100985	635346	6100990	0	-5	5	-6		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Jul-2023	22:30:26	2661	BP23MVEXP-ENV-DC-054			Camera	68	635346	6100984	635346	6100990	0	-6	6	3		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Jul-2023	22:31:00	2662	BP23MVEXP-ENV-DC-054			Camera	68	635344	6100981	635346	6100990	-2	-9	10	14		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Jul-2023	22:31:09	2663	BP23MVEXP-ENV-DC-054			Camera	68	635343	6100980	635346	6100990	-3	-10	11	15		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Jul-2023	22:32:21	2664	BP23MVEXP-ENV-DC-054			Camera	68	635340	6100973	635346	6100990	-6	-17	18	19		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Jul-2023	22:33:14	2665	BP23MVEXP-ENV-DC-054			Camera	68	635338	6100968	635346	6100990	-8	-22	24	20		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Jul-2023	22:33:21	2666	BP23MVEXP-ENV-DC-054			Camera	68	635337	6100967	635346	6100990	-9	-23	24	21		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Jul-2023	22:34:32	2667	BP23MVEXP-ENV-DC-054			Camera	68	635334	6100961	635346	6100990	-12	-29	31	22		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Jul-2023	22:35:49	2668	BP23MVEXP-ENV-DC-054			Camera	68	635331	6100954	635346	6100990	-15	-36	39	23		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Jul-2023	22:36:59	2669	BP23MVEXP-ENV-DC-054			Camera	68	635328	6100947	635346	6100990	-18	-43	46	23		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Jul-2023	22:37:24	2670	BP23MVEXP-ENV-DC-054			Camera	68	635327	6100946	635346	6100990	-20	-44	48	24		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Jul-2023	22:37:39	2671	BP23MVEXP-ENV-DC-054			Camera	68	635326	6100945	635346	6100990	-20	-45	49	24		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Jul-2023	22:38:22	2672	BP23MVEXP-ENV-DC-054			Camera	68	635325	6100944	635346	6100990	-21	-46	50	24		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Jul-2023	22:51:37	2673	BP23MVEXP-ENV-DC-054			Camera	68	635300	6101013	635346	6100990	-46	23	52	116		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Jul-2023	22:51:43	2674	BP23MVEXP-ENV-DC-054			Camera	68	635300	6101013	635346	6100990	-46	23	51	117		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Jul-2023	22:52:01	2675	BP23MVEXP-ENV-DC-054			Camera	68	635302	6101012	635346	6100990	-44	22	49	117		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Jul-2023	22:52:40	2676	BP23MVEXP-ENV-DC-054			Camera	68	635307	6101010	635346	6100990	-39	20	44	117		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Jul-2023	22:52:53	2677	BP23MVEXP-ENV-DC-054			Camera	68	635308	6101009	635346	6100990	-38	20	43	117		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Jul-2023	22:53:14	2678	BP23MVEXP-ENV-DC-054			Camera	68	635311	6101008	635346	6100990	-35	18	40	117		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Jul-2023	22:53:45	2679	BP23MVEXP-ENV-DC-054			Camera	68	635313	6101007	635346	6100990	-33	17	37	117		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Jul-2023	22:54:29	2680	BP23MVEXP-ENV-DC-054			Camera	68	635316	6101005	635346	6100990	-30	15	33	116		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Jul-2023	22:54:47	2681	BP23MVEXP-ENV-DC-054			Camera	68	635318	6101004	635346	6100990	-28	14	31	116		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Jul-2023	22:55:12	2682	BP23MVEXP-ENV-DC-054			Camera	68	635320	6101003	635346	6100990	-26	13	29	116		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Jul-2023	22:55:27	2683	BP23MVEXP-ENV-DC-054			Camera	68	635321	6101002	635346	6100990	-25	12	28	117		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Jul-2023	22:55:49	2684	BP23MVEXP-ENV-DC-054			Camera	68	635324	6101002	635346	6100990	-22	12	25	119		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Jul-2023	22:57:07	2685	BP23MVEXP-ENV-DC-054			Camera	68	635331	6100998	635346	6100990	-16	8	18	119		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Jul-2023	22:58:24	2686	BP23MVEXP-ENV-DC-054			Camera	68	635338	6100995	635346	6100990	-8	5	10	122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Jul-2023	23:00:10	2687	BP23MVEXP-ENV-DC-054			Camera	68	635349	6100992	635346	6100990	3	2	3	-119		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Jul-2023	23:00:58	2688	BP23MVEXP-ENV-DC-054			Camera	68	635353	6100990	635346	6100990	7	0	7	-90		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Jul-2023	23:02:20	2689	BP23MVEXP-ENV-DC-054			Camera	68	635361	6100986	635346	6100990	15	-4	15	-74		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Jul-2023	23:03:11	2690	BP23MVEXP-ENV-DC-054			Camera	68	635366	6100984	635346	6100990	20	-6	21	-73		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Jul-2023	23:04:31	2691	BP23MVEXP-ENV-DC-054			Camera	68	635373	6100981	635346	6100990	27	-9	29	-71		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Jul-2023	23:06:16	2692	BP23MVEXP-ENV-DC-054			Camera	68	635383	6100976	635346	6100990	37	-14	39	-69		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Jul-2023	23:07:37	2693	BP23MVEXP-ENV-DC-054			Camera	68	635390	6100974	635346	6100990	44	-16	47	-70		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Jul-2023	23:08:11	2694	BP23MVEXP-ENV-DC-054			Camera	68	635391	6100973	635346	6100990	45	-17	48	-69		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	01:07:19	2695	BP23MVEXP-ENV-DC-055			Camera	75	633541	6097506	633583	6097485	-42	21	47	117		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	01:08:05	2696	BP23MVEXP-ENV-DC-055			Camera	75	633541	6097507	633583	6097485	-42	22	47	118		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	01:09:00	2697	BP23MVEXP-ENV-DC-055			Camera	75	633544	6097506	633583	6097485	-39	21	44	118		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	01:09:51	2698	BP23MVEXP-ENV-DC-055			Camera	75	633549	6097504	633583	6097485	-34	19	39	119		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	01:10:06	2699	BP23MVEXP-ENV-DC-055			Camera	75	633551	6097503	633583	6097485	-32	18	37	119		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	01:10:35	2700	BP23MVEXP-ENV-DC-055			Camera	75	633553	6097502	633583	6097485	-30	17	35	119		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	01:11:14	2701	BP23MVEXP-ENV-DC-055			Camera	75	633555	6097501	633583	6097485	-28	16	32	120		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	01:11:27	2702	BP23MVEXP-ENV-DC-055			Camera	75	633556	6097500	633583	6097485	-27	15	31	120		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	01:11:58	2703	BP23MVEXP-ENV-DC-055			Camera	75	633559	6097499	633583	6097485	-24	14	27	121		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	01:12:35	2704	BP23MVEXP-ENV-DC-055			Camera	75	633564	6097497	633583	6097485	-19	12	22	123		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	01:12:57	2705	BP23MVEXP-ENV-DC-055			Camera	75	633567	6097495	633583	6097485	-16	10	19	123		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	01:13:29	2706	BP23MVEXP-ENV-DC-055			Camera	75	633569	6097494	633583	6097485	-14	9	17	122		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	01:13:57	2707	BP23MVEXP-ENV-DC-055			Camera	75	633571	6097493	633583	6097485	-12	8	15	124		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	01:14:42	2708	BP23MVEXP-ENV-DC-055			Camera	75	633576	6097492	633583	6097485	-7	7	10	133		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	01:15:39	2709	BP23MVEXP-ENV-DC-055			Camera	75	633582	6097488	633583	6097485	-1	3	3	154		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	01:15:58	2710	BP23MVEXP-ENV-DC-055			Camera	75	633583	6097487	633583	6097485	0	2	2	176		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	01:16:23	2711	BP23MVEXP-ENV-DC-055			Camera	75	633585	6097487	633583	6097485	2	2	2	-133		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	01:16:49	2712	BP23MVEXP-ENV-DC-055			Camera	75	633587	6097486	633583	6097485	4	1	4	-99		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	01:17:15	2713	BP23MVEXP-ENV-DC-055			Camera	75	633589	6097485	633583	6097485	6	0	6	-88		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	01:18:22	2714	BP23MVEXP-ENV-DC-055			Camera	75	633596	6097482	633583	6097485	13	-3	14	-76		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	01:18:31	2715	BP23MVEXP-ENV-DC-055			Camera	75	633597	6097481	633583	6097485	14	-4	15	-75		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	01:19:02	2716	BP23MVEXP-ENV-DC-055			Camera	75	633599	6097480	633583	6097485	16	-5	17	-72		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	01:19:19	2717	BP23MVEXP-ENV-DC-055			Camera	75	633600	6097479	633583	6097485	17	-6	18	-72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	01:19:57	2718	BP23MVEXP-ENV-DC-055			Camera	75	633604	6097479	633583	6097485	21	-6	22	-74		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	01:20:20	2719	BP23MVEXP-ENV-DC-055			Camera	75	633607	6097478	633583	6097485	24	-7	25	-73		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	01:21:09	2720	BP23MVEXP-ENV-DC-055			Camera	75	633613	6097474	633583	6097485	30	-11	32	-70		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	01:21:36	2721	BP23MVEXP-ENV-DC-055			Camera	75	633615	6097472	633583	6097485	32	-13	35	-68		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	01:21:58	2722	BP23MVEXP-ENV-DC-055			Camera	75	633617	6097471	633583	6097485	34	-14	36	-68		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	01:23:25	2723	BP23MVEXP-ENV-DC-055			Camera	75	633622	6097470	633583	6097485	39	-15	42	-70		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	01:24:09	2724	BP23MVEXP-ENV-DC-055			Camera	75	633629	6097468	633583	6097485	46	-17	49	-69		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	01:41:06	2725	BP23MVEXP-ENV-DC-055			Camera	75	633605	6097529	633583	6097485	23	44	49	-153		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	01:41:36	2726	BP23MVEXP-ENV-DC-055			Camera	75	633606	6097529	633583	6097485	23	44	50	-152		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	01:42:18	2727	BP23MVEXP-ENV-DC-055			Camera	75	633606	6097529	633583	6097485	23	44	49	-152		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	01:42:55	2728	BP23MVEXP-ENV-DC-055			Camera	75	633605	6097527	633583	6097485	22	42	47	-152		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	01:43:10	2729	BP23MVEXP-ENV-DC-055			Camera	75	633605	6097526	633583	6097485	22	41	46	-152		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	01:43:55	2730	BP23MVEXP-ENV-DC-055			Camera	75	633602	6097523	633583	6097485	19	38	42	-154		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	01:44:43	2731	BP23MVEXP-ENV-DC-055			Camera	75	633600	6097518	633583	6097485	17	33	37	-153		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	01:46:09	2732	BP23MVEXP-ENV-DC-055			Camera	75	633596	6097511	633583	6097485	13	26	29	-154		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	01:47:17	2733	BP23MVEXP-ENV-DC-055			Camera	75	633593	6097504	633583	6097485	10	20	22	-154		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	01:48:08	2734	BP23MVEXP-ENV-DC-055			Camera	75	633591	6097499	633583	6097485	8	14	16	-152		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	01:49:21	2735	BP23MVEXP-ENV-DC-055			Camera	75	633587	6097493	633583	6097485	4	8	9	-152		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	01:50:12	2736	BP23MVEXP-ENV-DC-055			Camera	75	633586	6097487	633583	6097485	3	2	3	-130		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	01:50:31	2737	BP23MVEXP-ENV-DC-055			Camera	75	633584	6097486	633583	6097485	1	1	1	-117		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	01:51:13	2738	BP23MVEXP-ENV-DC-055			Camera	75	633581	6097483	633583	6097485	-2	-2	3	38		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Jul-2023	01:51:39	2739	BP23MVEXP-ENV-DC-055			Camera	75	633581	6097480	633583	6097485	-2	-5	5	24		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Jul-2023	01:52:04	2740	BP23MVEXP-ENV-DC-055			Camera	75	633580	6097477	633583	6097485	-3	-8	8	18		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Jul-2023	01:52:29	2741	BP23MVEXP-ENV-DC-055			Camera	75	633579	6097474	633583	6097485	-4	-11	11	18		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Jul-2023	01:52:59	2742	BP23MVEXP-ENV-DC-055			Camera	75	633578	6097471	633583	6097485	-5	-14	15	21		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Jul-2023	01:53:25	2743	BP23MVEXP-ENV-DC-055			Camera	75	633576	6097469	633583	6097485	-7	-16	17	23		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	01:53:48	2744	BP23MVEXP-ENV-DC-055			Camera	75	633575	6097467	633583	6097485	-8	-18	19	25		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Jul-2023	01:55:36	2745	BP23MVEXP-ENV-DC-055			Camera	75	633572	6097458	633583	6097485	-12	-27	29	23		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Jul-2023	01:57:31	2746	BP23MVEXP-ENV-DC-055			Camera	75	633566	6097450	633583	6097485	-17	-35	39	26		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Jul-2023	01:58:16	2747	BP23MVEXP-ENV-DC-055			Camera	75	633566	6097446	633583	6097485	-17	-39	43	24		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Jul-2023	01:58:41	2748	BP23MVEXP-ENV-DC-055			Camera	75	633565	6097445	633583	6097485	-18	-40	44	24		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Jul-2023	01:59:20	2749	BP23MVEXP-ENV-DC-055			Camera	75	633563	6097443	633583	6097485	-20	-42	46	25		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Jul-2023	03:04:42	2750	BP23MVEXP-ENV-DC-056			Camera	75	631697	6093853	631745	6093826	-48	27	55	119		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	03:05:58	2751	BP23MVEXP-ENV-DC-056			Camera	75	631698	6093851	631745	6093826	-47	25	53	119		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	03:06:34	2752	BP23MVEXP-ENV-DC-056			Camera	75	631701	6093851	631745	6093826	-44	25	51	119		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	03:07:20	2753	BP23MVEXP-ENV-DC-056			Camera	75	631705	6093849	631745	6093826	-40	23	46	120		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	03:07:51	2754	BP23MVEXP-ENV-DC-056			Camera	75	631708	6093848	631745	6093826	-37	22	43	121		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	03:08:32	2755	BP23MVEXP-ENV-DC-056			Camera	75	631711	6093846	631745	6093826	-34	20	39	121		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	03:08:50	2756	BP23MVEXP-ENV-DC-056			Camera	75	631713	6093845	631745	6093826	-32	19	38	121		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	03:10:06	2757	BP23MVEXP-ENV-DC-056			Camera	75	631720	6093841	631745	6093826	-25	15	29	121		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	03:10:48	2758	BP23MVEXP-ENV-DC-056			Camera	75	631723	6093840	631745	6093826	-22	14	26	122		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	03:11:31	2759	BP23MVEXP-ENV-DC-056			Camera	75	631728	6093838	631745	6093826	-17	12	21	124		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	03:12:10	2760	BP23MVEXP-ENV-DC-056			Camera	75	631732	6093836	631745	6093826	-13	10	17	126		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	03:12:59	2761	BP23MVEXP-ENV-DC-056			Camera	75	631736	6093833	631745	6093826	-9	7	12	128		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	03:13:45	2762	BP23MVEXP-ENV-DC-056			Camera	75	631740	6093832	631745	6093826	-5	6	8	136		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	03:14:35	2763	BP23MVEXP-ENV-DC-056			Camera	75	631744	6093829	631745	6093826	-1	3	3	169		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	03:15:35	2764	BP23MVEXP-ENV-DC-056			Camera	75	631750	6093826	631745	6093826	5	0	5	-94		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	03:16:43	2765	BP23MVEXP-ENV-DC-056			Camera	75	631756	6093824	631745	6093826	11	-2	11	-78		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	03:17:30	2766	BP23MVEXP-ENV-DC-056			Camera	75	631761	6093821	631745	6093826	16	-5	17	-73		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	03:18:08	2767	BP23MVEXP-ENV-DC-056			Camera	75	631765	6093819	631745	6093826	20	-7	21	-71		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	03:19:20	2768	BP23MVEXP-ENV-DC-056			Camera	75	631771	6093816	631745	6093826	26	-10	27	-68		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	03:20:14	2769	BP23MVEXP-ENV-DC-056			Camera	75	631776	6093813	631745	6093826	31	-13	33	-67		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	03:21:09	2770	BP23MVEXP-ENV-DC-056			Camera	75	631780	6093811	631745	6093826	35	-15	38	-67		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	03:21:56	2771	BP23MVEXP-ENV-DC-056			Camera	75	631784	6093809	631745	6093826	39	-17	43	-66		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	03:22:17	2772	BP23MVEXP-ENV-DC-056			Camera	75	631786	6093808	631745	6093826	41	-18	45	-66		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	03:35:30	2773	BP23MVEXP-ENV-DC-056			Camera	76	631766	6093869	631745	6093826	21	43	48	-154		(Raw Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	03:36:21	2774	BP23MVEXP-ENV-DC-056			Camera	76	631765	6093868	631745	6093826	20	42	47	-155		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	03:37:11	2775	BP23MVEXP-ENV-DC-056			Camera	75	631763	6093864	631745	6093826	18	38	42	-155		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	03:37:57	2776	BP23MVEXP-ENV-DC-056			Camera	75	631760	6093860	631745	6093826	15	34	37	-156		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	03:38:52	2777	BP23MVEXP-ENV-DC-056			Camera	75	631758	6093855	631745	6093826	13	29	31	-156		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	03:39:50	2778	BP23MVEXP-ENV-DC-056			Camera	75	631756	6093849	631745	6093826	11	23	26	-155		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	03:40:03	2779	BP23MVEXP-ENV-DC-056			Camera	75	631756	6093848	631745	6093826	11	22	24	-154		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	03:40:56	2780	BP23MVEXP-ENV-DC-056			Camera	75	631754	6093842	631745	6093826	9	16	18	-152		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Jul-2023	03:42:03	2781	BP23MVEXP-ENV-DC-056			Camera	75	631751	6093836	631745	6093826	6	10	11	-149		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	03:43:18	2782	BP23MVEXP-ENV-DC-056			Camera	75	631747	6093828	631745	6093826	2	2	3	-136		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	03:44:18	2783	BP23MVEXP-ENV-DC-056			Camera	75	631744	6093823	631745	6093826	-1	-3	3	11		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	03:44:44	2784	BP23MVEXP-ENV-DC-056			Camera	75	631743	6093820	631745	6093826	-2	-6	6	18		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	03:45:43	2785	BP23MVEXP-ENV-DC-056			Camera	75	631741	6093815	631745	6093826	-4	-11	12	22		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	03:46:24	2786	BP23MVEXP-ENV-DC-056			Camera	75	631739	6093812	631745	6093826	-6	-14	16	24		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	03:47:04	2787	BP23MVEXP-ENV-DC-056			Camera	75	631737	6093808	631745	6093826	-8	-18	20	23		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	03:48:06	2788	BP23MVEXP-ENV-DC-056			Camera	75	631734	6093801	631745	6093826	-11	-25	27	23		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	03:49:24	2789	BP23MVEXP-ENV-DC-056			Camera	75	631731	6093794	631745	6093826	-14	-32	35	23		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	03:49:52	2790	BP23MVEXP-ENV-DC-056			Camera	75	631731	6093791	631745	6093826	-15	-35	37	23		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	03:50:46	2791	BP23MVEXP-ENV-DC-056			Camera	75	631728	6093786	631745	6093826	-17	-40	43	23		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	03:51:13	2792	BP23MVEXP-ENV-DC-056			Camera	75	631728	6093784	631745	6093826	-18	-42	45	23		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	05:08:36	2793	BP23MVEXP-ENV-DC-058			Camera	77	629074	6091044	629040	6091085	34	-41	53	-40		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	05:10:38	2794	BP23MVEXP-ENV-DC-058			Camera	77	629072	6091048	629040	6091085	32	-37	49	-40		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	05:11:46	2795	BP23MVEXP-ENV-DC-058			Camera	77	629068	6091053	629040	6091085	28	-32	43	-41		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	05:13:04	2796	BP23MVEXP-ENV-DC-058			Camera	77	629062	6091058	629040	6091085	22	-27	35	-39		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	05:13:51	2797	BP23MVEXP-ENV-DC-058			Camera	77	629059	6091062	629040	6091085	19	-23	30	-39		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	05:14:51	2798	BP23MVEXP-ENV-DC-058			Camera	77	629055	6091066	629040	6091085	15	-19	24	-38		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	05:15:23	2799	BP23MVEXP-ENV-DC-058			Camera	77	629053	6091070	629040	6091085	13	-15	20	-39		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	05:15:49	2800	BP23MVEXP-ENV-DC-058			Camera	77	629051	6091071	629040	6091085	11	-14	18	-38		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	05:17:11	2801	BP23MVEXP-ENV-DC-058			Camera	78	629045	6091077	629040	6091085	5	-8	10	-35		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	05:18:30	2802	BP23MVEXP-ENV-DC-058			Camera	77	629040	6091083	629040	6091085	0	-2	2	-1		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	05:18:41	2803	BP23MVEXP-ENV-DC-058			Camera	78	629039	6091084	629040	6091085	-1	-1	1	51		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	05:19:47	2804	BP23MVEXP-ENV-DC-058			Camera	77	629034	6091088	629040	6091085	-6	3	7	120		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	05:20:26	2805	BP23MVEXP-ENV-DC-058			Camera	78	629031	6091091	629040	6091085	-9	6	11	125		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	05:20:37	2806	BP23MVEXP-ENV-DC-058			Camera	78	629030	6091092	629040	6091085	-10	7	12	127		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	05:22:10	2807	BP23MVEXP-ENV-DC-058			Camera	78	629024	6091100	629040	6091085	-16	15	21	133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	05:22:56	2808	BP23MVEXP-ENV-DC-058			Camera	78	629021	6091103	629040	6091085	-19	18	26	133		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	05:23:22	2809	BP23MVEXP-ENV-DC-058			Camera	78	629019	6091105	629040	6091085	-21	20	29	134		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	05:23:46	2810	BP23MVEXP-ENV-DC-058			Camera	78	629018	6091108	629040	6091085	-22	23	31	137		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	05:24:08	2811	BP23MVEXP-ENV-DC-058			Camera	78	629017	6091109	629040	6091085	-23	24	33	136		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	05:25:04	2812	BP23MVEXP-ENV-DC-058			Camera	78	629014	6091112	629040	6091085	-26	28	38	136		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	05:25:24	2813	BP23MVEXP-ENV-DC-058			Camera	78	629012	6091114	629040	6091085	-28	29	40	136		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	05:26:38	2814	BP23MVEXP-ENV-DC-058			Camera	78	629007	6091119	629040	6091085	-33	34	48	136		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	05:38:58	2815	BP23MVEXP-ENV-DC-058			Camera	77	629004	6091056	629040	6091085	-36	-29	46	51		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	05:39:21	2816	BP23MVEXP-ENV-DC-058			Camera	77	629004	6091055	629040	6091085	-36	-30	47	50		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	05:40:34	2817	BP23MVEXP-ENV-DC-058			Camera	78	629006	6091056	629040	6091085	-34	-30	45	49		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	05:41:08	2818	BP23MVEXP-ENV-DC-058			Camera	77	629008	6091058	629040	6091085	-32	-28	42	49		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	05:41:22	2819	BP23MVEXP-ENV-DC-058			Camera	78	629010	6091059	629040	6091085	-30	-26	40	49		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	05:41:49	2820	BP23MVEXP-ENV-DC-058			Camera	78	629012	6091061	629040	6091085	-28	-24	37	49		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	05:42:28	2821	BP23MVEXP-ENV-DC-058			Camera	77	629015	6091063	629040	6091085	-26	-22	33	50		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	05:42:59	2822	BP23MVEXP-ENV-DC-058			Camera	78	629016	6091066	629040	6091085	-24	-19	30	51		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	05:43:47	2823	BP23MVEXP-ENV-DC-058			Camera	78	629020	6091069	629040	6091085	-20	-16	25	52		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	05:44:37	2824	BP23MVEXP-ENV-DC-058			Camera	78	629025	6091072	629040	6091085	-15	-13	20	50		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	05:45:09	2825	BP23MVEXP-ENV-DC-058			Camera	78	629027	6091074	629040	6091085	-13	-11	17	49		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	05:45:46	2826	BP23MVEXP-ENV-DC-058			Camera	78	629030	6091077	629040	6091085	-10	-8	13	51		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	05:46:04	2827	BP23MVEXP-ENV-DC-058			Camera	78	629031	6091077	629040	6091085	-9	-8	11	48		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	05:46:35	2828	BP23MVEXP-ENV-DC-058			Camera	78	629034	6091080	629040	6091085	-6	-5	8	47		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	05:47:13	2829	BP23MVEXP-ENV-DC-058			Camera	78	629037	6091083	629040	6091085	-3	-2	4	48		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	05:47:35	2830	BP23MVEXP-ENV-DC-058			Camera	78	629038	6091085	629040	6091085	-2	0	2	77		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	05:47:49	2831	BP23MVEXP-ENV-DC-058			Camera	78	629039	6091086	629040	6091085	-1	1	1	143		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	05:48:24	2832	BP23MVEXP-ENV-DC-058			Camera	77	629042	6091088	629040	6091085	2	3	3	-143		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	05:48:37	2833	BP23MVEXP-ENV-DC-058			Camera	77	629043	6091088	629040	6091085	3	3	4	-133		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	05:50:22	2834	BP23MVEXP-ENV-DC-058			Camera	78	629051	6091096	629040	6091085	11	11	15	-135		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	06:48:10	2835	BP23MVEXP-ENV-DC-060			Camera	72	625917	6088454	625885	6088496	32	-42	53	-38		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	06:49:40	2836	BP23MVEXP-ENV-DC-060			Camera	72	625916	6088454	625885	6088496	31	-42	52	-37		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	06:50:25	2837	BP23MVEXP-ENV-DC-060			Camera	72	625913	6088457	625885	6088496	29	-39	48	-36		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	06:50:54	2838	BP23MVEXP-ENV-DC-060			Camera	72	625912	6088459	625885	6088496	27	-37	46	-36		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	06:51:29	2839	BP23MVEXP-ENV-DC-060			Camera	72	625909	6088462	625885	6088496	24	-34	42	-36		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	06:52:31	2840	BP23MVEXP-ENV-DC-060			Camera	72	625905	6088467	625885	6088496	20	-29	35	-35		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	06:53:17	2841	BP23MVEXP-ENV-DC-060			Camera	72	625902	6088471	625885	6088496	17	-26	31	-34		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	06:53:53	2842	BP23MVEXP-ENV-DC-060			Camera	72	625900	6088473	625885	6088496	15	-23	27	-33		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	06:54:13	2843	BP23MVEXP-ENV-DC-060			Camera	72	625898	6088475	625885	6088496	13	-21	25	-32		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	06:55:05	2844	BP23MVEXP-ENV-DC-060			Camera	72	625895	6088479	625885	6088496	10	-17	20	-30		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	06:55:24	2845	BP23MVEXP-ENV-DC-060			Camera	72	625894	6088480	625885	6088496	9	-16	18	-30		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	06:55:41	2846	BP23MVEXP-ENV-DC-060			Camera	72	625893	6088482	625885	6088496	8	-14	16	-29		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	06:56:04	2847	BP23MVEXP-ENV-DC-060			Camera	72	625891	6088484	625885	6088496	6	-12	14	-27		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	06:57:29	2848	BP23MVEXP-ENV-DC-060			Camera	72	625886	6088490	625885	6088496	1	-6	6	-7		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	06:58:14	2849	BP23MVEXP-ENV-DC-060			Camera	72	625883	6088494	625885	6088496	-2	-2	3	51		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	06:58:55	2850	BP23MVEXP-ENV-DC-060			Camera	72	625880	6088497	625885	6088496	-5	1	5	104		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	06:59:16	2851	BP23MVEXP-ENV-DC-060			Camera	72	625878	6088499	625885	6088496	-7	3	7	112		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	07:00:08	2852	BP23MVEXP-ENV-DC-060			Camera	72	625875	6088503	625885	6088496	-10	7	12	124		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	07:00:48	2853	BP23MVEXP-ENV-DC-060			Camera	72	625873	6088506	625885	6088496	-12	10	16	129		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	07:01:05	2854	BP23MVEXP-ENV-DC-060			Camera	72	625872	6088507	625885	6088496	-13	11	17	130		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	07:02:09	2855	BP23MVEXP-ENV-DC-060			Camera	72	625867	6088513	625885	6088496	-18	17	24	133		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	07:02:22	2856	BP23MVEXP-ENV-DC-060			Camera	72	625866	6088514	625885	6088496	-19	18	26	133		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	07:02:32	2857	BP23MVEXP-ENV-DC-060			Camera	72	625866	6088514	625885	6088496	-19	18	27	134		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	07:03:55	2858	BP23MVEXP-ENV-DC-060			Camera	72	625860	6088520	625885	6088496	-25	24	35	135		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	07:04:59	2859	BP23MVEXP-ENV-DC-060			Camera	72	625856	6088526	625885	6088496	-29	30	41	135		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	07:05:53	2860	BP23MVEXP-ENV-DC-060			Camera	72	625853	6088530	625885	6088496	-33	34	47	136		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	07:06:04	2861	BP23MVEXP-ENV-DC-060			Camera	72	625852	6088530	625885	6088496	-33	34	47	136		(Raw Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	07:06:23	2862	BP23MVEXP-ENV-DC-060			Camera	72	625852	6088531	625885	6088496	-33	35	48	136		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	07:06:38	2863	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088531	625885	6088496	-34	36	49	136		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	07:06:47	2864	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088532	625885	6088496	-34	36	50	136		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	07:06:55	2865	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088532	625885	6088496	-34	36	50	137		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	07:07:03	2866	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088532	625885	6088496	-34	36	50	137		(Raw Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	07:13:03	2867	BP23MVEXP-ENV-DC-060			Camera	72	625861	6088515	625885	6088496	-24	19	30	129		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	07:14:01	2868	BP23MVEXP-ENV-DC-060			Camera	72	625860	6088509	625885	6088496	-25	13	29	117		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	07:14:33	2869	BP23MVEXP-ENV-DC-060			Camera	72	625859	6088506	625885	6088496	-26	10	28	110		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	07:16:16	2870	BP23MVEXP-ENV-DC-060			Camera	72	625856	6088495	625885	6088496	-29	-1	29	89		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	07:24:58	2871	BP23MVEXP-ENV-DC-060			Camera	72	625851	6088464	625885	6088496	-34	-32	47	47		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	07:25:34	2872	BP23MVEXP-ENV-DC-060			Camera	72	625853	6088466	625885	6088496	-32	-30	43	47		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	07:26:34	2873	BP23MVEXP-ENV-DC-060			Camera	72	625858	6088471	625885	6088496	-27	-25	37	47		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	07:26:53	2874	BP23MVEXP-ENV-DC-060			Camera	72	625860	6088472	625885	6088496	-26	-24	35	47		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	07:27:33	2875	BP23MVEXP-ENV-DC-060			Camera	72	625863	6088475	625885	6088496	-22	-21	30	47		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	07:28:11	2876	BP23MVEXP-ENV-DC-060			Camera	72	625865	6088478	625885	6088496	-20	-18	27	48		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	07:28:49	2877	BP23MVEXP-ENV-DC-060			Camera	72	625868	6088481	625885	6088496	-17	-15	23	48		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	07:29:26	2878	BP23MVEXP-ENV-DC-060			Camera	72	625871	6088483	625885	6088496	-14	-13	19	47		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Jul-2023	07:29:53	2879	BP23MVEXP-ENV-DC-060			Camera	72	625873	6088485	625885	6088496	-12	-11	16	48		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Jul-2023	07:30:45	2880	BP23MVEXP-ENV-DC-060			Camera	72	625877	6088489	625885	6088496	-8	-7	11	47		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Jul-2023	07:31:59	2881	BP23MVEXP-ENV-DC-060			Camera	72	625882	6088493	625885	6088496	-3	-3	4	44		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Jul-2023	07:32:40	2882	BP23MVEXP-ENV-DC-060			Camera	72	625886	6088496	625885	6088496	1	0	1	-95		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Jul-2023	07:33:45	2883	BP23MVEXP-ENV-DC-060			Camera	72	625891	6088501	625885	6088496	6	5	7	-131		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	07:33:55	2884	BP23MVEXP-ENV-DC-060			Camera	72	625891	6088501	625885	6088496	6	5	8	-131		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Jul-2023	07:35:39	2885	BP23MVEXP-ENV-DC-060			Camera	72	625899	6088508	625885	6088496	15	13	19	-131		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Jul-2023	07:36:23	2886	BP23MVEXP-ENV-DC-060			Camera	72	625903	6088512	625885	6088496	18	16	24	-131		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Jul-2023	07:36:49	2887	BP23MVEXP-ENV-DC-060			Camera	72	625905	6088513	625885	6088496	20	17	26	-130		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Jul-2023	07:37:23	2888	BP23MVEXP-ENV-DC-060			Camera	72	625907	6088516	625885	6088496	22	20	30	-132		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Jul-2023	07:38:15	2889	BP23MVEXP-ENV-DC-060			Camera	72	625911	6088519	625885	6088496	26	23	35	-131		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Jul-2023	07:39:08	2890	BP23MVEXP-ENV-DC-060			Camera	72	625915	6088522	625885	6088496	30	27	40	-131		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Jul-2023	07:39:43	2891	BP23MVEXP-ENV-DC-060			Camera	72	625918	6088525	625885	6088496	33	29	44	-131		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Jul-2023	07:40:20	2892	BP23MVEXP-ENV-DC-060			Camera	72	625921	6088527	625885	6088496	36	31	47	-131		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Jul-2023	07:40:47	2893	BP23MVEXP-ENV-DC-060			Camera	72	625921	6088529	625885	6088496	36	33	49	-132		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Jul-2023	18:07:07	2894	BP23MVEXP-ENV-DC-025			Camera	74	659493	6208084	659446	6208080	47	4	47	-95		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	18:08:08	2895	BP23MVEXP-ENV-DC-025			Camera	74	659494	6208084	659446	6208080	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	18:10:59	2896	BP23MVEXP-ENV-DC-025			Camera	74	659494	6208084	659446	6208080	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	18:13:22	2897	BP23MVEXP-ENV-DC-025			Camera	74	659494	6208081	659446	6208080	48	1	48	-91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	18:14:30	2898	BP23MVEXP-ENV-DC-025			Camera	74	659493	6208081	659446	6208080	47	1	47	-92		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	18:15:30	2899	BP23MVEXP-ENV-DC-025			Camera	74	659491	6208081	659446	6208080	45	1	45	-91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	18:15:53	2900	BP23MVEXP-ENV-DC-025			Camera	74	659489	6208081	659446	6208080	43	1	43	-91		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	18:16:44	2901	BP23MVEXP-ENV-DC-025			Camera	74	659484	6208080	659446	6208080	38	0	38	-90		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	18:17:03	2902	BP23MVEXP-ENV-DC-025			Camera	74	659482	6208080	659446	6208080	36	0	36	-90		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	18:17:34	2903	BP23MVEXP-ENV-DC-025			Camera	74	659479	6208080	659446	6208080	33	0	33	-89		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	18:18:04	2904	BP23MVEXP-ENV-DC-025			Camera	74	659475	6208079	659446	6208080	30	-1	29	-89		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	18:19:06	2905	BP23MVEXP-ENV-DC-025			Camera	74	659469	6208079	659446	6208080	23	-1	23	-88		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	18:19:13	2906	BP23MVEXP-ENV-DC-025			Camera	74	659468	6208079	659446	6208080	22	-1	22	-88		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	18:19:37	2907	BP23MVEXP-ENV-DC-025			Camera	74	659466	6208079	659446	6208080	20	-1	20	-87		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	18:20:09	2908	BP23MVEXP-ENV-DC-025			Camera	74	659463	6208079	659446	6208080	17	-1	17	-86		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	18:20:24	2909	BP23MVEXP-ENV-DC-025			Camera	74	659461	6208079	659446	6208080	15	-1	15	-85		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	18:21:14	2910	BP23MVEXP-ENV-DC-025			Camera	74	659456	6208078	659446	6208080	10	-2	10	-80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	18:21:40	2911	BP23MVEXP-ENV-DC-025			Camera	74	659453	6208078	659446	6208080	7	-2	7	-76		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	18:22:24	2912	BP23MVEXP-ENV-DC-025			Camera	74	659449	6208078	659446	6208080	3	-2	3	-53		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	18:23:44	2913	BP23MVEXP-ENV-DC-025			Camera	74	659441	6208076	659446	6208080	-5	-4	6	57		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	18:24:03	2914	BP23MVEXP-ENV-DC-025			Camera	74	659439	6208076	659446	6208080	-7	-4	8	62		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	18:24:35	2915	BP23MVEXP-ENV-DC-025			Camera	74	659435	6208076	659446	6208080	-11	-4	11	68		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	18:24:47	2916	BP23MVEXP-ENV-DC-025			Camera	74	659434	6208076	659446	6208080	-12	-4	13	70		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	18:25:13	2917	BP23MVEXP-ENV-DC-025			Camera	74	659431	6208076	659446	6208080	-15	-4	15	74		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	18:25:59	2918	BP23MVEXP-ENV-DC-025			Camera	74	659427	6208076	659446	6208080	-19	-5	20	77		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	18:26:16	2919	BP23MVEXP-ENV-DC-025			Camera	74	659425	6208075	659446	6208080	-22	-5	22	78		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	18:26:44	2920	BP23MVEXP-ENV-DC-025			Camera	74	659421	6208076	659446	6208080	-25	-4	25	81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	18:27:17	2921	BP23MVEXP-ENV-DC-025			Camera	74	659417	6208076	659446	6208080	-29	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	18:27:50	2922	BP23MVEXP-ENV-DC-025			Camera	74	659414	6208075	659446	6208080	-32	-5	32	82		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	18:29:04	2923	BP23MVEXP-ENV-DC-025			Camera	74	659406	6208075	659446	6208080	-40	-5	40	83		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Jul-2023	18:29:32	2924	BP23MVEXP-ENV-DC-025			Camera	74	659403	6208076	659446	6208080	-43	-4	43	84		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Jul-2023	18:30:41	2925	BP23MVEXP-ENV-DC-025			Camera	74	659396	6208074	659446	6208080	-50	-6	50	84		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Jul-2023	18:40:37	2926	BP23MVEXP-ENV-DC-025			Camera	74	659427	6208113	659446	6208080	-19	33	38	150		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Jul-2023	18:47:27	2927	BP23MVEXP-ENV-DC-025			Camera	74	659442	6208123	659446	6208080	-4	43	43	175		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Jul-2023	18:47:42	2928	BP23MVEXP-ENV-DC-025			Camera	74	659443	6208122	659446	6208080	-3	42	42	175		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Jul-2023	18:48:12	2929	BP23MVEXP-ENV-DC-025			Camera	74	659443	6208118	659446	6208080	-3	39	39	176		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Jul-2023	18:48:51	2930	BP23MVEXP-ENV-DC-025			Camera	74	659444	6208114	659446	6208080	-2	34	34	176		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Jul-2023	18:49:41	2931	BP23MVEXP-ENV-DC-025			Camera	74	659444	6208109	659446	6208080	-2	29	29	176		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Jul-2023	18:50:19	2932	BP23MVEXP-ENV-DC-025			Camera	74	659444	6208105	659446	6208080	-2	25	25	176		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Jul-2023	18:51:05	2933	BP23MVEXP-ENV-DC-025			Camera	74	659445	6208100	659446	6208080	-1	20	20	176		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Jul-2023	18:51:38	2934	BP23MVEXP-ENV-DC-025			Camera	74	659445	6208097	659446	6208080	-1	17	17	177		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Jul-2023	18:52:23	2935	BP23MVEXP-ENV-DC-025			Camera	74	659445	6208093	659446	6208080	-1	13	13	178		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Jul-2023	18:53:13	2936	BP23MVEXP-ENV-DC-025			Camera	74	659447	6208088	659446	6208080	1	8	8	-176		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Jul-2023	18:53:47	2937	BP23MVEXP-ENV-DC-025				74	659447	6208084	659446	6208080	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A) Fix no photo
11-Jul-2023	18:54:49	2938	BP23MVEXP-ENV-DC-025				74	659448	6208078	659446	6208080	2	-2	3	-36		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A) Fix no photo
11-Jul-2023	18:55:19	2939	BP23MVEXP-ENV-DC-025				74	659448	6208074	659446	6208080	2	-6	6	-17		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A) Fix no photo
11-Jul-2023	18:55:47	2940	BP23MVEXP-ENV-DC-025				74	659448	6208072	659446	6208080	2	-8	9	-14		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A) Fix no photo
11-Jul-2023	18:56:14	2941	BP23MVEXP-ENV-DC-025			Camera	74	659449	6208069	659446	6208080	3	-11	11	-13		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Jul-2023	18:56:47	2942	BP23MVEXP-ENV-DC-025			Camera	74	659449	6208066	659446	6208080	3	-14	14	-10		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Jul-2023	18:58:51	2943	BP23MVEXP-ENV-DC-025			Camera	74	659450	6208054	659446	6208080	4	-26	27	-9		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Jul-2023	19:00:26	2944	BP23MVEXP-ENV-DC-025				74	659452	6208043	659446	6208080	6	-37	37	-9		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A) Fix no photo
11-Jul-2023	20:35:09	2945	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212302	659215	6212354	3	-52	52	-3		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Jul-2023	20:37:52	2946	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212306	659215	6212354	3	-48	48	-3		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Jul-2023	20:38:45	2947	BP23MVEXP-ENV-DC-024			Camera	75	659217	6212310	659215	6212354	2	-44	44	-3		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Jul-2023	20:39:02	2948	BP23MVEXP-ENV-DC-024			Camera	74	659217	6212312	659215	6212354	2	-42	42	-3		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Jul-2023	20:39:12	2949	BP23MVEXP-ENV-DC-024			Camera	74	659217	6212313	659215	6212354	2	-41	41	-2		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Jul-2023	20:39:41	2950	BP23MVEXP-ENV-DC-024			Camera	74	659216	6212316	659215	6212354	1	-38	38	-2		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Jul-2023	20:40:11	2951	BP23MVEXP-ENV-DC-024			Camera	74	659216	6212320	659215	6212354	1	-34	34	-2		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Jul-2023	20:41:37	2952	BP23MVEXP-ENV-DC-024			Camera	74	659215	6212329	659215	6212354	0	-25	25	0		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Jul-2023	20:42:36	2953	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212335	659215	6212354	-1	-19	19	2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Jul-2023	20:42:40	2954	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212335	659215	6212354	-1	-19	19	2		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Jul-2023	20:42:57	2955	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212337	659215	6212354	-1	-17	17	3		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Jul-2023	20:44:24	2956	BP23MVEXP-ENV-DC-024			Camera	74	659214	6212346	659215	6212354	-1	-8	8	10		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Jul-2023	20:46:10	2957	BP23MVEXP-ENV-DC-024			Camera	74	659213	6212356	659215	6212354	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Jul-2023	20:46:38	2958	BP23MVEXP-ENV-DC-024			Camera	74	659212	6212359	659215	6212354	-3	5	6	154		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Jul-2023	20:47:41	2959	BP23MVEXP-ENV-DC-024			Camera	74	659211	6212366	659215	6212354	-4	12	13	162		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Jul-2023	20:47:59	2960	BP23MVEXP-ENV-DC-024			Camera	74	659211	6212368	659215	6212354	-4	14	15	163		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Jul-2023	20:49:03	2961	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212375	659215	6212354	-5	21	21	167		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Jul-2023	20:49:25	2962	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212377	659215	6212354	-5	23	23	168		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Jul-2023	20:49:50	2963	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212379	659215	6212354	-5	25	25	169		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Jul-2023	20:49:56	2964	BP23MVEXP-ENV-DC-024			Camera	74	659210	6212380	659215	6212354	-5	26	26	169		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Jul-2023	20:51:22	2965	BP23MVEXP-ENV-DC-024			Camera	74	659209	6212388	659215	6212354	-6	34	35	170		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Jul-2023	20:51:33	2966	BP23MVEXP-ENV-DC-024			Camera	74	659209	6212390	659215	6212354	-6	36	36	170		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Jul-2023	20:51:42	2967	BP23MVEXP-ENV-DC-024			Camera	74	659208	6212391	659215	6212354	-7	37	37	170		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Jul-2023	20:52:56	2968	BP23MVEXP-ENV-DC-024			Camera	74	659208	6212398	659215	6212354	-7	44	45	171		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Jul-2023	20:53:43	2969	BP23MVEXP-ENV-DC-024			Camera	74	659207	6212401	659215	6212354	-8	47	48	171		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Jul-2023	21:01:57	2970	BP23MVEXP-ENV-DC-024			Camera	75	659182	6212369	659215	6212354	-33	15	36	115		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Jul-2023	21:06:19	2971	BP23MVEXP-ENV-DC-024			Camera	75	659168	6212348	659215	6212354	-47	-6	48	83		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Jul-2023	21:07:31	2972	BP23MVEXP-ENV-DC-024			Camera	75	659169	6212347	659215	6212354	-46	-7	46	81		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Jul-2023	21:07:38	2973	BP23MVEXP-ENV-DC-024			Camera	75	659170	6212347	659215	6212354	-45	-7	46	81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Jul-2023	21:08:00	2974	BP23MVEXP-ENV-DC-024			Camera	77	659171	6212347	659215	6212354	44	7	45	81		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:08:11	2975	BP23MVEXP-ENV-DC-024			Camera	77	659172	6212347	659215	6212354	43	7	44	81		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:08:19	2976	BP23MVEXP-ENV-DC-024			Camera	77	659172	6212347	659215	6212354	43	7	43	81		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:08:45	2977	BP23MVEXP-ENV-DC-024			Camera	77	659175	6212348	659215	6212354	40	6	40	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Jul-2023	21:08:56	2978	BP23MVEXP-ENV-DC-024			Camera	77	659176	6212348	659215	6212354	39	6	40	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:09:40	2979	BP23MVEXP-ENV-DC-024			Camera	77	659180	6212349	659215	6212354	35	5	35	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:10:11	2980	BP23MVEXP-ENV-DC-024			Camera	77	659183	6212350	659215	6212354	32	4	32	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:10:35	2981	BP23MVEXP-ENV-DC-024			Camera	77	659186	6212350	659215	6212354	29	4	29	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:10:52	2982	BP23MVEXP-ENV-DC-024			Camera	77	659188	6212350	659215	6212354	27	4	28	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:11:15	2983	BP23MVEXP-ENV-DC-024			Camera	77	659190	6212350	659215	6212354	25	4	25	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:12:01	2984	BP23MVEXP-ENV-DC-024			Camera	77	659195	6212351	659215	6212354	20	3	20	82		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:12:33	2985	BP23MVEXP-ENV-DC-024			Camera	77	659199	6212352	659215	6212354	16	2	17	84		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:13:00	2986	BP23MVEXP-ENV-DC-024			Camera	77	659201	6212353	659215	6212354	14	1	14	85		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
11-Jul-2023	21:13:24	2987	BP23MVEXP-ENV-DC-024				74	659203	6212353	659215	6212354	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A) No Photo
11-Jul-2023	21:14:11	2988	BP23MVEXP-ENV-DC-024				74	659208	6212354	659215	6212354	-7	0	7	87		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)No PhotoNo Photo
11-Jul-2023	21:14:20	2989	BP23MVEXP-ENV-DC-024				74	659209	6212354	659215	6212354	-6	0	6	87		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A) No Photo
11-Jul-2023	21:14:29	2990	BP23MVEXP-ENV-DC-024				74	659210	6212354	659215	6212354	-5	0	5	86		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A) No Photo
11-Jul-2023	21:14:35	2991	BP23MVEXP-ENV-DC-024				74	659211	6212354	659215	6212354	-4	0	4	85		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A) No Photo
11-Jul-2023	21:14:42	2992	BP23MVEXP-ENV-DC-024				74	659212	6212354	659215	6212354	-3	0	3	85		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A) No Photo
11-Jul-2023	21:14:51	2993	BP23MVEXP-ENV-DC-024				74	659212	6212354	659215	6212354	-3	0	3	85		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A) No Photo
11-Jul-2023	21:14:58	2994	BP23MVEXP-ENV-DC-024				74	659213	6212354	659215	6212354	-2	0	2	85		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A) No Photo
11-Jul-2023	21:15:06	2995	BP23MVEXP-ENV-DC-024				74	659214	6212354	659215	6212354	-1	0	1	86		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A) No Photo
11-Jul-2023	21:15:13	2996	BP23MVEXP-ENV-DC-024				74	659215	6212354	659215	6212354	0	0	0	98		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A) No Photo
11-Jul-2023	21:15:21	2997	BP23MVEXP-ENV-DC-024				74	659216	6212354	659215	6212354	1	0	1	-106		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A) No Photo
11-Jul-2023	21:15:28	2998	BP23MVEXP-ENV-DC-024				74	659216	6212354	659215	6212354	1	0	1	-102		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A) No Photo
11-Jul-2023	21:15:36	2999	BP23MVEXP-ENV-DC-024				74	659217	6212354	659215	6212354	2	0	2	-101		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A) No Photo
11-Jul-2023	21:15:43	3000	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212355	659215	6212354	3	1	3	-101		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Jul-2023	21:15:49	3001	BP23MVEXP-ENV-DC-024			Camera	74	659218	6212355	659215	6212354	3	1	3	-100		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Jul-2023	21:16:03	3002	BP23MVEXP-ENV-DC-024			Camera	74	659220	6212355	659215	6212354	5	1	5	-100		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Jul-2023	21:16:16	3003	BP23MVEXP-ENV-DC-024			Camera	74	659221	6212355	659215	6212354	6	1	6	-100		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Jul-2023	21:16:25	3004	BP23MVEXP-ENV-DC-024			Camera	74	659222	6212355	659215	6212354	7	1	7	-100		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
11-Jul-2023	21:16:32	3005	BP23MVEXP-ENV-DC-024			Camera	74	659222	6212355	659215	6212354	7	1	8	-100		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
11-Jul-2023	21:16:42	3006	BP23MVEXP-ENV-DC-024			Camera	74	659223	6212355	659215	6212354	8	1	9	-100		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
11-Jul-2023	21:16:48	3007	BP23MVEXP-ENV-DC-024			Camera	74	659224	6212356	659215	6212354	9	2	9	-99		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
11-Jul-2023	21:17:05	3008	BP23MVEXP-ENV-DC-024			Camera	74	659226	6212356	659215	6212354	11	2	11	-99		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
11-Jul-2023	21:17:12	3009	BP23MVEXP-ENV-DC-024			Camera	74	659226	6212356	659215	6212354	11	2	12	-98		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
11-Jul-2023	21:17:40	3010	BP23MVEXP-ENV-DC-024			Camera	74	659229	6212356	659215	6212354	14	2	14	-97		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
11-Jul-2023	21:17:47	3011	BP23MVEXP-ENV-DC-024			Camera	74	659230	6212356	659215	6212354	15	2	15	-97		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
11-Jul-2023	21:17:59	3012	BP23MVEXP-ENV-DC-024			Camera	74	659231	6212356	659215	6212354	16	2	16	-98		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
11-Jul-2023	21:18:06	3013	BP23MVEXP-ENV-DC-024			Camera	74	659232	6212356	659215	6212354	17	2	17	-98		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
11-Jul-2023	21:18:16	3014	BP23MVEXP-ENV-DC-024			Camera	74	659233	6212356	659215	6212354	18	2	18	-97		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
11-Jul-2023	21:18:30	3015	BP23MVEXP-ENV-DC-024			Camera	74	659235	6212357	659215	6212354	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
11-Jul-2023	21:18:41	3016	BP23MVEXP-ENV-DC-024			Camera	74	659236	6212357	659215	6212354	21	3	21	-98		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
11-Jul-2023	21:18:55	3017	BP23MVEXP-ENV-DC-024			Camera	74	659237	6212357	659215	6212354	22	3	22	-98		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
11-Jul-2023	21:19:59	3018	BP23MVEXP-ENV-DC-024			Camera	74	659244	6212358	659215	6212354	29	4	29	-98		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
11-Jul-2023	21:23:04	3019	BP23MVEXP-ENV-DC-024			Camera	74	659263	6212361	659215	6212354	48	7	48	-98		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
11-Jul-2023		3020	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3021	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3022	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3023	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3024	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3025	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3026	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3027	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3028	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3029	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3030	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3031	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
11-Jul-2023		3032	BP23MVEXP-ENV-DC-024							659215	6212354						Photo no fix
12-Jul-2023	19:35:29	3020	BP23MVEXP-ENV-DC-071			Camera	68	617188	6281100	617141	6281096	48	4	48	-95		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Jul-2023	19:37:34	3021	BP23MVEXP-ENV-DC-071			Camera	68	617184	6281100	617141	6281096	43	4	43	-96		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Jul-2023	19:38:03	3022	BP23MVEXP-ENV-DC-071			Camera	68	617181	6281100	617141	6281096	40	4	40	-95		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Jul-2023	19:38:42	3023	BP23MVEXP-ENV-DC-071			Camera	68	617177	6281099	617141	6281096	36	3	36	-94		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Jul-2023	19:39:33	3024	BP23MVEXP-ENV-DC-071			Camera	68	617172	6281098	617141	6281096	31	2	31	-93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Jul-2023	19:41:09	3025	BP23MVEXP-ENV-DC-071			Camera	68	617162	6281096	617141	6281096	21	0	21	-91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Jul-2023	19:42:23	3026	BP23MVEXP-ENV-DC-071			Camera	68	617155	6281095	617141	6281096	14	-1	14	-88		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Jul-2023	19:43:07	3027	BP23MVEXP-ENV-DC-071			Camera	68	617151	6281095	617141	6281096	10	-1	10	-81		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Jul-2023	19:43:35	3028	BP23MVEXP-ENV-DC-071			Camera	68	617148	6281094	617141	6281096	7	-2	7	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Jul-2023	19:43:41	3029	BP23MVEXP-ENV-DC-071			Camera	68	617147	6281094	617141	6281096	6	-2	7	-73		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Jul-2023	19:44:15	3030	BP23MVEXP-ENV-DC-071			Camera	68	617144	6281093	617141	6281096	3	-3	4	-47		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Jul-2023	19:44:55	3031	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281093	617141	6281096	-2	-3	3	30		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Jul-2023	19:45:17	3032	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281093	617141	6281096	-3	-3	5	45		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Jul-2023	19:45:54	3033	BP23MVEXP-ENV-DC-071			Camera	68	617133	6281092	617141	6281096	-8	-4	9	65		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Jul-2023	19:46:32	3034	BP23MVEXP-ENV-DC-071			Camera	68	617129	6281092	617141	6281096	-12	-4	13	71		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Jul-2023	19:47:00	3035	BP23MVEXP-ENV-DC-071			Camera	68	617126	6281091	617141	6281096	-15	-5	15	72		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Jul-2023	19:48:07	3036	BP23MVEXP-ENV-DC-071			Camera	68	617119	6281090	617141	6281096	-22	-6	23	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Jul-2023	19:48:40	3037	BP23MVEXP-ENV-DC-071			Camera	68	617116	6281089	617141	6281096	-25	-7	26	75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Jul-2023	19:49:27	3038	BP23MVEXP-ENV-DC-071			Camera	68	617112	6281088	617141	6281096	-29	-8	30	75		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Jul-2023	19:50:00	3039	BP23MVEXP-ENV-DC-071			Camera	68	617108	6281088	617141	6281096	-33	-8	34	76		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Jul-2023	19:50:33	3040	BP23MVEXP-ENV-DC-071			Camera	68	617104	6281087	617141	6281096	-37	-9	38	77		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Jul-2023	19:51:47	3041	BP23MVEXP-ENV-DC-071			Camera	68	617096	6281086	617141	6281096	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Jul-2023	19:52:18	3042	BP23MVEXP-ENV-DC-071			Camera	68	617093	6281086	617141	6281096	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Jul-2023	19:56:26	3043	BP23MVEXP-ENV-DC-071			Camera	68	617101	6281098	617141	6281096	-40	2	40	93		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Jul-2023	19:56:34	3044	BP23MVEXP-ENV-DC-071			Camera	68	617102	6281099	617141	6281096	-39	3	39	94		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Jul-2023	20:03:31	3045	BP23MVEXP-ENV-DC-071			Camera	68	617125	6281134	617141	6281096	-16	38	41	158		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Jul-2023	20:07:50	3046	BP23MVEXP-ENV-DC-071			Camera	68	617134	6281145	617141	6281096	-7	49	50	172		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Jul-2023	20:08:03	3047	BP23MVEXP-ENV-DC-071			Camera	68	617134	6281145	617141	6281096	-7	49	49	172		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Jul-2023	20:08:17	3048	BP23MVEXP-ENV-DC-071			Camera	68	617134	6281144	617141	6281096	-7	48	48	172		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Jul-2023	20:08:32	3049	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281143	617141	6281096	-6	47	47	172		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Jul-2023	20:08:59	3050	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281141	617141	6281096	-6	45	45	172		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Jul-2023	20:09:07	3051	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281140	617141	6281096	-6	44	44	172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Jul-2023	20:09:30	3052	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281137	617141	6281096	-6	41	42	172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Jul-2023	20:09:58	3053	BP23MVEXP-ENV-DC-071			Camera	68	617135	6281135	617141	6281096	-6	39	39	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Jul-2023	20:10:11	3054	BP23MVEXP-ENV-DC-071			Camera	68	617136	6281133	617141	6281096	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Jul-2023	20:10:49	3055	BP23MVEXP-ENV-DC-071			Camera	68	617137	6281129	617141	6281096	-4	33	33	172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Jul-2023	20:11:01	3056	BP23MVEXP-ENV-DC-071			Camera	68	617137	6281128	617141	6281096	-4	32	32	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Jul-2023	20:11:09	3057	BP23MVEXP-ENV-DC-071			Camera	68	617137	6281127	617141	6281096	-4	31	31	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Jul-2023	20:11:48	3058	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281123	617141	6281096	-3	27	27	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Jul-2023	20:11:59	3059	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281122	617141	6281096	-3	26	26	173		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Jul-2023	20:12:12	3060	BP23MVEXP-ENV-DC-071			Camera	68	617138	6281121	617141	6281096	-3	25	25	174		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Jul-2023	20:12:42	3061	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281117	617141	6281096	-2	21	21	174		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Jul-2023	20:12:49	3062	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281116	617141	6281096	-2	21	21	174		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Jul-2023	20:13:01	3063	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281115	617141	6281096	-2	19	19	173		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Jul-2023	20:13:08	3064	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281114	617141	6281096	-2	18	18	173		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Jul-2023	20:13:20	3065	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281113	617141	6281096	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Jul-2023	20:13:39	3066	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281111	617141	6281096	-2	15	15	173		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Jul-2023	20:13:46	3067	BP23MVEXP-ENV-DC-071			Camera	68	617139	6281110	617141	6281096	-2	15	15	173		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Jul-2023	20:14:25	3068	BP23MVEXP-ENV-DC-071			Camera	68	617140	6281107	617141	6281096	-1	11	11	175		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Jul-2023	20:14:45	3069	BP23MVEXP-ENV-DC-071			Camera	68	617141	6281105	617141	6281096	0	9	9	179		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Jul-2023	20:14:53	3070	BP23MVEXP-ENV-DC-071			Camera	68	617141	6281104	617141	6281096	0	8	8	-179		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
12-Jul-2023	20:15:13	3071	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281102	617141	6281096	1	6	6	-174		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
12-Jul-2023	20:15:22	3072	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281101	617141	6281096	1	5	5	-171		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
12-Jul-2023	20:15:35	3073	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281100	617141	6281096	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
12-Jul-2023	20:15:47	3074	BP23MVEXP-ENV-DC-071			Camera	68	617142	6281099	617141	6281096	1	3	3	-154		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
12-Jul-2023	20:16:02	3075	BP23MVEXP-ENV-DC-071			Camera	68	617143	6281097	617141	6281096	2	1	2	-125		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
12-Jul-2023	20:16:55	3076	BP23MVEXP-ENV-DC-071			Camera	68	617144	6281092	617141	6281096	3	-4	5	-33		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
12-Jul-2023	20:18:39	3077	BP23MVEXP-ENV-DC-071			Camera	68	617145	6281081	617141	6281096	4	-15	15	-16		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
12-Jul-2023	20:20:27	3078	BP23MVEXP-ENV-DC-071			Camera	68	617147	6281070	617141	6281096	6	-26	26	-14		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
12-Jul-2023	23:30:44	3079	BP23MVEXP-ENV-DC-072			Camera	75	617676	6277171	617683	6277122	-7	49	50	172		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Jul-2023	23:31:11	3080	BP23MVEXP-ENV-DC-072			Camera	75	617676	6277172	617683	6277122	-7	50	50	172		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Jul-2023	23:33:10	3081	BP23MVEXP-ENV-DC-072			Camera	75	617677	6277168	617683	6277122	-6	46	46	173		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Jul-2023	23:33:25	3082	BP23MVEXP-ENV-DC-072			Camera	75	617678	6277166	617683	6277122	-5	44	45	173		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Jul-2023	23:34:04	3083	BP23MVEXP-ENV-DC-072			Camera	75	617678	6277162	617683	6277122	-5	40	40	173		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Jul-2023	23:34:51	3084	BP23MVEXP-ENV-DC-072			Camera	75	617678	6277156	617683	6277122	-5	34	35	172		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Jul-2023	23:35:39	3085	BP23MVEXP-ENV-DC-072			Camera	75	617679	6277152	617683	6277122	-4	30	30	173		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Jul-2023	23:36:02	3086	BP23MVEXP-ENV-DC-072			Camera	75	617680	6277150	617683	6277122	-3	28	28	174		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Jul-2023	23:36:37	3087	BP23MVEXP-ENV-DC-072			Camera	75	617681	6277146	617683	6277122	-2	24	24	175		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Jul-2023	23:37:06	3088	BP23MVEXP-ENV-DC-072			Camera	75	617682	6277144	617683	6277122	-1	22	22	176		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Jul-2023	23:37:41	3089	BP23MVEXP-ENV-DC-072			Camera	75	617682	6277141	617683	6277122	-1	19	19	178		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Jul-2023	23:38:07	3090	BP23MVEXP-ENV-DC-072			Camera	75	617683	6277138	617683	6277122	0	16	16	180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Jul-2023	23:39:26	3091	BP23MVEXP-ENV-DC-072			Camera	75	617683	6277129	617683	6277122	0	7	7	180		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Jul-2023	23:40:21	3092	BP23MVEXP-ENV-DC-072			Camera	75	617684	6277123	617683	6277122	1	1	2	-134		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Jul-2023	23:41:08	3093	BP23MVEXP-ENV-DC-072			Camera	75	617685	6277119	617683	6277122	2	-3	4	-24		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Jul-2023	23:41:51	3094	BP23MVEXP-ENV-DC-072			Camera	75	617685	6277114	617683	6277122	2	-8	8	-14		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Jul-2023	23:42:43	3095	BP23MVEXP-ENV-DC-072			Camera	75	617686	6277109	617683	6277122	3	-13	14	-11		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Jul-2023	23:43:26	3096	BP23MVEXP-ENV-DC-072			Camera	75	617686	6277105	617683	6277122	3	-18	18	-9		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Jul-2023	23:44:26	3097	BP23MVEXP-ENV-DC-072			Camera	75	617687	6277098	617683	6277122	4	-25	25	-10		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Jul-2023	23:45:12	3098	BP23MVEXP-ENV-DC-072			Camera	75	617688	6277093	617683	6277122	5	-29	29	-10		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Jul-2023	23:45:36	3099	BP23MVEXP-ENV-DC-072			Camera	75	617688	6277091	617683	6277122	5	-31	31	-9		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Jul-2023	23:46:19	3100	BP23MVEXP-ENV-DC-072			Camera	75	617688	6277086	617683	6277122	5	-36	36	-8		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Jul-2023	23:46:42	3101	BP23MVEXP-ENV-DC-072			Camera	75	617689	6277084	617683	6277122	6	-38	38	-9		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Jul-2023	23:47:42	3102	BP23MVEXP-ENV-DC-072			Camera	75	617690	6277078	617683	6277122	7	-44	44	-9		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	00:01:15	3103	BP23MVEXP-ENV-DC-072			Camera	75	617730	6277131	617683	6277122	47	9	48	-101		(Raw Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	00:02:42	3104	BP23MVEXP-ENV-DC-072			Camera	75	617728	6277130	617683	6277122	45	8	46	-101		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	00:04:17	3105	BP23MVEXP-ENV-DC-072			Camera	75	617723	6277129	617683	6277122	40	7	40	-101		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	00:04:57	3106	BP23MVEXP-ENV-DC-072			Camera	75	617719	6277129	617683	6277122	36	7	36	-101		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	00:06:04	3107	BP23MVEXP-ENV-DC-072			Camera	75	617712	6277127	617683	6277122	29	5	30	-99		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	00:07:04	3108	BP23MVEXP-ENV-DC-072			Camera	75	617708	6277125	617683	6277122	25	3	26	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	00:08:52	3109	BP23MVEXP-ENV-DC-072			Camera	75	617704	6277123	617683	6277122	21	1	21	-92		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	00:10:55	3110	BP23MVEXP-ENV-DC-072			Camera	75	617696	6277123	617683	6277122	13	1	13	-93		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	00:12:22	3111	BP23MVEXP-ENV-DC-072			Camera	75	617692	6277121	617683	6277122	9	-1	9	-83		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	00:12:42	3112	BP23MVEXP-ENV-DC-072			Camera	75	617690	6277121	617683	6277122	7	-1	7	-81		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	00:13:30	3113	BP23MVEXP-ENV-DC-072			Camera	75	617685	6277120	617683	6277122	2	-2	3	-56		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	00:14:13	3114	BP23MVEXP-ENV-DC-072			Camera	75	617681	6277120	617683	6277122	-2	-2	3	44		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	00:15:16	3115	BP23MVEXP-ENV-DC-072			Camera	75	617674	6277118	617683	6277122	-9	-4	9	68		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	00:15:31	3116	BP23MVEXP-ENV-DC-072			Camera	75	617673	6277118	617683	6277122	-10	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	00:16:13	3117	BP23MVEXP-ENV-DC-072			Camera	76	617669	6277117	617683	6277122	-14	-5	15	72		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	00:16:27	3118	BP23MVEXP-ENV-DC-072			Camera	76	617668	6277117	617683	6277122	-16	-5	16	72		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	00:16:51	3119	BP23MVEXP-ENV-DC-072			Camera	75	617665	6277117	617683	6277122	-18	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	00:19:52	3120	BP23MVEXP-ENV-DC-072			Camera	76	617646	6277113	617683	6277122	-37	-9	38	77		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	00:20:45	3121	BP23MVEXP-ENV-DC-072			Camera	76	617641	6277113	617683	6277122	-42	-9	43	77		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	00:21:21	3122	BP23MVEXP-ENV-DC-072			Camera	75	617638	6277112	617683	6277122	-45	-10	47	77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	02:43:24	3123	BP23MVEXP-ENV-DC-073			Camera	71	618224	6273191	618229	6273143	-5	48	48	174		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	02:43:40	3124	BP23MVEXP-ENV-DC-073			Camera	73	618223.1	6273191.1	618229	6273143	6	-48	48	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:44:50	3125	BP23MVEXP-ENV-DC-073			Camera	73	618222.9	6273190.0	618229	6273143	6	-47	47	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:45:31	3126	BP23MVEXP-ENV-DC-073			Camera	73	618223.4	6273187.6	618229	6273143	6	-45	45	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:46:00	3127	BP23MVEXP-ENV-DC-073			Camera	73	618224.1	6273184.4	618229	6273143	5	-41	42	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:46:45	3128	BP23MVEXP-ENV-DC-073			Camera	72	618224.2	6273179.6	618229	6273143	5	-37	37	173		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
13-Jul-2023	02:47:40	3129	BP23MVEXP-ENV-DC-073			Camera	71	618225	6273174	618229	6273143	-4	31	32	172		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	02:47:54	3130	BP23MVEXP-ENV-DC-073			Camera	71	618225	6273173	618229	6273143	-4	30	30	173		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	02:48:10	3131	BP23MVEXP-ENV-DC-073			Camera	71	618225	6273171	618229	6273143	-4	29	29	173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	02:48:32	3132	BP23MVEXP-ENV-DC-073			Camera	71	618226	6273169	618229	6273143	-3	26	26	173		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	02:48:58	3133	BP23MVEXP-ENV-DC-073			Camera	71	618226	6273167	618229	6273143	-3	24	24	173		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	02:50:08	3134	BP23MVEXP-ENV-DC-073			Camera	71	618228	6273159	618229	6273143	-1	16	16	175		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	02:50:16	3135	BP23MVEXP-ENV-DC-073			Camera	71	618228	6273158	618229	6273143	-1	16	16	175		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	02:51:11	3136	BP23MVEXP-ENV-DC-073			Camera	71	618229	6273153	618229	6273143	0	10	10	177		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	02:51:28	3137	BP23MVEXP-ENV-DC-073			Camera	71	618229	6273151	618229	6273143	0	8	8	178		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	02:52:33	3138	BP23MVEXP-ENV-DC-073			Camera	71	618230	6273145	618229	6273143	1	2	2	-158		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	02:52:48	3139	BP23MVEXP-ENV-DC-073			Camera	71	618230	6273143	618229	6273143	1	0	1	-98		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	02:53:48	3140	BP23MVEXP-ENV-DC-073			Camera	71	618231	6273137	618229	6273143	2	-6	7	-19		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	02:54:32	3141	BP23MVEXP-ENV-DC-073			Camera	71	618232	6273132	618229	6273143	3	-11	11	-15		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	02:55:14	3142	BP23MVEXP-ENV-DC-073			Camera	71	618233	6273128	618229	6273143	4	-15	15	-14		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	02:56:29	3143	BP23MVEXP-ENV-DC-073			Camera	71	618233	6273120	618229	6273143	4	-23	23	-11		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	02:57:12	3144	BP23MVEXP-ENV-DC-073			Camera	71	618234	6273116	618229	6273143	5	-27	28	-10		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	02:57:50	3145	BP23MVEXP-ENV-DC-073			Camera	71	618235	6273112	618229	6273143	6	-31	31	-10		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	02:58:46	3146	BP23MVEXP-ENV-DC-073			Camera	71	618235	6273106	618229	6273143	6	-37	37	-10		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	02:59:45	3147	BP23MVEXP-ENV-DC-073			Camera	71	618237	6273100	618229	6273143	8	-43	43	-10		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	03:00:12	3148	BP23MVEXP-ENV-DC-073			Camera	71	618237	6273098	618229	6273143	8	-45	46	-10		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	03:12:17	3149	BP23MVEXP-ENV-DC-073			Camera	70	618274	6273147	618229	6273143	45	4	45	-95		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	03:12:44	3150	BP23MVEXP-ENV-DC-073			Camera	70	618275	6273150	618229	6273143	46	7	47	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	03:12:54	3151	BP23MVEXP-ENV-DC-073			Camera	70	618276	6273150	618229	6273143	47	7	47	-98		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	03:13:31	3152	BP23MVEXP-ENV-DC-073			Camera	70	618276	6273151	618229	6273143	47	8	47	-100		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	03:14:44	3153	BP23MVEXP-ENV-DC-073			Camera	70	618271	6273150	618229	6273143	42	7	43	-100		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	03:15:23	3154	BP23MVEXP-ENV-DC-073			Camera	70	618266	6273150	618229	6273143	38	7	38	-100		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	03:15:36	3155	BP23MVEXP-ENV-DC-073			Camera	70	618265	6273149	618229	6273143	36	6	37	-100		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	03:16:28	3156	BP23MVEXP-ENV-DC-073			Camera	70	618260	6273148	618229	6273143	31	5	31	-100		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	03:17:08	3157	BP23MVEXP-ENV-DC-073			Camera	70	618255	6273148	618229	6273143	26	5	27	-100		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	03:18:09	3158	BP23MVEXP-ENV-DC-073			Camera	71	618249	6273147	618229	6273143	20	4	21	-101		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	03:18:47	3159	BP23MVEXP-ENV-DC-073			Camera	71	618245	6273146	618229	6273143	16	3	17	-102		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	03:19:31	3160	BP23MVEXP-ENV-DC-073			Camera	71	618241	6273145	618229	6273143	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	03:19:53	3161	BP23MVEXP-ENV-DC-073			Camera	71	618239	6273145	618229	6273143	10	2	10	-99		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	03:20:52	3162	BP23MVEXP-ENV-DC-073			Camera	71	618233	6273143	618229	6273143	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	03:21:20	3163	BP23MVEXP-ENV-DC-073			Camera	71	618230	6273143	618229	6273143	1	0	1	-83		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	03:21:44	3164	BP23MVEXP-ENV-DC-073			Camera	71	618228	6273142	618229	6273143	-1	-1	1	62		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	03:22:31	3165	BP23MVEXP-ENV-DC-073			Camera	71	618223	6273142	618229	6273143	-6	-1	6	83		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	03:23:37	3166	BP23MVEXP-ENV-DC-073			Camera	71	618216	6273141	618229	6273143	-13	-2	13	83		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	03:24:16	3167	BP23MVEXP-ENV-DC-073			Camera	71	618212	6273140	618229	6273143	-17	-3	17	81		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	03:25:21	3168	BP23MVEXP-ENV-DC-073			Camera	71	618206	6273139	618229	6273143	-23	-4	24	81		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	03:25:56	3169	BP23MVEXP-ENV-DC-073			Camera	71	618202	6273139	618229	6273143	-27	-4	27	81		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	03:27:16	3170	BP23MVEXP-ENV-DC-073			Camera	71	618194	6273137	618229	6273143	-35	-6	35	81		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	03:28:28	3171	BP23MVEXP-ENV-DC-073			Camera	71	618187	6273136	618229	6273143	-43	-7	43	81		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	03:28:45	3172	BP23MVEXP-ENV-DC-073			Camera	71	618185	6273136	618229	6273143	-44	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	03:29:28	3173	BP23MVEXP-ENV-DC-073			Camera	72	618181	6273135	618229	6273143	-48	-8	49	80		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	06:00:01	3174	BP23MVEXP-ENV-DC-074			Camera	66	618784	6269109	618778	6269161	6	-52	52	-7		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	06:01:48	3175	BP23MVEXP-ENV-DC-074			Camera	66	618784	6269110	618778	6269161	6	-51	52	-6		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	06:02:59	3176	BP23MVEXP-ENV-DC-074			Camera	66	618783	6269114	618778	6269161	5	-47	47	-6		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	06:03:59	3177	BP23MVEXP-ENV-DC-074			Camera	66	618781	6269121	618778	6269161	3	-40	41	-5		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	06:04:06	3178	BP23MVEXP-ENV-DC-074			Camera	66	618781	6269121	618778	6269161	3	-40	40	-4		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	06:07:00	3179	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269130	618778	6269161	2	-31	31	-4		(Raw Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	06:09:34	3180	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269130	618778	6269161	2	-31	31	-4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	06:09:43	3181	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269130	618778	6269161	2	-31	31	-4		(Raw Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	06:17:21	3182	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269121	618778	6269161	-6	-40	40	9		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	06:22:19	3183	BP23MVEXP-ENV-DC-074			Camera	66	618777	6269136	618778	6269161	-1	-25	25	3		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	06:22:28	3184	BP23MVEXP-ENV-DC-074			Camera	66	618776	6269136	618778	6269161	-2	-25	25	4		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	06:23:09	3185	BP23MVEXP-ENV-DC-074			Camera	66	618776	6269141	618778	6269161	-2	-21	21	7		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	06:23:37	3186	BP23MVEXP-ENV-DC-074			Camera	66	618775	6269144	618778	6269161	-3	-17	18	8		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	06:24:21	3187	BP23MVEXP-ENV-DC-074			Camera	66	618775	6269148	618778	6269161	-3	-13	14	12		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	06:25:45	3188	BP23MVEXP-ENV-DC-074			Camera	66	618774	6269156	618778	6269161	-4	-5	6	38		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	06:26:30	3189	BP23MVEXP-ENV-DC-074			Camera	66	618774	6269161	618778	6269161	-4	0	4	86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	06:27:33	3190	BP23MVEXP-ENV-DC-074			Camera	66	618773	6269167	618778	6269161	-5	6	8	140		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	06:28:30	3191	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269173	618778	6269161	-6	12	13	152		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	06:29:18	3192	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269178	618778	6269161	-7	17	18	159		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	06:30:24	3193	BP23MVEXP-ENV-DC-074			Camera	66	618771	6269184	618778	6269161	-7	23	24	163		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	06:31:44	3194	BP23MVEXP-ENV-DC-074			Camera	66	618770	6269193	618778	6269161	-8	32	33	165		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	06:31:55	3195	BP23MVEXP-ENV-DC-074			Camera	66	618770	6269193	618778	6269161	-8	32	33	166		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	06:32:26	3196	BP23MVEXP-ENV-DC-074			Camera	66	618769	6269197	618778	6269161	-9	36	37	166		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	06:33:09	3197	BP23MVEXP-ENV-DC-074			Camera	66	618769	6269201	618778	6269161	-9	40	41	167		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	06:34:25	3198	BP23MVEXP-ENV-DC-074			Camera	66	618768	6269209	618778	6269161	-10	48	49	168		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	06:46:56	3199	BP23MVEXP-ENV-DC-074			Camera	65	618824	6269172	618778	6269161	46	11	48	-103		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	06:48:23	3200	BP23MVEXP-ENV-DC-074			Camera	65	618829	6269169	618778	6269161	51	8	52	-99		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	06:48:35	3201	BP23MVEXP-ENV-DC-074			Camera	65	618829	6269169	618778	6269161	51	8	51	-99		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	06:48:43	3202	BP23MVEXP-ENV-DC-074			Camera	66	618828	6269169	618778	6269161	50	8	51	-99		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	06:49:08	3203	BP23MVEXP-ENV-DC-074			Camera	66	618826	6269168	618778	6269161	48	7	48	-99		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	06:49:38	3204	BP23MVEXP-ENV-DC-074			Camera	66	618823	6269168	618778	6269161	45	7	46	-98		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	06:49:49	3205	BP23MVEXP-ENV-DC-074			Camera	66	618822	6269167	618778	6269161	44	6	45	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	06:51:28	3206	BP23MVEXP-ENV-DC-074			Camera	66	618811	6269166	618778	6269161	33	5	34	-98		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	06:52:09	3207	BP23MVEXP-ENV-DC-074			Camera	66	618807	6269165	618778	6269161	30	4	30	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	06:52:36	3208	BP23MVEXP-ENV-DC-074			Camera	66	618805	6269164	618778	6269161	27	3	27	-97		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	06:53:50	3209	BP23MVEXP-ENV-DC-074			Camera	66	618798	6269163	618778	6269161	20	2	20	-95		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	06:55:00	3210	BP23MVEXP-ENV-DC-074			Camera	66	618790	6269161	618778	6269161	12	0	12	-91		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	06:55:52	3211	BP23MVEXP-ENV-DC-074			Camera	66	618785	6269160	618778	6269161	7	-1	7	-86		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	06:56:44	3212	BP23MVEXP-ENV-DC-074			Camera	66	618780	6269159	618778	6269161	2	-2	2	-47		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	06:57:02	3213	BP23MVEXP-ENV-DC-074			Camera	66	618778	6269159	618778	6269161	0	-2	2	8		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	06:57:57	3214	BP23MVEXP-ENV-DC-074			Camera	66	618772	6269159	618778	6269161	-6	-2	6	66		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	06:58:48	3215	BP23MVEXP-ENV-DC-074			Camera	66	618767	6269157	618778	6269161	-11	-4	11	72		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	06:59:38	3216	BP23MVEXP-ENV-DC-074			Camera	66	618762	6269157	618778	6269161	-16	-4	16	74		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	07:00:36	3217	BP23MVEXP-ENV-DC-074			Camera	66	618756	6269156	618778	6269161	-22	-5	23	77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	07:01:37	3218	BP23MVEXP-ENV-DC-074			Camera	66	618750	6269155	618778	6269161	-28	-6	29	77		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	07:03:03	3219	BP23MVEXP-ENV-DC-074			Camera	66	618741	6269153	618778	6269161	-37	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	07:03:12	3220	BP23MVEXP-ENV-DC-074			Camera	66	618740	6269153	618778	6269161	-38	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	07:04:26	3221	BP23MVEXP-ENV-DC-074			Camera	66	618733	6269151	618778	6269161	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	07:04:51	3222	BP23MVEXP-ENV-DC-074			Camera	66	618730	6269151	618778	6269161	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	08:52:01	3223	BP23MVEXP-ENV-DC-075			Camera	65	619261	6265226	619313	6265236	-52	-11	53	79		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	08:53:38	3224	BP23MVEXP-ENV-DC-075			Camera	65	619261	6265226	619313	6265236	-52	-10	53	79		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	08:55:08	3225	BP23MVEXP-ENV-DC-075			Camera	65	619268	6265226	619313	6265236	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	08:55:32	3226	BP23MVEXP-ENV-DC-075			Camera	65	619270	6265226	619313	6265236	-43	-10	44	77		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	08:56:12	3227	BP23MVEXP-ENV-DC-075			Camera	65	619274	6265226	619313	6265236	-39	-10	40	76		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	08:57:09	3228	BP23MVEXP-ENV-DC-075			Camera	65	619280	6265227	619313	6265236	-33	-9	34	75		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	08:57:27	3229	BP23MVEXP-ENV-DC-075			Camera	65	619282	6265227	619313	6265236	-31	-9	32	75		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	08:57:40	3230	BP23MVEXP-ENV-DC-075			Camera	65	619283	6265228	619313	6265236	-30	-8	31	74		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	08:58:03	3231	BP23MVEXP-ENV-DC-075			Camera	65	619286	6265228	619313	6265236	-28	-8	29	75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	08:58:56	3232	BP23MVEXP-ENV-DC-075			Camera	65	619290	6265229	619313	6265236	-23	-7	24	73		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	08:59:10	3233	BP23MVEXP-ENV-DC-075			Camera	65	619292	6265230	619313	6265236	-21	-6	22	74		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	08:59:47	3234	BP23MVEXP-ENV-DC-075			Camera	65	619295	6265231	619313	6265236	-18	-5	18	73		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	09:00:01	3235	BP23MVEXP-ENV-DC-075			Camera	65	619297	6265231	619313	6265236	-16	-5	17	72		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	09:00:08	3236	BP23MVEXP-ENV-DC-075			Camera	65	619298	6265231	619313	6265236	-15	-5	16	72		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	09:00:48	3237	BP23MVEXP-ENV-DC-075			Camera	65	619302	6265232	619313	6265236	-11	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	09:01:47	3238	BP23MVEXP-ENV-DC-075			Camera	65	619309	6265233	619313	6265236	-4	-3	5	51		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	09:01:59	3239	BP23MVEXP-ENV-DC-075			Camera	65	619310	6265233	619313	6265236	-3	-3	4	42		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	09:02:21	3240	BP23MVEXP-ENV-DC-075			Camera	65	619312	6265233	619313	6265236	-1	-3	3	16		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	09:02:27	3241	BP23MVEXP-ENV-DC-075			Camera	65	619313	6265233	619313	6265236	0	-3	3	6		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	09:03:07	3242	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265234	619313	6265236	3	-2	4	-54		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	09:03:52	3243	BP23MVEXP-ENV-DC-075			Camera	65	619321	6265234	619313	6265236	8	-2	8	-78		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	09:04:12	3244	BP23MVEXP-ENV-DC-075			Camera	65	619323	6265235	619313	6265236	10	-1	10	-83		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	09:05:04	3245	BP23MVEXP-ENV-DC-075			Camera	64	619329	6265236	619313	6265236	16	0	16	-90		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	09:05:10	3246	BP23MVEXP-ENV-DC-075			Camera	64	619330	6265236	619313	6265236	17	0	17	-91		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	09:05:24	3247	BP23MVEXP-ENV-DC-075			Camera	64	619331	6265236	619313	6265236	18	0	18	-92		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	09:06:35	3248	BP23MVEXP-ENV-DC-075			Camera	65	619338	6265237	619313	6265236	25	1	25	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	09:07:18	3249	BP23MVEXP-ENV-DC-075			Camera	65	619342	6265238	619313	6265236	29	2	29	-93		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	09:07:56	3250	BP23MVEXP-ENV-DC-075			Camera	64	619346	6265239	619313	6265236	33	3	33	-95		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	09:09:42	3251	BP23MVEXP-ENV-DC-075			Camera	65	619357	6265240	619313	6265236	44	4	44	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	09:10:17	3252	BP23MVEXP-ENV-DC-075			Camera	64	619360	6265241	619313	6265236	47	5	47	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	09:22:48	3253	BP23MVEXP-ENV-DC-075			Camera	64	619306	6265283	619313	6265236	-7	47	48	172		(Raw Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	09:23:16	3254	BP23MVEXP-ENV-DC-075			Camera	64	619306	6265284	619313	6265236	-7	48	49	172		(Raw Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	09:24:11	3255	BP23MVEXP-ENV-DC-075			Camera	64	619306	6265283	619313	6265236	-7	47	48	172		(Raw Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	09:25:00	3256	BP23MVEXP-ENV-DC-075			Camera	64	619307	6265279	619313	6265236	-6	43	44	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	09:25:30	3257	BP23MVEXP-ENV-DC-075			Camera	64	619307	6265277	619313	6265236	-6	41	41	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	09:26:07	3258	BP23MVEXP-ENV-DC-075			Camera	64	619308	6265273	619313	6265236	-5	37	37	172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	09:26:57	3259	BP23MVEXP-ENV-DC-075			Camera	64	619309	6265269	619313	6265236	-4	33	33	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	09:27:39	3260	BP23MVEXP-ENV-DC-075			Camera	64	619310	6265266	619313	6265236	-3	30	31	174		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	09:28:19	3261	BP23MVEXP-ENV-DC-075			Camera	64	619311	6265263	619313	6265236	-2	27	27	175		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	09:29:23	3262	BP23MVEXP-ENV-DC-075			Camera	64	619312	6265256	619313	6265236	-1	20	20	178		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	09:29:57	3263	BP23MVEXP-ENV-DC-075			Camera	64	619313	6265252	619313	6265236	0	16	16	-179		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	09:30:51	3264	BP23MVEXP-ENV-DC-075			Camera	65	619315	6265246	619313	6265236	2	10	10	-170		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	09:32:02	3265	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265239	619313	6265236	3	3	4	-141		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	09:32:39	3266	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265236	619313	6265236	3	0	3	-82		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	09:33:35	3267	BP23MVEXP-ENV-DC-075			Camera	65	619316	6265230	619313	6265236	3	-6	7	-31		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	09:35:02	3268	BP23MVEXP-ENV-DC-075			Camera	65	619319	6265222	619313	6265236	6	-15	16	-21		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	09:36:13	3269	BP23MVEXP-ENV-DC-075			Camera	65	619320	6265214	619313	6265236	7	-22	23	-17		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	09:37:28	3270	BP23MVEXP-ENV-DC-075			Camera	65	619321	6265207	619313	6265236	8	-30	30	-15		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	09:38:05	3271	BP23MVEXP-ENV-DC-075			Camera	65	619321	6265203	619313	6265236	8	-33	34	-14		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	09:39:20	3272	BP23MVEXP-ENV-DC-075			Camera	65	619323	6265195	619313	6265236	10	-41	42	-13		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	09:39:43	3273	BP23MVEXP-ENV-DC-075			Camera	65	619323	6265193	619313	6265236	10	-43	45	-14		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	09:40:43	3274	BP23MVEXP-ENV-DC-075			Camera	65	619324	6265188	619313	6265236	11	-48	50	-13		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
13-Jul-2023	09:41:41	3275	BP23MVEXP-ENV-DC-075			Camera	65	619324	6265187	619313	6265236	11	-49	50	-13		(Raw Nav, Kongsberg 14208, img#53) (B) (T.A)
13-Jul-2023	12:05:32	3277	BP23MVEXP-ENV-DC-076			Camera	59	619791	6261282	619800	6261234	-9	48	49	169		(Raw Nav, Kongsberg 14208, img#54) (B) (T.A)
13-Jul-2023	12:05:47	3278	BP23MVEXP-ENV-DC-076			Camera	59	619791	6261282	619800	6261234	-9	48	48	169		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	12:08:02	3279	BP23MVEXP-ENV-DC-076			Camera	59	619793	6261279	619800	6261234	-7	45	46	169		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	12:08:54	3280	BP23MVEXP-ENV-DC-076			Camera	59	619792	6261276	619800	6261234	-8	42	43	170		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	12:10:20	3281	BP23MVEXP-ENV-DC-076			Camera	59	619794	6261269	619800	6261234	-6	35	36	170		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	12:12:10	3282	BP23MVEXP-ENV-DC-076			Camera	59	619797	6261257	619800	6261234	-3	23	23	173		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	12:13:28	3283	BP23MVEXP-ENV-DC-076			Camera	59	619799	6261248	619800	6261234	-1	14	14	174		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	12:14:02	3284	BP23MVEXP-ENV-DC-076			Camera	59	619799	6261244	619800	6261234	-1	10	10	175		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	12:14:39	3285	BP23MVEXP-ENV-DC-076			Camera	59	619800	6261241	619800	6261234	0	7	7	179		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	12:15:29	3286	BP23MVEXP-ENV-DC-076			Camera	59	619800	6261237	619800	6261234	0	3	3	-175		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	12:18:01	3287	BP23MVEXP-ENV-DC-076			Camera	59	619804	6261221	619800	6261234	4	-13	14	-16		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	12:18:35	3288	BP23MVEXP-ENV-DC-076			Camera	59	619804	6261217	619800	6261234	4	-17	17	-14		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	12:19:02	3289	BP23MVEXP-ENV-DC-076			Camera	59	619805	6261214	619800	6261234	5	-20	20	-14		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	12:20:11	3290	BP23MVEXP-ENV-DC-076			Camera	59	619806	6261208	619800	6261234	6	-27	27	-14		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	12:20:28	3291	BP23MVEXP-ENV-DC-076			Camera	59	619806	6261206	619800	6261234	6	-28	29	-13		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	12:21:05	3292	BP23MVEXP-ENV-DC-076			Camera	60	619807	6261202	619800	6261234	7	-32	32	-13		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	12:22:11	3293	BP23MVEXP-ENV-DC-076			Camera	60	619808	6261195	619800	6261234	8	-39	40	-12		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	12:22:54	3294	BP23MVEXP-ENV-DC-076			Camera	60	619809	6261192	619800	6261234	9	-42	43	-12		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	12:23:05	3295	BP23MVEXP-ENV-DC-076			Camera	60	619809	6261191	619800	6261234	9	-43	44	-12		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	12:23:53	3296	BP23MVEXP-ENV-DC-076			Camera	60	619810	6261187	619800	6261234	10	-48	48	-12		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	12:34:07	3297	BP23MVEXP-ENV-DC-076			Camera	59	619836	6261223	619800	6261234	36	-11	38	-73		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	12:38:11	3298	BP23MVEXP-ENV-DC-076			Camera	59	619848	6261242	619800	6261234	48	8	49	-99		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	12:39:32	3299	BP23MVEXP-ENV-DC-076			Camera	59	619846	6261242	619800	6261234	46	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	12:39:57	3300	BP23MVEXP-ENV-DC-076			Camera	59	619844	6261242	619800	6261234	44	8	45	-100		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	12:40:04	3301	BP23MVEXP-ENV-DC-076			Camera	59	619844	6261242	619800	6261234	44	8	44	-100		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	12:40:19	3302	BP23MVEXP-ENV-DC-076			Camera	59	619843	6261241	619800	6261234	43	7	43	-99		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	12:40:41	3303	BP23MVEXP-ENV-DC-076			Camera	59	619841	6261239	619800	6261234	41	5	42	-97		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	12:41:04	3304	BP23MVEXP-ENV-DC-076			Camera	59	619840	6261238	619800	6261234	40	4	40	-96		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	12:41:15	3305	BP23MVEXP-ENV-DC-076			Camera	59	619840	6261238	619800	6261234	40	4	40	-96		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	12:41:22	3306	BP23MVEXP-ENV-DC-076			Camera	59	619839	6261238	619800	6261234	39	4	39	-96		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	12:42:16	3307	BP23MVEXP-ENV-DC-076			Camera	59	619836	6261238	619800	6261234	36	4	36	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	12:42:53	3308	BP23MVEXP-ENV-DC-076			Camera	59	619832	6261238	619800	6261234	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	12:43:03	3309	BP23MVEXP-ENV-DC-076			Camera	59	619831	6261238	619800	6261234	31	4	32	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	12:43:09	3310	BP23MVEXP-ENV-DC-076			Camera	59	619831	6261239	619800	6261234	31	5	31	-99		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	12:43:16	3311	BP23MVEXP-ENV-DC-076			Camera	59	619830	6261238	619800	6261234	30	4	30	-98		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	12:43:43	3312	BP23MVEXP-ENV-DC-076			Camera	59	619827	6261238	619800	6261234	27	4	27	-98		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	12:44:00	3313	BP23MVEXP-ENV-DC-076			Camera	59	619825	6261238	619800	6261234	25	4	25	-99		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	12:44:22	3314	BP23MVEXP-ENV-DC-076			Camera	59	619823	6261237	619800	6261234	23	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	12:44:33	3315	BP23MVEXP-ENV-DC-076			Camera	59	619822	6261237	619800	6261234	22	3	22	-97		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	12:45:13	3316	BP23MVEXP-ENV-DC-076			Camera	59	619817	6261236	619800	6261234	17	2	18	-95		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	12:45:31	3317	BP23MVEXP-ENV-DC-076			Camera	59	619816	6261235	619800	6261234	16	1	16	-94		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	12:45:37	3318	BP23MVEXP-ENV-DC-076			Camera	59	619815	6261235	619800	6261234	15	1	15	-94		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	12:46:27	3319	BP23MVEXP-ENV-DC-076			Camera	59	619811	6261234	619800	6261234	11	0	11	-91		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	12:46:38	3320	BP23MVEXP-ENV-DC-076			Camera	59	619810	6261234	619800	6261234	10	0	10	-91		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	12:47:11	3321	BP23MVEXP-ENV-DC-076			Camera	59	619807	6261233	619800	6261234	7	-1	7	-85		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	12:47:20	3322	BP23MVEXP-ENV-DC-076			Camera	59	619805	6261233	619800	6261234	5	-1	5	-83		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	12:47:45	3323	BP23MVEXP-ENV-DC-076			Camera	59	619803	6261233	619800	6261234	3	-1	3	-66		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	12:47:51	3324	BP23MVEXP-ENV-DC-076			Camera	59	619802	6261233	619800	6261234	2	-1	2	-59		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	12:48:03	3325	BP23MVEXP-ENV-DC-076			Camera	59	619801	6261233	619800	6261234	1	-1	1	-31		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	12:48:18	3326	BP23MVEXP-ENV-DC-076			Camera	59	619800	6261232	619800	6261234	0	-2	2	18		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	12:48:25	3327	BP23MVEXP-ENV-DC-076			Camera	59	619799	6261232	619800	6261234	-1	-2	2	32		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	12:48:41	3328	BP23MVEXP-ENV-DC-076			Camera	59	619797	6261232	619800	6261234	-3	-2	4	51		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	12:49:07	3329	BP23MVEXP-ENV-DC-076			Camera	59	619795	6261231	619800	6261234	-5	-3	6	65		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
13-Jul-2023	12:50:01	3330	BP23MVEXP-ENV-DC-076			Camera	59	619789	6261230	619800	6261234	-11	-4	12	71		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
13-Jul-2023	12:50:17	3331	BP23MVEXP-ENV-DC-076			Camera	59	619787	6261230	619800	6261234	-13	-4	13	71		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
13-Jul-2023	12:53:02	3332	BP23MVEXP-ENV-DC-076			Camera	59	619770	6261227	619800	6261234	-30	-7	30	77		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
13-Jul-2023	12:56:08	3333	BP23MVEXP-ENV-DC-076			Camera	59	619752	6261224	619800	6261234	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
13-Jul-2023	12:58:52	3334	BP23MVEXP-ENV-DC-076			Camera	59	619751	6261223	619800	6261234	-49	-11	50	78		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
13-Jul-2023	14:52:21	3335	BP23MVEXP-ENV-DC-077			Camera	61	620309	6257305	620314	6257253	-5	52	52	175		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	14:54:25	3336	BP23MVEXP-ENV-DC-077			Camera	61	620309	6257304	620314	6257253	-5	51	51	175		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	14:55:02	3337	BP23MVEXP-ENV-DC-077			Camera	61	620310	6257301	620314	6257253	-4	48	48	175		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	14:55:18	3338	BP23MVEXP-ENV-DC-077			Camera	61	620311	6257299	620314	6257253	-3	46	47	176		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	14:55:44	3339	BP23MVEXP-ENV-DC-077			Camera	61	620312	6257297	620314	6257253	-2	44	44	177		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	14:56:48	3340	BP23MVEXP-ENV-DC-077			Camera	61	620312	6257290	620314	6257253	-2	37	37	176		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	14:56:58	3341	BP23MVEXP-ENV-DC-077			Camera	61	620311	6257289	620314	6257253	-3	36	36	176		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	14:58:47	3342	BP23MVEXP-ENV-DC-077			Camera	61	620312	6257278	620314	6257253	-2	25	25	176		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	14:59:23	3343	BP23MVEXP-ENV-DC-077			Camera	61	620313	6257275	620314	6257253	-1	22	22	178		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	14:59:38	3344	BP23MVEXP-ENV-DC-077			Camera	61	620313	6257273	620314	6257253	-1	20	20	179		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	15:01:40	3345	BP23MVEXP-ENV-DC-077			Camera	61	620315	6257261	620314	6257253	1	8	8	-170		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	15:01:51	3346	BP23MVEXP-ENV-DC-077			Camera	61	620315	6257259	620314	6257253	1	6	7	-167		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	15:02:02	3347	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257258	620314	6257253	2	5	5	-163		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	15:02:13	3348	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257257	620314	6257253	2	4	5	-157		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	15:02:25	3349	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257256	620314	6257253	2	3	4	-148		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	15:02:31	3350	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257255	620314	6257253	2	2	3	-139		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	15:02:38	3351	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257254	620314	6257253	2	1	2	-125		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	15:02:45	3352	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257254	620314	6257253	2	1	2	-113		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	15:02:53	3353	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257253	620314	6257253	2	0	2	-88		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	15:03:04	3354	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257252	620314	6257253	2	-1	3	-63		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	15:03:16	3355	BP23MVEXP-ENV-DC-077			Camera	61	620317	6257251	620314	6257253	3	-2	4	-47		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	15:03:42	3356	BP23MVEXP-ENV-DC-077			Camera	61	620317	6257248	620314	6257253	3	-5	6	-31		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	15:04:27	3357	BP23MVEXP-ENV-DC-077			Camera	61	620318	6257243	620314	6257253	4	-10	10	-21		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	15:04:37	3358	BP23MVEXP-ENV-DC-077			Camera	61	620318	6257242	620314	6257253	4	-11	11	-20		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	15:06:27	3359	BP23MVEXP-ENV-DC-077			Camera	61	620319	6257231	620314	6257253	5	-22	22	-14		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	15:08:35	3360	BP23MVEXP-ENV-DC-077			Camera	61	620321	6257219	620314	6257253	7	-34	35	-12		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	15:24:37	3361	BP23MVEXP-ENV-DC-077			Camera	61	620266	6257248	620314	6257253	-48	-5	49	84		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	15:25:17	3362	BP23MVEXP-ENV-DC-077			Camera	61	620269	6257249	620314	6257253	-45	-4	46	85		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	15:26:46	3363	BP23MVEXP-ENV-DC-077			Camera	61	620278	6257251	620314	6257253	-36	-2	36	86		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	15:28:11	3364	BP23MVEXP-ENV-DC-077			Camera	61	620286	6257252	620314	6257253	-28	-1	28	87		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	15:28:18	3365	BP23MVEXP-ENV-DC-077			Camera	61	620287	6257252	620314	6257253	-27	-1	27	87		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	15:29:24	3366	BP23MVEXP-ENV-DC-077			Camera	61	620294	6257252	620314	6257253	-20	-1	20	88		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	15:31:06	3367	BP23MVEXP-ENV-DC-077			Camera	61	620304	6257254	620314	6257253	-10	1	10	95		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	15:32:09	3368	BP23MVEXP-ENV-DC-077			Camera	61	620310	6257255	620314	6257253	-4	2	4	121		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	15:33:08	3369	BP23MVEXP-ENV-DC-077			Camera	61	620316	6257257	620314	6257253	2	4	4	-150		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	15:33:22	3370	BP23MVEXP-ENV-DC-077			Camera	61	620318	6257257	620314	6257253	4	4	5	-138		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	15:34:08	3371	BP23MVEXP-ENV-DC-077			Camera	61	620322	6257257	620314	6257253	8	4	9	-117		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	15:35:01	3372	BP23MVEXP-ENV-DC-077			Camera	61	620327	6257258	620314	6257253	13	5	14	-111		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	15:35:57	3373	BP23MVEXP-ENV-DC-077			Camera	61	620333	6257259	620314	6257253	19	6	20	-109		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	15:36:37	3374	BP23MVEXP-ENV-DC-077			Camera	61	620337	6257261	620314	6257253	23	8	24	-108		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	15:37:41	3375	BP23MVEXP-ENV-DC-077			Camera	61	620344	6257261	620314	6257253	30	8	31	-105		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	15:38:12	3376	BP23MVEXP-ENV-DC-077			Camera	61	620347	6257262	620314	6257253	33	9	34	-105		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	15:39:29	3377	BP23MVEXP-ENV-DC-077			Camera	61	620354	6257263	620314	6257253	40	10	42	-104		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	15:39:55	3378	BP23MVEXP-ENV-DC-077			Camera	61	620357	6257264	620314	6257253	43	11	45	-104		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	15:40:40	3379	BP23MVEXP-ENV-DC-077			Camera	61	620366	6257265	620314	6257253	52	12	53	-103		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	18:20:38	3381	BP23MVEXP-ENV-DC-078			Camera	64	620864	6253292	620873	6253243	-9	49	49	170		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	18:22:58	3382	BP23MVEXP-ENV-DC-078			Camera	64	620865	6253290	620873	6253243	-8	47	48	171		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	18:23:50	3383	BP23MVEXP-ENV-DC-078			Camera	64	620867	6253285	620873	6253243	-6	42	43	172		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	18:24:05	3384	BP23MVEXP-ENV-DC-078			Camera	64	620867	6253283	620873	6253243	-6	40	41	171		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	18:24:50	3385	BP23MVEXP-ENV-DC-078			Camera	64	620868	6253279	620873	6253243	-5	36	36	171		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	18:25:36	3386	BP23MVEXP-ENV-DC-078			Camera	64	620868	6253274	620873	6253243	-5	31	31	171		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	18:25:59	3387	BP23MVEXP-ENV-DC-078			Camera	65	620869	6253272	620873	6253243	-4	29	29	172		(Raw Nav, Kongsberg 14208, img#7) (B)
13-Jul-2023	18:26:49	3387	BP23MVEXP-ENV-DC-078			Camera	65	620870	6253267	620873	6253243	-3	24	24	172		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	18:27:10	3388	BP23MVEXP-ENV-DC-078			Camera	64	620870	6253265	620873	6253243	-3	22	22	173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	18:28:10	3389	BP23MVEXP-ENV-DC-078			Camera	64	620871	6253258	620873	6253243	-2	15	16	173		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	18:28:26	3390	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253257	620873	6253243	-1	14	14	174		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	18:28:37	3391	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253256	620873	6253243	-1	13	13	174		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	18:28:45	3392	BP23MVEXP-ENV-DC-078			Camera	64	620871	6253255	620873	6253243	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	18:28:53	3393	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253254	620873	6253243	-1	11	11	175		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	18:29:02	3394	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253253	620873	6253243	0	10	10	177		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	18:29:35	3395	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253250	620873	6253243	0	7	7	179		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	18:30:00	3396	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253247	620873	6253243	0	4	4	-176		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	18:30:07	3397	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253246	620873	6253243	0	3	3	-175		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	18:30:14	3398	BP23MVEXP-ENV-DC-078			Camera	65	620873	6253245	620873	6253243	0	2	2	-172		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	18:30:25	3399	BP23MVEXP-ENV-DC-078			Camera	65	620874	6253245	620873	6253243	1	2	2	-161		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	18:30:33	3400	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253244	620873	6253243	1	1	1	-140		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	18:31:08	3401	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253241	620873	6253243	1	-2	3	-27		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	18:31:14	3402	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253240	620873	6253243	1	-3	3	-24		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	18:31:53	3403	BP23MVEXP-ENV-DC-078			Camera	64	620875	6253236	620873	6253243	2	-7	8	-18		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	18:33:06	3404	BP23MVEXP-ENV-DC-078			Camera	64	620877	6253229	620873	6253243	4	-15	15	-14		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	18:34:12	3405	BP23MVEXP-ENV-DC-078			Camera	65	620878	6253222	620873	6253243	5	-21	22	-13		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	18:41:27	3406	BP23MVEXP-ENV-DC-078			Camera	64	620874	6253199	620873	6253243	1	-44	44	-2		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	18:53:00	3407	BP23MVEXP-ENV-DC-078			Camera	64	620824	6253235	620873	6253243	-49	-8	50	80		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
13-Jul-2023	18:53:51	3408	BP23MVEXP-ENV-DC-078			Camera	64	620828	6253236	620873	6253243	-45	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	18:54:19	3409	BP23MVEXP-ENV-DC-078			Camera	65	620831	6253237	620873	6253243	-42	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	18:54:49	3410	BP23MVEXP-ENV-DC-078			Camera	64	620834	6253237	620873	6253243	-39	-6	39	82		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	18:56:09	3411	BP23MVEXP-ENV-DC-078			Camera	64	620843	6253238	620873	6253243	-30	-5	30	80		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	18:56:35	3412	BP23MVEXP-ENV-DC-078			Camera	64	620846	6253238	620873	6253243	-27	-5	27	80		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	18:57:30	3413	BP23MVEXP-ENV-DC-078			Camera	64	620853	6253240	620873	6253243	-20	-3	20	80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	18:58:00	3414	BP23MVEXP-ENV-DC-078			Camera	64	620856	6253240	620873	6253243	-17	-3	18	81		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	18:59:00	3415	BP23MVEXP-ENV-DC-078			Camera	64	620862	6253242	620873	6253243	-11	-1	11	85		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	19:00:06	3416	BP23MVEXP-ENV-DC-078			Camera	64	620868	6253243	620873	6253243	-5	0	5	92		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	19:00:41	3417	BP23MVEXP-ENV-DC-078			Camera	64	620872	6253244	620873	6253243	-1	1	1	130		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	19:00:49	3418	BP23MVEXP-ENV-DC-078			Camera	64	620873	6253244	620873	6253243	0	1	1	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	19:01:09	3419	BP23MVEXP-ENV-DC-078			Camera	64	620875	6253244	620873	6253243	2	1	2	-122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	19:01:43	3420	BP23MVEXP-ENV-DC-078			Camera	64	620879	6253245	620873	6253243	6	2	6	-107		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	19:02:44	3421	BP23MVEXP-ENV-DC-078			Camera	64	620885	6253246	620873	6253243	12	3	12	-102		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	19:03:53	3422	BP23MVEXP-ENV-DC-078			Camera	64	620892	6253247	620873	6253243	19	4	19	-102		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	19:04:34	3423	BP23MVEXP-ENV-DC-078			Camera	64	620895	6253247	620873	6253243	22	4	23	-101		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	19:05:41	3424	BP23MVEXP-ENV-DC-078			Camera	64	620902	6253249	620873	6253243	29	6	29	-101		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	19:06:23	3425	BP23MVEXP-ENV-DC-078			Camera	64	620906	6253250	620873	6253243	33	7	34	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	19:07:31	3426	BP23MVEXP-ENV-DC-078			Camera	64	620913	6253251	620873	6253243	40	8	41	-101		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	19:08:17	3427	BP23MVEXP-ENV-DC-078			Camera	65	620918	6253252	620873	6253243	45	9	46	-101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	19:08:44	3428	BP23MVEXP-ENV-DC-078			Camera	65	620921	6253253	620873	6253243	48	10	49	-101		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023		3429A	BP23MVEXP-ENV-DC-078							620873	6253243						Photo no fix
13-Jul-2023	20:58:01	3429	BP23MVEXP-ENV-DC-079			Camera	62	621420	6249328	621428	6249280	-8	48	49	171		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
13-Jul-2023	21:00:21	3430	BP23MVEXP-ENV-DC-079			Camera	62	621423	6249322	621428	6249280	-5	42	43	173		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
13-Jul-2023	21:01:00	3431	BP23MVEXP-ENV-DC-079			Camera	62	621423	6249318	621428	6249280	-5	38	38	173		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
13-Jul-2023	21:01:23	3432	BP23MVEXP-ENV-DC-079			Camera	62	621424	6249315	621428	6249280	-4	35	36	173		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
13-Jul-2023	21:01:51	3433	BP23MVEXP-ENV-DC-079			Camera	62	621424	6249312	621428	6249280	-4	32	33	174		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
13-Jul-2023	21:03:33	3434	BP23MVEXP-ENV-DC-079			Camera	62	621426	6249302	621428	6249280	-2	23	23	175		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
13-Jul-2023	21:04:39	3435	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249300	621428	6249280	3	20	20	-171		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
13-Jul-2023	21:05:32	3436	BP23MVEXP-ENV-DC-079			Camera	62	621428	6249291	621428	6249280	0	11	11	-178		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
13-Jul-2023	21:06:35	3437	BP23MVEXP-ENV-DC-079			Camera	62	621429	6249284	621428	6249280	1	4	4	-160		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
13-Jul-2023	21:06:43	3438	BP23MVEXP-ENV-DC-079			Camera	62	621429	6249283	621428	6249280	1	3	4	-155		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
13-Jul-2023	21:06:57	3439	BP23MVEXP-ENV-DC-079			Camera	62	621430	6249282	621428	6249280	2	2	2	-135		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
13-Jul-2023	21:08:09	3440	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249274	621428	6249280	3	-6	6	-26		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
13-Jul-2023	21:08:17	3441	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249274	621428	6249280	3	-6	7	-24		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
13-Jul-2023	21:09:06	3442	BP23MVEXP-ENV-DC-079			Camera	62	621432	6249268	621428	6249280	4	-12	12	-19		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
13-Jul-2023	21:09:15	3443	BP23MVEXP-ENV-DC-079			Camera	62	621432	6249268	621428	6249280	4	-13	13	-18		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
13-Jul-2023	21:09:56	3444	BP23MVEXP-ENV-DC-079			Camera	62	621433	6249263	621428	6249280	5	-17	17	-17		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
13-Jul-2023	21:10:24	3445	BP23MVEXP-ENV-DC-079			Camera	62	621433	6249261	621428	6249280	5	-19	20	-16		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
13-Jul-2023	21:11:03	3446	BP23MVEXP-ENV-DC-079			Camera	62	621434	6249257	621428	6249280	6	-23	24	-15		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
13-Jul-2023	21:11:27	3447	BP23MVEXP-ENV-DC-079			Camera	62	621435	6249254	621428	6249280	7	-26	27	-14		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
13-Jul-2023	21:11:34	3448	BP23MVEXP-ENV-DC-079			Camera	62	621435	6249253	621428	6249280	7	-27	27	-14		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
13-Jul-2023	21:12:42	3449	BP23MVEXP-ENV-DC-079			Camera	62	621436	6249246	621428	6249280	8	-34	35	-14		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
13-Jul-2023	21:12:56	3450	BP23MVEXP-ENV-DC-079			Camera	62	621436	6249245	621428	6249280	8	-35	36	-13		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
13-Jul-2023	21:13:38	3451	BP23MVEXP-ENV-DC-079			Camera	62	621437	6249241	621428	6249280	9	-39	40	-13		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
13-Jul-2023	21:14:55	3452	BP23MVEXP-ENV-DC-079			Camera	62	621438	6249233	621428	6249280	10	-47	49	-12		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
13-Jul-2023	21:23:38	3453	BP23MVEXP-ENV-DC-079			Camera	62	621400	6249256	621428	6249280	-28	-24	37	50		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
13-Jul-2023	21:29:00	3454	BP23MVEXP-ENV-DC-079			Camera	62	621377	6249271	621428	6249280	-52	-9	52	81		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
13-Jul-2023	21:29:08	3455	BP23MVEXP-ENV-DC-079			Camera	62	621377	6249271	621428	6249280	-51	-9	52	80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
13-Jul-2023	21:29:27	3456	BP23MVEXP-ENV-DC-079			Camera	62	621378	6249271	621428	6249280	-50	-9	51	80		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Jul-2023	21:29:42	3457	BP23MVEXP-ENV-DC-079			Camera	62	621379	6249271	621428	6249280	-49	-9	49	80		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
13-Jul-2023	21:29:52	3458	BP23MVEXP-ENV-DC-079			Camera	62	621380	6249271	621428	6249280	-48	-9	49	80		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
13-Jul-2023	21:30:05	3459	BP23MVEXP-ENV-DC-079			Camera	62	621381	6249271	621428	6249280	-47	-9	48	79		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
13-Jul-2023	21:30:42	3460	BP23MVEXP-ENV-DC-079			Camera	62	621385	6249272	621428	6249280	-43	-8	44	79		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
13-Jul-2023	21:31:36	3461	BP23MVEXP-ENV-DC-079			Camera	62	621391	6249272	621428	6249280	-37	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
13-Jul-2023	21:31:51	3462	BP23MVEXP-ENV-DC-079			Camera	62	621393	6249272	621428	6249280	-35	-8	36	78		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
13-Jul-2023	21:32:35	3463	BP23MVEXP-ENV-DC-079			Camera	62	621399	6249273	621428	6249280	-29	-7	30	77		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
13-Jul-2023	21:33:21	3464	BP23MVEXP-ENV-DC-079			Camera	62	621403	6249275	621428	6249280	-25	-5	25	79		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
13-Jul-2023	21:33:50	3465	BP23MVEXP-ENV-DC-079			Camera	62	621406	6249276	621428	6249280	-22	-4	22	80		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
13-Jul-2023	21:34:36	3466	BP23MVEXP-ENV-DC-079			Camera	62	621410	6249277	621428	6249280	-18	-3	18	79		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
13-Jul-2023	21:35:21	3467	BP23MVEXP-ENV-DC-079			Camera	62	621415	6249277	621428	6249280	-13	-3	13	78		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
13-Jul-2023	21:35:49	3468	BP23MVEXP-ENV-DC-079			Camera	62	621418	6249278	621428	6249280	-10	-2	10	77		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
13-Jul-2023	21:36:06	3469	BP23MVEXP-ENV-DC-079			Camera	62	621420	6249278	621428	6249280	-8	-2	8	74		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
13-Jul-2023	21:37:02	3470	BP23MVEXP-ENV-DC-079			Camera	62	621425	6249279	621428	6249280	-3	-1	3	73		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
13-Jul-2023	21:37:08	3471	BP23MVEXP-ENV-DC-079			Camera	62	621426	6249279	621428	6249280	-2	-1	2	67		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
13-Jul-2023	21:37:20	3472	BP23MVEXP-ENV-DC-079			Camera	62	621427	6249279	621428	6249280	-1	-1	1	56		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
13-Jul-2023	21:37:28	3473	BP23MVEXP-ENV-DC-079			Camera	62	621428	6249280	621428	6249280	0	0	0	28		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
13-Jul-2023	21:37:35	3474	BP23MVEXP-ENV-DC-079			Camera	62	621428	6249280	621428	6249280	0	0	0	-53		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
13-Jul-2023	21:37:47	3475	BP23MVEXP-ENV-DC-079			Camera	62	621429	6249280	621428	6249280	1	0	1	-87		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
13-Jul-2023	21:38:00	3476	BP23MVEXP-ENV-DC-079			Camera	62	621431	6249280	621428	6249280	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
13-Jul-2023	21:38:12	3477	BP23MVEXP-ENV-DC-079			Camera	62	621432	6249280	621428	6249280	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
13-Jul-2023	21:39:48	3478	BP23MVEXP-ENV-DC-079			Camera	62	621442	6249283	621428	6249280	14	3	14	-101		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
13-Jul-2023	21:40:18	3479	BP23MVEXP-ENV-DC-079			Camera	62	621445	6249283	621428	6249280	17	3	17	-100		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
13-Jul-2023	21:40:45	3480	BP23MVEXP-ENV-DC-079			Camera	62	621448	6249284	621428	6249280	20	4	20	-101		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
13-Jul-2023	21:42:24	3481	BP23MVEXP-ENV-DC-079			Camera	62	621458	6249285	621428	6249280	30	5	30	-100		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
13-Jul-2023	21:43:32	3482	BP23MVEXP-ENV-DC-079			Camera	62	621464	6249286	621428	6249280	36	6	37	-100		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
13-Jul-2023	21:43:43	3483	BP23MVEXP-ENV-DC-079			Camera	62	621466	6249287	621428	6249280	38	7	38	-100		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
13-Jul-2023	21:45:27	3484	BP23MVEXP-ENV-DC-079			Camera	62	621476	6249288	621428	6249280	48	8	48	-100		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
14-Jul-2023	00:37:56	3485	BP23MVEXP-ENV-DC-080			Camera	64	621909	6245393	621960	6245400	-51	-7	52	83		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	00:39:08	3486	BP23MVEXP-ENV-DC-080			Camera	64	621910	6245394	621960	6245400	-50	-6	50	83		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	00:39:49	3487	BP23MVEXP-ENV-DC-080			Camera	64	621913	6245394	621960	6245400	-47	-6	47	83		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	00:40:59	3488	BP23MVEXP-ENV-DC-080			Camera	64	621922	6245395	621960	6245400	-38	-5	39	83		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	00:41:22	3489	BP23MVEXP-ENV-DC-080			Camera	64	621923	6245396	621960	6245400	-37	-4	37	83		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	00:41:32	3490	BP23MVEXP-ENV-DC-080			Camera	64	621924	6245396	621960	6245400	-36	-4	36	83		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	00:42:09	3491	BP23MVEXP-ENV-DC-080			Camera	64	621929	6245396	621960	6245400	-31	-4	32	83		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	00:42:56	3492	BP23MVEXP-ENV-DC-080			Camera	64	621933	6245397	621960	6245400	-27	-3	27	83		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	00:44:54	3493	BP23MVEXP-ENV-DC-080			Camera	64	621945	6245399	621960	6245400	-15	-1	15	85		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	00:45:20	3494	BP23MVEXP-ENV-DC-080			Camera	64	621948	6245399	621960	6245400	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	00:46:01	3495	BP23MVEXP-ENV-DC-080			Camera	64	621952	6245400	621960	6245400	-8	0	8	90		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	00:47:17	3496	BP23MVEXP-ENV-DC-080			Camera	64	621960	6245401	621960	6245400	0	1	1	-164		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	00:47:28	3497	BP23MVEXP-ENV-DC-080			Camera	64	621961	6245401	621960	6245400	1	1	2	-128		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	00:49:07	3498	BP23MVEXP-ENV-DC-080			Camera	64	621972	6245403	621960	6245400	12	3	12	-106		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	00:49:45	3499	BP23MVEXP-ENV-DC-080			Camera	64	621975	6245404	621960	6245400	15	4	16	-103		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	00:50:02	3500	BP23MVEXP-ENV-DC-080			Camera	64	621977	6245404	621960	6245400	17	4	18	-103		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	00:50:46	3501	BP23MVEXP-ENV-DC-080			Camera	64	621981	6245405	621960	6245400	21	5	22	-103		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	00:51:27	3502	BP23MVEXP-ENV-DC-080			Camera	64	621985	6245405	621960	6245400	25	5	26	-102		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	00:51:55	3503	BP23MVEXP-ENV-DC-080			Camera	64	621988	6245406	621960	6245400	28	6	29	-102		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	00:52:28	3504	BP23MVEXP-ENV-DC-080			Camera	64	621992	6245406	621960	6245400	32	6	33	-101		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	00:52:52	3505	BP23MVEXP-ENV-DC-080			Camera	64	621995	6245407	621960	6245400	35	7	35	-101		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	00:55:05	3506	BP23MVEXP-ENV-DC-080			Camera	64	622008	6245409	621960	6245400	48	9	48	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	00:55:16	3507	BP23MVEXP-ENV-DC-080			Camera	64	622008	6245409	621960	6245400	49	9	49	-100		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	01:07:47	3508	BP23MVEXP-ENV-DC-080			Camera	64	621970	6245350	621960	6245400	10	-50	51	-11		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	01:09:02	3509	BP23MVEXP-ENV-DC-080			Camera	64	621968	6245347	621960	6245400	8	-53	53	-8		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	01:10:16	3510	BP23MVEXP-ENV-DC-080			Camera	64	621968	6245353	621960	6245400	8	-47	48	-9		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	01:11:37	3511	BP23MVEXP-ENV-DC-080			Camera	64	621966	6245357	621960	6245400	6	-43	43	-9		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	01:12:16	3512	BP23MVEXP-ENV-DC-080			Camera	64	621966	6245360	621960	6245400	6	-40	41	-9		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	01:13:32	3513	BP23MVEXP-ENV-DC-080			Camera	64	621965	6245363	621960	6245400	5	-37	37	-8		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	01:14:08	3514	BP23MVEXP-ENV-DC-080			Camera	64	621965	6245365	621960	6245400	5	-35	35	-8		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	01:15:16	3515	BP23MVEXP-ENV-DC-080			Camera	64	621964	6245368	621960	6245400	4	-32	32	-7		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	01:16:28	3516	BP23MVEXP-ENV-DC-080			Camera	64	621963	6245372	621960	6245400	3	-28	28	-7		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	01:17:07	3517	BP23MVEXP-ENV-DC-080			Camera	64	621963	6245376	621960	6245400	3	-24	24	-6		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	01:17:37	3518	BP23MVEXP-ENV-DC-080			Camera	64	621962	6245379	621960	6245400	2	-21	21	-6		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	01:18:02	3519	BP23MVEXP-ENV-DC-080			Camera	64	621962	6245382	621960	6245400	2	-18	19	-5		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	01:18:36	3520	BP23MVEXP-ENV-DC-080			Camera	64	621961	6245385	621960	6245400	1	-15	15	-4		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	01:20:24	3521	BP23MVEXP-ENV-DC-080			Camera	64	621959	6245396	621960	6245400	-1	-4	4	21		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	01:21:09	3522	BP23MVEXP-ENV-DC-080			Camera	64	621958	6245401	621960	6245400	-2	1	2	112		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	01:21:46	3523	BP23MVEXP-ENV-DC-080			Camera	64	621958	6245404	621960	6245400	-2	4	5	151		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	01:22:28	3524	BP23MVEXP-ENV-DC-080			Camera	64	621957	6245409	621960	6245400	-3	9	10	161		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	01:22:37	3525	BP23MVEXP-ENV-DC-080			Camera	64	621957	6245410	621960	6245400	-3	10	10	161		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	01:23:55	3526	BP23MVEXP-ENV-DC-080			Camera	64	621956	6245416	621960	6245400	-4	16	16	164		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	01:25:46	3527	BP23MVEXP-ENV-DC-080			Camera	64	621954	6245423	621960	6245400	-6	23	24	165		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	01:26:31	3528	BP23MVEXP-ENV-DC-080			Camera	64	621953	6245428	621960	6245400	-7	28	29	165		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	01:27:51	3529	BP23MVEXP-ENV-DC-080			Camera	64	621951	6245435	621960	6245400	-9	35	36	166		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	01:28:35	3530	BP23MVEXP-ENV-DC-080			Camera	64	621951	6245440	621960	6245400	-9	40	41	167		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	01:29:56	3531	BP23MVEXP-ENV-DC-080			Camera	64	621949	6245448	621960	6245400	-11	48	49	167		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	03:21:28	3532	BP23MVEXP-ENV-DC-081			Camera	67	622515	6241397	622506	6241445	9	-48	49	-11		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	03:23:49	3533	BP23MVEXP-ENV-DC-081			Camera	67	622514	6241404	622506	6241445	8	-42	42	-11		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	03:24:21	3534	BP23MVEXP-ENV-DC-081			Camera	67	622513	6241407	622506	6241445	7	-38	39	-10		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	03:24:51	3535	BP23MVEXP-ENV-DC-081			Camera	67	622511	6241410	622506	6241445	5	-35	35	-9		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	03:25:30	3536	BP23MVEXP-ENV-DC-081			Camera	67	622510	6241414	622506	6241445	4	-31	31	-8		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	03:26:02	3537	BP23MVEXP-ENV-DC-081			Camera	67	622510	6241418	622506	6241445	4	-27	28	-8		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	03:26:09	3538	BP23MVEXP-ENV-DC-081			Camera	67	622510	6241418	622506	6241445	4	-27	27	-8		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	03:26:35	3539	BP23MVEXP-ENV-DC-081			Camera	67	622509	6241421	622506	6241445	3	-24	24	-8		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	03:27:08	3540	BP23MVEXP-ENV-DC-081			Camera	67	622509	6241424	622506	6241445	3	-21	21	-7		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	03:27:41	3541	BP23MVEXP-ENV-DC-081			Camera	67	622508	6241428	622506	6241445	2	-17	17	-6		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	03:27:50	3542	BP23MVEXP-ENV-DC-081			Camera	67	622507	6241429	622506	6241445	1	-16	16	-5		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	03:28:00	3543	BP23MVEXP-ENV-DC-081			Camera	67	622507	6241430	622506	6241445	1	-15	15	-5		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	03:28:29	3544	BP23MVEXP-ENV-DC-081			Camera	67	622507	6241432	622506	6241445	1	-13	13	-4		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	03:28:56	3545	BP23MVEXP-ENV-DC-081			Camera	67	622506	6241435	622506	6241445	0	-10	10	-2		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	03:29:14	3546	BP23MVEXP-ENV-DC-081			Camera	67	622506	6241437	622506	6241445	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	03:29:35	3547	BP23MVEXP-ENV-DC-081			Camera	67	622506	6241439	622506	6241445	0	-6	6	3		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	03:29:58	3548	BP23MVEXP-ENV-DC-081			Camera	67	622505	6241441	622506	6241445	-1	-4	4	11		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	03:30:28	3549	BP23MVEXP-ENV-DC-081			Camera	67	622505	6241444	622506	6241445	-1	-1	1	57		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	03:31:10	3550	BP23MVEXP-ENV-DC-081			Camera	67	622504	6241449	622506	6241445	-2	4	4	149		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	03:31:16	3551	BP23MVEXP-ENV-DC-081			Camera	67	622504	6241449	622506	6241445	-2	4	5	152		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	03:31:42	3552	BP23MVEXP-ENV-DC-081			Camera	67	622503	6241452	622506	6241445	-3	7	7	159		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	03:32:15	3553	BP23MVEXP-ENV-DC-081			Camera	67	622503	6241455	622506	6241445	-3	10	11	163		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	03:33:45	3554	BP23MVEXP-ENV-DC-081			Camera	67	622501	6241464	622506	6241445	-5	19	20	165		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	03:34:02	3555	BP23MVEXP-ENV-DC-081			Camera	67	622501	6241466	622506	6241445	-5	21	22	166		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	03:34:34	3556	BP23MVEXP-ENV-DC-081			Camera	67	622500	6241469	622506	6241445	-6	24	25	166		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	03:35:00	3557	BP23MVEXP-ENV-DC-081			Camera	67	622500	6241472	622506	6241445	-6	27	28	167		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	03:35:42	3558	BP23MVEXP-ENV-DC-081			Camera	67	622499	6241476	622506	6241445	-7	31	32	167		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	03:36:16	3559	BP23MVEXP-ENV-DC-081			Camera	67	622498	6241479	622506	6241445	-8	34	35	167		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	03:36:45	3560	BP23MVEXP-ENV-DC-081			Camera	67	622498	6241483	622506	6241445	-8	38	38	167		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	03:37:26	3561	BP23MVEXP-ENV-DC-081				67	622497	6241487	622506	6241445	-9	42	43	168		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A) Fix no photo
14-Jul-2023	03:37:47	3562	BP23MVEXP-ENV-DC-081			Camera	67	622496	6241489	622506	6241445	-10	44	45	168		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	03:37:55	3563	BP23MVEXP-ENV-DC-081			Camera	67	622496	6241489	622506	6241445	-10	44	45	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	03:53:12	3564	BP23MVEXP-ENV-DC-081			Camera	67	622551	6241453	622506	6241445	45	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	03:53:50	3565	BP23MVEXP-ENV-DC-081			Camera	67	622547	6241453	622506	6241445	41	8	41	-101		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	03:54:25	3566	BP23MVEXP-ENV-DC-081			Camera	67	622542	6241452	622506	6241445	37	7	37	-101		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	03:54:58	3567	BP23MVEXP-ENV-DC-081			Camera	67	622539	6241451	622506	6241445	33	6	33	-101		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	03:55:27	3568	BP23MVEXP-ENV-DC-081			Camera	67	622536	6241451	622506	6241445	30	6	30	-101		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	03:55:51	3569	BP23MVEXP-ENV-DC-081			Camera	67	622533	6241450	622506	6241445	27	5	28	-101		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	03:56:27	3570	BP23MVEXP-ENV-DC-081			Camera	67	622530	6241449	622506	6241445	24	4	24	-101		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	03:56:52	3571	BP23MVEXP-ENV-DC-081			Camera	67	622528	6241449	622506	6241445	22	4	22	-101		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	03:57:35	3572	BP23MVEXP-ENV-DC-081			Camera	68	622523	6241448.2	622506.0	6241445.0	-17	-3	18	260		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:58:14	3573	BP23MVEXP-ENV-DC-081			Camera	68	622519	6241447.2	622506.0	6241445.0	-13	-2	13	261		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:58:48	3574	BP23MVEXP-ENV-DC-081			Camera	68	622516	6241446.6	622506.0	6241445.0	-10	-2	10	261		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:59:16	3575	BP23MVEXP-ENV-DC-081			Camera	68	622514	6241445.9	622506.0	6241445.0	-8	-1	8	263		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	03:59:43	3576	BP23MVEXP-ENV-DC-081			Camera	68	622511	6241445.3	622506.0	6241445.0	-5	0	5	267		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:00:12	3577	BP23MVEXP-ENV-DC-081			Camera	68	622508	6241444.7	622506.0	6241445.0	-2	0	2	277		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:00:44	3578	BP23MVEXP-ENV-DC-081			Camera	68	622505	6241443.9	622506.0	6241445.0	1	1	2	49		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:01:10	3579	BP23MVEXP-ENV-DC-081			Camera	68	622502	6241443.3	622506.0	6241445.0	4	2	4	67		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:01:43	3580	BP23MVEXP-ENV-DC-081			Camera	68	622499	6241442.8	622506.0	6241445.0	7	2	7	73		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:02:11	3581	BP23MVEXP-ENV-DC-081			Camera	68	622496	6241442.4	622506.0	6241445.0	10	3	10	76		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:02:32	3582	BP23MVEXP-ENV-DC-081			Camera	68	622494	6241441.9	622506.0	6241445.0	12	3	13	76		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:02:51	3583	BP23MVEXP-ENV-DC-081			Camera	68	622492	6241441.4	622506.0	6241445.0	14	4	15	76		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:03:09	3584	BP23MVEXP-ENV-DC-081			Camera	68	622490	6241441.2	622506.0	6241445.0	16	4	17	77		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:03:28	3585	BP23MVEXP-ENV-DC-081			Camera	68	622488	6241440.7	622506.0	6241445.0	18	4	18	77		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:04:14	3586	BP23MVEXP-ENV-DC-081			Camera	68	622483	6241440.0	622506.0	6241445.0	23	5	23	78		(Raw Nav, Kongsberg 14208, Fix taken from ManualFix file) (B)
14-Jul-2023	04:05:00	3587	BP23MVEXP-ENV-DC-081			Camera	67	622479	6241439	622506	6241445	-27	-6	28	78		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
14-Jul-2023	04:05:33	3588	BP23MVEXP-ENV-DC-081			Camera	67	622475	6241438	622506	6241445	-31	-7	31	78		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
14-Jul-2023	04:05:50	3589	BP23MVEXP-ENV-DC-081			Camera	67	622473	6241438	622506	6241445	-33	-7	33	78		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
14-Jul-2023	04:06:21	3590A	BP23MVEXP-ENV-DC-081			Camera	68	622470	6241437	622506	6241445	-36	-8	37	77		(Raw Nav, Kongsberg 14208, img#59) (B)
14-Jul-2023	04:07:15	3590B	BP23MVEXP-ENV-DC-081			Camera	68	622465	6241436	622506	6241445	-41	-9	42	78		(Raw Nav, Kongsberg 14208, img#60) (B)
14-Jul-2023	04:07:15	3591	BP23MVEXP-ENV-DC-081														(Raw Nav, Kongsberg 14208, img#60) (B) Photo no fix
14-Jul-2023	05:50:19	3590C	BP23MVEXP-ENV-DC-082			Camera	64	623045	6237488	623038	6237536	7	-48	49	-8		(Raw Nav, Kongsberg 14208, img#61) (B) (T.A)
14-Jul-2023	05:51:37	3591	BP23MVEXP-ENV-DC-082			Camera	64	623045	6237488	623038	6237536	7	-48	48	-8		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	05:53:28	3592	BP23MVEXP-ENV-DC-082			Camera	64	623045	6237489	623038	6237536	7	-47	48	-8		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	05:55:35	3593	BP23MVEXP-ENV-DC-082			Camera	64	623043	6237498	623038	6237536	5	-38	38	-7		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	05:55:56	3594	BP23MVEXP-ENV-DC-082			Camera	64	623042	6237500	623038	6237536	4	-36	36	-7		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	05:58:12	3595	BP23MVEXP-ENV-DC-082			Camera	64	623040	6237513	623038	6237536	2	-23	23	-6		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	05:59:14	3596	BP23MVEXP-ENV-DC-082			Camera	64	623040	6237520	623038	6237536	2	-16	16	-6		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	05:59:23	3597	BP23MVEXP-ENV-DC-082			Camera	64	623039	6237521	623038	6237536	1	-15	15	-4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	06:00:09	3598	BP23MVEXP-ENV-DC-082			Camera	64	623039	6237525	623038	6237536	1	-11	11	-4		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	06:00:54	3599	BP23MVEXP-ENV-DC-082			Camera	64	623038	6237529	623038	6237536	0	-7	7	-2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	06:01:22	3600	BP23MVEXP-ENV-DC-082			Camera	64	623037	6237533	623038	6237536	-1	-3	3	15		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	06:02:05	3601	BP23MVEXP-ENV-DC-082			Camera	64	623037	6237538	623038	6237536	-1	2	2	139		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	06:02:18	3602	BP23MVEXP-ENV-DC-082			Camera	64	623036	6237539	623038	6237536	-2	3	3	149		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	06:02:24	3603	BP23MVEXP-ENV-DC-082			Camera	64	623036	6237539	623038	6237536	-2	3	4	152		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	06:03:32	3604	BP23MVEXP-ENV-DC-082			Camera	64	623035	6237547	623038	6237536	-3	11	11	165		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	06:04:51	3605	BP23MVEXP-ENV-DC-082			Camera	64	623033	6237555	623038	6237536	-5	19	19	165		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	06:05:20	3606	BP23MVEXP-ENV-DC-082			Camera	64	623032	6237558	623038	6237536	-6	22	23	166		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	06:05:48	3607	BP23MVEXP-ENV-DC-082			Camera	64	623032	6237561	623038	6237536	-6	25	25	166		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	06:06:04	3608	BP23MVEXP-ENV-DC-082			Camera	64	623032	6237562	623038	6237536	-6	26	27	167		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	06:06:38	3609	BP23MVEXP-ENV-DC-082			Camera	64	623031	6237565	623038	6237536	-7	29	30	167		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	06:07:52	3610	BP23MVEXP-ENV-DC-082			Camera	64	623030	6237573	623038	6237536	-8	37	38	168		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	06:08:29	3611	BP23MVEXP-ENV-DC-082			Camera	64	623030	6237577	623038	6237536	-8	41	42	169		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	06:09:22	3612	BP23MVEXP-ENV-DC-082			Camera	64	623029	6237582	623038	6237536	-9	46	47	168		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	06:09:41	3613	BP23MVEXP-ENV-DC-082			Camera	64	623029	6237583	623038	6237536	-9	47	48	169		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	06:12:29	3614	BP23MVEXP-ENV-DC-082			Camera	64	623027	6237583	623038	6237536	-11	47	48	167		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	06:14:41	3615	BP23MVEXP-ENV-DC-082			Camera	64	623019	6237571	623038	6237536	-19	36	40	152		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	06:15:46	3616	BP23MVEXP-ENV-DC-082			Camera	64	623015	6237566	623038	6237536	-23	30	38	142		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	06:16:30	3617	BP23MVEXP-ENV-DC-082			Camera	64	623012	6237562	623038	6237536	-26	26	37	136		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	06:21:50	3618	BP23MVEXP-ENV-DC-082			Camera	64	622994	6237536	623038	6237536	-45	0	44	89		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	06:23:36	3619	BP23MVEXP-ENV-DC-082			Camera	64	622991	6237529	623038	6237536	-47	-7	48	82		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	06:24:15	3620	BP23MVEXP-ENV-DC-082			Camera	64	622994	6237530	623038	6237536	-44	-6	45	82		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	06:25:02	3621	BP23MVEXP-ENV-DC-082			Camera	64	622999	6237531	623038	6237536	-39	-5	40	82		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	06:25:46	3622	BP23MVEXP-ENV-DC-082			Camera	64	623004	6237531	623038	6237536	-34	-5	35	82		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	06:26:41	3623	BP23MVEXP-ENV-DC-082			Camera	64	623009	6237532	623038	6237536	-29	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	06:27:12	3624	BP23MVEXP-ENV-DC-082			Camera	64	623013	6237532	623038	6237536	-25	-4	26	82		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	06:28:07	3625	BP23MVEXP-ENV-DC-082			Camera	64	623018	6237534	623038	6237536	-20	-2	20	83		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	06:29:08	3626	BP23MVEXP-ENV-DC-082			Camera	64	623025	6237534	623038	6237536	-13	-2	13	83		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	06:29:45	3627	BP23MVEXP-ENV-DC-082			Camera	64	623028	6237535	623038	6237536	-10	-1	10	83		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	06:30:54	3628	BP23MVEXP-ENV-DC-082			Camera	64	623035	6237535	623038	6237536	-3	-1	3	78		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	06:31:15	3629	BP23MVEXP-ENV-DC-082			Camera	64	623037	6237536	623038	6237536	-1	0	1	62		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	06:31:34	3630	BP23MVEXP-ENV-DC-082			Camera	64	623039	6237536	623038	6237536	1	0	1	-94		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	06:31:59	3631	BP23MVEXP-ENV-DC-082			Camera	64	623042	6237537	623038	6237536	4	1	4	-102		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	06:33:02	3632	BP23MVEXP-ENV-DC-082			Camera	64	623048	6237538	623038	6237536	10	2	10	-99		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	06:33:35	3633	BP23MVEXP-ENV-DC-082			Camera	64	623051	6237538	623038	6237536	13	2	13	-99		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	06:34:42	3634	BP23MVEXP-ENV-DC-082			Camera	64	623057	6237539	623038	6237536	20	3	20	-99		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	06:35:22	3635	BP23MVEXP-ENV-DC-082			Camera	64	623062	6237540	623038	6237536	24	4	24	-99		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	06:35:38	3636	BP23MVEXP-ENV-DC-082			Camera	64	623064	6237540	623038	6237536	26	4	26	-98		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	06:35:44	3637	BP23MVEXP-ENV-DC-082			Camera	64	623064	6237540	623038	6237536	26	4	27	-98		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	06:36:13	3638	BP23MVEXP-ENV-DC-082			Camera	64	623067	6237540	623038	6237536	29	4	29	-99		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	06:37:35	3639	BP23MVEXP-ENV-DC-082			Camera	64	623076	6237542	623038	6237536	38	6	38	-99		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	06:37:52	3640	BP23MVEXP-ENV-DC-082			Camera	64	623077	6237542	623038	6237536	40	6	40	-99		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	06:38:03	3641	BP23MVEXP-ENV-DC-082			Camera	64	623079	6237543	623038	6237536	41	7	41	-99		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
14-Jul-2023	06:39:04	3642	BP23MVEXP-ENV-DC-082			Camera	64	623084	6237543	623038	6237536	46	7	47	-99		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
14-Jul-2023	08:50:33	3643	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233448	623635	6233497	7	-49	49	-8		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	08:51:50	3644	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233449	623635	6233497	7	-48	49	-8		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	08:52:17	3645	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233450	623635	6233497	7	-47	47	-8		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	08:52:32	3646	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233452	623635	6233497	6	-46	46	-8		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	08:52:55	3647	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233454	623635	6233497	6	-43	44	-8		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	08:53:08	3648	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233455	623635	6233497	6	-42	42	-8		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	08:53:30	3649	BP23MVEXP-ENV-DC-083			Camera	66	623641	6233457	623635	6233497	6	-40	40	-8		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	08:53:44	3650	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233459	623635	6233497	5	-38	39	-8		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	08:54:03	3651	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233461	623635	6233497	5	-36	37	-8		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	08:54:17	3652	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233462	623635	6233497	5	-35	35	-8		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	08:54:25	3653	BP23MVEXP-ENV-DC-083			Camera	66	623640	6233463	623635	6233497	5	-34	35	-8		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	08:54:54	3654	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233466	623635	6233497	4	-31	32	-7		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	08:55:27	3655	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233469	623635	6233497	4	-28	28	-7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	08:55:37	3656	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233470	623635	6233497	4	-27	27	-7		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	08:56:59	3657	BP23MVEXP-ENV-DC-083			Camera	66	623638	6233479	623635	6233497	3	-18	19	-8		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	08:57:06	3658	BP23MVEXP-ENV-DC-083			Camera	66	623638	6233479	623635	6233497	3	-18	18	-8		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	08:58:22	3659	BP23MVEXP-ENV-DC-083			Camera	66	623635	6233487	623635	6233497	0	-10	10	-2		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	08:58:29	3660	BP23MVEXP-ENV-DC-083			Camera	66	623635	6233488	623635	6233497	0	-10	10	-1		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	08:59:35	3661	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233494	623635	6233497	-1	-3	3	15		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	08:59:58	3662	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233496	623635	6233497	-1	-1	1	60		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	09:00:16	3663	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233498	623635	6233497	-1	1	2	134		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	09:00:52	3664	BP23MVEXP-ENV-DC-083			Camera	66	623633	6233502	623635	6233497	-2	5	5	157		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	09:01:42	3665	BP23MVEXP-ENV-DC-083			Camera	66	623632	6233507	623635	6233497	-3	10	10	164		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	09:01:50	3666	BP23MVEXP-ENV-DC-083			Camera	66	623632	6233508	623635	6233497	-3	11	11	164		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	09:02:38	3667	BP23MVEXP-ENV-DC-083			Camera	66	623631	6233512	623635	6233497	-4	15	16	166		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	09:03:04	3668	BP23MVEXP-ENV-DC-083			Camera	66	623630	6233515	623635	6233497	-5	18	19	166		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	09:03:49	3669	BP23MVEXP-ENV-DC-083			Camera	66	623630	6233520	623635	6233497	-5	23	24	167		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	09:04:19	3670	BP23MVEXP-ENV-DC-083			Camera	66	623629	6233523	623635	6233497	-6	26	27	168		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	09:05:09	3671	BP23MVEXP-ENV-DC-083			Camera	66	623628	6233528	623635	6233497	-7	31	32	168		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	09:06:01	3672	BP23MVEXP-ENV-DC-083			Camera	66	623628	6233534	623635	6233497	-7	37	37	169		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	09:06:14	3673	BP23MVEXP-ENV-DC-083			Camera	66	623627	6233535	623635	6233497	-8	38	39	169		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	09:06:49	3674	BP23MVEXP-ENV-DC-083			Camera	66	623627	6233538	623635	6233497	-9	41	42	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	09:07:36	3675	BP23MVEXP-ENV-DC-083			Camera	66	623626	6233543	623635	6233497	-9	46	47	168		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	09:20:05	3676	BP23MVEXP-ENV-DC-083			Camera	66	623588	6233488	623635	6233497	-48	-9	48	80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	09:22:39	3677	BP23MVEXP-ENV-DC-083			Camera	66	623599	6233490	623635	6233497	-36	-7	37	79		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	09:23:14	3678	BP23MVEXP-ENV-DC-083			Camera	66	623602	6233490	623635	6233497	-33	-7	33	79		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	09:23:50	3679	BP23MVEXP-ENV-DC-083			Camera	66	623606	6233492	623635	6233497	-29	-5	29	79		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	09:24:41	3680	BP23MVEXP-ENV-DC-083			Camera	66	623611	6233492	623635	6233497	-24	-5	25	78		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	09:25:10	3681	BP23MVEXP-ENV-DC-083			Camera	66	623614	6233492	623635	6233497	-22	-5	22	78		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	09:25:41	3682	BP23MVEXP-ENV-DC-083			Camera	66	623617	6233493	623635	6233497	-18	-4	19	77		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	09:26:31	3683	BP23MVEXP-ENV-DC-083			Camera	66	623622	6233493	623635	6233497	-13	-4	13	73		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	09:27:21	3684	BP23MVEXP-ENV-DC-083			Camera	66	623628	6233494	623635	6233497	-7	-3	8	71		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	09:28:01	3685	BP23MVEXP-ENV-DC-083			Camera	66	623632	6233496	623635	6233497	-3	-1	4	66		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	09:28:29	3686	BP23MVEXP-ENV-DC-083			Camera	66	623634	6233496	623635	6233497	-1	-1	1	37		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	09:28:48	3687	BP23MVEXP-ENV-DC-083			Camera	66	623636	6233497	623635	6233497	1	0	1	-75		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	09:29:18	3688	BP23MVEXP-ENV-DC-083			Camera	66	623639	6233498	623635	6233497	4	1	4	-97		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	09:29:47	3689	BP23MVEXP-ENV-DC-083			Camera	66	623642	6233498	623635	6233497	7	1	7	-102		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	09:30:07	3690	BP23MVEXP-ENV-DC-083			Camera	66	623643	6233499	623635	6233497	8	2	9	-103		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	09:30:52	3691	BP23MVEXP-ENV-DC-083			Camera	66	623648	6233499	623635	6233497	13	2	14	-100		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	09:31:10	3692	BP23MVEXP-ENV-DC-083			Camera	66	623650	6233500	623635	6233497	15	3	16	-100		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	09:31:52	3693	BP23MVEXP-ENV-DC-083			Camera	66	623655	6233500	623635	6233497	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
14-Jul-2023	09:32:15	3694	BP23MVEXP-ENV-DC-083			Camera	66	623657	6233500	623635	6233497	22	3	22	-98		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
14-Jul-2023	09:32:44	3695	BP23MVEXP-ENV-DC-083			Camera	66	623660	6233500	623635	6233497	25	3	25	-97		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
14-Jul-2023	09:33:16	3696	BP23MVEXP-ENV-DC-083			Camera	66	623664	6233500	623635	6233497	29	3	29	-97		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
14-Jul-2023	09:33:34	3697	BP23MVEXP-ENV-DC-083			Camera	66	623665	6233501	623635	6233497	30	4	31	-97		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
14-Jul-2023	09:34:01	3698	BP23MVEXP-ENV-DC-083			Camera	66	623668	6233502	623635	6233497	33	5	33	-98		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
14-Jul-2023	09:35:02	3699	BP23MVEXP-ENV-DC-083			Camera	66	623674	6233503	623635	6233497	39	6	39	-99		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
14-Jul-2023	09:35:46	3700	BP23MVEXP-ENV-DC-083			Camera	66	623678	6233504	623635	6233497	43	7	43	-100		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
14-Jul-2023	09:36:28	3701	BP23MVEXP-ENV-DC-083			Camera	66	623682	6233505	623635	6233497	47	8	48	-100		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
14-Jul-2023	09:37:09	3702	BP23MVEXP-ENV-DC-083			Camera	66	623684	6233506	623635	6233497	49	9	50	-100		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
14-Jul-2023	10:52:22	3703	BP23MVEXP-ENV-DC-084			Camera	68	624126	6229590	624135	6229544	-9	46	47	169		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	10:53:07	3704	BP23MVEXP-ENV-DC-084			Camera	68	624127	6229590	624135	6229544	-8	46	47	170		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	10:54:15	3705	BP23MVEXP-ENV-DC-084			Camera	68	624128	6229587	624135	6229544	-7	43	43	171		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	10:55:10	3706	BP23MVEXP-ENV-DC-084			Camera	68	624129	6229580	624135	6229544	-6	37	37	171		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	10:56:08	3707	BP23MVEXP-ENV-DC-084			Camera	68	624131	6229576	624135	6229544	-4	32	32	173		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	10:56:49	3708	BP23MVEXP-ENV-DC-084			Camera	68	624131	6229571	624135	6229544	-4	27	27	172		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	10:57:25	3709	BP23MVEXP-ENV-DC-084			Camera	68	624132	6229567	624135	6229544	-3	23	24	173		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	10:58:24	3710	BP23MVEXP-ENV-DC-084			Camera	68	624134	6229561	624135	6229544	-1	18	18	175		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	10:59:18	3711	BP23MVEXP-ENV-DC-084			Camera	68	624135	6229555	624135	6229544	0	11	11	179		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	11:00:15	3712	BP23MVEXP-ENV-DC-084			Camera	68	624136	6229549	624135	6229544	1	5	5	-173		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	11:00:31	3713	BP23MVEXP-ENV-DC-084			Camera	68	624136	6229548	624135	6229544	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	11:01:30	3714	BP23MVEXP-ENV-DC-084			Camera	68	624137	6229542	624135	6229544	2	-2	3	-45		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	11:02:15	3715	BP23MVEXP-ENV-DC-084			Camera	68	624139	6229538	624135	6229544	4	-6	7	-29		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	11:02:34	3716	BP23MVEXP-ENV-DC-084			Camera	68	624139	6229536	624135	6229544	4	-8	9	-24		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	11:02:54	3717	BP23MVEXP-ENV-DC-084			Camera	68	624139	6229534	624135	6229544	4	-10	11	-21		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	11:03:12	3718	BP23MVEXP-ENV-DC-084			Camera	68	624140	6229532	624135	6229544	5	-13	13	-21		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	11:03:31	3719	BP23MVEXP-ENV-DC-084			Camera	68	624140	6229529	624135	6229544	5	-15	16	-18		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	11:04:29	3720	BP23MVEXP-ENV-DC-084			Camera	68	624141	6229523	624135	6229544	6	-21	21	-16		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	11:04:59	3721	BP23MVEXP-ENV-DC-084			Camera	68	624142	6229521	624135	6229544	7	-23	24	-16		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	11:05:55	3722	BP23MVEXP-ENV-DC-084			Camera	68	624143	6229516	624135	6229544	8	-29	30	-15		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	11:06:11	3723	BP23MVEXP-ENV-DC-084			Camera	68	624143	6229514	624135	6229544	8	-30	31	-15		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	11:06:44	3724	BP23MVEXP-ENV-DC-084			Camera	68	624144	6229510	624135	6229544	9	-34	35	-15		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	11:07:16	3725	BP23MVEXP-ENV-DC-084			Camera	68	624144	6229507	624135	6229544	9	-37	38	-14		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	11:07:53	3726	BP23MVEXP-ENV-DC-084			Camera	68	624145	6229503	624135	6229544	10	-41	42	-14		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	11:08:19	3727	BP23MVEXP-ENV-DC-084			Camera	68	624145	6229501	624135	6229544	10	-43	44	-13		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	11:08:37	3728	BP23MVEXP-ENV-DC-084			Camera	68	624145	6229499	624135	6229544	10	-45	46	-13		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	11:27:16	3729	BP23MVEXP-ENV-DC-084			Camera	68	624083	6229535	624135	6229544	-52	-9	53	80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	11:27:54	3730	BP23MVEXP-ENV-DC-084			Camera	68	624087	6229535	624135	6229544	-48	-9	49	79		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	11:28:45	3731	BP23MVEXP-ENV-DC-084			Camera	68	624092	6229535	624135	6229544	-43	-9	44	79		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	11:28:58	3732	BP23MVEXP-ENV-DC-084			Camera	68	624094	6229536	624135	6229544	-41	-8	42	79		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	11:29:06	3733	BP23MVEXP-ENV-DC-084			Camera	68	624094	6229536	624135	6229544	-41	-8	41	78		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	11:29:33	3734	BP23MVEXP-ENV-DC-084			Camera	68	624097	6229536	624135	6229544	-38	-8	38	78		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	11:30:03	3735	BP23MVEXP-ENV-DC-084			Camera	68	624101	6229537	624135	6229544	-34	-7	35	79		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	11:30:40	3736	BP23MVEXP-ENV-DC-084			Camera	68	624105	6229538	624135	6229544	-30	-6	31	79		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	11:31:08	3737	BP23MVEXP-ENV-DC-084			Camera	68	624108	6229539	624135	6229544	-27	-5	28	79		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	11:32:33	3738	BP23MVEXP-ENV-DC-084			Camera	68	624117	6229540	624135	6229544	-18	-4	19	78		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	11:34:07	3739	BP23MVEXP-ENV-DC-084			Camera	68	624126	6229542	624135	6229544	-9	-2	9	80		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	11:34:47	3740	BP23MVEXP-ENV-DC-084			Camera	68	624130	6229543	624135	6229544	-5	-1	5	82		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	11:35:21	3741	BP23MVEXP-ENV-DC-084			Camera	68	624133	6229544	624135	6229544	-2	0	2	87		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	11:35:36	3742	BP23MVEXP-ENV-DC-084			Camera	68	624135	6229544	624135	6229544	0	0	0	111		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	11:35:54	3743	BP23MVEXP-ENV-DC-084			Camera	68	624137	6229544	624135	6229544	2	0	2	-95		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	11:36:09	3744	BP23MVEXP-ENV-DC-084			Camera	68	624138	6229544	624135	6229544	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	11:37:19	3745	BP23MVEXP-ENV-DC-084			Camera	68	624146	6229545	624135	6229544	11	1	11	-97		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	11:37:38	3746	BP23MVEXP-ENV-DC-084			Camera	68	624148	6229546	624135	6229544	13	2	13	-100		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	11:39:25	3747	BP23MVEXP-ENV-DC-084			Camera	68	624158	6229549	624135	6229544	23	5	24	-102		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	11:40:07	3748	BP23MVEXP-ENV-DC-084			Camera	68	624163	6229549	624135	6229544	28	5	28	-101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	11:41:33	3749	BP23MVEXP-ENV-DC-084			Camera	68	624172	6229551	624135	6229544	37	7	37	-100		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	11:42:25	3750	BP23MVEXP-ENV-DC-084			Camera	68	624177	6229551	624135	6229544	42	7	42	-100		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	11:42:39	3751	BP23MVEXP-ENV-DC-084			Camera	68	624178	6229552	624135	6229544	43	8	44	-100		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	12:39:20	3752	BP23MVEXP-ENV-DC-085			Camera	68	624668	6225616	624677	6225569	-9	47	48	169		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	12:41:28	3753	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225613	624677	6225569	-8	44	44	169		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	12:41:47	3754	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225611	624677	6225569	-8	42	43	169		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	12:42:01	3755	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225609	624677	6225569	-8	40	41	169		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	12:42:39	3756	BP23MVEXP-ENV-DC-085			Camera	68	624670	6225605	624677	6225569	-7	36	36	169		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	12:42:49	3757	BP23MVEXP-ENV-DC-085			Camera	68	624670	6225604	624677	6225569	-7	35	35	169		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	12:43:39	3758	BP23MVEXP-ENV-DC-085			Camera	68	624671	6225599	624677	6225569	-6	30	30	169		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	12:45:58	3759	BP23MVEXP-ENV-DC-085			Camera	68	624674	6225585	624677	6225569	-3	16	17	169		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	12:46:34	3760	BP23MVEXP-ENV-DC-085			Camera	68	624675	6225581	624677	6225569	-2	13	13	170		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	12:47:31	3761	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225576	624677	6225569	-1	7	7	170		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	12:47:38	3762	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225575	624677	6225569	-1	6	6	171		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	12:47:54	3763	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225573	624677	6225569	-1	4	4	170		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	12:48:09	3764	BP23MVEXP-ENV-DC-085			Camera	68	624676	6225572	624677	6225569	-1	3	3	167		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	12:48:20	3765	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225571	624677	6225569	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	12:48:34	3766	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225569	624677	6225569	0	0	0	122		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	12:48:42	3767	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225568	624677	6225569	0	-1	1	20		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	12:48:52	3768	BP23MVEXP-ENV-DC-085			Camera	68	624677	6225567	624677	6225569	0	-2	2	6		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	12:49:15	3769	BP23MVEXP-ENV-DC-085			Camera	68	624678	6225565	624677	6225569	1	-4	4	-7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	12:49:46	3770	BP23MVEXP-ENV-DC-085			Camera	68	624678	6225561	624677	6225569	1	-8	8	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	12:51:21	3771	BP23MVEXP-ENV-DC-085			Camera	68	624680	6225552	624677	6225569	3	-17	17	-9		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	12:52:45	3772	BP23MVEXP-ENV-DC-085			Camera	68	624682	6225543	624677	6225569	5	-26	26	-10		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	12:53:38	3773	BP23MVEXP-ENV-DC-085			Camera	68	624683	6225538	624677	6225569	6	-31	31	-11		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	12:55:10	3774	BP23MVEXP-ENV-DC-085			Camera	68	624684	6225529	624677	6225569	7	-40	41	-10		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	13:10:38	3775	BP23MVEXP-ENV-DC-085			Camera	68	624724	6225573	624677	6225569	47	4	47	-95		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	13:11:00	3776	BP23MVEXP-ENV-DC-085			Camera	68	624723	6225573	624677	6225569	46	4	46	-95		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	13:11:36	3777	BP23MVEXP-ENV-DC-085			Camera	68	624719	6225572	624677	6225569	42	3	42	-94		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	13:12:14	3778	BP23MVEXP-ENV-DC-085			Camera	68	624716	6225572	624677	6225569	39	3	39	-95		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	13:12:26	3779	BP23MVEXP-ENV-DC-085			Camera	68	624715	6225572	624677	6225569	38	3	38	-95		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	13:12:35	3780	BP23MVEXP-ENV-DC-085			Camera	68	624714	6225572	624677	6225569	37	3	37	-95		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	13:12:59	3781	BP23MVEXP-ENV-DC-085			Camera	68	624711	6225572	624677	6225569	34	3	34	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	13:13:26	3782	BP23MVEXP-ENV-DC-085			Camera	68	624709	6225573	624677	6225569	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	13:13:51	3783	BP23MVEXP-ENV-DC-085			Camera	68	624705	6225572	624677	6225569	28	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	13:14:36	3784	BP23MVEXP-ENV-DC-085			Camera	68	624700	6225572	624677	6225569	23	3	23	-96		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	13:14:58	3785	BP23MVEXP-ENV-DC-085			Camera	68	624698	6225572	624677	6225569	21	3	21	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	13:15:08	3786	BP23MVEXP-ENV-DC-085			Camera	68	624697	6225572	624677	6225569	20	3	20	-97		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	13:16:18	3787	BP23MVEXP-ENV-DC-085			Camera	68	624689	6225569	624677	6225569	12	0	12	-90		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	13:17:02	3788	BP23MVEXP-ENV-DC-085			Camera	68	624686	6225568	624677	6225569	9	-1	9	-82		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	13:17:39	3789	BP23MVEXP-ENV-DC-085			Camera	68	624682	6225567	624677	6225569	5	-2	5	-70		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	13:17:54	3790	BP23MVEXP-ENV-DC-085			Camera	68	624681	6225567	624677	6225569	4	-2	4	-60		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	13:18:58	3791	BP23MVEXP-ENV-DC-085			Camera	68	624674	6225566	624677	6225569	-3	-3	4	49		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	13:19:02	3792	BP23MVEXP-ENV-DC-085			Camera	68	624674	6225566	624677	6225569	-3	-3	4	54		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	13:19:48	3793	BP23MVEXP-ENV-DC-085			Camera	68	624669	6225566	624677	6225569	-8	-3	9	67		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	13:21:25	3794	BP23MVEXP-ENV-DC-085			Camera	68	624658	6225564	624677	6225569	-19	-5	19	76		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
14-Jul-2023	13:22:15	3795	BP23MVEXP-ENV-DC-085			Camera	68	624653	6225564	624677	6225569	-24	-5	25	77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	13:22:30	3796	BP23MVEXP-ENV-DC-085			Camera	68	624652	6225564	624677	6225569	-25	-5	25	78		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	13:23:22	3797	BP23MVEXP-ENV-DC-085			Camera	68	624647	6225563	624677	6225569	-30	-6	30	79		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	13:24:42	3798	BP23MVEXP-ENV-DC-085			Camera	68	624638	6225561	624677	6225569	-39	-8	40	79		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	13:25:27	3799	BP23MVEXP-ENV-DC-085			Camera	68	624634	6225561	624677	6225569	-43	-9	44	79		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	13:25:52	3800	BP23MVEXP-ENV-DC-085			Camera	68	624632	6225561	624677	6225569	-45	-8	45	79		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	14:48:35	3801	BP23MVEXP-ENV-DC-086			Camera	65	625212	6221669	625218	6221618	-6	52	52	174		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	14:49:10	3802	BP23MVEXP-ENV-DC-086			Camera	65	625213	6221669	625218	6221618	-5	51	51	174		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
14-Jul-2023	14:53:51	3803	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221669	625218	6221618	-8	51	52	171		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
14-Jul-2023	14:54:29	3804	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221666	625218	6221618	-8	48	49	171		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
14-Jul-2023	14:54:57	3805	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221663	625218	6221618	-8	45	46	170		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
14-Jul-2023	14:55:15	3806	BP23MVEXP-ENV-DC-086			Camera	65	625210	6221662	625218	6221618	-8	44	45	170		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
14-Jul-2023	14:56:23	3807	BP23MVEXP-ENV-DC-086			Camera	65	625212	6221654	625218	6221618	-6	36	37	171		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
14-Jul-2023	14:56:58	3808	BP23MVEXP-ENV-DC-086			Camera	65	625213	6221651	625218	6221618	-5	33	34	171		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
14-Jul-2023	14:57:58	3809	BP23MVEXP-ENV-DC-086			Camera	65	625214	6221645	625218	6221618	-4	27	27	172		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
14-Jul-2023	14:59:36	3810	BP23MVEXP-ENV-DC-086			Camera	65	625216	6221635	625218	6221618	-2	17	17	173		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
14-Jul-2023	15:00:04	3811	BP23MVEXP-ENV-DC-086			Camera	65	625218	6221632	625218	6221618	0	14	14	-178		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
14-Jul-2023	15:00:40	3812	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221627	625218	6221618	2	9	10	-168		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
14-Jul-2023	15:01:08	3813	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221624	625218	6221618	2	6	6	-161		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
14-Jul-2023	15:01:22	3814	BP23MVEXP-ENV-DC-086			Camera	65	625219	6221623	625218	6221618	1	5	5	-168		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
14-Jul-2023	15:01:35	3815	BP23MVEXP-ENV-DC-086			Camera	65	625219	6221622	625218	6221618	1	4	4	-168		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
14-Jul-2023	15:01:56	3816	BP23MVEXP-ENV-DC-086			Camera	65	625219	6221620	625218	6221618	1	2	2	-145		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
14-Jul-2023	15:02:09	3817	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221618	625218	6221618	2	0	2	-100		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
14-Jul-2023	15:02:15	3818	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221618	625218	6221618	2	0	2	-83		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
14-Jul-2023	15:02:24	3819	BP23MVEXP-ENV-DC-086			Camera	65	625221	6221617	625218	6221618	3	-1	3	-66		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
14-Jul-2023	15:02:33	3820	BP23MVEXP-ENV-DC-086			Camera	65	625221	6221616	625218	6221618	3	-2	4	-53		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
14-Jul-2023	15:03:20	3821	BP23MVEXP-ENV-DC-086			Camera	65	625222	6221610	625218	6221618	4	-8	9	-26		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
14-Jul-2023	15:04:42	3822	BP23MVEXP-ENV-DC-086			Camera	65	625221	6221603	625218	6221618	3	-15	16	-13		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
14-Jul-2023	15:05:43	3823	BP23MVEXP-ENV-DC-086			Camera	65	625223	6221597	625218	6221618	5	-21	22	-14		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
14-Jul-2023	15:08:14	3824	BP23MVEXP-ENV-DC-086			Camera	65	625225	6221582	625218	6221618	7	-36	37	-11		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
14-Jul-2023	15:29:35	3825	BP23MVEXP-ENV-DC-086			Camera	65	625175	6221611	625218	6221618	-43	-7	44	80		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
14-Jul-2023	15:30:52	3826	BP23MVEXP-ENV-DC-086			Camera	65	625178	6221611	625218	6221618	-40	-7	41	81		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
14-Jul-2023	15:33:19	3827	BP23MVEXP-ENV-DC-086			Camera	65	625187	6221613	625218	6221618	-31	-5	32	80		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
14-Jul-2023	15:37:51	3828	BP23MVEXP-ENV-DC-086			Camera	65	625200	6221615	625218	6221618	-18	-3	18	79		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
14-Jul-2023	15:39:51	3829	BP23MVEXP-ENV-DC-086			Camera	65	625205	6221617	625218	6221618	-13	-1	13	86		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
14-Jul-2023	15:40:14	3830	BP23MVEXP-ENV-DC-086			Camera	65	625205	6221618	625218	6221618	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
14-Jul-2023	15:41:34	3831	BP23MVEXP-ENV-DC-086			Camera	65	625211	6221618	625218	6221618	-7	0	7	89		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
14-Jul-2023	15:42:56	3832	BP23MVEXP-ENV-DC-086			Camera	65	625215	6221618	625218	6221618	-3	0	3	98		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
14-Jul-2023	15:43:13	3833	BP23MVEXP-ENV-DC-086			Camera	65	625216	6221619	625218	6221618	-2	1	2	107		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
14-Jul-2023	15:43:55	3834	BP23MVEXP-ENV-DC-086			Camera	65	625218	6221620	625218	6221618	0	2	2	173		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
14-Jul-2023	15:44:38	3835	BP23MVEXP-ENV-DC-086			Camera	65	625220	6221620	625218	6221618	2	2	3	-125		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
14-Jul-2023	15:45:09	3836	BP23MVEXP-ENV-DC-086			Camera	65	625222	6221620	625218	6221618	4	2	5	-115		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
14-Jul-2023	15:45:52	3837	BP23MVEXP-ENV-DC-086			Camera	65	625223	6221620	625218	6221618	5	2	5	-112		(Raw Nav, Kongsberg 14208, img#36) (B) (T.A)
14-Jul-2023	15:46:47	3838	BP23MVEXP-ENV-DC-086			Camera	65	625227	6221621	625218	6221618	9	3	9	-108		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
14-Jul-2023	15:47:14	3839	BP23MVEXP-ENV-DC-086			Camera	65	625228	6221621	625218	6221618	10	3	10	-107		(Raw Nav, Kongsberg 14208, img#38) (B) (T.A)
14-Jul-2023	15:47:56	3840	BP23MVEXP-ENV-DC-086			Camera	65	625230	6221621	625218	6221618	12	3	13	-104		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
14-Jul-2023	15:50:11	3841	BP23MVEXP-ENV-DC-086			Camera	65	625237	6221622	625218	6221618	19	4	20	-103		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
14-Jul-2023	15:51:15	3842	BP23MVEXP-ENV-DC-086			Camera	65	625240	6221623	625218	6221618	23	5	23	-102		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
14-Jul-2023	15:51:46	3843	BP23MVEXP-ENV-DC-086			Camera	65	625241	6221623	625218	6221618	23	5	24	-103		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
14-Jul-2023	15:52:10	3844	BP23MVEXP-ENV-DC-086			Camera	65	625242	6221624	625218	6221618	24	6	25	-104		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Jul-2023	15:53:07	3845	BP23MVEXP-ENV-DC-086			Camera	65	625245	6221624	625218	6221618	27	6	28	-103		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
14-Jul-2023	15:54:12	3846	BP23MVEXP-ENV-DC-086			Camera	65	625249	6221625	625218	6221618	31	7	32	-102		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
14-Jul-2023	15:54:50	3847	BP23MVEXP-ENV-DC-086			Camera	65	625251	6221625	625218	6221618	33	7	34	-102		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
14-Jul-2023	15:55:21	3848	BP23MVEXP-ENV-DC-086			Camera	65	625252	6221625	625218	6221618	35	7	35	-102		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
14-Jul-2023	15:56:23	3849	BP23MVEXP-ENV-DC-086			Camera	65	625256	6221625	625218	6221618	38	7	39	-101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
14-Jul-2023	15:57:19	3850	BP23MVEXP-ENV-DC-086			Camera	65	625258	6221626	625218	6221618	40	8	40	-102		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
14-Jul-2023	15:58:50	3851	BP23MVEXP-ENV-DC-086			Camera	65	625264	6221627	625218	6221618	46	9	47	-101		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
14-Jul-2023	15:59:23	3852	BP23MVEXP-ENV-DC-086			Camera	65	625265	6221627	625218	6221618	47	9	48	-101		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
30-Jul-2023	18:43:14	3853	BP23MVEXP-ENV-DC-087			Camera	64	625735	6217722	625786	6217725	-51	-3	51	87		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
30-Jul-2023	18:45:04	3854	BP23MVEXP-ENV-DC-087			Camera	64	625737	6217724	625786	6217725	-49	-1	49	88		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
30-Jul-2023	18:45:54	3855	BP23MVEXP-ENV-DC-087			Camera	64	625740	6217725	625786	6217725	-46	0	46	89		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
30-Jul-2023	18:46:20	3856	BP23MVEXP-ENV-DC-087			Camera	64	625743	6217725	625786	6217725	-43	0	43	90		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
30-Jul-2023	18:46:44	3857	BP23MVEXP-ENV-DC-087			Camera	64	625746	6217725	625786	6217725	-40	0	40	90		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
30-Jul-2023	18:47:39	3858	BP23MVEXP-ENV-DC-087			Camera	64	625753	6217726	625786	6217725	-33	1	33	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
30-Jul-2023	18:48:01	3859	BP23MVEXP-ENV-DC-087			Camera	64	625756	6217727	625786	6217725	-30	2	30	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
30-Jul-2023	18:49:07	3860	BP23MVEXP-ENV-DC-087			Camera	64	625762	6217725	625786	6217725	-24	0	24	90		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
30-Jul-2023	18:50:24	3861	BP23MVEXP-ENV-DC-087			Camera	64	625767	6217725	625786	6217725	-19	0	19	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
30-Jul-2023	18:50:45	3862	BP23MVEXP-ENV-DC-087			Camera	64	625769	6217726	625786	6217725	-17	1	17	92		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
30-Jul-2023	18:51:16	3863	BP23MVEXP-ENV-DC-087			Camera	65	625773	6217726	625786	6217725	-13	1	13	95		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
30-Jul-2023	18:51:36	3864	BP23MVEXP-ENV-DC-087			Camera	65	625775	6217726	625786	6217725	-11	1	11	98		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
30-Jul-2023	18:52:29	3865	BP23MVEXP-ENV-DC-087			Camera	65	625780	6217727	625786	6217725	-6	2	6	113		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
30-Jul-2023	18:52:57	3866	BP23MVEXP-ENV-DC-087			Camera	65	625783	6217728	625786	6217725	-3	3	5	138		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
30-Jul-2023	18:53:10	3867	BP23MVEXP-ENV-DC-087			Camera	64	625785	6217729	625786	6217725	-1	4	4	164		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
30-Jul-2023	18:53:16	3868	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217729	625786	6217725	0	4	4	176		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
30-Jul-2023	18:53:26	3869	BP23MVEXP-ENV-DC-087			Camera	64	625787	6217729	625786	6217725	1	4	5	-168		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
30-Jul-2023	18:54:21	3870	BP23MVEXP-ENV-DC-087			Camera	64	625794	6217731	625786	6217725	8	6	10	-126		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
30-Jul-2023	18:54:42	3871	BP23MVEXP-ENV-DC-087			Camera	64	625796	6217730	625786	6217725	10	5	11	-118		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
30-Jul-2023	18:55:31	3872	BP23MVEXP-ENV-DC-087			Camera	64	625800	6217731	625786	6217725	14	6	15	-112		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
30-Jul-2023	18:55:57	3873	BP23MVEXP-ENV-DC-087			Camera	64	625803	6217731	625786	6217725	17	6	18	-109		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
30-Jul-2023	18:56:29	3874	BP23MVEXP-ENV-DC-087			Camera	64	625807	6217731	625786	6217725	21	6	22	-106		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
30-Jul-2023	18:57:20	3875	BP23MVEXP-ENV-DC-087			Camera	65	625812	6217731	625786	6217725	26	6	27	-104		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
30-Jul-2023	18:57:31	3876	BP23MVEXP-ENV-DC-087			Camera	65	625813	6217731	625786	6217725	27	6	28	-103		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
30-Jul-2023	18:57:55	3877	BP23MVEXP-ENV-DC-087			Camera	65	625816	6217732	625786	6217725	30	7	30	-103		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
30-Jul-2023	18:58:35	3878	BP23MVEXP-ENV-DC-087			Camera	65	625819	6217732	625786	6217725	33	7	33	-102		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
30-Jul-2023	18:59:02	3879	BP23MVEXP-ENV-DC-087			Camera	65	625821	6217732	625786	6217725	35	7	36	-102		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
30-Jul-2023	18:59:27	3880	BP23MVEXP-ENV-DC-087			Camera	65	625824	6217733	625786	6217725	38	8	39	-102		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
30-Jul-2023	18:59:53	3881	BP23MVEXP-ENV-DC-087			Camera	65	625827	6217734	625786	6217725	41	9	41	-102		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
30-Jul-2023	19:00:10	3882	BP23MVEXP-ENV-DC-087			Camera	65	625829	6217734	625786	6217725	43	9	43	-102		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
30-Jul-2023	19:00:58	3883	BP23MVEXP-ENV-DC-087			Camera	65	625834	6217734	625786	6217725	48	9	49	-101		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
30-Jul-2023	19:16:29	3884	BP23MVEXP-ENV-DC-087			Camera	64	625775	6217773	625786	6217725	-11	48	50	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
30-Jul-2023	19:17:04	3885	BP23MVEXP-ENV-DC-087			Camera	64	625775	6217771	625786	6217725	-11	46	47	167		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
30-Jul-2023	19:17:27	3886	BP23MVEXP-ENV-DC-087			Camera	64	625776	6217769	625786	6217725	-10	44	45	167		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
30-Jul-2023	19:18:15	3887	BP23MVEXP-ENV-DC-087			Camera	64	625778	6217763	625786	6217725	-8	38	39	168		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
30-Jul-2023	19:18:21	3888	BP23MVEXP-ENV-DC-087			Camera	64	625778	6217763	625786	6217725	-8	38	38	168		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
30-Jul-2023	19:19:12	3889	BP23MVEXP-ENV-DC-087			Camera	64	625779	6217756	625786	6217725	-7	31	32	168		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
30-Jul-2023	19:19:28	3890	BP23MVEXP-ENV-DC-087			Camera	64	625779	6217755	625786	6217725	-7	30	31	167		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
30-Jul-2023	19:19:57	3891	BP23MVEXP-ENV-DC-087			Camera	64	625779	6217752	625786	6217725	-7	27	28	166		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
30-Jul-2023	19:20:32	3892	BP23MVEXP-ENV-DC-087			Camera	64	625780	6217749	625786	6217725	-6	24	25	166		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
30-Jul-2023	19:20:59	3893	BP23MVEXP-ENV-DC-087			Camera	64	625780	6217746	625786	6217725	-6	22	22	165		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
30-Jul-2023	19:21:54	3894	BP23MVEXP-ENV-DC-087			Camera	64	625782	6217741	625786	6217725	-4	16	17	167		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
30-Jul-2023	19:22:44	3895	BP23MVEXP-ENV-DC-087			Camera	64	625784	6217736	625786	6217725	-3	11	11	167		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
30-Jul-2023	19:23:38	3896	BP23MVEXP-ENV-DC-087			Camera	64	625785	6217730	625786	6217725	-1	5	6	168		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
30-Jul-2023	19:23:52	3897	BP23MVEXP-ENV-DC-087			Camera	65	625785	6217729	625786	6217725	-1	4	4	170		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
30-Jul-2023	19:24:18	3898	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217726	625786	6217725	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
30-Jul-2023	19:24:43	3899	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217723	625786	6217725	0	-2	2	1		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
30-Jul-2023	19:25:25	3900	BP23MVEXP-ENV-DC-087			Camera	65	625786	6217719	625786	6217725	0	-6	6	-3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
30-Jul-2023	19:25:56	3901	BP23MVEXP-ENV-DC-087			Camera	65	625788	6217716	625786	6217725	2	-9	9	-11		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
30-Jul-2023	19:26:24	3902	BP23MVEXP-ENV-DC-087			Camera	65	625788	6217713	625786	6217725	2	-12	12	-8		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
30-Jul-2023	19:27:00	3903	BP23MVEXP-ENV-DC-087			Camera	65	625788	6217709	625786	6217725	2	-16	16	-6		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
30-Jul-2023	19:28:09	3904	BP23MVEXP-ENV-DC-087			Camera	65	625789	6217702	625786	6217725	3	-23	23	-7		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
30-Jul-2023	19:28:57	3905	BP23MVEXP-ENV-DC-087			Camera	65	625791	6217698	625786	6217725	5	-27	27	-10		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
30-Jul-2023	19:29:36	3906	BP23MVEXP-ENV-DC-087			Camera	65	625792	6217694	625786	6217725	6	-31	31	-11		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
30-Jul-2023	19:30:18	3907	BP23MVEXP-ENV-DC-087			Camera	64	625792	6217689	625786	6217725	7	-36	36	-10		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
30-Jul-2023	19:30:28	3908	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217688	625786	6217725	7	-37	37	-10		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
30-Jul-2023	19:30:59	3909	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217685	625786	6217725	7	-40	41	-10		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
30-Jul-2023	19:31:33	3910	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217681	625786	6217725	7	-44	44	-9		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
30-Jul-2023	19:31:44	3911	BP23MVEXP-ENV-DC-087			Camera	64	625793	6217680	625786	6217725	7	-45	45	-9		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
30-Jul-2023	19:32:06	3912	BP23MVEXP-ENV-DC-087			Camera	64	625794	6217678	625786	6217725	8	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
30-Jul-2023	21:21:29	3913	BP23MVEXP-ENV-DC-088			Camera	62	626248	6213723	626296	6213734	-48	-11	49	77		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
30-Jul-2023	21:24:49	3914	BP23MVEXP-ENV-DC-088			Camera	62	626252	6213723	626296	6213734	-44	-11	45	76		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
30-Jul-2023	21:25:05	3915	BP23MVEXP-ENV-DC-088			Camera	62	626254	6213724	626296	6213734	-42	-10	43	76		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
30-Jul-2023	21:25:25	3916	BP23MVEXP-ENV-DC-088			Camera	62	626256	6213724	626296	6213734	-40	-10	41	76		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
30-Jul-2023	21:25:37	3917	BP23MVEXP-ENV-DC-088			Camera	62	626258	6213724	626296	6213734	-38	-10	40	75		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
30-Jul-2023	21:25:49	3918	BP23MVEXP-ENV-DC-088			Camera	62	626259	6213724	626296	6213734	-37	-10	38	75		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
30-Jul-2023	21:26:05	3919	BP23MVEXP-ENV-DC-088			Camera	62	626261	6213725	626296	6213734	-35	-9	36	75		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
30-Jul-2023	21:26:15	3920	BP23MVEXP-ENV-DC-088			Camera	62	626263	6213725	626296	6213734	-33	-9	35	75		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
30-Jul-2023	21:26:32	3921	BP23MVEXP-ENV-DC-088			Camera	62	626264	6213725	626296	6213734	-32	-9	33	74		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
30-Jul-2023	21:26:57	3922	BP23MVEXP-ENV-DC-088			Camera	61	626267	6213726	626296	6213734	-29	-8	30	74		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
30-Jul-2023	21:27:10	3923	BP23MVEXP-ENV-DC-088			Camera	61	626268	6213726	626296	6213734	-28	-8	29	75		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
30-Jul-2023	21:27:23	3924	BP23MVEXP-ENV-DC-088			Camera	62	626270	6213727	626296	6213734	-26	-7	27	74		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
30-Jul-2023	21:27:43	3925	BP23MVEXP-ENV-DC-088			Camera	61	626272	6213727	626296	6213734	-24	-7	25	74		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
30-Jul-2023	21:28:03	3926	BP23MVEXP-ENV-DC-088			Camera	61	626274	6213727	626296	6213734	-22	-7	23	73		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
30-Jul-2023	21:28:21	3927	BP23MVEXP-ENV-DC-088			Camera	61	626276	6213728	626296	6213734	-21	-6	21	73		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
30-Jul-2023	21:28:31	3928	BP23MVEXP-ENV-DC-088			Camera	61	626276	6213728	626296	6213734	-20	-6	21	73		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
30-Jul-2023	21:28:47	3929	BP23MVEXP-ENV-DC-088			Camera	61	626277	6213729	626296	6213734	-19	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
30-Jul-2023	21:28:54	3930	BP23MVEXP-ENV-DC-088			Camera	61	626278	6213729	626296	6213734	-18	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
30-Jul-2023	21:29:08	3931	BP23MVEXP-ENV-DC-088			Camera	61	626279	6213729	626296	6213734	-17	-5	18	74		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
30-Jul-2023	21:29:18	3932	BP23MVEXP-ENV-DC-088			Camera	61	626280	6213729	626296	6213734	-16	-5	17	73		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
30-Jul-2023	21:29:27	3933	BP23MVEXP-ENV-DC-088			Camera	61	626281	6213729	626296	6213734	-15	-5	16	73		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
30-Jul-2023	21:29:49	3934	BP23MVEXP-ENV-DC-088			Camera	61	626284	6213730	626296	6213734	-12	-4	13	71		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
30-Jul-2023	21:30:32	3935	BP23MVEXP-ENV-DC-088			Camera	61	626288	6213730	626296	6213734	-8	-4	9	66		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
30-Jul-2023	21:31:01	3936	BP23MVEXP-ENV-DC-088			Camera	61	626291	6213731	626296	6213734	-5	-3	6	59		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
30-Jul-2023	21:31:45	3937	BP23MVEXP-ENV-DC-088			Camera	61	626296	6213733	626296	6213734	0	-1	1	-9		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
30-Jul-2023	21:32:28	3938	BP23MVEXP-ENV-DC-088			Camera	61	626300	6213734	626296	6213734	4	0	4	-89		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
30-Jul-2023	21:33:31	3939	BP23MVEXP-ENV-DC-088			Camera	61	626306	6213735	626296	6213734	10	1	10	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
30-Jul-2023	21:34:27	3940	BP23MVEXP-ENV-DC-088			Camera	61	626312	6213736	626296	6213734	16	2	16	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
30-Jul-2023	21:35:50	3941	BP23MVEXP-ENV-DC-088			Camera	61	626320	6213737	626296	6213734	24	3	24	-98		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
30-Jul-2023	21:37:52	3942	BP23MVEXP-ENV-DC-088			Camera	61	626333	6213740	626296	6213734	37	6	38	-100		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
30-Jul-2023	21:55:03	3943	BP23MVEXP-ENV-DC-088			Camera	61	626286	6213780	626296	6213734	-10	46	47	167		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
30-Jul-2023	21:55:50	3944	BP23MVEXP-ENV-DC-088			Camera	61	626287	6213775	626296	6213734	-9	41	42	168		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
30-Jul-2023	21:56:15	3945	BP23MVEXP-ENV-DC-088			Camera	61	626289	6213772	626296	6213734	-7	38	39	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
30-Jul-2023	21:57:37	3946	BP23MVEXP-ENV-DC-088			Camera	61	626292	6213764	626296	6213734	-4	30	30	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
30-Jul-2023	21:58:02	3947	BP23MVEXP-ENV-DC-088			Camera	61	626292	6213760	626296	6213734	-4	26	27	171		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
30-Jul-2023	21:58:43	3948	BP23MVEXP-ENV-DC-088			Camera	61	626292	6213756	626296	6213734	-4	22	22	171		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
30-Jul-2023	21:59:32	3949	BP23MVEXP-ENV-DC-088			Camera	61	626293	6213751	626296	6213734	-3	17	18	170		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
30-Jul-2023	22:00:18	3950	BP23MVEXP-ENV-DC-088			Camera	61	626294	6213747	626296	6213734	-2	13	13	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
30-Jul-2023	22:01:01	3951	BP23MVEXP-ENV-DC-088			Camera	61	626295	6213743	626296	6213734	-1	9	9	175		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
30-Jul-2023	22:01:33	3952	BP23MVEXP-ENV-DC-088			Camera	61	626296	6213740	626296	6213734	0	6	6	-179		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
30-Jul-2023	22:02:07	3953	BP23MVEXP-ENV-DC-088			Camera	61	626297	6213737	626296	6213734	1	3	3	-169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
30-Jul-2023	22:02:47	3954	BP23MVEXP-ENV-DC-088			Camera	61	626297	6213732	626296	6213734	1	-2	2	-29		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
30-Jul-2023	22:03:20	3955	BP23MVEXP-ENV-DC-088			Camera	61	626297	6213728	626296	6213734	1	-6	6	-14		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
30-Jul-2023	22:03:50	3956	BP23MVEXP-ENV-DC-088			Camera	61	626299	6213725	626296	6213734	3	-9	9	-17		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
30-Jul-2023	22:04:54	3957	BP23MVEXP-ENV-DC-088			Camera	61	626301	6213719	626296	6213734	5	-15	15	-18		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
30-Jul-2023	22:05:28	3958	BP23MVEXP-ENV-DC-088			Camera	61	626302	6213716	626296	6213734	6	-18	19	-18		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
30-Jul-2023	22:06:14	3959	BP23MVEXP-ENV-DC-088			Camera	61	626303	6213711	626296	6213734	7	-23	24	-17		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
30-Jul-2023	22:06:35	3960	BP23MVEXP-ENV-DC-088			Camera	61	626303	6213709	626296	6213734	7	-25	26	-15		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
30-Jul-2023	22:07:01	3961	BP23MVEXP-ENV-DC-088			Camera	61	626303	6213707	626296	6213734	7	-27	28	-15		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
30-Jul-2023	22:07:15	3962	BP23MVEXP-ENV-DC-088			Camera	61	626304	6213706	626296	6213734	8	-29	29	-15		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
30-Jul-2023	22:07:52	3963	BP23MVEXP-ENV-DC-088			Camera	61	626304	6213701	626296	6213734	8	-33	34	-14		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
30-Jul-2023	22:08:34	3964	BP23MVEXP-ENV-DC-088			Camera	61	626305	6213697	626296	6213734	9	-37	38	-13		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
30-Jul-2023	22:09:03	3965	BP23MVEXP-ENV-DC-088			Camera	61	626305	6213694	626296	6213734	9	-40	41	-13		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
30-Jul-2023	22:10:00	3966	BP23MVEXP-ENV-DC-088			Camera	61	626307	6213689	626296	6213734	11	-45	47	-14		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
30-Jul-2023	22:10:40	3967	BP23MVEXP-ENV-DC-088			Camera	61	626307	6213685	626296	6213734	12	-49	50	-13		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
30-Jul-2023	23:36:48	3968	BP23MVEXP-ENV-DC-089			Camera	63	626890	6209728	626842	6209725	48	3	48	-93		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
30-Jul-2023	23:38:37	3969	BP23MVEXP-ENV-DC-089			Camera	63	626887	6209727	626842	6209725	45	2	45	-93		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
30-Jul-2023	23:38:57	3970	BP23MVEXP-ENV-DC-089			Camera	63	626886	6209727	626842	6209725	44	2	44	-92		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
30-Jul-2023	23:40:20	3971	BP23MVEXP-ENV-DC-089			Camera	63	626876	6209726	626842	6209725	34	1	34	-92		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
30-Jul-2023	23:40:48	3972	BP23MVEXP-ENV-DC-089			Camera	63	626874	6209726	626842	6209725	32	1	32	-92		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
30-Jul-2023	23:41:20	3973	BP23MVEXP-ENV-DC-089			Camera	63	626871	6209726	626842	6209725	29	1	29	-91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
30-Jul-2023	23:41:48	3974	BP23MVEXP-ENV-DC-089			Camera	63	626868	6209725	626842	6209725	26	0	26	-91		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
30-Jul-2023	23:42:12	3975	BP23MVEXP-ENV-DC-089			Camera	63	626865	6209725	626842	6209725	23	0	23	-91		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
30-Jul-2023	23:42:26	3976	BP23MVEXP-ENV-DC-089			Camera	63	626864	6209725	626842	6209725	22	0	22	-90		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
30-Jul-2023	23:43:04	3977	BP23MVEXP-ENV-DC-089			Camera	63	626860	6209725	626842	6209725	18	0	18	-91		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
30-Jul-2023	23:43:32	3978	BP23MVEXP-ENV-DC-089			Camera	63	626858	6209725	626842	6209725	16	0	16	-89		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
30-Jul-2023	23:43:57	3979	BP23MVEXP-ENV-DC-089			Camera	63	626855	6209724	626842	6209725	13	-1	13	-88		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
30-Jul-2023	23:44:36	3980	BP23MVEXP-ENV-DC-089			Camera	63	626851	6209724	626842	6209725	9	-1	9	-84		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
30-Jul-2023	23:45:18	3981	BP23MVEXP-ENV-DC-089			Camera	63	626846	6209724	626842	6209725	4	-1	5	-72		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
30-Jul-2023	23:45:40	3982	BP23MVEXP-ENV-DC-089			Camera	63	626844	6209723	626842	6209725	2	-2	3	-54		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
30-Jul-2023	23:45:49	3983	BP23MVEXP-ENV-DC-089			Camera	63	626843	6209723	626842	6209725	1	-2	2	-32		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
30-Jul-2023	23:45:55	3984	BP23MVEXP-ENV-DC-089			Camera	63	626842	6209723	626842	6209725	0	-2	2	-10		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
30-Jul-2023	23:46:15	3985	BP23MVEXP-ENV-DC-089			Camera	63	626840	6209723	626842	6209725	-2	-2	3	35		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
30-Jul-2023	23:46:41	3986	BP23MVEXP-ENV-DC-089			Camera	63	626838	6209723	626842	6209725	-4	-2	4	57		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
30-Jul-2023	23:47:54	3987	BP23MVEXP-ENV-DC-089			Camera	63	626832	6209721	626842	6209725	-10	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
30-Jul-2023	23:48:56	3988	BP23MVEXP-ENV-DC-089			Camera	63	626825	6209720	626842	6209725	-17	-5	18	75		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
30-Jul-2023	23:49:25	3989	BP23MVEXP-ENV-DC-089			Camera	63	626821	6209721	626842	6209725	-21	-4	21	78		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
30-Jul-2023	23:50:06	3990	BP23MVEXP-ENV-DC-089			Camera	63	626817	6209720	626842	6209725	-25	-5	25	78		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
30-Jul-2023	23:50:25	3991	BP23MVEXP-ENV-DC-089			Camera	63	626815	6209720	626842	6209725	-27	-5	27	79		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
30-Jul-2023	23:51:33	3992	BP23MVEXP-ENV-DC-089			Camera	63	626809	6209720	626842	6209725	-33	-5	33	81		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
30-Jul-2023	23:52:04	3993	BP23MVEXP-ENV-DC-089			Camera	63	626805	6209719	626842	6209725	-37	-6	38	81		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
30-Jul-2023	23:52:10	3994	BP23MVEXP-ENV-DC-089			Camera	63	626804	6209719	626842	6209725	-38	-6	38	81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
30-Jul-2023	23:53:01	3995	BP23MVEXP-ENV-DC-089			Camera	63	626799	6209718	626842	6209725	-43	-7	43	81		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
30-Jul-2023	23:53:17	3996	BP23MVEXP-ENV-DC-089			Camera	63	626797	6209718	626842	6209725	-45	-7	45	81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	00:04:24	3997	BP23MVEXP-ENV-DC-089			Camera	63	626838	6209687	626842	6209725	-4	-38	38	6		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	00:10:37	3998	BP23MVEXP-ENV-DC-089			Camera	63	626849	6209684	626842	6209725	7	-41	42	-10		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	00:11:08	3999	BP23MVEXP-ENV-DC-089			Camera	63	626849	6209687	626842	6209725	7	-38	38	-10		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	00:11:25	4000	BP23MVEXP-ENV-DC-089			Camera	63	626848	6209689	626842	6209725	6	-36	37	-10		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	00:11:40	4001	BP23MVEXP-ENV-DC-089			Camera	63	626848	6209690	626842	6209725	6	-35	35	-10		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	00:12:20	4002	BP23MVEXP-ENV-DC-089			Camera	63	626848	6209695	626842	6209725	6	-30	31	-11		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	00:12:38	4003	BP23MVEXP-ENV-DC-089			Camera	63	626847	6209697	626842	6209725	5	-28	29	-11		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	00:12:51	4004	BP23MVEXP-ENV-DC-089			Camera	63	626847	6209698	626842	6209725	5	-27	27	-12		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	00:13:22	4005	BP23MVEXP-ENV-DC-089			Camera	63	626847	6209702	626842	6209725	5	-23	24	-12		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	00:13:56	4006	BP23MVEXP-ENV-DC-089			Camera	63	626846	6209705	626842	6209725	4	-20	21	-11		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	00:14:23	4007	BP23MVEXP-ENV-DC-089			Camera	63	626844	6209707	626842	6209725	2	-18	18	-8		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	00:15:03	4008	BP23MVEXP-ENV-DC-089			Camera	63	626843	6209711	626842	6209725	1	-14	14	-5		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	00:15:40	4009	BP23MVEXP-ENV-DC-089			Camera	63	626842	6209716	626842	6209725	0	-9	9	-2		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	00:16:29	4010	BP23MVEXP-ENV-DC-089			Camera	63	626842	6209721	626842	6209725	0	-4	4	5		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	00:16:51	4011	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209723	626842	6209725	-1	-2	2	20		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	00:17:00	4012	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209724	626842	6209725	-1	-1	1	37		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	00:17:41	4013	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209728	626842	6209725	-1	3	3	166		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	00:18:36	4014	BP23MVEXP-ENV-DC-089			Camera	63	626841	6209734	626842	6209725	-1	9	9	171		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	00:19:32	4015	BP23MVEXP-ENV-DC-089			Camera	63	626838	6209739	626842	6209725	-4	15	15	166		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	00:20:20	4016	BP23MVEXP-ENV-DC-089			Camera	63	626837	6209744	626842	6209725	-5	19	20	164		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	00:21:01	4017	BP23MVEXP-ENV-DC-089			Camera	63	626836	6209748	626842	6209725	-6	23	24	165		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	00:21:42	4018	BP23MVEXP-ENV-DC-089			Camera	63	626835	6209752	626842	6209725	-7	27	28	166		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	00:22:38	4019	BP23MVEXP-ENV-DC-089			Camera	63	626834	6209758	626842	6209725	-8	33	34	167		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	00:23:00	4020	BP23MVEXP-ENV-DC-089			Camera	63	626834	6209760	626842	6209725	-8	35	36	168		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	00:24:22	4021	BP23MVEXP-ENV-DC-089			Camera	63	626833	6209768	626842	6209725	-9	43	44	168		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	00:24:54	4022	BP23MVEXP-ENV-DC-089			Camera	63	626832	6209772	626842	6209725	-10	47	48	168		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
31-Jul-2023	02:12:26	4023	BP23MVEXP-ENV-DC-090			Camera	63	627332	6205760	627380	6205770	-48	-10	49	78		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	02:12:45	4024	BP23MVEXP-ENV-DC-090			Camera	63	627333	6205760	627380	6205770	-47	-10	48	78		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	02:13:32	4025	BP23MVEXP-ENV-DC-090			Camera	63	627334	6205760	627380	6205770	-46	-10	47	78		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	02:13:44	4026	BP23MVEXP-ENV-DC-090			Camera	63	627335	6205760	627380	6205770	-45	-10	46	78		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	02:14:08	4027	BP23MVEXP-ENV-DC-090			Camera	63	627336	6205760	627380	6205770	-44	-10	45	78		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	02:14:15	4028	BP23MVEXP-ENV-DC-090			Camera	63	627337	6205761	627380	6205770	-43	-9	44	78		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	02:14:28	4029	BP23MVEXP-ENV-DC-090			Camera	63	627338	6205761	627380	6205770	-42	-9	43	78		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	02:14:39	4030	BP23MVEXP-ENV-DC-090			Camera	63	627339	6205761	627380	6205770	-41	-9	42	78		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	02:14:59	4031	BP23MVEXP-ENV-DC-090			Camera	63	627342	6205762	627380	6205770	-38	-8	39	78		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	02:15:17	4032	BP23MVEXP-ENV-DC-090			Camera	63	627343	6205762	627380	6205770	-37	-8	37	78		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	02:15:23	4033	BP23MVEXP-ENV-DC-090			Camera	63	627344	6205762	627380	6205770	-36	-8	37	78		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	02:15:43	4034	BP23MVEXP-ENV-DC-090			Camera	63	627346	6205763	627380	6205770	-34	-7	35	78		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	02:16:40	4035	BP23MVEXP-ENV-DC-090			Camera	63	627352	6205764	627380	6205770	-28	-6	29	78		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	02:17:16	4036	BP23MVEXP-ENV-DC-090			Camera	63	627356	6205765	627380	6205770	-24	-5	25	79		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	02:17:31	4037	BP23MVEXP-ENV-DC-090			Camera	63	627357	6205766	627380	6205770	-23	-4	23	79		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	02:17:43	4038	BP23MVEXP-ENV-DC-090			Camera	63	627358	6205766	627380	6205770	-22	-4	22	80		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	02:18:02	4039	BP23MVEXP-ENV-DC-090			Camera	63	627360	6205766	627380	6205770	-20	-4	20	80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	02:18:18	4040	BP23MVEXP-ENV-DC-090			Camera	63	627362	6205767	627380	6205770	-18	-3	19	80		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	02:18:29	4041	BP23MVEXP-ENV-DC-090			Camera	63	627363	6205767	627380	6205770	-17	-3	17	80		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	02:18:41	4042	BP23MVEXP-ENV-DC-090			Camera	63	627365	6205767	627380	6205770	-15	-3	16	80		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	02:19:26	4043	BP23MVEXP-ENV-DC-090			Camera	63	627369	6205768	627380	6205770	-11	-2	11	80		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	02:20:31	4044	BP23MVEXP-ENV-DC-090			Camera	63	627375	6205770	627380	6205770	-5	0	5	84		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	02:21:00	4045	BP23MVEXP-ENV-DC-090			Camera	63	627378	6205770	627380	6205770	-2	0	2	93		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	02:21:24	4046	BP23MVEXP-ENV-DC-090			Camera	63	627381	6205771	627380	6205770	1	1	1	-117		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	02:21:38	4047	BP23MVEXP-ENV-DC-090			Camera	63	627383	6205771	627380	6205770	3	1	3	-108		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	02:22:16	4048	BP23MVEXP-ENV-DC-090			Camera	63	627386	6205772	627380	6205770	6	2	6	-105		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	02:22:31	4049	BP23MVEXP-ENV-DC-090			Camera	63	627388	6205772	627380	6205770	8	2	8	-104		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	02:23:33	4050	BP23MVEXP-ENV-DC-090			Camera	63	627394	6205774	627380	6205770	14	4	15	-104		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	02:24:15	4051	BP23MVEXP-ENV-DC-090			Camera	63	627398	6205774	627380	6205770	18	4	19	-104		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	02:25:06	4052	BP23MVEXP-ENV-DC-090			Camera	63	627403	6205775	627380	6205770	23	5	24	-103		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	02:25:34	4053	BP23MVEXP-ENV-DC-090			Camera	63	627406	6205776	627380	6205770	26	6	27	-103		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	02:26:21	4054	BP23MVEXP-ENV-DC-090			Camera	63	627411	6205777	627380	6205770	31	7	32	-103		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	02:26:59	4055	BP23MVEXP-ENV-DC-090			Camera	63	627415	6205778	627380	6205770	35	8	35	-102		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	02:27:32	4056	BP23MVEXP-ENV-DC-090			Camera	63	627418	6205778	627380	6205770	38	8	39	-102		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	02:28:04	4057	BP23MVEXP-ENV-DC-090			Camera	63	627421	6205778	627380	6205770	41	8	42	-102		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	02:29:05	4058	BP23MVEXP-ENV-DC-090			Camera	63	627428	6205780	627380	6205770	48	10	49	-102		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	02:29:23	4059	BP23MVEXP-ENV-DC-090			Camera	63	627429	6205780	627380	6205770	49	10	50	-102		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	02:29:43	4060	BP23MVEXP-ENV-DC-090			Camera	63	627429	6205780	627380	6205770	49	10	50	-102		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	02:37:52	4061	BP23MVEXP-ENV-DC-090			Camera	63	627371	6205819	627380	6205770	-9	49	50	169		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	02:38:14	4062	BP23MVEXP-ENV-DC-090			Camera	63	627371	6205818	627380	6205770	-9	48	49	169		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	02:39:04	4063	BP23MVEXP-ENV-DC-090			Camera	63	627371	6205814	627380	6205770	-9	44	45	169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	02:39:20	4064	BP23MVEXP-ENV-DC-090			Camera	63	627372	6205813	627380	6205770	-8	43	44	169		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	02:39:48	4065	BP23MVEXP-ENV-DC-090			Camera	63	627372	6205810	627380	6205770	-8	40	41	169		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	02:40:45	4066	BP23MVEXP-ENV-DC-090			Camera	63	627373	6205804	627380	6205770	-7	34	35	169		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	02:41:19	4067	BP23MVEXP-ENV-DC-090			Camera	63	627374	6205800	627380	6205770	-6	30	31	169		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	02:41:47	4068	BP23MVEXP-ENV-DC-090			Camera	63	627375	6205797	627380	6205770	-5	27	28	170		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	02:42:14	4069	BP23MVEXP-ENV-DC-090			Camera	63	627376	6205794	627380	6205770	-4	24	24	170		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	02:42:57	4070	BP23MVEXP-ENV-DC-090			Camera	63	627377	6205789	627380	6205770	-3	19	20	170		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	02:43:19	4071	BP23MVEXP-ENV-DC-090			Camera	63	627377	6205787	627380	6205770	-3	17	17	171		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	02:44:17	4072	BP23MVEXP-ENV-DC-090			Camera	63	627378	6205781	627380	6205770	-2	11	11	170		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	02:45:01	4073	BP23MVEXP-ENV-DC-090			Camera	63	627379	6205777	627380	6205770	-1	7	7	173		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	02:45:54	4074	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205771	627380	6205770	0	1	1	-173		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	02:46:00	4075	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205771	627380	6205770	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	02:46:10	4076	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205770	627380	6205770	0	0	0	-95		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	02:46:17	4077	BP23MVEXP-ENV-DC-090			Camera	63	627380	6205769	627380	6205770	0	-1	1	-24		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
31-Jul-2023	02:46:38	4078	BP23MVEXP-ENV-DC-090			Camera	63	627381	6205767	627380	6205770	1	-3	4	-18		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
31-Jul-2023	02:47:11	4079	BP23MVEXP-ENV-DC-090			Camera	63	627382	6205763	627380	6205770	2	-7	7	-17		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
31-Jul-2023	02:48:25	4080	BP23MVEXP-ENV-DC-090			Camera	63	627383	6205756	627380	6205770	3	-14	15	-12		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
31-Jul-2023	02:48:50	4081	BP23MVEXP-ENV-DC-090			Camera	63	627384	6205754	627380	6205770	4	-16	17	-13		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
31-Jul-2023	02:49:09	4082	BP23MVEXP-ENV-DC-090			Camera	63	627384	6205752	627380	6205770	4	-18	19	-12		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
31-Jul-2023	02:49:19	4083	BP23MVEXP-ENV-DC-090			Camera	63	627384	6205751	627380	6205770	4	-19	19	-12		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
31-Jul-2023	02:50:19	4084	BP23MVEXP-ENV-DC-090			Camera	63	627385	6205746	627380	6205770	5	-24	25	-12		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
31-Jul-2023	02:51:56	4085	BP23MVEXP-ENV-DC-090			Camera	63	627387	6205735	627380	6205770	7	-35	36	-11		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
31-Jul-2023	02:52:33	4086	BP23MVEXP-ENV-DC-090			Camera	63	627388	6205731	627380	6205770	8	-39	40	-11		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
31-Jul-2023	02:53:16	4087	BP23MVEXP-ENV-DC-090			Camera	63	627388	6205727	627380	6205770	8	-43	44	-11		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
31-Jul-2023	02:53:46	4088	BP23MVEXP-ENV-DC-090			Camera	63	627389	6205724	627380	6205770	9	-46	47	-11		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
31-Jul-2023	02:54:04	4089	BP23MVEXP-ENV-DC-090			Camera	63	627389	6205722	627380	6205770	9	-48	49	-10		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
31-Jul-2023	04:06:29	4090	BP23MVEXP-ENV-DC-091			Camera	67	627985	6201742	627934	6201734	51	8	52	-99		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	04:06:46	4091	BP23MVEXP-ENV-DC-091			Camera	67	627985	6201742	627934	6201734	51	8	51	-99		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	04:08:02	4092	BP23MVEXP-ENV-DC-091			Camera	67	627983	6201743	627934	6201734	49	9	50	-100		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	04:08:42	4093	BP23MVEXP-ENV-DC-091			Camera	67	627980	6201742	627934	6201734	46	8	47	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	04:08:56	4094	BP23MVEXP-ENV-DC-091			Camera	67	627978	6201741	627934	6201734	44	7	45	-99		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	04:09:07	4095	BP23MVEXP-ENV-DC-091			Camera	67	627977	6201741	627934	6201734	43	7	44	-99		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	04:09:40	4096	BP23MVEXP-ENV-DC-091			Camera	67	627974	6201740	627934	6201734	40	6	40	-99		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	04:10:13	4097	BP23MVEXP-ENV-DC-091			Camera	67	627970	6201740	627934	6201734	36	6	37	-99		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	04:10:41	4098	BP23MVEXP-ENV-DC-091			Camera	67	627967	6201740	627934	6201734	33	6	34	-100		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	04:11:03	4099	BP23MVEXP-ENV-DC-091			Camera	67	627965	6201740	627934	6201734	31	6	32	-100		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	04:12:25	4100	BP23MVEXP-ENV-DC-091			Camera	67	627957	6201737	627934	6201734	23	3	24	-98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	04:13:09	4101	BP23MVEXP-ENV-DC-091			Camera	67	627952	6201736	627934	6201734	18	2	19	-97		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	04:14:11	4102	BP23MVEXP-ENV-DC-091			Camera	67	627946	6201736	627934	6201734	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	04:14:40	4103	BP23MVEXP-ENV-DC-091			Camera	67	627944	6201736	627934	6201734	10	2	10	-100		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	04:15:07	4104	BP23MVEXP-ENV-DC-091			Camera	67	627942	6201735	627934	6201734	8	1	8	-95		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	04:15:33	4105	BP23MVEXP-ENV-DC-091			Camera	67	627939	6201734	627934	6201734	5	0	5	-86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	04:15:59	4106	BP23MVEXP-ENV-DC-091			Camera	67	627935	6201733	627934	6201734	1	-1	2	-55		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	04:16:12	4107	BP23MVEXP-ENV-DC-091			Camera	67	627934	6201733	627934	6201734	0	-1	1	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	04:17:17	4108	BP23MVEXP-ENV-DC-091			Camera	67	627927	6201732	627934	6201734	-7	-2	7	77		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	04:17:33	4109	BP23MVEXP-ENV-DC-091			Camera	67	627926	6201732	627934	6201734	-8	-2	9	79		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	04:18:21	4110	BP23MVEXP-ENV-DC-091			Camera	67	627921	6201731	627934	6201734	-13	-3	13	79		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	04:18:38	4111	BP23MVEXP-ENV-DC-091			Camera	67	627919	6201731	627934	6201734	-15	-3	15	78		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	04:19:59	4112	BP23MVEXP-ENV-DC-091			Camera	67	627911	6201729	627934	6201734	-23	-5	23	78		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	04:21:52	4113	BP23MVEXP-ENV-DC-091			Camera	67	627900	6201727	627934	6201734	-34	-7	35	79		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	04:22:11	4114	BP23MVEXP-ENV-DC-091			Camera	67	627898	6201727	627934	6201734	-36	-7	37	79		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	04:22:37	4115	BP23MVEXP-ENV-DC-091			Camera	67	627895	6201726	627934	6201734	-39	-8	40	79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	04:23:10	4116	BP23MVEXP-ENV-DC-091			Camera	67	627891	6201725	627934	6201734	-43	-9	43	78		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	04:23:29	4117	BP23MVEXP-ENV-DC-091			Camera	67	627890	6201725	627934	6201734	-45	-9	45	79		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	04:23:42	4118	BP23MVEXP-ENV-DC-091			Camera	67	627888	6201725	627934	6201734	-46	-9	47	79		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	04:24:09	4119	BP23MVEXP-ENV-DC-091			Camera	67	627886	6201724	627934	6201734	-49	-10	49	79		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	04:39:23	4120	BP23MVEXP-ENV-DC-091			Camera	67	627926	6201786	627934	6201734	-8	52	52	171		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	04:42:27	4121	BP23MVEXP-ENV-DC-091			Camera	67	627926	6201784	627934	6201734	-8	50	50	171		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	04:42:48	4122	BP23MVEXP-ENV-DC-091			Camera	67	627927	6201782	627934	6201734	-7	48	48	171		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	04:43:07	4123A	BP23MVEXP-ENV-DC-091			Camera	68	627927	6201780	627934	6201734	-7	46	47	171		(Raw Nav, Kongsberg 14208, img#34) (B)
31-Jul-2023	04:43:20	4123B	BP23MVEXP-ENV-DC-091			Camera	67	627928	6201779	627934	6201734	-6	45	45	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	04:43:46	4124	BP23MVEXP-ENV-DC-091			Camera	67	627929	6201776	627934	6201734	-5	42	43	173		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	04:44:13	4125	BP23MVEXP-ENV-DC-091			Camera	67	627929	6201773	627934	6201734	-5	39	40	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	04:44:38	4126	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201771	627934	6201734	-4	37	37	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	04:45:07	4127	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201768	627934	6201734	-4	34	34	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	04:45:24	4128	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201766	627934	6201734	-4	32	33	173		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	04:45:59	4129	BP23MVEXP-ENV-DC-091			Camera	67	627930	6201763	627934	6201734	-4	29	29	173		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	04:46:25	4130	BP23MVEXP-ENV-DC-091			Camera	67	627931	6201760	627934	6201734	-3	26	26	173		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	04:47:02	4131	BP23MVEXP-ENV-DC-091			Camera	67	627932	6201756	627934	6201734	-2	23	23	174		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	04:47:19	4132	BP23MVEXP-ENV-DC-091			Camera	67	627932	6201755	627934	6201734	-2	21	21	175		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	04:47:41	4133	BP23MVEXP-ENV-DC-091			Camera	67	627933	6201752	627934	6201734	-1	18	18	176		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	04:47:55	4134	BP23MVEXP-ENV-DC-091			Camera	67	627933	6201750	627934	6201734	-1	16	16	177		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	04:48:45	4135	BP23MVEXP-ENV-DC-091			Camera	67	627933	6201746	627934	6201734	-1	12	12	176		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	04:49:26	4136	BP23MVEXP-ENV-DC-091			Camera	67	627934	6201742	627934	6201734	0	8	8	178		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	04:50:27	4137	BP23MVEXP-ENV-DC-091			Camera	67	627935	6201736	627934	6201734	1	2	2	-154		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	04:50:44	4138	BP23MVEXP-ENV-DC-091			Camera	67	627935	6201734	627934	6201734	1	0	1	-96		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	04:51:04	4139	BP23MVEXP-ENV-DC-091			Camera	67	627936	6201732	627934	6201734	2	-2	2	-43		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	04:51:48	4140	BP23MVEXP-ENV-DC-091			Camera	67	627936	6201728	627934	6201734	2	-6	7	-22		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	04:52:03	4141	BP23MVEXP-ENV-DC-091			Camera	67	627937	6201726	627934	6201734	3	-8	8	-21		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	04:52:23	4142	BP23MVEXP-ENV-DC-091			Camera	67	627937	6201724	627934	6201734	3	-10	11	-19		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	04:52:39	4143	BP23MVEXP-ENV-DC-091			Camera	67	627938	6201722	627934	6201734	4	-12	12	-17		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	04:53:20	4144	BP23MVEXP-ENV-DC-091			Camera	67	627938	6201718	627934	6201734	4	-16	17	-14		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
31-Jul-2023	04:53:29	4145	BP23MVEXP-ENV-DC-091			Camera	67	627938	6201717	627934	6201734	4	-17	18	-14		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
31-Jul-2023	04:54:12	4146	BP23MVEXP-ENV-DC-091			Camera	67	627939	6201713	627934	6201734	5	-21	22	-13		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
31-Jul-2023	04:54:57	4147	BP23MVEXP-ENV-DC-091			Camera	67	627940	6201709	627934	6201734	6	-25	26	-12		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
31-Jul-2023	04:55:24	4148	BP23MVEXP-ENV-DC-091			Camera	67	627940	6201706	627934	6201734	6	-28	29	-12		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
31-Jul-2023	04:55:57	4149	BP23MVEXP-ENV-DC-091			Camera	67	627940	6201702	627934	6201734	6	-32	32	-12		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
31-Jul-2023	04:56:24	4150	BP23MVEXP-ENV-DC-091			Camera	67	627941	6201700	627934	6201734	7	-34	35	-11		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
31-Jul-2023	04:56:52	4151	BP23MVEXP-ENV-DC-091			Camera	67	627941	6201697	627934	6201734	7	-37	38	-10		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
31-Jul-2023	04:57:44	4152	BP23MVEXP-ENV-DC-091			Camera	67	627941	6201692	627934	6201734	7	-42	43	-10		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
31-Jul-2023	04:58:18	4153	BP23MVEXP-ENV-DC-091			Camera	67	627942	6201689	627934	6201734	8	-45	46	-10		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
31-Jul-2023	04:58:38	4154	BP23MVEXP-ENV-DC-091			Camera	67	627942	6201687	627934	6201734	8	-47	48	-10		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
31-Jul-2023	06:53:09	4155	BP23MVEXP-ENV-DC-092			Camera	61	628406	6197867	628458	6197868	-52	-1	52	89		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	06:53:56	4156	BP23MVEXP-ENV-DC-092			Camera	61	628407	6197867	628458	6197868	-51	-1	51	89		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	06:55:12	4157	BP23MVEXP-ENV-DC-092			Camera	61	628408	6197868	628458	6197868	-50	0	50	90		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	06:55:41	4158	BP23MVEXP-ENV-DC-092			Camera	61	628411	6197869	628458	6197868	-47	1	47	91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	06:56:02	4159	BP23MVEXP-ENV-DC-092			Camera	61	628413	6197869	628458	6197868	-45	1	45	91		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	06:56:23	4160	BP23MVEXP-ENV-DC-092			Camera	61	628415	6197869	628458	6197868	-43	1	43	92		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	06:56:41	4161	BP23MVEXP-ENV-DC-092			Camera	61	628417	6197870	628458	6197868	-41	2	41	92		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	06:56:59	4162	BP23MVEXP-ENV-DC-092			Camera	61	628419	6197870	628458	6197868	-39	2	39	93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	06:57:20	4163	BP23MVEXP-ENV-DC-092			Camera	61	628421	6197870	628458	6197868	-37	2	37	93		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	06:58:07	4164	BP23MVEXP-ENV-DC-092			Camera	61	628426	6197871	628458	6197868	-32	3	33	95		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	06:58:55	4165	BP23MVEXP-ENV-DC-092			Camera	61	628431	6197872	628458	6197868	-27	4	28	98		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	06:59:06	4166	BP23MVEXP-ENV-DC-092			Camera	61	628432	6197872	628458	6197868	-26	4	27	98		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	07:01:02	4167	BP23MVEXP-ENV-DC-092			Camera	62	628444	6197872	628458	6197868	-14	4	15	105		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	07:02:34	4168	BP23MVEXP-ENV-DC-092			Camera	62	628453	6197873	628458	6197868	-5	5	8	136		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	07:02:49	4169	BP23MVEXP-ENV-DC-092			Camera	62	628454	6197874	628458	6197868	-4	6	7	147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	07:03:09	4170	BP23MVEXP-ENV-DC-092			Camera	62	628456	6197874	628458	6197868	-2	6	6	160		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	07:03:29	4171	BP23MVEXP-ENV-DC-092			Camera	62	628458	6197874	628458	6197868	0	6	6	177		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	07:03:52	4172	BP23MVEXP-ENV-DC-092			Camera	62	628460	6197874	628458	6197868	2	6	7	-162		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	07:04:44	4173	BP23MVEXP-ENV-DC-092			Camera	62	628466	6197875	628458	6197868	8	7	11	-131		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	07:05:16	4174	BP23MVEXP-ENV-DC-092			Camera	62	628470	6197875	628458	6197868	12	7	14	-122		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	07:05:36	4175	BP23MVEXP-ENV-DC-092			Camera	62	628472	6197875	628458	6197868	14	7	15	-118		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	07:06:14	4176	BP23MVEXP-ENV-DC-092			Camera	62	628475	6197876	628458	6197868	17	8	19	-114		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	07:06:41	4177	BP23MVEXP-ENV-DC-092			Camera	62	628478	6197876	628458	6197868	20	8	21	-111		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	07:07:03	4178	BP23MVEXP-ENV-DC-092			Camera	62	628480	6197876	628458	6197868	22	8	23	-110		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	07:07:52	4179	BP23MVEXP-ENV-DC-092			Camera	62	628485	6197876	628458	6197868	27	8	28	-106		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	07:08:38	4180	BP23MVEXP-ENV-DC-092			Camera	62	628489	6197877	628458	6197868	32	9	33	-105		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	07:09:29	4181	BP23MVEXP-ENV-DC-092			Camera	62	628494	6197877	628458	6197868	36	9	38	-104		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	07:10:10	4182	BP23MVEXP-ENV-DC-092			Camera	62	628499	6197878	628458	6197868	41	10	42	-104		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	07:10:48	4183	BP23MVEXP-ENV-DC-092			Camera	62	628503	6197878	628458	6197868	45	10	46	-103		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	07:11:21	4184	BP23MVEXP-ENV-DC-092			Camera	62	628506	6197878	628458	6197868	48	10	49	-102		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	07:26:14	4185	BP23MVEXP-ENV-DC-092			Camera	62	628450	6197916	628458	6197868	-8	48	49	171		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	07:27:52	4186	BP23MVEXP-ENV-DC-092			Camera	62	628451	6197914	628458	6197868	-7	46	47	172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	07:28:00	4187	BP23MVEXP-ENV-DC-092			Camera	62	628451	6197914	628458	6197868	-7	46	46	172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	07:28:37	4188	BP23MVEXP-ENV-DC-092			Camera	62	628452	6197910	628458	6197868	-6	42	42	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	07:29:43	4189	BP23MVEXP-ENV-DC-092			Camera	62	628453	6197902	628458	6197868	-5	34	35	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	07:30:38	4190	BP23MVEXP-ENV-DC-092			Camera	62	628454	6197897	628458	6197868	-4	29	29	172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	07:31:58	4191	BP23MVEXP-ENV-DC-092			Camera	62	628455	6197888	628458	6197868	-3	20	20	173		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	07:32:18	4192	BP23MVEXP-ENV-DC-092			Camera	62	628456	6197886	628458	6197868	-2	18	18	173		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	07:32:52	4193	BP23MVEXP-ENV-DC-092			Camera	62	628456	6197883	628458	6197868	-2	15	15	173		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	07:34:30	4194	BP23MVEXP-ENV-DC-092			Camera	62	628458	6197873	628458	6197868	0	5	5	177		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	07:34:47	4195	BP23MVEXP-ENV-DC-092			Camera	62	628458	6197871	628458	6197868	0	3	3	-179		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	07:35:06	4196	BP23MVEXP-ENV-DC-092			Camera	61	628458	6197869	628458	6197868	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	07:35:23	4197	BP23MVEXP-ENV-DC-092			Camera	61	628458	6197867	628458	6197868	0	-1	1	-12		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	07:35:38	4198	BP23MVEXP-ENV-DC-092			Camera	61	628458	6197866	628458	6197868	0	-2	2	-10		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	07:35:57	4199	BP23MVEXP-ENV-DC-092			Camera	61	628459	6197864	628458	6197868	1	-4	4	-10		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	07:37:14	4200	BP23MVEXP-ENV-DC-092			Camera	61	628461	6197856	628458	6197868	3	-12	12	-12		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	07:37:48	4201	BP23MVEXP-ENV-DC-092			Camera	61	628461	6197852	628458	6197868	3	-16	16	-11		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	07:38:12	4202	BP23MVEXP-ENV-DC-092			Camera	61	628461	6197850	628458	6197868	3	-18	19	-11		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	07:38:46	4203	BP23MVEXP-ENV-DC-092			Camera	61	628462	6197846	628458	6197868	4	-22	22	-10		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	07:39:31	4204	BP23MVEXP-ENV-DC-092			Camera	61	628463	6197841	628458	6197868	5	-27	27	-10		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	07:40:06	4205	BP23MVEXP-ENV-DC-092			Camera	61	628463	6197837	628458	6197868	5	-31	31	-9		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	07:40:55	4206	BP23MVEXP-ENV-DC-092			Camera	61	628464	6197833	628458	6197868	6	-35	35	-9		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	07:41:54	4207	BP23MVEXP-ENV-DC-092			Camera	61	628465	6197828	628458	6197868	7	-40	41	-10		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	07:42:54	4208	BP23MVEXP-ENV-DC-092			Camera	61	628466	6197821	628458	6197868	8	-47	48	-10		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	07:43:28	4209	BP23MVEXP-ENV-DC-092			Camera	61	628467	6197819	628458	6197868	9	-49	50	-10		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
31-Jul-2023	09:01:46	4210	BP23MVEXP-ENV-DC-093			Camera	66	629002	6193874	629054	6193880	-52	-6	52	83		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	09:01:59	4211	BP23MVEXP-ENV-DC-093			Camera	66	629003	6193873	629054	6193880	-52	-7	52	83		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	09:03:51	4212	BP23MVEXP-ENV-DC-093			Camera	66	629003	6193874	629054	6193880	-51	-6	51	83		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	09:04:12	4213	BP23MVEXP-ENV-DC-093			Camera	66	629005	6193874	629054	6193880	-49	-6	50	84		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	09:05:28	4214	BP23MVEXP-ENV-DC-093			Camera	66	629012	6193876	629054	6193880	-42	-4	42	85		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	09:05:56	4215	BP23MVEXP-ENV-DC-093			Camera	66	629015	6193877	629054	6193880	-39	-3	39	85		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	09:06:33	4216	BP23MVEXP-ENV-DC-093			Camera	66	629019	6193877	629054	6193880	-35	-3	35	85		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	09:06:46	4217	BP23MVEXP-ENV-DC-093			Camera	66	629020	6193877	629054	6193880	-34	-3	34	85		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	09:07:26	4218	BP23MVEXP-ENV-DC-093			Camera	66	629025	6193878	629054	6193880	-29	-2	30	86		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	09:08:11	4219	BP23MVEXP-ENV-DC-093			Camera	66	629029	6193878	629054	6193880	-25	-2	25	86		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	09:09:25	4220	BP23MVEXP-ENV-DC-093			Camera	66	629037	6193880	629054	6193880	-17	0	17	88		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	09:10:19	4221	BP23MVEXP-ENV-DC-093			Camera	66	629043	6193880	629054	6193880	-11	0	11	91		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	09:11:06	4222	BP23MVEXP-ENV-DC-093			Camera	66	629048	6193881	629054	6193880	-6	1	7	99		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	09:11:34	4223	BP23MVEXP-ENV-DC-093			Camera	66	629050	6193881	629054	6193880	-4	1	4	113		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	09:11:50	4224	BP23MVEXP-ENV-DC-093			Camera	66	629052	6193882	629054	6193880	-2	2	3	133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	09:12:06	4225	BP23MVEXP-ENV-DC-093			Camera	66	629054	6193882	629054	6193880	0	2	2	172		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	09:12:17	4226	BP23MVEXP-ENV-DC-093			Camera	66	629055	6193882	629054	6193880	1	2	2	-158		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	09:12:40	4227	BP23MVEXP-ENV-DC-093			Camera	66	629057	6193882	629054	6193880	3	2	4	-127		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	09:13:12	4228	BP23MVEXP-ENV-DC-093			Camera	66	629060	6193883	629054	6193880	6	3	7	-114		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	09:14:06	4229	BP23MVEXP-ENV-DC-093			Camera	66	629066	6193884	629054	6193880	12	4	12	-107		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	09:14:29	4230	BP23MVEXP-ENV-DC-093			Camera	66	629068	6193884	629054	6193880	14	4	15	-105		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	09:15:58	4231	BP23MVEXP-ENV-DC-093			Camera	66	629077	6193885	629054	6193880	23	5	24	-103		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	09:16:43	4232	BP23MVEXP-ENV-DC-093			Camera	66	629082	6193886	629054	6193880	28	6	29	-101		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	09:17:47	4233	BP23MVEXP-ENV-DC-093			Camera	66	629088	6193887	629054	6193880	34	7	35	-101		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	09:18:24	4234	BP23MVEXP-ENV-DC-093			Camera	66	629092	6193887	629054	6193880	38	7	39	-101		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	09:20:03	4235	BP23MVEXP-ENV-DC-093			Camera	66	629102	6193889	629054	6193880	48	9	49	-100		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	09:21:13	4236	BP23MVEXP-ENV-DC-093			Camera	66	629104	6193889	629054	6193880	50	9	51	-100		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	09:24:15	4237	BP23MVEXP-ENV-DC-093			Camera	66	629095	6193896	629054	6193880	41	16	44	-112		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	09:28:18	4238	BP23MVEXP-ENV-DC-093			Camera	66	629073	6193911	629054	6193880	19	31	36	-148		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	09:35:08	4239	BP23MVEXP-ENV-DC-093			Camera	66	629046	6193929	629054	6193880	-8	49	49	170		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	09:36:43	4240	BP23MVEXP-ENV-DC-093			Camera	66	629046	6193925	629054	6193880	-8	45	46	170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	09:37:02	4241	BP23MVEXP-ENV-DC-093			Camera	66	629046	6193923	629054	6193880	-8	43	44	169		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	09:37:42	4242	BP23MVEXP-ENV-DC-093			Camera	66	629047	6193919	629054	6193880	-7	39	39	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	09:38:22	4243	BP23MVEXP-ENV-DC-093			Camera	66	629047	6193914	629054	6193880	-7	34	35	169		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	09:38:36	4244	BP23MVEXP-ENV-DC-093			Camera	66	629048	6193913	629054	6193880	-6	33	34	170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	09:39:23	4245	BP23MVEXP-ENV-DC-093			Camera	66	629049	6193908	629054	6193880	-5	28	29	169		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	09:40:28	4246	BP23MVEXP-ENV-DC-093			Camera	66	629050	6193902	629054	6193880	-4	22	22	169		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	09:42:06	4247	BP23MVEXP-ENV-DC-093			Camera	66	629051	6193892	629054	6193880	-3	12	12	168		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	09:43:28	4248	BP23MVEXP-ENV-DC-093			Camera	66	629053	6193883	629054	6193880	-1	3	3	164		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	09:43:38	4249	BP23MVEXP-ENV-DC-093			Camera	66	629053	6193882	629054	6193880	-1	2	2	163		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	09:44:05	4250	BP23MVEXP-ENV-DC-093			Camera	66	629054	6193879	629054	6193880	0	-1	1	9		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	09:44:43	4251	BP23MVEXP-ENV-DC-093			Camera	66	629055	6193876	629054	6193880	1	-4	4	-12		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	09:45:09	4252	BP23MVEXP-ENV-DC-093			Camera	66	629055	6193873	629054	6193880	1	-7	7	-12		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	09:45:26	4253	BP23MVEXP-ENV-DC-093			Camera	66	629056	6193871	629054	6193880	2	-9	9	-12		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	09:45:57	4254	BP23MVEXP-ENV-DC-093			Camera	66	629056	6193868	629054	6193880	2	-12	12	-12		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	09:46:52	4255	BP23MVEXP-ENV-DC-093			Camera	66	629058	6193862	629054	6193880	4	-18	18	-12		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	09:47:40	4256	BP23MVEXP-ENV-DC-093			Camera	66	629058	6193858	629054	6193880	4	-23	23	-11		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	09:48:40	4257	BP23MVEXP-ENV-DC-093			Camera	66	629059	6193851	629054	6193880	5	-29	29	-10		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	09:49:36	4258	BP23MVEXP-ENV-DC-093			Camera	66	629060	6193846	629054	6193880	6	-34	35	-10		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	09:50:03	4259	BP23MVEXP-ENV-DC-093			Camera	66	629060	6193843	629054	6193880	6	-37	38	-10		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	09:50:53	4260	BP23MVEXP-ENV-DC-093			Camera	66	629061	6193838	629054	6193880	7	-42	43	-9		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	09:51:38	4261	BP23MVEXP-ENV-DC-093			Camera	66	629062	6193833	629054	6193880	8	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	09:52:02	4262	BP23MVEXP-ENV-DC-093			Camera	66	629062	6193831	629054	6193880	8	-49	50	-9		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	11:31:05	4623	BP23MVEXP-ENV-DC-094			Camera	72	628537	6190278	628588	6190282	-51	-4	51	86		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	11:32:13	4624	BP23MVEXP-ENV-DC-094			Camera	72	628538	6190278	628588	6190282	-50	-4	50	85		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	11:32:34	4625	BP23MVEXP-ENV-DC-094			Camera	72	628540	6190278	628588	6190282	-48	-4	48	85		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	11:32:50	4626	BP23MVEXP-ENV-DC-094			Camera	72	628542	6190278	628588	6190282	-46	-4	46	85		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	11:33:17	4627	BP23MVEXP-ENV-DC-094			Camera	72	628545	6190278	628588	6190282	-43	-4	43	85		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	11:33:47	4628	BP23MVEXP-ENV-DC-094			Camera	72	628548	6190278	628588	6190282	-40	-4	40	85		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	11:34:26	4629	BP23MVEXP-ENV-DC-094			Camera	72	628552	6190278	628588	6190282	-36	-4	36	84		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	11:34:57	4630	BP23MVEXP-ENV-DC-094			Camera	72	628555	6190279	628588	6190282	-33	-3	33	84		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	11:35:14	4631	BP23MVEXP-ENV-DC-094			Camera	72	628557	6190279	628588	6190282	-31	-3	31	84		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	11:36:06	4632	BP23MVEXP-ENV-DC-094			Camera	72	628562	6190279	628588	6190282	-26	-3	26	83		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	11:36:27	4633	BP23MVEXP-ENV-DC-094			Camera	72	628564	6190279	628588	6190282	-24	-3	24	83		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	11:36:48	4634	BP23MVEXP-ENV-DC-094			Camera	72	628566	6190279	628588	6190282	-22	-3	22	81		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	11:37:32	4635	BP23MVEXP-ENV-DC-094			Camera	72	628571	6190279	628588	6190282	-17	-3	17	79		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	11:38:34	4636	BP23MVEXP-ENV-DC-094			Camera	72	628577	6190280	628588	6190282	-11	-2	11	77		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	11:39:00	4637	BP23MVEXP-ENV-DC-094			Camera	72	628580	6190280	628588	6190282	-8	-2	8	74		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	11:39:34	4638	BP23MVEXP-ENV-DC-094			Camera	72	628584	6190280	628588	6190282	-4	-2	5	63		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	11:39:40	4639	BP23MVEXP-ENV-DC-094			Camera	72	628584	6190280	628588	6190282	-4	-2	4	59		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	11:40:11	4640	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190280	628588	6190282	0	-2	2	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	11:40:33	4641	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190280	628588	6190282	2	-2	3	-39		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	11:41:32	4642	BP23MVEXP-ENV-DC-094			Camera	72	628595	6190281	628588	6190282	7	-1	8	-80		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	11:41:53	4643	BP23MVEXP-ENV-DC-094			Camera	72	628598	6190281	628588	6190282	10	-1	10	-84		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	11:42:23	4644	BP23MVEXP-ENV-DC-094			Camera	72	628601	6190281	628588	6190282	13	-1	13	-85		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	11:43:02	4645	BP23MVEXP-ENV-DC-094			Camera	72	628605	6190281	628588	6190282	17	-1	17	-86		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	11:44:03	4646	BP23MVEXP-ENV-DC-094			Camera	72	628611	6190281	628588	6190282	23	-1	23	-87		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	11:44:24	4647	BP23MVEXP-ENV-DC-094			Camera	72	628614	6190281	628588	6190282	26	-1	26	-88		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	11:46:00	4648	BP23MVEXP-ENV-DC-094			Camera	72	628623	6190282	628588	6190282	35	0	35	-90		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	11:46:47	4649	BP23MVEXP-ENV-DC-094			Camera	73	628628	6190282	628588	6190282	40	0	40	-90		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	11:48:10	4650	BP23MVEXP-ENV-DC-094			Camera	73	628637	6190282	628588	6190282	49	0	49	-90		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	11:56:28	4651	BP23MVEXP-ENV-DC-094			Camera	72	628587	6190330	628588	6190282	-1	48	48	179		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	11:57:59	4652	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190327	628588	6190282	0	45	45	180		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	11:58:27	4653	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190324	628588	6190282	0	42	42	180		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	11:58:48	4654	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190321	628588	6190282	0	39	39	180		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	11:59:28	4655	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190317	628588	6190282	0	35	35	180		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	11:59:56	4656	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190314	628588	6190282	0	32	32	180		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	12:00:30	4657	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190310	628588	6190282	0	28	28	-180		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	12:00:39	4658	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190309	628588	6190282	0	27	27	-180		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	12:01:03	4659	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190307	628588	6190282	0	25	25	-179		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	12:02:40	4660	BP23MVEXP-ENV-DC-094			Camera	72	628588	6190297	628588	6190282	0	15	15	-179		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	12:04:26	4661	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190286	628588	6190282	1	4	4	-171		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	12:04:48	4662	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190284	628588	6190282	1	2	2	-157		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	12:05:02	4663	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190282	628588	6190282	1	0	1	-93		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	12:05:27	4664	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190279	628588	6190282	1	-3	3	-18		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	12:05:48	4665	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190277	628588	6190282	1	-5	5	-10		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	12:06:01	4666	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190276	628588	6190282	1	-6	6	-8		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	12:06:26	4667	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190274	628588	6190282	1	-8	8	-6		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	12:07:27	4668	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190267	628588	6190282	1	-15	15	-4		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	12:08:33	4669	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190261	628588	6190282	1	-21	21	-3		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	12:09:13	4670	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190256	628588	6190282	1	-26	26	-3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	12:09:41	4671	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190254	628588	6190282	1	-28	28	-2		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	12:10:30	4672	BP23MVEXP-ENV-DC-094			Camera	72	628589	6190249	628588	6190282	1	-34	34	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	12:11:12	4673	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190244	628588	6190282	2	-38	38	-2		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	12:11:56	4674	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190240	628588	6190282	2	-42	42	-2		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	12:12:44	4675	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190235	628588	6190282	2	-47	47	-2		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
31-Jul-2023	12:13:26	4676	BP23MVEXP-ENV-DC-094			Camera	72	628590	6190232	628588	6190282	2	-50	50	-2		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
31-Jul-2023	12:59:25	4677	BP23MVEXP-ENV-DC-095			Camera	69	630139	6190131	630186	6190154	-47	-23	53	64		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	13:01:05	4678	BP23MVEXP-ENV-DC-095			Camera	69	630142	6190132	630186	6190154	-44	-22	49	63		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	13:01:17	4679	BP23MVEXP-ENV-DC-095			Camera	69	630143	6190132	630186	6190154	-43	-22	48	63		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	13:01:34	4680	BP23MVEXP-ENV-DC-095			Camera	69	630145	6190132	630186	6190154	-41	-22	47	62		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	13:01:52	4681	BP23MVEXP-ENV-DC-095			Camera	69	630147	6190133	630186	6190154	-39	-21	45	62		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	13:02:38	4682	BP23MVEXP-ENV-DC-095			Camera	69	630151	6190135	630186	6190154	-35	-19	40	62		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	13:03:07	4683	BP23MVEXP-ENV-DC-095			Camera	70	630153	6190136	630186	6190154	-33	-18	37	61		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	13:04:07	4684	BP23MVEXP-ENV-DC-095			Camera	70	630160	6190139	630186	6190154	-26	-15	30	60		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	13:05:01	4685	BP23MVEXP-ENV-DC-095			Camera	70	630166	6190141	630186	6190154	-21	-13	24	57		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	13:05:57	4686	BP23MVEXP-ENV-DC-095			Camera	70	630171	6190142	630186	6190154	-15	-12	19	51		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	13:07:04	4687	BP23MVEXP-ENV-DC-095			Camera	70	630177	6190145	630186	6190154	-9	-9	13	42		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	13:07:30	4688	BP23MVEXP-ENV-DC-095			Camera	70	630180	6190146	630186	6190154	-6	-8	10	35		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	13:08:24	4689	BP23MVEXP-ENV-DC-095			Camera	70	630185	6190147	630186	6190154	-1	-7	7	12		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	13:08:48	4690	BP23MVEXP-ENV-DC-095			Camera	70	630187	6190148	630186	6190154	1	-6	6	-12		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	13:09:06	4691	BP23MVEXP-ENV-DC-095			Camera	70	630189	6190149	630186	6190154	3	-5	6	-31		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	13:09:40	4692	BP23MVEXP-ENV-DC-095			Camera	70	630192	6190150	630186	6190154	6	-4	7	-60		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	13:10:29	4693	BP23MVEXP-ENV-DC-095			Camera	70	630198	6190152	630186	6190154	12	-2	12	-80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	13:10:53	4694	BP23MVEXP-ENV-DC-095			Camera	70	630200	6190153	630186	6190154	14	-1	14	-87		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	13:11:37	4695	BP23MVEXP-ENV-DC-095			Camera	70	630204	6190155	630186	6190154	18	1	18	-93		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	13:11:45	4696	BP23MVEXP-ENV-DC-095			Camera	70	630205	6190155	630186	6190154	19	1	19	-93		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	13:12:55	4697	BP23MVEXP-ENV-DC-095			Camera	70	630211	6190158	630186	6190154	26	4	26	-98		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	13:14:21	4698	BP23MVEXP-ENV-DC-095			Camera	70	630220	6190160	630186	6190154	34	6	34	-100		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	13:15:00	4699	BP23MVEXP-ENV-DC-095			Camera	70	630223	6190162	630186	6190154	37	8	38	-102		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	13:15:37	4700	BP23MVEXP-ENV-DC-095			Camera	70	630227	6190163	630186	6190154	41	9	42	-103		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	13:24:41	4701	BP23MVEXP-ENV-DC-095			Camera	70	630170	6190196	630186	6190154	-16	42	45	160		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	13:26:45	4702	BP23MVEXP-ENV-DC-095			Camera	70	630171	6190195	630186	6190154	-15	42	44	160		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	13:27:34	4703	BP23MVEXP-ENV-DC-095			Camera	70	630173	6190190	630186	6190154	-13	36	39	160		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	13:28:11	4704	BP23MVEXP-ENV-DC-095			Camera	70	630174	6190186	630186	6190154	-12	32	34	159		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	13:29:16	4705	BP23MVEXP-ENV-DC-095			Camera	70	630177	6190181	630186	6190154	-9	27	29	161		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	13:30:13	4706	BP23MVEXP-ENV-DC-095			Camera	70	630179	6190176	630186	6190154	-7	22	23	163		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	13:31:17	4707	BP23MVEXP-ENV-DC-095			Camera	70	630181	6190170	630186	6190154	-5	16	16	163		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	13:31:58	4708	BP23MVEXP-ENV-DC-095			Camera	70	630183	6190166	630186	6190154	-3	12	13	166		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	13:32:31	4709	BP23MVEXP-ENV-DC-095			Camera	70	630184	6190163	630186	6190154	-2	9	9	170		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	13:33:00	4710	BP23MVEXP-ENV-DC-095			Camera	70	630185	6190160	630186	6190154	-1	6	6	172		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	13:33:39	4711	BP23MVEXP-ENV-DC-095			Camera	70	630186	6190156	630186	6190154	0	2	2	-165		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	13:33:56	4712	BP23MVEXP-ENV-DC-095			Camera	70	630187	6190154	630186	6190154	1	0	1	-93		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	13:34:34	4713	BP23MVEXP-ENV-DC-095			Camera	70	630189	6190150	630186	6190154	3	-4	4	-36		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	13:34:58	4714	BP23MVEXP-ENV-DC-095			Camera	70	630190	6190148	630186	6190154	4	-6	7	-30		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	13:35:34	4715	BP23MVEXP-ENV-DC-095			Camera	70	630191	6190145	630186	6190154	5	-9	10	-30		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	13:36:34	4716	BP23MVEXP-ENV-DC-095			Camera	70	630194	6190139	630186	6190154	8	-15	16	-28		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	13:36:50	4717	BP23MVEXP-ENV-DC-095			Camera	70	630194	6190138	630186	6190154	8	-16	18	-26		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	13:37:37	4718	BP23MVEXP-ENV-DC-095			Camera	70	630195	6190133	630186	6190154	9	-21	23	-24		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	13:38:01	4719	BP23MVEXP-ENV-DC-095			Camera	70	630196	6190131	630186	6190154	10	-23	25	-24		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	13:38:43	4720	BP23MVEXP-ENV-DC-095			Camera	69	630198	6190127	630186	6190154	12	-27	29	-25		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	13:38:49	4721	BP23MVEXP-ENV-DC-095			Camera	70	630199	6190127	630186	6190154	13	-27	30	-25		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	13:39:05	4722	BP23MVEXP-ENV-DC-095			Camera	69	630199	6190125	630186	6190154	14	-29	32	-25		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	13:40:27	4723	BP23MVEXP-ENV-DC-095			Camera	69	630202	6190118	630186	6190154	16	-36	40	-24		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	13:40:51	4724	BP23MVEXP-ENV-DC-095			Camera	69	630203	6190116	630186	6190154	17	-38	42	-24		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	13:41:13	4725	BP23MVEXP-ENV-DC-095			Camera	69	630204	6190113	630186	6190154	18	-41	44	-24		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	13:41:28	4726	BP23MVEXP-ENV-DC-095			Camera	69	630204	6190112	630186	6190154	18	-42	46	-23		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	13:41:57	4727	BP23MVEXP-ENV-DC-095			Camera	69	630205	6190109	630186	6190154	19	-45	49	-23		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	14:51:07	4728	BP23MVEXP-ENV-DC-097			Camera	69	631417	6186277	631463	6186300	-46	-23	51	63		(Raw Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	14:53:58	4729	BP23MVEXP-ENV-DC-097			Camera	69	631421	6186281	631463	6186300	-42	-19	46	66		(Raw Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	14:54:30	4730	BP23MVEXP-ENV-DC-097			Camera	69	631424	6186282	631463	6186300	-39	-18	43	65		(Raw Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	14:55:04	4731	BP23MVEXP-ENV-DC-097			Camera	69	631426	6186283	631463	6186300	-37	-17	41	65		(Raw Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	14:55:18	4732	BP23MVEXP-ENV-DC-097			Camera	69	631428	6186284	631463	6186300	-35	-16	38	65		(Raw Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	14:55:44	4733	BP23MVEXP-ENV-DC-097			Camera	69	631430	6186285	631463	6186300	-33	-15	36	66		(Raw Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	14:56:31	4734	BP23MVEXP-ENV-DC-097			Camera	69	631435	6186287	631463	6186300	-28	-13	31	65		(Raw Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	14:56:50	4735	BP23MVEXP-ENV-DC-097			Camera	69	631437	6186288	631463	6186300	-26	-12	29	65		(Raw Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	14:57:35	4736	BP23MVEXP-ENV-DC-097			Camera	69	631441	6186289	631463	6186300	-22	-11	25	63		(Raw Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	14:58:56	4737	BP23MVEXP-ENV-DC-097			Camera	69	631448	6186293	631463	6186300	-15	-7	17	65		(Raw Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	14:59:44	4738	BP23MVEXP-ENV-DC-097			Camera	70	631452	6186296	631463	6186300	-11	-4	12	70		(Raw Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	15:00:47	4739	BP23MVEXP-ENV-DC-097			Camera	70	631459	6186299	631463	6186300	-4	-1	4	76		(Raw Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	15:01:18	4740	BP23MVEXP-ENV-DC-097			Camera	70	631461	6186301	631463	6186300	-2	1	2	117		(Raw Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	15:01:30	4741	BP23MVEXP-ENV-DC-097			Camera	70	631464	6186300	631463	6186300	1	0	1	-90		(Raw Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	15:02:07	4742	BP23MVEXP-ENV-DC-097			Camera	70	631466	6186303	631463	6186300	3	3	4	-135		(Raw Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	15:02:34	4743	BP23MVEXP-ENV-DC-097			Camera	70	631470	6186304	631463	6186300	7	4	8	-120		(Raw Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	15:02:56	4744	BP23MVEXP-ENV-DC-097			Camera	70	631472	6186304	631463	6186300	9	4	10	-114		(Raw Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	15:03:44	4745	BP23MVEXP-ENV-DC-097			Camera	70	631476	6186306	631463	6186300	13	6	14	-115		(Raw Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	15:04:23	4746	BP23MVEXP-ENV-DC-097			Camera	70	631480	6186308	631463	6186300	17	8	19	-115		(Raw Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	15:04:36	4747	BP23MVEXP-ENV-DC-097			Camera	70	631481	6186308	631463	6186300	18	8	20	-114		(Raw Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	15:04:57	4748	BP23MVEXP-ENV-DC-097			Camera	70	631483	6186308	631463	6186300	20	8	22	-112		(Raw Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	15:05:15	4749	BP23MVEXP-ENV-DC-097			Camera	70	631485	6186310	631463	6186300	22	10	24	-114		(Raw Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	15:05:53	4750	BP23MVEXP-ENV-DC-097			Camera	70	631488	6186311	631463	6186300	25	11	27	-114		(Raw Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	15:06:04	4751	BP23MVEXP-ENV-DC-097			Camera	70	631489	6186312	631463	6186300	26	12	29	-115		(Raw Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	15:06:39	4752	BP23MVEXP-ENV-DC-097			Camera	70	631492	6186313	631463	6186300	29	13	32	-114		(Raw Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	15:07:43	4753	BP23MVEXP-ENV-DC-097			Camera	70	631498	6186316	631463	6186300	35	16	38	-115		(Raw Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	15:08:51	4754	BP23MVEXP-ENV-DC-097			Camera	70	631504	6186319	631463	6186300	41	19	45	-115		(Raw Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	15:09:46	4755	BP23MVEXP-ENV-DC-097			Camera	70	631508	6186321	631463	6186300	45	21	50	-115		(Raw Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	15:18:52	4756	BP23MVEXP-ENV-DC-097			Camera	70	631493	6186284	631463	6186300	30	-16	34	-62		(Raw Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	15:24:42	4757	BP23MVEXP-ENV-DC-097			Camera	70	631480	6186253	631463	6186300	17	-47	50	-20		(Raw Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	15:25:56	4758	BP23MVEXP-ENV-DC-097			Camera	70	631481	6186255	631463	6186300	18	-45	48	-22		(Raw Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	15:26:23	4759	BP23MVEXP-ENV-DC-097			Camera	70	631480	6186258	631463	6186300	17	-42	45	-22		(Raw Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	15:27:06	4760	BP23MVEXP-ENV-DC-097			Camera	70	631477	6186261	631463	6186300	14	-39	41	-20		(Raw Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	15:28:09	4761	BP23MVEXP-ENV-DC-097			Camera	70	631474	6186267	631463	6186300	11	-33	35	-18		(Raw Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	15:28:40	4762	BP23MVEXP-ENV-DC-097			Camera	70	631473	6186270	631463	6186300	10	-30	32	-18		(Raw Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	15:29:14	4763	BP23MVEXP-ENV-DC-097			Camera	70	631471	6186272	631463	6186300	8	-28	29	-16		(Raw Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	15:29:49	4764	BP23MVEXP-ENV-DC-097			Camera	70	631470	6186276	631463	6186300	7	-24	25	-16		(Raw Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	15:30:39	4765	BP23MVEXP-ENV-DC-097			Camera	70	631468	6186281	631463	6186300	5	-19	20	-15		(Raw Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	15:31:34	4766	BP23MVEXP-ENV-DC-097			Camera	70	631466	6186287	631463	6186300	3	-13	13	-13		(Raw Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	15:32:52	4767	BP23MVEXP-ENV-DC-097			Camera	70	631463	6186294	631463	6186300	0	-6	6	0		(Raw Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	15:33:37	4768	BP23MVEXP-ENV-DC-097			Camera	70	631461	6186298	631463	6186300	-2	-2	3	45		(Raw Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	15:33:56	4769	BP23MVEXP-ENV-DC-097			Camera	70	631460	6186300	631463	6186300	-3	0	3	90		(Raw Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	15:34:24	4770	BP23MVEXP-ENV-DC-097			Camera	70	631459	6186303	631463	6186300	-4	3	5	127		(Raw Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	15:34:55	4771	BP23MVEXP-ENV-DC-097			Camera	70	631458	6186306	631463	6186300	-5	6	8	140		(Raw Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	15:35:49	4772	BP23MVEXP-ENV-DC-097			Camera	70	631456	6186312	631463	6186300	-7	12	14	150		(Raw Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	15:36:27	4773	BP23MVEXP-ENV-DC-097			Camera	70	631454	6186316	631463	6186300	-9	16	18	151		(Raw Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	15:37:27	4774	BP23MVEXP-ENV-DC-097			Camera	70	631453	6186321	631463	6186300	-10	21	23	155		(Raw Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	15:37:58	4775	BP23MVEXP-ENV-DC-097			Camera	70	631452	6186325	631463	6186300	-11	25	27	156		(Raw Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	15:38:48	4776	BP23MVEXP-ENV-DC-097			Camera	70	631450	6186330	631463	6186300	-13	30	33	157		(Raw Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	15:40:15	4777	BP23MVEXP-ENV-DC-097			Camera	69	631446	6186338	631463	6186300	-17	38	42	156		(Raw Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	15:40:52	4778	BP23MVEXP-ENV-DC-097			Camera	69	631445	6186342	631463	6186300	-18	42	46	157		(Raw Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	15:41:49	4779	BP23MVEXP-ENV-DC-097			Camera	70	631442	6186350	631463	6186300	-21	50	54	157		(Raw Nav, Kongsberg 14208, img#52) (B) (T.A)
31-Jul-2023	17:16:00	4780	BP23MVEXP-ENV-DC-096			Camera	79	628434	6186334	628432	6186279	2	55	55	-178		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	17:17:42	4781	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186332	628432	6186279	2	53	53	-178		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	17:18:11	4782	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186330	628432	6186279	3	51	51	-177		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	17:18:53	4783	BP23MVEXP-ENV-DC-096			Camera	80	628435	6186325	628432	6186279	3	46	46	-177		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	17:19:32	4784	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186321	628432	6186279	2	43	43	-178		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	17:20:14	4785	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186318	628432	6186279	1	40	40	-178		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	17:21:59	4786	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186307	628432	6186279	2	29	29	-176		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	17:22:43	4787	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186303	628432	6186279	1	24	24	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	17:23:28	4788	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186298	628432	6186279	2	20	20	-174		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	17:24:29	4789	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186291	628432	6186279	2	12	12	-171		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	17:24:48	4790	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186289	628432	6186279	1	10	10	-172		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	17:25:43	4791	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186284	628432	6186279	2	5	6	-165		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	17:25:52	4792	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186284	628432	6186279	2	5	5	-161		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	17:26:01	4793	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186283	628432	6186279	2	4	4	-154		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	17:26:19	4794	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186281	628432	6186279	2	2	3	-130		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	17:26:40	4795	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186279	628432	6186279	2	0	2	-79		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	17:27:09	4796	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186275	628432	6186279	2	-4	4	-27		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	17:27:48	4797	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186272	628432	6186279	1	-7	7	-8		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	17:28:38	4798	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186267	628432	6186279	2	-12	12	-9		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	17:30:45	4799	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186254	628432	6186279	1	-25	25	-2		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	17:31:42	4800	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186248	628432	6186279	1	-31	31	-2		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	17:33:10	4801	BP23MVEXP-ENV-DC-096			Camera	80	628434	6186239	628432	6186279	2	-40	40	-3		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	17:50:01	4802	BP23MVEXP-ENV-DC-096			Camera	80	628382	6186280	628432	6186279	-50	1	50	92		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	17:50:40	4803	BP23MVEXP-ENV-DC-096			Camera	80	628386	6186280	628432	6186279	-46	1	46	92		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	17:51:15	4804	BP23MVEXP-ENV-DC-096			Camera	80	628390	6186280	628432	6186279	-42	1	42	92		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	17:51:37	4805	BP23MVEXP-ENV-DC-096			Camera	80	628392	6186281	628432	6186279	-40	2	40	93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	17:51:48	4806	BP23MVEXP-ENV-DC-096			Camera	80	628393	6186281	628432	6186279	-39	2	39	93		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	17:52:29	4807	BP23MVEXP-ENV-DC-096			Camera	80	628397	6186281	628432	6186279	-35	2	35	93		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	17:52:56	4808	BP23MVEXP-ENV-DC-096			Camera	80	628400	6186281	628432	6186279	-32	2	32	94		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	17:53:16	4809	BP23MVEXP-ENV-DC-096			Camera	80	628402	6186281	628432	6186279	-30	2	30	94		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	17:53:23	4810	BP23MVEXP-ENV-DC-096			Camera	80	628403	6186281	628432	6186279	-29	2	29	95		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	17:55:35	4811	BP23MVEXP-ENV-DC-096			Camera	80	628417	6186281	628432	6186279	-15	2	15	96		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	17:55:49	4812	BP23MVEXP-ENV-DC-096			Camera	80	628418	6186281	628432	6186279	-14	2	14	97		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	17:56:30	4813	BP23MVEXP-ENV-DC-096			Camera	80	628422	6186281	628432	6186279	-10	2	10	100		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	17:57:13	4814	BP23MVEXP-ENV-DC-096			Camera	80	628426	6186281	628432	6186279	-6	2	6	112		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	17:58:15	4815	BP23MVEXP-ENV-DC-096			Camera	80	628433	6186282	628432	6186279	1	3	3	-165		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	17:58:38	4816	BP23MVEXP-ENV-DC-096			Camera	80	628435	6186281	628432	6186279	3	2	4	-127		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	17:59:16	4817	BP23MVEXP-ENV-DC-096			Camera	80	628439	6186281	628432	6186279	7	2	8	-106		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	17:59:53	4818	BP23MVEXP-ENV-DC-096			Camera	80	628443	6186281	628432	6186279	11	2	11	-99		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	18:00:07	4819	BP23MVEXP-ENV-DC-096			Camera	80	628444	6186281	628432	6186279	12	2	13	-99		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	18:00:52	4820	BP23MVEXP-ENV-DC-096			Camera	80	628449	6186282	628432	6186279	17	3	17	-98		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	18:02:34	4821	BP23MVEXP-ENV-DC-096			Camera	80	628459	6186281	628432	6186279	27	2	28	-95		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	18:03:19	4822	BP23MVEXP-ENV-DC-096			Camera	80	628464	6186281	628432	6186279	32	2	32	-94		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	18:04:52	4823	BP23MVEXP-ENV-DC-096			Camera	80	628474	6186281	628432	6186279	42	2	42	-93		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	18:05:34	4824	BP23MVEXP-ENV-DC-096			Camera	80	628478	6186282	628432	6186279	46	3	46	-94		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	18:05:42	4825	BP23MVEXP-ENV-DC-096			Camera	80	628478	6186282	628432	6186279	46	3	46	-94		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	18:06:16	4826	BP23MVEXP-ENV-DC-096			Camera	80	628482	6186282	628432	6186279	50	3	50	-94		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	19:42:48	4827	BP23MVEXP-ENV-DC-098			Camera	90	628211	6182336	628264	6182327	-53	9	53	100		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	19:46:20	4828	BP23MVEXP-ENV-DC-098			Camera	90	628219	6182337	628264	6182327	-45	10	46	102		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	19:46:39	4829	BP23MVEXP-ENV-DC-098			Camera	90	628221	6182337	628264	6182327	-43	10	44	103		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	19:47:14	4830	BP23MVEXP-ENV-DC-098			Camera	90	628224	6182336	628264	6182327	-40	9	41	103		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	19:47:29	4831	BP23MVEXP-ENV-DC-098			Camera	90	628226	6182336	628264	6182327	-38	9	39	104		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	19:48:42	4832	BP23MVEXP-ENV-DC-098			Camera	90	628234	6182336	628264	6182327	-30	9	31	107		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	19:50:10	4833	BP23MVEXP-ENV-DC-098			Camera	90	628243	6182336	628264	6182327	-21	9	23	113		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	19:50:43	4834	BP23MVEXP-ENV-DC-098			Camera	90	628246	6182336	628264	6182327	-18	9	20	116		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	19:51:28	4835	BP23MVEXP-ENV-DC-098			Camera	90	628251	6182335	628264	6182327	-13	8	15	121		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	19:51:44	4836	BP23MVEXP-ENV-DC-098			Camera	90	628253	6182335	628264	6182327	-12	8	14	123		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	19:51:53	4837	BP23MVEXP-ENV-DC-098			Camera	90	628254	6182334	628264	6182327	-11	7	13	125		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	19:52:18	4838	BP23MVEXP-ENV-DC-098			Camera	89	628256	6182334	628264	6182327	-8	7	11	132		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	19:52:56	4839	BP23MVEXP-ENV-DC-098			Camera	89	628259	6182334	628264	6182327	-5	7	8	146		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	19:53:35	4840	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182334	628264	6182327	-1	7	7	174		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	19:54:06	4841	BP23MVEXP-ENV-DC-098			Camera	89	628267	6182334	628264	6182327	3	7	7	-157		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	19:54:22	4842	BP23MVEXP-ENV-DC-098			Camera	89	628269	6182333	628264	6182327	5	6	8	-144		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	19:54:50	4843	BP23MVEXP-ENV-DC-098			Camera	89	628272	6182333	628264	6182327	8	6	10	-129		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	19:55:26	4844	BP23MVEXP-ENV-DC-098			Camera	89	628275	6182333	628264	6182327	11	6	13	-118		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	19:55:41	4845	BP23MVEXP-ENV-DC-098			Camera	89	628277	6182333	628264	6182327	13	6	14	-115		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	19:57:04	4846	BP23MVEXP-ENV-DC-098			Camera	89	628285	6182332	628264	6182327	21	5	22	-104		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	19:57:30	4847	BP23MVEXP-ENV-DC-098			Camera	89	628288	6182332	628264	6182327	24	5	24	-102		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	19:58:11	4848	BP23MVEXP-ENV-DC-098			Camera	89	628292	6182332	628264	6182327	28	5	29	-99		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	19:58:43	4849	BP23MVEXP-ENV-DC-098			Camera	89	628296	6182331	628264	6182327	32	4	32	-97		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	19:59:22	4850	BP23MVEXP-ENV-DC-098			Camera	89	628300	6182331	628264	6182327	36	4	36	-96		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	20:00:52	4851	BP23MVEXP-ENV-DC-098			Camera	89	628308	6182331	628264	6182327	44	4	44	-95		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	20:01:30	4852	BP23MVEXP-ENV-DC-098			Camera	89	628312	6182330	628264	6182327	48	3	48	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
31-Jul-2023	20:09:37	4853	BP23MVEXP-ENV-DC-098			Camera	90	628289	6182350	628264	6182327	25	23	34	-132		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	20:17:51	4854	BP23MVEXP-ENV-DC-098			Camera	90	628261	6182376	628264	6182327	-3	49	49	176		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	20:18:38	4855	BP23MVEXP-ENV-DC-098			Camera	90	628260	6182374	628264	6182327	-4	47	47	176		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	20:19:24	4856	BP23MVEXP-ENV-DC-098			Camera	90	628260	6182370	628264	6182327	-4	43	43	174		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	20:19:46	4857	BP23MVEXP-ENV-DC-098			Camera	90	628260	6182368	628264	6182327	-4	41	41	174		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	20:20:38	4858	BP23MVEXP-ENV-DC-098			Camera	89	628261	6182362	628264	6182327	-3	35	35	176		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	20:20:58	4859	BP23MVEXP-ENV-DC-098			Camera	89	628262	6182360	628264	6182327	-2	33	33	176		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	20:21:32	4860	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182356	628264	6182327	-1	29	29	177		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	20:22:21	4861	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182350	628264	6182327	-1	23	23	177		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	20:23:06	4862	BP23MVEXP-ENV-DC-098			Camera	89	628263	6182345	628264	6182327	-1	18	18	177		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	20:23:55	4863	BP23MVEXP-ENV-DC-098			Camera	90	628263	6182340	628264	6182327	-1	13	13	178		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	20:24:18	4864	BP23MVEXP-ENV-DC-098			Camera	90	628263	6182338	628264	6182327	-1	11	11	177		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	20:24:41	4865	BP23MVEXP-ENV-DC-098			Camera	90	628263	6182335	628264	6182327	-1	8	8	176		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	20:25:16	4866	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182332	628264	6182327	0	5	5	178		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	20:25:26	4867	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182330	628264	6182327	0	4	4	-180		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	20:25:48	4868	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182328	628264	6182327	0	1	1	-167		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	20:26:14	4869	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182325	628264	6182327	1	-2	2	-19		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	20:26:58	4870	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182321	628264	6182327	0	-6	6	-4		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	20:28:00	4871	BP23MVEXP-ENV-DC-098			Camera	90	628264	6182314	628264	6182327	0	-13	13	-1		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	20:28:49	4872	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182309	628264	6182327	1	-18	18	-2		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	20:29:28	4873	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182305	628264	6182327	1	-22	22	-2		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	20:30:23	4874	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182299	628264	6182327	1	-28	28	-1		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	20:31:41	4875	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182292	628264	6182327	1	-35	35	-2		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	20:32:02	4876	BP23MVEXP-ENV-DC-098			Camera	90	628265	6182289	628264	6182327	1	-38	38	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	20:33:13	4877	BP23MVEXP-ENV-DC-098			Camera	91	628265	6182282	628264	6182327	1	-45	45	-1		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
31-Jul-2023	22:00:30	4878	BP23MVEXP-ENV-DC-099			Camera	80	632702	6182592	632746	6182610	-44	-18	48	67		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
31-Jul-2023	22:02:17	4879	BP23MVEXP-ENV-DC-099			Camera	80	632704	6182593	632746	6182610	-42	-18	45	67		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
31-Jul-2023	22:03:06	4880	BP23MVEXP-ENV-DC-099			Camera	80	632709	6182594	632746	6182610	-37	-16	41	67		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
31-Jul-2023	22:03:46	4881	BP23MVEXP-ENV-DC-099			Camera	79	632712	6182596	632746	6182610	-34	-14	36	67		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
31-Jul-2023	22:04:00	4882	BP23MVEXP-ENV-DC-099			Camera	79	632714	6182596	632746	6182610	-32	-14	35	67		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
31-Jul-2023	22:04:47	4883	BP23MVEXP-ENV-DC-099			Camera	79	632718	6182598	632746	6182610	-28	-12	30	67		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
31-Jul-2023	22:04:59	4884	BP23MVEXP-ENV-DC-099			Camera	79	632720	6182599	632746	6182610	-26	-11	29	67		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
31-Jul-2023	22:05:32	4885	BP23MVEXP-ENV-DC-099			Camera	79	632722	6182600	632746	6182610	-24	-10	26	67		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
31-Jul-2023	22:06:15	4886	BP23MVEXP-ENV-DC-099			Camera	79	632726	6182601	632746	6182610	-20	-9	21	66		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
31-Jul-2023	22:07:09	4887	BP23MVEXP-ENV-DC-099			Camera	79	632732	6182604	632746	6182610	-14	-6	16	65		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
31-Jul-2023	22:07:59	4888	BP23MVEXP-ENV-DC-099			Camera	79	632737	6182606	632746	6182610	-9	-4	10	64		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
31-Jul-2023	22:08:41	4889	BP23MVEXP-ENV-DC-099			Camera	79	632741	6182607	632746	6182610	-5	-3	6	63		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
31-Jul-2023	22:08:55	4890	BP23MVEXP-ENV-DC-099			Camera	79	632742	6182608	632746	6182610	-4	-2	5	60		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
31-Jul-2023	22:09:53	4891	BP23MVEXP-ENV-DC-099			Camera	79	632748	6182610	632746	6182610	2	0	2	-102		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
31-Jul-2023	22:10:26	4892	BP23MVEXP-ENV-DC-099			Camera	79	632751	6182612	632746	6182610	5	2	5	-109		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
31-Jul-2023	22:11:17	4893	BP23MVEXP-ENV-DC-099			Camera	79	632756	6182614	632746	6182610	10	4	10	-111		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
31-Jul-2023	22:11:42	4894	BP23MVEXP-ENV-DC-099			Camera	79	632758	6182614	632746	6182610	12	4	13	-110		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
31-Jul-2023	22:12:58	4895	BP23MVEXP-ENV-DC-099			Camera	79	632765	6182618	632746	6182610	19	8	21	-112		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
31-Jul-2023	22:13:36	4896	BP23MVEXP-ENV-DC-099			Camera	79	632769	6182620	632746	6182610	23	10	25	-113		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
31-Jul-2023	22:14:12	4897	BP23MVEXP-ENV-DC-099			Camera	79	632772	6182621	632746	6182610	26	11	28	-112		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
31-Jul-2023	22:14:54	4898	BP23MVEXP-ENV-DC-099			Camera	79	632776	6182622	632746	6182610	30	12	33	-112		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
31-Jul-2023	22:15:48	4899	BP23MVEXP-ENV-DC-099			Camera	79	632782	6182625	632746	6182610	36	15	39	-112		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
31-Jul-2023	22:16:16	4900	BP23MVEXP-ENV-DC-099			Camera	79	632785	6182626	632746	6182610	39	16	42	-112		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
31-Jul-2023	22:16:44	4901	BP23MVEXP-ENV-DC-099			Camera	79	632787	6182627	632746	6182610	41	17	44	-112		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
31-Jul-2023	22:17:26	4902	BP23MVEXP-ENV-DC-099			Camera	79	632791	6182628	632746	6182610	45	18	48	-112		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
31-Jul-2023	22:18:01	4903	BP23MVEXP-ENV-DC-099			Camera	79	632793	6182629	632746	6182610	47	19	51	-112		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
31-Jul-2023	22:36:38	4904	BP23MVEXP-ENV-DC-099			Camera	79	632738	6182650	632746	6182610	-8	40	41	169		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
31-Jul-2023	22:38:48	4905	BP23MVEXP-ENV-DC-099			Camera	79	632728	6182656	632746	6182610	-18	46	49	159		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
31-Jul-2023	22:39:40	4906	BP23MVEXP-ENV-DC-099			Camera	79	632729	6182653	632746	6182610	-17	43	46	158		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
31-Jul-2023	22:40:25	4907	BP23MVEXP-ENV-DC-099			Camera	79	632731	6182648	632746	6182610	-15	38	41	158		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
31-Jul-2023	22:42:03	4908	BP23MVEXP-ENV-DC-099			Camera	79	632735	6182638	632746	6182610	-11	28	30	158		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
31-Jul-2023	22:42:50	4909	BP23MVEXP-ENV-DC-099			Camera	79	632737	6182634	632746	6182610	-9	24	25	158		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
31-Jul-2023	22:43:12	4910	BP23MVEXP-ENV-DC-099			Camera	79	632739	6182631	632746	6182610	-7	21	22	161		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
31-Jul-2023	22:44:10	4911	BP23MVEXP-ENV-DC-099			Camera	79	632740	6182626	632746	6182610	-6	16	17	160		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
31-Jul-2023	22:44:24	4912	BP23MVEXP-ENV-DC-099			Camera	79	632741	6182625	632746	6182610	-5	15	16	160		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
31-Jul-2023	22:45:31	4913	BP23MVEXP-ENV-DC-099			Camera	79	632743	6182618	632746	6182610	-3	8	8	161		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
31-Jul-2023	22:45:54	4914	BP23MVEXP-ENV-DC-099			Camera	79	632744	6182615	632746	6182610	-2	5	6	159		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
31-Jul-2023	22:46:03	4915	BP23MVEXP-ENV-DC-099			Camera	79	632744	6182615	632746	6182610	-2	5	5	160		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
31-Jul-2023	22:46:23	4916	BP23MVEXP-ENV-DC-099			Camera	79	632745	6182613	632746	6182610	-1	3	3	164		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
31-Jul-2023	22:47:01	4917	BP23MVEXP-ENV-DC-099			Camera	79	632747	6182610	632746	6182610	1	0	1	-49		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
31-Jul-2023	22:47:46	4918	BP23MVEXP-ENV-DC-099			Camera	79	632748	6182605	632746	6182610	2	-5	5	-21		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
31-Jul-2023	22:48:03	4919	BP23MVEXP-ENV-DC-099			Camera	79	632749	6182604	632746	6182610	3	-6	7	-25		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
31-Jul-2023	22:48:49	4920	BP23MVEXP-ENV-DC-099			Camera	80	632750	6182599	632746	6182610	4	-11	12	-20		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
31-Jul-2023	22:49:32	4921	BP23MVEXP-ENV-DC-099			Camera	80	632752	6182594	632746	6182610	6	-16	17	-22		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
31-Jul-2023	22:50:04	4922	BP23MVEXP-ENV-DC-099			Camera	80	632754	6182591	632746	6182610	8	-19	20	-23		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
31-Jul-2023	22:50:48	4923	BP23MVEXP-ENV-DC-099			Camera	80	632756	6182587	632746	6182610	10	-23	25	-22		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
31-Jul-2023	22:51:26	4924	BP23MVEXP-ENV-DC-099			Camera	80	632757	6182584	632746	6182610	11	-26	29	-23		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
31-Jul-2023	22:51:43	4925	BP23MVEXP-ENV-DC-099			Camera	80	632758	6182582	632746	6182610	12	-28	30	-23		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
31-Jul-2023	22:52:40	4926	BP23MVEXP-ENV-DC-099			Camera	80	632760	6182576	632746	6182610	14	-34	36	-23		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
31-Jul-2023	22:53:31	4927	BP23MVEXP-ENV-DC-099			Camera	80	632762	6182571	632746	6182610	16	-39	42	-23		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
31-Jul-2023	22:54:17	4928	BP23MVEXP-ENV-DC-099			Camera	80	632764	6182567	632746	6182610	18	-43	46	-22		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	00:00:09	4929	BP23MVEXP-ENV-DC-101			Camera	87	634162	6178820	634211	6178844	-49	-24	54	64		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	00:00:21	4930	BP23MVEXP-ENV-DC-101			Camera	87	634163	6178820	634211	6178844	-48	-24	54	64		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	00:00:50	4931	BP23MVEXP-ENV-DC-101			Camera	87	634163	6178819	634211	6178844	-48	-25	54	63		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	00:02:03	4932	BP23MVEXP-ENV-DC-101			Camera	87	634165	6178819	634211	6178844	-46	-25	52	61		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	00:02:20	4933	BP23MVEXP-ENV-DC-101			Camera	87	634166	6178819	634211	6178844	-45	-25	51	61		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	00:03:45	4934	BP23MVEXP-ENV-DC-101			Camera	87	634174	6178824	634211	6178844	-37	-20	42	62		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	00:04:14	4935	BP23MVEXP-ENV-DC-101			Camera	87	634177	6178825	634211	6178844	-34	-19	39	62		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	00:04:28	4936	BP23MVEXP-ENV-DC-101			Camera	87	634178	6178826	634211	6178844	-33	-18	38	62		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	00:05:48	4937	BP23MVEXP-ENV-DC-101			Camera	87	634186	6178830	634211	6178844	-25	-14	29	61		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	00:06:11	4938	BP23MVEXP-ENV-DC-101			Camera	87	634188	6178831	634211	6178844	-23	-13	26	61		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	00:06:53	4939	BP23MVEXP-ENV-DC-101			Camera	87	634192	6178833	634211	6178844	-19	-11	22	60		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	00:07:34	4940	BP23MVEXP-ENV-DC-101			Camera	87	634196	6178834	634211	6178844	-15	-10	18	57		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	00:09:25	4941	BP23MVEXP-ENV-DC-101			Camera	88	634206	6178839	634211	6178844	-5	-5	8	45		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	00:10:08	4942	BP23MVEXP-ENV-DC-101			Camera	88	634210	6178841	634211	6178844	-1	-3	4	12		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	00:10:39	4943	BP23MVEXP-ENV-DC-101			Camera	88	634213	6178842	634211	6178844	2	-2	3	-48		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	00:10:52	4944	BP23MVEXP-ENV-DC-101			Camera	88	634215	6178843	634211	6178844	4	-2	4	-67		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	00:11:49	4945	BP23MVEXP-ENV-DC-101			Camera	88	634220	6178845	634211	6178844	9	1	9	-97		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	00:12:04	4946	BP23MVEXP-ENV-DC-101			Camera	88	634221	6178846	634211	6178844	10	2	11	-100		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	00:12:14	4947	BP23MVEXP-ENV-DC-101			Camera	88	634222	6178846	634211	6178844	11	2	12	-101		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	00:14:37	4948	BP23MVEXP-ENV-DC-101			Camera	88	634235	6178852	634211	6178844	24	8	25	-108		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	00:14:50	4949A	BP23MVEXP-ENV-DC-101			Camera	91	634236	6178852	634211	6178844	25	8	26	-108		(Raw Nav, Kongsberg 14208, img#21) (B)
01-Aug-2023	00:15:20	4949B	BP23MVEXP-ENV-DC-101			Camera	88	634239	6178854	634211	6178844	28	10	30	-109		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	00:15:29	4950	BP23MVEXP-ENV-DC-101			Camera	88	634240	6178854	634211	6178844	29	10	31	-110		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	00:15:45	4951	BP23MVEXP-ENV-DC-101			Camera	88	634242	6178855	634211	6178844	31	11	33	-110		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	00:16:02	4952	BP23MVEXP-ENV-DC-101			Camera	88	634243	6178856	634211	6178844	32	12	34	-111		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	00:16:29	4953	BP23MVEXP-ENV-DC-101			Camera	88	634246	6178857	634211	6178844	35	13	37	-111		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	00:17:04	4954	BP23MVEXP-ENV-DC-101			Camera	88	634249	6178859	634211	6178844	38	15	41	-111		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	00:17:59	4955	BP23MVEXP-ENV-DC-101			Camera	88	634255	6178861	634211	6178844	44	17	47	-111		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	00:18:08	4956	BP23MVEXP-ENV-DC-101			Camera	88	634256	6178861	634211	6178844	45	17	48	-111		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	00:18:37	4957	BP23MVEXP-ENV-DC-101			Camera	88	634257	6178862	634211	6178844	46	18	50	-111		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	00:29:51	4958	BP23MVEXP-ENV-DC-101			Camera	87	634196	6178889	634211	6178844	-15	45	47	161		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	00:30:04	4959	BP23MVEXP-ENV-DC-101			Camera	87	634196	6178890	634211	6178844	-15	46	48	161		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	00:30:26	4960	BP23MVEXP-ENV-DC-101			Camera	87	634195	6178891	634211	6178844	-16	47	49	161		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	00:33:08	4961	BP23MVEXP-ENV-DC-101			Camera	87	634199	6178882	634211	6178844	-12	38	40	163		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	00:35:57	4962	BP23MVEXP-ENV-DC-101			Camera	87	634205	6178866	634211	6178844	-6	23	23	166		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	00:36:44	4963	BP23MVEXP-ENV-DC-101			Camera	87	634208	6178861	634211	6178844	-3	17	18	170		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	00:37:30	4964	BP23MVEXP-ENV-DC-101			Camera	87	634208	6178857	634211	6178844	-3	13	13	166		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	00:39:15	4965	BP23MVEXP-ENV-DC-101			Camera	87	634213	6178847	634211	6178844	2	3	3	-150		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	00:39:32	4966	BP23MVEXP-ENV-DC-101			Camera	87	634213	6178845	634211	6178844	2	1	2	-118		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	00:40:03	4967	BP23MVEXP-ENV-DC-101			Camera	87	634213	6178842	634211	6178844	2	-2	3	-43		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	00:40:26	4968	BP23MVEXP-ENV-DC-101			Camera	87	634214	6178840	634211	6178844	3	-4	5	-39		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	00:40:41	4969	BP23MVEXP-ENV-DC-101			Camera	87	634215	6178839	634211	6178844	4	-5	6	-38		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	00:41:46	4970	BP23MVEXP-ENV-DC-101			Camera	87	634218	6178832	634211	6178844	7	-12	13	-31		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	00:43:16	4971	BP23MVEXP-ENV-DC-101			Camera	87	634221	6178824	634211	6178844	10	-20	22	-26		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	00:45:02	4972	BP23MVEXP-ENV-DC-101			Camera	88	634224	6178813	634211	6178844	13	-31	33	-23		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	00:45:11	4973	BP23MVEXP-ENV-DC-101			Camera	88	634224	6178812	634211	6178844	13	-32	34	-22		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	00:46:13	4974	BP23MVEXP-ENV-DC-101			Camera	88	634227	6178807	634211	6178844	16	-37	40	-24		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	00:46:28	4975	BP23MVEXP-ENV-DC-101			Camera	88	634228	6178806	634211	6178844	17	-39	42	-24		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	00:46:48	4976	BP23MVEXP-ENV-DC-101			Camera	88	634229	6178803	634211	6178844	18	-41	44	-24		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	00:46:58	4977	BP23MVEXP-ENV-DC-101			Camera	88	634229	6178803	634211	6178844	18	-41	45	-23		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	00:47:28	4978	BP23MVEXP-ENV-DC-101			Camera	88	634227	6178800	634211	6178844	16	-44	47	-20		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	02:37:17	4979	BP23MVEXP-ENV-DC-100			Camera	91	628118	6178332	628064	6178337	54	-5	55	-85		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	02:38:10	4980	BP23MVEXP-ENV-DC-100			Camera	91	628118	6178332	628064	6178337	54	-5	54	-85		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	02:38:58	4981	BP23MVEXP-ENV-DC-100			Camera	91	628117	6178332	628064	6178337	53	-5	53	-85		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	02:39:12	4982	BP23MVEXP-ENV-DC-100			Camera	91	628116	6178332	628064	6178337	52	-5	52	-84		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	02:39:52	4983	BP23MVEXP-ENV-DC-100			Camera	91	628113	6178331	628064	6178337	49	-6	50	-83		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	02:41:13	4984	BP23MVEXP-ENV-DC-100			Camera	91	628105	6178332	628064	6178337	41	-5	41	-83		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	02:41:34	4985	BP23MVEXP-ENV-DC-100			Camera	91	628102	6178332	628064	6178337	38	-5	39	-83		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	02:41:59	4986	BP23MVEXP-ENV-DC-100			Camera	91	628100	6178332	628064	6178337	36	-5	36	-82		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	02:42:18	4987	BP23MVEXP-ENV-DC-100			Camera	91	628098	6178333	628064	6178337	34	-4	34	-83		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	02:42:33	4988	BP23MVEXP-ENV-DC-100			Camera	91	628096	6178333	628064	6178337	32	-4	32	-83		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	02:43:23	4989	BP23MVEXP-ENV-DC-100			Camera	91	628091	6178333	628064	6178337	27	-4	28	-81		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	02:43:54	4990	BP23MVEXP-ENV-DC-100			Camera	91	628088	6178333	628064	6178337	25	-4	25	-81		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	02:46:33	4991	BP23MVEXP-ENV-DC-100			Camera	91	628072	6178334	628064	6178337	8	-3	8	-71		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	02:46:51	4992	BP23MVEXP-ENV-DC-100			Camera	91	628070	6178334	628064	6178337	6	-3	7	-66		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	02:48:09	4993	BP23MVEXP-ENV-DC-100			Camera	91	628062	6178336	628064	6178337	-2	-1	3	57		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	02:48:15	4994	BP23MVEXP-ENV-DC-100			Camera	91	628061	6178336	628064	6178337	-3	-1	3	63		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	02:48:21	4995	BP23MVEXP-ENV-DC-100			Camera	91	628061	6178336	628064	6178337	-3	-1	4	67		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	02:49:16	4996	BP23MVEXP-ENV-DC-100			Camera	91	628055	6178336	628064	6178337	-9	-1	9	85		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	02:49:58	4997	BP23MVEXP-ENV-DC-100			Camera	91	628051	6178336	628064	6178337	-13	-1	13	87		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	02:52:23	4998	BP23MVEXP-ENV-DC-100			Camera	91	628036	6178337	628064	6178337	-28	0	28	90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	02:52:51	4999	BP23MVEXP-ENV-DC-100			Camera	91	628033	6178337	628064	6178337	-31	0	31	91		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	02:54:03	5000	BP23MVEXP-ENV-DC-100			Camera	91	628027	6178338	628064	6178337	-37	1	37	91		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	02:54:41	5001	BP23MVEXP-ENV-DC-100			Camera	91	628022	6178338	628064	6178337	-42	1	42	91		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	02:55:04	5002	BP23MVEXP-ENV-DC-100			Camera	91	628020	6178338	628064	6178337	-44	1	44	91		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	02:55:19	5003	BP23MVEXP-ENV-DC-100			Camera	91	628018	6178338	628064	6178337	-46	1	46	91		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	03:03:49	5004	BP23MVEXP-ENV-DC-100			Camera	90	628064	6178388	628064	6178337	0	51	51	180		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	03:04:28	5005	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178388	628064	6178337	-1	51	51	179		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	03:05:10	5006	BP23MVEXP-ENV-DC-100			Camera	91	628062	6178386	628064	6178337	-2	49	49	178		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	03:06:55	5007	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178376	628064	6178337	-1	39	39	179		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	03:07:37	5008	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178371	628064	6178337	-1	34	34	179		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	03:08:10	5009	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178368	628064	6178337	-1	31	31	178		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	03:08:29	5010	BP23MVEXP-ENV-DC-100			Camera	91	628063	6178366	628064	6178337	-1	29	29	178		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	03:09:17	5011	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178361	628064	6178337	0	24	24	179		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	03:09:52	5012	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178357	628064	6178337	0	20	20	179		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	03:11:11	5013	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178349	628064	6178337	0	12	12	179		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	03:11:42	5014	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178346	628064	6178337	0	9	9	179		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	03:12:23	5015	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178342	628064	6178337	0	5	5	-178		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	03:12:38	5016	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178341	628064	6178337	0	4	4	-175		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	03:13:00	5017	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178338	628064	6178337	0	1	1	-159		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	03:13:10	5018	BP23MVEXP-ENV-DC-100			Camera	91	628064	6178337	628064	6178337	0	0	1	-112		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	03:13:29	5019	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178335	628064	6178337	1	-2	2	-19		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	03:14:32	5020	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178329	628064	6178337	1	-8	8	-7		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	03:15:14	5021	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178324	628064	6178337	1	-13	13	-4		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	03:16:15	5022	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178318	628064	6178337	1	-19	19	-3		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	03:17:08	5023	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178313	628064	6178337	1	-24	24	-3		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	03:18:09	5024	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178307	628064	6178337	2	-30	30	-3		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	03:18:51	5025	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178302	628064	6178337	2	-35	35	-3		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	03:19:09	5026	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178300	628064	6178337	2	-37	37	-3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	03:19:31	5027	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178298	628064	6178337	2	-39	39	-3		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	03:20:13	5028	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178294	628064	6178337	1	-43	43	-2		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	03:20:26	5029	BP23MVEXP-ENV-DC-100			Camera	91	628065	6178293	628064	6178337	1	-44	44	-2		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	03:21:02	5030	BP23MVEXP-ENV-DC-100			Camera	91	628066	6178290	628064	6178337	2	-47	47	-2		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	05:00:16	5031	BP23MVEXP-ENV-DC-102			Camera	84	627801	6174330	627849	6174330	-48	0	48	90		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	05:02:21	5032	BP23MVEXP-ENV-DC-102			Camera	84	627804	6174330	627849	6174330	-45	0	45	90		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	05:02:41	5033	BP23MVEXP-ENV-DC-102			Camera	84	627806	6174330	627849	6174330	-44	0	43	90		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	05:03:16	5034	BP23MVEXP-ENV-DC-102			Camera	84	627809	6174331	627849	6174330	-40	1	40	91		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	05:03:53	5035	BP23MVEXP-ENV-DC-102			Camera	83	627813	6174331	627849	6174330	-36	1	36	91		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	05:04:20	5036	BP23MVEXP-ENV-DC-102			Camera	83	627817	6174331	627849	6174330	-32	1	32	91		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	05:05:14	5037	BP23MVEXP-ENV-DC-102			Camera	83	627822	6174331	627849	6174330	-27	1	27	91		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	05:06:27	5038	BP23MVEXP-ENV-DC-102			Camera	83	627830	6174331	627849	6174330	-19	1	19	93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	05:06:47	5039	BP23MVEXP-ENV-DC-102			Camera	83	627832	6174331	627849	6174330	-17	1	17	94		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	05:07:20	5040	BP23MVEXP-ENV-DC-102			Camera	83	627835	6174331	627849	6174330	-14	1	14	95		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	05:07:54	5041	BP23MVEXP-ENV-DC-102			Camera	83	627839	6174332	627849	6174330	-10	2	10	101		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	05:08:43	5042	BP23MVEXP-ENV-DC-102			Camera	83	627844	6174331	627849	6174330	-5	1	6	103		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	05:09:06	5043	BP23MVEXP-ENV-DC-102			Camera	83	627846	6174331	627849	6174330	-3	1	3	107		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	05:09:25	5044	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174330	627849	6174330	-1	0	1	130		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	05:09:43	5045	BP23MVEXP-ENV-DC-102			Camera	83	627850	6174330	627849	6174330	1	0	1	-102		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	05:10:14	5046	BP23MVEXP-ENV-DC-102			Camera	83	627853	6174330	627849	6174330	4	0	4	-91		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	05:10:41	5047	BP23MVEXP-ENV-DC-102			Camera	83	627856	6174330	627849	6174330	7	0	7	-92		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	05:11:01	5048	BP23MVEXP-ENV-DC-102			Camera	83	627858	6174330	627849	6174330	9	0	9	-92		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	05:11:27	5049	BP23MVEXP-ENV-DC-102			Camera	83	627861	6174330	627849	6174330	12	0	12	-91		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	05:11:58	5050	BP23MVEXP-ENV-DC-102			Camera	83	627864	6174330	627849	6174330	15	0	15	-91		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	05:12:54	5051	BP23MVEXP-ENV-DC-102			Camera	83	627870	6174331	627849	6174330	21	1	21	-93		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	05:13:55	5052	BP23MVEXP-ENV-DC-102			Camera	83	627876	6174332	627849	6174330	27	2	27	-94		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	05:14:36	5053	BP23MVEXP-ENV-DC-102			Camera	83	627880	6174332	627849	6174330	31	2	32	-94		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	05:15:06	5054	BP23MVEXP-ENV-DC-102			Camera	83	627884	6174332	627849	6174330	35	2	35	-94		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	05:15:30	5055	BP23MVEXP-ENV-DC-102			Camera	83	627886	6174332	627849	6174330	37	2	37	-94		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	05:16:15	5056	BP23MVEXP-ENV-DC-102			Camera	83	627889	6174332	627849	6174330	40	2	40	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	05:17:08	5057	BP23MVEXP-ENV-DC-102			Camera	83	627895	6174332	627849	6174330	46	2	46	-92		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	05:20:03	5058	BP23MVEXP-ENV-DC-102			Camera	83	627896	6174327	627849	6174330	47	-3	47	-87		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	05:36:11	5059	BP23MVEXP-ENV-DC-102			Camera	84	627852	6174282	627849	6174330	3	-48	48	-4		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	05:38:12	5060	BP23MVEXP-ENV-DC-102			Camera	84	627849	6174281	627849	6174330	0	-50	49	0		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	05:38:47	5061	BP23MVEXP-ENV-DC-102			Camera	84	627849	6174284	627849	6174330	0	-46	46	0		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	05:39:17	5062	BP23MVEXP-ENV-DC-102			Camera	84	627848	6174288	627849	6174330	-1	-42	42	1		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	05:39:56	5063	BP23MVEXP-ENV-DC-102			Camera	84	627849	6174293	627849	6174330	0	-37	37	1		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	05:40:30	5064	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174296	627849	6174330	-1	-34	34	1		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	05:41:09	5065	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174301	627849	6174330	-1	-29	29	2		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	05:41:35	5066	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174304	627849	6174330	-1	-26	26	2		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	05:42:13	5067	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174309	627849	6174330	-1	-21	21	1		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	05:42:50	5068	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174312	627849	6174330	0	-18	18	1		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	05:43:20	5069	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174315	627849	6174330	-1	-15	15	2		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	05:44:39	5070	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174321	627849	6174330	-1	-9	9	5		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	05:45:31	5071	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174325	627849	6174330	0	-5	5	3		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	05:45:41	5072	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174326	627849	6174330	0	-4	4	2		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	05:45:55	5073	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174328	627849	6174330	-1	-2	2	16		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	05:46:20	5074	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174331	627849	6174330	0	1	1	160		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	05:46:42	5075	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174333	627849	6174330	0	3	3	179		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	05:47:52	5076	BP23MVEXP-ENV-DC-102			Camera	83	627849	6174341	627849	6174330	0	11	11	178		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	05:49:11	5077	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174350	627849	6174330	-1	20	20	177		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	05:50:01	5078	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174356	627849	6174330	-2	26	26	176		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	05:50:42	5079	BP23MVEXP-ENV-DC-102			Camera	83	627848	6174360	627849	6174330	-1	30	30	177		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	05:51:24	5080	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174365	627849	6174330	-2	35	35	177		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	05:52:15	5081	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174370	627849	6174330	-2	40	40	177		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	05:52:23	5082	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174371	627849	6174330	-2	41	41	177		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	05:52:47	5083	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174374	627849	6174330	-2	44	44	178		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
01-Aug-2023	05:53:54	5084	BP23MVEXP-ENV-DC-102			Camera	83	627847	6174379	627849	6174330	-2	49	49	178		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
01-Aug-2023	07:27:26	5085	BP23MVEXP-ENV-DC-103			Camera	84	635596	6175119	635613	6175059	-17	60	62	164		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	07:30:48	5086	BP23MVEXP-ENV-DC-103			Camera	84	635591	6175112	635613	6175059	-22	53	57	158		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	07:31:37	5087	BP23MVEXP-ENV-DC-103			Camera	83	635590	6175107	635613	6175059	-23	49	54	154		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	07:35:51	5088	BP23MVEXP-ENV-DC-103			Camera	83	635585	6175085	635613	6175059	-28	26	38	133		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	07:44:32	5089	BP23MVEXP-ENV-DC-103			Camera	83	635599	6175104	635613	6175059	-15	45	47	162		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	07:45:24	5090	BP23MVEXP-ENV-DC-103			Camera	83	635601	6175100	635613	6175059	-12	41	43	163		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	07:45:50	5091	BP23MVEXP-ENV-DC-103			Camera	83	635602	6175098	635613	6175059	-11	39	41	164		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	07:46:56	5092	BP23MVEXP-ENV-DC-103			Camera	83	635604	6175091	635613	6175059	-9	32	34	164		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	07:47:49	5093	BP23MVEXP-ENV-DC-103			Camera	83	635604	6175086	635613	6175059	-9	27	28	162		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	07:48:34	5094	BP23MVEXP-ENV-DC-103			Camera	83	635605	6175082	635613	6175059	-8	23	24	161		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	07:49:14	5095	BP23MVEXP-ENV-DC-103			Camera	83	635607	6175078	635613	6175059	-6	19	20	163		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	07:49:26	5096	BP23MVEXP-ENV-DC-103			Camera	83	635608	6175077	635613	6175059	-5	18	19	164		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	07:49:34	5097	BP23MVEXP-ENV-DC-103			Camera	83	635608	6175076	635613	6175059	-5	17	18	165		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	07:50:18	5098	BP23MVEXP-ENV-DC-103			Camera	83	635610	6175072	635613	6175059	-3	13	13	168		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	07:51:04	5099	BP23MVEXP-ENV-DC-103			Camera	83	635612	6175068	635613	6175059	-1	9	9	172		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	07:51:21	5100	BP23MVEXP-ENV-DC-103			Camera	83	635613	6175066	635613	6175059	0	7	7	176		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	07:51:57	5101	BP23MVEXP-ENV-DC-103			Camera	83	635614	6175063	635613	6175059	1	4	4	-169		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	07:52:08	5102	BP23MVEXP-ENV-DC-103			Camera	83	635614	6175062	635613	6175059	1	3	4	-158		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	07:52:21	5103	BP23MVEXP-ENV-DC-103			Camera	83	635615	6175061	635613	6175059	2	2	3	-136		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	07:52:36	5104	BP23MVEXP-ENV-DC-103			Camera	83	635615	6175059	635613	6175059	2	0	2	-90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	07:53:05	5105	BP23MVEXP-ENV-DC-103			Camera	83	635617	6175056	635613	6175059	4	-3	5	-51		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	07:53:37	5106	BP23MVEXP-ENV-DC-103			Camera	83	635617	6175053	635613	6175059	4	-6	7	-34		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	07:54:23	5107	BP23MVEXP-ENV-DC-103			Camera	83	635619	6175048	635613	6175059	6	-11	12	-28		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	07:55:03	5108	BP23MVEXP-ENV-DC-103			Camera	83	635620	6175045	635613	6175059	7	-14	16	-26		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	07:55:45	5109	BP23MVEXP-ENV-DC-103			Camera	83	635621	6175041	635613	6175059	8	-18	20	-24		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	07:56:32	5110	BP23MVEXP-ENV-DC-103			Camera	83	635623	6175036	635613	6175059	10	-23	25	-24		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	07:58:53	5111	BP23MVEXP-ENV-DC-103			Camera	83	635629	6175023	635613	6175059	16	-36	40	-23		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	07:59:03	5112	BP23MVEXP-ENV-DC-103			Camera	83	635629	6175022	635613	6175059	16	-37	41	-23		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	07:59:09	5113	BP23MVEXP-ENV-DC-103			Camera	83	635629	6175021	635613	6175059	16	-38	41	-23		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	08:00:28	5114	BP23MVEXP-ENV-DC-103			Camera	83	635632	6175015	635613	6175059	19	-44	48	-24		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	08:15:15	5115	BP23MVEXP-ENV-DC-103			Camera	83	635658	6175074	635613	6175059	45	15	47	-109		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	08:16:12	5116	BP23MVEXP-ENV-DC-103			Camera	83	635654	6175073	635613	6175059	41	14	43	-109		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	08:16:32	5117	BP23MVEXP-ENV-DC-103			Camera	83	635652	6175072	635613	6175059	39	13	41	-108		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	08:17:09	5118	BP23MVEXP-ENV-DC-103			Camera	83	635648	6175070	635613	6175059	35	11	36	-108		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	08:17:43	5119	BP23MVEXP-ENV-DC-103			Camera	83	635644	6175070	635613	6175059	31	11	33	-110		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	08:18:11	5120	BP23MVEXP-ENV-DC-103			Camera	83	635641	6175068	635613	6175059	28	9	30	-109		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	08:18:43	5121	BP23MVEXP-ENV-DC-103			Camera	83	635638	6175067	635613	6175059	25	8	26	-108		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	08:18:57	5122	BP23MVEXP-ENV-DC-103			Camera	83	635637	6175067	635613	6175059	24	8	25	-108		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	08:19:30	5123	BP23MVEXP-ENV-DC-103			Camera	83	635634	6175065	635613	6175059	21	6	22	-106		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	08:20:56	5124	BP23MVEXP-ENV-DC-103			Camera	83	635625	6175062	635613	6175059	12	3	13	-103		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	08:22:04	5125	BP23MVEXP-ENV-DC-103			Camera	83	635619	6175060	635613	6175059	6	1	6	-101		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	08:22:38	5126	BP23MVEXP-ENV-DC-103			Camera	83	635615	6175058	635613	6175059	2	-1	2	-78		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	08:22:54	5127	BP23MVEXP-ENV-DC-103			Camera	83	635614	6175058	635613	6175059	1	-1	2	-35		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	08:23:16	5128	BP23MVEXP-ENV-DC-103			Camera	83	635612	6175057	635613	6175059	-1	-2	3	29		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	08:23:30	5129	BP23MVEXP-ENV-DC-103			Camera	83	635610	6175056	635613	6175059	-3	-3	4	39		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	08:23:55	5130	BP23MVEXP-ENV-DC-103			Camera	83	635608	6175055	635613	6175059	-5	-4	6	47		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	08:24:34	5131	BP23MVEXP-ENV-DC-103			Camera	83	635604	6175053	635613	6175059	-9	-6	10	56		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	08:24:57	5132	BP23MVEXP-ENV-DC-103			Camera	83	635602	6175053	635613	6175059	-11	-6	12	60		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	08:25:36	5133	BP23MVEXP-ENV-DC-103			Camera	83	635598	6175052	635613	6175059	-15	-7	16	64		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	08:26:13	5134	BP23MVEXP-ENV-DC-103			Camera	83	635595	6175052	635613	6175059	-18	-7	20	68		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	08:26:51	5135	BP23MVEXP-ENV-DC-103			Camera	83	635591	6175050	635613	6175059	-22	-9	24	68		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	08:27:39	5136	BP23MVEXP-ENV-DC-103			Camera	83	635587	6175048	635613	6175059	-26	-11	29	68		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	08:28:35	5137	BP23MVEXP-ENV-DC-103			Camera	83	635581	6175046	635613	6175059	-32	-13	35	68		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
01-Aug-2023	08:29:20	5138	BP23MVEXP-ENV-DC-103			Camera	83	635577	6175044	635613	6175059	-36	-15	39	67		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
01-Aug-2023	08:30:09	5139	BP23MVEXP-ENV-DC-103			Camera	83	635572	6175042	635613	6175059	-41	-17	44	68		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
01-Aug-2023	08:30:50	5140	BP23MVEXP-ENV-DC-103			Camera	83	635568	6175041	635613	6175059	-45	-18	49	68		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
01-Aug-2023	09:32:54	5141	BP23MVEXP-ENV-DC-105			Camera	84	635689	6171964	635667	6171916	22	48	52	-155		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	09:35:02	5142	BP23MVEXP-ENV-DC-105			Camera	84	635687	6171960	635667	6171916	20	45	49	-156		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	09:35:14	5143	BP23MVEXP-ENV-DC-105			Camera	84	635686	6171960	635667	6171916	19	44	48	-156		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	09:35:42	5144	BP23MVEXP-ENV-DC-105			Camera	84	635685	6171957	635667	6171916	18	41	45	-156		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	09:36:17	5145	BP23MVEXP-ENV-DC-105			Camera	84	635684	6171954	635667	6171916	17	38	42	-156		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	09:36:27	5146	BP23MVEXP-ENV-DC-105			Camera	84	635683	6171953	635667	6171916	16	37	41	-157		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	09:36:55	5147	BP23MVEXP-ENV-DC-105			Camera	84	635681	6171951	635667	6171916	14	35	38	-157		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	09:37:06	5148	BP23MVEXP-ENV-DC-105			Camera	84	635681	6171949	635667	6171916	14	34	36	-158		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	09:37:51	5149	BP23MVEXP-ENV-DC-105			Camera	84	635678	6171945	635667	6171916	11	29	31	-159		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	09:38:22	5150	BP23MVEXP-ENV-DC-105			Camera	84	635677	6171942	635667	6171916	10	26	28	-159		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	09:38:37	5151	BP23MVEXP-ENV-DC-105			Camera	84	635676	6171940	635667	6171916	9	25	26	-159		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	09:39:34	5152	BP23MVEXP-ENV-DC-105			Camera	84	635674	6171935	635667	6171916	7	19	20	-160		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	09:41:21	5153	BP23MVEXP-ENV-DC-105			Camera	84	635669	6171926	635667	6171916	2	10	10	-166		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	09:41:28	5154	BP23MVEXP-ENV-DC-105			Camera	84	635669	6171925	635667	6171916	2	9	9	-166		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	09:42:07	5155	BP23MVEXP-ENV-DC-105			Camera	84	635667	6171921	635667	6171916	0	5	5	-176		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	09:42:22	5156	BP23MVEXP-ENV-DC-105			Camera	84	635667	6171919	635667	6171916	0	3	3	173		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	09:42:43	5157	BP23MVEXP-ENV-DC-105			Camera	84	635666	6171917	635667	6171916	-1	1	2	135		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	09:43:04	5158	BP23MVEXP-ENV-DC-105			Camera	84	635665	6171915	635667	6171916	-2	-1	3	69		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	09:44:23	5159	BP23MVEXP-ENV-DC-105			Camera	85	635660	6171908	635667	6171916	-7	-8	11	40		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	09:44:46	5160	BP23MVEXP-ENV-DC-105			Camera	85	635659	6171905	635667	6171916	-8	-11	13	37		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	09:44:51	5161	BP23MVEXP-ENV-DC-105			Camera	85	635659	6171905	635667	6171916	-8	-11	14	37		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	09:45:50	5162	BP23MVEXP-ENV-DC-105			Camera	85	635656	6171900	635667	6171916	-11	-16	20	34		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	09:45:59	5163	BP23MVEXP-ENV-DC-105			Camera	85	635655	6171898	635667	6171916	-12	-18	22	34		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	09:46:15	5164	BP23MVEXP-ENV-DC-105			Camera	85	635655	6171897	635667	6171916	-12	-19	23	33		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	09:46:56	5165	BP23MVEXP-ENV-DC-105			Camera	85	635653	6171893	635667	6171916	-14	-23	27	31		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	09:48:33	5166	BP23MVEXP-ENV-DC-105			Camera	85	635649	6171885	635667	6171916	-18	-31	36	30		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	09:49:04	5167	BP23MVEXP-ENV-DC-105			Camera	85	635647	6171883	635667	6171916	-20	-34	39	30		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	09:50:47	5168	BP23MVEXP-ENV-DC-105			Camera	85	635643	6171873	635667	6171916	-24	-43	49	29		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	09:51:02	5169	BP23MVEXP-ENV-DC-105			Camera	85	635643	6171872	635667	6171916	-24	-44	50	29		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	10:01:37	5170	BP23MVEXP-ENV-DC-105			Camera	84	635629	6171927	635667	6171916	-38	11	39	106		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	10:04:20	5171	BP23MVEXP-ENV-DC-105			Camera	84	635625	6171940	635667	6171916	-42	24	49	120		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	10:05:28	5172	BP23MVEXP-ENV-DC-105			Camera	84	635626	6171940	635667	6171916	-41	24	48	120		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	10:05:55	5173	BP23MVEXP-ENV-DC-105			Camera	84	635627	6171939	635667	6171916	-40	23	46	120		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	10:07:22	5174	BP23MVEXP-ENV-DC-105			Camera	84	635635	6171935	635667	6171916	-32	19	37	121		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	10:07:51	5175	BP23MVEXP-ENV-DC-105			Camera	84	635638	6171933	635667	6171916	-29	17	34	121		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	10:08:19	5176	BP23MVEXP-ENV-DC-105			Camera	84	635640	6171932	635667	6171916	-27	16	31	120		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	10:08:37	5177	BP23MVEXP-ENV-DC-105			Camera	84	635642	6171930	635667	6171916	-25	14	29	120		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	10:09:04	5178	BP23MVEXP-ENV-DC-105			Camera	84	635644	6171929	635667	6171916	-23	13	26	119		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	10:10:06	5179	BP23MVEXP-ENV-DC-105			Camera	84	635650	6171926	635667	6171916	-17	10	20	122		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	10:10:33	5180	BP23MVEXP-ENV-DC-105			Camera	84	635653	6171925	635667	6171916	-14	9	17	122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	10:10:51	5181	BP23MVEXP-ENV-DC-105			Camera	84	635654	6171924	635667	6171916	-13	8	15	122		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	10:12:17	5182	BP23MVEXP-ENV-DC-105			Camera	84	635662	6171919	635667	6171916	-5	3	6	121		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	10:12:41	5183	BP23MVEXP-ENV-DC-105			Camera	84	635664	6171918	635667	6171916	-3	2	3	121		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	10:13:23	5184	BP23MVEXP-ENV-DC-105			Camera	84	635668	6171916	635667	6171916	1	0	1	-66		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	10:13:37	5185	BP23MVEXP-ENV-DC-105			Camera	84	635669	6171915	635667	6171916	2	-1	2	-68		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	10:15:11	5186	BP23MVEXP-ENV-DC-105			Camera	84	635676	6171909	635667	6171916	9	-7	12	-54		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	10:15:51	5187	BP23MVEXP-ENV-DC-105			Camera	84	635680	6171907	635667	6171916	13	-9	16	-55		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	10:16:29	5188	BP23MVEXP-ENV-DC-105			Camera	84	635684	6171905	635667	6171916	17	-11	20	-58		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	10:16:54	5189	BP23MVEXP-ENV-DC-105			Camera	84	635686	6171904	635667	6171916	19	-12	23	-58		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	10:17:37	5190	BP23MVEXP-ENV-DC-105			Camera	84	635690	6171902	635667	6171916	23	-14	27	-58		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	10:18:52	5191	BP23MVEXP-ENV-DC-105			Camera	84	635697	6171898	635667	6171916	30	-18	35	-60		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	10:20:22	5192	BP23MVEXP-ENV-DC-105			Camera	84	635705	6171893	635667	6171916	38	-24	45	-58		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	10:21:12	5193	BP23MVEXP-ENV-DC-105			Camera	84	635708	6171889	635667	6171916	41	-27	48	-57		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
01-Aug-2023	12:04:05	5194	BP23MVEXP-ENV-DC-107			Camera	90	633390	6168530	633418	6168578	-28	-48	55	30		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	12:05:55	5195	BP23MVEXP-ENV-DC-107			Camera	89	633391	6168532	633418	6168578	-27	-46	53	31		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	12:06:13	5196	BP23MVEXP-ENV-DC-107			Camera	89	633392	6168533	633418	6168578	-27	-45	52	31		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	12:07:17	5197	BP23MVEXP-ENV-DC-107			Camera	89	633395	6168539	633418	6168578	-23	-39	45	31		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	12:08:16	5198	BP23MVEXP-ENV-DC-107			Camera	89	633398	6168545	633418	6168578	-20	-33	38	32		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	12:08:43	5199	BP23MVEXP-ENV-DC-107			Camera	89	633399	6168548	633418	6168578	-19	-30	35	32		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	12:09:05	5200	BP23MVEXP-ENV-DC-107			Camera	89	633401	6168550	633418	6168578	-17	-28	33	32		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	12:10:03	5201	BP23MVEXP-ENV-DC-107			Camera	89	633403	6168554	633418	6168578	-15	-24	28	32		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	12:10:56	5202	BP23MVEXP-ENV-DC-107			Camera	89	633406	6168559	633418	6168578	-12	-19	22	33		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	12:11:13	5203	BP23MVEXP-ENV-DC-107			Camera	89	633407	6168561	633418	6168578	-11	-17	20	33		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	12:11:39	5204	BP23MVEXP-ENV-DC-107			Camera	89	633408	6168563	633418	6168578	-10	-15	18	33		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	12:12:53	5205	BP23MVEXP-ENV-DC-107			Camera	89	633413	6168570	633418	6168578	-5	-8	10	31		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	12:14:13	5206	BP23MVEXP-ENV-DC-107			Camera	89	633417	6168576	633418	6168578	-1	-2	2	17		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	12:14:37	5207	BP23MVEXP-ENV-DC-107			Camera	89	633419	6168578	633418	6168578	1	0	1	-101		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	12:14:54	5208	BP23MVEXP-ENV-DC-107			Camera	89	633420	6168580	633418	6168578	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	12:15:07	5209	BP23MVEXP-ENV-DC-107			Camera	89	633421	6168581	633418	6168578	3	3	4	-140		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	12:15:49	5210	BP23MVEXP-ENV-DC-107			Camera	89	633422	6168585	633418	6168578	4	7	8	-148		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	12:16:11	5211	BP23MVEXP-ENV-DC-107			Camera	88	633423	6168586	633418	6168578	5	8	10	-150		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	12:17:07	5212	BP23MVEXP-ENV-DC-107			Camera	88	633425	6168590	633418	6168578	7	12	14	-149		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	12:18:14	5213	BP23MVEXP-ENV-DC-107			Camera	88	633430	6168596	633418	6168578	12	18	22	-147		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	12:18:53	5214	BP23MVEXP-ENV-DC-107			Camera	88	633432	6168600	633418	6168578	14	22	26	-148		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	12:20:13	5215	BP23MVEXP-ENV-DC-107			Camera	88	633436	6168607	633418	6168578	18	29	34	-149		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	12:20:35	5216	BP23MVEXP-ENV-DC-107			Camera	88	633437	6168609	633418	6168578	19	31	36	-149		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	12:20:48	5217	BP23MVEXP-ENV-DC-107			Camera	88	633437	6168610	633418	6168578	19	32	37	-149		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	12:21:39	5218	BP23MVEXP-ENV-DC-107			Camera	88	633440	6168614	633418	6168578	22	37	43	-149		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	12:22:08	5219	BP23MVEXP-ENV-DC-107			Camera	88	633442	6168617	633418	6168578	24	40	46	-148		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	12:38:42	5220	BP23MVEXP-ENV-DC-107			Camera	87	633458	6168548	633418	6168578	40	-30	50	-53		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	12:39:25	5221	BP23MVEXP-ENV-DC-107			Camera	87	633458	6168547	633418	6168578	40	-31	51	-53		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	12:40:30	5222	BP23MVEXP-ENV-DC-107			Camera	87	633454	6168548	633418	6168578	36	-30	47	-51		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	12:41:10	5223	BP23MVEXP-ENV-DC-107			Camera	88	633451	6168551	633418	6168578	33	-27	43	-51		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	12:41:34	5224	BP23MVEXP-ENV-DC-107			Camera	87	633450	6168552	633418	6168578	32	-26	41	-51		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	12:42:17	5225	BP23MVEXP-ENV-DC-107			Camera	88	633447	6168554	633418	6168578	29	-24	37	-50		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	12:42:54	5226	BP23MVEXP-ENV-DC-107			Camera	88	633444	6168556	633418	6168578	26	-22	34	-50		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	12:43:35	5227	BP23MVEXP-ENV-DC-107			Camera	88	633440	6168558	633418	6168578	22	-20	30	-48		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	12:45:07	5228	BP23MVEXP-ENV-DC-107			Camera	88	633432	6168564	633418	6168578	14	-14	20	-45		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	12:45:52	5229	BP23MVEXP-ENV-DC-107			Camera	88	633429	6168566	633418	6168578	11	-12	16	-43		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	12:46:43	5230	BP23MVEXP-ENV-DC-107			Camera	88	633425	6168569	633418	6168578	7	-9	11	-36		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	12:47:29	5231	BP23MVEXP-ENV-DC-107			Camera	88	633420	6168572	633418	6168578	2	-6	7	-22		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	12:48:26	5232	BP23MVEXP-ENV-DC-107			Camera	88	633416	6168575	633418	6168578	-2	-3	3	39		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	12:48:36	5233	BP23MVEXP-ENV-DC-107			Camera	88	633415	6168576	633418	6168578	-3	-2	4	54		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	12:48:59	5234	BP23MVEXP-ENV-DC-107			Camera	88	633413	6168577	633418	6168578	-5	-1	5	75		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	12:49:33	5235	BP23MVEXP-ENV-DC-107			Camera	88	633410	6168579	633418	6168578	-8	1	8	95		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	12:50:04	5236	BP23MVEXP-ENV-DC-107			Camera	88	633407	6168581	633418	6168578	-11	3	11	104		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	12:50:23	5237	BP23MVEXP-ENV-DC-107			Camera	88	633406	6168582	633418	6168578	-12	4	13	107		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	12:52:41	5238	BP23MVEXP-ENV-DC-107			Camera	88	633394	6168589	633418	6168578	-24	11	26	114		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	12:53:06	5239	BP23MVEXP-ENV-DC-107			Camera	88	633392	6168591	633418	6168578	-26	13	29	116		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	12:53:18	5240	BP23MVEXP-ENV-DC-107			Camera	88	633391	6168591	633418	6168578	-27	14	30	117		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	12:53:44	5241	BP23MVEXP-ENV-DC-107			Camera	88	633390	6168593	633418	6168578	-29	15	32	117		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	12:54:20	5242	BP23MVEXP-ENV-DC-107			Camera	88	633387	6168595	633418	6168578	-31	17	36	118		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	12:54:27	5243	BP23MVEXP-ENV-DC-107			Camera	88	633386	6168595	633418	6168578	-32	17	36	118		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	12:57:52	5244	BP23MVEXP-ENV-DC-107			Camera	88	633377	6168601	633418	6168578	-41	23	47	120		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	14:12:03	5245	BP23MVEXP-ENV-DC-104			Camera	81	627638	6170306	627686	6170307	-48	-1	48	88		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	14:14:32	5246	BP23MVEXP-ENV-DC-104			Camera	81	627641	6170307	627686	6170307	-45	0	45	90		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	14:15:04	5247	BP23MVEXP-ENV-DC-104			Camera	81	627644	6170308	627686	6170307	-42	1	42	91		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	14:15:47	5248	BP23MVEXP-ENV-DC-104			Camera	81	627648	6170308	627686	6170307	-38	1	38	92		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	14:16:06	5249	BP23MVEXP-ENV-DC-104			Camera	81	627650	6170308	627686	6170307	-36	1	36	91		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	14:17:09	5250	BP23MVEXP-ENV-DC-104			Camera	81	627657	6170308	627686	6170307	-29	1	29	93		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	14:17:55	5251	BP23MVEXP-ENV-DC-104			Camera	81	627663	6170308	627686	6170307	-23	1	23	94		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	14:18:37	5252	BP23MVEXP-ENV-DC-104			Camera	81	627667	6170309	627686	6170307	-19	2	19	96		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	14:19:33	5253	BP23MVEXP-ENV-DC-104			Camera	82	627672	6170309	627686	6170307	-14	2	14	98		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	14:19:52	5254	BP23MVEXP-ENV-DC-104			Camera	81	627674	6170309	627686	6170307	-12	2	12	100		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	14:20:14	5255	BP23MVEXP-ENV-DC-104			Camera	82	627677	6170309	627686	6170307	-9	2	9	102		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	14:21:15	5256	BP23MVEXP-ENV-DC-104			Camera	82	627683	6170308	627686	6170307	-3	1	3	115		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	14:21:24	5257	BP23MVEXP-ENV-DC-104			Camera	82	627684	6170308	627686	6170307	-2	1	2	123		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	14:21:44	5258	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170308	627686	6170307	0	1	1	-176		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	14:21:55	5259	BP23MVEXP-ENV-DC-104			Camera	82	627687	6170308	627686	6170307	1	1	2	-133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	14:22:02	5260	BP23MVEXP-ENV-DC-104			Camera	82	627688	6170308	627686	6170307	2	1	2	-121		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	14:22:23	5261	BP23MVEXP-ENV-DC-104			Camera	82	627690	6170308	627686	6170307	4	1	4	-109		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	14:23:37	5262	BP23MVEXP-ENV-DC-104			Camera	82	627697	6170309	627686	6170307	11	2	12	-101		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	14:24:11	5263	BP23MVEXP-ENV-DC-104			Camera	82	627701	6170310	627686	6170307	15	3	15	-100		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	14:24:49	5264	BP23MVEXP-ENV-DC-104			Camera	82	627705	6170310	627686	6170307	19	3	19	-98		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	14:26:17	5265	BP23MVEXP-ENV-DC-104			Camera	82	627714	6170309	627686	6170307	28	2	28	-95		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	14:27:43	5266	BP23MVEXP-ENV-DC-104			Camera	82	627723	6170309	627686	6170307	37	2	37	-93		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	14:28:35	5267	BP23MVEXP-ENV-DC-104			Camera	82	627728	6170308	627686	6170307	42	1	42	-91		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	14:39:52	5268	BP23MVEXP-ENV-DC-104			Camera	82	627688	6170356	627686	6170307	2	49	49	-178		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	14:40:05	5269	BP23MVEXP-ENV-DC-104			Camera	82	627688	6170356	627686	6170307	2	49	49	-178		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	14:42:08	5270	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170352	627686	6170307	0	45	45	180		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	14:42:42	5271	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170348	627686	6170307	0	41	41	-180		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	14:43:24	5272	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170344	627686	6170307	0	37	37	-180		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	14:44:07	5273	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170339	627686	6170307	0	32	32	180		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	14:44:28	5274	BP23MVEXP-ENV-DC-104			Camera	82	627686	6170337	627686	6170307	0	30	30	179		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	14:45:16	5275	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170332	627686	6170307	-1	25	25	179		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	14:45:50	5276	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170329	627686	6170307	-1	22	22	178		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	14:46:44	5277	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170323	627686	6170307	-1	16	16	177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	14:48:08	5278	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170314	627686	6170307	-1	7	7	173		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	14:48:26	5278	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170312	627686	6170307	-1	5	5	172		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	14:48:46	5280	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170310	627686	6170307	-1	3	3	167		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	14:49:07	5281	BP23MVEXP-ENV-DC-104			Camera	82	627685	6170308	627686	6170307	-1	1	2	146		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	14:49:18	5282	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170307	627686	6170307	-1	0	1	99		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	14:49:32	5283	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170306	627686	6170307	-1	-1	2	34		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	14:49:58	5284	BP23MVEXP-ENV-DC-104			Camera	81	627686	6170303	627686	6170307	0	-4	4	4		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	14:50:30	5285	BP23MVEXP-ENV-DC-104			Camera	81	627686	6170299	627686	6170307	0	-8	8	2		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	14:51:27	5286	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170293	627686	6170307	-1	-14	14	4		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	14:51:55	5287	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170291	627686	6170307	-1	-16	16	5		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	14:52:56	5288	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170285	627686	6170307	-1	-22	22	4		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	14:53:30	5289	BP23MVEXP-ENV-DC-104			Camera	81	627684	6170282	627686	6170307	-2	-26	26	4		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	14:53:54	5290	BP23MVEXP-ENV-DC-104			Camera	81	627684	6170279	627686	6170307	-2	-28	28	3		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	14:54:29	5291	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170275	627686	6170307	-1	-32	32	1		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	14:54:58	5292	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170272	627686	6170307	-1	-35	35	1		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	14:55:36	5293	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170268	627686	6170307	-1	-39	39	2		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	14:56:53	5294	BP23MVEXP-ENV-DC-104			Camera	81	627685	6170263	627686	6170307	-1	-44	44	1		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	14:57:48	5295	BP23MVEXP-ENV-DC-104			Camera	81	627686	6170261	627686	6170307	0	-46	46	0		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	15:00:44	5296	BP23MVEXP-ENV-DC-104			Camera	85	627686	6170256	627686	6170307	0	-51	51	0		(Raw Nav, Kongsberg 14208, img#52) (B)
01-Aug-2023	16:33:17	5296	BP23MVEXP-ENV-DC-106			Camera	70	627455	6166333	627403	6166336	52	-3	52	-86		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	16:34:40	5297	BP23MVEXP-ENV-DC-106			Camera	70	627453	6166333	627403	6166336	50	-3	50	-87		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	16:35:14	5298	BP23MVEXP-ENV-DC-106			Camera	71	627450	6166334	627403	6166336	47	-2	47	-87		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	16:36:05	5299	BP23MVEXP-ENV-DC-106			Camera	71	627445	6166333	627403	6166336	42	-3	42	-85		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	16:37:20	5300	BP23MVEXP-ENV-DC-106			Camera	71	627437	6166332	627403	6166336	34	-4	34	-83		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	16:38:03	5301	BP23MVEXP-ENV-DC-106			Camera	70	627434	6166331	627403	6166336	31	-5	31	-81		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	16:39:30	5302	BP23MVEXP-ENV-DC-106			Camera	70	627426	6166332	627403	6166336	23	-4	23	-79		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	16:40:02	5303	BP23MVEXP-ENV-DC-106			Camera	71	627423	6166332	627403	6166336	20	-4	20	-78		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	16:40:45	5304	BP23MVEXP-ENV-DC-106			Camera	70	627418	6166332	627403	6166336	16	-4	16	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	16:41:21	5305	BP23MVEXP-ENV-DC-106			Camera	70	627414	6166332	627403	6166336	11	-4	12	-70		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	16:41:36	5306	BP23MVEXP-ENV-DC-106			Camera	70	627412	6166332	627403	6166336	9	-4	10	-68		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	16:42:00	5307	BP23MVEXP-ENV-DC-106			Camera	70	627409	6166332	627403	6166336	6	-4	7	-58		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	16:42:36	5308	BP23MVEXP-ENV-DC-106			Camera	70	627405	6166332	627403	6166336	2	-4	5	-23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	16:42:48	5309	BP23MVEXP-ENV-DC-106			Camera	70	627403	6166332	627403	6166336	0	-4	4	-3		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	16:43:39	5310	BP23MVEXP-ENV-DC-106			Camera	70	627399	6166331	627403	6166336	-4	-5	7	42		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	16:44:00	5311	BP23MVEXP-ENV-DC-106			Camera	70	627397	6166331	627403	6166336	-6	-5	8	51		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	16:44:42	5312	BP23MVEXP-ENV-DC-106			Camera	71	627393	6166331	627403	6166336	-10	-5	11	65		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	16:44:55	5313	BP23MVEXP-ENV-DC-106			Camera	70	627392	6166331	627403	6166336	-11	-5	12	68		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	16:45:36	5314	BP23MVEXP-ENV-DC-106			Camera	70	627388	6166332	627403	6166336	-15	-4	16	77		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	16:45:47	5315	BP23MVEXP-ENV-DC-106			Camera	70	627387	6166333	627403	6166336	-16	-3	17	78		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	16:46:37	5316	BP23MVEXP-ENV-DC-106			Camera	70	627381	6166333	627403	6166336	-22	-3	22	83		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	16:47:16	5317	BP23MVEXP-ENV-DC-106			Camera	70	627377	6166333	627403	6166336	-26	-3	26	84		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	16:48:13	5318	BP23MVEXP-ENV-DC-106			Camera	70	627371	6166334	627403	6166336	-32	-2	32	86		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	16:48:34	5319	BP23MVEXP-ENV-DC-106			Camera	71	627369	6166334	627403	6166336	-34	-2	34	86		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	16:49:19	5320	BP23MVEXP-ENV-DC-106			Camera	71	627364	6166334	627403	6166336	-39	-2	39	86		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	16:50:18	5321	BP23MVEXP-ENV-DC-106			Camera	71	627359	6166334	627403	6166336	-45	-2	45	88		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	16:50:33	5322	BP23MVEXP-ENV-DC-106			Camera	71	627357	6166334	627403	6166336	-46	-2	46	88		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	16:57:08	5323	BP23MVEXP-ENV-DC-106			Camera	70	627377	6166313	627403	6166336	-27	-23	35	49		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	17:04:02	5324	BP23MVEXP-ENV-DC-106			Camera	71	627405	6166289	627403	6166336	2	-47	47	-2		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	17:04:44	5325	BP23MVEXP-ENV-DC-106			Camera	71	627403	6166294	627403	6166336	0	-42	42	0		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	17:05:00	5326	BP23MVEXP-ENV-DC-106			Camera	71	627403	6166297	627403	6166336	0	-39	39	0		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	17:05:39	5327	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166302	627403	6166336	-1	-34	34	2		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	17:06:41	5328	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166310	627403	6166336	-1	-26	26	2		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	17:07:28	5329	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166315	627403	6166336	-1	-21	21	4		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	17:08:37	5330	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166321	627403	6166336	-2	-15	15	9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	17:09:15	5331	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166325	627403	6166336	-1	-11	11	7		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	17:09:45	5332	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166328	627403	6166336	-1	-8	8	6		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	17:10:55	5333	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166334	627403	6166336	-1	-2	2	32		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	17:11:21	5334	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166337	627403	6166336	-1	1	1	146		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	17:11:33	5335	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166339	627403	6166336	-1	3	3	161		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	17:12:02	5336	BP23MVEXP-ENV-DC-106			Camera	70	627402	6166342	627403	6166336	-1	6	6	169		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	17:13:15	5337	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166349	627403	6166336	-2	13	13	173		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	17:14:03	5338	BP23MVEXP-ENV-DC-106			Camera	70	627401	6166354	627403	6166336	-2	18	18	175		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	17:14:34	5339	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166357	627403	6166336	-1	21	21	177		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	17:14:51	5340	BP23MVEXP-ENV-DC-106			Camera	71	627402	6166359	627403	6166336	-1	23	23	177		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	17:16:11	5341	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166367	627403	6166336	-2	31	31	177		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	17:16:24	5342	BP23MVEXP-ENV-DC-106			Camera	71	627401	6166368	627403	6166336	-2	32	32	176		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	17:17:41	5343	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166377	627403	6166336	-3	41	41	176		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	17:18:22	5344	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166380	627403	6166336	-3	44	44	176		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	17:18:35	5345	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166382	627403	6166336	-3	46	46	176		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	17:19:01	5346	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166384	627403	6166336	-3	48	48	176		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	17:19:33	5347	BP23MVEXP-ENV-DC-106			Camera	71	627400	6166387	627403	6166336	-3	51	51	177		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	18:20:32	5348	BP23MVEXP-ENV-DC-109			Camera	93	631250	6165266	631206	6165285	44	-20	48	-66		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	18:22:35	5349	BP23MVEXP-ENV-DC-109			Camera	93	631251	6165266	631206	6165285	45	-19	49	-67		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	18:23:51	5349	BP23MVEXP-ENV-DC-109			Camera	93	631246	6165268	631206	6165285	40	-17	43	-67		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	18:24:25	5351	BP23MVEXP-ENV-DC-109			Camera	93	631244	6165268	631206	6165285	38	-17	42	-66		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	18:24:49	5352	BP23MVEXP-ENV-DC-109			Camera	93	631243	6165269	631206	6165285	37	-16	41	-66		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	18:26:10	5353	BP23MVEXP-ENV-DC-109			Camera	93	631238	6165273	631206	6165285	32	-12	34	-69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	18:27:17	5354	BP23MVEXP-ENV-DC-109			Camera	93	631232	6165276	631206	6165285	26	-9	27	-70		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	18:28:35	5355	BP23MVEXP-ENV-DC-109			Camera	93	631225	6165280	631206	6165285	19	-5	20	-74		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	18:29:00	5356	BP23MVEXP-ENV-DC-109			Camera	93	631222	6165281	631206	6165285	16	-4	16	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	18:29:59	5357	BP23MVEXP-ENV-DC-109			Camera	93	631215	6165282	631206	6165285	9	-3	9	-71		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	18:30:22	5358	BP23MVEXP-ENV-DC-109			Camera	93	631213	6165283	631206	6165285	7	-2	7	-73		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	18:31:12	5359	BP23MVEXP-ENV-DC-109			Camera	93	631207	6165285	631206	6165285	1	0	1	-94		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	18:32:44	5360	BP23MVEXP-ENV-DC-109			Camera	93	631199	6165289	631206	6165285	-7	4	8	122		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	18:33:28	5361	BP23MVEXP-ENV-DC-109			Camera	93	631196	6165292	631206	6165285	-10	7	12	123		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	18:34:34	5362	BP23MVEXP-ENV-DC-109			Camera	93	631191	6165296	631206	6165285	-15	11	19	125		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	18:35:01	5363	BP23MVEXP-ENV-DC-109			Camera	93	631189	6165297	631206	6165285	-18	12	21	124		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	18:35:28	5364	BP23MVEXP-ENV-DC-109			Camera	93	631187	6165298	631206	6165285	-20	13	23	124		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	18:35:59	5365	BP23MVEXP-ENV-DC-109			Camera	92	631184	6165300	631206	6165285	-22	15	27	124		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	18:37:03	5366	BP23MVEXP-ENV-DC-109			Camera	92	631178	6165303	631206	6165285	-28	18	34	123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	18:38:14	5367	BP23MVEXP-ENV-DC-109			Camera	92	631171	6165307	631206	6165285	-35	22	41	122		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	18:39:50	5368	BP23MVEXP-ENV-DC-109			Camera	92	631163	6165311	631206	6165285	-43	26	51	121		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	18:44:30	5369	BP23MVEXP-ENV-DC-109			Camera	92	631168	6165297	631206	6165285	-38	12	40	107		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	18:46:27	5370	BP23MVEXP-ENV-DC-109			Camera	92	631171	6165285	631206	6165285	-36	0	35	89		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	18:58:14	5371	BP23MVEXP-ENV-DC-109			Camera	91	631178	6165243	631206	6165285	-28	-42	50	34		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	18:59:18	5372	BP23MVEXP-ENV-DC-109			Camera	91	631179	6165245	631206	6165285	-27	-40	48	34		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	18:59:53	5373	BP23MVEXP-ENV-DC-109			Camera	91	631181	6165247	631206	6165285	-25	-38	45	33		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	19:00:15	5374	BP23MVEXP-ENV-DC-109			Camera	91	631182	6165249	631206	6165285	-24	-36	43	33		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	19:01:34	5375	BP23MVEXP-ENV-DC-109			Camera	92	631187	6165256	631206	6165285	-19	-29	35	33		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	19:02:19	5376	BP23MVEXP-ENV-DC-109			Camera	92	631190	6165260	631206	6165285	-16	-25	30	33		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	19:03:21	5377	BP23MVEXP-ENV-DC-109			Camera	92	631193	6165265	631206	6165285	-13	-20	24	33		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	19:04:00	5378	BP23MVEXP-ENV-DC-109			Camera	92	631195	6165269	631206	6165285	-11	-16	19	35		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	19:04:51	5379	BP23MVEXP-ENV-DC-109			Camera	92	631197	6165273	631206	6165285	-9	-12	15	36		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	19:05:14	5380	BP23MVEXP-ENV-DC-109			Camera	92	631199	6165276	631206	6165285	-7	-9	12	38		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	19:05:40	5381	BP23MVEXP-ENV-DC-109			Camera	92	631201	6165278	631206	6165285	-5	-7	9	38		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	19:06:07	5382	BP23MVEXP-ENV-DC-109			Camera	92	631202	6165281	631206	6165285	-4	-4	6	39		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	19:06:28	5383	BP23MVEXP-ENV-DC-109			Camera	92	631204	6165283	631206	6165285	-2	-2	3	42		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	19:06:38	5384	BP23MVEXP-ENV-DC-109			Camera	92	631204	6165283	631206	6165285	-2	-2	2	44		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	19:06:52	5385	BP23MVEXP-ENV-DC-109			Camera	92	631205	6165284	631206	6165285	-1	-1	2	56		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	19:08:37	5386	BP23MVEXP-ENV-DC-109			Camera	92	631210	6165293	631206	6165285	4	8	9	-154		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	19:09:18	5387	BP23MVEXP-ENV-DC-109			Camera	92	631212	6165297	631206	6165285	6	12	14	-153		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	19:09:46	5388	BP23MVEXP-ENV-DC-109			Camera	93	631214	6165300	631206	6165285	8	15	17	-152		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	19:10:17	5389	BP23MVEXP-ENV-DC-109			Camera	93	631216	6165302	631206	6165285	10	17	20	-149		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	19:11:10	5390	BP23MVEXP-ENV-DC-109			Camera	93	631219	6165306	631206	6165285	13	21	25	-149		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	19:12:10	5391	BP23MVEXP-ENV-DC-109			Camera	93	631221	6165311	631206	6165285	15	27	31	-150		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	19:12:26	5392	BP23MVEXP-ENV-DC-109			Camera	93	631222	6165313	631206	6165285	16	28	32	-150		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	19:13:07	5393	BP23MVEXP-ENV-DC-109			Camera	93	631224	6165316	631206	6165285	18	31	36	-150		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	19:13:50	5394	BP23MVEXP-ENV-DC-109			Camera	93	631227	6165321	631206	6165285	21	36	41	-149		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	19:14:24	5395	BP23MVEXP-ENV-DC-109			Camera	93	631229	6165323	631206	6165285	23	39	45	-149		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	21:14:29	5396	BP23MVEXP-ENV-DC-110			Camera	85	628973	6161976	628946	6161934	27	42	50	-147		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	21:16:02	5397	BP23MVEXP-ENV-DC-110			Camera	85	628973	6161975	628946	6161934	27	41	49	-147		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	21:16:38	5398	BP23MVEXP-ENV-DC-110			Camera	85	628971	6161973	628946	6161934	25	39	47	-148		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	21:17:25	5399	BP23MVEXP-ENV-DC-110			Camera	85	628968	6161970	628946	6161934	22	36	42	-148		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	21:18:52	5400	BP23MVEXP-ENV-DC-110			Camera	85	628963	6161963	628946	6161934	17	29	34	-150		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	21:19:25	5401	BP23MVEXP-ENV-DC-110			Camera	85	628961	6161960	628946	6161934	15	26	30	-151		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Aug-2023	21:20:45	5402	BP23MVEXP-ENV-DC-110			Camera	84	628957	6161953	628946	6161934	11	19	22	-151		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	21:21:36	5403	BP23MVEXP-ENV-DC-110			Camera	84	628953	6161948	628946	6161934	7	14	16	-152		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	21:21:55	5404	BP23MVEXP-ENV-DC-110			Camera	84	628953	6161946	628946	6161934	7	12	14	-152		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	21:22:41	5405	BP23MVEXP-ENV-DC-110			Camera	84	628950	6161942	628946	6161934	4	8	9	-153		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	21:23:15	5406	BP23MVEXP-ENV-DC-110			Camera	84	628948	6161939	628946	6161934	2	5	5	-153		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	21:24:02	5407	BP23MVEXP-ENV-DC-110			Camera	84	628946	6161934	628946	6161934	0	0	0	180		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	21:24:23	5408	BP23MVEXP-ENV-DC-110			Camera	84	628945	6161933	628946	6161934	-1	-1	2	30		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	21:24:49	5409	BP23MVEXP-ENV-DC-110			Camera	84	628944	6161930	628946	6161934	-2	-4	4	25		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	21:25:17	5410	BP23MVEXP-ENV-DC-110			Camera	84	628942	6161927	628946	6161934	-4	-7	8	27		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	21:25:49	5411	BP23MVEXP-ENV-DC-110			Camera	84	628941	6161924	628946	6161934	-5	-10	12	28		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	21:26:11	5412	BP23MVEXP-ENV-DC-110			Camera	84	628939	6161922	628946	6161934	-7	-12	14	29		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	21:26:23	5413	BP23MVEXP-ENV-DC-110			Camera	84	628939	6161921	628946	6161934	-7	-13	15	30		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	21:26:52	5414	BP23MVEXP-ENV-DC-110			Camera	84	628937	6161919	628946	6161934	-9	-16	18	30		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	21:27:39	5415	BP23MVEXP-ENV-DC-110			Camera	84	628935	6161915	628946	6161934	-11	-19	23	30		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	21:27:58	5416	BP23MVEXP-ENV-DC-110			Camera	84	628933	6161913	628946	6161934	-13	-21	24	32		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	21:28:54	5417	BP23MVEXP-ENV-DC-110			Camera	84	628930	6161909	628946	6161934	-16	-25	30	33		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	21:29:54	5418	BP23MVEXP-ENV-DC-110			Camera	84	628927	6161903	628946	6161934	-19	-31	36	31		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	21:30:20	5419	BP23MVEXP-ENV-DC-110			Camera	84	628926	6161901	628946	6161934	-20	-33	39	31		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	21:31:22	5420	BP23MVEXP-ENV-DC-110			Camera	84	628922	6161895	628946	6161934	-24	-39	46	31		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	21:31:44	5421	BP23MVEXP-ENV-DC-110			Camera	84	628921	6161893	628946	6161934	-25	-41	48	31		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	21:46:51	5422	BP23MVEXP-ENV-DC-110			Camera	84	628905	6161960	628946	6161934	-41	27	49	123		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	21:48:34	5423	BP23MVEXP-ENV-DC-110			Camera	84	628905	6161961	628946	6161934	-41	27	49	124		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	21:48:45	5424	BP23MVEXP-ENV-DC-110			Camera	84	628906	6161961	628946	6161934	-40	27	48	124		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	21:48:58	5425	BP23MVEXP-ENV-DC-110			Camera	84	628906	6161961	628946	6161934	-40	27	48	124		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	21:49:31	5426	BP23MVEXP-ENV-DC-110			Camera	84	628909	6161960	628946	6161934	-38	26	45	125		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	21:49:59	5427	BP23MVEXP-ENV-DC-110			Camera	84	628911	6161959	628946	6161934	-35	25	43	125		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	21:50:20	5428	BP23MVEXP-ENV-DC-110			Camera	84	628913	6161958	628946	6161934	-33	24	41	125		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	21:50:36	5429	BP23MVEXP-ENV-DC-110			Camera	84	628914	6161957	628946	6161934	-32	23	39	125		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	21:50:52	5430	BP23MVEXP-ENV-DC-110			Camera	84	628916	6161955	628946	6161934	-30	21	37	125		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	21:51:32	5431	BP23MVEXP-ENV-DC-110			Camera	84	628919	6161953	628946	6161934	-27	19	33	125		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	21:52:33	5432	BP23MVEXP-ENV-DC-110			Camera	84	628925	6161949	628946	6161934	-21	15	26	126		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	21:53:32	5433	BP23MVEXP-ENV-DC-110			Camera	84	628930	6161946	628946	6161934	-16	12	20	126		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	21:54:58	5434	BP23MVEXP-ENV-DC-110			Camera	84	628937	6161941	628946	6161934	-9	7	11	128		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	21:55:32	5435	BP23MVEXP-ENV-DC-110			Camera	84	628940	6161939	628946	6161934	-6	5	8	131		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	21:56:01	5436	BP23MVEXP-ENV-DC-110			Camera	84	628942	6161938	628946	6161934	-4	4	5	134		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	21:56:13	5437	BP23MVEXP-ENV-DC-110			Camera	84	628943	6161937	628946	6161934	-3	3	4	134		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	21:56:23	5438	BP23MVEXP-ENV-DC-110			Camera	84	628944	6161936	628946	6161934	-2	2	3	134		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	21:56:53	5439	BP23MVEXP-ENV-DC-110			Camera	84	628946	6161935	628946	6161934	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	21:57:03	5440	BP23MVEXP-ENV-DC-110			Camera	84	628947	6161934	628946	6161934	1	0	1	-108		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	21:57:44	5441	BP23MVEXP-ENV-DC-110			Camera	84	628951	6161932	628946	6161934	5	-2	6	-70		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	21:58:14	5442	BP23MVEXP-ENV-DC-110			Camera	84	628954	6161930	628946	6161934	8	-4	9	-66		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	21:59:48	5443	BP23MVEXP-ENV-DC-110			Camera	84	628962	6161925	628946	6161934	16	-9	19	-60		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	22:00:37	5444	BP23MVEXP-ENV-DC-110			Camera	84	628967	6161921	628946	6161934	21	-13	25	-59		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	22:01:38	5445	BP23MVEXP-ENV-DC-110			Camera	84	628972	6161918	628946	6161934	26	-16	31	-59		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	22:56:29	5446	BP23MVEXP-ENV-DC-108			Camera	89	627132	6162324	627184	6162321	-52	3	52	93		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	22:56:42	5447	BP23MVEXP-ENV-DC-108			Camera	89	627131	6162323	627184	6162321	-53	2	53	92		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	22:57:00	5448	BP23MVEXP-ENV-DC-108			Camera	89	627131	6162324	627184	6162321	-53	3	53	93		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
01-Aug-2023	23:01:11	5449	BP23MVEXP-ENV-DC-108			Camera	89	627150	6162323	627184	6162321	-34	2	34	93		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
01-Aug-2023	23:01:38	5450	BP23MVEXP-ENV-DC-108			Camera	89	627152	6162323	627184	6162321	-32	2	32	93		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
01-Aug-2023	23:01:49	5451	BP23MVEXP-ENV-DC-108			Camera	89	627154	6162323	627184	6162321	-30	2	30	93		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
01-Aug-2023	23:02:04	5452	BP23MVEXP-ENV-DC-108			Camera	89	627155	6162323	627184	6162321	-29	2	29	93		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
01-Aug-2023	23:02:14	5453	BP23MVEXP-ENV-DC-108			Camera	89	627156	6162322	627184	6162321	-28	1	28	92		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
01-Aug-2023	23:03:40	5454	BP23MVEXP-ENV-DC-108			Camera	89	627165	6162322	627184	6162321	-19	1	19	94		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
01-Aug-2023	23:03:49	5455	BP23MVEXP-ENV-DC-108			Camera	89	627166	6162322	627184	6162321	-18	1	18	94		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
01-Aug-2023	23:04:00	5456	BP23MVEXP-ENV-DC-108			Camera	89	627167	6162322	627184	6162321	-17	1	17	95		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
01-Aug-2023	23:04:36	5457	BP23MVEXP-ENV-DC-108			Camera	89	627171	6162322	627184	6162321	-13	1	13	95		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
01-Aug-2023	23:05:17	5458	BP23MVEXP-ENV-DC-108			Camera	88	627175	6162322	627184	6162321	-9	1	9	94		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
01-Aug-2023	23:05:27	5459	BP23MVEXP-ENV-DC-108			Camera	88	627177	6162322	627184	6162321	-7	1	7	98		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
01-Aug-2023	23:05:41	5460	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162322	627184	6162321	-6	1	6	97		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
01-Aug-2023	23:06:19	5461	BP23MVEXP-ENV-DC-108			Camera	88	627182	6162322	627184	6162321	-2	1	2	108		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
01-Aug-2023	23:06:34	5462	BP23MVEXP-ENV-DC-108			Camera	88	627184	6162322	627184	6162321	0	1	1	149		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
01-Aug-2023	23:07:07	5463	BP23MVEXP-ENV-DC-108			Camera	88	627187	6162322	627184	6162321	3	1	3	-103		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
01-Aug-2023	23:07:35	5464	BP23MVEXP-ENV-DC-108			Camera	88	627189	6162322	627184	6162321	5	1	5	-100		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
01-Aug-2023	23:10:25	5465	BP23MVEXP-ENV-DC-108			Camera	88	627207	6162321	627184	6162321	23	0	23	-89		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
01-Aug-2023	23:10:54	5466	BP23MVEXP-ENV-DC-108			Camera	88	627210	6162321	627184	6162321	26	0	26	-89		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
01-Aug-2023	23:11:40	5467	BP23MVEXP-ENV-DC-108			Camera	88	627214	6162320	627184	6162321	30	-1	30	-88		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
01-Aug-2023	23:11:53	5468	BP23MVEXP-ENV-DC-108			Camera	88	627216	6162320	627184	6162321	32	-1	32	-88		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
01-Aug-2023	23:13:08	5469	BP23MVEXP-ENV-DC-108			Camera	88	627224	6162320	627184	6162321	40	-1	40	-88		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
01-Aug-2023	23:13:53	5470	BP23MVEXP-ENV-DC-108			Camera	88	627229	6162320	627184	6162321	45	-1	45	-89		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
01-Aug-2023	23:14:10	5471	BP23MVEXP-ENV-DC-108			Camera	88	627230	6162320	627184	6162321	46	-1	46	-89		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
01-Aug-2023	23:14:33	5472	BP23MVEXP-ENV-DC-108			Camera	88	627232	6162319	627184	6162321	48	-2	48	-88		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
01-Aug-2023	23:26:05	5473	BP23MVEXP-ENV-DC-108			Camera	88	627181	6162266	627184	6162321	-3	-55	55	3		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
01-Aug-2023	23:26:46	5474	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162266	627184	6162321	-5	-55	55	5		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
01-Aug-2023	23:27:04	5475	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162266	627184	6162321	-5	-55	55	5		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
01-Aug-2023	23:27:53	5476	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162269	627184	6162321	-5	-52	52	5		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
01-Aug-2023	23:28:48	5477	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162276	627184	6162321	-6	-45	45	7		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
01-Aug-2023	23:29:25	5478	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162280	627184	6162321	-6	-41	41	8		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
01-Aug-2023	23:30:07	5479	BP23MVEXP-ENV-DC-108			Camera	88	627178	6162284	627184	6162321	-6	-37	37	9		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
01-Aug-2023	23:30:35	5480	BP23MVEXP-ENV-DC-108			Camera	88	627179	6162287	627184	6162321	-5	-34	34	9		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
01-Aug-2023	23:30:55	5481	BP23MVEXP-ENV-DC-108			Camera	87	627179	6162289	627184	6162321	-5	-32	32	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
01-Aug-2023	23:31:28	5482	BP23MVEXP-ENV-DC-108			Camera	87	627179	6162292	627184	6162321	-5	-29	29	9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
01-Aug-2023	23:32:10	5483	BP23MVEXP-ENV-DC-108			Camera	87	627180	6162296	627184	6162321	-4	-25	26	10		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
01-Aug-2023	23:33:46	5484	BP23MVEXP-ENV-DC-108			Camera	87	627181	6162306	627184	6162321	-3	-15	15	12		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
01-Aug-2023	23:35:04	5485	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162314	627184	6162321	-2	-7	7	14		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
01-Aug-2023	23:35:50	5486	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162319	627184	6162321	-2	-2	3	50		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
01-Aug-2023	23:36:11	5487	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162321	627184	6162321	-2	0	2	88		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
01-Aug-2023	23:36:44	5488	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162324	627184	6162321	-2	3	4	147		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
01-Aug-2023	23:36:53	5489	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162325	627184	6162321	-2	4	5	155		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
01-Aug-2023	23:37:27	5490	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162329	627184	6162321	-2	8	8	169		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
01-Aug-2023	23:38:11	5491	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162333	627184	6162321	-2	12	12	169		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
01-Aug-2023	23:38:42	5492	BP23MVEXP-ENV-DC-108			Camera	87	627182	6162335	627184	6162321	-2	15	15	172		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
01-Aug-2023	23:39:40	5493	BP23MVEXP-ENV-DC-108			Camera	87	627183	6162341	627184	6162321	-1	21	20	178		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
01-Aug-2023	23:40:03	5494	BP23MVEXP-ENV-DC-108			Camera	87	627183	6162344	627184	6162321	-1	23	23	177		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
01-Aug-2023	23:41:07	5495	BP23MVEXP-ENV-DC-108			Camera	87	627184	6162350	627184	6162321	0	29	29	179		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
01-Aug-2023	23:41:59	5496	BP23MVEXP-ENV-DC-108			Camera	86	627184	6162356	627184	6162321	0	35	35	-180		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
01-Aug-2023	23:42:31	5497	BP23MVEXP-ENV-DC-108			Camera	86	627184	6162359	627184	6162321	0	38	38	-180		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
01-Aug-2023	23:43:11	5498	BP23MVEXP-ENV-DC-108			Camera	86	627185	6162363	627184	6162321	1	42	42	-179		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
01-Aug-2023	23:43:24	5499	BP23MVEXP-ENV-DC-108			Camera	86	627185	6162364	627184	6162321	1	44	44	-179		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
01-Aug-2023	23:43:54	5500	BP23MVEXP-ENV-DC-108			Camera	86	627185	6162368	627184	6162321	1	47	47	-179		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	01:31:45	5501	BP23MVEXP-ENV-DC-111			Camera	94	626972	6158485	626978	6158542	-6	-57	57	6		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	01:34:50	5502	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158491	626978	6158542	-3	-51	51	4		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	01:34:59	5503	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158492	626978	6158542	-3	-50	50	4		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	01:35:31	5504	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158496	626978	6158542	-3	-46	46	4		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	01:35:42	5505	BP23MVEXP-ENV-DC-111			Camera	94	626975	6158497	626978	6158542	-3	-46	46	4		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	01:36:21	5506	BP23MVEXP-ENV-DC-111			Camera	93	626975	6158501	626978	6158542	-3	-41	41	4		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	01:37:03	5507	BP23MVEXP-ENV-DC-111			Camera	93	626976	6158505	626978	6158542	-2	-37	37	4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	01:37:16	5508	BP23MVEXP-ENV-DC-111			Camera	93	626976	6158506	626978	6158542	-2	-36	36	3		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	01:38:09	5509	BP23MVEXP-ENV-DC-111			Camera	93	626977	6158512	626978	6158542	-1	-30	30	2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	01:39:18	5510	BP23MVEXP-ENV-DC-111			Camera	93	626977	6158519	626978	6158542	-1	-23	23	3		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	01:40:27	5511	BP23MVEXP-ENV-DC-111			Camera	93	626978	6158526	626978	6158542	0	-16	16	-1		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	01:40:53	5512	BP23MVEXP-ENV-DC-111			Camera	93	626978	6158529	626978	6158542	0	-13	13	-2		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	01:41:30	5513	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158532	626978	6158542	1	-10	10	-4		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	01:41:55	5514	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158535	626978	6158542	1	-7	7	-7		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	01:42:10	5515	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158536	626978	6158542	1	-6	6	-11		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	01:42:55	5516	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158541	626978	6158542	1	-1	1	-63		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	01:43:09	5517	BP23MVEXP-ENV-DC-111			Camera	93	626979	6158543	626978	6158542	1	1	2	-129		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	01:43:53	5518	BP23MVEXP-ENV-DC-111			Camera	93	626980	6158547	626978	6158542	2	5	6	-162		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	01:46:09	5519	BP23MVEXP-ENV-DC-111			Camera	93	626980	6158562	626978	6158542	2	20	20	-173		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	01:46:16	5520	BP23MVEXP-ENV-DC-111			Camera	93	626981	6158563	626978	6158542	3	21	21	-172		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	01:46:32	5521	BP23MVEXP-ENV-DC-111			Camera	93	626981	6158564	626978	6158542	3	22	23	-171		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	01:47:29	5522	BP23MVEXP-ENV-DC-111			Camera	93	626983	6158570	626978	6158542	5	28	29	-169		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	01:47:50	5523	BP23MVEXP-ENV-DC-111			Camera	93	626984	6158572	626978	6158542	6	30	31	-169		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	01:48:14	5524	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158575	626978	6158542	6	33	33	-169		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	01:49:48	5525	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158584	626978	6158542	6	42	42	-171		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	01:50:08	5526	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158586	626978	6158542	6	44	44	-172		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	01:50:28	5527	BP23MVEXP-ENV-DC-111			Camera	92	626984	6158587	626978	6158542	6	45	45	-172		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	02:00:42	5528	BP23MVEXP-ENV-DC-111			Camera	93	627032	6158534	626978	6158542	54	-8	55	-82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	02:01:06	5529	BP23MVEXP-ENV-DC-111			Camera	93	627033	6158533	626978	6158542	55	-9	55	-81		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	02:02:55	5530	BP23MVEXP-ENV-DC-111			Camera	93	627024	6158531	626978	6158542	46	-11	47	-76		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	02:03:33	5531	BP23MVEXP-ENV-DC-111			Camera	93	627019	6158531	626978	6158542	41	-11	42	-75		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	02:03:59	5532	BP23MVEXP-ENV-DC-111			Camera	93	627016	6158532	626978	6158542	38	-10	39	-75		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	02:04:25	5533	BP23MVEXP-ENV-DC-111			Camera	93	627013	6158533	626978	6158542	35	-9	36	-75		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	02:04:47	5534	BP23MVEXP-ENV-DC-111			Camera	93	627011	6158533	626978	6158542	33	-9	34	-75		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	02:05:37	5535	BP23MVEXP-ENV-DC-111			Camera	93	627005	6158535	626978	6158542	27	-7	28	-75		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	02:06:11	5536	BP23MVEXP-ENV-DC-111			Camera	93	627002	6158535	626978	6158542	24	-7	25	-74		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	02:06:44	5537	BP23MVEXP-ENV-DC-111			Camera	93	626998	6158535	626978	6158542	21	-7	22	-72		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	02:07:45	5538	BP23MVEXP-ENV-DC-111			Camera	93	626993	6158536	626978	6158542	15	-7	16	-66		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	02:08:25	5539	BP23MVEXP-ENV-DC-111			Camera	93	626989	6158536	626978	6158542	11	-6	12	-62		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	02:09:46	5540	BP23MVEXP-ENV-DC-111			Camera	93	626981	6158537	626978	6158542	3	-5	6	-29		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	02:10:14	5541	BP23MVEXP-ENV-DC-111			Camera	93	626978	6158538	626978	6158542	0	-4	4	3		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	02:10:25	5542	BP23MVEXP-ENV-DC-111			Camera	93	626977	6158538	626978	6158542	-1	-4	4	15		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	02:10:37	5543	BP23MVEXP-ENV-DC-111			Camera	93	626976	6158538	626978	6158542	-2	-4	5	30		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	02:11:15	5544	BP23MVEXP-ENV-DC-111			Camera	93	626972	6158539	626978	6158542	-6	-3	7	61		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	02:11:56	5545	BP23MVEXP-ENV-DC-111			Camera	93	626968	6158539	626978	6158542	-10	-3	11	73		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	02:12:17	5546	BP23MVEXP-ENV-DC-111			Camera	93	626965	6158539	626978	6158542	-13	-3	13	78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	02:12:26	5547	BP23MVEXP-ENV-DC-111			Camera	93	626964	6158539	626978	6158542	-14	-3	14	79		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	02:13:44	5548	BP23MVEXP-ENV-DC-111			Camera	94	626957	6158541	626978	6158542	-21	-1	21	87		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	02:14:14	5549	BP23MVEXP-ENV-DC-111			Camera	94	626954	6158541	626978	6158542	-24	-1	24	88		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	02:14:59	5550	BP23MVEXP-ENV-DC-111			Camera	94	626949	6158541	626978	6158542	-29	-1	29	88		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	02:17:38	5551	BP23MVEXP-ENV-DC-111			Camera	94	626933	6158543	626978	6158542	-45	1	45	91		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	02:18:02	5552	BP23MVEXP-ENV-DC-111			Camera	94	626931	6158544	626978	6158542	-47	2	47	93		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
02-Aug-2023	02:18:18	5553	BP23MVEXP-ENV-DC-111			Camera	94	626929	6158545	626978	6158542	-49	3	49	93		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	03:37:26	5554	BP23MVEXP-ENV-DC-112			Camera	103	626336	6154429	626284	6154439	52	-10	53	-79		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
02-Aug-2023	03:37:46	5555	BP23MVEXP-ENV-DC-112			Camera	103	626336	6154430	626284	6154439	52	-9	52	-80		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	03:40:17	5556	BP23MVEXP-ENV-DC-112			Camera	102	626333	6154430	626284	6154439	49	-9	50	-80		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	03:40:52	5557	BP23MVEXP-ENV-DC-112			Camera	102	626331	6154430	626284	6154439	47	-9	48	-79		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	03:41:09	5558	BP23MVEXP-ENV-DC-112			Camera	102	626330	6154429	626284	6154439	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	03:41:52	5559	BP23MVEXP-ENV-DC-112			Camera	102	626326	6154428	626284	6154439	42	-11	43	-76		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	03:42:00	5560A	BP23MVEXP-ENV-DC-112				102	626325	6154429	626284	6154439	41	-11	42	-76		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A) Fix no photo
02-Aug-2023	03:42:04	5560B	BP23MVEXP-ENV-DC-112			Camera	105	626325	6154428	626284	6154439	41	-11	42	-75		(Raw Nav, Kongsberg 14208, img#7) (B)
02-Aug-2023	03:43:01	5561	BP23MVEXP-ENV-DC-112			Camera	102	626319	6154431	626284	6154439	35	-8	36	-77		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	03:43:48	5562	BP23MVEXP-ENV-DC-112			Camera	102	626315	6154432	626284	6154439	31	-7	32	-77		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	03:44:16	5563	BP23MVEXP-ENV-DC-112			Camera	102	626312	6154433	626284	6154439	28	-6	29	-77		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	03:44:42	5564	BP23MVEXP-ENV-DC-112			Camera	102	626310	6154433	626284	6154439	26	-6	26	-77		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	03:46:07	5565	BP23MVEXP-ENV-DC-112			Camera	102	626301	6154435	626284	6154439	17	-4	17	-75		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	03:46:42	5566	BP23MVEXP-ENV-DC-112			Camera	102	626297	6154436	626284	6154439	13	-3	13	-76		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	03:46:52	5567	BP23MVEXP-ENV-DC-112			Camera	101	626296	6154436	626284	6154439	12	-3	13	-76		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	03:47:42	5568	BP23MVEXP-ENV-DC-112			Camera	101	626292	6154436	626284	6154439	8	-3	9	-73		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	03:48:21	5569	BP23MVEXP-ENV-DC-112			Camera	101	626288	6154437	626284	6154439	4	-2	5	-69		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	03:48:52	5570	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154438	626284	6154439	1	-1	2	-50		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	03:49:33	5571	BP23MVEXP-ENV-DC-112			Camera	101	626281	6154439	626284	6154439	-3	0	3	84		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	03:49:42	5572	BP23MVEXP-ENV-DC-112			Camera	101	626280	6154439	626284	6154439	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	03:50:21	5573	BP23MVEXP-ENV-DC-112			Camera	101	626276	6154439	626284	6154439	-8	0	8	90		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	03:50:28	5574	BP23MVEXP-ENV-DC-112			Camera	101	626275	6154439	626284	6154439	-9	0	9	91		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	03:51:07	5575	BP23MVEXP-ENV-DC-112			Camera	101	626271	6154440	626284	6154439	-13	1	13	93		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	03:52:14	5576	BP23MVEXP-ENV-DC-112			Camera	101	626263	6154441	626284	6154439	-21	2	21	96		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	03:53:22	5577	BP23MVEXP-ENV-DC-112			Camera	101	626256	6154442	626284	6154439	-28	3	28	96		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	03:54:25	5578	BP23MVEXP-ENV-DC-112			Camera	101	626250	6154444	626284	6154439	-35	5	35	98		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	03:55:17	5579	BP23MVEXP-ENV-DC-112			Camera	101	626244	6154444	626284	6154439	-40	5	40	98		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	03:56:58	5580	BP23MVEXP-ENV-DC-112			Camera	101	626235	6154445	626284	6154439	-49	6	49	97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	03:59:24	5581	BP23MVEXP-ENV-DC-112			Camera	101	626235	6154444	626284	6154439	-49	5	49	95		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	04:12:32	5582	BP23MVEXP-ENV-DC-112			Camera	101	626275	6154391	626284	6154439	-9	-48	49	11		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	04:12:49	5583	BP23MVEXP-ENV-DC-112			Camera	101	626275	6154390	626284	6154439	-9	-49	50	11		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	04:15:45	5584	BP23MVEXP-ENV-DC-112			Camera	101	626279	6154401	626284	6154439	-5	-38	38	8		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	04:16:08	5585	BP23MVEXP-ENV-DC-112			Camera	101	626279	6154403	626284	6154439	-5	-36	36	8		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	04:16:37	5586	BP23MVEXP-ENV-DC-112			Camera	101	626280	6154407	626284	6154439	-4	-32	33	7		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	04:17:40	5587	BP23MVEXP-ENV-DC-112			Camera	101	626281	6154413	626284	6154439	-3	-26	26	7		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	04:18:34	5588	BP23MVEXP-ENV-DC-112			Camera	101	626281	6154419	626284	6154439	-3	-20	21	9		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	04:18:58	5589	BP23MVEXP-ENV-DC-112			Camera	101	626282	6154421	626284	6154439	-2	-18	18	8		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	04:19:38	5590	BP23MVEXP-ENV-DC-112			Camera	101	626282	6154425	626284	6154439	-2	-14	14	9		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	04:21:04	5591	BP23MVEXP-ENV-DC-112			Camera	101	626284	6154434	626284	6154439	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	04:21:35	5592	BP23MVEXP-ENV-DC-112			Camera	101	626284	6154437	626284	6154439	0	-2	2	-8		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	04:21:44	5593	BP23MVEXP-ENV-DC-112			Camera	101	626284	6154438	626284	6154439	0	-1	1	-13		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	04:22:27	5594	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154442	626284	6154439	1	3	3	-170		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	04:22:37	5595	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154443	626284	6154439	1	4	4	-172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	04:22:56	5596	BP23MVEXP-ENV-DC-112			Camera	101	626285	6154446	626284	6154439	1	7	7	-173		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	04:23:48	5597	BP23MVEXP-ENV-DC-112			Camera	101	626286	6154451	626284	6154439	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	04:24:20	5598	BP23MVEXP-ENV-DC-112			Camera	101	626286	6154454	626284	6154439	2	15	16	-171		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	04:25:00	5599	BP23MVEXP-ENV-DC-112			Camera	101	626287	6154459	626284	6154439	3	20	20	-171		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	04:25:38	5600	BP23MVEXP-ENV-DC-112			Camera	102	626287	6154463	626284	6154439	3	24	24	-172		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	04:26:43	5601	BP23MVEXP-ENV-DC-112			Camera	102	626288	6154470	626284	6154439	4	31	31	-173		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	04:26:53	5602	BP23MVEXP-ENV-DC-112			Camera	102	626288	6154471	626284	6154439	4	32	32	-174		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	04:27:17	5603	BP23MVEXP-ENV-DC-112			Camera	102	626287	6154473	626284	6154439	3	34	34	-174		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	04:28:17	5604	BP23MVEXP-ENV-DC-112			Camera	102	626289	6154480	626284	6154439	5	41	41	-173		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	04:28:40	5605	BP23MVEXP-ENV-DC-112			Camera	102	626289	6154482	626284	6154439	5	43	44	-173		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
02-Aug-2023	04:29:13	5606	BP23MVEXP-ENV-DC-112			Camera	102	626290	6154486	626284	6154439	6	47	47	-173		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	06:04:48	5607	BP23MVEXP-ENV-DC-113			Camera	97	625600	6150634	625643	6150623	-43	11	45	104		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	06:07:38	5608	BP23MVEXP-ENV-DC-113			Camera	97	625600	6150634	625643	6150623	-43	12	45	105		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	06:08:23	5609	BP23MVEXP-ENV-DC-113			Camera	97	625604	6150634	625643	6150623	-39	11	40	105		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	06:08:38	5610	BP23MVEXP-ENV-DC-113			Camera	97	625606	6150634	625643	6150623	-37	11	39	106		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	06:09:10	5611	BP23MVEXP-ENV-DC-113			Camera	97	625609	6150633	625643	6150623	-34	10	35	106		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	06:09:49	5612	BP23MVEXP-ENV-DC-113			Camera	97	625613	6150632	625643	6150623	-30	9	31	106		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	06:10:15	5613	BP23MVEXP-ENV-DC-113			Camera	97	625615	6150631	625643	6150623	-28	8	29	107		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	06:10:57	5614	BP23MVEXP-ENV-DC-113			Camera	97	625620	6150631	625643	6150623	-23	8	25	109		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	06:11:17	5615	BP23MVEXP-ENV-DC-113			Camera	97	625622	6150632	625643	6150623	-21	9	23	112		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	06:12:04	5616	BP23MVEXP-ENV-DC-113			Camera	97	625628	6150631	625643	6150623	-15	8	17	118		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	06:13:21	5617	BP23MVEXP-ENV-DC-113			Camera	97	625635	6150629	625643	6150623	-8	6	10	125		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	06:13:43	5618	BP23MVEXP-ENV-DC-113			Camera	97	625637	6150629	625643	6150623	-6	6	8	135		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	06:13:55	5619	BP23MVEXP-ENV-DC-113			Camera	97	625638	6150628	625643	6150623	-5	5	7	137		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	06:14:53	5620	BP23MVEXP-ENV-DC-113			Camera	97	625645	6150626	625643	6150623	2	3	4	-143		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	06:15:34	5621	BP23MVEXP-ENV-DC-113			Camera	97	625649	6150626	625643	6150623	6	3	7	-120		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	06:15:46	5622	BP23MVEXP-ENV-DC-113			Camera	97	625650	6150626	625643	6150623	7	3	8	-111		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	06:16:00	5623	BP23MVEXP-ENV-DC-113			Camera	97	625652	6150625	625643	6150623	9	2	9	-106		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	06:16:47	5624	BP23MVEXP-ENV-DC-113			Camera	97	625657	6150625	625643	6150623	14	2	14	-96		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	06:17:05	5625	BP23MVEXP-ENV-DC-113			Camera	97	625658	6150624	625643	6150623	15	1	15	-93		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	06:17:19	5626	BP23MVEXP-ENV-DC-113			Camera	97	625659	6150623	625643	6150623	16	0	16	-92		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	06:17:50	5627	BP23MVEXP-ENV-DC-113			Camera	97	625663	6150623	625643	6150623	20	0	20	-89		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	06:18:31	5628	BP23MVEXP-ENV-DC-113			Camera	97	625667	6150621	625643	6150623	24	-2	24	-86		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	06:19:50	5629	BP23MVEXP-ENV-DC-113			Camera	97	625674	6150620	625643	6150623	31	-3	31	-85		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	06:20:38	5630	BP23MVEXP-ENV-DC-113			Camera	97	625679	6150620	625643	6150623	36	-3	36	-86		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	06:21:59	5631	BP23MVEXP-ENV-DC-113			Camera	97	625687	6150619	625643	6150623	44	-4	44	-85		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	06:22:11	5632	BP23MVEXP-ENV-DC-113			Camera	97	625688	6150619	625643	6150623	46	-4	46	-85		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	06:35:27	5633	BP23MVEXP-ENV-DC-113			Camera	97	625648	6150672	625643	6150623	5	49	49	-174		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	06:37:39	5634	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150669	625643	6150623	4	46	46	-175		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	06:38:12	5635	BP23MVEXP-ENV-DC-113			Camera	97	625646	6150666	625643	6150623	3	43	43	-175		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	06:39:04	5636	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150661	625643	6150623	4	38	39	-174		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	06:39:53	5637	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150656	625643	6150623	4	33	33	-173		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	06:40:37	5638	BP23MVEXP-ENV-DC-113			Camera	97	625647	6150652	625643	6150623	4	30	30	-173		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	06:41:41	5639	BP23MVEXP-ENV-DC-113			Camera	97	625644	6150645	625643	6150623	1	22	22	-177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	06:42:29	5640	BP23MVEXP-ENV-DC-113			Camera	97	625645	6150641	625643	6150623	2	18	18	-173		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	06:44:20	5641	BP23MVEXP-ENV-DC-113			Camera	97	625644	6150629	625643	6150623	1	6	6	-174		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	06:44:43	5642	BP23MVEXP-ENV-DC-113			Camera	97	625644	6150627	625643	6150623	1	4	4	-172		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	06:45:13	5643	BP23MVEXP-ENV-DC-113			Camera	97	625643	6150624	625643	6150623	0	1	1	-174		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	06:45:24	5644	BP23MVEXP-ENV-DC-113			Camera	97	625643	6150623	625643	6150623	0	0	0	47		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	06:46:12	5645	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150618	625643	6150623	-2	-5	6	19		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	06:47:19	5646	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150611	625643	6150623	-2	-12	12	7		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	06:47:38	5647	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150610	625643	6150623	-2	-13	13	7		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	06:47:49	5648	BP23MVEXP-ENV-DC-113			Camera	97	625641	6150609	625643	6150623	-2	-14	15	8		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	06:48:33	5649	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150605	625643	6150623	-3	-18	19	9		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	06:49:07	5650	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150601	625643	6150623	-3	-22	22	7		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	06:49:20	5651	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150600	625643	6150623	-3	-24	24	7		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	06:49:58	5652	BP23MVEXP-ENV-DC-113			Camera	97	625640	6150595	625643	6150623	-3	-28	28	7		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	06:50:57	5653	BP23MVEXP-ENV-DC-113			Camera	97	625639	6150590	625643	6150623	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	06:51:13	5654	BP23MVEXP-ENV-DC-113			Camera	97	625639	6150588	625643	6150623	-4	-35	35	7		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	06:52:13	5655	BP23MVEXP-ENV-DC-113			Camera	98	625638	6150582	625643	6150623	-5	-41	41	7		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	06:53:03	5656	BP23MVEXP-ENV-DC-113			Camera	98	625637	6150577	625643	6150623	-6	-46	47	7		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	06:53:27	5657	BP23MVEXP-ENV-DC-113			Camera	98	625637	6150574	625643	6150623	-6	-49	49	7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	08:20:57	5658	BP23MVEXP-ENV-DC-114			Camera	93	624928	6146684	624983	6146663	-55	21	59	111		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	08:26:42	5659	BP23MVEXP-ENV-DC-114			Camera	93	624933	6146673	624983	6146663	-50	10	51	101		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	08:28:55	5660	BP23MVEXP-ENV-DC-114			Camera	93	624938	6146669	624983	6146663	-45	6	46	98		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	08:29:40	5661	BP23MVEXP-ENV-DC-114			Camera	93	624939	6146668	624983	6146663	-44	5	44	97		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	08:30:58	5662	BP23MVEXP-ENV-DC-114			Camera	93	624943	6146668	624983	6146663	-40	5	40	97		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	08:31:16	5663	BP23MVEXP-ENV-DC-114			Camera	93	624944	6146667	624983	6146663	-39	4	39	96		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	08:32:40	5664	BP23MVEXP-ENV-DC-114			Camera	93	624949	6146666	624983	6146663	-34	3	34	96		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	08:32:52	5665	BP23MVEXP-ENV-DC-114			Camera	93	624950	6146666	624983	6146663	-33	3	33	95		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	08:33:44	5666	BP23MVEXP-ENV-DC-114			Camera	93	624953	6146665	624983	6146663	-30	2	30	94		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	08:34:35	5667	BP23MVEXP-ENV-DC-114			Camera	93	624955	6146664	624983	6146663	-28	1	28	92		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	08:35:33	5668	BP23MVEXP-ENV-DC-114			Camera	93	624958	6146664	624983	6146663	-25	1	25	92		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	08:36:46	5669	BP23MVEXP-ENV-DC-114			Camera	93	624962	6146664	624983	6146663	-21	1	21	92		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	08:37:32	5670	BP23MVEXP-ENV-DC-114			Camera	93	624964	6146663	624983	6146663	-19	0	19	90		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	08:39:45	5671	BP23MVEXP-ENV-DC-114			Camera	93	624971	6146662	624983	6146663	-12	-1	12	86		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	08:43:16	5672	BP23MVEXP-ENV-DC-114			Camera	93	624978	6146660	624983	6146663	-5	-3	6	58		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	08:44:29	5673	BP23MVEXP-ENV-DC-114			Camera	93	624981	6146660	624983	6146663	-2	-3	4	29		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	08:44:39	5674	BP23MVEXP-ENV-DC-114			Camera	93	624982	6146660	624983	6146663	-1	-3	4	22		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	08:44:53	5675	BP23MVEXP-ENV-DC-114			Camera	93	624983	6146660	624983	6146663	0	-3	3	7		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	08:45:12	5676	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146660	624983	6146663	1	-3	3	-18		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	08:46:08	5677	BP23MVEXP-ENV-DC-114			Camera	93	624989	6146660	624983	6146663	6	-3	7	-63		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	08:47:14	5678	BP23MVEXP-ENV-DC-114			Camera	93	624996	6146660	624983	6146663	13	-3	14	-78		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	08:48:48	5679	BP23MVEXP-ENV-DC-114			Camera	93	625006	6146659	624983	6146663	23	-4	24	-80		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	08:49:03	5680	BP23MVEXP-ENV-DC-114			Camera	93	625008	6146658	624983	6146663	25	-5	26	-80		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	08:49:35	5681	BP23MVEXP-ENV-DC-114			Camera	93	625012	6146657	624983	6146663	29	-6	29	-79		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	08:50:05	5682	BP23MVEXP-ENV-DC-114			Camera	93	625015	6146657	624983	6146663	32	-6	32	-79		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	08:51:33	5683	BP23MVEXP-ENV-DC-114			Camera	93	625024	6146655	624983	6146663	41	-8	42	-79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	08:52:39	5684	BP23MVEXP-ENV-DC-114			Camera	93	625031	6146655	624983	6146663	48	-8	49	-80		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	09:02:31	5685	BP23MVEXP-ENV-DC-114			Camera	93	625002	6146693	624983	6146663	19	30	36	-148		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	09:06:40	5686	BP23MVEXP-ENV-DC-114			Camera	93	624991	6146711	624983	6146663	8	48	49	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	09:07:59	5687	BP23MVEXP-ENV-DC-114			Camera	93	624988	6146713	624983	6146663	5	50	50	-175		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	09:09:16	5688	BP23MVEXP-ENV-DC-114			Camera	93	624986	6146707	624983	6146663	3	44	44	-176		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	09:09:46	5689	BP23MVEXP-ENV-DC-114			Camera	93	624985	6146703	624983	6146663	2	40	41	-177		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	09:10:15	5690	BP23MVEXP-ENV-DC-114			Camera	93	624985	6146700	624983	6146663	2	37	37	-177		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	09:10:49	5691	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146697	624983	6146663	1	34	34	-178		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	09:10:59	5692	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146696	624983	6146663	1	33	33	-178		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	09:11:45	5693	BP23MVEXP-ENV-DC-114			Camera	93	624984	6146691	624983	6146663	1	28	28	-179		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	09:12:33	5694	BP23MVEXP-ENV-DC-114			Camera	93	624983	6146687	624983	6146663	0	24	24	179		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	09:14:38	5695	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146676	624983	6146663	-3	13	13	167		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	09:15:04	5696	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146672	624983	6146663	-3	9	10	164		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	09:15:53	5697	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146668	624983	6146663	-3	5	5	148		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	09:16:09	5698	BP23MVEXP-ENV-DC-114			Camera	93	624980	6146665	624983	6146663	-3	2	4	128		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	09:16:32	5699	BP23MVEXP-ENV-DC-114			Camera	93	624979	6146663	624983	6146663	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	09:16:46	5700	BP23MVEXP-ENV-DC-114			Camera	93	624979	6146661	624983	6146663	-4	-2	4	65		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	09:17:04	5701	BP23MVEXP-ENV-DC-114			Camera	93	624979	6146659	624983	6146663	-4	-4	6	43		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	09:17:43	5702	BP23MVEXP-ENV-DC-114			Camera	93	624978	6146655	624983	6146663	-5	-8	9	30		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	09:18:28	5703	BP23MVEXP-ENV-DC-114			Camera	93	624978	6146650	624983	6146663	-6	-13	14	23		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	09:19:10	5704	BP23MVEXP-ENV-DC-114			Camera	93	624977	6146646	624983	6146663	-6	-17	18	20		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	09:19:50	5705	BP23MVEXP-ENV-DC-114			Camera	93	624976	6146642	624983	6146663	-7	-21	22	18		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	09:21:01	5706	BP23MVEXP-ENV-DC-114			Camera	93	624975	6146635	624983	6146663	-8	-28	29	16		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	09:21:51	5707	BP23MVEXP-ENV-DC-114			Camera	93	624974	6146631	624983	6146663	-9	-32	34	16		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	09:23:04	5708	BP23MVEXP-ENV-DC-114			Camera	93	624972	6146624	624983	6146663	-11	-39	40	16		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
02-Aug-2023	09:23:23	5709	BP23MVEXP-ENV-DC-114			Camera	93	624972	6146623	624983	6146663	-11	-40	41	15		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
02-Aug-2023	09:23:59	5710	BP23MVEXP-ENV-DC-114			Camera	93	624973	6146621	624983	6146663	-10	-42	43	14		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
02-Aug-2023	11:52:44	5711	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158491	626978	6158542	-12	-51	52	13		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
02-Aug-2023	11:54:47	5712	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158495	626978	6158542	-12	-47	49	15		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
02-Aug-2023	11:55:02	5713	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158496	626978	6158542	-12	-46	47	15		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
02-Aug-2023	11:55:36	5714	BP23MVEXP-ENV-DC-111A			Camera	93	626966	6158500	626978	6158542	-12	-43	44	15		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
02-Aug-2023	11:55:51	5715	BP23MVEXP-ENV-DC-111A			Camera	93	626967	6158501	626978	6158542	-11	-41	42	16		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
02-Aug-2023	11:57:00	5716	BP23MVEXP-ENV-DC-111A			Camera	93	626967	6158508	626978	6158542	-11	-34	36	17		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
02-Aug-2023	11:57:14	5717	BP23MVEXP-ENV-DC-111A			Camera	93	626967	6158509	626978	6158542	-11	-33	35	18		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
02-Aug-2023	11:57:50	5718	BP23MVEXP-ENV-DC-111A			Camera	93	626968	6158512	626978	6158542	-10	-30	32	18		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
02-Aug-2023	11:58:21	5719	BP23MVEXP-ENV-DC-111A			Camera	93	626969	6158515	626978	6158542	-9	-27	28	18		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
02-Aug-2023	11:59:20	5720	BP23MVEXP-ENV-DC-111A			Camera	93	626971	6158522	626978	6158542	-7	-20	22	18		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
02-Aug-2023	12:00:14	5721	BP23MVEXP-ENV-DC-111A			Camera	93	626972	6158527	626978	6158542	-6	-15	16	23		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
02-Aug-2023	12:00:30	5722	BP23MVEXP-ENV-DC-111A			Camera	93	626972	6158528	626978	6158542	-6	-14	15	23		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
02-Aug-2023	12:01:10	5723	BP23MVEXP-ENV-DC-111A			Camera	93	626973	6158533	626978	6158542	-5	-9	11	27		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
02-Aug-2023	12:01:28	5724	BP23MVEXP-ENV-DC-111A			Camera	93	626974	6158534	626978	6158542	-4	-8	9	28		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
02-Aug-2023	12:01:54	5725	BP23MVEXP-ENV-DC-111A			Camera	93	626975	6158537	626978	6158542	-3	-5	6	35		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
02-Aug-2023	12:02:16	5726	BP23MVEXP-ENV-DC-111A			Camera	93	626975	6158539	626978	6158542	-3	-3	4	44		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
02-Aug-2023	12:02:39	5727	BP23MVEXP-ENV-DC-111A			Camera	93	626976	6158542	626978	6158542	-2	0	2	80		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
02-Aug-2023	12:02:50	5728	BP23MVEXP-ENV-DC-111A			Camera	93	626976	6158543	626978	6158542	-2	1	2	111		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
02-Aug-2023	12:03:26	5729	BP23MVEXP-ENV-DC-111A			Camera	93	626977	6158547	626978	6158542	-1	5	5	169		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
02-Aug-2023	12:03:52	5730	BP23MVEXP-ENV-DC-111A			Camera	93	626977	6158549	626978	6158542	-1	7	7	176		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
02-Aug-2023	12:04:08	5731	BP23MVEXP-ENV-DC-111A			Camera	93	626978	6158551	626978	6158542	0	9	9	178		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
02-Aug-2023	12:04:55	5732	BP23MVEXP-ENV-DC-111A			Camera	93	626978	6158556	626978	6158542	0	14	14	-179		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
02-Aug-2023	12:05:53	5733	BP23MVEXP-ENV-DC-111A			Camera	93	626980	6158561	626978	6158542	2	19	19	-175		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
02-Aug-2023	12:06:19	5734	BP23MVEXP-ENV-DC-111A			Camera	93	626981	6158563	626978	6158542	3	21	21	-173		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
02-Aug-2023	12:06:39	5735	BP23MVEXP-ENV-DC-111A			Camera	93	626981	6158565	626978	6158542	3	23	23	-173		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
02-Aug-2023	12:07:14	5736	BP23MVEXP-ENV-DC-111A			Camera	93	626982	6158568	626978	6158542	4	26	26	-172		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
02-Aug-2023	12:08:17	5737	BP23MVEXP-ENV-DC-111A			Camera	92	626982	6158574	626978	6158542	4	32	32	-173		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
02-Aug-2023	12:08:34	5738	BP23MVEXP-ENV-DC-111A			Camera	92	626983	6158576	626978	6158542	5	34	34	-172		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
02-Aug-2023	12:09:12	5739	BP23MVEXP-ENV-DC-111A			Camera	92	626984	6158580	626978	6158542	6	38	38	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
02-Aug-2023	12:09:50	5740	BP23MVEXP-ENV-DC-111A			Camera	92	626986	6158583	626978	6158542	8	41	42	-169		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
02-Aug-2023	12:21:23	5741	BP23MVEXP-ENV-DC-111A			Camera	93	626932	6158548	626978	6158542	-47	6	47	98		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
02-Aug-2023	12:22:02	5742	BP23MVEXP-ENV-DC-111A			Camera	93	626936	6158547	626978	6158542	-42	5	42	97		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
02-Aug-2023	12:22:21	5743	BP23MVEXP-ENV-DC-111A			Camera	93	626938	6158546	626978	6158542	-40	4	40	96		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
02-Aug-2023	12:22:47	5744	BP23MVEXP-ENV-DC-111A			Camera	93	626940	6158545	626978	6158542	-38	3	38	94		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
02-Aug-2023	12:23:35	5745	BP23MVEXP-ENV-DC-111A			Camera	93	626945	6158544	626978	6158542	-33	2	33	94		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
02-Aug-2023	12:24:31	5746	BP23MVEXP-ENV-DC-111A			Camera	93	626951	6158543	626978	6158542	-27	1	27	93		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
02-Aug-2023	12:25:11	5747	BP23MVEXP-ENV-DC-111A			Camera	93	626955	6158543	626978	6158542	-23	1	23	93		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
02-Aug-2023	12:25:54	5748	BP23MVEXP-ENV-DC-111A			Camera	93	626959	6158543	626978	6158542	-19	1	19	92		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
02-Aug-2023	12:27:01	5749	BP23MVEXP-ENV-DC-111A			Camera	93	626965	6158541	626978	6158542	-13	-1	13	86		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
02-Aug-2023	12:27:22	5750	BP23MVEXP-ENV-DC-111A			Camera	93	626968	6158541	626978	6158542	-11	-1	11	84		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
02-Aug-2023	12:28:17	5751	BP23MVEXP-ENV-DC-111A			Camera	93	626973	6158539	626978	6158542	-5	-3	6	62		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
02-Aug-2023	12:29:08	5752	BP23MVEXP-ENV-DC-111A			Camera	93	626978	6158539	626978	6158542	0	-3	3	-3		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
02-Aug-2023	12:29:48	5753	BP23MVEXP-ENV-DC-111A			Camera	93	626983	6158539	626978	6158542	5	-3	5	-59		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
02-Aug-2023	12:30:19	5754	BP23MVEXP-ENV-DC-111A			Camera	93	626985	6158539	626978	6158542	7	-3	8	-66		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
02-Aug-2023	12:31:16	5755	BP23MVEXP-ENV-DC-111A			Camera	93	626992	6158538	626978	6158542	14	-4	14	-72		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
02-Aug-2023	12:31:50	5756	BP23MVEXP-ENV-DC-111A			Camera	93	626995	6158537	626978	6158542	17	-5	18	-75		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
02-Aug-2023	12:32:30	5757	BP23MVEXP-ENV-DC-111A			Camera	93	626999	6158537	626978	6158542	21	-5	22	-76		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
02-Aug-2023	12:34:00	5758	BP23MVEXP-ENV-DC-111A			Camera	93	627008	6158535	626978	6158542	30	-7	31	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
02-Aug-2023	12:34:44	5759	BP23MVEXP-ENV-DC-111A			Camera	93	627013	6158535	626978	6158542	35	-7	36	-78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
02-Aug-2023	12:35:53	5760	BP23MVEXP-ENV-DC-111A			Camera	93	627021	6158533	626978	6158542	43	-9	44	-79		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
02-Aug-2023	12:36:34	5761	BP23MVEXP-ENV-DC-111A			Camera	93	627025	6158533	626978	6158542	47	-9	48	-79		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Aug-2023	04:44:31	5762	BP23MVEXP-ENV-DC-070			Camera	21	611209	6076884	611157	6076873	52	11	53	-102		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Aug-2023	04:45:42	5763	BP23MVEXP-ENV-DC-070			Camera	21	611208	6076883	611157	6076873	51	10	52	-101		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Aug-2023	04:46:20	5764	BP23MVEXP-ENV-DC-070			Camera	21	611208	6076884	611157	6076873	52	11	53	-102		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Aug-2023	04:47:45	5765	BP23MVEXP-ENV-DC-070			Camera	21	611204	6076881	611157	6076873	47	8	48	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Aug-2023	04:48:09	5766	BP23MVEXP-ENV-DC-070			Camera	21	611202	6076880	611157	6076873	45	7	45	-99		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Aug-2023	04:48:40	5767	BP23MVEXP-ENV-DC-070			Camera	21	611197	6076880	611157	6076873	41	7	41	-100		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Aug-2023	04:49:41	5768	BP23MVEXP-ENV-DC-070			Camera	21	611192	6076878	611157	6076873	35	5	35	-98		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Aug-2023	04:50:20	5769	BP23MVEXP-ENV-DC-070			Camera	21	611188	6076876	611157	6076873	31	3	31	-96		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Aug-2023	04:51:27	5770	BP23MVEXP-ENV-DC-070			Camera	21	611182	6076875	611157	6076873	25	2	25	-94		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Aug-2023	04:51:47	5771	BP23MVEXP-ENV-DC-070			Camera	20	611180	6076875	611157	6076873	23	2	23	-94		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Aug-2023	04:52:37	5772	BP23MVEXP-ENV-DC-070			Camera	21	611175	6076873	611157	6076873	18	0	18	-90		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Aug-2023	04:55:08	5773	BP23MVEXP-ENV-DC-070			Camera	20	611160	6076870	611157	6076873	3	-3	4	-45		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Aug-2023	04:55:32	5774	BP23MVEXP-ENV-DC-070			Camera	20	611158	6076870	611157	6076873	1	-3	3	-9		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Aug-2023	04:55:54	5775	BP23MVEXP-ENV-DC-070			Camera	20	611155	6076869	611157	6076873	-2	-4	5	20		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Aug-2023	04:56:29	5776	BP23MVEXP-ENV-DC-070			Camera	20	611152	6076867	611157	6076873	-5	-6	8	43		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Aug-2023	04:57:44	5777	BP23MVEXP-ENV-DC-070			Camera	20	611144	6076866	611157	6076873	-13	-7	15	62		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Aug-2023	04:58:07	5778	BP23MVEXP-ENV-DC-070			Camera	20	611142	6076865	611157	6076873	-15	-8	17	62		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Aug-2023	04:59:29	5779	BP23MVEXP-ENV-DC-070			Camera	20	611134	6076864	611157	6076873	-23	-9	25	68		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Aug-2023	04:59:51	5780	BP23MVEXP-ENV-DC-070			Camera	20	611132	6076863	611157	6076873	-25	-10	27	69		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Aug-2023	05:00:50	5781	BP23MVEXP-ENV-DC-070			Camera	20	611126	6076862	611157	6076873	-31	-11	33	70		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Aug-2023	05:01:35	5782	BP23MVEXP-ENV-DC-070			Camera	20	611121	6076860	611157	6076873	-36	-13	38	70		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Aug-2023	05:02:08	5783	BP23MVEXP-ENV-DC-070			Camera	20	611118	6076860	611157	6076873	-39	-14	41	71		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Aug-2023	05:02:35	5784	BP23MVEXP-ENV-DC-070			Camera	20	611115	6076859	611157	6076873	-42	-14	44	72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Aug-2023	05:03:07	5785	BP23MVEXP-ENV-DC-070			Camera	20	611113	6076857	611157	6076873	-44	-16	47	70		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Aug-2023	05:16:31	5786	BP23MVEXP-ENV-DC-070			Camera	21	611171	6076825	611157	6076873	14	-48	50	-16		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Aug-2023	05:17:14	5787	BP23MVEXP-ENV-DC-070			Camera	21	611171	6076827	611157	6076873	14	-47	48	-16		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Aug-2023	05:17:33	5788	BP23MVEXP-ENV-DC-070			Camera	21	611170	6076828	611157	6076873	13	-45	47	-16		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Aug-2023	05:18:16	5789	BP23MVEXP-ENV-DC-070			Camera	21	611169	6076832	611157	6076873	12	-41	42	-16		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Aug-2023	05:18:46	5790	BP23MVEXP-ENV-DC-070			Camera	21	611168	6076835	611157	6076873	11	-38	39	-16		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Aug-2023	05:19:25	5791	BP23MVEXP-ENV-DC-070			Camera	21	611166	6076839	611157	6076873	9	-34	36	-15		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Aug-2023	05:19:52	5792	BP23MVEXP-ENV-DC-070			Camera	21	611165	6076842	611157	6076873	8	-31	32	-15		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Aug-2023	05:20:27	5793	BP23MVEXP-ENV-DC-070			Camera	21	611165	6076846	611157	6076873	8	-27	28	-15		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Aug-2023	05:21:18	5794	BP23MVEXP-ENV-DC-070			Camera	21	611162	6076850	611157	6076873	5	-23	23	-13		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Aug-2023	05:21:51	5795	BP23MVEXP-ENV-DC-070			Camera	21	611161	6076854	611157	6076873	4	-19	20	-13		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Aug-2023	05:22:47	5796	BP23MVEXP-ENV-DC-070			Camera	21	611160	6076860	611157	6076873	3	-13	13	-13		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Aug-2023	05:23:33	5797	BP23MVEXP-ENV-DC-070			Camera	20	611159	6076865	611157	6076873	2	-8	8	-15		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Aug-2023	05:24:12	5798	BP23MVEXP-ENV-DC-070			Camera	20	611158	6076869	611157	6076873	1	-4	4	-11		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Aug-2023	05:24:35	5799	BP23MVEXP-ENV-DC-070			Camera	20	611157	6076871	611157	6076873	0	-2	2	1		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Aug-2023	05:24:58	5800	BP23MVEXP-ENV-DC-070			Camera	20	611157	6076873	611157	6076873	0	0	1	64		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Aug-2023	05:25:40	5801	BP23MVEXP-ENV-DC-070			Camera	20	611155	6076877	611157	6076873	-2	4	5	155		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Aug-2023	05:26:38	5802	BP23MVEXP-ENV-DC-070			Camera	20	611153	6076882	611157	6076873	-4	9	10	157		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Aug-2023	05:27:23	5803	BP23MVEXP-ENV-DC-070			Camera	20	611151	6076887	611157	6076873	-6	14	15	156		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Aug-2023	05:27:56	5804	BP23MVEXP-ENV-DC-070			Camera	20	611151	6076890	611157	6076873	-6	17	18	159		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Aug-2023	05:28:13	5805	BP23MVEXP-ENV-DC-070			Camera	20	611150	6076892	611157	6076873	-7	19	20	160		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Aug-2023	05:28:40	5806	BP23MVEXP-ENV-DC-070			Camera	20	611149	6076896	611157	6076873	-8	23	24	160		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Aug-2023	05:29:29	5807	BP23MVEXP-ENV-DC-070			Camera	20	611148	6076901	611157	6076873	-9	28	29	161		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Aug-2023	05:30:23	5808	BP23MVEXP-ENV-DC-070			Camera	20	611146	6076906	611157	6076873	-11	33	35	162		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Aug-2023	05:30:50	5809	BP23MVEXP-ENV-DC-070			Camera	20	611145	6076908	611157	6076873	-12	35	37	161		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Aug-2023	05:31:58	5810	BP23MVEXP-ENV-DC-070			Camera	20	611143	6076915	611157	6076873	-14	42	44	161		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Aug-2023	05:32:41	5811	BP23MVEXP-ENV-DC-070			Camera	20	611141	6076919	611157	6076873	-16	46	48	161		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
05-Aug-2023	06:22:13	5812	BP23MVEXP-ENV-DC-068			Camera	30	613785	6077999	613813	6078042	-28	-43	52	33		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
05-Aug-2023	06:23:29	5813	BP23MVEXP-ENV-DC-068			Camera	30	613788	6078003	613813	6078042	-25	-39	47	32		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
05-Aug-2023	06:24:40	5814	BP23MVEXP-ENV-DC-068			Camera	30	613792	6078008	613813	6078042	-21	-34	40	31		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
05-Aug-2023	06:25:06	5815	BP23MVEXP-ENV-DC-068			Camera	30	613794	6078011	613813	6078042	-19	-31	37	32		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
05-Aug-2023	06:25:31	5816	BP23MVEXP-ENV-DC-068			Camera	30	613795	6078013	613813	6078042	-18	-29	34	31		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
05-Aug-2023	06:26:24	5817	BP23MVEXP-ENV-DC-068			Camera	30	613799	6078018	613813	6078042	-14	-24	28	31		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
05-Aug-2023	06:26:48	5818	BP23MVEXP-ENV-DC-068			Camera	30	613800	6078020	613813	6078042	-13	-22	25	31		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
05-Aug-2023	06:27:18	5819	BP23MVEXP-ENV-DC-068			Camera	31	613802	6078022	613813	6078042	-12	-20	23	30		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
05-Aug-2023	06:28:00	5820	BP23MVEXP-ENV-DC-068			Camera	31	613804	6078026	613813	6078042	-9	-16	18	30		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
05-Aug-2023	06:28:28	5821	BP23MVEXP-ENV-DC-068			Camera	31	613805	6078029	613813	6078042	-8	-13	15	32		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
05-Aug-2023	06:29:11	5822	BP23MVEXP-ENV-DC-068			Camera	31	613807	6078032	613813	6078042	-6	-10	12	31		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
05-Aug-2023	06:29:31	5823	BP23MVEXP-ENV-DC-068			Camera	31	613808	6078034	613813	6078042	-5	-8	9	31		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
05-Aug-2023	06:29:51	5824	BP23MVEXP-ENV-DC-068			Camera	31	613810	6078036	613813	6078042	-3	-6	7	29		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
05-Aug-2023	06:30:49	5825	BP23MVEXP-ENV-DC-068			Camera	31	613813	6078041	613813	6078042	0	-1	1	-10		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
05-Aug-2023	06:30:59	5826	BP23MVEXP-ENV-DC-068			Camera	31	613814	6078042	613813	6078042	1	0	1	-67		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
05-Aug-2023	06:31:16	5827	BP23MVEXP-ENV-DC-068			Camera	31	613814	6078043	613813	6078042	1	1	1	-133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
05-Aug-2023	06:31:47	5828	BP23MVEXP-ENV-DC-068			Camera	31	613816	6078046	613813	6078042	3	4	5	-146		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
05-Aug-2023	06:32:09	5829	BP23MVEXP-ENV-DC-068			Camera	31	613817	6078048	613813	6078042	4	6	7	-145		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
05-Aug-2023	06:32:55	5830	BP23MVEXP-ENV-DC-068			Camera	31	613820	6078052	613813	6078042	7	10	12	-146		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
05-Aug-2023	06:33:28	5831	BP23MVEXP-ENV-DC-068			Camera	31	613821	6078055	613813	6078042	8	13	16	-147		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
05-Aug-2023	06:34:42	5832	BP23MVEXP-ENV-DC-068			Camera	31	613824	6078063	613813	6078042	11	21	24	-153		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
05-Aug-2023	06:35:04	5833	BP23MVEXP-ENV-DC-068			Camera	31	613826	6078065	613813	6078042	13	23	27	-151		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
05-Aug-2023	06:35:47	5834	BP23MVEXP-ENV-DC-068			Camera	31	613829	6078068	613813	6078042	16	26	31	-148		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
05-Aug-2023	06:36:30	5835	BP23MVEXP-ENV-DC-068			Camera	31	613832	6078071	613813	6078042	19	29	35	-147		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
05-Aug-2023	06:38:00	5836	BP23MVEXP-ENV-DC-068			Camera	31	613835	6078081	613813	6078042	22	39	44	-151		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
05-Aug-2023	06:53:26	5837	BP23MVEXP-ENV-DC-068			Camera	31	613855	6078012	613813	6078042	42	-30	51	-55		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
05-Aug-2023	06:53:59	5838	BP23MVEXP-ENV-DC-068			Camera	31	613851	6078014	613813	6078042	38	-28	47	-54		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
05-Aug-2023	06:54:14	5839	BP23MVEXP-ENV-DC-068			Camera	31	613849	6078015	613813	6078042	37	-27	45	-54		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
05-Aug-2023	06:54:50	5840	BP23MVEXP-ENV-DC-068			Camera	31	613847	6078018	613813	6078042	34	-24	41	-55		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
05-Aug-2023	06:55:16	5841	BP23MVEXP-ENV-DC-068			Camera	31	613845	6078020	613813	6078042	32	-22	39	-55		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
05-Aug-2023	06:55:47	5842	BP23MVEXP-ENV-DC-068			Camera	31	613842	6078021	613813	6078042	29	-21	36	-55		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
05-Aug-2023	06:56:42	5843	BP23MVEXP-ENV-DC-068			Camera	31	613838	6078024	613813	6078042	25	-18	31	-54		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
05-Aug-2023	06:58:06	5844	BP23MVEXP-ENV-DC-068			Camera	31	613830	6078028	613813	6078042	17	-14	22	-52		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
05-Aug-2023	06:58:40	5845	BP23MVEXP-ENV-DC-068			Camera	31	613828	6078030	613813	6078042	15	-12	19	-51		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
05-Aug-2023	06:59:15	5846	BP23MVEXP-ENV-DC-068			Camera	31	613825	6078033	613813	6078042	12	-9	15	-51		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
05-Aug-2023	07:00:07	5847	BP23MVEXP-ENV-DC-068			Camera	31	613820	6078035	613813	6078042	7	-7	10	-46		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
05-Aug-2023	07:00:46	5848	BP23MVEXP-ENV-DC-068			Camera	31	613817	6078038	613813	6078042	4	-4	6	-44		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
05-Aug-2023	07:01:07	5849	BP23MVEXP-ENV-DC-068			Camera	31	613815	6078039	613813	6078042	2	-3	4	-36		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
05-Aug-2023	07:01:28	5850	BP23MVEXP-ENV-DC-068			Camera	31	613814	6078040	613813	6078042	1	-2	2	-23		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
05-Aug-2023	07:01:42	5851	BP23MVEXP-ENV-DC-068			Camera	31	613813	6078041	613813	6078042	0	-1	1	18		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
05-Aug-2023	07:02:19	5852	BP23MVEXP-ENV-DC-068			Camera	31	613810	6078043	613813	6078042	-3	1	3	100		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
05-Aug-2023	07:02:46	5853	BP23MVEXP-ENV-DC-068			Camera	31	613807	6078044	613813	6078042	-6	2	6	108		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
05-Aug-2023	07:03:52	5854	BP23MVEXP-ENV-DC-068			Camera	31	613800	6078047	613813	6078042	-13	5	14	113		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
05-Aug-2023	07:04:38	5855	BP23MVEXP-ENV-DC-068			Camera	31	613796	6078051	613813	6078042	-17	9	19	117		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
05-Aug-2023	07:05:28	5856	BP23MVEXP-ENV-DC-068			Camera	31	613793	6078053	613813	6078042	-20	11	23	119		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
05-Aug-2023	07:05:51	5857	BP23MVEXP-ENV-DC-068			Camera	31	613791	6078054	613813	6078042	-22	12	25	119		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
05-Aug-2023	07:06:24	5858	BP23MVEXP-ENV-DC-068			Camera	31	613787	6078056	613813	6078042	-26	14	29	119		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
05-Aug-2023	07:06:54	5859	BP23MVEXP-ENV-DC-068			Camera	31	613784	6078058	613813	6078042	-29	16	33	119		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
05-Aug-2023	07:08:06	5860	BP23MVEXP-ENV-DC-068			Camera	31	613779	6078062	613813	6078042	-34	20	39	120		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
05-Aug-2023	07:08:38	5861	BP23MVEXP-ENV-DC-068			Camera	30	613776	6078063	613813	6078042	-37	21	43	120		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
05-Aug-2023	07:10:05	5862	BP23MVEXP-ENV-DC-068			Camera	31	613769	6078068	613813	6078042	-44	26	51	121		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
07-Aug-2023	07:17:41	5863	BP23MVEXP-ENV-DC-057			Camera	79	628583	6091634	628558	6091692	26	-58	63	-24		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
07-Aug-2023	07:22:24	5864	BP23MVEXP-ENV-DC-057			Camera	79	628578	6091648	628558	6091692	20	-44	48	-24		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
07-Aug-2023	07:23:07	5865	BP23MVEXP-ENV-DC-057			Camera	79	628576	6091652	628558	6091692	18	-40	44	-24		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
07-Aug-2023	07:23:32	5866	BP23MVEXP-ENV-DC-057			Camera	79	628574	6091655	628558	6091692	16	-37	40	-24		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
07-Aug-2023	07:24:10	5867	BP23MVEXP-ENV-DC-057			Camera	79	628573	6091658	628558	6091692	16	-34	37	-25		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
07-Aug-2023	07:24:59	5868	BP23MVEXP-ENV-DC-057			Camera	79	628570	6091663	628558	6091692	12	-29	31	-22		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
07-Aug-2023	07:25:27	5869	BP23MVEXP-ENV-DC-057			Camera	79	628569	6091665	628558	6091692	11	-28	30	-22		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
07-Aug-2023	07:25:55	5870	BP23MVEXP-ENV-DC-057			Camera	79	628568	6091668	628558	6091692	10	-24	26	-23		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
07-Aug-2023	07:26:40	5871	BP23MVEXP-ENV-DC-057			Camera	79	628567	6091672	628558	6091692	9	-20	22	-23		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
07-Aug-2023	07:27:13	5872	BP23MVEXP-ENV-DC-057			Camera	79	628566	6091674	628558	6091692	8	-18	19	-24		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
07-Aug-2023	07:27:55	5873	BP23MVEXP-ENV-DC-057			Camera	79	628563	6091678	628558	6091692	5	-14	14	-20		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
07-Aug-2023	07:28:27	5874	BP23MVEXP-ENV-DC-057			Camera	79	628562	6091682	628558	6091692	4	-10	11	-21		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
07-Aug-2023	07:29:35	5875	BP23MVEXP-ENV-DC-057			Camera	79	628559	6091688	628558	6091692	1	-4	4	-20		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
07-Aug-2023	07:30:30	5876	BP23MVEXP-ENV-DC-057			Camera	79	628557	6091693	628558	6091692	-1	1	1	119		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
07-Aug-2023	07:31:01	5877	BP23MVEXP-ENV-DC-057			Camera	79	628554	6091696	628558	6091692	-4	4	5	138		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
07-Aug-2023	07:31:28	5878	BP23MVEXP-ENV-DC-057			Camera	79	628554	6091699	628558	6091692	-4	7	8	151		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
07-Aug-2023	07:31:46	5879	BP23MVEXP-ENV-DC-057			Camera	79	628553	6091701	628558	6091692	-5	9	10	151		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
07-Aug-2023	07:32:16	5880	BP23MVEXP-ENV-DC-057			Camera	79	628551	6091704	628558	6091692	-7	12	14	149		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
07-Aug-2023	07:33:32	5881	BP23MVEXP-ENV-DC-057			Camera	79	628548	6091711	628558	6091692	-10	19	21	152		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
07-Aug-2023	07:33:50	5882	BP23MVEXP-ENV-DC-057			Camera	79	628548	6091712	628558	6091692	-10	20	23	153		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
07-Aug-2023	07:34:18	5883	BP23MVEXP-ENV-DC-057			Camera	79	628547	6091715	628558	6091692	-11	23	26	154		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
07-Aug-2023	07:35:16	5884	BP23MVEXP-ENV-DC-057			Camera	79	628545	6091719	628558	6091692	-14	27	30	154		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
07-Aug-2023	07:35:34	5885	BP23MVEXP-ENV-DC-057			Camera	79	628544	6091721	628558	6091692	-15	29	33	154		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
07-Aug-2023	07:36:40	5886	BP23MVEXP-ENV-DC-057			Camera	79	628541	6091728	628558	6091692	-17	36	40	155		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
07-Aug-2023	07:53:10	5887	BP23MVEXP-ENV-DC-057			Camera	79	628517	6091672	628558	6091692	-41	-20	46	64		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
07-Aug-2023	07:54:18	5888	BP23MVEXP-ENV-DC-057			Camera	79	628524	6091674	628558	6091692	-34	-18	38	62		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
07-Aug-2023	07:54:48	5889	BP23MVEXP-ENV-DC-057			Camera	79	628527	6091677	628558	6091692	-31	-15	34	64		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
07-Aug-2023	07:55:17	5890	BP23MVEXP-ENV-DC-057			Camera	79	628530	6091679	628558	6091692	-28	-13	31	65		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
07-Aug-2023	07:55:42	5891	BP23MVEXP-ENV-DC-057			Camera	79	628533	6091680	628558	6091692	-26	-12	28	65		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
07-Aug-2023	07:56:50	5892	BP23MVEXP-ENV-DC-057			Camera	79	628538	6091682	628558	6091692	-20	-10	22	63		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
07-Aug-2023	07:57:32	5893	BP23MVEXP-ENV-DC-057			Camera	79	628542	6091684	628558	6091692	-16	-8	18	63		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
07-Aug-2023	07:58:08	5894	BP23MVEXP-ENV-DC-057			Camera	79	628545	6091686	628558	6091692	-13	-6	14	67		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
07-Aug-2023	07:59:08	5895	BP23MVEXP-ENV-DC-057			Camera	79	628551	6091690	628558	6091692	-7	-2	8	72		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
07-Aug-2023	07:59:50	5896	BP23MVEXP-ENV-DC-057			Camera	79	628555	6091691	628558	6091692	-3	-1	4	71		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
07-Aug-2023	08:00:11	5897	BP23MVEXP-ENV-DC-057			Camera	79	628556	6091691	628558	6091692	-2	-1	2	70		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
07-Aug-2023	08:00:36	5898	BP23MVEXP-ENV-DC-057			Camera	79	628559	6091692	628558	6091692	1	0	1	-104		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Aug-2023	08:01:31	5899	BP23MVEXP-ENV-DC-057				79	628563	6091694	628558	6091692	5	2	6	-111		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A) Fix no photo
07-Aug-2023	08:01:38	5900	BP23MVEXP-ENV-DC-057			Camera	79	628564	6091694	628558	6091692	6	2	7	-112		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
07-Aug-2023	08:02:31	5901	BP23MVEXP-ENV-DC-057			Camera	79	628569	6091698	628558	6091692	12	6	13	-116		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
07-Aug-2023	08:03:38	5902	BP23MVEXP-ENV-DC-057				79	628575	6091701	628558	6091692	17	9	20	-118		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A) Fix no photo
07-Aug-2023	08:03:47	5903	BP23MVEXP-ENV-DC-057			Camera	79	628576	6091702	628558	6091692	18	10	21	-119		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
07-Aug-2023	08:04:34	5904	BP23MVEXP-ENV-DC-057			Camera	79	628580	6091705	628558	6091692	22	13	25	-120		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
07-Aug-2023	08:05:34	5905	BP23MVEXP-ENV-DC-057			Camera	79	628586	6091707	628558	6091692	28	15	31	-119		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
07-Aug-2023	08:06:52	5906	BP23MVEXP-ENV-DC-057			Camera	79	628593	6091711	628558	6091692	35	19	40	-118		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
07-Aug-2023	08:07:32	5907	BP23MVEXP-ENV-DC-057			Camera	79	628596	6091712	628558	6091692	38	20	43	-118		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
07-Aug-2023	08:08:18	5908	BP23MVEXP-ENV-DC-057			Camera	79	628601	6091713	628558	6091692	43	21	48	-116		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	08:11:03	5909	BP23MVEXP-ENV-DC-126			Camera	80	621019	6099966	621032	6100018	-13	-52	53	14		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	08:13:52	5910	BP23MVEXP-ENV-DC-126			Camera	80	621022	6099974	621032	6100018	-10	-45	46	13		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	08:14:09	5911	BP23MVEXP-ENV-DC-126			Camera	80	621022	6099975	621032	6100018	-10	-43	44	13		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	08:14:50	5912	BP23MVEXP-ENV-DC-126			Camera	80	621023	6099979	621032	6100018	-9	-39	40	13		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	08:15:03	5913	BP23MVEXP-ENV-DC-126			Camera	80	621023	6099980	621032	6100018	-9	-38	39	13		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	08:16:01	5914	BP23MVEXP-ENV-DC-126			Camera	80	621025	6099987	621032	6100018	-7	-31	32	13		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	08:16:58	5915	BP23MVEXP-ENV-DC-126			Camera	80	621027	6099992	621032	6100018	-5	-26	26	11		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	08:17:18	5916	BP23MVEXP-ENV-DC-126			Camera	80	621027	6099994	621032	6100018	-5	-24	24	11		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	08:18:01	5917	BP23MVEXP-ENV-DC-126			Camera	80	621028	6099998	621032	6100018	-4	-20	21	10		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	08:18:33	5918	BP23MVEXP-ENV-DC-126			Camera	80	621029	6100000	621032	6100018	-3	-18	18	10		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	08:18:50	5919	BP23MVEXP-ENV-DC-126			Camera	80	621029	6100002	621032	6100018	-3	-16	16	11		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	08:19:08	5920	BP23MVEXP-ENV-DC-126			Camera	80	621029	6100004	621032	6100018	-3	-14	14	12		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	08:19:44	5921	BP23MVEXP-ENV-DC-126			Camera	80	621030	6100008	621032	6100018	-2	-10	10	11		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	08:20:12	5922	BP23MVEXP-ENV-DC-126			Camera	80	621031	6100011	621032	6100018	-1	-7	7	9		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	08:20:33	5923	BP23MVEXP-ENV-DC-126			Camera	80	621032	6100013	621032	6100018	0	-5	5	5		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	08:21:27	5924	BP23MVEXP-ENV-DC-126			Camera	80	621033	6100018	621032	6100018	1	0	1	-106		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	08:21:36	5925	BP23MVEXP-ENV-DC-126			Camera	80	621033	6100019	621032	6100018	1	1	2	-142		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	08:21:59	5926	BP23MVEXP-ENV-DC-126			Camera	80	621033	6100022	621032	6100018	1	4	4	-159		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	08:22:25	5927	BP23MVEXP-ENV-DC-126			Camera	80	621034	6100024	621032	6100018	2	6	6	-162		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	08:22:59	5928	BP23MVEXP-ENV-DC-126			Camera	80	621035	6100028	621032	6100018	3	10	10	-163		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	08:23:36	5929	BP23MVEXP-ENV-DC-126			Camera	80	621036	6100031	621032	6100018	4	13	13	-162		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	08:24:41	5930	BP23MVEXP-ENV-DC-126			Camera	80	621037	6100038	621032	6100018	5	20	21	-165		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	08:25:18	5931	BP23MVEXP-ENV-DC-126			Camera	80	621038	6100042	621032	6100018	6	24	25	-165		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	08:26:04	5932	BP23MVEXP-ENV-DC-126			Camera	80	621040	6100047	621032	6100018	8	29	30	-165		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	08:26:48	5933	BP23MVEXP-ENV-DC-126			Camera	80	621041	6100051	621032	6100018	9	33	34	-165		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	08:27:14	5934	BP23MVEXP-ENV-DC-126			Camera	80	621042	6100053	621032	6100018	10	35	36	-165		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	08:28:25	5935	BP23MVEXP-ENV-DC-126			Camera	80	621043	6100059	621032	6100018	11	42	43	-165		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	08:42:40	5936	BP23MVEXP-ENV-DC-126			Camera	80	620989	6100030	621032	6100018	-43	12	45	105		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	08:43:56	5937	BP23MVEXP-ENV-DC-126			Camera	80	620997	6100027	621032	6100018	-35	9	36	104		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	08:44:14	5938	BP23MVEXP-ENV-DC-126			Camera	80	620999	6100027	621032	6100018	-33	9	35	105		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	08:44:28	5939	BP23MVEXP-ENV-DC-126			Camera	80	621000	6100027	621032	6100018	-32	9	33	106		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	08:45:01	5940	BP23MVEXP-ENV-DC-126			Camera	80	621004	6100027	621032	6100018	-29	9	30	107		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	08:45:47	5941	BP23MVEXP-ENV-DC-126			Camera	80	621008	6100026	621032	6100018	-24	8	25	108		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	08:46:03	5942	BP23MVEXP-ENV-DC-126			Camera	80	621010	6100025	621032	6100018	-22	7	23	107		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	08:48:02	5943	BP23MVEXP-ENV-DC-126			Camera	80	621022	6100022	621032	6100018	-10	4	11	112		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	08:49:03	5944	BP23MVEXP-ENV-DC-126			Camera	80	621028	6100020	621032	6100018	-4	2	4	114		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	08:50:19	5945	BP23MVEXP-ENV-DC-126			Camera	80	621036	6100019	621032	6100018	4	1	4	-104		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	08:50:51	5946	BP23MVEXP-ENV-DC-126			Camera	80	621039	6100018	621032	6100018	7	0	7	-91		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	08:51:33	5947	BP23MVEXP-ENV-DC-126			Camera	80	621043	6100017	621032	6100018	11	-1	11	-84		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	08:52:08	5948	BP23MVEXP-ENV-DC-126			Camera	80	621046	6100016	621032	6100018	14	-2	14	-83		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	08:52:50	5949	BP23MVEXP-ENV-DC-126			Camera	80	621051	6100015	621032	6100018	19	-3	19	-80		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	08:53:44	5950	BP23MVEXP-ENV-DC-126			Camera	80	621056	6100013	621032	6100018	24	-5	25	-78		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	08:54:02	5951	BP23MVEXP-ENV-DC-126			Camera	80	621058	6100012	621032	6100018	26	-6	27	-77		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	08:54:21	5952	BP23MVEXP-ENV-DC-126			Camera	80	621060	6100012	621032	6100018	28	-6	28	-77		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	08:55:45	5953	BP23MVEXP-ENV-DC-126			Camera	80	621068	6100011	621032	6100018	36	-7	37	-78		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	08:56:06	5954	BP23MVEXP-ENV-DC-126			Camera	80	621070	6100010	621032	6100018	38	-8	39	-78		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	08:56:29	5955	BP23MVEXP-ENV-DC-126			Camera	80	621073	6100009	621032	6100018	41	-9	42	-77		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	08:57:20	5956	BP23MVEXP-ENV-DC-126			Camera	80	621078	6100008	621032	6100018	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	08:57:29	5957	BP23MVEXP-ENV-DC-126			Camera	80	621079	6100008	621032	6100018	47	-10	48	-78		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	10:01:31	5958	BP23MVEXP-ENV-DC-127			Camera	70	619943	6096222	619930	6096179	13	43	45	-164		(Corr'd Nav, Kongsberg 14208, img#50) (B)
10-Aug-2023	10:02:53	5959	BP23MVEXP-ENV-DC-127			Camera	70	619941	6096221	619930	6096179	11	42	43	-165		(Corr'd Nav, Kongsberg 14208, img#1) (B)
10-Aug-2023	10:03:26	5960	BP23MVEXP-ENV-DC-127			Camera	70	619940	6096218	619930	6096179	10	39	41	-166		(Corr'd Nav, Kongsberg 14208, img#2) (B)
10-Aug-2023	10:05:00	5961	BP23MVEXP-ENV-DC-127			Camera	70	619939	6096209	619930	6096179	9	30	31	-164		(Corr'd Nav, Kongsberg 14208, img#3) (B)
10-Aug-2023	10:05:34	5962	BP23MVEXP-ENV-DC-127			Camera	69	619938	6096205	619930	6096179	8	26	27	-163		(Corr'd Nav, Kongsberg 14208, img#4) (B)
10-Aug-2023	10:06:26	5963	BP23MVEXP-ENV-DC-127			Camera	70	619936	6096200	619930	6096179	6	21	22	-164		(Corr'd Nav, Kongsberg 14208, img#5) (B)
10-Aug-2023	10:07:08	5964	BP23MVEXP-ENV-DC-127			Camera	70	619935	6096196	619930	6096179	5	17	18	-164		(Corr'd Nav, Kongsberg 14208, img#6) (B)
10-Aug-2023	10:07:22	5965	BP23MVEXP-ENV-DC-127			Camera	71	619934	6096194	619930	6096179	4	15	16	-164		(Corr'd Nav, Kongsberg 14208, img#7) (B)
10-Aug-2023	10:08:40	5966	BP23MVEXP-ENV-DC-127			Camera	70	619933	6096187	619930	6096179	3	8	8	-160		(Corr'd Nav, Kongsberg 14208, img#8) (B)
10-Aug-2023	10:09:14	5967	BP23MVEXP-ENV-DC-127			Camera	70	619932	6096183	619930	6096179	2	4	5	-153		(Corr'd Nav, Kongsberg 14208, img#9) (B)
10-Aug-2023	10:10:05	5968	BP23MVEXP-ENV-DC-127			Camera	70	619931	6096179	619930	6096179	1	0	1	-65		(Corr'd Nav, Kongsberg 14208, img#10) (B)
10-Aug-2023	10:11:09	5969	BP23MVEXP-ENV-DC-127			Camera	69	619929	6096172	619930	6096179	-1	-7	7	10		(Corr'd Nav, Kongsberg 14208, img#11) (B)
10-Aug-2023	10:11:29	5970	BP23MVEXP-ENV-DC-127			Camera	70	619928	6096170	619930	6096179	-2	-9	9	11		(Corr'd Nav, Kongsberg 14208, img#12) (B)
10-Aug-2023	10:12:14	5971	BP23MVEXP-ENV-DC-127			Camera	70	619927	6096166	619930	6096179	-3	-13	13	13		(Corr'd Nav, Kongsberg 14208, img#13) (B)
10-Aug-2023	10:12:27	5972	BP23MVEXP-ENV-DC-127			Camera	70	619927	6096165	619930	6096179	-3	-14	15	12		(Corr'd Nav, Kongsberg 14208, img#14) (B)
10-Aug-2023	10:13:21	5973	BP23MVEXP-ENV-DC-127				70	619926	6096159	619930	6096179	-4	-20	20	12		(Corr'd Nav, Kongsberg 14208, img#15) (B) Fix no photo
10-Aug-2023	10:13:33	5974	BP23MVEXP-ENV-DC-127			Camera	70	619925	6096159	619930	6096179	-5	-21	21	13		(Corr'd Nav, Kongsberg 14208, img#16) (B)
10-Aug-2023	10:14:00	5975	BP23MVEXP-ENV-DC-127			Camera	70	619925	6096156	619930	6096179	-5	-23	24	13		(Corr'd Nav, Kongsberg 14208, img#17) (B)
10-Aug-2023	10:14:51	5976	BP23MVEXP-ENV-DC-127			Camera	69	619923	6096150	619930	6096179	-7	-29	30	13		(Corr'd Nav, Kongsberg 14208, img#18) (B)
10-Aug-2023	10:15:42	5977	BP23MVEXP-ENV-DC-127			Camera	70	619922	6096145	619930	6096179	-8	-34	35	13		(Corr'd Nav, Kongsberg 14208, img#19) (B)
10-Aug-2023	10:16:01	5978	BP23MVEXP-ENV-DC-127			Camera	70	619922	6096143	619930	6096179	-8	-36	37	13		(Corr'd Nav, Kongsberg 14208, img#20) (B)
10-Aug-2023	10:16:19	5979	BP23MVEXP-ENV-DC-127			Camera	70	619921	6096142	619930	6096179	-9	-37	38	14		(Corr'd Nav, Kongsberg 14208, img#21) (B)
10-Aug-2023	10:16:39	5980	BP23MVEXP-ENV-DC-127			Camera	70	619920	6096139	619930	6096179	-10	-40	41	14		(Corr'd Nav, Kongsberg 14208, img#22) (B)
10-Aug-2023	10:17:55	5981	BP23MVEXP-ENV-DC-127			Camera	70	619919	6096132	619930	6096179	-11	-47	48	13		(Corr'd Nav, Kongsberg 14208, img#23) (B)
10-Aug-2023	10:31:43	5982	BP23MVEXP-ENV-DC-127			Camera	70	619883	6096190	619930	6096179	-47	11	48	103		(Corr'd Nav, Kongsberg 14208, img#24) (B)
10-Aug-2023	10:32:54	5983	BP23MVEXP-ENV-DC-127			Camera	70	619890	6096188	619930	6096179	-40	9	41	103		(Corr'd Nav, Kongsberg 14208, img#25) (B)
10-Aug-2023	10:35:07	5984	BP23MVEXP-ENV-DC-127			Camera	69	619904	6096186	619930	6096179	-26	7	27	105		(Corr'd Nav, Kongsberg 14208, img#26) (B)
10-Aug-2023	10:35:18	5985	BP23MVEXP-ENV-DC-127			Camera	70	619905	6096186	619930	6096179	-25	7	26	105		(Corr'd Nav, Kongsberg 14208, img#27) (B)
10-Aug-2023	10:36:19	5986	BP23MVEXP-ENV-DC-127			Camera	69	619912	6096184	619930	6096179	-18	5	19	106		(Corr'd Nav, Kongsberg 14208, img#28) (B)
10-Aug-2023	10:37:13	5987	BP23MVEXP-ENV-DC-127			Camera	69	619917	6096183	619930	6096179	-13	4	14	108		(Corr'd Nav, Kongsberg 14208, img#29) (B)
10-Aug-2023	10:37:58	5988	BP23MVEXP-ENV-DC-127			Camera	70	619921	6096183	619930	6096179	-9	4	9	112		(Corr'd Nav, Kongsberg 14208, img#30) (B)
10-Aug-2023	10:39:37	5989	BP23MVEXP-ENV-DC-127			Camera	70	619931	6096180	619930	6096179	1	1	2	-128		(Corr'd Nav, Kongsberg 14208, img#31) (B)
10-Aug-2023	10:39:47	5990	BP23MVEXP-ENV-DC-127			Camera	70	619932	6096180	619930	6096179	2	1	2	-108		(Corr'd Nav, Kongsberg 14208, img#32) (B)
10-Aug-2023	10:40:49	5991	BP23MVEXP-ENV-DC-127			Camera	70	619938	6096179	619930	6096179	8	0	8	-91		(Corr'd Nav, Kongsberg 14208, img#33) (B)
10-Aug-2023	10:41:09	5992	BP23MVEXP-ENV-DC-127			Camera	70	619940	6096179	619930	6096179	10	0	10	-90		(Corr'd Nav, Kongsberg 14208, img#34) (B)
10-Aug-2023	10:42:06	5993	BP23MVEXP-ENV-DC-127			Camera	70	619946	6096178	619930	6096179	16	-1	16	-86		(Corr'd Nav, Kongsberg 14208, img#35) (B)
10-Aug-2023	10:43:21	5994	BP23MVEXP-ENV-DC-127			Camera	70	619953	6096177	619930	6096179	23	-2	23	-84		(Corr'd Nav, Kongsberg 14208, img#36) (B)
10-Aug-2023	10:43:33	5995	BP23MVEXP-ENV-DC-127			Camera	70	619954	6096176	619930	6096179	24	-3	24	-84		(Corr'd Nav, Kongsberg 14208, img#37) (B)
10-Aug-2023	10:44:50	5996	BP23MVEXP-ENV-DC-127			Camera	70	619962	6096174	619930	6096179	32	-5	33	-82		(Corr'd Nav, Kongsberg 14208, img#38) (B)
10-Aug-2023	10:45:47	5997	BP23MVEXP-ENV-DC-127			Camera	71	619969	6096173	619930	6096179	39	-6	39	-81		(Corr'd Nav, Kongsberg 14208, img#39) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	10:46:31	5998	BP23MVEXP-ENV-DC-127			Camera	71	619973	6096172	619930	6096179	43	-7	43	-81		(Corr'd Nav, Kongsberg 14208, img#40) (B)
10-Aug-2023	10:46:38	5999	BP23MVEXP-ENV-DC-127			Camera	70	619973	6096172	619930	6096179	43	-7	44	-81		(Corr'd Nav, Kongsberg 14208, img#41) (B)
10-Aug-2023	10:47:49	6000	BP23MVEXP-ENV-DC-127			Camera	70	619978	6096171	619930	6096179	48	-8	49	-80		(Corr'd Nav, Kongsberg 14208, img#42) (B)
10-Aug-2023	11:48:13	6001	BP23MVEXP-ENV-DC-128			Camera	56	618878	6092320	618835	6092326	43	-6	43	-83		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	11:48:45	6002	BP23MVEXP-ENV-DC-128			Camera	56	618884	6092315	618835	6092326	49	-11	50	-78		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	11:49:45	6003	BP23MVEXP-ENV-DC-128			Camera	56	618879	6092317	618835	6092326	44	-9	45	-78		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	11:49:57	6004	BP23MVEXP-ENV-DC-128			Camera	56	618878	6092317	618835	6092326	43	-9	44	-78		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	11:50:56	6005	BP23MVEXP-ENV-DC-128			Camera	56	618871	6092318	618835	6092326	36	-8	37	-78		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	11:51:39	6006	BP23MVEXP-ENV-DC-128			Camera	56	618867	6092319	618835	6092326	32	-7	33	-77		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	11:52:44	6007	BP23MVEXP-ENV-DC-128			Camera	56	618860	6092320	618835	6092326	25	-6	26	-77		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	11:54:26	6008	BP23MVEXP-ENV-DC-128			Camera	56	618850	6092323	618835	6092326	15	-3	16	-79		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	11:54:36	6009	BP23MVEXP-ENV-DC-128			Camera	56	618849	6092323	618835	6092326	14	-3	15	-80		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	11:55:01	6010	BP23MVEXP-ENV-DC-128			Camera	56	618847	6092324	618835	6092326	12	-2	12	-79		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	11:55:26	6011	BP23MVEXP-ENV-DC-128			Camera	56	618845	6092324	618835	6092326	10	-2	10	-78		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	11:56:39	6012	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092326	618835	6092326	2	0	2	-81		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	11:56:51	6013	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092326	618835	6092326	0	0	0	-86		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	11:57:04	6014	BP23MVEXP-ENV-DC-128			Camera	56	618834	6092326	618835	6092326	-1	0	1	97		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	11:58:07	6015	BP23MVEXP-ENV-DC-128			Camera	56	618828	6092328	618835	6092326	-7	2	7	103		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	11:59:31	6016	BP23MVEXP-ENV-DC-128			Camera	56	618820	6092330	618835	6092326	-16	4	16	103		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	11:59:50	6017	BP23MVEXP-ENV-DC-128			Camera	56	618817	6092330	618835	6092326	-18	4	18	103		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	12:00:02	6018	BP23MVEXP-ENV-DC-128			Camera	56	618816	6092330	618835	6092326	-19	4	19	103		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	12:00:17	6019	BP23MVEXP-ENV-DC-128			Camera	56	618815	6092331	618835	6092326	-20	5	21	103		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	12:00:37	6020	BP23MVEXP-ENV-DC-128			Camera	56	618813	6092331	618835	6092326	-22	5	23	103		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	12:01:09	6021	BP23MVEXP-ENV-DC-128			Camera	56	618810	6092332	618835	6092326	-25	6	26	103		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	12:02:12	6022	BP23MVEXP-ENV-DC-128			Camera	56	618803	6092332	618835	6092326	-32	6	32	102		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	12:02:40	6023	BP23MVEXP-ENV-DC-128			Camera	56	618801	6092333	618835	6092326	-35	7	35	101		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	12:02:51	6024	BP23MVEXP-ENV-DC-128			Camera	56	618799	6092333	618835	6092326	-36	7	36	101		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	12:03:33	6025	BP23MVEXP-ENV-DC-128			Camera	56	618795	6092334	618835	6092326	-40	8	41	102		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	12:03:56	6026	BP23MVEXP-ENV-DC-128			Camera	56	618793	6092335	618835	6092326	-42	9	43	102		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	12:04:40	6027	BP23MVEXP-ENV-DC-128			Camera	56	618788	6092336	618835	6092326	-47	10	48	103		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	12:04:56	6028	BP23MVEXP-ENV-DC-128			Camera	56	618787	6092337	618835	6092326	-48	11	49	102		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	12:12:18	6029	BP23MVEXP-ENV-DC-128			Camera	56	618824	6092279	618835	6092326	-11	-47	48	14		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	12:12:40	6030A	BP23MVEXP-ENV-DC-128			Camera	58	618823	6092280	618835	6092326	-12	-46	48	15		(Raw Nav, Kongsberg 14208, img#30) (B)
10-Aug-2023	12:13:31	6030B	BP23MVEXP-ENV-DC-128			Camera	56	618824	6092283	618835	6092326	-11	-43	44	14		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	12:14:21	6031	BP23MVEXP-ENV-DC-128			Camera	56	618825	6092288	618835	6092326	-10	-38	39	15		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	12:15:20	6032	BP23MVEXP-ENV-DC-128			Camera	56	618826	6092294	618835	6092326	-9	-32	33	15		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	12:16:25	6033	BP23MVEXP-ENV-DC-128			Camera	56	618828	6092301	618835	6092326	-7	-25	26	16		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	12:18:13	6034	BP23MVEXP-ENV-DC-128			Camera	56	618830	6092312	618835	6092326	-5	-14	15	18		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	12:19:38	6035	BP23MVEXP-ENV-DC-128			Camera	56	618832	6092320	618835	6092326	-3	-6	7	25		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	12:20:04	6036	BP23MVEXP-ENV-DC-128			Camera	56	618833	6092323	618835	6092326	-2	-3	4	33		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	12:20:17	6037	BP23MVEXP-ENV-DC-128			Camera	56	618833	6092324	618835	6092326	-2	-2	3	41		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	12:21:12	6038	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092330	618835	6092326	0	4	4	172		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	12:21:49	6039	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092333	618835	6092326	0	7	7	-177		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	12:22:11	6040	BP23MVEXP-ENV-DC-128			Camera	56	618836	6092335	618835	6092326	1	9	10	-175		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	12:23:04	6041	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092341	618835	6092326	2	15	15	-172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	12:24:00	6042	BP23MVEXP-ENV-DC-128			Camera	56	618838	6092346	618835	6092326	3	20	20	-170		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	12:24:09	6043	BP23MVEXP-ENV-DC-128			Camera	56	618839	6092347	618835	6092326	4	21	21	-170		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	12:25:23	6044	BP23MVEXP-ENV-DC-128			Camera	56	618840	6092354	618835	6092326	5	29	29	-169		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	12:26:15	6045	BP23MVEXP-ENV-DC-128			Camera	56	618842	6092360	618835	6092326	7	34	34	-169		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	12:26:42	6046	BP23MVEXP-ENV-DC-128			Camera	56	618842	6092362	618835	6092326	7	36	37	-169		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	12:26:52	6047	BP23MVEXP-ENV-DC-128			Camera	56	618842	6092363	618835	6092326	7	37	38	-169		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	12:27:53	6048	BP23MVEXP-ENV-DC-128			Camera	56	618844	6092369	618835	6092326	9	43	44	-168		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	12:28:42	6049	BP23MVEXP-ENV-DC-128			Camera	56	618845	6092374	618835	6092326	10	48	49	-168		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	12:38:43	6050	BP23MVEXP-ENV-DC-128			Camera	56	618849	6092373	618835	6092326	14	47	49	-164		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	12:39:52	6051	BP23MVEXP-ENV-DC-128			Camera	56	618847	6092366	618835	6092326	12	40	42	-163		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	12:40:16	6052	BP23MVEXP-ENV-DC-128			Camera	56	618846	6092363	618835	6092326	11	37	39	-163		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Aug-2023	12:40:28	6053	BP23MVEXP-ENV-DC-128			Camera	56	618846	6092362	618835	6092326	11	36	38	-163		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Aug-2023	12:41:08	6054	BP23MVEXP-ENV-DC-128			Camera	56	618845	6092358	618835	6092326	10	32	34	-162		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Aug-2023	12:42:04	6055	BP23MVEXP-ENV-DC-128			Camera	56	618844	6092352	618835	6092326	9	27	28	-162		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
10-Aug-2023	12:42:13	6056	BP23MVEXP-ENV-DC-128			Camera	56	618844	6092352	618835	6092326	9	26	27	-162		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
10-Aug-2023	12:42:49	6057	BP23MVEXP-ENV-DC-128			Camera	56	618843	6092348	618835	6092326	8	22	23	-161		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
10-Aug-2023	12:43:44	6058	BP23MVEXP-ENV-DC-128			Camera	56	618841	6092343	618835	6092326	6	17	18	-159		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
10-Aug-2023	12:44:11	6059	BP23MVEXP-ENV-DC-128			Camera	56	618841	6092340	618835	6092326	6	14	15	-158		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
10-Aug-2023	12:45:01	6060	BP23MVEXP-ENV-DC-128			Camera	56	618840	6092335	618835	6092326	5	9	10	-153		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
10-Aug-2023	12:45:25	6061	BP23MVEXP-ENV-DC-128			Camera	56	618839	6092333	618835	6092326	4	7	8	-150		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
10-Aug-2023	12:46:21	6062	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092327	618835	6092326	2	1	3	-109		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)
10-Aug-2023	12:46:31	6063	BP23MVEXP-ENV-DC-128			Camera	56	618837	6092326	618835	6092326	2	0	2	-91		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
10-Aug-2023	12:47:34	6064	BP23MVEXP-ENV-DC-128			Camera	56	618836	6092320	618835	6092326	1	-6	6	-7		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
10-Aug-2023	12:48:10	6065	BP23MVEXP-ENV-DC-128			Camera	56	618835	6092316	618835	6092326	0	-10	10	1		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
10-Aug-2023	12:48:40	6066	BP23MVEXP-ENV-DC-128			Camera	56	618834	6092313	618835	6092326	-1	-13	13	4		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
10-Aug-2023	12:48:51	6067	BP23MVEXP-ENV-DC-128			Camera	56	618834	6092312	618835	6092326	-1	-14	14	5		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
10-Aug-2023	12:49:44	6068	BP23MVEXP-ENV-DC-128			Camera	56	618832	6092307	618835	6092326	-3	-19	19	8		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
10-Aug-2023	12:50:05	6069	BP23MVEXP-ENV-DC-128			Camera	56	618832	6092305	618835	6092326	-3	-21	21	8		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
10-Aug-2023	12:50:55	6070	BP23MVEXP-ENV-DC-128			Camera	56	618830	6092299	618835	6092326	-5	-27	27	10		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
10-Aug-2023	12:51:37	6071	BP23MVEXP-ENV-DC-128			Camera	56	618830	6092295	618835	6092326	-5	-31	31	9		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
10-Aug-2023	12:52:34	6072	BP23MVEXP-ENV-DC-128			Camera	56	618829	6092290	618835	6092326	-6	-36	37	10		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
10-Aug-2023	12:52:57	6073	BP23MVEXP-ENV-DC-128			Camera	56	618828	6092288	618835	6092326	-7	-38	39	10		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
10-Aug-2023	12:53:23	6074	BP23MVEXP-ENV-DC-128			Camera	56	618827	6092285	618835	6092326	-8	-41	41	11		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
10-Aug-2023	12:54:07	6075	BP23MVEXP-ENV-DC-128			Camera	56	618826	6092280	618835	6092326	-9	-46	47	11		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
10-Aug-2023	13:51:30	6076	BP23MVEXP-ENV-DC-129			Camera	50	616350	6089453	616332	6089421	18	32	37	-150		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	13:51:40	6077	BP23MVEXP-ENV-DC-129			Camera	50	616350	6089452	616332	6089421	18	31	36	-150		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	13:51:56	6078	BP23MVEXP-ENV-DC-129			Camera	50	616349	6089451	616332	6089421	17	30	34	-150		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	13:53:07	6079	BP23MVEXP-ENV-DC-129			Camera	50	616346	6089445	616332	6089421	14	24	27	-150		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	13:53:55	6080	BP23MVEXP-ENV-DC-129			Camera	50	616343	6089440	616332	6089421	11	19	22	-149		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	13:54:06	6081	BP23MVEXP-ENV-DC-129			Camera	50	616343	6089439	616332	6089421	11	18	21	-149		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	13:54:56	6082	BP23MVEXP-ENV-DC-129			Camera	50	616341	6089434	616332	6089421	9	13	16	-147		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	13:55:41	6083	BP23MVEXP-ENV-DC-129			Camera	50	616339	6089431	616332	6089421	7	10	12	-146		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	13:56:24	6084	BP23MVEXP-ENV-DC-129			Camera	50	616336	6089427	616332	6089421	4	6	7	-144		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	13:57:01	6085	BP23MVEXP-ENV-DC-129			Camera	50	616334	6089424	616332	6089421	2	3	3	-144		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	13:57:28	6086	BP23MVEXP-ENV-DC-129			Camera	50	616333	6089422	616332	6089421	1	1	1	-132		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	13:57:59	6087	BP23MVEXP-ENV-DC-129			Camera	50	616332	6089419	616332	6089421	0	-2	2	11		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	13:58:21	6088	BP23MVEXP-ENV-DC-129			Camera	50	616330	6089417	616332	6089421	-2	-4	4	23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	13:58:59	6089	BP23MVEXP-ENV-DC-129			Camera	50	616328	6089413	616332	6089421	-4	-8	9	27		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	13:59:25	6090	BP23MVEXP-ENV-DC-129			Camera	50	616327	6089411	616332	6089421	-5	-10	11	27		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	13:59:56	6091	BP23MVEXP-ENV-DC-129			Camera	50	616326	6089408	616332	6089421	-6	-13	14	27		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	14:00:35	6092	BP23MVEXP-ENV-DC-129			Camera	50	616324	6089404	616332	6089421	-8	-17	18	26		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	14:01:32	6093	BP23MVEXP-ENV-DC-129			Camera	50	616321	6089399	616332	6089421	-11	-22	25	27		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	14:02:35	6094	BP23MVEXP-ENV-DC-129			Camera	50	616318	6089394	616332	6089421	-14	-28	31	27		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	14:03:35	6095	BP23MVEXP-ENV-DC-129			Camera	50	616315	6089388	616332	6089421	-17	-33	37	27		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	14:04:22	6096	BP23MVEXP-ENV-DC-129			Camera	50	616312	6089383	616332	6089421	-20	-38	43	28		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	14:05:13	6097	BP23MVEXP-ENV-DC-129			Camera	50	616310	6089379	616332	6089421	-22	-42	47	28		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	14:12:52	6098	BP23MVEXP-ENV-DC-129			Camera	50	616374	6089396	616332	6089421	42	-25	49	-59		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	14:12:59	6099	BP23MVEXP-ENV-DC-129			Camera	50	616374	6089396	616332	6089421	42	-25	49	-59		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	14:14:14	6100	BP23MVEXP-ENV-DC-129			Camera	50	616370	6089398	616332	6089421	39	-23	45	-59		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	14:14:56	6101	BP23MVEXP-ENV-DC-129			Camera	50	616366	6089400	616332	6089421	34	-21	40	-58		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	14:16:09	6102	BP23MVEXP-ENV-DC-129			Camera	50	616358	6089403	616332	6089421	26	-18	32	-56		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	14:17:01	6103	BP23MVEXP-ENV-DC-129			Camera	50	616354	6089405	616332	6089421	22	-16	27	-55		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	14:17:53	6104	BP23MVEXP-ENV-DC-129			Camera	50	616350	6089408	616332	6089421	18	-13	22	-55		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	14:18:55	6105	BP23MVEXP-ENV-DC-129				50	616345	6089412	616332	6089421	13	-9	16	-55		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A) Fix no photo
10-Aug-2023	14:19:42	6106	BP23MVEXP-ENV-DC-129			Camera	50	616341	6089414	616332	6089421	9	-7	11	-53		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	14:21:09	6107	BP23MVEXP-ENV-DC-129			Camera	50	616333	6089420	616332	6089421	1	-1	2	-29		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	14:21:45	6108	BP23MVEXP-ENV-DC-129			Camera	50	616330	6089421	616332	6089421	-2	0	2	94		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	14:23:11	6109	BP23MVEXP-ENV-DC-129			Camera	50	616322	6089425	616332	6089421	-10	5	11	114		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	14:24:47	6110	BP23MVEXP-ENV-DC-129			Camera	50	616314	6089431	616332	6089421	-18	10	21	118		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	14:25:24	6111	BP23MVEXP-ENV-DC-129			Camera	50	616310	6089432	616332	6089421	-22	11	25	117		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	14:26:23	6112	BP23MVEXP-ENV-DC-129			Camera	50	616305	6089435	616332	6089421	-27	14	31	118		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	14:27:12	6113	BP23MVEXP-ENV-DC-129			Camera	50	616301	6089437	616332	6089421	-31	16	35	118		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	14:27:59	6114	BP23MVEXP-ENV-DC-129			Camera	49	616296	6089440	616332	6089421	-36	19	40	118		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	14:28:51	6115	BP23MVEXP-ENV-DC-129			Camera	48	616292	6089443	616332	6089421	-40	22	46	118		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	14:29:38	6116	BP23MVEXP-ENV-DC-129			Camera	47	616289	6089444	616332	6089421	-43	24	49	119		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	15:20:07	6117	BP23MVEXP-ENV-DC-130			Camera	50	617511	6088637	617558	6088614	-47	23	53	116		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	15:21:40	6118	BP23MVEXP-ENV-DC-130			Camera	50	617513	6088637	617558	6088614	-45	23	50	117		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	15:21:55	6119	BP23MVEXP-ENV-DC-130			Camera	50	617514	6088636	617558	6088614	-44	22	49	117		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	15:22:35	6120	BP23MVEXP-ENV-DC-130			Camera	50	617518	6088634	617558	6088614	-40	20	45	117		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	15:23:31	6121	BP23MVEXP-ENV-DC-130			Camera	50	617524	6088632	617558	6088614	-34	18	39	118		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	15:24:08	6122	BP23MVEXP-ENV-DC-130			Camera	50	617528	6088631	617558	6088614	-30	17	35	119		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	15:24:20	6123	BP23MVEXP-ENV-DC-130			Camera	50	617529	6088630	617558	6088614	-29	16	33	119		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	15:25:20	6124	BP23MVEXP-ENV-DC-130			Camera	50	617535	6088627	617558	6088614	-24	13	27	119		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	15:25:38	6125	BP23MVEXP-ENV-DC-130			Camera	50	617536	6088626	617558	6088614	-22	12	25	119		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	15:26:23	6126	BP23MVEXP-ENV-DC-130			Camera	50	617540	6088624	617558	6088614	-18	10	20	119		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	15:26:54	6127	BP23MVEXP-ENV-DC-130			Camera	50	617543	6088623	617558	6088614	-15	9	18	120		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	15:27:17	6128	BP23MVEXP-ENV-DC-130			Camera	50	617545	6088622	617558	6088614	-13	8	16	121		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	15:28:10	6129	BP23MVEXP-ENV-DC-130			Camera	50	617550	6088620	617558	6088614	-8	6	10	124		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	15:28:24	6130	BP23MVEXP-ENV-DC-130			Camera	50	617551	6088619	617558	6088614	-7	5	9	125		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	15:28:52	6131	BP23MVEXP-ENV-DC-130			Camera	50	617554	6088618	617558	6088614	-4	4	6	130		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	15:29:01	6132	BP23MVEXP-ENV-DC-130			Camera	50	617554	6088617	617558	6088614	-4	3	5	132		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	15:29:33	6133	BP23MVEXP-ENV-DC-130			Camera	50	617557	6088616	617558	6088614	-1	2	2	161		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	15:29:52	6134	BP23MVEXP-ENV-DC-130			Camera	50	617559	6088615	617558	6088614	1	1	2	-140		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	15:29:59	6135	BP23MVEXP-ENV-DC-130			Camera	50	617560	6088615	617558	6088614	2	1	2	-123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	15:30:51	6136	BP23MVEXP-ENV-DC-130			Camera	50	617565	6088613	617558	6088614	7	-1	7	-81		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	15:31:11	6137	BP23MVEXP-ENV-DC-130			Camera	50	617566	6088612	617558	6088614	8	-2	8	-78		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	15:31:53	6138	BP23MVEXP-ENV-DC-130			Camera	50	617570	6088611	617558	6088614	12	-3	13	-75		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	15:32:50	6139	BP23MVEXP-ENV-DC-130			Camera	50	617576	6088608	617558	6088614	18	-6	19	-71		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	15:33:01	6140	BP23MVEXP-ENV-DC-130			Camera	50	617577	6088608	617558	6088614	19	-6	20	-71		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	15:34:01	6141	BP23MVEXP-ENV-DC-130			Camera	50	617582	6088605	617558	6088614	24	-9	26	-69		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	15:34:38	6142	BP23MVEXP-ENV-DC-130			Camera	50	617586	6088604	617558	6088614	28	-11	30	-69		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	15:34:51	6143	BP23MVEXP-ENV-DC-130			Camera	50	617587	6088603	617558	6088614	29	-11	31	-69		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	15:36:10	6144	BP23MVEXP-ENV-DC-130			Camera	50	617594	6088599	617558	6088614	36	-15	39	-68		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	15:37:28	6145	BP23MVEXP-ENV-DC-130			Camera	50	617603	6088597	617558	6088614	45	-17	48	-70		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	15:51:44	6146	BP23MVEXP-ENV-DC-130			Camera	50	617535	6088567	617558	6088614	-23	-47	52	27		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	15:52:43	6147	BP23MVEXP-ENV-DC-130			Camera	50	617537	6088571	617558	6088614	-21	-43	48	26		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	15:53:19	6148	BP23MVEXP-ENV-DC-130			Camera	50	617538	6088575	617558	6088614	-20	-39	44	27		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	15:53:53	6149	BP23MVEXP-ENV-DC-130			Camera	50	617540	6088578	617558	6088614	-18	-36	40	26		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	15:54:21	6150	BP23MVEXP-ENV-DC-130			Camera	50	617541	6088580	617558	6088614	-17	-34	38	26		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	15:55:14	6151	BP23MVEXP-ENV-DC-130			Camera	50	617544	6088585	617558	6088614	-15	-29	32	27		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	15:55:59	6152	BP23MVEXP-ENV-DC-130			Camera	50	617545	6088590	617558	6088614	-13	-25	27	27		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	15:56:27	6153	BP23MVEXP-ENV-DC-130			Camera	50	617547	6088592	617558	6088614	-11	-22	25	27		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	15:58:21	6154	BP23MVEXP-ENV-DC-130			Camera	50	617552	6088602	617558	6088614	-6	-12	14	28		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	15:59:34	6155	BP23MVEXP-ENV-DC-130			Camera	50	617555	6088609	617558	6088614	-3	-5	6	34		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	16:00:32	6156	BP23MVEXP-ENV-DC-130			Camera	50	617557	6088614	617558	6088614	-1	0	1	123		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	16:00:53	6157	BP23MVEXP-ENV-DC-130			Camera	50	617558	6088617	617558	6088614	0	3	3	-174		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	16:01:01	6158	BP23MVEXP-ENV-DC-130			Camera	50	617559	6088617	617558	6088614	1	3	3	-168		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	16:02:00	6159	BP23MVEXP-ENV-DC-130			Camera	50	617561	6088622	617558	6088614	3	8	9	-158		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	16:02:32	6160	BP23MVEXP-ENV-DC-130			Camera	50	617562	6088626	617558	6088614	4	12	12	-159		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	16:03:10	6161	BP23MVEXP-ENV-DC-130			Camera	50	617564	6088629	617558	6088614	6	15	16	-158		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	16:03:31	6162	BP23MVEXP-ENV-DC-130			Camera	50	617565	6088631	617558	6088614	7	17	18	-157		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	16:04:04	6163	BP23MVEXP-ENV-DC-130			Camera	50	617566	6088634	617558	6088614	8	20	22	-158		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	16:05:14	6164	BP23MVEXP-ENV-DC-130			Camera	50	617569	6088641	617558	6088614	11	27	29	-157		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	16:06:10	6165	BP23MVEXP-ENV-DC-130			Camera	50	617572	6088646	617558	6088614	14	32	35	-156		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	16:06:37	6166	BP23MVEXP-ENV-DC-130			Camera	50	617573	6088648	617558	6088614	15	34	37	-156		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	16:07:20	6167	BP23MVEXP-ENV-DC-130			Camera	50	617575	6088652	617558	6088614	17	38	42	-156		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	16:08:01	6168	BP23MVEXP-ENV-DC-130			Camera	50	617576	6088656	617558	6088614	18	42	46	-156		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	16:47:47	6169	BP23MVEXP-ENV-DC-063			Camera	48	617551	6086790	617596	6086808	-45	-18	48	69		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	16:48:20	6170	BP23MVEXP-ENV-DC-063			Camera	48	617550	6086790	617596	6086808	-46	-18	49	68		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	16:49:08	6171	BP23MVEXP-ENV-DC-063			Camera	48	617552	6086790	617596	6086808	-44	-18	48	68		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	16:49:34	6172	BP23MVEXP-ENV-DC-063			Camera	48	617553	6086791	617596	6086808	-43	-17	46	68		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	16:49:42	6173	BP23MVEXP-ENV-DC-063			Camera	48	617554	6086792	617596	6086808	-42	-16	45	69		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	16:50:21	6174	BP23MVEXP-ENV-DC-063			Camera	48	617558	6086794	617596	6086808	-38	-14	41	69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	16:51:04	6175	BP23MVEXP-ENV-DC-063			Camera	48	617562	6086795	617596	6086808	-34	-13	36	69		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	16:51:31	6176	BP23MVEXP-ENV-DC-063			Camera	48	617564	6086796	617596	6086808	-32	-12	34	70		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	16:53:02	6177	BP23MVEXP-ENV-DC-063			Camera	48	617573	6086800	617596	6086808	-24	-8	25	71		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	16:53:12	6178	BP23MVEXP-ENV-DC-063			Camera	48	617573	6086800	617596	6086808	-23	-8	24	71		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	16:54:10	6179	BP23MVEXP-ENV-DC-063			Camera	48	617579	6086803	617596	6086808	-17	-5	18	74		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	16:55:41	6180	BP23MVEXP-ENV-DC-063			Camera	48	617588	6086807	617596	6086808	-8	-1	9	80		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	16:56:21	6181	BP23MVEXP-ENV-DC-063			Camera	48	617592	6086808	617596	6086808	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	16:56:38	6182	BP23MVEXP-ENV-DC-063			Camera	48	617593	6086808	617596	6086808	-3	0	3	99		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	16:56:58	6183	BP23MVEXP-ENV-DC-063			Camera	48	617595	6086809	617596	6086808	-1	1	2	133		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	16:57:09	6184	BP23MVEXP-ENV-DC-063			Camera	48	617596	6086810	617596	6086808	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	16:57:55	6185	BP23MVEXP-ENV-DC-063			Camera	48	617600	6086812	617596	6086808	4	4	6	-141		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	16:58:22	6186	BP23MVEXP-ENV-DC-063			Camera	48	617602	6086814	617596	6086808	6	6	9	-132		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	16:59:26	6187	BP23MVEXP-ENV-DC-063			Camera	48	617609	6086816	617596	6086808	13	8	15	-123		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	17:00:31	6188	BP23MVEXP-ENV-DC-063			Camera	48	617614	6086818	617596	6086808	18	10	21	-120		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	17:01:04	6189	BP23MVEXP-ENV-DC-063			Camera	48	617618	6086820	617596	6086808	22	12	25	-119		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	17:01:24	6190	BP23MVEXP-ENV-DC-063			Camera	48	617619	6086821	617596	6086808	23	13	27	-119		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	17:02:09	6191	BP23MVEXP-ENV-DC-063			Camera	48	617623	6086823	617596	6086808	27	15	31	-119		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	17:03:21	6192	BP23MVEXP-ENV-DC-063			Camera	48	617631	6086826	617596	6086808	35	19	40	-118		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	17:04:04	6193	BP23MVEXP-ENV-DC-063			Camera	48	617636	6086828	617596	6086808	40	20	44	-117		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	17:04:47	6194	BP23MVEXP-ENV-DC-063			Camera	48	617641	6086830	617596	6086808	45	22	50	-116		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	17:21:21	6195	BP23MVEXP-ENV-DC-063			Camera	36	617572	6086855	617596	6086808	-24	47	52	153		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	17:21:41	6196	BP23MVEXP-ENV-DC-063			Camera	36	617573	6086854	617596	6086808	-24	46	51	153		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	17:22:33	6197	BP23MVEXP-ENV-DC-063			Camera	35	617575	6086850	617596	6086808	-21	42	47	153		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	17:22:45	6198	BP23MVEXP-ENV-DC-063			Camera	34	617575	6086849	617596	6086808	-21	41	45	153		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	17:23:09	6199	BP23MVEXP-ENV-DC-063			Camera	34	617577	6086847	617596	6086808	-19	39	43	154		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	17:24:04	6200	BP23MVEXP-ENV-DC-063			Camera	32	617580	6086840	617596	6086808	-16	32	36	153		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	17:24:52	6201	BP23MVEXP-ENV-DC-063			Camera	31	617582	6086835	617596	6086808	-14	27	31	153		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	17:25:47	6202	BP23MVEXP-ENV-DC-063			Camera	30	617584	6086832	617596	6086808	-13	24	27	152		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	17:26:01	6203	BP23MVEXP-ENV-DC-063			Camera	30	617584	6086831	617596	6086808	-12	23	26	152		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	17:26:28	6204	BP23MVEXP-ENV-DC-063			Camera	29	617585	6086828	617596	6086808	-11	20	23	152		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	17:26:44	6205	BP23MVEXP-ENV-DC-063			Camera	29	617586	6086826	617596	6086808	-10	18	21	151		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	17:27:37	6206	BP23MVEXP-ENV-DC-063			Camera	27	617588	6086821	617596	6086808	-8	13	15	146		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	17:28:38	6207	BP23MVEXP-ENV-DC-063			Camera	26	617592	6086815	617596	6086808	-4	7	8	150		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	17:29:33	6208	BP23MVEXP-ENV-DC-063			Camera	24	617594	6086811	617596	6086808	-2	3	4	154		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	17:30:41	6209	BP23MVEXP-ENV-DC-063			Camera	23	617597	6086805	617596	6086808	1	-3	3	-16		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	17:31:14	6210	BP23MVEXP-ENV-DC-063			Camera	22	617599	6086801	617596	6086808	3	-7	7	-23		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	17:31:57	6211	BP23MVEXP-ENV-DC-063			Camera	21	617601	6086797	617596	6086808	5	-11	12	-25		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	17:32:21	6212	BP23MVEXP-ENV-DC-063			Camera	20	617601	6086795	617596	6086808	5	-13	14	-24		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	17:32:35	6213	BP23MVEXP-ENV-DC-063			Camera	20	617603	6086794	617596	6086808	7	-14	15	-26		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	17:33:00	6214	BP23MVEXP-ENV-DC-063			Camera	19	617603	6086793	617596	6086808	7	-15	17	-26		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	17:34:12	6215	BP23MVEXP-ENV-DC-063			Camera	17	617608	6086785	617596	6086808	12	-23	25	-27		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	17:34:28	6216	BP23MVEXP-ENV-DC-063			Camera	17	617608	6086784	617596	6086808	12	-24	27	-27		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	17:34:52	6217	BP23MVEXP-ENV-DC-063			Camera	17	617609	6086782	617596	6086808	13	-26	29	-27		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	17:36:01	6218	BP23MVEXP-ENV-DC-063			Camera	15	617613	6086775	617596	6086808	17	-33	37	-27		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	17:36:48	6219	BP23MVEXP-ENV-DC-063			Camera	14	617615	6086770	617596	6086808	19	-38	42	-27		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	17:37:09	6220	BP23MVEXP-ENV-DC-063			Camera	13	617616	6086769	617596	6086808	20	-39	44	-27		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	17:37:47	6221	BP23MVEXP-ENV-DC-063			Camera	12	617618	6086765	617596	6086808	22	-43	48	-27		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Aug-2023	18:36:56	6222	BP23MVEXP-ENV-DC-061			Camera	58	621193	6088412	621239	6088432	-46	-20	51	67		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	18:38:46	6223	BP23MVEXP-ENV-DC-061			Camera	58	621195	6088414	621239	6088432	-44	-18	48	68		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	18:39:29	6224	BP23MVEXP-ENV-DC-061			Camera	58	621199	6088417	621239	6088432	-40	-15	43	69		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	18:39:55	6225	BP23MVEXP-ENV-DC-061			Camera	58	621202	6088418	621239	6088432	-37	-14	39	69		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	18:40:38	6226	BP23MVEXP-ENV-DC-061			Camera	58	621206	6088420	621239	6088432	-33	-13	35	69		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	18:41:22	6227	BP23MVEXP-ENV-DC-061			Camera	58	621210	6088421	621239	6088432	-29	-11	31	69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	18:42:20	6228	BP23MVEXP-ENV-DC-061			Camera	58	621216	6088424	621239	6088432	-23	-8	25	71		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	18:43:17	6229	BP23MVEXP-ENV-DC-061			Camera	58	621221	6088426	621239	6088432	-18	-6	19	72		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	18:43:39	6230	BP23MVEXP-ENV-DC-061			Camera	58	621223	6088427	621239	6088432	-16	-5	17	74		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	18:44:21	6231	BP23MVEXP-ENV-DC-061			Camera	58	621227	6088429	621239	6088432	-12	-3	13	76		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	18:44:46	6232	BP23MVEXP-ENV-DC-061			Camera	58	621229	6088430	621239	6088432	-10	-2	10	79		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	18:45:32	6233	BP23MVEXP-ENV-DC-061			Camera	58	621233	6088432	621239	6088432	-6	0	6	90		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	18:46:01	6234	BP23MVEXP-ENV-DC-061			Camera	58	621236	6088434	621239	6088432	-3	2	4	116		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	18:46:11	6235	BP23MVEXP-ENV-DC-061			Camera	58	621237	6088434	621239	6088432	-2	2	3	129		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	18:46:46	6236	BP23MVEXP-ENV-DC-061			Camera	58	621240	6088436	621239	6088432	1	4	4	-167		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	18:47:01	6237	BP23MVEXP-ENV-DC-061			Camera	58	621241	6088436	621239	6088432	2	4	5	-152		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	18:47:27	6238	BP23MVEXP-ENV-DC-061			Camera	58	621244	6088438	621239	6088432	5	6	7	-138		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	18:47:38	6239	BP23MVEXP-ENV-DC-061			Camera	58	621245	6088438	621239	6088432	6	6	8	-134		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	18:47:51	6240	BP23MVEXP-ENV-DC-061			Camera	58	621246	6088438	621239	6088432	7	6	10	-131		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	18:48:30	6241	BP23MVEXP-ENV-DC-061			Camera	58	621250	6088440	621239	6088432	11	8	13	-128		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	18:49:29	6242	BP23MVEXP-ENV-DC-061				58	621256	6088443	621239	6088432	17	11	20	-123		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A) Fix no photo
10-Aug-2023	18:49:52	6243	BP23MVEXP-ENV-DC-061			Camera	58	621258	6088444	621239	6088432	19	12	22	-122		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	18:50:54	6244	BP23MVEXP-ENV-DC-061			Camera	58	621264	6088447	621239	6088432	25	15	29	-121		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	18:51:07	6245	BP23MVEXP-ENV-DC-061			Camera	58	621265	6088447	621239	6088432	26	15	30	-120		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	18:51:31	6246	BP23MVEXP-ENV-DC-061			Camera	58	621267	6088448	621239	6088432	28	16	33	-120		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	18:51:39	6247	BP23MVEXP-ENV-DC-061			Camera	58	621268	6088449	621239	6088432	29	17	33	-120		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	18:52:21	6248	BP23MVEXP-ENV-DC-061			Camera	58	621272	6088450	621239	6088432	33	18	37	-119		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	18:53:14	6249	BP23MVEXP-ENV-DC-061			Camera	58	621277	6088453	621239	6088432	38	21	43	-119		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	18:53:52	6250	BP23MVEXP-ENV-DC-061			Camera	58	621281	6088455	621239	6088432	42	23	48	-119		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	18:57:06	6251	BP23MVEXP-ENV-DC-061			Camera	58	621274	6088457	621239	6088432	35	25	44	-126		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	19:08:20	6252	BP23MVEXP-ENV-DC-061			Camera	58	621217	6088475	621239	6088432	-22	43	49	153		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	19:09:13	6253	BP23MVEXP-ENV-DC-061			Camera	58	621219	6088470	621239	6088432	-20	38	43	152		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	19:09:27	6254	BP23MVEXP-ENV-DC-061			Camera	58	621219	6088469	621239	6088432	-20	37	42	152		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	19:10:24	6255	BP23MVEXP-ENV-DC-061			Camera	58	621223	6088464	621239	6088432	-16	32	36	153		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	19:11:26	6256	BP23MVEXP-ENV-DC-061			Camera	58	621226	6088458	621239	6088432	-13	26	30	153		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	19:12:09	6257	BP23MVEXP-ENV-DC-061			Camera	58	621228	6088454	621239	6088432	-11	22	25	153		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	19:12:49	6258	BP23MVEXP-ENV-DC-061			Camera	58	621229	6088451	621239	6088432	-10	19	21	152		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	19:13:51	6259	BP23MVEXP-ENV-DC-061			Camera	58	621232	6088445	621239	6088432	-7	13	14	151		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	19:15:42	6260	BP23MVEXP-ENV-DC-061			Camera	58	621237	6088435	621239	6088432	-2	3	3	140		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	19:16:14	6261	BP23MVEXP-ENV-DC-061			Camera	58	621238	6088432	621239	6088432	-1	0	1	55		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	19:18:17	6262	BP23MVEXP-ENV-DC-061			Camera	58	621243	6088420	621239	6088432	4	-12	12	-20		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	19:19:55	6263	BP23MVEXP-ENV-DC-061			Camera	58	621248	6088411	621239	6088432	9	-21	23	-24		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	19:20:57	6264	BP23MVEXP-ENV-DC-061			Camera	58	621251	6088405	621239	6088432	12	-27	29	-25		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	19:21:46	6265	BP23MVEXP-ENV-DC-061			Camera	58	621253	6088401	621239	6088432	14	-31	34	-25		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	19:22:29	6266	BP23MVEXP-ENV-DC-061			Camera	58	621255	6088397	621239	6088432	16	-35	39	-24		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	19:22:49	6267	BP23MVEXP-ENV-DC-061			Camera	58	621256	6088395	621239	6088432	17	-37	40	-24		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	19:23:07	6268	BP23MVEXP-ENV-DC-061			Camera	58	621256	6088394	621239	6088432	18	-38	42	-24		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	19:23:18	6269	BP23MVEXP-ENV-DC-061			Camera	58	621257	6088392	621239	6088432	18	-40	44	-24		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	19:23:37	6270	BP23MVEXP-ENV-DC-061			Camera	58	621258	6088391	621239	6088432	19	-41	45	-25		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	19:23:51	6271	BP23MVEXP-ENV-DC-061			Camera	58	621258	6088389	621239	6088432	19	-43	47	-24		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	20:27:09	6272	BP23MVEXP-ENV-DC-059			Camera	73	624843	6090039	624889	6090061	-46	-22	51	64		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
10-Aug-2023	20:28:38	6273	BP23MVEXP-ENV-DC-059			Camera	73	624845	6090039	624889	6090061	-44	-22	49	64		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	20:28:57	6274	BP23MVEXP-ENV-DC-059			Camera	73	624846	6090040	624889	6090061	-43	-22	48	63		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	20:29:29	6275	BP23MVEXP-ENV-DC-059			Camera	73	624849	6090041	624889	6090061	-40	-20	44	63		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	20:29:59	6276	BP23MVEXP-ENV-DC-059			Camera	73	624852	6090042	624889	6090061	-37	-19	41	63		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	20:30:32	6277	BP23MVEXP-ENV-DC-059			Camera	73	624855	6090044	624889	6090061	-34	-18	38	63		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	20:30:44	6278	BP23MVEXP-ENV-DC-059			Camera	73	624856	6090044	624889	6090061	-33	-17	37	63		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	20:31:17	6279	BP23MVEXP-ENV-DC-059			Camera	73	624859	6090045	624889	6090061	-30	-16	34	62		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	20:31:45	6280	BP23MVEXP-ENV-DC-059			Camera	73	624862	6090047	624889	6090061	-28	-14	31	63		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	20:32:23	6281	BP23MVEXP-ENV-DC-059			Camera	73	624865	6090049	624889	6090061	-24	-12	26	63		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	20:32:55	6282	BP23MVEXP-ENV-DC-059			Camera	73	624869	6090051	624889	6090061	-20	-10	23	63		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	20:34:15	6283	BP23MVEXP-ENV-DC-059			Camera	73	624876	6090055	624889	6090061	-13	-6	15	65		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	20:35:05	6284	BP23MVEXP-ENV-DC-059			Camera	73	624881	6090057	624889	6090061	-8	-4	9	63		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	20:35:29	6285	BP23MVEXP-ENV-DC-059			Camera	73	624883	6090058	624889	6090061	-6	-3	7	63		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	20:35:49	6286	BP23MVEXP-ENV-DC-059			Camera	73	624885	6090059	624889	6090061	-4	-2	5	59		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	20:35:59	6287	BP23MVEXP-ENV-DC-059			Camera	74	624886	6090059	624889	6090061	-3	-2	4	59		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	20:36:17	6288	BP23MVEXP-ENV-DC-059			Camera	74	624888	6090060	624889	6090061	-1	-1	2	52		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	20:36:53	6289	BP23MVEXP-ENV-DC-059			Camera	74	624891	6090061	624889	6090061	2	0	2	-100		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	20:37:44	6290	BP23MVEXP-ENV-DC-059			Camera	74	624896	6090063	624889	6090061	7	2	7	-104		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	20:39:08	6291	BP23MVEXP-ENV-DC-059			Camera	74	624902	6090066	624889	6090061	13	5	14	-111		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	20:39:23	6292	BP23MVEXP-ENV-DC-059			Camera	74	624904	6090067	624889	6090061	15	6	16	-111		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	20:40:42	6293	BP23MVEXP-ENV-DC-059			Camera	74	624912	6090071	624889	6090061	23	10	25	-114		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	20:41:41	6294	BP23MVEXP-ENV-DC-059			Camera	74	624917	6090074	624889	6090061	29	13	31	-115		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	20:42:50	6295	BP23MVEXP-ENV-DC-059			Camera	74	624924	6090077	624889	6090061	35	16	39	-114		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
10-Aug-2023	20:43:59	6296	BP23MVEXP-ENV-DC-059			Camera	74	624930	6090079	624889	6090061	41	19	45	-114		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	20:58:35	6297	BP23MVEXP-ENV-DC-059			Camera	73	624912	6090012	624889	6090061	23	-49	54	-25		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	20:59:15	6298	BP23MVEXP-ENV-DC-059			Camera	73	624911	6090014	624889	6090061	22	-47	52	-25		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	21:00:14	6299	BP23MVEXP-ENV-DC-059			Camera	73	624910	6090018	624889	6090061	21	-43	47	-26		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	21:00:55	6300	BP23MVEXP-ENV-DC-059			Camera	73	624908	6090022	624889	6090061	19	-39	43	-26		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	21:01:55	6301	BP23MVEXP-ENV-DC-059			Camera	73	624905	6090029	624889	6090061	16	-33	36	-27		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	21:02:20	6302	BP23MVEXP-ENV-DC-059			Camera	73	624904	6090031	624889	6090061	15	-30	33	-27		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	21:02:49	6303	BP23MVEXP-ENV-DC-059			Camera	73	624903	6090034	624889	6090061	14	-27	30	-28		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	21:03:04	6304	BP23MVEXP-ENV-DC-059			Camera	73	624902	6090036	624889	6090061	13	-26	29	-27		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	21:03:38	6305	BP23MVEXP-ENV-DC-059			Camera	73	624901	6090039	624889	6090061	12	-22	25	-27		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	21:04:34	6306	BP23MVEXP-ENV-DC-059			Camera	73	624898	6090045	624889	6090061	9	-16	19	-28		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	21:05:16	6307	BP23MVEXP-ENV-DC-059			Camera	73	624896	6090049	624889	6090061	7	-12	14	-30		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	21:06:01	6308	BP23MVEXP-ENV-DC-059			Camera	73	624894	6090053	624889	6090061	5	-8	9	-31		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	21:06:27	6309	BP23MVEXP-ENV-DC-059			Camera	73	624893	6090055	624889	6090061	4	-6	7	-34		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	21:06:53	6310	BP23MVEXP-ENV-DC-059			Camera	73	624891	6090057	624889	6090061	2	-4	4	-32		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	21:07:18	6311	BP23MVEXP-ENV-DC-059			Camera	73	624890	6090060	624889	6090061	1	-1	2	-41		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	21:07:47	6312	BP23MVEXP-ENV-DC-059			Camera	73	624890	6090062	624889	6090061	1	1	1	-154		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	21:08:11	6313	BP23MVEXP-ENV-DC-059			Camera	73	624889	6090065	624889	6090061	0	4	4	172		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	21:08:55	6314	BP23MVEXP-ENV-DC-059			Camera	73	624887	6090068	624889	6090061	-2	7	8	163		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	21:09:41	6315	BP23MVEXP-ENV-DC-059			Camera	73	624885	6090073	624889	6090061	-4	12	13	160		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	21:09:59	6316	BP23MVEXP-ENV-DC-059			Camera	73	624884	6090075	624889	6090061	-5	14	15	159		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	21:10:33	6317	BP23MVEXP-ENV-DC-059			Camera	73	624882	6090078	624889	6090061	-7	17	19	157		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	21:10:47	6318	BP23MVEXP-ENV-DC-059			Camera	73	624881	6090079	624889	6090061	-8	18	20	158		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	21:11:45	6319	BP23MVEXP-ENV-DC-059			Camera	73	624879	6090085	624889	6090061	-11	24	26	156		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	21:12:11	6320	BP23MVEXP-ENV-DC-059			Camera	73	624877	6090087	624889	6090061	-12	26	29	156		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	21:12:38	6321	BP23MVEXP-ENV-DC-059			Camera	73	624876	6090090	624889	6090061	-13	29	32	155		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	21:13:28	6322	BP23MVEXP-ENV-DC-059			Camera	74	624874	6090094	624889	6090061	-15	33	36	156		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	21:14:04	6323	BP23MVEXP-ENV-DC-059			Camera	73	624873	6090097	624889	6090061	-16	36	40	156		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	21:14:20	6324	BP23MVEXP-ENV-DC-059			Camera	73	624872	6090098	624889	6090061	-17	37	41	155		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
10-Aug-2023	21:14:50	6325	BP23MVEXP-ENV-DC-059			Camera	74	624871	6090101	624889	6090061	-18	40	44	156		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Aug-2023	22:32:52	6326	BP23MVEXP-ENV-DC-062				58	622756	6085919	622796	6085952	-40	-34	52	50		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A) Fix no photo
10-Aug-2023	22:33:03	6327	BP23MVEXP-ENV-DC-062			Camera	58	622756	6085918	622796	6085952	-40	-34	52	50		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
10-Aug-2023	22:34:43	6328	BP23MVEXP-ENV-DC-062			Camera	58	622758	6085919	622796	6085952	-38	-33	50	49		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
10-Aug-2023	22:35:39	6329	BP23MVEXP-ENV-DC-062			Camera	58	622762	6085922	622796	6085952	-34	-30	45	48		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
10-Aug-2023	22:36:32	6330	BP23MVEXP-ENV-DC-062			Camera	58	622767	6085926	622796	6085952	-29	-26	39	48		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
10-Aug-2023	22:37:00	6331	BP23MVEXP-ENV-DC-062			Camera	58	622769	6085928	622796	6085952	-27	-24	36	48		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
10-Aug-2023	22:37:20	6332	BP23MVEXP-ENV-DC-062			Camera	58	622771	6085929	622796	6085952	-25	-23	34	47		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
10-Aug-2023	22:38:01	6333	BP23MVEXP-ENV-DC-062			Camera	58	622774	6085932	622796	6085952	-22	-21	30	47		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
10-Aug-2023	22:39:11	6334	BP23MVEXP-ENV-DC-062			Camera	58	622780	6085937	622796	6085952	-16	-16	23	47		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
10-Aug-2023	22:39:48	6335	BP23MVEXP-ENV-DC-062			Camera	58	622783	6085939	622796	6085952	-13	-13	19	45		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
10-Aug-2023	22:40:28	6336	BP23MVEXP-ENV-DC-062			Camera	58	622785	6085941	622796	6085952	-11	-11	15	44		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
10-Aug-2023	22:40:55	6337	BP23MVEXP-ENV-DC-062			Camera	58	622788	6085943	622796	6085952	-8	-9	12	41		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
10-Aug-2023	22:41:28	6338	BP23MVEXP-ENV-DC-062			Camera	58	622790	6085945	622796	6085952	-6	-7	9	39		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
10-Aug-2023	22:41:49	6339	BP23MVEXP-ENV-DC-062			Camera	58	622792	6085946	622796	6085952	-4	-6	7	36		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
10-Aug-2023	22:42:12	6340	BP23MVEXP-ENV-DC-062			Camera	58	622794	6085948	622796	6085952	-2	-4	5	29		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
10-Aug-2023	22:42:21	6341	BP23MVEXP-ENV-DC-062			Camera	58	622794	6085948	622796	6085952	-2	-4	4	25		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
10-Aug-2023	22:42:44	6342	BP23MVEXP-ENV-DC-062			Camera	58	622796	6085950	622796	6085952	0	-2	2	-4		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
10-Aug-2023	22:43:04	6343	BP23MVEXP-ENV-DC-062			Camera	58	622798	6085952	622796	6085952	2	-1	2	-75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
10-Aug-2023	22:43:36	6344	BP23MVEXP-ENV-DC-062			Camera	58	622800	6085954	622796	6085952	4	2	5	-111		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
10-Aug-2023	22:44:28	6345	BP23MVEXP-ENV-DC-062			Camera	58	622804	6085957	622796	6085952	8	5	10	-123		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
10-Aug-2023	22:45:04	6346	BP23MVEXP-ENV-DC-062			Camera	58	622807	6085960	622796	6085952	11	8	14	-124		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
10-Aug-2023	22:45:26	6347	BP23MVEXP-ENV-DC-062			Camera	58	622809	6085961	622796	6085952	13	9	16	-124		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
10-Aug-2023	22:46:00	6348	BP23MVEXP-ENV-DC-062			Camera	58	622811	6085963	622796	6085952	15	11	19	-126		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
10-Aug-2023	22:46:16	6349	BP23MVEXP-ENV-DC-062			Camera	58	622813	6085965	622796	6085952	17	13	21	-127		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
10-Aug-2023	22:47:01	6350	BP23MVEXP-ENV-DC-062			Camera	58	622816	6085967	622796	6085952	20	15	25	-127		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
10-Aug-2023	22:47:55	6351	BP23MVEXP-ENV-DC-062			Camera	58	622821	6085971	622796	6085952	25	19	31	-127		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
10-Aug-2023	22:48:08	6352	BP23MVEXP-ENV-DC-062			Camera	58	622822	6085972	622796	6085952	26	20	33	-128		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
10-Aug-2023	22:48:40	6353	BP23MVEXP-ENV-DC-062			Camera	58	622824	6085974	622796	6085952	28	22	36	-128		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
10-Aug-2023	22:48:56	6354	BP23MVEXP-ENV-DC-062			Camera	58	622825	6085975	622796	6085952	29	23	37	-128		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
10-Aug-2023	22:49:22	6355	BP23MVEXP-ENV-DC-062			Camera	58	622827	6085977	622796	6085952	31	25	40	-129		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
10-Aug-2023	22:49:47	6356	BP23MVEXP-ENV-DC-062			Camera	58	622829	6085979	622796	6085952	33	27	43	-129		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
10-Aug-2023	22:50:09	6357	BP23MVEXP-ENV-DC-062			Camera	58	622831	6085980	622796	6085952	35	29	45	-129		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
10-Aug-2023	23:00:11	6358	BP23MVEXP-ENV-DC-062			Camera	58	622765	6085984	622796	6085952	-31	32	45	135		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
10-Aug-2023	23:01:08	6359	BP23MVEXP-ENV-DC-062			Camera	58	622770	6085980	622796	6085952	-26	28	38	136		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
10-Aug-2023	23:02:08	6360	BP23MVEXP-ENV-DC-062			Camera	58	622775	6085975	622796	6085952	-21	23	31	138		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
10-Aug-2023	23:02:59	6361	BP23MVEXP-ENV-DC-062			Camera	58	622779	6085971	622796	6085952	-17	20	26	139		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
10-Aug-2023	23:03:10	6362	BP23MVEXP-ENV-DC-062			Camera	58	622780	6085971	622796	6085952	-16	19	25	139		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
10-Aug-2023	23:03:36	6363	BP23MVEXP-ENV-DC-062			Camera	58	622781	6085969	622796	6085952	-15	17	22	139		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
10-Aug-2023	23:04:33	6364	BP23MVEXP-ENV-DC-062			Camera	58	622786	6085964	622796	6085952	-11	12	16	140		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
10-Aug-2023	23:04:45	6365	BP23MVEXP-ENV-DC-062			Camera	58	622786	6085964	622796	6085952	-10	12	15	140		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
10-Aug-2023	23:05:44	6366	BP23MVEXP-ENV-DC-062			Camera	58	622790	6085959	622796	6085952	-6	7	9	142		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
10-Aug-2023	23:06:02	6367	BP23MVEXP-ENV-DC-062			Camera	58	622791	6085958	622796	6085952	-5	6	8	144		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
10-Aug-2023	23:06:31	6368	BP23MVEXP-ENV-DC-062			Camera	58	622794	6085956	622796	6085952	-2	4	5	151		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
10-Aug-2023	23:07:25	6369	BP23MVEXP-ENV-DC-062			Camera	58	622797	6085953	622796	6085952	1	1	1	-117		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
10-Aug-2023	23:08:38	6370	BP23MVEXP-ENV-DC-062			Camera	58	622803	6085947	622796	6085952	7	-5	8	-52		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
10-Aug-2023	23:10:11	6371	BP23MVEXP-ENV-DC-062			Camera	58	622809	6085940	622796	6085952	13	-12	18	-48		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
10-Aug-2023	23:12:05	6372	BP23MVEXP-ENV-DC-062			Camera	58	622817	6085931	622796	6085952	21	-21	29	-46		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
10-Aug-2023	23:13:00	6373	BP23MVEXP-ENV-DC-062			Camera	58	622821	6085928	622796	6085952	25	-24	34	-46		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
10-Aug-2023	23:13:31	6374	BP23MVEXP-ENV-DC-062			Camera	58	622823	6085926	622796	6085952	27	-26	38	-46		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
10-Aug-2023	23:14:07	6375	BP23MVEXP-ENV-DC-062			Camera	58	622825	6085923	622796	6085952	30	-29	41	-46		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
10-Aug-2023	23:15:15	6376	BP23MVEXP-ENV-DC-062			Camera	58	622829	6085918	622796	6085952	33	-34	48	-44		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
10-Aug-2023	23:15:29	6377	BP23MVEXP-ENV-DC-062			Camera	58	622829	6085917	622796	6085952	33	-35	49	-43		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
10-Aug-2023	23:17:06	6378	BP23MVEXP-ENV-DC-062				58	622830	6085911	622796	6085952	34	-41	53	-40		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A) Fix no photo
10-Aug-2023	23:17:10	6379	BP23MVEXP-ENV-DC-062			Camera	58	622831	6085911	622796	6085952	35	-41	53	-40		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
10-Aug-2023	23:17:43	6380	BP23MVEXP-ENV-DC-062			Camera	58	622831	6085910	622796	6085952	36	-42	55	-41		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
10-Aug-2023	23:17:50	6381	BP23MVEXP-ENV-DC-062			Camera	58	622832	6085911	622796	6085952	36	-41	55	-41		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	00:19:55	6382	BP23MVEXP-ENV-DC-064			Camera	49	619776	6083456	619737	6083425	39	31	49	-128		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	00:20:40	6383	BP23MVEXP-ENV-DC-064			Camera	49	619776	6083456	619737	6083425	39	31	50	-128		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	00:21:31	6384	BP23MVEXP-ENV-DC-064			Camera	49	619775	6083455	619737	6083425	38	30	48	-129		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	00:22:11	6385	BP23MVEXP-ENV-DC-064			Camera	49	619772	6083453	619737	6083425	35	28	45	-128		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	00:22:41	6386	BP23MVEXP-ENV-DC-064			Camera	49	619770	6083450	619737	6083425	33	25	41	-128		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	00:23:05	6387	BP23MVEXP-ENV-DC-064			Camera	49	619767	6083448	619737	6083425	30	23	38	-127		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	00:24:46	6388	BP23MVEXP-ENV-DC-064			Camera	49	619758	6083440	619737	6083425	21	15	26	-125		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	00:26:40	6389	BP23MVEXP-ENV-DC-064			Camera	49	619752	6083434	619737	6083425	15	9	18	-122		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	00:27:54	6390	BP23MVEXP-ENV-DC-064			Camera	49	619746	6083429	619737	6083425	9	4	10	-116		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	00:28:59	6391	BP23MVEXP-ENV-DC-064			Camera	49	619741	6083425	619737	6083425	4	0	4	-83		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	00:29:46	6392	BP23MVEXP-ENV-DC-064			Camera	49	619737	6083422	619737	6083425	0	-3	3	2		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	00:31:56	6393	BP23MVEXP-ENV-DC-064			Camera	48	619727	6083413	619737	6083425	-10	-12	16	42		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	00:33:05	6394	BP23MVEXP-ENV-DC-064			Camera	48	619721	6083408	619737	6083425	-16	-17	23	45		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	00:33:33	6395	BP23MVEXP-ENV-DC-064			Camera	48	619718	6083407	619737	6083425	-19	-18	26	46		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	00:34:20	6396	BP23MVEXP-ENV-DC-064			Camera	48	619715	6083404	619737	6083425	-22	-21	30	48		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	00:35:27	6397	BP23MVEXP-ENV-DC-064			Camera	48	619709	6083400	619737	6083425	-28	-25	37	48		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	00:36:22	6398	BP23MVEXP-ENV-DC-064			Camera	48	619705	6083397	619737	6083425	-32	-28	42	49		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	00:36:34	6399	BP23MVEXP-ENV-DC-064			Camera	48	619704	6083397	619737	6083425	-33	-28	43	49		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	00:36:45	6400	BP23MVEXP-ENV-DC-064			Camera	48	619703	6083396	619737	6083425	-34	-29	45	49		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	00:37:02	6401	BP23MVEXP-ENV-DC-064			Camera	48	619701	6083395	619737	6083425	-36	-30	47	49		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	00:37:37	6402	BP23MVEXP-ENV-DC-064			Camera	48	619699	6083392	619737	6083425	-38	-33	50	49		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	00:37:54	6403	BP23MVEXP-ENV-DC-064			Camera	48	619698	6083392	619737	6083425	-39	-33	51	49		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	00:51:36	6404	BP23MVEXP-ENV-DC-064			Camera	49	619763	6083390	619737	6083425	27	-35	44	-37		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	00:52:18	6405	BP23MVEXP-ENV-DC-064			Camera	49	619760	6083393	619737	6083425	23	-32	39	-36		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	00:52:35	6406	BP23MVEXP-ENV-DC-064			Camera	49	619759	6083394	619737	6083425	22	-31	38	-35		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	00:52:57	6407	BP23MVEXP-ENV-DC-064			Camera	48	619757	6083396	619737	6083425	20	-29	35	-35		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	00:53:15	6408	BP23MVEXP-ENV-DC-064			Camera	48	619756	6083397	619737	6083425	19	-28	34	-34		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	00:53:55	6409	BP23MVEXP-ENV-DC-064			Camera	48	619753	6083400	619737	6083425	16	-25	30	-32		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	00:54:34	6410	BP23MVEXP-ENV-DC-064			Camera	48	619750	6083403	619737	6083425	13	-22	26	-30		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	00:54:47	6411	BP23MVEXP-ENV-DC-064			Camera	48	619749	6083404	619737	6083425	12	-21	24	-31		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	00:55:37	6412	BP23MVEXP-ENV-DC-064			Camera	48	619746	6083409	619737	6083425	9	-16	19	-29		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	00:56:39	6413	BP23MVEXP-ENV-DC-064			Camera	49	619743	6083414	619737	6083425	6	-11	12	-26		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	00:56:47	6414	BP23MVEXP-ENV-DC-064			Camera	49	619742	6083415	619737	6083425	5	-10	12	-25		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	00:57:10	6415	BP23MVEXP-ENV-DC-064			Camera	48	619741	6083416	619737	6083425	4	-9	9	-23		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	00:58:02	6416	BP23MVEXP-ENV-DC-064			Camera	49	619737	6083421	619737	6083425	0	-4	4	-1		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	00:59:24	6417	BP23MVEXP-ENV-DC-064			Camera	49	619732	6083427	619737	6083425	-5	2	6	115		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	00:59:48	6418	BP23MVEXP-ENV-DC-064			Camera	48	619730	6083429	619737	6083425	-7	4	8	120		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	01:00:31	6419	BP23MVEXP-ENV-DC-064			Camera	49	619727	6083432	619737	6083425	-10	7	12	126		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	01:01:11	6420	BP23MVEXP-ENV-DC-064			Camera	48	619725	6083435	619737	6083425	-12	10	16	130		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	01:01:21	6421	BP23MVEXP-ENV-DC-064			Camera	48	619724	6083436	619737	6083425	-13	11	17	130		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	01:02:08	6422	BP23MVEXP-ENV-DC-064			Camera	48	619721	6083440	619737	6083425	-16	15	22	133		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	01:02:38	6423	BP23MVEXP-ENV-DC-064			Camera	48	619719	6083442	619737	6083425	-18	17	25	133		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	01:03:16	6424	BP23MVEXP-ENV-DC-064			Camera	48	619717	6083445	619737	6083425	-21	20	29	135		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	01:03:52	6425	BP23MVEXP-ENV-DC-064			Camera	48	619714	6083448	619737	6083425	-23	23	33	135		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	01:04:29	6426	BP23MVEXP-ENV-DC-064			Camera	49	619712	6083451	619737	6083425	-26	26	36	136		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	01:04:59	6427	BP23MVEXP-ENV-DC-064			Camera	48	619710	6083453	619737	6083425	-27	28	39	136		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	01:05:59	6428	BP23MVEXP-ENV-DC-064			Camera	49	619706	6083458	619737	6083425	-31	33	46	137		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	01:06:31	6429	BP23MVEXP-ENV-DC-064			Camera	49	619704	6083461	619737	6083425	-33	36	49	137		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	01:06:42	6430	BP23MVEXP-ENV-DC-064			Camera	49	619703	6083462	619737	6083425	-34	37	50	137		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	02:08:01	6431	BP23MVEXP-ENV-DC-131			Camera	45	615625	6085194	615581	6085218	44	-24	51	-62		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	02:09:34	6432	BP23MVEXP-ENV-DC-131			Camera	45	615621	6085196	615581	6085218	40	-22	46	-62		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	02:10:06	6433	BP23MVEXP-ENV-DC-131			Camera	45	615619	6085198	615581	6085218	38	-20	43	-62		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	02:10:20	6434	BP23MVEXP-ENV-DC-131			Camera	45	615618	6085198	615581	6085218	37	-20	41	-62		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	02:10:41	6435	BP23MVEXP-ENV-DC-131			Camera	45	615616	6085200	615581	6085218	35	-18	39	-62		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	02:11:19	6436	BP23MVEXP-ENV-DC-131			Camera	45	615612	6085202	615581	6085218	31	-16	35	-62		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	02:11:55	6437	BP23MVEXP-ENV-DC-131			Camera	45	615608	6085204	615581	6085218	27	-14	31	-62		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	02:12:05	6438	BP23MVEXP-ENV-DC-131			Camera	45	615607	6085204	615581	6085218	27	-14	30	-62		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	02:12:47	6439	BP23MVEXP-ENV-DC-131			Camera	45	615604	6085206	615581	6085218	23	-12	26	-62		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	02:13:30	6440	BP23MVEXP-ENV-DC-131			Camera	45	615600	6085208	615581	6085218	19	-10	22	-62		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	02:14:38	6441	BP23MVEXP-ENV-DC-131			Camera	45	615594	6085212	615581	6085218	13	-6	14	-63		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	02:15:46	6442	BP23MVEXP-ENV-DC-131			Camera	45	615588	6085215	615581	6085218	7	-3	7	-63		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	02:16:15	6443	BP23MVEXP-ENV-DC-131			Camera	45	615585	6085216	615581	6085218	4	-2	4	-62		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	02:16:37	6444	BP23MVEXP-ENV-DC-131			Camera	45	615583	6085217	615581	6085218	2	-1	2	-66		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	02:16:47	6445	BP23MVEXP-ENV-DC-131			Camera	45	615582	6085218	615581	6085218	1	0	1	-70		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	02:17:26	6446	BP23MVEXP-ENV-DC-131			Camera	45	615579	6085220	615581	6085218	-2	2	3	128		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	02:17:44	6447	BP23MVEXP-ENV-DC-131			Camera	45	615577	6085221	615581	6085218	-4	3	5	125		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	02:18:03	6448	BP23MVEXP-ENV-DC-131			Camera	45	615575	6085222	615581	6085218	-6	4	7	123		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	02:18:23	6449	BP23MVEXP-ENV-DC-131			Camera	45	615573	6085222	615581	6085218	-8	5	9	120		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	02:18:29	6450	BP23MVEXP-ENV-DC-131			Camera	45	615573	6085223	615581	6085218	-8	5	9	120		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	02:19:21	6451	BP23MVEXP-ENV-DC-131			Camera	45	615568	6085225	615581	6085218	-13	7	15	118		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	02:19:35	6452	BP23MVEXP-ENV-DC-131			Camera	45	615567	6085226	615581	6085218	-14	8	16	118		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	02:20:47	6453	BP23MVEXP-ENV-DC-131			Camera	45	615561	6085230	615581	6085218	-20	12	23	120		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	02:21:16	6454	BP23MVEXP-ENV-DC-131			Camera	45	615558	6085231	615581	6085218	-23	13	26	120		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	02:22:22	6455	BP23MVEXP-ENV-DC-131			Camera	45	615552	6085234	615581	6085218	-29	16	33	119		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	02:24:09	6456	BP23MVEXP-ENV-DC-131			Camera	45	615542	6085239	615581	6085218	-39	21	44	119		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	02:24:58	6457	BP23MVEXP-ENV-DC-131			Camera	45	615538	6085241	615581	6085218	-43	23	49	119		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	02:32:55	6458	BP23MVEXP-ENV-DC-131			Camera	45	615558	6085175	615581	6085218	-23	-43	49	29		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	02:34:19	6459	BP23MVEXP-ENV-DC-131			Camera	45	615560	6085182	615581	6085218	-21	-36	42	30		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	02:34:41	6460	BP23MVEXP-ENV-DC-131			Camera	45	615561	6085184	615581	6085218	-20	-34	39	30		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	02:35:11	6461	BP23MVEXP-ENV-DC-131			Camera	45	615563	6085187	615581	6085218	-18	-31	36	30		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	02:36:18	6462	BP23MVEXP-ENV-DC-131			Camera	45	615566	6085193	615581	6085218	-15	-25	29	31		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	02:36:50	6463	BP23MVEXP-ENV-DC-131			Camera	45	615568	6085196	615581	6085218	-13	-22	26	31		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	02:37:27	6464	BP23MVEXP-ENV-DC-131			Camera	45	615570	6085199	615581	6085218	-11	-19	22	31		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	02:38:28	6465	BP23MVEXP-ENV-DC-131			Camera	45	615573	6085205	615581	6085218	-8	-14	16	31		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	02:39:19	6466	BP23MVEXP-ENV-DC-131			Camera	45	615575	6085209	615581	6085218	-6	-9	11	32		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	02:40:17	6467	BP23MVEXP-ENV-DC-131			Camera	45	615579	6085214	615581	6085218	-2	-4	4	30		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	02:41:02	6468	BP23MVEXP-ENV-DC-131			Camera	45	615581	6085218	615581	6085218	0	0	0	-96		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	02:41:43	6469	BP23MVEXP-ENV-DC-131			Camera	45	615582	6085222	615581	6085218	1	4	4	-159		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	02:43:16	6470	BP23MVEXP-ENV-DC-131			Camera	45	615587	6085231	615581	6085218	6	13	14	-154		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	02:44:10	6471	BP23MVEXP-ENV-DC-131			Camera	45	615590	6085235	615581	6085218	9	18	20	-153		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	02:44:43	6472	BP23MVEXP-ENV-DC-131			Camera	45	615592	6085238	615581	6085218	11	20	23	-152		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	02:45:14	6473	BP23MVEXP-ENV-DC-131			Camera	45	615593	6085241	615581	6085218	12	23	26	-152		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	02:45:40	6474	BP23MVEXP-ENV-DC-131			Camera	45	615595	6085244	615581	6085218	14	26	29	-152		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	02:45:54	6475	BP23MVEXP-ENV-DC-131			Camera	45	615595	6085245	615581	6085218	14	27	30	-152		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	02:46:32	6476	BP23MVEXP-ENV-DC-131			Camera	45	615597	6085248	615581	6085218	16	30	34	-151		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	02:47:03	6477	BP23MVEXP-ENV-DC-131			Camera	45	615599	6085251	615581	6085218	18	33	37	-152		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	02:47:13	6478	BP23MVEXP-ENV-DC-131			Camera	45	615599	6085252	615581	6085218	18	34	38	-152		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	02:47:48	6479	BP23MVEXP-ENV-DC-131			Camera	45	615601	6085255	615581	6085218	20	37	42	-152		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	02:48:03	6480	BP23MVEXP-ENV-DC-131			Camera	45	615602	6085257	615581	6085218	21	39	44	-152		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	02:48:32	6481	BP23MVEXP-ENV-DC-131			Camera	45	615603	6085259	615581	6085218	22	41	46	-152		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	03:27:04	6482	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085762	614050	6085716	26	46	53	-150		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	03:27:47	6483	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085762	614050	6085716	26	46	53	-150		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	03:28:20	6484	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085762	614050	6085716	26	46	52	-151		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	03:29:29	6485	BP23MVEXP-ENV-DC-065			Camera	44	614072	6085756	614050	6085716	22	40	46	-152		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	03:29:39	6486	BP23MVEXP-ENV-DC-065			Camera	44	614071	6085755	614050	6085716	21	39	45	-151		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	03:30:09	6487	BP23MVEXP-ENV-DC-065			Camera	44	614070	6085752	614050	6085716	20	36	41	-151		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	03:31:07	6488	BP23MVEXP-ENV-DC-065			Camera	44	614068	6085746	614050	6085716	18	30	35	-150		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	03:31:15	6489	BP23MVEXP-ENV-DC-065			Camera	44	614067	6085745	614050	6085716	17	29	34	-150		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	03:31:38	6490	BP23MVEXP-ENV-DC-065			Camera	44	614066	6085743	614050	6085716	16	27	32	-150		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	03:32:22	6491	BP23MVEXP-ENV-DC-065			Camera	44	614064	6085739	614050	6085716	14	23	27	-149		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	03:32:44	6492	BP23MVEXP-ENV-DC-065			Camera	44	614063	6085737	614050	6085716	13	21	25	-149		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	03:32:54	6493	BP23MVEXP-ENV-DC-065			Camera	44	614063	6085737	614050	6085716	13	21	24	-149		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	03:33:36	6494	BP23MVEXP-ENV-DC-065			Camera	44	614061	6085733	614050	6085716	11	17	20	-148		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	03:33:55	6495	BP23MVEXP-ENV-DC-065			Camera	44	614060	6085731	614050	6085716	10	15	18	-147		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	03:34:07	6496	BP23MVEXP-ENV-DC-065			Camera	44	614059	6085730	614050	6085716	9	14	16	-147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	03:34:37	6497	BP23MVEXP-ENV-DC-065			Camera	44	614058	6085727	614050	6085716	8	11	14	-146		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	03:34:47	6498	BP23MVEXP-ENV-DC-065			Camera	44	614057	6085726	614050	6085716	7	10	13	-146		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	03:35:12	6499	BP23MVEXP-ENV-DC-065			Camera	44	614056	6085724	614050	6085716	6	8	10	-144		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	03:35:33	6500	BP23MVEXP-ENV-DC-065			Camera	44	614055	6085722	614050	6085716	5	6	8	-141		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	03:36:09	6501	BP23MVEXP-ENV-DC-065			Camera	44	614053	6085719	614050	6085716	3	3	4	-132		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	03:37:17	6502	BP23MVEXP-ENV-DC-065			Camera	44	614050	6085713	614050	6085716	0	-3	3	4		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	03:37:58	6503	BP23MVEXP-ENV-DC-065			Camera	44	614047	6085709	614050	6085716	-3	-7	7	20		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	03:38:19	6504	BP23MVEXP-ENV-DC-065			Camera	43	614047	6085707	614050	6085716	-3	-9	9	21		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	03:38:32	6505	BP23MVEXP-ENV-DC-065			Camera	43	614046	6085706	614050	6085716	-4	-10	11	22		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	03:38:55	6506	BP23MVEXP-ENV-DC-065			Camera	44	614045	6085704	614050	6085716	-5	-12	13	24		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	03:40:07	6507	BP23MVEXP-ENV-DC-065			Camera	44	614041	6085697	614050	6085716	-9	-19	21	25		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	03:40:33	6508	BP23MVEXP-ENV-DC-065			Camera	43	614040	6085695	614050	6085716	-10	-21	23	25		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	03:41:07	6509	BP23MVEXP-ENV-DC-065			Camera	43	614039	6085692	614050	6085716	-12	-24	27	26		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	03:41:19	6510	BP23MVEXP-ENV-DC-065			Camera	43	614038	6085691	614050	6085716	-12	-25	28	25		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	03:41:48	6511	BP23MVEXP-ENV-DC-065			Camera	43	614036	6085688	614050	6085716	-14	-28	31	26		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	03:42:49	6512	BP23MVEXP-ENV-DC-065			Camera	43	614033	6085682	614050	6085716	-17	-34	38	27		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	03:43:44	6513	BP23MVEXP-ENV-DC-065			Camera	43	614030	6085679	614050	6085716	-20	-38	42	28		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	03:44:06	6514	BP23MVEXP-ENV-DC-065			Camera	43	614029	6085676	614050	6085716	-21	-40	45	28		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	03:44:29	6515	BP23MVEXP-ENV-DC-065			Camera	43	614028	6085674	614050	6085716	-22	-42	47	28		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	03:45:06	6516	BP23MVEXP-ENV-DC-065			Camera	43	614027	6085671	614050	6085716	-23	-45	51	28		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	03:57:58	6517	BP23MVEXP-ENV-DC-065			Camera	44	614005	6085741	614050	6085716	-45	26	52	119		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	03:59:28	6518	BP23MVEXP-ENV-DC-065			Camera	43	614006	6085745	614050	6085716	-44	29	52	123		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	04:00:13	6519	BP23MVEXP-ENV-DC-065			Camera	43	614010	6085742	614050	6085716	-40	26	48	123		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	04:00:55	6520	BP23MVEXP-ENV-DC-065			Camera	44	614013	6085740	614050	6085716	-37	24	44	123		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	04:02:09	6521	BP23MVEXP-ENV-DC-065			Camera	43	614020	6085736	614050	6085716	-30	20	36	124		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	04:02:57	6522	BP23MVEXP-ENV-DC-065			Camera	44	614025	6085733	614050	6085716	-25	18	31	124		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	04:03:48	6523	BP23MVEXP-ENV-DC-065			Camera	44	614029	6085730	614050	6085716	-21	14	25	125		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	04:04:12	6524	BP23MVEXP-ENV-DC-065			Camera	43	614032	6085729	614050	6085716	-18	13	23	126		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	04:04:50	6525	BP23MVEXP-ENV-DC-065			Camera	44	614036	6085727	614050	6085716	-14	11	18	128		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	04:05:16	6526	BP23MVEXP-ENV-DC-065			Camera	44	614038	6085726	614050	6085716	-12	10	15	131		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	04:05:28	6527	BP23MVEXP-ENV-DC-065			Camera	44	614039	6085726	614050	6085716	-11	10	15	131		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	04:05:54	6528	BP23MVEXP-ENV-DC-065			Camera	44	614040	6085725	614050	6085716	-10	9	13	134		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	04:06:29	6529	BP23MVEXP-ENV-DC-065			Camera	44	614043	6085724	614050	6085716	-7	8	10	140		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	04:07:25	6530	BP23MVEXP-ENV-DC-065			Camera	44	614048	6085721	614050	6085716	-2	5	6	159		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	04:08:09	6531	BP23MVEXP-ENV-DC-065			Camera	44	614053	6085718	614050	6085716	3	2	3	-128		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	04:08:41	6532	BP23MVEXP-ENV-DC-065			Camera	44	614056	6085716	614050	6085716	6	0	6	-89		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	04:09:59	6533	BP23MVEXP-ENV-DC-065			Camera	44	614062	6085712	614050	6085716	12	-4	13	-71		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Aug-2023	04:10:41	6534	BP23MVEXP-ENV-DC-065			Camera	44	614065	6085710	614050	6085716	15	-6	16	-69		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Aug-2023	04:11:06	6535	BP23MVEXP-ENV-DC-065			Camera	44	614067	6085709	614050	6085716	18	-7	19	-69		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Aug-2023	04:11:31	6536	BP23MVEXP-ENV-DC-065			Camera	44	614070	6085708	614050	6085716	20	-8	21	-68		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Aug-2023	04:12:21	6537	BP23MVEXP-ENV-DC-065			Camera	44	614076	6085706	614050	6085716	26	-10	27	-68		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	04:12:42	6538	BP23MVEXP-ENV-DC-065			Camera	44	614078	6085705	614050	6085716	28	-11	30	-68		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Aug-2023	04:13:40	6539	BP23MVEXP-ENV-DC-065			Camera	44	614083	6085702	614050	6085716	33	-14	36	-67		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Aug-2023	04:14:18	6540	BP23MVEXP-ENV-DC-065			Camera	44	614086	6085700	614050	6085716	36	-16	39	-66		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Aug-2023	04:15:18	6541	BP23MVEXP-ENV-DC-065			Camera	44	614091	6085695	614050	6085716	41	-21	46	-63		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
11-Aug-2023	04:15:37	6542	BP23MVEXP-ENV-DC-065			Camera	44	614093	6085694	614050	6085716	43	-22	48	-63		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
11-Aug-2023	04:15:55	6543	BP23MVEXP-ENV-DC-065			Camera	44	614093	6085693	614050	6085716	43	-23	49	-63		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
11-Aug-2023	05:12:35	6544	BP23MVEXP-ENV-DC-067				28	611427	6082655	611447	6082612	-20	43	47	155		(Raw Nav, Kongsberg 14208, img#63) (B) Fix no photo
11-Aug-2023	05:13:11	6545	BP23MVEXP-ENV-DC-067				28	611430	6082651	611447	6082612	-17	39	43	156		(Raw Nav, Kongsberg 14208, img#64) (B) Fix no photo
11-Aug-2023	05:14:13	6546	BP23MVEXP-ENV-DC-067				28	611431	6082645	611447	6082612	-16	33	37	154		(Raw Nav, Kongsberg 14208, img#65) (B) Fix no photo
11-Aug-2023	06:21:49	6547	BP23MVEXP-ENV-DC-066			Camera	42	616589	6080843	616631	6080874	-42	-31	52	53		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
11-Aug-2023	06:23:23	6548	BP23MVEXP-ENV-DC-066			Camera	42	616590	6080844	616631	6080874	-41	-30	51	53		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	06:23:49	6549	BP23MVEXP-ENV-DC-066			Camera	42	616592	6080845	616631	6080874	-39	-29	49	53		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	06:24:45	6550	BP23MVEXP-ENV-DC-066			Camera	42	616597	6080849	616631	6080874	-34	-25	42	53		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	06:24:59	6551	BP23MVEXP-ENV-DC-066			Camera	42	616598	6080849	616631	6080874	-33	-25	41	53		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	06:25:25	6552	BP23MVEXP-ENV-DC-066			Camera	42	616600	6080851	616631	6080874	-31	-23	39	53		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	06:25:50	6553	BP23MVEXP-ENV-DC-066			Camera	42	616602	6080853	616631	6080874	-29	-21	36	54		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	06:26:34	6554	BP23MVEXP-ENV-DC-066			Camera	42	616605	6080856	616631	6080874	-26	-18	32	55		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	06:27:22	6555	BP23MVEXP-ENV-DC-066			Camera	42	616609	6080859	616631	6080874	-22	-15	26	55		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	06:27:31	6556	BP23MVEXP-ENV-DC-066			Camera	42	616610	6080860	616631	6080874	-21	-14	25	55		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	06:27:45	6557	BP23MVEXP-ENV-DC-066			Camera	42	616611	6080860	616631	6080874	-20	-14	24	56		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	06:28:25	6558	BP23MVEXP-ENV-DC-066			Camera	42	616614	6080863	616631	6080874	-17	-11	20	57		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	06:28:57	6559	BP23MVEXP-ENV-DC-066			Camera	42	616617	6080865	616631	6080874	-14	-9	17	59		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	06:29:07	6560	BP23MVEXP-ENV-DC-066			Camera	42	616617	6080866	616631	6080874	-14	-8	16	60		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	06:29:35	6561	BP23MVEXP-ENV-DC-066			Camera	42	616620	6080868	616631	6080874	-12	-6	13	62		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	06:30:14	6562	BP23MVEXP-ENV-DC-066			Camera	42	616623	6080870	616631	6080874	-8	-4	9	66		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	06:30:21	6563	BP23MVEXP-ENV-DC-066			Camera	42	616624	6080871	616631	6080874	-7	-3	8	67		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	06:31:13	6564	BP23MVEXP-ENV-DC-066			Camera	42	616628	6080874	616631	6080874	-3	0	3	93		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	06:31:38	6565	BP23MVEXP-ENV-DC-066			Camera	42	616630	6080876	616631	6080874	-1	2	2	146		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	06:32:28	6566	BP23MVEXP-ENV-DC-066			Camera	42	616634	6080879	616631	6080874	3	5	6	-154		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	06:32:51	6567	BP23MVEXP-ENV-DC-066			Camera	42	616635	6080881	616631	6080874	4	7	8	-150		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	06:33:10	6568	BP23MVEXP-ENV-DC-066			Camera	42	616636	6080882	616631	6080874	5	8	10	-147		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	06:33:48	6569	BP23MVEXP-ENV-DC-066			Camera	42	616639	6080885	616631	6080874	8	11	13	-142		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	06:34:30	6570	BP23MVEXP-ENV-DC-066			Camera	42	616643	6080887	616631	6080874	12	14	18	-139		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	06:35:30	6571	BP23MVEXP-ENV-DC-066			Camera	42	616648	6080891	616631	6080874	17	17	24	-136		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	06:36:03	6572	BP23MVEXP-ENV-DC-066			Camera	42	616651	6080894	616631	6080874	20	20	28	-135		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	06:36:48	6573	BP23MVEXP-ENV-DC-066			Camera	42	616654	6080897	616631	6080874	23	23	32	-134		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	06:37:30	6574	BP23MVEXP-ENV-DC-066			Camera	42	616657	6080899	616631	6080874	26	25	37	-134		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	06:39:39	6575	BP23MVEXP-ENV-DC-066			Camera	42	616667	6080908	616631	6080874	36	35	50	-134		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	06:53:43	6576	BP23MVEXP-ENV-DC-066			Camera	42	616599	6080910	616631	6080874	-32	36	48	138		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	06:55:06	6577	BP23MVEXP-ENV-DC-066			Camera	42	616603	6080906	616631	6080874	-28	32	43	139		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	06:55:29	6578	BP23MVEXP-ENV-DC-066			Camera	42	616605	6080904	616631	6080874	-26	30	40	139		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	06:56:07	6579	BP23MVEXP-ENV-DC-066			Camera	42	616607	6080901	616631	6080874	-24	27	36	138		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	06:56:46	6580	BP23MVEXP-ENV-DC-066			Camera	42	616610	6080897	616631	6080874	-21	23	32	137		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	06:57:07	6581	BP23MVEXP-ENV-DC-066			Camera	42	616611	6080896	616631	6080874	-20	22	30	137		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	06:57:51	6582	BP23MVEXP-ENV-DC-066			Camera	42	616614	6080893	616631	6080874	-17	19	25	138		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	06:58:37	6583	BP23MVEXP-ENV-DC-066			Camera	42	616617	6080889	616631	6080874	-14	15	20	138		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	07:00:14	6584	BP23MVEXP-ENV-DC-066			Camera	42	616624	6080882	616631	6080874	-7	8	11	137		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	07:01:24	6585	BP23MVEXP-ENV-DC-066			Camera	42	616628	6080876	616631	6080874	-3	2	3	129		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	07:01:46	6586	BP23MVEXP-ENV-DC-066			Camera	42	616630	6080875	616631	6080874	-1	1	1	117		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	07:02:18	6587	BP23MVEXP-ENV-DC-066			Camera	42	616632	6080872	616631	6080874	1	-2	2	-33		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	07:02:47	6588	BP23MVEXP-ENV-DC-066			Camera	42	616634	6080870	616631	6080874	3	-4	5	-39		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	07:03:33	6589	BP23MVEXP-ENV-DC-066			Camera	42	616638	6080867	616631	6080874	7	-7	10	-43		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	07:04:49	6590	BP23MVEXP-ENV-DC-066			Camera	42	616642	6080861	616631	6080874	12	-13	17	-42		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	07:05:15	6591	BP23MVEXP-ENV-DC-066			Camera	42	616644	6080859	616631	6080874	13	-15	20	-42		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	07:05:56	6592	BP23MVEXP-ENV-DC-066			Camera	42	616648	6080856	616631	6080874	17	-18	24	-43		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	07:06:40	6593	BP23MVEXP-ENV-DC-066			Camera	42	616651	6080852	616631	6080874	20	-22	29	-42		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	07:06:53	6594	BP23MVEXP-ENV-DC-066			Camera	42	616651	6080851	616631	6080874	21	-23	31	-42		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	07:07:31	6595	BP23MVEXP-ENV-DC-066			Camera	42	616654	6080848	616631	6080874	23	-26	34	-42		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	07:09:05	6596	BP23MVEXP-ENV-DC-066			Camera	42	616661	6080841	616631	6080874	30	-33	44	-42		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	07:09:57	6597	BP23MVEXP-ENV-DC-066			Camera	42	616664	6080838	616631	6080874	33	-36	49	-42		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	08:06:08	6598	BP23MVEXP-ENV-DC-132			Camera	38	613304	6081547	613334	6081592	-30	-45	54	34		(Raw Nav, Kongsberg 14208, img#1) (B)
11-Aug-2023	08:06:17	6599	BP23MVEXP-ENV-DC-132			Camera	38	613305	6081547	613334	6081592	-29	-45	54	33		(Raw Nav, Kongsberg 14208, img#2) (B)
11-Aug-2023	08:07:05	6600	BP23MVEXP-ENV-DC-132			Camera	38	613306	6081549	613334	6081592	-28	-43	51	33		(Raw Nav, Kongsberg 14208, img#3) (B)
11-Aug-2023	08:07:45	6601	BP23MVEXP-ENV-DC-132			Camera	38	613309	6081552	613334	6081592	-25	-40	47	32		(Raw Nav, Kongsberg 14208, img#4) (B)
11-Aug-2023	08:08:16	6602	BP23MVEXP-ENV-DC-132			Camera	38	613311	6081555	613334	6081592	-23	-37	44	32		(Raw Nav, Kongsberg 14208, img#5) (B)
11-Aug-2023	08:09:02	6603	BP23MVEXP-ENV-DC-132			Camera	38	613312	6081559	613334	6081592	-22	-33	40	34		(Raw Nav, Kongsberg 14208, img#6) (B)
11-Aug-2023	08:09:48	6604	BP23MVEXP-ENV-DC-132			Camera	38	613315	6081563	613334	6081592	-19	-29	35	33		(Raw Nav, Kongsberg 14208, img#7) (B)
11-Aug-2023	08:10:29	6605	BP23MVEXP-ENV-DC-132			Camera	38	613316	6081567	613334	6081592	-18	-25	31	36		(Raw Nav, Kongsberg 14208, img#8) (B)
11-Aug-2023	08:11:09	6606	BP23MVEXP-ENV-DC-132			Camera	39	613317	6081571	613334	6081592	-17	-21	27	39		(Raw Nav, Kongsberg 14208, img#9) (B)
11-Aug-2023	08:11:29	6607	BP23MVEXP-ENV-DC-132			Camera	38	613319	6081572	613334	6081592	-15	-20	25	37		(Raw Nav, Kongsberg 14208, img#10) (B)
11-Aug-2023	08:12:08	6608	BP23MVEXP-ENV-DC-132			Camera	38	613321	6081575	613334	6081592	-13	-17	21	37		(Raw Nav, Kongsberg 14208, img#11) (B)
11-Aug-2023	08:12:34	6609	BP23MVEXP-ENV-DC-132			Camera	38	613323	6081577	613334	6081592	-11	-15	19	36		(Raw Nav, Kongsberg 14208, img#12) (B)
11-Aug-2023	08:12:39	6610	BP23MVEXP-ENV-DC-132				38	613323	6081578	613334	6081592	-11	-14	18	38		(Raw Nav, Kongsberg 14208, img#13) (B) Fix no photo
11-Aug-2023	08:13:06	6611	BP23MVEXP-ENV-DC-132			Camera	38	613324	6081580	613334	6081592	-10	-12	16	40		(Raw Nav, Kongsberg 14208, img#14) (B)
11-Aug-2023	08:13:28	6612	BP23MVEXP-ENV-DC-132			Camera	38	613325	6081582	613334	6081592	-9	-10	13	42		(Raw Nav, Kongsberg 14208, img#15) (B)
11-Aug-2023	08:14:05	6613	BP23MVEXP-ENV-DC-132			Camera	38	613327	6081585	613334	6081592	-7	-7	10	45		(Raw Nav, Kongsberg 14208, img#16) (B)
11-Aug-2023	08:15:04	6614	BP23MVEXP-ENV-DC-132			Camera	38	613330	6081590	613334	6081592	-4	-2	4	63		(Raw Nav, Kongsberg 14208, img#17) (B)
11-Aug-2023	08:15:56	6615	BP23MVEXP-ENV-DC-132			Camera	38	613334	6081595	613334	6081592	0	3	3	180		(Raw Nav, Kongsberg 14208, img#18) (B)
11-Aug-2023	08:16:11	6616	BP23MVEXP-ENV-DC-132			Camera	38	613334	6081596	613334	6081592	0	4	4	180		(Raw Nav, Kongsberg 14208, img#19) (B)
11-Aug-2023	08:17:24	6617	BP23MVEXP-ENV-DC-132			Camera	38	613338	6081603	613334	6081592	4	11	12	-160		(Raw Nav, Kongsberg 14208, img#20) (B)
11-Aug-2023	08:17:48	6618	BP23MVEXP-ENV-DC-132			Camera	38	613339	6081605	613334	6081592	5	13	14	-159		(Raw Nav, Kongsberg 14208, img#21) (B)
11-Aug-2023	08:18:27	6619	BP23MVEXP-ENV-DC-132			Camera	38	613341	6081609	613334	6081592	7	17	18	-158		(Raw Nav, Kongsberg 14208, img#22) (B)
11-Aug-2023	08:18:35	6620	BP23MVEXP-ENV-DC-132			Camera	38	613341	6081610	613334	6081592	7	18	19	-159		(Raw Nav, Kongsberg 14208, img#23) (B)
11-Aug-2023	08:19:25	6621	BP23MVEXP-ENV-DC-132			Camera	38	613344	6081614	613334	6081592	10	22	24	-156		(Raw Nav, Kongsberg 14208, img#24) (B)
11-Aug-2023	08:19:33	6622	BP23MVEXP-ENV-DC-132			Camera	38	613344	6081614	613334	6081592	10	22	24	-156		(Raw Nav, Kongsberg 14208, img#25) (B)
11-Aug-2023	08:19:51	6623	BP23MVEXP-ENV-DC-132			Camera	38	613345	6081616	613334	6081592	11	24	26	-155		(Raw Nav, Kongsberg 14208, img#26) (B)
11-Aug-2023	08:20:27	6624	BP23MVEXP-ENV-DC-132			Camera	38	613347	6081619	613334	6081592	13	27	30	-154		(Raw Nav, Kongsberg 14208, img#27) (B)
11-Aug-2023	08:21:23	6625	BP23MVEXP-ENV-DC-132			Camera	38	613350	6081624	613334	6081592	16	32	36	-153		(Raw Nav, Kongsberg 14208, img#28) (B)
11-Aug-2023	08:21:46	6626	BP23MVEXP-ENV-DC-132			Camera	38	613352	6081627	613334	6081592	18	35	39	-153		(Raw Nav, Kongsberg 14208, img#29) (B)
11-Aug-2023	08:21:53	6627	BP23MVEXP-ENV-DC-132			Camera	38	613352	6081627	613334	6081592	18	35	39	-153		(Raw Nav, Kongsberg 14208, img#30) (B)
11-Aug-2023	08:22:44	6628	BP23MVEXP-ENV-DC-132			Camera	38	613355	6081632	613334	6081592	21	40	45	-152		(Raw Nav, Kongsberg 14208, img#31) (B)
11-Aug-2023	09:03:37	6629	BP23MVEXP-ENV-DC-132A			Camera	36	613291	6081616	613334	6081592	-43	24	49	119		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	09:03:58	6630	BP23MVEXP-ENV-DC-132A			Camera	36	613291	6081616	613334	6081592	-43	24	49	119		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	09:04:58	6631	BP23MVEXP-ENV-DC-132A			Camera	36	613292	6081615	613334	6081592	-42	23	48	118		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	09:05:26	6632	BP23MVEXP-ENV-DC-132A			Camera	36	613294	6081613	613334	6081592	-40	22	45	119		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	09:06:13	6633	BP23MVEXP-ENV-DC-132A			Camera	36	613298	6081611	613334	6081592	-36	19	41	118		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	09:06:39	6634	BP23MVEXP-ENV-DC-132A			Camera	36	613301	6081610	613334	6081592	-33	18	38	119		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	09:07:33	6635	BP23MVEXP-ENV-DC-132A			Camera	36	613306	6081608	613334	6081592	-28	16	32	120		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	09:08:07	6636	BP23MVEXP-ENV-DC-132A			Camera	36	613309	6081606	613334	6081592	-25	14	29	119		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	09:08:45	6637	BP23MVEXP-ENV-DC-132A			Camera	36	613313	6081604	613334	6081592	-21	12	24	119		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	09:09:38	6638	BP23MVEXP-ENV-DC-132A			Camera	36	613318	6081601	613334	6081592	-16	9	18	119		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	09:10:30	6639	BP23MVEXP-ENV-DC-132A			Camera	36	613323	6081599	613334	6081592	-11	7	13	121		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	09:11:15	6640	BP23MVEXP-ENV-DC-132A			Camera	36	613327	6081596	613334	6081592	-7	4	8	121		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	09:11:36	6641	BP23MVEXP-ENV-DC-132A			Camera	36	613328	6081595	613334	6081592	-6	3	7	118		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	09:12:40	6642	BP23MVEXP-ENV-DC-132A			Camera	36	613334	6081592	613334	6081592	0	0	0	-150		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	09:13:13	6643	BP23MVEXP-ENV-DC-132A			Camera	36	613337	6081590	613334	6081592	3	-2	4	-63		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	09:13:32	6644	BP23MVEXP-ENV-DC-132A			Camera	36	613339	6081589	613334	6081592	5	-3	6	-61		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	09:14:54	6645	BP23MVEXP-ENV-DC-132A			Camera	36	613347	6081585	613334	6081592	13	-7	14	-62		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	09:16:26	6646	BP23MVEXP-ENV-DC-132A			Camera	36	613355	6081580	613334	6081592	21	-12	24	-61		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	09:16:54	6647	BP23MVEXP-ENV-DC-132A			Camera	36	613358	6081579	613334	6081592	24	-13	27	-62		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	09:17:23	6648	BP23MVEXP-ENV-DC-132A			Camera	36	613361	6081578	613334	6081592	27	-14	30	-62		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	09:17:34	6649	BP23MVEXP-ENV-DC-132A			Camera	36	613361	6081577	613334	6081592	27	-15	31	-61		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	09:18:00	6650	BP23MVEXP-ENV-DC-132A			Camera	36	613364	6081576	613334	6081592	30	-16	34	-61		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	09:18:23	6651	BP23MVEXP-ENV-DC-132A			Camera	36	613366	6081575	613334	6081592	32	-17	36	-61		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	09:18:40	6652	BP23MVEXP-ENV-DC-132A			Camera	36	613367	6081574	613334	6081592	33	-18	38	-61		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	09:19:29	6653	BP23MVEXP-ENV-DC-132A			Camera	36	613371	6081571	613334	6081592	38	-21	43	-61		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	09:19:40	6654	BP23MVEXP-ENV-DC-132A			Camera	36	613372	6081571	613334	6081592	38	-21	44	-61		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	09:20:21	6655	BP23MVEXP-ENV-DC-132A			Camera	36	613377	6081569	613334	6081592	43	-23	48	-62		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	09:20:41	6656	BP23MVEXP-ENV-DC-132A			Camera	36	613378	6081569	613334	6081592	44	-23	50	-62		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	09:34:01	6657	BP23MVEXP-ENV-DC-132A			Camera	36	613357	6081634	613334	6081592	23	42	48	-151		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	09:34:55	6658	BP23MVEXP-ENV-DC-132A			Camera	36	613355	6081631	613334	6081592	21	39	45	-151		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	09:35:26	6659	BP23MVEXP-ENV-DC-132A			Camera	36	613353	6081628	613334	6081592	19	36	41	-152		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	09:37:06	6660	BP23MVEXP-ENV-DC-132A			Camera	36	613349	6081618	613334	6081592	15	26	30	-151		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	09:38:05	6661	BP23MVEXP-ENV-DC-132A			Camera	36	613345	6081613	613334	6081592	11	21	24	-152		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	09:38:25	6662	BP23MVEXP-ENV-DC-132A			Camera	36	613344	6081611	613334	6081592	10	19	22	-152		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	09:39:09	6663	BP23MVEXP-ENV-DC-132A			Camera	36	613342	6081607	613334	6081592	8	15	17	-153		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	09:40:16	6664	BP23MVEXP-ENV-DC-132A			Camera	36	613339	6081602	613334	6081592	5	10	11	-155		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	09:40:59	6665	BP23MVEXP-ENV-DC-132A			Camera	36	613337	6081598	613334	6081592	3	6	6	-157		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	09:41:44	6666	BP23MVEXP-ENV-DC-132A			Camera	36	613334	6081593	613334	6081592	0	1	1	-180		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	09:42:54	6667	BP23MVEXP-ENV-DC-132A			Camera	36	613331	6081587	613334	6081592	-3	-5	6	35		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	09:43:41	6668	BP23MVEXP-ENV-DC-132A			Camera	36	613328	6081584	613334	6081592	-6	-8	10	36		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	09:44:49	6669	BP23MVEXP-ENV-DC-132A			Camera	36	613325	6081578	613334	6081592	-9	-14	17	33		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	09:45:40	6670	BP23MVEXP-ENV-DC-132A			Camera	36	613322	6081572	613334	6081592	-12	-20	23	31		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	09:45:54	6671	BP23MVEXP-ENV-DC-132A			Camera	36	613322	6081571	613334	6081592	-12	-21	24	31		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	09:46:40	6672	BP23MVEXP-ENV-DC-132A			Camera	36	613319	6081567	613334	6081592	-15	-25	29	31		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	09:48:32	6673	BP23MVEXP-ENV-DC-132A			Camera	36	613313	6081558	613334	6081592	-21	-35	40	31		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	10:47:07	6674	BP23MVEXP-ENV-DC-133			Camera	24	611128	6078394	611083	6078422	45	-28	53	-58		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	10:48:07	6675	BP23MVEXP-ENV-DC-133			Camera	24	611127	6078394	611083	6078422	45	-28	52	-58		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	10:48:27	6676	BP23MVEXP-ENV-DC-133			Camera	24	611127	6078395	611083	6078422	44	-27	52	-58		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	10:49:25	6677	BP23MVEXP-ENV-DC-133			Camera	24	611124	6078398	611083	6078422	41	-24	47	-59		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	10:49:52	6678	BP23MVEXP-ENV-DC-133			Camera	24	611121	6078399	611083	6078422	38	-23	44	-59		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	10:50:42	6679	BP23MVEXP-ENV-DC-133			Camera	24	611115	6078402	611083	6078422	32	-21	38	-58		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	10:50:52	6680	BP23MVEXP-ENV-DC-133			Camera	24	611115	6078402	611083	6078422	32	-20	37	-57		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	10:51:24	6681	BP23MVEXP-ENV-DC-133			Camera	24	611112	6078404	611083	6078422	29	-18	34	-58		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	10:51:43	6682	BP23MVEXP-ENV-DC-133			Camera	24	611110	6078405	611083	6078422	27	-17	32	-57		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	10:53:01	6683	BP23MVEXP-ENV-DC-133			Camera	24	611103	6078408	611083	6078422	20	-14	25	-55		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	10:53:59	6684	BP23MVEXP-ENV-DC-133			Camera	23	611099	6078411	611083	6078422	16	-11	19	-56		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	10:54:38	6685	BP23MVEXP-ENV-DC-133			Camera	23	611096	6078413	611083	6078422	13	-9	15	-56		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	10:55:01	6686	BP23MVEXP-ENV-DC-133			Camera	23	611094	6078415	611083	6078422	11	-7	13	-56		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	10:55:25	6687	BP23MVEXP-ENV-DC-133			Camera	23	611092	6078416	611083	6078422	9	-6	11	-53		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	10:55:45	6688	BP23MVEXP-ENV-DC-133			Camera	23	611090	6078417	611083	6078422	7	-5	9	-52		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	10:56:14	6689	BP23MVEXP-ENV-DC-133			Camera	23	611087	6078418	611083	6078422	4	-4	6	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	10:56:41	6690	BP23MVEXP-ENV-DC-133			Camera	23	611084	6078419	611083	6078422	1	-3	3	-27		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	10:57:15	6691	BP23MVEXP-ENV-DC-133			Camera	23	611081	6078421	611083	6078422	-2	-1	2	60		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	10:57:43	6692	BP23MVEXP-ENV-DC-133			Camera	23	611078	6078423	611083	6078422	-5	1	5	95		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	10:58:27	6693	BP23MVEXP-ENV-DC-133			Camera	23	611074	6078425	611083	6078422	-9	3	10	108		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	10:59:05	6694	BP23MVEXP-ENV-DC-133			Camera	23	611071	6078427	611083	6078422	-12	5	13	112		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	11:00:06	6695	BP23MVEXP-ENV-DC-133			Camera	23	611065	6078431	611083	6078422	-18	9	20	116		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	11:01:02	6696	BP23MVEXP-ENV-DC-133			Camera	23	611062	6078434	611083	6078422	-21	12	24	119		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	11:01:57	6697	BP23MVEXP-ENV-DC-133			Camera	23	611057	6078436	611083	6078422	-26	14	29	118		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	11:02:39	6698	BP23MVEXP-ENV-DC-133			Camera	23	611053	6078437	611083	6078422	-30	15	33	116		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	11:03:24	6699	BP23MVEXP-ENV-DC-133			Camera	23	611047	6078438	611083	6078422	-36	16	39	114		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	11:04:01	6700	BP23MVEXP-ENV-DC-133			Camera	23	611043	6078440	611083	6078422	-40	18	43	114		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	11:04:47	6701	BP23MVEXP-ENV-DC-133			Camera	23	611040	6078444	611083	6078422	-43	22	48	117		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	11:05:18	6702	BP23MVEXP-ENV-DC-133			Camera	23	611038	6078445	611083	6078422	-45	23	50	117		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	11:14:23	6703	BP23MVEXP-ENV-DC-133			Camera	23	611058	6078377	611083	6078422	-25	-45	51	29		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	11:15:34	6704	BP23MVEXP-ENV-DC-133			Camera	23	611061	6078383	611083	6078422	-22	-39	45	29		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	11:15:54	6705	BP23MVEXP-ENV-DC-133			Camera	23	611062	6078384	611083	6078422	-21	-38	43	29		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	11:16:32	6706	BP23MVEXP-ENV-DC-133			Camera	23	611064	6078388	611083	6078422	-19	-34	39	29		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	11:16:49	6707	BP23MVEXP-ENV-DC-133			Camera	23	611065	6078389	611083	6078422	-18	-33	37	29		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	11:17:10	6708	BP23MVEXP-ENV-DC-133			Camera	23	611066	6078391	611083	6078422	-17	-31	35	29		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	11:17:32	6709	BP23MVEXP-ENV-DC-133			Camera	23	611067	6078393	611083	6078422	-16	-29	33	29		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	11:17:59	6710	BP23MVEXP-ENV-DC-133			Camera	24	611069	6078396	611083	6078422	-14	-26	30	29		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	11:18:31	6711	BP23MVEXP-ENV-DC-133			Camera	24	611070	6078399	611083	6078422	-13	-23	26	29		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	11:19:09	6712	BP23MVEXP-ENV-DC-133			Camera	24	611072	6078402	611083	6078422	-11	-20	23	30		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	11:19:54	6713	BP23MVEXP-ENV-DC-133			Camera	23	611074	6078406	611083	6078422	-9	-16	19	30		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	11:20:03	6714	BP23MVEXP-ENV-DC-133			Camera	23	611074	6078407	611083	6078422	-9	-15	18	30		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	11:20:49	6715	BP23MVEXP-ENV-DC-133			Camera	23	611076	6078411	611083	6078422	-7	-11	13	31		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	11:21:19	6716	BP23MVEXP-ENV-DC-133			Camera	24	611078	6078414	611083	6078422	-5	-8	9	31		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	11:22:23	6717	BP23MVEXP-ENV-DC-133			Camera	24	611081	6078420	611083	6078422	-2	-2	3	50		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	11:22:51	6718	BP23MVEXP-ENV-DC-133			Camera	24	611082	6078422	611083	6078422	-1	0	1	79		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	11:23:00	6719	BP23MVEXP-ENV-DC-133			Camera	24	611082	6078423	611083	6078422	-1	1	1	140		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	11:24:18	6720	BP23MVEXP-ENV-DC-133			Camera	24	611087	6078429	611083	6078422	4	7	8	-154		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	11:24:32	6721	BP23MVEXP-ENV-DC-133			Camera	24	611088	6078431	611083	6078422	5	9	10	-152		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	11:25:10	6722	BP23MVEXP-ENV-DC-133			Camera	24	611090	6078435	611083	6078422	7	13	14	-153		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	11:25:24	6723	BP23MVEXP-ENV-DC-133			Camera	24	611090	6078436	611083	6078422	7	14	16	-153		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	11:26:33	6724	BP23MVEXP-ENV-DC-133			Camera	24	611094	6078442	611083	6078422	11	20	23	-151		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	11:27:22	6725	BP23MVEXP-ENV-DC-133			Camera	24	611096	6078448	611083	6078422	14	26	29	-152		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Aug-2023	11:27:39	6726	BP23MVEXP-ENV-DC-133			Camera	24	611097	6078450	611083	6078422	14	28	31	-153		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Aug-2023	11:28:23	6727	BP23MVEXP-ENV-DC-133			Camera	24	611098	6078454	611083	6078422	15	32	35	-155		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Aug-2023	11:28:49	6728	BP23MVEXP-ENV-DC-133			Camera	24	611099	6078455	611083	6078422	16	34	37	-155		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Aug-2023	11:29:37	6729	BP23MVEXP-ENV-DC-133			Camera	24	611101	6078460	611083	6078422	18	38	42	-154		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	11:29:59	6730	BP23MVEXP-ENV-DC-133			Camera	24	611103	6078462	611083	6078422	20	40	44	-154		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Aug-2023	12:36:42	6731	BP23MVEXP-ENV-DC-069			Camera	21	609910	6081805	609888	6081851	22	-46	51	-25		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	12:39:23	6732	BP23MVEXP-ENV-DC-069			Camera	21	609911	6081806	609888	6081851	23	-45	51	-26		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	12:39:56	6733	BP23MVEXP-ENV-DC-069			Camera	21	609909	6081808	609888	6081851	21	-43	48	-26		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	12:40:08	6734	BP23MVEXP-ENV-DC-069			Camera	21	609909	6081808	609888	6081851	21	-43	47	-26		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	12:40:51	6735	BP23MVEXP-ENV-DC-069			Camera	21	609906	6081812	609888	6081851	18	-39	43	-25		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	12:41:32	6736	BP23MVEXP-ENV-DC-069			Camera	21	609904	6081816	609888	6081851	16	-35	39	-24		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	12:42:02	6737	BP23MVEXP-ENV-DC-069			Camera	21	609903	6081819	609888	6081851	15	-32	35	-25		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	12:42:15	6738	BP23MVEXP-ENV-DC-069			Camera	21	609902	6081820	609888	6081851	14	-31	34	-25		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	12:43:07	6739	BP23MVEXP-ENV-DC-069			Camera	21	609900	6081825	609888	6081851	12	-26	29	-24		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	12:43:34	6740	BP23MVEXP-ENV-DC-069			Camera	20	609899	6081827	609888	6081851	11	-24	26	-24		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	12:44:31	6741	BP23MVEXP-ENV-DC-069			Camera	21	609897	6081832	609888	6081851	9	-19	21	-25		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	12:44:45	6742	BP23MVEXP-ENV-DC-069			Camera	21	609896	6081834	609888	6081851	8	-17	19	-24		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	12:45:19	6743	BP23MVEXP-ENV-DC-069			Camera	21	609894	6081837	609888	6081851	6	-14	15	-23		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	12:46:01	6744	BP23MVEXP-ENV-DC-069			Camera	21	609892	6081841	609888	6081851	4	-10	11	-21		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	12:46:31	6745	BP23MVEXP-ENV-DC-069			Camera	21	609891	6081844	609888	6081851	3	-7	8	-23		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	12:46:51	6746	BP23MVEXP-ENV-DC-069			Camera	21	609890	6081846	609888	6081851	2	-5	6	-22		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	12:47:12	6747	BP23MVEXP-ENV-DC-069			Camera	21	609889	6081848	609888	6081851	1	-3	4	-19		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	12:47:23	6748	BP23MVEXP-ENV-DC-069			Camera	20	609889	6081849	609888	6081851	1	-2	3	-14		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	12:47:37	6749	BP23MVEXP-ENV-DC-069			Camera	20	609888	6081849	609888	6081851	0	-2	2	-6		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	12:48:22	6750	BP23MVEXP-ENV-DC-069			Camera	20	609885	6081853	609888	6081851	-3	2	4	131		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	12:49:00	6751	BP23MVEXP-ENV-DC-069			Camera	20	609884	6081857	609888	6081851	-4	6	7	145		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	12:50:09	6752	BP23MVEXP-ENV-DC-069			Camera	20	609880	6081864	609888	6081851	-8	13	15	148		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	12:50:29	6753	BP23MVEXP-ENV-DC-069			Camera	20	609880	6081865	609888	6081851	-8	15	17	150		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	12:50:36	6754	BP23MVEXP-ENV-DC-069			Camera	20	609880	6081866	609888	6081851	-9	15	17	151		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	12:51:02	6755	BP23MVEXP-ENV-DC-069			Camera	20	609878	6081869	609888	6081851	-10	18	21	152		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	12:51:09	6756	BP23MVEXP-ENV-DC-069			Camera	20	609878	6081870	609888	6081851	-10	19	22	152		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	12:52:07	6757	BP23MVEXP-ENV-DC-069			Camera	20	609876	6081875	609888	6081851	-13	24	27	153		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	12:53:05	6758	BP23MVEXP-ENV-DC-069			Camera	20	609874	6081881	609888	6081851	-15	30	33	154		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	12:54:31	6759	BP23MVEXP-ENV-DC-069			Camera	20	609869	6081889	609888	6081851	-19	38	42	153		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	12:54:50	6760	BP23MVEXP-ENV-DC-069			Camera	20	609868	6081890	609888	6081851	-20	39	44	153		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	12:55:25	6761	BP23MVEXP-ENV-DC-069			Camera	20	609867	6081893	609888	6081851	-21	42	46	154		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	13:03:43	6762	BP23MVEXP-ENV-DC-069			Camera	20	609844	6081829	609888	6081851	-44	-22	50	63		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	13:04:44	6763	BP23MVEXP-ENV-DC-069			Camera	20	609846	6081830	609888	6081851	-42	-21	47	63		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	13:05:25	6764	BP23MVEXP-ENV-DC-069			Camera	21	609851	6081832	609888	6081851	-37	-19	42	63		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	13:06:15	6765	BP23MVEXP-ENV-DC-069			Camera	21	609855	6081835	609888	6081851	-33	-16	37	64		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	13:06:46	6766	BP23MVEXP-ENV-DC-069			Camera	21	609858	6081836	609888	6081851	-30	-15	33	64		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	13:07:42	6767	BP23MVEXP-ENV-DC-069			Camera	21	609863	6081839	609888	6081851	-25	-12	28	64		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	13:09:23	6768	BP23MVEXP-ENV-DC-069			Camera	21	609872	6081844	609888	6081851	-16	-7	17	67		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	13:09:50	6769	BP23MVEXP-ENV-DC-069			Camera	21	609875	6081845	609888	6081851	-13	-6	14	67		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	13:10:37	6770	BP23MVEXP-ENV-DC-069			Camera	21	609879	6081847	609888	6081851	-9	-4	9	68		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	13:11:49	6771	BP23MVEXP-ENV-DC-069			Camera	21	609886	6081850	609888	6081851	-2	-1	2	77		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	13:12:12	6772	BP23MVEXP-ENV-DC-069			Camera	21	609888	6081852	609888	6081851	0	1	1	-176		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	13:12:42	6773	BP23MVEXP-ENV-DC-069			Camera	21	609891	6081854	609888	6081851	3	3	4	-134		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	13:13:44	6774	BP23MVEXP-ENV-DC-069			Camera	21	609896	6081856	609888	6081851	8	5	9	-123		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	13:14:26	6775	BP23MVEXP-ENV-DC-069			Camera	21	609900	6081858	609888	6081851	12	7	14	-123		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	13:15:09	6776	BP23MVEXP-ENV-DC-069			Camera	21	609904	6081860	609888	6081851	16	9	18	-121		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	13:15:43	6777	BP23MVEXP-ENV-DC-069			Camera	21	609907	6081861	609888	6081851	19	10	22	-119		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	13:16:59	6778	BP23MVEXP-ENV-DC-069			Camera	21	609914	6081865	609888	6081851	26	14	30	-118		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
11-Aug-2023	13:18:10	6779	BP23MVEXP-ENV-DC-069			Camera	21	609921	6081869	609888	6081851	33	18	37	-118		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
11-Aug-2023	13:18:57	6780	BP23MVEXP-ENV-DC-069			Camera	21	609925	6081871	609888	6081851	37	20	42	-118		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
11-Aug-2023	13:20:01	6781	BP23MVEXP-ENV-DC-069			Camera	21	609930	6081874	609888	6081851	42	23	48	-118		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
11-Aug-2023	13:20:20	6782	BP23MVEXP-ENV-DC-069			Camera	21	609932	6081875	609888	6081851	44	24	49	-118		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
11-Aug-2023	14:58:46	6783	BP23MVEXP-ENV-DC-067A			Camera	29	611744	6082753	611697	6082732	47	20	51	-113		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
11-Aug-2023	14:59:43	6784	BP23MVEXP-ENV-DC-067A			Camera	29	611743	6082753	611697	6082732	46	21	51	-114		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
11-Aug-2023	15:00:49	6785	BP23MVEXP-ENV-DC-067A			Camera	29	611738	6082751	611697	6082732	41	18	45	-114		(Corr'd Nav, Kongsberg 14208, img#55) (B) (T.A)
11-Aug-2023	15:01:29	6786	BP23MVEXP-ENV-DC-067A			Camera	29	611736	6082750	611697	6082732	39	18	43	-114		(Corr'd Nav, Kongsberg 14208, img#56) (B) (T.A)
11-Aug-2023	15:02:35	6787	BP23MVEXP-ENV-DC-067A			Camera	29	611734	6082748	611697	6082732	37	16	40	-113		(Corr'd Nav, Kongsberg 14208, img#57) (B) (T.A)
11-Aug-2023	15:03:10	6788	BP23MVEXP-ENV-DC-067A			Camera	29	611731	6082747	611697	6082732	34	15	37	-113		(Corr'd Nav, Kongsberg 14208, img#58) (B) (T.A)
11-Aug-2023	15:03:31	6789	BP23MVEXP-ENV-DC-067A			Camera	29	611727	6082745	611697	6082732	30	13	32	-114		(Corr'd Nav, Kongsberg 14208, img#59) (B) (T.A)
11-Aug-2023	15:04:19	6790	BP23MVEXP-ENV-DC-067A			Camera	29	611730	6082746	611697	6082732	32	14	35	-113		(Corr'd Nav, Kongsberg 14208, img#60) (B) (T.A)
11-Aug-2023	15:04:51	6791	BP23MVEXP-ENV-DC-067A			Camera	29	611727	6082745	611697	6082732	29	12	32	-113		(Corr'd Nav, Kongsberg 14208, img#61) (B) (T.A)
11-Aug-2023	15:05:14	6792	BP23MVEXP-ENV-DC-067A			Camera	29	611727	6082745	611697	6082732	30	12	32	-112		(Corr'd Nav, Kongsberg 14208, img#62) (B) (T.A)
11-Aug-2023	15:06:15	6793	BP23MVEXP-ENV-DC-067A			Camera	29	611723	6082743	611697	6082732	26	11	28	-113		(Corr'd Nav, Kongsberg 14208, img#63) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	15:07:43	6794	BP23MVEXP-ENV-DC-067A			Camera	29	611718	6082742	611697	6082732	21	9	23	-114		(Corr'd Nav, Kongsberg 14208, img#64) (B) (T.A)
11-Aug-2023	15:11:28	6795	BP23MVEXP-ENV-DC-067A			Camera	29	611711	6082735	611697	6082732	13	3	14	-102		(Corr'd Nav, Kongsberg 14208, img#65) (B) (T.A)
11-Aug-2023	15:11:38	6796	BP23MVEXP-ENV-DC-067A			Camera	29	611710	6082735	611697	6082732	13	3	13	-101		(Corr'd Nav, Kongsberg 14208, img#66) (B) (T.A)
11-Aug-2023	15:11:47	6797	BP23MVEXP-ENV-DC-067A			Camera	29	611709	6082735	611697	6082732	12	2	12	-100		(Corr'd Nav, Kongsberg 14208, img#67) (B) (T.A)
11-Aug-2023	15:15:10	6798	BP23MVEXP-ENV-DC-067A			Camera	29	611699	6082731	611697	6082732	2	-2	3	-47		(Corr'd Nav, Kongsberg 14208, img#68) (B) (T.A)
11-Aug-2023	15:16:50	6799	BP23MVEXP-ENV-DC-067A			Camera	29	611694	6082729	611697	6082732	-3	-4	5	39		(Corr'd Nav, Kongsberg 14208, img#69) (B) (T.A)
11-Aug-2023	15:17:40	6800	BP23MVEXP-ENV-DC-067A			Camera	29	611692	6082728	611697	6082732	-6	-4	7	54		(Corr'd Nav, Kongsberg 14208, img#70) (B) (T.A)
11-Aug-2023	15:18:01	6801	BP23MVEXP-ENV-DC-067A			Camera	29	611691	6082728	611697	6082732	-7	-4	8	59		(Corr'd Nav, Kongsberg 14208, img#71) (B) (T.A)
11-Aug-2023	15:18:26	6802	BP23MVEXP-ENV-DC-067A			Camera	29	611690	6082728	611697	6082732	-8	-5	9	57		(Corr'd Nav, Kongsberg 14208, img#72) (B) (T.A)
11-Aug-2023	15:19:13	6803	BP23MVEXP-ENV-DC-067A			Camera	29	611687	6082726	611697	6082732	-10	-7	12	56		(Corr'd Nav, Kongsberg 14208, img#73) (B) (T.A)
11-Aug-2023	15:20:07	6804	BP23MVEXP-ENV-DC-067A			Camera	29	611685	6082724	611697	6082732	-13	-8	15	57		(Corr'd Nav, Kongsberg 14208, img#74) (B) (T.A)
11-Aug-2023	15:20:50	6805	BP23MVEXP-ENV-DC-067A			Camera	29	611684	6082723	611697	6082732	-14	-9	17	57		(Corr'd Nav, Kongsberg 14208, img#75) (B) (T.A)
11-Aug-2023	15:20:59	6806	BP23MVEXP-ENV-DC-067A			Camera	29	611683	6082723	611697	6082732	-14	-9	17	57		(Corr'd Nav, Kongsberg 14208, img#76) (B) (T.A)
11-Aug-2023	15:21:21	6807	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082721	611697	6082732	-16	-11	20	55		(Corr'd Nav, Kongsberg 14208, img#77) (B) (T.A)
11-Aug-2023	15:21:43	6808	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082721	611697	6082732	-16	-12	20	55		(Corr'd Nav, Kongsberg 14208, img#78) (B) (T.A)
11-Aug-2023	15:21:57	6809	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082721	611697	6082732	-17	-11	20	56		(Corr'd Nav, Kongsberg 14208, img#79) (B) (T.A)
11-Aug-2023	15:22:28	6810	BP23MVEXP-ENV-DC-067A			Camera	29	611678	6082721	611697	6082732	-19	-12	22	59		(Corr'd Nav, Kongsberg 14208, img#80) (B) (T.A)
11-Aug-2023	15:25:10	6811	BP23MVEXP-ENV-DC-067A			Camera	29	611671	6082718	611697	6082732	-26	-15	30	60		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	15:25:26	6812	BP23MVEXP-ENV-DC-067A			Camera	29	611671	6082717	611697	6082732	-27	-16	31	60		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	15:25:36	6813	BP23MVEXP-ENV-DC-067A			Camera	29	611670	6082717	611697	6082732	-27	-16	31	60		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	15:26:11	6814	BP23MVEXP-ENV-DC-067A			Camera	29	611668	6082715	611697	6082732	-29	-17	34	59		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	15:26:40	6815	BP23MVEXP-ENV-DC-067A			Camera	29	611668	6082715	611697	6082732	-30	-17	34	60		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	15:27:15	6816	BP23MVEXP-ENV-DC-067A			Camera	29	611666	6082714	611697	6082732	-32	-19	37	60		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	15:27:48	6817	BP23MVEXP-ENV-DC-067A			Camera	29	611664	6082713	611697	6082732	-33	-19	38	60		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	15:28:21	6818	BP23MVEXP-ENV-DC-067A			Camera	29	611662	6082713	611697	6082732	-35	-20	40	61		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	15:29:35	6819	BP23MVEXP-ENV-DC-067A			Camera	29	611659	6082711	611697	6082732	-39	-21	44	61		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	15:30:27	6820	BP23MVEXP-ENV-DC-067A			Camera	29	611656	6082710	611697	6082732	-41	-22	47	61		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	15:36:34	6821	BP23MVEXP-ENV-DC-067A			Camera	29	611657	6082725	611697	6082732	-41	-7	41	80		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	15:37:48	6822	BP23MVEXP-ENV-DC-067A			Camera	29	611660	6082732	611697	6082732	-37	-1	37	89		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	15:38:34	6823	BP23MVEXP-ENV-DC-067A			Camera	29	611661	6082736	611697	6082732	-36	4	36	96		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	15:41:00	6824	BP23MVEXP-ENV-DC-067A			Camera	29	611666	6082750	611697	6082732	-31	17	36	119		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	15:44:46	6825	BP23MVEXP-ENV-DC-067A			Camera	29	611673	6082773	611697	6082732	-24	40	47	149		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	15:45:44	6826	BP23MVEXP-ENV-DC-067A			Camera	29	611674	6082779	611697	6082732	-23	46	52	153		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	15:47:39	6827	BP23MVEXP-ENV-DC-067A			Camera	29	611676	6082778	611697	6082732	-21	46	50	155		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	15:49:25	6828	BP23MVEXP-ENV-DC-067A			Camera	29	611677	6082772	611697	6082732	-21	40	45	153		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	15:51:11	6829	BP23MVEXP-ENV-DC-067A			Camera	29	611678	6082767	611697	6082732	-19	35	40	151		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	15:51:50	6830	BP23MVEXP-ENV-DC-067A			Camera	29	611679	6082765	611697	6082732	-19	33	38	150		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	15:54:52	6831	BP23MVEXP-ENV-DC-067A			Camera	29	611681	6082756	611697	6082732	-17	24	29	145		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	16:00:48	6832	BP23MVEXP-ENV-DC-067A			Camera	29	611684	6082739	611697	6082732	-13	6	14	116		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	16:01:11	6833	BP23MVEXP-ENV-DC-067A			Camera	29	611685	6082738	611697	6082732	-12	5	13	113		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	16:01:31	6834	BP23MVEXP-ENV-DC-067A			Camera	29	611685	6082736	611697	6082732	-12	4	13	108		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	16:01:48	6835	BP23MVEXP-ENV-DC-067A			Camera	29	611686	6082736	611697	6082732	-12	4	12	107		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	16:02:27	6836	BP23MVEXP-ENV-DC-067A			Camera	29	611686	6082734	611697	6082732	-11	1	11	95		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	16:02:35	6837	BP23MVEXP-ENV-DC-067A			Camera	29	611686	6082733	611697	6082732	-11	1	11	94		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	16:03:41	6838	BP23MVEXP-ENV-DC-067A			Camera	29	611687	6082730	611697	6082732	-11	-2	11	77		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	16:06:31	6839	BP23MVEXP-ENV-DC-067A			Camera	29	611689	6082722	611697	6082732	-9	-10	13	40		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	16:06:48	6840	BP23MVEXP-ENV-DC-067A			Camera	29	611689	6082722	611697	6082732	-8	-11	13	38		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	16:08:24	6841	BP23MVEXP-ENV-DC-067A			Camera	29	611690	6082716	611697	6082732	-8	-17	18	25		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	16:09:56	6842	BP23MVEXP-ENV-DC-067A			Camera	29	611691	6082711	611697	6082732	-6	-21	22	17		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	16:11:47	6843	BP23MVEXP-ENV-DC-067A			Camera	29	611692	6082706	611697	6082732	-5	-26	27	11		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	16:12:28	6844	BP23MVEXP-ENV-DC-067A			Camera	29	611693	6082704	611697	6082732	-5	-29	29	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	16:13:51	6845	BP23MVEXP-ENV-DC-067A			Camera	29	611693	6082700	611697	6082732	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	16:14:07	6846	BP23MVEXP-ENV-DC-067A			Camera	29	611693	6082700	611697	6082732	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	16:15:07	6847	BP23MVEXP-ENV-DC-067A			Camera	29	611695	6082696	611697	6082732	-3	-36	36	4		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	16:15:55	6848	BP23MVEXP-ENV-DC-067A			Camera	29	611695	6082693	611697	6082732	-2	-39	39	4		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	16:16:32	6849	BP23MVEXP-ENV-DC-067A			Camera	29	611695	6082692	611697	6082732	-2	-40	40	3		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	16:17:08	6850	BP23MVEXP-ENV-DC-067A			Camera	29	611696	6082691	611697	6082732	-1	-42	42	2		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	17:03:40	6851	BP23MVEXP-ENV-DC-067B			Camera	30	611717	6082689	611697	6082732	20	-44	48	-24		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	17:05:02	6852	BP23MVEXP-ENV-DC-067B			Camera	30	611718	6082689	611697	6082732	21	-44	48	-25		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	17:06:37	6853	BP23MVEXP-ENV-DC-067B			Camera	30	611715	6082695	611697	6082732	18	-37	41	-25		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	17:06:57	6854	BP23MVEXP-ENV-DC-067B			Camera	30	611714	6082697	611697	6082732	17	-35	39	-26		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	17:07:38	6855	BP23MVEXP-ENV-DC-067B			Camera	30	611712	6082701	611697	6082732	15	-31	34	-25		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	17:08:27	6856	BP23MVEXP-ENV-DC-067B			Camera	30	611709	6082706	611697	6082732	12	-27	29	-24		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	17:08:36	6857	BP23MVEXP-ENV-DC-067B			Camera	30	611709	6082707	611697	6082732	12	-26	28	-24		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	17:09:29	6858	BP23MVEXP-ENV-DC-067B			Camera	30	611706	6082712	611697	6082732	9	-21	22	-23		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	17:10:27	6859	BP23MVEXP-ENV-DC-067B			Camera	29	611703	6082718	611697	6082732	6	-15	16	-21		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	17:11:13	6860	BP23MVEXP-ENV-DC-067B			Camera	29	611701	6082723	611697	6082732	3	-10	10	-18		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	17:12:04	6861	BP23MVEXP-ENV-DC-067B			Camera	29	611698	6082728	611697	6082732	0	-5	5	-2		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	17:12:32	6862	BP23MVEXP-ENV-DC-067B			Camera	29	611696	6082731	611697	6082732	-1	-2	2	29		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	17:12:54	6863	BP23MVEXP-ENV-DC-067B			Camera	29	611695	6082733	611697	6082732	-2	0	2	96		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	17:13:53	6864	BP23MVEXP-ENV-DC-067B			Camera	29	611693	6082738	611697	6082732	-5	5	7	139		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	17:14:53	6865	BP23MVEXP-ENV-DC-067B			Camera	29	611691	6082743	611697	6082732	-7	11	13	147		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	17:15:31	6866	BP23MVEXP-ENV-DC-067B			Camera	29	611689	6082746	611697	6082732	-9	14	16	148		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	17:16:25	6867	BP23MVEXP-ENV-DC-067B			Camera	29	611687	6082751	611697	6082732	-10	19	22	152		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	17:17:52	6868	BP23MVEXP-ENV-DC-067B			Camera	29	611683	6082760	611697	6082732	-15	27	31	152		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	17:18:14	6869	BP23MVEXP-ENV-DC-067B			Camera	29	611682	6082762	611697	6082732	-16	29	33	152		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	17:19:02	6870	BP23MVEXP-ENV-DC-067B			Camera	29	611679	6082766	611697	6082732	-18	33	38	152		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	17:19:46	6871	BP23MVEXP-ENV-DC-067B			Camera	29	611678	6082770	611697	6082732	-20	37	42	152		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	17:40:04	6872	BP23MVEXP-ENV-DC-067B			Camera	29	611658	6082714	611697	6082732	-40	-18	44	65		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	17:40:12	6873	BP23MVEXP-ENV-DC-067B			Camera	29	611659	6082715	611697	6082732	-39	-18	43	65		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	17:40:23	6874	BP23MVEXP-ENV-DC-067B			Camera	29	611660	6082715	611697	6082732	-38	-17	42	66		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	17:40:47	6875	BP23MVEXP-ENV-DC-067B			Camera	29	611662	6082716	611697	6082732	-35	-16	39	65		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	17:41:34	6876	BP23MVEXP-ENV-DC-067B			Camera	29	611667	6082718	611697	6082732	-31	-14	34	65		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	17:42:56	6877	BP23MVEXP-ENV-DC-067B			Camera	29	611674	6082722	611697	6082732	-23	-11	26	66		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	17:43:33	6878	BP23MVEXP-ENV-DC-067B			Camera	29	611677	6082723	611697	6082732	-20	-9	22	66		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	17:43:56	6879	BP23MVEXP-ENV-DC-067B			Camera	29	611680	6082724	611697	6082732	-18	-8	19	66		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	17:44:36	6880	BP23MVEXP-ENV-DC-067B			Camera	29	611683	6082726	611697	6082732	-15	-6	16	67		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	17:45:13	6881	BP23MVEXP-ENV-DC-067B			Camera	29	611686	6082728	611697	6082732	-11	-4	12	69		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	17:45:20	6882	BP23MVEXP-ENV-DC-067B			Camera	29	611687	6082728	611697	6082732	-11	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	17:45:55	6883	BP23MVEXP-ENV-DC-067B			Camera	29	611691	6082730	611697	6082732	-7	-2	7	73		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	17:46:09	6884	BP23MVEXP-ENV-DC-067B			Camera	29	611692	6082731	611697	6082732	-5	-1	6	76		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	17:46:21	6885	BP23MVEXP-ENV-DC-067B			Camera	29	611693	6082732	611697	6082732	-4	-1	5	80		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	17:46:56	6886	BP23MVEXP-ENV-DC-067B			Camera	29	611696	6082733	611697	6082732	-1	0	1	110		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	17:47:04	6887	BP23MVEXP-ENV-DC-067B			Camera	29	611697	6082733	611697	6082732	0	1	1	149		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	17:47:54	6888	BP23MVEXP-ENV-DC-067B			Camera	29	611701	6082736	611697	6082732	4	3	5	-128		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	17:48:28	6889	BP23MVEXP-ENV-DC-067B			Camera	29	611704	6082737	611697	6082732	7	5	9	-124		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	17:49:18	6890	BP23MVEXP-ENV-DC-067B			Camera	29	611708	6082739	611697	6082732	11	7	13	-122		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	17:50:54	6891	BP23MVEXP-ENV-DC-067B			Camera	29	611718	6082743	611697	6082732	21	11	23	-118		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	17:51:13	6892	BP23MVEXP-ENV-DC-067B			Camera	29	611719	6082744	611697	6082732	22	12	25	-118		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	17:52:22	6893	BP23MVEXP-ENV-DC-067B			Camera	29	611726	6082748	611697	6082732	28	15	32	-119		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2023	17:52:44	6894	BP23MVEXP-ENV-DC-067B			Camera	29	611727	6082749	611697	6082732	30	16	34	-119		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	17:54:27	6895	BP23MVEXP-ENV-DC-067B			Camera	29	611737	6082754	611697	6082732	39	21	45	-118		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	17:54:47	6896	BP23MVEXP-ENV-DC-067B			Camera	29	611739	6082755	611697	6082732	41	22	47	-118		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	20:50:04	6897	BP23MVEXP-ENV-DC-125			Camera	82	622032	6103882	622083	6103872	-51	11	52	102		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	20:54:32	6898	BP23MVEXP-ENV-DC-125			Camera	82	622029	6103882	622083	6103872	-54	10	55	101		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	20:55:58	6899	BP23MVEXP-ENV-DC-125			Camera	82	622037	6103882	622083	6103872	-46	10	47	102		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	20:56:17	6900	BP23MVEXP-ENV-DC-125			Camera	82	622039	6103881	622083	6103872	-44	9	45	102		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	20:56:55	6901	BP23MVEXP-ENV-DC-125			Camera	82	622044	6103880	622083	6103872	-39	8	40	102		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	20:57:17	6902	BP23MVEXP-ENV-DC-125			Camera	82	622046	6103880	622083	6103872	-37	8	37	102		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	20:57:42	6903	BP23MVEXP-ENV-DC-125			Camera	82	622049	6103879	622083	6103872	-34	7	35	102		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	20:58:21	6904	BP23MVEXP-ENV-DC-125			Camera	82	622053	6103879	622083	6103872	-30	7	31	103		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	20:58:48	6905	BP23MVEXP-ENV-DC-125			Camera	82	622056	6103878	622083	6103872	-27	6	28	103		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	20:59:17	6906	BP23MVEXP-ENV-DC-125			Camera	82	622059	6103878	622083	6103872	-24	6	25	104		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	20:59:44	6907	BP23MVEXP-ENV-DC-125			Camera	82	622062	6103877	622083	6103872	-21	5	22	104		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	21:00:28	6908	BP23MVEXP-ENV-DC-125			Camera	82	622066	6103876	622083	6103872	-17	4	17	104		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	21:01:30	6909	BP23MVEXP-ENV-DC-125			Camera	82	622072	6103875	622083	6103872	-11	3	11	106		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	21:02:13	6910	BP23MVEXP-ENV-DC-125			Camera	82	622077	6103873	622083	6103872	-6	1	6	104		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	21:02:40	6911	BP23MVEXP-ENV-DC-125			Camera	82	622080	6103872	622083	6103872	-3	0	3	95		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	21:02:57	6912	BP23MVEXP-ENV-DC-125			Camera	82	622081	6103872	622083	6103872	-2	0	2	86		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	21:03:07	6913	BP23MVEXP-ENV-DC-125			Camera	82	622082	6103872	622083	6103872	-1	0	1	74		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	21:03:15	6914	BP23MVEXP-ENV-DC-125			Camera	82	622083	6103872	622083	6103872	0	0	0	-12		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	21:04:43	6915	BP23MVEXP-ENV-DC-125			Camera	82	622092	6103870	622083	6103872	9	-2	9	-79		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	21:05:57	6916	BP23MVEXP-ENV-DC-125			Camera	82	622099	6103868	622083	6103872	17	-4	17	-78		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	21:07:00	6917	BP23MVEXP-ENV-DC-125			Camera	82	622106	6103867	622083	6103872	23	-5	23	-79		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	21:08:17	6918	BP23MVEXP-ENV-DC-125			Camera	82	622114	6103866	622083	6103872	31	-6	31	-79		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	21:08:44	6919	BP23MVEXP-ENV-DC-125			Camera	82	622116	6103865	622083	6103872	33	-7	34	-79		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	21:24:53	6920	BP23MVEXP-ENV-DC-125			Camera	82	622093	6103919	622083	6103872	10	47	48	-168		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	21:25:49	6921	BP23MVEXP-ENV-DC-125			Camera	82	622091	6103916	622083	6103872	8	44	45	-170		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	21:26:30	6922	BP23MVEXP-ENV-DC-125			Camera	82	622090	6103913	622083	6103872	7	41	41	-170		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	21:27:07	6923	BP23MVEXP-ENV-DC-125			Camera	82	622090	6103908	622083	6103872	7	36	37	-169		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	21:27:28	6924	BP23MVEXP-ENV-DC-125			Camera	82	622090	6103906	622083	6103872	7	34	35	-168		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	21:28:50	6925	BP23MVEXP-ENV-DC-125			Camera	82	622089	6103896	622083	6103872	6	24	25	-166		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	21:29:46	6926	BP23MVEXP-ENV-DC-125			Camera	82	622087	6103891	622083	6103872	4	19	19	-167		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	21:31:14	6927	BP23MVEXP-ENV-DC-125				82	622085	6103883	622083	6103872	2	11	11	-170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A) Fix no photo
11-Aug-2023	21:31:27	6928	BP23MVEXP-ENV-DC-125			Camera	82	622085	6103882	622083	6103872	2	10	10	-170		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	21:32:03	6929	BP23MVEXP-ENV-DC-125			Camera	82	622084	6103878	622083	6103872	1	6	6	-172		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	21:35:05	6930	BP23MVEXP-ENV-DC-125			Camera	82	622080	6103859	622083	6103872	-3	-13	13	14		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	21:35:22	6931	BP23MVEXP-ENV-DC-125			Camera	82	622079	6103857	622083	6103872	-4	-15	15	14		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	21:36:44	6932	BP23MVEXP-ENV-DC-125			Camera	82	622077	6103850	622083	6103872	-6	-22	23	16		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	21:38:01	6933	BP23MVEXP-ENV-DC-125			Camera	82	622075	6103842	622083	6103872	-8	-30	31	15		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	21:38:30	6934	BP23MVEXP-ENV-DC-125			Camera	82	622075	6103839	622083	6103872	-8	-34	34	14		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	21:38:41	6935	BP23MVEXP-ENV-DC-125			Camera	82	622074	6103837	622083	6103872	-9	-35	36	14		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	21:38:50	6936	BP23MVEXP-ENV-DC-125			Camera	82	622074	6103836	622083	6103872	-9	-36	37	14		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	21:40:24	6937	BP23MVEXP-ENV-DC-125			Camera	82	622072	6103827	622083	6103872	-11	-45	46	14		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	22:45:10	6938	BP23MVEXP-ENV-DC-124			Camera	89	623041	6107650	623089	6107641	-48	9	49	100		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
11-Aug-2023	22:46:56	6939	BP23MVEXP-ENV-DC-124			Camera	89	623045	6107649	623089	6107641	-44	8	45	100		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
11-Aug-2023	22:47:26	6940	BP23MVEXP-ENV-DC-124			Camera	89	623047	6107649	623089	6107641	-42	8	43	101		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
11-Aug-2023	22:47:43	6941	BP23MVEXP-ENV-DC-124			Camera	89	623049	6107649	623089	6107641	-40	8	41	101		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
11-Aug-2023	22:48:32	6942	BP23MVEXP-ENV-DC-124			Camera	88	623055	6107648	623089	6107641	-34	7	35	102		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
11-Aug-2023	22:49:00	6943	BP23MVEXP-ENV-DC-124			Camera	88	623059	6107647	623089	6107641	-30	6	31	101		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
11-Aug-2023	22:49:23	6944	BP23MVEXP-ENV-DC-124			Camera	89	623061	6107646	623089	6107641	-28	5	28	100		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
11-Aug-2023	22:49:47	6945	BP23MVEXP-ENV-DC-124			Camera	88	623064	6107645	623089	6107641	-25	4	25	99		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
11-Aug-2023	22:50:13	6946	BP23MVEXP-ENV-DC-124			Camera	88	623066	6107644	623089	6107641	-23	3	23	97		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
11-Aug-2023	22:50:35	6947	BP23MVEXP-ENV-DC-124			Camera	88	623068	6107644	623089	6107641	-21	3	21	97		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
11-Aug-2023	22:51:01	6948	BP23MVEXP-ENV-DC-124			Camera	88	623070	6107643	623089	6107641	-19	2	19	96		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
11-Aug-2023	22:51:16	6949	BP23MVEXP-ENV-DC-124			Camera	88	623072	6107643	623089	6107641	-17	2	17	96		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
11-Aug-2023	22:52:13	6950	BP23MVEXP-ENV-DC-124			Camera	88	623078	6107640	623089	6107641	-11	-1	11	87		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
11-Aug-2023	22:52:37	6951	BP23MVEXP-ENV-DC-124			Camera	88	623080	6107640	623089	6107641	-9	-1	9	83		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
11-Aug-2023	22:53:11	6952	BP23MVEXP-ENV-DC-124			Camera	88	623083	6107639	623089	6107641	-6	-2	6	74		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
11-Aug-2023	22:53:29	6953	BP23MVEXP-ENV-DC-124			Camera	88	623085	6107639	623089	6107641	-4	-2	4	61		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
11-Aug-2023	22:54:08	6954	BP23MVEXP-ENV-DC-124			Camera	88	623089	6107638	623089	6107641	0	-3	3	-2		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
11-Aug-2023	22:54:45	6955	BP23MVEXP-ENV-DC-124			Camera	88	623093	6107637	623089	6107641	4	-4	5	-46		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
11-Aug-2023	22:55:21	6956	BP23MVEXP-ENV-DC-124			Camera	88	623097	6107637	623089	6107641	8	-4	9	-63		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
11-Aug-2023	22:55:45	6957	BP23MVEXP-ENV-DC-124			Camera	88	623099	6107636	623089	6107641	10	-5	11	-65		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
11-Aug-2023	22:56:39	6958	BP23MVEXP-ENV-DC-124			Camera	88	623105	6107635	623089	6107641	16	-6	17	-68		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
11-Aug-2023	22:57:01	6959	BP23MVEXP-ENV-DC-124			Camera	88	623107	6107634	623089	6107641	18	-7	19	-69		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
11-Aug-2023	22:57:46	6960	BP23MVEXP-ENV-DC-124			Camera	88	623111	6107634	623089	6107641	22	-7	23	-72		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
11-Aug-2023	22:58:04	6961	BP23MVEXP-ENV-DC-124			Camera	88	623112	6107634	623089	6107641	24	-7	25	-72		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
11-Aug-2023	22:59:44	6962	BP23MVEXP-ENV-DC-124			Camera	88	623123	6107632	623089	6107641	34	-9	35	-75		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
11-Aug-2023	23:00:08	6963	BP23MVEXP-ENV-DC-124			Camera	88	623125	6107631	623089	6107641	36	-10	38	-75		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
11-Aug-2023	23:01:04	6964	BP23MVEXP-ENV-DC-124			Camera	88	623131	6107630	623089	6107641	42	-11	44	-75		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
11-Aug-2023	23:01:36	6965	BP23MVEXP-ENV-DC-124			Camera	88	623135	6107629	623089	6107641	46	-12	48	-75		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
11-Aug-2023	23:09:15	6966	BP23MVEXP-ENV-DC-124			Camera	88	623078	6107591	623089	6107641	-11	-51	52	12		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
11-Aug-2023	23:10:30	6967	BP23MVEXP-ENV-DC-124			Camera	88	623079	6107594	623089	6107641	-10	-47	48	12		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
11-Aug-2023	23:11:03	6968	BP23MVEXP-ENV-DC-124			Camera	88	623080	6107598	623089	6107641	-9	-43	44	11		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
11-Aug-2023	23:11:42	6969	BP23MVEXP-ENV-DC-124			Camera	88	623082	6107602	623089	6107641	-7	-39	40	10		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
11-Aug-2023	23:13:30	6970	BP23MVEXP-ENV-DC-124			Camera	88	623084	6107613	623089	6107641	-5	-28	28	10		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
11-Aug-2023	23:14:33	6971	BP23MVEXP-ENV-DC-124			Camera	88	623085	6107619	623089	6107641	-4	-22	22	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
11-Aug-2023	23:15:10	6972	BP23MVEXP-ENV-DC-124			Camera	88	623086	6107623	623089	6107641	-3	-18	19	10		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
11-Aug-2023	23:16:50	6973	BP23MVEXP-ENV-DC-124			Camera	88	623088	6107632	623089	6107641	-1	-9	9	6		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
11-Aug-2023	23:17:54	6974	BP23MVEXP-ENV-DC-124			Camera	88	623090	6107639	623089	6107641	1	-2	2	-21		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
11-Aug-2023	23:18:34	6975	BP23MVEXP-ENV-DC-124			Camera	89	623091	6107643	623089	6107641	2	2	3	-139		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
11-Aug-2023	23:19:17	6976	BP23MVEXP-ENV-DC-124			Camera	89	623092	6107648	623089	6107641	3	7	8	-158		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
11-Aug-2023	23:19:43	6977	BP23MVEXP-ENV-DC-124			Camera	89	623092	6107650	623089	6107641	3	9	10	-161		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
11-Aug-2023	23:21:12	6978	BP23MVEXP-ENV-DC-124			Camera	89	623094	6107659	623089	6107641	5	18	18	-166		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
11-Aug-2023	23:22:02	6979	BP23MVEXP-ENV-DC-124			Camera	89	623095	6107664	623089	6107641	6	23	23	-166		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
11-Aug-2023	23:22:56	6980	BP23MVEXP-ENV-DC-124			Camera	89	623096	6107669	623089	6107641	7	28	29	-166		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
11-Aug-2023	23:23:57	6981	BP23MVEXP-ENV-DC-124			Camera	89	623098	6107675	623089	6107641	9	34	35	-166		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
11-Aug-2023	23:24:28	6982	BP23MVEXP-ENV-DC-124			Camera	89	623098	6107679	623089	6107641	9	38	39	-166		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
11-Aug-2023	23:25:20	6983	BP23MVEXP-ENV-DC-124			Camera	89	623099	6107684	623089	6107641	10	43	44	-167		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
11-Aug-2023	23:25:40	6984	BP23MVEXP-ENV-DC-124			Camera	89	623100	6107686	623089	6107641	11	45	46	-167		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
11-Aug-2023	23:25:58	6985	BP23MVEXP-ENV-DC-124			Camera	89	623099	6107687	623089	6107641	10	46	47	-167		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	00:30:21	6986	BP23MVEXP-ENV-DC-123			Camera	93	624140	6111562	624150	6111614	-10	-52	53	11		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	00:34:38	6987	BP23MVEXP-ENV-DC-123			Camera	93	624139	6111562	624150	6111614	-11	-52	53	11		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	00:35:38	6988	BP23MVEXP-ENV-DC-123			Camera	93	624140	6111564	624150	6111614	-10	-50	51	12		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	00:36:54	6989	BP23MVEXP-ENV-DC-123			Camera	93	624142	6111572	624150	6111614	-8	-42	43	11		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	00:37:16	6990	BP23MVEXP-ENV-DC-123			Camera	93	624142	6111574	624150	6111614	-8	-40	41	11		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	00:37:56	6991	BP23MVEXP-ENV-DC-123			Camera	93	624144	6111578	624150	6111614	-6	-36	36	10		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	00:38:44	6992	BP23MVEXP-ENV-DC-123			Camera	93	624146	6111584	624150	6111614	-4	-30	31	8		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	00:39:15	6993	BP23MVEXP-ENV-DC-123			Camera	93	624146	6111587	624150	6111614	-4	-27	28	7		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	00:39:46	6994	BP23MVEXP-ENV-DC-123			Camera	93	624147	6111590	624150	6111614	-3	-24	24	7		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	00:40:05	6995	BP23MVEXP-ENV-DC-123			Camera	93	624148	6111592	624150	6111614	-2	-22	23	6		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	00:40:42	6996	BP23MVEXP-ENV-DC-123			Camera	93	624148	6111595	624150	6111614	-2	-19	19	5		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	00:41:26	6997	BP23MVEXP-ENV-DC-123			Camera	93	624149	6111600	624150	6111614	-1	-14	14	3		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	00:42:31	6998	BP23MVEXP-ENV-DC-123			Camera	93	624151	6111606	624150	6111614	1	-8	8	-5		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	00:43:11	6999	BP23MVEXP-ENV-DC-123			Camera	93	624152	6111610	624150	6111614	2	-4	4	-23		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	00:43:43	7000	BP23MVEXP-ENV-DC-123			Camera	93	624153	6111613	624150	6111614	3	-1	3	-75		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	00:44:21	7001	BP23MVEXP-ENV-DC-123			Camera	93	624154	6111617	624150	6111614	4	3	5	-130		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	00:44:58	7002	BP23MVEXP-ENV-DC-123			Camera	93	624155	6111621	624150	6111614	5	7	8	-144		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	00:45:33	7003	BP23MVEXP-ENV-DC-123			Camera	93	624155	6111624	624150	6111614	5	10	11	-152		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	00:45:51	7004	BP23MVEXP-ENV-DC-123			Camera	93	624156	6111626	624150	6111614	6	12	13	-155		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	00:46:10	7005	BP23MVEXP-ENV-DC-123			Camera	93	624156	6111628	624150	6111614	6	14	15	-157		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	00:46:46	7006	BP23MVEXP-ENV-DC-123			Camera	93	624157	6111631	624150	6111614	7	17	19	-159		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	00:47:31	7007	BP23MVEXP-ENV-DC-123			Camera	93	624158	6111635	624150	6111614	8	22	23	-160		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	00:47:55	7008	BP23MVEXP-ENV-DC-123			Camera	93	624158	6111638	624150	6111614	8	24	25	-161		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	00:48:48	7009	BP23MVEXP-ENV-DC-123			Camera	93	624160	6111644	624150	6111614	10	30	31	-162		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	00:50:38	7010	BP23MVEXP-ENV-DC-123			Camera	93	624162	6111655	624150	6111614	12	41	42	-163		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	00:51:42	7011	BP23MVEXP-ENV-DC-123			Camera	93	624164	6111661	624150	6111614	14	47	49	-164		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	01:00:16	7012	BP23MVEXP-ENV-DC-123			Camera	93	624200	6111603	624150	6111614	50	-11	51	-78		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	01:02:04	7013	BP23MVEXP-ENV-DC-123			Camera	93	624193	6111604	624150	6111614	43	-10	44	-77		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	01:02:32	7014	BP23MVEXP-ENV-DC-123			Camera	93	624191	6111605	624150	6111614	41	-9	42	-77		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	01:03:04	7015	BP23MVEXP-ENV-DC-123			Camera	93	624187	6111606	624150	6111614	37	-8	38	-77		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	01:03:27	7016	BP23MVEXP-ENV-DC-123			Camera	93	624185	6111606	624150	6111614	35	-8	36	-78		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	01:03:58	7017	BP23MVEXP-ENV-DC-123			Camera	93	624182	6111607	624150	6111614	32	-7	33	-78		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	01:04:46	7018	BP23MVEXP-ENV-DC-123			Camera	93	624177	6111608	624150	6111614	27	-6	27	-77		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	01:05:09	7019	BP23MVEXP-ENV-DC-123			Camera	93	624174	6111608	624150	6111614	24	-6	25	-77		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	01:05:58	7020	BP23MVEXP-ENV-DC-123			Camera	93	624170	6111610	624150	6111614	20	-4	20	-77		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	01:06:54	7021	BP23MVEXP-ENV-DC-123			Camera	93	624164	6111610	624150	6111614	14	-4	14	-76		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	01:08:06	7022	BP23MVEXP-ENV-DC-123			Camera	93	624156	6111612	624150	6111614	6	-2	6	-71		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	01:08:59	7023	BP23MVEXP-ENV-DC-123			Camera	93	624151	6111613	624150	6111614	1	-1	1	-35		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	01:09:39	7024	BP23MVEXP-ENV-DC-123			Camera	93	624146	6111614	624150	6111614	-4	0	4	88		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	01:10:28	7025	BP23MVEXP-ENV-DC-123			Camera	93	624141	6111615	624150	6111614	-9	1	9	97		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	01:11:47	7026	BP23MVEXP-ENV-DC-123			Camera	93	624133	6111617	624150	6111614	-17	3	17	100		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	01:12:33	7027	BP23MVEXP-ENV-DC-123			Camera	93	624128	6111617	624150	6111614	-22	3	22	99		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	01:13:06	7028	BP23MVEXP-ENV-DC-123			Camera	93	624125	6111618	624150	6111614	-25	4	26	99		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	01:13:27	7029	BP23MVEXP-ENV-DC-123			Camera	93	624123	6111619	624150	6111614	-27	5	28	99		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	01:14:17	7030	BP23MVEXP-ENV-DC-123			Camera	93	624118	6111620	624150	6111614	-32	6	33	101		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	01:15:10	7031	BP23MVEXP-ENV-DC-123			Camera	93	624113	6111621	624150	6111614	-37	7	38	101		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	01:16:04	7032	BP23MVEXP-ENV-DC-123			Camera	93	624107	6111622	624150	6111614	-43	8	44	101		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	01:16:22	7033	BP23MVEXP-ENV-DC-123			Camera	93	624105	6111623	624150	6111614	-45	9	46	101		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	01:16:39	7034	BP23MVEXP-ENV-DC-123			Camera	93	624104	6111623	624150	6111614	-46	9	47	101		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	02:16:06	7035	BP23MVEXP-ENV-DC-122			Camera	97	624621	6115454	624665	6115470	-44	-17	47	70		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	02:17:15	7036	BP23MVEXP-ENV-DC-122			Camera	97	624622	6115454	624665	6115470	-43	-16	46	70		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	02:17:45	7037	BP23MVEXP-ENV-DC-122			Camera	97	624624	6115454	624665	6115470	-41	-16	44	69		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	02:18:48	7038	BP23MVEXP-ENV-DC-122			Camera	97	624630	6115456	624665	6115470	-35	-14	38	68		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	02:19:12	7039	BP23MVEXP-ENV-DC-122			Camera	97	624632	6115457	624665	6115470	-33	-13	35	69		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	02:19:39	7040	BP23MVEXP-ENV-DC-122			Camera	97	624635	6115459	624665	6115470	-30	-11	32	69		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	02:20:48	7041	BP23MVEXP-ENV-DC-122			Camera	97	624642	6115461	624665	6115470	-23	-9	25	69		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	02:22:29	7042	BP23MVEXP-ENV-DC-122			Camera	97	624652	6115464	624665	6115470	-13	-6	14	67		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	02:23:49	7043	BP23MVEXP-ENV-DC-122			Camera	97	624659	6115467	624665	6115470	-6	-3	7	65		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	02:24:57	7044	BP23MVEXP-ENV-DC-122			Camera	97	624666	6115469	624665	6115470	1	-1	1	-50		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	02:25:32	7045	BP23MVEXP-ENV-DC-122			Camera	97	624669	6115470	624665	6115470	4	0	4	-95		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	02:25:54	7046	BP23MVEXP-ENV-DC-122			Camera	97	624671	6115471	624665	6115470	6	1	6	-101		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	02:26:39	7047	BP23MVEXP-ENV-DC-122			Camera	97	624676	6115473	624665	6115470	11	3	11	-104		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	02:27:16	7048	BP23MVEXP-ENV-DC-122			Camera	97	624679	6115474	624665	6115470	14	4	15	-106		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	02:27:57	7049	BP23MVEXP-ENV-DC-122			Camera	97	624684	6115475	624665	6115470	19	5	19	-106		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	02:28:39	7050	BP23MVEXP-ENV-DC-122			Camera	98	624687	6115477	624665	6115470	22	7	23	-107		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	02:29:22	7051	BP23MVEXP-ENV-DC-122			Camera	97	624692	6115478	624665	6115470	27	8	28	-107		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	02:29:44	7052	BP23MVEXP-ENV-DC-122			Camera	97	624693	6115479	624665	6115470	28	9	30	-107		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	02:30:10	7053	BP23MVEXP-ENV-DC-122			Camera	98	624696	6115479	624665	6115470	31	9	33	-107		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	02:31:46	7054	BP23MVEXP-ENV-DC-122			Camera	98	624706	6115483	624665	6115470	41	13	43	-108		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	02:32:04	7055	BP23MVEXP-ENV-DC-122			Camera	98	624708	6115484	624665	6115470	43	14	45	-108		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	02:32:36	7056	BP23MVEXP-ENV-DC-122			Camera	98	624710	6115484	624665	6115470	45	14	47	-108		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	02:33:03	7057	BP23MVEXP-ENV-DC-122			Camera	98	624713	6115486	624665	6115470	48	16	51	-108		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	02:33:26	7058	BP23MVEXP-ENV-DC-122			Camera	98	624714	6115487	624665	6115470	49	17	52	-109		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	02:42:31	7059	BP23MVEXP-ENV-DC-122			Camera	97	624649	6115512	624665	6115470	-16	42	45	159		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	02:42:43	7060	BP23MVEXP-ENV-DC-122			Camera	97	624649	6115511	624665	6115470	-16	41	44	159		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	02:43:18	7061	BP23MVEXP-ENV-DC-122			Camera	97	624650	6115508	624665	6115470	-15	38	41	159		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	02:43:59	7062	BP23MVEXP-ENV-DC-122			Camera	97	624652	6115505	624665	6115470	-13	36	38	160		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	02:44:34	7063	BP23MVEXP-ENV-DC-122			Camera	97	624654	6115502	624665	6115470	-12	32	34	160		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	02:45:36	7064	BP23MVEXP-ENV-DC-122			Camera	97	624656	6115496	624665	6115470	-9	26	28	160		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	02:45:47	7065	BP23MVEXP-ENV-DC-122			Camera	97	624656	6115495	624665	6115470	-9	25	26	160		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	02:46:34	7066	BP23MVEXP-ENV-DC-122			Camera	97	624658	6115489	624665	6115470	-7	19	21	160		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	02:47:43	7067	BP23MVEXP-ENV-DC-122			Camera	97	624660	6115481	624665	6115470	-5	11	12	157		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	02:48:45	7068	BP23MVEXP-ENV-DC-122			Camera	97	624662	6115474	624665	6115470	-3	4	5	143		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	02:49:43	7069	BP23MVEXP-ENV-DC-122			Camera	97	624663	6115469	624665	6115470	-2	-1	2	52		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	02:50:11	7070	BP23MVEXP-ENV-DC-122			Camera	98	624664	6115466	624665	6115470	-1	-4	4	17		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	02:50:17	7071	BP23MVEXP-ENV-DC-122			Camera	98	624664	6115466	624665	6115470	-1	-4	5	17		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	02:50:36	7072	BP23MVEXP-ENV-DC-122			Camera	98	624664	6115464	624665	6115470	-1	-6	6	7		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	02:51:16	7073	BP23MVEXP-ENV-DC-122			Camera	98	624665	6115460	624665	6115470	0	-10	10	0		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	02:51:33	7074	BP23MVEXP-ENV-DC-122			Camera	98	624666	6115459	624665	6115470	1	-11	11	-5		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	02:52:39	7075	BP23MVEXP-ENV-DC-122			Camera	98	624670	6115453	624665	6115470	5	-17	18	-16		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	02:52:56	7076	BP23MVEXP-ENV-DC-122			Camera	98	624671	6115451	624665	6115470	6	-19	20	-16		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	02:53:17	7077	BP23MVEXP-ENV-DC-122			Camera	98	624672	6115449	624665	6115470	7	-21	22	-18		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	02:53:37	7078	BP23MVEXP-ENV-DC-122			Camera	98	624672	6115447	624665	6115470	7	-23	24	-18		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	02:53:46	7079	BP23MVEXP-ENV-DC-122			Camera	98	624673	6115446	624665	6115470	8	-24	25	-18		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	02:54:44	7080	BP23MVEXP-ENV-DC-122			Camera	98	624674	6115441	624665	6115470	9	-29	31	-17		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	02:55:09	7081	BP23MVEXP-ENV-DC-122			Camera	98	624676	6115438	624665	6115470	11	-32	34	-19		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	02:55:26	7082	BP23MVEXP-ENV-DC-122			Camera	98	624676	6115437	624665	6115470	11	-33	35	-18		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	02:55:55	7083	BP23MVEXP-ENV-DC-122			Camera	98	624677	6115434	624665	6115470	12	-36	38	-19		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	02:56:31	7084	BP23MVEXP-ENV-DC-122			Camera	97	624678	6115431	624665	6115470	13	-39	41	-18		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	02:57:16	7085	BP23MVEXP-ENV-DC-122			Camera	98	624680	6115426	624665	6115470	15	-44	46	-19		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
12-Aug-2023	03:57:02	7086	BP23MVEXP-ENV-DC-121			Camera	97	623463	6119286	623511	6119299	-48	-13	49	75		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	03:58:24	7087	BP23MVEXP-ENV-DC-121			Camera	97	623464	6119287	623511	6119299	-47	-12	48	76		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	03:59:00	7088	BP23MVEXP-ENV-DC-121			Camera	97	623467	6119289	623511	6119299	-44	-10	45	77		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	03:59:43	7089	BP23MVEXP-ENV-DC-121			Camera	97	623472	6119290	623511	6119299	-39	-9	40	77		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	04:00:25	7090	BP23MVEXP-ENV-DC-121			Camera	97	623475	6119291	623511	6119299	-36	-8	37	77		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	04:01:21	7091	BP23MVEXP-ENV-DC-121			Camera	97	623481	6119293	623511	6119299	-30	-6	31	78		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	04:02:16	7092	BP23MVEXP-ENV-DC-121			Camera	97	623486	6119294	623511	6119299	-25	-5	25	79		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	04:03:13	7093	BP23MVEXP-ENV-DC-121			Camera	97	623491	6119296	623511	6119299	-20	-3	20	83		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	04:04:47	7094	BP23MVEXP-ENV-DC-121			Camera	97	623502	6119299	623511	6119299	-9	0	9	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	04:05:18	7095	BP23MVEXP-ENV-DC-121			Camera	97	623505	6119300	623511	6119299	-6	1	6	97		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	04:05:52	7096	BP23MVEXP-ENV-DC-121			Camera	97	623508	6119301	623511	6119299	-3	2	4	115		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	04:06:59	7097	BP23MVEXP-ENV-DC-121			Camera	97	623515	6119303	623511	6119299	4	4	6	-137		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	04:07:49	7098	BP23MVEXP-ENV-DC-121			Camera	97	623520	6119304	623511	6119299	9	5	11	-120		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	04:08:08	7099	BP23MVEXP-ENV-DC-121			Camera	97	623522	6119305	623511	6119299	11	6	12	-117		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	04:09:13	7100	BP23MVEXP-ENV-DC-121			Camera	97	623528	6119307	623511	6119299	17	8	19	-114		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	04:10:04	7101	BP23MVEXP-ENV-DC-121			Camera	97	623534	6119308	623511	6119299	23	9	25	-113		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	04:11:10	7102	BP23MVEXP-ENV-DC-121			Camera	97	623540	6119310	623511	6119299	29	11	31	-111		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	04:12:06	7103	BP23MVEXP-ENV-DC-121			Camera	97	623546	6119312	623511	6119299	35	13	37	-110		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	04:12:22	7104	BP23MVEXP-ENV-DC-121			Camera	97	623547	6119312	623511	6119299	36	13	39	-110		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	04:13:01	7105	BP23MVEXP-ENV-DC-121			Camera	97	623550	6119313	623511	6119299	40	14	42	-110		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	04:13:53	7106	BP23MVEXP-ENV-DC-121			Camera	97	623556	6119315	623511	6119299	45	16	48	-110		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	04:14:07	7107	BP23MVEXP-ENV-DC-121			Camera	97	623558	6119316	623511	6119299	47	17	50	-109		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	04:28:13	7108	BP23MVEXP-ENV-DC-121			Camera	97	623496	6119349	623511	6119299	-15	50	52	163		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	04:29:20	7109	BP23MVEXP-ENV-DC-121			Camera	97	623498	6119344	623511	6119299	-13	45	47	164		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	04:29:38	7110	BP23MVEXP-ENV-DC-121			Camera	97	623499	6119342	623511	6119299	-12	43	45	164		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	04:29:47	7111	BP23MVEXP-ENV-DC-121			Camera	97	623499	6119341	623511	6119299	-12	42	44	164		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	04:30:20	7112	BP23MVEXP-ENV-DC-121			Camera	97	623500	6119337	623511	6119299	-11	38	40	165		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	04:30:50	7113	BP23MVEXP-ENV-DC-121			Camera	97	623501	6119334	623511	6119299	-10	35	37	165		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	04:31:17	7114	BP23MVEXP-ENV-DC-121			Camera	97	623502	6119332	623511	6119299	-9	33	34	165		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	04:32:15	7115	BP23MVEXP-ENV-DC-121			Camera	97	623504	6119326	623511	6119299	-7	27	28	166		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	04:32:52	7116	BP23MVEXP-ENV-DC-121			Camera	97	623505	6119322	623511	6119299	-6	23	24	166		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	04:33:24	7117	BP23MVEXP-ENV-DC-121			Camera	97	623506	6119319	623511	6119299	-5	20	21	167		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	04:34:05	7118	BP23MVEXP-ENV-DC-121			Camera	97	623508	6119315	623511	6119299	-3	16	17	169		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	04:34:49	7119	BP23MVEXP-ENV-DC-121			Camera	97	623509	6119311	623511	6119299	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	04:36:19	7120	BP23MVEXP-ENV-DC-121			Camera	97	623512	6119302	623511	6119299	1	3	3	-159		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	04:36:53	7121	BP23MVEXP-ENV-DC-121			Camera	97	623513	6119299	623511	6119299	2	0	2	-83		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	04:37:03	7122	BP23MVEXP-ENV-DC-121			Camera	97	623513	6119298	623511	6119299	2	-1	3	-64		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	04:37:12	7123	BP23MVEXP-ENV-DC-121			Camera	97	623514	6119297	623511	6119299	3	-2	3	-53		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	04:37:49	7124	BP23MVEXP-ENV-DC-121			Camera	97	623515	6119293	623511	6119299	4	-6	7	-35		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	04:38:32	7125	BP23MVEXP-ENV-DC-121			Camera	97	623516	6119289	623511	6119299	5	-10	11	-29		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	04:39:13	7126	BP23MVEXP-ENV-DC-121			Camera	97	623518	6119285	623511	6119299	7	-14	16	-26		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	04:40:18	7127	BP23MVEXP-ENV-DC-121			Camera	97	623520	6119279	623511	6119299	9	-20	22	-24		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	04:40:56	7128	BP23MVEXP-ENV-DC-121			Camera	97	623521	6119275	623511	6119299	10	-24	26	-23		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	04:41:40	7129	BP23MVEXP-ENV-DC-121			Camera	97	623522	6119271	623511	6119299	11	-28	30	-22		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	04:42:12	7130	BP23MVEXP-ENV-DC-121			Camera	97	623524	6119268	623511	6119299	13	-31	34	-22		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	04:42:41	7131	BP23MVEXP-ENV-DC-121			Camera	97	623525	6119265	623511	6119299	14	-34	37	-22		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	04:43:12	7132	BP23MVEXP-ENV-DC-121			Camera	97	623526	6119262	623511	6119299	15	-37	40	-22		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	04:43:44	7133	BP23MVEXP-ENV-DC-121			Camera	97	623527	6119258	623511	6119299	16	-41	44	-21		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	04:44:03	7134	BP23MVEXP-ENV-DC-121			Camera	97	623528	6119257	623511	6119299	17	-42	45	-21		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	04:44:39	7135	BP23MVEXP-ENV-DC-121			Camera	97	623529	6119253	623511	6119299	18	-46	49	-21		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	05:45:12	7136	BP23MVEXP-ENV-DC-120			Camera	94	622336	6123204	622353	6123151	-17	53	55	162		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	05:48:16	7137	BP23MVEXP-ENV-DC-120			Camera	94	622340	6123194	622353	6123151	-13	43	45	164		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	05:48:58	7138	BP23MVEXP-ENV-DC-120			Camera	94	622342	6123190	622353	6123151	-11	39	41	165		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	05:49:37	7139	BP23MVEXP-ENV-DC-120			Camera	94	622344	6123186	622353	6123151	-9	35	36	165		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	05:50:07	7140	BP23MVEXP-ENV-DC-120			Camera	94	622344	6123183	622353	6123151	-9	32	33	165		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	05:50:38	7141	BP23MVEXP-ENV-DC-120			Camera	94	622345	6123179	622353	6123151	-8	28	29	164		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	05:51:14	7142	BP23MVEXP-ENV-DC-120			Camera	94	622346	6123176	622353	6123151	-7	25	26	164		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	05:52:13	7143	BP23MVEXP-ENV-DC-120			Camera	94	622348	6123171	622353	6123151	-5	20	20	166		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	05:52:32	7144	BP23MVEXP-ENV-DC-120			Camera	94	622349	6123169	622353	6123151	-4	18	18	167		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	05:53:03	7145	BP23MVEXP-ENV-DC-120			Camera	94	622350	6123166	622353	6123151	-3	15	15	168		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	05:53:35	7146	BP23MVEXP-ENV-DC-120			Camera	94	622351	6123163	622353	6123151	-2	12	12	170		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	05:54:12	7147	BP23MVEXP-ENV-DC-120			Camera	94	622352	6123159	622353	6123151	-1	8	8	176		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	05:54:56	7148	BP23MVEXP-ENV-DC-120			Camera	94	622354	6123155	622353	6123151	1	4	4	-158		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	05:55:13	7149	BP23MVEXP-ENV-DC-120			Camera	94	622355	6123153	622353	6123151	2	2	3	-133		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	05:55:24	7150	BP23MVEXP-ENV-DC-120			Camera	94	622355	6123152	622353	6123151	2	1	3	-109		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	05:56:09	7151	BP23MVEXP-ENV-DC-120			Camera	94	622357	6123147	622353	6123151	4	-4	5	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	05:56:49	7152	BP23MVEXP-ENV-DC-120			Camera	94	622358	6123143	622353	6123151	5	-8	9	-34		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	05:57:22	7153	BP23MVEXP-ENV-DC-120			Camera	94	622359	6123140	622353	6123151	6	-11	13	-29		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	05:57:50	7154	BP23MVEXP-ENV-DC-120			Camera	94	622360	6123137	622353	6123151	7	-14	15	-27		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	05:58:33	7155	BP23MVEXP-ENV-DC-120			Camera	94	622361	6123134	622353	6123151	8	-17	19	-25		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	05:59:07	7156	BP23MVEXP-ENV-DC-120			Camera	94	622362	6123131	622353	6123151	9	-21	23	-25		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	05:59:31	7157	BP23MVEXP-ENV-DC-120			Camera	94	622363	6123128	622353	6123151	10	-23	25	-24		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	06:00:00	7158	BP23MVEXP-ENV-DC-120			Camera	94	622365	6123125	622353	6123151	12	-26	28	-24		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	06:00:42	7159	BP23MVEXP-ENV-DC-120			Camera	94	622366	6123121	622353	6123151	13	-30	33	-24		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	06:01:18	7160	BP23MVEXP-ENV-DC-120			Camera	94	622367	6123118	622353	6123151	14	-33	36	-23		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	06:02:12	7161	BP23MVEXP-ENV-DC-120			Camera	94	622370	6123112	622353	6123151	17	-39	42	-23		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	06:02:27	7162	BP23MVEXP-ENV-DC-120			Camera	94	622370	6123110	622353	6123151	17	-41	44	-23		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	06:03:06	7163	BP23MVEXP-ENV-DC-120			Camera	94	622371	6123107	622353	6123151	18	-44	48	-22		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	06:19:50	7164	BP23MVEXP-ENV-DC-120			Camera	94	622304	6123136	622353	6123151	-49	-15	52	73		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	06:20:59	7165	BP23MVEXP-ENV-DC-120			Camera	94	622310	6123139	622353	6123151	-43	-12	45	74		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	06:22:02	7166	BP23MVEXP-ENV-DC-120			Camera	94	622317	6123140	622353	6123151	-36	-12	38	73		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	06:22:41	7167	BP23MVEXP-ENV-DC-120			Camera	94	622320	6123140	622353	6123151	-33	-11	35	72		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	06:23:42	7168	BP23MVEXP-ENV-DC-120			Camera	94	622325	6123143	622353	6123151	-28	-8	29	75		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	06:25:13	7169	BP23MVEXP-ENV-DC-120			Camera	94	622334	6123146	622353	6123151	-19	-5	19	74		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	06:25:59	7170	BP23MVEXP-ENV-DC-120			Camera	94	622339	6123147	622353	6123151	-14	-4	14	75		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	06:27:03	7171	BP23MVEXP-ENV-DC-120			Camera	94	622345	6123149	622353	6123151	-8	-2	8	79		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	06:27:45	7172	BP23MVEXP-ENV-DC-120			Camera	94	622349	6123151	622353	6123151	-4	0	4	91		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	06:28:43	7173	BP23MVEXP-ENV-DC-120			Camera	94	622355	6123153	622353	6123151	2	2	3	-135		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	06:29:14	7174	BP23MVEXP-ENV-DC-120			Camera	94	622358	6123154	622353	6123151	5	3	6	-119		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	06:30:13	7175	BP23MVEXP-ENV-DC-120			Camera	94	622364	6123156	622353	6123151	11	5	12	-114		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	06:30:48	7176	BP23MVEXP-ENV-DC-120			Camera	94	622367	6123157	622353	6123151	14	6	15	-113		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	06:31:40	7177	BP23MVEXP-ENV-DC-120			Camera	94	622372	6123159	622353	6123151	19	8	21	-112		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	06:32:51	7178	BP23MVEXP-ENV-DC-120			Camera	94	622379	6123161	622353	6123151	26	10	28	-111		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	06:33:41	7179	BP23MVEXP-ENV-DC-120			Camera	94	622384	6123163	622353	6123151	31	12	33	-111		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	06:34:35	7180	BP23MVEXP-ENV-DC-120			Camera	94	622390	6123164	622353	6123151	37	13	39	-110		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	06:35:35	7181	BP23MVEXP-ENV-DC-120			Camera	94	622395	6123166	622353	6123151	42	15	45	-110		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	06:36:12	7182	BP23MVEXP-ENV-DC-120			Camera	94	622399	6123167	622353	6123151	46	16	48	-110		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	07:39:37	7183	BP23MVEXP-ENV-DC-119			Camera	91	621552	6126991	621603	6126979	-51	12	53	103		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	07:41:30	7184	BP23MVEXP-ENV-DC-119			Camera	91	621556	6126990	621603	6126979	-47	12	49	104		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	07:42:02	7185	BP23MVEXP-ENV-DC-119			Camera	91	621559	6126990	621603	6126979	-44	11	46	104		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	07:42:32	7186	BP23MVEXP-ENV-DC-119			Camera	91	621562	6126990	621603	6126979	-41	11	43	105		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	07:43:06	7187	BP23MVEXP-ENV-DC-119			Camera	91	621565	6126990	621603	6126979	-38	11	40	106		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	07:43:50	7188	BP23MVEXP-ENV-DC-119			Camera	91	621570	6126989	621603	6126979	-33	10	34	107		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	07:44:17	7189	BP23MVEXP-ENV-DC-119			Camera	91	621573	6126988	621603	6126979	-30	9	31	107		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	07:44:56	7190	BP23MVEXP-ENV-DC-119			Camera	91	621578	6126987	621603	6126979	-25	8	27	107		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	07:45:25	7191	BP23MVEXP-ENV-DC-119			Camera	91	621581	6126986	621603	6126979	-22	7	23	108		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	07:45:49	7192	BP23MVEXP-ENV-DC-119			Camera	91	621583	6126986	621603	6126979	-20	7	21	109		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	07:46:38	7193	BP23MVEXP-ENV-DC-119			Camera	91	621588	6126985	621603	6126979	-15	6	16	112		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N		Vertical / Tidal Datum	LAT		

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	07:47:13	7194	BP23MVEXP-ENV-DC-119			Camera	91	621592	6126984	621603	6126979	-11	5	12	115		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	07:48:13	7195	BP23MVEXP-ENV-DC-119			Camera	91	621598	6126983	621603	6126979	-5	4	7	127		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	07:48:56	7196	BP23MVEXP-ENV-DC-119			Camera	91	621602	6126982	621603	6126979	-1	3	4	161		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	07:49:10	7197	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126982	621603	6126979	0	3	3	-174		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	07:49:58	7198	BP23MVEXP-ENV-DC-119			Camera	91	621609	6126981	621603	6126979	6	2	6	-111		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	07:50:45	7199	BP23MVEXP-ENV-DC-119			Camera	91	621614	6126980	621603	6126979	11	1	11	-98		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	07:51:02	7200	BP23MVEXP-ENV-DC-119			Camera	91	621615	6126980	621603	6126979	12	1	12	-95		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	07:51:46	7201	BP23MVEXP-ENV-DC-119			Camera	91	621619	6126979	621603	6126979	17	0	16	-90		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	07:52:04	7202	BP23MVEXP-ENV-DC-119			Camera	91	621621	6126979	621603	6126979	18	0	18	-89		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	07:52:31	7203	BP23MVEXP-ENV-DC-119			Camera	91	621624	6126978	621603	6126979	21	-1	21	-88		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	07:52:55	7204	BP23MVEXP-ENV-DC-119			Camera	91	621627	6126978	621603	6126979	24	-1	24	-87		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	07:53:41	7205	BP23MVEXP-ENV-DC-119			Camera	91	621631	6126977	621603	6126979	28	-2	28	-86		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	07:53:51	7206	BP23MVEXP-ENV-DC-119			Camera	91	621632	6126977	621603	6126979	29	-2	29	-86		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	07:54:41	7207	BP23MVEXP-ENV-DC-119			Camera	91	621637	6126977	621603	6126979	34	-2	34	-86		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	07:56:06	7208	BP23MVEXP-ENV-DC-119			Camera	91	621646	6126975	621603	6126979	43	-4	43	-85		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	07:57:11	7209	BP23MVEXP-ENV-DC-119			Camera	91	621652	6126974	621603	6126979	49	-5	50	-84		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	08:05:03	7210	BP23MVEXP-ENV-DC-119			Camera	91	621626	6127006	621603	6126979	23	27	36	-139		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	08:09:25	7211	BP23MVEXP-ENV-DC-119			Camera	91	621611	6127026	621603	6126979	8	47	48	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	08:11:30	7212	BP23MVEXP-ENV-DC-119			Camera	91	621609	6127020	621603	6126979	6	41	41	-171		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	08:11:54	7213	BP23MVEXP-ENV-DC-119			Camera	91	621608	6127017	621603	6126979	5	38	39	-172		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	08:12:28	7214	BP23MVEXP-ENV-DC-119			Camera	91	621608	6127014	621603	6126979	5	35	35	-172		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	08:13:18	7215	BP23MVEXP-ENV-DC-119			Camera	91	621608	6127009	621603	6126979	5	30	30	-171		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	08:13:40	7216	BP23MVEXP-ENV-DC-119			Camera	91	621607	6127006	621603	6126979	4	27	28	-171		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	08:14:26	7217	BP23MVEXP-ENV-DC-119			Camera	91	621607	6127001	621603	6126979	4	22	23	-170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	08:14:36	7218	BP23MVEXP-ENV-DC-119			Camera	91	621607	6127000	621603	6126979	4	21	22	-170		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	08:15:54	7219	BP23MVEXP-ENV-DC-119			Camera	91	621605	6126993	621603	6126979	2	14	14	-170		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	08:16:25	7220	BP23MVEXP-ENV-DC-119			Camera	91	621605	6126990	621603	6126979	2	11	11	-170		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	08:17:33	7221	BP23MVEXP-ENV-DC-119			Camera	91	621604	6126982	621603	6126979	1	3	4	-160		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	08:17:57	7222	BP23MVEXP-ENV-DC-119			Camera	91	621604	6126980	621603	6126979	1	1	1	-127		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	08:18:23	7223	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126977	621603	6126979	0	-2	2	-13		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	08:18:53	7224	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126974	621603	6126979	0	-5	5	0		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	08:19:10	7225	BP23MVEXP-ENV-DC-119			Camera	91	621603	6126972	621603	6126979	0	-7	7	2		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	08:19:57	7226	BP23MVEXP-ENV-DC-119			Camera	91	621602	6126968	621603	6126979	-1	-11	11	5		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	08:20:34	7227	BP23MVEXP-ENV-DC-119			Camera	91	621602	6126964	621603	6126979	-1	-15	15	5		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	08:21:40	7228	BP23MVEXP-ENV-DC-119			Camera	91	621601	6126957	621603	6126979	-2	-22	22	5		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	08:22:45	7229	BP23MVEXP-ENV-DC-119			Camera	91	621600	6126950	621603	6126979	-3	-29	29	6		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	08:23:00	7230	BP23MVEXP-ENV-DC-119			Camera	91	621600	6126948	621603	6126979	-3	-31	31	6		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	08:23:30	7231	BP23MVEXP-ENV-DC-119			Camera	91	621599	6126945	621603	6126979	-4	-34	34	7		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	08:23:55	7232	BP23MVEXP-ENV-DC-119			Camera	91	621599	6126943	621603	6126979	-4	-36	36	7		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	08:24:20	7233	BP23MVEXP-ENV-DC-119			Camera	91	621598	6126940	621603	6126979	-5	-39	39	7		(Corr'd Nav, Kongsberg 14208, img#51) (B) (T.A)
12-Aug-2023	08:25:04	7234	BP23MVEXP-ENV-DC-119			Camera	91	621597	6126936	621603	6126979	-6	-43	43	8		(Corr'd Nav, Kongsberg 14208, img#52) (B) (T.A)
12-Aug-2023	08:25:43	7235	BP23MVEXP-ENV-DC-119			Camera	91	621597	6126932	621603	6126979	-6	-47	48	8		(Corr'd Nav, Kongsberg 14208, img#53) (B) (T.A)
12-Aug-2023	08:26:02	7236	BP23MVEXP-ENV-DC-119			Camera	91	621597	6126930	621603	6126979	-6	-49	49	8		(Corr'd Nav, Kongsberg 14208, img#54) (B) (T.A)
12-Aug-2023	09:29:03	7237	BP23MVEXP-ENV-DC-118			Camera	91	622226	6130923	622273	6130918	-47	5	48	96		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	09:30:37	7238	BP23MVEXP-ENV-DC-118			Camera	91	622229	6130924	622273	6130918	-44	6	44	97		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	09:31:18	7239	BP23MVEXP-ENV-DC-118			Camera	91	622231	6130924	622273	6130918	-42	6	42	99		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	09:32:21	7240	BP23MVEXP-ENV-DC-118			Camera	91	622235	6130923	622273	6130918	-38	5	38	98		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	09:32:54	7241	BP23MVEXP-ENV-DC-118			Camera	91	622238	6130922	622273	6130918	-35	4	35	97		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	09:33:48	7242	BP23MVEXP-ENV-DC-118			Camera	91	622243	6130921	622273	6130918	-30	3	30	96		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	09:34:23	7243	BP23MVEXP-ENV-DC-118			Camera	91	622246	6130920	622273	6130918	-27	2	27	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	09:34:58	7244	BP23MVEXP-ENV-DC-118			Camera	91	622248	6130917	622273	6130918	-25	-1	25	88		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	09:35:07	7245	BP23MVEXP-ENV-DC-118			Camera	91	622249	6130917	622273	6130918	-24	-1	24	87		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	09:35:48	7246	BP23MVEXP-ENV-DC-118			Camera	91	622253	6130916	622273	6130918	-20	-2	21	84		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	09:36:20	7247	BP23MVEXP-ENV-DC-118			Camera	91	622256	6130916	622273	6130918	-17	-2	17	83		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	09:36:52	7248	BP23MVEXP-ENV-DC-118			Camera	91	622260	6130916	622273	6130918	-13	-2	13	83		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	09:37:22	7249	BP23MVEXP-ENV-DC-118			Camera	91	622263	6130916	622273	6130918	-10	-2	10	81		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	09:37:57	7250	BP23MVEXP-ENV-DC-118			Camera	91	622267	6130916	622273	6130918	-6	-2	6	71		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	09:38:07	7251	BP23MVEXP-ENV-DC-118			Camera	91	622268	6130916	622273	6130918	-5	-2	5	66		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	09:38:34	7252	BP23MVEXP-ENV-DC-118			Camera	91	622271	6130916	622273	6130918	-2	-2	3	47		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	09:38:49	7253	BP23MVEXP-ENV-DC-118			Camera	91	622273	6130916	622273	6130918	0	-2	2	10		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	09:39:01	7254	BP23MVEXP-ENV-DC-118			Camera	91	622274	6130916	622273	6130918	1	-2	2	-22		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	09:39:18	7255	BP23MVEXP-ENV-DC-118			Camera	91	622276	6130915	622273	6130918	3	-3	4	-43		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	09:39:35	7256	BP23MVEXP-ENV-DC-118			Camera	91	622277	6130915	622273	6130918	4	-3	5	-54		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	09:40:26	7257	BP23MVEXP-ENV-DC-118			Camera	91	622282	6130915	622273	6130918	9	-3	9	-69		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	09:41:03	7258	BP23MVEXP-ENV-DC-118			Camera	91	622285	6130913	622273	6130918	12	-5	13	-69		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	09:41:20	7259	BP23MVEXP-ENV-DC-118			Camera	91	622287	6130913	622273	6130918	15	-5	15	-73		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	09:42:28	7260	BP23MVEXP-ENV-DC-118			Camera	91	622294	6130913	622273	6130918	21	-5	22	-77		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	09:42:47	7261	BP23MVEXP-ENV-DC-118			Camera	91	622296	6130913	622273	6130918	23	-5	23	-78		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	09:43:53	7262	BP23MVEXP-ENV-DC-118			Camera	91	622303	6130912	622273	6130918	31	-6	31	-79		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	09:44:43	7263	BP23MVEXP-ENV-DC-118			Camera	91	622309	6130912	622273	6130918	36	-6	36	-81		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	09:45:42	7264	BP23MVEXP-ENV-DC-118			Camera	91	622314	6130911	622273	6130918	41	-7	42	-80		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	09:58:35	7265	BP23MVEXP-ENV-DC-118			Camera	91	622281	6130967	622273	6130918	8	49	50	-171		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	09:59:36	7266	BP23MVEXP-ENV-DC-118			Camera	91	622281	6130965	622273	6130918	8	47	48	-170		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	10:00:26	7267	BP23MVEXP-ENV-DC-118			Camera	91	622281	6130959	622273	6130918	8	41	42	-170		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	10:01:01	7268	BP23MVEXP-ENV-DC-118			Camera	91	622280	6130955	622273	6130918	7	37	37	-170		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	10:01:10	7269	BP23MVEXP-ENV-DC-118			Camera	91	622279	6130954	622273	6130918	6	36	36	-170		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	10:01:42	7270	BP23MVEXP-ENV-DC-118			Camera	91	622279	6130950	622273	6130918	6	32	33	-170		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	10:02:18	7271	BP23MVEXP-ENV-DC-118			Camera	91	622278	6130947	622273	6130918	5	29	29	-170		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	10:03:31	7272	BP23MVEXP-ENV-DC-118			Camera	91	622278	6130940	622273	6130918	5	22	23	-168		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	10:04:20	7273	BP23MVEXP-ENV-DC-118			Camera	91	622277	6130935	622273	6130918	4	17	18	-166		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	10:04:57	7274	BP23MVEXP-ENV-DC-118			Camera	91	622277	6130932	622273	6130918	4	14	14	-164		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	10:06:00	7275	BP23MVEXP-ENV-DC-118			Camera	91	622276	6130925	622273	6130918	3	7	8	-156		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	10:06:42	7276	BP23MVEXP-ENV-DC-118			Camera	91	622275	6130921	622273	6130918	2	3	4	-140		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	10:07:26	7277	BP23MVEXP-ENV-DC-118			Camera	91	622275	6130916	622273	6130918	2	-2	3	-50		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	10:07:43	7278	BP23MVEXP-ENV-DC-118			Camera	91	622275	6130914	622273	6130918	2	-4	4	-27		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	10:09:16	7279	BP23MVEXP-ENV-DC-118			Camera	91	622274	6130905	622273	6130918	1	-13	13	-3		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	10:10:19	7280	BP23MVEXP-ENV-DC-118			Camera	91	622273	6130899	622273	6130918	0	-19	19	0		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	10:11:11	7281	BP23MVEXP-ENV-DC-118			Camera	91	622272	6130893	622273	6130918	-1	-25	25	1		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	10:11:57	7282	BP23MVEXP-ENV-DC-118			Camera	91	622272	6130889	622273	6130918	-1	-29	29	2		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	10:12:57	7283	BP23MVEXP-ENV-DC-118			Camera	91	622271	6130883	622273	6130918	-2	-35	35	3		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	10:13:12	7284	BP23MVEXP-ENV-DC-118			Camera	91	622271	6130881	622273	6130918	-2	-37	37	3		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	10:14:30	7285	BP23MVEXP-ENV-DC-118			Camera	91	622270	6130873	622273	6130918	-3	-45	45	4		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	10:14:58	7286	BP23MVEXP-ENV-DC-118			Camera	91	622269	6130870	622273	6130918	-4	-48	48	4		(Corr'd Nav, Kongsberg 14208, img#50) (B) (T.A)
12-Aug-2023	11:16:40	7287	BP23MVEXP-ENV-DC-117			Camera	91	622896	6134916	622943	6134912	-47	4	48	95		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	11:17:33	7288	BP23MVEXP-ENV-DC-117			Camera	91	622896	6134916	622943	6134912	-47	4	48	95		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	11:18:27	7289	BP23MVEXP-ENV-DC-117			Camera	91	622899	6134916	622943	6134912	-44	4	44	95		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	11:18:54	7290	BP23MVEXP-ENV-DC-117			Camera	91	622903	6134915	622943	6134912	-40	3	40	94		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	11:19:12	7291	BP23MVEXP-ENV-DC-117			Camera	91	622906	6134915	622943	6134912	-37	3	37	94		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	11:19:40	7292	BP23MVEXP-ENV-DC-117			Camera	91	622910	6134914	622943	6134912	-33	2	33	94		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	11:19:56	7293	BP23MVEXP-ENV-DC-117			Camera	91	622912	6134914	622943	6134912	-31	2	31	93		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	11:20:28	7294	BP23MVEXP-ENV-DC-117			Camera	91	622915	6134913	622943	6134912	-28	1	28	93		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	11:21:10	7295	BP23MVEXP-ENV-DC-117			Camera	91	622918	6134913	622943	6134912	-25	1	25	91		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	11:22:00	7296	BP23MVEXP-ENV-DC-117			Camera	91	622923	6134912	622943	6134912	-20	0	20	90		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	11:22:46	7297	BP23MVEXP-ENV-DC-117			Camera	91	622929	6134912	622943	6134912	-14	0	14	88		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	11:23:05	7298	BP23MVEXP-ENV-DC-117			Camera	91	622931	6134912	622943	6134912	-12	0	12	88		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	11:23:49	7299	BP23MVEXP-ENV-DC-117			Camera	91	622934	6134912	622943	6134912	-9	0	9	88		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	11:24:49	7300	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134911	622943	6134912	-2	-1	3	65		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	11:25:13	7301	BP23MVEXP-ENV-DC-117			Camera	91	622943	6134910	622943	6134912	0	-2	2	-13		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	11:26:17	7302	BP23MVEXP-ENV-DC-117			Camera	91	622950	6134909	622943	6134912	7	-3	8	-71		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	11:26:24	7303	BP23MVEXP-ENV-DC-117			Camera	91	622951	6134909	622943	6134912	8	-3	8	-72		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	11:26:46	7304	BP23MVEXP-ENV-DC-117			Camera	91	622953	6134909	622943	6134912	10	-3	10	-75		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	11:27:25	7305	BP23MVEXP-ENV-DC-117			Camera	92	622957	6134909	622943	6134912	14	-3	14	-77		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	11:28:40	7306	BP23MVEXP-ENV-DC-117			Camera	92	622964	6134909	622943	6134912	21	-3	21	-81		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	11:29:10	7307	BP23MVEXP-ENV-DC-117			Camera	92	622967	6134908	622943	6134912	24	-4	24	-81		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	11:29:54	7308	BP23MVEXP-ENV-DC-117			Camera	92	622972	6134908	622943	6134912	29	-4	29	-82		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	11:30:05	7309	BP23MVEXP-ENV-DC-117			Camera	92	622973	6134908	622943	6134912	30	-4	30	-82		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	11:30:35	7310	BP23MVEXP-ENV-DC-117			Camera	92	622976	6134908	622943	6134912	33	-5	33	-82		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	11:31:20	7311	BP23MVEXP-ENV-DC-117			Camera	92	622981	6134907	622943	6134912	38	-5	38	-83		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	11:31:45	7312	BP23MVEXP-ENV-DC-117			Camera	92	622983	6134907	622943	6134912	40	-5	41	-83		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	11:32:43	7313	BP23MVEXP-ENV-DC-117			Camera	92	622990	6134906	622943	6134912	47	-6	47	-82		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	11:40:03	7314	BP23MVEXP-ENV-DC-117			Camera	91	622937	6134862	622943	6134912	-6	-50	51	6		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	11:42:16	7315	BP23MVEXP-ENV-DC-117			Camera	91	622936	6134865	622943	6134912	-7	-47	48	9		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	11:42:26	7316	BP23MVEXP-ENV-DC-117			Camera	91	622936	6134866	622943	6134912	-7	-46	47	9		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	11:43:20	7317	BP23MVEXP-ENV-DC-117			Camera	91	622937	6134871	622943	6134912	-6	-41	41	8		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	11:43:46	7318	BP23MVEXP-ENV-DC-117			Camera	91	622938	6134874	622943	6134912	-5	-38	38	8		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	11:44:30	7319	BP23MVEXP-ENV-DC-117			Camera	91	622939	6134879	622943	6134912	-4	-33	33	7		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	11:45:29	7320	BP23MVEXP-ENV-DC-117			Camera	91	622940	6134884	622943	6134912	-3	-28	28	5		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	11:46:00	7321	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134888	622943	6134912	-2	-25	25	5		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	11:46:23	7322	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134890	622943	6134912	-2	-22	22	4		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	11:47:26	7323	BP23MVEXP-ENV-DC-117			Camera	91	622941	6134896	622943	6134912	-2	-16	16	6		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	11:49:17	7324	BP23MVEXP-ENV-DC-117			Camera	91	622943	6134908	622943	6134912	0	-4	4	5		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	11:49:34	7325	BP23MVEXP-ENV-DC-117			Camera	92	622943	6134910	622943	6134912	0	-2	2	-5		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	11:50:05	7326	BP23MVEXP-ENV-DC-117			Camera	92	622944	6134913	622943	6134912	1	1	1	-129		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	11:50:40	7327	BP23MVEXP-ENV-DC-117			Camera	92	622944	6134916	622943	6134912	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	11:51:25	7328	BP23MVEXP-ENV-DC-117			Camera	92	622944	6134921	622943	6134912	1	9	9	-174		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	11:51:51	7329	BP23MVEXP-ENV-DC-117			Camera	92	622945	6134923	622943	6134912	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	11:53:32	7330	BP23MVEXP-ENV-DC-117			Camera	92	622946	6134933	622943	6134912	3	21	21	-172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	11:54:24	7331	BP23MVEXP-ENV-DC-117			Camera	92	622946	6134938	622943	6134912	3	27	27	-174		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	11:55:45	7332	BP23MVEXP-ENV-DC-117			Camera	92	622948	6134947	622943	6134912	5	35	36	-172		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	11:57:11	7333	BP23MVEXP-ENV-DC-117			Camera	92	622950	6134955	622943	6134912	7	43	44	-170		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	11:57:45	7334	BP23MVEXP-ENV-DC-117			Camera	92	622951	6134958	622943	6134912	8	46	47	-171		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	11:58:08	7335	BP23MVEXP-ENV-DC-117			Camera	92	622951	6134959	622943	6134912	8	47	47	-171		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	12:58:22	7336	BP23MVEXP-ENV-DC-116			Camera	87	623653	6138791	623603	6138802	50	-11	51	-77		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	13:00:24	7337	BP23MVEXP-ENV-DC-116			Camera	87	623648	6138793	623603	6138802	45	-9	46	-78		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	13:01:06	7338	BP23MVEXP-ENV-DC-116			Camera	87	623644	6138792	623603	6138802	41	-10	42	-76		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	13:01:42	7339	BP23MVEXP-ENV-DC-116			Camera	87	623640	6138793	623603	6138802	37	-9	38	-77		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	13:02:48	7340	BP23MVEXP-ENV-DC-116			Camera	87	623632	6138794	623603	6138802	29	-8	30	-75		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	13:03:38	7341	BP23MVEXP-ENV-DC-116			Camera	87	623627	6138796	623603	6138802	24	-6	24	-76		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	13:04:00	7342	BP23MVEXP-ENV-DC-116			Camera	87	623625	6138796	623603	6138802	22	-6	22	-76		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	13:04:25	7343	BP23MVEXP-ENV-DC-116			Camera	87	623622	6138797	623603	6138802	19	-5	20	-75		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	13:05:47	7344	BP23MVEXP-ENV-DC-116			Camera	87	623613	6138797	623603	6138802	10	-5	11	-65		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)
12-Aug-2023	13:05:57	7345	BP23MVEXP-ENV-DC-116			Camera	86	623612	6138798	623603	6138802	9	-4	10	-64		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	13:06:21	7346	BP23MVEXP-ENV-DC-116			Camera	86	623609	6138799	623603	6138802	6	-3	7	-64		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	13:07:09	7347	BP23MVEXP-ENV-DC-116			Camera	86	623605	6138800	623603	6138802	2	-2	3	-54		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	13:07:28	7348	BP23MVEXP-ENV-DC-116			Camera	86	623604	6138800	623603	6138802	1	-2	2	-24		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	13:07:45	7349	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138801	623603	6138802	-1	-1	2	30		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	13:08:00	7350	BP23MVEXP-ENV-DC-116			Camera	86	623601	6138801	623603	6138802	-2	-1	3	59		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	13:08:51	7351	BP23MVEXP-ENV-DC-116			Camera	86	623596	6138801	623603	6138802	-7	-1	7	80		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	13:09:37	7352	BP23MVEXP-ENV-DC-116			Camera	86	623591	6138802	623603	6138802	-12	0	12	90		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	13:10:13	7353	BP23MVEXP-ENV-DC-116			Camera	86	623588	6138803	623603	6138802	-15	1	15	93		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	13:10:37	7354	BP23MVEXP-ENV-DC-116			Camera	86	623586	6138803	623603	6138802	-17	1	17	93		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	13:11:39	7355	BP23MVEXP-ENV-DC-116			Camera	86	623579	6138804	623603	6138802	-24	2	24	94		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	13:12:41	7356	BP23MVEXP-ENV-DC-116			Camera	86	623571	6138806	623603	6138802	-32	4	32	96		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	13:13:00	7357	BP23MVEXP-ENV-DC-116			Camera	86	623569	6138806	623603	6138802	-34	4	34	97		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	13:13:35	7358	BP23MVEXP-ENV-DC-116			Camera	86	623566	6138806	623603	6138802	-37	4	37	97		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	13:14:06	7359	BP23MVEXP-ENV-DC-116			Camera	86	623564	6138807	623603	6138802	-39	5	39	97		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	13:14:21	7360	BP23MVEXP-ENV-DC-116			Camera	86	623563	6138807	623603	6138802	-40	5	40	97		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	13:14:47	7361	BP23MVEXP-ENV-DC-116			Camera	86	623561	6138807	623603	6138802	-42	5	43	96		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	13:15:21	7362	BP23MVEXP-ENV-DC-116			Camera	86	623558	6138807	623603	6138802	-45	5	46	97		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	13:23:48	7363	BP23MVEXP-ENV-DC-116			Camera	86	623597	6138754	623603	6138802	-6	-48	49	7		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	13:24:44	7364	BP23MVEXP-ENV-DC-116			Camera	86	623598	6138758	623603	6138802	-5	-44	44	7		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	13:25:04	7365	BP23MVEXP-ENV-DC-116			Camera	86	623598	6138761	623603	6138802	-5	-41	42	7		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	13:25:17	7366	BP23MVEXP-ENV-DC-116			Camera	86	623598	6138762	623603	6138802	-5	-40	40	7		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	13:26:33	7367	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138771	623603	6138802	-4	-31	32	7		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	13:26:59	7368	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138773	623603	6138802	-4	-29	29	8		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	13:27:12	7369	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138774	623603	6138802	-4	-28	28	9		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	13:28:11	7370	BP23MVEXP-ENV-DC-116			Camera	86	623599	6138781	623603	6138802	-4	-21	22	11		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	13:29:22	7371	BP23MVEXP-ENV-DC-116			Camera	86	623600	6138789	623603	6138802	-3	-13	14	12		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	13:30:22	7372	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138794	623603	6138802	-1	-8	8	9		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	13:31:11	7373	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138799	623603	6138802	-1	-3	3	12		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	13:31:20	7374	BP23MVEXP-ENV-DC-116			Camera	86	623602	6138800	623603	6138802	-1	-2	2	16		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	13:31:34	7375	BP23MVEXP-ENV-DC-116			Camera	86	623603	6138801	623603	6138802	0	-1	1	37		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	13:32:21	7376	BP23MVEXP-ENV-DC-116			Camera	86	623603	6138806	623603	6138802	0	4	4	177		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	13:33:26	7377	BP23MVEXP-ENV-DC-116			Camera	86	623604	6138814	623603	6138802	1	12	12	-176		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	13:33:59	7378	BP23MVEXP-ENV-DC-116			Camera	86	623605	6138817	623603	6138802	2	15	15	-173		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	13:35:06	7379	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138823	623603	6138802	3	21	21	-172		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	13:36:07	7380	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138829	623603	6138802	3	27	27	-173		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)
12-Aug-2023	13:37:02	7381	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138835	623603	6138802	3	33	34	-174		(Corr'd Nav, Kongsberg 14208, img#46) (B) (T.A)
12-Aug-2023	13:37:42	7382	BP23MVEXP-ENV-DC-116			Camera	86	623607	6138840	623603	6138802	4	38	38	-174		(Corr'd Nav, Kongsberg 14208, img#47) (B) (T.A)
12-Aug-2023	13:38:25	7383	BP23MVEXP-ENV-DC-116			Camera	86	623607	6138844	623603	6138802	4	42	42	-174		(Corr'd Nav, Kongsberg 14208, img#48) (B) (T.A)
12-Aug-2023	13:39:42	7384	BP23MVEXP-ENV-DC-116			Camera	86	623606	6138851	623603	6138802	3	49	49	-176		(Corr'd Nav, Kongsberg 14208, img#49) (B) (T.A)
12-Aug-2023	14:37:33	7385	BP23MVEXP-ENV-DC-115			Camera	95	624288	6142824	624293	6142873	-5	-49	50	6		(Corr'd Nav, Kongsberg 14208, img#1) (B) (T.A)
12-Aug-2023	14:38:25	7386	BP23MVEXP-ENV-DC-115			Camera	95	624288	6142825	624293	6142873	-5	-48	48	6		(Corr'd Nav, Kongsberg 14208, img#2) (B) (T.A)
12-Aug-2023	14:38:58	7387	BP23MVEXP-ENV-DC-115			Camera	95	624289	6142827	624293	6142873	-4	-46	47	5		(Corr'd Nav, Kongsberg 14208, img#3) (B) (T.A)
12-Aug-2023	14:39:21	7388	BP23MVEXP-ENV-DC-115			Camera	95	624289	6142829	624293	6142873	-4	-44	44	5		(Corr'd Nav, Kongsberg 14208, img#4) (B) (T.A)
12-Aug-2023	14:40:12	7389	BP23MVEXP-ENV-DC-115			Camera	95	624290	6142835	624293	6142873	-3	-38	38	5		(Corr'd Nav, Kongsberg 14208, img#5) (B) (T.A)
12-Aug-2023	14:40:53	7390	BP23MVEXP-ENV-DC-115			Camera	95	624290	6142838	624293	6142873	-3	-35	35	6		(Corr'd Nav, Kongsberg 14208, img#6) (B) (T.A)
12-Aug-2023	14:41:21	7391	BP23MVEXP-ENV-DC-115			Camera	95	624291	6142841	624293	6142873	-2	-32	32	4		(Corr'd Nav, Kongsberg 14208, img#7) (B) (T.A)
12-Aug-2023	14:42:00	7392	BP23MVEXP-ENV-DC-115			Camera	95	624291	6142845	624293	6142873	-2	-28	28	3		(Corr'd Nav, Kongsberg 14208, img#8) (B) (T.A)
12-Aug-2023	14:42:38	7393	BP23MVEXP-ENV-DC-115			Camera	95	624292	6142849	624293	6142873	-1	-24	24	2		(Corr'd Nav, Kongsberg 14208, img#9) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR			Deployment Location	Environmental A frame	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2023	14:43:06	7394	BP23MVEXP-ENV-DC-115			Camera	95	624292	6142852	624293	6142873	-1	-21	21	2		(Corr'd Nav, Kongsberg 14208, img#10) (B) (T.A)
12-Aug-2023	14:43:17	7395	BP23MVEXP-ENV-DC-115			Camera	95	624293	6142854	624293	6142873	0	-20	19	1		(Corr'd Nav, Kongsberg 14208, img#11) (B) (T.A)
12-Aug-2023	14:44:09	7396	BP23MVEXP-ENV-DC-115			Camera	95	624294	6142859	624293	6142873	1	-14	14	-4		(Corr'd Nav, Kongsberg 14208, img#12) (B) (T.A)
12-Aug-2023	14:44:34	7397	BP23MVEXP-ENV-DC-115			Camera	95	624294	6142862	624293	6142873	1	-11	11	-7		(Corr'd Nav, Kongsberg 14208, img#13) (B) (T.A)
12-Aug-2023	14:45:04	7398	BP23MVEXP-ENV-DC-115			Camera	95	624295	6142865	624293	6142873	2	-8	8	-14		(Corr'd Nav, Kongsberg 14208, img#14) (B) (T.A)
12-Aug-2023	14:45:31	7399	BP23MVEXP-ENV-DC-115			Camera	95	624295	6142867	624293	6142873	2	-6	6	-19		(Corr'd Nav, Kongsberg 14208, img#15) (B) (T.A)
12-Aug-2023	14:45:53	7400	BP23MVEXP-ENV-DC-115			Camera	95	624295	6142870	624293	6142873	2	-3	4	-34		(Corr'd Nav, Kongsberg 14208, img#16) (B) (T.A)
12-Aug-2023	14:46:09	7401	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142871	624293	6142873	3	-2	3	-56		(Corr'd Nav, Kongsberg 14208, img#17) (B) (T.A)
12-Aug-2023	14:46:21	7402	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142873	624293	6142873	3	0	3	-80		(Corr'd Nav, Kongsberg 14208, img#18) (B) (T.A)
12-Aug-2023	14:46:51	7403	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142876	624293	6142873	3	3	4	-133		(Corr'd Nav, Kongsberg 14208, img#19) (B) (T.A)
12-Aug-2023	14:47:35	7404	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142880	624293	6142873	3	7	8	-157		(Corr'd Nav, Kongsberg 14208, img#20) (B) (T.A)
12-Aug-2023	14:48:22	7405	BP23MVEXP-ENV-DC-115			Camera	95	624297	6142885	624293	6142873	4	12	12	-163		(Corr'd Nav, Kongsberg 14208, img#21) (B) (T.A)
12-Aug-2023	14:49:35	7406	BP23MVEXP-ENV-DC-115			Camera	95	624297	6142892	624293	6142873	4	19	19	-167		(Corr'd Nav, Kongsberg 14208, img#22) (B) (T.A)
12-Aug-2023	14:50:33	7407	BP23MVEXP-ENV-DC-115			Camera	95	624298	6142898	624293	6142873	5	26	26	-168		(Corr'd Nav, Kongsberg 14208, img#23) (B) (T.A)
12-Aug-2023	14:51:26	7408	BP23MVEXP-ENV-DC-115			Camera	95	624299	6142904	624293	6142873	6	31	31	-169		(Corr'd Nav, Kongsberg 14208, img#24) (B) (T.A)
12-Aug-2023	14:52:24	7409	BP23MVEXP-ENV-DC-115			Camera	95	624300	6142909	624293	6142873	7	36	37	-170		(Corr'd Nav, Kongsberg 14208, img#25) (B) (T.A)
12-Aug-2023	14:53:56	7410	BP23MVEXP-ENV-DC-115			Camera	95	624300	6142919	624293	6142873	7	46	46	-171		(Corr'd Nav, Kongsberg 14208, img#26) (B) (T.A)
12-Aug-2023	15:02:55	7411	BP23MVEXP-ENV-DC-115			Camera	95	624342	6142866	624293	6142873	49	-7	49	-82		(Corr'd Nav, Kongsberg 14208, img#27) (B) (T.A)
12-Aug-2023	15:03:05	7412	BP23MVEXP-ENV-DC-115			Camera	95	624341	6142867	624293	6142873	48	-7	48	-82		(Corr'd Nav, Kongsberg 14208, img#28) (B) (T.A)
12-Aug-2023	15:03:48	7413	BP23MVEXP-ENV-DC-115			Camera	95	624336	6142867	624293	6142873	43	-6	43	-82		(Corr'd Nav, Kongsberg 14208, img#29) (B) (T.A)
12-Aug-2023	15:04:56	7414	BP23MVEXP-ENV-DC-115			Camera	95	624328	6142868	624293	6142873	35	-5	35	-82		(Corr'd Nav, Kongsberg 14208, img#30) (B) (T.A)
12-Aug-2023	15:05:41	7415	BP23MVEXP-ENV-DC-115			Camera	95	624323	6142869	624293	6142873	30	-4	30	-81		(Corr'd Nav, Kongsberg 14208, img#31) (B) (T.A)
12-Aug-2023	15:06:02	7416	BP23MVEXP-ENV-DC-115			Camera	95	624321	6142869	624293	6142873	28	-4	28	-81		(Corr'd Nav, Kongsberg 14208, img#32) (B) (T.A)
12-Aug-2023	15:06:44	7417	BP23MVEXP-ENV-DC-115			Camera	95	624315	6142869	624293	6142873	22	-4	22	-81		(Corr'd Nav, Kongsberg 14208, img#33) (B) (T.A)
12-Aug-2023	15:08:19	7418	BP23MVEXP-ENV-DC-115			Camera	95	624307	6142871	624293	6142873	14	-2	14	-80		(Corr'd Nav, Kongsberg 14208, img#34) (B) (T.A)
12-Aug-2023	15:08:55	7419	BP23MVEXP-ENV-DC-115			Camera	95	624303	6142871	624293	6142873	10	-2	10	-80		(Corr'd Nav, Kongsberg 14208, img#35) (B) (T.A)
12-Aug-2023	15:10:06	7420	BP23MVEXP-ENV-DC-115			Camera	95	624296	6142872	624293	6142873	3	-1	3	-65		(Corr'd Nav, Kongsberg 14208, img#36) (B) (T.A)
12-Aug-2023	15:10:19	7421	BP23MVEXP-ENV-DC-115			Camera	95	624294	6142872	624293	6142873	1	-1	1	-51		(Corr'd Nav, Kongsberg 14208, img#37) (B) (T.A)
12-Aug-2023	15:10:35	7422	BP23MVEXP-ENV-DC-115			Camera	95	624292	6142872	624293	6142873	-1	-1	1	44		(Corr'd Nav, Kongsberg 14208, img#38) (B) (T.A)
12-Aug-2023	15:10:52	7423	BP23MVEXP-ENV-DC-115			Camera	95	624291	6142872	624293	6142873	-2	-1	2	70		(Corr'd Nav, Kongsberg 14208, img#39) (B) (T.A)
12-Aug-2023	15:11:36	7424	BP23MVEXP-ENV-DC-115			Camera	95	624286	6142873	624293	6142873	-7	0	7	92		(Corr'd Nav, Kongsberg 14208, img#40) (B) (T.A)
12-Aug-2023	15:12:05	7425	BP23MVEXP-ENV-DC-115			Camera	95	624285	6142874	624293	6142873	-8	1	8	96		(Corr'd Nav, Kongsberg 14208, img#41) (B) (T.A)
12-Aug-2023	15:12:52	7426	BP23MVEXP-ENV-DC-115			Camera	95	624279	6142874	624293	6142873	-14	1	14	96		(Corr'd Nav, Kongsberg 14208, img#42) (B) (T.A)
12-Aug-2023	15:13:15	7427	BP23MVEXP-ENV-DC-115			Camera	95	624275	6142875	624293	6142873	-18	2	18	95		(Corr'd Nav, Kongsberg 14208, img#43) (B) (T.A)
12-Aug-2023	15:13:52	7428	BP23MVEXP-ENV-DC-115			Camera	95	624273	6142876	624293	6142873	-21	3	21	97		(Corr'd Nav, Kongsberg 14208, img#44) (B) (T.A)
12-Aug-2023	15:16:10	7429	BP23MVEXP-ENV-DC-115			Camera	95	624259	6142877	624293	6142873	-34	4	34	97		(Corr'd Nav, Kongsberg 14208, img#45) (B) (T.A)

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-001	04-Jul-2023	22:02:18	22:41:58	54027_BP23MVEXPENV001_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV001_2023-07-04_220218_Ch1/Ch2_00	Fine sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes)	MB, AA, JO	51	1	51	
BP23MVEXP-ENV-DC-002	05-Jul-2023	01:31:06	02:10:49	54027_BP23MVEXPENV002_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV002_2023-07-05_013106_Ch1/Ch2_00	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes)	MB, CD, MD	42	52	94	Fix #92 has no photo
BP23MVEXP-ENV-DC-003	05-Jul-2023	03:28:39	04:17:06	54027_BP23MVEXPENV003_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV003_2023-07-05_032839_Ch1/Ch2_00	Rippled sand with shell fragments	Annelida (Polychaeta), Chordata (Pleuronectiformes), Echinodermata (Asteroidea), Mollusca (Scaphopoda)	CD, MD	52	95	145	Fix #132 repeated
BP23MVEXP-ENV-DC-004	05-Jul-2023	06:58:02	07:41:32	54027_BP23MVEXPENV004_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV004_2023-07-05_065802_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	CD, MD, DP	52	146	199	Fixes #163 and #167 have no photos
BP23MVEXP-ENV-DC-005	05-Jul-2023	08:57:32	09:50:14	54027_BP23MVEXPENV005_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV005_2023-07-05_085732_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea), Mollusca (Bivalvia)	CD, MD, DP	55	200	256	Fixes #211 and #234 have no photos
BP23MVEXP-ENV-DC-006	05-Jul-2023	11:36:06	12:36:03	54027_BP23MVEXPENV006_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV006_2023-07-05_113606_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Pagaroidea), Bryozoa (Flustridae), Echinodermata (Asteroidea, Ophiuroidea)	CD, MD, DP	70	257	327	Fix #282 has no photo
BP23MVEXP-ENV-DC-007	05-Jul-2023	13:43:55	14:48:07	54027_BP23MVEXPENV007_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV007_2023-07-05_134355_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthopoda (Paguoridea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Pennatuloidea, Hydrozoa), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	MB, AA, JO, DP	55	328	383	Fix #345 has no photo
BP23MVEXP-ENV-DC-008	05-Jul-2023	16:48:03	17:47:07	54027_BP23MVEXPENV008_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV008_2023-07-05_164803_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Echinoidea), Mollusca (Bivalvia)	MB, AA, JO, DP	51	384	434	Strong current
BP23MVEXP-ENV-DC-009	05-Jul-2023	19:00:44	19:53:58	54027_BP23MVEXPENV009_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV009_2023-07-05_190044_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Echinoidea, Ophiuroidea), Molusca (Gastropoda)	MB, AA, JO	56	435	490	
BP23MVEXP-ENV-DC-010	05-Jul-2023	21:51:05	22:45:40	54027_BP23MVEXPENV010_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV010_2023-07-05_215405_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Caridea, Decapoda, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea), Mollusca (*Arctica islandica* , Bivalvia, Scaphopoda)	MB, AA, JO	50	491	541	
BP23MVEXP-ENV-DC-011	06-Jul-2023	00:13:32	01:08:22	54027_BP23MVEXPENV011_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV011_2023-07-06_001332_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea) Mollusca (*Arctica islandica* , Bivalvia, Gastropoda)	CD, MD	43	542	585	Fix #582 has no photo
BP23MVEXP-ENV-DC-012	06-Jul-2023	02:51:58	03:40:31	54027_BP23MVEXPENV012_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV012_2023-07-06_025138_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Scaphopoda)	CD, MD	47	586	632	
BP23MVEXP-ENV-DC-013	06-Jul-2023	04:42:06	05:31:42	54027_BP23MVEXPENV013_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV013_2023-07-06_044206_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (Bivalvia, Scaphopoda)	CD, MD	54	633	686	
BP23MVEXP-ENV-DC-014	06-Jul-2023	07:26:36	08:17:53	54027_BP23MVEXPENV014_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV014_2023-07-06_072636_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (*Arctica islandica* , Scaphopoda)	CD, MD, DP	54	687	740	
BP23MVEXP-ENV-DC-015	06-Jul-2023	09:29:30	10:18:50	54027_BP23MVEXPENV015_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV015_2023-07-06_092930_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea, Opiuroidea), Mollusca (*Arctica islandica* , Bivalvia)	CD, MD, DP	44	741	784	
BP23MVEXP-ENV-DC-016	06-Jul-2023	12:02:13	12:32:12	54027_BP23MVEXPENV016_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV016_2023-07-06_120213_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Lophiidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hexacorallia, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	51	785	835	
BP23MVEXP-ENV-DC-017	06-Jul-2023	13:57:17	14:52:50	54027_BP23MVEXPENV017_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV017_2023-07-06_135717_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum* , Pennatuloidea), Echinodermata (Asteroidea), Mollusca (*Arctica islandica* , Bivalvia)	MB, AA, JO, DP	55	836	890	
BP23MVEXP-ENV-DC-018	06-Jul-2023	16:24:31	17:24:15	54027_BP23MVEXPENV018_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV018_2023-07-06_162431_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Caridea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	51	891	940	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-019	06-Jul-2023	18:34:00	19:25:05	54027_BP23MVEXPENV019_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV019_2023-07-06_183400_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	MB, AA, JO	52	941	992	
BP23MVEXP-ENV-DC-020	06-Jul-2023	20:56:25	21:47:12	54027_BP23MVEXPENV020_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV020_2023-07-06_205625_Ch1/Ch2_00	Rippled sand with shell and shell fragments, pebbles, cobbles, and boulders	Annelida (Serpulidae), Arthropoda (Majidae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Crossaster papposus*), Mollusca (Bivalvia, Scaphopoda), Porifera	MB, AA, JO	68	993	1060	
BP23MVEXP-ENV-DC-021	06-Jul-2023	23:08:04	23:52:19	54027_BP23MVEXPENV021_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV021/021C_2023-07-06_230804_Ch1/Ch2_00	Rippled sand with shell and shell fragments, pebbles and cobbles	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum* , Pennatuloidea)	CD, MD	23	1061	1083	1st transect only, recovered due to bad weather
BP23MVEXP-ENV-DC-21A	07-Jul-2023	01:11:20	01:34:26	54027_BP23MVEXPENV021_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV021/021C_2023-07-06_230804_Ch1/Ch2_00	Rippled sand with shell fragments	No video	CD, MD	22	1084	1105	2nd transect - No HD Video recorded
BP23MVEXP-ENV-DC-21B	07-Jul-2023	01:38:51	01:46:58	54027_BP23MVEXPENV021_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV021/021C_2023-07-06_230804_Ch1/Ch2_00	No new sediment descriptors	Echinodermata (Ophiuroidea)	CD, MD	18	1106	1123	2nd transect re-run
BP23MVEXP-ENV-DC-022	07-Jul-2023	03:42:33	04:48:58	54027_BP23MVEXPENV022_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV022_2023-07-07_034233_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Echinodermata (Ophiuroidea)	CD, MD	48	1124	1172	Fix #1152 has no photo
BP23MVEXP-ENV-DC-023	07-Jul-2023	13:50:07	14:44:11	54027_BP23MVEXPENV023_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV023_2023-07-07_135007_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Scaphopoda)	MB, AA, JO, DP	53	1173	1225	
BP23MVEXP-ENV-DC-026	07-Jul-2023	18:26:05	19:16:49	54027_BP23MVEXPENV026_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV026_2023-07-07_182605_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Pennatuloidea), Mollusca (Scaphopoda)	MB, AA, JO	53	1231	1282	
BP23MVEXP-ENV-DC-027	07-Jul-2023	20:18:37	22:07:04	54027_BP23MVEXPENV027_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV027_2023-07-07_205836_Ch1/Ch2_01	Sand with shell and shell fragments	Annelida (Aphrodita aculeata), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Alcyonium digitatum, Hydrozoa,Pennatuloidea), Mollusca (Scaphopoda)	AA, JO	84	1283	1366	No HD video recorded for fixes #1283 to #1308
BP23MVEXP-ENV-DC-028	08-Jul-2023	00:24:44	01:25:17	54027_BP23MVEXPENV028_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV028_2023-07-08_002404_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Polychaeta, Serpulidae), Arthropoda (Decapoda), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes) Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Ophiuroidea), Mollusca (Gastropoda), Porifera	CD, MD	45	1367	1411	Anthropogenic debris
BP23MVEXP-ENV-DC-029	08-Jul-2023	02:26:56	03:19:48	54027_BP23MVEXPENV029_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV029_2023-07-08_022856_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Brachyura, Paguroidea), Chordata (Gadidae, Lophiiformes, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Gastropoda)	CD, MD	44	1412	1455	
BP23MVEXP-ENV-DC-030	08-Jul-2023	05:01:34	05:52:05	54027_BP23MVEXPENV030_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV30_2023-07-08_050134_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actinaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	CD, MD, DP	39	1456	1494	
BP23MVEXP-ENV-DC-31A	08-Jul-2023	08:04:16	08:23:28	54027_BP23MVEXPENV031A/B_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV31/B_2023-07-08_080416_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Pagauroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Pectinidae)	CD, MD, DP	21	1495	1515	Station abandoned after 1st transect due to bad weather
BP23MVEXP-ENV-DC-31B	08-Jul-2023	17:21:40	17:44:13	54027_BP23MVEXPENV031A/B_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV31/B_2023-07-08_080416_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Decapoda), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, DP	26	1516	1541	2nd transect
BP23MVEXP-ENV-DC-032	08-Jul-2023	19:15:39	20:07:03	54027_BP23MVEXPENV032_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV32_2023-07-08_191539_Ch1/Ch2_00	Rippled sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes, Triglide), Cnidaria (Pennatuloidea),Echinodermata (Asteroidea)	MB, AA, JO	48	1542	1589	
BP23MVEXP-ENV-DC-033	08-Jul-2023	22:12:36	23:03:24	54027_BP23MVEXPENV033_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV33_2023-07-08_221236_Ch1/Ch2_00	Fine sand with shell fragments and cobbles	Annelida (Serpulidae), Arthropoda (Caridea, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, *Alcyonium digitatum* , Pennatuloidea), Echinodermata (Asteroidea, *Crossaster papposus*), Mollusca (Gastropoda, Pectinidae)	MB, AA, JO	54	1590	1643	
BP23MVEXP-ENV-DC-034	09-Jul-2023	01:04:00	01:53:21	54027_BP23MVEXPENV034_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV34_2023-07-09_010400_Ch1/Ch2_00	Sand w/ shell andshell fragments	Annelida (Aphrodita aculeata), Arthropoda (Brachyura, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, Hydrozoa),Echinodermata (Asteroidea, *Porania pulvillus*), Mollusca (Bivalvia, Gastropoda, Pectinidae), Porifera	CD, MD	41	1644	1685	
BP23MVEXP-ENV-DC-035	09-Jul-2023	03:27:51	04:16:45	54027_BP23MVEXPENV035_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV35_2023-07-09_032751_Ch1/Ch2_00	Sand, pebble, cobble, shell and shell fragments	Annelida (Serpulidae), Arthropoda (Brachyura, Caridea, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes) Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea), Mollusca (Bivalvia, Pectinidae, Scaphopoda), Porifera	CD, MD	48	1686	1733	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-036	09-Jul-2023	05:11:42	05:59:45	54027_BP23MVEXPENV036_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV36_2023-07-09_051142_Ch1/Ch2_00	Sand with shell, shell fragments, and cobbles	Arthropoda (Brachyura, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Lophiiformes, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata *(Asterias rubens,* Asteroidea*),* Mollusca (Bivalvia, Scaphopoda)	CD, MD, DP	42	1734	1775	
BP23MVEXP-ENV-DC-037	09-Jul-2023	07:29:54	08:19:47	54027_BP23MVEXPENV037_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV37_2023-07-09_072954_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea), Mollusca (Pectinidae)	CD, MD, DP	38	1776	1814	
BP23MVEXP-ENV-DC-038	09-Jul-2023	10:57:27	11:52:45	54027_BP23MVEXPENV038_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV38_2023-07-09_105727_Ch1/Ch2_00	Sand with shell and shell fragments, cobbles, and boulders	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Lophiiformes, Pleuronectiformes) Cnidaria (Actiniaria, Hydrozoa), Echinodermata (*Astropecten irregularis*), Mollusca (Pectinidae, Scaphopoda)	MB, AA, JO, DP	55	1816	1870	
BP23MVEXP-ENV-DC-039	09-Jul-2023	13:12:25	14:06:06	54027_BP23MVEXPENV040_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV39_2023-07-09_131225_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria,Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	57	1871	1927	
BP23MVEXP-ENV-DC-040	09-Jul-2023	15:14:37	16:05:55	54027_BP23MVEXPENV040_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV40_2023-07-09_151437_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	51	1928	1978	
BP23MVEXP-ENV-DC-041	09-Jul-2023	17:41:17	18:30:35	54027_BP23MVEXPENV041_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV41_2023-07-09_174117_Ch1/Ch2_00	Sand with shell and shell fragments, and fauna burrows	Arthropoda (Caridae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Pectinidae, Scaphopoda), Porifera	AA, JO	49	1979	2027	
BP23MVEXP-ENV-DC-042	09-Jul-2023	19:33:32	20:24:18	54027_BP23MVEXPENV042_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV42_2023-07-09_193332_Ch1/Ch2_00	Sand withshell and shell fragments, and fauna burrows	Arthropoda (*Lithodes* sp., Nephropidae, Paguroidea), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Mollusc (Bivalvia), Porifera	AA, JO	51	2028	2078	
BP23MVEXP-ENV-DC-043	09-Jul-2023	21:59:20	22:49:37	54027_BP23MVEXPENV043_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV43_2023-07-09_215920_Ch1/Ch2_00	Sand with shell and shell fragments, and fauna burrows	Arthropoda (Caridea, Nephropidae, Paguroidea), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, Pennatuloidea)	AA, JO	53	2079	2130	
BP23MVEXP-ENV-DC-044	10-Jul-2023	00:00:13	00:51:44	54027_BP23MVEXPENV044_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV44_2023-07-10_000013_Ch1/Ch2_00	Sand with shell and shell fragments, and fauna burrows	Annelida, Arthropoda (Caridea, Nephropidae), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	CD, MD	49	2131	2179	
BP23MVEXP-ENV-DC-045	10-Jul-2023	02:18:46	03:12:34	54027_BP23MVEXPENV045_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV45_2023-07-10_021846_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Nephropidae), Chordata (Actinopterygii, Mixinidae), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea)	CD, MD	46	2180	2226	Fix #2216 has no photo
BP23MVEXP-ENV-DC-046	10-Jul-2023	04:09:00	04:55:49	54027_BP23MVEXPENV046_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV46_2023-07-10_040900_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes), Cnidaria (Cerianthidae, Hydrozoa, Pennatuloidea), Mollusca (Gastropoda)	CD, MD	50	2227	2277	
BP23MVEXP-ENV-DC-047	10-Jul-2023	06:22:48	07:15:47	54027_BP23MVEXPENV047_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV47_2023-07-10_062248_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Mollusca (Gastropoda)	CD, MD, DP	46	2278	2323	
BP23MVEXP-ENV-DC-048	10-Jul-2023	08:09:54	09:03:09	54027_BP23MVEXPENV048_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV48_2023-07-10_080954_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Nephropidae), Chordata (Myxinidae, Pleuronectiformes),Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (*Hippasteria phrygiana* , Ophiuroidea)	CD, MD, DP	53	2324	2377	Fix #2357 has no photo
BP23MVEXP-ENV-DC-049	10-Jul-2023	10:22:58	11:14:35	54027_BP23MVEXPENV049_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV49_2023-07-10_102258_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (*Asterias rubens* , Asteroidea), Mollusca (Scaphopoda, Gastropoda)	CD, MD, DP	53	2378	2430	
BP23MVEXP-ENV-DC-050	10-Jul-2023	12:36:54	13:29:36	54027_BP23MVEXPENV050_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV50_2023-07-10_123654_Ch1/Ch2_00	Sand with shell fragmentscobbles and boulders	Annelida (Serpulidae), Arthropoda (Caridea, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actinaria, Hydrozoan), Echinodermata (Asteroidea, Echinoidea), Mollusc (Pectinidae)	MB, AA, JO, DP	47	2431	2477	
BP23MVEXP-ENV-DC-051	10-Jul-2023	15:05:36	15:57:40	54027_BP23MVEXPENV051_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV51_2023-07-10_150536_Ch1/Ch2_00	Sand with shell fragmentscobbles and boulders	Bryozoa (Flustridae), Chordata (Callionymidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Porifera	MB, AA, JO, DP	52	2478	2529	
BP23MVEXP-ENV-DC-052	10-Jul-2023	16:56:01	17:44:56	54027_BP23MVEXPENV052_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV52_2023-07-10_165601_Ch1/Ch2_00	Sand with shell fragmentscobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura, Caridea, Galatheoidea, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes, Rajiidae), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (*Asterias rubens,* Asteroidea, Echinoidea)	MB, AA, JO, DP	63	2530	2592	
BP23MVEXP-ENV-DC-053	10-Jul-2023	20:28:42	21:17:04	54027_BP23MVEXPENV053_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV53_2023-07-10_202842_Ch1/Ch2_00	Sand with shell fragments	Arthropoda (Amphipoda, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Porifera	MB, AA, JO	53	2593	2645	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-054	10-Jul-2023	22:18:02	23:08:36	54027_BP23MVEXPENV054_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV54_2023-07-10_221802_Ch1/Ch2_00	Sand with shell fragments	Arthropoda (Caridea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actinaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	AA, JO, CD, MD	49	2646	2694	
BP23MVEXP-ENV-DC-055	11-Jul-2023	01:06:44	01:59:38	54027_BP23MVEXPENV055_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV55_2023-07-11_010644_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Cerianthidae, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	CD, MD	55	2695	2749	
BP23MVEXP-ENV-DC-056	11-Jul-2023	03:04:15	03:51:43	54027_BP23MVEXPENV056_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV56_2023-07-11_030415_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	CD,MD	43	2750	2792	
BP23MVEXP-ENV-DC-058	11-Jul-2023	05:07:49	05:51:33	54027_BP23MVEXPENV058_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV58_2023-07-11_050749_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Annelida, Arthropoda (Caridea), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Pennatuloidea)	CD, MD	42	2793	2834	Reduced visibility due to suspended sediment
BP23MVEXP-ENV-DC-060	11-Jul-2023	06:47:39	07:41:11	54027_BP23MVEXPENV060_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV60_2023-07-11_064739_Ch1/Ch2_00	Sand with shell fragments and fauna burrows	Annelida, Arthropoda (Paguroidea), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea)	CD, MD	59	2835	2893	Reduced visibility due to suspended sediment
BP23MVEXP-ENV-DC-025	11-Jul-2023	18:12:47	19:02:58	54027_BP23MVEXPENV025_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV025_2023-07-11_181247_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (Gastropoda)	AA, JO	46	2894	2943	Fixes #2940 and 2944 have no photos
BP23MVEXP-ENV-DC-024	11-Jul-2023	20:34:51	21:24:05	54027_BP23MVEXPENV024_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV024_2023-07-11_203451_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Polychaeta, Serpulidae), Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (*Astropecten irregularis* , Ophiuroidea), Mollusca (Bivalvia, Pectinidae)	AA, JO	75	2945	3019	
BP23MVEXP-ENV-DC-071	12-Jul-2023	19:34:03	20:24:47	54027_BP23MVEXPENV071_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV071_2023-07-12_193403_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa *(Flustridae*), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Echiniodea, Ophiuroidea), Mollusca (Gastropoda)	AA, JO	59	3020	3078	
BP23MVEXP-ENV-DC-072	12-Jul-2023	23:29:59	00:21:34	54027_BP23MVEXPENV072_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV072_2023-07-12_232959_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (*Aphrodita aculeata*), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes, Triglidae), Cnidaria (Actiniaria, *Alcyonium digitatum,* Hydrozoa), Echinodermata (Asteroidea, *Echinocardium cordatum,* Ophiuroidea), Mollusca (Scaphopoda)	CD, MD	44	3079	3122	
BP23MVEXP-ENV-DC-073	13-Jul-2023	02:42:46	03:29:52	54027_BP23MVEXPENV073_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV073_2023-07-13_024246_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Asterias rubens* , *Astropecten irregularis* , Ophiuroidea)	CD, MD	51	3123	3173	
BP23MVEXP-ENV-DC-074	13-Jul-2023	05:59:12	07:05:38	54027_BP23MVEXPENV074_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV074_2023-07-13_055912_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (*Aphrodita aculeata* , Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Cephalopoda)	CD, MD, DP	49	3174	3222	
BP23MVEXP-ENV-DC-075	13-Jul-2023	08:51:18	09:42:04	54027_BP23MVEXPENV075_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV075_2023-07-13_085118_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (Actiniaria, *Alcyonium digitatum,* Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea, *Astropecten irregularis,* Ophiuroidea)	CD, MD, DP	53	3223	3275	
BP23MVEXP-ENV-DC-076	13-Jul-2023	12:04:28	13:00:42	54027_BP23MVEXPENV076_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV076_2023-07-13_120428_Ch1/Ch2_00	Sand with shell fragments, pebbles and cobbles	Annelida (Serpulidae), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum,* Hydrozoa), Echinodermata (Asteroidea, *Crossaster papposus, Hippasteria phrygiana* , Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	58	3277	3334	
BP23MVEXP-ENV-DC-077	13-Jul-2023	14:51:21	15:42:22	54027_BP23MVEXPENV077_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV077_2023-07-13_145121_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	45	3335	3379	
BP23MVEXP-ENV-DC-078	13-Jul-2023	18:19:44	19:10:28	54027_BP23MVEXPENV078_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV078_2023-07-13_181944_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa), Echinodermata (Asteroidea, *Astropecten irregularis,* Ophiuroidea)	AA, JO	49	3381	3428	
BP23MVEXP-ENV-DC-079	13-Jul-2023	20:57:32	21:47:12	54027_BP23MVEXPENV079_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV079_2023-07-13_205732_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida (Serpulidae), Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae),Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (*Asterias rubens* , Asteroidea, *Astropecten irregularis* , Ophiuroidea), Mollusca (Bivalvia, Gastropoda, Pectinidae,Scaphopoda)	AA, JO	56	3429	3484	
BP23MVEXP-ENV-DC-080	14-Jul-2023	00:36:08	01:30:22	54027_BP23MVEXPENV080_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV080_2023-07-14_003608_Ch1/Ch2_00	Sand with shell and shell fragments	Annelida, Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Gadidae, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea, Astropecten irregularis, Ophiuroidea), Mollusca (Pectinidae)	CD, MD	47	3485	3531	
BP23MVEXP-ENV-DC-081	14-Jul-2023	03:20:48	04:08:31	54027_BP23MVEXPENV081_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV081_2023-07-14_032048_Ch1/Ch2_00	Sand with shell and shell fragments	Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Astropecten irregularis* , Ophiuroidea), Mollusca (Gastropoda)	CD, MD	59	3532	3590B	Fix #3561 has no photo Fix #3590 repeated

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-082	14-Jul-2023	05:49:33	06:39:26	54027_BP23MVEXPENV082_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV082_2023-07-14_054933_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropodoa (Brachyura, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, *Astropecten irregularis* , Ophiuroidea)	DP, MD	53	3590C	3642	Fix #3590 repeated
BP23MVEXP-ENV-DC-083	14-Jul-2023	08:49:39	09:37:30	54027_BP23MVEXPENV083_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV083_2023-07-14_084939_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea)	MB, DP, MD	60	3643	3702	
BP23MVEXP-ENV-DC-084	14-Jul-2023	10:51:44	11:44:59	54027_BP23MVEXPENV084_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV084_2023-07-14_105144_Ch1/Ch2_00	Sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Cnidaria (Actiniaria, Alcyonium digitatum, Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (*Arctica islandica* , Bivalvia)	MB, DP, MD	49	3703	3751	
BP23MVEXP-ENV-DC-085	14-Jul-2023	12:38:21	13:26:37	54027_BP23MVEXPENV085_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV085_2023-07-14_123821_Ch1/Ch2_00	Fine sand with shell and shell fragments	Arthropoda (Paguroidea, Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	MB, AA, JO, DP	49	3752	3800	
BP23MVEXP-ENV-DC-086	14-Jul-2023	14:48:04	16:00:01	54027_BP23MVEXPENV086_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV086_2023-07-14_144804_Ch1/Ch2_00	Fine sand with shell and shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Gastropoda)	MB, AA, JO, DP	52	3801	3852	
BP23MVEXP-ENV-DC-087	30-Jul-2023	18:42:14	19:33:21	54027_BP23MVEXPENV087_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV087_2023-07-30_184214_Ch1/Ch2_00	Mixed sediment with shell fragments	Arthropoda (Brachyura, Paguroidea), Bryozoa (*Flustridae*), Chordata (Actinopterygii), Cnidaria (Actiniaria, Hydrozoa, *Nemertesia antennina*), Echinodermata (Asteroidea, Ophiuroidea, *Porania pulvillus*), Mollusca (Gastropoda, Pectinidae)	MB, AA, JO	60	3853	3912	
BP23MVEXP-ENV-DC-088	30-Jul-2023	21:20:24	22:11:36	54027_BP23MVEXPENV088_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV088_2023-07-30_212024_Ch1/Ch2_00.mp4	Fine sand with shell fragments	Annelida (Polychaeta, Serpulidae), Arthropoda (*Cancer pagurus* , Caridea, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum,* Hydrozoa, *Nemertesia antennina*), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia, Pectinidae)	AA, JO	55	3913	3967	
BP23MVEXP-ENV-DC-089	30-Jul-2023	23:36:12	00:25:59	54027_BP23MVEXPENV089_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV089_2023-07-30_233612_Ch1/Ch2_00.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, *Alcyonium digitatum*), Echinodermata (*Asterias rubens* , Asteroidea)	MB, MM, JH	55	3968	4022	
BP23MVEXP-ENV-DC-090	31-Jul-2023	02:11:40	02:54:36	54027_BP23MVEXPENV090_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV090_2023-07-31_021140_Ch1/Ch2.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, *Luidia ciliaris,* Ophiuroidea)	MB, MM, JH	67	4023	4089	
BP23MVEXP-ENV-DC-091	31-Jul-2023	04:05:23	04:59:18	54027_BP23MVEXPENV091_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV091_2023-07-31_040523_Ch1/Ch2.mp4	Fine sand with shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Ophiuroidea)	MM, JH	66	4090	4154	Fix #4123 repeated
BP23MVEXP-ENV-DC-092	31-Jul-2023	06:52:12	07:44:00	54027_BP23MVEXPENV092_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV092_2023-07-31_065212_Ch1/Ch2.mp4	Fine sand with shell fragments and gravel	Annelida (Polychaeta), Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa), Echinodermata (*Asterias rubens* , Asteroidea)	MM, JH, NW	55	4155	4209	
BP23MVEXP-ENV-DC-093	31-Jul-2023	09:00:30	09:54:44	54027_BP23MVEXPENV093_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV093_2023-07-31_090030_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Hydrozoa, Pennatuloidea), Echinodermata (Echinoidea)	MM, JH, NW	53	4210	4262	
BP23MVEXP-ENV-DC-094	31-Jul-2023	11:29:40	12:13:43	54027_BP23MVEXPENV094_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV094_2023-07-31_112940_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (*Cancer pagurus* , Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoan, Pennatuloidea)	MB, AA, JO, NW	54	4623	4676	Starting fix number used is incorrect
BP23MVEXP-ENV-DC-095	31-Jul-2023	12:58:27	13:42:19	54027_BP23MVEXPENV095_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV095_2023-07-31_125827_Ch1/Ch2.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (*Asterias rubens* , Asteroidea), Mollusca (Bivalvia)	MB, AA, JO, NW	51	4677	4727	
BP23MVEXP-ENV-DC-097	31-Jul-2023	14:50:30	15:42:23	54027_BP23MVEXPENV097_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV097_2023-07-31_145030_Ch1/Ch2.mp4	Fine sand with shell fragments and gravel	Annelida (Polychaeta), Arthropoda (*Cancer pagurus* , Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea), Mollusca (Bivalvia)	MB, AA, JO, NW	52	4728	4779	
BP23MVEXP-ENV-DC-096	31-Jul-2023	17:14:30	18:06:40	54027_BP23MVEXPENV096_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV096_2023-07-31_171430_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (*Cancer pagurus* , Paguroidea), Cnidaria (Hydrozoa, Pennatuloidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea, *Crossaster papposus*)	MB, AA, JO	47	4780	4826	
BP23MVEXP-ENV-DC-098	31-Jul-2023	19:41:55	20:34:10	54027_BP23MVEXPENV098_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV098_2023-07-31_194155_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea)	AA, JO	51	4827	4877	
BP23MVEXP-ENV-DC-099	31-Jul-2023	21:58:49	22:55:22	54027_BP23MVEXPENV099_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV099_2023-07-31_215849_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea, Echinoidea), Mollusca (Bivalvia)	AA, JO	51	4878	4928	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-101	31-Jul-2023	23:58:19	00:48:12	54027_BP23MVEXPENV101_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV101_2023-07-31_235819_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Galatheoidea, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MM, JH	51	4929	4978	Fix #4949 repeated
BP23MVEXP-ENV-DC-100	01-Aug-2023	02:36:13	03:22:48	54027_BP23MVEXPENV100_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV100_2023-08-01_023613_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Chordata (Actinopterigyii, Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum* , Pennatuloidea), Echiondermata (Asteroidea)	MM, JH	52	4979	5030	
BP23MVEXP-ENV-DC-102	01-Aug-2023	04:49:55	05:54:24	54027_BP23MVEXPENV102_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV102_2023-08-01_045945_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MM, JH	54	5031	5084	
BP23MVEXP-ENV-DC-103	01-Aug-2023	07:24:53	08:31:02	54027_BP23MVEXPENV103_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV103_2023-08-01_072453_Ch1/Ch2.mp4	Fine sand with faunal burrows, cobbles and boulders	Annelida (Polychaeta), Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria), Echinodermata (Asteroidea)	MM, JH, NW	56	5085	5140	
BP23MVEXP-ENV-DC-105	01-Aug-2023	09:32:01	10:21:22	54027_BP23MVEXPENV105_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV105_2023-08-01_093201_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Actiniaria, Hydrozoa, Pennatuloidea), Echinodermata (Asteroideae)	MM,JH, NW	53	5141	5193	FIXES 5155 and 5183 boulders in these areas, near center of station
BP23MVEXP-ENV-DC-107	01-Aug-2023	12:03:16	12:58:02	54027_BP23MVEXPENV107_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV107_2023-08-01_120316_Ch1/Ch2.mp4	Fine sand	Arthropoda (Brachyura), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, NW	51	5194	5244	
BP23MVEXP-ENV-DC-104	01-Aug-2023	14:10:00	15:01:55	54027_BP23MVEXPENV104_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV104_2023-08-01_141000_Ch1/Ch2.mp4	Fine sand with shell fragments	Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, NW	52	5245	5296	
BP23MVEXP-ENV-DC-106	01-Aug-2023	16:32:06	17:20:14	54027_BP23MVEXPENV106_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV106_2023-08-01_163206_Ch1/Ch2.mp4	Rippled sand with shell fragments, cobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura, Paguiroidea), Chordata (Pleuronectiformes), Cnidaria (Actiniaria, Pennatuloidea), Echinodermata (Asteroidea)	MB, AA, JO, NW	52	5296	5347	FIX 5325 Tie Line (?)
BP23MVEXP-ENV-DC-109	01-Aug-2023	18:19:26	19:15:03	54027_BP23MVEXPENV109_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV109_2023-08-01_181926_Ch1/Ch2.mp4	Rippled sand with faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	AA, JO	48	5348	5395	
BP23MVEXP-ENV-DC-110	01-Aug-2023	21:13:24	22:09:22	54027_BP23MVEXPENV110_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV110_2023-08-01_211324_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida, Arthropoda (Decapoda, Nephropidae, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (Hydrozoa, Pennatuloidea)	AA, JO	50	5396	5445	
BP23MVEXP-ENV-DC-108	01-Aug-2023	22:55:33	23:44:31	54027_BP23MVEXPENV108_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV108_2023-08-01_225533_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	MM, JH	55	5446	5500	
BP23MVEXP-ENV-DC-111	02-Aug-2023	01:30:56	02:18:44	54027_BP&EnBW_MorvenECR_ENV111_2023-08-02_013056_Ch1/2	Rippled sand with faunal burrows	Annelida (Polychaeta), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	MM, JH	53	5501	5553	No HD Video recorded
BP23MVEXP-ENV-DC-11A	02-Aug-2023	11:52:44	12:36:34	54027_BP23MVEXPENV111A_1CAMHD 54027_BP&EnBW_MorvenECR_ENV111A_2023-08-02_122145_Ch1/2	Rippled sand with faunal burrows	Annelida (Polychaeta), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Hydrozoa, Pennatuloidea)	MM, JH	51	5711	5761	Station re-run
BP23MVEXP-ENV-DC-112	02-Aug-2023	03:36:35	04:29:40	54027_BP23MVEXPENV112_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV112_2023-08-02_033635_Ch1/Ch2.mp4	Rippled sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Brachyura), Chordata (Actinopterygii), Cnidaria (Pennatuloidea)	MM, JH	53	5554	5606	Fix #5560A has no photo. Turbid
BP23MVEXP-ENV-DC-113	02-Aug-2023	06:04:04	06:53:35	54027_BP23MVEXPENV113_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV113_2023-08-02_060404_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Nephropidae), Chordata (Actinopterygii, Myxinidae), Cnidaria (*Alcyonium digitatum* , Pennatuloidea), Echinodermata (Asteroidea)	MM, JH, NW	51	5607	5657	
BP23MVEXP-ENV-DC-114	02-Aug-2023	08:19:40	09:23:19	54027_BP23MVEXPENV114_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV114_2023-08-02_081940_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*)	MB, MM, JH, NW	53	5658	5710	Strong current, turbid
BP23MVEXP-ENV-DC-11A	02-Aug-2023	11:51:46	12:36:54	54027_BP23MVEXPENV111A_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV111A_2023-08-02_115146_Ch1/Ch2.mp4	Rippled sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Brachyura, Nephropidae), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	51	5711	5761	
BP23MVEXP-ENV-DC-070	05-Aug-2023	04:45:25	05:33:17	54027_BP23MVEXPENV070_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV070_2023-08-05_044525_Ch1/Ch2.mp4	Coarse sand with gravel, cobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura, Caridea, Galatheoidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, *Crossasster pappossus* , Echinoidea, Ophiuroidea), Mollusca (Cephalopoda), Porifera	MM, JH, NW	50	5762	5811	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-068	05-Aug-2023	06:21:23	07:10:15	54027_BP23MVEXPENV068_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV068_2023-08-05_062123_Ch1/Ch2.mp4	Coarse sand with gravel, cobbles and boulders	Annelida (Serpulidae), Arthropoda (Caridea, Paguroidea), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	MM, JH, NW	51	5812	5862	
BP23MVEXP-ENV-DC-057	07-Aug-2023	07:16:51	08:08:40	54027_BP23MVEXPENV057_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV057_2023-08-07_071651_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MB, MM, JH, NW	44	5863	5908	Large swell and high turbidity Fixes #5899 and #5902 have no photos
BP23MVEXP-ENV-DC-126	10-Aug-2023	08:10:30	08:57:54	54027_BP23MVEXPENV126_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV126_2023-08-10_081030_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (*Aphrodita aculeata* , Polychaeta), Chordata (Gadidae, Myxinidae), Cnidaria (Pennatuloidea)	MB, MM, JH, NW	49	5909	5957	Large swell - reduced visibility
BP23MVEXP-ENV-DC-127	10-Aug-2023	10:00:44	10:48:14	54027_BP23MVEXPENV127_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV127_2023-08-10_100044_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Decapoda), Chordata (Actinopterygii), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MB, MM, JH, NW	42	5958	6000	Large swell - reduced visibility Fix #5973 has no photo
BP23MVEXP-ENV-DC-128	10-Aug-2023	11:47:11	12:29:09	54027_BP23MVEXPENV128_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV128_2023-08-10_114711_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Pleuronectiformes, Triglidae), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	50	6001	6049	Large swell - reduced visibility Fix #4030 repeated
BP23MVEXP-ENV-DC-128	10-Aug-2023	12:35:39	12:54:25	54027_BP23MVEXPENV128_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV128_2023-08-10_114711_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Pleuronectiformes, Triglidae)	MB, AA, JO, NW	27	6050	6075	Large swell - reduced visibility Re-run of second transect
BP23MVEXP-ENV-DC-129	10-Aug-2023	13:47:12	14:30:10	54027_BP23MVEXPENV129_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV129_2023-08-10_134712_Ch1/Ch2.mp4	Fine sand with faunal burrows	Arthropoda (Nephropidae), Chordata (Gadidae, Myxinidae)	MB, AA, JO, NW	40	6076	6116	Large swell - reduced visibility
BP23MVEXP-ENV-DC-130	10-Aug-2023	15:17:57	16:08:54	54027_BP23MVEXPENV130_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV130_2023-08-10_151757_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Mollusca (Scaphopoda)	MB, AA, JO, NW	52	6117	6168	Large swell - reduced visibility
BP23MVEXP-ENV-DC-063	10-Aug-2023	16:47:05	17:40:19	54027_BP23MVEXPENV063_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV063_2023-08-10_164705_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Chordata (Gadidae), Echinodermata (Asteroidea)	MB, AA, JO	53	6169	6221	
BP23MVEXP-ENV-DC-061	10-Aug-2023	18:35:39	19:24:27	54027_BP23MVEXPENV061_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV061_2023-08-10_183539_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Gadidae, Myxinidae)	AA, JO	49	6222	6271	
BP23MVEXP-ENV-DC-059	10-Aug-2023	20:25:17	21:15:35	54027_BP23MVEXPENV059_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV059_2023-08-10_202517_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	AA, JO	54	6272	6325	
BP23MVEXP-ENV-DC-062	10-Aug-2023	22:32:39	23:18:46	54027_BP23MVEXPENV062_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV062_2023-08-10_223139_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Gadidae, Myxinidae)	AA, JO	54	6327	6381	Fixes #6378 and #6326 have no photos
BP23MVEXP-ENV-DC-064	11-Aug-2023	00:18:52	01:07:07	54027_BP23MVEXPENV064_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV064_2023-08-11_001852_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae, Paguroidea), Cnidaria (Pennatuloidea)	MM, JH	49	6382	6430	
BP23MVEXP-ENV-DC-131	11-Aug-2023	02:06:35	02:49:53	54027_BP23MVEXPENV131_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV131_2023-08-11_020635_Ch1/Ch2.mp4	Fine sand with shell fragments and faunal burrows	Annelida (Polychaeta), Arthopoda (Caridea, Paguroidea), Chordata (Gadidae, Triglidae), Cnidaria (Actiniaria), Echinodermata (Asteroidea)	MM, JH	51	6431	6481	Low visibility and large swell
BP23MVEXP-ENV-DC-065	11-Aug-2023	03:25:46	04:16:15	54027_BP23MVEXPENV065_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV065_2023-08-11_032546_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae, Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea)	MM, JH	62	6482	6543	Low visibility and large swell
BP23MVEXP-ENV-DC-066	11-Aug-2023	06:21:25	07:09:54	54027_BP23MVEXPENV066_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV066_2023-08-11_062125_Ch1/Ch2.mp4	Fine sand with shell fragments	Annelida (Polychaeta), Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (Actiniaria), Mollusca (Bivalvia)	MB, MM, JH, NW	51	6547	6597	
BP23MVEXP-ENV-DC-132	11-Aug-2023	08:05:28	08:36:15	54027_BP&EnBW_MorvenECR_ENV132_2023-08-11_080528_Ch2.mp4	Fine sand	Echinodermata (Asteroidea)	MB, MM, JH, NW	30	6598	6628	Run with FWL - aborted due to low image quality Fix #6110 has no photo
BP23MVEXP-ENV-DC-132A	11-Aug-2023	09:03:14	09:50:35	54027_BP23MVEXPENV132A_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV132A_2023-08-11_090314_Ch1/Ch2.mp4	Fine sand with shell fragments and cobbles	Annelida (Polychaeta, Serpulidae), Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (Actinaria, *Alyconium digitatum*), Echinodermata (Ophiuroidea)	MB, MM, JH, NW	45	6629	6673	Re-run with shallow water camera, low visibility

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	54027	Area: North Sea	Scale: 105mm
Project:	Morven Offshore Wind Limited		Equipment: 1CAM / OE14-208
Client:	bp and EnBW		Vessel: MV *Ocean Geograph*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
BP23MVEXP-ENV-DC-133	11-Aug-2023	10:46:11	11:30:49	54027_BP23MVEXPENV133_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV133_2023-08-11_104611_Ch1/Ch2.mp4	Rippled sand with shell fragments	Arthropoda (Brachyura), Echinodermata (Asteroidea)	MB, MM, JH, NW	57	6674	6730	
BP23MVEXP-ENV-DC-069	11-Aug-2023	12:35:39	13:20:39	54027_BP23MVEXPENV069_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV069_2023-08-11_123539_Ch1/Ch2.mp4	Fine sand with cobbles and boulders	Annelida (Polychaeta, Serpulidae), Arthropoda (Decapoda, Galatheoidea), Bryozoa (Flustridae), Cnidaria (Actinaria, *Alyconium digitatum* , Hydrozoa) Echinodermata (Asteroidea, *Crossasster pappossus*), Mollusca (Gastropoda)	MB, AA, JO, NW	54	6731	6782	Low visibility
BP23MVEXP-ENV-DC-67A	11-Aug-2023	14:58:13	16:21:17	54027_BP&EnBW_MorvenECR_ENV067A__2023-08-11_162306_Ch2.mp4	Fine sand with cobbles and boulders	Annelida (Serpulidae), Arthropoda (Brachyura), Bryozoa (Flustridae), Cnidaria (*Alyconium digitatum*), Echinodermata (Asteroidea, Echinoidea)	MB, AA, JO, NW	68	6783	6850	Run with FWL - bad image quality
BP23MVEXP-ENV-DC-67B	11-Aug-2023	17:03:01	17:55:42	54027_BP23MVEXPENV067B_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV067B_2023-08-11_170301_Ch1.mp4	Fine sand with cobbles and boulders	Annelida (Serpulidae), Arthropoda (Galatheoidea, Paguroidea), Chordata (Actinopterygii, Myxinidae), Cnidaria (*Alyconium digitatum*), Echinodermata (Asteroidea, *Crossasster pappossus* , Echinoidea)	MB, AA, JO	46	6851	6896	Re-run with shallow water camera Low visibility
BP23MVEXP-ENV-DC-125	11-Aug-2023	20:48:53	21:40:54	54027_BP23MVEXPENV125_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV125_2023-08-11_204853_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	AA, JO	40	6897	6937	Low visibility
BP23MVEXP-ENV-DC-124	11-Aug-2023	22:43:49	23:26:32	54027_BP23MVEXPENV124_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV124_2023-08-11_224349_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	AA, JO	48	6938	6985	Low visibility
BP23MVEXP-ENV-DC-123	12-Aug-2023	00:27:43	01:17:47	54027_BP23MVEXPENV123_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV123_2023-08-12_002743_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	MM, JH	49	6986	7034	Low visibility
BP23MVEXP-ENV-DC-122	12-Aug-2023	02:15:05	02:58:18	54027_BP23MVEXPENV122_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV122_2023-08-12_021505_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida, (Polychaeta), Chordata (Gadidae, Myxinidae), Cnidaria (Pennatuloidea)	MM, JH	51	7035	7085	
BP23MVEXP-ENV-DC-121	12-Aug-2023	03:56:28	04:45:18	54027_BP23MVEXPENV121_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV121_2023-08-12_035628_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MM, JH	50	7086	7135	
BP23MVEXP-ENV-DC-120	12-Aug-2023	05:43:53	06:38:33	54027_BP23MVEXPENV120_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV120_2023-08-12_054353_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Bryozoa (Flustridae), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MM, JH, NW	47	7136	7182	
BP23MVEXP-ENV-DC-119	12-Aug-2023	07:39:05	08:25:58	54027_BP23MVEXPENV119_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV119_2023-08-12_073905_Ch1/Ch2.mp4	Fine sand with faunal burrows	Chordata (Gadidae, Triglidae), Cnidaria (*Alyconium digitatum* , Pennatuloidea)	MB, MM, JH, NW	54	7183	7236	
BP23MVEXP-ENV-DC-118	12-Aug-2023	09:28:29	10:15:14	54027_BP23MVEXPENV118_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV118_2023-08-12_092829_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Arthropoda (Nephropidae), Chordata (Gadidae), Cnidaria (Pennatuloidea),	MB, MM, JH, NW	50	7237	7286	
BP23MVEXP-ENV-DC-117	12-Aug-2023	11:15:32	11:58:15	54027_BP23MVEXPENV117_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV117_2023-08-12_111532_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Myxinidae, Pleuronectiformes), Cnidaria (Pennatuloidea), Mollusca	MB, AA, JO, NW	49	7287	7335	
BP23MVEXP-ENV-DC-116	12-Aug-2023	12:57:27	13:39:47	54027_BP23MVEXPENV116_1CAMHD.MTS 54027_BP&EnBW_MorvenECR_ENV116_2023-08-12_125727_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	49	7336	7384	
BP23MVEXP-ENV-DC-115	12-Aug-2023	14:36:56	15:18:26	54027_BP23MVEXPENV115_1CAMHD.MTS54027_BP&EnBW_MorvenECR_ENV115_2023-08-12_143656_Ch1/Ch2.mp4	Fine sand with faunal burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Pennatuloidea)	MB, AA, JO, NW	45	7385	7429	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG							
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location							
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Jul-2023	01:44	1	BP23MVEXP-ENV-GS-011	85%	MFA	DG	74	656159	6264036	656157	6264039	-2	3	4	319	HS	
12-Jul-2023	01:59	2	BP23MVEXP-ENV-GS-011	70%	MFB	DG	74	656159	6264037	656157	6264039	-2	2	3	324	HS	
12-Jul-2023	02:10	3	BP23MVEXP-ENV-GS-011	50%	CHEM1	DG	74	656158	6264037	656157	6264039	-1	2	2	32	HS	
12-Jul-2023	02:29	4	BP23MVEXP-ENV-GS-011	60%	CHEM2	DG	74	656159	6264038	656157	6264039	-2	1	2	52	HS	
12-Jul-2023	03:27	5	BP23MVEXP-ENV-GS-010	70%	MFA	DG	75	653552	6267077	653551	6267079	-1	2	2	15	HS	
12-Jul-2023	03:41	6	BP23MVEXP-ENV-GS-010	65%	MFB	DG	75	653552	6267078	653551	6267079	-1	1	1	34	HS	
12-Jul-2023	03:50	7	BP23MVEXP-ENV-GS-010	65%	PSA	DG	75	653552	6267077	653551	6267079	-1	2	2	37	HS	
12-Jul-2023	04:41	8	BP23MVEXP-ENV-GS-009	50%	MFA	DG	75	650936	6270129	650936	6270129	0	0	0	18	HS	
12-Jul-2023	04:54	9	BP23MVEXP-ENV-GS-009	70%	MFB	DG	75	650937	6270129	650936	6270129	-1	0	1	66	HS	
12-Jul-2023	05:03	10	BP23MVEXP-ENV-GS-009	65%	CHEM1	DG	75	650936	6270129	650936	6270129	0	0	1	55	HS	
12-Jul-2023	05:22	11	BP23MVEXP-ENV-GS-009	60%	CHEM2	DG	75	650937	6270129	650936	6270129	-1	0	1	74	HS	
12-Jul-2023	06:15	12	BP23MVEXP-ENV-GS-008	80%	MFA	DG	78	648376	6273115	648378	6273115	2	0	2	81	VP	
12-Jul-2023	06:23	13	BP23MVEXP-ENV-GS-008	80%	MFB	DG	74	648377	6273113	648378	6273115	1	2	2	35	VP	
12-Jul-2023	06:32	14	BP23MVEXP-ENV-GS-008	70%	PSA	DG	74	648378	6273114	648378	6273115	1	1	1	38	VP	
12-Jul-2023	07:24	15	BP23MVEXP-ENV-GS-007	65%	MFA	DG	75	645744	6276186	645743	6276186	-1	0	1	69	VP	
12-Jul-2023	07:33	16	BP23MVEXP-ENV-GS-007	60%	MFB	DG	75	645743	6276187	645743	6276186	0	-1	1	5	VP	
12-Jul-2023	07:41	17	BP23MVEXP-ENV-GS-007	55%	CHEM1	DG	75	645744	6276185	645743	6276186	-1	1	1	38	VP	
12-Jul-2023	07:54	18	BP23MVEXP-ENV-GS-007	50%	CHEM2	DG	75	645744	6276185	645743	6276186	-1	1	1	63	VP	
12-Jul-2023	08:53	19	BP23MVEXP-ENV-GS-006	55%	MFA	DG	76	643128	6279226	643128	6279228	0	2	2	3	VP	
12-Jul-2023	09:02	20	BP23MVEXP-ENV-GS-006	80%	MFB	DG	76	643128	6279227	643128	6279228	0	1	1	22	VP	
12-Jul-2023	09:09	21	BP23MVEXP-ENV-GS-006	70%	PSA	DG	76	643128	6279228	643128	6279228	0	0	1	36	VP	
12-Jul-2023	10:07	22	BP23MVEXP-ENV-GS-005	70%	MFA	DG	78	640532	6282261	640532	6282261	0	0	0	23	AC	
12-Jul-2023	10:17	23	BP23MVEXP-ENV-GS-005	70%	No Sample	DG	78	640532	6282261	640532	6282261	0	0	0	39	AC	Misfire
12-Jul-2023	10:26	24	BP23MVEXP-ENV-GS-005	65%	MFB	DG	78	640532	6282261	640532	6282261	0	0	0	9	AC	
12-Jul-2023	10:44	25	BP23MVEXP-ENV-GS-005	55%	CHEM1	DG	78	640532	6282261	640532	6282261	0	0	0	22	AC	
12-Jul-2023	11:03	26	BP23MVEXP-ENV-GS-005	70%	CHEM2	DG	78	640532	6282261	640532	6282261	0	0	0	69	AC	
12-Jul-2023	12:09	27	BP23MVEXP-ENV-GS-004	60%	MFA	DG	72	637940	6285279	637941	6285279	1	0	1	80	AC	
12-Jul-2023	12:23	28	BP23MVEXP-ENV-GS-004	65%	MFB	DG	72	637941	6285279	637941	6285279	0	0	0	52	AC	
12-Jul-2023	12:33	29	BP23MVEXP-ENV-GS-004	60%	PSA	DG	71	637941	6285279	637941	6285279	0	0	0	88	AC	
12-Jul-2023	13:30	30	BP23MVEXP-ENV-GS-003	60%	MFA	DG	70	635280	6288301	635281	6288299	1	-2	2	24	AC	
12-Jul-2023	13:42	31	BP23MVEXP-ENV-GS-003	70%	MFB	DG	70	635280	6288301	635281	6288299	1	-2	3	28	AC	
12-Jul-2023	13:52	32	BP23MVEXP-ENV-GS-003	60%	CHEM1	DG	70	635280	6288301	635281	6288299	1	-2	2	21	AC	
12-Jul-2023	14:11	33	BP23MVEXP-ENV-GS-003	75%	CHEM2	DG	70	635280	6288301	635281	6288299	1	-2	2	16	AC	
12-Jul-2023	15:12	34	BP23MVEXP-ENV-GS-002	75%	MFA	DG	67	632683	6291341	632683	6291340	0	-1	1	10	AC	
12-Jul-2023	15:24	35	BP23MVEXP-ENV-GS-002	80%	MFB	DG	67	632683	6291341	632683	6291340	0	-1	1	16	AC	
12-Jul-2023	15:40	36	BP23MVEXP-ENV-GS-002	90%	PSA	DG	67	632683	6291340	632683	6291340	0	0	0	51	AC	
12-Jul-2023	16:31	37	BP23MVEXP-ENV-GS-001	60%	MFA	DG	68	630090	6294366	630092	6294363	2	-3	3	40	AC	
12-Jul-2023	16:46	38	BP23MVEXP-ENV-GS-001	75%	MFB	DG	68	630091	6294364	630092	6294363	1	-1	2	49	AC	
12-Jul-2023	17:01	39	BP23MVEXP-ENV-GS-001	60%	CHEM1	DG	68	630091	6294364	630092	6294363	1	-1	2	57	HS	
12-Jul-2023	17:16	40	BP23MVEXP-ENV-GS-001	70%	CHEM2	DG	68	630090	6294364	630092	6294363	2	-1	2	62	HS	
12-Jul-2023	21:29	41	BP23MVEXP-ENV-GS-071	85%	MFA	DG	71	617141	6281096	617141	6281096	0	0	1	40	HS	
12-Jul-2023	21:52	42	BP23MVEXP-ENV-GS-071	85%	MFB	DG	71	617141	6281096	617141	6281096	0	0	0	20	HS	
12-Jul-2023	22:09	43	BP23MVEXP-ENV-GS-071	70%	CHEM1	DG	71	617141	6281096	617141	6281096	0	0	0	48	HS	
12-Jul-2023	22:26	44	BP23MVEXP-ENV-GS-071	70%	CHEM2	DG	71	617141	6281096	617141	6281096	0	0	0	39	HS	
13-Jul-2023	01:12	45	BP23MVEXP-ENV-GS-072	40%	MFA	DG	77	617683	6277122	617683	6277122	0	0	0	79	HS	
13-Jul-2023	01:27	46	BP23MVEXP-ENV-GS-072	45%	MFB	DG	77	617684	6277121	617683	6277122	-1	1	1	37	HS	
13-Jul-2023	01:38	47	BP23MVEXP-ENV-GS-072	45%	PSA	DG	77	617684	6277121	617683	6277122	-1	1	1	37	HS	
13-Jul-2023	04:19	48	BP23MVEXP-ENV-GS-073	60%	MFA	DG	72	618229	6273145	618229	6273143	0	-2	2	3	HS	
13-Jul-2023	04:28	49	BP23MVEXP-ENV-GS-073	55%	MFB	DG	72	618229	6273144	618229	6273143	0	-1	1	8	HS	
13-Jul-2023	04:37	50	BP23MVEXP-ENV-GS-073	75%	CHEM1	DG	72	618228	6273145	618229	6273143	1	-2	2	20	HS	
13-Jul-2023	04:50	51	BP23MVEXP-ENV-GS-073	50%	CHEM2	DG	72	618229	6273144	618229	6273143	0	-1	1	12	HS	
13-Jul-2023	07:32	52	BP23MVEXP-ENV-GS-074	55%	MFA	DG	68	618778	6269161	618778	6269161	0	0	0	72	VP	
13-Jul-2023	07:43	53	BP23MVEXP-ENV-GS-074	75%	MFB	DG	68	618778	6269160	618778	6269161	0	1	1	15	VP	
13-Jul-2023	07:51	54	BP23MVEXP-ENV-GS-074	75%	PSA	DG	68	618778	6269160	618778	6269161	0	1	1	21	VP	
13-Jul-2023	10:22	55	BP23MVEXP-ENV-GS-075	75%	MFA	DG	68	619314	6265236	619313	6265236	-1	0	1	89	VP	
13-Jul-2023	10:33	56	BP23MVEXP-ENV-GS-075	75%	MFB	DG	68	619313	6265236	619313	6265236	0	0	1	24	VP	
13-Jul-2023	10:42	57	BP23MVEXP-ENV-GS-075	65%	CHEM1	DG	68	619314	6265236	619313	6265236	-1	0	1	86	VP	
13-Jul-2023	11:05	58	BP23MVEXP-ENV-GS-075	60%	CHEM2	DG	68	619314	6265236	619313	6265236	-1	0	1	69	AC	
13-Jul-2023	13:19	59	BP23MVEXP-ENV-GS-076	55%	MFA	DG	61	619800	6261235	619800	6261234	0	-1	1	11	AC	
13-Jul-2023	13:34	60	BP23MVEXP-ENV-GS-076	55%	MFB	DG	61	619800	6261235	619800	6261234	0	-1	1	18	AC	
13-Jul-2023	13:43	61	BP23MVEXP-ENV-GS-076	40%	No Sample	DG	61	619800	6261235	619800	6261234	0	-1	1	347	AC	Low retention
13-Jul-2023	13:50	62	BP23MVEXP-ENV-GS-076	50%	PSA	DG	61	619800	6261236	619800	6261234	0	-2	2	17	AC	
13-Jul-2023	16:23	63	BP23MVEXP-ENV-GS-077	65%	MFA	DG	62	620314	6257251	620314	6257253	0	2	2	192	AC	
13-Jul-2023	16:41	64	BP23MVEXP-ENV-GS-077	40%	MFB	DG	62	620314	6257252	620314	6257253	0	1	1	7	AC	
13-Jul-2023	16:55	65	BP23MVEXP-ENV-GS-077	40%	CHEM1	DG	62	620314	6257252	620314	6257253	0	1	1	6	HS	
13-Jul-2023	17:11	66	BP23MVEXP-ENV-GS-077	20%	No Sample	DG	62	620314	6257252	620314	6257253	0	1	2	14	HS	Low retention
13-Jul-2023	17:17	67	BP23MVEXP-ENV-GS-077	70%	CHEM2	DG	62	620314	6257252	620314	6257253	0	1	1	11	HS	
13-Jul-2023	19:31	68	BP23MVEXP-ENV-GS-078	75%	MFA	DG	66	620874	6253241	620873	6253243	-1	2	2	17	HS	
13-Jul-2023	19:47	69	BP23MVEXP-ENV-GS-078	70%	MFB	DG	66	620874	6253241	620873	6253243	-1	2	2	35	HS	
13-Jul-2023	20:00	70	BP23MVEXP-ENV-GS-078	70%	PSA	DG	66	620874	6253241	620873	6253243	-1	2	2	32	HS	
13-Jul-2023	22:42	71	BP23MVEXP-ENV-GS-079	75%	MFA	DG	65	621429	6249278	621428	6249280	-1	2	2	18	HS	
13-Jul-2023	22:58	72	BP23MVEXP-ENV-GS-079	65%	MFB	DG	65	621428	6249279	621428	6249280	0	1	1	5	HS	
13-Jul-2023	23:14	73	BP23MVEXP-ENV-GS-079	75%	CHEM1	DG	65	621428	6249279	621428	6249280	0	1	2	10	HS	
13-Jul-2023	23:28	74	BP23MVEXP-ENV-GS-079	45%	CHEM2	DG	65	621428	6249279	621428	6249280	0	1	1	2	HS	
14-Jul-2023	01:49	75	BP23MVEXP-ENV-GS-080	70%	MFA	DG	66	621961	6245401	621960	6245400	-1	-1	1	35	HS	
14-Jul-2023	01:58	76	BP23MVEXP-ENV-GS-080	60%	MFB	DG	66	621961	6245403	621960	6245400	-1	-3	3	14	HS	
14-Jul-2023	02:06	77	BP23MVEXP-ENV-GS-080	65%	PSA	DG	66	621961	6245401	621960	6245400	-1	-1	1	41	HS	
22-Oct-2023	21:38	78	BP23MVEXP-ENV-GS-081	40%	CHEM1	DG	69	622508	6241445	622506	6241445	-2	0	2	274	SP	
22-Oct-2023	22:02	79	BP23MVEXP-ENV-GS-081	60%	MFA	DG	69	622507	6241446	622506	6241445	-1	-1	2	249	SP	
22-Oct-2023	22:12	80	BP23MVEXP-ENV-GS-081	50%	MFB	DG	69	622506	6241444	622506	6241445	0	1	1	318	SP	
22-Oct-2023	22:25	81	BP23MVEXP-ENV-GS-081	50%	CHEM2	DG	69	622507	6241446	622506	6241445	-1	-1	1	248	SP	
22-Oct-2023	23:37	82	BP23MVEXP-ENV-GS-082	90%	MFA	DG	66	623038	6237535	623038	6237536	0	1	1	16	AN	
23-Oct-2023	00:06	83	BP23MVEXP-ENV-GS-082	70%	MFB	DG	66	623038	6237535	623038	6237536	0	1	1	17	AN	
23-Oct-2023	00:25	84	BP23MVEXP-ENV-GS-082	60%	PSA	DG	66	623038	6237535	623038	6237536	0	1	1	355	AN	
23-Oct-2023	01:29	85	BP23MVEXP-ENV-GS-083	60%	CHEM1	DG	67	623635	6233497	623635	6233497	0	0	0	171	AN	
23-Oct-2023	01:54	86	BP23MVEXP-ENV-GS-083	40%	MFA	DG	67	623635	6233496	623635	6233497	0	1	1	1	AN	
23-Oct-2023	02:08	87	BP23MVEXP-ENV-GS-083	70%	MFB	DG	67	623635	6233497	623635	6233497	0	0	0	171	AN	
23-Oct-2023	02:22	88	BP23MVEXP-ENV-GS-083	30%	No Sample	DG	67	623634	6233497	623635	6233497	1	0	1	74	AN	Low retention
23-Oct-2023	02:34	89	BP23MVEXP-ENV-GS-083	66%	CHEM2	DG	67	623635	6233498	623635	6233497	0	-1	1	194	AN	
23-Oct-2023	03:31	90	BP23MVEXP-ENV-GS-084	40%	MFA	DG	69	624135	6229543	624135	6229544	0	1	1	338	AN	
23-Oct-2023	03:46	91	BP23MVEXP-ENV-GS-084	50%	MFB	DG	69	624136	6229543	624135	6229544	-1	1	1	314	AN	
23-Oct-2023	03:59	92	BP23MVEXP-ENV-GS-084	60%	PSA	DG	69	624135	6229543	624135	6229544	0	1	1	343	AN	
23-Oct-2023	04:59	93	BP23MVEXP-ENV-GS-085	40%	CHEM1	DG	70	624677	6225569	624677	6225569	0	0	0	341	AN	
23-Oct-2023	05:19	94	BP23MVEXP-ENV-GS-085	50%	MFA	DG	70	624676	6225568	624677	6225569	1	1	1	30	AN	
23-Oct-2023	05:42	95	BP23MVEXP-ENV-GS-085	60%	MFB	DG	70	624676	6225569	624677	6225569	1	0	1	97	AR	
23-Oct-2023	05:59	96	BP23MVEXP-ENV-GS-085	60%	CHEM2	DG	70	624676	6225568	624677	6225569	1	1	1	52	AR	
23-Oct-2023	06:56	97	BP23MVEXP-ENV-GS-086	60%	MFA	DG	68	625218	6221618	625218	6221618	0	0	0	210	AR	
23-Oct-2023	07:14	98	BP23MVEXP-ENV-GS-086	80%	MFB	DG	68	625217	6221618	625218	6221618	1	0	1	73	AR	
23-Oct-2023	07:27	99	BP23MVEXP-ENV-GS-086	50%	PSA	DG	68	625218	6221618	625218	6221618	0	0	0	265	AR	
23-Oct-2023	08:21	100	BP23MVEXP-ENV-GS-087	90%	CHEM1	DG	68	625785	6217724	625786	6217725	1	1	1	26	AR	
23-Oct-2023	08:37	101	BP23MVEXP-ENV-GS-087	50%	MFA	DG	68	625785	6217724	625786	6217725	1	1	2	40	AR	
23-Oct-2023	08:52	102	BP23MVEXP-ENV-GS-087	0%	No Sample	DG	68	625786	6217724	625786	6217725	0	1	1	11	AR	Misfire
23-Oct-2023	09:01	103	BP23MVEXP-ENV-GS-087	0%	No Sample	DG	68	625785	6217723	625786	6217725	1	2	2	27	AR	Misfire
23-Oct-2023	09:17	104	BP23MVEXP-ENV-GS-087	70%	MFB	DG	68	625785	6217724	625786	6217725	1	1	2	36	AR	
23-Oct-2023	09:34	105	BP23MVEXP-ENV-GS-087	60%	CHEM2	DG	68	625785	6217724	625786	6217725	1	1	2	26	AR	
23-Oct-2023	16:57	106	BP23MVEXP-ENV-GS-088	60%	MFA	DG	63	626296	6213735	626296	6213734	0	-1	1	182	AR	
23-Oct-2023	17:06	107	BP23MVEXP-ENV-GS-088	70%	MFB	DG	63	626296	6213735	626296	6213734	0	-1	1	205	AR	
23-Oct-2023	17:15	108	BP23MVEXP-ENV-GS-088	40%	PSA	DG	63	626296	6213735	626296	6213734	0	-1	1	161	AR	
23-Oct-2023	18:03	109	BP23MVEXP-ENV-GS-089	70%	CHEM1	DG	65	626842	6209725	626842	6209725	0	0	1	58	SP	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
23-Oct-2023	18:15	110	BP23MVEXP-ENV-GS-089	50%	MFA	DG	65	626842	6209725	626842	6209725	0	0	0	284	SP	
23-Oct-2023	18:28	111	BP23MVEXP-ENV-GS-089	40%	MFB	DG	65	626842	6209725	626842	6209725	0	0	0	292	SP	
23-Oct-2023	18:39	112	BP23MVEXP-ENV-GS-089	40%	CHEM2	DG	65	626842	6209725	626842	6209725	0	0	0	326	SP	
23-Oct-2023	19:34	113	BP23MVEXP-ENV-GS-090	40%	MFA	DG	66	627380	6205770	627380	6205770	0	0	0	344	SP	
23-Oct-2023	19:43	114	BP23MVEXP-ENV-GS-090	60%	MFB	DG	66	627380	6205770	627380	6205770	0	0	0	348	SP	
23-Oct-2023	19:52	115	BP23MVEXP-ENV-GS-090	40%	PSA	DG	66	627380	6205769	627380	6205770	0	1	1	326	SP	
23-Oct-2023	20:48	116	BP23MVEXP-ENV-GS-091	40%	CHEM1	DG	70	627933	6201732	627934	6201734	1	2	2	13	SP	
23-Oct-2023	21:00	117	BP23MVEXP-ENV-GS-091	40%	MFA	DG	70	627934	6201733	627934	6201734	0	1	1	10	SP	
23-Oct-2023	21:11	118	BP23MVEXP-ENV-GS-091	50%	MFB	DG	70	627934	6201733	627934	6201734	0	1	2	10	SP	
23-Oct-2023	21:20	119	BP23MVEXP-ENV-GS-091	50%	CHEM2	DG	70	627933	6201732	627934	6201734	1	2	2	20	SP	
23-Oct-2023	22:13	120	BP23MVEXP-ENV-GS-092	0%	No Sample	DG	65	628458	6197868	628458	6197868	0	0	0	75	SP	Rock in jaws
23-Oct-2023	22:19	121	BP23MVEXP-ENV-GS-092	40%	MFA	DG	65	628457	6197868	628458	6197868	1	0	1	107	SP	
23-Oct-2023	22:27	122	BP23MVEXP-ENV-GS-092	30%	No Sample	DG	65	628457	6197869	628458	6197868	1	-1	1	138	SP	Low retention
23-Oct-2023	22:33	123	BP23MVEXP-ENV-GS-092	40%	MFB	DG	65	628457	6197868	628458	6197868	1	0	1	79	SP	
23-Oct-2023	22:41	124	BP23MVEXP-ENV-GS-092	0%	No Sample	DG	65	628457	6197868	628458	6197868	1	0	1	84	SP	Misfire
23-Oct-2023	22:46	125	BP23MVEXP-ENV-GS-092	0%	No Sample	DG	65	628457	6197868	628458	6197868	1	0	1	87	SP	Rock in jaws
23-Oct-2023	22:51	126	BP23MVEXP-ENV-GS-092	40%	PSA	DG	65	628457	6197868	628458	6197868	1	0	1	84	SP	
23-Oct-2023	23:50	127	BP23MVEXP-ENV-GS-093	40%	CHEM1	DG	68	629054	6193879	629054	6193880	0	1	1	19	AN	
24-Oct-2023	00:09	128	BP23MVEXP-ENV-GS-093	60%	MFA	DG	68	629054	6193878	629054	6193880	0	2	2	6	AN	
24-Oct-2023	00:24	129	BP23MVEXP-ENV-GS-093	70%	MFB	DG	68	629054	6193878	629054	6193880	0	2	2	347	AN	
24-Oct-2023	00:38	130	BP23MVEXP-ENV-GS-093	70%	CHEM2	DG	68	629054	6193878	629054	6193880	0	2	2	14	AN	
24-Oct-2023	01:42	131	BP23MVEXP-ENV-GS-094	40%	MFA	DG	74	628589	6190284	628588	6190282	-1	-2	2	201	AN	
24-Oct-2023	01:58	132	BP23MVEXP-ENV-GS-094	40%	MFB	DG	74	628589	6190284	628588	6190282	-1	-2	2	210	AN	
24-Oct-2023	02:17	133	BP23MVEXP-ENV-GS-094	40%	PSA	DG	74	628591	6190284	628588	6190282	-3	-2	4	238	AN	
24-Oct-2023	03:04	134	BP23MVEXP-ENV-GS-095	0%	No Sample	DG	71	630188	6190157	630186	6190154	-2	-3	4	215	AN	Rock in jaws
24-Oct-2023	03:15	135	BP23MVEXP-ENV-GS-095	40%	MFA	DG	71	630187	6190153	630186	6190154	-1	1	1	304	AN	
24-Oct-2023	03:29	136	BP23MVEXP-ENV-GS-095	60%	MFB	DG	71	630186	6190154	630186	6190154	0	0	0	11	AN	
24-Oct-2023	03:41	137	BP23MVEXP-ENV-GS-095	40%	PSA	DG	71	630188	6190154	630186	6190154	-2	0	2	281	AN	
24-Oct-2023	04:48	138	BP23MVEXP-ENV-GS-096	40%	CHEM1	DG	82	628432	6186279	628432	6186279	0	0	0	14	AN	
24-Oct-2023	05:04	139	BP23MVEXP-ENV-GS-096	60%	MFA	DG	82	628433	6186280	628432	6186279	-1	-1	1	232	AN	
24-Oct-2023	05:20	140	BP23MVEXP-ENV-GS-096	70%	MFB	DG	82	628433	6186279	628432	6186279	-1	0	1	266	AN	
24-Oct-2023	05:35	141	BP23MVEXP-ENV-GS-096	40%	CHEM2	DG	82	628433	6186279	628432	6186279	-1	0	1	268	AN	
24-Oct-2023	06:35	142	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	71	631464	6186301	631463	6186300	-1	-1	1	210	AR	Rock in jaws
24-Oct-2023	06:46	143	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	71	631464	6186302	631463	6186300	-1	-2	2	200	AR	Rock in jaws
24-Oct-2023	06:59	144	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	72	631464	6186301	631463	6186300	-1	-1	1	220	AR	Rock in jaws, moved 10m east
24-Oct-2023	07:12	145	BP23MVEXP-ENV-GS-097	50%	CHEM1	DG	72	631471	6186296	631463	6186300	-8	4	9	294	AR	
24-Oct-2023	07:30	146	BP23MVEXP-ENV-GS-097	50%	MFA	DG	72	631473	6186297	631463	6186300	-10	3	11	287	AR	
24-Oct-2023	07:43	147	BP23MVEXP-ENV-GS-097	0%	No Sample	DG	72	631473	6186297	631463	6186300	-10	3	11	285	AR	Rock in jaws
24-Oct-2023	07:54	148	BP23MVEXP-ENV-GS-097	80%	MFB	DG	72	631472	6186297	631463	6186300	-9	3	10	288	AR	
24-Oct-2023	08:07	149	BP23MVEXP-ENV-GS-097	70%	CHEM2	DG	72	631472	6186297	631463	6186300	-9	3	10	291	AR	
24-Oct-2023	09:05	150	BP23MVEXP-ENV-GS-099	80%	MFA	DG	82	632743	6182609	632746	6182610	3	1	3	76	AR	
24-Oct-2023	09:21	151	BP23MVEXP-ENV-GS-099	50%	MFB	DG	82	632743	6182610	632746	6182610	3	0	3	81	AR	
24-Oct-2023	09:33	152	BP23MVEXP-ENV-GS-099	0%	No Sample	DG	82	632741	6182610	632746	6182610	5	0	5	86	AR	Rock in jaws
24-Oct-2023	09:41	153	BP23MVEXP-ENV-GS-099	80%	PSA	DG	82	632744	6182609	632746	6182610	2	1	2	71	AR	
24-Oct-2023	10:34	154	BP23MVEXP-ENV-GS-098	50%	MFA	DG	94	628262	6182324	628264	6182327	2	3	3	31	AR	
24-Oct-2023	10:48	155	BP23MVEXP-ENV-GS-098	50%	MFB	DG	94	628262	6182324	628264	6182327	2	4	4	24	AR	
24-Oct-2023	11:02	156	BP23MVEXP-ENV-GS-098	60%	PSA	DG	94	628263	6182324	628264	6182327	1	3	3	23	SP	
24-Oct-2023	11:55	157	BP23MVEXP-ENV-GS-100	70%	CHEM1	DG	95	628062	6178340	628064	6178337	2	-3	3	144	AR	
24-Oct-2023	12:06	158	BP23MVEXP-ENV-GS-100	70%	MFA	DG	95	628062	6178339	628064	6178337	2	-2	3	134	AR	
24-Oct-2023	12:16	159	BP23MVEXP-ENV-GS-100	70%	MFB	DG	95	628062	6178339	628064	6178337	2	-2	3	133	AR	
24-Oct-2023	12:25	160	BP23MVEXP-ENV-GS-100	70%	CHEM2	DG	95	628061	6178339	628064	6178337	3	-2	3	121	AR	
24-Oct-2023	13:37	161	BP23MVEXP-ENV-GS-101	70%	CHEM1	DG	91	634212	6178844	634211	6178844	-1	0	1	271	AR	
24-Oct-2023	13:48	162	BP23MVEXP-ENV-GS-101	60%	MFA	DG	90	634213	6178844	634211	6178844	-2	0	2	262	AR	
24-Oct-2023	14:01	163	BP23MVEXP-ENV-GS-101	60%	MFB	DG	90	634213	6178844	634211	6178844	-2	0	2	270	AR	
24-Oct-2023	14:09	164	BP23MVEXP-ENV-GS-101	50%	CHEM2	DG	90	634212	6178845	634211	6178844	-1	-1	1	245	AR	
24-Oct-2023	15:09	165	BP23MVEXP-ENV-GS-103	50%	MFA	DG	86	635614	6175058	635613	6175059	-1	1	1	329	AR	
24-Oct-2023	15:18	166	BP23MVEXP-ENV-GS-103	50%	MFB	DG	86	635614	6175058	635613	6175059	-1	1	2	320	AR	
24-Oct-2023	15:25	167	BP23MVEXP-ENV-GS-103	50%	PSA	DG	86	635613	6175059	635613	6175059	0	0	1	319	AR	
24-Oct-2023	16:19	168	BP23MVEXP-ENV-GS-105	40%	CHEM1	DG	86	635666	6171915	635667	6171916	1	1	1	29	SP	
24-Oct-2023	16:29	169	BP23MVEXP-ENV-GS-105	0%	No Sample	DG	86	635669	6171915	635667	6171916	-2	1	3	297	SP	Rock in jaws
24-Oct-2023	16:36	170	BP23MVEXP-ENV-GS-105	20%	No Sample	DG	86	635667	6171916	635667	6171916	0	0	0	8	SP	Low retention
24-Oct-2023	16:43	171	BP23MVEXP-ENV-GS-105	20%	No Sample	DG	86	635669	6171916	635667	6171916	-2	0	2	278	SP	Low retention
24-Oct-2023	16:51	172	BP23MVEXP-ENV-GS-105	60%	MFA	DG	86	635659	6171917	635667	6171916	8	-1	8	94	SP	
24-Oct-2023	17:00	173	BP23MVEXP-ENV-GS-105	50%	MFB	DG	86	635659	6171916	635667	6171916	8	0	8	88	SP	
24-Oct-2023	17:10	174	BP23MVEXP-ENV-GS-105	50%	CHEM2	DG	86	635659	6171917	635667	6171916	8	-1	8	98	SP	
24-Oct-2023	18:07	175	BP23MVEXP-ENV-GS-107	60%	MFA	DG	90	633418	6168577	633418	6168578	0	1	1	20	SP	
24-Oct-2023	18:16	176	BP23MVEXP-ENV-GS-107	40%	MFB	DG	90	633418	6168577	633418	6168578	0	1	1	344	SP	
24-Oct-2023	18:24	177	BP23MVEXP-ENV-GS-107	50%	PSA	DG	90	633418	6168578	633418	6168578	0	0	0	303	SP	
24-Oct-2023	19:48	178	BP23MVEXP-ENV-GS-102	60%	MFA	DG	86	627847	6174325	627849	6174330	2	5	6	23	SP	
24-Oct-2023	19:55	179	BP23MVEXP-ENV-GS-102	40%	MFB	DG	86	627848	6174325	627849	6174330	1	5	5	9	SP	
24-Oct-2023	20:02	180	BP23MVEXP-ENV-GS-102	50%	PSA	DG	86	627848	6174330	627849	6174330	1	0	1	90	SP	
24-Oct-2023	21:05	181	BP23MVEXP-ENV-GS-104	40%	CHEM1	DG	85	627687	6170306	627686	6170307	-1	1	2	311	SP	
24-Oct-2023	21:15	182	BP23MVEXP-ENV-GS-104	40%	MFA	DG	85	627687	6170305	627686	6170307	-1	2	2	331	SP	
24-Oct-2023	21:25	183	BP23MVEXP-ENV-GS-104	40%	MFB	DG	85	627687	6170306	627686	6170307	-1	1	2	316	SP	
24-Oct-2023	21:32	184	BP23MVEXP-ENV-GS-104	40%	CHEM2	DG	85	627687	6170305	627686	6170307	-1	2	2	328	SP	
24-Oct-2023	22:29	185	BP23MVEXP-ENV-GS-106	50%	MFA	DG	74	627404	6166334	627403	6166336	-1	2	2	326	SP	
24-Oct-2023	22:38	186	BP23MVEXP-ENV-GS-106	0%	No Sample	DG	75	627405	6166335	627403	6166336	-2	1	2	302	SP	Misfire
24-Oct-2023	22:43	187	BP23MVEXP-ENV-GS-106	0%	No Sample	DG	74	627404	6166335	627403	6166336	-1	1	2	300	SP	Rock in jaws
24-Oct-2023	22:51	188	BP23MVEXP-ENV-GS-106	40%	MFB	DG	75	627405	6166335	627403	6166336	-2	1	3	293	SP	
24-Oct-2023	22:59	189	BP23MVEXP-ENV-GS-106	40%	PSA	DG	75	627405	6166335	627403	6166336	-2	1	2	313	AN	
31-Oct-2023	19:48	190	BP23MVEXP-ENV-GS-109	90%	CHEM1	DG	95	631206	6165284	631206	6165285	0	1	1	347	SP	
31-Oct-2023	20:00	191	BP23MVEXP-ENV-GS-109	90%	MFA	DG	95	631206	6165285	631206	6165285	0	0	0	13	SP	
31-Oct-2023	20:10	192	BP23MVEXP-ENV-GS-109	60%	MFB	DG	95	631206	6165285	631206	6165285	0	0	0	236	SP	
31-Oct-2023	20:18	193	BP23MVEXP-ENV-GS-109	70%	CHEM2	DG	94	631206	6165284	631206	6165285	0	1	1	20	SP	
31-Oct-2023	21:17	194	BP23MVEXP-ENV-GS-110	60%	MFA	DG	86	628946	6161937	628946	6161934	0	-3	3	170	SP	
31-Oct-2023	21:24	195	BP23MVEXP-ENV-GS-110	60%	MFB	DG	86	628946	6161938	628946	6161934	0	-4	4	181	SP	
31-Oct-2023	21:30	196	BP23MVEXP-ENV-GS-110	70%	PSA	DG	86	628946	6161937	628946	6161934	0	-3	3	172	SP	
31-Oct-2023	22:22	197	BP23MVEXP-ENV-GS-108	70%	CHEM1	DG	88	627179	6162320	627184	6162321	5	1	5	77	SP	
31-Oct-2023	22:32	198	BP23MVEXP-ENV-GS-108	70%	MFA	DG	88	627179	6162320	627184	6162321	5	1	5	74	SP	
31-Oct-2023	22:41	199	BP23MVEXP-ENV-GS-108	70%	MFB	DG	88	627179	6162319	627184	6162321	5	2	5	72	SP	
31-Oct-2023	22:49	200	BP23MVEXP-ENV-GS-108	70%	CHEM2	DG	88	627179	6162320	627184	6162321	5	1	5	73	SP	
31-Oct-2023	23:51	201	BP23MVEXP-ENV-GS-111	0%	No Sample	DG	94	626976	6158543	626978	6158542	2	-1	2	107	SP	Hagfish
01-Nov-2023	00:02	202	BP23MVEXP-ENV-GS-111	90%	MFA	DG	94	626977	6158543	626978	6158542	1	-1	1	114	AN	
01-Nov-2023	00:16	203	BP23MVEXP-ENV-GS-111	90%	MFB	DG	94	626977	6158543	626978	6158542	1	-1	2	119	AN	
01-Nov-2023	00:28	204	BP23MVEXP-ENV-GS-111	90%	PSA	DG	95	626977	6158542	626978	6158542	1	0	1	96	AN	
01-Nov-2023	01:25	205	BP23MVEXP-ENV-GS-112	90%	CHEM1	DG	104	626283	6154436	626284	6154439	1	3	4	20	AN	
01-Nov-2023	01:43	206	BP23MVEXP-ENV-GS-112	90%	MFA	DG	104	626284	6154438	626284	6154439	0	1	1	10	AN	
01-Nov-2023	01:57	207	BP23MVEXP-ENV-GS-112	90%	MFB	DG	104	626284	6154437	626284	6154439	0	2	2	359	AN	
01-Nov-2023	02:09	208	BP23MVEXP-ENV-GS-112	90%	CHEM2	DG	104	626284	6154437	626284	6154439	0	2	2	10	AN	
01-Nov-2023	03:07	209	BP23MVEXP-ENV-GS-113	90%	MFA	DG	101	625643	6150622	625643	6150623	0	1	1	343	AN	
01-Nov-2023	03:21	210	BP23MVEXP-ENV-GS-113	90%	MFB	DG	101	625644	6150622	625643	6150623	-1	1	1	329	AN	
01-Nov-2023	03:33	211	BP23MVEXP-ENV-GS-113	90%	PSA	DG	101	625644	6150621	625643	6150623	-1	2	2	318	AN	
01-Nov-2023	04:26	212	BP23MVEXP-ENV-GS-114	90%	CHEM1	DG	98	624981	6146662	624983	6146663	2	1	2	52	AN	
01-Nov-2023	04:42	213	BP23MVEXP-ENV-GS-114	90%	MFA	DG	98	624982	6146665	624983	6146663	1	-2	2	154	AN	
01-Nov-2023	04:55	214	BP23MVEXP-ENV-GS-114	90%	MFB	DG	98	624982	6146663	624983	6146663	1	0	1	92	AN	
01-Nov-2023	05:07	215	BP23MVEXP-ENV-GS-114	90%	CHEM2	DG	98	624983	6146663	624983	6146663	0	0	0	307	AN	
01-Nov-2023	06:07	216	BP23MVEXP-ENV-GS-115	90%	MFA	DG	99	624294	6142874	624293	6142873	-1	-1	1	227	AN	
01-Nov-2023	06:22	217	BP23MVEXP-ENV-GS-115	90%	MFB	DG	100	624294	6142874	624293	6142873	-1	-1	1	229	AR	
01-Nov-2023	06:36	218	BP23MVEXP-ENV-GS-115	90%	PSA	DG	100	624294	6142873	624293	6142873	-1	0	1	261	AR	
01-Nov-2023	07:37	219	BP23MVEXP-ENV-GS-116	90%	CHEM1	DG	90	623603	6138801	623603	6138802	0	1	1	337	AR	
01-Nov-2023	07:53	220	BP23MVEXP-ENV-GS-116	90%	MFA	DG	90	623604	6138799	623603	6138802	-1	3	3	341	AR	
01-Nov-2023	08:05	221	BP23MVEXP-ENV-GS-116	90%	MFB	DG	89	623603	6138801	623603	6138802	1	1	1	40	AR	
01-Nov-2023	08:15	222	BP23MVEXP-ENV-GS-116	90%	CHEM2	DG	89	623603	6138801	623603	6138802	0	1	1	345	AR	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
01-Nov-2023	09:25	223	BP23MVEXP-ENV-GS-117	90%	MFA	DG	93	622944	6134913	622943	6134912	-1	-1	2	206	AR	
01-Nov-2023	09:37	224	BP23MVEXP-ENV-GS-117	90%	MFB	DG	93	622943	6134912	622943	6134912	0	0	1	211	AR	
01-Nov-2023	09:47	225	BP23MVEXP-ENV-GS-117	90%	PSA	DG	93	622945	6134912	622943	6134912	-2	0	2	267	AR	
04-Nov-2023	05:17	226	BP23MVEXP-ENV-GS-026	40%	MFA	DG	75	659652	6204209	659653	6204210	1	1	1	30	AN	
04-Nov-2023	05:27	227	BP23MVEXP-ENV-GS-026	40%	MFB	DG	75	659653	6204210	659653	6204210	0	0	0	21	AN	
04-Nov-2023	05:38	228	BP23MVEXP-ENV-GS-026	50%	PSA	DG	75	659652	6204208	659653	6204210	1	2	2	38	AN	
04-Nov-2023	06:20	229	BP23MVEXP-ENV-GS-027	0%	No Sample	DG	74	659868	6200219	659868	6200219	0	0	0	22	AR	Misfire
04-Nov-2023	06:29	230	BP23MVEXP-ENV-GS-027	0%	No Sample	DG	74	659869	6200220	659868	6200219	-1	-1	1	216	AR	Rock in jaws
04-Nov-2023	06:39	231	BP23MVEXP-ENV-GS-027	50%	CHEM1	DG	74	659868	6200219	659868	6200219	0	0	1	144	AR	
04-Nov-2023	06:53	232	BP23MVEXP-ENV-GS-027	40%	MFA	DG	74	659868	6200219	659868	6200219	0	0	0	326	AR	
04-Nov-2023	07:04	233	BP23MVEXP-ENV-GS-027	60%	MFB	DG	74	659869	6200220	659868	6200219	-1	-1	1	235	AR	
04-Nov-2023	07:16	234	BP23MVEXP-ENV-GS-027	50%	CHEM2	DG	74	659868	6200219	659868	6200219	0	0	0	322	AR	
04-Nov-2023	08:10	235	BP23MVEXP-ENV-GS-028	50%	MFA	DG	77	660086	6196218	660086	6196220	0	2	2	9	AR	
04-Nov-2023	08:21	236	BP23MVEXP-ENV-GS-028	40%	MFB	DG	77	660086	6196219	660086	6196220	0	1	1	11	AR	
04-Nov-2023	08:30	237	BP23MVEXP-ENV-GS-028	40%	PSA	DG	77	660086	6196219	660086	6196220	0	1	1	2	AR	
04-Nov-2023	09:15	238	BP23MVEXP-ENV-GS-029	50%	CHEM1	DG	79	660305	6192231	660307	6192230	2	-1	2	119	AR	
04-Nov-2023	09:31	239	BP23MVEXP-ENV-GS-029	50%	MFA	DG	79	660307	6192231	660307	6192230	0	-1	1	177	AR	
04-Nov-2023	09:43	240	BP23MVEXP-ENV-GS-029	50%	MFB	DG	79	660308	6192231	660307	6192230	-1	-1	2	211	AR	
04-Nov-2023	09:53	241	BP23MVEXP-ENV-GS-029	30%	No Sample	DG	79	660308	6192230	660307	6192230	-1	0	1	227	AR	Low retention
04-Nov-2023	10:02	242	BP23MVEXP-ENV-GS-029	60%	CHEM2	DG	79	660307	6192231	660307	6192230	0	-1	1	172	AR	
04-Nov-2023	10:53	243	BP23MVEXP-ENV-GS-030	40%	CHEM1	DG	76	660578	6188237	660581	6188239	3	2	4	61	AR	
04-Nov-2023	11:06	244	BP23MVEXP-ENV-GS-030	60%	MFA	DG	76	660579	6188237	660581	6188239	2	2	3	45	AR	
04-Nov-2023	11:18	245	BP23MVEXP-ENV-GS-030	60%	MFB	DG	76	660577	6188237	660581	6188239	4	2	4	56	AR	
04-Nov-2023	11:28	246	BP23MVEXP-ENV-GS-030	60%	CHEM2	DG	76	660578	6188237	660581	6188239	3	2	4	58	AR	
04-Nov-2023	12:17	247	BP23MVEXP-ENV-GS-031	30%	No Sample	DG	75	660799	6184245	660798	6184246	-1	1	1	302	AR	Low retention
04-Nov-2023	12:28	248	BP23MVEXP-ENV-GS-031	40%	CHEM1	DG	75	660798	6184245	660798	6184246	0	1	1	4	AR	
04-Nov-2023	12:37	249	BP23MVEXP-ENV-GS-031	40%	MFA	DG	75	660797	6184245	660798	6184246	1	1	1	37	AR	
04-Nov-2023	12:46	250	BP23MVEXP-ENV-GS-031	30%	No Sample	DG	75	660798	6184245	660798	6184246	0	1	1	355	AR	Low retention
04-Nov-2023	12:54	251	BP23MVEXP-ENV-GS-031	40%	MFB	DG	75	660798	6184245	660798	6184246	0	1	1	8	AR	
04-Nov-2023	13:02	252	BP23MVEXP-ENV-GS-031	40%	CHEM2	DG	75	660798	6184244	660798	6184246	0	2	2	5	AR	
04-Nov-2023	13:46	253	BP23MVEXP-ENV-GS-032	30%	No Sample	DG	71	661014	6180250	661016	6180251	2	1	2	62	AR	Low retention
04-Nov-2023	13:51	254	BP23MVEXP-ENV-GS-032	30%	No Sample	DG	71	661013	6180250	661016	6180251	3	1	3	76	AR	Low retention
04-Nov-2023	13:56	255	BP23MVEXP-ENV-GS-032	30%	No Sample	DG	71	661014	6180249	661016	6180251	2	2	3	47	AR	Low retention, moved 10m north
04-Nov-2023	14:03	256	BP23MVEXP-ENV-GS-032	40%	CHEM1	DG	71	661013	6180259	661016	6180251	3	-8	8	161	AR	
04-Nov-2023	14:12	257	BP23MVEXP-ENV-GS-032	40%	MFA	DG	71	661014	6180258	661016	6180251	2	-7	7	165	AR	
04-Nov-2023	14:21	258	BP23MVEXP-ENV-GS-032	40%	MFB	DG	71	661014	6180256	661016	6180251	2	-5	5	153	AR	
04-Nov-2023	14:29	259	BP23MVEXP-ENV-GS-032	0%	No Sample	DG	71	661014	6180257	661016	6180251	2	-6	6	161	AR	Rock in jaws
04-Nov-2023	14:34	260	BP23MVEXP-ENV-GS-032	0%	No Sample	DG	71	661013	6180256	661016	6180251	3	-5	6	149	AR	Rock in jaws
04-Nov-2023	14:39	261	BP23MVEXP-ENV-GS-032	30%	CHEM2	DG	71	661014	6180256	661016	6180251	2	-5	6	156	AR	
04-Nov-2023	15:19	262	BP23MVEXP-ENV-GS-033	40%	CHEM1	DG	69	661235	6176268	661235	6176269	0	1	1	9	AR	
04-Nov-2023	15:29	263	BP23MVEXP-ENV-GS-033	40%	MFA	DG	69	661235	6176269	661235	6176269	0	0	0	309	AR	
04-Nov-2023	15:35	264	BP23MVEXP-ENV-GS-033	30%	No Sample	DG	69	661235	6176268	661235	6176269	0	1	1	344	AR	Low retention
04-Nov-2023	15:41	265	BP23MVEXP-ENV-GS-033	0%	No Sample	DG	69	661235	6176269	661235	6176269	0	0	0	331	AR	Rock in jaws
05-Nov-2023	15:45	266	BP23MVEXP-ENV-GS-033	40%	MFB	DG	69	661236	6176268	661235	6176269	-1	1	1	84	AR	
04-Nov-2023	15:53	267	BP23MVEXP-ENV-GS-033	20%	No Sample	DG	69	661236	6176268	661235	6176269	-1	1	1	82	AR	Low retention, moved 10m west
04-Nov-2023	16:00	268	BP23MVEXP-ENV-GS-033	10%	No Sample	DG	69	661226	6176268	661235	6176269	9	1	10	357	AR	Low retention
04-Nov-2023	16:05	269	BP23MVEXP-ENV-GS-033	50%	CHEM2	DG	69	661226	6176268	661235	6176269	9	1	9	357	AR	
04-Nov-2023	16:45	270	BP23MVEXP-ENV-GS-034	70%	CHEM1	DG	67	661477	6172274	661478	6172275	1	1	1	31	AR	
04-Nov-2023	16:55	271	BP23MVEXP-ENV-GS-034	60%	MFA	DG	67	661478	6172275	661478	6172275	0	0	0	194	AR	
04-Nov-2023	17:02	272	BP23MVEXP-ENV-GS-034	50%	MFB	DG	67	661478	6172276	661478	6172275	0	-1	1	149	AR	
04-Nov-2023	17:12	273	BP23MVEXP-ENV-GS-034	60%	CHEM2	DG	67	661478	6172275	661478	6172275	0	0	0	77	AR	
04-Nov-2023	17:59	274	BP23MVEXP-ENV-GS-035	0%	No Sample	DG	67	661225	6168223	661223	6168222	-2	-1	2	252	SP	Rock in jaws
04-Nov-2023	18:04	275	BP23MVEXP-ENV-GS-035	0%	No Sample	DG	67	661225	6168221	661223	6168222	-2	1	2	298	SP	Rock in jaws
04-Nov-2023	18:09	276	BP23MVEXP-ENV-GS-035	0%	No Sample	DG	67	661225	6168222	661223	6168222	-2	0	2	272	SP	Rock in jaws
04-Nov-2023	18:16	277	BP23MVEXP-ENV-GS-035	10%	No Sample	DG	67	661235	6168223	661223	6168222	-12	-1	12	263	SP	Low retention
04-Nov-2023	18:30	278	BP23MVEXP-ENV-GS-035	0%	No Sample	HG	67	661235	6168222	661223	6168222	-12	0	12	269	SP	Low retention
04-Nov-2023	18:53	279	BP23MVEXP-ENV-GS-035	20%	No Sample	HG	67	661235	6168222	661223	6168222	-12	0	12	268	SP	Low retention, station abandoned
04-Nov-2023	19:31	280	BP23MVEXP-ENV-GS-036	0%	No Sample	DG	69	658815	6165337	658815	6165338	0	1	1	337	SP	Rock in jaws
04-Nov-2023	19:35	281	BP23MVEXP-ENV-GS-036	40%	CHEM1	DG	69	658816	6165337	658815	6165338	-1	1	1	331	SP	
04-Nov-2023	19:45	282	BP23MVEXP-ENV-GS-036	40%	MFA	DG	69	658816	6165337	658815	6165338	-1	1	1	326	SP	
04-Nov-2023	19:53	283	BP23MVEXP-ENV-GS-036	50%	MFB	DG	69	658816	6165338	658815	6165338	-1	0	1	249	SP	
04-Nov-2023	19:59	284	BP23MVEXP-ENV-GS-036	40%	CHEM2	DG	69	658816	6165337	658815	6165338	-1	1	1	316	SP	
04-Nov-2023	20:54	285	BP23MVEXP-ENV-GS-037	40%	MFA	DG	67	656202	6162208	656204	6162209	2	1	2	60	SP	
04-Nov-2023	21:00	286	BP23MVEXP-ENV-GS-037	50%	MFB	DG	67	656203	6162207	656204	6162209	1	2	3	18	SP	
04-Nov-2023	21:06	287	BP23MVEXP-ENV-GS-037	50%	PSA	DG	67	656203	6162207	656204	6162209	1	2	2	36	SP	
04-Nov-2023	21:57	288	BP23MVEXP-ENV-GS-038	50%	CHEM1	DG	68	653641	6159135	653638	6159136	-3	1	3	293	SP	
04-Nov-2023	22:06	289	BP23MVEXP-ENV-GS-038	50%	MFA	DG	68	653642	6159135	653638	6159136	-4	2	4	292	SP	
04-Nov-2023	22:16	290	BP23MVEXP-ENV-GS-038	0%	No Sample	DG	68	653640	6159133	653638	6159136	-2	3	4	334	SP	Misfire
04-Nov-2023	22:20	291	BP23MVEXP-ENV-GS-038	40%	MFB	DG	67	653641	6159133	653638	6159136	-3	3	4	309	SP	
04-Nov-2023	22:27	292	BP23MVEXP-ENV-GS-038	60%	CHEM2	DG	67	653641	6159134	653638	6159136	-3	2	3	313	SP	
04-Nov-2023	23:16	293	BP23MVEXP-ENV-GS-039	40%	MFA	DG	73	651095	6156058	651097	6156056	2	-2	3	133	SP	
04-Nov-2023	23:24	294	BP23MVEXP-ENV-GS-039	20%	No Sample	DG	73	651097	6156056	651097	6156056	0	0	0	77	SP	Low retention
04-Nov-2023	23:29	295	BP23MVEXP-ENV-GS-039	30%	No Sample	DG	73	651095	6156056	651097	6156056	2	0	2	96	SP	Low retention
04-Nov-2023	23:35	296	BP23MVEXP-ENV-GS-039	40%	MFB	DG	73	651097	6156057	651097	6156056	0	-1	1	170	SP	
04-Nov-2023	23:41	297	BP23MVEXP-ENV-GS-039	40%	PSA	DG	73	651096	6156057	651097	6156056	1	-1	1	152	SP	
05-Nov-2023	00:33	298	BP23MVEXP-ENV-GS-040	90%	CHEM1	DG	88	648723	6152680	648723	6152682	0	2	2	360	AN	
05-Nov-2023	00:50	299	BP23MVEXP-ENV-GS-040	60%	MFA	DG	88	648724	6152680	648723	6152682	-1	2	2	335	AN	
05-Nov-2023	01:02	300	BP23MVEXP-ENV-GS-040	80%	MFB	DG	88	648724	6152680	648723	6152682	-1	2	2	336	AN	
05-Nov-2023	01:12	301	BP23MVEXP-ENV-GS-040	90%	CHEM2	DG	88	648724	6152680	648723	6152682	-1	2	2	343	AN	
05-Nov-2023	02:07	302	BP23MVEXP-ENV-GS-041	90%	MFA	DG	90	646686	6149424	646687	6149423	1	-1	1	132	AN	
05-Nov-2023	02:17	303	BP23MVEXP-ENV-GS-041	70%	MFB	DG	90	646687	6149423	646687	6149423	1	0	1	74	AN	
05-Nov-2023	02:29	304	BP23MVEXP-ENV-GS-041	90%	PSA	DG	90	646687	6149423	646687	6149423	0	0	0	60	AN	
05-Nov-2023	03:20	305	BP23MVEXP-ENV-GS-042	80%	CHEM1	DG	91	645394	6145646	645395	6145643	1	-3	3	155	AN	
05-Nov-2023	03:33	306	BP23MVEXP-ENV-GS-042	0%	No Sample	DG	91	645396	6145644	645395	6145643	-1	-1	1	234	AN	Misfire
05-Nov-2023	03:42	307	BP23MVEXP-ENV-GS-042	80%	MFA	DG	91	645393	6145646	645395	6145643	2	-3	3	137	AN	
05-Nov-2023	03:54	308	BP23MVEXP-ENV-GS-042	70%	MFB	DG	91	645399	6145646	645395	6145643	-4	-3	5	231	AN	
05-Nov-2023	05:29	309	BP23MVEXP-ENV-GS-042	90%	CHEM2	DG	91	645396	6145644	645395	6145643	-1	-1	1	246	AN	
05-Nov-2023	06:23	310	BP23MVEXP-ENV-GS-043	90%	MFA	DG	90	644054	6141779	644054	6141780	0	1	1	1	AR	
05-Nov-2023	06:37	311	BP23MVEXP-ENV-GS-043	50%	MFB	DG	90	644055	6141780	644054	6141780	-1	0	1	241	AR	
05-Nov-2023	06:49	312	BP23MVEXP-ENV-GS-043	70%	PSA	DG	90	644054	6141779	644054	6141780	0	1	1	29	AR	
05-Nov-2023	07:41	313	BP23MVEXP-ENV-GS-044	0%	No Sample	DG	96	642775	6138053	642775	6138054	0	1	1	320	AR	Misfire
05-Nov-2023	07:48	314	BP23MVEXP-ENV-GS-044	90%	CHEM1	DG	96	642774	6138053	642775	6138054	1	1	1	48	AR	
05-Nov-2023	08:03	315	BP23MVEXP-ENV-GS-044	90%	MFA	DG	96	642774	6138054	642775	6138054	1	0	1	55	AR	
05-Nov-2023	08:17	316	BP23MVEXP-ENV-GS-044	90%	MFB	DG	96	642775	6138053	642775	6138054	0	1	1	16	AR	
05-Nov-2023	08:28	317	BP23MVEXP-ENV-GS-044	90%	CHEM2	DG	96	642776	6138053	642775	6138054	-1	1	1	321	AR	
05-Nov-2023	09:22	318	BP23MVEXP-ENV-GS-045	90%	MFA	DG	95	641484	6134299	641483	6134299	-1	0	1	274	AR	
05-Nov-2023	09:35	319	BP23MVEXP-ENV-GS-045	90%	MFB	DG	95	641485	6134299	641483	6134299	-2	0	2	281	AR	
05-Nov-2023	09:46	320	BP23MVEXP-ENV-GS-045	90%	PSA	DG	95	641485	6134298	641483	6134299	-2	1	2	292	AR	
05-Nov-2023	10:44	321	BP23MVEXP-ENV-GS-046	90%	CHEM1	DG	90	640072	6130539	640073	6130539	1	1	1	59	AR	
05-Nov-2023	10:58	322	BP23MVEXP-ENV-GS-046	90%	MFA	DG	89	640074	6130539	640073	6130539	-1	0	1	307	AR	
05-Nov-2023	11:08	323	BP23MVEXP-ENV-GS-046	90%	MFB	DG	89	640073	6130538	640073	6130539	0	1	1	354	AR	
05-Nov-2023	11:18	324	BP23MVEXP-ENV-GS-046	90%	CHEM2	DG	89	640073	6130538	640073	6130539	0	1	1	359	AR	
05-Nov-2023	12:45	325	BP23MVEXP-ENV-GS-048	60%	CHEM1	DG	81	640644	6122943	640642	6122945	-2	2	2	317	AR	
05-Nov-2023	12:54	326	BP23MVEXP-ENV-GS-048	60%	MFA	DG	81	640644	6122943	640642	6122945	-2	2	2	310	AR	
05-Nov-2023	13:02	327	BP23MVEXP-ENV-GS-048	50%	MFB	DG	81	640643	6122944	640642	6122945	-1	1	1	313	AR	
05-Nov-2023	13:10	328	BP23MVEXP-ENV-GS-048	60%	CHEM2	DG	81	640645	6122944	640642	6122945	-3	1	3	282	AR	
05-Nov-2023	14:22	329	BP23MVEXP-ENV-GS-050	50%	CHEM1	DG	68	642448	6115177	642446	6115178	-2	1	2	301	AR	
05-Nov-2023	14:32	330	BP23MVEXP-ENV-GS-050	50%	MFA	DG	68	642448	6115178	642446	6115178	-2	0	2	282	AR	
05-Nov-2023	14:40	331	BP23MVEXP-ENV-GS-050	40%	MFB	DG	68	642448	6115177	642446	6115178	-2	1	2	290	AR	
05-Nov-2023	14:47	332	BP23MVEXP-ENV-GS-050	40%	CHEM2	DG	68	642448	6115176	642446	6115178	-2	2	2	308	AR	
05-Nov-2023	15:56	333	BP23MVEXP-ENV-GS-052	10%	No Sample	DG	66	638951	6108154	638949	6108153	-2	-1	2	250	AR	Low retention
05-Nov-2023	16:02	334	BP23MVEXP-ENV-GS-052	20%	No Sample	DG	66	638953	6108153	638949	6108153	-4	0	4	273	AR	Low retention
05-Nov-2023	16:07	335	BP23MVEXP-ENV-GS-052	20%	No Sample	DG	66	638952	6108153	638949	6108153	-3	0	3	279	AR	Low retention, moved 10m west

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027			Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	CoG						
Project Name	Morven ECR			Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97
Primary Positioning System	Starpack 1			Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924	Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
05-Nov-2023	16:13	336	BP23MVEXP-ENV-GS-052	10%	No Sample	DG	66	638942	6108153	638949	6108153	7	0	7	93	AR	Low retention
05-Nov-2023	16:18	337	BP23MVEXP-ENV-GS-052	40%	CHEM1	DG	67	638942	6108154	638949	6108153	7	-1	7	103	AR	
05-Nov-2023	16:27	338	BP23MVEXP-ENV-GS-052	20%	No Sample	DG	67	638942	6108154	638949	6108153	7	-1	7	97	AR	Low retention
05-Nov-2023	16:33	339	BP23MVEXP-ENV-GS-052	10%	No Sample	DG	67	638942	6108154	638949	6108153	7	-1	7	97	AR	Low retention, station abandoned
05-Nov-2023	17:37	340	BP23MVEXP-ENV-GS-054	60%	CHEM1	DG	71	635347	6100991	635346	6100990	-1	-1	1	225	AR	
05-Nov-2023	17:45	341	BP23MVEXP-ENV-GS-054	40%	MFA	DG	71	635348	6100991	635346	6100990	-2	-1	2	245	SP	
05-Nov-2023	17:54	342	BP23MVEXP-ENV-GS-054	70%	MFB	DG	71	635347	6100991	635346	6100990	-1	-1	1	232	SP	
05-Nov-2023	18:01	343	BP23MVEXP-ENV-GS-054	40%	CHEM2	DG	71	635347	6100991	635346	6100990	-1	-1	1	226	SP	
05-Nov-2023	19:19	344	BP23MVEXP-ENV-GS-056	80%	CHEM1	DG	80	631745	6093825	631745	6093826	0	2	2	2	SP	
05-Nov-2023	19:29	345	BP23MVEXP-ENV-GS-056	60%	MFA	DG	80	631745	6093825	631745	6093826	0	1	1	354	SP	
05-Nov-2023	19:38	346	BP23MVEXP-ENV-GS-056	70%	MFB	DG	80	631745	6093825	631745	6093826	0	1	1	323	SP	
05-Nov-2023	19:45	347	BP23MVEXP-ENV-GS-056	80%	CHEM2	DG	80	631745	6093826	631745	6093826	0	0	0	286	SP	
05-Nov-2023	20:35	348	BP23MVEXP-ENV-GS-057	90%	MFA	DG	83	628561	6091689	628558	6091692	-3	3	4	313	SP	
05-Nov-2023	20:41	349	BP23MVEXP-ENV-GS-057	90%	MFB	DG	83	628561	6091689	628558	6091692	-3	3	4	313	SP	
05-Nov-2023	20:49	350	BP23MVEXP-ENV-GS-057	0%	No Sample	DG	83	628561	6091689	628558	6091692	-3	3	4	311	SP	Misfire
05-Nov-2023	20:53	351	BP23MVEXP-ENV-GS-057	90%	PSA	DG	83	628560	6091690	628558	6091692	-2	2	3	314	SP	
05-Nov-2023	21:28	352	BP23MVEXP-ENV-GS-058	90%	MFA	DG	82	629040	6091086	629040	6091085	0	-1	1	160	SP	
05-Nov-2023	21:35	353	BP23MVEXP-ENV-GS-058	90%	MFB	DG	82	629039	6091086	629040	6091085	1	-1	2	153	SP	
05-Nov-2023	21:43	354	BP23MVEXP-ENV-GS-058	90%	PSA	DG	82	629039	6091086	629040	6091085	1	-1	1	154	SP	
05-Nov-2023	22:35	355	BP23MVEXP-ENV-GS-059	90%	MFA	DG	77	624892	6090059	624889	6090061	-3	2	4	296	SP	
05-Nov-2023	22:44	356	BP23MVEXP-ENV-GS-059	90%	MFB	DG	77	624892	6090059	624889	6090061	-3	2	4	299	SP	
05-Nov-2023	22:54	357	BP23MVEXP-ENV-GS-059	90%	CHEM1	DG	77	624893	6090059	624889	6090061	-4	2	4	297	SP	
05-Nov-2023	23:03	358	BP23MVEXP-ENV-GS-059	90%	CHEM2	DG	77	624893	6090060	624889	6090061	-4	1	4	287	SP	
05-Nov-2023	23:39	359	BP23MVEXP-ENV-GS-060	90%	CHEM1	DG	75	625886	6088497	625885	6088496	-1	-1	1	229	SP	
05-Nov-2023	23:49	360	BP23MVEXP-ENV-GS-060	90%	MFA	DG	75	625888	6088496	625885	6088496	-3	0	3	274	SP	
06-Nov-2023	00:00	361	BP23MVEXP-ENV-GS-060	90%	MFB	DG	75	625887	6088497	625885	6088496	-2	-1	2	236	AN	
06-Nov-2023	00:09	362	BP23MVEXP-ENV-GS-060	90%	CHEM2	DG	75	625887	6088497	625885	6088496	-2	-1	3	244	AN	
06-Nov-2023	00:59	363	BP23MVEXP-ENV-GS-061	90%	MFA	DG	61	621238	6088431	621239	6088432	1	1	1	41	AN	
06-Nov-2023	01:07	364	BP23MVEXP-ENV-GS-061	90%	MFB	DG	61	621240	6088431	621239	6088432	-1	1	1	325	AN	
06-Nov-2023	01:14	365	BP23MVEXP-ENV-GS-061	90%	PSA	DG	61	621238	6088431	621239	6088432	1	1	1	34	AN	
06-Nov-2023	01:55	366	BP23MVEXP-ENV-GS-062	90%	MFA	DG	61	622796	6085954	622796	6085952	0	-2	2	189	AN	
06-Nov-2023	02:03	367	BP23MVEXP-ENV-GS-062	90%	MFB	DG	61	622797	6085954	622796	6085952	-1	-2	2	205	AN	
06-Nov-2023	02:11	368	BP23MVEXP-ENV-GS-062	90%	PSA	DG	60	622797	6085955	622796	6085952	-1	-3	3	193	AN	
06-Nov-2023	03:08	369	BP23MVEXP-ENV-GS-063	80%	CHEM1	DG	50	617596	6086807	617596	6086808	0	1	1	10	AN	
06-Nov-2023	03:18	370	BP23MVEXP-ENV-GS-063	50%	MFA	DG	50	617596	6086808	617596	6086808	0	0	0	20	AN	
06-Nov-2023	03:24	371	BP23MVEXP-ENV-GS-063	50%	MFB	DG	50	617596	6086808	617596	6086808	0	0	0	327	AN	
06-Nov-2023	03:32	372	BP23MVEXP-ENV-GS-063	50%	CHEM2	DG	50	617597	6086808	617596	6086808	-1	0	1	268	AN	
06-Nov-2023	04:18	373	BP23MVEXP-ENV-GS-064	40%	CHEM1	DG	51	619738	6083423	619737	6083425	-1	2	2	326	AN	
06-Nov-2023	04:30	374	BP23MVEXP-ENV-GS-064	40%	MFA	DG	51	619738	6083423	619737	6083425	-1	2	3	324	AN	
06-Nov-2023	04:36	375	BP23MVEXP-ENV-GS-064	40%	MFB	DG	51	619738	6083423	619737	6083425	-1	2	2	325	AN	
06-Nov-2023	04:44	376	BP23MVEXP-ENV-GS-064	30%	No Sample	DG	51	619738	6083423	619737	6083425	-1	2	2	342	AN	Low retention
06-Nov-2023	04:51	377	BP23MVEXP-ENV-GS-064	80%	CHEM2	DG	51	619738	6083424	619737	6083425	-1	1	2	315	AN	
06-Nov-2023	05:37	378	BP23MVEXP-ENV-GS-066	90%	MFA	DG	45	616632	6080873	616631	6080874	-1	1	2	338	AN	
06-Nov-2023	05:47	379	BP23MVEXP-ENV-GS-066	90%	MFB	DG	45	616631	6080873	616631	6080874	0	1	1	351	AN	
06-Nov-2023	05:56	380	BP23MVEXP-ENV-GS-066	90%	PSA	DG	45	616631	6080874	616631	6080874	0	0	0	12	AN	
06-Nov-2023	07:43	381	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613814	6078040	613813	6078042	-1	2	2	346	AR	Rock in jaws
06-Nov-2023	07:47	382	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613814	6078041	613813	6078042	-1	1	1	336	AR	Rock in jaws
06-Nov-2023	07:52	383	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613814	6078041	613813	6078042	-1	1	1	336	AR	Rock in jaws, moved 10m south
06-Nov-2023	07:57	384	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	55	AR	Rock in jaws
06-Nov-2023	08:02	385	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	53	AR	Misfire
06-Nov-2023	08:04	386	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	54	AR	Rock in jaws
06-Nov-2023	08:09	387	BP23MVEXP-ENV-GS-068	0%	No Sample	DG	34	613805	6078036	613813	6078042	8	6	10	52	AR	Rock in jaws, station abandoned
06-Nov-2023	08:55	388	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611156	6076874	611157	6076873	1	-1	1	137	AR	Rock in jaws
06-Nov-2023	08:59	389	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611156	6076873	611157	6076873	1	0	1	110	AR	Rock in jaws
06-Nov-2023	09:04	390	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611156	6076874	611157	6076873	1	-1	2	121	AR	Rock in jaws, moved 10m east
06-Nov-2023	09:12	391	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	263	AR	Misfire
06-Nov-2023	09:14	392	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611165	6076874	611157	6076873	-8	-1	8	264	AR	Misfire
06-Nov-2023	09:19	393	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	265	AR	Misfire
06-Nov-2023	09:21	394	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	264	AR	Rock in jaws
06-Nov-2023	09:26	395	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	263	AR	Rock in jaws
06-Nov-2023	09:29	396	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	263	AR	Misfire
06-Nov-2023	09:31	397	BP23MVEXP-ENV-GS-070	0%	No Sample	DG	24	611166	6076874	611157	6076873	-9	-1	9	264	AR	Rock in jaws, station abandoned
06-Nov-2023	10:03	398	BP23MVEXP-ENV-GS-133	90%	MFA	DG	27	611081	6078425	611083	6078422	2	-3	3	140	AR	
06-Nov-2023	10:13	399	BP23MVEXP-ENV-GS-133	90%	CHEM1	DG	27	611081	6078425	611083	6078422	3	-3	4	139	AR	
06-Nov-2023	10:26	400	BP23MVEXP-ENV-GS-133	60%	MFB	DG	27	611081	6078425	611083	6078422	2	-3	4	142	AR	
06-Nov-2023	10:33	401	BP23MVEXP-ENV-GS-133	80%	CHEM2	DG	27	611081	6078425	611083	6078422	2	-3	4	144	AR	
06-Nov-2023	11:19	402	BP23MVEXP-ENV-GS-069	40%	MFA	DG	24	609888	6081850	609888	6081851	0	1	1	342	AR	
06-Nov-2023	11:25	403	BP23MVEXP-ENV-GS-069	70%	MFB	DG	24	609887	6081850	609888	6081851	1	1	2	41	AR	
06-Nov-2023	11:33	404	BP23MVEXP-ENV-GS-069	60%	PSA	DG	24	609887	6081850	609888	6081851	1	1	1	39	AR	
06-Nov-2023	12:06	405	BP23MVEXP-ENV-GS-67A	0%	No Sample	DG	33	611697	6082732	611697	6082732	0	0	1	135	AR	Rock in jaws
06-Nov-2023	12:09	406	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082733	611697	6082732	0	-1	1	205	AR	Low retention
06-Nov-2023	12:13	407	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082733	611697	6082732	0	-1	1	181	AR	Low retention
06-Nov-2023	12:18	408	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082723	611697	6082732	0	9	9	357	AR	Low retention
06-Nov-2023	12:21	409	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082723	611697	6082732	0	9	9	358	AR	Low retention
06-Nov-2023	12:25	410	BP23MVEXP-ENV-GS-67A	10%	No Sample	DG	33	611697	6082722	611697	6082732	0	10	10	359	AR	Low retention, station abandoned
06-Nov-2023	12:59	411	BP23MVEXP-ENV-GS-132	60%	MFA	DG	39	613335	6081592	613334	6081592	-1	0	1	264	AR	
06-Nov-2023	13:06	412	BP23MVEXP-ENV-GS-132	50%	MFB	DG	39	613335	6081591	613334	6081592	-1	1	1	303	AR	
06-Nov-2023	13:11	413	BP23MVEXP-ENV-GS-132	40%	PSA	DG	39	613335	6081592	613334	6081592	-1	0	1	292	AR	
06-Nov-2023	13:55	414	BP23MVEXP-ENV-GS-065	90%	MFA	DG	47	614050	6085715	614050	6085716	0	1	1	13	AR	
06-Nov-2023	14:02	415	BP23MVEXP-ENV-GS-065	90%	MFB	DG	47	614050	6085715	614050	6085716	0	1	1	10	AR	
06-Nov-2023	14:08	416	BP23MVEXP-ENV-GS-065	90%	PSA	DG	47	614050	6085715	614050	6085716	0	1	1	359	AR	
06-Nov-2023	14:43	417	BP23MVEXP-ENV-GS-131	80%	CHEM1	DG	48	615581	6085219	615581	6085218	0	-1	1	150	AR	
06-Nov-2023	14:49	418	BP23MVEXP-ENV-GS-131	70%	MFA	DG	48	615581	6085219	615581	6085218	0	-1	1	172	AR	
06-Nov-2023	15:00	419	BP23MVEXP-ENV-GS-131	50%	MFB	DG	47	615581	6085219	615581	6085218	0	-1	1	163	AR	
06-Nov-2023	15:05	420	BP23MVEXP-ENV-GS-131	60%	CHEM2	DG	47	615581	6085219	615581	6085218	0	-1	1	175	AR	
06-Nov-2023	15:54	421	BP23MVEXP-ENV-GS-130	80%	MFA	DG	53	617558	6088614	617558	6088614	0	0	0	323	AR	
06-Nov-2023	16:00	422	BP23MVEXP-ENV-GS-130	80%	MFB	DG	53	617557	6088613	617558	6088614	1	1	1	53	AR	
06-Nov-2023	16:06	423	BP23MVEXP-ENV-GS-130	80%	PSA	DG	53	617557	6088614	617558	6088614	1	0	1	71	AR	
06-Nov-2023	16:35	424	BP23MVEXP-ENV-GS-129	90%	MFA	DG	53	616334	6089421	616332	6089421	-2	0	2	265	AR	
06-Nov-2023	16:42	425	BP23MVEXP-ENV-GS-129	90%	MFB	DG	53	616334	6089421	616332	6089421	-2	0	2	281	AR	
06-Nov-2023	16:47	426	BP23MVEXP-ENV-GS-129	70%	PSA	DG	53	616334	6089422	616332	6089421	-2	-1	2	256	AR	
06-Nov-2023	17:33	427	BP23MVEXP-ENV-GS-128	80%	CHEM1	DG	59	618834	6092325	618835	6092326	1	1	1	34	SP	
06-Nov-2023	17:41	428	BP23MVEXP-ENV-GS-128	90%	MFA	DG	59	618835	6092325	618835	6092326	0	1	1	29	SP	
06-Nov-2023	17:48	429	BP23MVEXP-ENV-GS-128	80%	MFB	DG	59	618835	6092325	618835	6092326	0	1	1	12	SP	
06-Nov-2023	17:56	430	BP23MVEXP-ENV-GS-128	80%	CHEM2	DG	59	618836	6092326	618835	6092326	-1	0	1	303	SP	
06-Nov-2023	18:41	431	BP23MVEXP-ENV-GS-127	90%	MFA	DG	69	619929	6096179	619930	6096179	1	0	1	117	SP	
06-Nov-2023	18:48	432	BP23MVEXP-ENV-GS-127	90%	MFB	DG	69	619929	6096180	619930	6096179	1	-1	2	141	SP	
06-Nov-2023	18:55	433	BP23MVEXP-ENV-GS-127	90%	PSA	DG	69	619929	6096179	619930	6096179	1	0	1	94	SP	
06-Nov-2023	19:41	434	BP23MVEXP-ENV-GS-126	90%	MFA	DG	83	621032	6100018	621032	6100018	0	0	0	175	SP	
06-Nov-2023	19:50	435	BP23MVEXP-ENV-GS-126	90%	CHEM1	DG	83	621032	6100019	621032	6100018	0	-1	1	210	SP	
06-Nov-2023	20:02	436	BP23MVEXP-ENV-GS-126	90%	MFB	DG	83	621032	6100018	621032	6100018	0	0	1	226	SP	
06-Nov-2023	20:11	437	BP23MVEXP-ENV-GS-126	90%	CHEM2	DG	83	621032	6100018	621032	6100018	0	0	0	162	SP	
06-Nov-2023	21:01	438	BP23MVEXP-ENV-GS-125	90%	MFA	DG	85	622081	6103873	622083	6103872	2	-1	2	106	SP	
06-Nov-2023	21:09	439	BP23MVEXP-ENV-GS-125	90%	MFB	DG	85	622081	6103871	622083	6103872	2	1	3	65	SP	
06-Nov-2023	21:17	440	BP23MVEXP-ENV-GS-125	90%	PSA	DG	86	622080	6103870	622083	6103872	3	2	4	54	SP	
06-Nov-2023	22:10	441	BP23MVEXP-ENV-GS-124	90%	CHEM1	DG	92	623088	6107643	623089	6107641	1	-2	2	148	SP	
06-Nov-2023	22:22	442	BP23MVEXP-ENV-GS-124	90%	MFA	DG	92	623088	6107642	623089	6107641	1	-1	2	143	SP	
06-Nov-2023	22:30	443	BP23MVEXP-ENV-GS-124	90%	MFB	DG	92	623088	6107642	623089	6107641	1	-1	2	119	SP	
06-Nov-2023	22:39	444	BP23MVEXP-ENV-GS-124	90%	CHEM2	DG	92	623088	6107642	623089	6107641	2	-1	2	132	SP	
06-Nov-2023	23:36	445	BP23MVEXP-ENV-GS-123	90%	MFA	DG	96	624149	6111616	624150	6111614	1	-2	2	139	SP	
06-Nov-2023	23:44	446	BP23MVEXP-ENV-GS-123	90%	MFB	DG	96	624149	6111615	624150	6111614	1	-1	1	131	SP	
06-Nov-2023	23:53	447	BP23MVEXP-ENV-GS-123	90%	PSA	DG	96	624149	6111616	624150	6111614	1	-2	2	149	SP	
07-Nov-2023	00:43	448	BP23MVEXP-ENV-GS-122	90%	CHEM1	DG	101	624665	6115469	624665	6115470	0	1	1	343	AN	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	54027				Vessel	*Ocean Geograph*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	CoG							
Project Name	Morven ECR				Deployment Location	Camera Deployment Node	x	9.31	y	-14.81	z	5.97	
Primary Positioning System	Starpack 1				Actual Coordinates derived from	Deployment Location							
Geodetic Reference System	Datum	ED50	Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
07-Nov-2023	00:56	449	BP23MVEXP-ENV-GS-122	90%	MFA	DG	101	624666	6115468	624665	6115470	-1	2	2	334	AN	
07-Nov-2023	01:06	450	BP23MVEXP-ENV-GS-122	90%	MFB	DG	100	624666	6115468	624665	6115470	-1	2	2	330	AN	
07-Nov-2023	01:16	451	BP23MVEXP-ENV-GS-122	90%	CHEM2	DG	100	624666	6115468	624665	6115470	-1	2	2	326	AN	
07-Nov-2023	02:06	452	BP23MVEXP-ENV-GS-121	90%	MFA	DG	99	623511	6119296	623511	6119299	0	3	3	352	AN	
07-Nov-2023	02:17	453	BP23MVEXP-ENV-GS-121	90%	MFB	DG	99	623512	6119297	623511	6119299	-1	2	2	342	AN	
07-Nov-2023	02:26	454	BP23MVEXP-ENV-GS-121	90%	PSA	DG	99	623512	6119297	623511	6119299	-1	2	2	344	AN	
07-Nov-2023	03:18	455	BP23MVEXP-ENV-GS-120	90%	CHEM1	DG	96	622353	6123150	622353	6123151	0	1	1	347	AN	
07-Nov-2023	03:29	456	BP23MVEXP-ENV-GS-120	90%	MFA	DG	96	622354	6123150	622353	6123151	-1	1	1	325	AN	
07-Nov-2023	03:42	457	BP23MVEXP-ENV-GS-120	90%	MFB	DG	96	622353	6123150	622353	6123151	0	1	1	335	AN	
07-Nov-2023	03:52	458	BP23MVEXP-ENV-GS-120	90%	CHEM2	DG	95	622354	6123150	622353	6123151	-1	1	1	322	AN	
07-Nov-2023	04:36	459	BP23MVEXP-ENV-GS-119	90%	MFA	DG	93	621603	6126980	621603	6126979	0	-1	1	200	AN	
07-Nov-2023	04:46	460	BP23MVEXP-ENV-GS-119	90%	No Sample	DG	93	621603	6126979	621603	6126979	0	0	0	200	AN	Hagfish
07-Nov-2023	04:55	461	BP23MVEXP-ENV-GS-119	90%	PSA	DG	93	621604	6126979	621603	6126979	-1	0	1	230	AN	
07-Nov-2023	05:07	462	BP23MVEXP-ENV-GS-119	90%	MFB	DG	93	621604	6126979	621603	6126979	-1	0	1	242	AN	
07-Nov-2023	05:58	463	BP23MVEXP-ENV-GS-118	90%	CHEM1	DG	92	622272	6130919	622273	6130918	1	-1	1	130	AN	
07-Nov-2023	06:09	464	BP23MVEXP-ENV-GS-118	90%	MFA	DG	92	622272	6130919	622273	6130918	1	-1	1	131	AN	
07-Nov-2023	06:17	465	BP23MVEXP-ENV-GS-118	90%	MFB	DG	92	622272	6130919	622273	6130918	1	-1	1	123	AN	
07-Nov-2023	06:29	466	BP23MVEXP-ENV-GS-118	90%	CHEM2	DG	92	622272	6130919	622273	6130918	1	-1	1	146	AN	
07-Nov-2023	08:46	467	BP23MVEXP-ENV-GS-047	90%	MFA	DG	88	639530	6126759	639530	6126759	0	0	0	358	AR	
07-Nov-2023	08:54	468	BP23MVEXP-ENV-GS-047	90%	MFB	DG	88	639530	6126758	639530	6126759	0	1	1	349	AR	
07-Nov-2023	09:03	469	BP23MVEXP-ENV-GS-047	90%	PSA	DG	88	639530	6126758	639530	6126759	0	1	1	359	AR	
07-Nov-2023	10:13	470	BP23MVEXP-ENV-GS-049	50%	MFA	DG	78	641832	6119158	641831	6119158	-1	0	1	279	AR	
07-Nov-2023	10:24	471	BP23MVEXP-ENV-GS-049	30%	No Sample	DG	78	641833	6119158	641831	6119158	-2	0	2	273	AR	Low retention
07-Nov-2023	10:32	472	BP23MVEXP-ENV-GS-049	50%	MFB	DG	78	641833	6119158	641831	6119158	-2	0	2	261	AR	
07-Nov-2023	10:40	473	BP23MVEXP-ENV-GS-049	50%	PSA	DG	78	641833	6119158	641831	6119158	-2	0	2	271	AR	
07-Nov-2023	11:42	474	BP23MVEXP-ENV-GS-051	40%	MFA	DG	69	640671	6111632	640672	6111630	1	-2	2	157	AR	
07-Nov-2023	11:51	475	BP23MVEXP-ENV-GS-051	70%	MFB	DG	69	640671	6111631	640672	6111630	1	-1	1	140	AR	
07-Nov-2023	12:01	476	BP23MVEXP-ENV-GS-051	80%	PSA	DG	69	640671	6111631	640672	6111630	1	-1	2	142	AR	
07-Nov-2023	13:24	477	BP23MVEXP-ENV-GS-053	90%	MFA	DG	69	637136	6104543	637135	6104545	-1	2	2	328	AR	
07-Nov-2023	13:30	478	BP23MVEXP-ENV-GS-053	90%	MFB	DG	69	637136	6104544	637135	6104545	-1	1	1	330	AR	
07-Nov-2023	13:36	479	BP23MVEXP-ENV-GS-053	90%	PSA	DG	69	637135	6104545	637135	6104545	0	0	1	297	AR	
07-Nov-2023	14:52	480	BP23MVEXP-ENV-GS-055	90%	No Sample	DG	78	633585	6097485	633583	6097485	-2	0	2	263	AR	Hagfish
07-Nov-2023	15:00	481	BP23MVEXP-ENV-GS-055	80%	MFA	DG	78	633585	6097485	633583	6097485	-2	0	2	284	AR	
07-Nov-2023	15:07	482	BP23MVEXP-ENV-GS-055	80%	MFB	DG	78	633584	6097485	633583	6097485	-1	0	1	251	AR	
07-Nov-2023	15:14	483	BP23MVEXP-ENV-GS-055	90%	PSA	DG	78	633584	6097486	633583	6097485	-1	-1	1	245	AR	
08-Nov-2023	00:56	484	BP23MVEXP-ENV-GS-012	40%	MFA	DG	75	656656	6260133	656656	6260131	0	-2	2	179	AN	
08-Nov-2023	01:03	485	BP23MVEXP-ENV-GS-012	40%	MFB	DG	75	656656	6260133	656656	6260131	0	-2	2	183	AN	
08-Nov-2023	01:10	486	BP23MVEXP-ENV-GS-012	50%	PSA	DG	75	656656	6260132	656656	6260131	0	-1	1	194	AN	
08-Nov-2023	01:59	487	BP23MVEXP-ENV-GS-013	40%	CHEM1	DG	76	656879	6256139	656877	6256136	-2	-3	3	217	AN	
08-Nov-2023	02:09	488	BP23MVEXP-ENV-GS-013	40%	MFA	DG	76	656879	6256139	656877	6256136	-2	-3	3	214	AN	
08-Nov-2023	02:17	489	BP23MVEXP-ENV-GS-013	40%	MFB	DG	76	656879	6256139	656877	6256136	-2	-3	3	212	AN	
08-Nov-2023	02:24	490	BP23MVEXP-ENV-GS-013	50%	CHEM2	DG	76	656879	6256139	656877	6256136	-2	-3	3	211	AN	
08-Nov-2023	03:11	491	BP23MVEXP-ENV-GS-014	40%	MFA	DG	76	657094	6252145	657092	6252144	-2	-1	2	238	AN	
08-Nov-2023	03:18	492	BP23MVEXP-ENV-GS-014	40%	MFB	DG	76	657093	6252144	657092	6252144	-1	0	1	250	AN	
08-Nov-2023	03:24	493	BP23MVEXP-ENV-GS-014	40%	PSA	DG	76	657093	6252145	657092	6252144	-1	-1	2	242	AN	
08-Nov-2023	04:10	494	BP23MVEXP-ENV-GS-015	40%	CHEM1	DG	73	657314	6248187	657314	6248185	0	-2	2	187	AN	
08-Nov-2023	04:20	495	BP23MVEXP-ENV-GS-015	60%	MFA	DG	73	657315	6248186	657314	6248185	-1	-1	1	213	AN	
08-Nov-2023	04:27	496	BP23MVEXP-ENV-GS-015	50%	MFB	DG	73	657315	6248186	657314	6248185	-1	-1	1	208	AN	
08-Nov-2023	04:34	497	BP23MVEXP-ENV-GS-015	40%	CHEM2	DG	73	657315	6248186	657314	6248185	-1	-1	2	209	AN	
08-Nov-2023	05:19	498	BP23MVEXP-ENV-GS-016	40%	MFA	DG	71	657528	6244154	657529	6244154	1	0	1	125	AN	
08-Nov-2023	05:25	499	BP23MVEXP-ENV-GS-016	40%	MFB	DG	71	657530	6244154	657529	6244154	-1	0	1	269	AN	
08-Nov-2023	05:32	500	BP23MVEXP-ENV-GS-016	40%	PSA	DG	71	657530	6244154	657529	6244154	-1	0	1	256	AN	
08-Nov-2023	06:12	501	BP23MVEXP-ENV-GS-017	60%	CHEM1	DG	69	657757	6240165	657756	6240164	-1	-1	1	220	AR	
08-Nov-2023	06:22	502	BP23MVEXP-ENV-GS-017	30%	No Sample	DG	69	657757	6240164	657756	6240164	-1	0	1	253	AR	Low retention
08-Nov-2023	06:28	503	BP23MVEXP-ENV-GS-017	60%	MFA	DG	69	657756	6240165	657756	6240164	0	-1	1	207	AR	
08-Nov-2023	06:35	504	BP23MVEXP-ENV-GS-017	60%	MFB	DG	69	657757	6240165	657756	6240164	-1	-1	1	207	AR	
08-Nov-2023	06:42	505	BP23MVEXP-ENV-GS-017	30%	No Sample	DG	69	657756	6240165	657756	6240164	0	-1	1	208	AR	Low retention
08-Nov-2023	06:48	506	BP23MVEXP-ENV-GS-017	50%	CHEM2	DG	69	657756	6240164	657756	6240164	0	0	0	128	AR	
08-Nov-2023	07:31	507	BP23MVEXP-ENV-GS-018	40%	MFA	DG	63	657940	6236202	657939	6236203	-1	1	1	329	AR	
08-Nov-2023	07:38	508	BP23MVEXP-ENV-GS-018	40%	MFB	DG	63	657939	6236202	657939	6236203	0	1	1	329	AR	
08-Nov-2023	07:45	509	BP23MVEXP-ENV-GS-018	50%	PSA	DG	63	657940	6236202	657939	6236203	-1	1	1	328	AR	
08-Nov-2023	08:29	510	BP23MVEXP-ENV-GS-019	60%	CHEM1	DG	61	658157	6232175	658157	6232173	0	-2	2	174	AR	
08-Nov-2023	08:39	511	BP23MVEXP-ENV-GS-019	50%	MFA	DG	61	658157	6232176	658157	6232173	0	-3	3	171	AR	
08-Nov-2023	08:46	512	BP23MVEXP-ENV-GS-019	50%	MFB	DG	61	658156	6232175	658157	6232173	1	-2	3	158	AR	
08-Nov-2023	08:53	513	BP23MVEXP-ENV-GS-019	40%	CHEM2	DG	61	658156	6232176	658157	6232173	1	-3	3	154	AR	
08-Nov-2023	18:26	514	BP23MVEXP-ENV-GS-025	20%	No Sample	DG	76	659449	6208081	659446	6208080	-3	-1	3	248	SP	Low retention
09-Nov-2023	04:29	515	BP23MVEXP-ENV-GS-025	40%	CHEM1	DG	76	659445	6208079	659446	6208080	1	1	2	32	AN	
09-Nov-2023	04:41	516	BP23MVEXP-ENV-GS-025	40%	MFA	DG	76	659445	6208080	659446	6208080	1	0	1	84	AN	
09-Nov-2023	04:49	517	BP23MVEXP-ENV-GS-025	30%	No Sample	DG	76	659445	6208079	659446	6208080	1	1	2	63	AN	Low retention
09-Nov-2023	04:55	518	BP23MVEXP-ENV-GS-025	40%	MFB	DG	76	659446	6208080	659446	6208080	0	0	1	51	AN	
09-Nov-2023	05:03	519	BP23MVEXP-ENV-GS-025	50%	CHEM2	DG	76	659446	6208079	659446	6208080	0	1	1	18	AN	
09-Nov-2023	05:48	520	BP23MVEXP-ENV-GS-024	50%	MFA	DG	76	659215	6212354	659215	6212354	0	0	1	36	AN	
09-Nov-2023	05:55	521	BP23MVEXP-ENV-GS-024	40%	MFB	DG	76	659216	6212356	659215	6212354	-1	-2	2	212	AN	
09-Nov-2023	06:03	522	BP23MVEXP-ENV-GS-024	40%	PSA	DG	76	659216	6212353	659215	6212354	-1	1	1	320	AN	
09-Nov-2023	06:45	523	BP23MVEXP-ENV-GS-023	50%	CHEM1	DG	82	659017	6216190	659015	6216191	-2	1	2	290	AN	
09-Nov-2023	06:55	524	BP23MVEXP-ENV-GS-023	40%	MFA	DG	82	659016	6216190	659015	6216191	-1	1	2	300	AR	
09-Nov-2023	07:02	525	BP23MVEXP-ENV-GS-023	50%	MFB	DG	82	659016	6216190	659015	6216191	-1	1	1	317	AR	
09-Nov-2023	07:09	526	BP23MVEXP-ENV-GS-023	50%	CHEM2	DG	82	659016	6216190	659015	6216191	-1	1	2	307	AR	
09-Nov-2023	07:56	527	BP23MVEXP-ENV-GS-022	50%	MFA	DG	78	658789	6220189	658789	6220190	0	1	1	348	AR	
09-Nov-2023	08:04	528	BP23MVEXP-ENV-GS-022	50%	MFB	DG	78	658789	6220189	658789	6220190	0	1	1	350	AR	
09-Nov-2023	08:11	529	BP23MVEXP-ENV-GS-022	40%	PSA	DG	78	658790	6220189	658789	6220190	-1	1	1	314	AR	
09-Nov-2023	08:57	530	BP23MVEXP-ENV-GS-021	40%	CHEM1	DG	74	658585	6224181	658588	6224181	3	0	3	83	AR	
09-Nov-2023	09:06	531	BP23MVEXP-ENV-GS-021	60%	MFA	DG	74	658586	6224181	658588	6224181	2	0	2	80	AR	
09-Nov-2023	09:14	532	BP23MVEXP-ENV-GS-021	50%	MFB	DG	74	658586	6224180	658588	6224181	2	1	2	71	AR	
09-Nov-2023	09:20	533	BP23MVEXP-ENV-GS-021	50%	CHEM2	DG	74	658586	6224180	658588	6224181	2	1	2	66	AR	
09-Nov-2023	10:09	534	BP23MVEXP-ENV-GS-020		No Sample	DG	63	658372	6228182	658374	6228181	2	-1	2	106	AR	Misfire
09-Nov-2023	10:12	535	BP23MVEXP-ENV-GS-020		No Sample	DG	63	658371	6228182	658374	6228181	3	-1	3	105	AR	Rock in jaws
09-Nov-2023	10:18	536	BP23MVEXP-ENV-GS-020	10%	No Sample	DG	64	658373	6228180	658374	6228181	1	1	2	52	AR	Low retention
09-Nov-2023	10:24	537	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658373	6228180	658374	6228181	1	1	2	60	AR	Low retention. Moved 10m SW
09-Nov-2023	10:32	538	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658365	6228173	658374	6228181	9	8	12	48	AR	Misfire
09-Nov-2023	10:37	539	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658365	6228173	658374	6228181	9	8	12	50	AR	Rock in jaws
09-Nov-2023	10:43	540	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658365	6228174	658374	6228181	9	7	12	51	AR	Rock in jaws
09-Nov-2023	10:49	541	BP23MVEXP-ENV-GS-020	80%	MFA	DG	64	658365	6228174	658374	6228181	9	7	11	51	AR	
09-Nov-2023	10:56	542	BP23MVEXP-ENV-GS-020		No Sample	DG	64	658364	6228173	658374	6228181	10	8	13	50	AR	Misfire
09-Nov-2023	11:00	543	BP23MVEXP-ENV-GS-020	10%	No Sample	DG	64	658365	6228173	658374	6228181	9	8	12	51	AR	Low retention, station abandoned

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
1	BP23MVEXP-ENV-GS-011	12-Jul-2023	01:44	85%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	MB,CD,MD	
2	BP23MVEXP-ENV-GS-011	12-Jul-2023	01:59	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)	MB,CD,MD	
3	BP23MVEXP-ENV-GS-011	12-Jul-2023	02:10	50%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	MB,CD,MD	Redox: 1cm (6.10pH, 10.4˚C, 460mV), 10cm (6.12pH, 10.1˚C, 404mV)
4	BP23MVEXP-ENV-GS-011	12-Jul-2023	02:29	60%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	MB,CD,MD	
5	BP23MVEXP-ENV-GS-010	12-Jul-2023	03:27	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	CD, MD	
6	BP23MVEXP-ENV-GS-010	12-Jul-2023	03:41	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polchaeta)	CD, MD	
7	BP23MVEXP-ENV-GS-010	12-Jul-2023	03:50	65%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	CD, MD	Redox: 1cm (6.35pH, 10.2˚C, 235mV), 10cm (6.30pH, 9.3˚C, 222mV)
8	BP23MVEXP-ENV-GS-009	12-Jul-2023	04:41	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Cnidaria (Anthozoa), Mollusca (Bivalvia, Gastropoda)	CD, MD	
9	BP23MVEXP-ENV-GS-009	12-Jul-2023	04:54	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	CD, MD	
10	BP23MVEXP-ENV-GS-009	12-Jul-2023	05:03	65%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.35pH, 10.2˚C, 235mV), 10cm (6.30pH, 9.3˚C, 222mV)
11	BP23MVEXP-ENV-GS-009	12-Jul-2023	05:22	60%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 5/1	No visible fauna	CD, MD, DP	
12	BP23MVEXP-ENV-GS-008	12-Jul-2023	06:15	80%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta)	CD, MD, DP	
13	BP23MVEXP-ENV-GS-008	12-Jul-2023	06:23	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta), Mollusca (Bivalvia)	CD, MD, DP	
14	BP23MVEXP-ENV-GS-008	12-Jul-2023	06:32	70%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 4/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.36pH, 10.6˚C, 266mV), 10cm (6.33pH, 10.3˚C, 256mV)
15	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:24	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	CD, MD, DP	
16	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:33	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/1	Annelida (Polychaeta)	CD, MD, DP	
17	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:41	65%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 4/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.32pH, 11.2˚C, 234mV), 10cm (6.34pH, 10.5˚C, 214mV)
18	BP23MVEXP-ENV-GS-007	12-Jul-2023	07:54	50%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 2.5YR 4/1	No visible fauna	CD, MD, DP	
19	BP23MVEXP-ENV-GS-006	12-Jul-2023	08:53	55%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/2	Annelida (Polychaeta)	CD, MD, DP	
20	BP23MVEXP-ENV-GS-006	12-Jul-2023	09:02	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/2	Annelida (Polychaeta)	CD, MD, DP	
21	BP23MVEXP-ENV-GS-006	12-Jul-2023	09:09	70%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 4/2	No visible fauna	CD, MD, DP	Redox: 1cm (6.5pH, 11.3˚C, 251mV), 10cm (6.45pH, 10.4˚C, 251mV)
22	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:07	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 5/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	CD, MD, DP	
23	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:17	0%	No Sample				CD, MD, DP	Misfire
24	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:26	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 5/1	Annelida (Polychaeta), Mollusca (Bivalvia)	CD, MD, DP	
25	BP23MVEXP-ENV-GS-005	12-Jul-2023	10:44	55%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 5/1	No visible fauna	CD, MD, DP	Redox: 1cm (6.24pH, 12.7˚C, 213mV), 10cm (6.18pH, 11.6˚C, 204mV)
26	BP23MVEXP-ENV-GS-005	12-Jul-2023	11:03	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 5/1	No visible fauna	MB, AA, JO, DP	
27	BP23MVEXP-ENV-GS-004	12-Jul-2023	12:09	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/4	Annelida (Polychaeta)	MB, AA, JO, DP	
28	BP23MVEXP-ENV-GS-004	12-Jul-2023	12:23	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 2.5YR 4/4	Echinodermata (Ophiuroidea)	MB, AA, JO, DP	
29	BP23MVEXP-ENV-GS-004	12-Jul-2023	12:33	60%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 2.5YR 4/4	No visible fauna	MB, AA, JO, DP	Redox: 1cm (7.34pH, 13.4˚C, 254mV), 10cm (7.17pH, 12.1˚C, 232mV)
30	BP23MVEXP-ENV-GS-003	12-Jul-2023	13:30	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Mollusca (Gastropoda)	MB, AA, JO, DP	
31	BP23MVEXP-ENV-GS-003	12-Jul-2023	13:42	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	MB, AA, JO, DP	
32	BP23MVEXP-ENV-GS-003	12-Jul-2023	13:52	60%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	MB, AA, JO, DP	Redox: 1cm (7.58pH, 13.5˚C, 142mV) 10cm (7.55pH, 13.1˚C, 118mV)
33	BP23MVEXP-ENV-GS-003	12-Jul-2023	14:11	75%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	MB, AA, JO, DP	
34	BP23MVEXP-ENV-GS-002	12-Jul-2023	15:12	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Mollusca (Bivalvia)	MB, AA, JO, DP	
35	BP23MVEXP-ENV-GS-002	12-Jul-2023	15:24	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	MB, AA, JO, DP	
36	BP23MVEXP-ENV-GS-002	12-Jul-2023	15:40	90%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 10YR 3/4	No visible fauna	MB, AA, JO, DP	Redox: 1cm (7.00pH, 11.5˚C, 267mV), 10cm (6.90pH, 11.1˚C, 116mV)
37	BP23MVEXP-ENV-GS-001	12-Jul-2023	16:31	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	
38	BP23MVEXP-ENV-GS-001	12-Jul-2023	16:46	75%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	MB, AA, JO, DP	
39	BP23MVEXP-ENV-GS-001	12-Jul-2023	17:01	60%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 4/4	No visible fauna	AA, JO	Redox: 1cm (6.69pH, 11.8˚C, 198mV), 10cm (6.67pH, 11.7˚C, 186mV)
40	BP23MVEXP-ENV-GS-001	12-Jul-2023	17:16	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 4/4	No visible fauna	AA, JO	
41	BP23MVEXP-ENV-GS-071	12-Jul-2023	21:29	85%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	AA, JO	
42	BP23MVEXP-ENV-GS-071	12-Jul-2023	21:52	85%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AA, JO	
43	BP23MVEXP-ENV-GS-071	12-Jul-2023	22:09	70%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	AA, JO	Redox: 1cm (5.73pH, 10.8˚C, 243mV), 10cm (5.75pH, 10.7˚C, 96mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
44	BP23MVEXP-ENV-GS-071	12-Jul-2023	22:26	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/3	No visible fauna	AA, JO	
45	BP23MVEXP-ENV-GS-072	13-Jul-2023	01:12	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	CD, MD	
46	BP23MVEXP-ENV-GS-072	13-Jul-2023	01:27	45%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta)	CD, MD	
47	BP23MVEXP-ENV-GS-072	13-Jul-2023	01:38	45%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 10YR 3/2	No visible fauna	CD, MD	Redox: 1cm (5.76pH, 9.9˚C, 62mV), 10cm (5.74pH, 9.6˚C, 60mV)
48	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:19	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta)	CD, MD	
49	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:28	55%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)	CD, MD	
50	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:37	75%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/2	No visible fauna	CD, MD	Redox: 1cm (6.30pH, 10.8˚C, 335mV), 10cm (6.30pH, 9.1˚C, 218mV)
51	BP23MVEXP-ENV-GS-073	13-Jul-2023	04:50	50%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/2	No visible fauna	CD, MD	
52	BP23MVEXP-ENV-GS-074	13-Jul-2023	07:32	55%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/6	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	CD, MD, DP	
53	BP23MVEXP-ENV-GS-074	13-Jul-2023	07:43	75%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 4/6	Annelida (Polychaeta)	CD, MD, DP	
54	BP23MVEXP-ENV-GS-074	13-Jul-2023	07:51	75%	PSA	2 x Ziploc bags	Fine sand with small shell fragments Munsell: 10YR 4/6	No visible fauna	CD, MD, DP	Redox: 1cm (5.79pH, 10.1˚C, 208mV), 10cm (5.75pH, 9.6˚C, 209mV)
55	BP23MVEXP-ENV-GS-075	13-Jul-2023	10:22	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 4/2	Annelida (Polychaeta), Mollusca (Scaphopoda), Cnidaria (Hydrozoa)	CD, MD, DP	
56	BP23MVEXP-ENV-GS-075	13-Jul-2023	10:33	75%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 5YR 4/2	Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Scaphopoda), Cnidaria (Hydrozoa)	CD, MD, DP	
57	BP23MVEXP-ENV-GS-075	13-Jul-2023	10:42	65%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 4/2	No visible fauna	CD, MD, DP	Redox: 1cm (6.14pH, 12.1˚C, 30mV), 10cm (6.07pH, 10.3˚C, 47mV)
58	BP23MVEXP-ENV-GS-075	13-Jul-2023	11:05	60%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 5YR 4/2	No visible fauna	MB, AA, JO, DP	
59	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:19	55%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse gravelly sand with shelll fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	MB, AA, JO, DP	
60	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:34	55%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse gravelly sand with shelll fragments Munsell: 10YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Gastropoda, Scaphopoda), Cnidaria (Hydrozoa)	MB, AA, JO, DP	
61	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:43	0%	No Sample					Low retention
62	BP23MVEXP-ENV-GS-076	13-Jul-2023	13:50	50%	PSA	2 x Ziploc bags	Coarse gravelly sand with shelll fragments Munsell: 10YR 4/4	No visible fauna	MB, AA, JO, DP	Redox: 1cm (6.07pH, 12.4˚C, 239mV), 10cm (6.01pH, 11.5˚C, 179mV)
63	BP23MVEXP-ENV-GS-077	13-Jul-2023	16:23	65%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Mollusca (Bivalvia)	MB, AA, JO, DP	
64	BP23MVEXP-ENV-GS-077	13-Jul-2023	16:41	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with small shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta)	MB, AA, JO, DP	
65	BP23MVEXP-ENV-GS-077	13-Jul-2023	16:55	40%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/4	No visible fauna	MB, AA, JO, DP	
66	BP23MVEXP-ENV-GS-077	13-Jul-2023	17:11	20%	No Sample					Low retention
67	BP23MVEXP-ENV-GS-077	13-Jul-2023	17:17	70%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine sand with small shell fragments Munsell: 10YR 3/4	No visible fauna	AA, JO	Redox: 1cm (6.03pH, 12.0˚C, 220mV), 10cm (5.90pH, 11.2˚C, 183mV)
68	BP23MVEXP-ENV-GS-078	13-Jul-2023	19:31	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 4/3	Annelida (Polychaeta)	AA, JO	
69	BP23MVEXP-ENV-GS-078	13-Jul-2023	19:47	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AA, JO	
70	BP23MVEXP-ENV-GS-078	13-Jul-2023	20:00	70%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 4/3	No visible fauna	AA, JO	Redox: 1cm (5.96pH, 11.6˚C, 213mV), 10cm (6.00pH, 11.1˚C,193mV)
71	BP23MVEXP-ENV-GS-079	13-Jul-2023	22:42	75%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine to medium sand with shell fragments Munsell: 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AA, JO	
72	BP23MVEXP-ENV-GS-079	13-Jul-2023	22:58	65%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine to medium sand with shell fragments Munsell: 4/4	Annelida (Polychaeta),Cnidaria (Hydrozoa), Mollusca (Bivalvia, Scaphopoda)	CD, MD	
73	BP23MVEXP-ENV-GS-079	13-Jul-2023	23:14	75%	CHEM1	3 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine to medium sand with shell fragments Munsell: 4/4	No visible fauna	CD, MD	
74	BP23MVEXP-ENV-GS-079	13-Jul-2023	23:28	45%	CHEM2	2 x Ziploc bags 1 x 1L jar 1 x 120ml jar	Fine to medium sand with shell fragments Munsell: 4/4	No visible fauna	CD, MD	Redox: 1cm (5.62pH, 10.0˚C, 212mV), 10cm (5.62pH, 10.3˚C, 215mV
75	BP23MVEXP-ENV-GS-080	14-Jul-2023	01:49	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 5/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)	CD, MD	
76	BP23MVEXP-ENV-GS-080	14-Jul-2023	01:58	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 5/2	Annelida (Polychaeta), Cnidaria (Hydrozoa), Mollusca (Bivalvia, Scaphopoda)	CD, MD	
77	BP23MVEXP-ENV-GS-080	14-Jul-2023	02:06	65%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 5/2	No visible fauna	CD, MD	Redox: 1cm (5.62pH, 11.5˚C, 196mV), 10cm (5.62pH, 11.0˚C, 171mV)
78	BP23MVEXP-ENV-GS-081	22-Oct-2023	21:38	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
79	BP23MVEXP-ENV-GS-081	22-Oct-2023	22:02	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (6.87pH, 10.2˚C, 240mV), 10cm (7.18pH, 10.5˚C, 207mV)
80	BP23MVEXP-ENV-GS-081	22-Oct-2023	22:12	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
81	BP23MVEXP-ENV-GS-081	22-Oct-2023	22:25	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
82	BP23MVEXP-ENV-GS-082	23-Oct-2023	23:37	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (7.54pH, 10.4˚C, 248mV), 10cm (7.65pH, 10.8˚C, 248mV)
83	BP23MVEXP-ENV-GS-082	23-Oct-2023	00:06	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, EG	
84	BP23MVEXP-ENV-GS-082	23-Oct-2023	00:25	60%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, EG	
85	BP23MVEXP-ENV-GS-083	23-Oct-2023	01:29	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 3/1	No visible fauna	JH, CA, EG	
86	BP23MVEXP-ENV-GS-083	23-Oct-2023	01:54	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (7.91pH, 10.5˚C, 237mV), 10cm (7.96pH, 10.8˚C, 225mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
87	BP23MVEXP-ENV-GS-083	23-Oct-2023	02:08	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Echinodermata (Asteroidea), Mollusca (Bivalvia)	JH, CA, EG	
88	BP23MVEXP-ENV-GS-083	23-Oct-2023	02:22	30%	No Sample					Low retention
89	BP23MVEXP-ENV-GS-083	23-Oct-2023	02:34	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 3/1	No visible fauna	JH, CA, EG	
90	BP23MVEXP-ENV-GS-084	23-Oct-2023	03:31	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/2	Mollusca (Bivalvia, Scaphopoda)	JH, CA, EG	
91	BP23MVEXP-ENV-GS-084	23-Oct-2023	03:46	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 3/2	No visible fauna	JH, CA, EG	
92	BP23MVEXP-ENV-GS-084	23-Oct-2023	03:59	60%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5Y 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (7.61pH, 10.6˚C, 234mV), 10cm (7.67pH, 10.9˚C, 270mV)
93	BP23MVEXP-ENV-GS-085	23-Oct-2023	04:59	40%	CHEM1	1 x Ziploc bags 1 x 1L Jar	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	JH, CA, RR	No PSA collected
94	BP23MVEXP-ENV-GS-085	23-Oct-2023	05:19	50%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (6.35pH, 10.5˚C, 283mV), 10cm (7.67pH, 10.7˚C, 240mV)
95	BP23MVEXP-ENV-GS-085	23-Oct-2023	05:42	60%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/3	Echinodermata (Asteroidea)	JH, CA, RR	PSA collected
96	BP23MVEXP-ENV-GS-085	23-Oct-2023	05:59	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	JH, CA, RR	
97	BP23MVEXP-ENV-GS-086	23-Oct-2023	06:56	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	Redox: 1cm (7.60pH, 10.7˚C, 247mV), 10cm (7.96pH, 10.7˚C, 215mV)
98	BP23MVEXP-ENV-GS-086	23-Oct-2023	07:14	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)	JH, CA, RR	
99	BP23MVEXP-ENV-GS-086	23-Oct-2023	07:27	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
100	BP23MVEXP-ENV-GS-087	23-Oct-2023	08:21	90%	CHEM1	1 x Ziploc bags 1 x 1L Jar	Coarse sand with shell fragments Munsell: 10YR 4/3	No visible fauna	JH, CA, RR	
101	BP23MVEXP-ENV-GS-087	23-Oct-2023	08:37	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10YR 4/3	No visible fauna	JH, CA, RR	
102	BP23MVEXP-ENV-GS-087	23-Oct-2023	08:52	0%	No Sample					Misfire
103	BP23MVEXP-ENV-GS-087	23-Oct-2023	09:01	0%	No Sample					Misfire
104	BP23MVEXP-ENV-GS-087	23-Oct-2023	09:17	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10YR 4/3	Mollusca (Bivalvia)	JH, CA, RR	Redox: 1cm (7.18pH, 10.7˚C, 263mV), 10cm (7.50pH, 10.8˚C, 245mV)
105	BP23MVEXP-ENV-GS-087	23-Oct-2023	09:34	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10YR 4/3	No visible fauna	JH, CA, RR	
106	BP23MVEXP-ENV-GS-088	23-Oct-2023	16:57	60%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
107	BP23MVEXP-ENV-GS-088	23-Oct-2023	17:06	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta), Mollusca (*Arctica islandica*)	RH, NW, EG	*Arctica islandica* - L: 65.68mm; H: 57.39mm; W: 34.62mm; Mass: 80.01g Redox: 1cm (7.74pH, 10.9˚C, 219mV), 10cm (7.72pH, 10.8˚C, 218mV)
108	BP23MVEXP-ENV-GS-088	23-Oct-2023	17:15	40%	PSA	2 x Ziploc bags	Coarse sand with shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	
109	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:03	70%	CHEM1	2x Ziploc bags 1 x 1L Jar	Coarse sand with shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, EG	
110	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:15	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (7.4pH, 10.8˚C, 201mV) 10cm (7.5pH, 10.0˚C, 216mV)
111	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:28	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Echinoidea)	RH, NW, EG	
112	BP23MVEXP-ENV-GS-089	23-Oct-2023	18:39	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, EG	
113	BP23MVEXP-ENV-GS-090	23-Oct-2023	19:34	40%	MFA	1 x 5L Bucket 1 x Ziploc bags	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta)	RH, NW, EG	
114	BP23MVEXP-ENV-GS-090	23-Oct-2023	19:43	60%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
115	BP23MVEXP-ENV-GS-090	23-Oct-2023	19:52	40%	PSA	2 x Ziploc bags	Coarse sand with shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, EG	Redox: 1cm (7.83pH, 10.8˚C, 178mV) 10cm (7.62pH, 10.8˚C, 201mV)
116	BP23MVEXP-ENV-GS-091	23-Oct-2023	20:48	40%	CHEM1	1 x 1L Jar 2x Ziploc bags	Fine sand with shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	
117	BP23MVEXP-ENV-GS-091	23-Oct-2023	21:00	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, EG	Redox: 1cm (7.49pH, 10.7˚C, 195mV) 10cm (7.46pH, 10.7˚C, 205mV)
118	BP23MVEXP-ENV-GS-091	23-Oct-2023	21:11	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
119	BP23MVEXP-ENV-GS-091	23-Oct-2023	21:20	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	
120	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:13	0%	No Sample				RH, NW, EG	Rock in jaws
121	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:19	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand, gravel and shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta), Echinodermata (Asteroidea), Mollusca (Scaphopoda)	RH, NW, EG	
122	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:27	30%	No Sample				RH, NW, EG	Low retention
123	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:33	40%	MFB	2 x 5L Bucket 1 x Ziploc bag	Coarse sand, gravel and shell fragments Munsell: 2.5YR 3/2	Annelida (Polychaeta)	RH, NW, EG	
124	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:41	0%	No Sample				RH, NW, EG	Misfire
125	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:46	0%	No Sample				RH, NW, EG	Rock in jaws
126	BP23MVEXP-ENV-GS-092	23-Oct-2023	22:51	40%	PSA	2 x Ziploc bags	Coarse sand, gravel and shell fragments Munsell: 2.5YR 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (7.84pH, 10.8˚C, 217mV) 10cm (7.70pH, 10.8˚C, 230mV)
127	BP23MVEXP-ENV-GS-093	24-Oct-2023	23:50	40%	CHEM1	2x Ziploc bags 1 x 1L Jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, EG	
128	BP23MVEXP-ENV-GS-093	24-Oct-2023	00:09	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, EG	Redox: 1cm (7.55pH, 10.9˚C, 197mV) 10cm (7.52pH, 10.7˚C, 189mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
129	BP23MVEXP-ENV-GS-093	24-Oct-2023	00:24:00	70%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoiodea)	JH, CA, EG	
130	BP23MVEXP-ENV-GS-093	24-Oct-2023	00:38	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, EG	
131	BP23MVEXP-ENV-GS-094	24-Oct-2023	01:42	40%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Mollusca (Scaphopoda)	JH, CA, EG	
132	BP23MVEXP-ENV-GS-094	24-Oct-2023	01:58	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta)	JH, CA, EG	
133	BP23MVEXP-ENV-GS-094	24-Oct-2023	02:17	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, EG	Redox: 1cm (7.45pH, 10.7˚C, 213mV) 10cm (7.53pH, 10.2˚C, 156mV)
134	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:04	0%	No Sample				JH, CA, RR	Rock in jaws
135	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:15	40%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Echinodermata (Asteroidea)	JH, CA, RR	
136	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:29	60%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta, Serpulidae), Cnidaria (Hydrozoa)	JH, CA, RR	
137	BP23MVEXP-ENV-GS-095	24-Oct-2023	03:41	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, RR	Redox: 1cm (7.4pH, 10.7˚C, 142mV) 10cm (7.43pH, 10.5˚C, 88mV)
138	BP23MVEXP-ENV-GS-096	24-Oct-2023	04:48	40%	CHEM1	2x Ziploc bags 1 x 1L Jar	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, RR	
139	BP23MVEXP-ENV-GS-096	24-Oct-2023	05:04	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (7.5pH, 11.2˚C, 115mV) 10cm (7.42pH, 10.1˚C, 117mV)
140	BP23MVEXP-ENV-GS-096	24-Oct-2023	05:20	70%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea)	JH, CA, RR	
141	BP23MVEXP-ENV-GS-096	24-Oct-2023	05:35	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	06:35	0%	No Sample		Large shells and cobbles		JH, CA, RR	Rock in jaws
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	06:46	0%	No Sample		Sand and shells		JH, CA, RR	Rock in jaws
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	06:59	0%	No Sample		Sand, and shell fragments		JH, CA, RR	Rock in jaws
145	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:12	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell and shell fragments Munsell: 10YR 4/2	No visible fauna	JH, CA, RR	Moved 10m from target
146	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:30	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Sand with shell and shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, RR	Redox: 1cm (7.18pH, 11.2˚C, 163mV) 10cm (7.15pH, 10.3˚C, 173mV)
134	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:43	0%	No Sample		Sand and shells		JH, CA, RR	Rock in jaws
148	BP23MVEXP-ENV-GS-097	24-Oct-2023	07:54	80%	MFB	1 x 5L Bucket 1 x Ziploc bag	Sand with shell and shell fragments Munsell: 10YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroiodea)	JH, CA, RR	
149	BP23MVEXP-ENV-GS-097	24-Oct-2023	08:07	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Sand with shell and shell fragments Munsell: 10YR 4/2	No visible fauna	JH, CA, RR	
150	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:05	80%	MFA	1 x 1L Pot 1 x Ziploc bags	Sand with shell and shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (8.51pH, 10.7˚C, -60mV) 10cm (7.64pH, 10.0˚C, -09mV)
151	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:21	50%	MFB	1 x 1L Pot 1 x Ziploc bags	Sand with shell and shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea)	JH, CA, RR	
152	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:33	0%	No Sample		Sand and shells		JH, CA, RR	Rock in jaws
153	BP23MVEXP-ENV-GS-099	24-Oct-2023	09:41	80%	PSA	2 x Ziploc bags	Sand with shell and shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
154	BP23MVEXP-ENV-GS-098	24-Oct-2023	10:34	50%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	JH, CA, RR	Redox: 1cm (7.98pH, 10.1˚C, 6mV) 10cm (7.91pH, 9.7˚C, -39mV)
155	BP23MVEXP-ENV-GS-098	24-Oct-2023	10:48	50%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, RR	
156	BP23MVEXP-ENV-GS-098	24-Oct-2023	11:02	60%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
157	BP23MVEXP-ENV-GS-100	24-Oct-2023	11:55	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 2/2	No visible fauna	RH, NW, RR	Redox: 1cm (7.7pH, 10.5˚C, 55mV) 10cm (7.56pH, 9.8˚C, 16mV)
158	BP23MVEXP-ENV-GS-100	24-Oct-2023	12:06	70%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 2/2	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	RH, NW, RR	
159	BP23MVEXP-ENV-GS-100	24-Oct-2023	12:16	70%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 2/2	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, RR	
160	BP23MVEXP-ENV-GS-100	24-Oct-2023	12:25	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 2/2	No visible fauna	RH, NW, RR	
161	BP23MVEXP-ENV-GS-101	24-Oct-2023	13:37	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, RR	
162	BP23MVEXP-ENV-GS-101	24-Oct-2023	13:48	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, RR	Redox: 1cm (7.6pH, 10.1˚C, -39mV) 10cm (7.7pH, 9.9˚C, 20mV)
163	BP23MVEXP-ENV-GS-101	24-Oct-2023	14:01	60%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, RR	
164	BP23MVEXP-ENV-GS-101	24-Oct-2023	14:09	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 2.5YR 3/3	No visible fauna	RH, NW, RR	
165	BP23MVEXP-ENV-GS-103	24-Oct-2023	15:09	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell, shell fragments, gravel Munsell: 10YR 3/3	Annelida (Polychaeta)	RH, NW, RR	
166	BP23MVEXP-ENV-GS-103	24-Oct-2023	15:18	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell and shell fragments Munsell: 10YR 3/3	No visible fauna	RH, NW, RR	
167	BP23MVEXP-ENV-GS-103	24-Oct-2023	15:25	50%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/3	No visible fauna	RH, NW, RR	Redox: 1cm (7.2pH, 10.4˚C, -32mV) 10cm (8.26pH, 9.9˚C, 25mV)
168	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:19	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, RR	
169	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:29	0%	No Sample				RH, NW, RR	Rock in jaws
170	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:36	20%	No Sample				RH, NW, RR	Low retention
171	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:43	20%	No Sample				RH, NW, RR	Low retention

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
172	BP23MVEXP-ENV-GS-105	24-Oct-2023	16:51	60%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	RH, NW, RR	Moved 10m from target Redox: 1cm (7.66pH, 10.2˚C, 47mV) 10cm (7.6pH, 9.9˚C, -69mV)
173	BP23MVEXP-ENV-GS-105	24-Oct-2023	17:00	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, RR	
174	BP23MVEXP-ENV-GS-105	24-Oct-2023	17:10	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, RR	
175	BP23MVEXP-ENV-GS-107	24-Oct-2023	18:07	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (7.58pH, 10.2˚C, -37mV) 10cm (7.87pH, 9.8˚C, -66mV)
176	BP23MVEXP-ENV-GS-107	24-Oct-2023	18:16	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
177	BP23MVEXP-ENV-GS-107	24-Oct-2023	18:24	50%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
178	BP23MVEXP-ENV-GS-102	24-Oct-2023	19:48	60%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuoroidea), Mollusca (Scaphopoda)	RH, NW, EG	
179	BP23MVEXP-ENV-GS-102	24-Oct-2023	19:55	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/1	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	RH, NW, EG	
180	BP23MVEXP-ENV-GS-102	24-Oct-2023	20:02	50%	PSA	2 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 2.5Y 3/1	No visible fauna	RH, NW, EG	Redox: 1cm (7.51pH, 10.2˚C, 18mV) 10cm (7.35pH, 9.8˚C, 36mV)
181	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:05	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
182	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:15	40%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Echinodermata (Ophiuroidea)	RH, NW, EG	Redox: 1cm (7.83pH, 10.2˚C, 24mV) 10cm (7.74pH, 10.0˚C, 34mV)
183	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:25	40%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell and shell fragments Munsell: 10YR 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, EG	
184	BP23MVEXP-ENV-GS-104	24-Oct-2023	21:32	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell and shell fragments Munsell: 10YR 3/2	No visible fauna	RH, NW, EG	
185	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:29	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, EG	
186	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:38	0%	No Sample				RH, NW, EG	Misfire
187	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:43	0%	No Sample				RH, NW, EG	Rock in jaws
188	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:51	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with shell and shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta)	RH, NW, EG	
189	BP23MVEXP-ENV-GS-106	24-Oct-2023	22:59	40%	PSA	2 x Ziploc bags	Coarse sand with shell and shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, EG	Redox: 1cm (8.61pH, 10.2˚C, 49mV) 10cm (8.45pH, 10.3˚C, 73mV)
190	BP23MVEXP-ENV-GS-109	31-Oct-2023	19:48	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
191	BP23MVEXP-ENV-GS-109	31-Oct-2023	20:00	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.88pH, 10.4˚C, -74mV) 10cm (6.87pH, 10.2˚C, -8.5mV)
192	BP23MVEXP-ENV-GS-109	31-Oct-2023	20:10	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea),	RH, NW, EG	
193	BP23MVEXP-ENV-GS-109	31-Oct-2023	20:18	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
194	BP23MVEXP-ENV-GS-110	31-Oct-2023	21:17	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
195	BP23MVEXP-ENV-GS-110	31-Oct-2023	21:24	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, EG	
196	BP23MVEXP-ENV-GS-110	31-Oct-2023	21:30	70%	PSA	2 x Ziploc bags	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	Redox: 1cm (6.88pH, 9.6˚C, -20mV) 10cm (6.90pH, 10.1˚C, -18mV)
197	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:22	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
198	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:32	70%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	Redox: 1cm (6.90pH, 10.1˚C, -36mV) 10cm (6.92pH, 10.1˚C, -38mV)
199	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:41	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10YR 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
200	BP23MVEXP-ENV-GS-108	31-Oct-2023	22:49	70%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10YR 3/3	No visible fauna	RH, NW, EG	
201	BP23MVEXP-ENV-GS-111	31-Oct-2023	23:51	0%	No Sample				RH, NW, EG	Hagfish
202	BP23MVEXP-ENV-GS-111	01-Nov-2023	00:02	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (9.95pH, 9.9˚C, -67mV) 10cm (6.98pH, 10.0˚C, -76mV)
203	BP23MVEXP-ENV-GS-111	01-Nov-2023	00:16	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, EG	
204	BP23MVEXP-ENV-GS-111	01-Nov-2023	00:28	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, EG	
205	BP23MVEXP-ENV-GS-112	01-Nov-2023	01:25	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
206	BP23MVEXP-ENV-GS-112	01-Nov-2023	01:43	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)	JH, CA, EG	Redox: 1cm (6.94pH, 9.9˚C, -91mV) 10cm (6.94pH, 10.1˚C, -93mV)
207	BP23MVEXP-ENV-GS-112	01-Nov-2023	01:57	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
208	BP23MVEXP-ENV-GS-112	01-Nov-2023	02:09	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
209	BP23MVEXP-ENV-GS-113	01-Nov-2023	03:07	90%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.91pH, 9.6˚C, -161mV) 10cm (6.87pH, 10.0˚C, -178mV)
210	BP23MVEXP-ENV-GS-113	01-Nov-2023	03:21	90%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
211	BP23MVEXP-ENV-GS-113	01-Nov-2023	03:33	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/4	No visible fauna	JH, CA, EG	
212	BP23MVEXP-ENV-GS-114	01-Nov-2023	04:26	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (6.76pH, 9.6˚C, -52mV) 10cm (6.73pH, 10.2˚C, -65mV)
213	BP23MVEXP-ENV-GS-114	01-Nov-2023	04:42	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
214	BP23MVEXP-ENV-GS-114	01-Nov-2023	04:55	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5YR 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
215	BP23MVEXP-ENV-GS-114	01-Nov-2023	05:07	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5YR 3/2	No visible fauna	JH, CA, EG	
216	BP23MVEXP-ENV-GS-115	01-Nov-2023	06:07	90%	MFA	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, RR	Redox: 1cm (6.85pH, 10.1˚C, 63mV) 10cm (6.80pH, 10.4˚C, 31mV)
217	BP23MVEXP-ENV-GS-115	01-Nov-2023	06:22	90%	MFB	1 x 1L Pot 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, RR	
218	BP23MVEXP-ENV-GS-115	01-Nov-2023	06:36	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5YR 4/3	No visible fauna	JH, CA, RR	
219	BP23MVEXP-ENV-GS-116	01-Nov-2023	07:37	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, RR	
220	BP23MVEXP-ENV-GS-116	01-Nov-2023	07:53	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	JH, CA, RR	Redox: 1cm (6.90pH, 10.7˚C, 171mV) 10cm (6.89pH, 10.7˚C, 78mV)
221	BP23MVEXP-ENV-GS-116	01-Nov-2023	08:05	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
222	BP23MVEXP-ENV-GS-116	01-Nov-2023	08:15	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10YR 3/3	No visible fauna	JH, CA, RR	
223	BP23MVEXP-ENV-GS-117	01-Nov-2023	09:25	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca	JH, CA, RR	
224	BP23MVEXP-ENV-GS-117	01-Nov-2023	09:37	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10YR 3/4	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	JH, CA, RR	
225	BP23MVEXP-ENV-GS-117	01-Nov-2023	09:47	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10YR 3/4	No visible fauna	JH, CA, RR	Redox: 1cm (6.54pH, 10.9˚C, -48mV) 10cm (6.53pH, 10.9˚C, 153mV)
226	BP23MVEXP-ENV-GS-026	04-Nov-2023	05:17	40%	MFA	1 x Ziploc bags 1 x 1L pot	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
227	BP23MVEXP-ENV-GS-026	04-Nov-2023	05:27	40%	MFB	1 x Ziploc bags 1 x 1L pot	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (6.56pH, 10.5˚C, 150mV) 10cm (6.55pH, 10.7˚C, 179mV)
228	BP23MVEXP-ENV-GS-026	04-Nov-2023	05:38	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, EG	
229	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:20	0%	No Sample				JH, CA, RR	Miss fire
230	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:29	0%	No Sample				JH, CA, RR	Shell in jaws
231	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:39	50%	CHEM1	1 x Ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
232	BP23MVEXP-ENV-GS-027	04-Nov-2023	06:53	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	Bryozoa (Flustridae), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	
233	BP23MVEXP-ENV-GS-027	04-Nov-2023	07:04	60%	MFB	2 x Ziploc bag 1 x 5L bucket	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida, Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (6.53pH, 10.4˚C, 213mV) 10cm (6.53pH, 10.6˚C, 198mV)
234	BP23MVEXP-ENV-GS-027	04-Nov-2023	07:15	50%	CHEM2	1 x Ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
235	BP23MVEXP-ENV-GS-028	04-Nov-2023	08:10	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.53pH, 10.3˚C, 202mV) 10cm (6.53pH, 10.6˚C, 118mV)
236	BP23MVEXP-ENV-GS-028	04-Nov-2023	08:21	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/3	Annelida (Polychatea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	
237	BP23MVEXP-ENV-GS-028	04-Nov-2023	08:30	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5Y 4/3	No visible fauna	JH, CA, RR	
238	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:15	50%	CHEM1	1 x Ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
239	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:31	50%	MFA	1 x Ziploc bag 1 x 1L pot	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Scaphopoda)	JH, CA, RR	Redox: 1cm (6.43pH, 10.4˚C, 164mV) 10cm (6.45pH, 10.5˚C, 94mV)
240	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:43	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	
241	BP23MVEXP-ENV-GS-029	04-Nov-2023	09:53	30%	No Sample				JH, CA, RR	Low retention
242	BP23MVEXP-ENV-GS-029	04-Nov-2023	10:02	60%	CHEM2	1 x ziploc bag 1 x 1L jar	Fine sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
243	BP23MVEXP-ENV-GS-030	04-Nov-2023	10:53	40%	CHEM1	2 x Ziploc bag 1 x 1L jar	Sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
244	BP23MVEXP-ENV-GS-030	04-Nov-2023	11:06	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, RR	Redox: 1cm (6.48pH, 10.6˚C, 158mV) 10cm (6.5pH, 10.5˚C, 48mV)
245	BP23MVEXP-ENV-GS-030	04-Nov-2023	11:18	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5Y 4/4	Annelida (Polychaeta)	JH, CA, RR	
246	BP23MVEXP-ENV-GS-030	04-Nov-2023	11:28	60%	CHEM2	2 x Ziploc bag 1 x 1L jar	Sand with shell fragments Munsell: 5Y 4/4	No visible fauna	JH, CA, RR	
247	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:17	30%	No Sample				RH, NW, RR	Low retention
248	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:28	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 2/3	No visible fauna	RH, NW, RR	
249	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:37	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 2/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
250	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:46	30%	No Sample				RH, NW, RR	Low retention
251	BP23MVEXP-ENV-GS-031	04-Nov-2023	12:54	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5Y 2/3	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)	RH, NW, RR	
252	BP23MVEXP-ENV-GS-031	04-Nov-2023	13:02	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5Y 2/3	No visible fauna	RH, NW, RR	
253	BP23MVEXP-ENV-GS-032	04-Nov-2023	13:46	30%	No Sample				RH, NW, RR	
254	BP23MVEXP-ENV-GS-032	04-Nov-2023	13:51	20%	No Sample				RH, NW, RR	
255	BP23MVEXP-ENV-GS-032	04-Nov-2023	13:56	20%	No Sample				RH, NW, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
256	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:03	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
257	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:12	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Gastropoda,Scaphopoda)	RH, NW, RR	Redox: 1cm (6.72pH, 10.4˚C, 185mV) 10cm (6.71pH, 10.5˚C, 208mV)
258	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:21	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Serpulidae), Mollusca (Gastropoda)	RH, NW, RR	
259	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:29	0%	No Sample				RH, NW, RR	
260	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:34	20%	No Sample				RH, NW, RR	
261	BP23MVEXP-ENV-GS-032	04-Nov-2023	14:39	30%	CHEM2	2 x Ziploc bag 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	No PSA spare collected due to low retention
262	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:19	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
263	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:29	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
264	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:35	30%	No Sample				RH, NW, RR	Low retention
265	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:41	0%	No Sample				RH, NW, RR	Rock in jaws
266	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:45	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 2.5Y 3/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	Redox: 1cm (6.83pH, 10.3˚C, 221mV) 10cm (6.82pH, 10.5˚C, 216mV)
267	BP23MVEXP-ENV-GS-033	04-Nov-2023	15:53	20%	No Sample				RH, NW, RR	Low retention
268	BP23MVEXP-ENV-GS-033	04-Nov-2023	16:00	10%	No Sample				RH, NW, RR	Low retention
269	BP23MVEXP-ENV-GS-033	04-Nov-2023	16:05	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 2.5Y 3/3	No visible fauna	RH, NW, RR	
270	BP23MVEXP-ENV-GS-034	04-Nov-2023	16:45	70%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, RR	
271	BP23MVEXP-ENV-GS-034	04-Nov-2023	16:55	60%	MFA	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polycheata)	RH, NW, RR	Redox: 1cm (6.79pH, 10.0˚C, 231mV) 10cm (6.79pH, 10.2˚C, 238mV)
272	BP23MVEXP-ENV-GS-034	04-Nov-2023	17:02	60%	MFB	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polycheata)	RH, NW, RR	
273	BP23MVEXP-ENV-GS-034	04-Nov-2023	17:12	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, RR	
274	BP23MVEXP-ENV-GS-035	04-Nov-2023	17:59	0%	No Sample				RH, NW, EG	Rock in jaws
275	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:04	0%	No Sample				RH, NW, EG	Rock in jaws
276	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:09	0%	No Sample				RH, NW, EG	Rock in jaws
277	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:16	0%	No Sample				RH, NW, EG	Rock in jaws
278	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:30	0%	No Sample				RH, NW, EG	Rock in jaws
279	BP23MVEXP-ENV-GS-035	04-Nov-2023	18:53	20%	No Sample				RH, NW, EG	Low retention
280	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:31		No Sample				RH, NW, EG	Rock in jaws
281	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:35	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, EG	
282	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:45	40%	MFA	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.93pH, 10.1˚C, 244mV) 10cm (6.95pH, 10.3˚C, 214mV)
283	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:53	40%	MFB	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 3/6	Annelida (Polychaeta)	RH, NW, EG	
284	BP23MVEXP-ENV-GS-036	04-Nov-2023	19:59	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 3/6	No visible fauna	RH, NW, EG	
285	BP23MVEXP-ENV-GS-037	04-Nov-2023	20:54	40%	MFA	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/6	Annelida (Polychaeta)	RH, NW, EG	
286	BP23MVEXP-ENV-GS-037	04-Nov-2023	21:00	50%	MFB	2 x 5L Buckets 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/6	Annelida (Polychaeta)	RH, NW, EG	
287	BP23MVEXP-ENV-GS-037	04-Nov-2023	21:06	50%	PSA	2 x Ziploc bags	Coarse sand with shell fragments Munsell: 10 YR 4/6	No visible fauna	RH, NW, EG	Redox: 1cm (6.90pH, 10.2˚C, 235mV) 10cm (6.90pH, 10.2˚C, 245mV)
288	BP23MVEXP-ENV-GS-038	04-Nov-2023	21:57	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 4/3	No visible fauna	RH, NW, EG	
289	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:06	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	RH, NW, EG	Redox: 1cm (7.12pH, 10˚C, 236mV) 10cm (7.11pH, 10.1˚C, 235mV)
290	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:16	0%	No Sample				RH, NW, EG	Misfire
291	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:20	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Coarse sand with shell fragments Munsell: 10 YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, EG	
292	BP23MVEXP-ENV-GS-038	04-Nov-2023	22:27	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with shell fragments Munsell: 10 YR 4/3	No visible fauna	RH, NW, EG	
293	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:16	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 2/2	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	RH, NW, EG	
294	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:24	20%	No Sample				RH, NW, EG	Low retention
295	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:29	30%	No Sample				RH, NW, EG	Low retention
296	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:35	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 2/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	RH, NW, EG	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
297	BP23MVEXP-ENV-GS-039	04-Nov-2023	23:41	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10 YR 2/2	No visible fauna	RH, NW, EG	Redox: 1cm (6.96pH, 10.1˚C, 140mV) 10cm (6.97pH, 10.1˚C, 82mV)
298	BP23MVEXP-ENV-GS-040	05-Nov-2023	00:33	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	JH, CA, EG	
299	BP23MVEXP-ENV-GS-040	05-Nov-2023	00:50	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (7.01pH, 10.0˚C, 150mV) 10cm (7.01pH, 10.0˚C, 171mV)
300	BP23MVEXP-ENV-GS-040	05-Nov-2023	01:02	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia)	JH, CA, EG	
301	BP23MVEXP-ENV-GS-040	05-Nov-2023	01:12	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	JH, CA, EG	
302	BP23MVEXP-ENV-GS-041	05-Nov-2023	02:07	90%	MFA	1 x 5L Bucket 1 x Ziploc bags	Sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
303	BP23MVEXP-ENV-GS-041	05-Nov-2023	02:17	70%	MFB	1 x 5L Bucket 1 x Ziploc bags	Sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, EG	Redox: 1cm (6.87pH, 10.1˚C, 217mV) 10cm (6.87pH, 10.2˚C, 206mV)
304	BP23MVEXP-ENV-GS-041	05-Nov-2023	02:29	90%	PSA	2 x Ziploc bags	Sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
305	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:20	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
306	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:33	0%	No Sample				JH, CA, EG	Misfire
307	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:42	80%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, EG	Redox: 1cm (6.81pH, 10.1˚C, 94mV) 10cm (6.32pH, 10.1˚C, 20mV)
308	BP23MVEXP-ENV-GS-042	05-Nov-2023	03:54	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
309	BP23MVEXP-ENV-GS-042	05-Nov-2023	05:29	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
310	BP23MVEXP-ENV-GS-043	05-Nov-2023	06:23	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.74pH, 10.1˚C, 229mV) 10cm (6.71pH, 10.2˚C, 93mV)
311	BP23MVEXP-ENV-GS-043	05-Nov-2023	06:37	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, RR	
312	BP23MVEXP-ENV-GS-043	05-Nov-2023	06:49	70%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
313	BP23MVEXP-ENV-GS-044	05-Nov-2023	07:41	0%	No Sample				JH, CA, RR	Misfire
314	BP23MVEXP-ENV-GS-044	05-Nov-2023	07:48	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
315	BP23MVEXP-ENV-GS-044	05-Nov-2023	08:03	90%	MFA	1 x 5L Bucket 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.56pH, 10.2˚C, 118mV) 10cm (6.57pH, 10.2˚C, -29mV)
316	BP23MVEXP-ENV-GS-044	05-Nov-2023	08:17	90%	MFB	1 x 5L Bucket 1 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
317	BP23MVEXP-ENV-GS-044	05-Nov-2023	08:28	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
318	BP23MVEXP-ENV-GS-045	05-Nov-2023	09:22	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	JH, CA, RR	Redox: 1cm (6.78pH, 10.6˚C, 178mV) 10cm (6.76pH, 10.7˚C, -28mV)
319	BP23MVEXP-ENV-GS-045	05-Nov-2023	09:35	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, RR	
320	BP23MVEXP-ENV-GS-045	05-Nov-2023	09:46	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/2	No visible fauna	JH, CA, RR	
321	BP23MVEXP-ENV-GS-046	05-Nov-2023	10:44	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
322	BP23MVEXP-ENV-GS-046	05-Nov-2023	10:58	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, RR	Redox: 1cm (6.69pH, 10.9˚C, 195mV) 10cm (6.69pH, 11.0˚C, 193mV)
323	BP23MVEXP-ENV-GS-046	05-Nov-2023	11:08	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	JH, CA, RR	
324	BP23MVEXP-ENV-GS-046	05-Nov-2023	11:18	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, RR	
325	BP23MVEXP-ENV-GS-048	05-Nov-2023	12:45	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
326	BP23MVEXP-ENV-GS-048	05-Nov-2023	12:54	60%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	RH, NW, RR	Redox: 1cm (6.72pH, 10.6˚C, 230mV) 10cm (6.70pH, 11.0˚C, 187mV)
327	BP23MVEXP-ENV-GS-048	05-Nov-2023	13:02	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	RH, NW, RR	
328	BP23MVEXP-ENV-GS-048	05-Nov-2023	13:10	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
329	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:22	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
330	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:32	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Asteroidea)	RH, NW, RR	Redox: 1cm (6.69pH, 10.9˚C, 192mV) 10cm (6.69pH, 11.0˚C, 36mV)
331	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:40	40%	MFB	1 x 5L Bucket 1 x Ziploc bag	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	RH, NW, RR	
332	BP23MVEXP-ENV-GS-050	05-Nov-2023	14:47	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Coarse sand with gravel and shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
333	BP23MVEXP-ENV-GS-052	05-Nov-2023	15:56	10%	No Sample				RH, NW, RR	Low retention
334	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:02	20%	No Sample				RH, NW, RR	Low retention
335	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:07	20%	No Sample				RH, NW, RR	Low retention, moved 10m west
336	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:13	10%	No Sample				RH, NW, RR	Low retention
337	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:18	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
338	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:27	20%	No Sample				RH, NW, RR	Low retention
339	BP23MVEXP-ENV-GS-052	05-Nov-2023	16:33	10%	No Sample				RH, NW, RR	Low retention, station abandoned
340	BP23MVEXP-ENV-GS-054	05-Nov-2023	17:37	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/2	No visible fauna	RH, NW, RR	
341	BP23MVEXP-ENV-GS-054	05-Nov-2023	17:45	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta)	RH, NW, RR	Redox: 1cm (6.55pH, 10.5˚C, 230mV) 10cm (6.64pH, 10.8˚C, 118mV)
342	BP23MVEXP-ENV-GS-054	05-Nov-2023	17:54	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	RH, NW, RR	
343	BP23MVEXP-ENV-GS-054	05-Nov-2023	18:01	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/2	No visible fauna	RH, NW, RR	
344	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:19	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/4	No visible fauna	RH, NW, EG	
345	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:29	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, EG	Redox: 1cm (6.19pH, 10.5˚C, 83mV) 10cm (6.19pH, 10.0˚C, -90mV)
346	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:38	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
347	BP23MVEXP-ENV-GS-056	05-Nov-2023	19:45	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/4	No visible fauna	RH, NW, EG	
348	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:35	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Mollusca (Gastropoda)	RH, NW, EG	Redox: 1cm (6.16pH, 10.5˚C, 118mV) 10cm (6.16pH, 10.0˚C, -14mV)
349	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:41	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, EG	
350	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:49	0%	No Sample				RH, NW, EG	Misfire
351	BP23MVEXP-ENV-GS-057	05-Nov-2023	20:53	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10 YR 3/4	No visible fauna	RH, NW, EG	
352	BP23MVEXP-ENV-GS-058	05-Nov-2023	21:28	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.99.pH, 10.4˚C, 125mV) 10cm (6.99pH, 10.7˚C, 140mV)
353	BP23MVEXP-ENV-GS-058	05-Nov-2023	21:35	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
354	BP23MVEXP-ENV-GS-058	05-Nov-2023	21:43	90%	PSA	2 x Ziploc bags	Fine sand Munsell: 10 YR 3/1	No visible fauna	RH, NW, EG	
355	BP23MVEXP-ENV-GS-059	05-Nov-2023	22:35	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta)	RH, NW, EG	Redox: 1cm (6.94.pH, 10.2˚C, -66mV) 10cm (6.95pH, 10.7˚C, -163mV)
356	BP23MVEXP-ENV-GS-059	05-Nov-2023	22:44	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 10 YR 3/1	Annelida (Polychaeta), Arthropoda	RH, NW, EG	
357	BP23MVEXP-ENV-GS-059	05-Nov-2023	22:54	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10 YR 3/1	No visible fauna	RH, NW, EG	
358	BP23MVEXP-ENV-GS-059	05-Nov-2023	23:03	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 10 YR 3/1	No visible fauna	RH, NW, EG	
359	BP23MVEXP-ENV-GS-060	05-Nov-2023	23:39	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/3	No visible fauna	RH, NW, EG	
360	BP23MVEXP-ENV-GS-060	05-Nov-2023	23:49	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta), Arthropoda (*Nephrops* sp.), Echinodermata (*Echinocardium cordatum*)	RH, NW, EG	Redox: 1cm (6.79.pH, 10.5˚C, -20mV) 10cm (6.83pH, 10.8˚C, -91mV)
361	BP23MVEXP-ENV-GS-060	05-Nov-2023	00:00	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta)	RH, NW, EG	
362	BP23MVEXP-ENV-GS-060	06-Nov-2023	00:09	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 10 YR 3/3	No visible fauna	JH, CA, EG	
363	BP23MVEXP-ENV-GS-061	06-Nov-2023	00:59	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
364	BP23MVEXP-ENV-GS-061	06-Nov-2023	01:07	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 10 YR 3/3	Annelida (Polychaeta)	JH, CA, EG	
365	BP23MVEXP-ENV-GS-061	06-Nov-2023	01:14	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 10 YR 3/3	No visible fauna	JH, CA, EG	Redox: 1cm (6.82.pH, 10.6˚C, 22mV) 10cm (6.82pH, 10.1˚C, 88mV)
366	BP23MVEXP-ENV-GS-062	06-Nov-2023	01:55	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
367	BP23MVEXP-ENV-GS-062	06-Nov-2023	02:03	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Paguroidea)	JH, CA, EG	
368	BP23MVEXP-ENV-GS-062	06-Nov-2023	02:11	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (6.82.pH, 10.7˚C, -138mV) 10cm (6.82pH, 10.9˚C, -154mV)
369	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:08	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/2	No visible fauna	JH, CA, EG	
370	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:18	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	Redox: 1cm (6.03.pH, 9.5˚C, 194mV) 10cm (6.04pH, 10.3˚C, 183mV)
371	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:24	50%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/2	Annelida (Polychaeta)	JH, CA, EG	
372	BP23MVEXP-ENV-GS-063	06-Nov-2023	03:32	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/2	No visible fauna	JH, CA, EG	
373	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:18	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	No visible fauna	JH, CA, EG	
374	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:30	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.16.pH, 10.7˚C, 132mV) 10cm (6.18pH, 10.7˚C, 148mV)
375	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:36	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
376	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:44	30%	No Sample				JH, CA, EG	Low retention
377	BP23MVEXP-ENV-GS-064	06-Nov-2023	04:51	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/2	No visible fauna	JH, CA, EG	
378	BP23MVEXP-ENV-GS-066	06-Nov-2023	05:37	90%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 3/1	Annelida (Polychaeta)	JH, CA, EG	Redox: 1cm (6.46.pH, 10.7˚C, -144mV) 10cm (6.43pH, 10.7˚C, -180mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
379	BP23MVEXP-ENV-GS-066	06-Nov-2023	05:47	90%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
380	BP23MVEXP-ENV-GS-066	06-Nov-2023	05:56	90%	PSA	2 x Ziploc bags	Fine sand with gravel and shell fragments Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
381	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:43	0%	No Sample				JH, CA, RR	Rock in jaws
382	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:47	0%	No Sample				JH, CA, RR	Rock in jaws
383	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:52	0%	No Sample				JH, CA, RR	Rock in jaws, moved 10m south
384	BP23MVEXP-ENV-GS-068	06-Nov-2023	07:57	0%	No Sample				JH, CA, RR	Rock in jaws
385	BP23MVEXP-ENV-GS-068	06-Nov-2023	08:02	0%	No Sample				JH, CA, RR	Misfire
386	BP23MVEXP-ENV-GS-068	06-Nov-2023	08:04	0%	No Sample				JH, CA, RR	Rock in jaws
387	BP23MVEXP-ENV-GS-068	06-Nov-2023	08:09	0%	No Sample				JH, CA, RR	Rock in jaws, station abandoned
388	BP23MVEXP-ENV-GS-070	06-Nov-2023	08:55	0%	No Sample				JH, CA, RR	Rock in jaws
389	BP23MVEXP-ENV-GS-070	06-Nov-2023	08:59	0%	No Sample				JH, CA, RR	Rock in jaws
390	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:04	0%	No Sample				JH, CA, RR	Rock in jaws, moved 10m east
391	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:12	0%	No Sample				JH, CA, RR	Misfire
392	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:14	0%	No Sample				JH, CA, RR	Misfire
393	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:19	0%	No Sample				JH, CA, RR	Misfire
394	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:21	0%	No Sample				JH, CA, RR	Rock in jaws
395	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:26	0%	No Sample				JH, CA, RR	Rock in jaws
396	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:29	0%	No Sample				JH, CA, RR	Misfire
397	BP23MVEXP-ENV-GS-070	06-Nov-2023	09:31	0%	No Sample				JH, CA, RR	Rock in jaws, station abandoned
398	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:03	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/2	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.66.pH, 10.5˚C, -112mV) 10cm (6.56pH, 10.7˚C, -129mV)
399	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:13	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/2	No visible fauna	JH, CA, RR	
400	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:26	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/2	Annelida (Polychaeta)	JH, CA, RR	
401	BP23MVEXP-ENV-GS-133	06-Nov-2023	10:33	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/2	No visible fauna	JH, CA, RR	
402	BP23MVEXP-ENV-GS-069	06-Nov-2023	11:19	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta)	JH, CA, RR	Redox: 1cm (6.83.pH, 10.6˚C, 34mV) 10cm (6.64pH, 10.7˚C, 198mV)
403	BP23MVEXP-ENV-GS-069	06-Nov-2023	11:25	70%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
404	BP23MVEXP-ENV-GS-069	06-Nov-2023	11:33	60%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
405	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:06	0%	No Sample				RH, NW, RR	Rock in jaws
406	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:09	10%	No Sample				RH, NW, RR	Low retention
407	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:13	10%	No Sample				RH, NW, RR	Low retention, moved 10m south
408	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:18	10%	No Sample				RH, NW, RR	Low retention
409	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:21	10%	No Sample				RH, NW, RR	Low retention
410	BP23MVEXP-ENV-GS-67A	06-Nov-2023	12:25	10%	No Sample				RH, NW, RR	Low retention, station abandoned
411	BP23MVEXP-ENV-GS-132	06-Nov-2023	12:59	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta)	RH, NW, RR	Redox: 1cm (6.60.pH, 11.0˚C, 72mV) 10cm (6.60pH, 11.0˚C, 108mV)
412	BP23MVEXP-ENV-GS-132	06-Nov-2023	13:06	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Arthropoda (*Nephrops* sp.), Echinodermata (*Echinocardium cordatum* , Ophiuroidea)	RH, NW, RR	
413	BP23MVEXP-ENV-GS-132	06-Nov-2023	13:11	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	RH, NW, RR	
414	BP23MVEXP-ENV-GS-065	06-Nov-2023	13:55	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
415	BP23MVEXP-ENV-GS-065	06-Nov-2023	14:02	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	RH, NW, RR	
416	BP23MVEXP-ENV-GS-065	06-Nov-2023	14:08	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	Redox: 1cm (6.57.pH, 11.1˚C, -114mV) 10cm (6.57pH, 11.1˚C, -183mV)
417	BP23MVEXP-ENV-GS-131	06-Nov-2023	14:43	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/3	No visible fauna	RH, NW, RR	
418	BP23MVEXP-ENV-GS-131	06-Nov-2023	14:49	70%	MFA	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Mollusca (Gastropoda)	RH, NW, RR	Redox: 1cm (6.40.pH, 11.1˚C, -36mV) 10cm (6.65pH, 11.1˚C, -24mV)
419	BP23MVEXP-ENV-GS-131	06-Nov-2023	15:00	50%	MFB	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Ophiuroidea)	RH, NW, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
420	BP23MVEXP-ENV-GS-131	06-Nov-2023	15:05	60%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/3	No visible fauna	RH, NW, RR	
421	BP23MVEXP-ENV-GS-130	06-Nov-2023	15:54	80%	MFA	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)	RH, NW, RR	
422	BP23MVEXP-ENV-GS-130	06-Nov-2023	16:00	80%	MFB	2 x 5L Buckets 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH, NW, RR	
423	BP23MVEXP-ENV-GS-130	06-Nov-2023	16:06	80%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/3	No visible fauna	RH, NW, RR	Redox: 1cm (7.21.pH, 11.0˚C, -82mV) 10cm (7.15pH, 11.0˚C, -72mV)
424	BP23MVEXP-ENV-GS-129	06-Nov-2023	16:35	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Mollusca (Scaphopoda)	RH, NW, RR	
425	BP23MVEXP-ENV-GS-129	06-Nov-2023	16:42	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/4	Annelida (Polychaeta), Arthropoda (*Nephrops* sp.)	RH, NW, RR	
426	BP23MVEXP-ENV-GS-129	06-Nov-2023	16:47	70%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/4	No visible fauna	RH, NW, RR	Redox: 1cm (7.15.pH, 10.5˚C, -88mV) 10cm (7.18pH, 11.0˚C, -95mV)
427	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:33	80%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
428	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:41	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda (Brachyura)	RH, NW, RR	Redox: 1cm (7.25.pH, 11.5˚C, -70mV) 10cm (7.33pH, 11.5˚C, -79mV)
429	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:48	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta)	RH, NW, RR	
430	BP23MVEXP-ENV-GS-128	06-Nov-2023	17:56	80%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, RR	
431	BP23MVEXP-ENV-GS-127	06-Nov-2023	18:41	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
432	BP23MVEXP-ENV-GS-127	06-Nov-2023	18:48	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 3/2	Annelida (Polychaeta)	RH, NW, EG	
433	BP23MVEXP-ENV-GS-127	06-Nov-2023	18:55	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (7.36.pH, 10.1˚C, -120mV) 10cm (7.43pH, 10.1˚C, -131mV)
434	BP23MVEXP-ENV-GS-126	06-Nov-2023	19:41	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
435	BP23MVEXP-ENV-GS-126	06-Nov-2023	19:50	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
436	BP23MVEXP-ENV-GS-126	06-Nov-2023	20:02	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	Redox: 1cm (7.48.pH, 10.0˚C, -134mV) 10cm (7.68pH, 10.0˚C, -153mV)
437	BP23MVEXP-ENV-GS-126	06-Nov-2023	20:11	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
438	BP23MVEXP-ENV-GS-125	06-Nov-2023	21:01	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
439	BP23MVEXP-ENV-GS-125	06-Nov-2023	21:09	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Arthropoda, Echinodermata (Ophiuroidea)	RH, NW, EG	
440	BP23MVEXP-ENV-GS-125	06-Nov-2023	21:17	90%	PSA	2 x Ziploc bags	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (7.60.pH, 10.1˚C, -91mV) 10cm (7.62pH, 10.3˚C, -95mV)
441	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:10	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
442	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:22	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, EG	Redox: 1cm (7.26.pH, 10.0˚C, -63mV) 10cm (7.35pH, 10.8˚C, -108mV)
443	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:30	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea)	RH, NW, EG	
444	BP23MVEXP-ENV-GS-124	06-Nov-2023	22:39	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	
445	BP23MVEXP-ENV-GS-123	06-Nov-2023	23:36	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum* , Ophiuroidea)	RH, NW, EG	
446	BP23MVEXP-ENV-GS-123	06-Nov-2023	23:44	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, EG	
447	BP23MVEXP-ENV-GS-123	06-Nov-2023	23:53	90%	PSA	2 x Ziploc bags	Fine sand Munsell: 5 Y 3/2	No visible fauna	RH, NW, EG	Redox: 1cm (6.93.pH, 10.0˚C, -18mV) 10cm (6.95pH, 11.0˚C, -59mV)
448	BP23MVEXP-ENV-GS-122	07-Nov-2023	00:43	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
449	BP23MVEXP-ENV-GS-122	07-Nov-2023	00:56	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.94.pH, 11.0˚C, 312mV) 10cm (6.85pH, 11.0˚C, 361mV)
450	BP23MVEXP-ENV-GS-122	07-Nov-2023	01:06	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand Munsell: 5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
451	BP23MVEXP-ENV-GS-122	07-Nov-2023	01:16	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand Munsell: 5 Y 3/1	No visible fauna	JH, CA, EG	
452	BP23MVEXP-ENV-GS-121	07-Nov-2023	02:06	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
453	BP23MVEXP-ENV-GS-121	07-Nov-2023	02:17	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
454	BP23MVEXP-ENV-GS-121	07-Nov-2023	02:26	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 3/2	No visible fauna	JH, CA, EG	Redox: 1cm (6.85.pH, 10.0˚C, 312mV) 10cm (6.60pH, 10.0˚C, 161mV)
455	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:18	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/3	No visible fauna	JH, CA, EG	
456	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:29	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	Redox: 1cm (6.92.pH, 10.1˚C, 313mV) 10cm (6.92pH, 10.1˚C, 310mV)
457	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:42	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
458	BP23MVEXP-ENV-GS-120	07-Nov-2023	03:52	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/3	No visible fauna	JH, CA, EG	
459	BP23MVEXP-ENV-GS-119	07-Nov-2023	04:36	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Arthropoda (Nephrops *sp.*), Echinodermata (Ophiuroidea)	JH, CA, EG	
460	BP23MVEXP-ENV-GS-119	07-Nov-2023	04:46	90%	No Sample				JH, CA, EG	Hagfish

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
461	BP23MVEXP-ENV-GS-119	07-Nov-2023	04:55	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 3/3	No visible fauna	JH, CA, EG	Redox: 1cm (6.87.pH, 10.0˚C, 198mV) 10cm (6.87pH, 10.0˚C, 127mV)
462	BP23MVEXP-ENV-GS-119	07-Nov-2023	05:07	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	JH, CA, EG	
463	BP23MVEXP-ENV-GS-118	07-Nov-2023	05:58	90%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/1	No visible fauna	JH, CA, EG	
464	BP23MVEXP-ENV-GS-118	07-Nov-2023	06:09	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
465	BP23MVEXP-ENV-GS-118	07-Nov-2023	06:17	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
466	BP23MVEXP-ENV-GS-118	07-Nov-2023	06:29	90%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 3/1	No visible fauna	JH, CA, RR	
467	BP23MVEXP-ENV-GS-047	07-Nov-2023	08:46	90%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
468	BP23MVEXP-ENV-GS-047	07-Nov-2023	08:54	90%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	JH, CA, RR	
469	BP23MVEXP-ENV-GS-047	07-Nov-2023	09:03	90%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	Redox: 1cm (6.90.pH, 10.0˚C, 71mV) 10cm (6.92pH, 10.1˚C, 52mV)
470	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:13	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/3	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, RR	
471	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:24	30%	No Sample				JH, CA, RR	Low retention
472	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:32	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	JH, CA, RR	
473	BP23MVEXP-ENV-GS-049	07-Nov-2023	10:40	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 5/3	No visible fauna	JH, CA, RR	Redox: 1cm (6.54.pH, 11.0˚C, 138mV) 10cm (6.68pH, 11.0˚C, 175mV)
474	BP23MVEXP-ENV-GS-051	07-Nov-2023	11:42	40%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	JH, CA, RR	
475	BP23MVEXP-ENV-GS-051	07-Nov-2023	11:51	70%	MFB	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta)	JH, CA, RR	
476	BP23MVEXP-ENV-GS-051	07-Nov-2023	12:01	80%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 3/1	No visible fauna	RH, NW, RR	
477	BP23MVEXP-ENV-GS-053	07-Nov-2023	13:24	90%	MFA	2 x 5L Buckets 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)	RH, NW, RR	
478	BP23MVEXP-ENV-GS-053	07-Nov-2023	13:30	90%	MFB	2 x 5L Buckets 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, RR	
479	BP23MVEXP-ENV-GS-053	07-Nov-2023	13:36	90%	PSA	2 x Ziploc bags	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/1	No visible fauna	RH, NW, RR	
480	BP23MVEXP-ENV-GS-055	07-Nov-2023	14:52	90%	No Sample				RH, NW, RR	Hagfish
481	BP23MVEXP-ENV-GS-055	07-Nov-2023	15:00	80%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	RH, NW, RR	
482	BP23MVEXP-ENV-GS-055	07-Nov-2023	15:07	80%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	RH, NW, RR	
483	BP23MVEXP-ENV-GS-055	07-Nov-2023	15:14	90%	PSA	2 x Ziploc bags	Fine sand with gravel and shell fragments Munsell: 2.5 Y 3/3	No visible fauna	RH, NW, RR	
484	BP23MVEXP-ENV-GS-012	08-Nov-2023	00:56	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
485	BP23MVEXP-ENV-GS-012	08-Nov-2023	01:03	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)	JH, CA, EG	
486	BP23MVEXP-ENV-GS-012	08-Nov-2023	01:10	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/4	No visible fauna	JH, CA, EG	
487	BP23MVEXP-ENV-GS-013	08-Nov-2023	01:59	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
488	BP23MVEXP-ENV-GS-013	08-Nov-2023	02:09	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Mollusca (Scaphopoda)	JH, CA, EG	
489	BP23MVEXP-ENV-GS-013	08-Nov-2023	02:17	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
490	BP23MVEXP-ENV-GS-013	08-Nov-2023	02:24	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, EG	
491	BP23MVEXP-ENV-GS-014	08-Nov-2023	03:11	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, EG	
492	BP23MVEXP-ENV-GS-014	08-Nov-2023	03:18	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta)	JH, CA, EG	
493	BP23MVEXP-ENV-GS-014	08-Nov-2023	03:24	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/4	No visible fauna	JH, CA, EG	
494	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:10	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
495	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:20	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta)	JH, CA, EG	
496	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:27	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	JH, CA, EG	
497	BP23MVEXP-ENV-GS-015	08-Nov-2023	04:34	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
498	BP23MVEXP-ENV-GS-016	08-Nov-2023	05:19	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, EG	
499	BP23MVEXP-ENV-GS-016	08-Nov-2023	05:25	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, EG	
500	BP23MVEXP-ENV-GS-016	08-Nov-2023	05:32	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
501	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:12	40%	Chem1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, RR	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	54027	Area:	North Sea	Sieve Size:	0.5mm
Project:	Morven Offshore Wind Limited			Equipment:	Day Grab/Mini-Hamon Grab
Client:	bp and EnBW			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
502	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:22	30%	No Sample				JH, CA, RR	Low retention
503	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:28	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia)	JH, CA, RR	
504	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:35	60%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, RR	
505	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:42	30%	No Sample				JH, CA, RR	Low retention
506	BP23MVEXP-ENV-GS-017	08-Nov-2023	06:48	50%	Chem2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, RR	
507	BP23MVEXP-ENV-GS-018	08-Nov-2023	07:31	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Scaphopoda)	JH, CA, RR	
508	BP23MVEXP-ENV-GS-018	08-Nov-2023	07:38	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, RR	
509	BP23MVEXP-ENV-GS-018	08-Nov-2023	07:45	50%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, RR	
510	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:29	60%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 4/4	No visible fauna	JH, CA, RR	
511	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:39	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 YR 4/4	Annelida (Polychaeta)	JH, CA, RR	
512	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:46	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 YR 4/4	Annelida (Polychaeta), Mollusca (Bivalvia)	JH, CA, RR	
513	BP23MVEXP-ENV-GS-019	08-Nov-2023	08:53	40%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 YR 4/4	No visible fauna	JH, CA, RR	
514	BP23MVEXP-ENV-GS-025	08-Nov-2023	18:26	20%	No Sample				RH, NW, EG	Low retention
515	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:29	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
516	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:41	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia, Scaphopoda)	JH, CA, EG	
517	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:49	30%	No Sample				JH, CA, EG	Low retention
518	BP23MVEXP-ENV-GS-025	09-Nov-2023	04:55	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	Annelida (Polychaeta), Molluca (Scaphopoda)	JH, CA, EG	
519	BP23MVEXP-ENV-GS-025	09-Nov-2023	05:03	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with gravel and shell fragments Munsell: 5 Y 4/3	No visible fauna	JH, CA, EG	
520	BP23MVEXP-ENV-GS-024	09-Nov-2023	05:48	50%	MFA	1 x 5L Bucket 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (*Echinocardium cordatum*)	JH, CA, EG	
521	BP23MVEXP-ENV-GS-024	09-Nov-2023	05:55	40%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/4	Annelida (Polychaeta), Molluca (Bivalvia, Scaphopoda)	JH, CA, EG	
522	BP23MVEXP-ENV-GS-024	09-Nov-2023	06:03	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 2.5 Y 4/4	No visible fauna	JH, CA, EG	
523	BP23MVEXP-ENV-GS-023	09-Nov-2023	06:45	50%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/3	No visible fauna	JH, CA, EG	
524	BP23MVEXP-ENV-GS-023	09-Nov-2023	06:55	40%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/3	Annelida (Polychaeta), Molluca (Bivalvia, Gastropoda)	JH, CA, EG	
525	BP23MVEXP-ENV-GS-023	09-Nov-2023	07:02	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 2.5 Y 4/3	Annelida (Polychaeta)	JH, CA, EG	
526	BP23MVEXP-ENV-GS-023	09-Nov-2023	07:09	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 2.5 Y 4/3	No visible fauna	JH, CA, EG	
527	BP23MVEXP-ENV-GS-022	09-Nov-2023	07:56	50%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Arthropoda (Amphipoda), Molluca (Bivalvia, Gastropoda)	JH, CA, EG	
528	BP23MVEXP-ENV-GS-022	09-Nov-2023	08:04	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	JH, CA, EG	
529	BP23MVEXP-ENV-GS-022	09-Nov-2023	08:11	40%	PSA	2 x Ziploc bags	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, EG	
530	BP23MVEXP-ENV-GS-021	09-Nov-2023	08:57	40%	CHEM1	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, EG	
531	BP23MVEXP-ENV-GS-021	09-Nov-2023	09:06	60%	MFA	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Molluca (Bivalvia)	JH, CA, EG	
532	BP23MVEXP-ENV-GS-021	09-Nov-2023	09:14	50%	MFB	1 x 1L Pot 1 x Ziploc bag	Fine sand with shell fragments Munsell: 5 Y 5/4	Annelida (Polychaeta), Cnidaria (Pennatuloidea), Molluca (Bivalvia)	JH, CA, EG	
533	BP23MVEXP-ENV-GS-021	09-Nov-2023	09:20	50%	CHEM2	2 x Ziploc bags 1 x 1L jar	Fine sand with shell fragments Munsell: 5 Y 5/4	No visible fauna	JH, CA, EG	
534	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:09	0%	No Sample				JH, CA, EG	Misfire
535	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:12	0%	No Sample				JH, CA, EG	Rock in jaws
536	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:18	10%	No Sample				JH, CA, EG	Low retention, moved 10 SW
537	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:24	10%	No Sample				JH, CA, EG	Low retention
538	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:32	0%	No Sample				JH, CA, EG	Misfire
539	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:37	0%	No Sample				JH, CA, EG	Rock in jaws
540	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:43	0%	No Sample				JH, CA, EG	Rock in jaws
541	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:49	80%	MFA	1 x 5L Bucket 1 x Ziploc bag	Sand with shell fragments Munsell: 5 Y 5/4	Molluca (Scaphopoda)	JH, CA, EG	
542	BP23MVEXP-ENV-GS-020	09-Nov-2023	10:56	0%	No Sample				JH, CA, EG	Misfire

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	54027		Area:	North Sea				Sieve Size:	0.5mm	
Project:	Morven Offshore Wind Limited							Equipment:	Day Grab/Mini-Hamon Grab	
Client:	bp and EnBW							Vessel:	*Ocean Geograph*	
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
543	BP23MVEXP-ENV-GS-020	09-Nov-2023	11:00	10%	No Sample				JH, CA, EG	Low retention, station abandoned

APPENDIX A FIELD SAMPLING LOGS

Water Sampling Positioning Summary

Job No	54027					Vessel	*Ocean Geograph*				
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG				
Project Name	Morven ECR					Deployment Location	Camera Deployment	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1					Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	ED50		Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
04-Jul-2023	23:55	1	BP23MVEXP-ENV-WS-001				69	630087	6294348	630092	6294363	5	15	16	20	VP	5m below sea surface
04-Jul-2023	23:56	2	BP23MVEXP-ENV-WS-001				69	630087	6294348	630092	6294363	5	15	16	19	HS	5m above seafloor
05-Jul-2023	05:12	3	BP23MVEXP-ENV-WS-003				71	635283	6288300	635281	6288299	-2	-1	3	247	HS	5m below sea surface
05-Jul-2023	05:12	4	BP23MVEXP-ENV-WS-003				71	635283	6288300	635281	6288299	-2	-1	2	246	HS	No Sample
05-Jul-2023	05:32	5	BP23MVEXP-ENV-WS-003				70	635286	6288304	635281	6288299	-5	-5	7	221	VP	No Sample
05-Jul-2023	05:46	6	BP23MVEXP-ENV-WS-003				70	635285	6288307	635281	6288299	-4	-8	9	203	VP	5m above seafloor
05-Jul-2023	10:26	7	BP23MVEXP-ENV-WS-005				76	640527	6282266	640532	6282261	5	-5	7	137	VP	5m below sea surface
05-Jul-2023	10:26	8	BP23MVEXP-ENV-WS-005				76	640528	6282266	640532	6282261	4	-5	7	142	VP	5m above seafloor
05-Jul-2023	15:37	9	BP23MVEXP-ENV-WS-007				75	645741	6276167	645743	6276186	2	19	19	5	AC	5m below sea surface
05-Jul-2023	15:37	10	BP23MVEXP-ENV-WS-007				75	645741	6276167	645743	6276186	2	19	19	6	AC	5m above seafloor
05-Jul-2023	20:40	11	BP23MVEXP-ENV-WS-009				74	650935	6270125	650936	6270129	1	4	4	15	AC	5m below sea surface
05-Jul-2023	20:40	12	BP23MVEXP-ENV-WS-009				74	650935	6270125	650936	6270129	1	4	4	13	AC	5m above seafloor
06-Jul-2023	01:45	13	BP23MVEXP-ENV-WS-011				75	656152	6264021	656157	6264039	5	18	19	15	HS	5m below sea surface
06-Jul-2023	01:45	14	BP23MVEXP-ENV-WS-011				75	656151	6264021	656157	6264039	6	18	19	18	HS	5m above seafloor
06-Jul-2023	05:59	15	BP23MVEXP-ENV-WS-013				77	656879	6256134	656877	6256136	-2	2	3	311	HS	5m below sea surface
06-Jul-2023	06:00	16	BP23MVEXP-ENV-WS-013				77	656879	6256134	656877	6256136	-2	2	3	317	HS	No Sample
06-Jul-2023	06:08	17	BP23MVEXP-ENV-WS-013				76	656878	6256135	656877	6256136	-1	1	1	322	HS	No Sample
06-Jul-2023	06:13	18	BP23MVEXP-ENV-WS-013				76	656881	6256135	656877	6256136	-4	1	4	288	VP	5m above seafloor
06-Jul-2023	10:56	19	BP23MVEXP-ENV-WS-015				72	657314	6248197	657314	6248185	0	-12	12	178	AC	5m below sea surface
06-Jul-2023	10:56	20	BP23MVEXP-ENV-WS-015				72	657314	6248197	657314	6248185	0	-12	12	178	AC	5m above seafloor
06-Jul-2023	15:27	21	BP23MVEXP-ENV-WS-017				70	657754	6240160	657756	6240164	2	4	4	26	AC	5m below sea surface
06-Jul-2023	15:27	22	BP23MVEXP-ENV-WS-017				70	657754	6240162	657756	6240164	2	2	3	46	AC	5m above seafloor
06-Jul-2023	19:56	23	BP23MVEXP-ENV-WS-019				61	658161	6232177	658157	6232173	-4	-4	5	221	HS	5m below sea surface
06-Jul-2023	19:56	24	BP23MVEXP-ENV-WS-019				61	658161	6232177	658157	6232173	-4	-4	6	221	HS	5m above seafloor
07-Jul-2023	02:31	25	BP23MVEXP-ENV-WS-021				73	658587	6224169	658588	6224181	1	12	12	6	HS	5m below sea surface
07-Jul-2023	02:32	26	BP23MVEXP-ENV-WS-021				73	658588	6224170	658588	6224181	0	11	11	358	HS	5m above seafloor
07-Jul-2023	15:20	27	BP23MVEXP-ENV-WS-023				82	659008	6216179	659015	6216191	7	12	14	31	AC	5m below sea surface
07-Jul-2023	15:20	28	BP23MVEXP-ENV-WS-023				82	659008	6216181	659015	6216191	7	10	12	34	AC	5m above seafloor
07-Jul-2023	22:48	29	BP23MVEXP-ENV-WS-027				72	659868	6200221	659868	6200219	0	-2	2	180	HS	5m below sea surface
07-Jul-2023	22:49	30	BP23MVEXP-ENV-WS-027				72	659868	6200220	659868	6200219	0	-1	1	167	HS	No Sample
07-Jul-2023	23:05	31	BP23MVEXP-ENV-WS-027				72	659867	6200220	659868	6200219	1	-1	1	127	HS	5m above seafloor
08-Jul-2023	03:52	32	BP23MVEXP-ENV-WS-029				79	660306	6192218	660307	6192230	1	12	12	3	HS	5m below sea surface
08-Jul-2023	03:53	33	BP23MVEXP-ENV-WS-029				79	660306	6192218	660307	6192230	1	12	12	4	HS	5m above seafloor
08-Jul-2023	06:30	34	BP23MVEXP-ENV-WS-030				77	660584	6188234	660581	6188239	-3	5	6	332	VP	5m below sea surface
08-Jul-2023	06:30	35	BP23MVEXP-ENV-WS-030				77	660584	6188234	660581	6188239	-3	5	6	330	VP	5m above seafloor
08-Jul-2023	18:12	36	BP23MVEXP-ENV-WS-031				77	660795	6184234	660798	6184246	3	12	12	14	HS	5m below sea surface
08-Jul-2023	18:12	37	BP23MVEXP-ENV-WS-031				77	660795	6184235	660798	6184246	3	11	12	15	HS	5m above seafloor
08-Jul-2023	20:38	38	BP23MVEXP-ENV-WS-032				72	661019	6180249	661016	6180251	-3	2	4	301	HS	5m below sea surface
08-Jul-2023	20:38	39	BP23MVEXP-ENV-WS-032				72	661020	6180249	661016	6180251	-4	3	4	304	HS	No Sample
08-Jul-2023	20:56	40	BP23MVEXP-ENV-WS-032				72	661019	6180249	661016	6180251	-3	2	4	310	HS	5m above seafloor
08-Jul-2023	23:33	41	BP23MVEXP-ENV-WS-033				67	661237	6176277	661235	6176269	-2	-8	8	197	HS	5m below sea surface
08-Jul-2023	23:34	42	BP23MVEXP-ENV-WS-033				67	661238	6176274	661235	6176269	-3	-5	6	212	HS	5m above seafloor
09-Jul-2023	02:20	43	BP23MVEXP-ENV-WS-034				65	661449	6172274	661451	6172274	2	0	2	79	HS	5m below sea surface
09-Jul-2023	02:20	44	BP23MVEXP-ENV-WS-034				65	661449	6172273	661451	6172274	2	1	2	78	HS	5m above seafloor
09-Jul-2023	06:27	45	BP23MVEXP-ENV-WS-036				69	658815	6165331	658815	6165338	1	7	7	4	VP	5m below sea surface
09-Jul-2023	06:27	46	BP23MVEXP-ENV-WS-036				69	658815	6165331	658815	6165338	0	7	7	4	VP	5m above seafloor
09-Jul-2023	12:15	47	BP23MVEXP-ENV-WS-038				65	653637	6159149	653638	6159136	1	-13	13	178	AC	5m below sea surface
09-Jul-2023	12:16	48	BP23MVEXP-ENV-WS-038				65	653638	6159148	653638	6159136	0	-12	12	178	AC	5m above seafloor
09-Jul-2023	16:40	49	BP23MVEXP-ENV-WS-040				88	648733	6152697	648733	6152697	1	0	1	72	AC	5m below sea surface
09-Jul-2023	16:40	50	BP23MVEXP-ENV-WS-040				88	648733	6152697	648733	6152697	0	0	0	20	AC	5m above seafloor
09-Jul-2023	20:55	51	BP23MVEXP-ENV-WS-042				92	645402	6145636	645395	6145643	-7	7	10	315	HS	5m below sea surface
09-Jul-2023	20:55	52	BP23MVEXP-ENV-WS-042				92	645402	6145637	645395	6145643	-7	6	9	314	HS	5m above seafloor
10-Jul-2023	01:18	53	BP23MVEXP-ENV-WS-044				93	642774	6138064	642775	6138054	1	-10	10	174	HS	5m below sea surface
10-Jul-2023	01:20	54	BP23MVEXP-ENV-WS-044				93	642774	6138064	642775	6138054	1	-10	10	173	HS	5m above seafloor
10-Jul-2023	05:24	55	BP23MVEXP-ENV-WS-046				89	640074	6130530	640073	6130539	-1	9	9	356	HS	5m below sea surface
10-Jul-2023	05:26	56	BP23MVEXP-ENV-WS-046				89	640074	6130530	640073	6130539	-1	9	9	351	HS	5m above seafloor
10-Jul-2023	09:24	57	BP23MVEXP-ENV-WS-048				82	640649	6122938	640642	6122945	-7	7	10	317	VP	5m below sea surface
10-Jul-2023	09:24	58	BP23MVEXP-ENV-WS-048				83	640649	6122938	640642	6122945	-7	7	10	317	VP	5m above seafloor
10-Jul-2023	13:57	59	BP23MVEXP-ENV-WS-050				67	642445	6115181	642446	6115177	1	-4	4	168	AC	5m below sea surface
10-Jul-2023	13:58	60	BP23MVEXP-ENV-WS-050				67	642445	6115180	642446	6115177	1	-3	3	164	AC	5m above seafloor
10-Jul-2023	18:07	61	BP23MVEXP-ENV-WS-052				66	638948	6108150	638949	6108153	1	3	4	20	HS	5m below sea surface
10-Jul-2023	18:08	62	BP23MVEXP-ENV-WS-052				66	638948	6108150	638949	6108153	1	3	3	17	HS	5m above seafloor
10-Jul-2023	23:36	63	BP23MVEXP-ENV-WS-054				72	635347	6100984	635346	6100990	-1	6	7	355	HS	5m below sea surface
10-Jul-2023	23:36	64	BP23MVEXP-ENV-WS-054				72	635346	6100985	635346	6100990	0	5	5	1	HS	5m above seafloor
11-Jul-2023	04:13	65	BP23MVEXP-ENV-WS-056				77	631743	6093829	631745	6093826	2	-3	4	150	HS	5m below sea surface
11-Jul-2023	04:14	66	BP23MVEXP-ENV-WS-056				77	631744	6093829	631745	6093826	1	-3	3	165	HS	5m above seafloor
11-Jul-2023	08:04	67	BP23MVEXP-ENV-WS-060				76	625893	6088483	625885	6088496	-8	13	15	328	VP	5m below sea surface
11-Jul-2023	08:04	68	BP23MVEXP-ENV-WS-060				76	625893	6088483	625885	6088496	-8	13	15	327	VP	5m above seafloor
11-Jul-2023	19:28	69	BP23MVEXP-ENV-WS-025				76	659446	6208075	659446	6208080	0	5	5	3	HS	5m below sea surface
11-Jul-2023	19:28	70	BP23MVEXP-ENV-WS-025				76	659446	6208075	659446	6208080	0	5	5	358	HS	5m above seafloor
12-Jul-2023	20:52	71	BP23MVEXP-ENV-WS-071				71	617142	6281086	617141	6281096	-1	10	10	355	HS	5m below sea surface
12-Jul-2023	20:52	72	BP23MVEXP-ENV-WS-071				71	617142	6281086	617141	6281096	-1	10	10	353	HS	5m above seafloor
13-Jul-2023	03:52	73	BP23MVEXP-ENV-WS-073				72	618230	6273147	618229	6273143	-1	-4	4	197	HS	5m below sea surface
13-Jul-2023	03:53	74	BP23MVEXP-ENV-WS-073				72	618230	6273147	618229	6273143	-1	-4	4	199	HS	5m above seafloor
13-Jul-2023	10:03	75	BP23MVEXP-ENV-WS-075				68	619311	6265229	619313	6265236	2	7	7	19	VP	5m below sea surface
13-Jul-2023	10:04	76	BP23MVEXP-ENV-WS-075				68	619310	6265229	619313	6265236	3	7	7	22	VP	5m above seafloor
13-Jul-2023	16:05	77	BP23MVEXP-ENV-WS-077				62	620314	6257252	620314	6257253	0	1	1	7	AC	5m below sea surface
13-Jul-2023	16:06	78	BP23MVEXP-ENV-WS-077				62	620314	6257251	620314	6257253	0	2	2	8	AC	5m above seafloor
13-Jul-2023	22:13	79	BP23MVEXP-ENV-WS-079				65	621427	6249272	621428	6249280	1	8	8	5	HS	5m below sea surface
13-Jul-2023	22:13	80	BP23MVEXP-ENV-WS-079				65	621428	6249272	621428	6249280	0	8	8	360	HS	5m above seafloor
14-Jul-2023	04:44	81	BP23MVEXP-ENV-WS-081				68	622509	6241451	622506	6241445	-3	-6	7	207	HS	5m below sea surface
14-Jul-2023	04:45	82	BP23MVEXP-ENV-WS-081				68	622509	6241451	622506	6241445	-3	-6	6	209	HS	5m above seafloor
14-Jul-2023	10:03	83	BP23MVEXP-ENV-WS-083				69	623636	6233496	623635	6233497	-1	1	1	305	VP	5m below sea surface
14-Jul-2023	10:03	84	BP23MVEXP-ENV-WS-083				69	623636	6233496	623635	6233497	-1	1	1	305	VP	5m above seafloor
14-Jul-2023	13:49	85	BP23MVEXP-ENV-WS-085				71	624678	6225570	624677	6225569	-1	-1	2	220	AC	5m below sea surface
14-Jul-2023	13:49	86	BP23MVEXP-ENV-WS-085				71	624678	6225570	624677	6225569	-1	-1	1	226	AC	5m above seafloor
30-Jul-2023	20:11	87	BP23MVEXP-ENV-WS-087				66	625785	6217724	625786	6217725	1	1	1	60	AC	5m below sea surface
30-Jul-2023	20:12	88	BP23MVEXP-ENV-WS-087				66	625785	6217724	625786	6217725	1	1	1	41	AC	5m above seafloor
31-Jul-2023	00:58	89	BP23MVEXP-ENV-WS-089				66	626843	6209716	626842	6209725	-1	9	9	355	HS	5m below sea surface
31-Jul-2023	00:59	90	BP23MVEXP-ENV-WS-089				66	626843	6209716	626842	6209725	-1	9	9	351	HS	5m above seafloor
31-Jul-2023	05:27	91	BP23MVEXP-ENV-WS-091				68	627933	6201740	627934	6201734	1	-6	6	167	SP	5m below sea surface
31-Jul-2023	05:28	92	BP23MVEXP-ENV-WS-091				68	627933	6201739	627934	6201734	1	-5	5	166	SP	No Sample
31-Jul-2023	05:34	93	BP23MVEXP-ENV-WS-091				68	627931	6201741	627934	6201734	3	-7	7	159	SP	No Sample
31-Jul-2023	05:41	94	BP23MVEXP-ENV-WS-091				68	627930	6201741	627934	6201734	4	-7	8	154	SP	5m above seafloor
31-Jul-2023	10:23	95	BP23MVEXP-ENV-WS-093				68	629052	6193876	629054	6193880	2	4	4	20	SP	5m below sea surface
31-Jul-2023	10:24	96	BP23MVEXP-ENV-WS-093				68	629053	6193876	629054	6193880	1	4	4	13	SP	No Sample
31-Jul-2023	10:33	97	BP23MVEXP-ENV-WS-093				68	629052	6193874	629054	6193880	2	6	6	19	SP	5m above seafloor
31-Jul-2023	16:12	98	BP23MVEXP-ENV-WS-097				72	631465	6186303	631463	6186300	-2	-3	4	216	AC	5m below sea surface
31-Jul-2023	16:13	99	BP23MVEXP-ENV-WS-097				72	631465	6186303	631463	6186300	-2	-3	4	211	AC	5m above seafloor
31-Jul-2023	18:39	100	BP23MVEXP-ENV-WS-096				81	628432	6186280	628432	6186279	0	-1	1	159	HS	5m below sea surface
31-Jul-2023	18:39	101	BP23MVEXP-ENV-WS-096				81	628432	6186279	628432	6186279	0	0	1	136	HS	5m above seafloor
01-Aug-2023	01:14	102	BP23MVEXP-ENV-WS-101				91	634215	6178823	634211	6178844	-4	21	21	350	HS	5m below sea surface
01-Aug-2023	01:15	103	BP23MVEXP-ENV-WS-101				91	634215	6178823	634211	6178844	-4	21	21	350	HS	5m above seafloor
01-Aug-2023	03:50	104	BP23MVEXP-ENV-WS-100				94	628068	6178333	628064	6178337	-4	4	6	319	HS	5m below sea surface
01-Aug-2023	03:50	105	BP23MVEXP-ENV-WS-100				94	628067	6178333	628064	6178337	-3	4	5	319	HS	5m above seafloor
01-Aug-2023	10:51	106	BP23MVEXP-ENV-WS-105				86	635666	6171914	635667	6171916	1	2	2	20	SP	5m below sea surface
01-Aug-2023	10:51	107	BP23MVEXP-ENV-WS-105				86	635667	6171914	635667	6171916	0	2	2	357	SP	5m above seafloor
01-Aug-2023	15:32	108	BP23MVEXP-ENV-WS-104				85	627693	6170295	627686	6170307	-7	12	14	331	AC	5m below sea surface
01-Aug-2023	15:32	109	BP23MVEXP-ENV-WS-104				85	627692	6170296	627686	6170307	-6	11	13	331	AC	5m above seafloor
01-Aug-2023	20:00	110	BP23MVEXP-ENV-WS-109				93	631203	6165308	631206	6165285	3	-23	23	172	HS	5m below sea surface
01-Aug-2023	20:00	111	BP23MVEXP-ENV-WS-109				93	631203	6165307	631206	6165285	3	-22	22	172	HS	5m above seafloor
02-Aug-2023	00:19	112	BP23MVEXP-ENV-WS-108				90	627183	6162314	627184	6162321	1	7	7	7	HS	5m below sea surface
02-Aug-2023	00:19	113	BP23MVEXP-ENV-WS-108				90	627183	6162314	627184	6162321	1	7	7	10	HS	5m above seafloor
02-Aug-2023	04:58	114	BP23MVEXP-ENV-WS-112				105	626291	6154434	626284	6154439	-7	5	9	305	SP	5m below sea surface

APPENDIX A FIELD SAMPLING LOGS

Water Sampling Positioning Summary

Job No	54027					Vessel	*Ocean Geograph*						
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG						
Project Name	Morven ECR					Deployment Location	Camera Deployment	x	9.31	y	-14.81	z	5.97
Primary Positioning System	StarPack1					Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	ED50		Ellipsoid	International 1924		Projection	UTM Zone 30			Vertical / Tidal Datum	LAT	

Date	Time (UTC/GMT)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
02-Aug-2023	04:59	115	BP23MVEXP-ENV-WS-112				105	626291	6154434	626284	6154439	-7	5	8	305	SP	5m above seafloor
02-Aug-2023	09:56	116	BP23MVEXP-ENV-WS-114				94	624973	6146683	624983	6146663	10	-20	23	153	SP	5m below sea surface
02-Aug-2023	09:57	117	BP23MVEXP-ENV-WS-114				94	624972	6146683	624983	6146663	11	-20	23	151	SP	5m above seafloor
05-Aug-2023	07:33	118	BP23MVEXP-ENV-WS-068				35	613814	6078045	613813	6078042	-1	-3	3	194	SP	5m below sea surface
05-Aug-2023	07:33	119	BP23MVEXP-ENV-WS-068				35	613813	6078045	613813	6078042	0	-3	3	188	SP	5m above seafloor
07-Aug-2023	09:29	120	BP23MVEXP-ENV-WS-059				78	624891	6090062	624889	6090061	-2	-1	2	234	SP	5m below sea surface
07-Aug-2023	09:29	121	BP23MVEXP-ENV-WS-059				78	624891	6090062	624889	6090061	-2	-1	2	232	SP	5m above seafloor
07-Aug-2023	10:44	122	BP23MVEXP-ENV-WS-063				51	617599	6086814	617596	6086808	-3	-6	6	203	SP	5m below sea surface
07-Aug-2023	10:45	123	BP23MVEXP-ENV-WS-063				51	617599	6086814	617596	6086808	-3	-6	6	204	SP	5m above seafloor
07-Aug-2023	11:37	124	BP23MVEXP-ENV-WS-064				51	619737	6083435	619737	6083425	0	-10	10	183	AC	5m below sea surface
07-Aug-2023	11:37	125	BP23MVEXP-ENV-WS-064				50	619738	6083434	619737	6083425	-1	-9	9	183	AC	5m above seafloor
07-Aug-2023	13:17	126	BP23MVEXP-ENV-WS-067				26	611446	6082611	611447	6082612	1	1	2	41	AC	5m below sea surface
07-Aug-2023	13:18	127	BP23MVEXP-ENV-WS-067				26	611446	6082610	611447	6082612	1	2	2	29	AC	5m above seafloor
07-Aug-2023	14:23	128	BP23MVEXP-ENV-WS-133				24	611083	6078424	611083	6078422	0	-2	2	169	AC	5m below sea surface
07-Aug-2023	14:23	129	BP23MVEXP-ENV-WS-133				24	611083	6078423	611083	6078422	0	-1	1	190	AC	5m above seafloor
07-Aug-2023	15:46	130	BP23MVEXP-ENV-WS-131				47	615578	6085213	615581	6085218	3	5	6	26	AC	5m below sea surface
07-Aug-2023	15:47	131	BP23MVEXP-ENV-WS-131				47	615578	6085213	615581	6085218	3	5	6	29	AC	5m above seafloor
07-Aug-2023	17:08	132	BP23MVEXP-ENV-WS-128				59	618836	6092320	618835	6092326	-1	6	7	348	AC	5m below sea surface
07-Aug-2023	17:09	133	BP23MVEXP-ENV-WS-128				59	618838	6092320	618835	6092326	-3	6	7	333	AC	5m above seafloor
07-Aug-2023	18:39	134	BP23MVEXP-ENV-WS-126				84	621034	6100004	621032	6100018	-2	14	14	351	AC	5m below sea surface
07-Aug-2023	18:40	135	BP23MVEXP-ENV-WS-126				84	621037	6100003	621032	6100018	-5	15	16	341	AC	5m above seafloor
07-Aug-2023	20:27	136	BP23MVEXP-ENV-WS-124				93	623094	6107631	623089	6107641	-5	10	12	332	AC	5m below sea surface
07-Aug-2023	20:28	137	BP23MVEXP-ENV-WS-124				93	623094	6107631	623089	6107641	-5	10	11	332	AC	5m above seafloor
07-Aug-2023	22:02	138	BP23MVEXP-ENV-WS-122				101	624663	6115469	624665	6115470	2	1	2	57	AC	5m below sea surface
07-Aug-2023	22:04	139	BP23MVEXP-ENV-WS-122				101	624664	6115469	624665	6115470	1	1	1	44	AC	No Sample
07-Aug-2023	22:10	140	BP23MVEXP-ENV-WS-122				101	624664	6115470	624665	6115470	1	0	2	83	AC	No Sample
07-Aug-2023	22:11	141	BP23MVEXP-ENV-WS-122				101	624663	6115469	624665	6115470	2	1	2	63	AC	5m above seafloor
07-Aug-2023	23:40	142	BP23MVEXP-ENV-WS-120				96	622353	6123154	622353	6123151	0	-3	3	183	SP	5m below sea surface
07-Aug-2023	23:41	143	BP23MVEXP-ENV-WS-120				96	622354	6123154	622353	6123151	-1	-3	3	192	SP	5m above seafloor
08-Aug-2023	01:03	144	BP23MVEXP-ENV-WS-118				92	622269	6130927	622273	6130918	4	-9	9	157	SP	5m below sea surface
08-Aug-2023	01:04	145	BP23MVEXP-ENV-WS-118				92	622270	6130926	622273	6130918	3	-8	9	158	SP	5m above seafloor
08-Aug-2023	02:39	146	BP23MVEXP-ENV-WS-116				88	623598	6138808	623603	6138802	5	-6	7	141	SP	5m below sea surface
08-Aug-2023	02:40	147	BP23MVEXP-ENV-WS-116				88	623598	6138807	623603	6138802	5	-5	7	135	SP	5m above seafloor

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck) **FOR-ENV-0540**

Job No:	54027	Area:	North Sea	Volume:	2 litres
Project:	Morven ECR			Equipment:	Niskin Bottles
Client:	Morven Offshore Wind Limited			Vessel:	*Ocean Geograph*

Sample Number	Station Number	Date	Time	Load	Overall Station Depth (m)	Sample Depth (m)	Sample Analysis	Operator(s)	Comments
1	BP23MVEXP-ENV-WS-001	04-Jul-2023	23:55	5L Niskin	69	5	2 litres filtered, 5m below sea surface	MB, CD, MD	PSI-01-02380
2	BP23MVEXP-ENV-WS-001	04-Jul-2023	23:56	5L Niskin	69	64	2 litres filtered, 5m above seabed	MB, CD, MD	PSI-01-02418
3	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:12	5L Niskin	71	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02430
4	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:12	5L Niskin	71	66	No sample	CD, MD	Misfire
5	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:32	5L Niskin	71	66	No sample	CD, MD	Misfire
6	BP23MVEXP-ENV-WS-003	05-Jul-2023	05:46	5L Niskin	71	66	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02404
7	BP23MVEXP-ENV-WS-005	05-Jul-2023	10:26	5L Niskin	76	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02429
8	BP23MVEXP-ENV-WS-005	05-Jul-2023	10:26	5L Niskin	76	71	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02346
9	BP23MVEXP-ENV-WS-007	05-Jul-2023	15:37	5L Niskin	75	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02427
10	BP23MVEXP-ENV-WS-007	05-Jul-2023	15:37	5L Niskin	75	70	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02417
11	BP23MVEXP-ENV-WS-009	05-Jul-2023	20:40	5L Niskin	75	5	2 litres filtered, 5m below sea surface	MB, AA, JO	PSI-01-02428
12	BP23MVEXP-ENV-WS-009	05-Jul-2023	20:40	5L Niskin	75	70	2 litres filtered, 5m above seabed	MB, AA, JO	PSI-01-02410
13	BP23MVEXP-ENV-WS-011	05-Jul-2023	01:45	5L Niskin	75	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02471
14	BP23MVEXP-ENV-WS-011	05-Jul-2023	01:45	5L Niskin	75	70	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02426
15	BP23MVEXP-ENV-WS-013	06-Jul-2023	05:59	5L Niskin	77	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02423
16	BP23MVEXP-ENV-WS-013	06-Jul-2023	06:00	5L Niskin	77	72	No sample	CD, MD, DP	Misfire
17	BP23MVEXP-ENV-WS-013	06-Jul-2023	06:08	5L Niskin	77	72	No sample	CD, MD, DP	Misfire
18	BP23MVEXP-ENV-WS-013	06-Jul-2023	06:13	5L Niskin	77	72	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02461
19	BP23MVEXP-ENV-WS-015	06-Jul-2023	10:56	5L Niskin	72	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02486
20	BP23MVEXP-ENV-WS-015	06-Jul-2023	10:56	5L Niskin	72	67	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02488
21	BP23MVEXP-ENV-WS-017	06-Jul-2023	15:27	5L Niskin	70	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02480
22	BP23MVEXP-ENV-WS-017	06-Jul-2023	15:27	5L Niskin	70	65	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02447
23	BP23MVEXP-ENV-WS-019	06-Jul-2023	19:56	5L Niskin	61	5	2 litres filtered, 5m below sea surface	MB, AA, JO	PSI-01-02198
24	BP23MVEXP-ENV-WS-019	06-Jul-2023	19:56	5L Niskin	61	66	2 litres filtered, 5m above seabed	MB, AA, JO	PSI-01-02495
25	BP23MVEXP-ENV-WS-021	07-Jul-2023	02:31	5L Niskin	73	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02472
26	BP23MVEXP-ENV-WS-021	07-Jul-2023	02:32	5L Niskin	73	68	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02497
27	BP23MVEXP-ENV-WS-023	07-Jul-2023	15:20	5L Niskin	82	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02476
28	BP23MVEXP-ENV-WS-023	07-Jul-2023	15:20	5L Niskin	82	77	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02485
29	BP23MVEXP-ENV-WS-027	07-Jul-2023	22:48	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02493
30	BP23MVEXP-ENV-WS-027	07-Jul-2023	22:49	5L Niskin	72	67	No sample	AA, JO	Misfire
31	BP23MVEXP-ENV-WS-027	07-Jul-2023	23:05	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02467
32	BP23MVEXP-ENV-WS-029	08-Jul-2023	03:52	5L Niskin	79	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02412
33	BP23MVEXP-ENV-WS-029	08-Jul-2023	03:53	5L Niskin	79	74	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02228
34	BP23MVEXP-ENV-WS-030	08-Jul-2023	06:30	5L Niskin	77	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02437
35	BP23MVEXP-ENV-WS-030	08-Jul-2023	06:30	5L Niskin	77	72	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02375
36	BP23MVEXP-ENV-WS-031	08-Jul-2023	18:12	5L Niskin	77	5	2 litres filtered, 5m below sea surface	MB, AA, JO	PSI-01-02473
37	BP23MVEXP-ENV-WS-031	08-Jul-2023	18:12	5L Niskin	77	72	2 litres filtered, 5m above seabed	MB, AA, JO	PSI-01-02475
38	BP23MVEXP-ENV-WS-032	08-Jul-2023	20:38	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02491
39	BP23MVEXP-ENV-WS-032	08-Jul-2023	20:38	5L Niskin	72	67	No sample	AA, JO	Misfire
40	BP23MVEXP-ENV-WS-032	08-Jul-2023	20:56	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02327
41	BP23MVEXP-ENV-WS-033	08-Jul-2023	23:33	5L Niskin	67	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02432
42	BP23MVEXP-ENV-WS-033	08-Jul-2023	23:34	5L Niskin	67	62	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02413
43	BP23MVEXP-ENV-WS-034	09-Jul-2023	02:20	5L Niskin	65	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02434
44	BP23MVEXP-ENV-WS-034	09-Jul-2023	02:20	5L Niskin	65	60	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02462
45	BP23MVEXP-ENV-WS-036	09-Jul-2023	06:27	5L Niskin	69	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02483
46	BP23MVEXP-ENV-WS-036	09-Jul-2023	06:27	5L Niskin	69	64	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02494
47	BP23MVEXP-ENV-WS-038	09-Jul-2023	12:15	5L Niskin	65	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02489
48	BP23MVEXP-ENV-WS-038	09-Jul-2023	12:15	5L Niskin	65	60	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02438
49	BP23MVEXP-ENV-WS-040	09-Jul-2023	16:40	5L Niskin	88	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02490
50	BP23MVEXP-ENV-WS-040	09-Jul-2023	16:40	5L Niskin	88	83	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02325
51	BP23MVEXP-ENV-WS-042	09-Jul-2023	20:55	5L Niskin	92	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02330
52	BP23MVEXP-ENV-WS-042	09-Jul-2023	20:55	5L Niskin	92	87	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02376
53	BP23MVEXP-ENV-WS-044	10-Jul-2023	01:18	5L Niskin	93	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02383
54	BP23MVEXP-ENV-WS-044	10-Jul-2023	01:20	5L Niskin	93	88	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02308
55	BP23MVEXP-ENV-WS-046	10-Jul-2023	05:24	5L Niskin	67	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02324
56	BP23MVEXP-ENV-WS-046	10-Jul-2023	05:26	5L Niskin	67	62	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02229
57	BP23MVEXP-ENV-WS-048	10-Jul-2023	09:24	5L Niskin	82	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02374
58	BP23MVEXP-ENV-WS-048	10-Jul-2023	09:24	5L Niskin	83	78	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02323
59	BP23MVEXP-ENV-WS-050	10-Jul-2023	13:57	5L Niskin	67	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02465
60	BP23MVEXP-ENV-WS-050	10-Jul-2023	13:58	5L Niskin	67	52	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02326
61	BP23MVEXP-ENV-WS-052	10-Jul-2023	18:07	5L Niskin	66	5	2 litres filtered, 5m below sea surface	MB, DP, AA, JO	PSI-01-02347
62	BP23MVEXP-ENV-WS-052	10-Jul-2023	18:08	5L Niskin	66	61	2 litres filtered, 5m above seabed	MB, DP, AA, JO	PSI-01-02321
63	BP23MVEXP-ENV-WS-054	10-Jul-2023	23:36	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02378
64	BP23MVEXP-ENV-WS-054	10-Jul-2023	23:36	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02377
65	BP23MVEXP-ENV-WS-056	11-Jul-2023	04:13	5L Niskin	77	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02496
66	BP23MVEXP-ENV-WS-056	11-Jul-2023	04:14	5L Niskin	77	72	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02492
67	BP23MVEXP-ENV-WS-060	11-Jul-2023	08:04	5L Niskin	76	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02435
68	BP23MVEXP-ENV-WS-060	11-Jul-2023	08:04	5L Niskin	76	71	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02487
69	BP23MVEXP-ENV-WS-025	11-Jul-2023	19:28	5L Niskin	76	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02373
70	BP23MVEXP-ENV-WS-025	11-Jul-2023	19:28	5L Niskin	76	71	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02394
71	BP23MVEXP-ENV-WS-071	12-Jul-2023	20:52	5L Niskin	71	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02396
72	BP23MVEXP-ENV-WS-071	12-Jul-2023	20:52	5L Niskin	71	66	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02415
73	BP23MVEXP-ENV-WS-073	13-Jul-2023	03:52	5L Niskin	72	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02381
74	BP23MVEXP-ENV-WS-073	13-Jul-2023	03:52	5L Niskin	72	67	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02392
75	BP23MVEXP-ENV-WS-075	13-Jul-2023	10:03	5L Niskin	68	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02436
76	BP23MVEXP-ENV-WS-075	13-Jul-2023	10:04	5L Niskin	68	63	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02456
77	BP23MVEXP-ENV-WS-077	13-Jul-2023	16:05	5L Niskin	62	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02468
78	BP23MVEXP-ENV-WS-077	13-Jul-2023	16:05	5L Niskin	62	57	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02384
79	BP23MVEXP-ENV-WS-079	13-Jul-2023	22:13	5L Niskin	65	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02463
80	BP23MVEXP-ENV-WS-079	13-Jul-2023	22:13	5L Niskin	65	60	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02446
81	BP23MVEXP-ENV-WS-081	14-Jul-2023	04:44	5L Niskin	68	5	2 litres filtered, 5m below sea surface	CD, MD	PSI-01-02450
82	BP23MVEXP-ENV-WS-081	14-Jul-2023	04:45	5L Niskin	68	63	2 litres filtered, 5m above seabed	CD, MD	PSI-01-02393
83	BP23MVEXP-ENV-WS-083	14-Jul-2023	10:03	5L Niskin	69	5	2 litres filtered, 5m below sea surface	CD, MD, DP	PSI-01-02474
84	BP23MVEXP-ENV-WS-083	14-Jul-2023	10:03	5L Niskin	69	64	2 litres filtered, 5m above seabed	CD, MD, DP	PSI-01-02479
85	BP23MVEXP-ENV-WS-085	14-Jul-2023	13:49	5L Niskin	71	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02482
86	BP23MVEXP-ENV-WS-085	14-Jul-2023	13:49	5L Niskin	71	66	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02341
87	BP23MVEXP-ENV-WS-087	30-Jul-2023	20:12	5L Niskin	66	61	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02276
88	BP23MVEXP-ENV-WS-087	30-Jul-2023	20:11	5L Niskin	66	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02319
89	BP23MVEXP-ENV-WS-089	31-Jul-2023	00:59	5L Niskin	66	61	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02320
90	BP23MVEXP-ENV-WS-089	31-Jul-2023	00:58	5L Niskin	66	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02303
91	BP23MVEXP-ENV-WS-091	31-Jul-2023	05:41	5L Niskin	68	63	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02213
92	BP23MVEXP-ENV-WS-091	31-Jul-2023	05:27	5L Niskin	68	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02187
93	BP23MVEXP-ENV-WS-091	31-Jul-2023	10:33	5L Niskin	68	63	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02222
94	BP23MVEXP-ENV-WS-091	31-Jul-2023	10:23	5L Niskin	68	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02209
95	BP23MVEXP-ENV-WS-093	31-Jul-2023	16:13	5L Niskin	72	67	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02302
96	BP23MVEXP-ENV-WS-093	31-Jul-2023	16:12	5L Niskin	72	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02300
97	BP23MVEXP-ENV-WS-093	31-Jul-2023	18:39	5L Niskin	81	76	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02298
98	BP23MVEXP-ENV-WS-097	31-Jul-2023	18:39	5L Niskin	81	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02305
99	BP23MVEXP-ENV-WS-097	01-Aug-2023	01:14	5L Niskin	91	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02304
100	BP23MVEXP-ENV-WS-096	01-Aug-2023	01:15	5L Niskin	91	86	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02207
101	BP23MVEXP-ENV-WS-096	01-Aug-2023	03:50	5L Niskin	94	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02297
102	BP23MVEXP-ENV-WS-101	01-Aug-2023	03:50	5L Niskin	94	89	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02240
103	BP23MVEXP-ENV-WS-101	01-Aug-2023	10:51	5L Niskin	86	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02210
104	BP23MVEXP-ENV-WS-100	01-Aug-2023	10:51	5L Niskin	86	81	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02227
105	BP23MVEXP-ENV-WS-100	01-Aug-2023	15:32	5L Niskin	85	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02274
106	BP23MVEXP-ENV-WS-105	01-Aug-2023	15:32	5L Niskin	85	80	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02295
107	BP23MVEXP-ENV-WS-105	01-Aug-2023	20:00	5L Niskin	93	88	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02285

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)									FOR-ENV-0540
Job No:	54027			Area:	North Sea			Volume:	2 litres
Project:	Morven ECR							Equipment:	Niskin Bottles
Client:	Morven Offshore Wind Limited							Vessel:	*Ocean Geograph*
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (m)	Sample Depth (m)	Sample Analysis	Operator(s)	Comments
108	BP23MVEXP-ENV-WS-104	01-Aug-2023	20:00	5L Niskin	93	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02282
109	BP23MVEXP-ENV-WS-104	02-Aug-2023	00:19	5L Niskin	90	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02235
110	BP23MVEXP-ENV-WS-109	02-Aug-2023	00:19	5L Niskin	90	85	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02214
111	BP23MVEXP-ENV-WS-109	02-Aug-2023	04:58	5L Niskin	105	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02221
112	BP23MVEXP-ENV-WS-108	02-Aug-2023	04:59	5L Niskin	105	100	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02234
113	BP23MVEXP-ENV-WS-108	02-Aug-2023	09:57	5L Niskin	94	89	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02238
114	BP23MVEXP-ENV-WS-112	02-Aug-2023	09:56	5L Niskin	94	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02247
115	BP23MVEXP-ENV-WS-112	05-Aug-2023	07:33	5L Niskin	35	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02469
116	BP23MVEXP-ENV-WS-114	05-Aug-2023	07:33	5L Niskin	35	30	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02464
117	BP23MVEXP-ENV-WS-114	07-Aug-2023	09:29	5L Niskin	78	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02477
118	BP23MVEXP-ENV-WS-068	07-Aug-2023	09:29	5L Niskin	78	73	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02481
119	BP23MVEXP-ENV-WS-068	07-Aug-2023	10:44	5L Niskin	51	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02470
120	BP23MVEXP-ENV-WS-059	07-Aug-2023	10:45	5L Niskin	51	46	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02382
121	BP23MVEXP-ENV-WS-059	07-Aug-2023	11:37	5L Niskin	51	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02478
122	BP23MVEXP-ENV-WS-063	07-Aug-2023	11:37	5L Niskin	51	46	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02440
123	BP23MVEXP-ENV-WS-063	07-Aug-2023	13:17	5L Niskin	26	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02217
124	BP23MVEXP-ENV-WS-064	07-Aug-2023	13:18	5L Niskin	26	21	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02236
125	BP23MVEXP-ENV-WS-064	07-Aug-2023	14:23	5L Niskin	24	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02452
126	BP23MVEXP-ENV-WS-067	07-Aug-2023	14:23	5L Niskin	24	19	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02451
127	BP23MVEXP-ENV-WS-067	07-Aug-2023	15:46	5L Niskin	47	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02249
128	BP23MVEXP-ENV-WS-133	07-Aug-2023	15:47	5L Niskin	47	42	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02241
129	BP23MVEXP-ENV-WS-133	07-Aug-2023	17:08	5L Niskin	59	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02200
130	BP23MVEXP-ENV-WS-131	07-Aug-2023	17:09	5L Niskin	59	54	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02281
131	BP23MVEXP-ENV-WS-131	07-Aug-2023	18:39	5L Niskin	84	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02239
132	BP23MVEXP-ENV-WS-128	07-Aug-2023	18:40	5L Niskin	84	79	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02286
133	BP23MVEXP-ENV-WS-128	07-Aug-2023	20:27	5L Niskin	93	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02219
134	BP23MVEXP-ENV-WS-126	07-Aug-2023	20:28	5L Niskin	93	88	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02232
135	BP23MVEXP-ENV-WS-126	07-Aug-2023	22:02	5L Niskin	101	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02208
136	BP23MVEXP-ENV-WS-124	07-Aug-2023	22:11	5L Niskin	101	96	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02194
137	BP23MVEXP-ENV-WS-124	08-Aug-2023	23:40	5L Niskin	96	5	2 litres filtered, 5m below sea surface	AA, JO	PSI-01-02230
138	BP23MVEXP-ENV-WS-122	08-Aug-2023	23:41	5L Niskin	96	91	2 litres filtered, 5m above seabed	AA, JO	PSI-01-02216
139	BP23MVEXP-ENV-WS-122	08-Aug-2023	01:03	5L Niskin	92	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02211
140	BP23MVEXP-ENV-WS-122	08-Aug-2023	01:04	5L Niskin	92	87	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02275
141	BP23MVEXP-ENV-WS-122	08-Aug-2023	02:39	5L Niskin	88	5	2 litres filtered, 5m below sea surface	MM, JH	PSI-01-02484
142	BP23MVEXP-ENV-WS-120	08-Aug-2023	02:40	5L Niskin	88	83	2 litres filtered, 5m above seabed	MM, JH	PSI-01-02387

APPENDIX B DATA ACQUISITION AND PROCESSING

B.1 Seabed Imagery Acquisition

Environmental seabed images were taken by means of a digital stills camera system with a dedicated strobe and video lamp(s), mounted within a stainless steel frame. Video footage was also acquired throughout the survey area using a HD video camera. A USBL positioning beacon was attached to the camera frame. Footage was viewed in real time via an umbilical, assisting in the control of the digital stills camera. This allowed for shot selection to capture sediment changes or features at the seafloor.

During acquisition, a minimum of 18 seabed photographs and 8 minutes of footage were collected at each station at appropriate intervals. This technique allowed the frame to move progressively along the seabed as the vessel traversed the work area on its thrusters or drifted. The images were captured remotely using the surface control unit and stored on the camera's internal memory card. Video footage was overlaid with time, position and depth, and recorded directly onto onboard server/PC hard drive. On completion, photographs were downloaded onto a PC via a USB download cable and copied onto a GSPEED. All GSPEEDs were labelled with the relevant job details, write-protected and stored.

During acquisition, a total of 6996 photos and 117 hours and 26 minutes of video footage were taken using the stills camera system across 133 stations. An additional 4566 video frames were captured from the video footage and reviewed onshore. A selection of seabed photographs is presented in Appendix C, whilst environmental deck and positioning logs are contained in Appendix A.

Table B.1 Camera Equipment Specifications

Equipment	HD Camera System	Stills Camera System
Manufacturer	SubC Control Ltd.	Kongsberg/Simrad.
Model	1Cam Alpha Mk5/6	OE14-208
Lens	Wide angle (26.3mm), f 3.8 ~ 38.0 mm (5/32 ~ 1 1/2 in.), 10x optical zoom and automatic or manual focus control	f 7.2 – 28.8 (35mm format equivalent to 38 – 140mm) 4x optical zoom and automatic or manual focus control
Pixels	12.0 M (Picture mode) OR 8.3 M (Video mode)	5.0 M
Video Resolution	1920 x 1080p	PAL 625 Line/50 Hz PAL
Image Resolution (pixels)	No stills in HD video mode	2592 x 1944
Field of View	47.8° horizontal (β) by 36.2° vertical (α)	48.4° horizontal (β) by 29.9° vertical (α)
Video Overlay	EdgeDVR Inspection System (Digital Edge Subsea (Ltd)	
Trigger	Remote from deck	
Height Control	USBL Beacon and/or Video footage	
Lighting	1 fixed forward facing strobe, 2 fixed LED lamps	
Scale bar	Green line lasers with 105mm separation between lines.	
Housing	Standard Frame	

Table unit definitions: M = megapixels, p = progressive scan, PAL = phase alternating line, Hz = Hertz

B.2 Benthic Sampling

Benthic samples were recovered using an in-house constructed, modified, stainless-steel 0.1m^2 Day grab. The Day grab carried extra weights where appropriate to induce better penetration on impact and an extended bucket lip to reduce sediment washout. Storm feet and elastic straps were used to reduce the likelihood of the instrument pre-triggering in the water column during deployment. A USBL positioning beacon was attached to the deployment cable immediately above the grab.

Grab sampling operational procedures were as follows:

The vessel's sampling area was pre-cleaned using a powerful deck fire-hose and seawater. The Day grab was thoroughly washed down using pentane prior to deployment at every station to prevent hydrocarbon cross contamination. A 13mm, dry-core, galvanised-steel cable was used to lower the Day grab to the seabed.

All containers were thoroughly washed with appropriate solvents and labelled externally prior to use. Biology samples were placed in 1-litre polypropylene, screw-top, squat jars and 5 litre buckets and provided with an additional internal waterproof label. Hydrocarbon samples were placed in 120ml glass jars, whilst the remaining samples (metals and particle size) were placed in double-lined zip-lock bags.

For accuracy of grab sampling in deeper waters, the Day grab was winched down so that it was approximately 10-15m from the seabed prior to release to sea floor. Communication between the deck, bridge crew and the surveyors was conducted by means of VHF radio. When directly over the sampling station the grab was winched to the seabed and recovered so that the sample could be obtained and the apparatus prepared for the next deployment.

Positional fixes were taken for each grab sample immediately following the grab reaching the sea floor. The precise time that the grab reached the seabed was determined by observations of the tension on the winch cable.

On recovery of a sample, the grab would first be examined for acceptability following strict quality assurance criteria. In the following cases, a sample would be rejected and the instrument prepared for the next deployment:

1. Jammed sample closure due to entrapment of a large stone, shell or other objects allowing surface sediment washout.
2. Accidental premature opening of sampler on recovery, causing possible surface washout.
3. Half sample obtained where the grab has not struck a flat area of bottom, or not hit true, causing a side or half bite of sediment.
4. Disruption of the sample by obvious shaking or contamination (these can occur when a sample is badly handled or if the grab strikes the side of the vessel during operations).
5. The sample represents less than 40% of the grab's total capacity (*i.e.* less than 6 litres) or totally fills the grab.
6. Sample was acquired more than 10m from the target (as determined by the onboard surveyors, environmentalist and client representative, with consideration of the survey objectives);
7. The presence of exopolymeric substances, mucus coagulants and/or fauna that generate them *i.e.* Myxinidae.

Brief descriptions of the collected sediments were made at the time of sampling. These were recorded in the environmentalist's log sheets and are presented in Appendix A. A selection of photographs, taken of the sediment samples whilst in the Day grab, is presented in Appendix C.

Sediment samples collected for physio-chemical analysis (CHEM) were sub-sampled into the relevant containers. All containers were thoroughly washed with the appropriate solvents and labelled externally prior to use. Where sediment samples were collected to be processed using MMO (2023) methodology chemical analysis was sub-sampled into a 1 litre glass jar along with the spare. Particle size analysis (PSA), and a spare sample were collected at all stations using a plastic scoop and stored in double-lined zip-lock bags. Where additional analysis was required (Scottish waters) two surficial (<2cm depth) sediments were scooped using a stainless-steel spoon into 120ml amber glass jars that had been previously washed with pentane to remove any organic contaminants; one of these was intended for hydrocarbon determinations, the other was retained as a spare. A plastic scoop was the used to obtain two further sub-samples; one for analysis of metals, and a spare sample. These were placed in double zip-locked bags. All the physico-chemical samples were transferred to an onboard freezer for storage at less than -18°C.

Sediment eDNA was collected from each faunal sample analyses and stored in a double lined zip-lock bag and transferred to an onboard freezer for storage. Following this, samples were thoroughly washed from the grab into a plastic tray. Once all equipment was washed free of sediment, the sediment sample was transferred to a sieving machine where it was broken down using a low powered seawater spray. All materials retained by the 500µm mesh sieve were transferred to a squat jar or bucket by means of scoop and funnel, making sure that none of the sample was lost or trapped in the mesh. The samples were fixed with a pre-buffered <10% formalin solution of known concentration, then subsequently diluted to a final concentration of approximately 4% formalin. Biological samples were placed in 1 litre polypropylene screw-top squat jars or 5 litre buckets, depending on sample size, and provided with an additional internal waterproof label.

B.3 Water sampling

Niskin bottles were mounted directly to a 10mm dry-core galvanised-steel deployment cable along with a 25kg purse weight to maintain vertical transit. Messenger weights were affixed to allow acquisition of the samples. A depth enabled USBL beacon was attached below the deepest Niskin bottles prior to the release of the top messenger and used to determine depth and location prior to release of the messenger, positional fixes were taken immediately after release of the messenger and prior to recovery.

On recovery of the water sample the Niskin bottle was examined for acceptability following strict quality assurance criteria. In the following cases, a Niskin bottle sample would be rejected and the instrument returned to the pre-deployment position:

1. One or both ends had not release and the sampler had failed to trigger.
2. One or both ends failed to seal the sampler and water had leaked out.
3. Disruption of the sample by obvious shaking or contamination.
4. Sample was taken from and unacceptable depth or more than 10m form the target.

Water samples were taken at two depths per station: five metres below the water and five metres above the seabed. Two litres of water were filtered through a 0.8µm pore size CN filter and transferred to an onboard freezer for storage at less than -18°C.

B.4 Imagery Processing

Seabed photos were assessed using the Gardline developed imagery analysis program (CountEM). The program allows for individual fauna to be tagged and a sediment description to be assigned to each image. The software allows features to be selected within an image to provide an accurate figure of percentage coverage of each individual element (*e.g.* cobbles and boulders, sponge) based upon the proportion of pixels. CountEM can also measure the area of seabed and observed features primarily in pixels, though this can be converted to

millimetres (mm) given a reference scale within the image, such as using two laser lines with a known separation. Further, laser scale lines were used to calculate an approximate area for each photo using methodologies developed from Wakefield and Genin (1987).

Gardline has developed an institution-level reference image catalogue of operational taxonomic units (OTUs) or morphospecies based on Howell *et al.* (2019). Where examples within the images were matched with a morphotype already included within the OTU database these have been given the suffix GLXXXX. To standardise image-based identification, nomenclature based on Horton *et al.* (2021) has been used within the project. *Incerta* (*inc*.) was used to denote where a taxon is identifiable to a certain taxonomic level but the identification is not certain, *indeterminabilis* (*indet*.) was used for a taxon that is unidentifiable below a certain taxonomic level due to image quality or lack of clarity in a image while *stetit* (*stet*.) was used for taxon that are identifiable to a certain taxonomic level with certainty but a decision has been made to not identify further or a lack of resources has led to no further identification.

Each visible morphotype was tagged once in each photograph to record its presence. The exceptions were specific features or taxa of potential interest as described in Section 1.1, such as *P. phosphorea* and burrows, which were enumerated from all photographs to allow assessment for the presence of protected habitats.

In addition to the photographs taken across the targets, video footage was reviewed and video frames were captured whenever any further observations of specific features or taxa of potential interest occurred. This resulted in an additional 4566 video frames, which were analysed in CountEM. Other than enumerating any specific features or taxa of potential interest in these video frames images and tagging as present any previously unobserved morphotypes, no further tagging or video frames were conducted.

Following quality control, data were exported into an excel file used to summarise seabed imagery observations and allow for further analysis as applicable. A reference collection of taxa ID is presented in Appendix E.

B.5 Habitat Analysis

B.5.1 Sea Pen and Burrowing Megafauna Communities

Clarifications on the identification of OSPAR description of the habitat were summarised in a report by the JNCC (2014b) to improve the definition and correct identification of this habitat. These clarifications suggest that burrowed areas of mud should be deemed to be a ‘sea pen and burrowing megafauna communities’ habitat regardless of the presence of sea pens, if multiple sightings of burrows and/or mounds attributable to the relevant species are observed. Furthermore, although the habitat occurs predominantly in fine mud sediments, examples of the habitat have been identified in areas of sandy muds where there is clear evidence of the relevant biological assemblages (burrowing megafauna and in some examples, sea pens). Consequently, habitats can be classed as ‘sea pen and burrowing megafauna communities’ regardless of the grain size composition of the sediment (JNCC, 2014b). The report (JNCC, 2014b) also recommends that the definition should extend further than the habitat classification biotope ‘sea-pens and burrowing megafauna in circalittoral fine mud’ (Connor *et al.*, 2004) since additional biotopes are also considered to be associated with the habitat.

The clarifications (JNCC, 2014b) advocate utilising seabed video imagery and/or photographs to confirm the presence of burrows and/or mounds and sea pens, where present. Whilst from seabed grab samples, identification would confirm associated fauna and particle size analysis (PSA) data a fine mud/sandy mud habitat. The density classifications as laid out by the Marine Nature Conservation Review (MNCR) SACFOR scale (JNCC, 2013) were used to quantify these defining features (see Table B. 2). The JNCC (2014b) clarification report specifies that multiple sightings of burrows and/or mounds attributable to relevant species together with sea pens, if present, should be classified as at least ‘frequent’ for their size on the SACFOR scale

in order to be considered a 'sea pen and burrowing megafauna communities' habitat. However, it acknowledges the inherent difficulties of identifying species from burrow type alone using ever evolving guides, such as those cited by the ICES (2011) guide. Subsequently, the overall density of burrows themselves were assessed instead, in order to consider whether their density was a 'prominent' feature of the sediment surface and potentially indicative of a sub-surface complex gallery burrow system.

Table B. 2 SACFOR Abundance Scale

Density	Size of Individuals			
	<1cm	1-3cm	3-15cm	>15cm
≥10000 m^{-2}	S	S	S	S
≥1000 m^{-2} to <10000 m^{-2}	A	S	S	S
≥100 m^{-2} to <1000 m^{-2}	C	A	S	S
≥10 m^{-2} to <100 m^{-2}	F	C	A	S
≥1 m^{-2} to <10 m^{-2}	O	F	C	A
≥0.1 m^{-2} to <1 m^{-2}	R	O	F	C
≥0.01 m^{-2} to <0.1 m^{-2}	R	R	O	F
≥0.001 m^{-2} to <0.01 m^{-2}	R	R	R	O
<0.001 m^{-2}	R	R	R	R

S= Superabundant, A = Abundant, C = Common, F = Frequent, O = Occasional and R = Rare. Table amended from: JNCC (2013).
For sedentary species attached to the substratum, percentage cover should be used in preference to the density scale whenever possible.

B.5.2 Rocky Reefs

A multi-criteria scoring system; see Table B.3, was used to assess the characteristics of the potential stony reef. Each characteristic was scored as low, medium or high; with spatial extent (m^2), substratum composition (% cover) and elevation (m) as the primary characteristics, as defined by Irving (2009).

Table B.3 Stony Reef Criteria

Characteristic	Resemblance to 'Stony Reef'			
	Not a 'Stony Reef'	Low	Medium	High
Composition	<10% cobbles/boulders	10 - <40% cobbles/boulders	40 - <95% cobbles/boulders	≥95% cobbles/boulders
		Matrix supported: dominated by sediment	Clast supported: dominated by cobbles/boulders	Clast supported: dominated by cobbles/boulders
Elevation	Flat seabed	<0.064m	0.064 - <5m	≥5m
Extent	≤25m^2	>25m^2	>25m^2	>25m^2
Biota	Dominated by infaunal species			>80% of species present composed of epifaunal species

Stony reef assessment criteria adapted from Irving (2009)

B.5.3 Herring Spawning

Determination of spawning potential for a specific area of seabed is been based on guidelines provided by Cefas (2001) and Reach *et al.* (Reach *et al.*, 2013 in; MarineSpace Ltd *et al.*, 2013), summarised in Table B.4 and a variety of measured and inferred sedimentological and hydrodynamic characteristics.

In order to be classified as 'Prime' or 'Sub-Prime' under the habitat sediment preference criteria for herring spawning (Reach *et al.*, 2013 in; MarineSpace Ltd *et al.*, 2013), the sediment must be composed of >50% or >25% gravel (>2mm), respectively, with little (<5%) mud (<63µm, silt and clay). In general terms, the area must fall into one of three sediment types based on the modified Folk (1954) classification: gravel, sandy gravel or gravelly sand. As acknowledged by Reach *et al.* (2013 in; MarineSpace Ltd *et al.*, 2013) and as previously defined by Cefas (2001), use of the modified Folk classification alone may over-estimate the suitability of an

area in terms of its herring spawning potential as further consideration should be given to other environmental (physical, chemical and abiotic) parameters such as oxygenation, siltation, micro-scale morphological features (*e.g.* ripples and ridges). Furthermore, the area must be exposed to the main flow of water and the sediments wells sorted in order to ensure maximum oxygenation of the sediment and hence the lower layers of herring eggs; the area should be elevated with respect to the surrounding seabed.

Based on these criteria, the herring spawning potential of each station/transect was graded from 'Unsuitable' to 'Prime' based on habitat sediment preference and 'Unsuitable' to 'Preferred' based on habitat sediment class, as presented in Table B.4.

Table B.4 Herring Spawning Ground Potential Criteria

Criteria From	Habitat Sediment Preference[1]	Unsuitable	Suitable	Sub-Prime	Prime
Sediment Classes (Reach *et al.*, 2013 in; MarineSpace Ltd *et al.*, 2013)	% Particle Contribution Preference	>5% muds, <10% gravel	<5% muds, >10% gravel	<5% muds, >25% gravel	<5% muds, >50% gravel
	Modified Folk classification (based on sand, mud, gravel fractions above)	Everything excluding gravel, sandy gravel and part gravelly sand	Part gravelly sand	Part sandy gravel and part gravelly sand	Gravel and part sand gravel
Further sediment Description Parameters (including those from Cefas (2001))	% coarse sand to gravel	≤20%	20% to <40%	40% to <60%	≥60%
	Sorting coefficient and description (Folk & Ward, 1957)	≥1.00, poor to extremely poor	0.71 to <1.00, Moderate	0.5 to <0.71, Moderately well	≤0.5, Well
	Wentworth (1922) Classification of mode grain size	Silts and clays	Very fine to medium sand	Coarse to very coarse sand	Granule to pebble
	Exposure	Flat seabed			Elevated (such as raised gravel banks) relative to surrounding seabed
Criteria From	**Habitat Sediment Class[2]**	**Unsuitable**	**Marginal**	**Preferred**	
Sediment Classes (Reach *et al.*, 2013 in; MarineSpace Ltd *et al.*, 2013)	Generalised Folk Classification Preference	All others	Gravelly sand	Gravel and sandy gravel	

1 Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria are met
2 Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria are met

B.5.4 Sand Eel Spawning

Determination of spawning potential for a specific area of seabed has been based on guidelines laid out in Latto *et al.* (2013), as summarised in Table B. 5. In order to be classified as 'Prime' or 'Sub-Prime' for sand eel spawning, the sediment must be composed of >85% or >70% sand (≥63µm, <2mm), respectively, with little mud (<1% or 4%; <63µm) and gravel (<15% or <25%; >2mm). Although these criteria do not easily blend with the modified Folk (1954) classification; in general terms the area must fall into one of three sediment types: sand, slightly gravelly sand or gravelly sand. Beyond this, 'Suitable' conditions are those where the sediment is

composed of >50% sand, <10% mud and <35% gravel and while this covers parts of several modified Folk (1954) classifications, sandy gravel is generally considered the marginal seabed type.

Sand eels were found by Holland *et al.* (2005) to have a preference against sediments finer than 0.25mm, which cover muds and a portion of the sand Folk category (63µm to 2mm) and therefore includes a portion of less suitable sediment. As mentioned above Latto *et al.* (2013) bases its categorisation of the sediment on the modified Folk (1954) classification for comparison to the pre-existing BGS charts to allow a broadscale assessment of potential sand eel spawning suitability and this method is likely to overstate the suitability of sediment to support populations of sand eels.

Based on these criteria, the sand eel spawning potential of each station was graded from 'Unsuitable' to 'Prime' based on habitat sediment preference, as presented in Table B. 5.

Table B. 5 Sand Eel Spawning Potential

Criteria From	Habitat Sediment Preference[1]	Unsuitable	Suitable	Sub-prime	Prime
Sediment Classes	% Particle contribution preference	>10% muds, <50% sand, >35gravel	<10% muds, >50% sand, <35% gravel	<4% muds, >70% sand, <35% gravel	<1% muds, >85% sand, <15% gravel (inferred)
	Folk classification based on % particle contribution preferences above	All others (including mS, (g)mS, part gmS, part msG and part sG)	Part S, part (g)S, part gS, part sG, part mS, part (g)mS, part gmS and part msG.	Part S, part (g)S, and part gS	Part S, part (g)S, and part gS
Criteria From	Habitat Sediment Class[2]	Unsuitable	Marginal	Preferred	
Sediment Classes	Folk classification generalised	All others	Sandy gravel	Sand, slightly gravelly sand and gravelly sand	

Adapted from Latto *et al.* (2013)

1 Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria are met.

2 Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria are met.

B.6 Particle Size Analysis

Particle size analysis was carried out by Thomson Environmental Consultants Limited in accordance with NMBAQC methods for diamictons (Mason, 2022).

No dispersants were used and the sediment was not treated to remove carbonates. The range of sieve sizes, together with their Wentworth classifications (Wentworth, 1922), is given in Table B.6.

The results, given in Appendix E, present particle size distributions in terms of mean phi, fraction percentages (*i.e.* gravel, sand and fines), sorting (mixture of sediment sizes) and skewness (weighting of sediment fractions above and below the mean sediment size) (Folk & Ward, 1957). These indices are described below:

1. Graphic Mean - a measure of average particle size in phi units (-log2(diamm), Folk & Ward, 1957).

$$M_z = \frac{\emptyset 16 + \emptyset 84 + \emptyset 50}{3}$$

where M_z= The graphic mean particle size in phi
ø = the phi size of the nth percentile of the sample

2. Sorting – the inclusive graphic standard deviation of the sample is a measure of the degree of sorting. Sorting classifications are presented in Table B.7.

$$\sigma_1 = \frac{\emptyset 84 - \emptyset 16}{4} + \frac{\emptyset 95 - \emptyset 5}{6.6}$$

where σ_1 = the inclusive graphic standard deviation

3. Inclusive Graphic Skewness – the degree of asymmetry of a frequency or cumulative curve, Skewness classification are presented in Table B.8.

$$S = \frac{\emptyset 16 + \emptyset 84 - 2(\emptyset 50)}{2(\emptyset 84 - \emptyset 16)} + \frac{\emptyset 5 + \emptyset 95 - 2(\emptyset 50)}{2(\emptyset 95 - \emptyset 5)}$$

where S = the skewness of the sample

4. Graphic Kurtosis – The degree of peakedness or departure from a ‘normal’ frequency or cumulative curve. Kurtosis classifications are presented in Table B.9.

$$K = \frac{\emptyset 95 - \emptyset 5}{2.44(\emptyset 75 - \emptyset 25)}$$

where K= Kurtosis

The sediment samples were additionally classified using the modified Folk triangle classification and the EUNIS classification (Figure B. 1) with results presented in Appendix E. These classifications use the sand:mud ratio and the percentage of gravel (Folk, 1954; Parry, 2019).

Table B.6 Phi and Sieve Aperture with Wentworth Classifications

Aperture in microns	Aperture in Phi Unit	Sediment Description	
≥16000	≤-4	Pebble	GRAVEL
<16000 to 11200	>-4 to -3.5		
<11200 to 8000	>-3.5 to -3		
<8000 to 5600	>-3 to -2.5		
<5600 to 4000	>-2.5 to -2		
<4000 to 2800	>-2 to -1.5	Granule	
<2800 to 2000	>-1.5 to -1		
<2000 to 1400	>-1 to -0.5	Very Coarse Sand	SAND
<1400 to 1000	>-0.5 to 0		
<1000 to 710	>0 to 0.5	Coarse Sand	
<710 to 500	>0.5 to 1		
<500 to 355	>1 to 1.5	Medium Sand	
<355 to 250	>1.5 to 2		
<250 to 180	>2 to 2.5	Fine Sand	
<180 to 125	>2.5 to 3		
<125 to 90	>3 to 3.5	Very Fine Sand	
<90 to 63	>3.5 to 4		
<63 to 44	>4 to 4.5	Coarse Silt	FINES
<44 to 31.5	>4.5 to 5		
<31.5 to 22	>5 to 5.5	Medium Silt	
<22 to 15.6	>5.5 to 6		
<15.6 to 11	>6 to 6.5	Fine Silt	
<11 to 7.8	>6.5 to 7		
<7.8 to 5.5	>7 to 7.5	Very Fine Silt	
<5.5 to 3.9	>7.5 to 8		
<3.9 to 2.8	>8 to 8.5	Clay	
<2.8 to 2	>8.5 to 9		
<2 to 1.4	>9 to 9.5		
<1.4 to 1	>9.5 to 10		
<1	>10		

Table B.7 Sorting Classifications

Sorting Coefficient (Graphical Standard Deviation)	Sorting Classifications
0 < 0.35	Very well sorted
0.35 < 0.50	Well sorted
0.50 < 0.71	Moderately well sorted
0.71 < 1.00	Moderately sorted
1.00 < 2.00	Poorly sorted
2.00 < 4.00	Very poorly sorted
4.00	Extremely poorly sorted

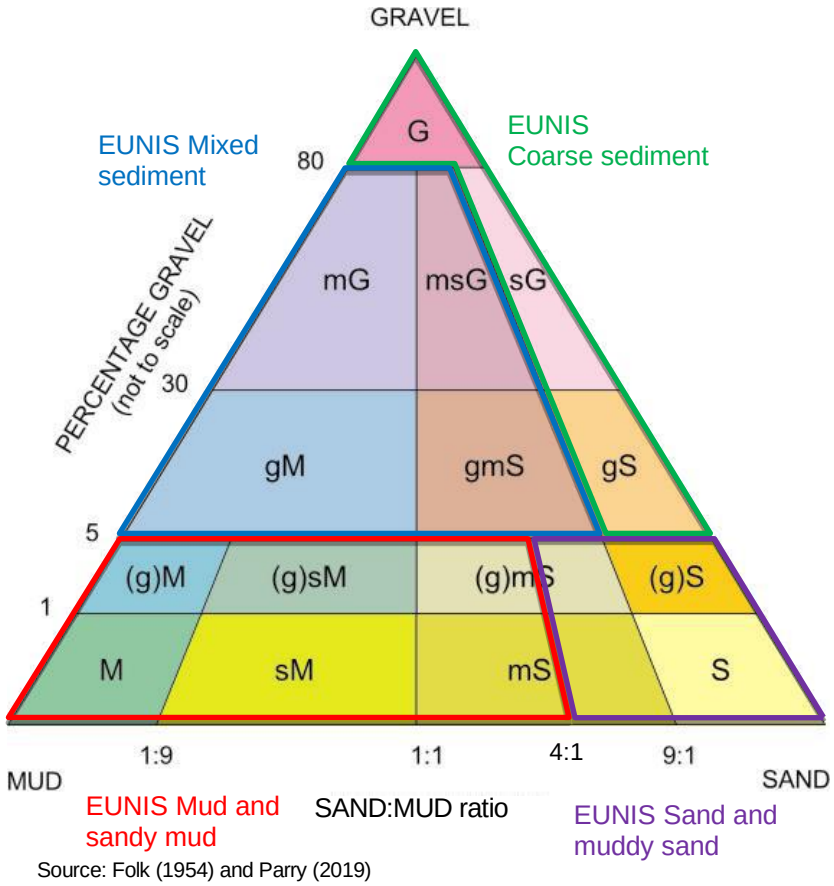
Table B.8 Skewness Classification

Skewness Coefficient	Mathematical Skewness	Graphical Skewness
1.00 > 0.30	Strongly Positive	Strongly fine skewed
0.30 > 0.10	Positive	Fine skewed
0.10 > -0.10	Near Symmetrical	Symmetrical
-0.10 > -0.30	Negative	Coarse skewed
-0.30 > -1.00	Strongly Negative	Strongly coarse skewed

Table B.9 Kurtosis Classification

Kurtosis Coefficient	Kurtosis Classification	Graphical meaning
≤ 0.67	Very Platykurtic	Flat-peaked; the ends are better sorted than the centre
0.67 < 0.90	Platykurtic	
0.90 < 1.11	Mesokurtic	Normal; bell shaped curve
1.11 < 1.50	Leptokurtic	Curves are excessively peaked; the centre is better sorted than the ends
1.50 < 3.00	Very Leptokurtic	
≥ 3.00	Extremely Leptokurtic	

Figure B. 1 Modified Folk Classification and EUNIS Sediment Classes



Source: Folk (1954) and Parry (2019)

Code	Modified Folk Classification
G	Gravel
mG	Muddy gravel
msG	Muddy sandy gravel
sG	Sandy gravel
gM	Gravelly mud
gmS	Gravelly muddy sand
gS	Gravelly sand
(g)M	Slightly gravelly mud
(g)sM	Slightly gravelly sandy mud
(g)mS	Slightly gravelly muddy sand
(g)S	Slightly gravelly sand
M	Mud
sM	Sandy mud
mS	Muddy sand
S	Sand

B.7 EUNIS Habitat Classification

Habitat classification is used to identify different habitats and biotopes based on the biotic and abiotic features of the seabed. Habitat and biotope classifications were conducted on the available survey data, adhering to protocols within EUNIS. The system was developed between 1996 and 2001 by the EEA in collaboration with European experts. Table B.10 gives examples of the five EUNIS levels used to describe the marine environments.

Table B.10 Example EUNIS Habitat Classification Levels

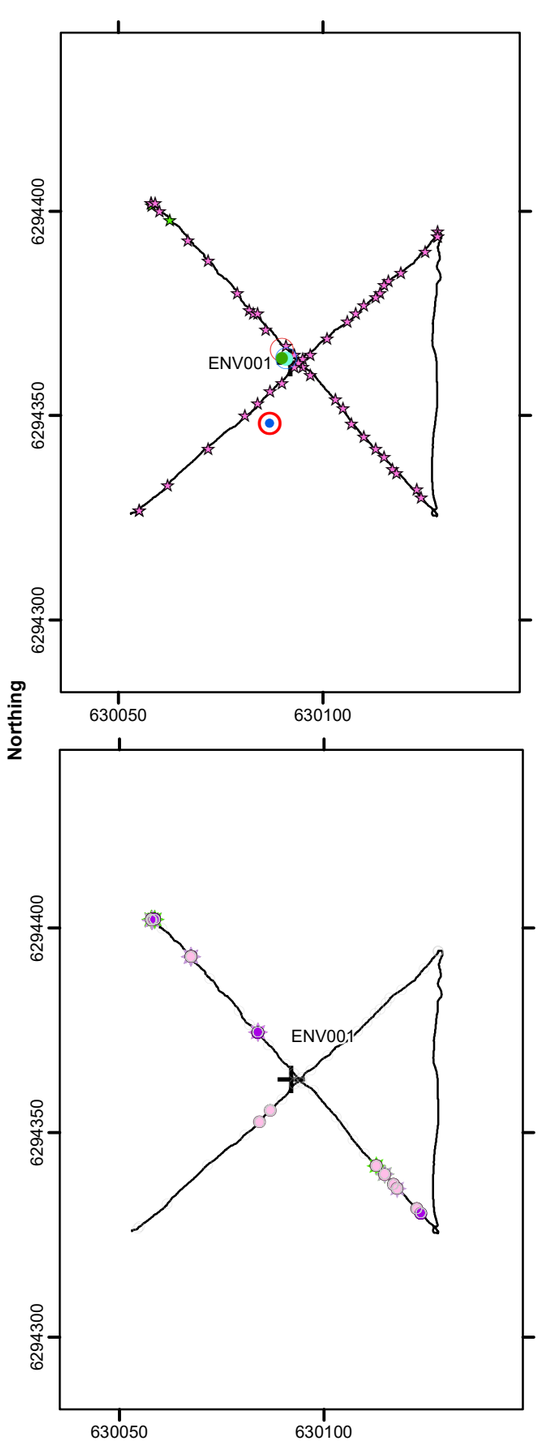
Level	Detail Covered (EUNIS code)
1. Environment	Marine benthic habitats (M)
2. Broad habitats	Circalittoral biogenic habitat (MC2)
3. Main habitats	Atlantic circalittoral biogenic habitat (MC 22)
4. Biotope complexes	Worm reefs in the Atlantic circalittoral zone (MC221)
5. Biotopes	*Sabellaria spinulosa* on stable Atlantic circalittoral mixed sediment (MC2211)

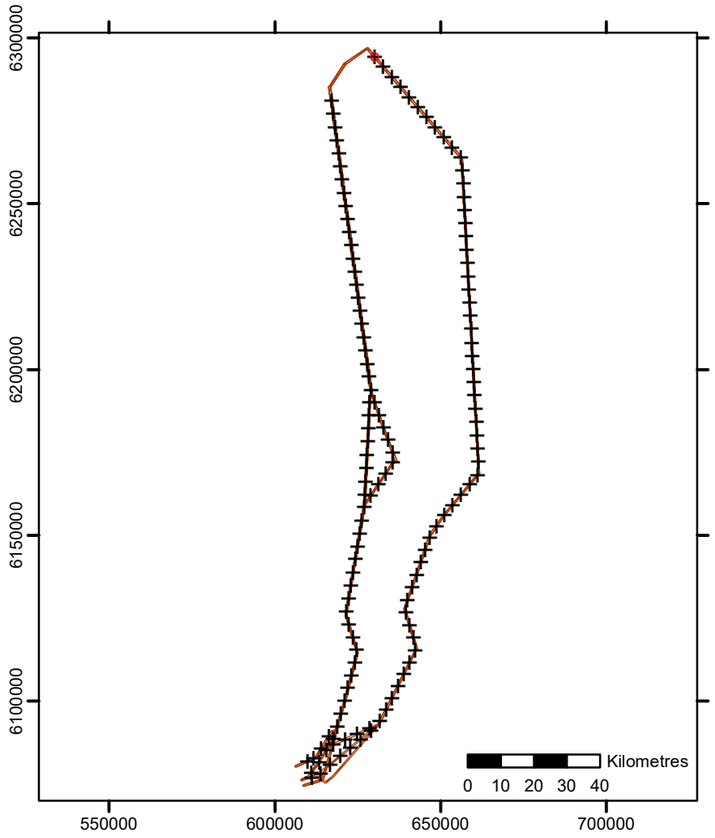
Development of the EUNIS classification comes from both a top-down and a bottom-up approach. The first division is based on differentiating between major biological zones related to depth (littoral down to abyssal) and differentiation of substrate type *(e.g.* rock, sand, gravel). These high-level divisions can be further subdivided based on the main biogeographical regions of Europe's seas (*e.g.* Arctic, Baltic, Atlantic) with these regional splits being based on a combination of salinity and temperature. Such broad-scale differences in habitat character are readily understood by non-specialists and provide classification types that are easily mapped. However, they also have ecological relevance as they reflect major changes in habitat character upon which species distribution depends (Connor *et al.*, 2004).

Bottom-up classification differentiates between places with different species communities. Relative species composition, diversity and abundance vary from place to place and are dependent both on environmental characteristics and upon interactions between species. Surveyed sites with similar environmental characteristics, such as sediment type and depth, show certain levels of similarity in their species communities.

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV001

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

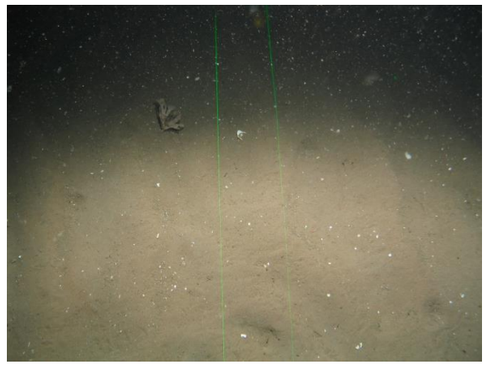
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

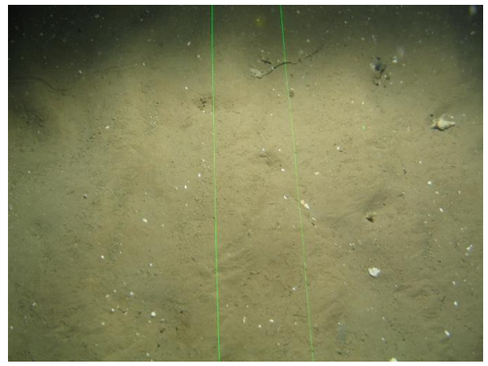
Easting



Station: ENV001
Fix: 15 **E:** 630095 **N:** 6294362 **Depth (m):** 67

Sediment Description:
Soft sediment with scattered shell fragments and faunal tracks.

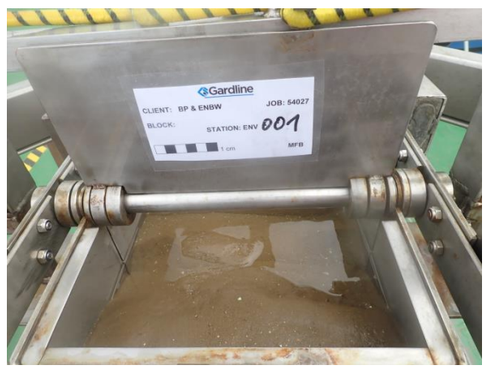
Faunal Description:
Bryozoa (Flustridae *stet.*)



Station: ENV001
Fix: 44 **E:** 630090 **N:** 6294358 **Depth (m):** 67

Sediment Description:
Soft sediment with scattered shell fragments and faunal tracks.

Faunal Description:
No visible fauna



Station: ENV001
Fix: 38 **E:** 630091 **N:** 6294364 **Depth (m):** 68
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)

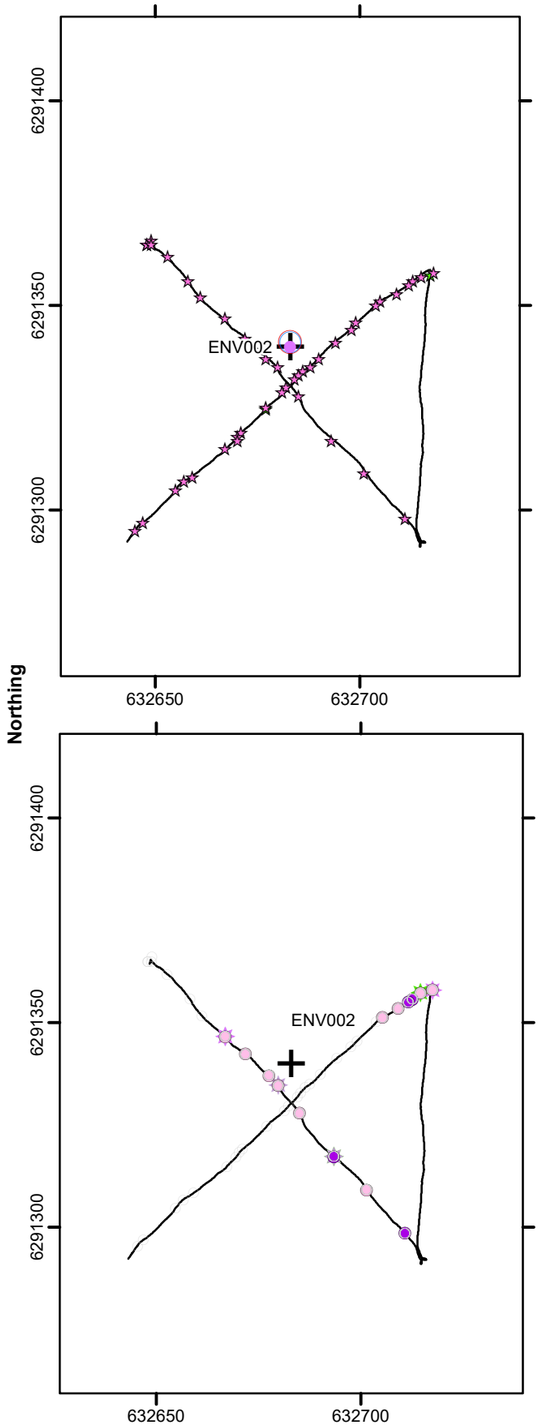


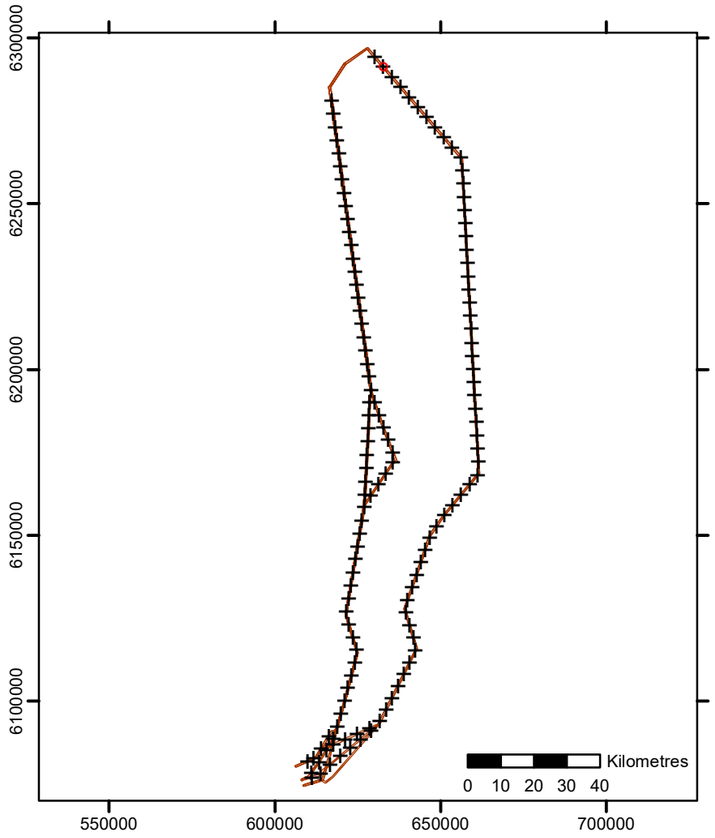
Station: ENV001
Fix: 38 **E:** 630091 **N:** 6294364 **Depth (m):** 68
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV002

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

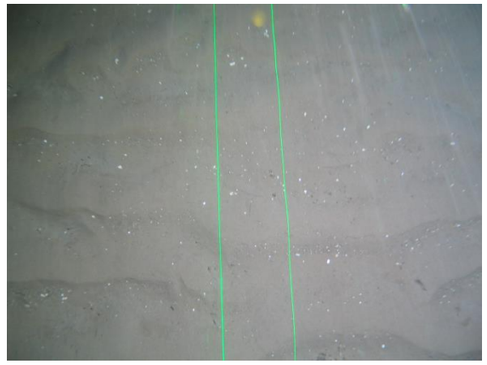
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

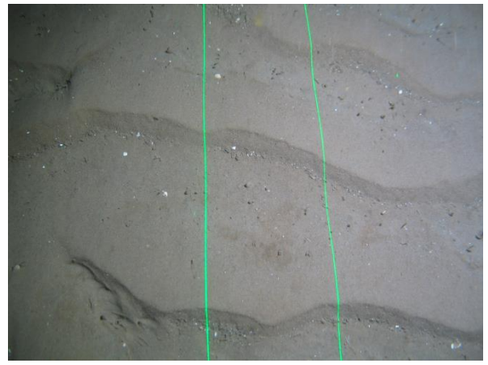
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV002
Fix: 55 **E:** 632649 **N:** 6291365 **Depth (m):** 66

Sediment Description:
Gently rippled soft sediment with some scattered shell fragments.

Faunal Description:
No visible fauna



Station: ENV002
Fix: 86 **E:** 632670 **N:** 6291318 **Depth (m):** 66

Sediment Description:
Genlty rippled soft sediment with some scattered shell fragments.

Faunal Description:
No visible fauna



Station: ENV002
Fix: 34 **E:** 632683 **N:** 6291341 **Depth (m):** 67
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

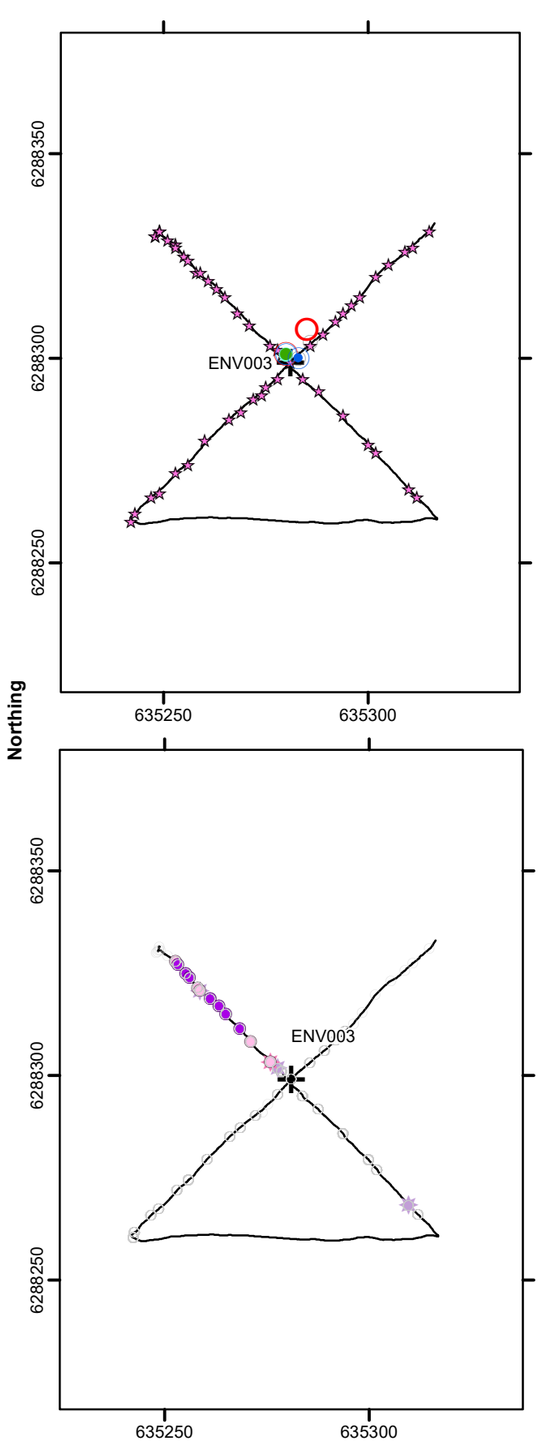


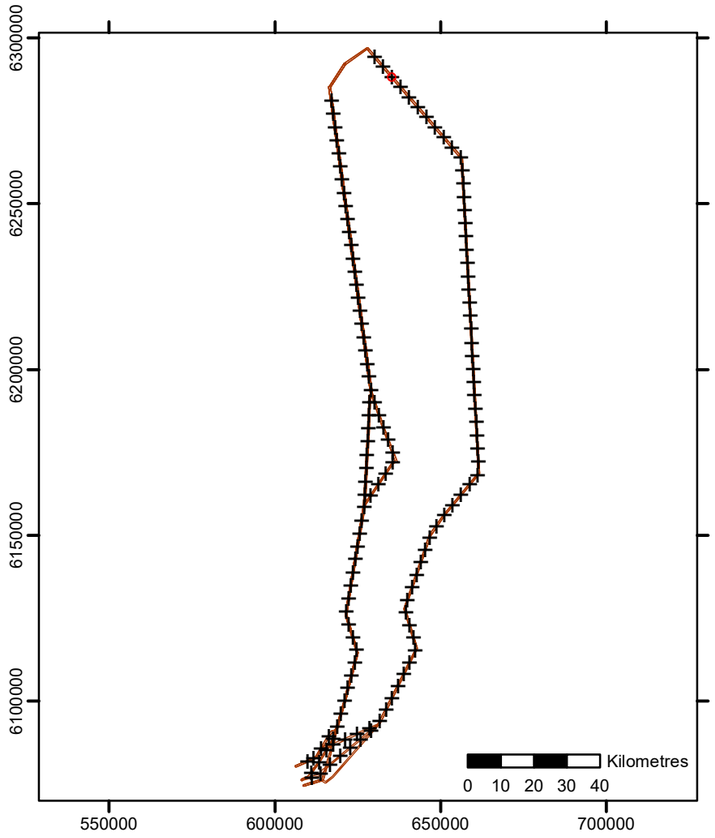
Station: ENV002
Fix: 34 **E:** 632683 **N:** 6291341 **Depth (m):** 67
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV003

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

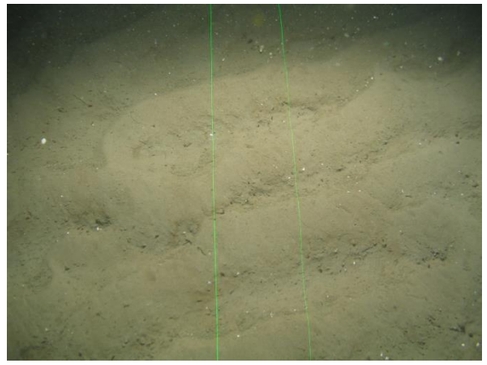
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

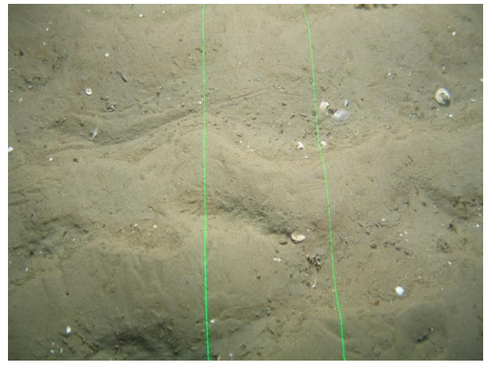
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV003
Fix: 104 **E:** 635256 **N:** 6288324 **Depth (m):** 69

Sediment Description:
Gently rippled soft sediment.

Faunal Description:
Animalia tube



Station: ENV003
Fix: 133 **E:** 635278 **N:** 6288295 **Depth (m):** 68

Sediment Description:
Gently rippled soft sediment with faunal tracks and some scattered shell fragments.

Faunal Description:
Animalia tube



Station: ENV003
Fix: 31 **E:** 635280 **N:** 6288301 **Depth (m):** 70
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)

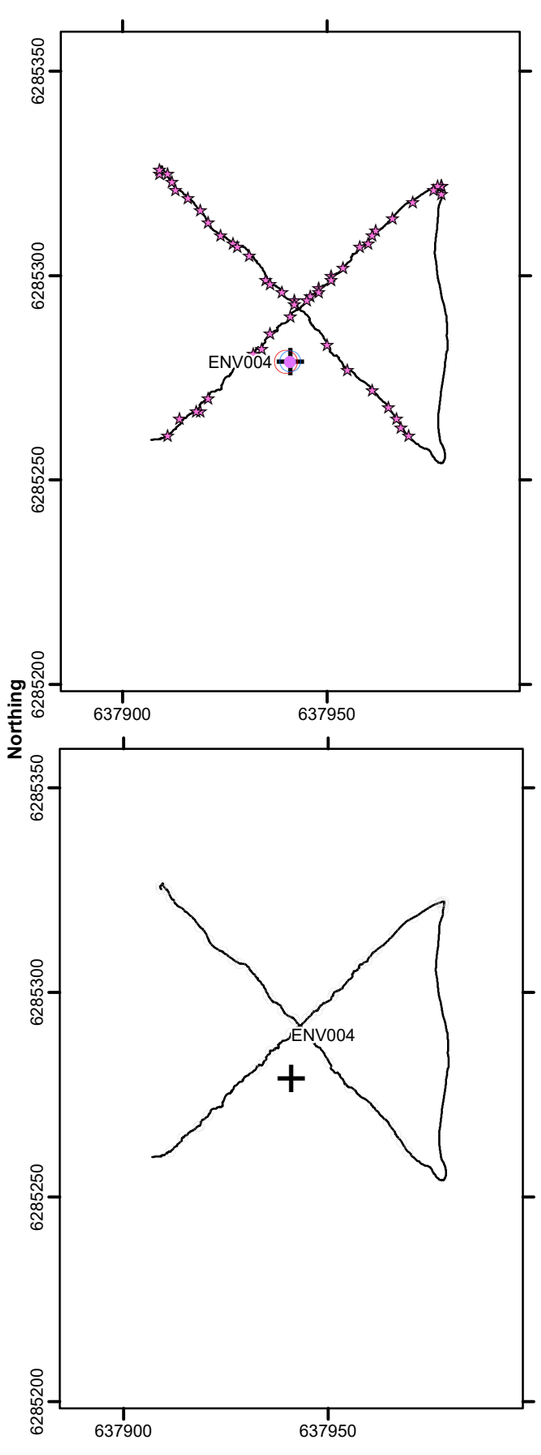


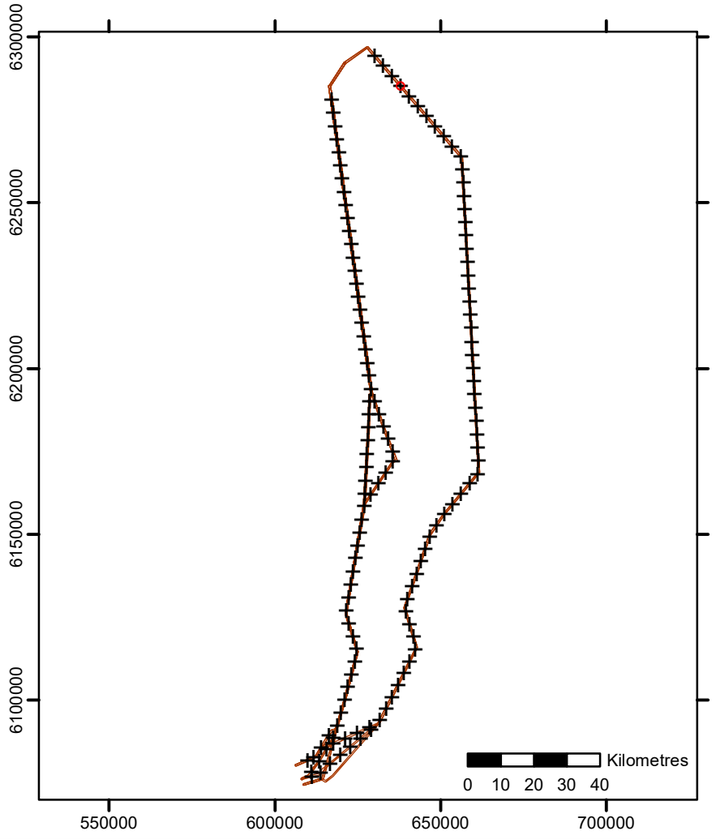
Station: ENV003
Fix: 31 **E:** 635280 **N:** 6288301 **Depth (m):** 70
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV004

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

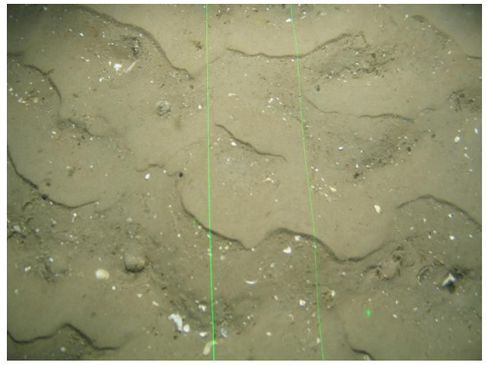
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

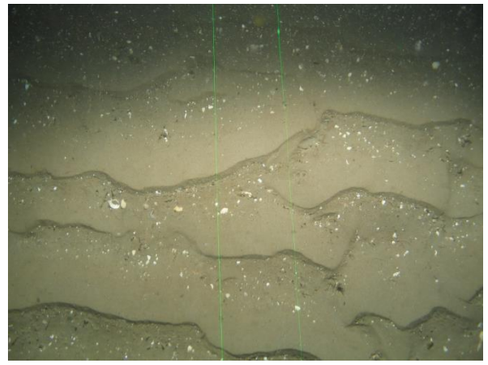
Easting



Station: ENV004
Fix: 154 **E:** 637924 **N:** 6285310 **Depth (m):** 70

Sediment Description:
Rippled soft sediment with scattered shell fragments.

Faunal Description:
Animalia tube



Station: ENV004
Fix: 192 **E:** 637936 **N:** 6285286 **Depth (m):** 70

Sediment Description:
Gently rippled soft sediment with scattered shell fragments.

Faunal Description:
Animalia tube



Station: ENV004
Fix: 27 **E:** 637940 **N:** 6285279 **Depth (m):** 72
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

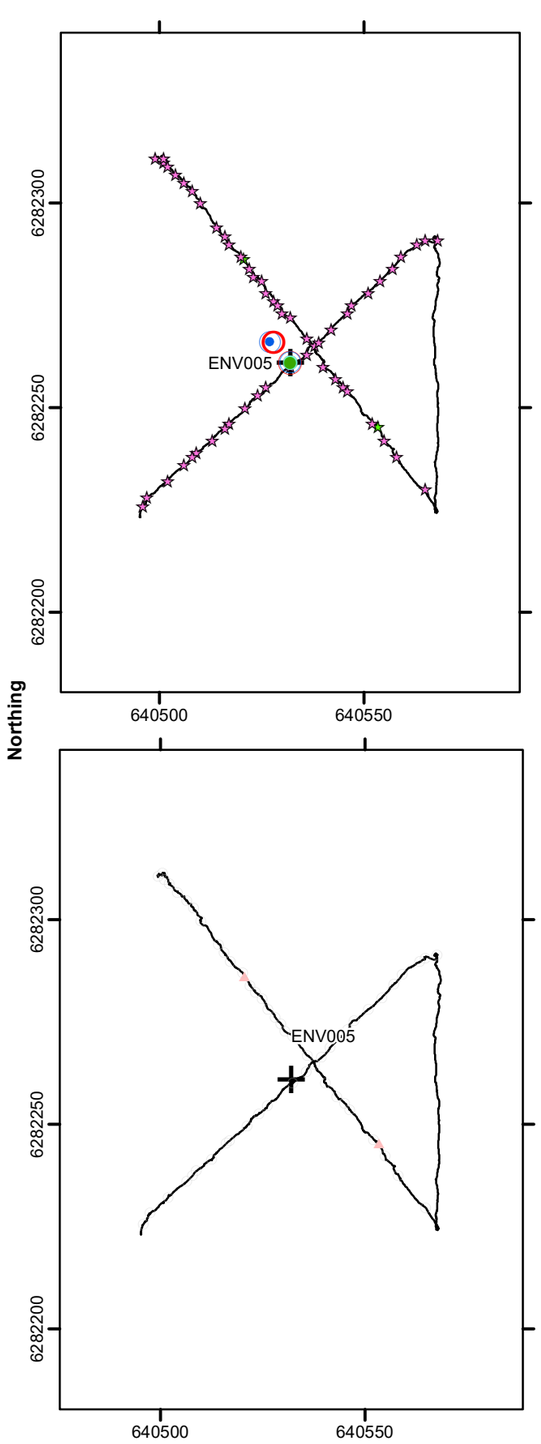


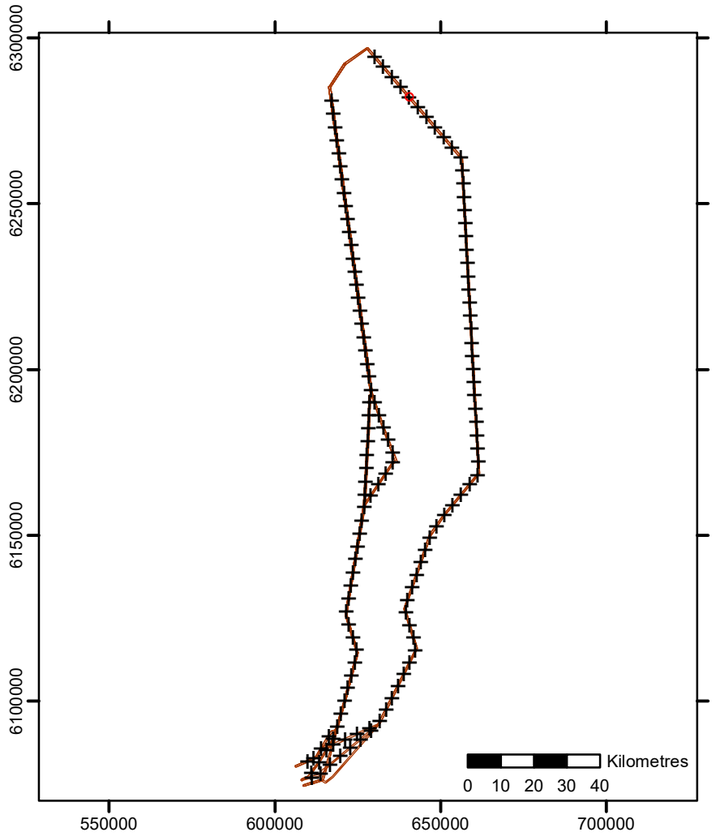
Station: ENV004
Fix: 27 **E:** 637940 **N:** 6285279 **Depth (m):** 72
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV005

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

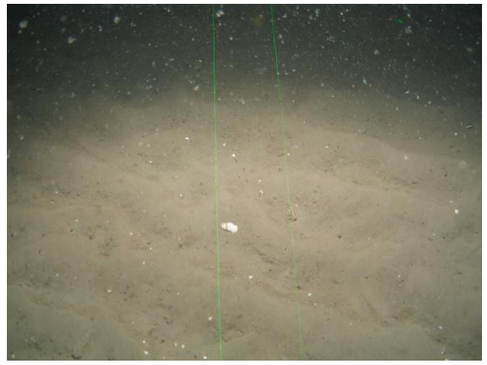
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV005
Fix: 203 **E:** 640502 **N:** 6282309 **Depth (m):** 75

Sediment Description:
Gently rippled soft sediment.

Faunal Description:
No visible fauna



Station: ENV005
Fix: 254 **E:** 640502 **N:** 6282232 **Depth (m):** 75

Sediment Description:
Soft sediment with faunal tracks.

Faunal Description:
No visible fauna



Station: ENV005
Fix: 22 **E:** 640532 **N:** 6282261 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)

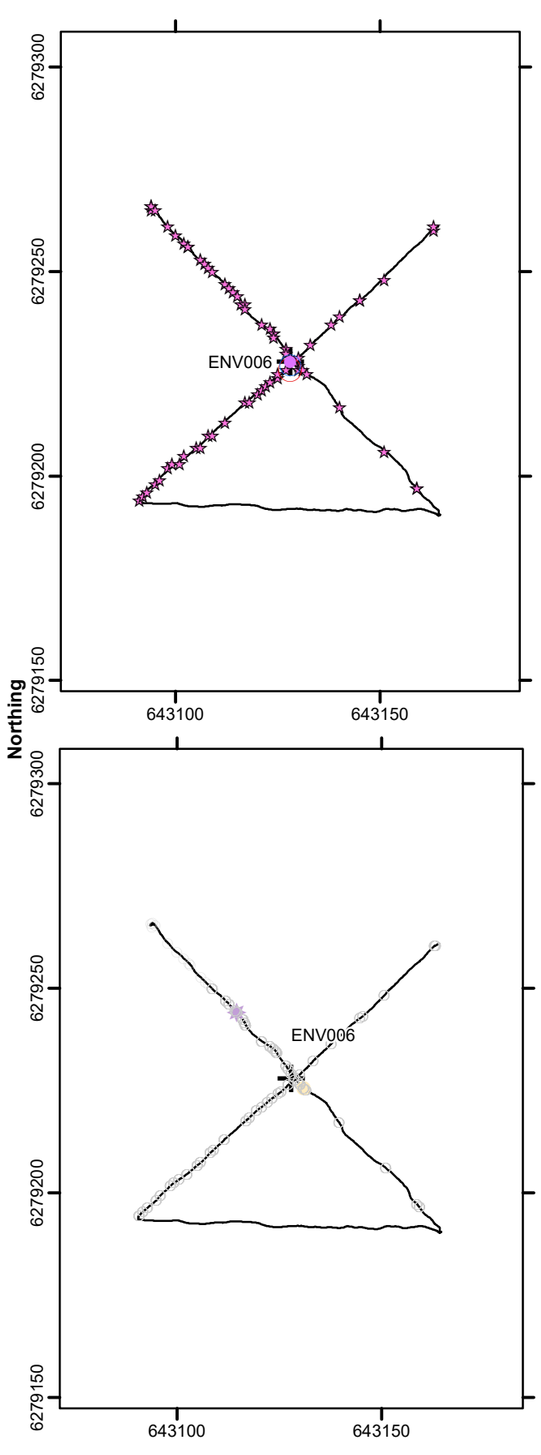


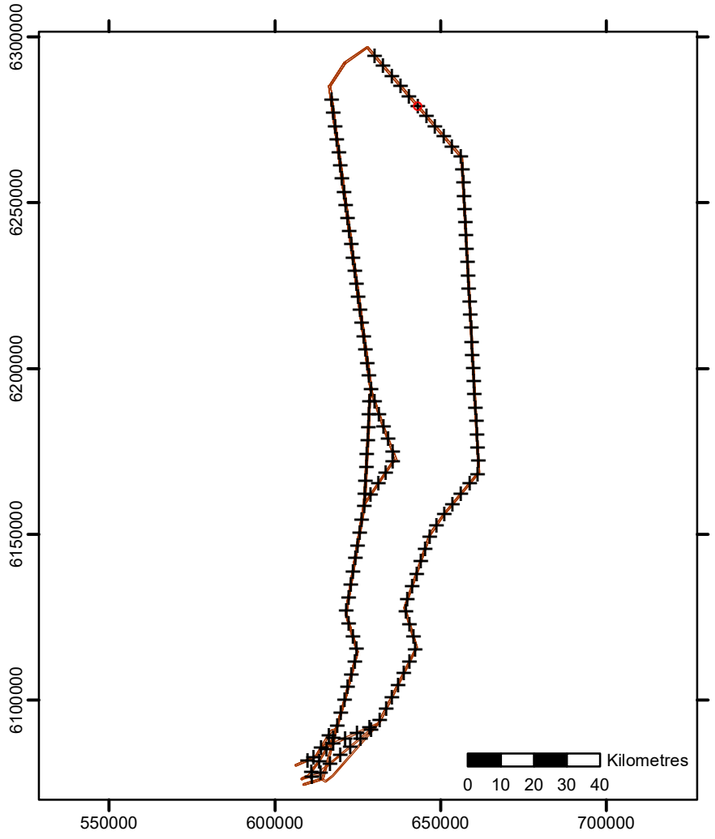
Station: ENV005
Fix: 22 **E:** 640532 **N:** 6282261 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV006

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

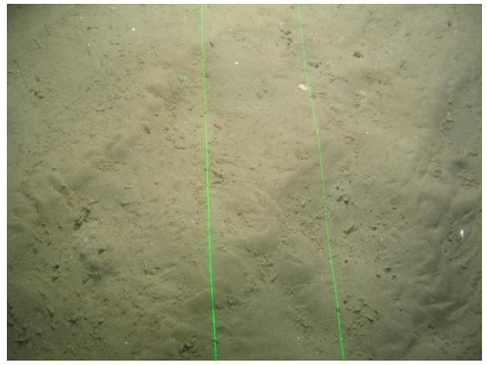
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

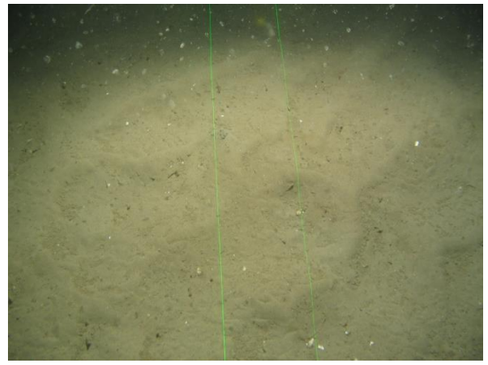
Easting



Station: ENV006
Fix: 260 **E:** 643095 **N:** 6279265 **Depth (m):** 73

Sediment Description:
Gently rippled soft sediment.

Faunal Description:
Animalia tube



Station: ENV006
Fix: 304 **E:** 643105 **N:** 6279207 **Depth (m):** 73

Sediment Description:
Gently rippled soft sediment.

Faunal Description:
Animalia tube



Station: ENV006
Fix: 20 **E:** 643128 **N:** 6279227 **Depth (m):** 76
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

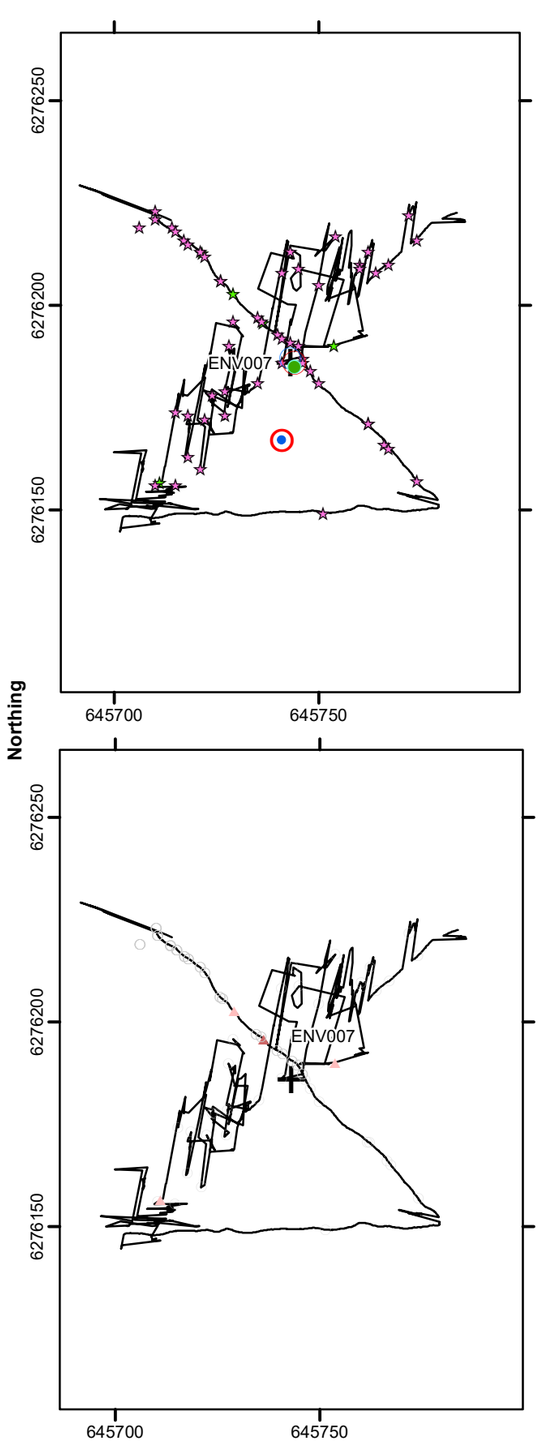


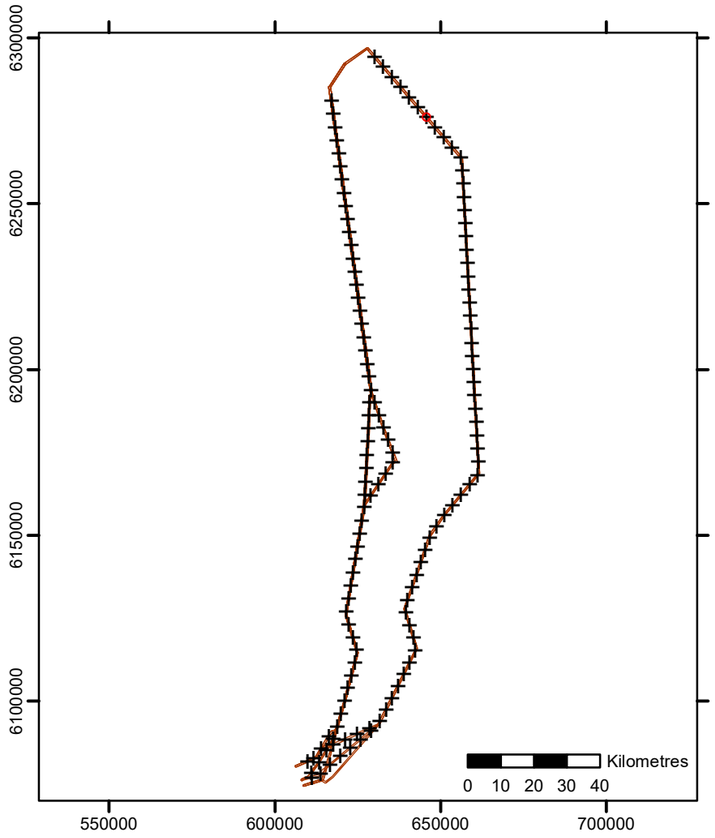
Station: ENV006
Fix: 20 **E:** 643128 **N:** 6279227 **Depth (m):** 76
Retention: MFB

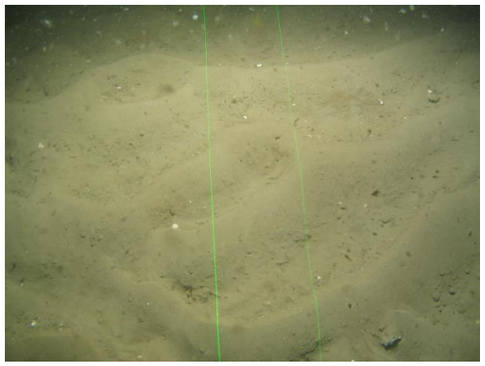
Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



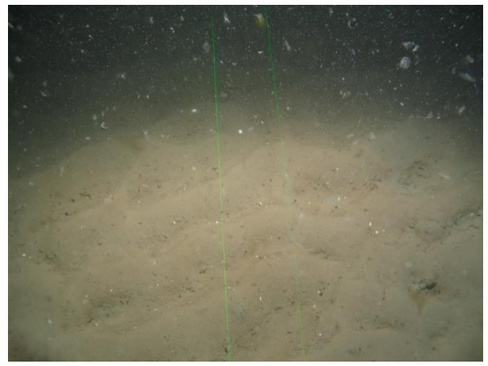




Station: ENV007
Fix: 331 **E:** 645714 **N:** 6276219 **Depth (m):** 72

Sediment Description:
Rippled soft sediment with shell fragments

Faunal Description:
Animalia tube



Station: ENV007
Fix: 375 **E:** 645745 **N:** 6276209 **Depth (m):** 72

Sediment Description:
Rippled, soft sediment

Faunal Description:
No visible fauna

Overview of Station: ENV007

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

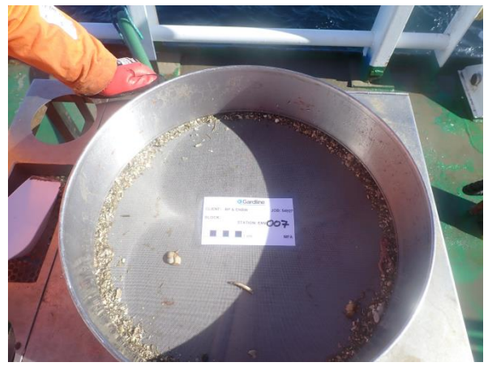
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV007
Fix: 15 **E:** 645744 **N:** 6276186 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

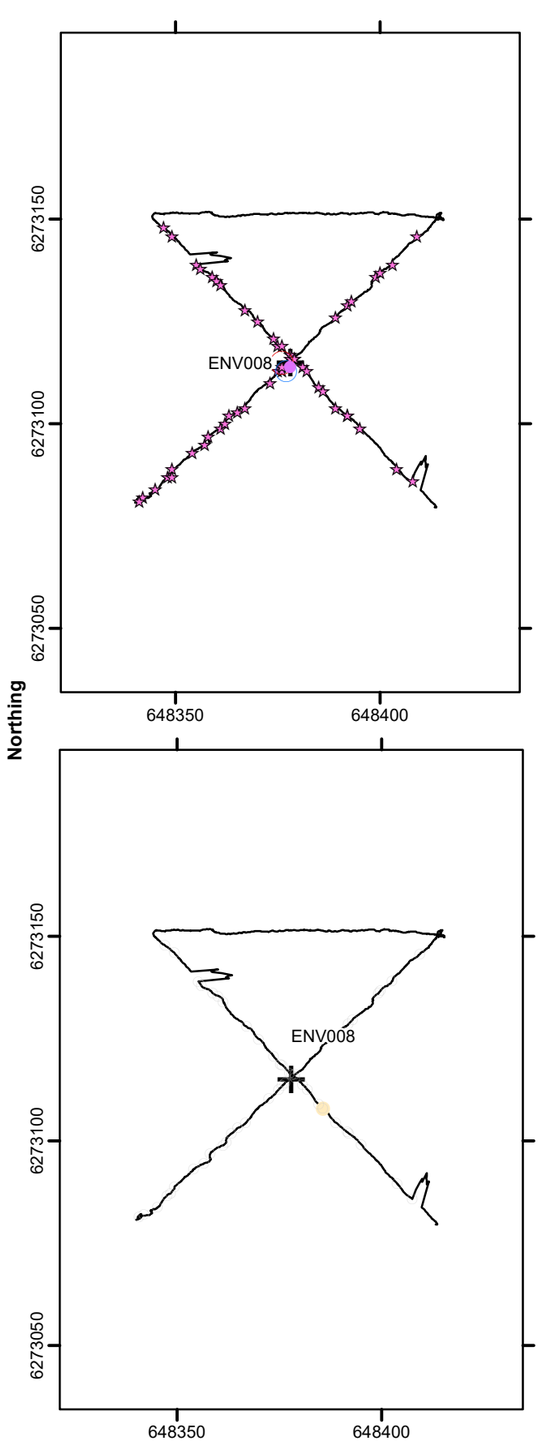


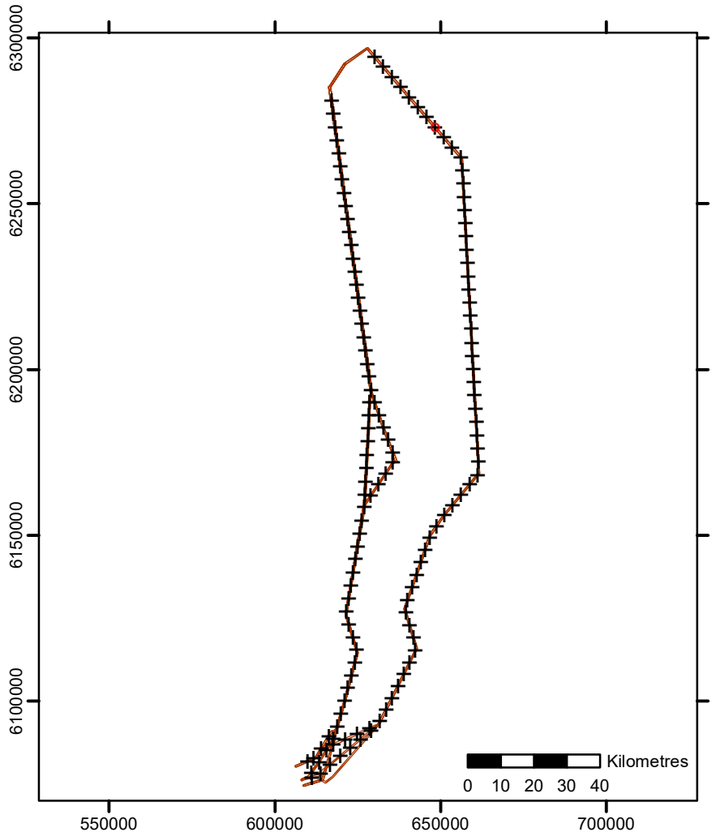
Station: ENV007
Fix: 15 **E:** 645744 **N:** 6276186 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV008

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

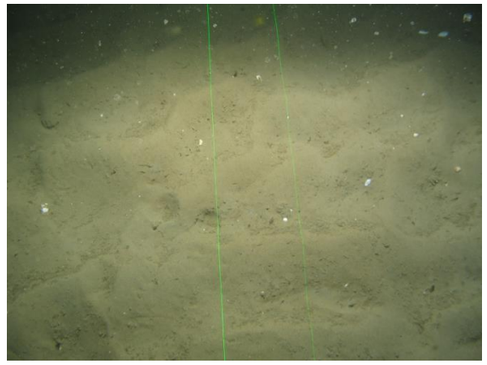
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

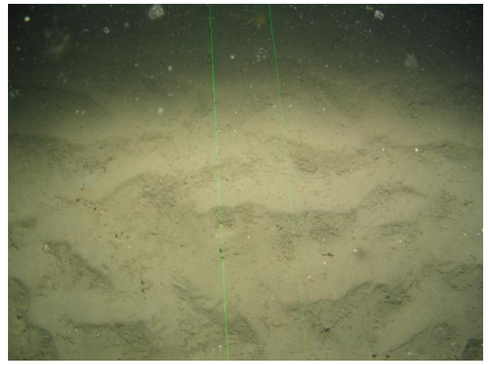
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV008
Fix: 400 **E:** 648376 **N:** 6273113 **Depth (m):** 72

Sediment Description:
Rippled, soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV008
Fix: 417 **E:** 648367 **N:** 6273128 **Depth (m):** 72

Sediment Description:
Rippled, soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV008
Fix: 12 **E:** 648376 **N:** 6273115 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

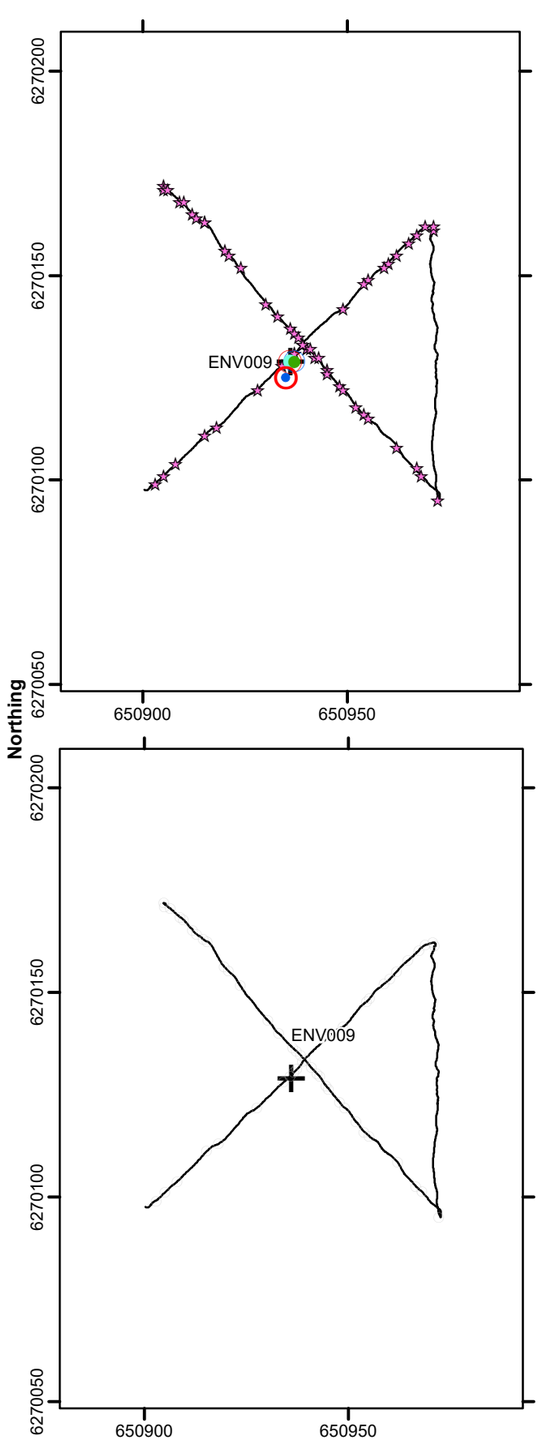


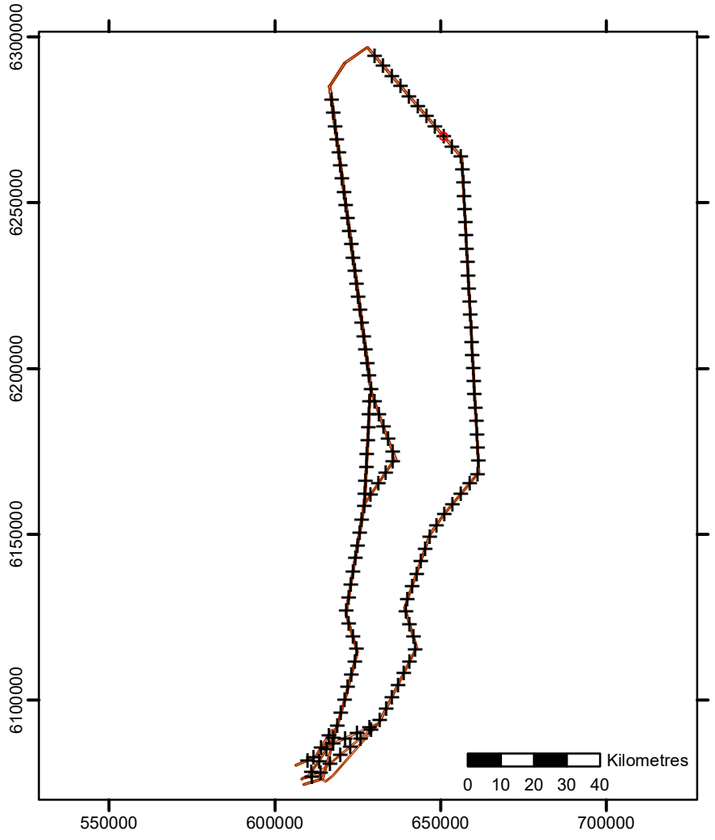
Station: ENV008
Fix: 12 **E:** 648376 **N:** 6273115 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV009

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

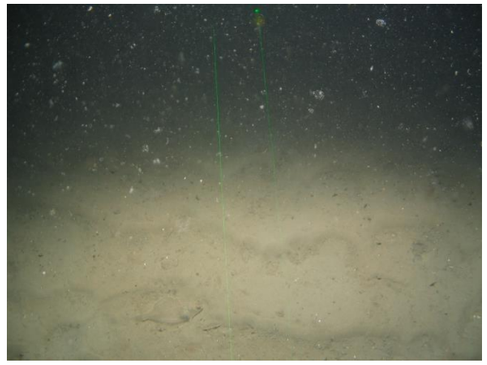
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

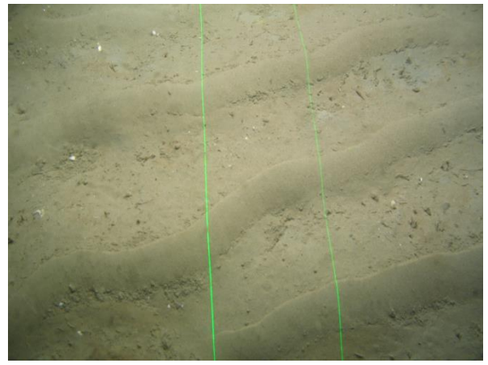
Easting



Station: ENV009
Fix: 448 **E:** 650933 **N:** 6270140 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment

Faunal Description:
Annelida (Terebellidae *stet.*), Chordata (Pleuronectiformes *stet.*)



Station: ENV009
Fix: 485 **E:** 650928 **N:** 6270122 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment

Faunal Description:
No visible fauna



Station: ENV009
Fix: 9 **E:** 650937 **N:** 6270129 **Depth (m):** 75
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

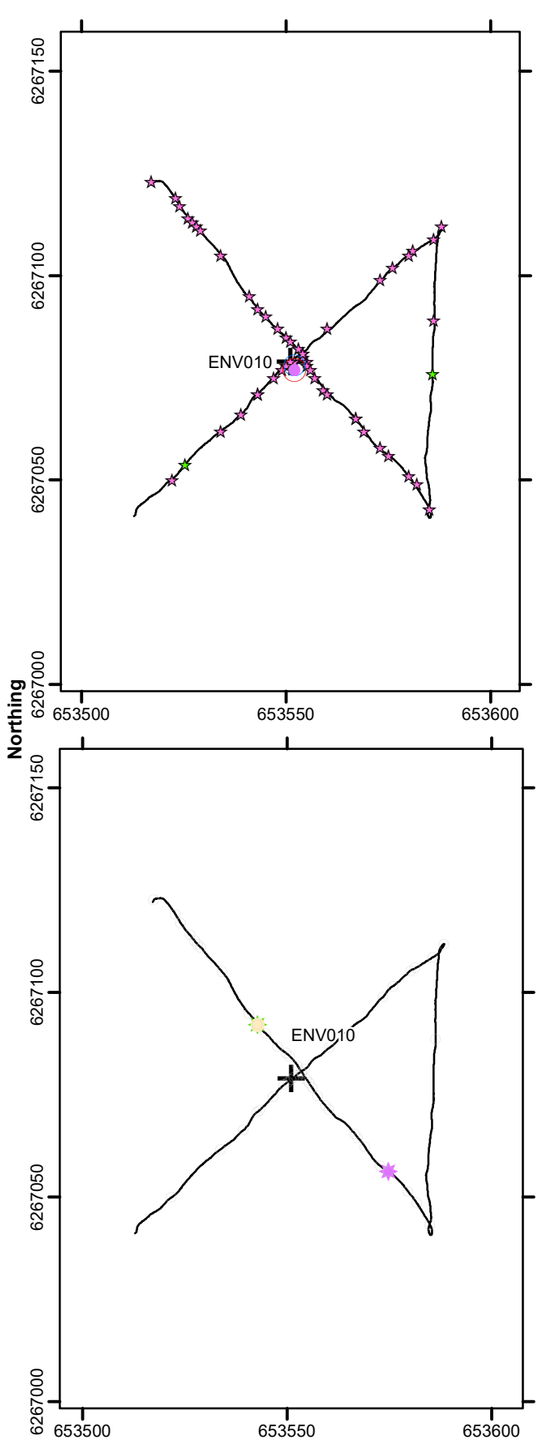


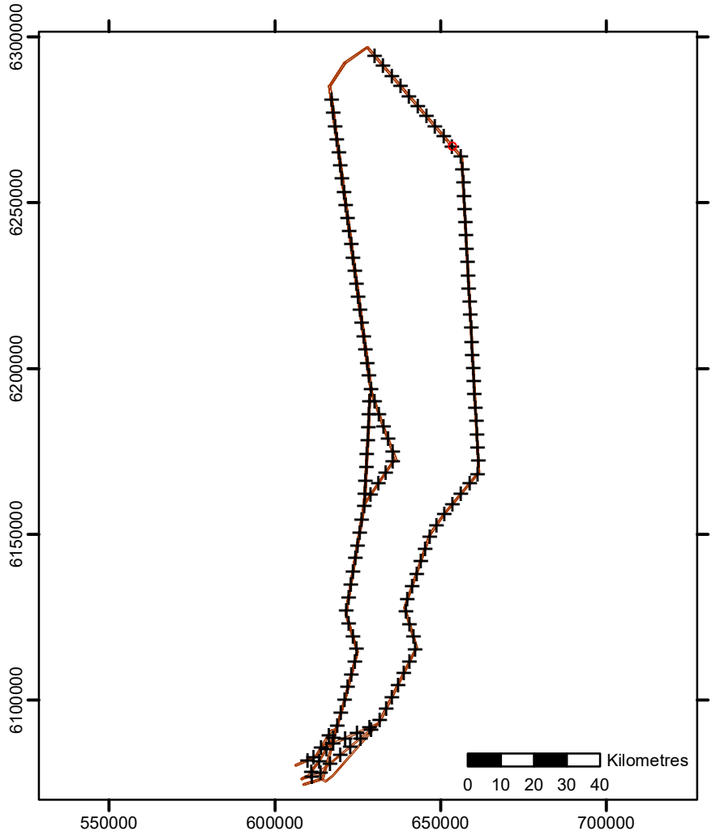
Station: ENV009
Fix: 9 **E:** 650937 **N:** 6270129 **Depth (m):** 75
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV010

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

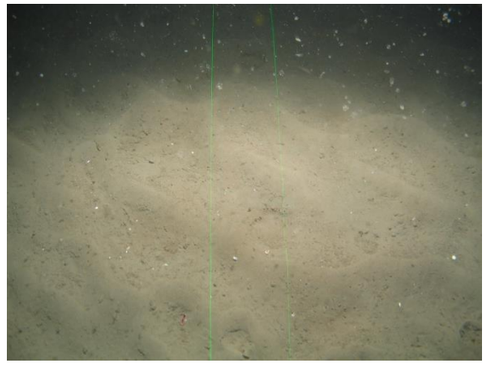
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

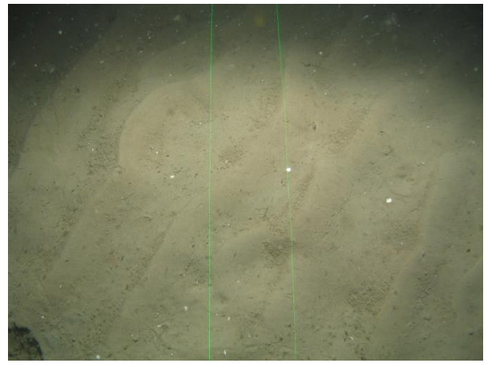
Easting



Station: ENV010
Fix: 500 **E:** 653543 **N:** 6267092 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment with bioturbation

Faunal Description:
Annelida (Terebellidae *stet.*), Mollusca (*Arctica islandica* siphons)



Station: ENV010
Fix: 535 **E:** 653549 **N:** 6267077 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV010
Fix: 5 **E:** 653552 **N:** 6267077 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

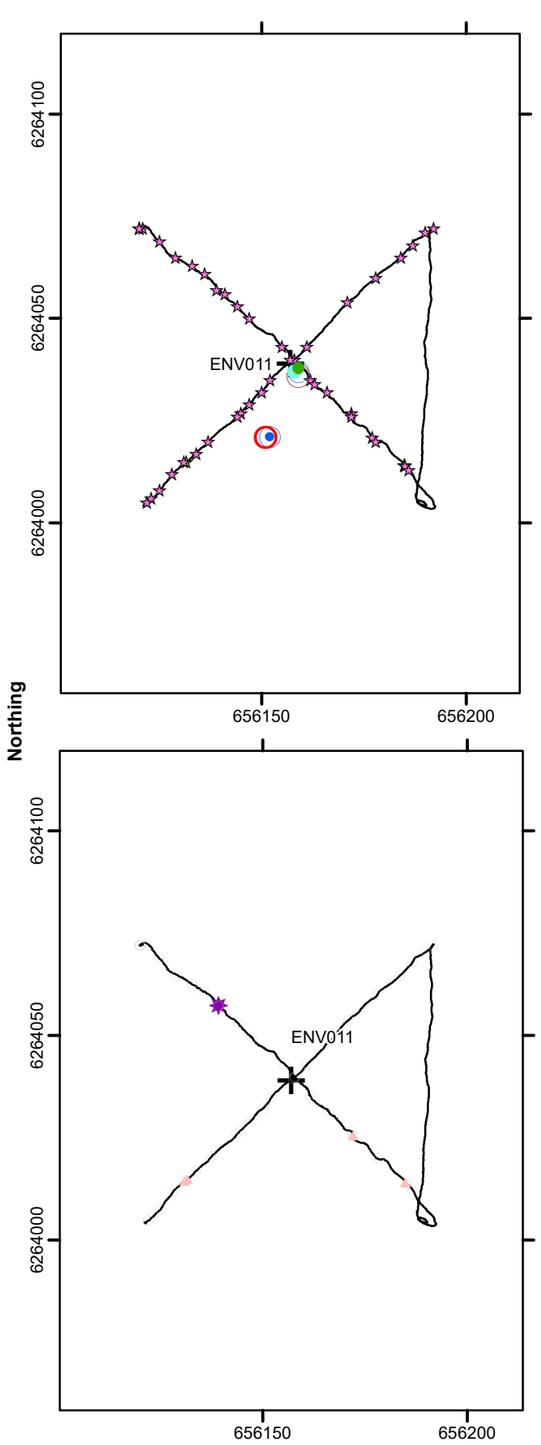


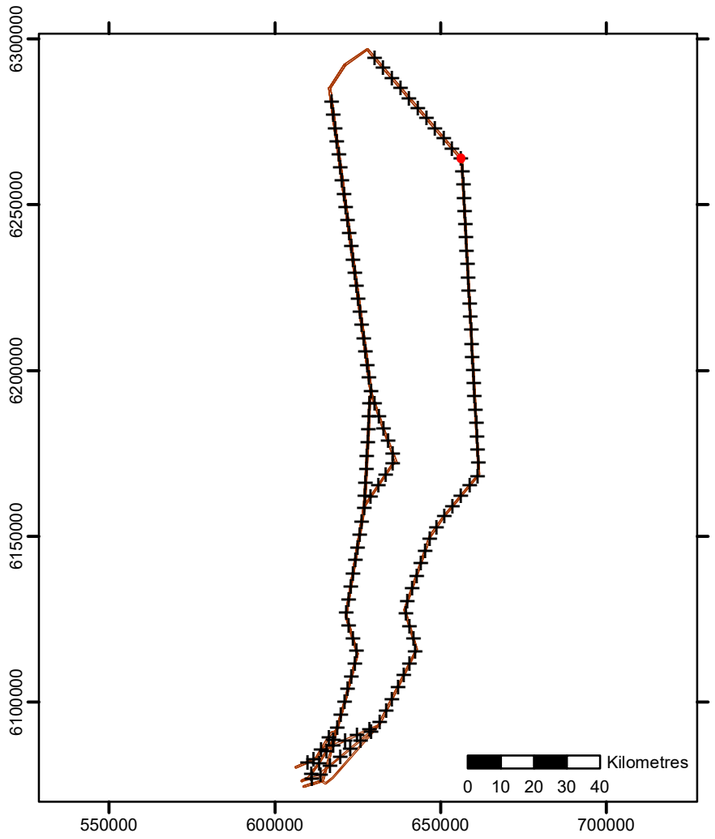
Station: ENV010
Fix: 5 **E:** 653552 **N:** 6267077 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV011

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

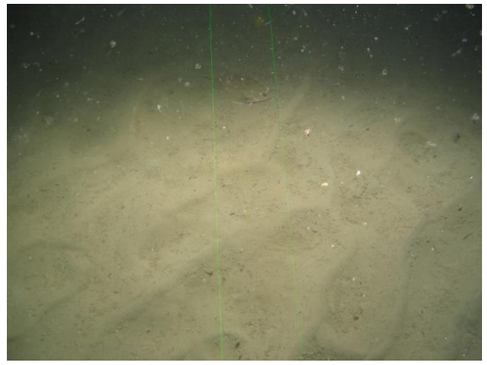
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

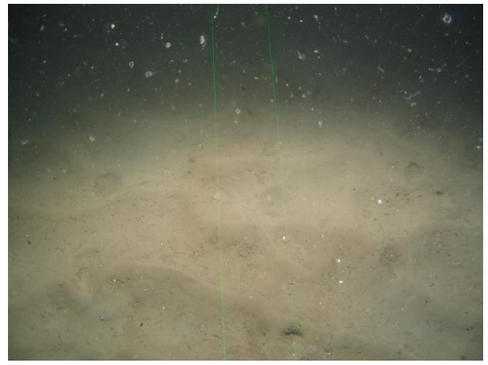
Easting



Station: ENV011
Fix: 550 **E:** 656139 **N:** 6264057 **Depth (m):** 73

Sediment Description:
Rippled, soft sediment with evidence of bioturbation

Faunal Description:
Chordata (*Glyptocephalus cynoglossus*)



Station: ENV011
Fix: 574 **E:** 656150 **N:** 6264032 **Depth (m):** 73

Sediment Description:
Rippled, soft sediment with evidence of bioturbation

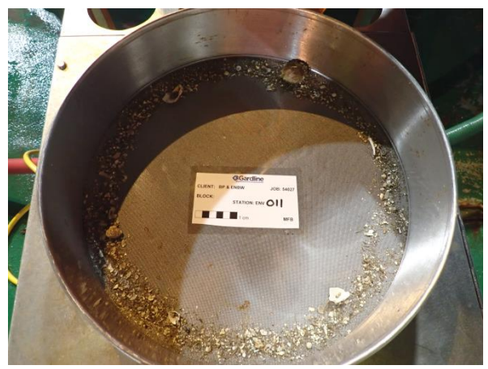
Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*)



Station: ENV011
Fix: 2 **E:** 656159 **N:** 6264037 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)

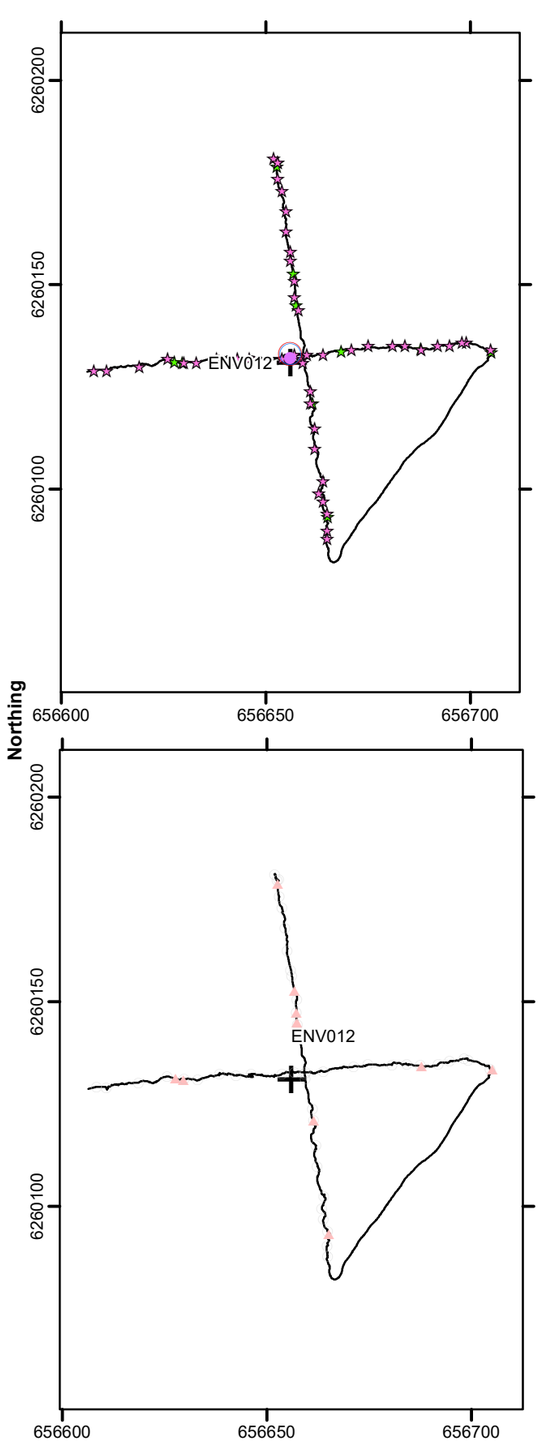


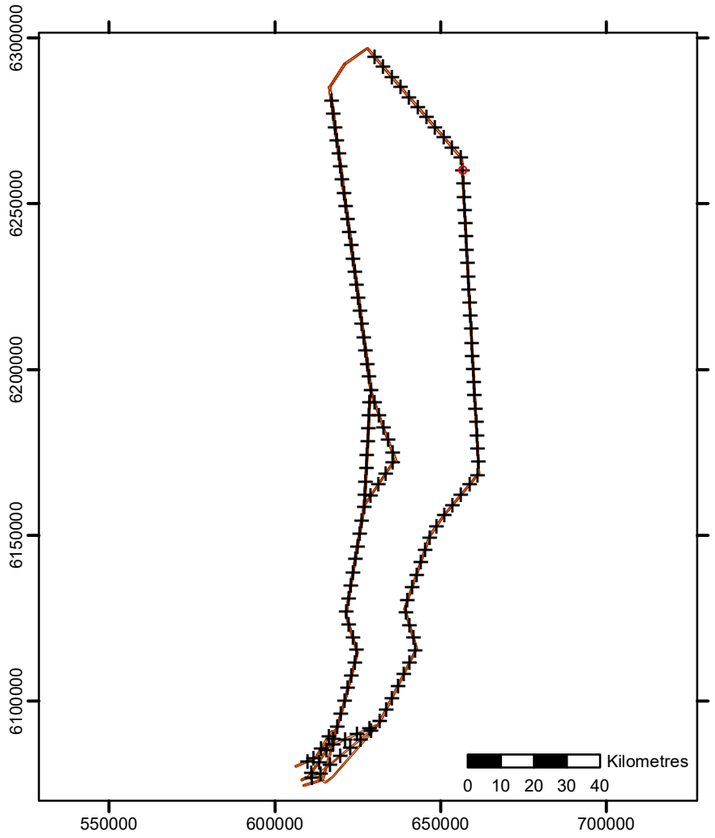
Station: ENV011
Fix: 2 **E:** 656159 **N:** 6264037 **Depth (m):** 74
Retention: MFB

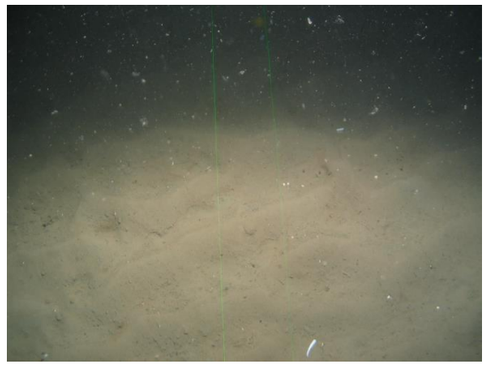
Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



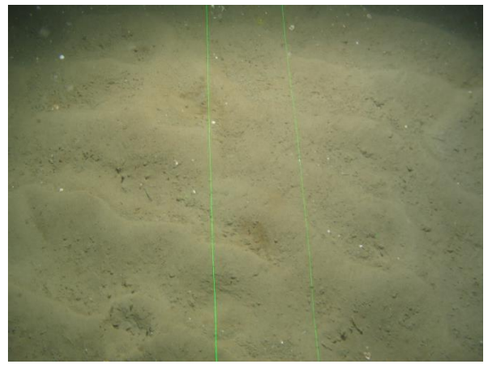




Station: ENV012
Fix: 590 **E:** 656654 **N:** 6260173 **Depth (m):** 73

Sediment Description:
Rippled soft sediment

Faunal Description:
Animalia tube, Mollusca (Scaphopoda *stet.*)



Station: ENV012
Fix: 625 **E:** 656643 **N:** 6260132 **Depth (m):** 73

Sediment Description:
Rippled soft sediment

Faunal Description:
Animalia tube

Overview of Station: ENV012

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV012
Fix: 484 **E:** 656656 **N:** 6260133 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

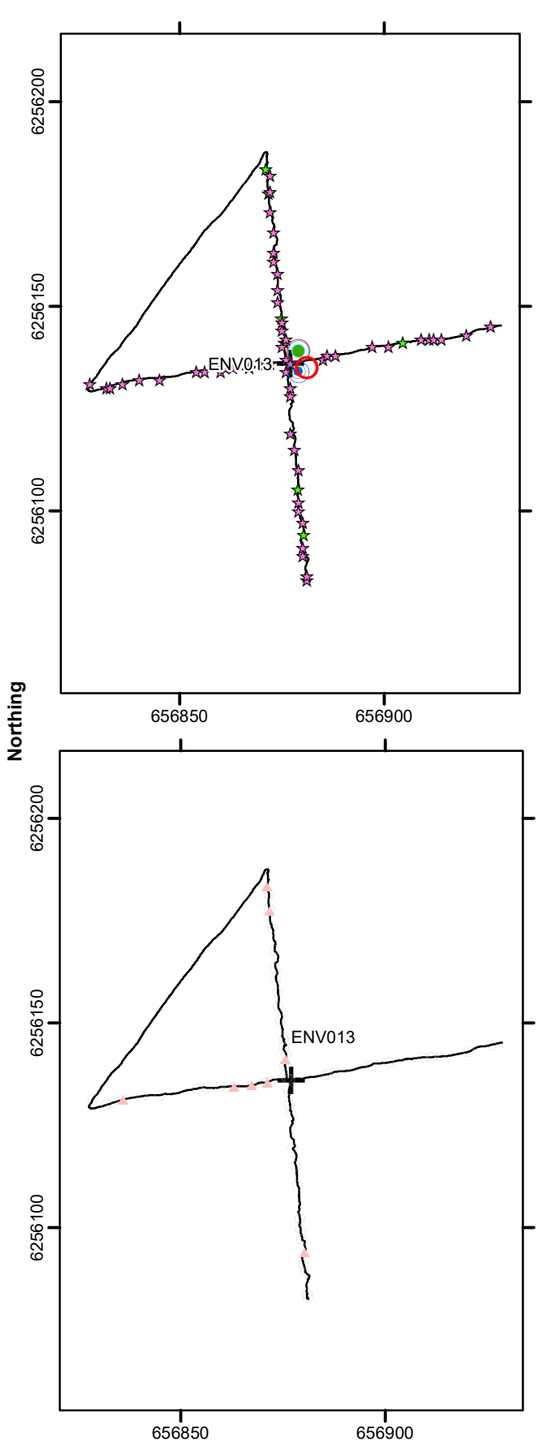


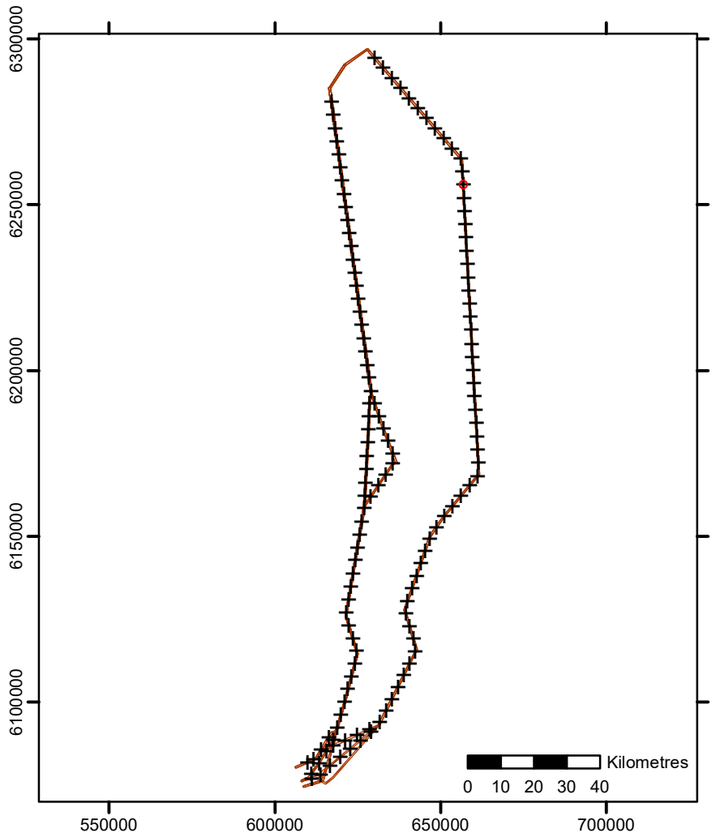
Station: ENV012
Fix: 484 **E:** 656656 **N:** 6260133 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV013

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

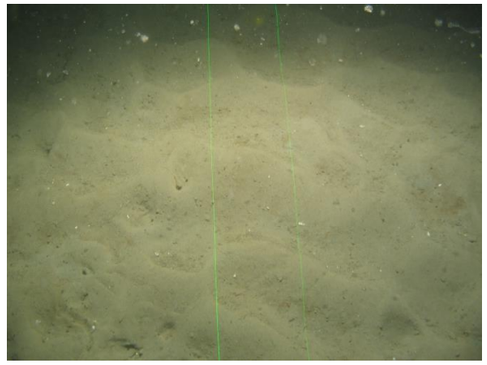
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

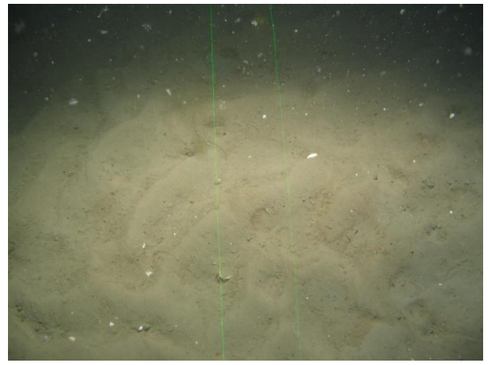
Easting



Station: ENV013
Fix: 643 **E:** 656877 **N:** 6256128 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube



Station: ENV013
Fix: 666 **E:** 656854 **N:** 6256134 **Depth (m):** 74

Sediment Description:
Soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube



Station: ENV013
Fix: 488 **E:** 656879 **N:** 6256139 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Mollusca (Scaphopoda)

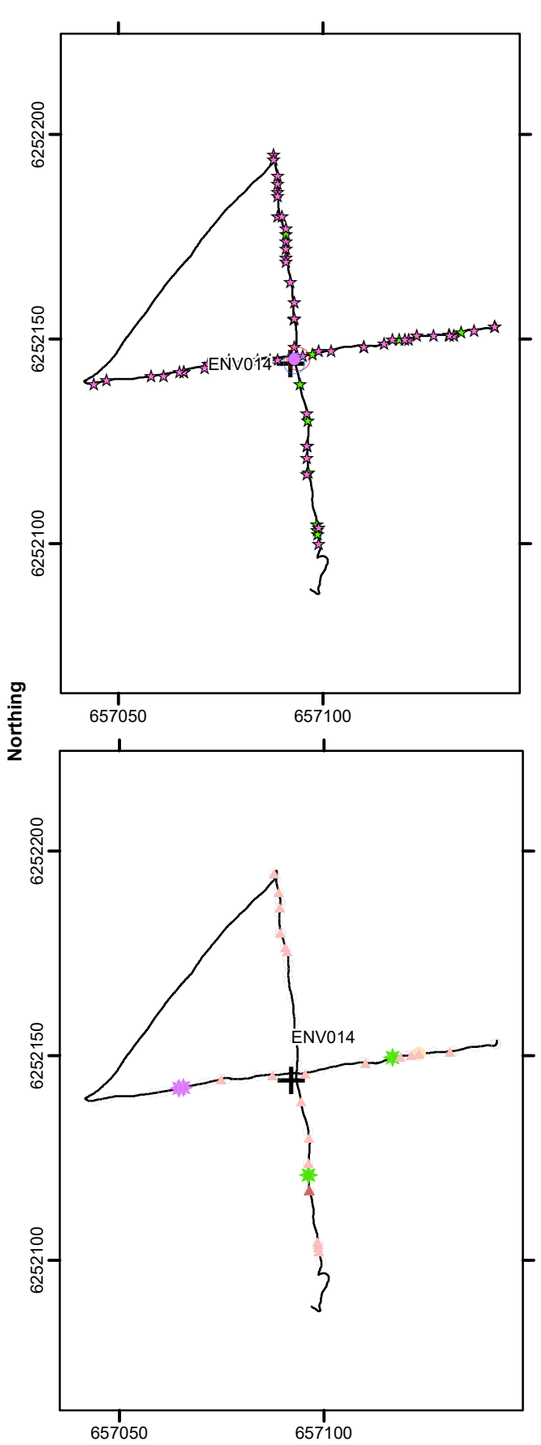


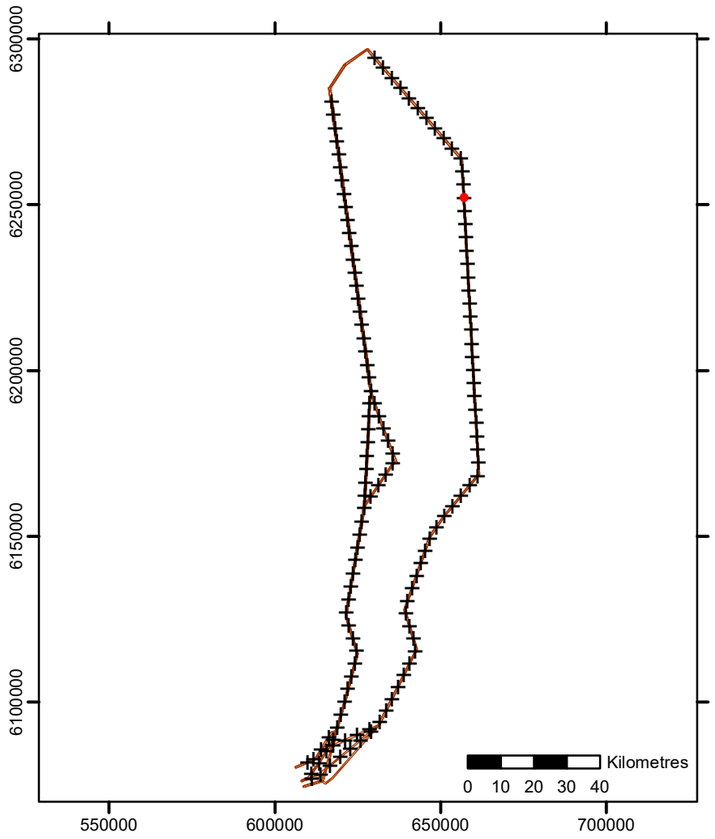
Station: ENV013
Fix: 488 **E:** 656879 **N:** 6256139 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV014

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

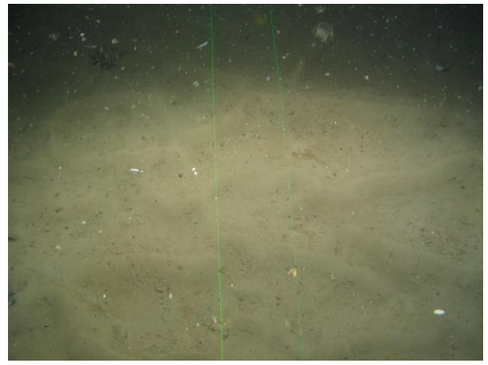
Easting



Station: ENV014
Fix: 690 **E:** 657132 **N:** 6252151 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV014
Fix: 732 **E:** 657093 **N:** 6252159 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment with shell fragments

Faunal Description:
Animalia tube, Mollusca (Scaphopoda *stet.*)



Station: ENV014
Fix: 491 **E:** 657094 **N:** 6252145 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

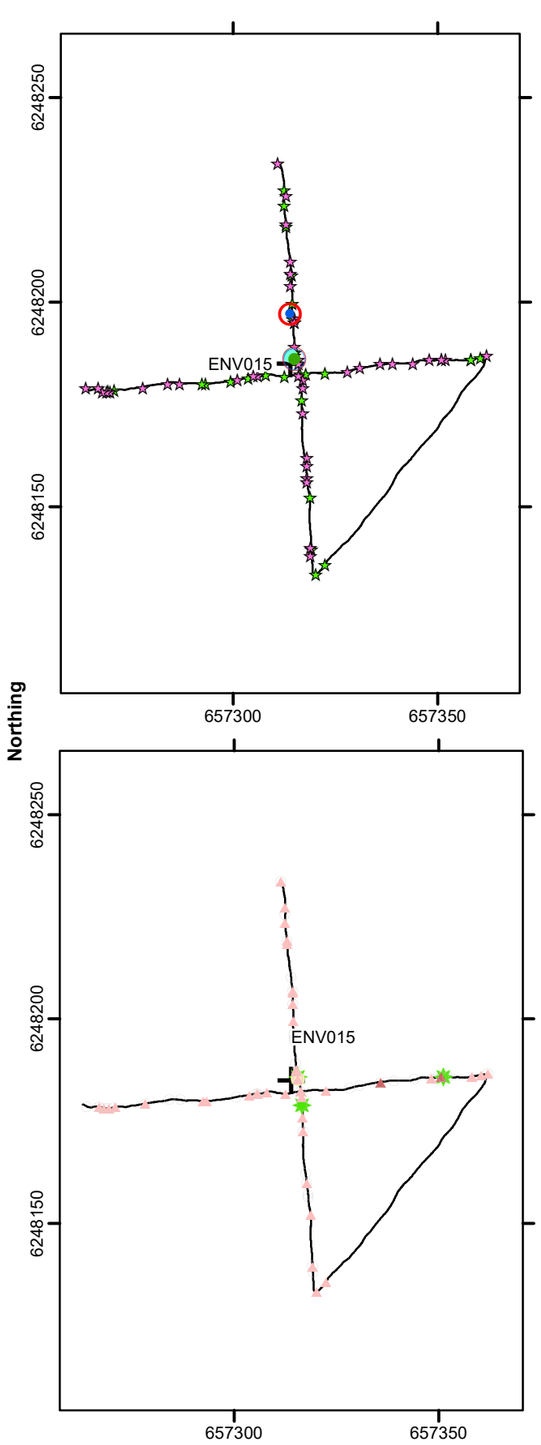


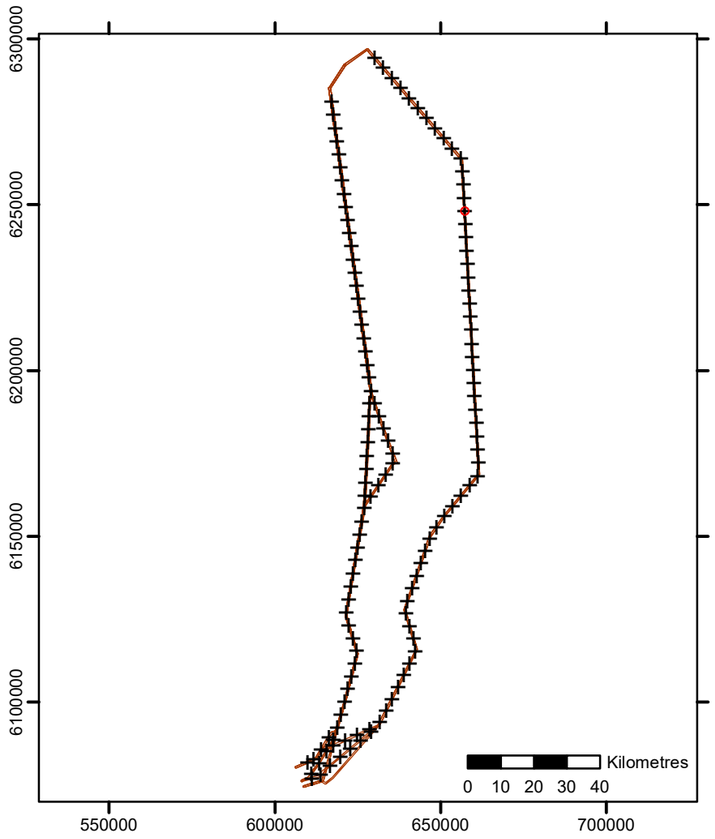
Station: ENV014
Fix: 491 **E:** 657094 **N:** 6252145 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV015

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

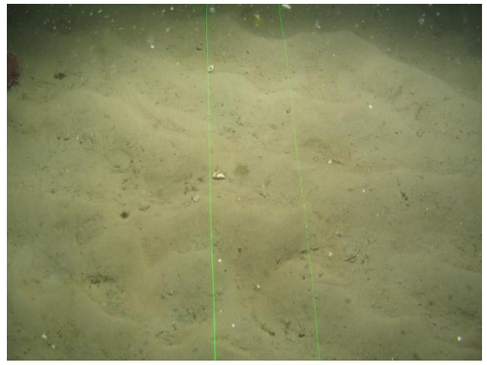
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

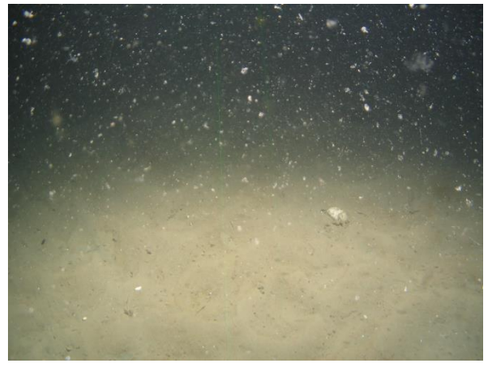
Easting



Station: ENV015
Fix: 753 **E:** 657316 **N:** 6248185 **Depth (m):** 72

Sediment Description:
Rippled, soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*), Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV015
Fix: 780 **E:** 657270 **N:** 6248178 **Depth (m):** 72

Sediment Description:
Soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube



Station: ENV015
Fix: 495 **E:** 657315 **N:** 6248186 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

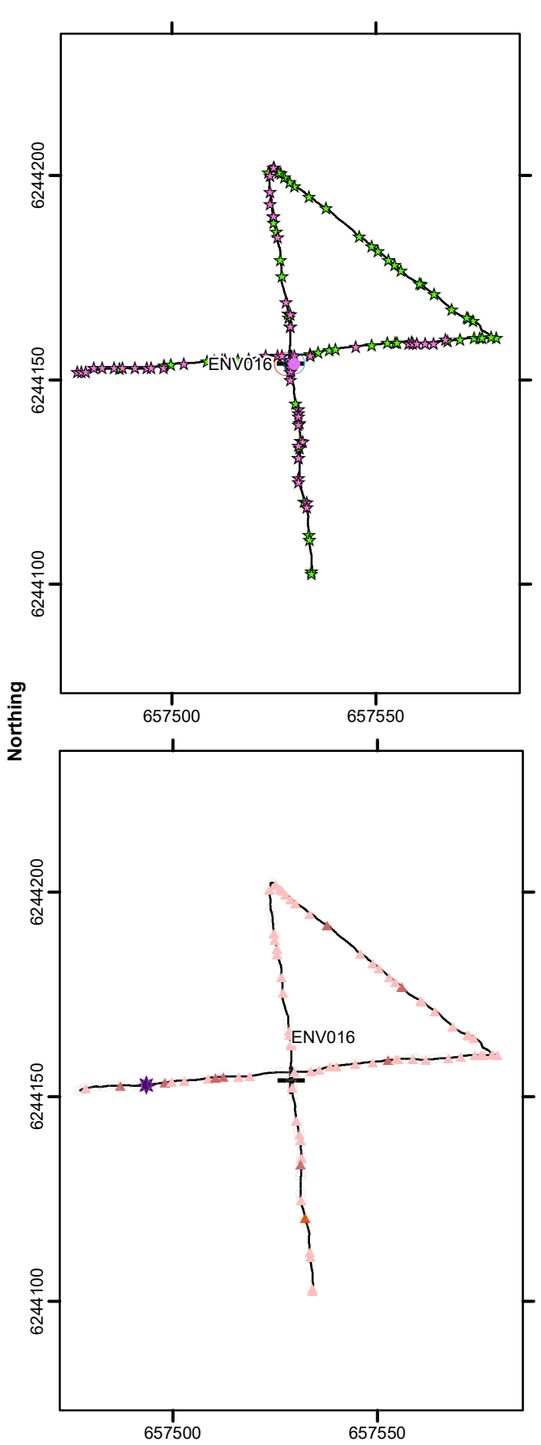


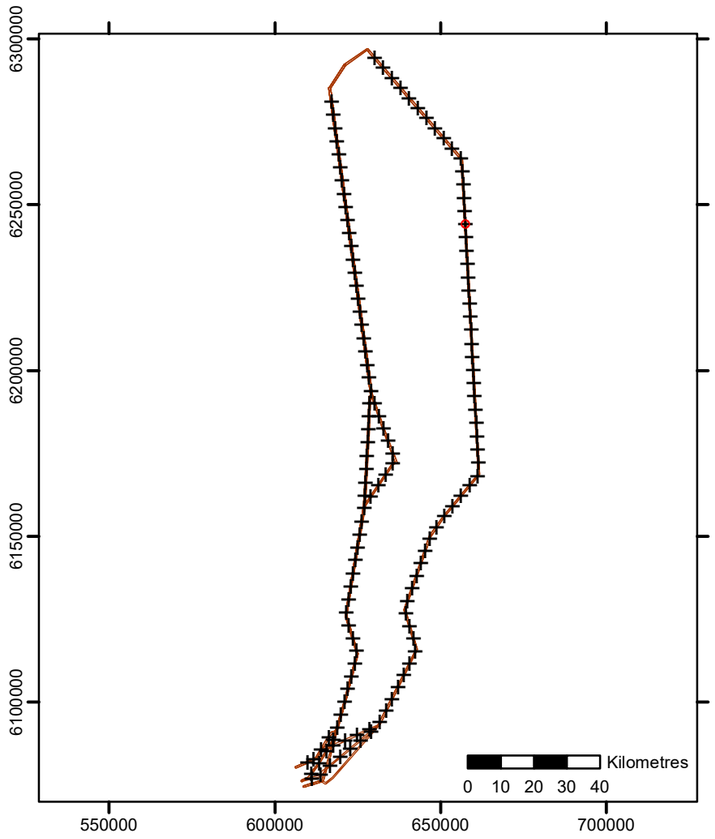
Station: ENV015
Fix: 495 **E:** 657315 **N:** 6248186 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV016

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

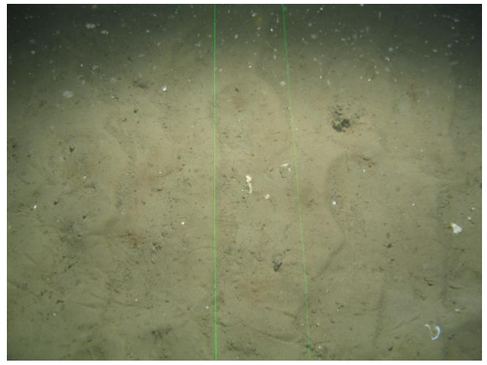
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV016
Fix: 788 **E:** 657481 **N:** 6244153 **Depth (m):** 69

Sediment Description:
Rippled, soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube



Station: ENV016
Fix: 831 **E:** 657531 **N:** 6244131 **Depth (m):** 70

Sediment Description:
Soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube



Station: ENV016
Fix: 498 **E:** 657528 **N:** 6244154 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

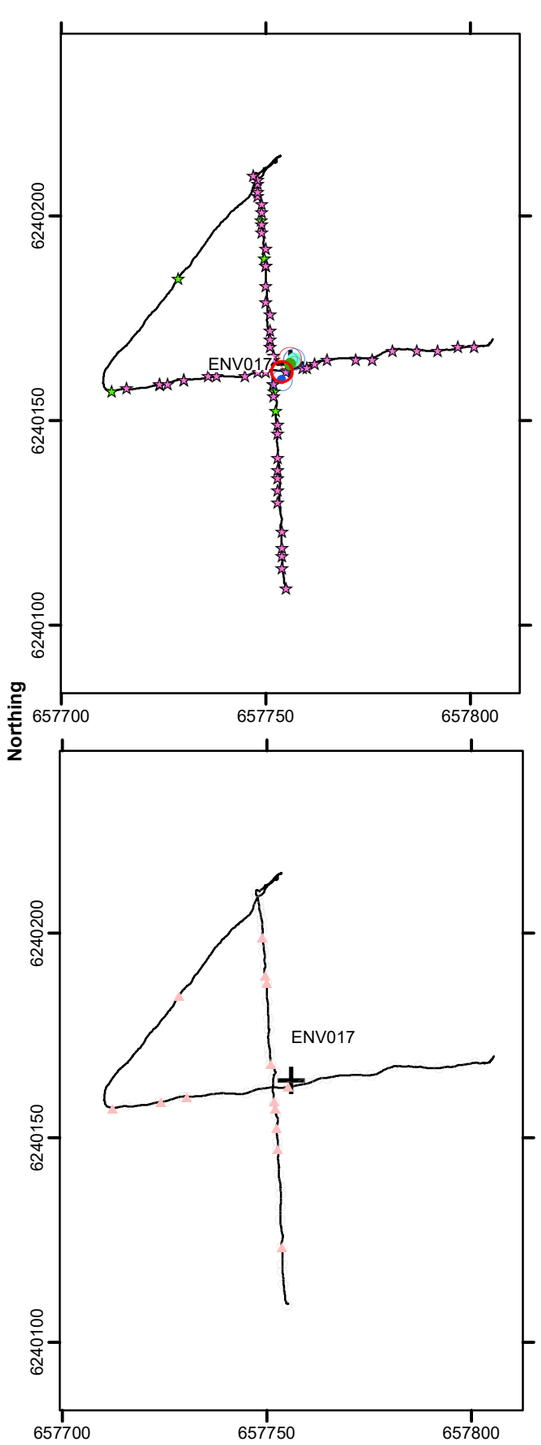


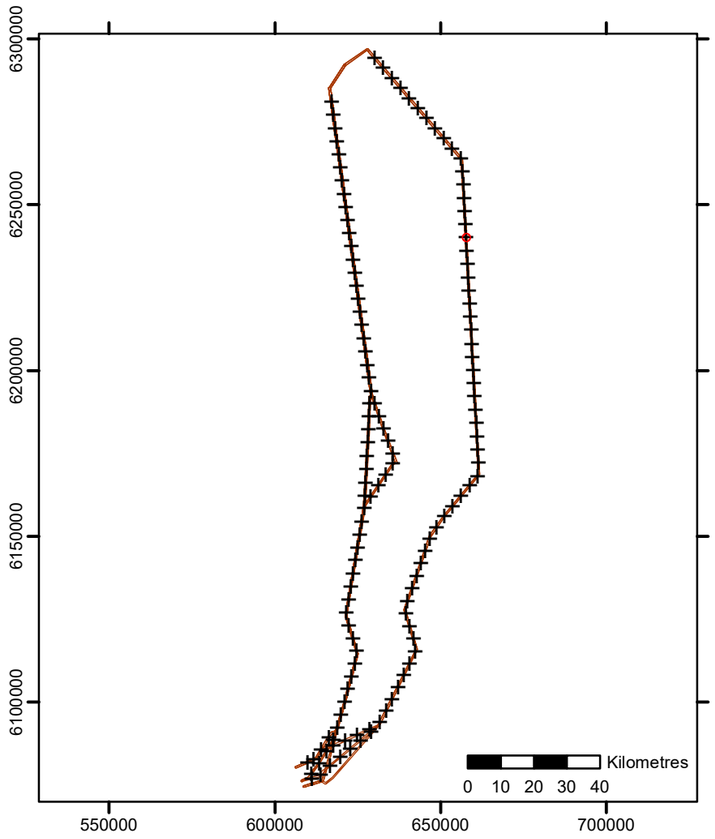
Station: ENV016
Fix: 498 **E:** 657528 **N:** 6244154 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV017

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

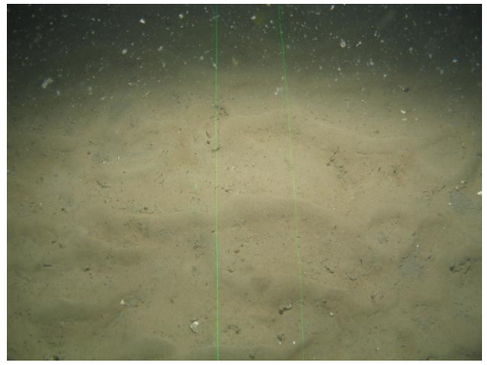
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

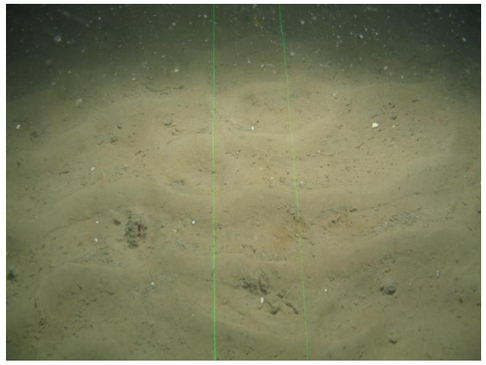
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV017
Fix: 844 **E:** 657753 **N:** 6240138 **Depth (m):** 67

Sediment Description:
Gently rippled soft sediment.

Faunal Description:
No visible fauna



Station: ENV017
Fix: 881 **E:** 657760 **N:** 6240163 **Depth (m):** 68

Sediment Description:
Rippled, soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV017
Fix: 504 **E:** 657757 **N:** 6240165 **Depth (m):** 69
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

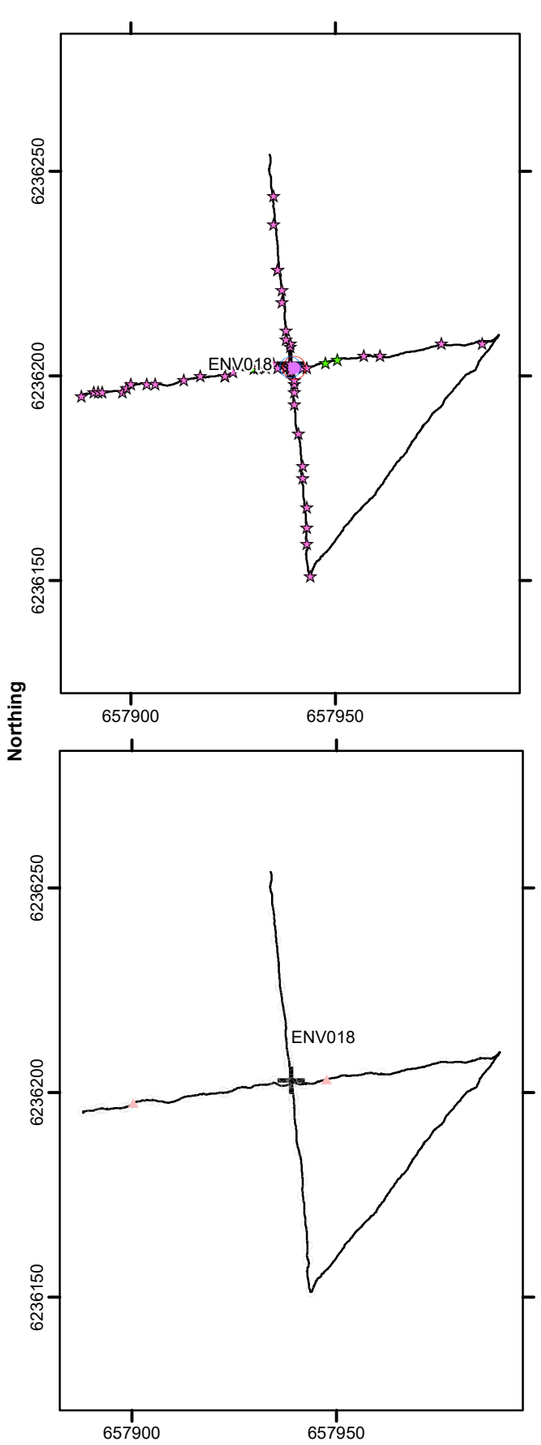


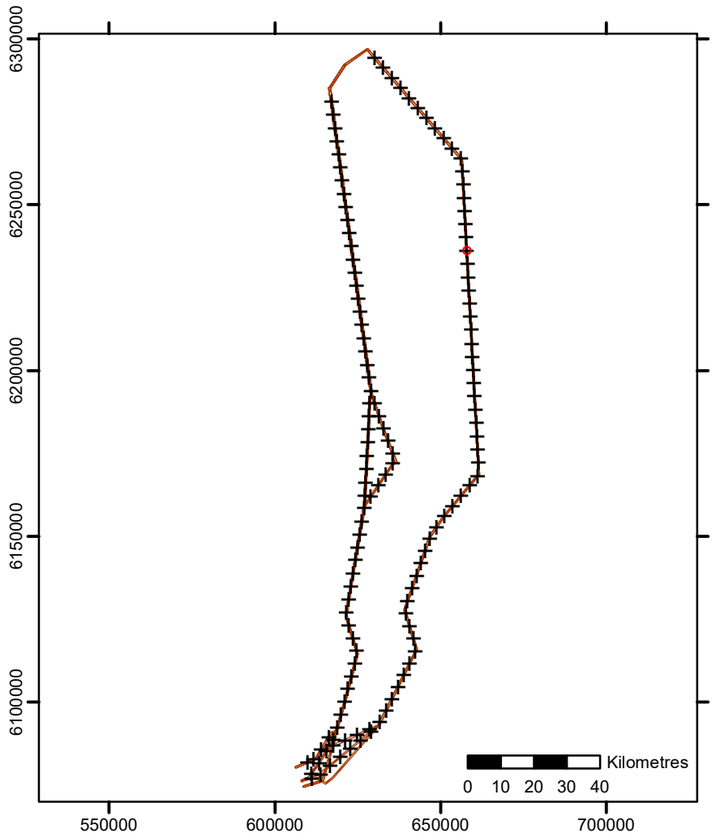
Station: ENV017
Fix: 504 **E:** 657757 **N:** 6240165 **Depth (m):** 69
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV018

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

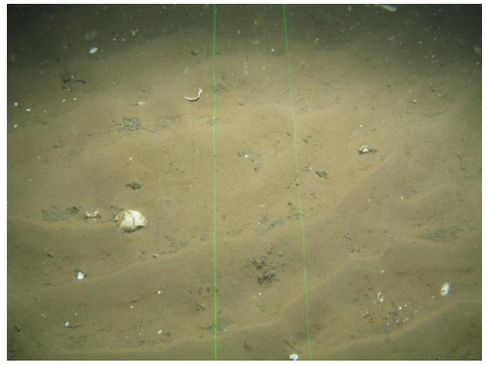
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

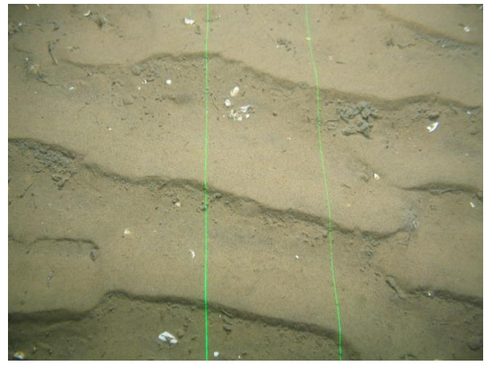
Easting



Station: ENV018
Fix: 900 **E:** 657913 **N:** 6236199 **Depth (m):** 61

Sediment Description:
Gently rippled soft sediment.

Faunal Description:
Animalia tube



Station: ENV018
Fix: 934 **E:** 657938 **N:** 6236211 **Depth (m):** 61

Sediment Description:
Rippled soft sediment.

Faunal Description:
No visible fauna



Station: ENV018
Fix: 507 **E:** 657940 **N:** 6236202 **Depth (m):** 63
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

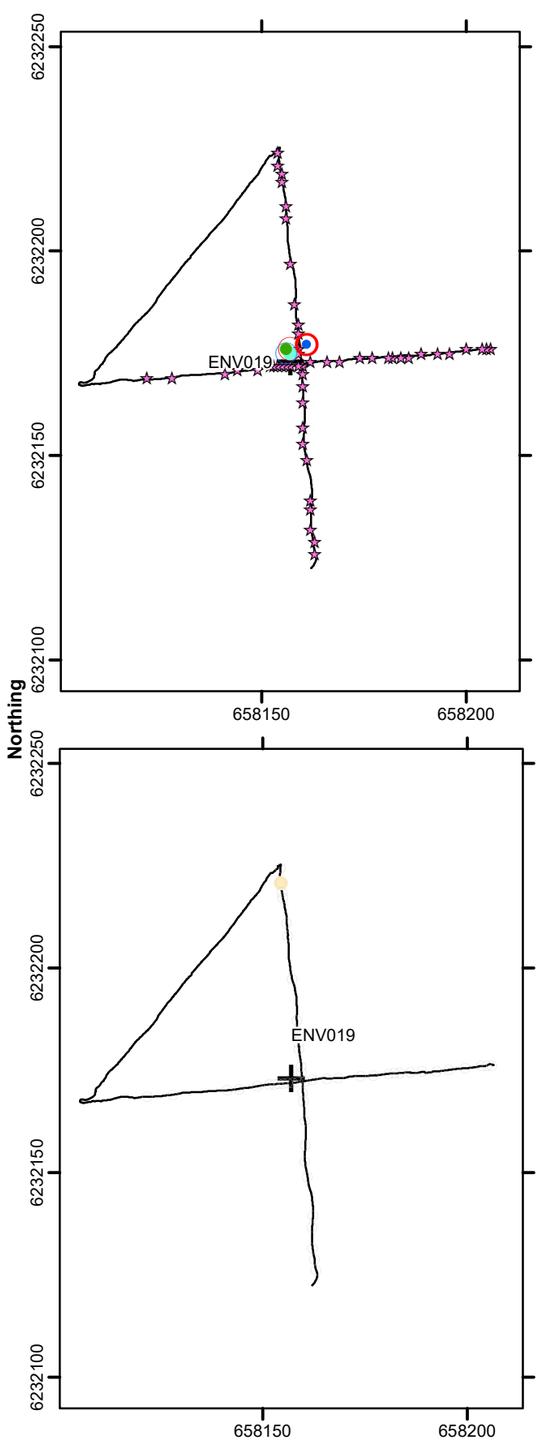


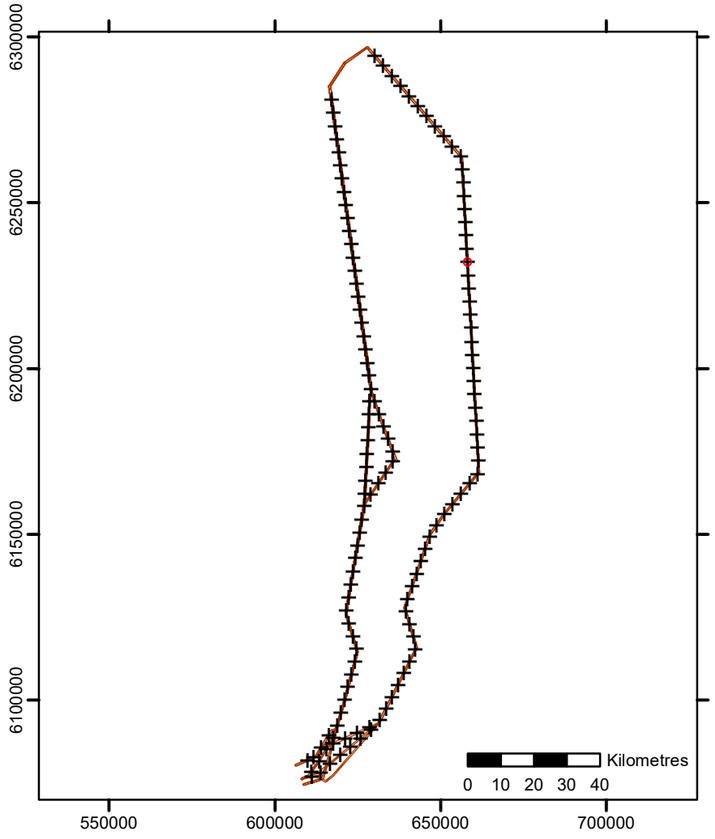
Station: ENV018
Fix: 507 **E:** 657940 **N:** 6236202 **Depth (m):** 63
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV019

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

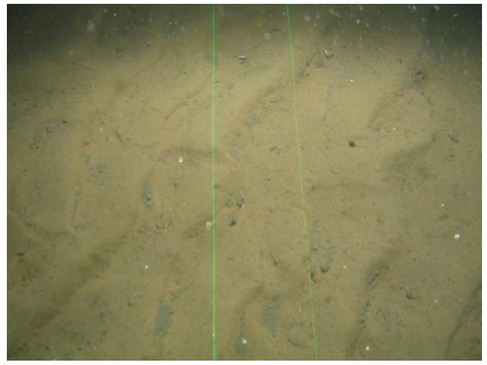
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

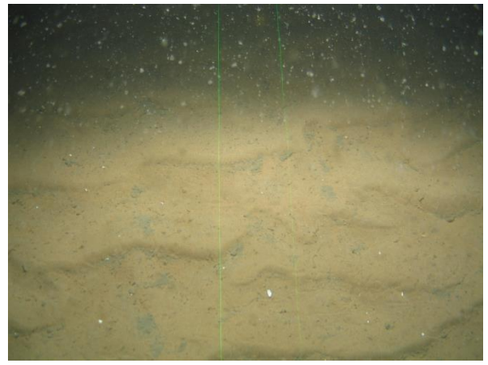
Easting



Station: ENV019
Fix: 955 **E:** 658166 **N:** 6232173 **Depth (m):** 59

Sediment Description:
Gently rippled soft sediment with faunal tracks.

Faunal Description:
Animalia tube



Station: ENV019
Fix: 974 **E:** 658156 **N:** 6232211 **Depth (m):** 59

Sediment Description:
Gently rippled soft sediment with faunal tracks.

Faunal Description:
No visible fauna



Station: ENV019
Fix: 511 **E:** 658157 **N:** 6232176 **Depth (m):** 61
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

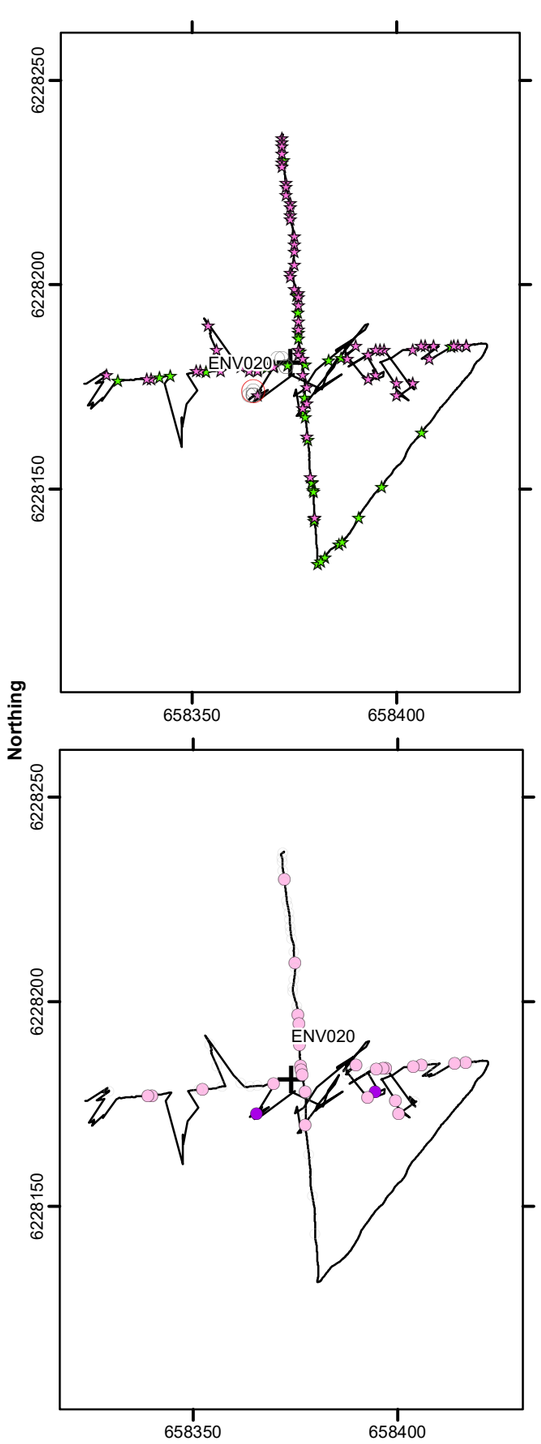


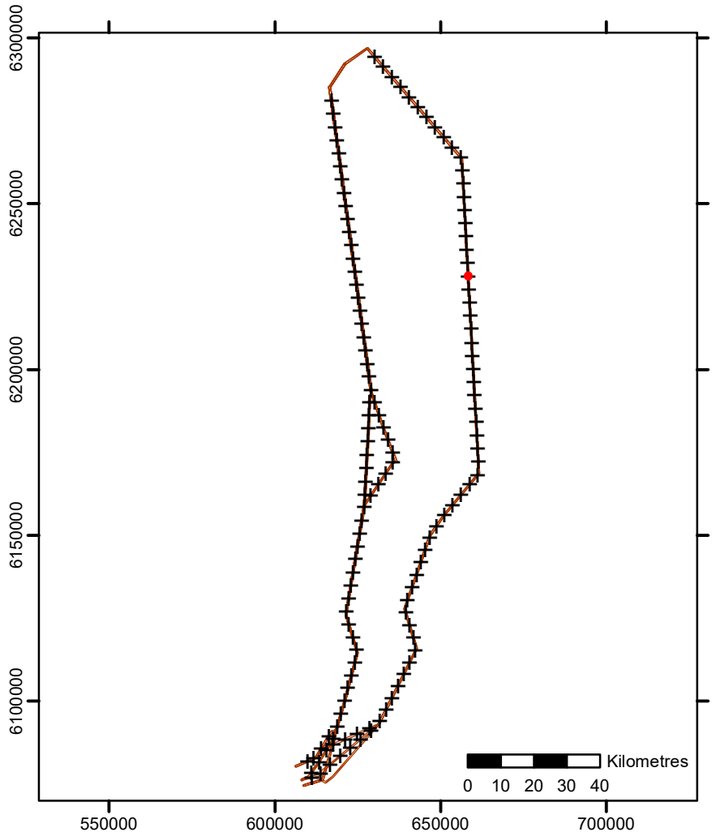
Station: ENV019
Fix: 511 **E:** 658157 **N:** 6232176 **Depth (m):** 61
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV020

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

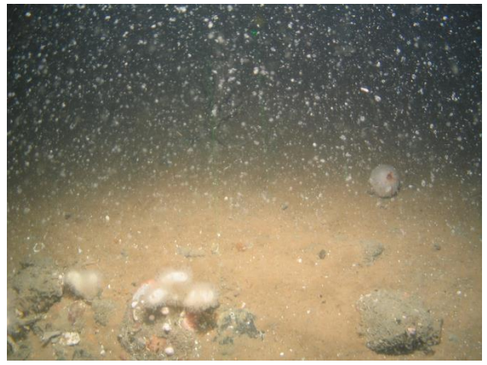
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

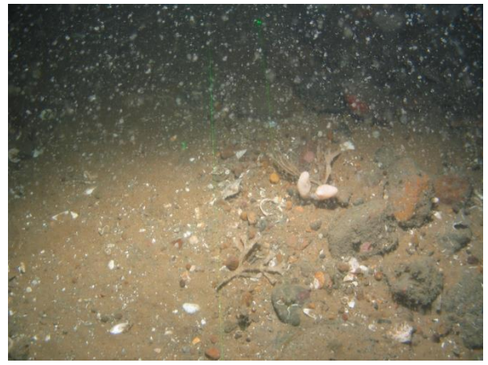
Easting



Station: ENV020
Fix: 1024 **E:** 658377 **N:** 6228170 **Depth (m):** 61

Sediment Description:
Soft sediment with scattered cobbles

Faunal Description:
Annelida (Serpulidae *stet.*), Bryozoa (Flustridae *stet.*), Cnidaria (Actiniaria *stet.*, *Alcyonium digitatum*, *Caryophyllia stet.*), Faunal turf, Porifera (Hard Substrate Sponges)



Station: ENV020
Fix: 1049 **E:** 658370 **N:** 6228180 **Depth (m):** 61

Sediment Description:
Soft sediment with cobbles and gravel.

Faunal Description:
Annelida (Serpulidae *stet.*), Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*, *Caryophyllia stet.*), Faunal turf, Porifera (Hard Substrate Sponges)



Station: ENV020
Fix: 541 **E:** 658365 **N:** 6228174 **Depth (m):** 64
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Mollusca (Scaphopoda)

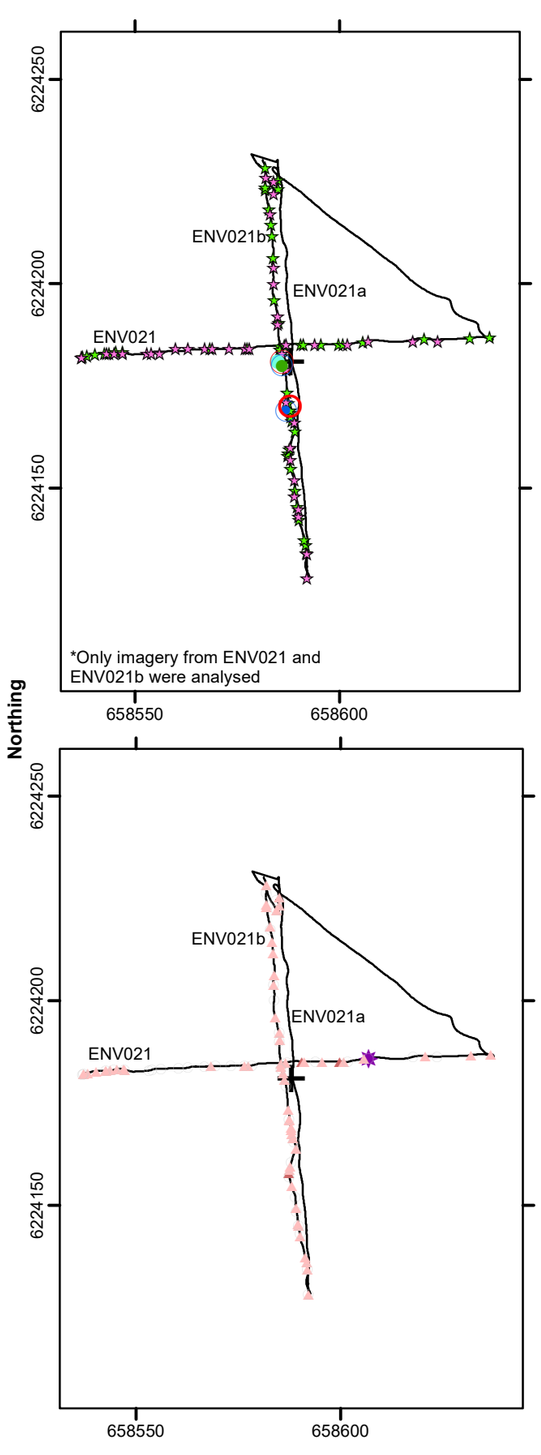


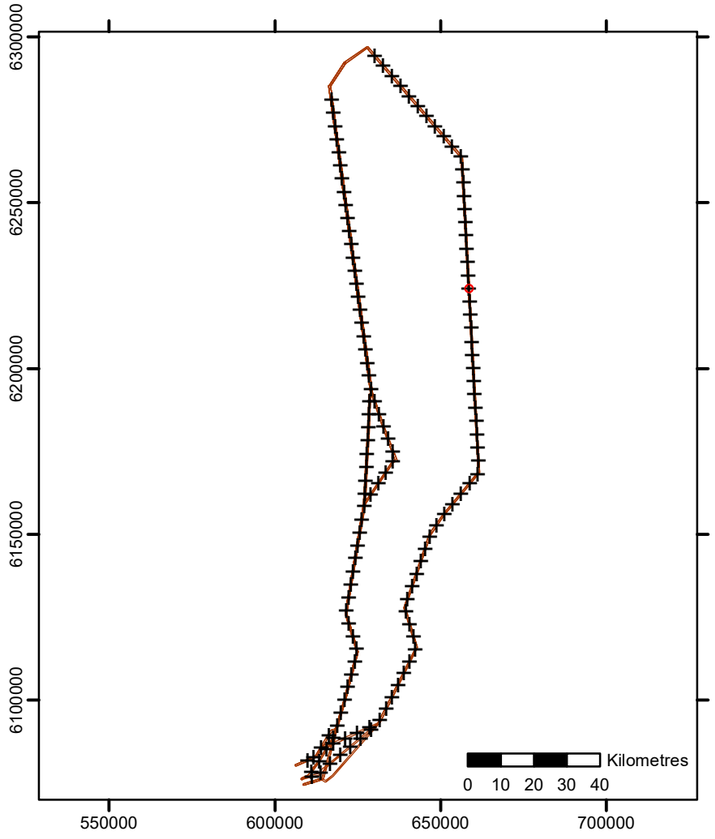
Station: ENV020
Fix: 541 **E:** 658365 **N:** 6228174 **Depth (m):** 64
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV021

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

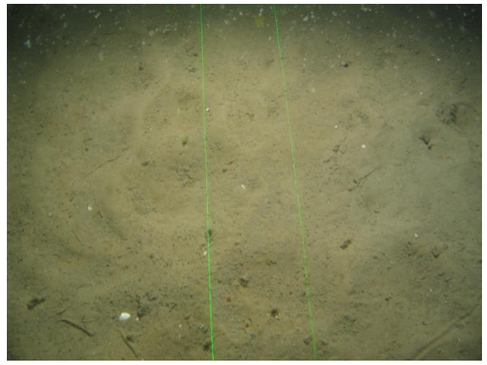
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

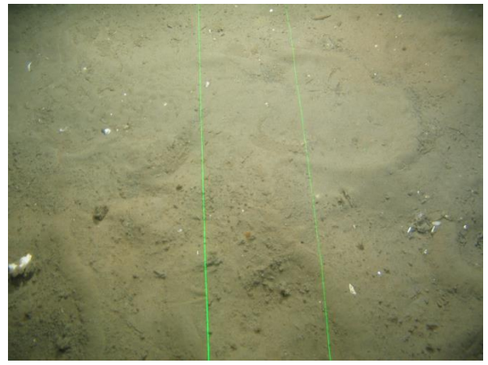
Easting



Station: ENV021
Fix: 1074 **E:** 658577 **N:** 6224184 **Depth (m):** 71

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*), Cnidaria (*Pennatula phosphorea inc.*),Mollusca (Bivalvia siphons)



Station: ENV021
Fix: 1082 **E:** 658584 **N:** 6224225 **Depth (m):** 71

Sediment Description:
Slightly rippled, soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV021
Fix: 544 **E:** 658586 **N:** 6224181 **Depth (m):** 74
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

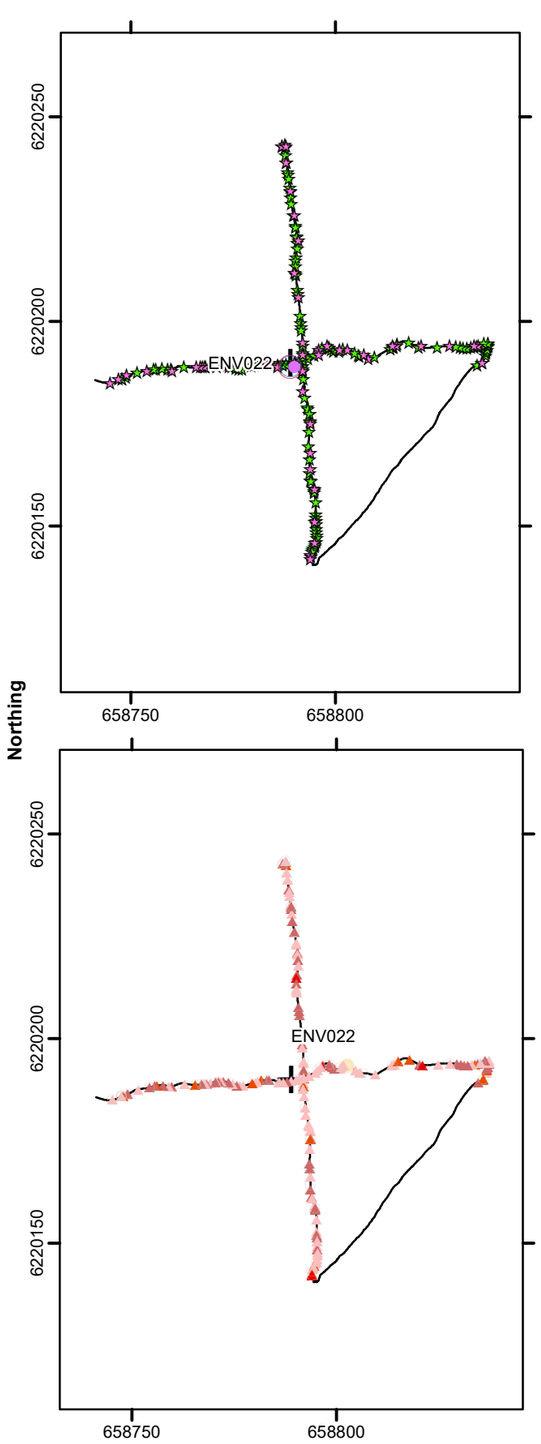


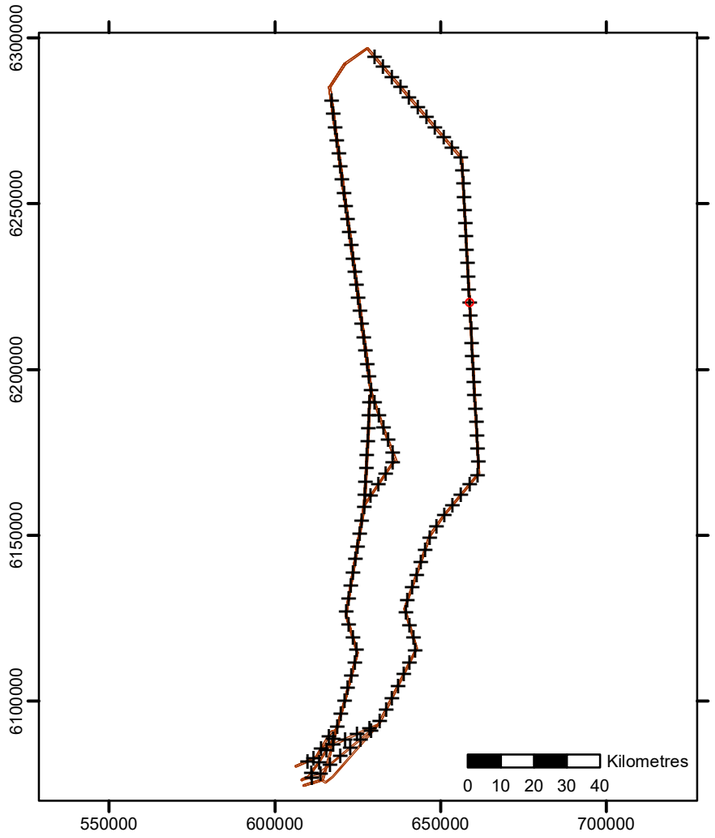
Station: ENV021
Fix: 544 **E:** 658586 **N:** 6224181 **Depth (m):** 74
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV022

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

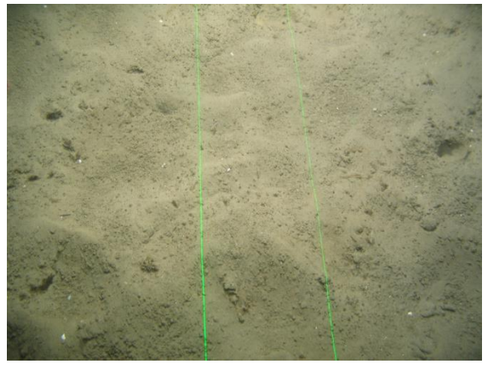
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

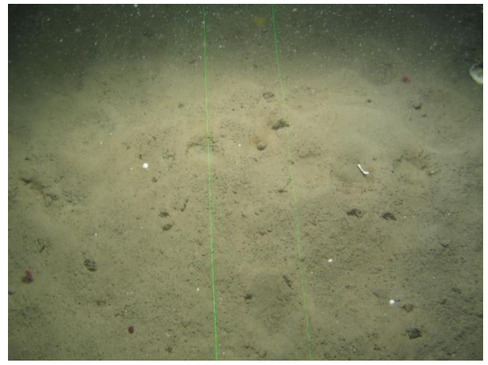
Easting



Station: ENV022
Fix: 1135 **E:** 658792 **N:** 6220188 **Depth (m):** 76

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV022
Fix: 1164 **E:** 658771 **N:** 6220189 **Depth (m):** 76

Sediment Description:
Slightly rippled, soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV022
Fix: 528 **E:** 658789 **N:** 6220189 **Depth (m):** 78
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

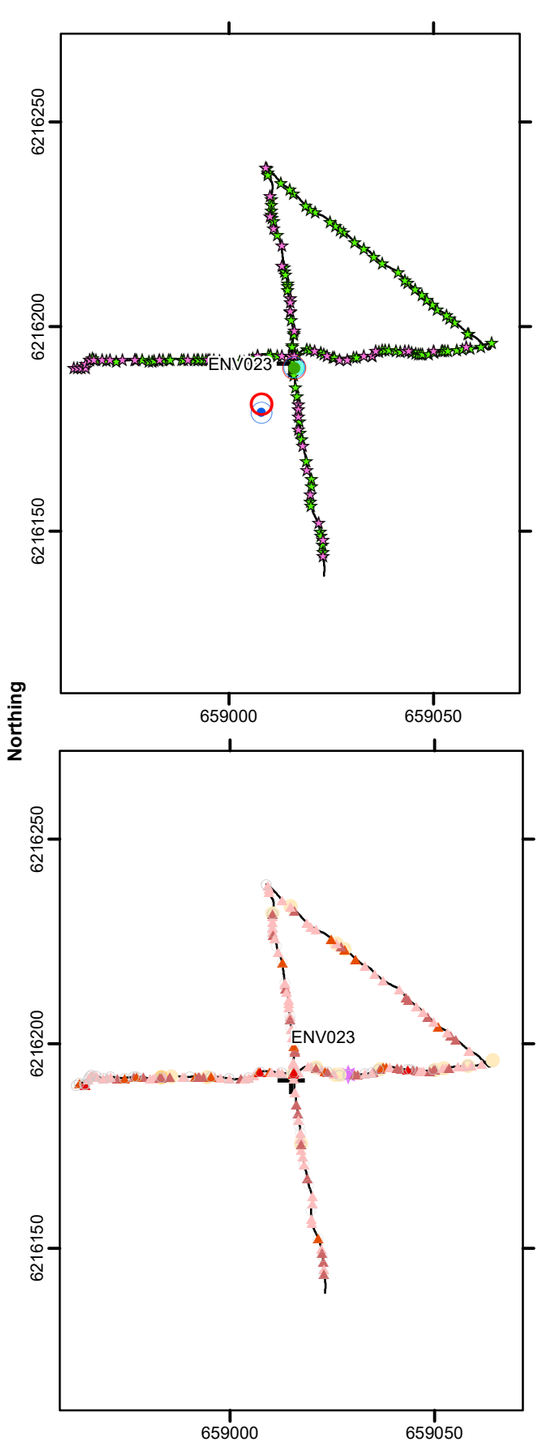


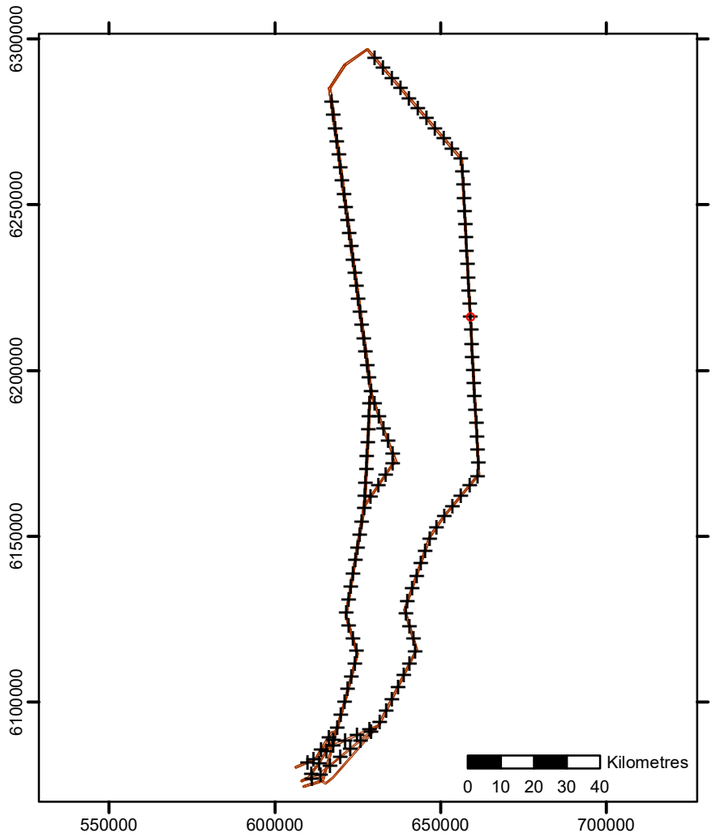
Station: ENV022
Fix: 528 **E:** 658789 **N:** 6220189 **Depth (m):** 78
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV023

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

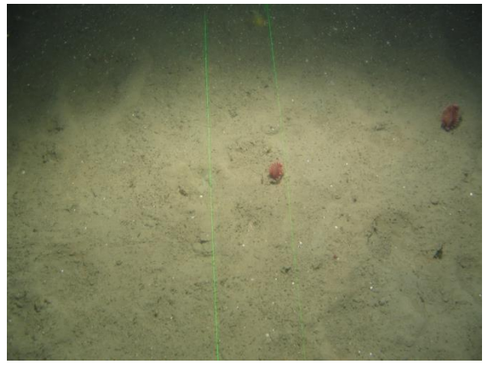
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

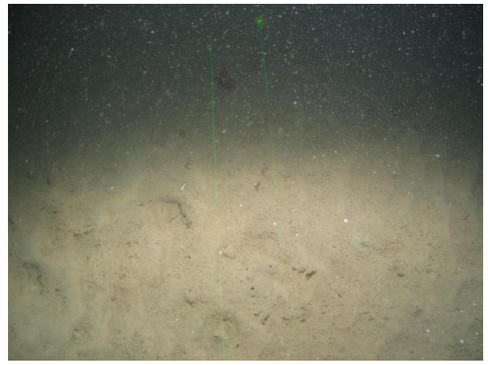
Easting



Station: ENV023
Fix: 1183 **E:** 658974 **N:** 6216192 **Depth (m):** 80

Sediment Description:
Slightly rippled, soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV023
Fix: 1216 **E:** 659017 **N:** 6216181 **Depth (m):** 80

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV023
Fix: 525 **E:** 659016 **N:** 6216190 **Depth (m):** 82
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

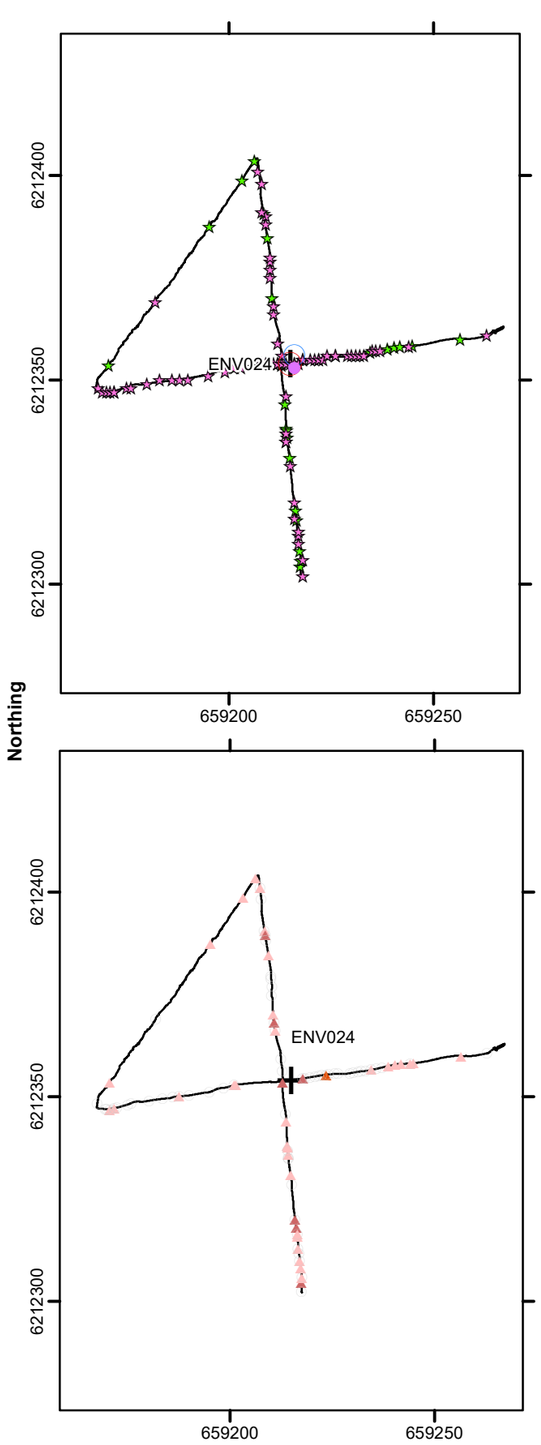


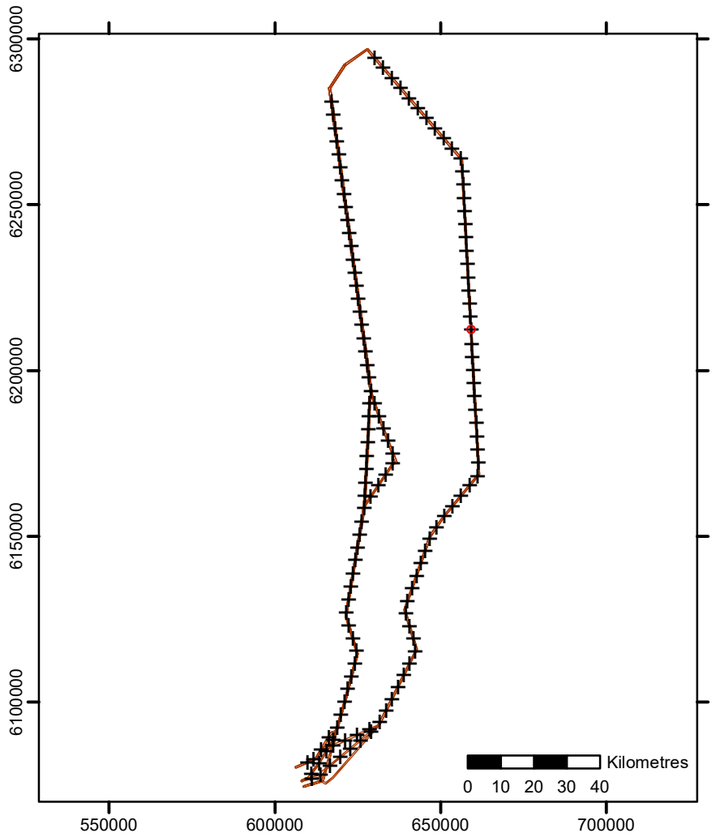
Station: ENV023
Fix: 525 **E:** 659016 **N:** 6216190 **Depth (m):** 82
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV024

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

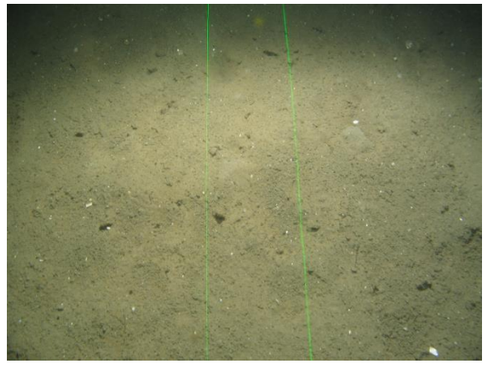
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

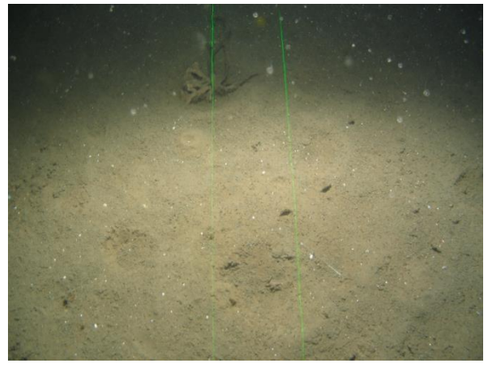
Easting



Station: ENV024
Fix: 2958 **E:** 659212 **N:** 6212359 **Depth (m):** 74

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*)



Station: ENV024
Fix: 3019 **E:** 659263 **N:** 6212361 **Depth (m):** 74

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Annelida (*Myxicola stet*)



Station: ENV024
Fix: 520 **E:** 659215 **N:** 6212354 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (*Echinocardium cordatum*)

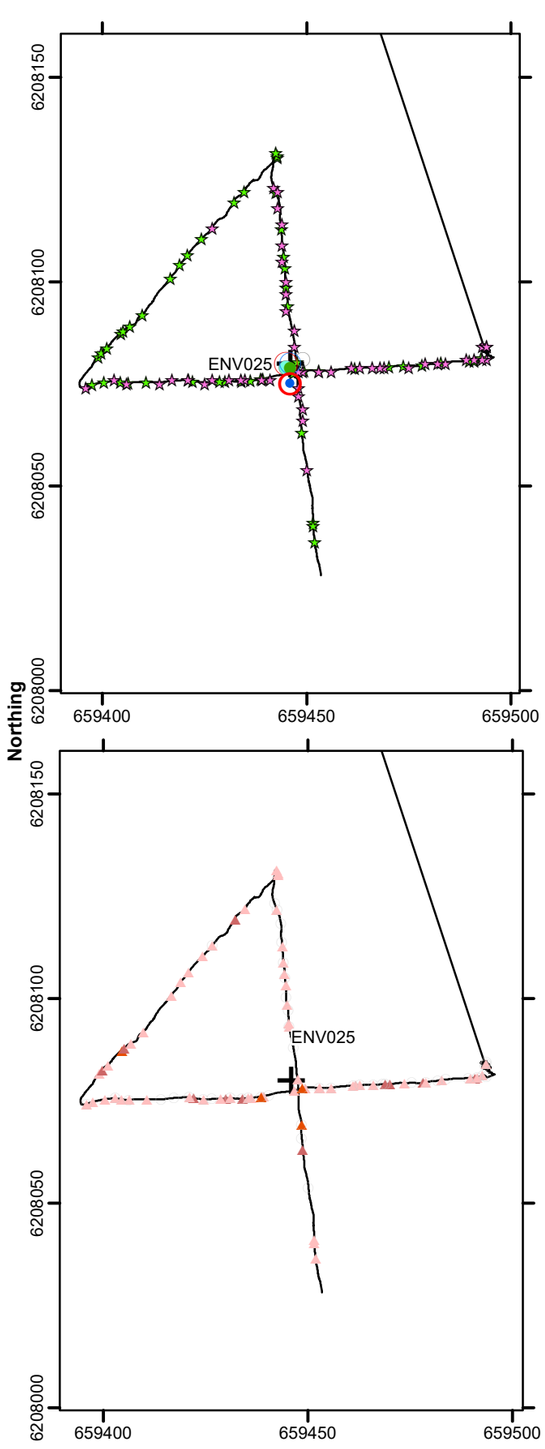


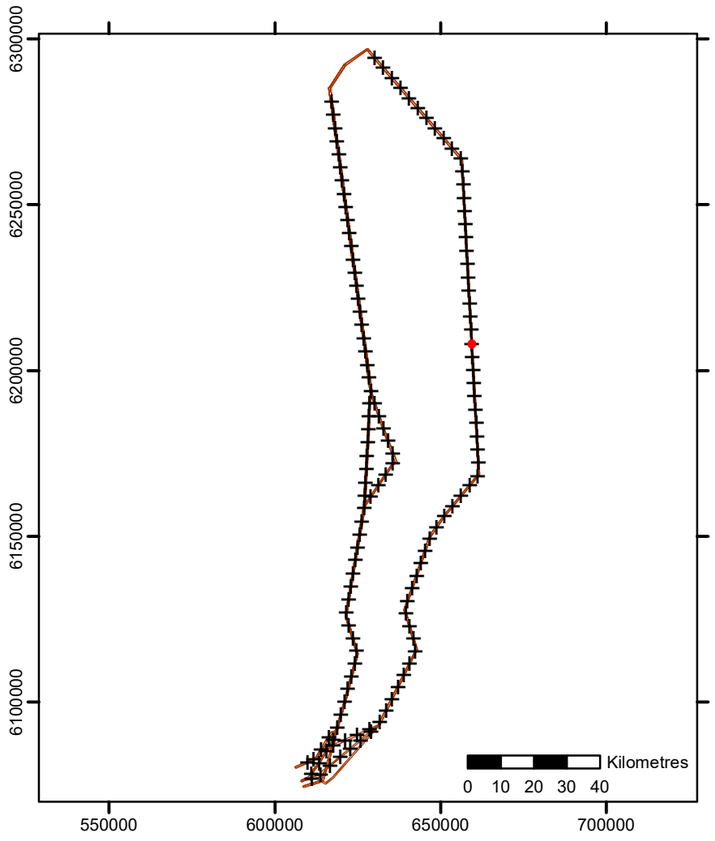
Station: ENV024
Fix: 520 **E:** 659215 **N:** 6212354 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (*Echinocardium cordatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV025

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

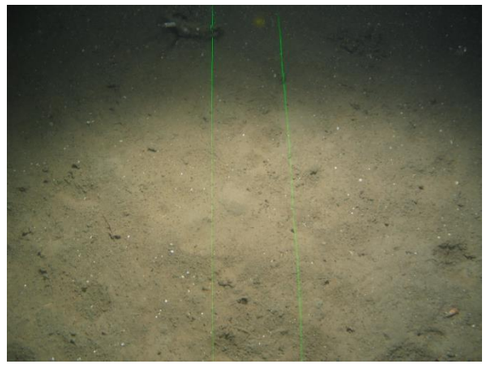
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

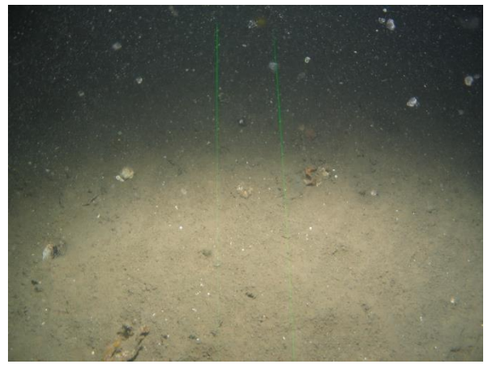
Easting



Station: ENV025
Fix: 2898 **E:** 659493 **N:** 6208081 **Depth (m):** 74

Sediment Description:
Soft sediment with evidence of bioturbation

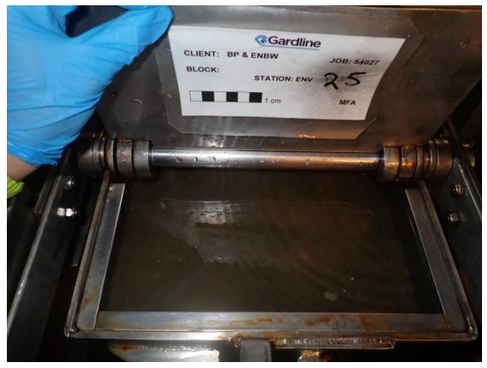
Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*), Faunal turf



Station: ENV025
Fix: 2932 **E:** 659444 **N:** 6208105 **Depth (m):** 74

Sediment Description:
Soft sediment with shell fragments and evidence of bioturbation

Faunal Description:
Annelida (Serpulidae *stet.*)



Station: ENV025
Fix: 516 **E:** 659445 **N:** 6208080 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

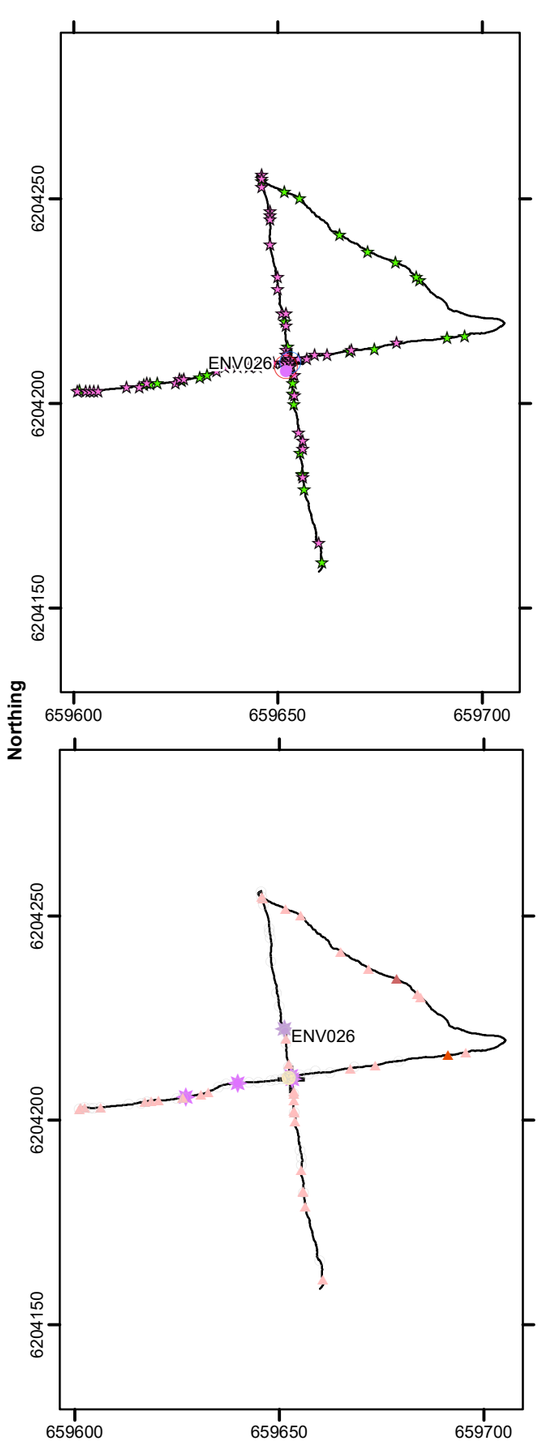


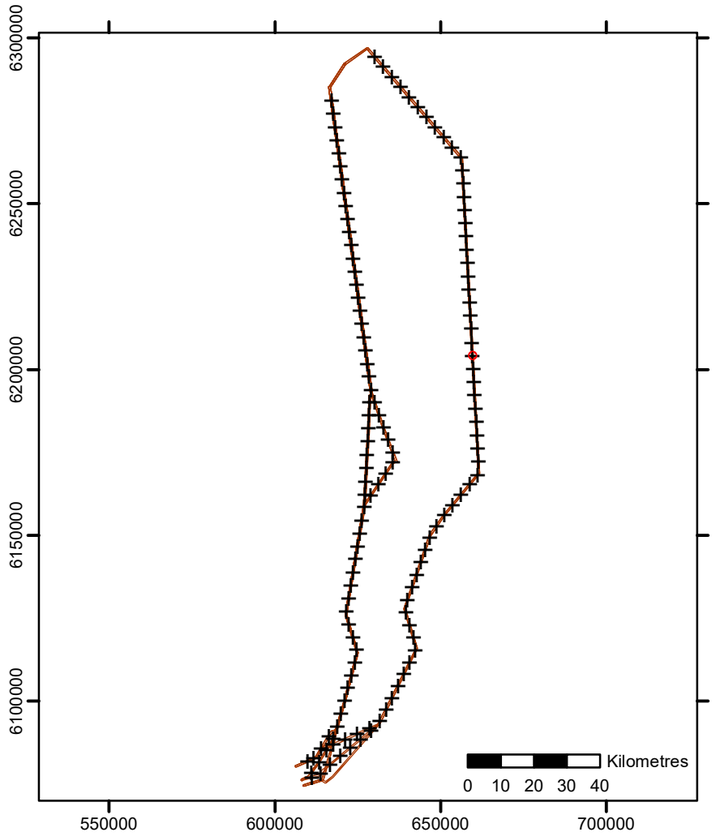
Station: ENV025
Fix: 516 **E:** 659445 **N:** 6208080 **Depth (m):** 76
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV026

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

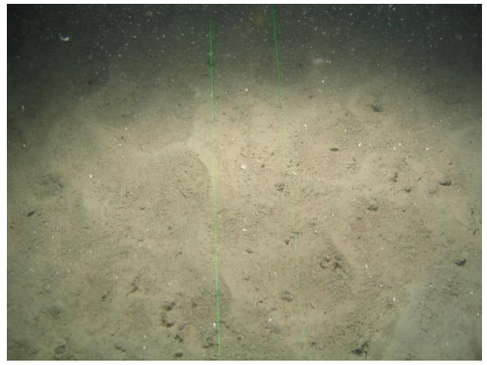
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

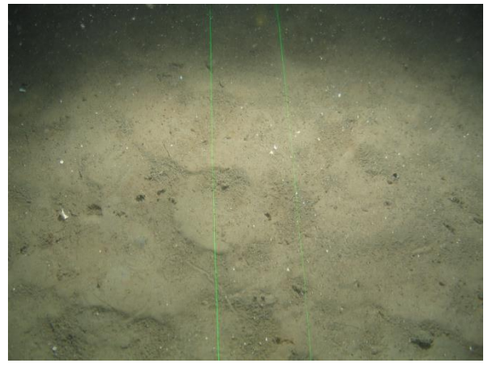
Easting



Station: ENV026
Fix: 1242 **E:** 659635 **N:** 6204208 **Depth (m):** 73

Sediment Description:
Soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV026
Fix: 1271 **E:** 659652 **N:** 6204212 **Depth (m):** 73

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*)



Station: ENV026
Fix: 226 **E:** 659652 **N:** 6204209 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

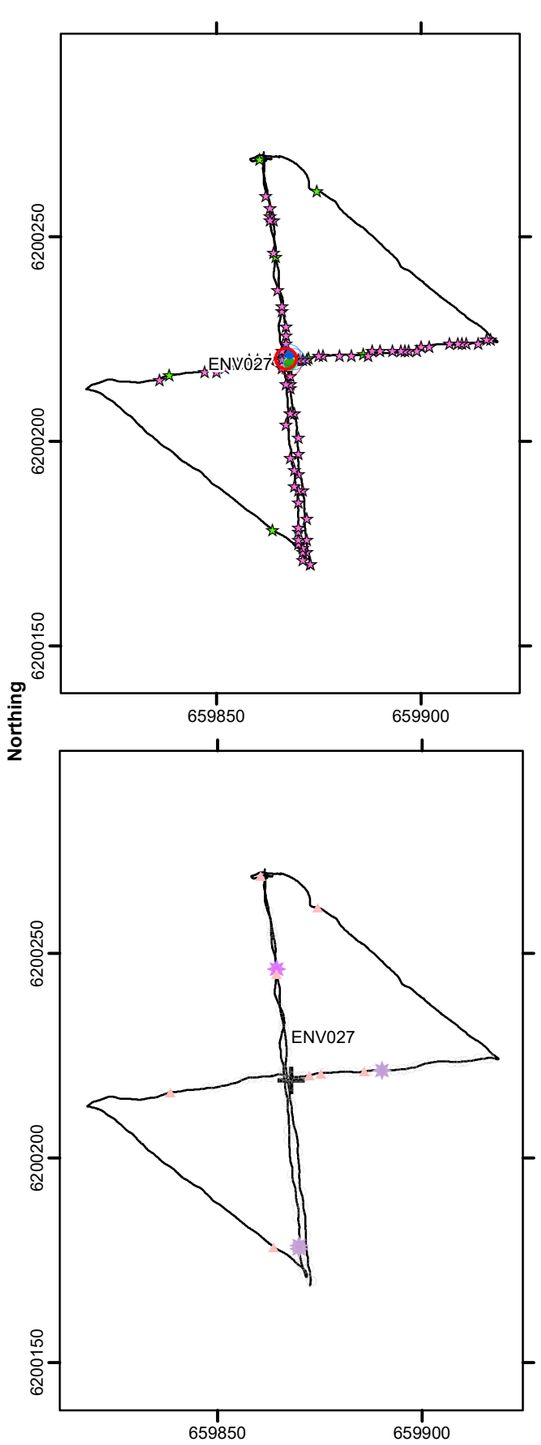


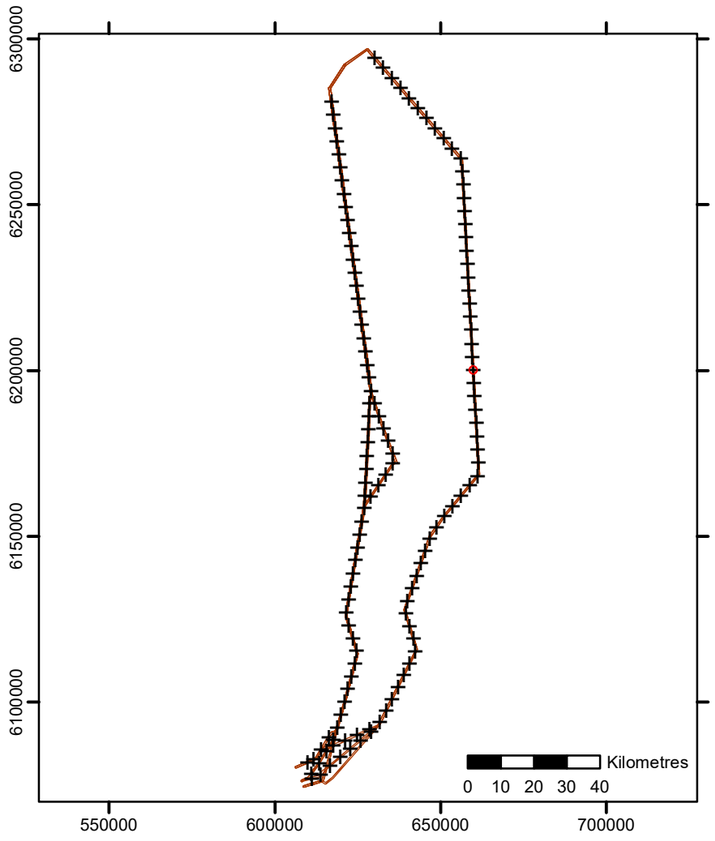
Station: ENV026
Fix: 226 **E:** 659652 **N:** 6204209 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV027

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

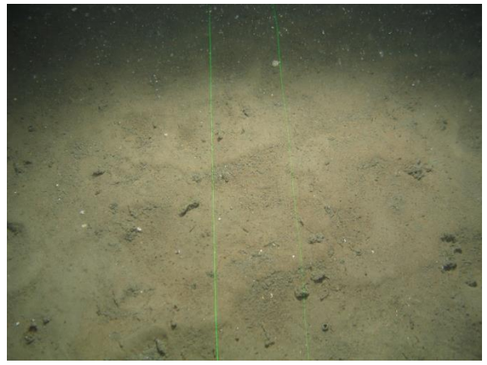
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

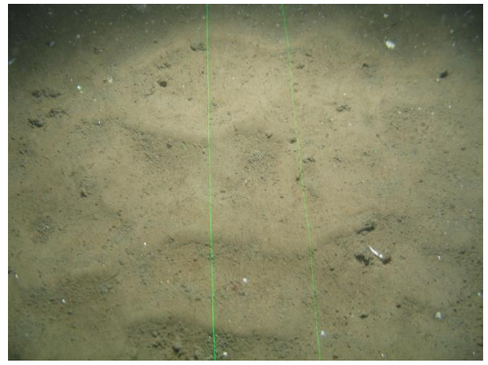
Easting



Station: ENV027
Fix: 1325 **E:** 659887 **N:** 6200221 **Depth (m):** 71

Sediment Description:
Soft Sediment

Faunal Description:
Animalia tube, Echinodermata (Ophiuroidea *stet.*)



Station: ENV027
Fix: 1348 **E:** 659870 **N:** 6200175 **Depth (m):** 71

Sediment Description:
Rippled, soft sediments.

Faunal Description:
Mollusca (Scaphopoda *stet.*)



Station: ENV027
Fix: 232 **E:** 659868 **N:** 6200219 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Bryozoa (Flustridae), Mollusca (Bivalvia, Scaphopoda)

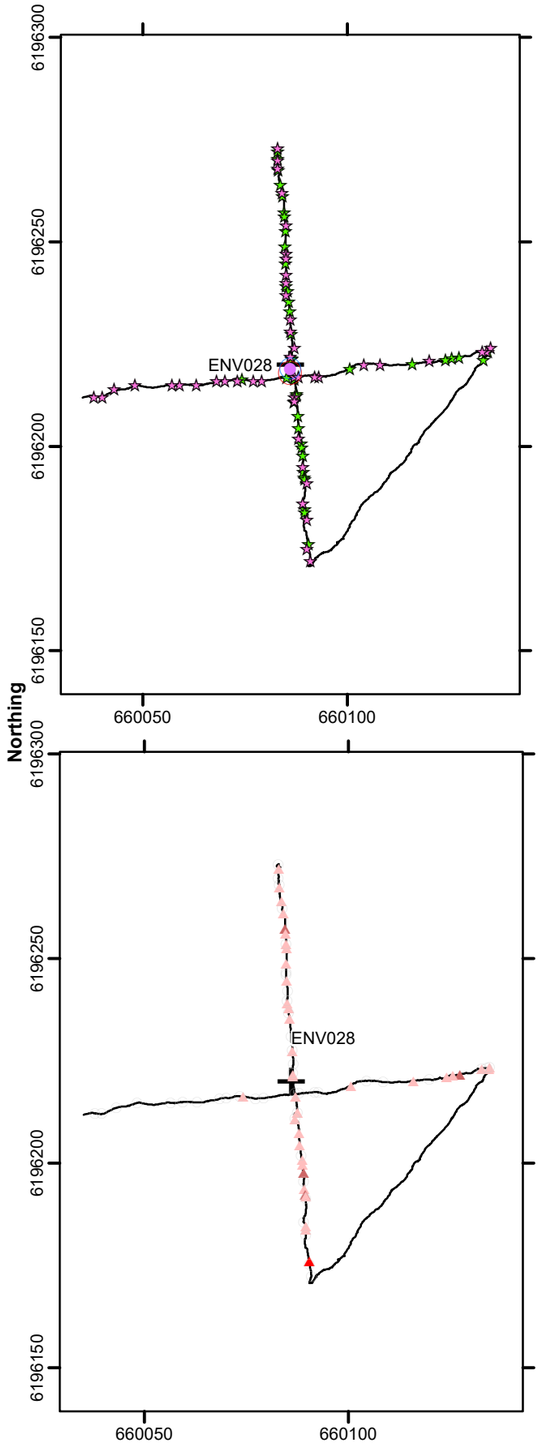


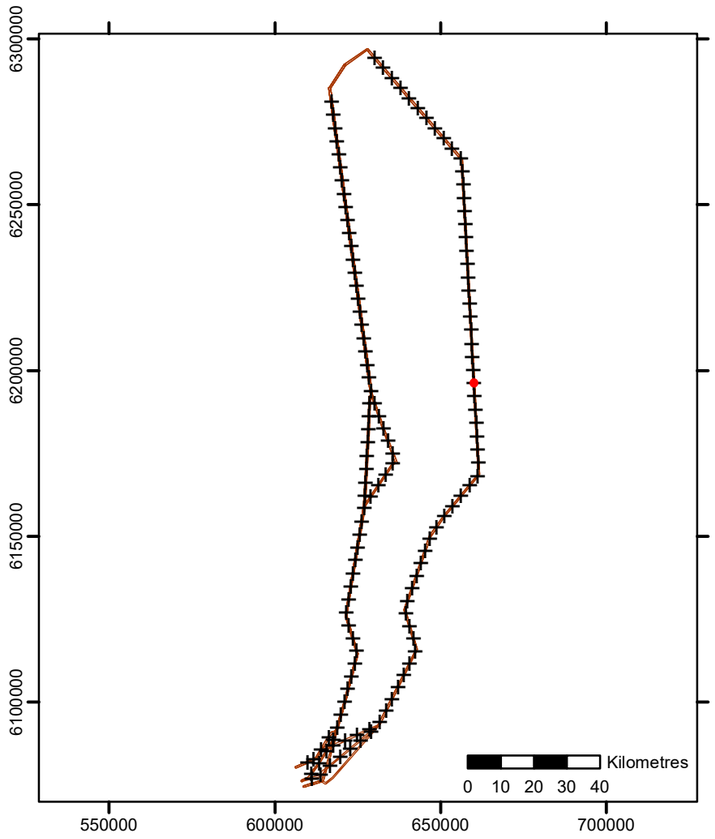
Station: ENV027
Fix: 232 **E:** 659868 **N:** 6200219 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Bryozoa (Flustridae), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV028

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

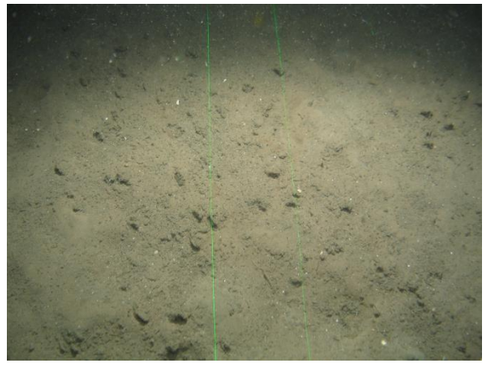
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

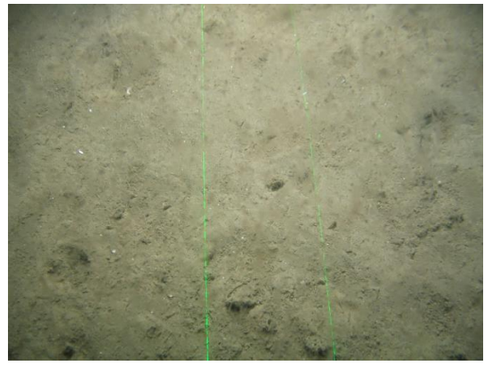
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV028
Fix: 1376 **E:** 660085 **N:** 6196237 **Depth (m):** 74

Sediment Description:
Soft sediment

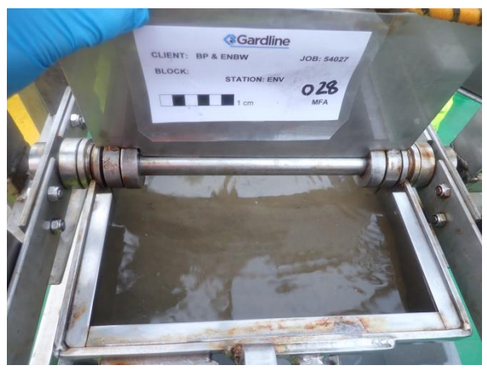
Faunal Description:
No visible fauna



Station: ENV028
Fix: 1406 **E:** 660059 **N:** 6196215 **Depth (m):** 74

Sediment Description:
Soft sediments

Faunal Description:
No visible fauna



Station: ENV028
Fix: 235 **E:** 660086 **N:** 6196218 **Depth (m):** 77
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

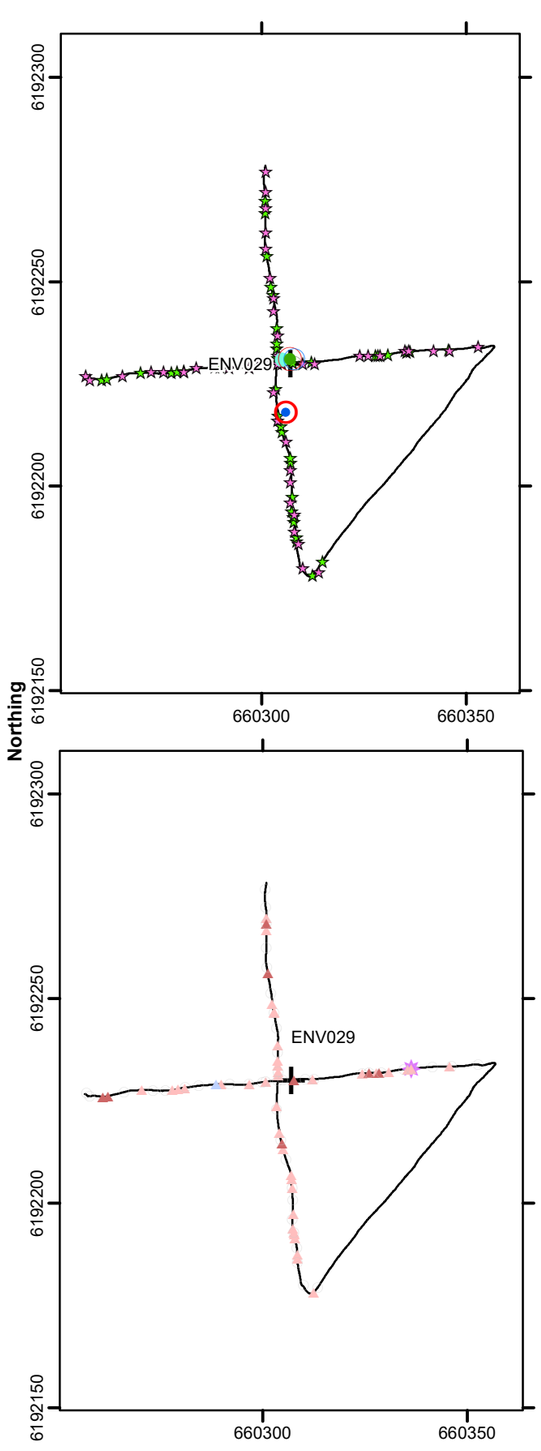


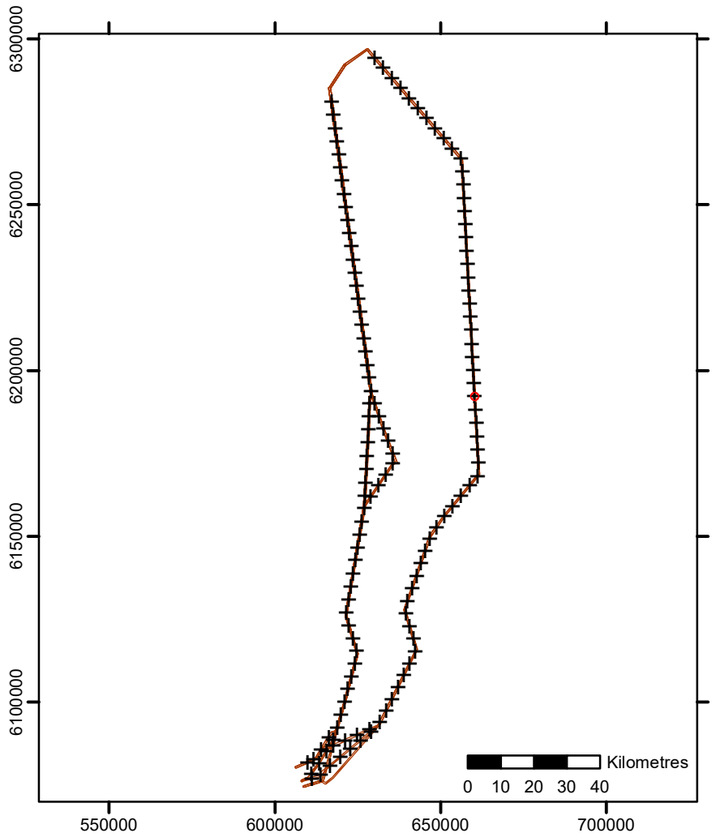
Station: ENV028
Fix: 235 **E:** 660086 **N:** 6196218 **Depth (m):** 77
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV029

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

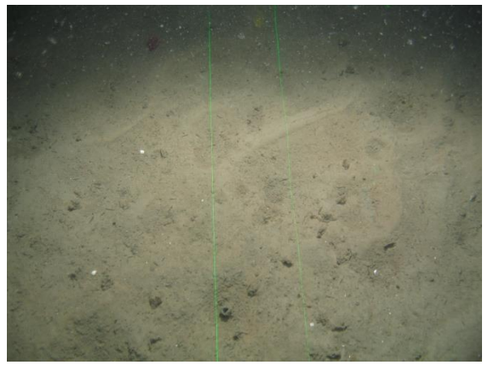
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

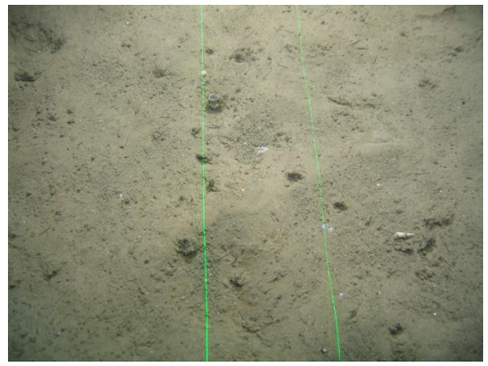
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV029
Fix: 1420 **E:** 660297 **N:** 6192229 **Depth (m):** 76

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV029
Fix: 1451 **E:** 660301 **N:** 6192258 **Depth (m):** 76

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube



Station: ENV029
Fix: 239 **E:** 660307 **N:** 6192231 **Depth (m):** 79
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

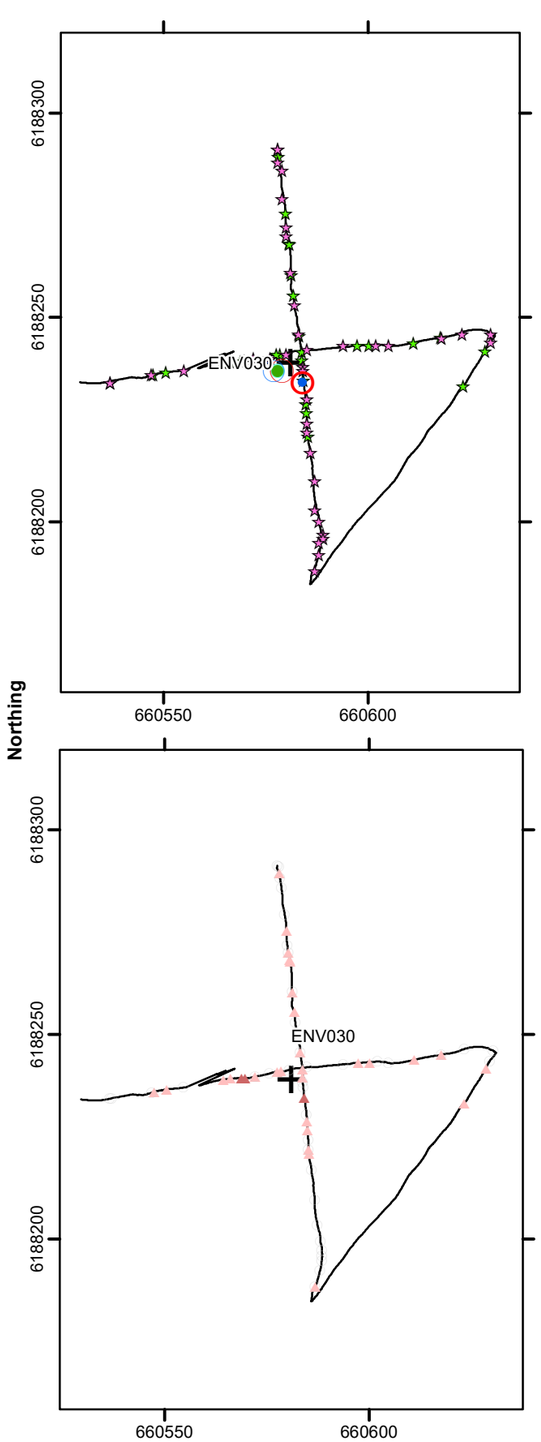


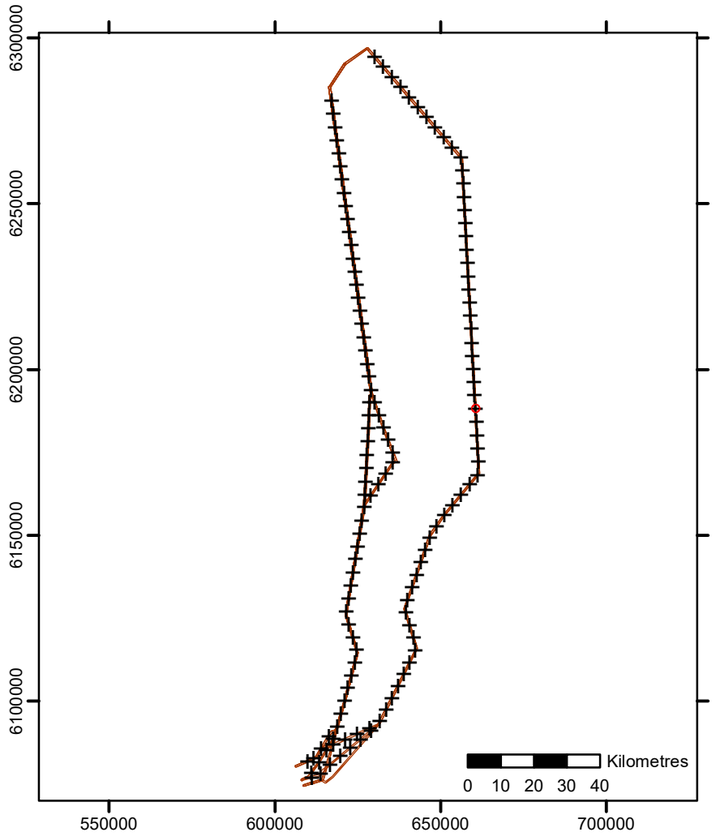
Station: ENV029
Fix: 239 **E:** 660307 **N:** 6192231 **Depth (m):** 79
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV030

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

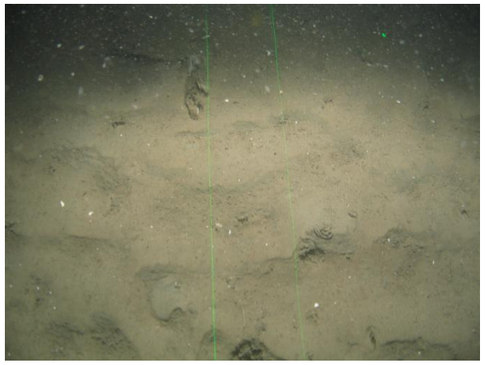
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

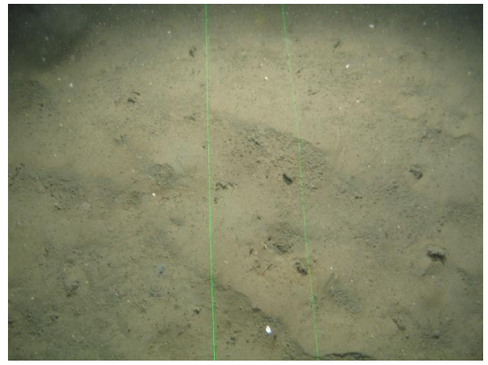
Easting



Station: ENV030
Fix: 1466 **E:** 660584 **N:** 6188238 **Depth (m):** 74

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Faunal turf



Station: ENV030
Fix: 1491 **E:** 660555 **N:** 6188237 **Depth (m):** 74

Sediment Description:
Rippled, soft sediment

Faunal Description:
No visible fauna



Station: ENV030
Fix: 244 **E:** 660579 **N:** 6188237 **Depth (m):** 76
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)

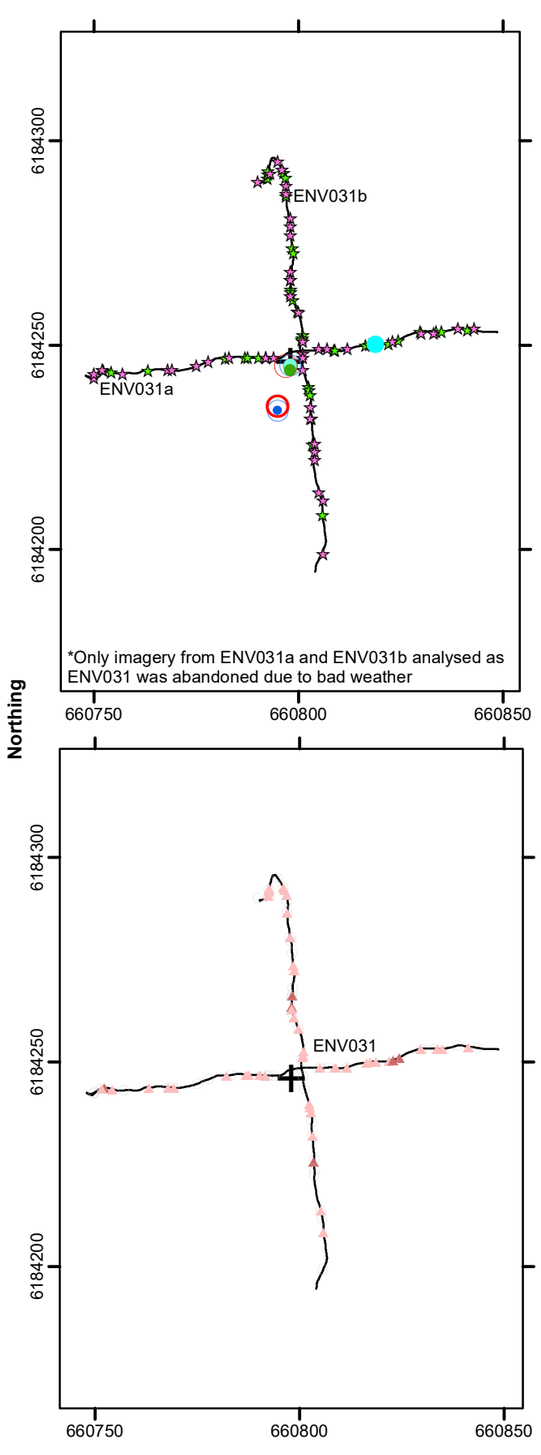


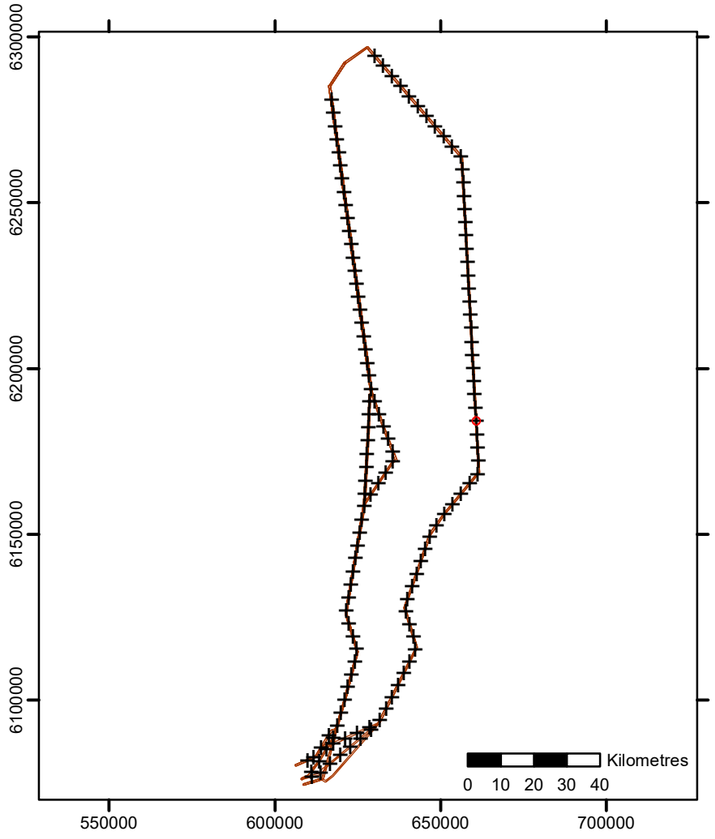
Station: ENV030
Fix: 244 **E:** 660579 **N:** 6188237 **Depth (m):** 76
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV031

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

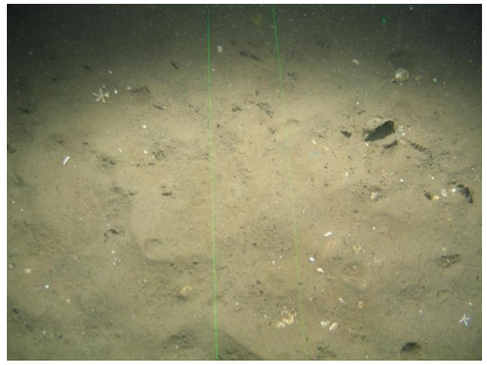
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

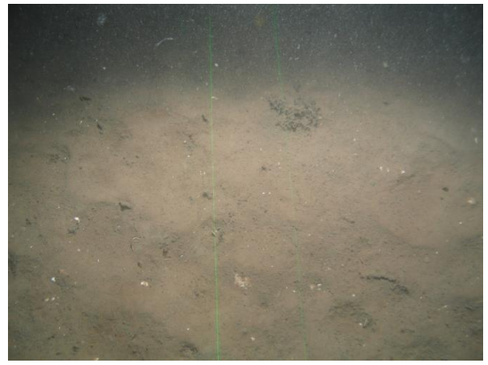
Easting



Station: ENV031
Fix: 1506 **E:** 660794 **N:** 6184247 **Depth (m):** 73

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Echinodermata (*Asterias rubens*, *Astropecten irregularis*)



Station: ENV031
Fix: 1503 **E:** 660783 **N:** 6184247 **Depth (m):** 73

Sediment Description:
Soft sediment

Faunal Description:
Faunal turf



Station: ENV031
Fix: 251 **E:** 660798 **N:** 6184245 **Depth (m):** 75
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)

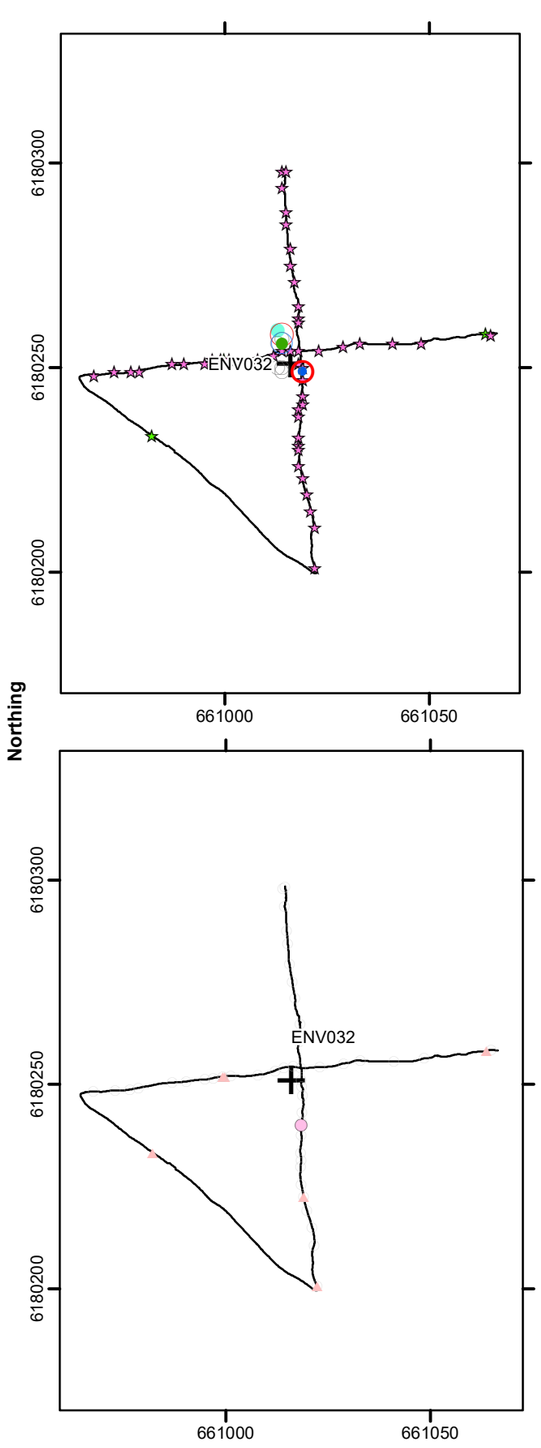


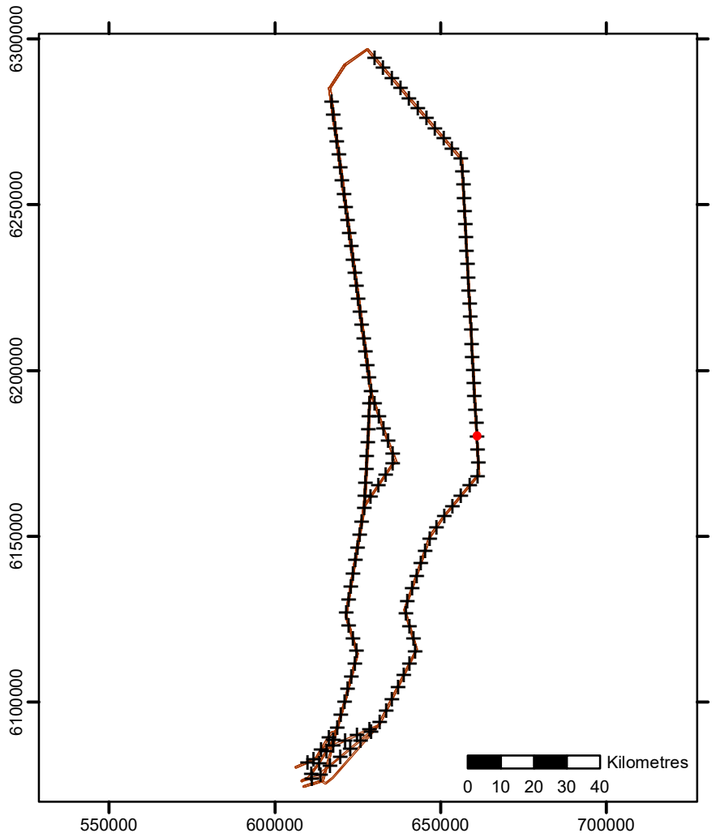
Station: ENV031
Fix: 251 **E:** 660798 **N:** 6184245 **Depth (m):** 75
Retention: MFB

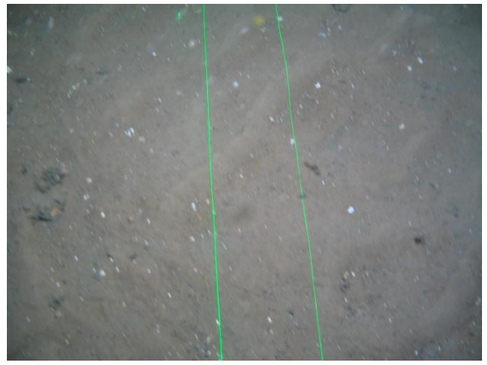
Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



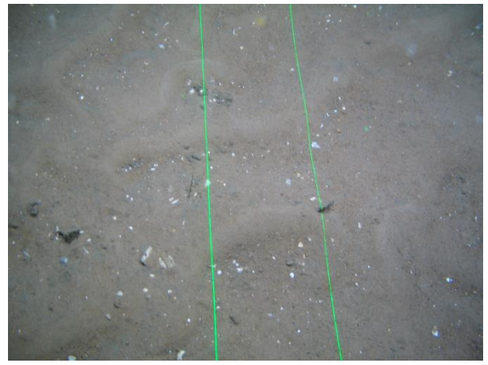




Station: ENV032
Fix: 1551 **E:** 661018 **N:** 6180262 **Depth (m):** 69

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Faunal turf



Station: ENV032
Fix: 1580 **E:** 661008 **N:** 6180252 **Depth (m):** 69

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna

Overview of Station: ENV032

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV032
Fix: 257 **E:** 661014 **N:** 6180258 **Depth (m):** 71
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

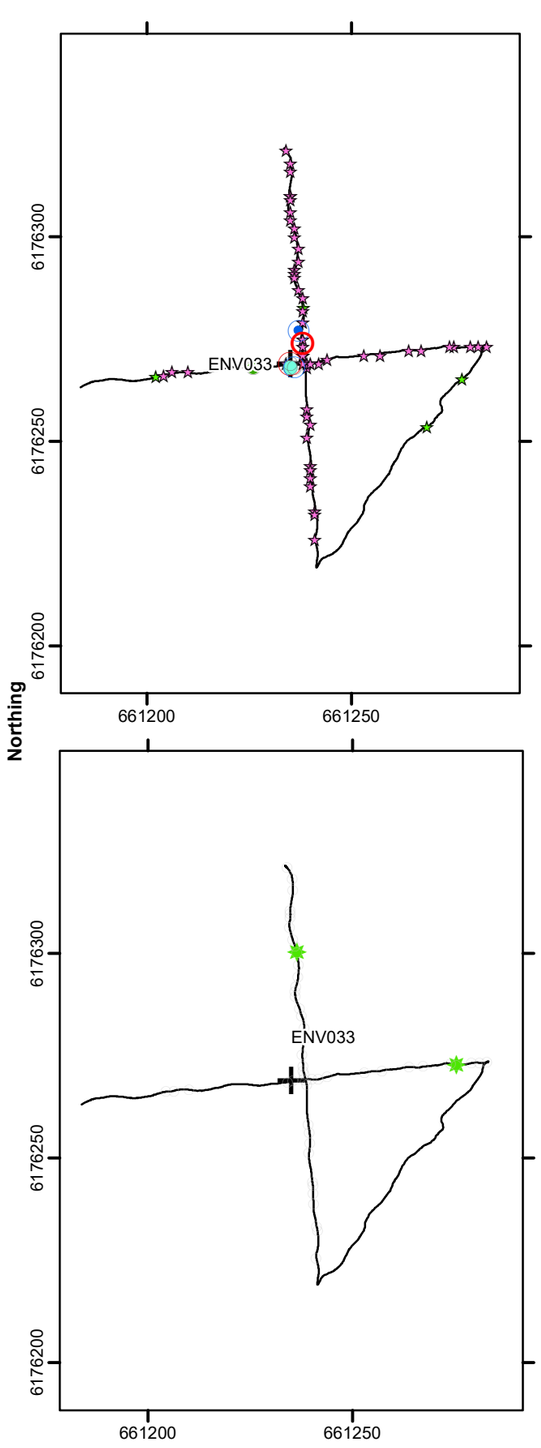


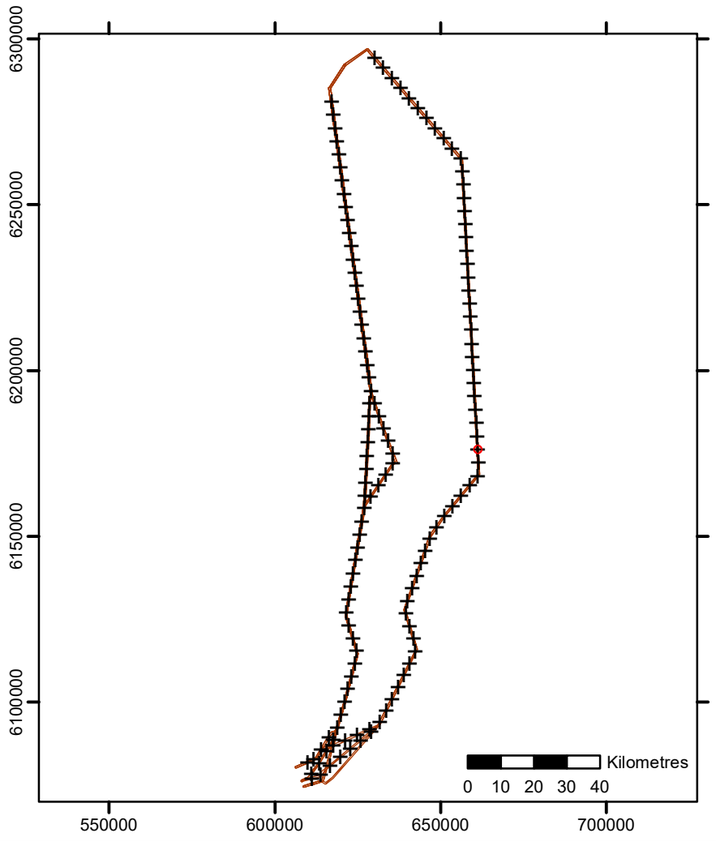
Station: ENV032
Fix: 257 **E:** 661014 **N:** 6180258 **Depth (m):** 71
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV033

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

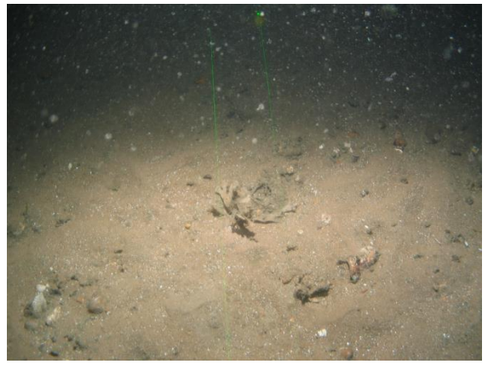
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

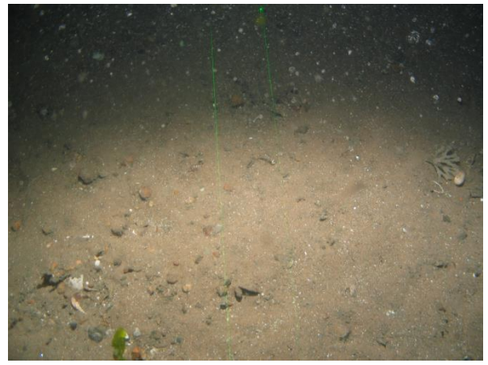
Easting



Station: ENV033
Fix: 1600 **E:** 661237 **N:** 6176297 **Depth (m):** 66

Sediment Description:
Soft sediment with shell hash, some faunal tracks and scattered pebbles

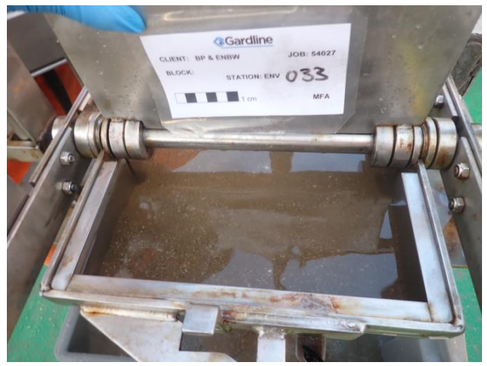
Faunal Description:
Annelida (Serpulidae *stet.*), Bryozoa (Flustridae *stet.*)



Station: ENV033
Fix: 1631 **E:** 661267 **N:** 6176272 **Depth (m):** 66

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna



Station: ENV033
Fix: 263 **E:** 661235 **N:** 6176269 **Depth (m):** 69
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

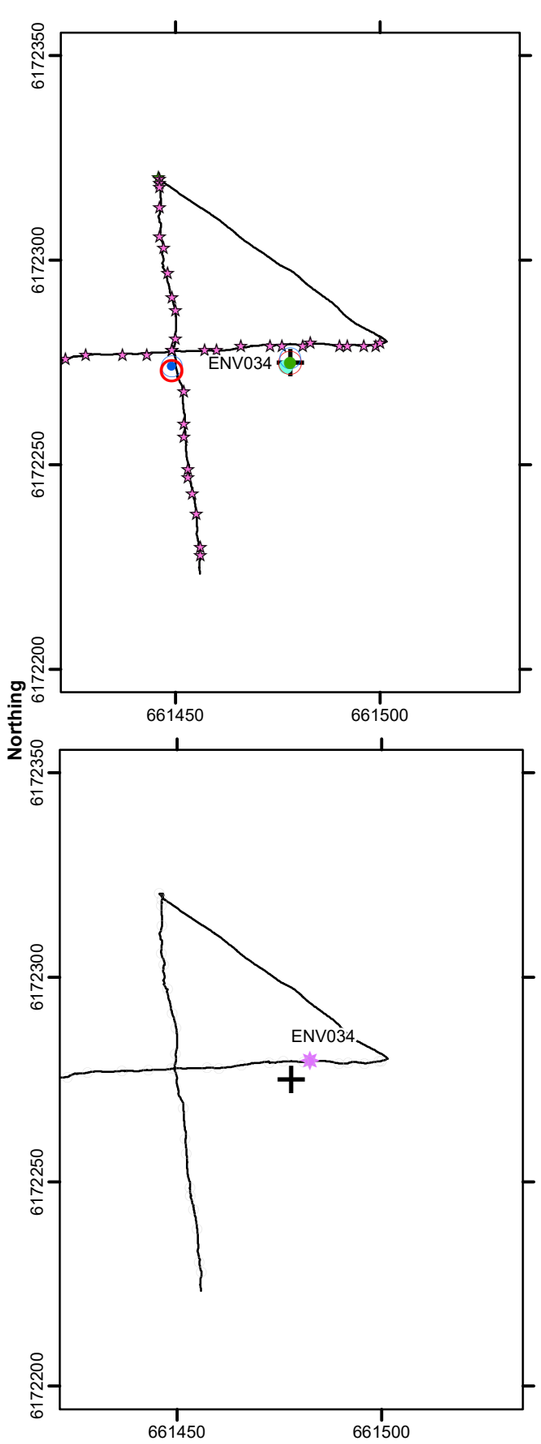


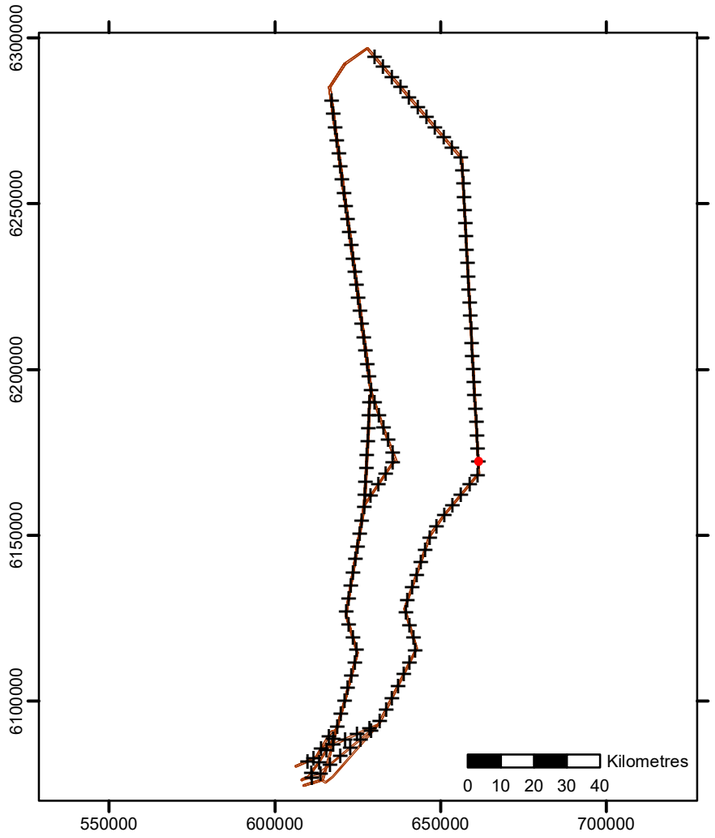
Station: ENV033
Fix: 263 **E:** 661235 **N:** 6176269 **Depth (m):** 69
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







Station: ENV034
Fix: 1647 **E:** 661406 **N:** 6172275 **Depth (m):** 64

Sediment Description:
Soft sediment and shell hash

Faunal Description:
No visible fauna



Station: ENV034
Fix: 1670 **E:** 661446 **N:** 6172306 **Depth (m):** 64

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Animalia tube

Overview of Station: ENV034

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV034
Fix: 271 **E:** 661478 **N:** 6172275 **Depth (m):** 67
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

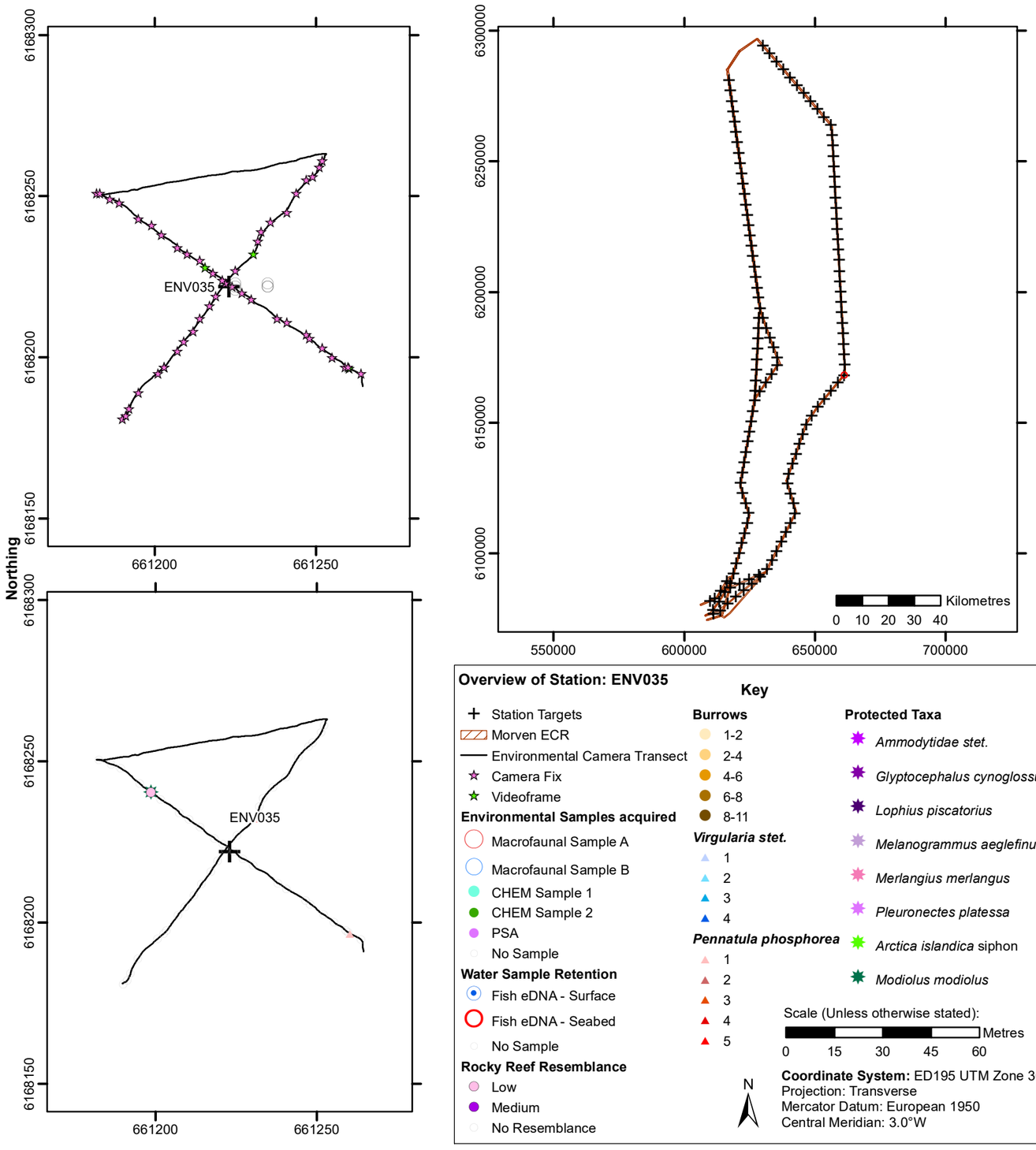


Station: ENV034
Fix: 271 **E:** 661478 **N:** 6172275 **Depth (m):** 67
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV035

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

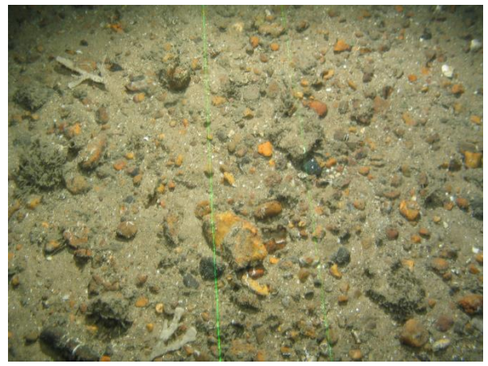
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV035
Fix: 1688 **E:** 661192 **N:** 6168184 **Depth (m):** 63

Sediment Description:
Gravel area with underlying soft sediment

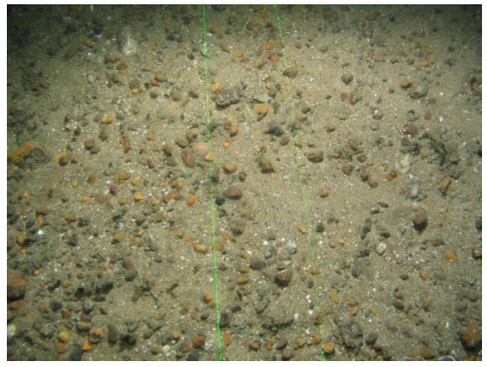
Faunal Description:
Annelida (Serpulidae *stet.*)



Station: ENV035
Fix: 1703 **E:** 661236 **N:** 6168242 **Depth (m):** 63

Sediment Description:
Gravel area

Faunal Description:
Animalia tube, Annelida (Serpulidae *stet.*), Cnidaria (Hydrozoa *stet.*), Faunal turf



Station: ENV035
Fix: 1711 **E:** 661183 **N:** 6168251 **Depth (m):** 63

Sediment Description:
Sparse gravel area

Faunal Description:
Cnidaria (Hydrozoa *stet.*), Porifera (Hard Substrate Sponges)

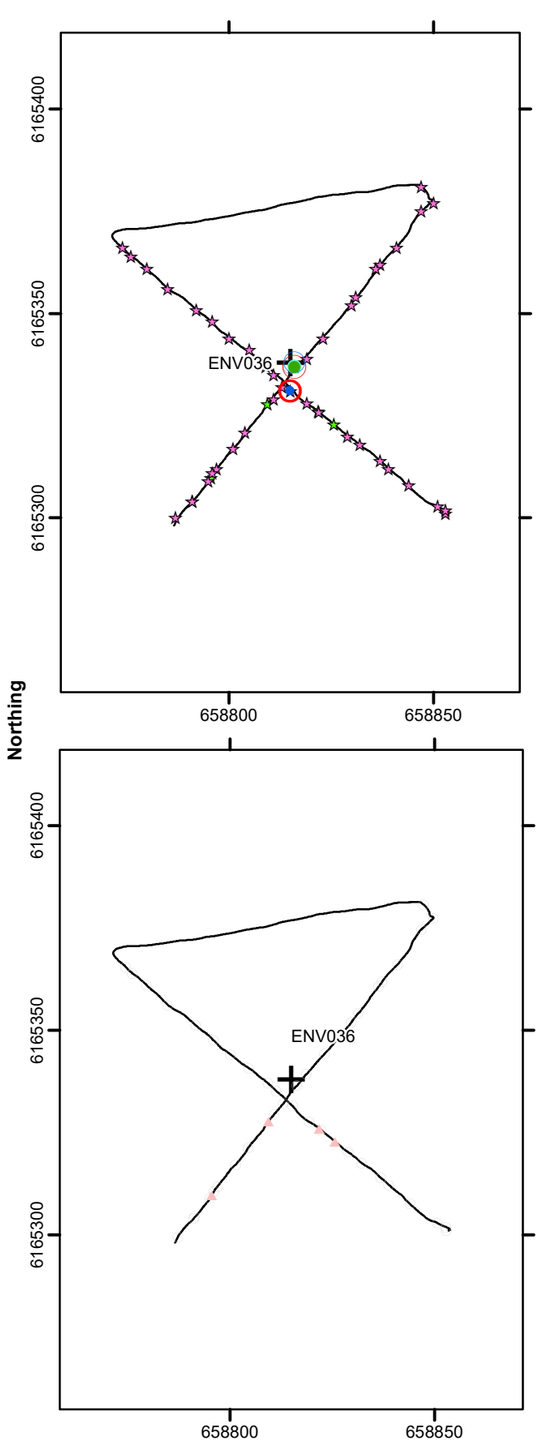


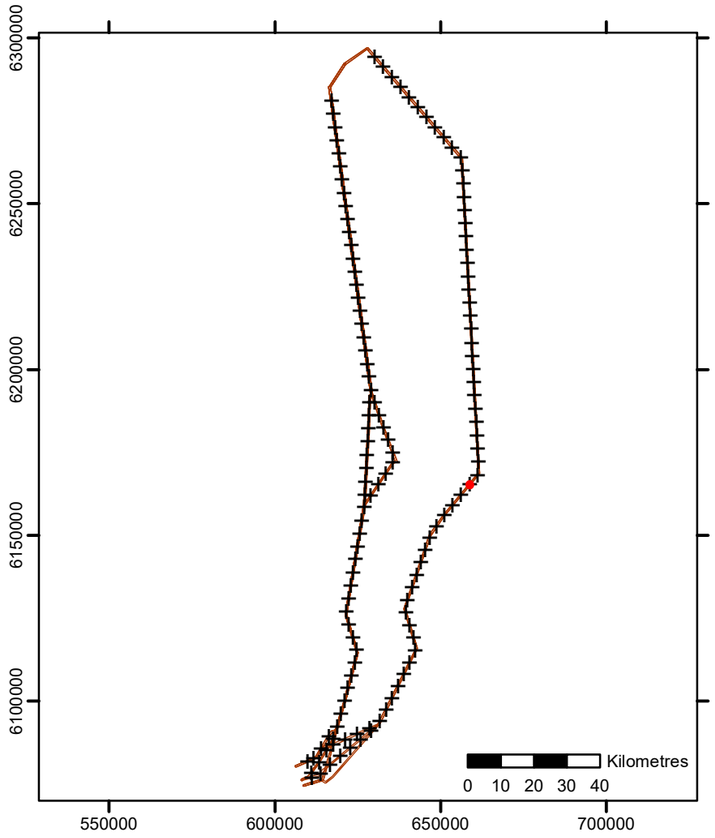
Station: ENV035
Fix: 1715 **E:** 661199 **N:** 6168241 **Depth (m):** 63

Sediment Description:
Gravel area

Faunal Description:
Faunal turf, Mollusca (*Modiolus modiolus*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV036

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

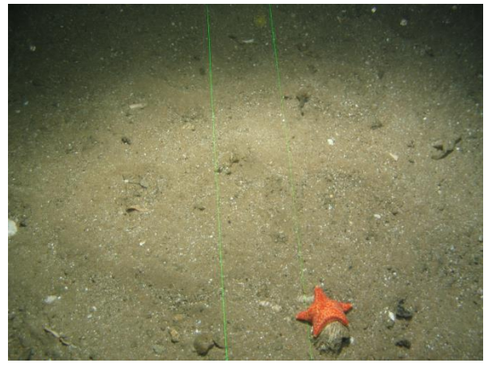
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV036
Fix: 1738 **E:** 658839 **N:** 6165312 **Depth (m):** 65

Sediment Description:
Soft sediment with shell frements and hash

Faunal Description:
Arthropoda (*Munida rugosa*), Mollusca (Scaphopoda *stet.*)



Station: ENV036
Fix: 1766 **E:** 658813 **N:** 6165332 **Depth (m):** 65

Sediment Description:
Soft sediment with shell hash and fragments

Faunal Description:
Echinodermata (*Porania pulvillus*)



Station: ENV036
Fix: 282 **E:** 658816 **N:** 6165337 **Depth (m):** 69
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

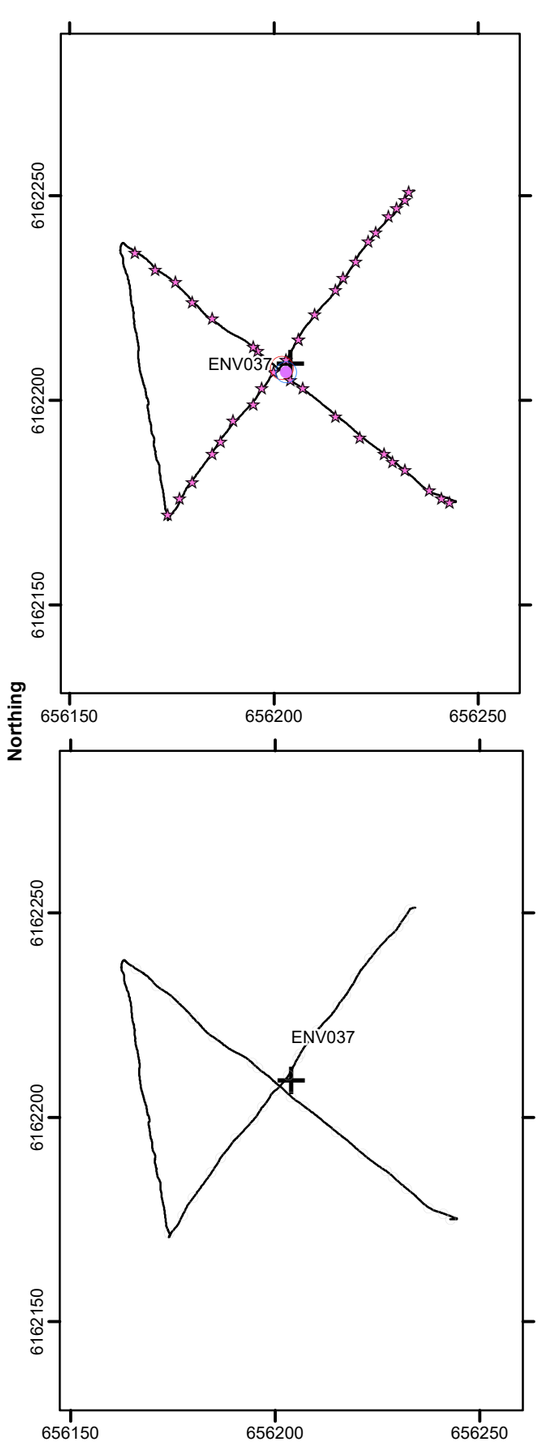


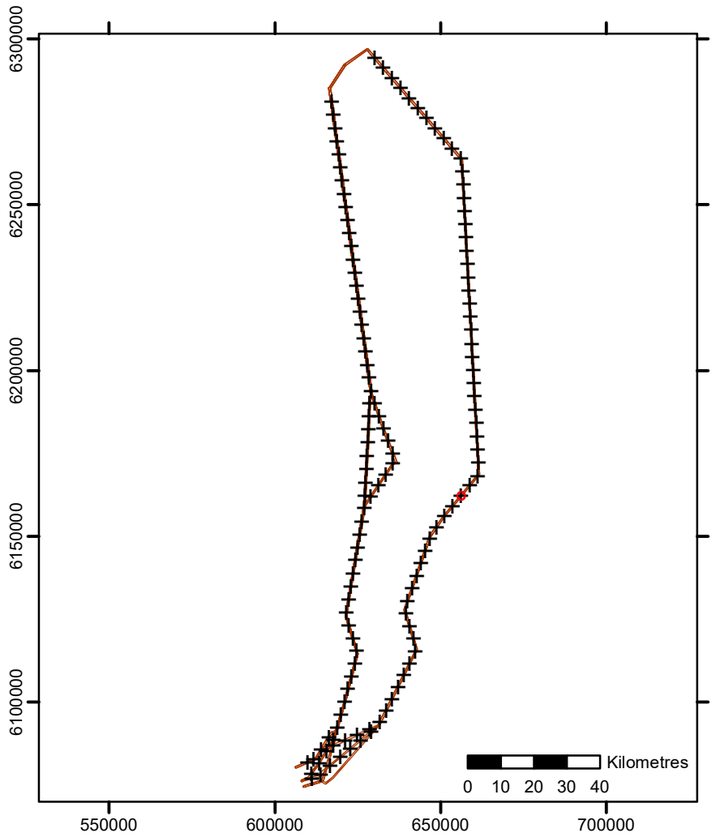
Station: ENV036
Fix: 282 **E:** 658816 **N:** 6165337 **Depth (m):** 69
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV037

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

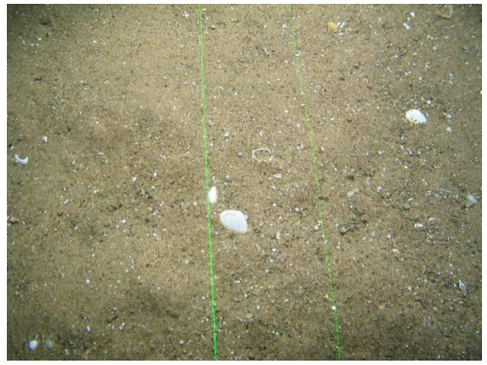
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV037
Fix: 1794 **E:** 656177 **N:** 6162176 **Depth (m):** 63

Sediment Description:
Soft sediment with shell hash and fragments

Faunal Description:
No visible fauna



Station: ENV037
Fix: 1814 **E:** 656233 **N:** 6162251 **Depth (m):** 63

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV037
Fix: 286 **E:** 656203 **N:** 6162207 **Depth (m):** 67
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

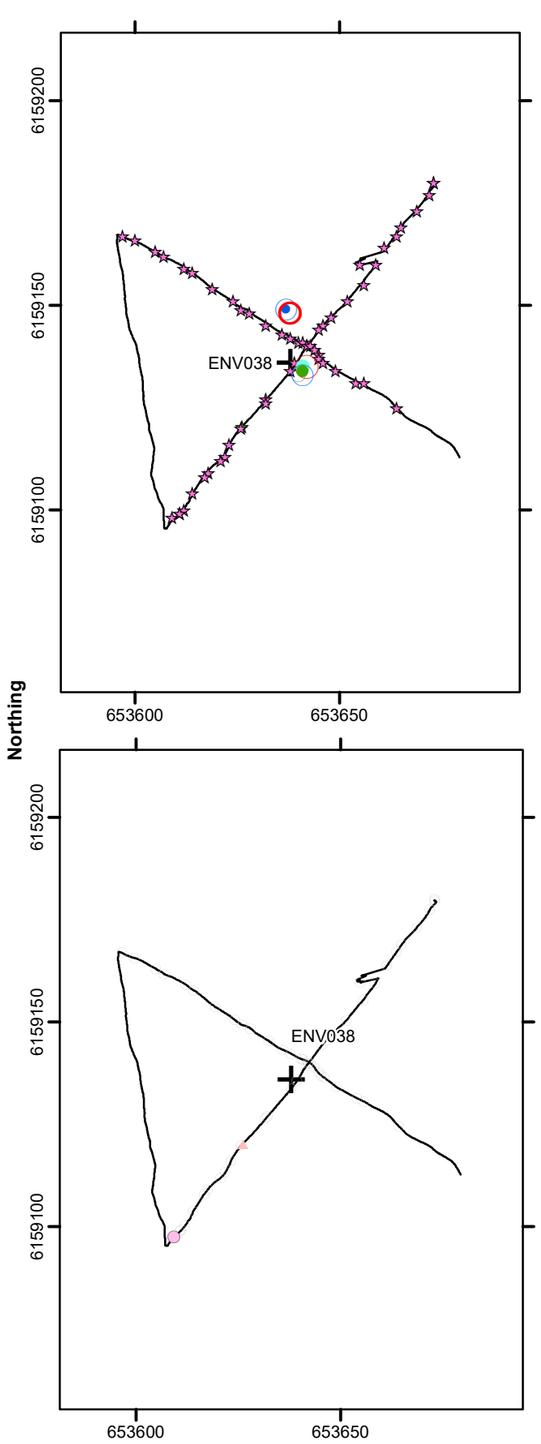


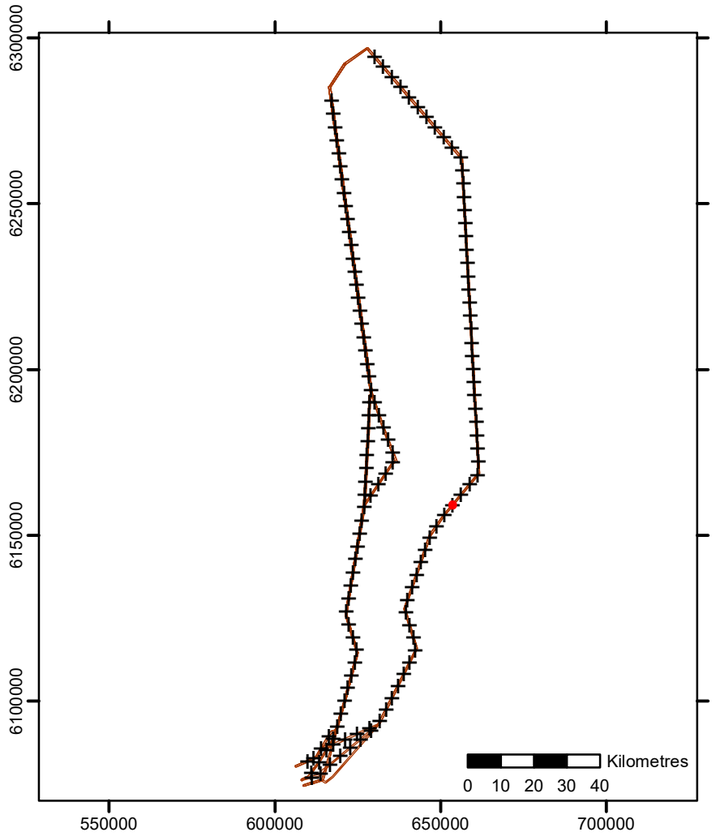
Station: ENV037
Fix: 286 **E:** 656203 **N:** 6162207 **Depth (m):** 67
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV038

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

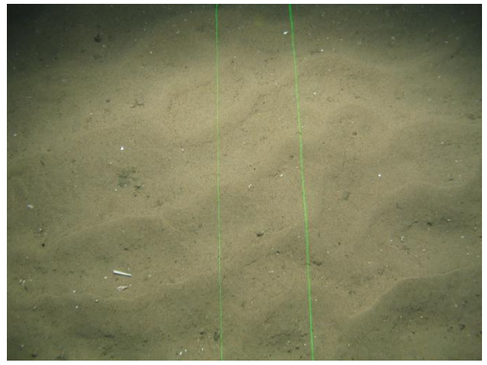
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

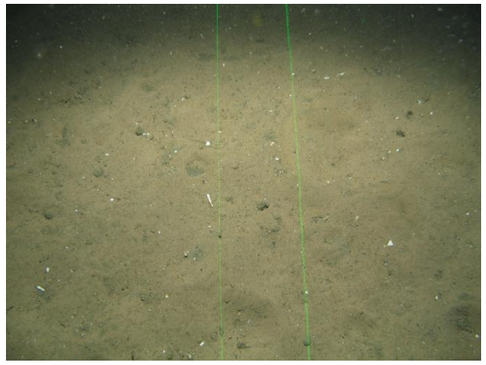
Easting



Station: ENV038
Fix: 1819 **E:** 653669 **N:** 6159173 **Depth (m):** 64

Sediment Description:
Soft slightly rippled sediment

Faunal Description:
Animalia tube



Station: ENV038
Fix: 1838 **E:** 653621 **N:** 6159112 **Depth (m):** 64

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV038
Fix: 289 **E:** 653642 **N:** 6159135 **Depth (m):** 68
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

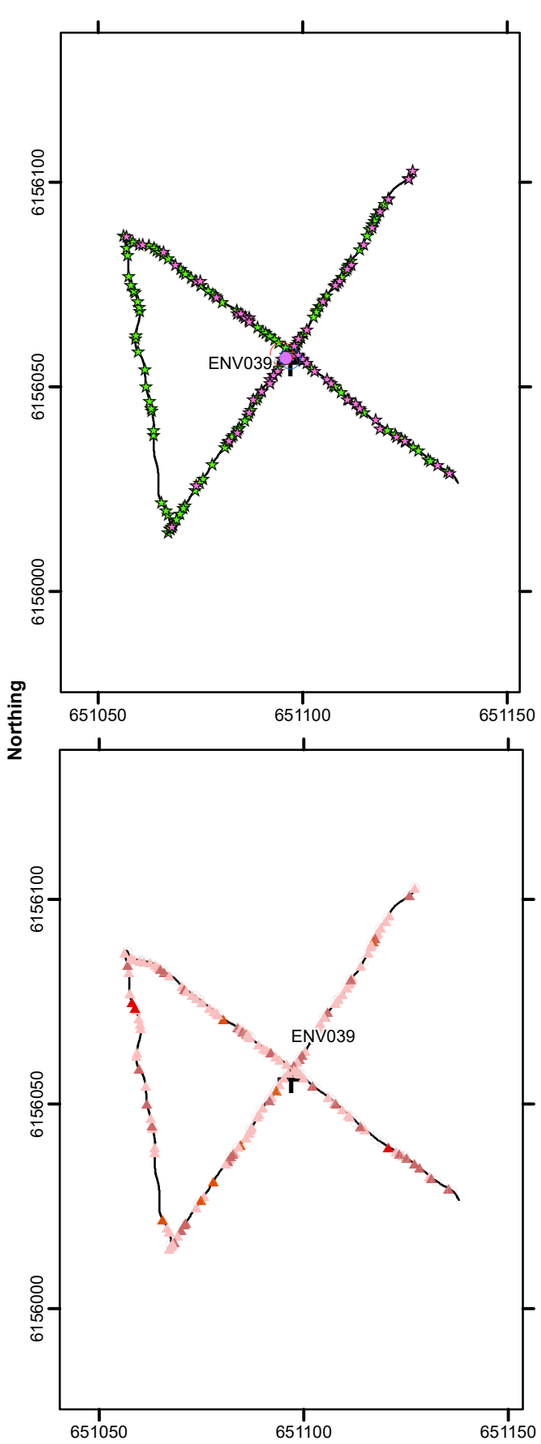


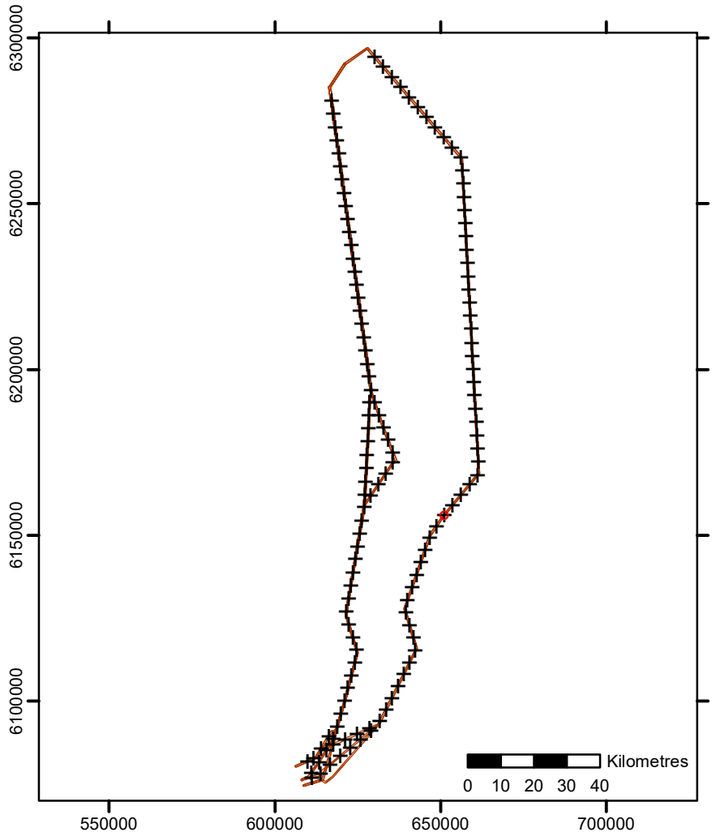
Station: ENV038
Fix: 289 **E:** 653642 **N:** 6159135 **Depth (m):** 68
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV039

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

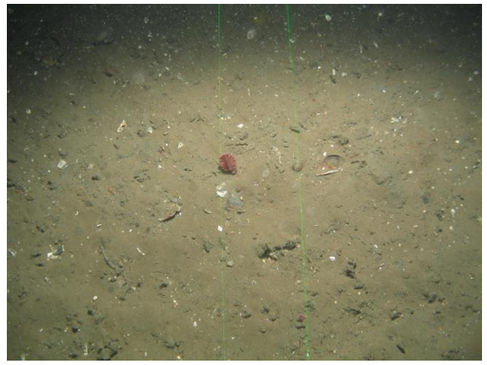
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

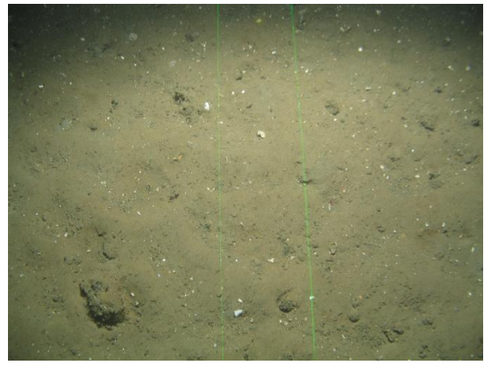
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV039
Fix: 1891 **E:** 651092 **N:** 6156051 **Depth (m):** 70

Sediment Description:
Soft sediments

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV039
Fix: 1922 **E:** 651118 **N:** 6156042 **Depth (m):** 70

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV039
Fix: 293 **E:** 651095 **N:** 6156058 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

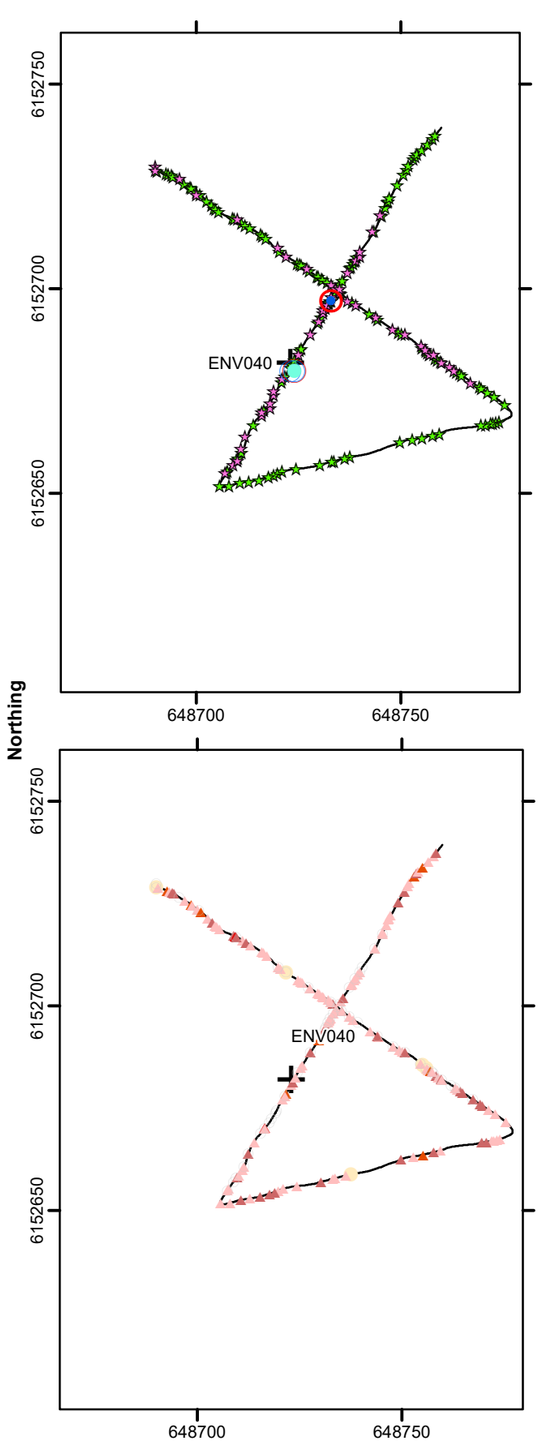


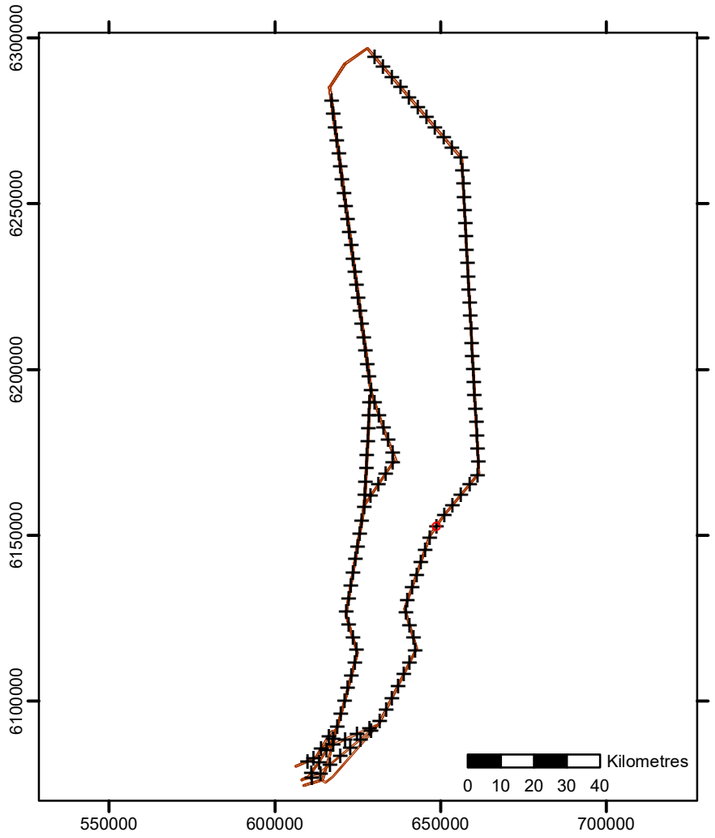
Station: ENV039
Fix: 293 **E:** 651095 **N:** 6156058 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV040

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

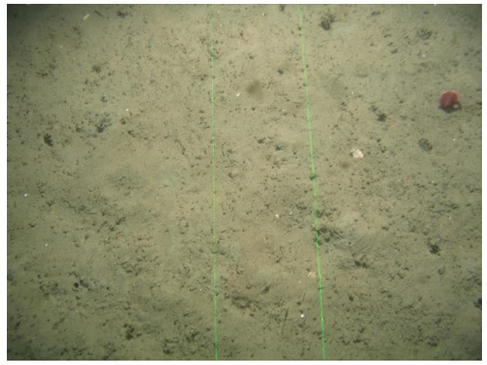
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

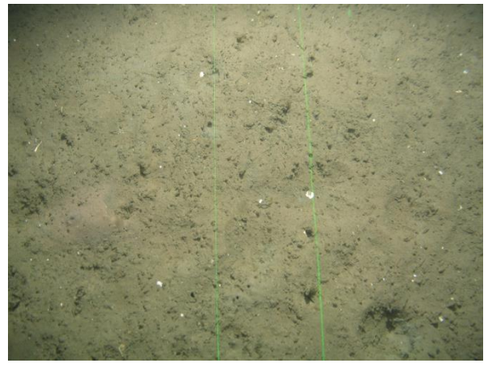
Easting



Station: ENV040
Fix: 1942 **E:** 648748 **N:** 6152690 **Depth (m):** 86

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV040
Fix: 1976 **E:** 648740 **N:** 6152709 **Depth (m):** 86

Sediment Description:
Slightly rippled soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV040
Fix: 300 **E:** 648724 **N:** 6152680 **Depth (m):** 88
Retention: MFB

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia)

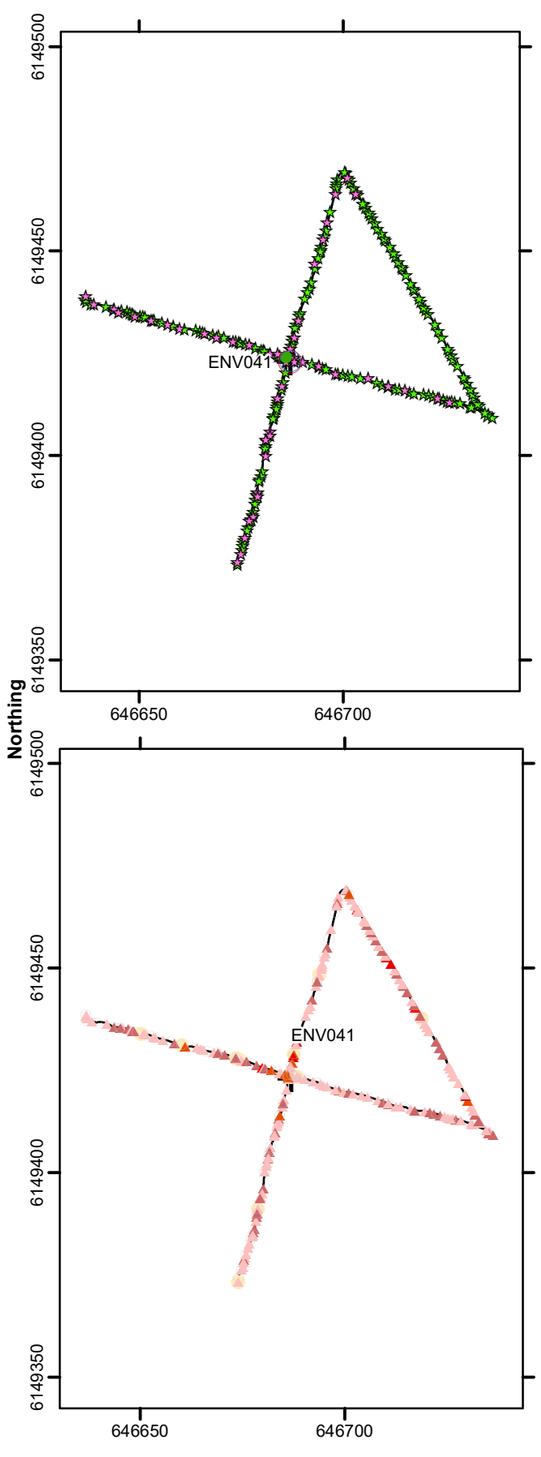


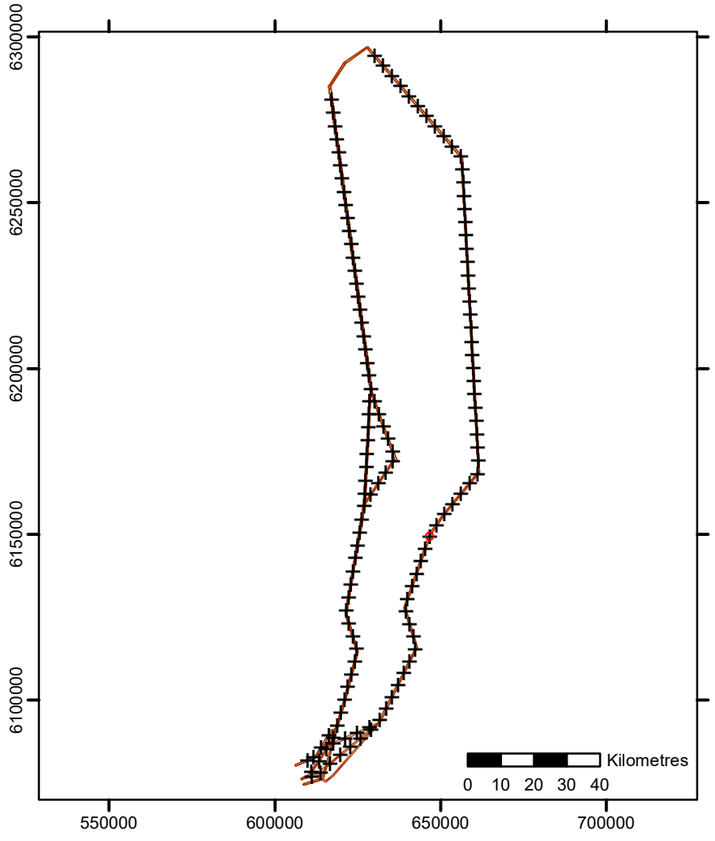
Station: ENV040
Fix: 300 **E:** 648724 **N:** 6152680 **Depth (m):** 88
Retention: MFB

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV041

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

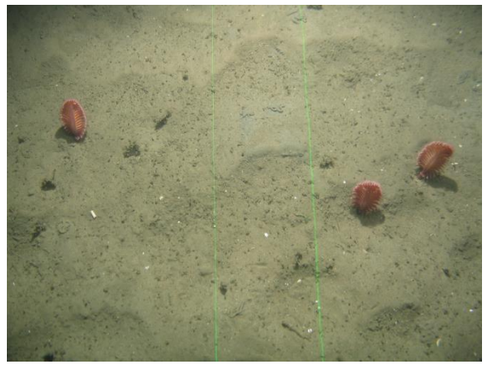
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

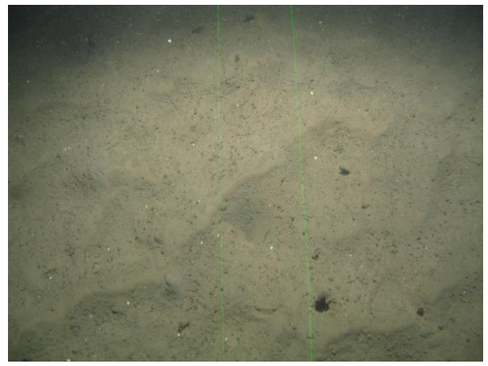
Easting



Station: ENV041
Fix: 2006 **E:** 646701 **N:** 6149468 **Depth (m):** 87

Sediment Description:
Soft sediment

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087), Faunal turf



Station: ENV041
Fix: 2013 **E:** 646687 **N:** 6149426 **Depth (m):** 88

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna



Station: ENV041
Fix: 302 **E:** 646686 **N:** 6149424 **Depth (m):** 90
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Bivalvia)

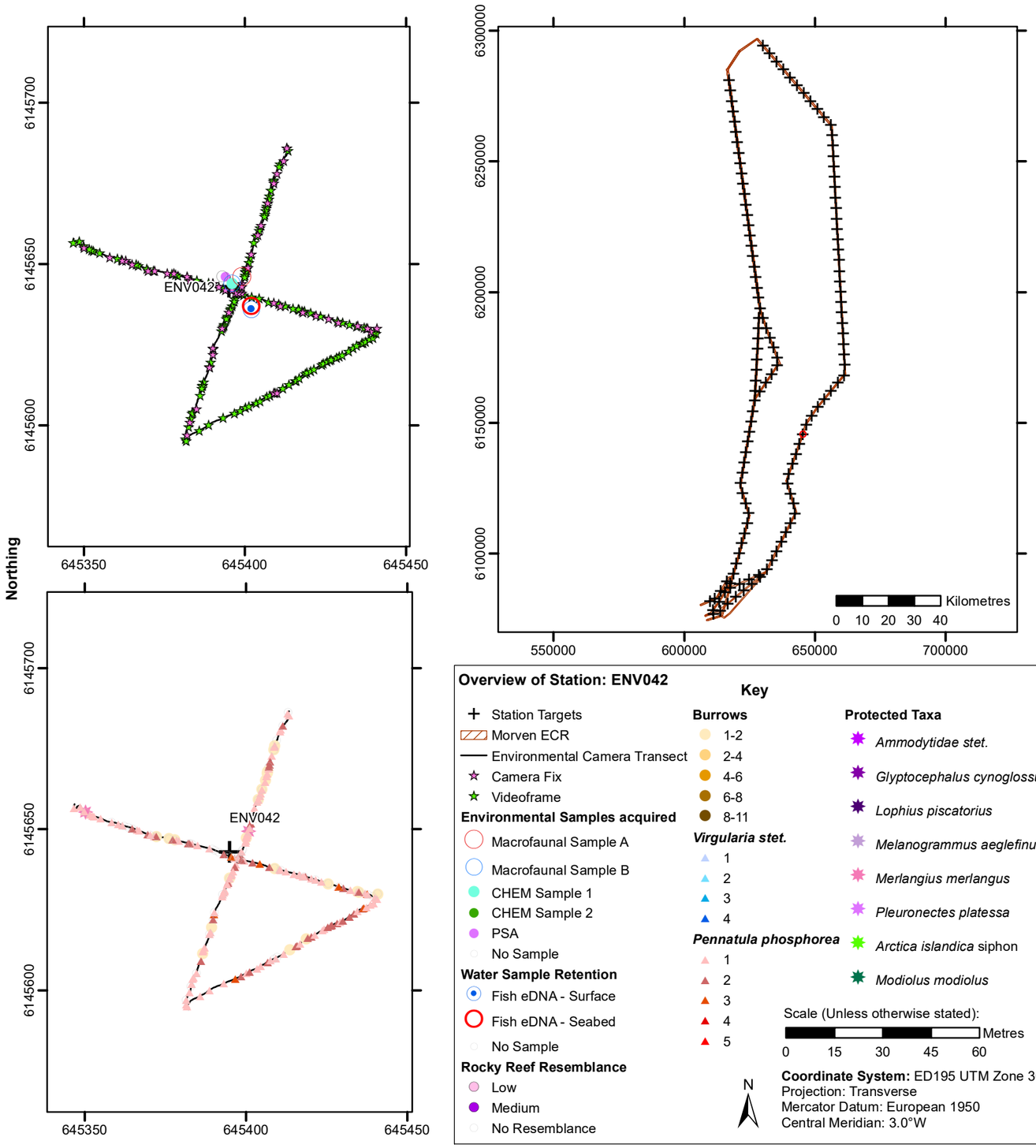


Station: ENV041
Fix: 302 **E:** 646686 **N:** 6149424 **Depth (m):** 90
Retention: MFA

Sediment Description:
Sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV042

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

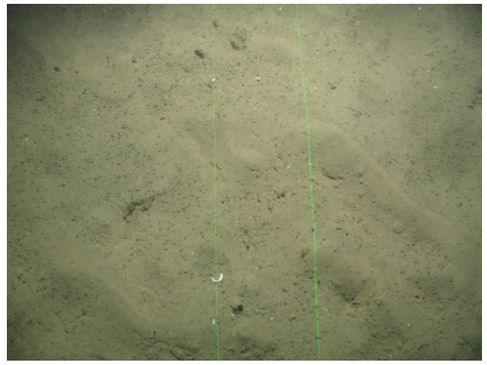
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

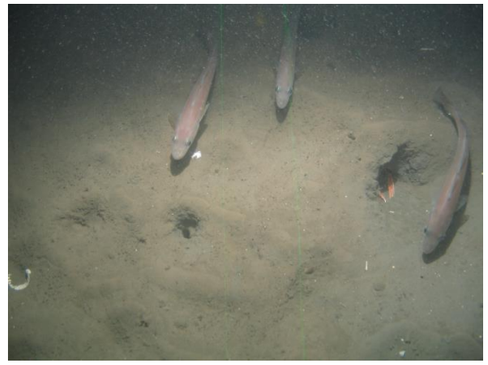
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV042
Fix: 2039 **E:** 645398 **N:** 6145641 **Depth (m):** 88

Sediment Description:
Soft sediment with bioturbtion.

Faunal Description:
Animalia tube



Station: ENV042
Fix: 2071 **E:** 645376 **N:** 6145647 **Depth (m):** 88

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Arthropoda (*Nephrops norvegicus*), Chordata (Gadidae *indet.* GL0001)



Station: ENV042
Fix: 308 **E:** 645399 **N:** 6145646 **Depth (m):** 91
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

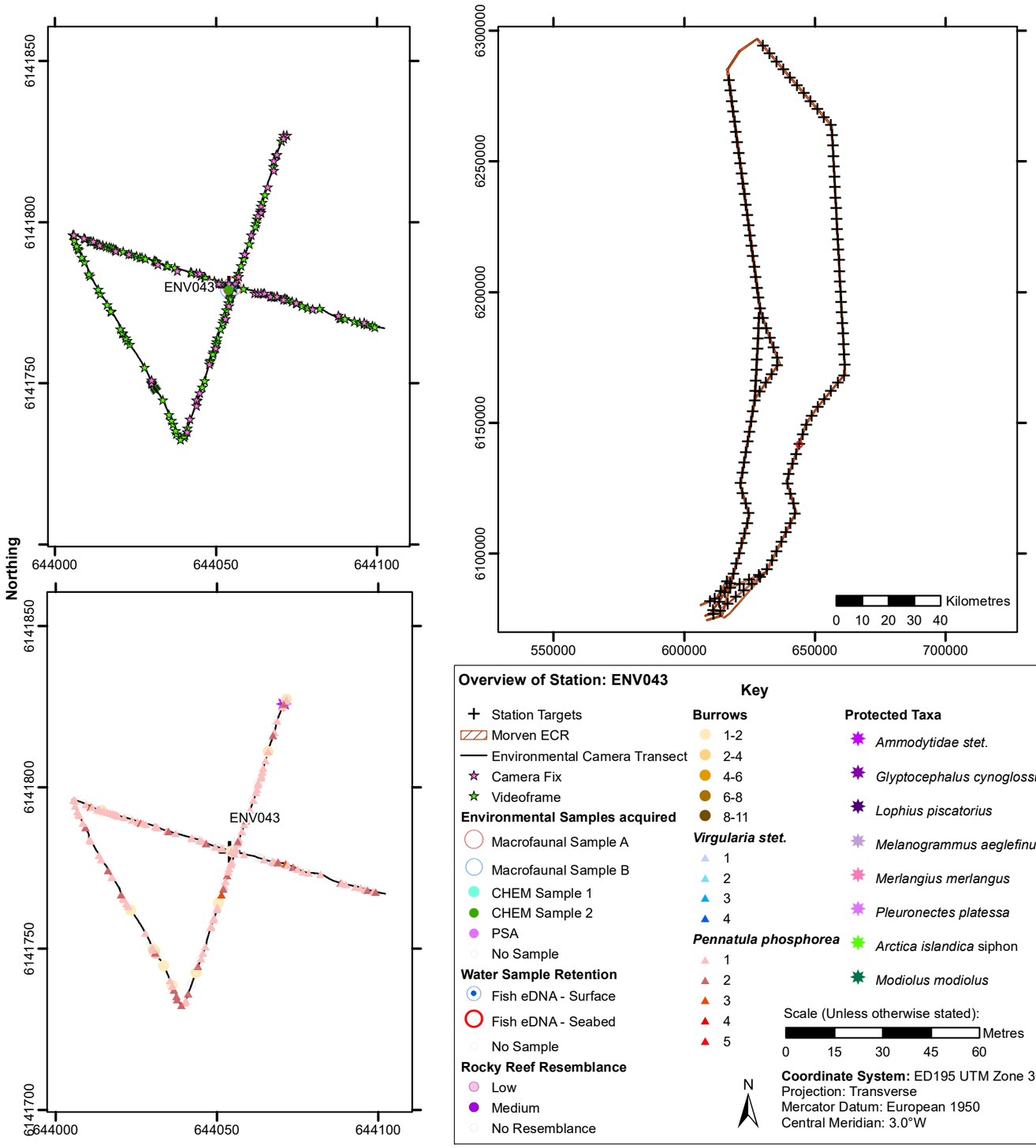


Station: ENV042
Fix: 308 **E:** 645399 **N:** 6145646 **Depth (m):** 91
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV043

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

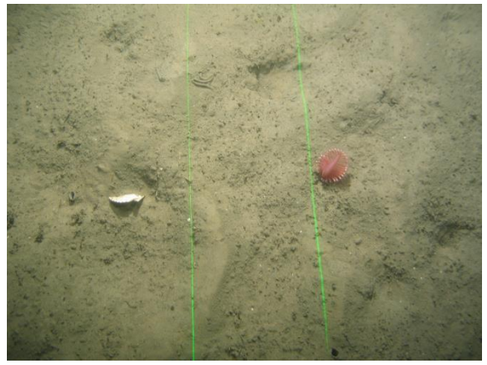
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

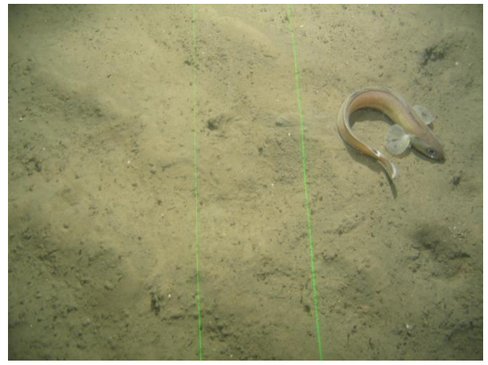
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV043
Fix: 2086 **E:** 644064 **N:** 6141805 **Depth (m):** 87

Sediment Description:
Soft sediment with bioturbtion.

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV043
Fix: 2104 **E:** 644030 **N:** 6141751 **Depth (m):** 87

Sediment Description:
Soft sediment with bioturbtion.

Faunal Description:
Chordata (Lotidae *stet.*)



Station: ENV043
Fix: 310 **E:** 644054 **N:** 6141779 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

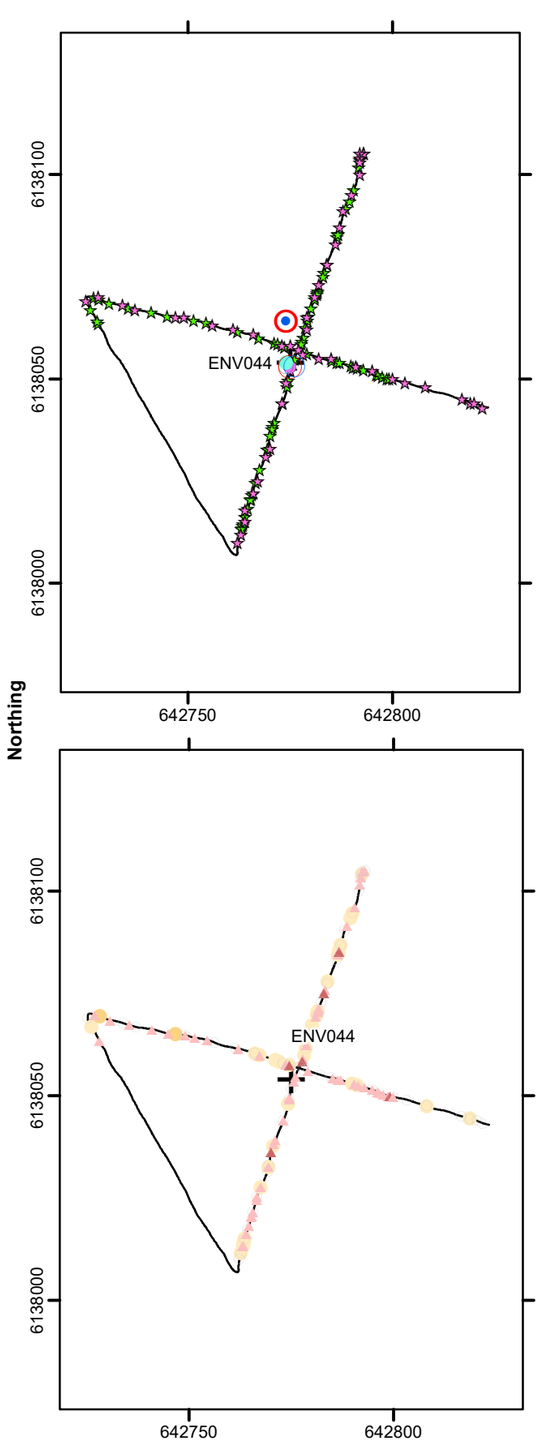


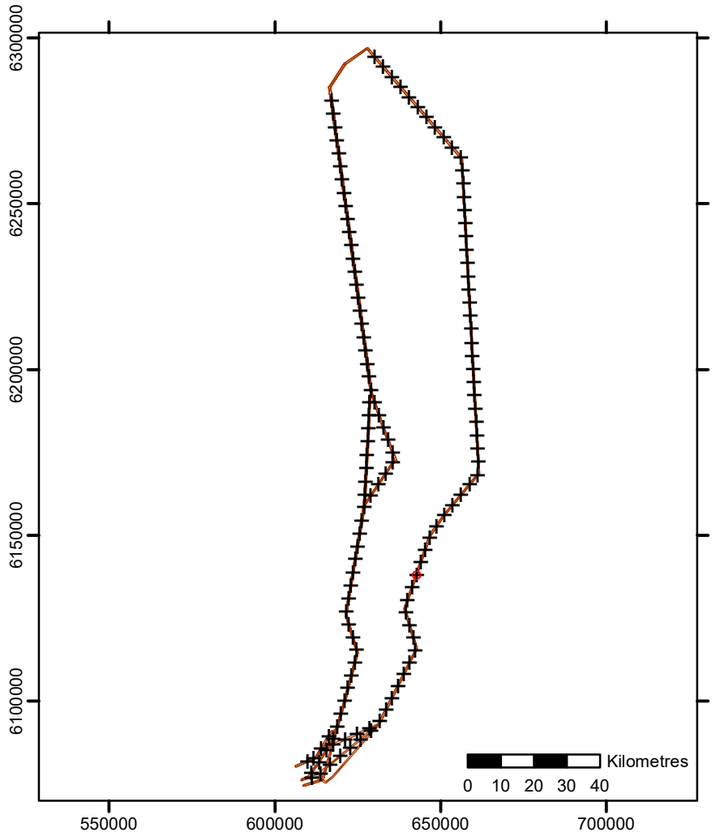
Station: ENV043
Fix: 310 **E:** 644054 **N:** 6141779 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV044

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

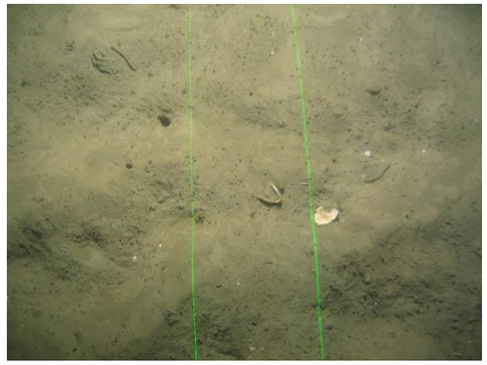
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

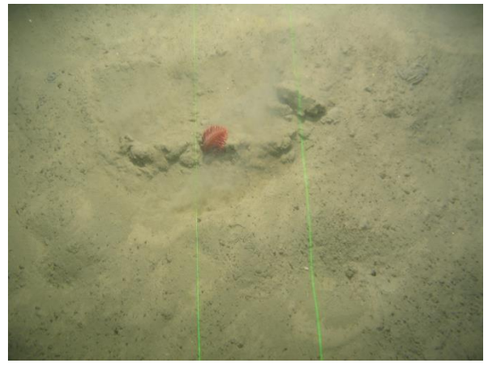
Easting



Station: ENV044
Fix: 2139 **E:** 642786 **N:** 6138083 **Depth (m):** 92

Sediment Description:
Soft sediment with bioturbation.

Faunal Description:
No visible fauna



Station: ENV044
Fix: 2162 **E:** 642749 **N:** 6138065 **Depth (m):** 92

Sediment Description:
Soft sediment with bioturbation.

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV044
Fix: 315 **E:** 642774 **N:** 6138054 **Depth (m):** 96
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

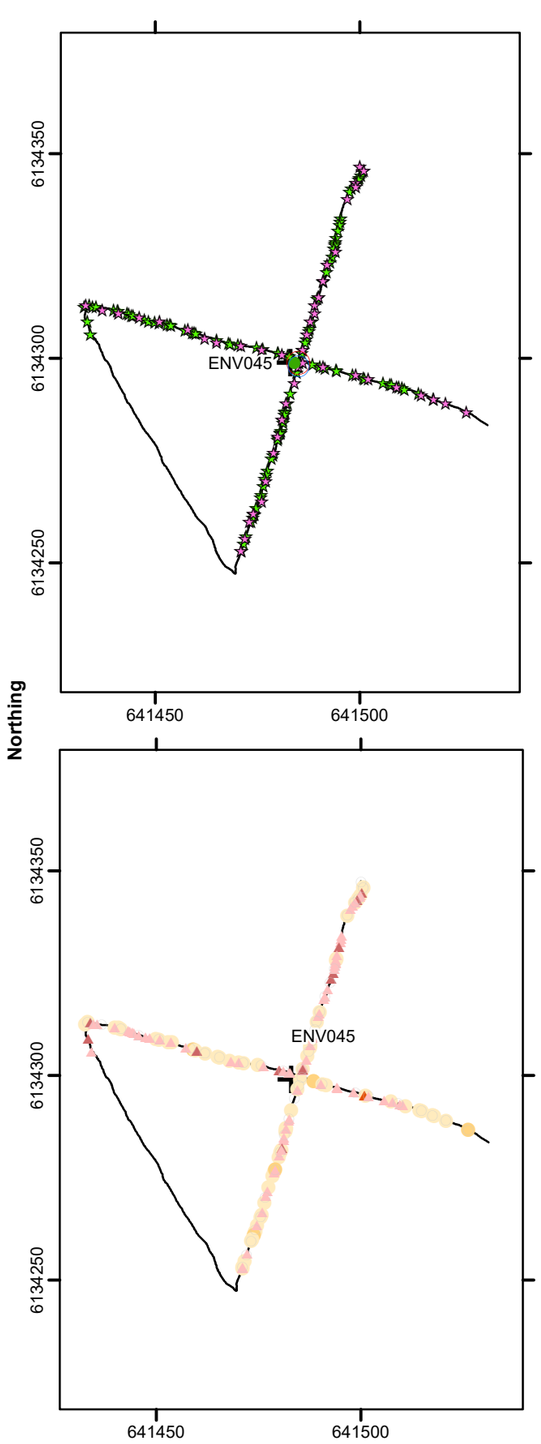


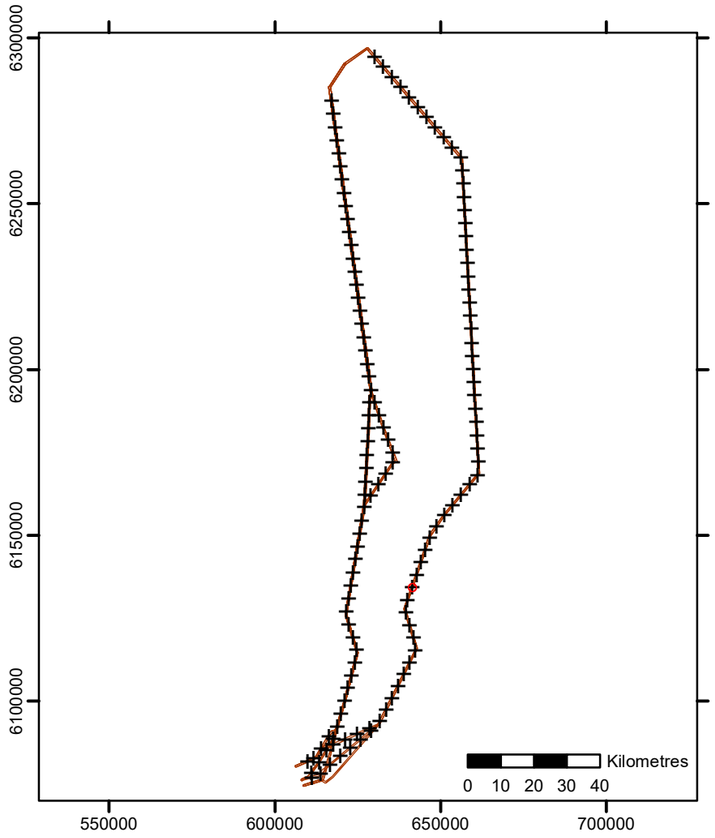
Station: ENV044
Fix: 315 **E:** 642774 **N:** 6138054 **Depth (m):** 96
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV045

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

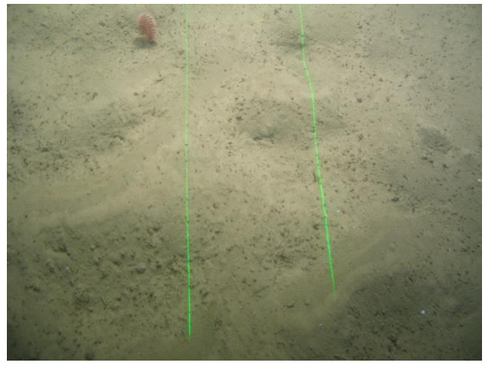
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

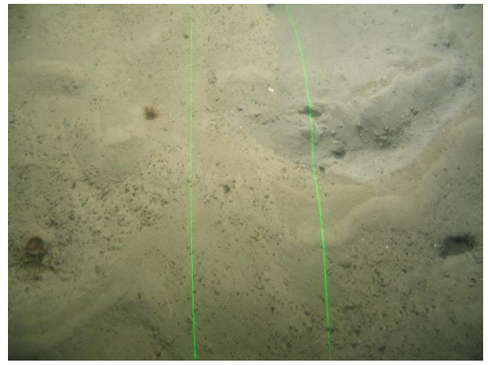
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV045
Fix: 2187 **E:** 641491 **N:** 6134319 **Depth (m):** 92

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV045
Fix: 2203 **E:** 641473 **N:** 6134260 **Depth (m):** 92

Sediment Description:
Soft sediment with bioturbation.

Faunal Description:
Cnidaria (Ceriantharia *stet.*)



Station: ENV045
Fix: 318 **E:** 641484 **N:** 6134299 **Depth (m):** 95
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Arthropoda), Echinodermata (Ophiuroidea)

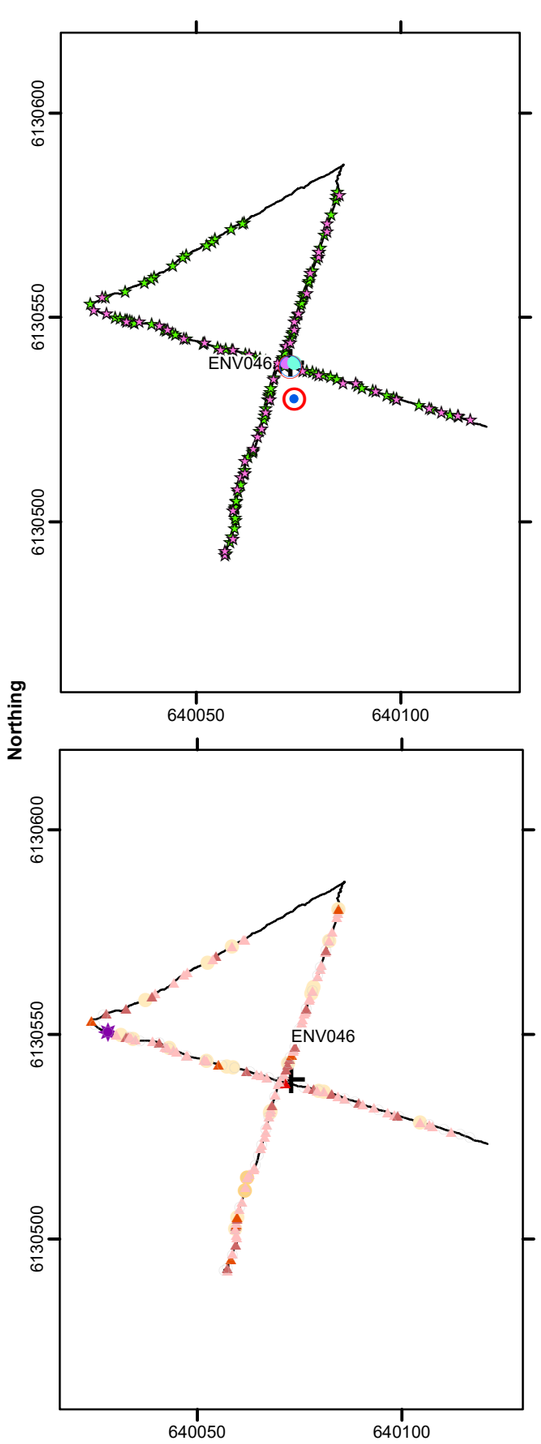


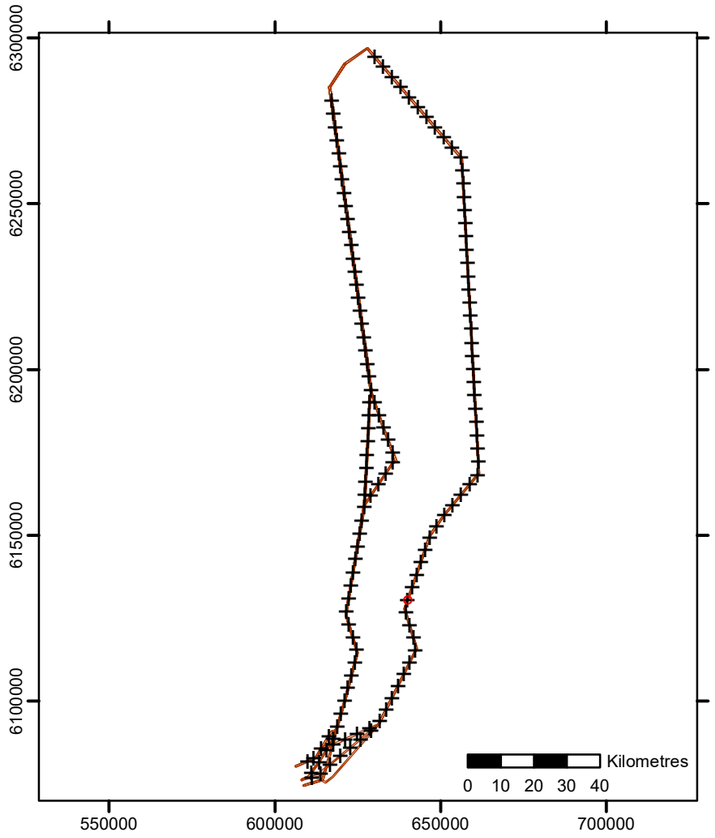
Station: ENV045
Fix: 318 **E:** 641484 **N:** 6134299 **Depth (m):** 95
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Arthropoda), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV046

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

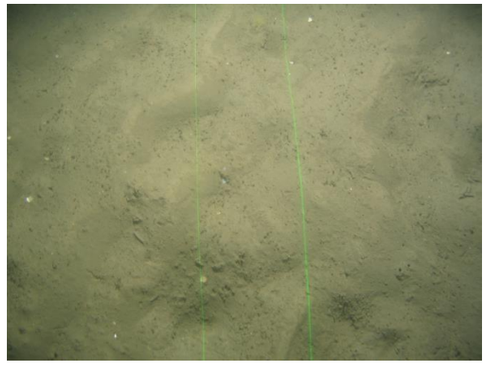
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

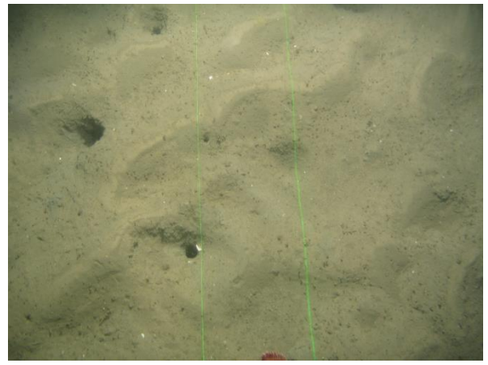
Easting



Station: ENV046
Fix: 2239 **E:** 640068 **N:** 6130530 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV046
Fix: 2252 **E:** 640082 **N:** 6130573 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV046
Fix: 322 **E:** 640074 **N:** 6130539 **Depth (m):** 89
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

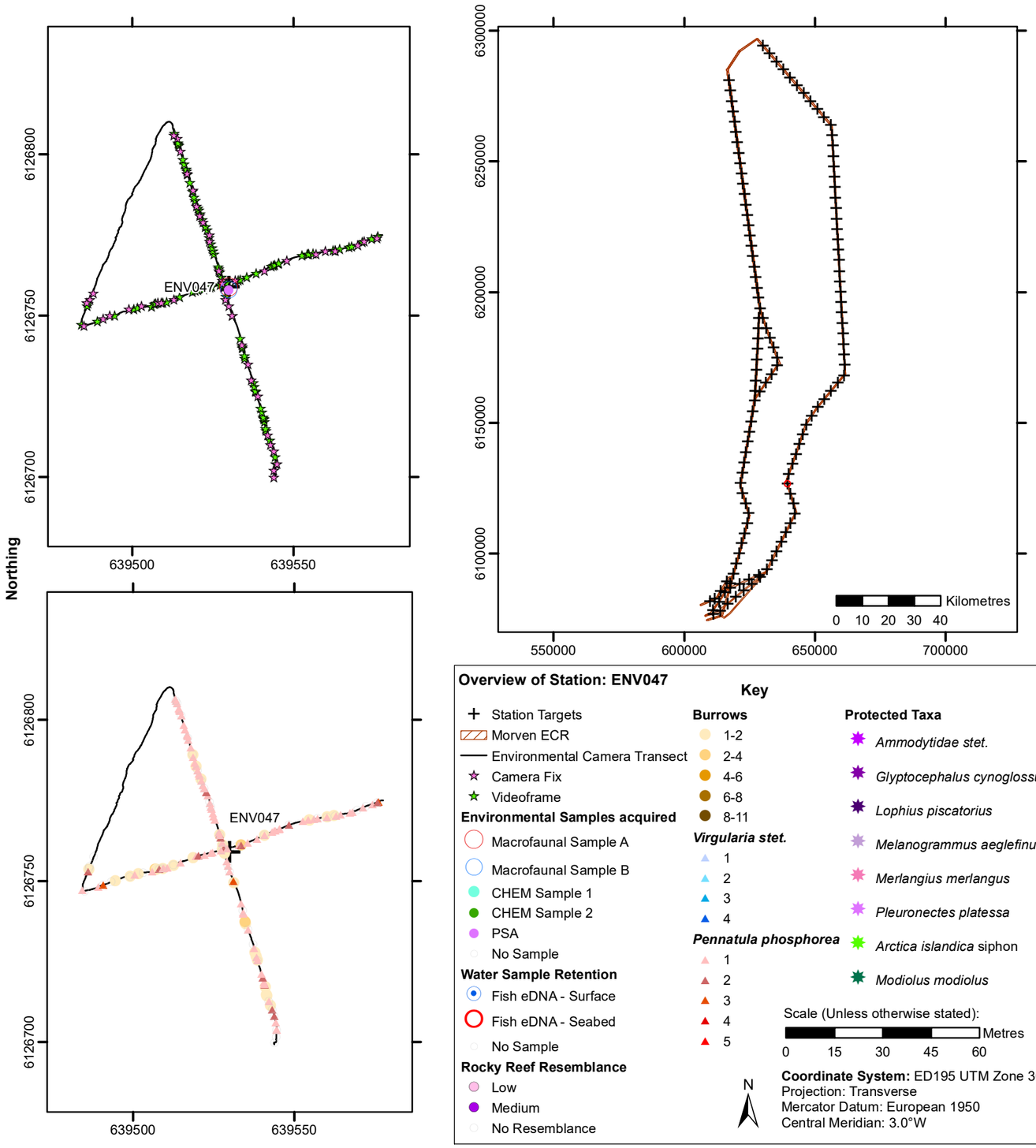


Station: ENV046
Fix: 322 **E:** 640074 **N:** 6130539 **Depth (m):** 89
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV047

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV047
Fix: 2290 **E:** 639529 **N:** 6126755 **Depth (m):** 85

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV047
Fix: 2314 **E:** 639528 **N:** 6126760 **Depth (m):** 85

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Arthropoda (Caridea *stet.*)



Station: ENV047
Fix: 467 **E:** 639530 **N:** 6126759 **Depth (m):** 88
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

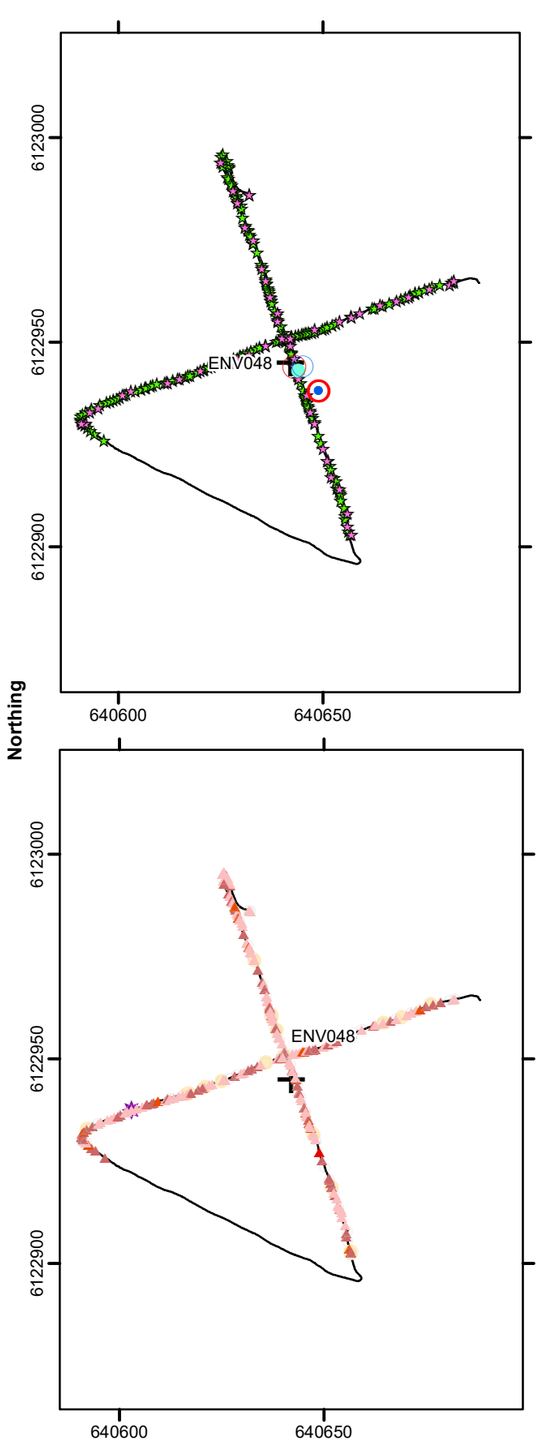


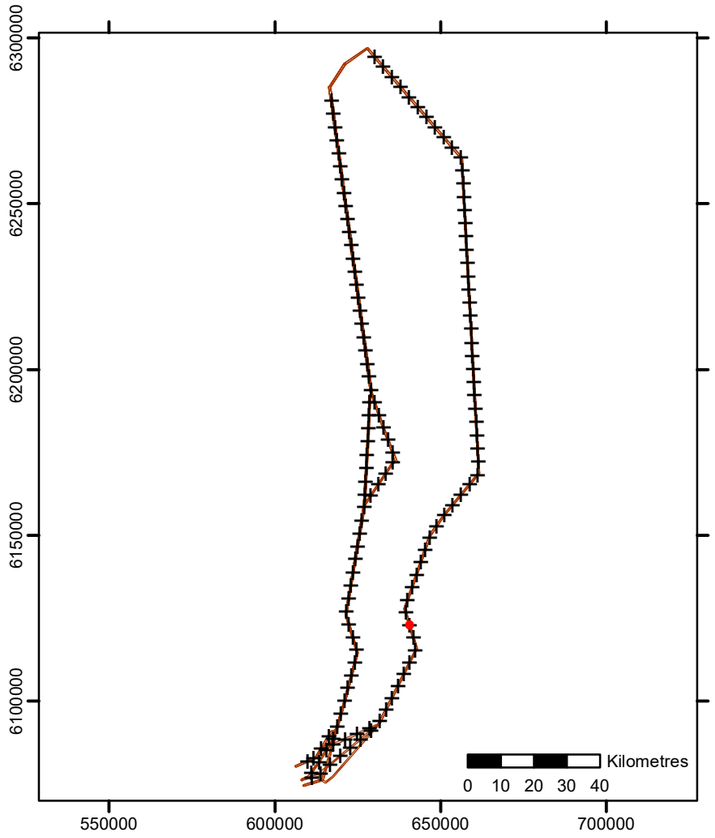
Station: ENV047
Fix: 467 **E:** 639530 **N:** 6126759 **Depth (m):** 88
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV048

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

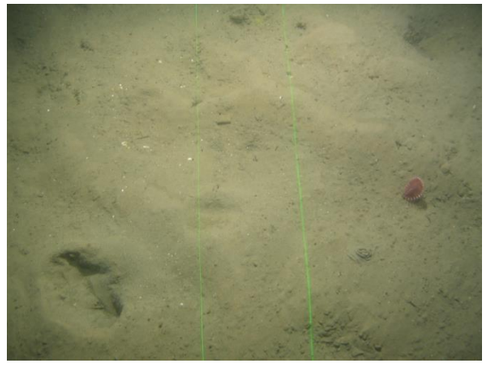
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

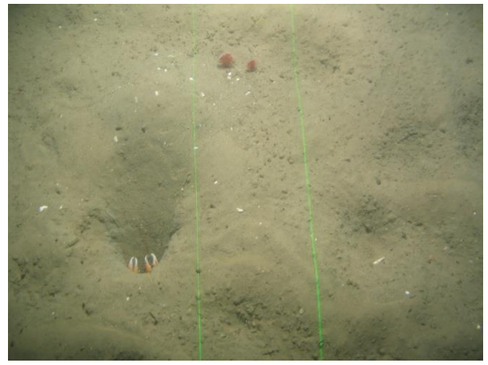
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV048
Fix: 2332 **E:** 640636 **N:** 6122965 **Depth (m):** 78

Sediment Description:
Soft sediments

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV048
Fix: 2350 **E:** 640657 **N:** 6122903 **Depth (m):** 78

Sediment Description:
Soft sediments

Faunal Description:
Arthropoda (*Nephrops norvegicus*), Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV048
Fix: 326 **E:** 640644 **N:** 6122943 **Depth (m):** 81
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

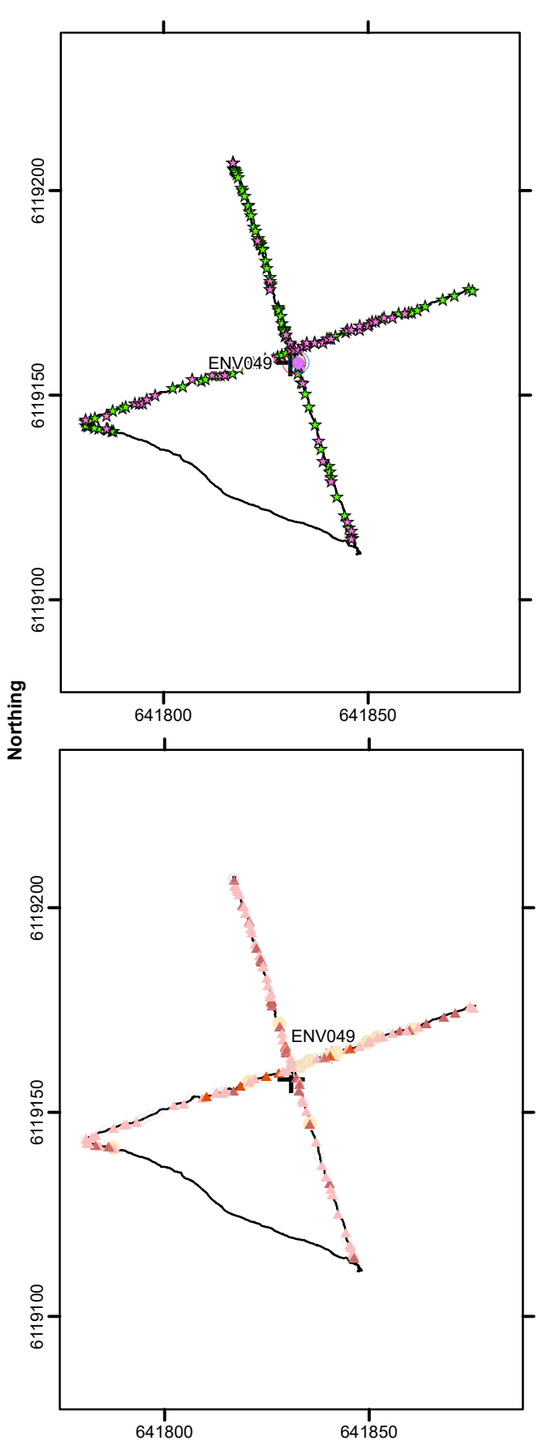


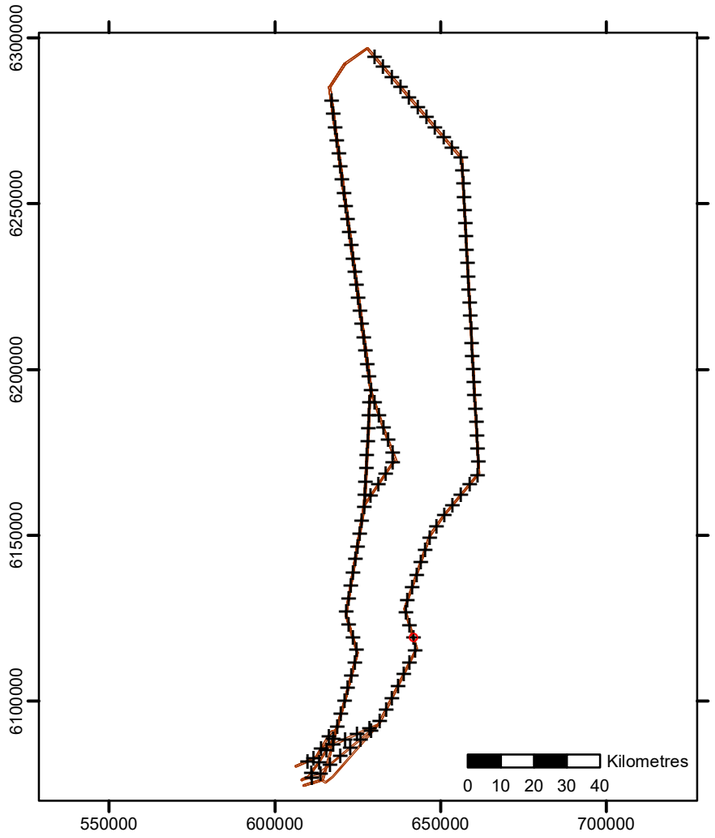
Station: ENV048
Fix: 326 **E:** 640644 **N:** 6122943 **Depth (m):** 81
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV049

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

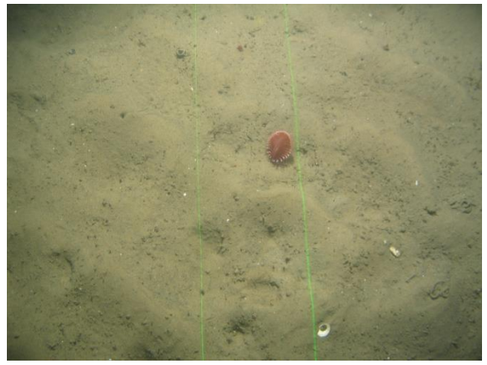
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

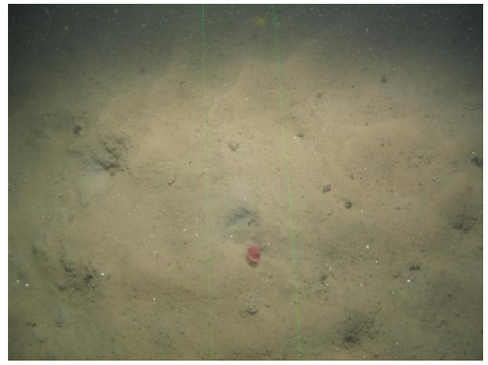
Easting



Station: ENV049
Fix: 2380 **E:** 641817 **N:** 6119207 **Depth (m):** 76

Sediment Description:
Soft sediments

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV049
Fix: 2423 **E:** 641848 **N:** 6119166 **Depth (m):** 75

Sediment Description:
Soft sediments

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV049
Fix: 470 **E:** 641832 **N:** 6119158 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

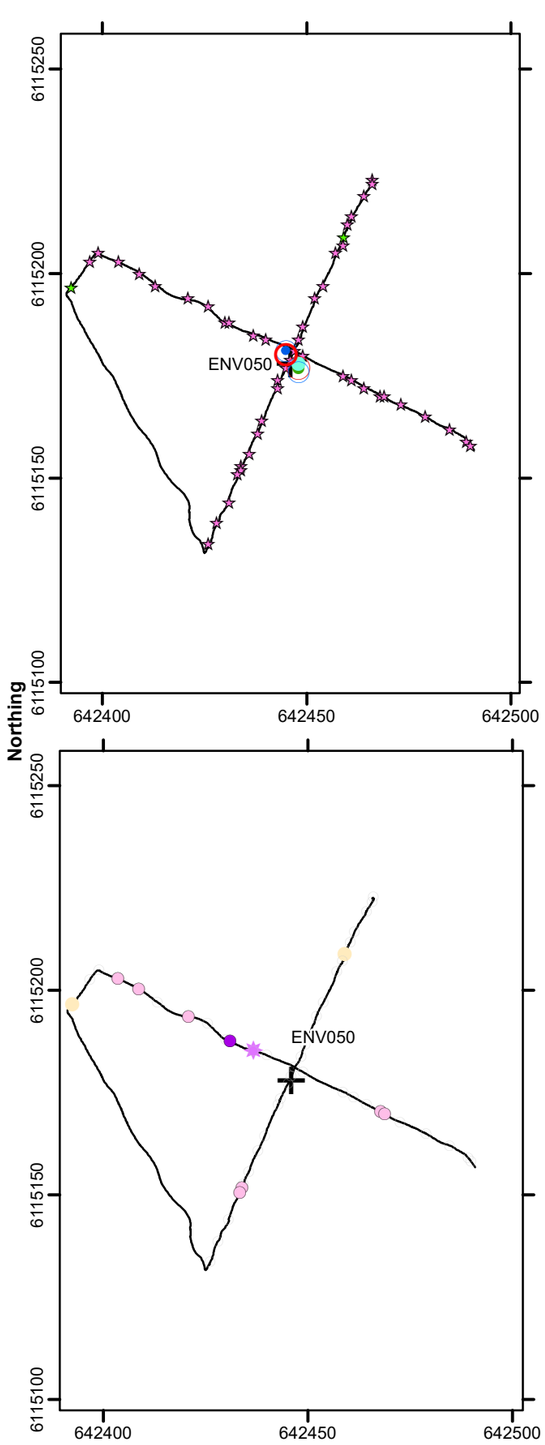


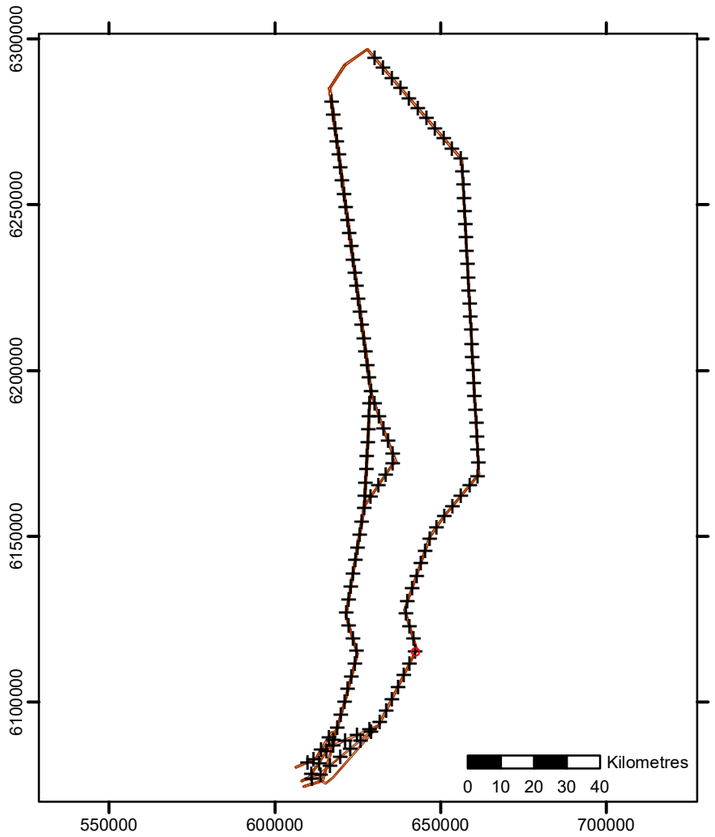
Station: ENV049
Fix: 470 **E:** 641832 **N:** 6119158 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV050

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

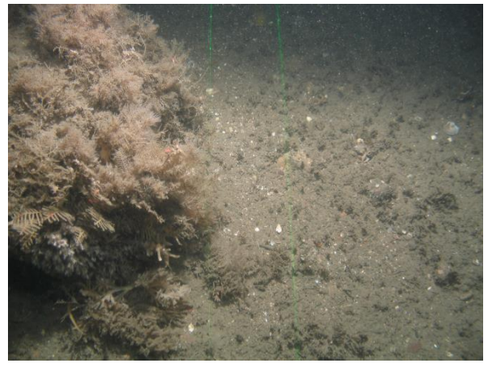
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV050
Fix: 2439 **E:** 642452 **N:** 6115194 **Depth (m):** 66

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*), Cnidaria (Hydrozoa *stet.*, *Tubularia indivisa inc*), Porifera (Hard Substrate Sponges)



Station: ENV050
Fix: 2472 **E:** 642469 **N:** 6115170 **Depth (m):** 66

Sediment Description:
A large boulder on soft sediment and gravel

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*), Porifera (Hard Substrate Sponges)



Station: ENV050
Fix: 330 **E:** 642448 **N:** 6115178 **Depth (m):** 68
Retention: MFA

Sediment Description:
Coarse sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Asteroidea)

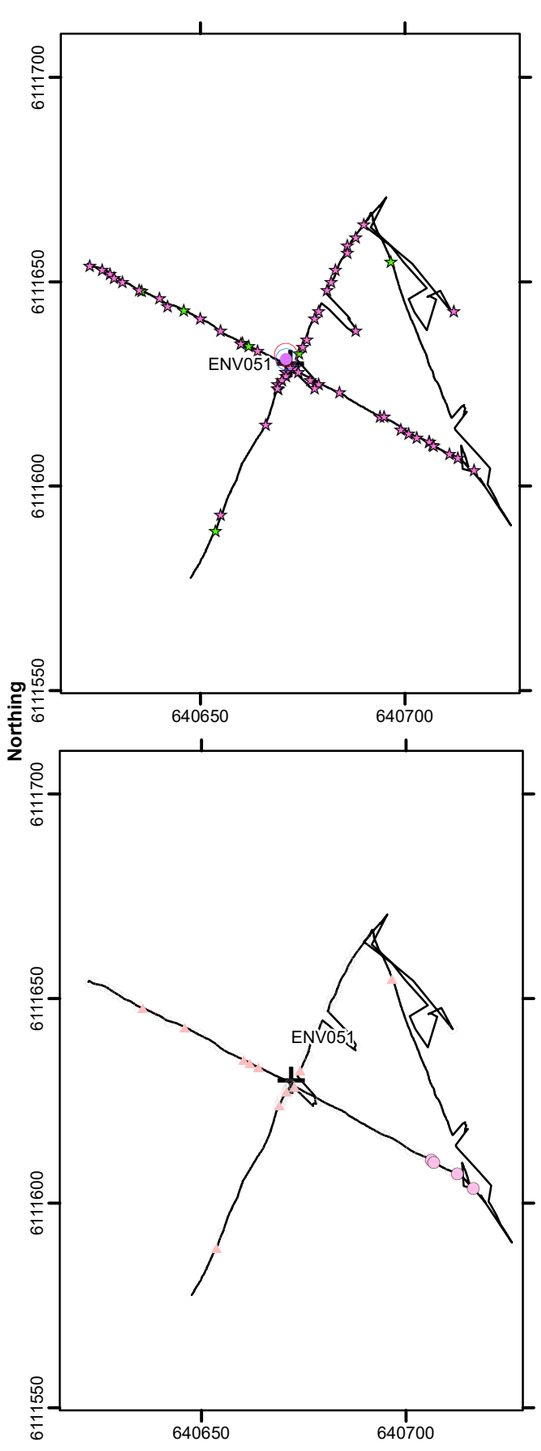


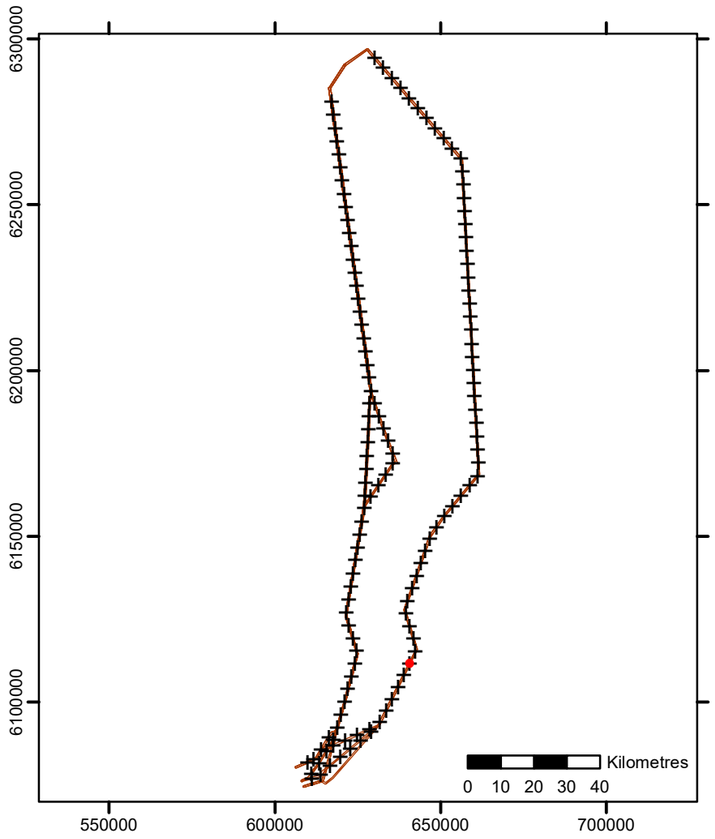
Station: ENV050
Fix: 330 **E:** 642448 **N:** 6115178 **Depth (m):** 68
Retention: MFA

Sediment Description:
Coarse sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Asteroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV051

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

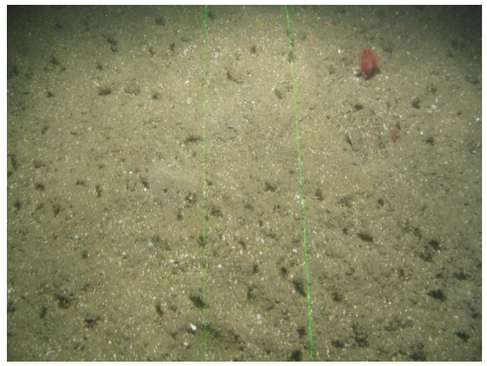
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

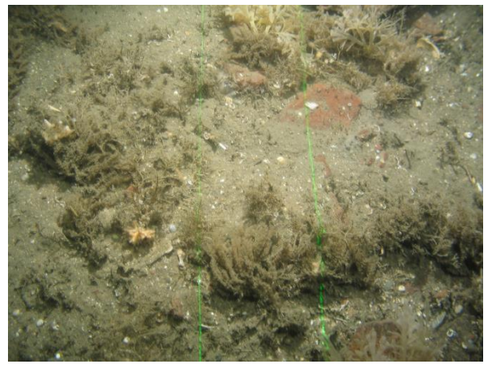
Easting



Station: ENV051
Fix: 2489 **E:** 640664 **N:** 6111633 **Depth (m):** 65

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087), Echinodermata (Ophiuroidea *stet.*)



Station: ENV051
Fix: 2501 **E:** 640706 **N:** 6111611 **Depth (m):** 65

Sediment Description:
Soft sediment with scattered cobbles

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*), Porifera (Hard Substrate Sponges)



Station: ENV051
Fix: 475 **E:** 640671 **N:** 6111631 **Depth (m):** 69
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

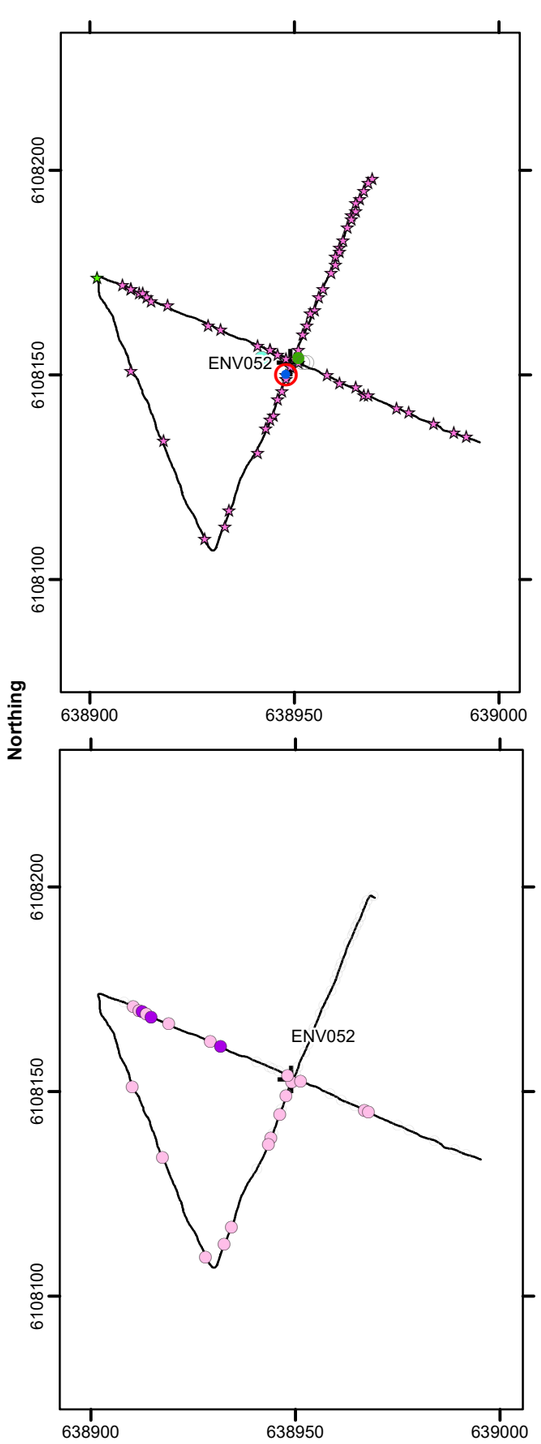


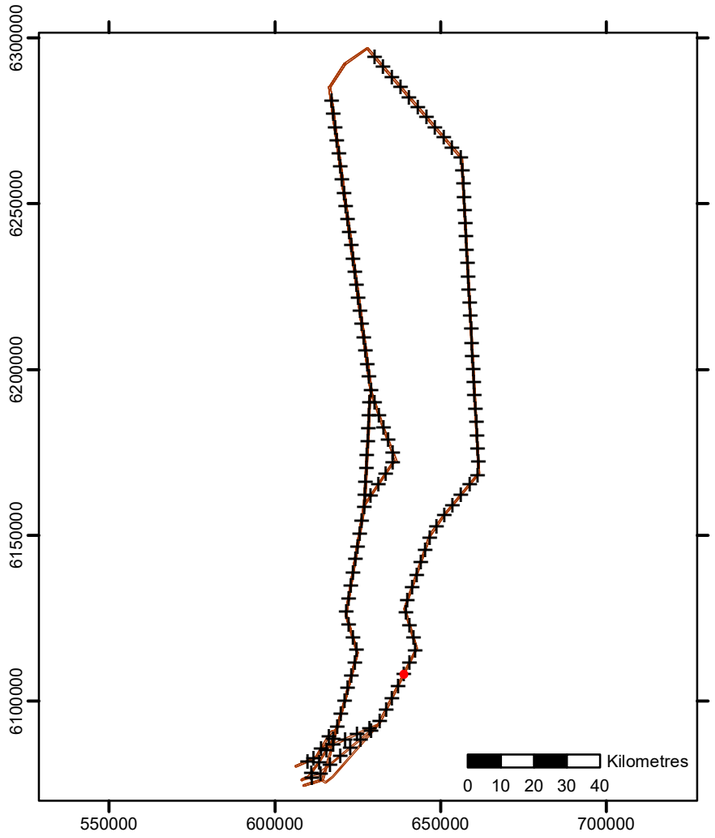
Station: ENV051
Fix: 475 **E:** 640671 **N:** 6111631 **Depth (m):** 69
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV052

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

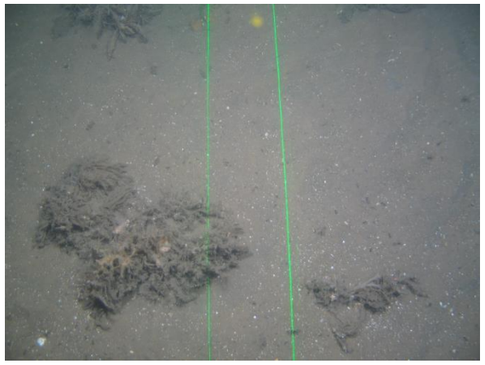
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

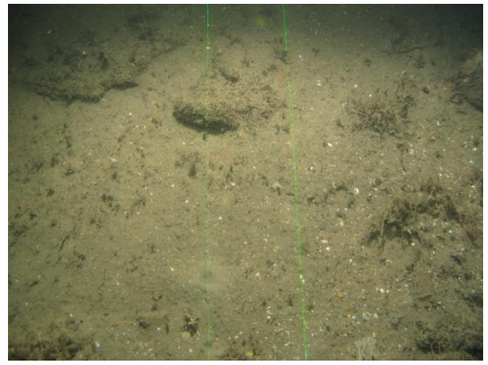
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV052
Fix: 2530 **E:** 638969 **N:** 6108198 **Depth (m):** 64

Sediment Description:
Soft sediment with shell hash

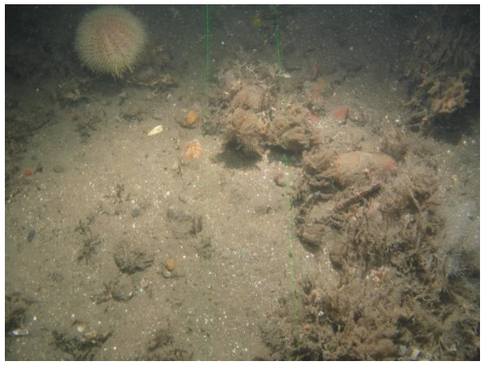
Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*)



Station: ENV052
Fix: 2537 **E:** 638964 **N:** 6108188 **Depth (m):** 64

Sediment Description:
Scattered cobbles.

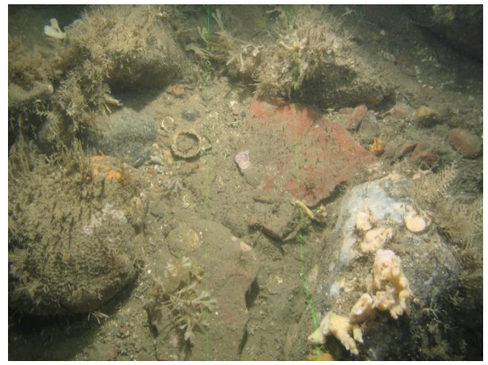
Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*), Faunal turf



Station: ENV052
Fix: 2564 **E:** 638928 **N:** 6108110 **Depth (m):** 64

Sediment Description:
Scattered cobbles.

Faunal Description:
Cnidaria (Hydrozoa *stet.*), Echinodermata (*Echinus esculentus inc*), Faunal turf, Porifera (Hard Substrate Sponges)

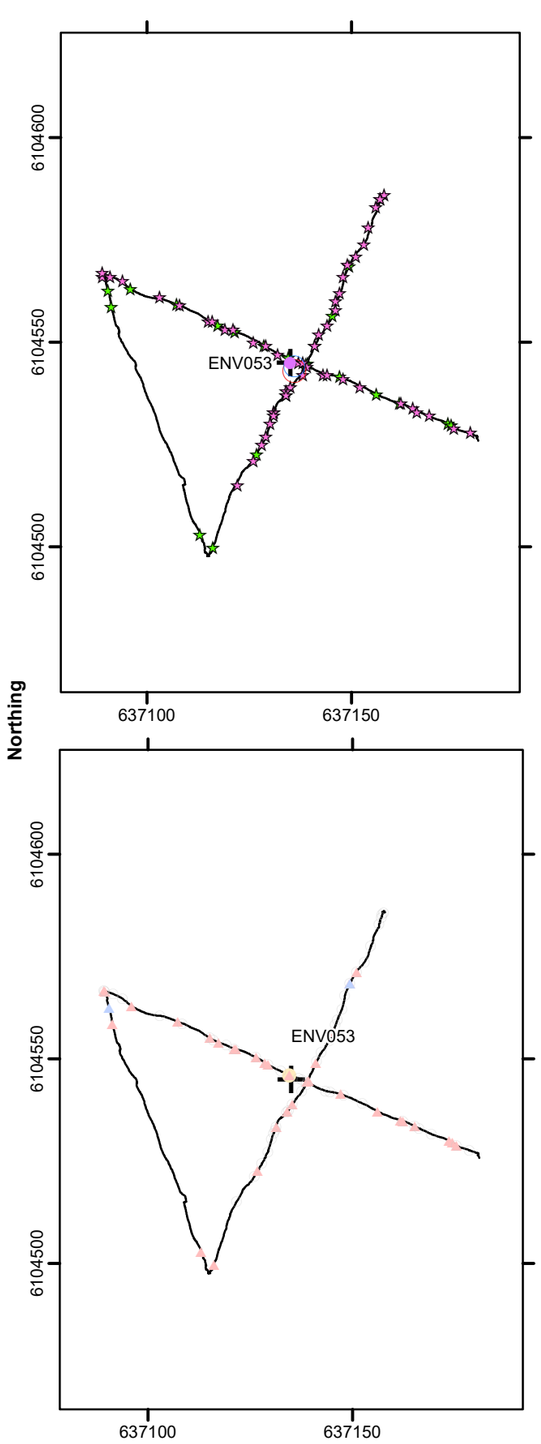


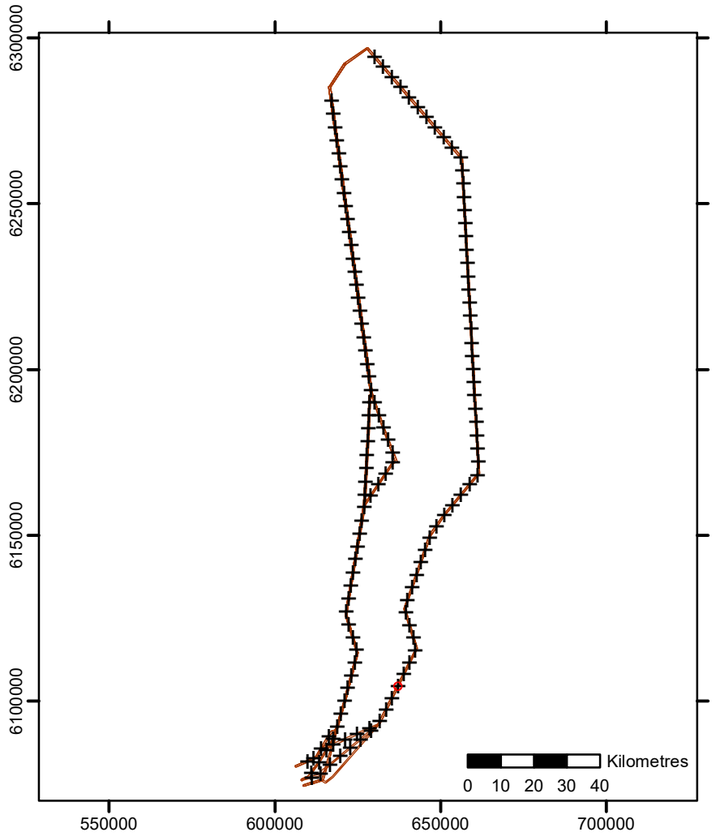
Station: ENV052
Fix: 2571 **E:** 638913 **N:** 6108170 **Depth (m):** 64

Sediment Description:
Boulder area

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*), Faunal turf, Porifera (Hard Substrate Sponges)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV053

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

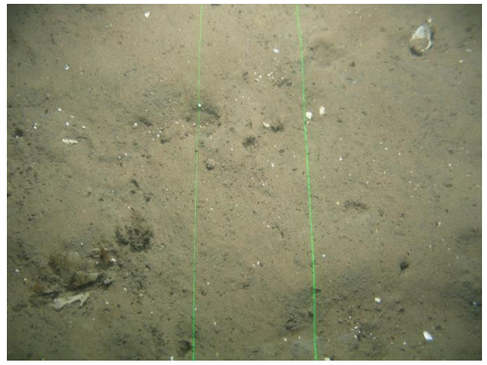
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

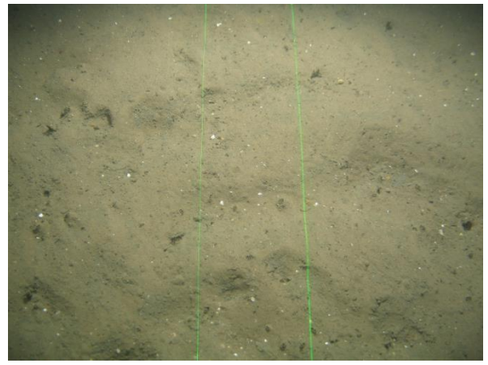
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV053
Fix: 2624 **E:** 637094 **N:** 6104565 **Depth (m):** 65

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*)



Station: ENV053
Fix: 2638 **E:** 637148 **N:** 6104541 **Depth (m):** 65

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV053
Fix: 477 **E:** 637136 **N:** 6104543 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)

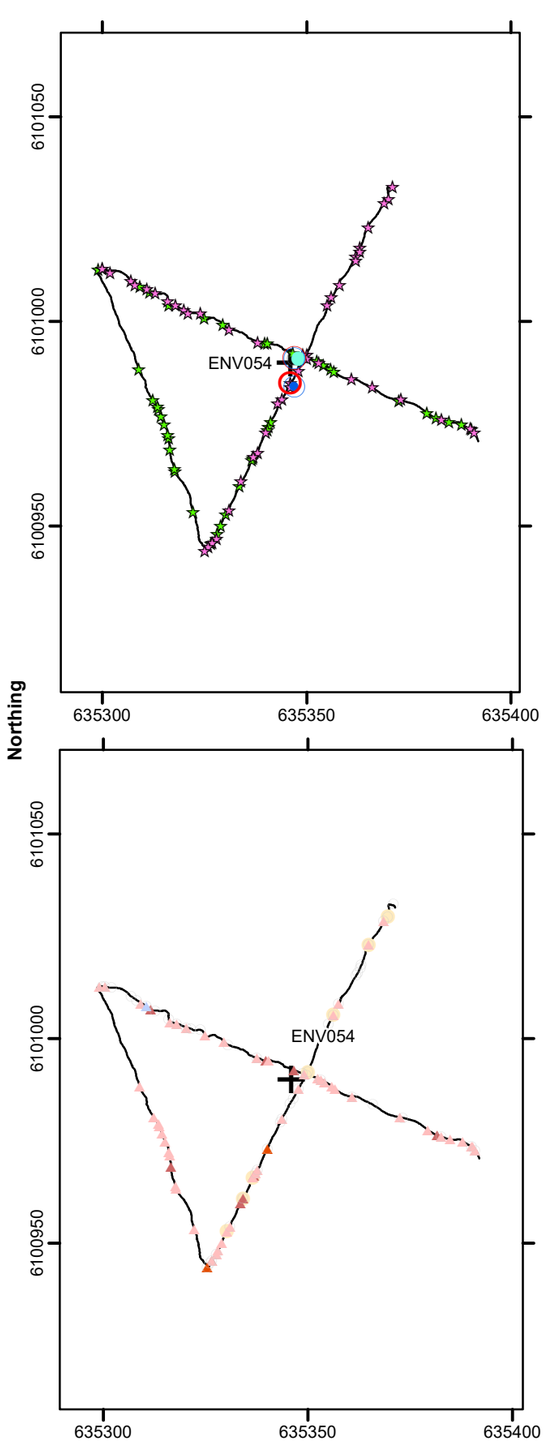


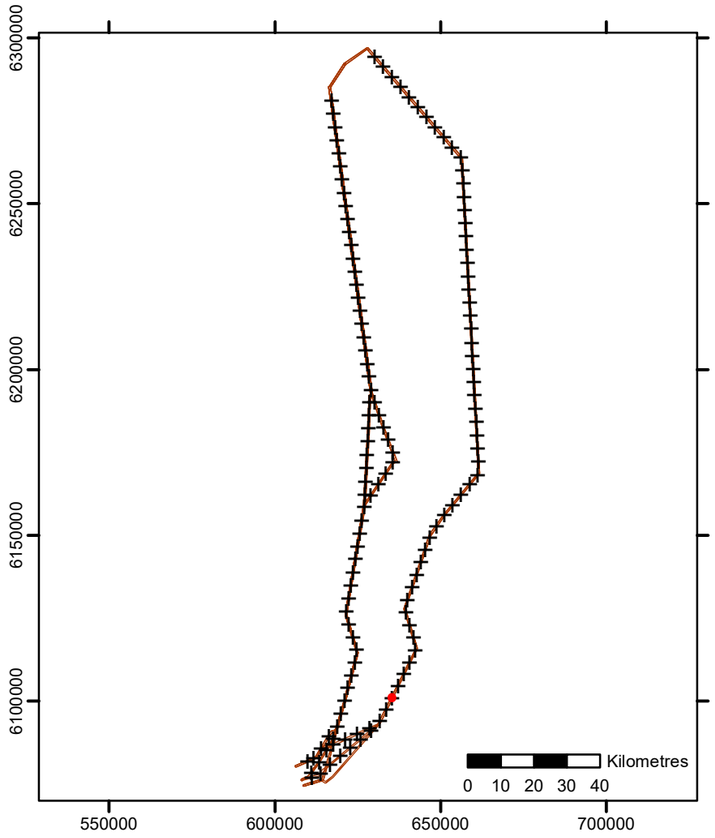
Station: ENV053
Fix: 477 **E:** 637136 **N:** 6104543 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV054

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

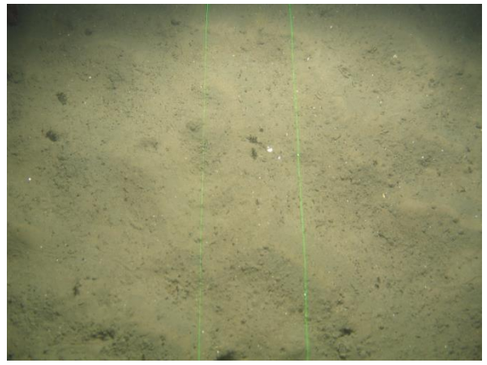
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

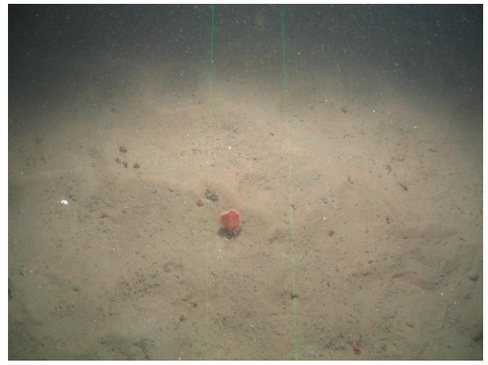
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV054
Fix: 2646 **E:** 635371 **N:** 6101033 **Depth (m):** 69

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV054
Fix: 2672 **E:** 635325 **N:** 6100944 **Depth (m):** 68

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087), Faunal turf



Station: ENV054
Fix: 341 **E:** 635348 **N:** 6100991 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

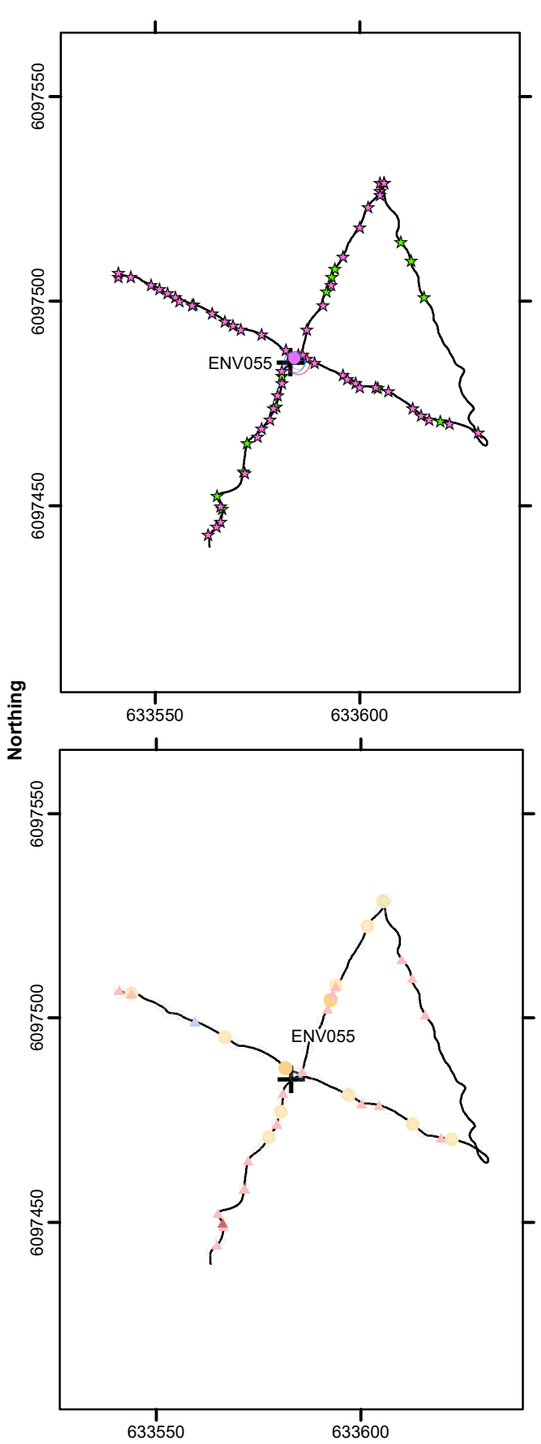


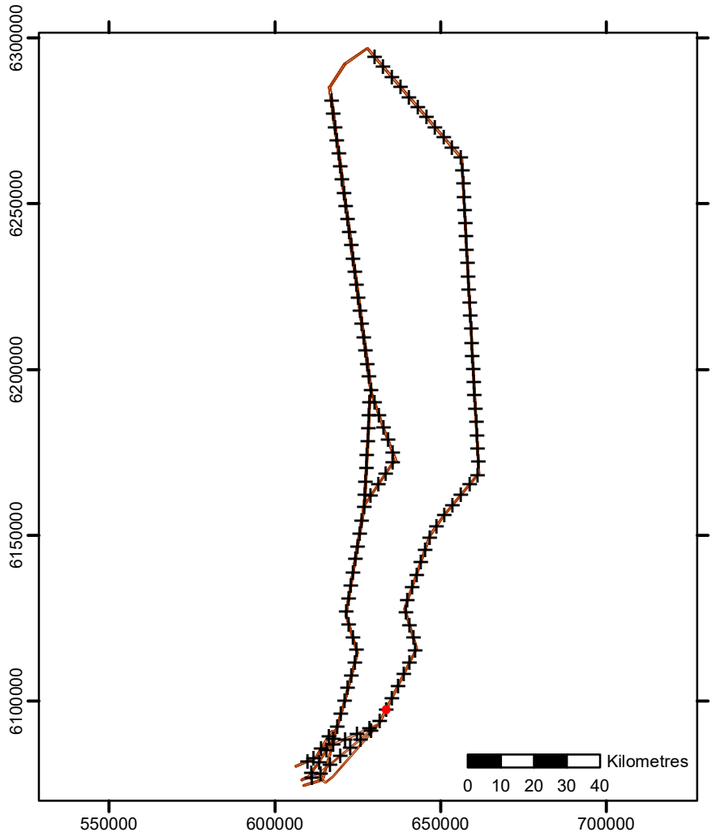
Station: ENV054
Fix: 341 **E:** 635348 **N:** 6100991 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV055

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

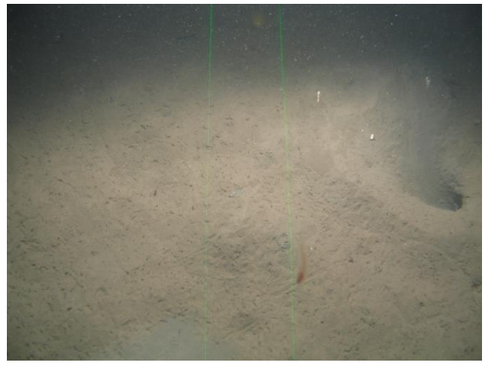
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

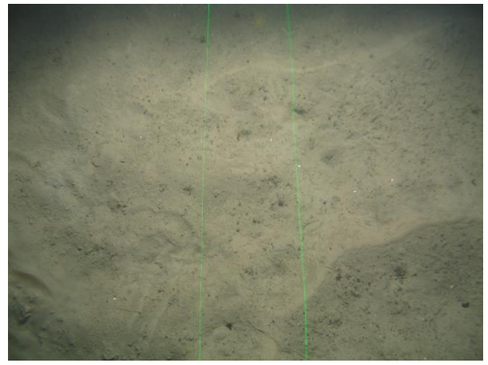
Easting



Station: ENV055
Fix: 2705 **E:** 633567 **N:** 6097495 **Depth (m):** 75

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV055
Fix: 2743 **E:** 633576 **N:** 6097469 **Depth (m):** 75

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV055
Fix: 481 **E:** 633585 **N:** 6097485 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

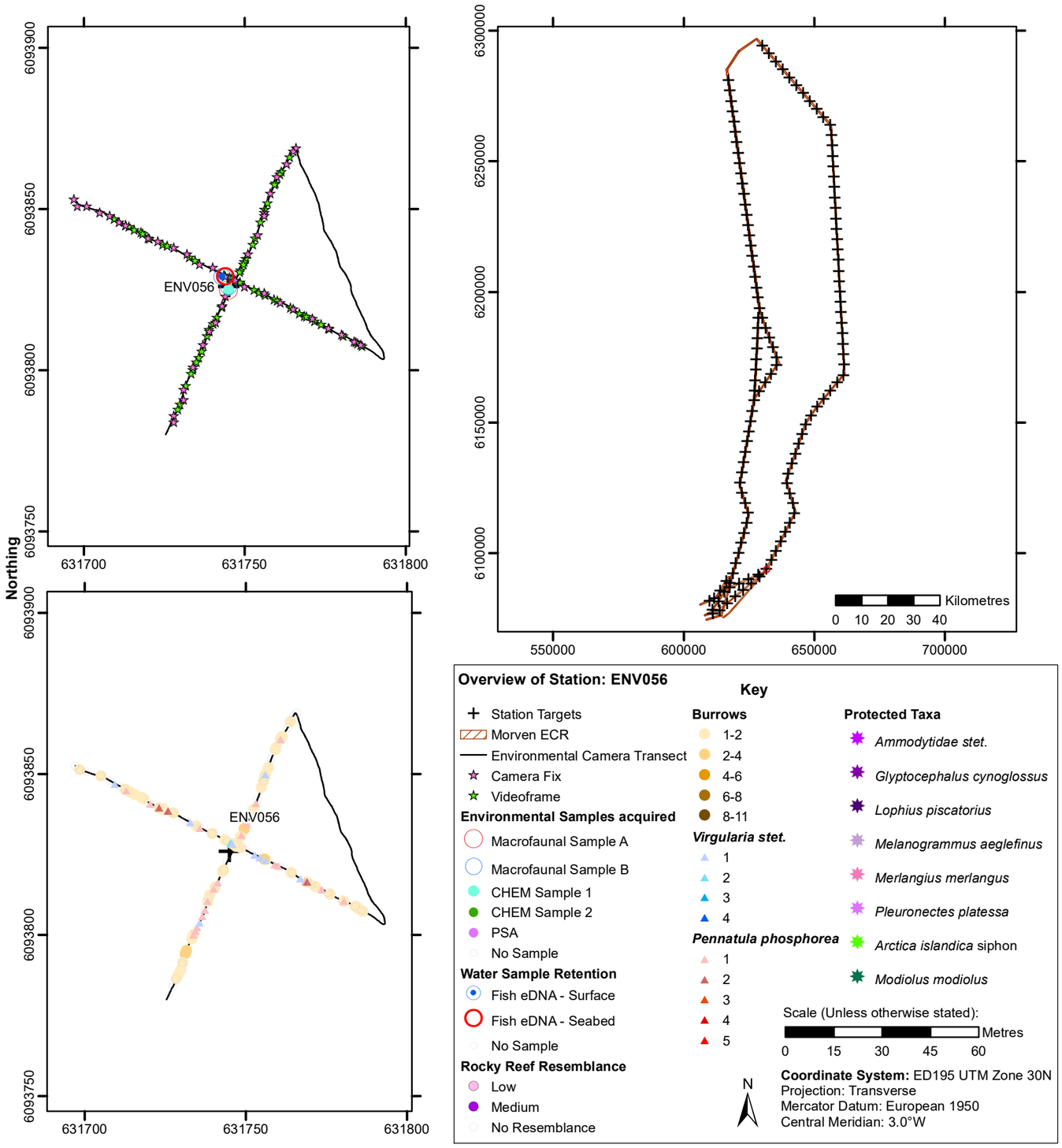


Station: ENV055
Fix: 481 **E:** 633585 **N:** 6097485 **Depth (m):** 78
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV056

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

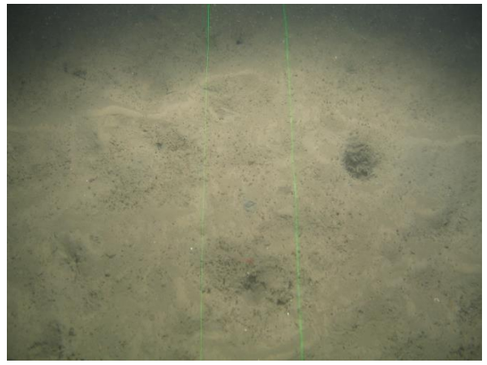
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

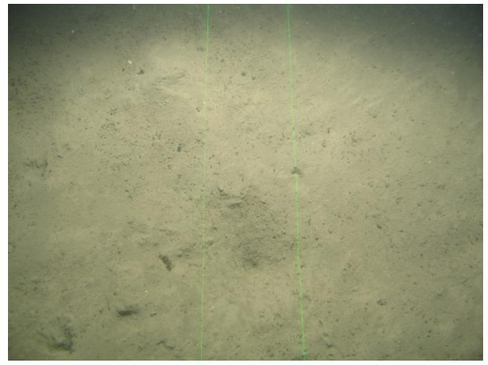
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV056
Fix: 2757 **E:** 631720 **N:** 6093841 **Depth (m):** 75

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV056
Fix: 2792 **E:** 631728 **N:** 6093784 **Depth (m):** 75

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV056
Fix: 345 **E:** 631745 **N:** 6093825 **Depth (m):** 80
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

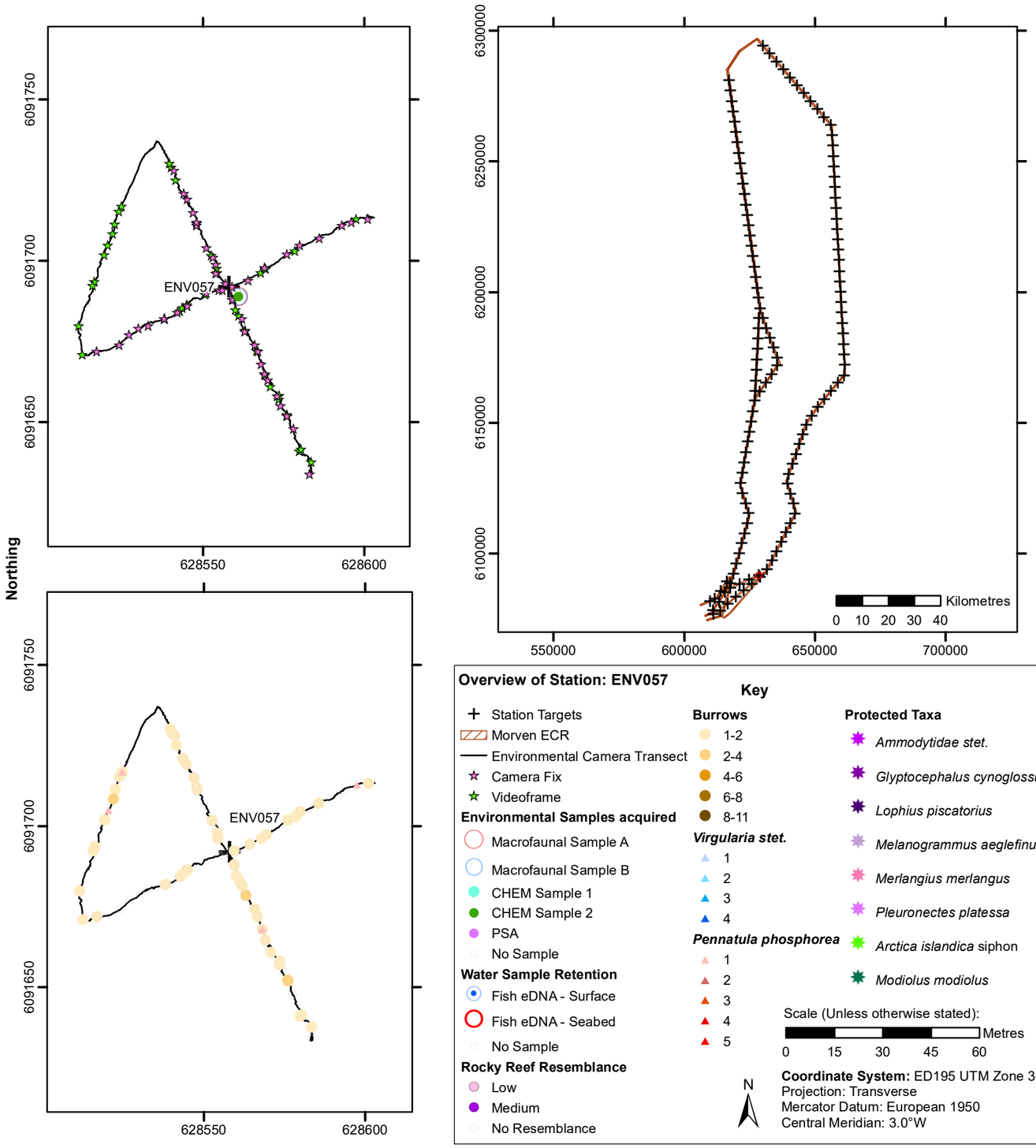


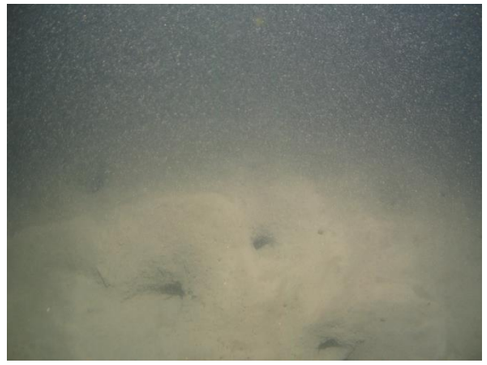
Station: ENV056
Fix: 345 **E:** 631745 **N:** 6093825 **Depth (m):** 80
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS

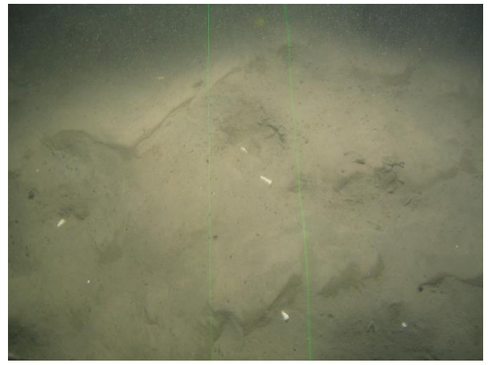




Station: ENV057
Fix: 5865 **E:** 628576 **N:** 6091652 **Depth (m):** 79

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV057
Fix: 5890 **E:** 628530 **N:** 6091679 **Depth (m):** 79

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV057
Fix: 348 **E:** 628561 **N:** 6091689 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda)

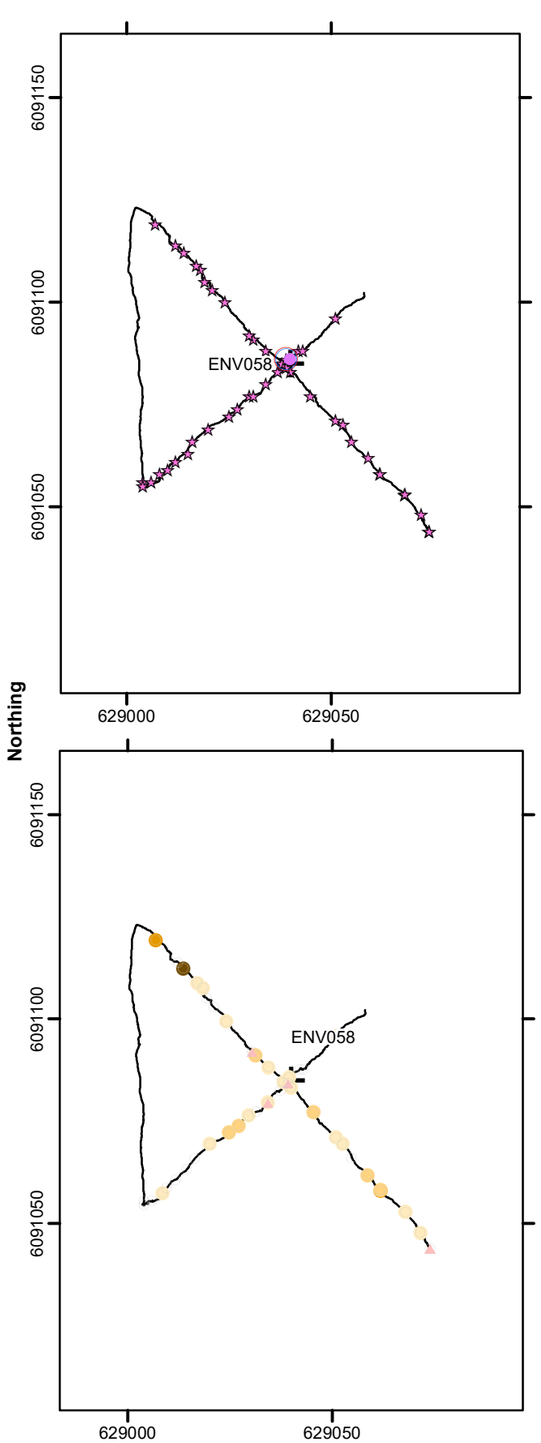


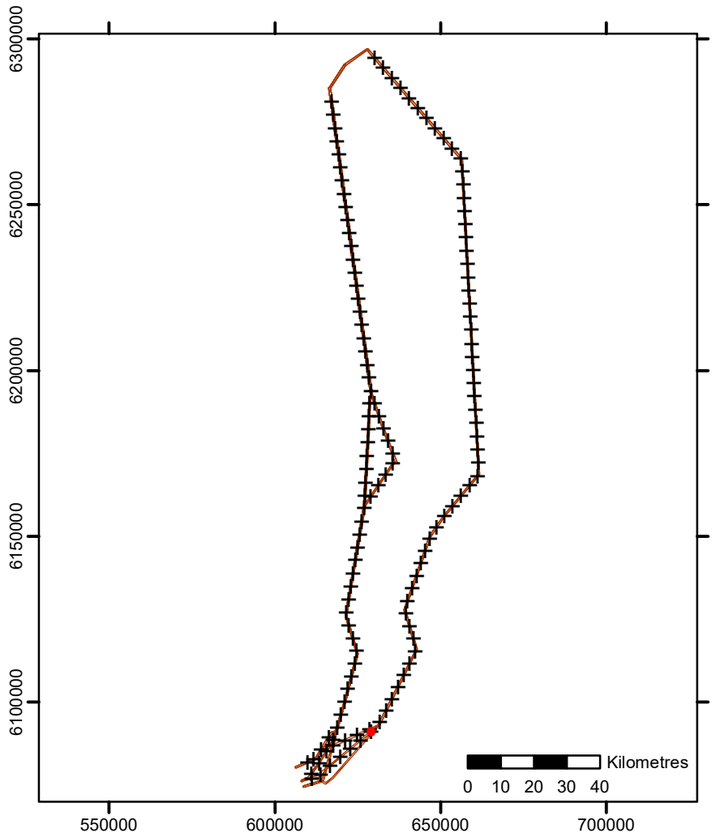
Station: ENV057
Fix: 348 **E:** 628561 **N:** 6091689 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV058

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

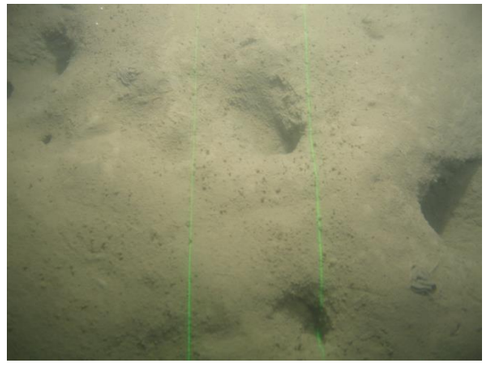
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

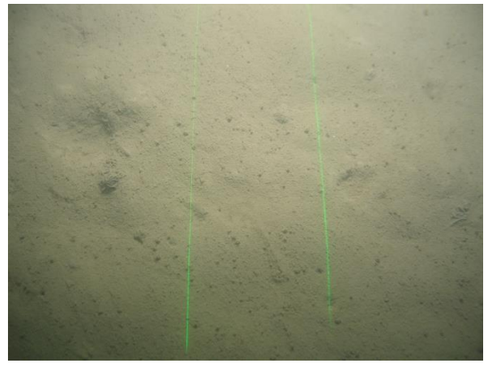
Easting



Station: ENV058
Fix: 2796 **E:** 629062 **N:** 6091058 **Depth (m):** 77

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV058
Fix: 2822 **E:** 629016 **N:** 6091066 **Depth (m):** 78

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV058
Fix: 352 **E:** 629040 **N:** 6091086 **Depth (m):** 82
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

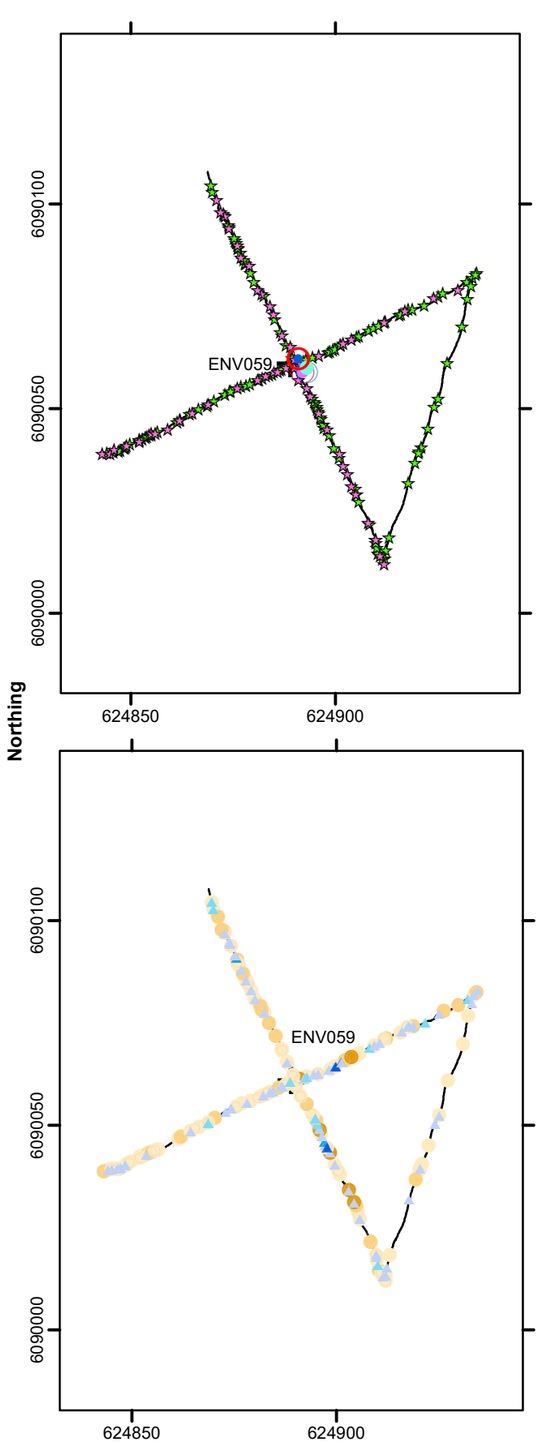


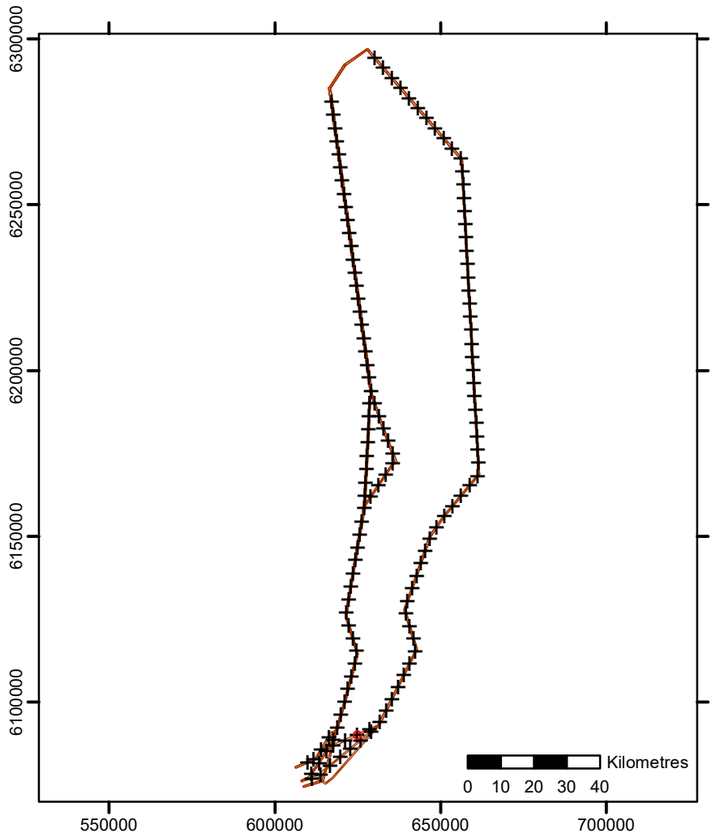
Station: ENV058
Fix: 352 **E:** 629040 **N:** 6091086 **Depth (m):** 82
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV059

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

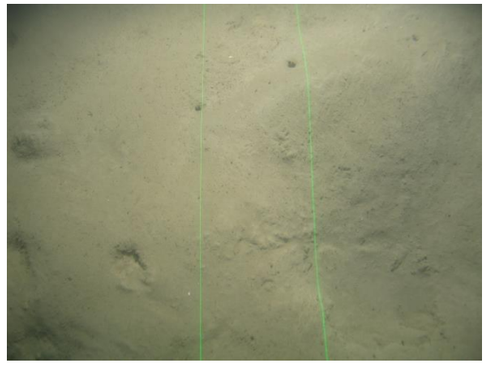
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

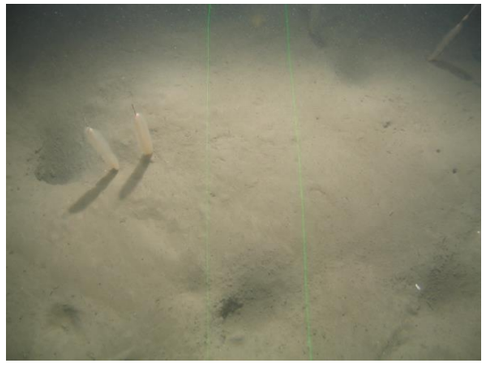
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV059
Fix: 6280 **E:** 624862 **N:** 6090047 **Depth (m):** 73

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV059
Fix: 6305 **E:** 624901 **N:** 6090039 **Depth (m):** 73

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV059
Fix: 355 **E:** 624892 **N:** 6090059 **Depth (m):** 77
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

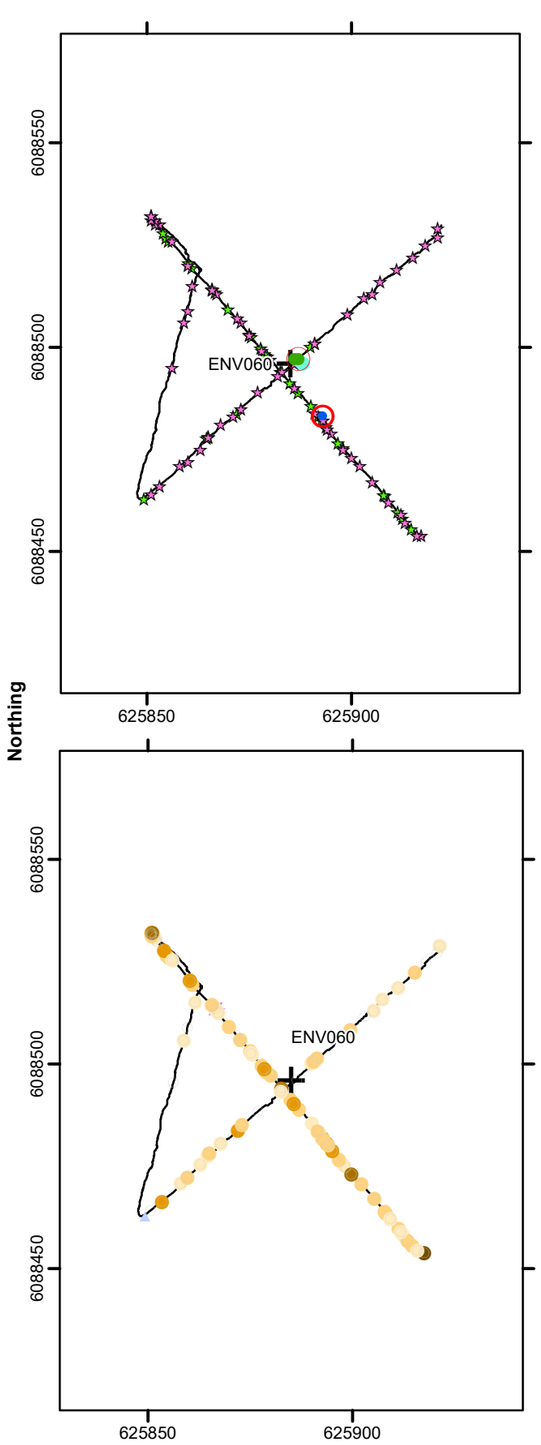


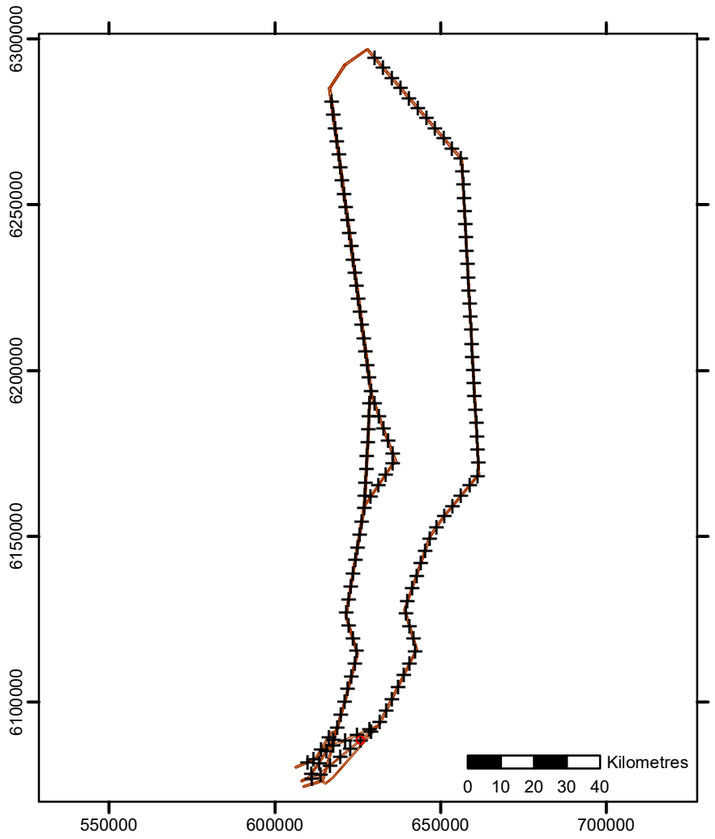
Station: ENV059
Fix: 355 **E:** 624892 **N:** 6090059 **Depth (m):** 77
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV060

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

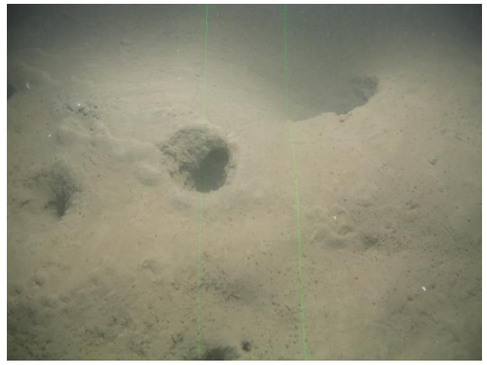
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV060
Fix: 2845 **E:** 625894 **N:** 6088480 **Depth (m):** 72

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV060
Fix: 2868 **E:** 625860 **N:** 6088509 **Depth (m):** 72

Sediment Description:
Soft sediment with evidence of bioturbation

Faunal Description:
Chordata (Gadidae *indet.* GL0001)



Station: ENV060
Fix: 360 **E:** 625888 **N:** 6088496 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (*Nephrops* sp.), Echinodermata (*Echinocardium cordatum*)

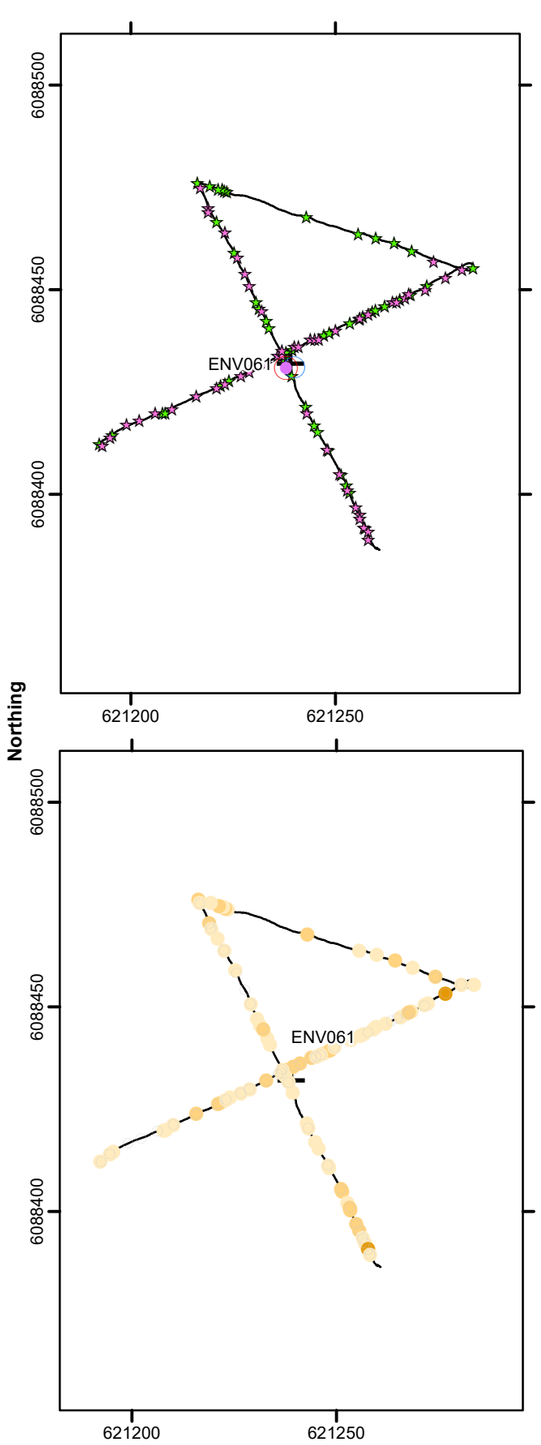


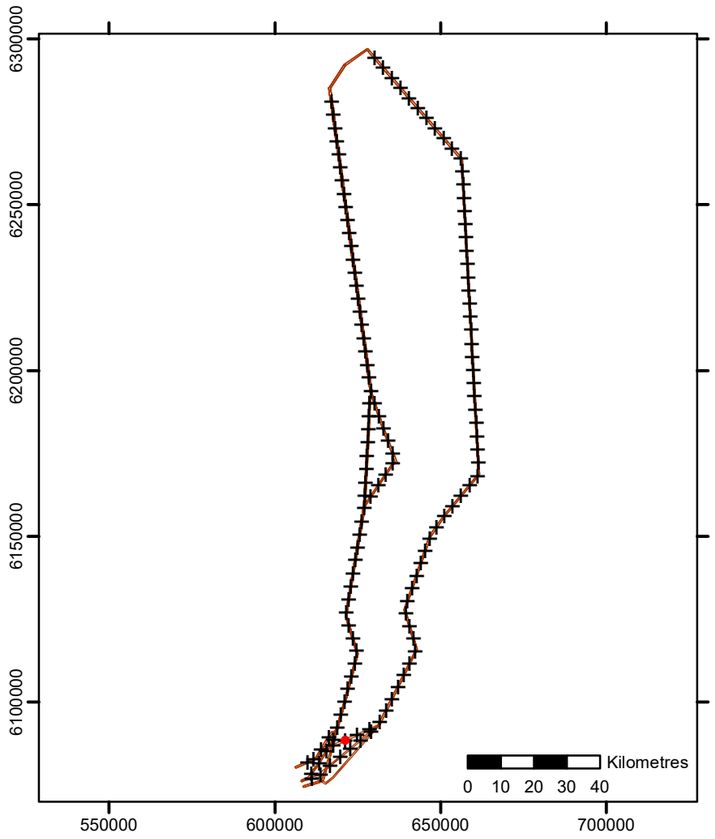
Station: ENV060
Fix: 360 **E:** 625888 **N:** 6088496 **Depth (m):** 75
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (*Nephrops* sp.), Echinodermata (*Echinocardium cordatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV061

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

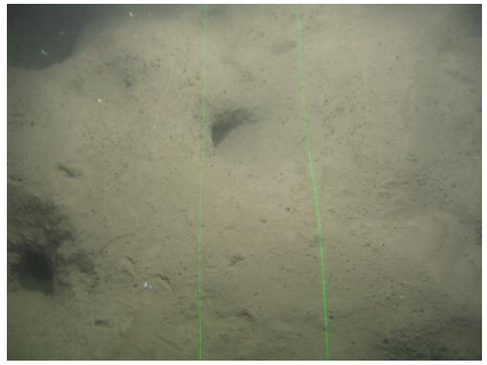
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV061
Fix: 6228 **E:** 621216 **N:** 6088424 **Depth (m):** 58

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV061
Fix: 6266 **E:** 621255 **N:** 6088397 **Depth (m):** 58

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV061
Fix: 363 **E:** 621238 **N:** 6088431 **Depth (m):** 61
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

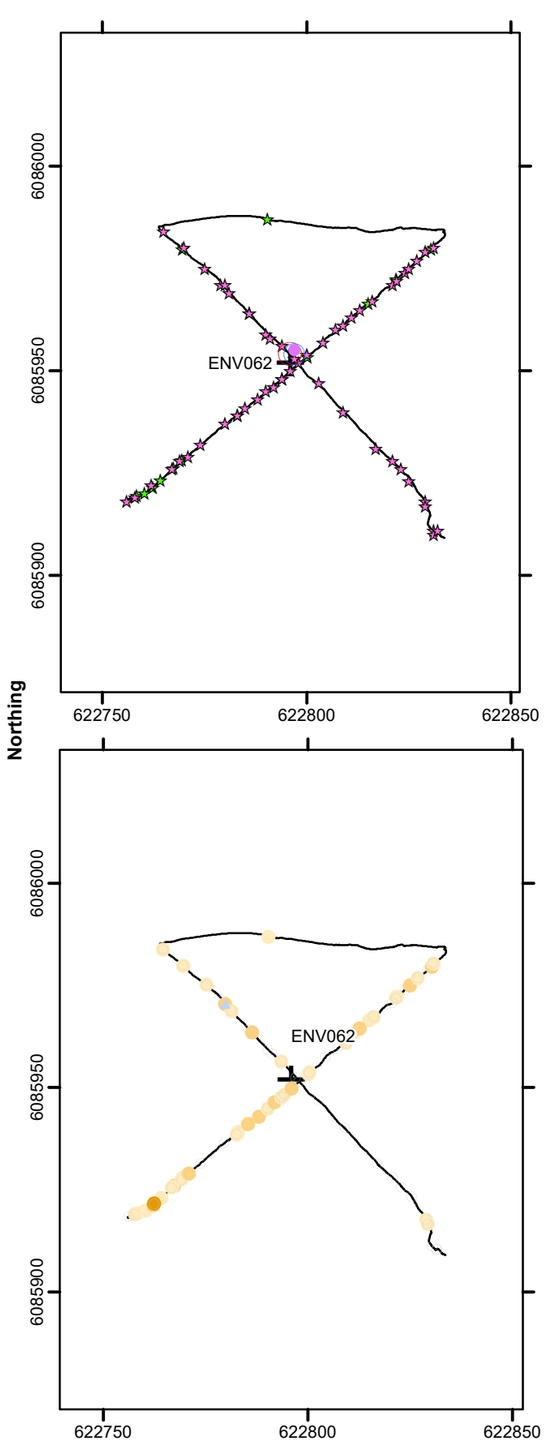


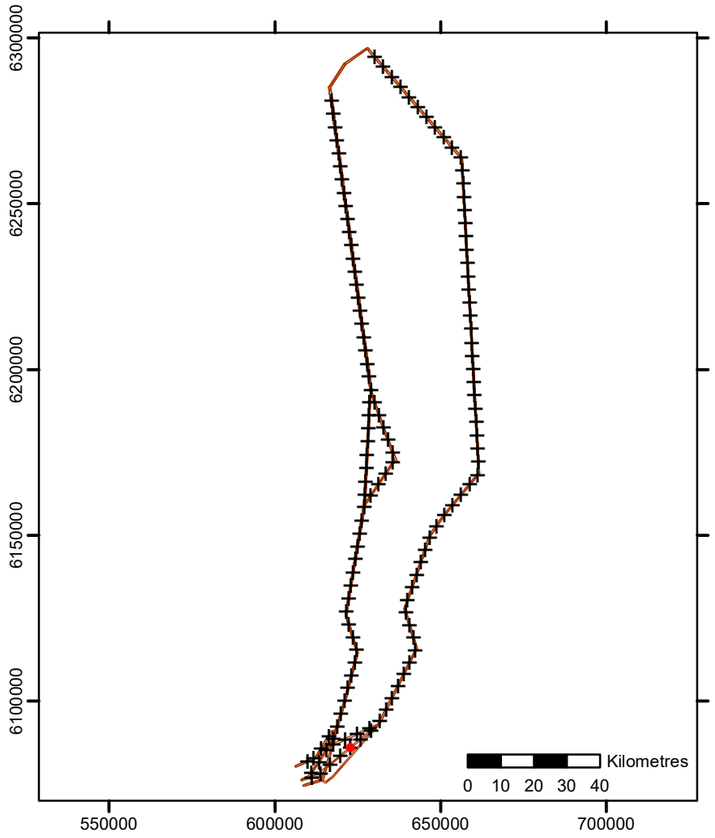
Station: ENV061
Fix: 363 **E:** 621238 **N:** 6088431 **Depth (m):** 61
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV062

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

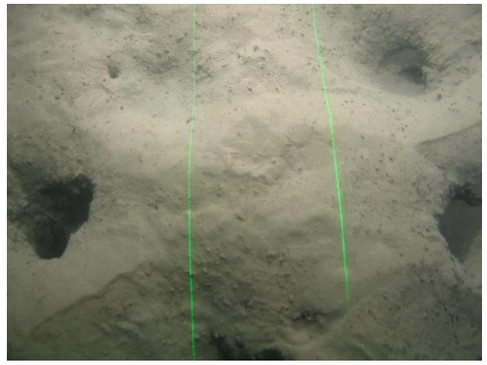
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

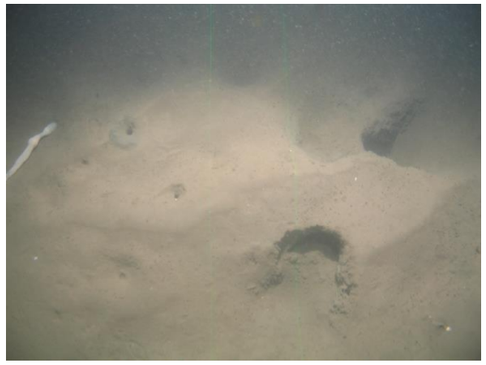
Easting



Station: ENV062
Fix: 6339 **E:** 622792 **N:** 6085946 **Depth (m):** 58

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV062
Fix: 6347 **E:** 622809 **N:** 6085961 **Depth (m):** 58

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV062
Fix: 366 **E:** 622796 **N:** 6085954 **Depth (m):** 61
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

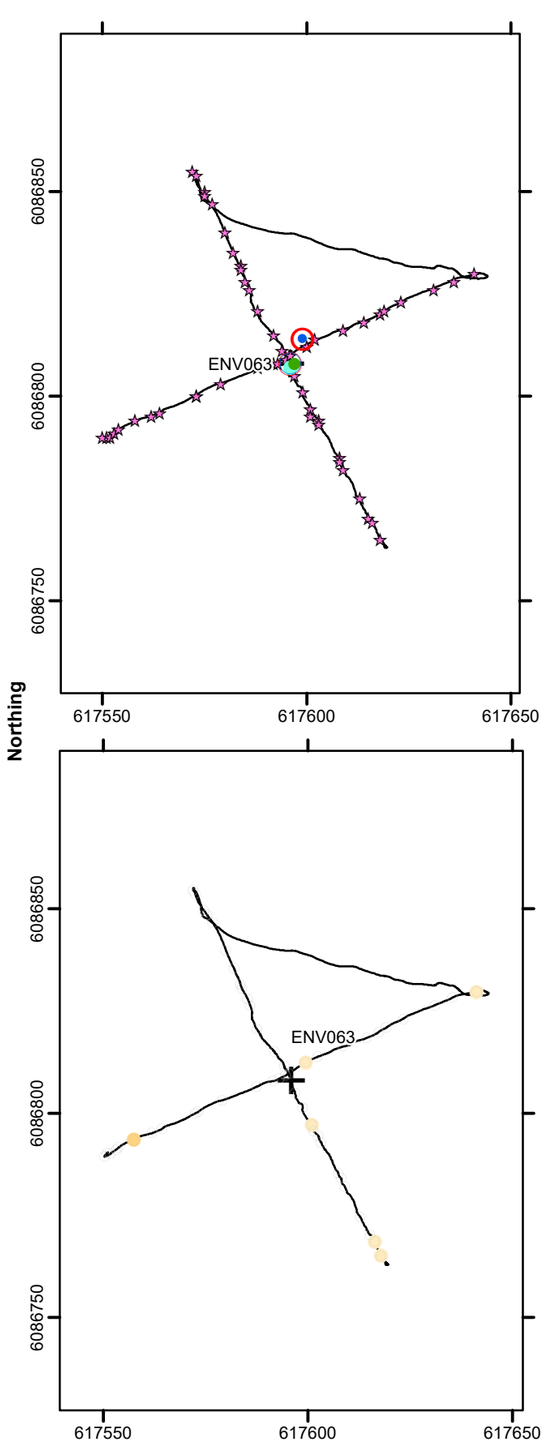


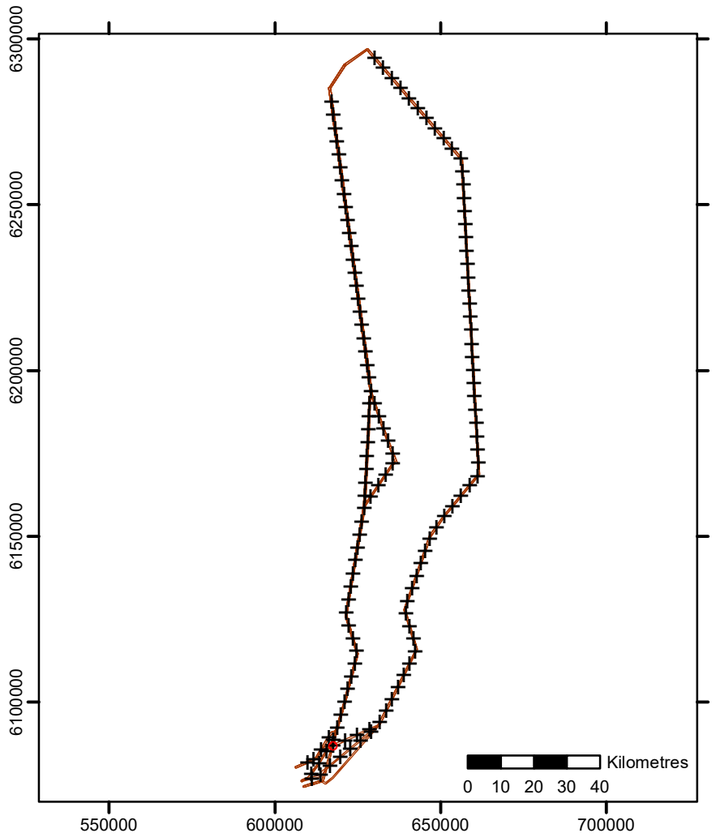
Station: ENV062
Fix: 366 **E:** 622796 **N:** 6085954 **Depth (m):** 61
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV063

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

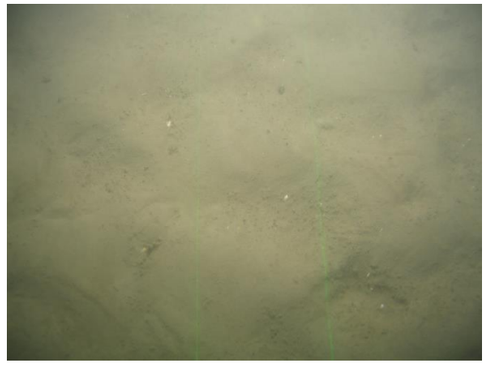
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

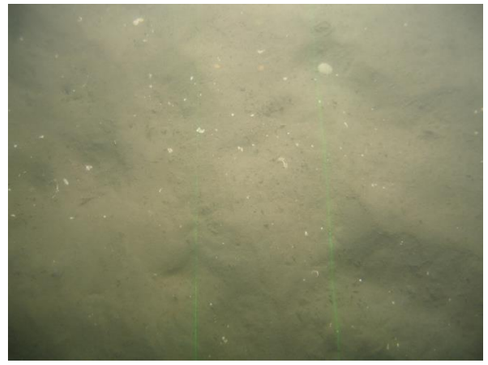
Easting



Station: ENV063
Fix: 6201 **E:** 617582 **N:** 6086835 **Depth (m):** 31

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV063
Fix: 6209 **E:** 617597 **N:** 6086805 **Depth (m):** 23

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV063
Fix: 370 **E:** 617596 **N:** 6086808 **Depth (m):** 50
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

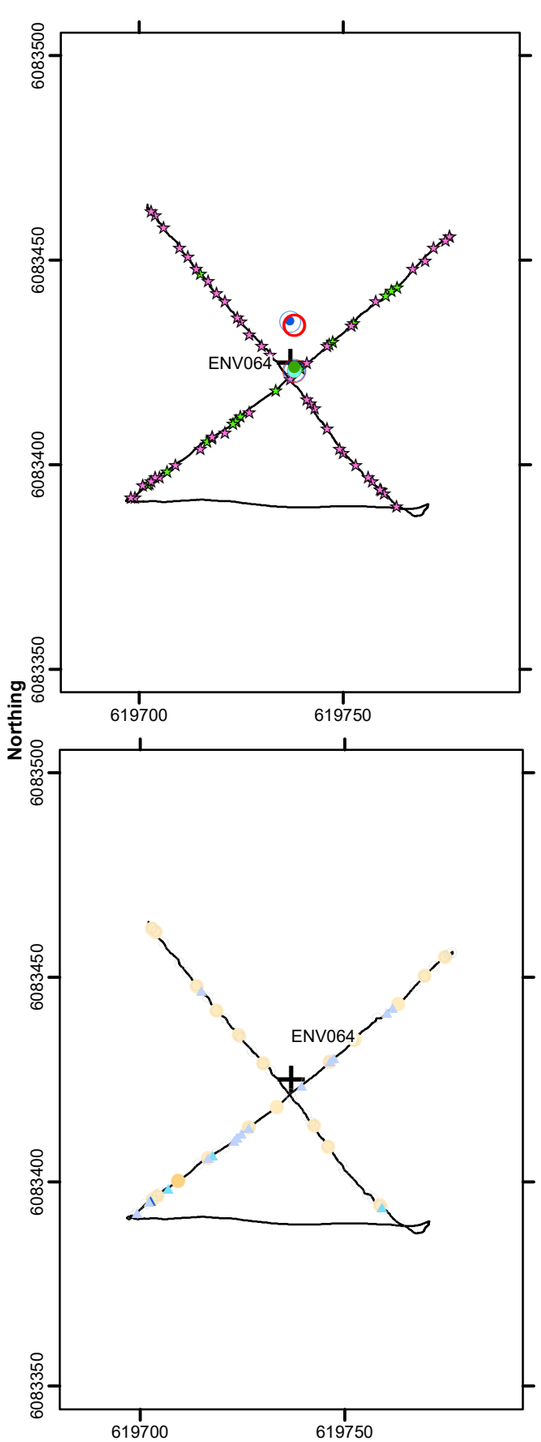


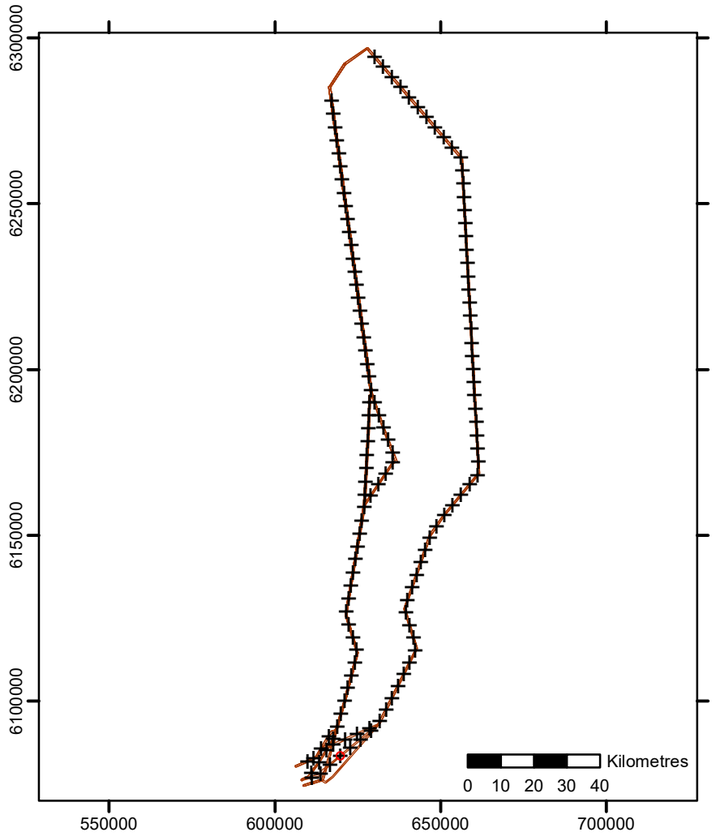
Station: ENV063
Fix: 370 **E:** 617596 **N:** 6086808 **Depth (m):** 50
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV064

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

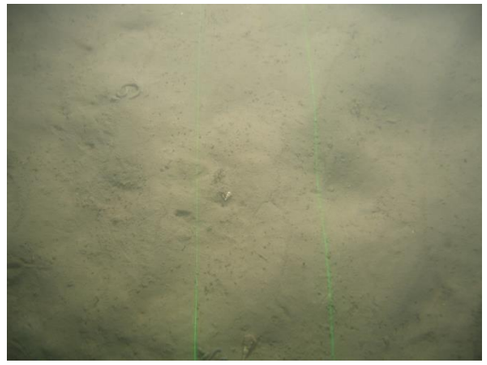
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

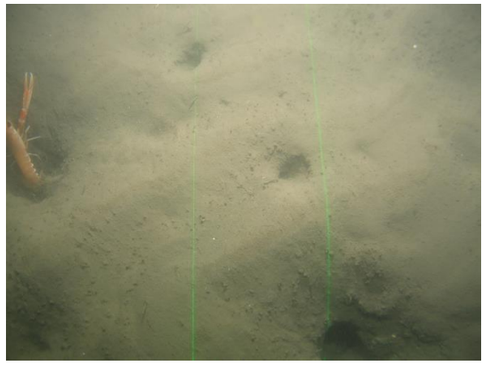
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV064
Fix: 6385 **E:** 619772 **N:** 6083453 **Depth (m):** 49

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV064
Fix: 6397 **E:** 619709 **N:** 6083400 **Depth (m):** 48

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Arthropoda (*Nephrops norvegicus*)



Station: ENV064
Fix: 375 **E:** 619738 **N:** 6083423 **Depth (m):** 51
Retention: MFB

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

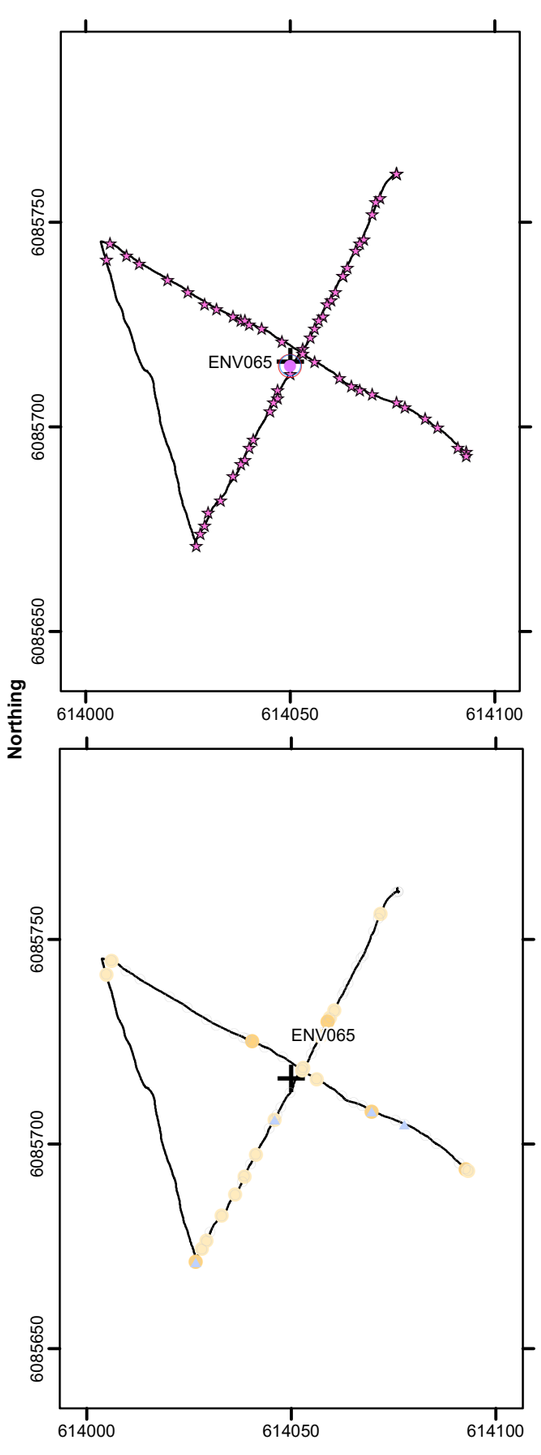


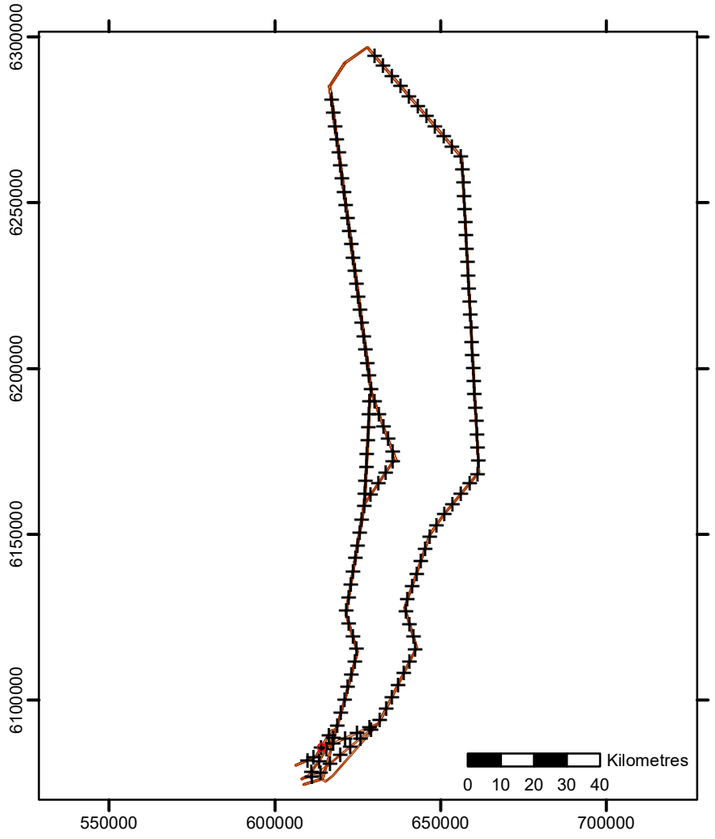
Station: ENV064
Fix: 375 **E:** 619738 **N:** 6083423 **Depth (m):** 51
Retention: MFB

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV065

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

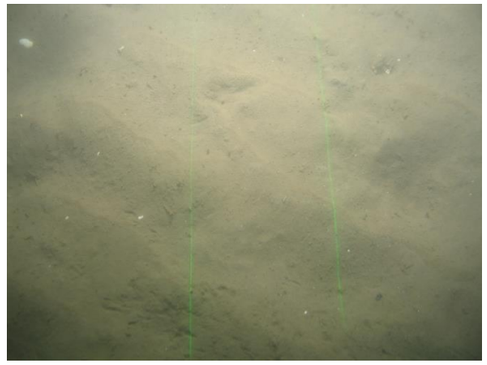
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

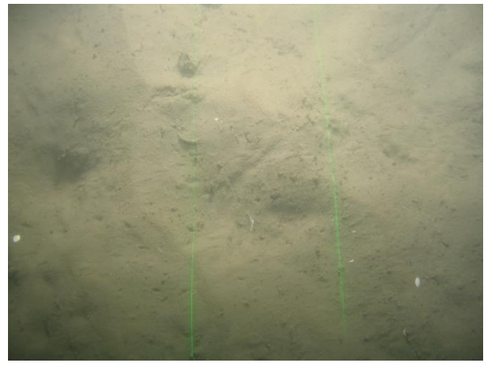
Easting



Station: ENV065
Fix: 6508 **E:** 614040 **N:** 6085695 **Depth (m):** 43

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV065
Fix: 6540 **E:** 614086 **N:** 6085700 **Depth (m):** 44

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV065
Fix: 414 **E:** 614050 **N:** 6085715 **Depth (m):** 47
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

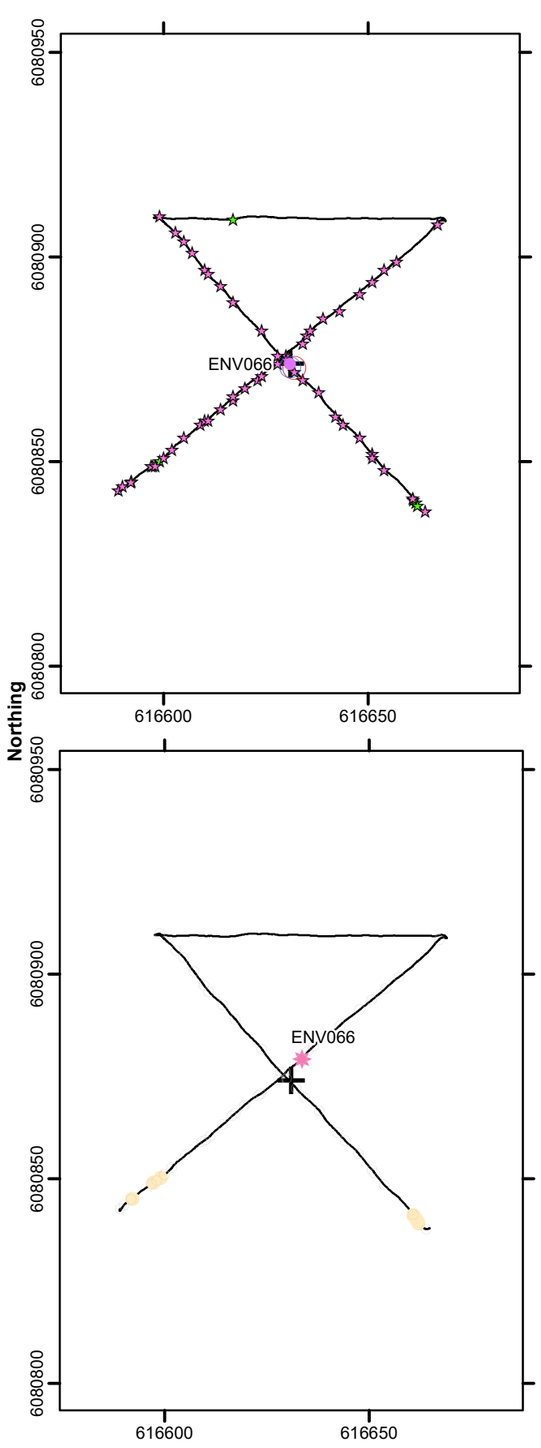


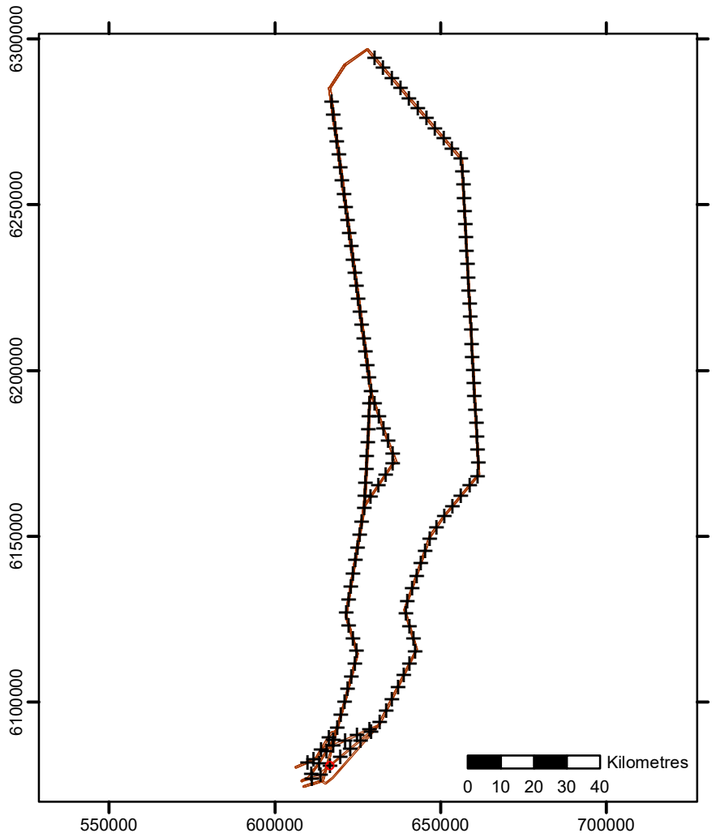
Station: ENV065
Fix: 414 **E:** 614050 **N:** 6085715 **Depth (m):** 47
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV066

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

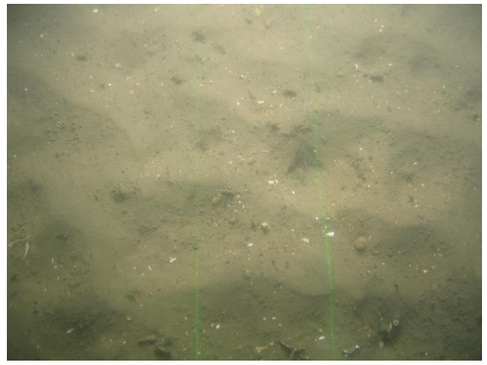
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

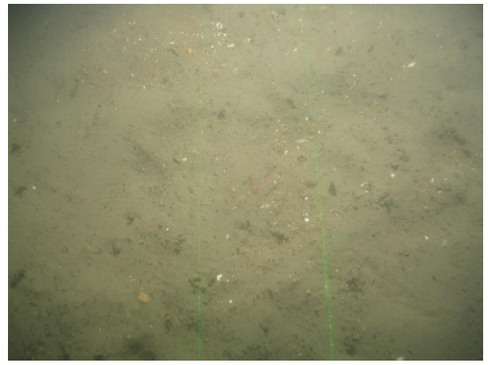
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV066
Fix: 6553 **E:** 616602 **N:** 6080853 **Depth (m):** 42

Sediment Description:
Slightly rippled soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV066
Fix: 6575 **E:** 616667 **N:** 6080908 **Depth (m):** 42

Sediment Description:
Soft sediment with bioturbation and shell fagments

Faunal Description:
No visible fauna



Station: ENV066
Fix: 378 **E:** 616632 **N:** 6080873 **Depth (m):** 45
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta)

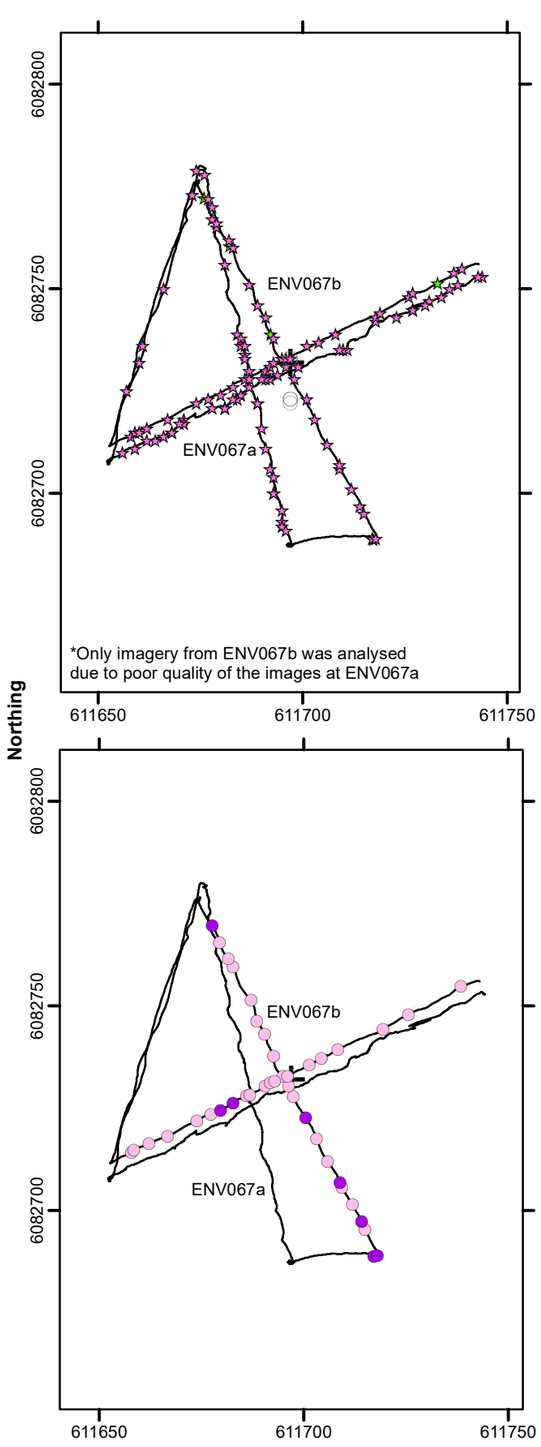


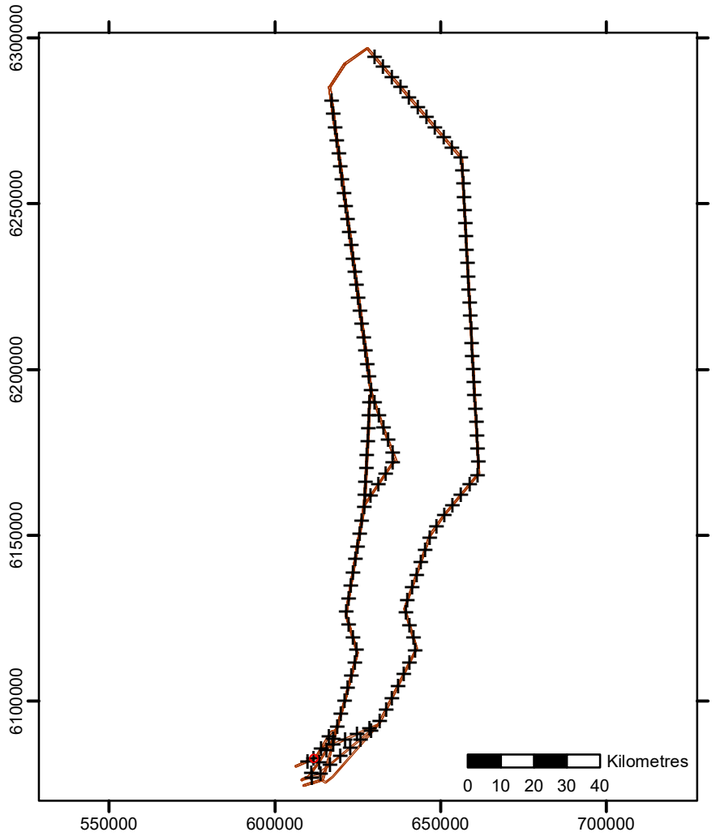
Station: ENV066
Fix: 378 **E:** 616632 **N:** 6080873 **Depth (m):** 45
Retention: MFA

Sediment Description:
Fine sand with gravel and shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV067A

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV067B
Fix: 6860 **E:** 611701 **N:** 6082723 **Depth (m):** 29

Sediment Description:
Cobbles and boulders. No laser lines

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Paguroidea *stet.*)



Station: ENV067B
Fix: 6863 **E:** 611695 **N:** 6082733 **Depth (m):** 29

Sediment Description:
Scattered cobbles and boulders. No laser lines

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (*Munida rugosa*), Echinodermata (*Crossaster papposus*)



Station: ENV067B
Fix: 6878 **E:** 611677 **N:** 6082723 **Depth (m):** 29

Sediment Description:
Scattered cobbles on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*, *Munida rugosa*), Cnidaria (*Alcyonium digitatum*)

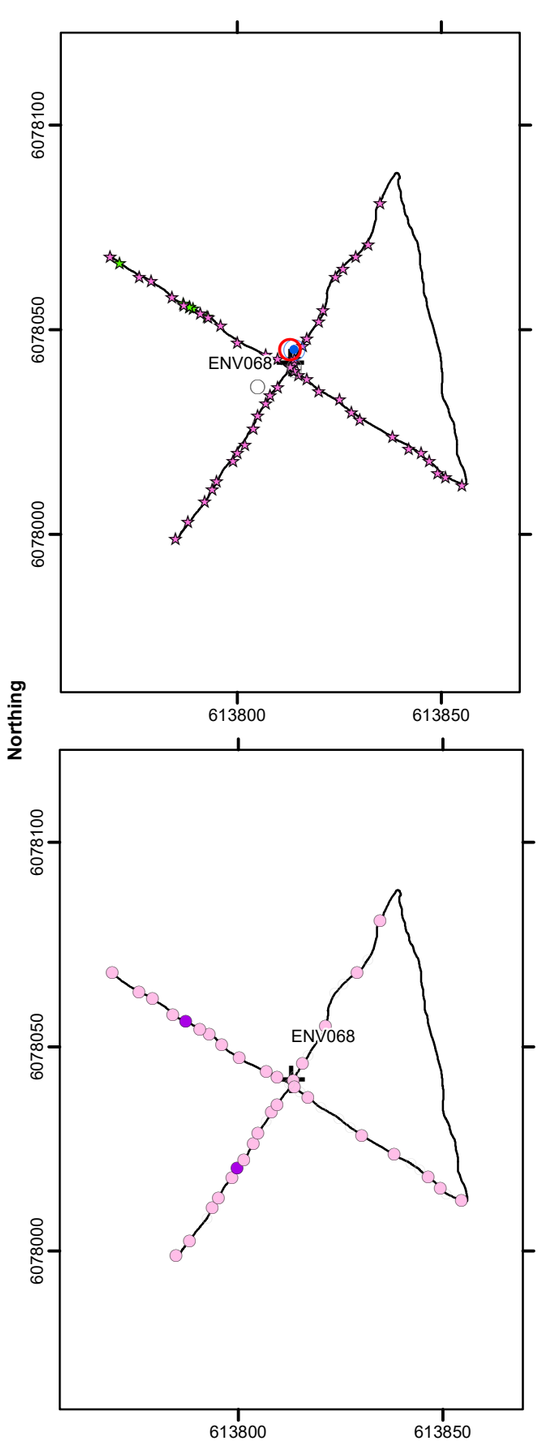


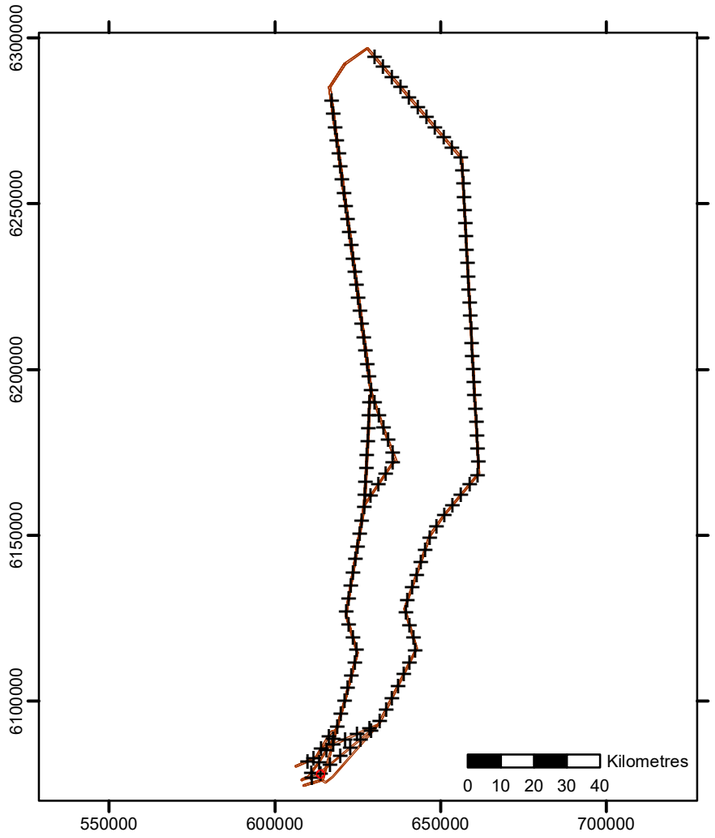
Station: ENV067B
Fix: 6888 **E:** 611701 **N:** 6082736 **Depth (m):** 29

Sediment Description:
Scattered cobbles on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (*Echinus esculentus inc*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV068

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

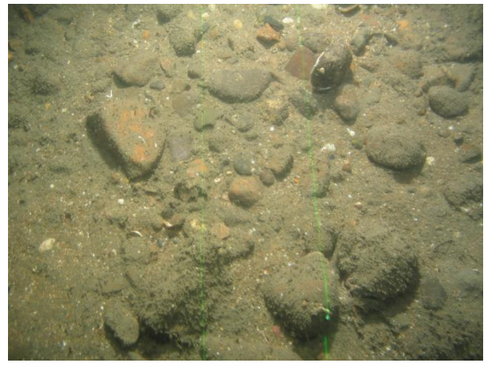
Easting



Station: ENV068
Fix: 5816 **E:** 613795 **N:** 6078013 **Depth (m):** 30

Sediment Description:
Cobbles and boulders on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*, Galatheoidea *stet.*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal turf



Station: ENV068
Fix: 5843 **E:** 613838 **N:** 6078024 **Depth (m):** 31

Sediment Description:
Scattered cobbles on coarse sediment

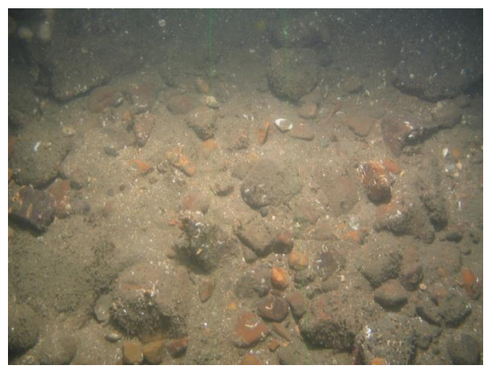
Faunal Description:
Animalia tube, Annelida (Serpulidae *stet.*), Arthropoda (Paguroidea *stet.*), Echinodermata (Ophiuroidea *stet.*)



Station: ENV068
Fix: 5852 **E:** 613810 **N:** 6078043 **Depth (m):** 31

Sediment Description:
Scattered cobbles on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Paguroidea *stet.*), Echinodermata (Ophiuroidea *stet.*)

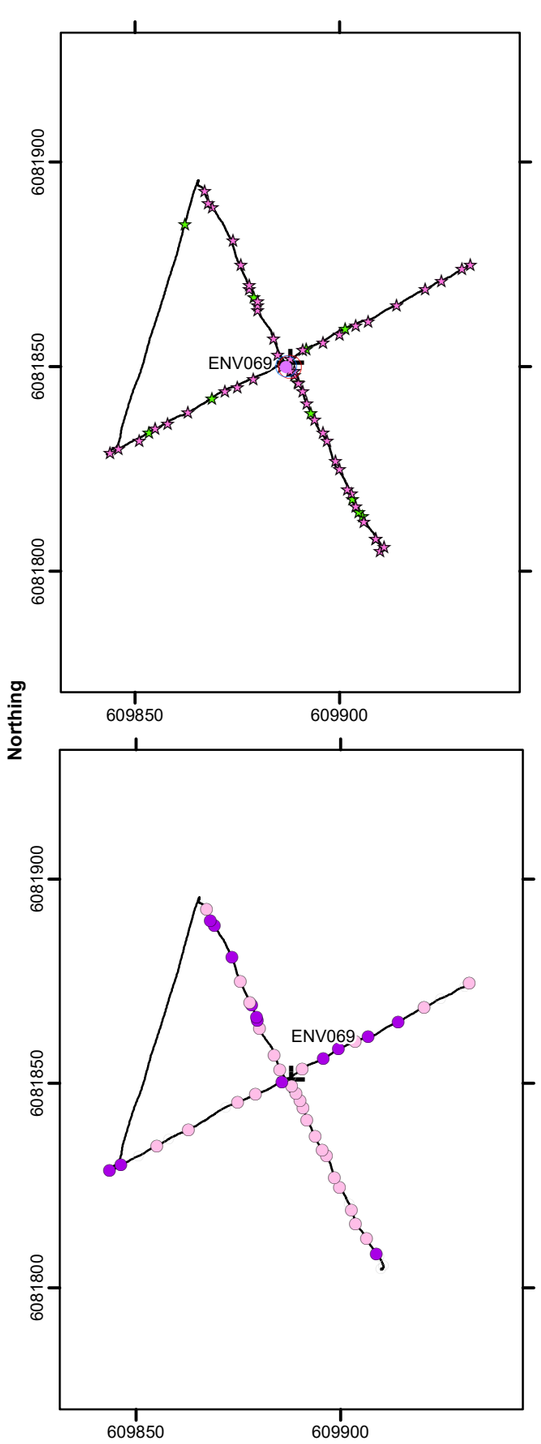


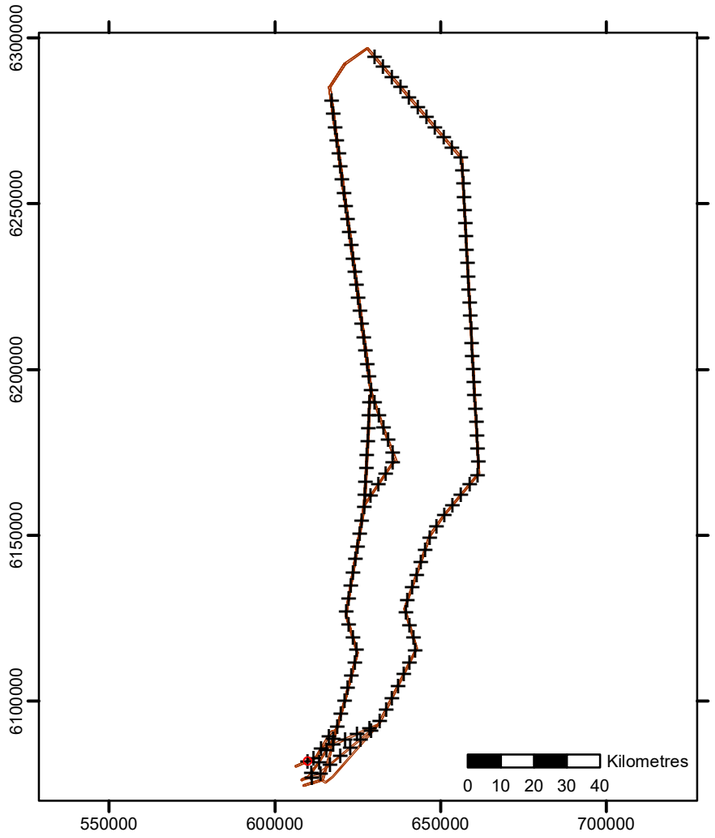
Station: ENV068
Fix: 5855 **E:** 613796 **N:** 6078051 **Depth (m):** 31

Sediment Description:
Scattered cobbles on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*, Paguroidea *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea *stet.*), Faunal turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV069

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV069
Fix: 6764 **E:** 609851 **N:** 6081832 **Depth (m):** 21

Sediment Description:
Pebbles and gravel on soft sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Mollusca (*Pecten maximus*)



Station: ENV069
Fix: 6779 **E:** 609921 **N:** 6081869 **Depth (m):** 21

Sediment Description:
Scattered cobbles on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Bryozoa (Flustridae *stet.*), Faunal turf



Station: ENV069
Fix: 403 **E:** 609887 **N:** 6081850 **Depth (m):** 24
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

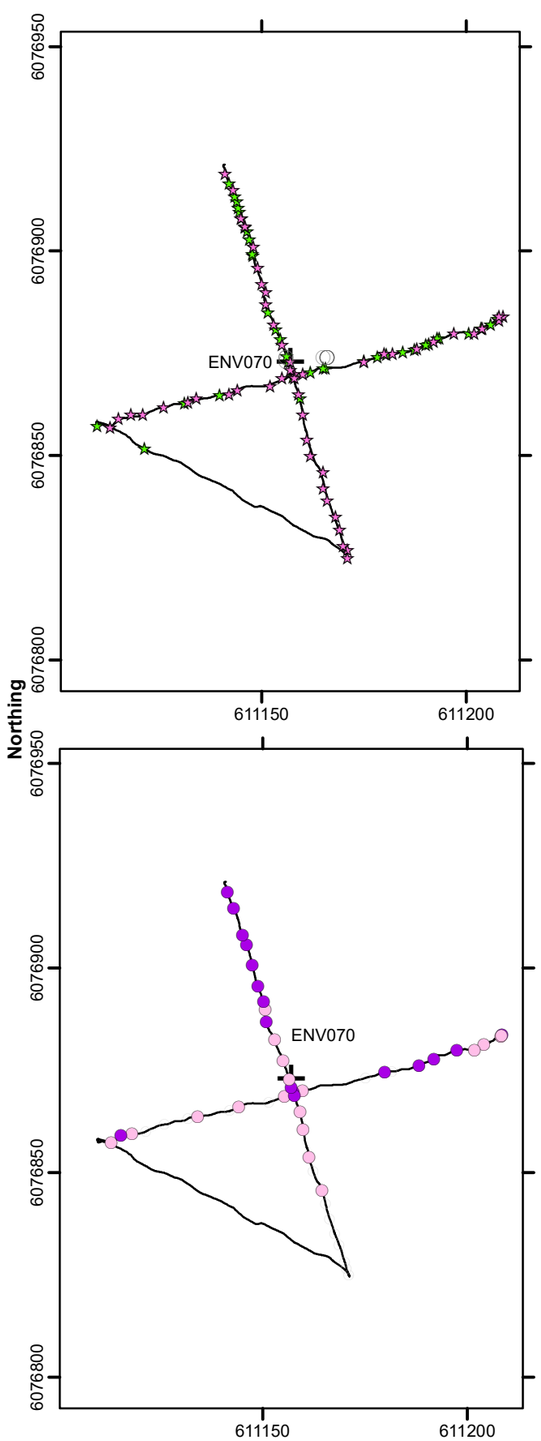


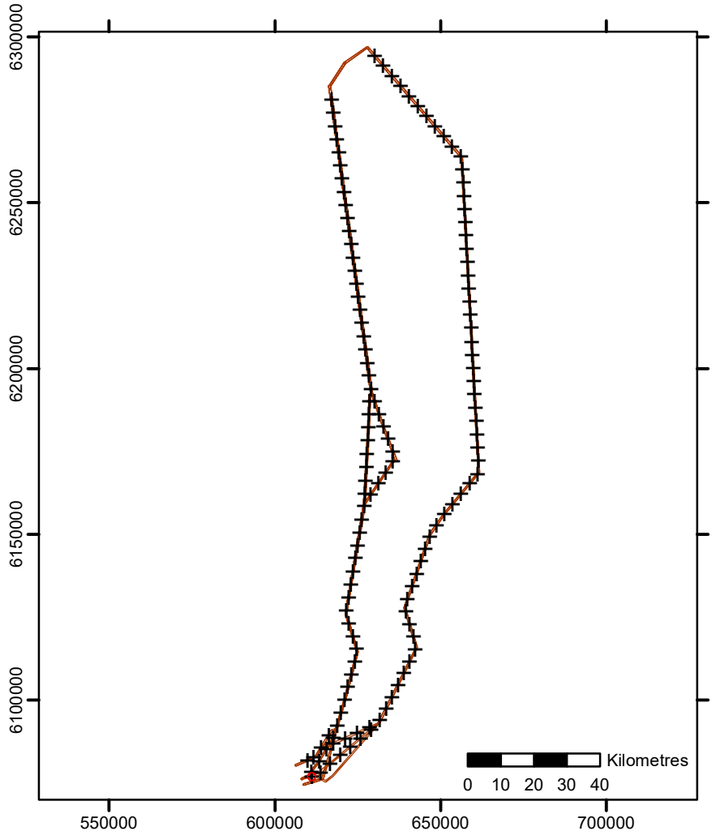
Station: ENV069
Fix: 403 **E:** 609887 **N:** 6081850 **Depth (m):** 24
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV070

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

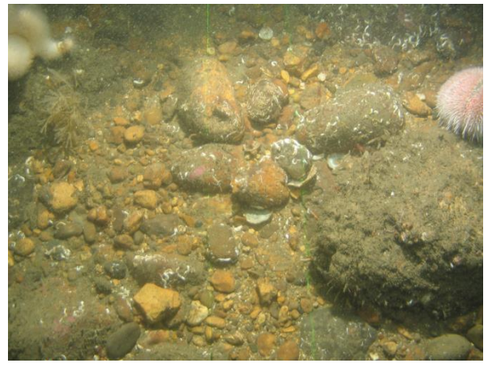
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV070
Fix: 5762 **E:** 611209 **N:** 6076884 **Depth (m):** 21

Sediment Description:
Cobbles and boulders

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*, Decapoda *stet.*, Paguroidea *stet.*), Porifera (Hard Substrate Sponges)



Station: ENV070
Fix: 5767 **E:** 611197 **N:** 6076880 **Depth (m):** 21

Sediment Description:
Cobbles and boulders on gravel and pebbles

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (Caridea *stet.*), Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (*Echinus esculentus inc*), Porifera (Hard Substrate Sponges)



Station: ENV070
Fix: 5780 **E:** 611132 **N:** 6076863 **Depth (m):** 20

Sediment Description:
Scattered cobbles on coarse sediment

Faunal Description:
Annelida (Serpulidae *stet.*), Echinodermata (*Ophiura albida inc*), Faunal turf

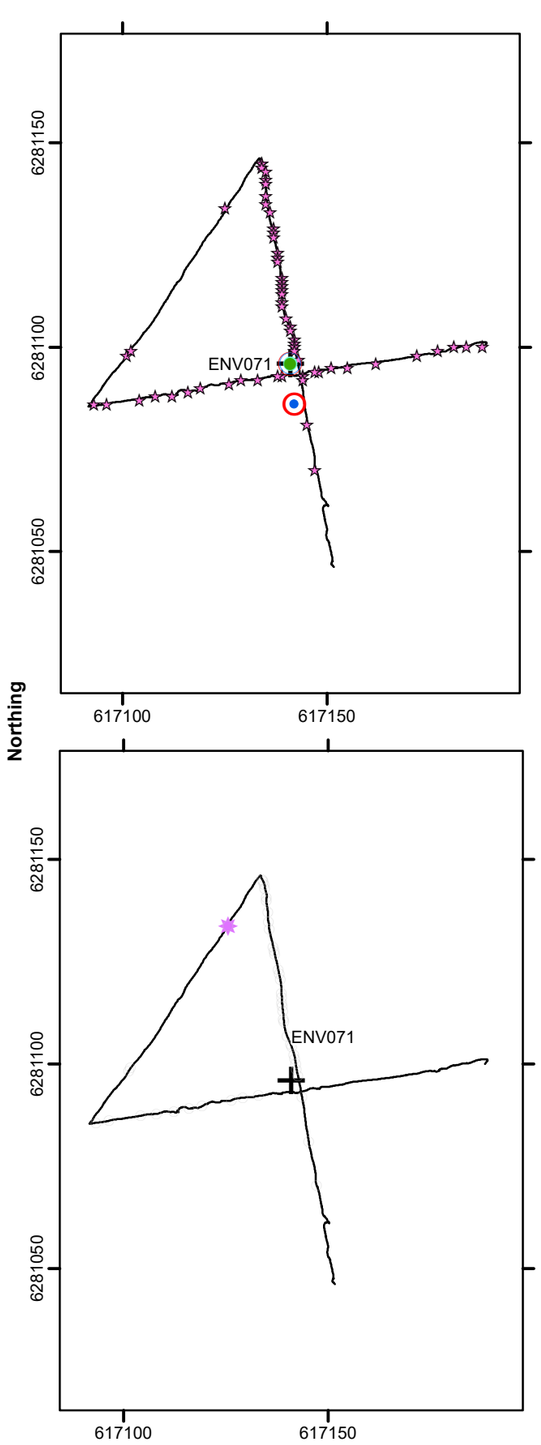


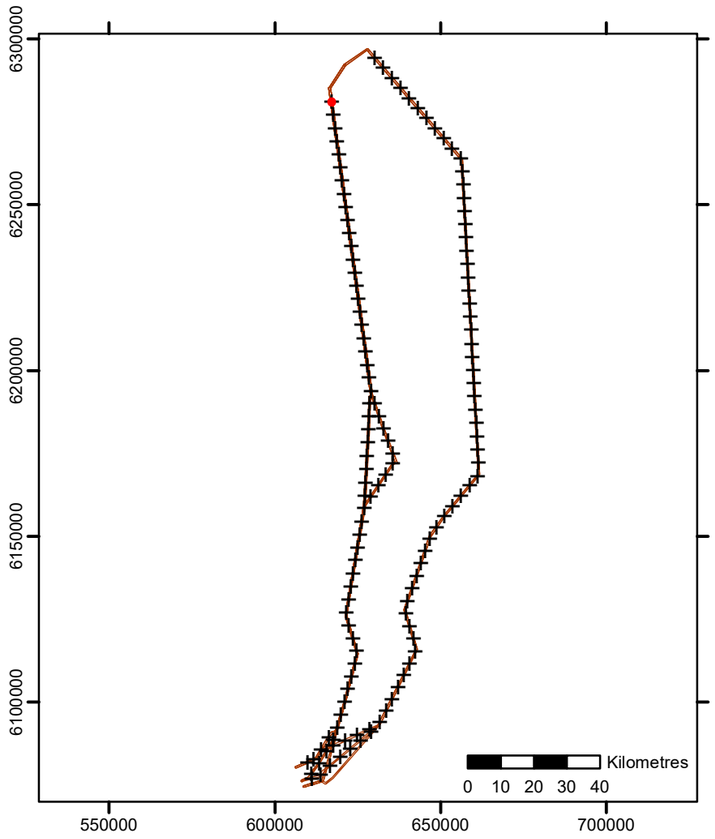
Station: ENV070
Fix: 5809 **E:** 611145 **N:** 6076908 **Depth (m):** 20

Sediment Description:
Cobbles and boulders

Faunal Description:
Annelida (Serpulidae *stet.*), Arthropoda (*Macropodia stet*, *Munida rugosa*), Echinodermata (*Echinus esculentus inc*), Porifera (Hard Substrate Sponges)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV071

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

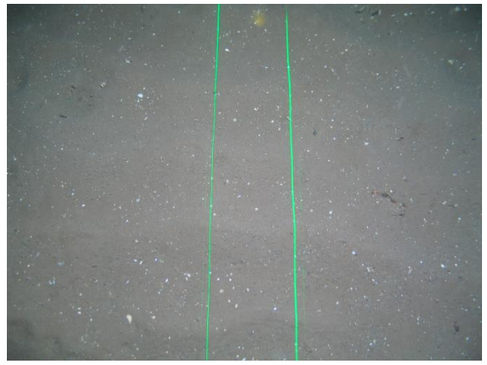
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

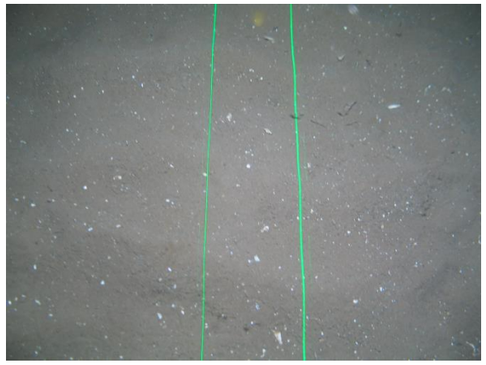
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV071
Fix: 3020 **E:** 617188 **N:** 6281100 **Depth (m):** 68

Sediment Description:
Soft sediment with shell fragments

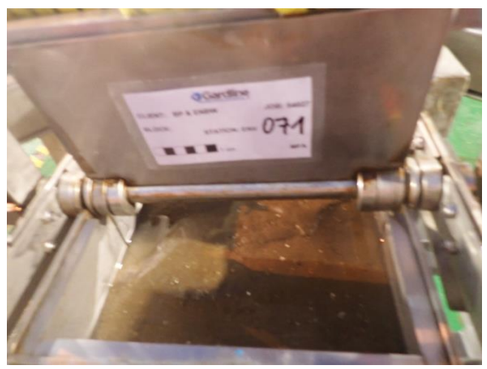
Faunal Description:
No visible fauna



Station: ENV071
Fix: 3046 **E:** 617134 **N:** 6281145 **Depth (m):** 68

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV071
Fix: 41 **E:** 617141 **N:** 6281096 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

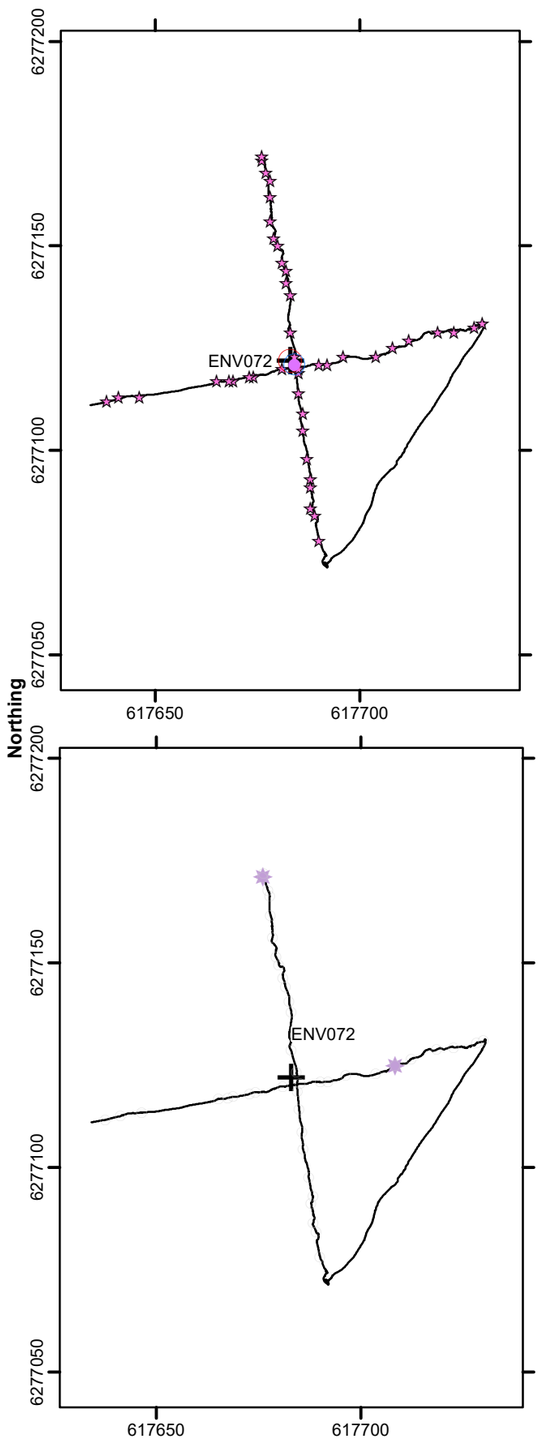


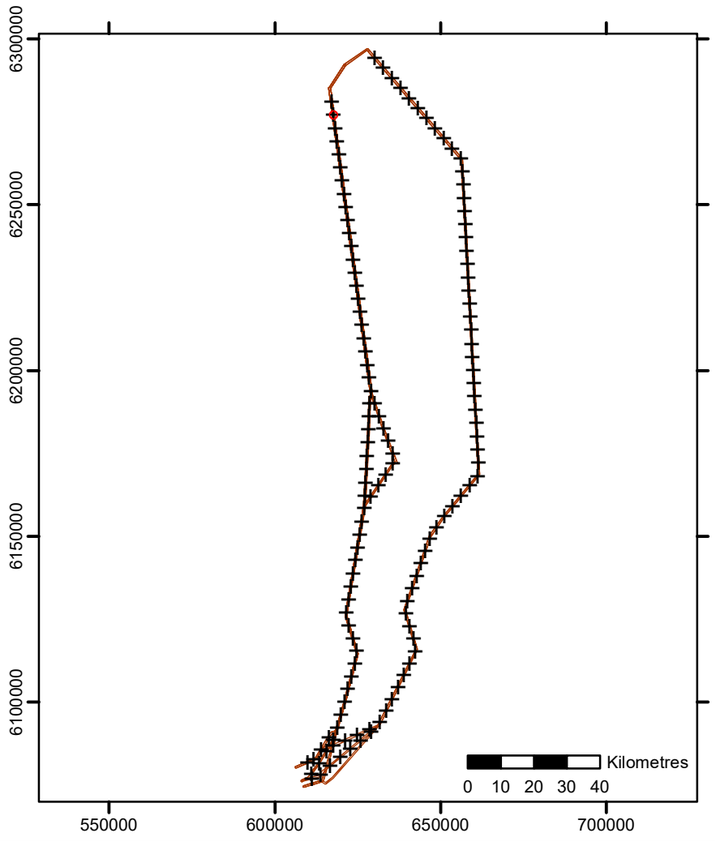
Station: ENV071
Fix: 41 **E:** 617141 **N:** 6281096 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV072

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

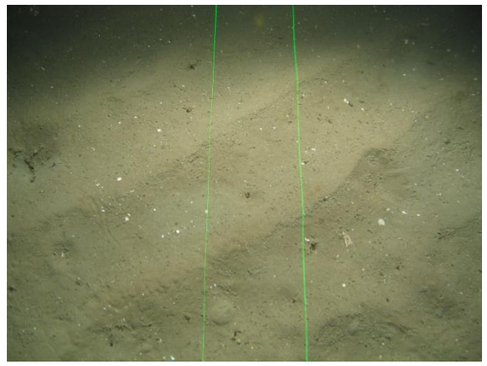
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

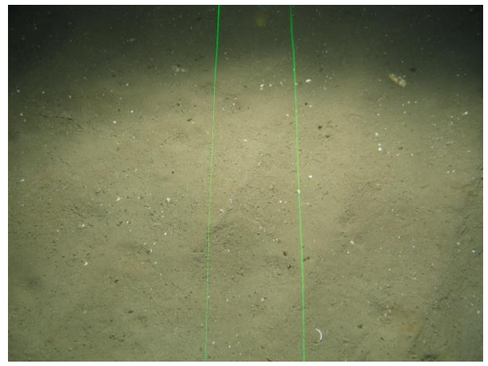
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV072
Fix: 3083 **E:** 617678 **N:** 6277162 **Depth (m):** 75

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV072
Fix: 3121 **E:** 617641 **N:** 6277113 **Depth (m):** 76

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV072
Fix: 46 **E:** 617684 **N:** 6277121 **Depth (m):** 77
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

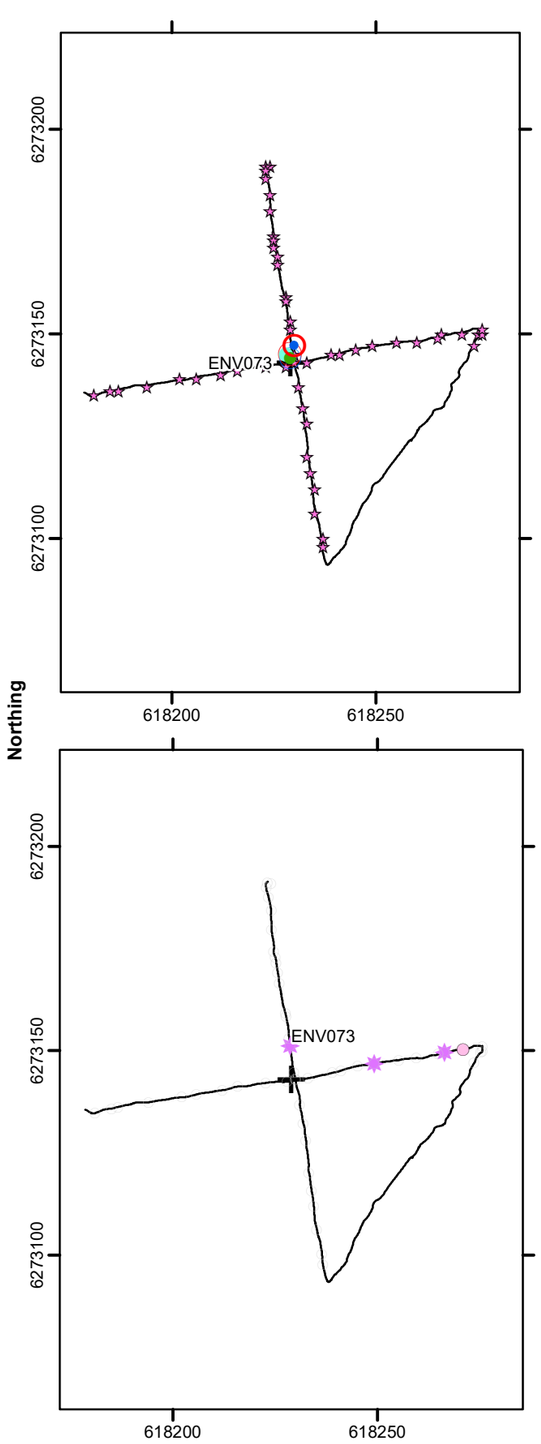


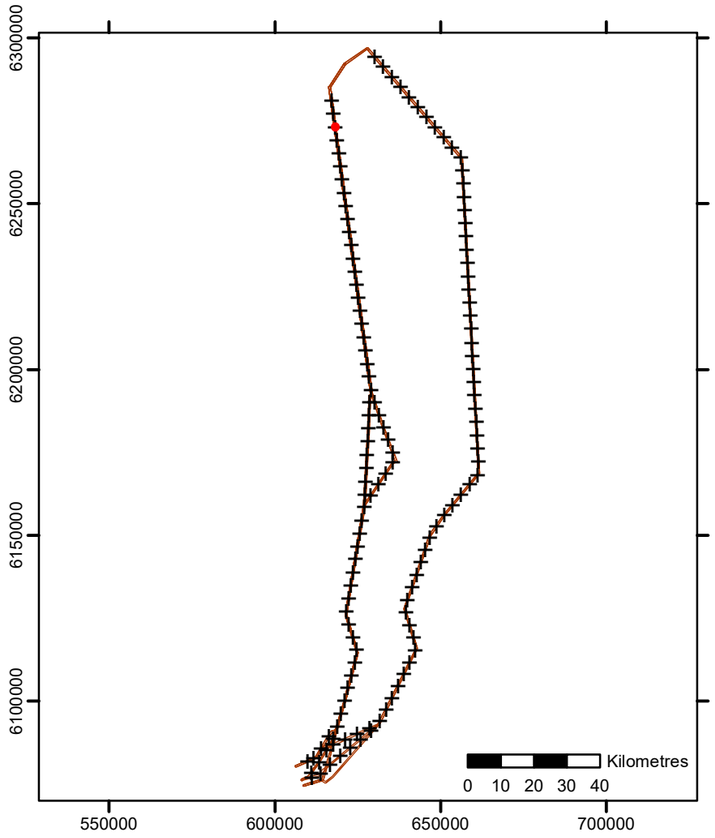
Station: ENV072
Fix: 46 **E:** 617684 **N:** 6277121 **Depth (m):** 77
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV073

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

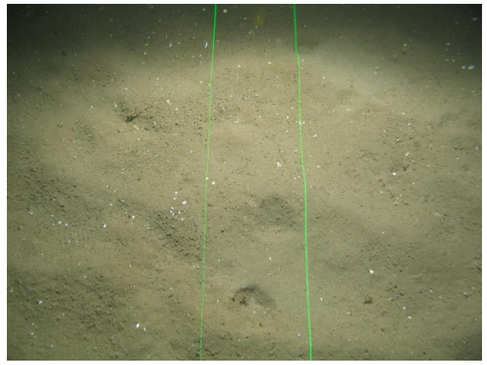
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

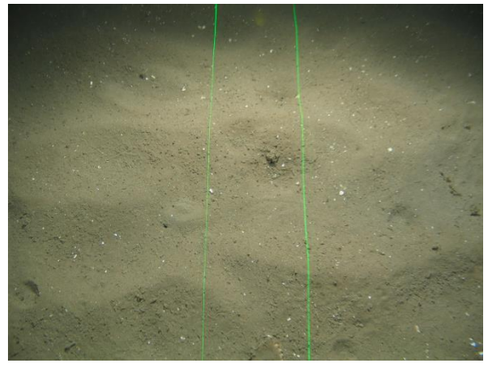
Easting



Station: ENV073
Fix: 3129 **E:** 618225 **N:** 6273174 **Depth (m):** 71

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV073
Fix: 3147 **E:** 618237 **N:** 6273100 **Depth (m):** 71

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV073
Fix: 48 **E:** 618229 **N:** 6273145 **Depth (m):** 72
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

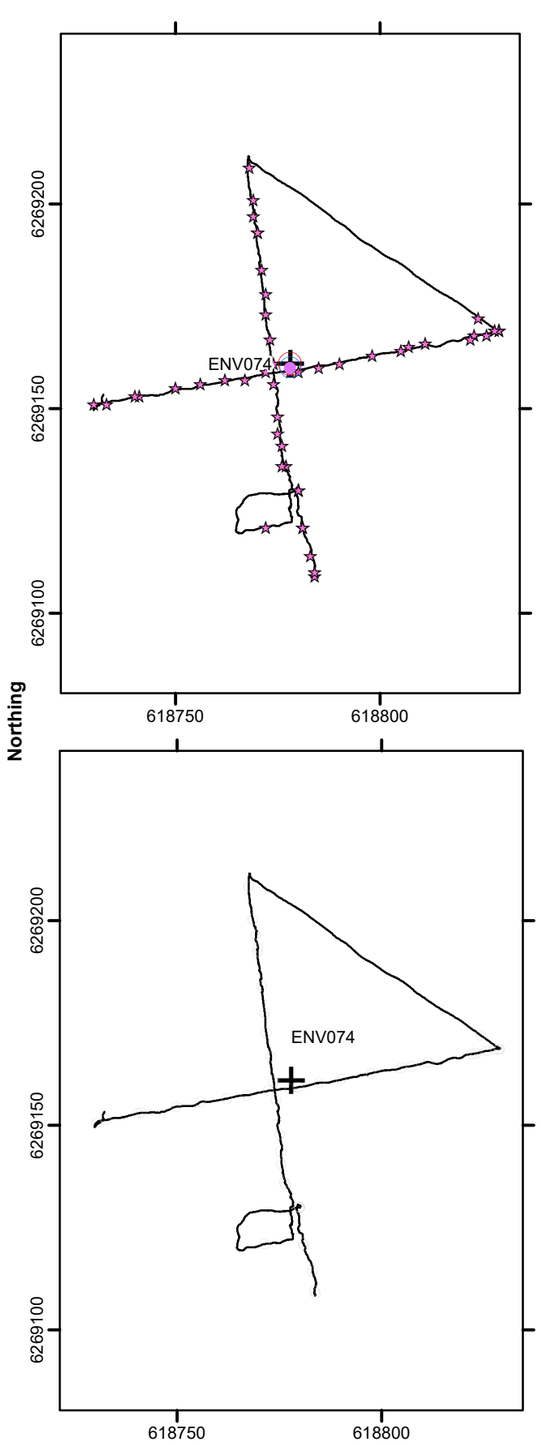


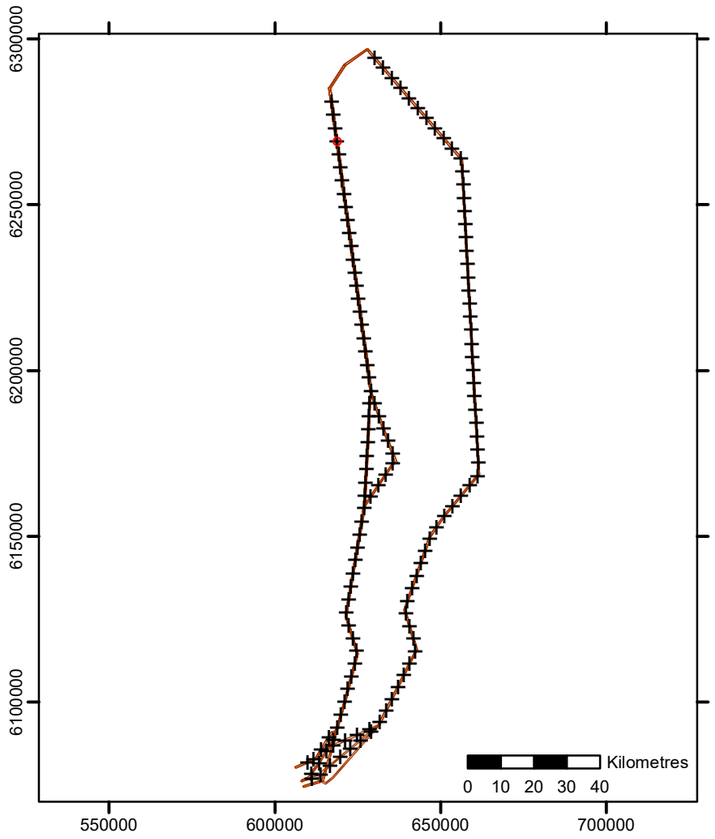
Station: ENV073
Fix: 48 **E:** 618229 **N:** 6273145 **Depth (m):** 72
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV074

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

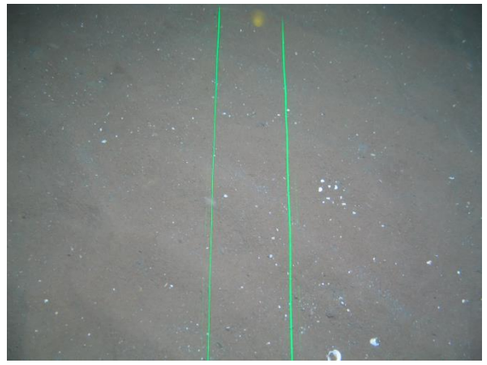
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

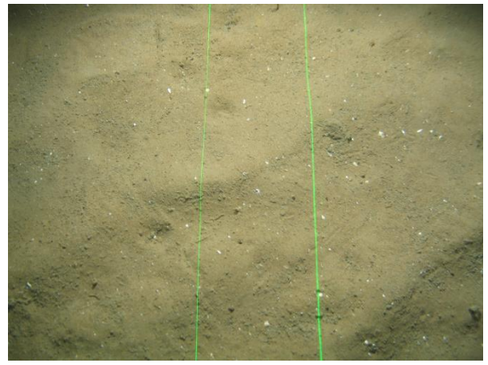
Easting



Station: ENV074
Fix: 3179 **E:** 618780 **N:** 6269130 **Depth (m):** 66

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV074
Fix: 3185 **E:** 618776 **N:** 6269141 **Depth (m):** 66

Sediment Description:
Soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV074
Fix: 53 **E:** 618778 **N:** 6269160 **Depth (m):** 68
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

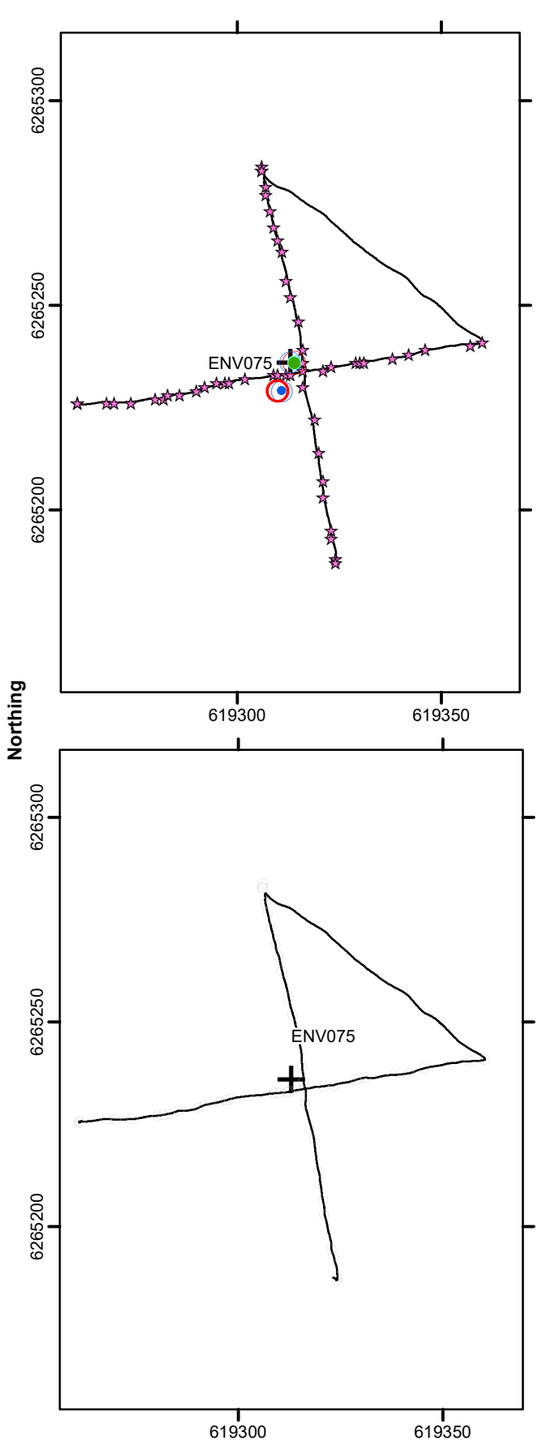


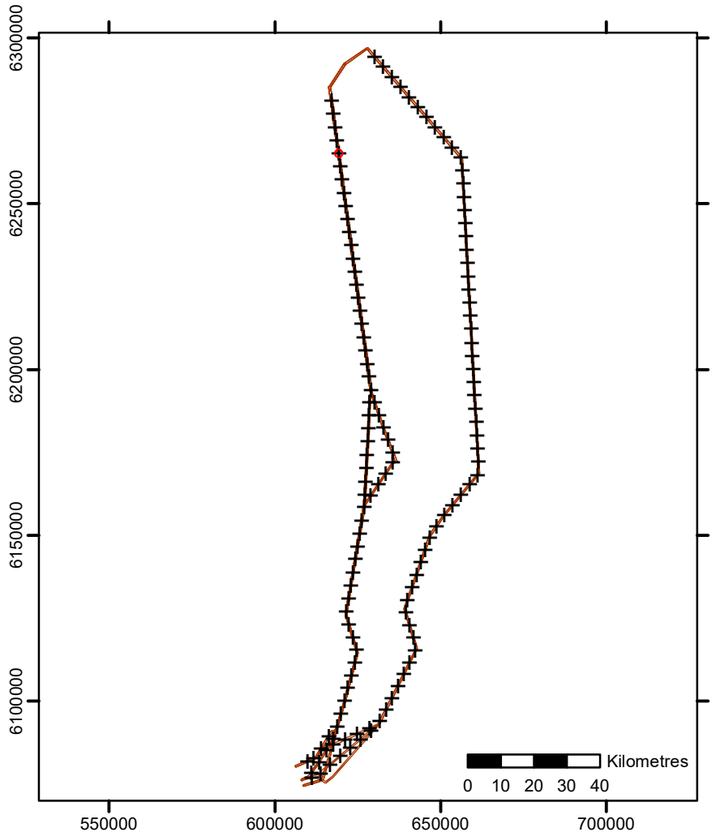
Station: ENV074
Fix: 53 **E:** 618778 **N:** 6269160 **Depth (m):** 68
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV075

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

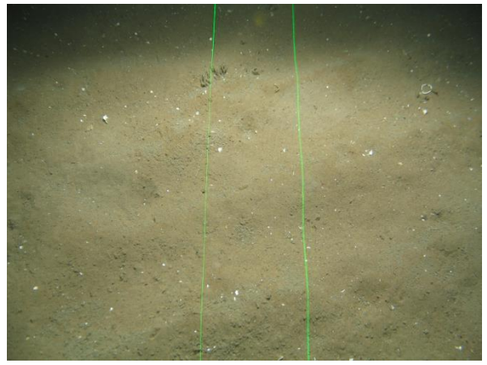
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

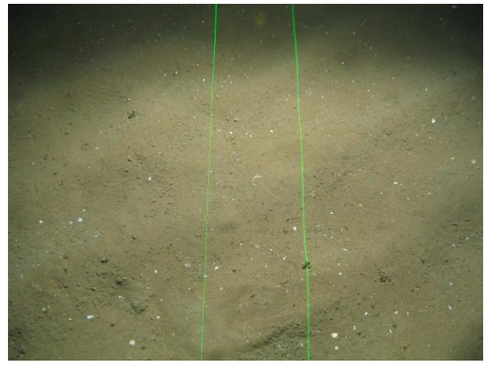
Easting



Station: ENV075
Fix: 3231 **E:** 619286 **N:** 6265228 **Depth (m):** 65

Sediment Description:
Soft sediment with shell fragments

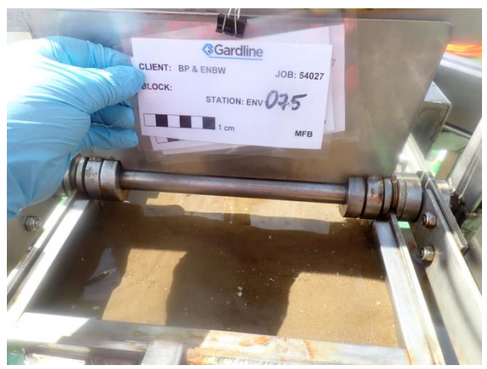
Faunal Description:
Animalia tube, Faunal turf



Station: ENV075
Fix: 3239 **E:** 619310 **N:** 6265233 **Depth (m):** 65

Sediment Description:
Soft sediment with shell fragments.

Faunal Description:
No visible fauna



Station: ENV075
Fix: 56 **E:** 619313 **N:** 6265236 **Depth (m):** 68
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Cnidaria (Hydrozoa), Mollusca (Scaphopoda)

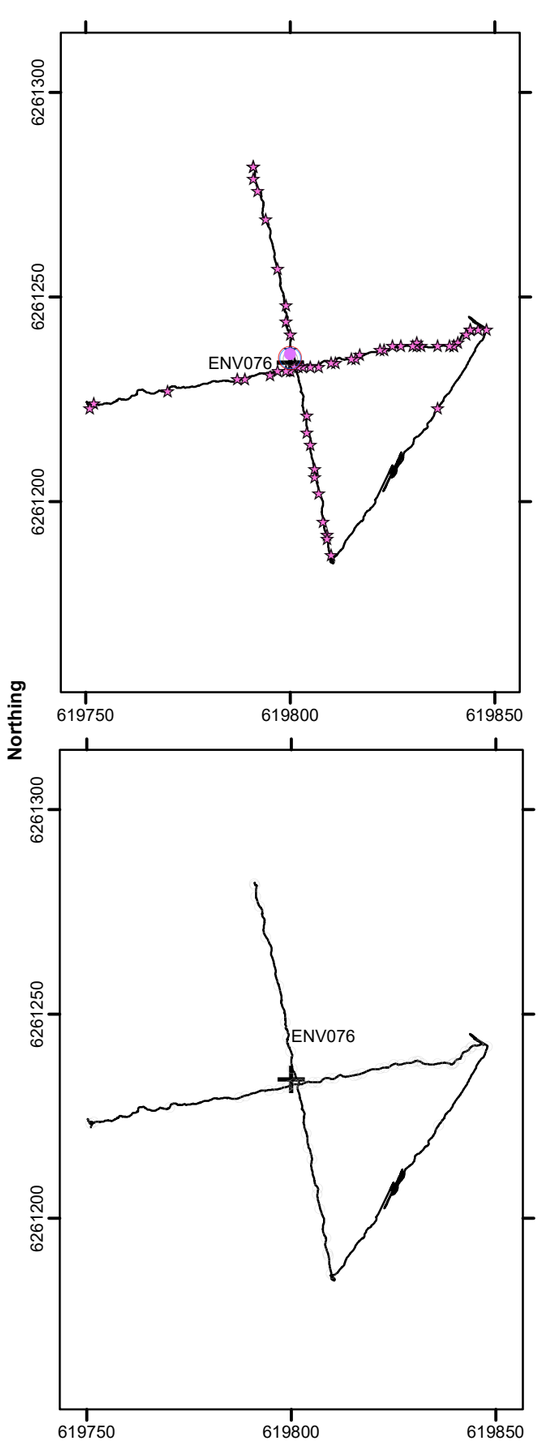


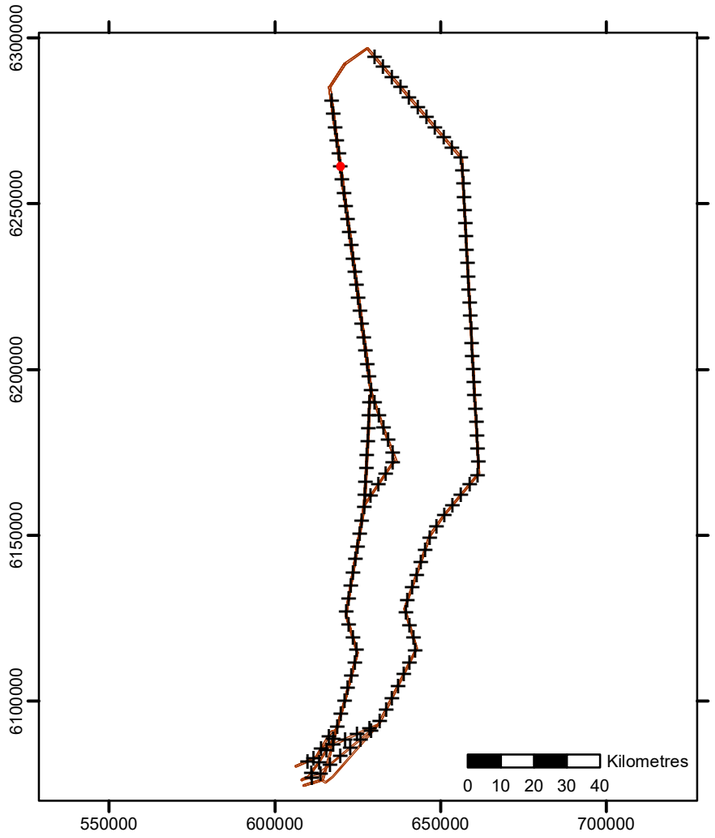
Station: ENV075
Fix: 56 **E:** 619313 **N:** 6265236 **Depth (m):** 68
Retention: MFB

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Cnidaria (Hydrozoa), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV076

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

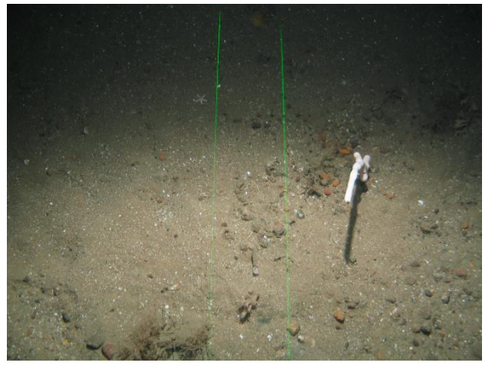
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

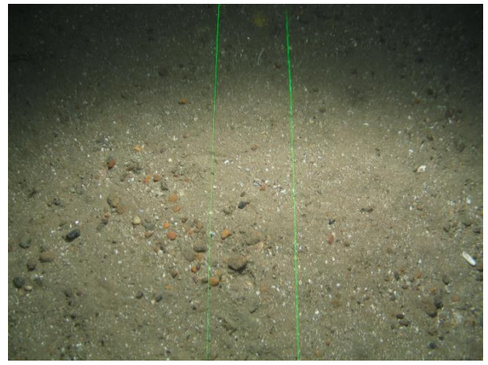
Easting



Station: ENV076
Fix: 3315 **E:** 619822 **N:** 6261237 **Depth (m):** 59

Sediment Description:
Soft sediment with shell hash and scattered gravel.

Faunal Description:
Animalia tube, Annelida (Serpulidae *stet.*), Cnidaria (*Alcyonium digitatum*, *Epizoanthus papillosus inc*, *Tubularia indivisa inc*), Echinodermata (*Asterias rubens*), Faunal turf



Station: ENV076
Fix: 3332 **E:** 619770 **N:** 6261227 **Depth (m):** 59

Sediment Description:
Shell hash with scattered gravel.

Faunal Description:
No visible fauna



Station: ENV076
Fix: 59 **E:** 619800 **N:** 6261235 **Depth (m):** 61
Retention: MFA

Sediment Description:
Coarse gravelly sand with shelll fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

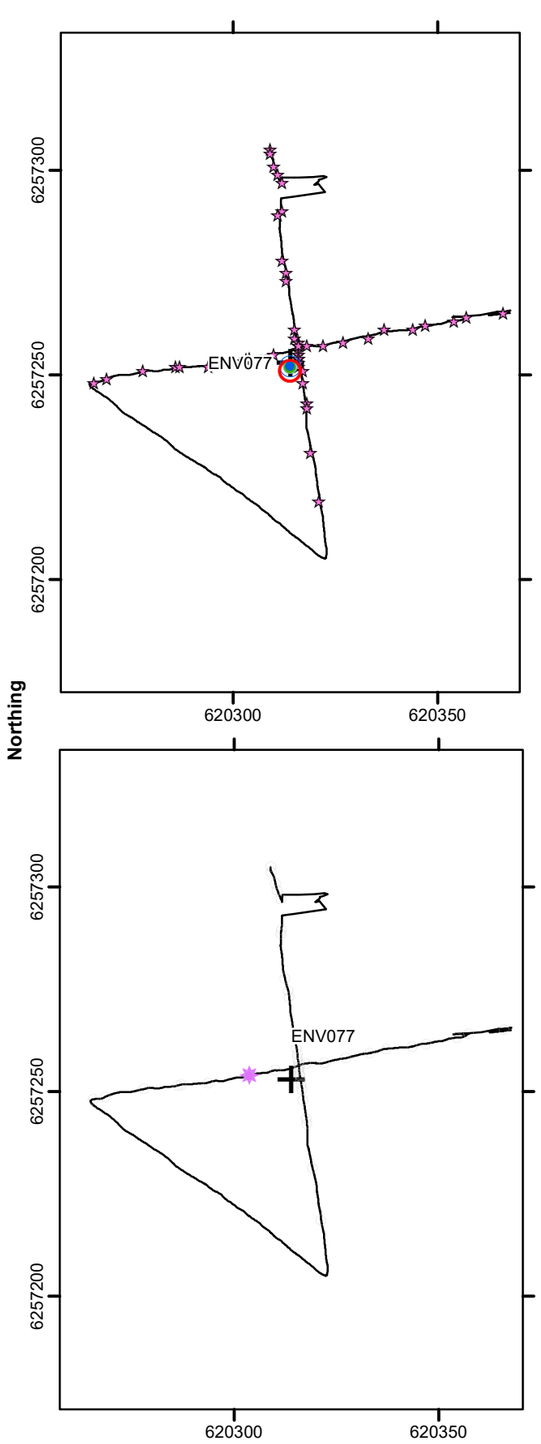


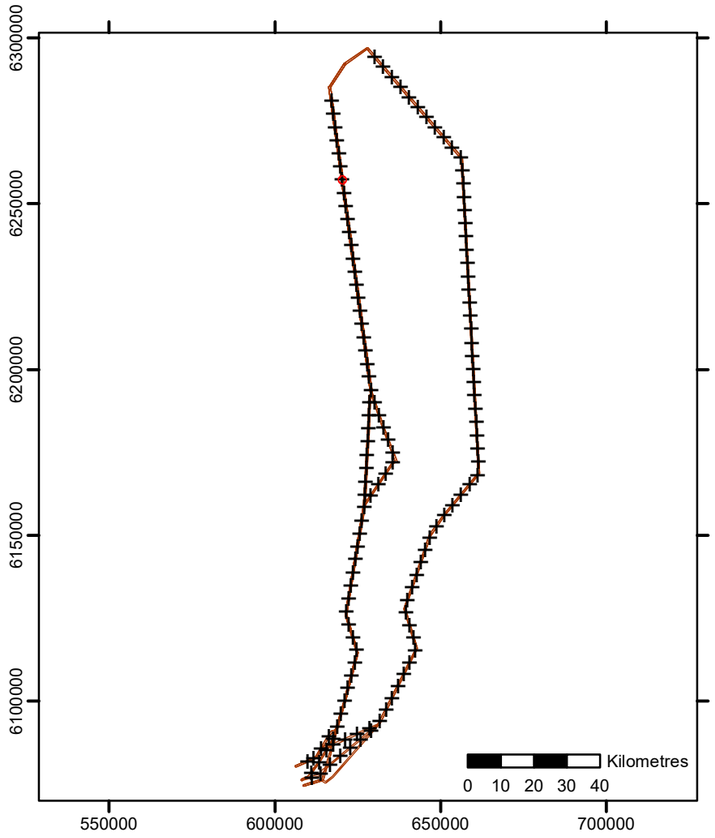
Station: ENV076
Fix: 59 **E:** 619800 **N:** 6261235 **Depth (m):** 61
Retention: MFA

Sediment Description:
Coarse gravelly sand with shelll fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV077

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

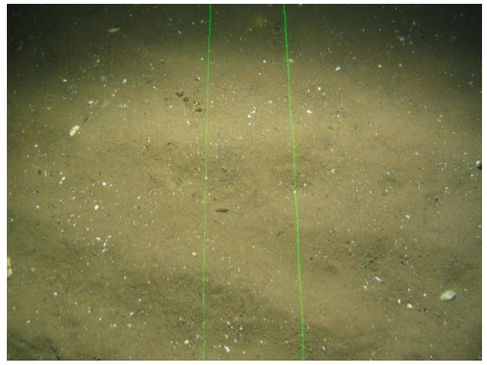
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

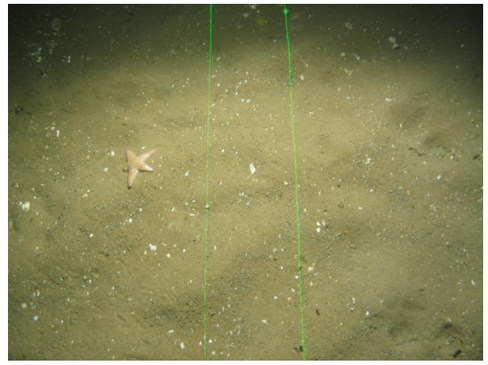
Easting



Station: ENV077
Fix: 3354 **E:** 620316 **N:** 6257252 **Depth (m):** 61

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV077
Fix: 3363 **E:** 620278 **N:** 6257251 **Depth (m):** 61

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:



Station: ENV077
Fix: 63 **E:** 620314 **N:** 6257251 **Depth (m):** 62
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

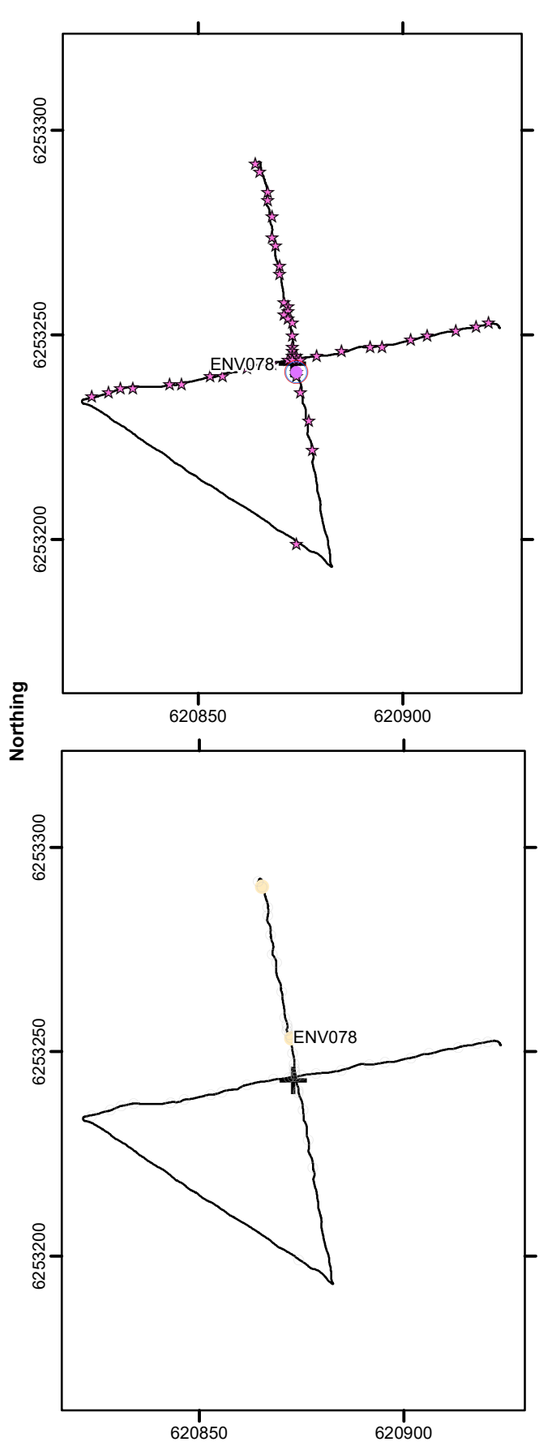


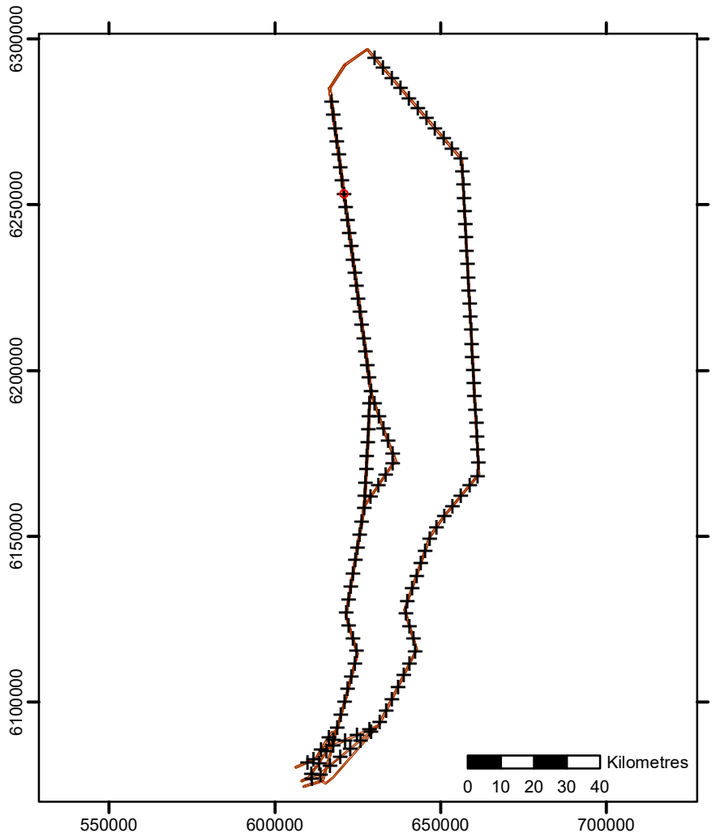
Station: ENV077
Fix: 63 **E:** 620314 **N:** 6257251 **Depth (m):** 62
Retention: MFA

Sediment Description:
Fine sand with small shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV078

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

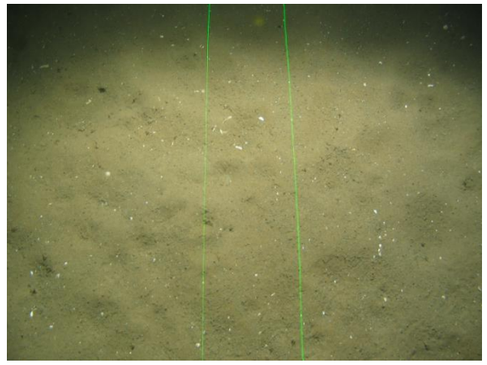
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

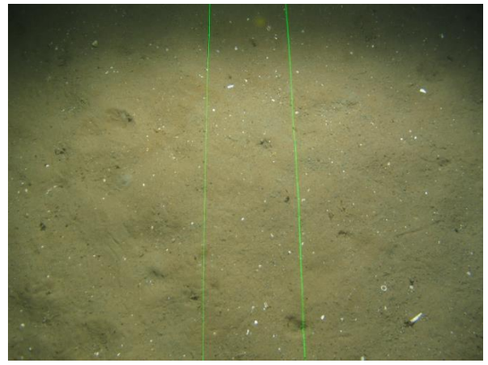
Easting



Station: ENV078
Fix: 3389 **E:** 620871 **N:** 6253258 **Depth (m):** 64

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV078
Fix: 3403 **E:** 620875 **N:** 6253236 **Depth (m):** 64

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube, Annelida (Terebellidae *stet.*)



Station: ENV078
Fix: 68 **E:** 620874 **N:** 6253241 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

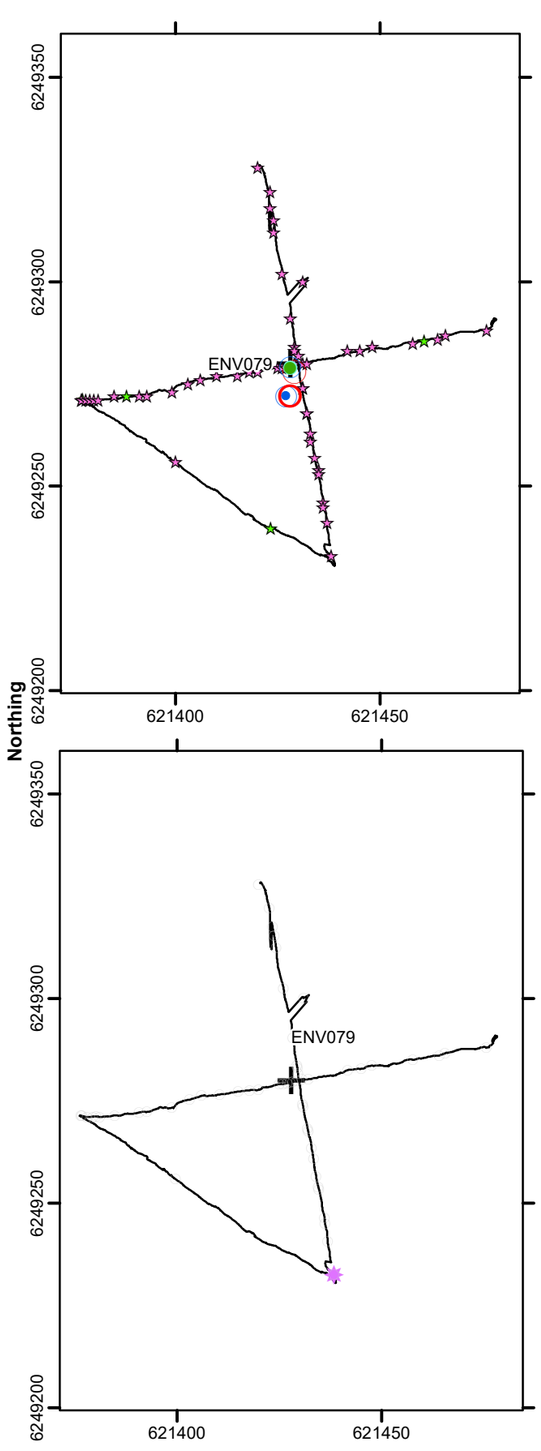


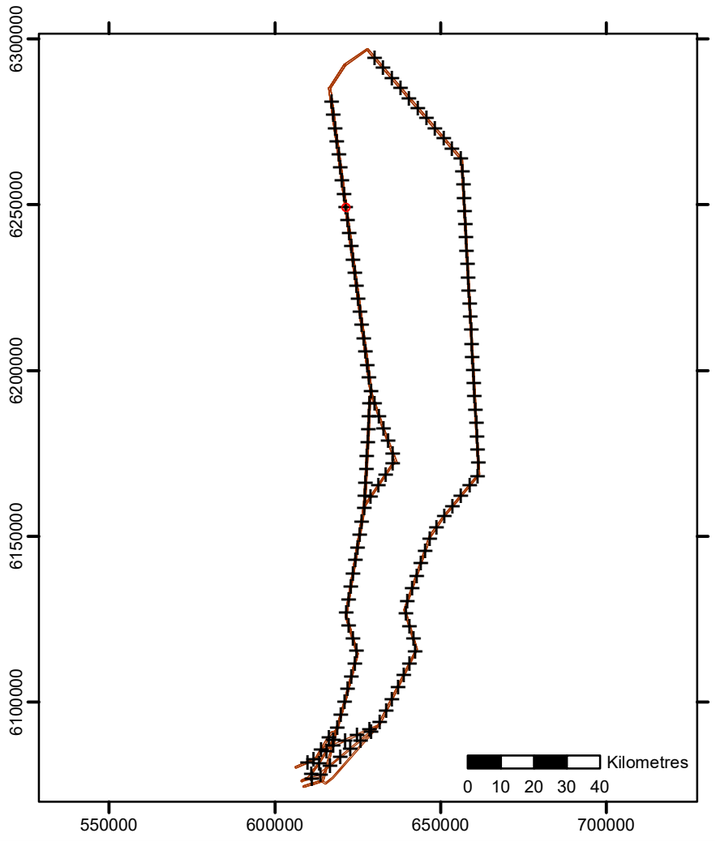
Station: ENV078
Fix: 68 **E:** 620874 **N:** 6253241 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV079

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

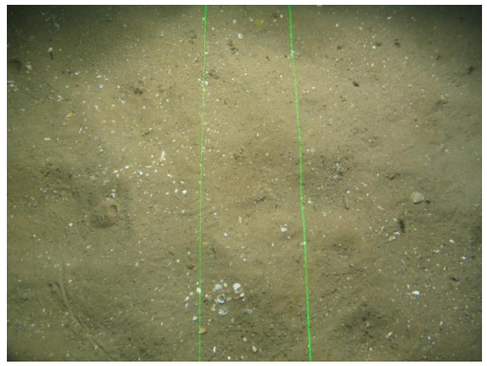
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

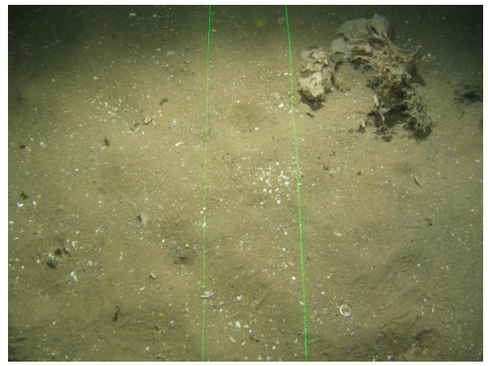
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV079
Fix: 3430 **E:** 621423 **N:** 6249322 **Depth (m):** 62

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
No visible fauna



Station: ENV079
Fix: 3439 **E:** 621430 **N:** 6249282 **Depth (m):** 62

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (Hydrozoa *stet.*, *Tubularia indivisa inc*)



Station: ENV079
Fix: 71 **E:** 621429 **N:** 6249278 **Depth (m):** 65
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

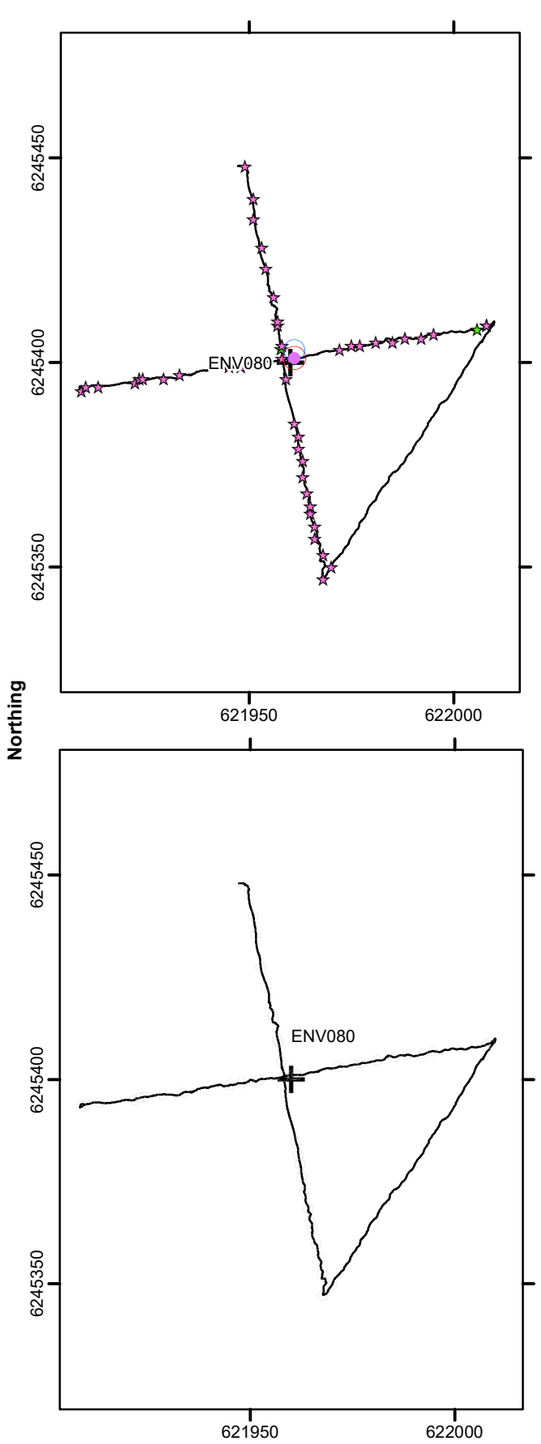


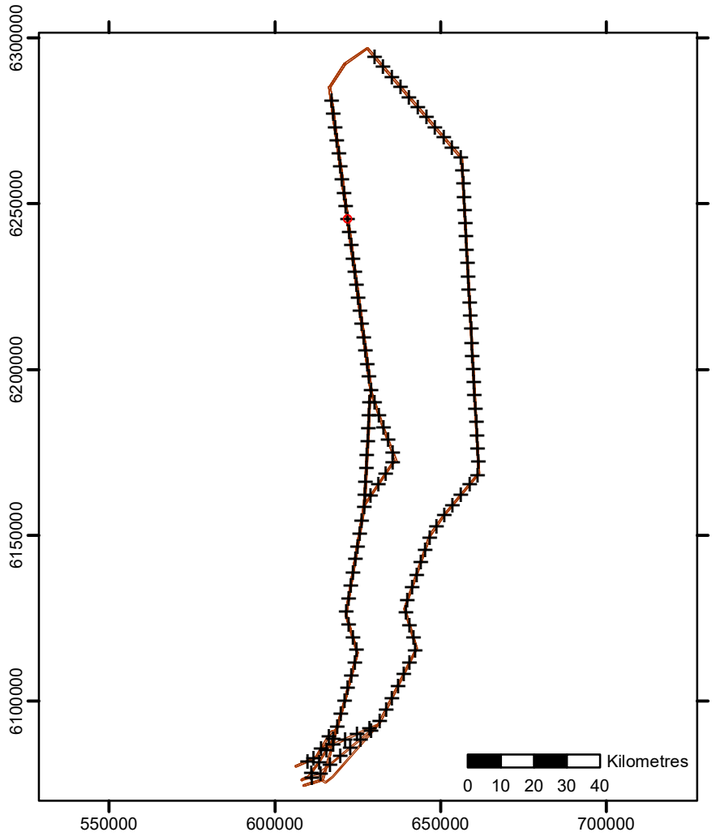
Station: ENV079
Fix: 71 **E:** 621429 **N:** 6249278 **Depth (m):** 65
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV080

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

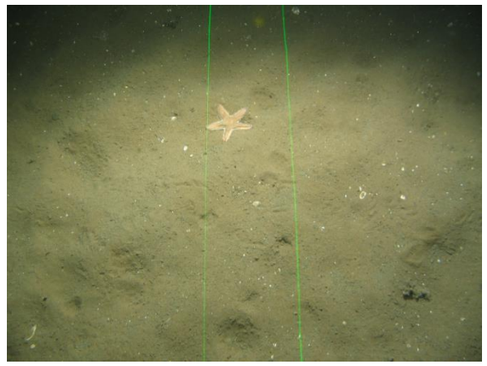
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

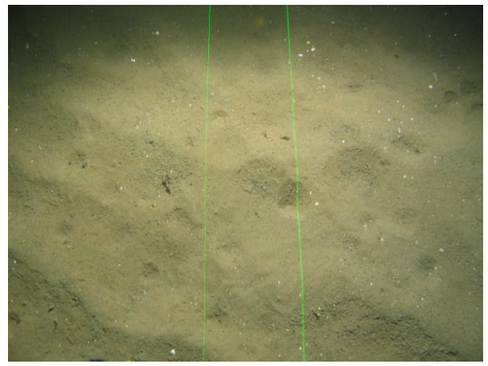
Easting



Station: ENV080
Fix: 3499 **E:** 621975 **N:** 6245404 **Depth (m):** 64

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Echinodermata (*Astropecten irregularis*)



Station: ENV080
Fix: 3510 **E:** 621968 **N:** 6245353 **Depth (m):** 64

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV080
Fix: 75 **E:** 621961 **N:** 6245401 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)

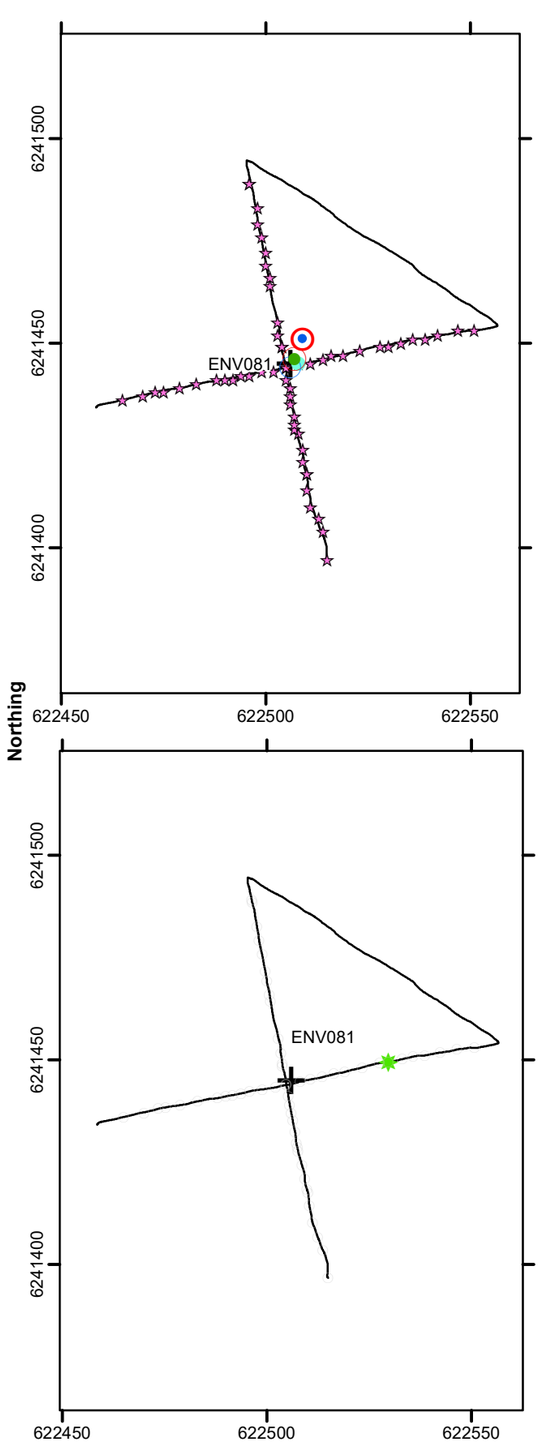


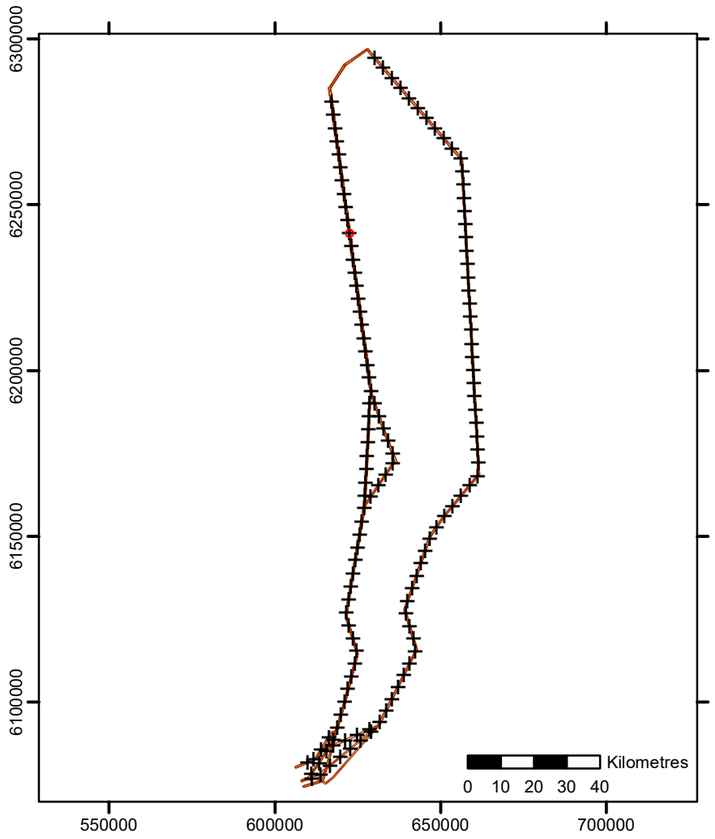
Station: ENV080
Fix: 75 **E:** 621961 **N:** 6245401 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV081

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

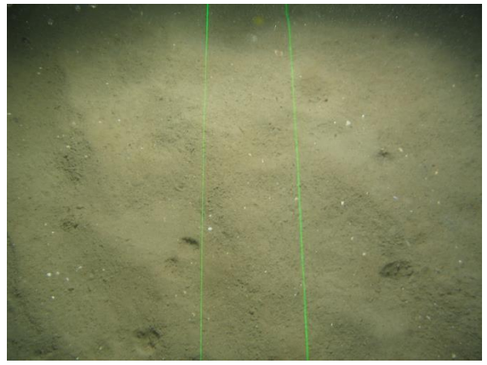
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

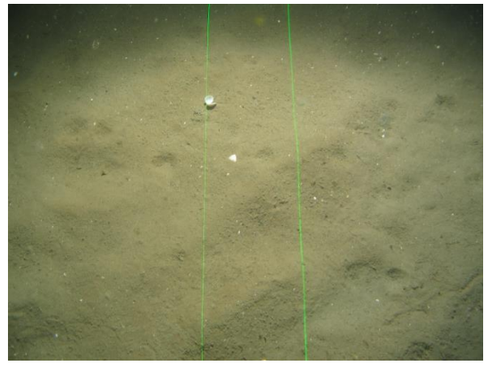
Easting



Station: ENV081
Fix: 3538 **E:** 622510 **N:** 6241418 **Depth (m):** 67

Sediment Description:
Rippled, soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV081
Fix: 3567 **E:** 622539 **N:** 6241451 **Depth (m):** 67

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV081
Fix: 79 **E:** 622507 **N:** 6241446 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

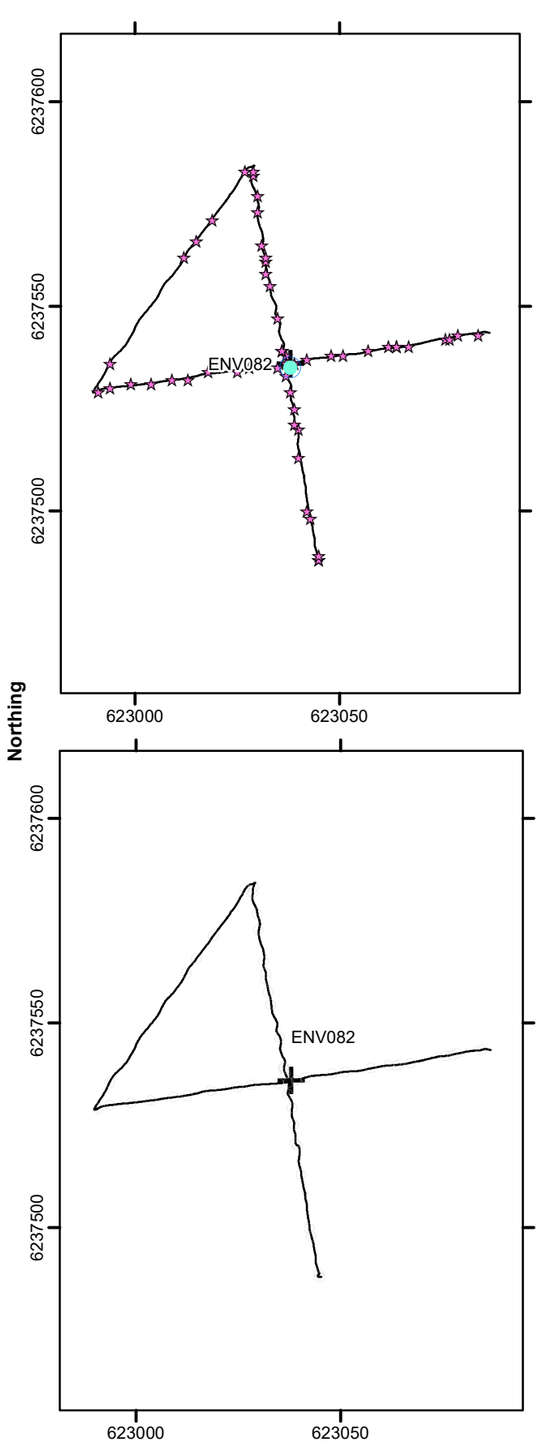


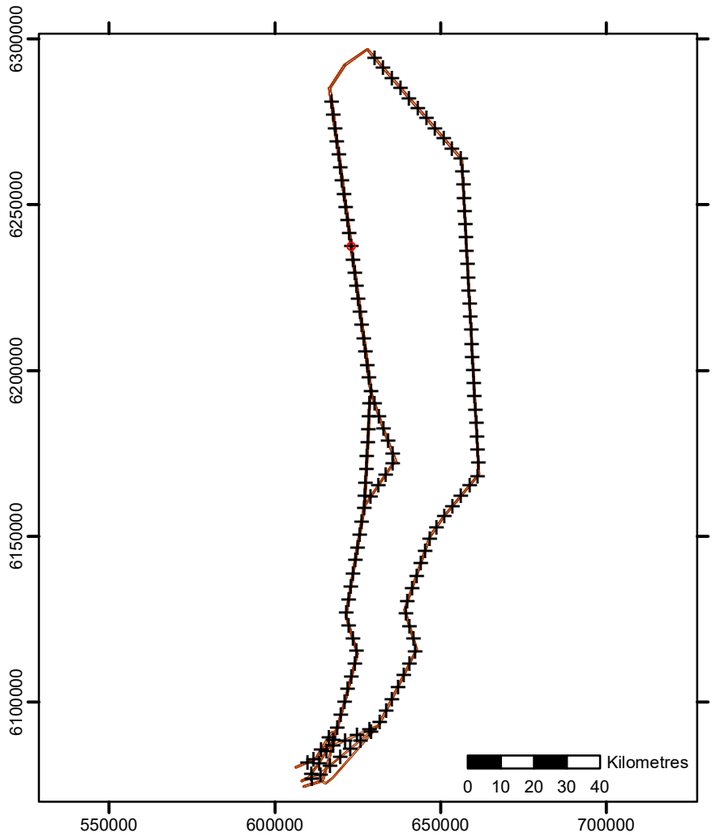
Station: ENV081
Fix: 79 **E:** 622507 **N:** 6241446 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV082

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

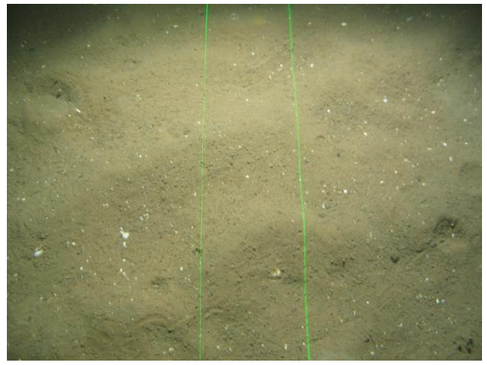
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

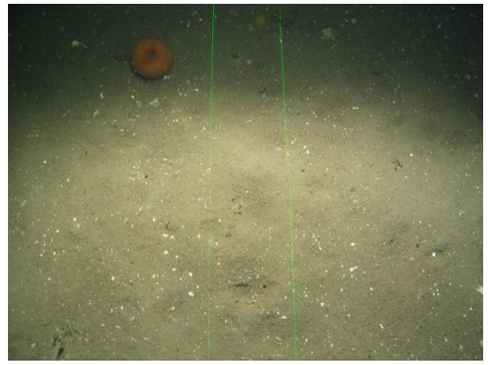
Easting



Station: ENV082
Fix: 3602 **E:** 623036 **N:** 6237539 **Depth (m):** 64

Sediment Description:
Rippled, soft sediment with shell hash and evidence of bioturbation

Faunal Description:
Animalia tube



Station: ENV082
Fix: 3637 **E:** 623064 **N:** 6237540 **Depth (m):** 64

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
Cnidaria (Actiniaria *stet.*)



Station: ENV082
Fix: 83 **E:** 623038 **N:** 6237535 **Depth (m):** 66
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

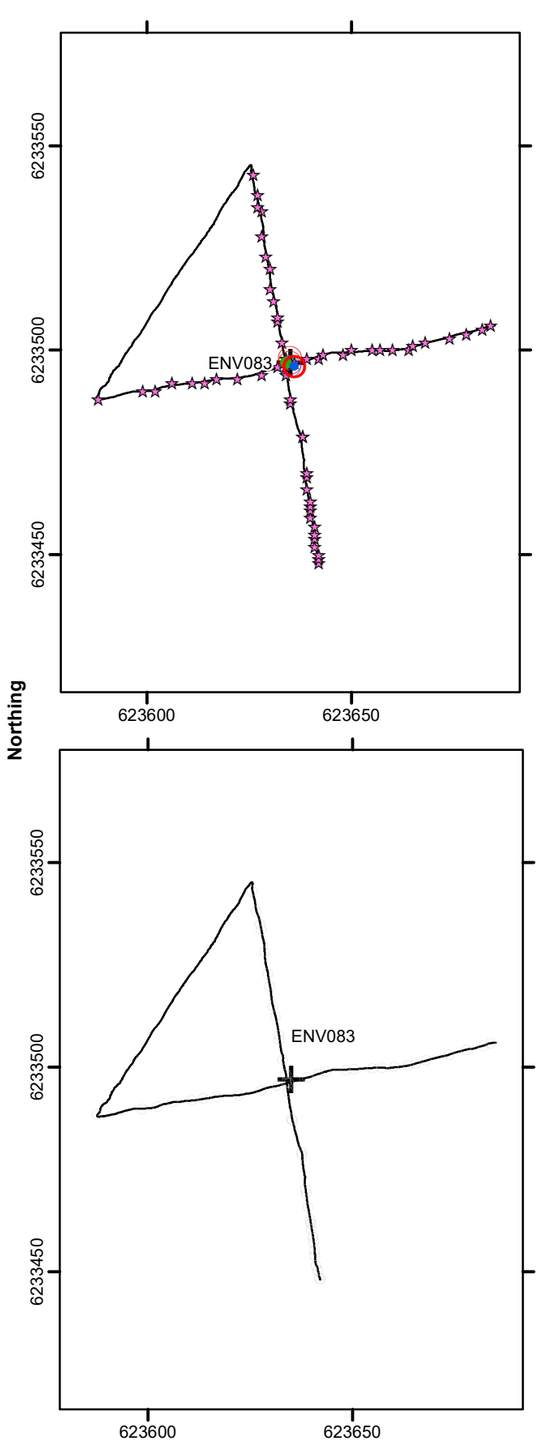


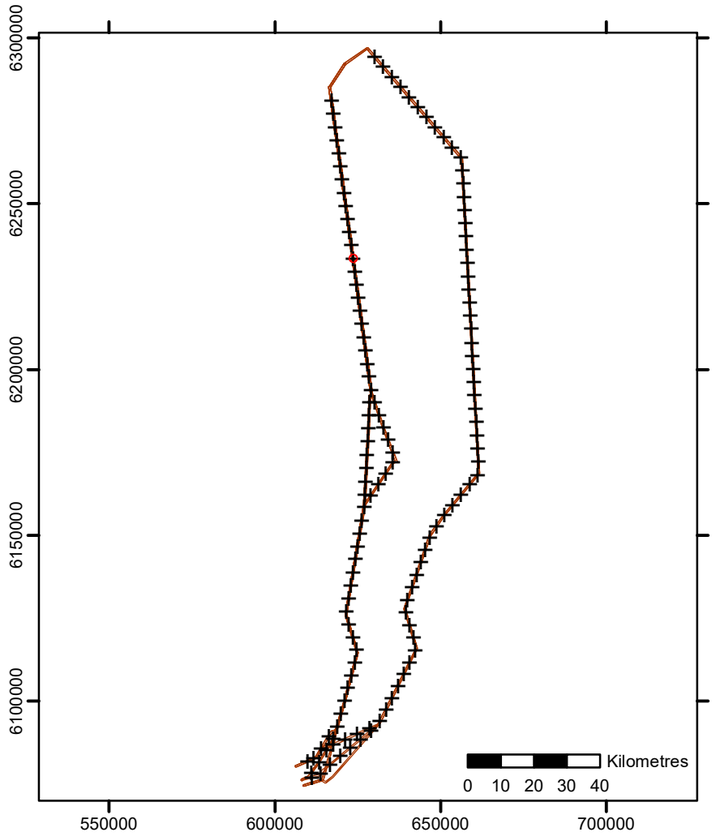
Station: ENV082
Fix: 83 **E:** 623038 **N:** 6237535 **Depth (m):** 66
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV083

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

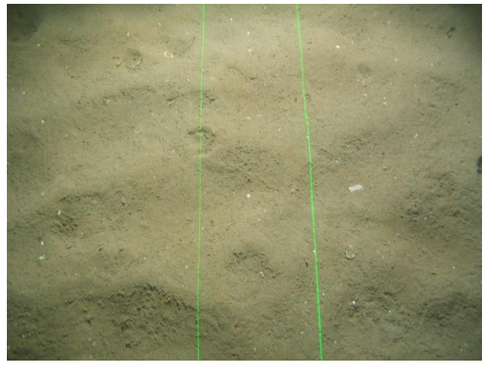
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

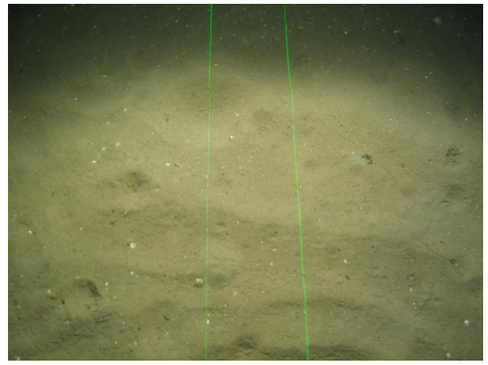
Easting



Station: ENV083
Fix: 3662 **E:** 623634 **N:** 6233496 **Depth (m):** 66

Sediment Description:
Soft sediment wtih bioturbation

Faunal Description:
No visible fauna



Station: ENV083
Fix: 3694 **E:** 623657 **N:** 6233500 **Depth (m):** 66

Sediment Description:
Soft rippled sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV083
Fix: 86 **E:** 623635 **N:** 6233496 **Depth (m):** 67
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

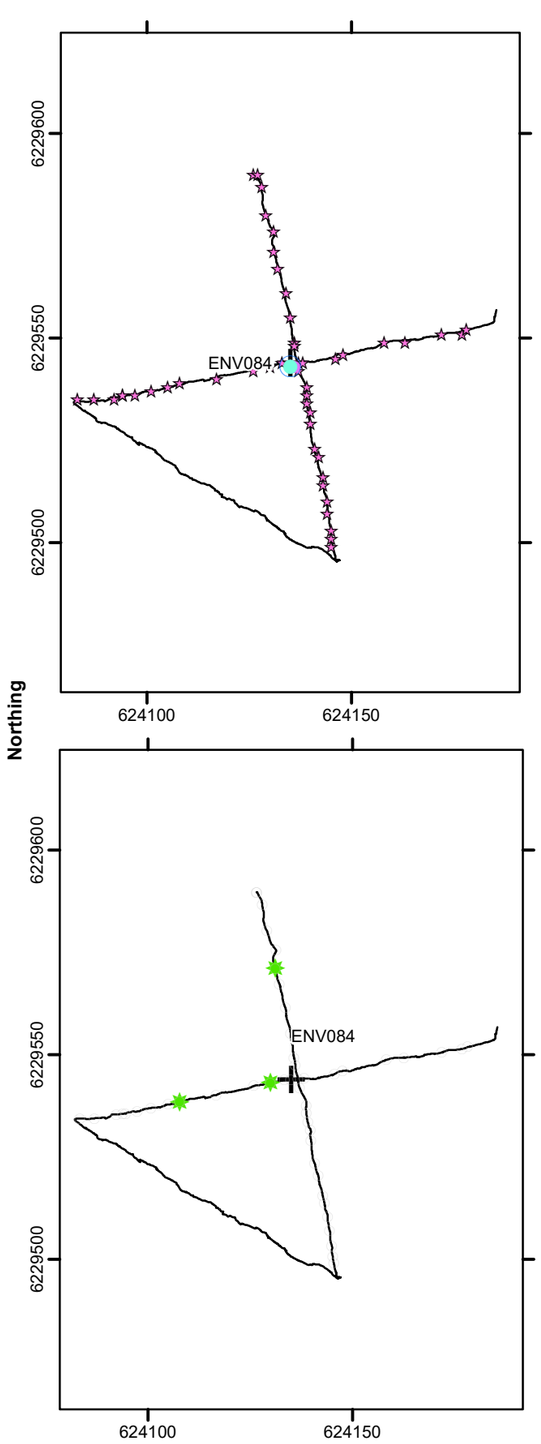


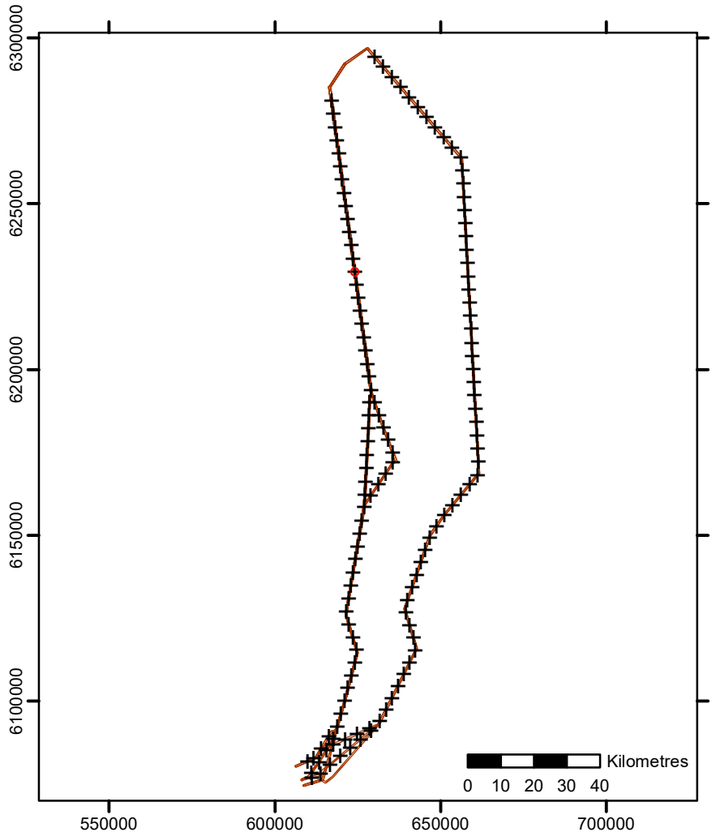
Station: ENV083
Fix: 86 **E:** 623635 **N:** 6233496 **Depth (m):** 67
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV084

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

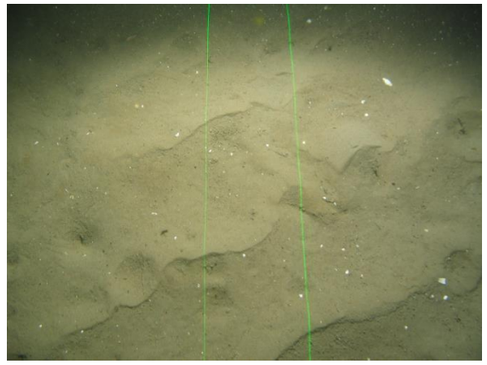
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

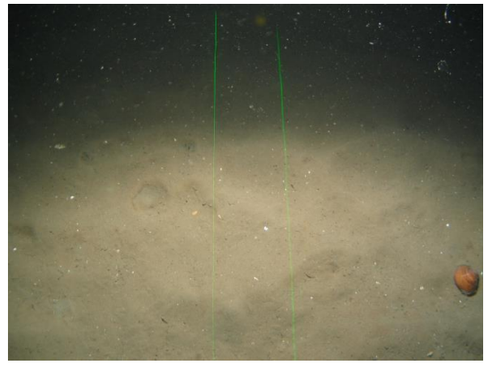
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV084
Fix: 3711 **E:** 624135 **N:** 6229555 **Depth (m):** 68

Sediment Description:
Soft rippled sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV084
Fix: 3734 **E:** 624097 **N:** 6229536 **Depth (m):** 68

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV084
Fix: 91 **E:** 624136 **N:** 6229543 **Depth (m):** 69
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

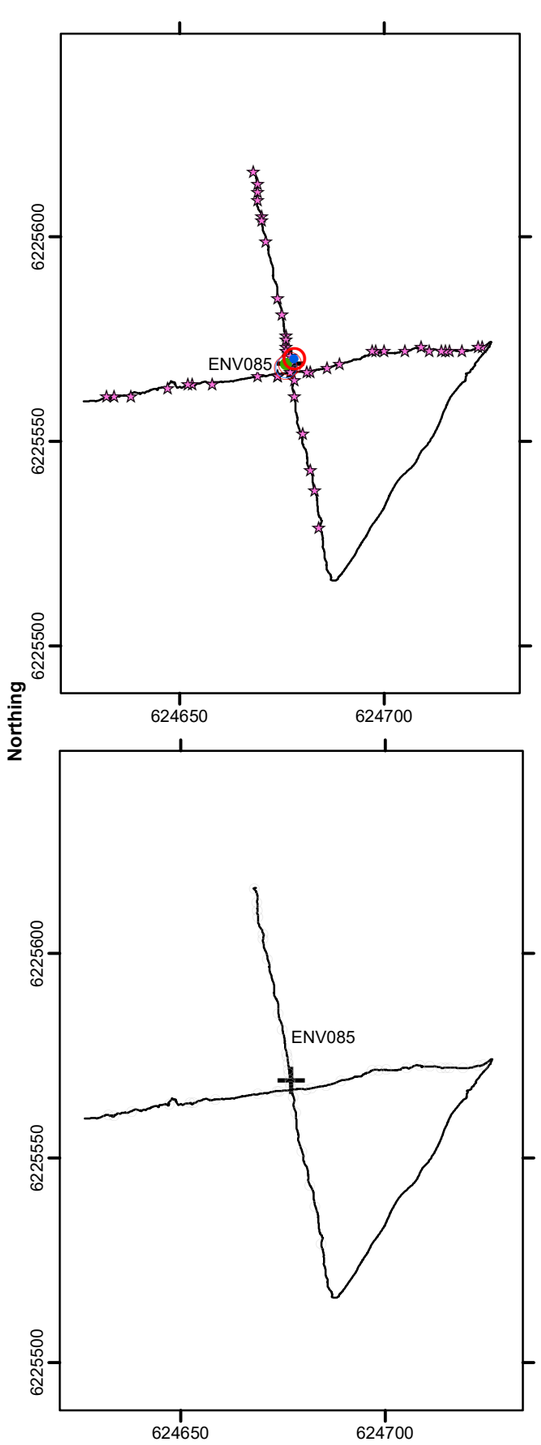


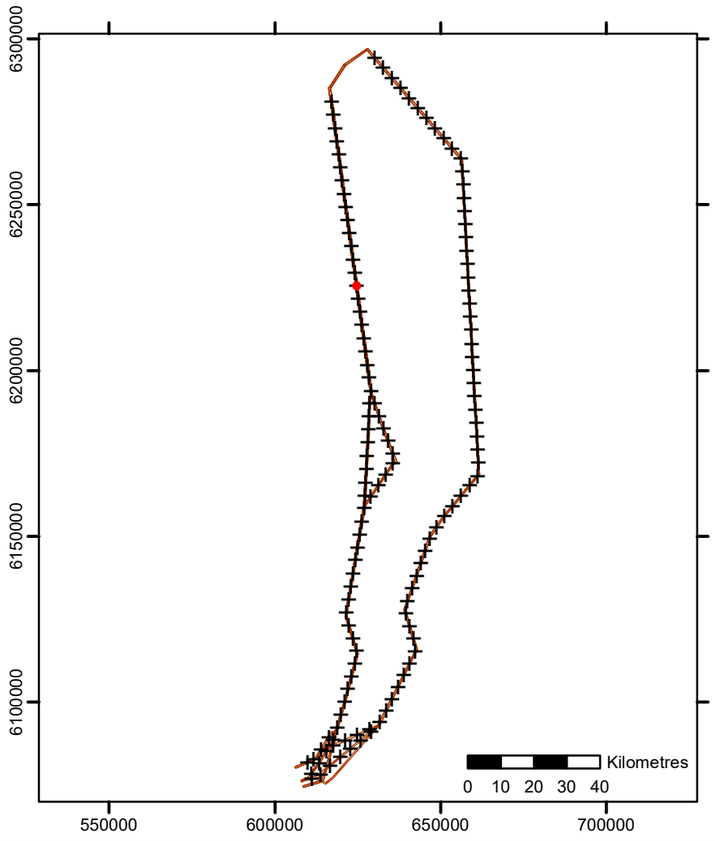
Station: ENV084
Fix: 91 **E:** 624136 **N:** 6229543 **Depth (m):** 69
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV085

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

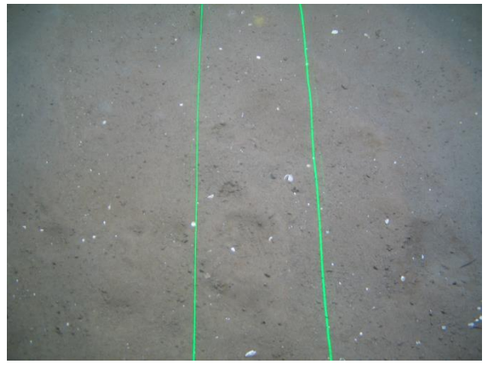
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

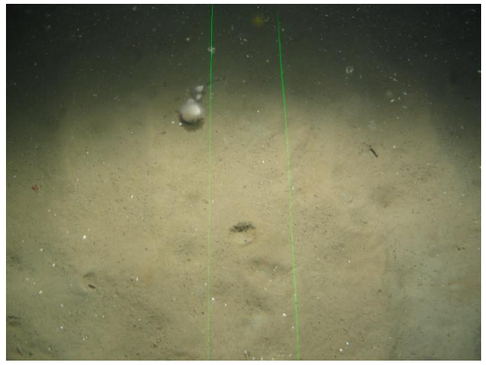
Easting



Station: ENV085
Fix: 3778 **E:** 624716 **N:** 6225572 **Depth (m):** 68

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV085
Fix: 3797 **E:** 624647 **N:** 6225563 **Depth (m):** 68

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV085
Fix: 94 **E:** 624676 **N:** 6225568 **Depth (m):** 70
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

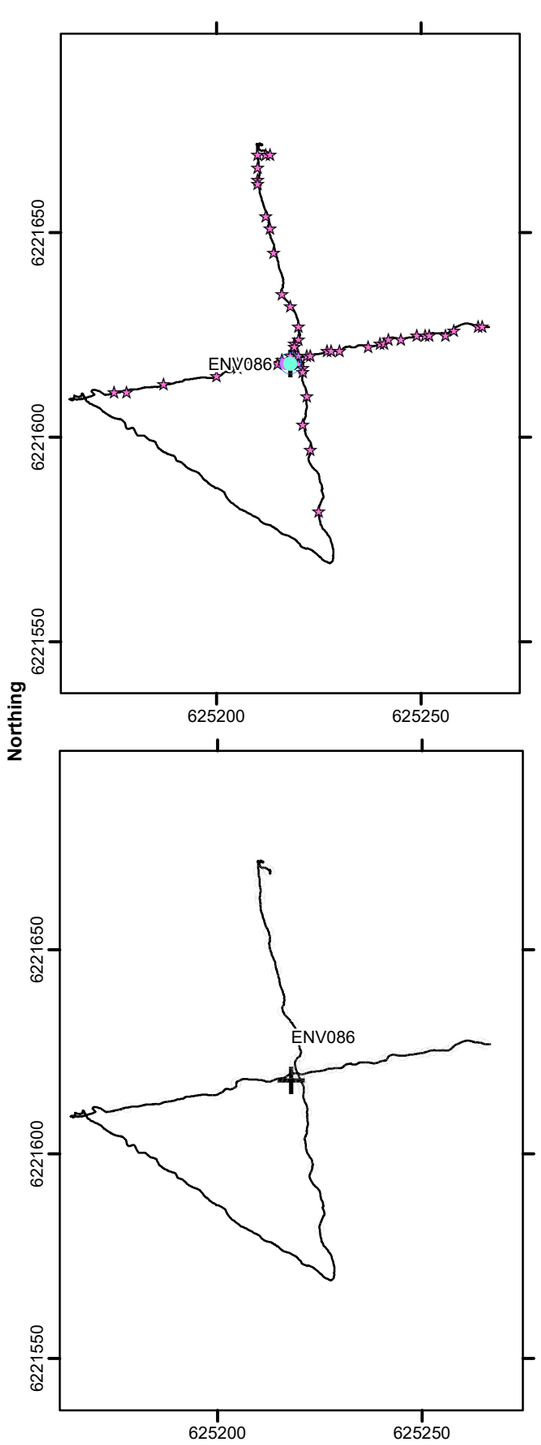


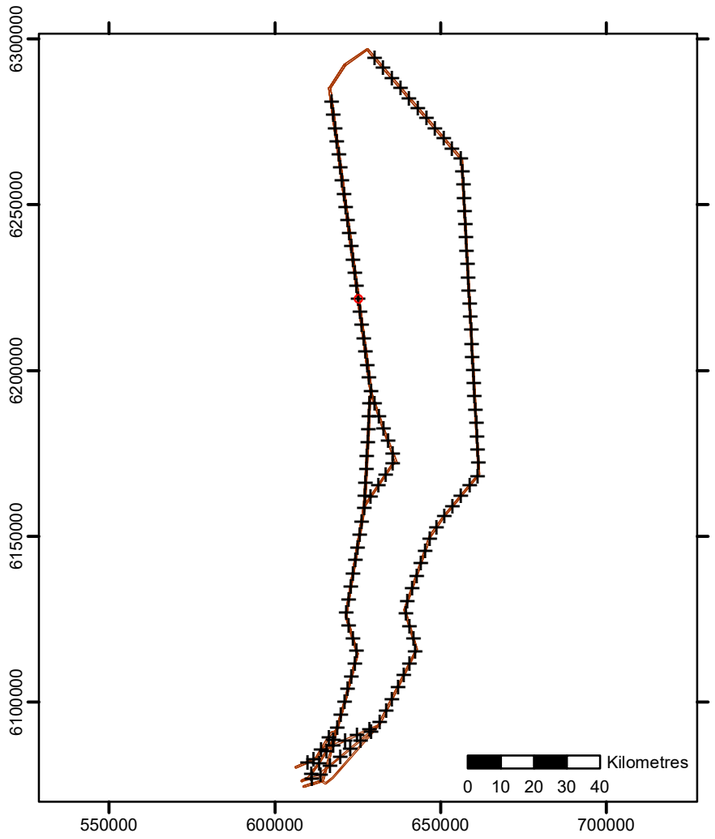
Station: ENV085
Fix: 94 **E:** 624676 **N:** 6225568 **Depth (m):** 70
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV086

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

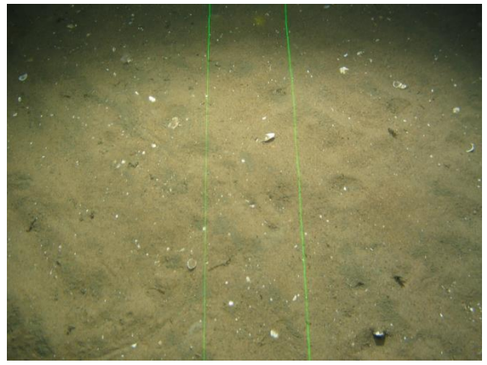
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

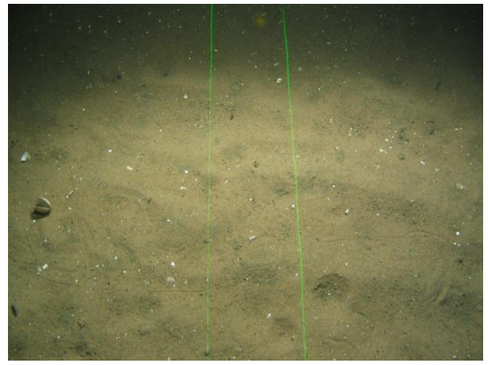
Easting



Station: ENV086
Fix: 3811 **E:** 625218 **N:** 6221632 **Depth (m):** 65

Sediment Description:
Soft sediment with bioturbationa and shell fragments

Faunal Description:
No visible fauna



Station: ENV086
Fix: 3829 **E:** 625205 **N:** 6221617 **Depth (m):** 65

Sediment Description:
Soft sediment with bioturbationa and shell fragments

Faunal Description:
No visible fauna



Station: ENV086
Fix: 97 **E:** 625218 **N:** 6221618 **Depth (m):** 68
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

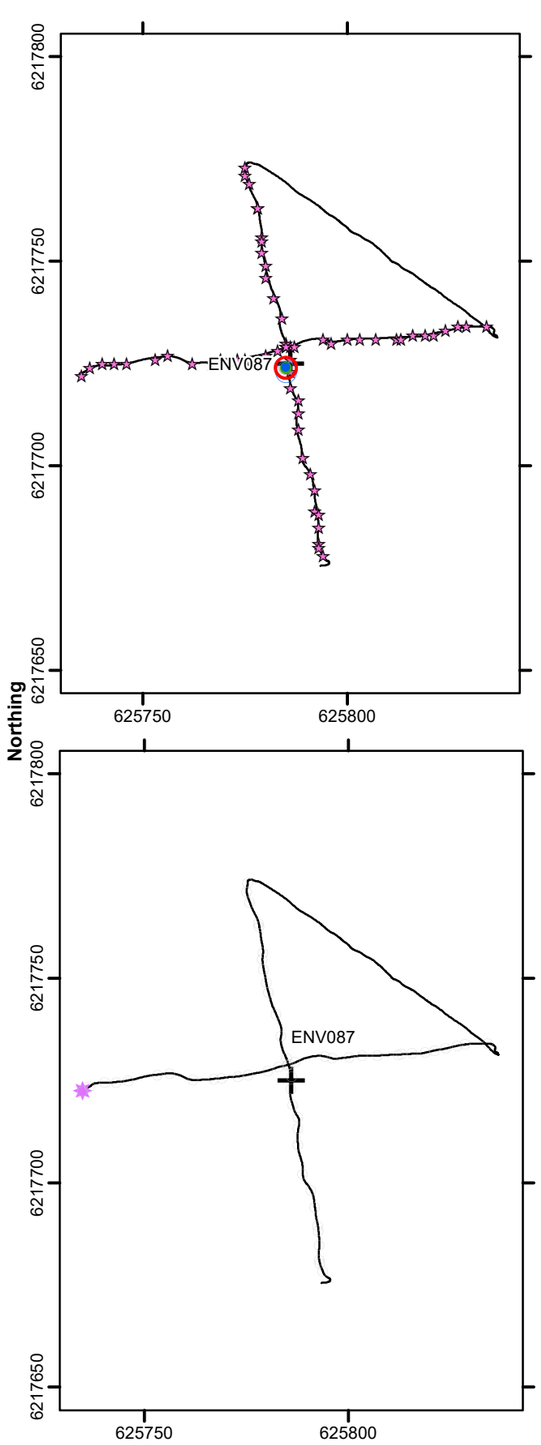


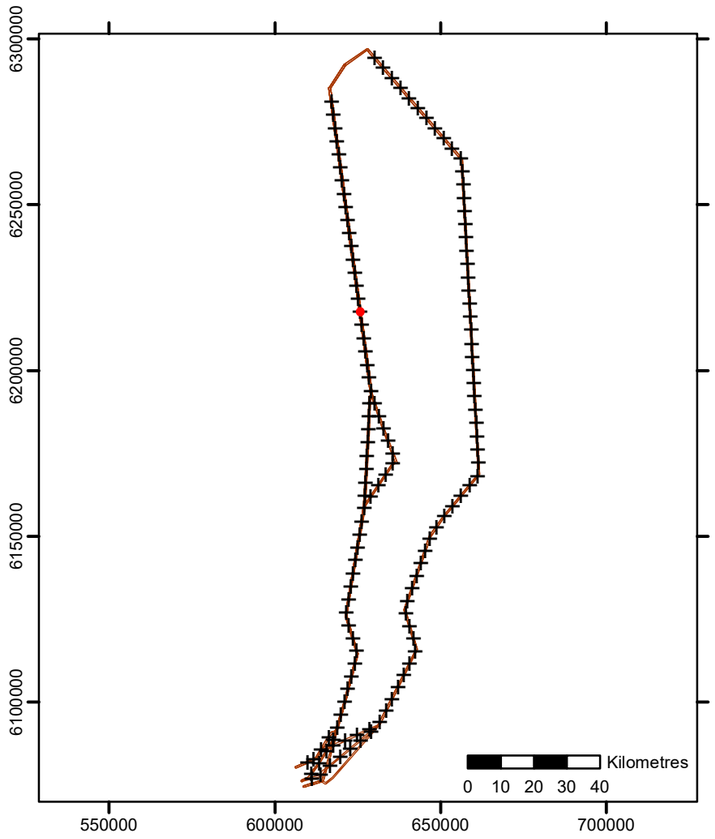
Station: ENV086
Fix: 97 **E:** 625218 **N:** 6221618 **Depth (m):** 68
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV087

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

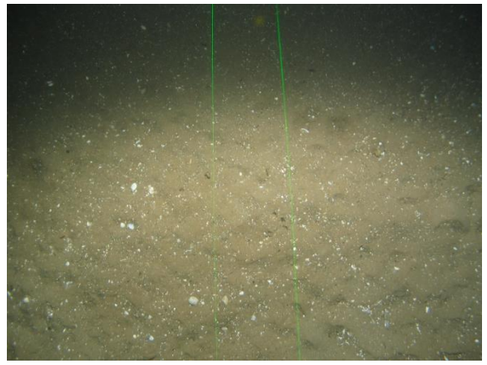
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV087
Fix: 3854 **E:** 625737 **N:** 6217724 **Depth (m):** 64

Sediment Description:
Soft sediment with bioturbation and shell hash

Faunal Description:
No visible fauna



Station: ENV087
Fix: 3877 **E:** 625816 **N:** 6217732 **Depth (m):** 65

Sediment Description:
Soft sediment with bioturbation and shell hash

Faunal Description:
No visible fauna



Station: ENV087
Fix: 101 **E:** 625785 **N:** 6217724 **Depth (m):** 68
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
No visible fauna

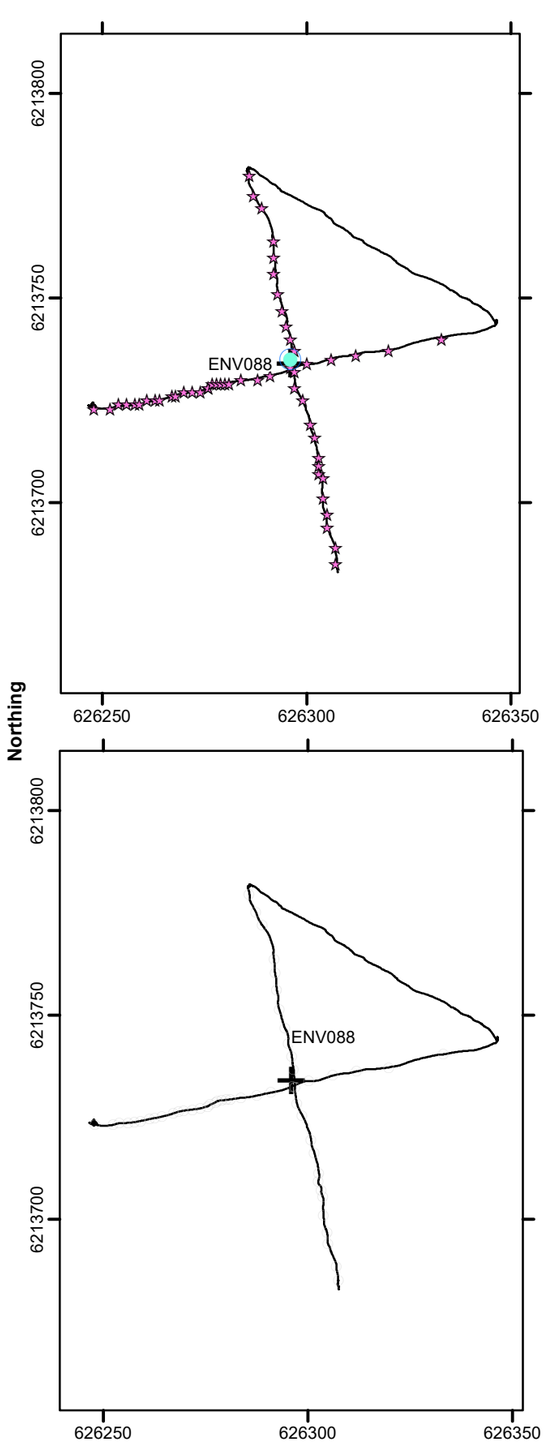


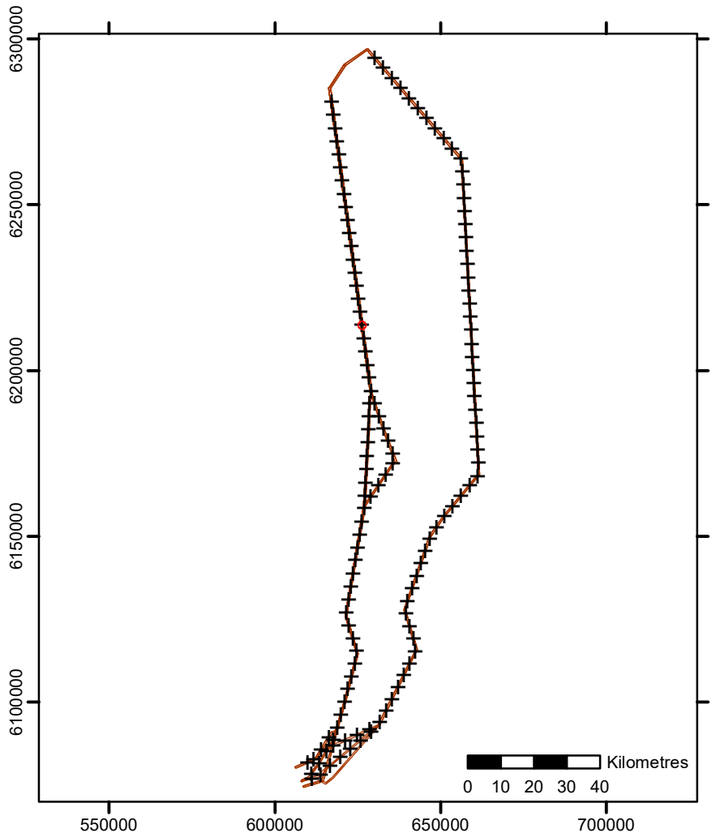
Station: ENV087
Fix: 101 **E:** 625785 **N:** 6217724 **Depth (m):** 68
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV088

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

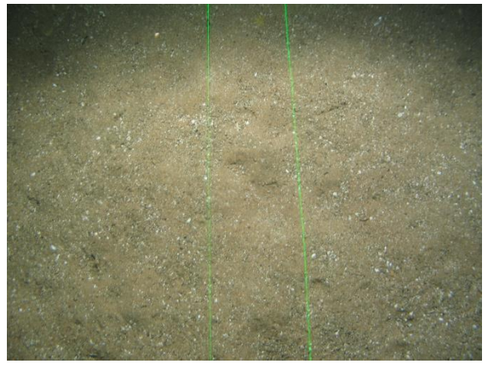
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

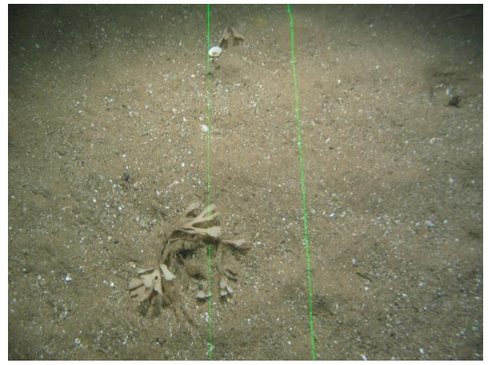
Easting



Station: ENV088
Fix: 3925 **E:** 626272 **N:** 6213727 **Depth (m):** 61

Sediment Description:
Soft sediment with shell hash and gravel

Faunal Description:
No visible fauna



Station: ENV088
Fix: 3951 **E:** 626295 **N:** 6213743 **Depth (m):** 61

Sediment Description:
Soft sediment with shell hash and gravel. Evidence of bioturbation

Faunal Description:
Cnidaria (Hydrozoa *stet.*)



Station: ENV088
Fix: 106 **E:** 626296 **N:** 6213735 **Depth (m):** 63
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

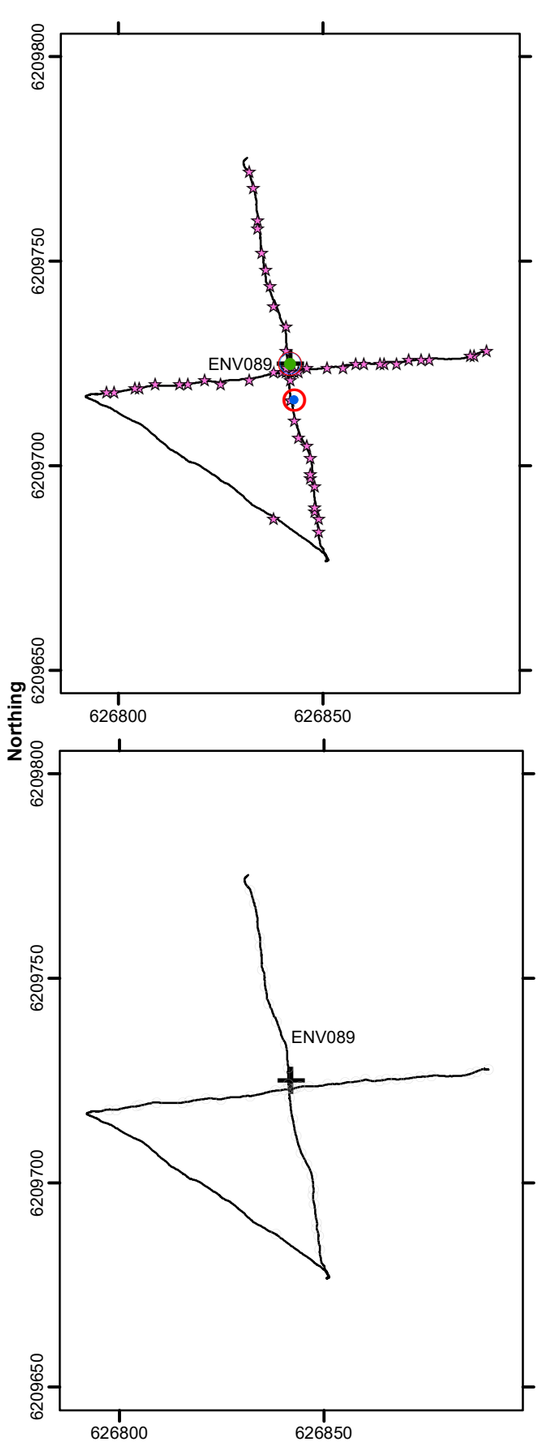


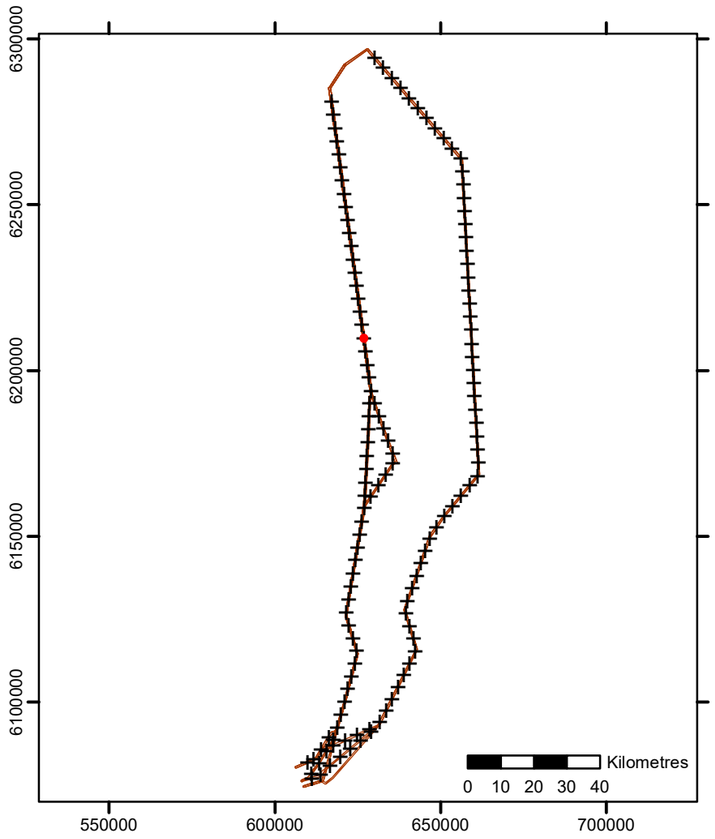
Station: ENV088
Fix: 106 **E:** 626296 **N:** 6213735 **Depth (m):** 63
Retention: MFA

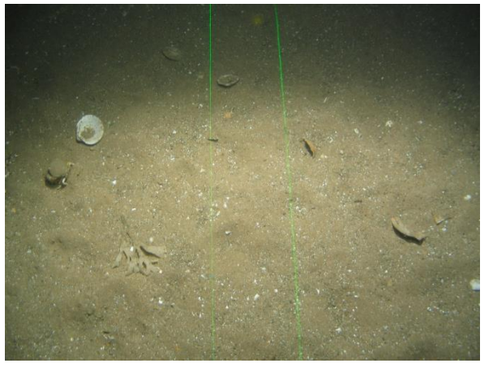
Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



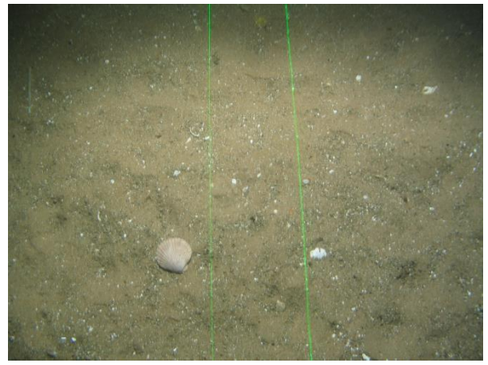




Station: ENV089
Fix: 3969 **E:** 626887 **N:** 6209727 **Depth (m):** 63

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Porcellanidae *stet.*), Bryozoa (Flustridae *stet.*)



Station: ENV089
Fix: 4018 **E:** 626835 **N:** 6209752 **Depth (m):** 63

Sediment Description:
Soft sediment with bioturbation and shell hash

Faunal Description:
Annelida (*Hyalinoecia tubicola*)

Overview of Station: ENV089

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV089
Fix: 110 **E:** 626842 **N:** 6209725 **Depth (m):** 65
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

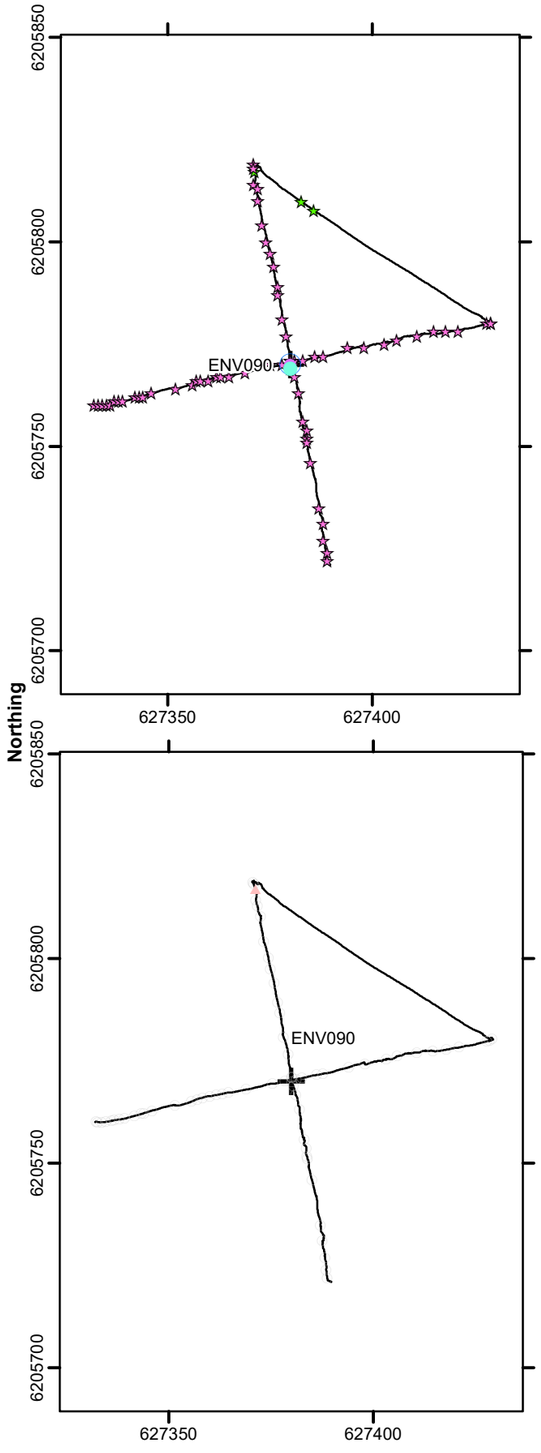


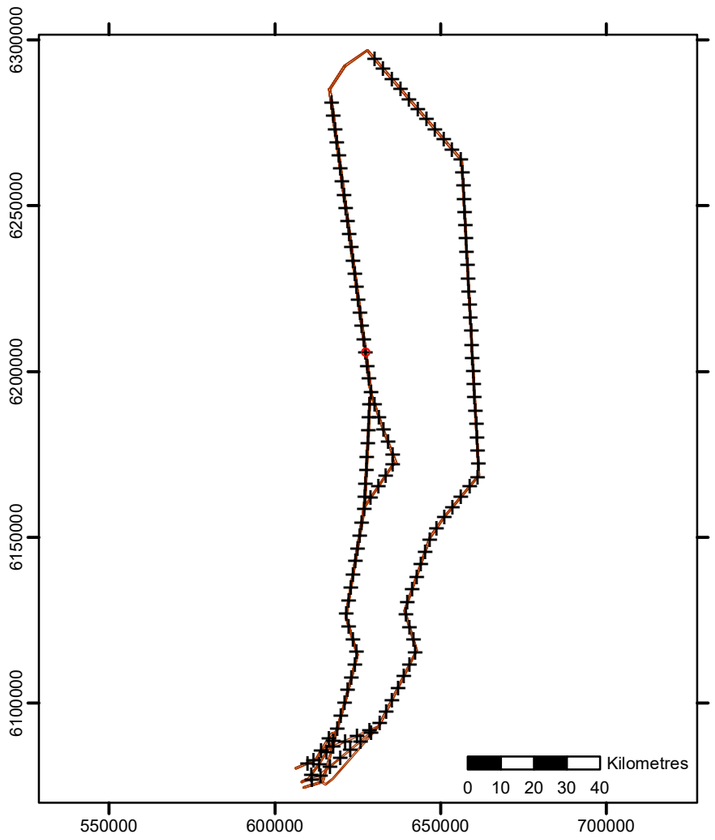
Station: ENV089
Fix: 110 **E:** 626842 **N:** 6209725 **Depth (m):** 65
Retention: MFA

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV090

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

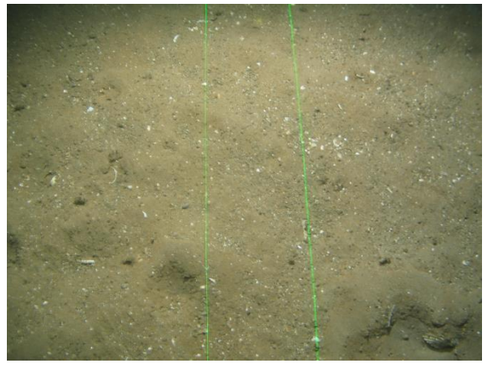
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

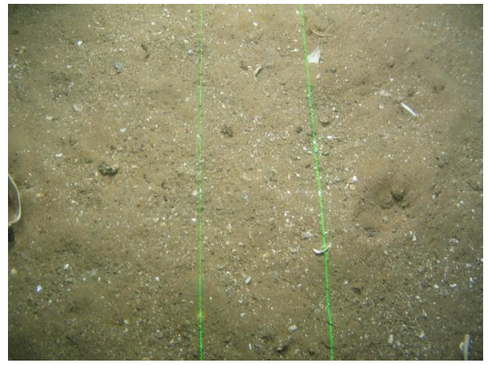
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV090
Fix: 4028 **E:** 627337 **N:** 6205761 **Depth (m):** 63

Sediment Description:
Soft sediment with bioturbation and shell hash

Faunal Description:
No visible fauna



Station: ENV090
Fix: 4056 **E:** 627418 **N:** 6205778 **Depth (m):** 63

Sediment Description:
Soft sediment with bioturbation and shell hash

Faunal Description:
No visible fauna



Station: ENV090
Fix: 114 **E:** 627380 **N:** 6205770 **Depth (m):** 66
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

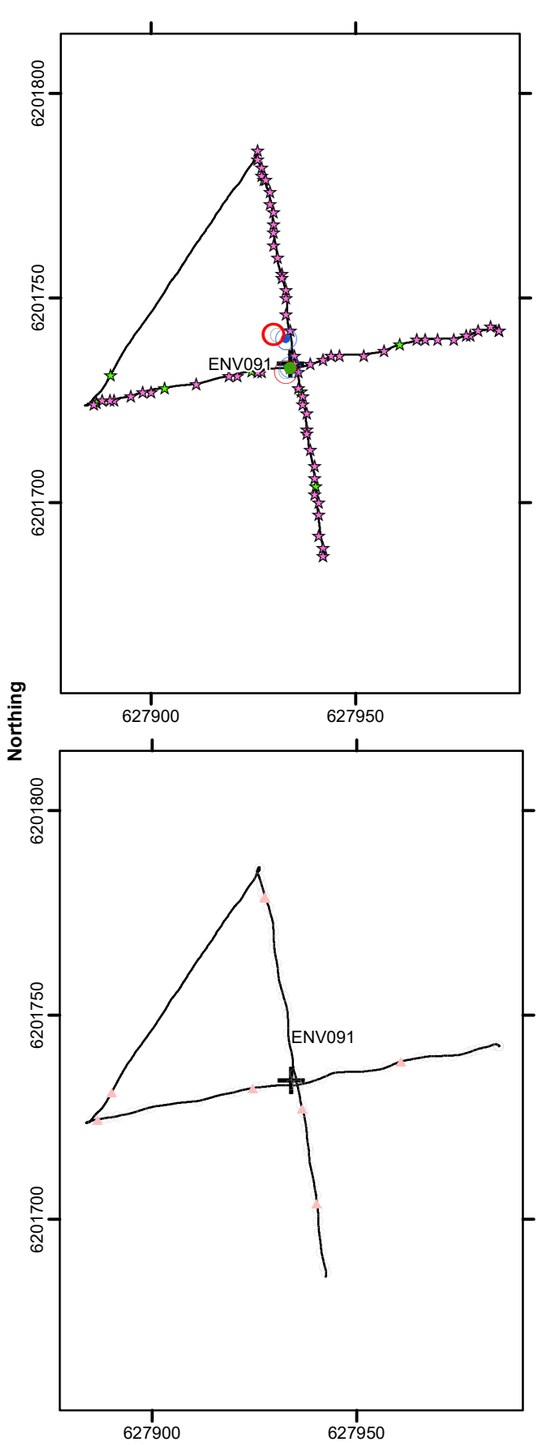


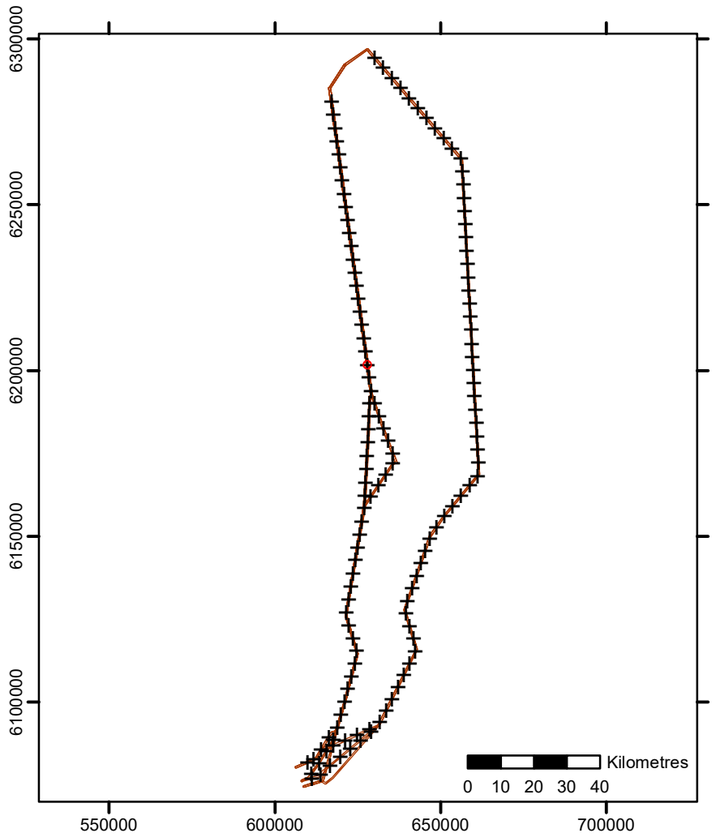
Station: ENV090
Fix: 114 **E:** 627380 **N:** 6205770 **Depth (m):** 66
Retention: MFB

Sediment Description:
Coarse sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV091

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

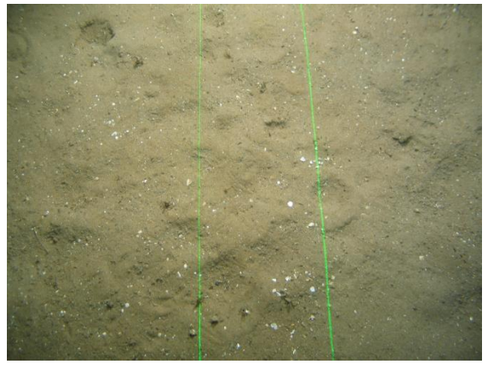
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

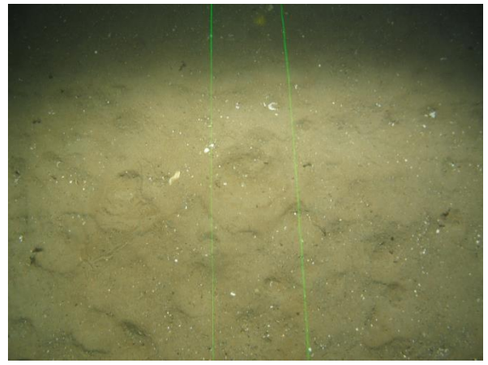
Easting



Station: ENV091
Fix: 4103 **E:** 627944 **N:** 6201736 **Depth (m):** 67

Sediment Description:
Soft rippled sediment with bioturbation and shell hash

Faunal Description:
Animalia tube



Station: ENV091
Fix: 4126 **E:** 627930 **N:** 6201771 **Depth (m):** 67

Sediment Description:
Soft sediment with bioturbation and shell hash

Faunal Description:
No visible fauna



Station: ENV091
Fix: 117 **E:** 627934 **N:** 6201733 **Depth (m):** 70
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

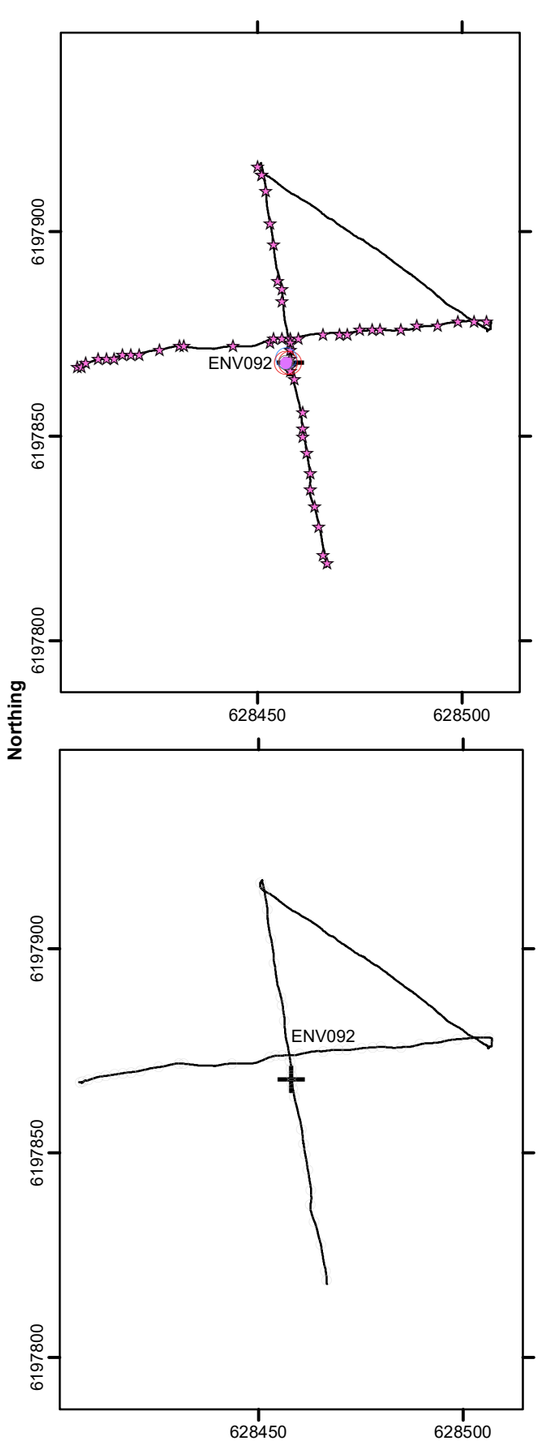


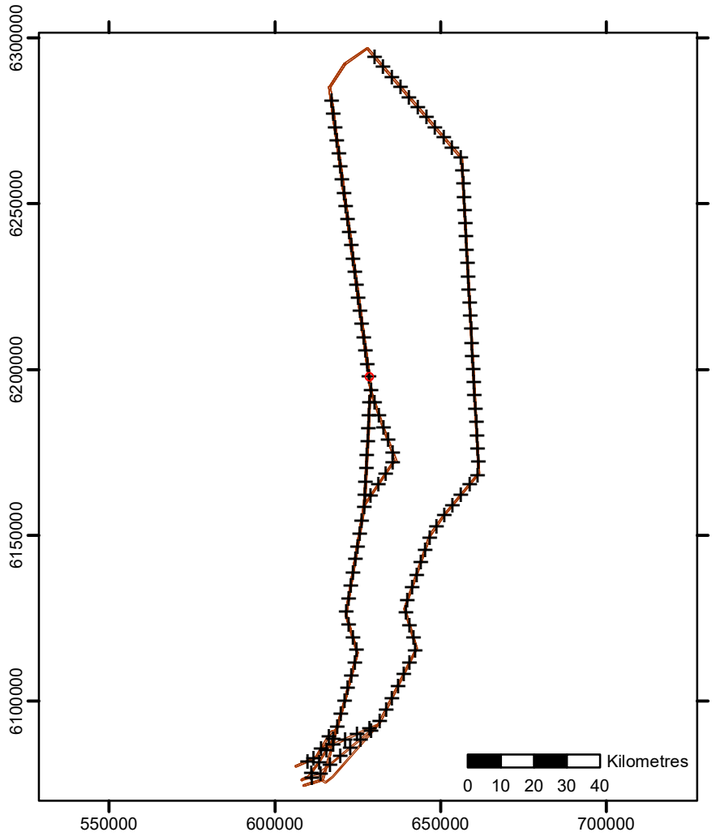
Station: ENV091
Fix: 117 **E:** 627934 **N:** 6201733 **Depth (m):** 70
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV092

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

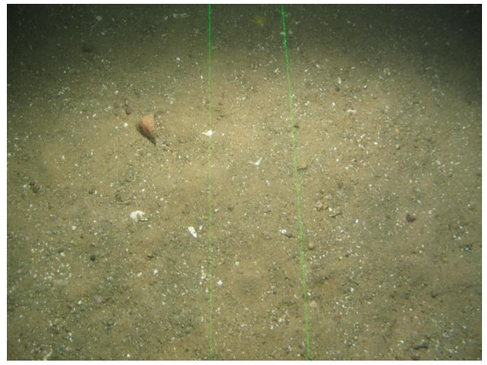
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

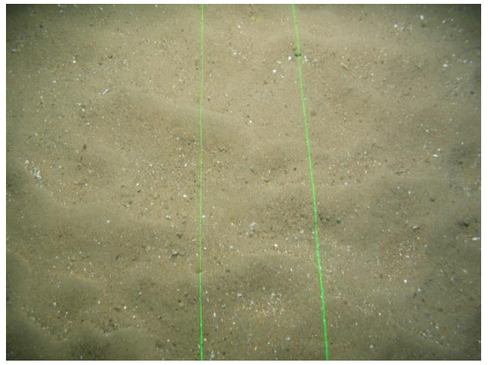
Easting



Station: ENV092
Fix: 4164 **E:** 628426 **N:** 6197871 **Depth (m):** 61

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV092
Fix: 4191 **E:** 628455 **N:** 6197888 **Depth (m):** 62

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna



Station: ENV092
Fix: 121 **E:** 628457 **N:** 6197868 **Depth (m):** 65
Retention: MFA

Sediment Description:
Coarse sand, gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Asteroidea), Mollusca (Scaphopoda)

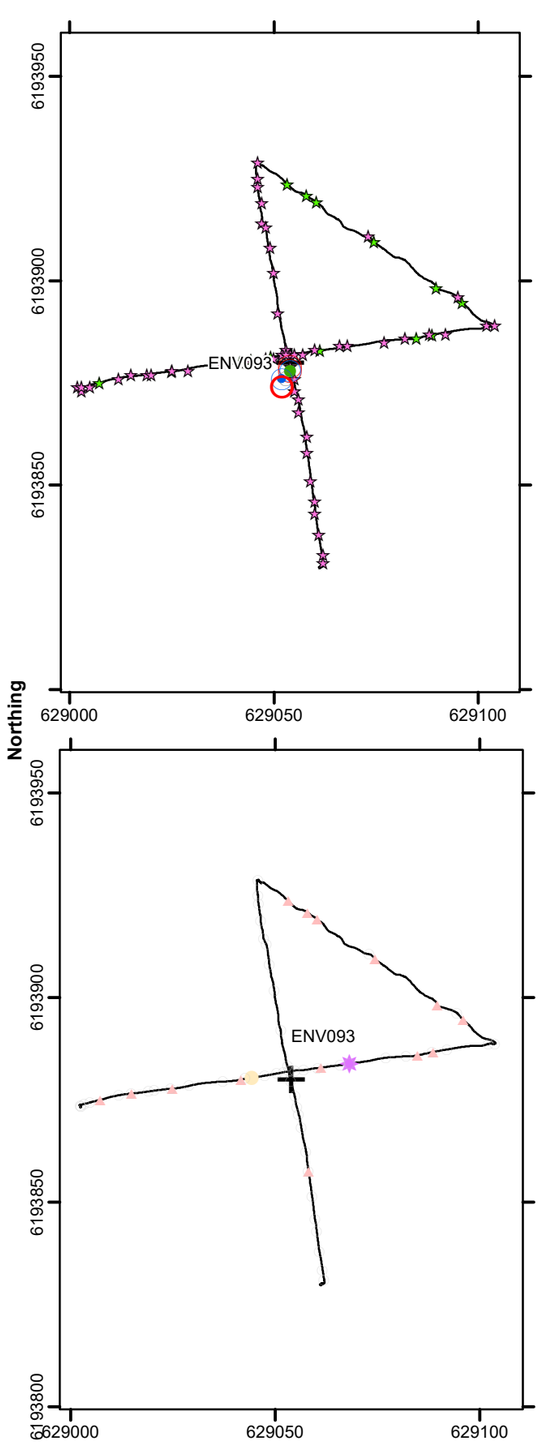


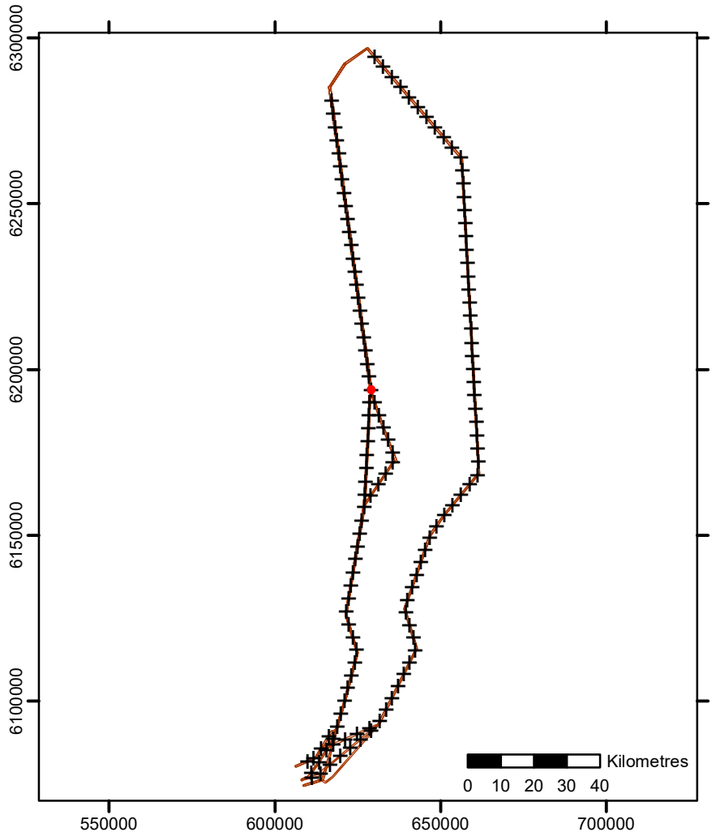
Station: ENV092
Fix: 121 **E:** 628457 **N:** 6197868 **Depth (m):** 65
Retention: MFA

Sediment Description:
Coarse sand, gravel and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Asteroidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV093

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

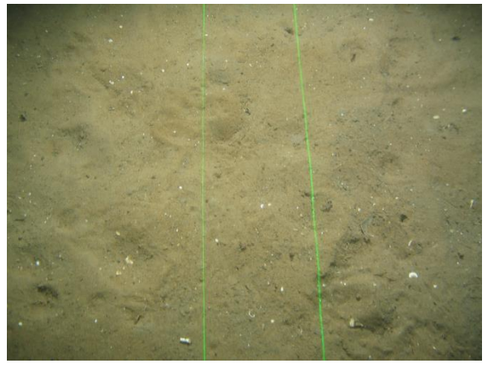
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

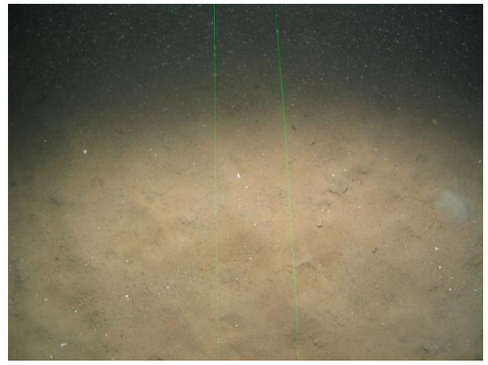
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV093
Fix: 4224 **E:** 629052 **N:** 6193882 **Depth (m):** 66

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV093
Fix: 4256 **E:** 629058 **N:** 6193858 **Depth (m):** 66

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV093
Fix: 128 **E:** 629054 **N:** 6193878 **Depth (m):** 68
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

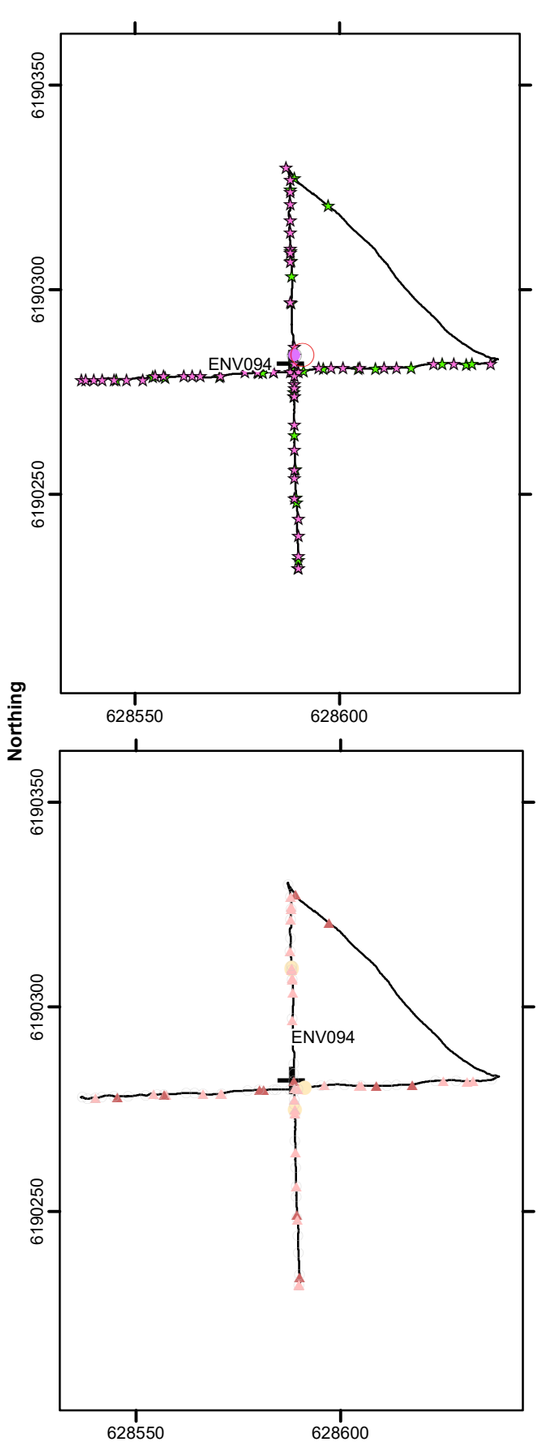


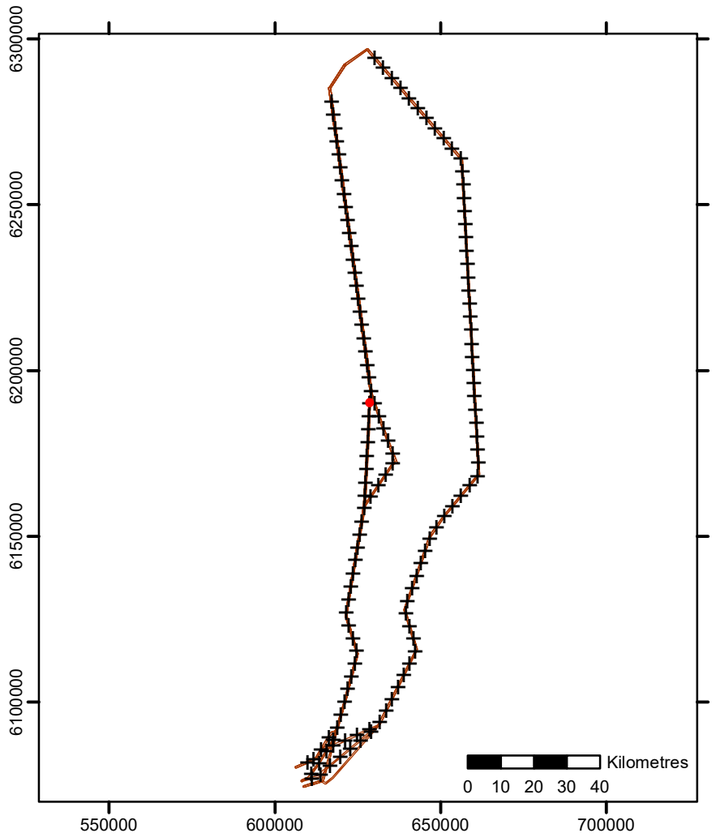
Station: ENV093
Fix: 128 **E:** 629054 **N:** 6193878 **Depth (m):** 68
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV094

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

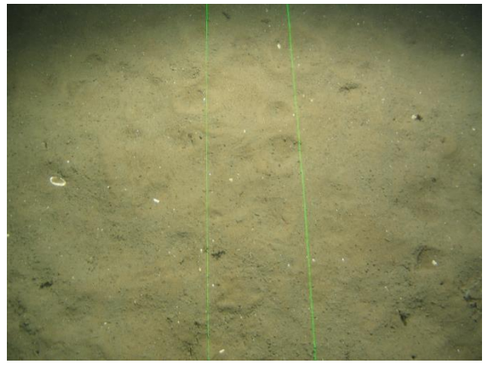
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

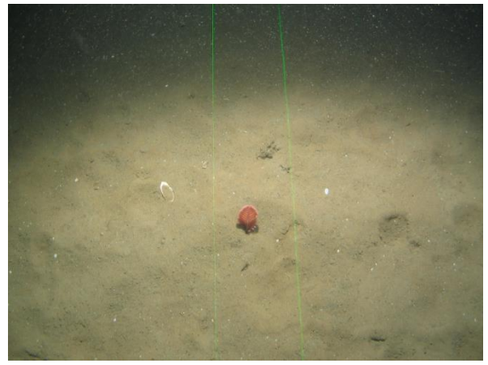
Easting



Station: ENV094
Fix: 4626 **E:** 628542 **N:** 6190278 **Depth (m):** 72

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV094
Fix: 4656 **E:** 628588 **N:** 6190314 **Depth (m):** 72

Sediment Description:
Soft sediment with bioturbation and shell fragments

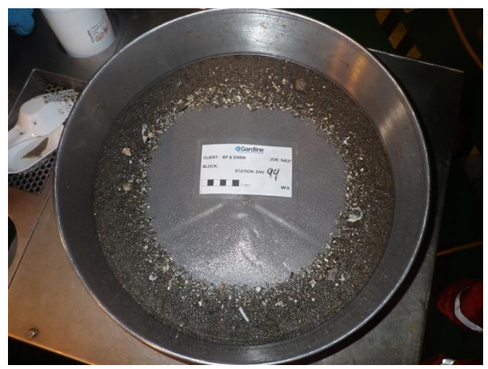
Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV094
Fix: 131 **E:** 628589 **N:** 6190284 **Depth (m):** 74
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Mollusca (Scaphopoda)

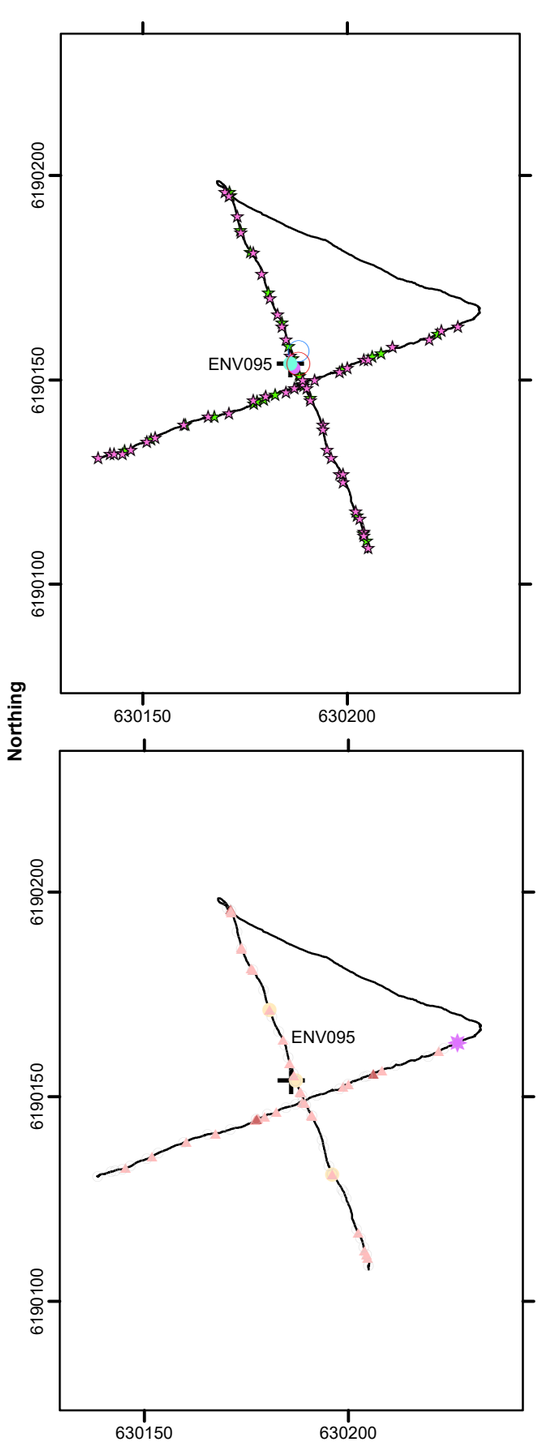


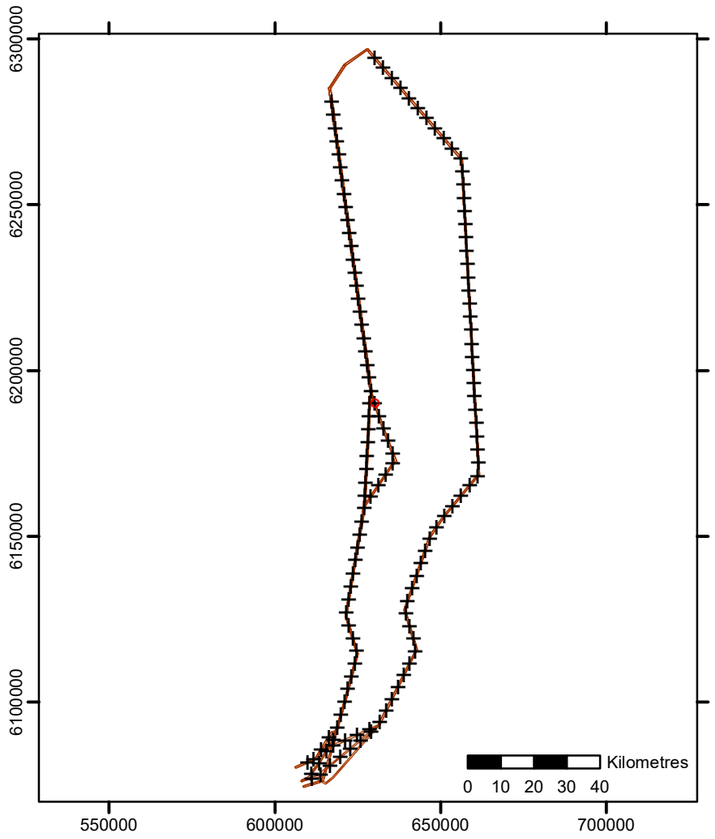
Station: ENV094
Fix: 131 **E:** 628589 **N:** 6190284 **Depth (m):** 74
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV095

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

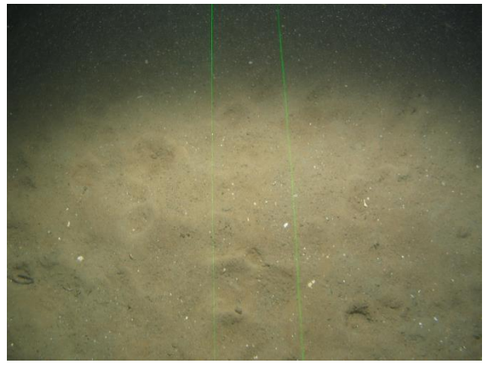
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

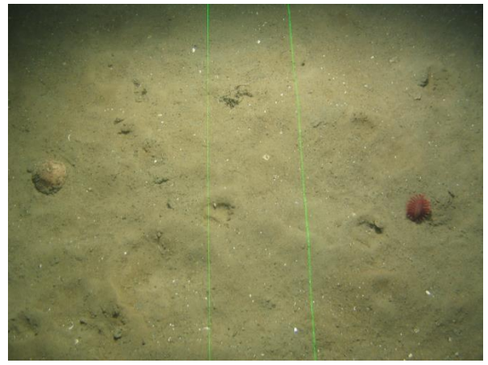
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV095
Fix: 4701 **E:** 630170 **N:** 6190196 **Depth (m):** 70

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV095
Fix: 4715 **E:** 630191 **N:** 6190145 **Depth (m):** 70

Sediment Description:
Soft sediment with bioturbation and shell fragments

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV095
Fix: 136 **E:** 630186 **N:** 6190154 **Depth (m):** 71
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta, Serpulidae), Cnidaria (Hydrozoa)

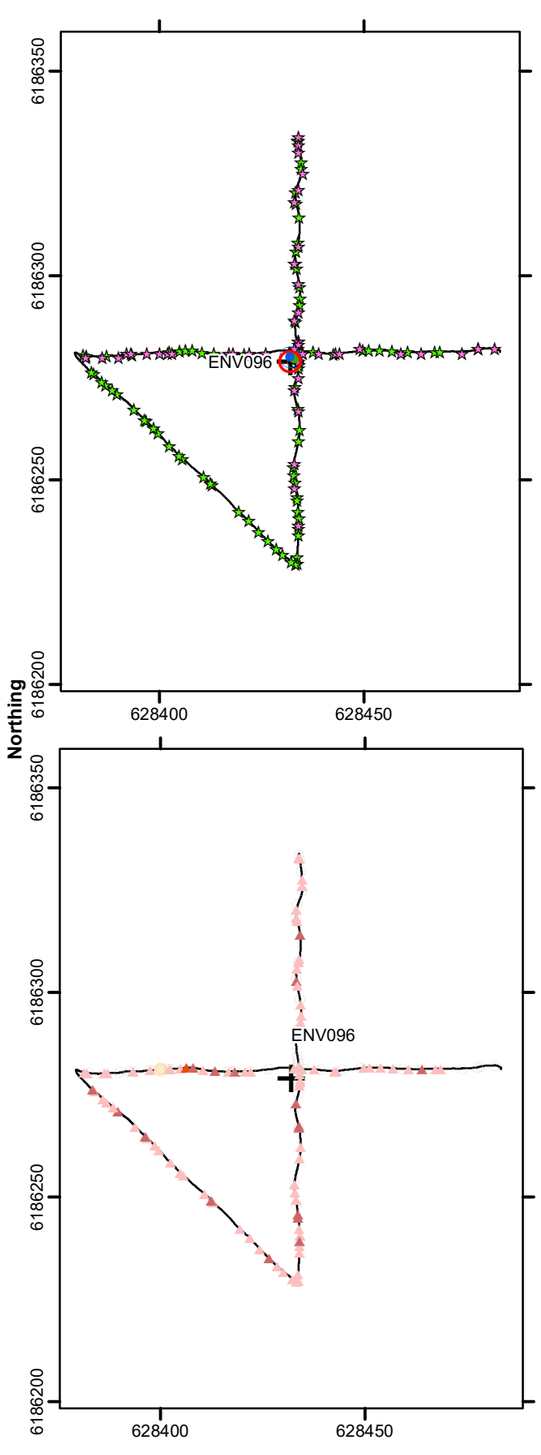


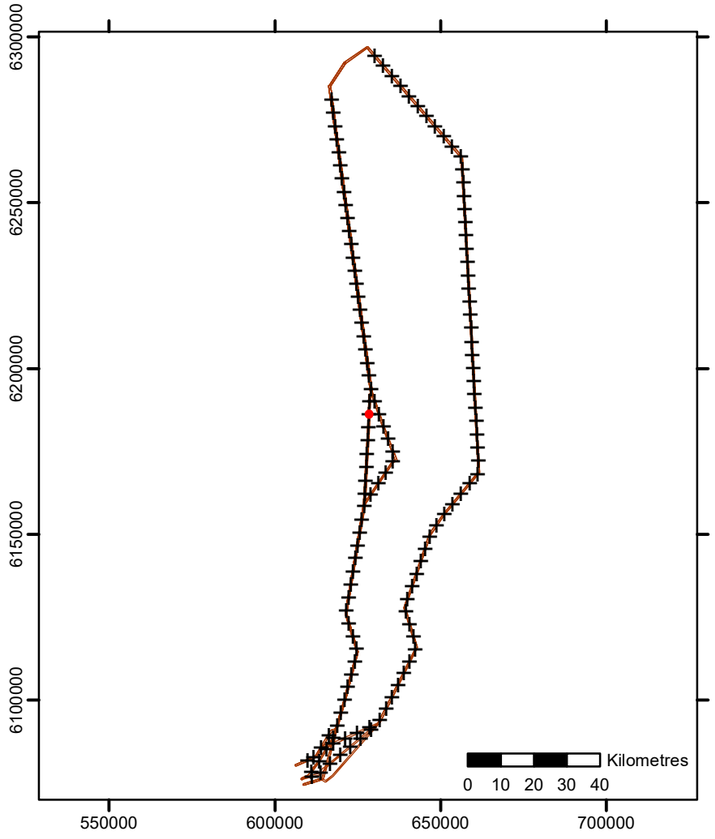
Station: ENV095
Fix: 136 **E:** 630186 **N:** 6190154 **Depth (m):** 71
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta, Serpulidae), Cnidaria (Hydrozoa)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV096

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

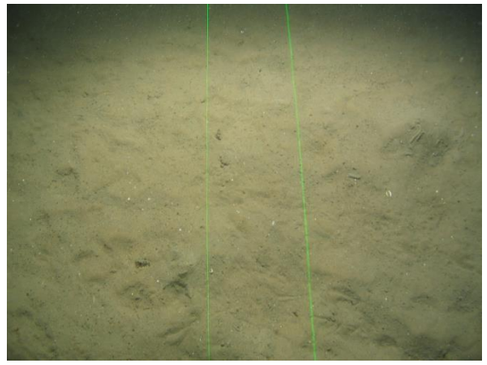
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

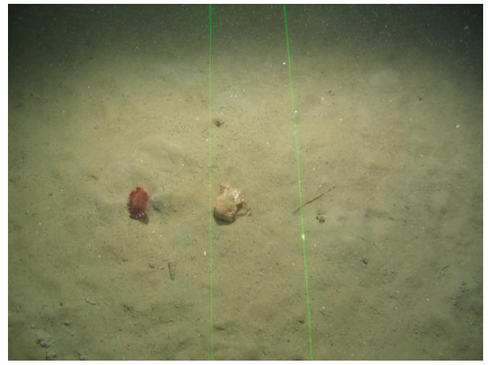
Easting



Station: ENV096
Fix: 4797 **E:** 628433 **N:** 6186272 **Depth (m):** 80

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV096
Fix: 4809 **E:** 628402 **N:** 6186281 **Depth (m):** 80

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV096
Fix: 140 **E:** 628433 **N:** 6186279 **Depth (m):** 82
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea)

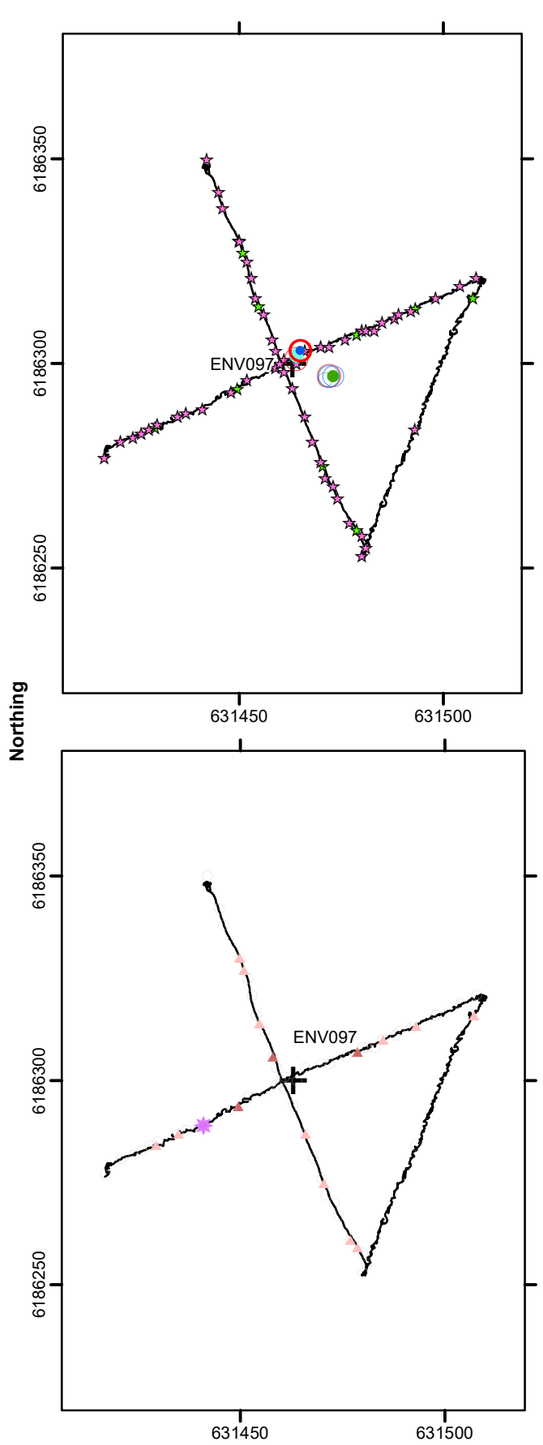


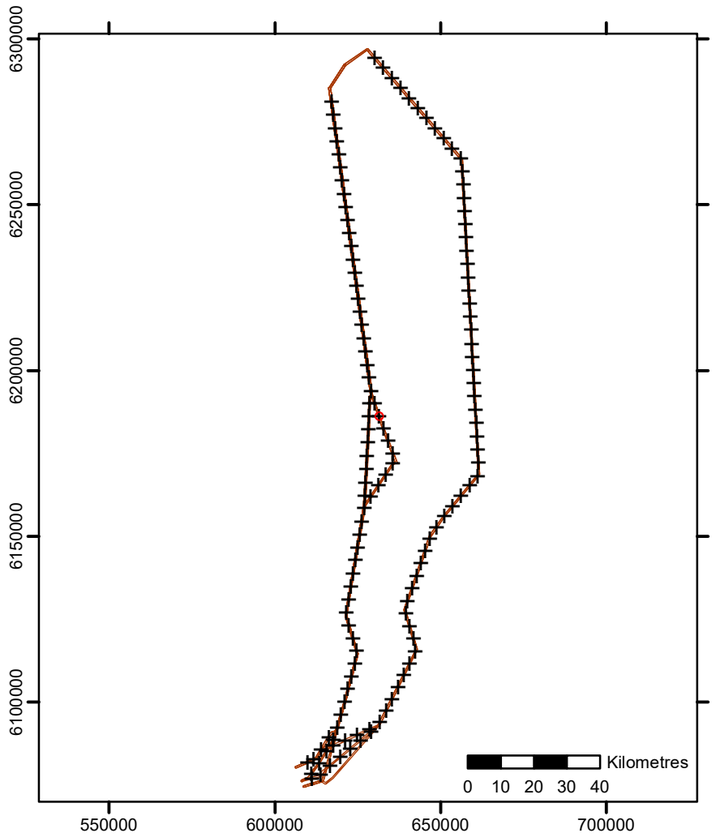
Station: ENV096
Fix: 140 **E:** 628433 **N:** 6186279 **Depth (m):** 82
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Asteroidea, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV097

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

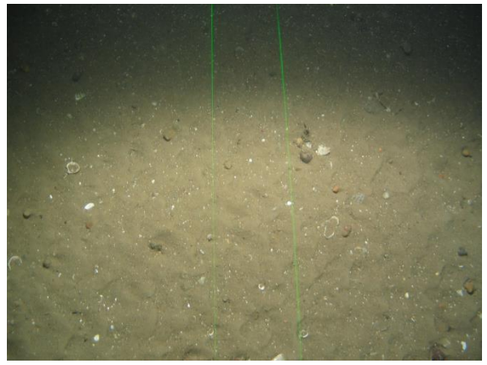
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

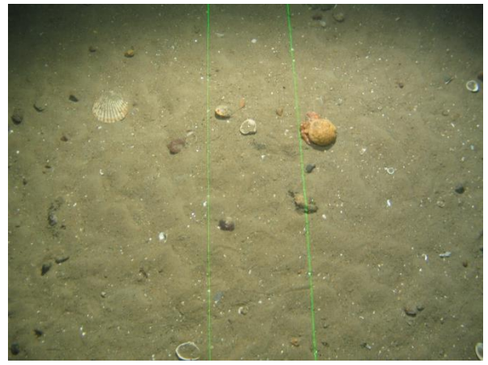
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV097
Fix: 4732 **E:** 631428 **N:** 6186284 **Depth (m):** 69

Sediment Description:
Gently rippled soft sediment with scattered shell fragments and gravel.

Faunal Description:
No visible fauna



Station: ENV097
Fix: 4764 **E:** 631470 **N:** 6186276 **Depth (m):** 70

Sediment Description:
soft sediment with shell fragments and bioturbation

Faunal Description:
Arthropoda (Paguroidea *stet.*)



Station: ENV097
Fix: 146 **E:** 631473 **N:** 6186297 **Depth (m):** 72
Retention: MFA

Sediment Description:
Sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

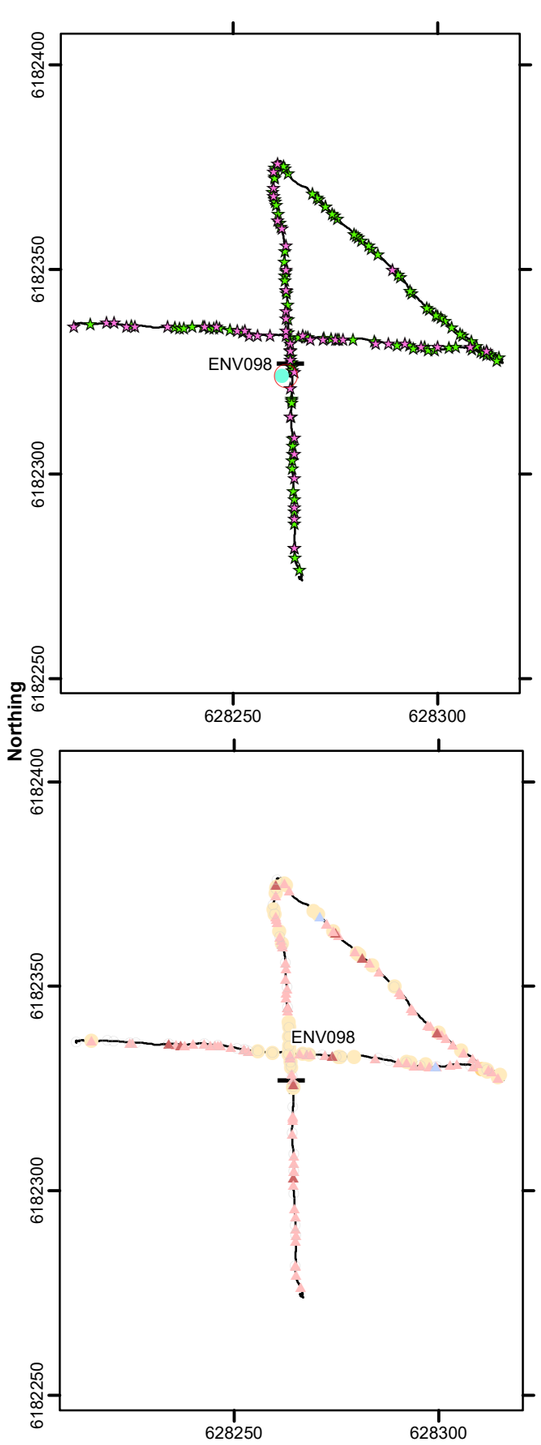


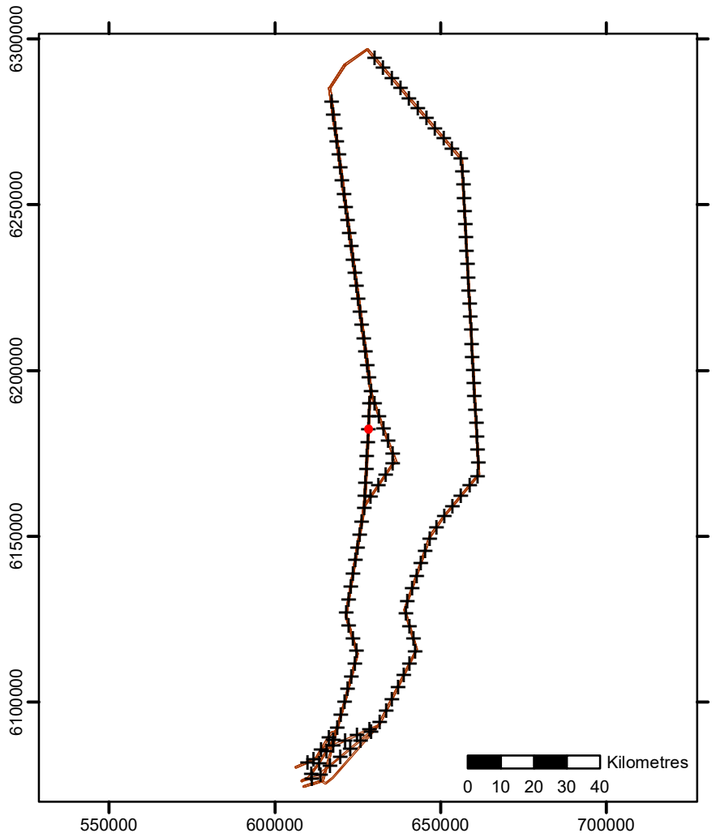
Station: ENV097
Fix: 146 **E:** 631473 **N:** 6186297 **Depth (m):** 72
Retention: MFA

Sediment Description:
Sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV098

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

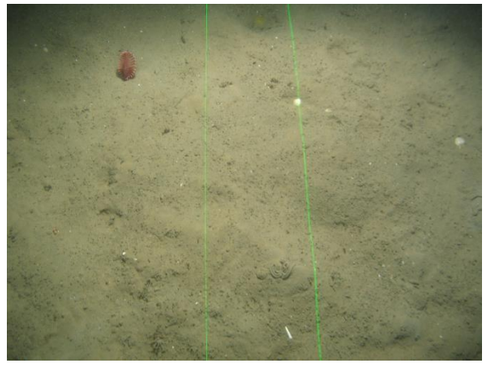
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

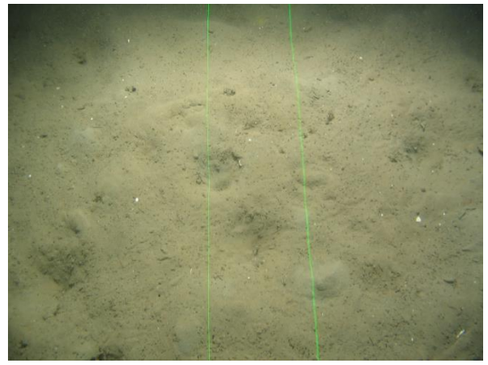
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV098
Fix: 4834 **E:** 628246 **N:** 6182336 **Depth (m):** 90

Sediment Description:
Soft sediment with shell fragments and bioturbation

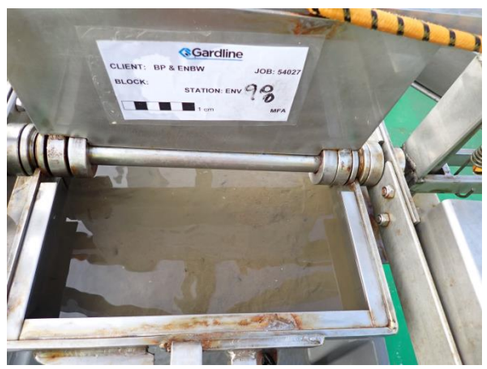
Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087), Faunal turf, Mollusca (Scaphopoda *stet.*)



Station: ENV098
Fix: 4861 **E:** 628263 **N:** 6182350 **Depth (m):** 89

Sediment Description:
Soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube



Station: ENV098
Fix: 154 **E:** 628262 **N:** 6182324 **Depth (m):** 94
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

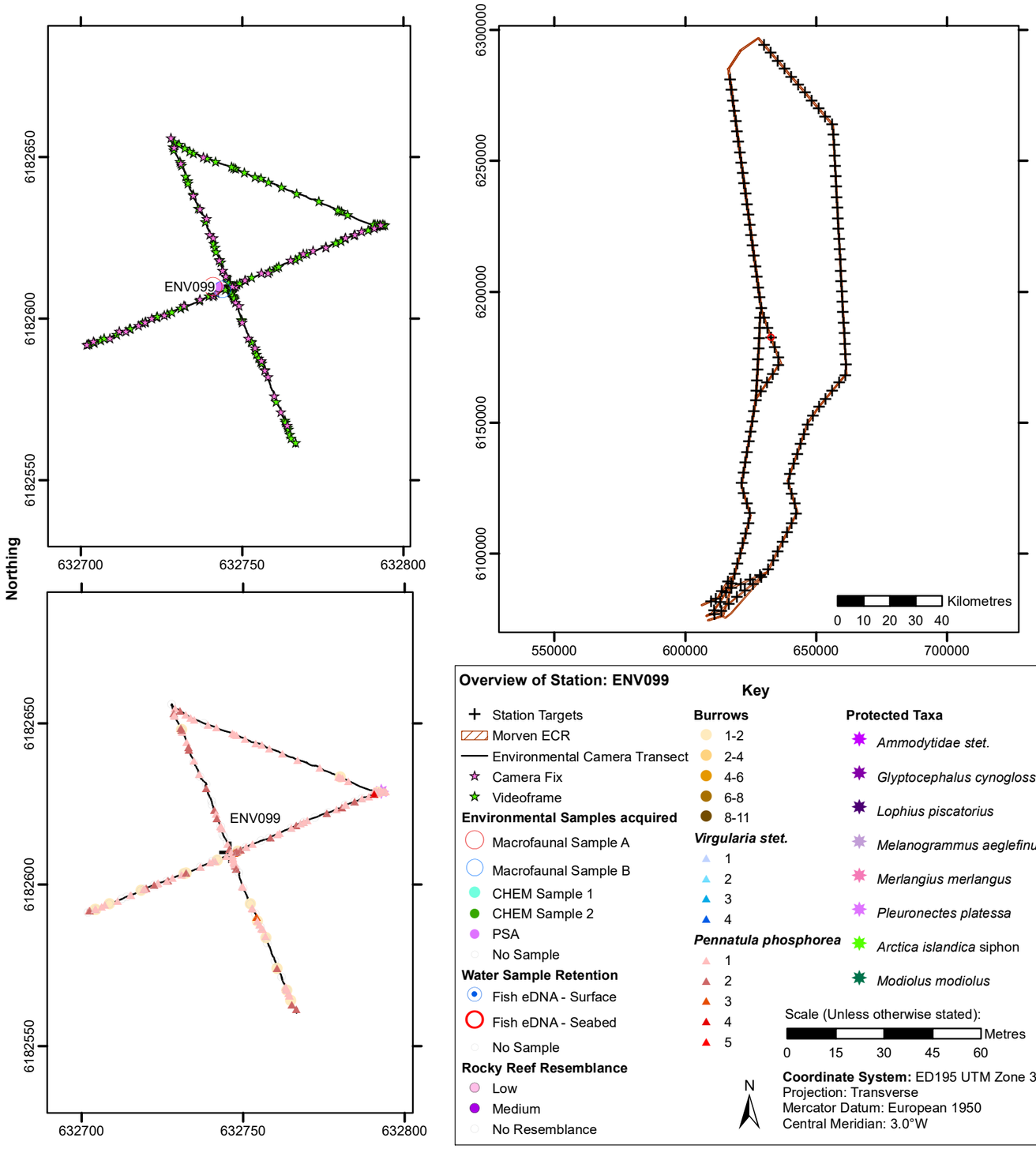


Station: ENV098
Fix: 154 **E:** 628262 **N:** 6182324 **Depth (m):** 94
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV099

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

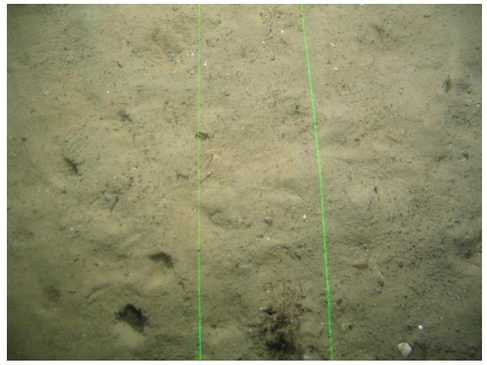
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

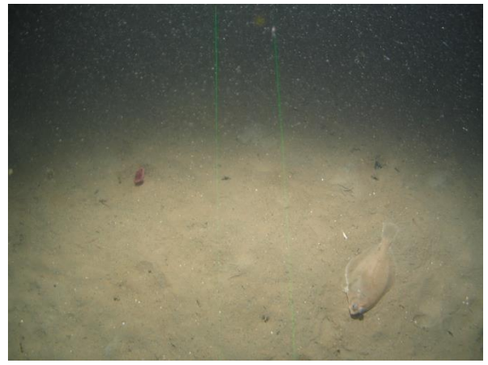
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV099
Fix: 4880 **E:** 632709 **N:** 6182594 **Depth (m):** 80

Sediment Description:
Soft sediment with shell fragments and bioturbation

Faunal Description:
Animalia tube, Faunal turf



Station: ENV099
Fix: 4913 **E:** 632743 **N:** 6182618 **Depth (m):** 79

Sediment Description:
Soft sediment with shell fragments and bioturbation

Faunal Description:
Chordata (Pleuronectiformes *stet.*), Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV099
Fix: 150 **E:** 632743 **N:** 6182609 **Depth (m):** 82
Retention: MFA

Sediment Description:
Sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)

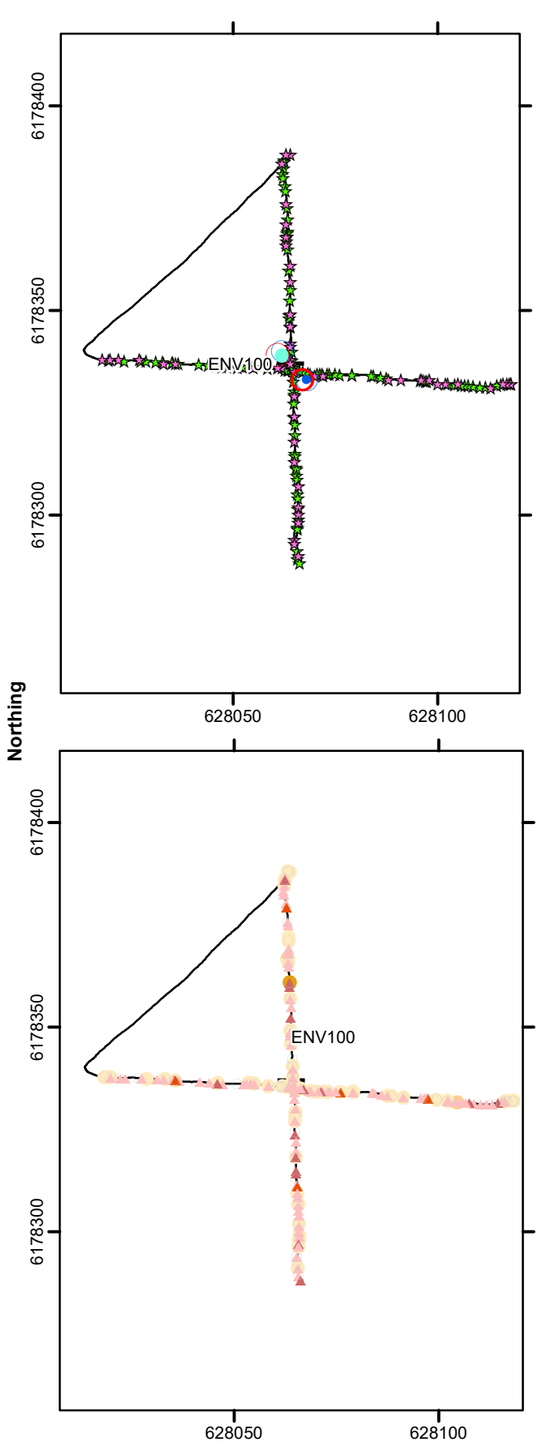


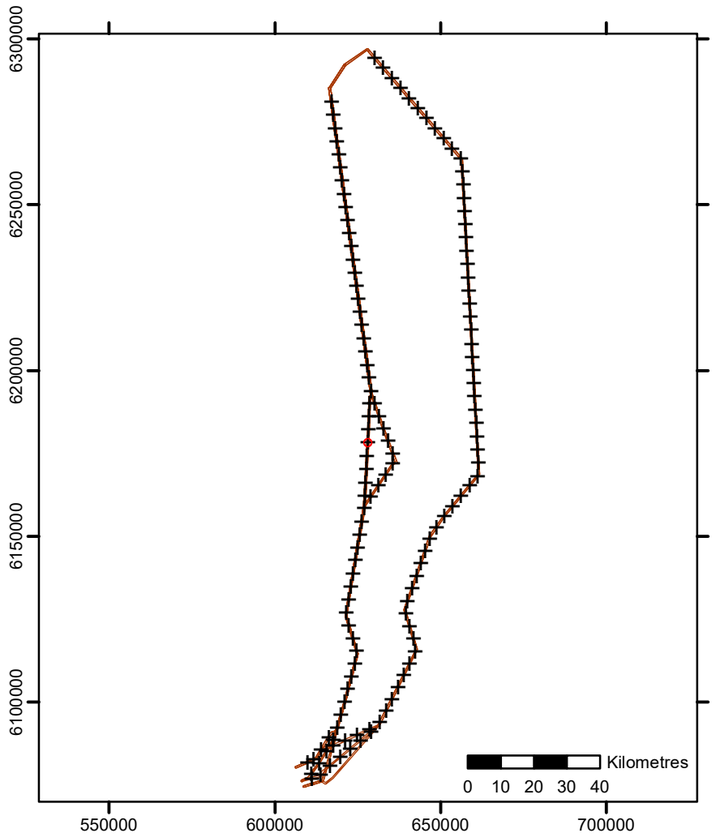
Station: ENV099
Fix: 150 **E:** 632743 **N:** 6182609 **Depth (m):** 82
Retention: MFA

Sediment Description:
Sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV100

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

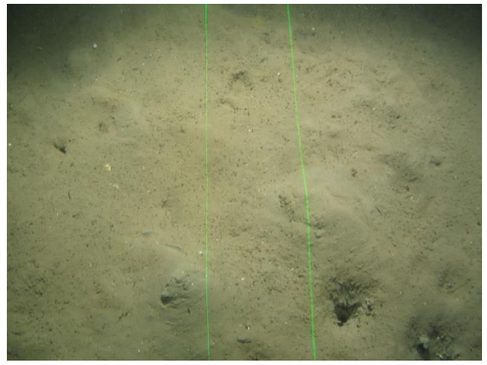
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

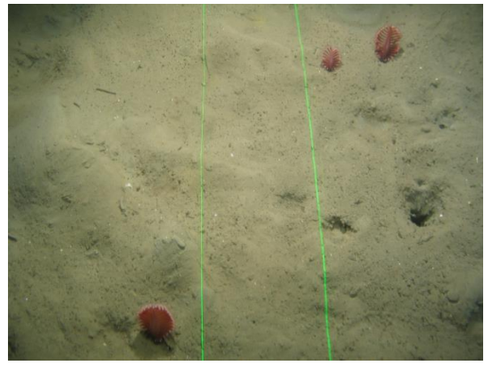
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV100
Fix: 4993 **E:** 628062 **N:** 6178336 **Depth (m):** 91

Sediment Description:
Soft sediment with faunal tracks

Faunal Description:
Animalia tube, Echinodermata (Ophiuroidea *stet.*)



Station: ENV100
Fix: 4998 **E:** 628036 **N:** 6178337 **Depth (m):** 91

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV100
Fix: 158 **E:** 628062 **N:** 6178339 **Depth (m):** 95
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

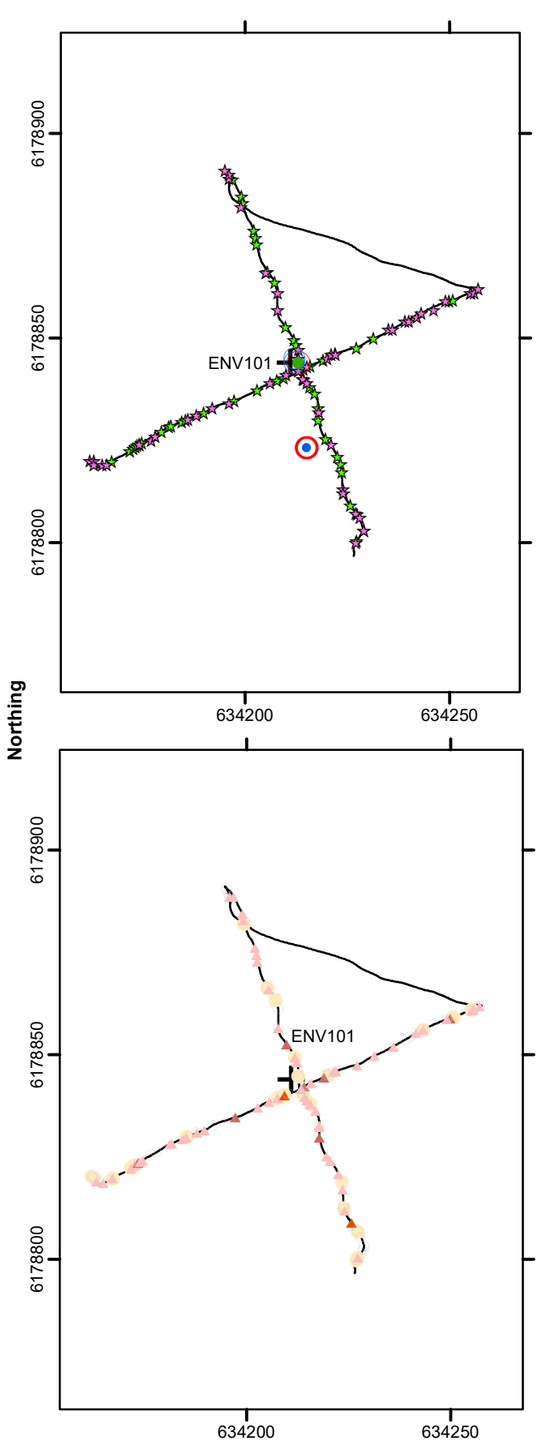


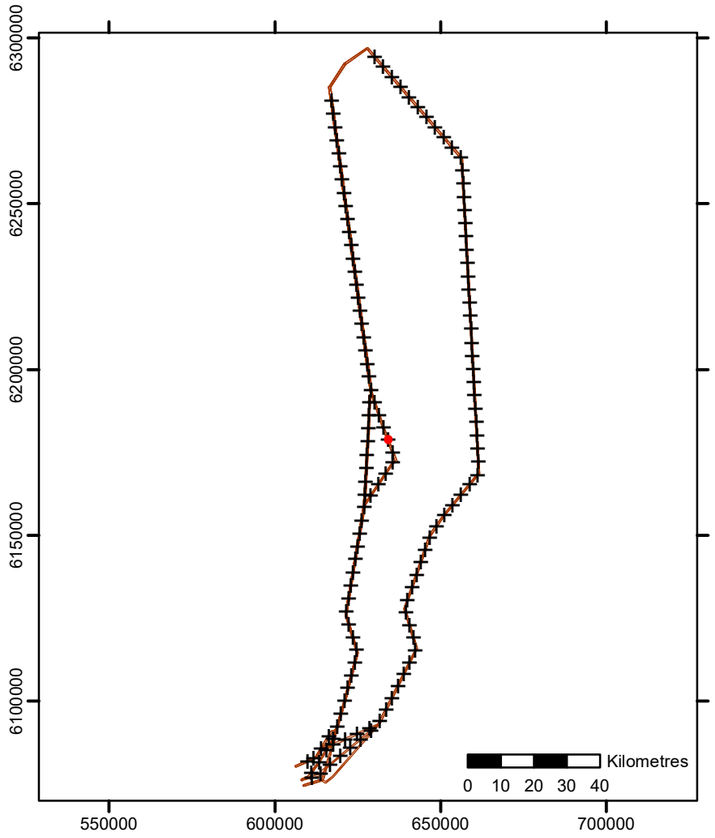
Station: ENV100
Fix: 158 **E:** 628062 **N:** 6178339 **Depth (m):** 95
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV101

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

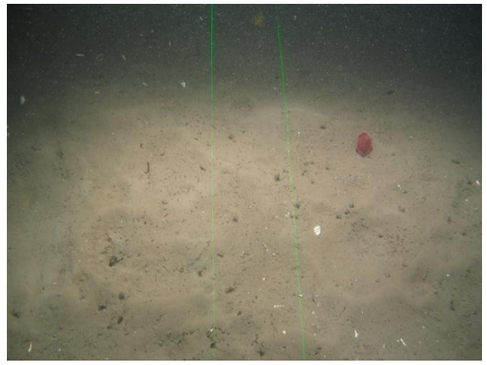
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

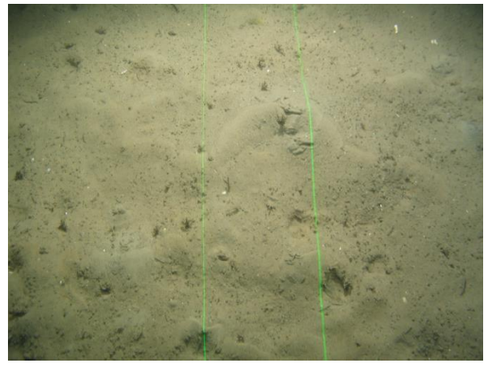
Easting



Station: ENV101
Fix: 4958 **E:** 634196 **N:** 6178889 **Depth (m):** 87

Sediment Description:
Slightly rippled soft sediment

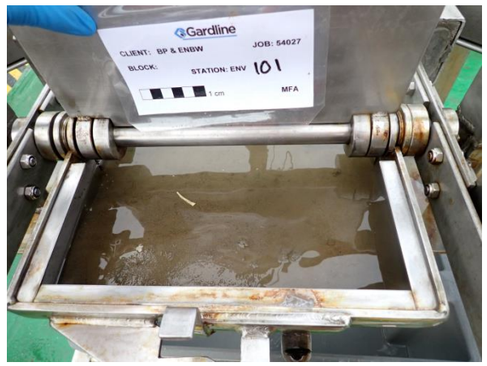
Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV101
Fix: 4959 **E:** 634196 **N:** 6178890 **Depth (m):** 87

Sediment Description:
Soft sediment

Faunal Description:
Animalia tube



Station: ENV101
Fix: 162 **E:** 634213 **N:** 6178844 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

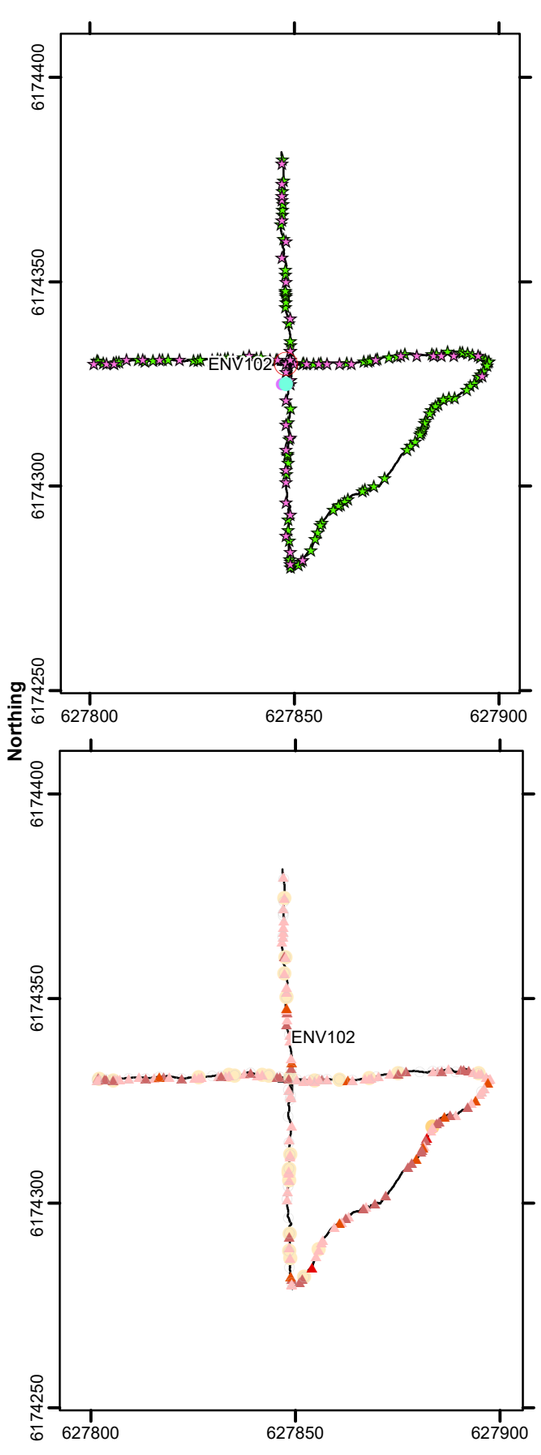


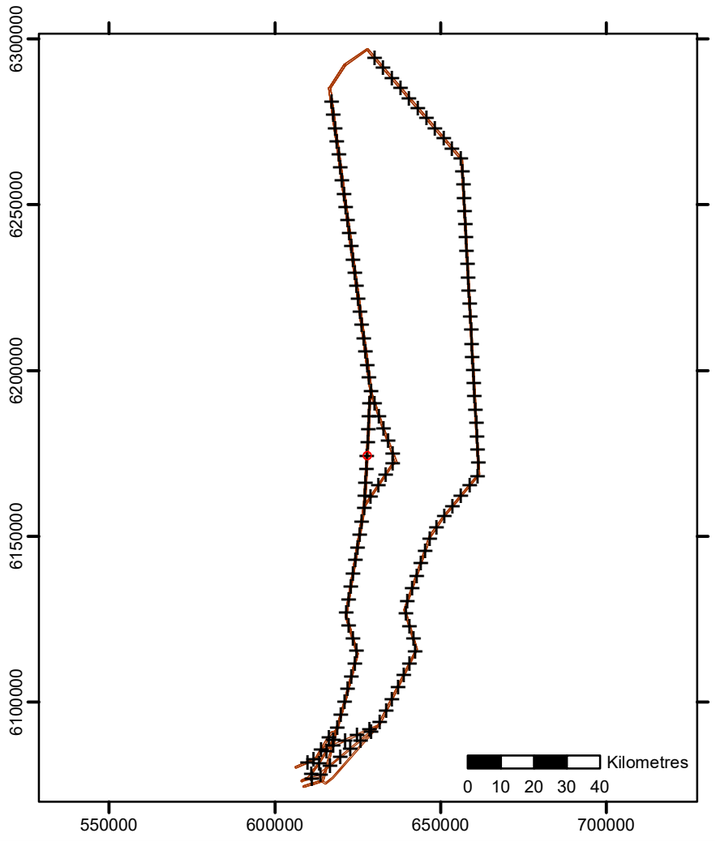
Station: ENV101
Fix: 162 **E:** 634213 **N:** 6178844 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV102

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

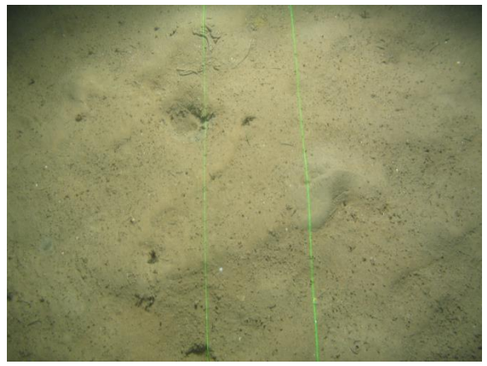
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

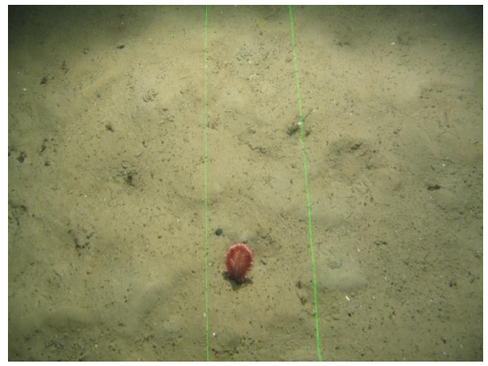
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV102
Fix: 5066 **E:** 627848 **N:** 6174304 **Depth (m):** 83

Sediment Description:
Slightly rippled soft sediment

Faunal Description:
No visible fauna



Station: ENV102
Fix: 5076 **E:** 627849 **N:** 6174341 **Depth (m):** 83

Sediment Description:
Slightly rippled soft sediment

Faunal Description:
Animalia tube, Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV102
Fix: 178 **E:** 627847 **N:** 6174325 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

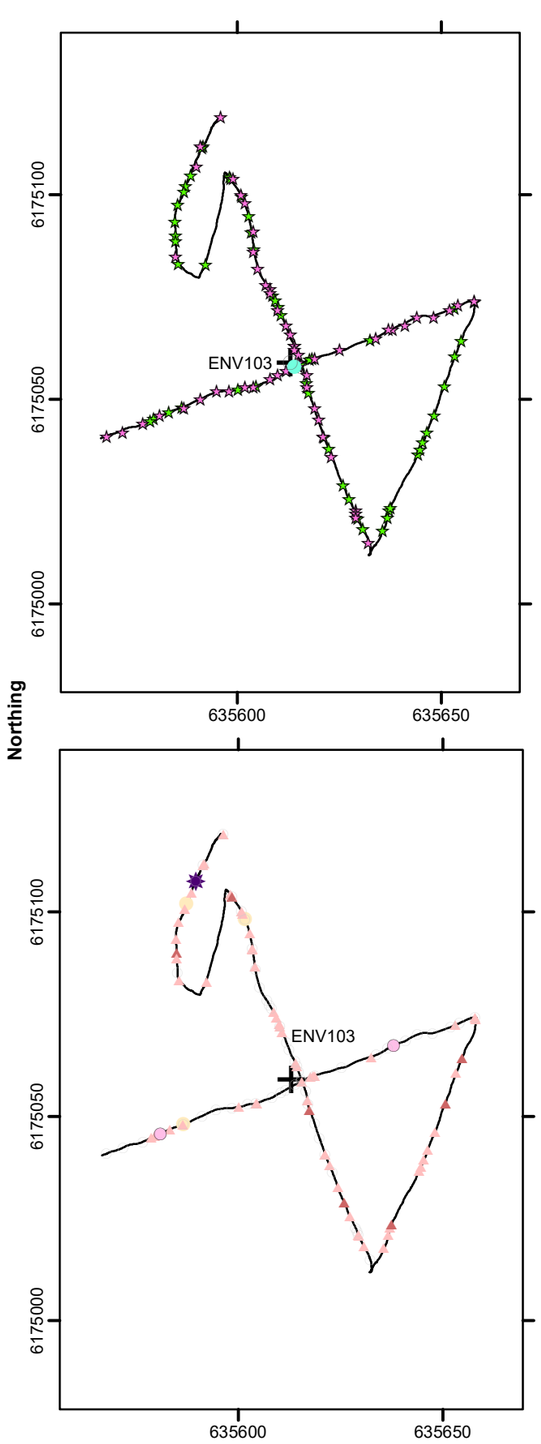


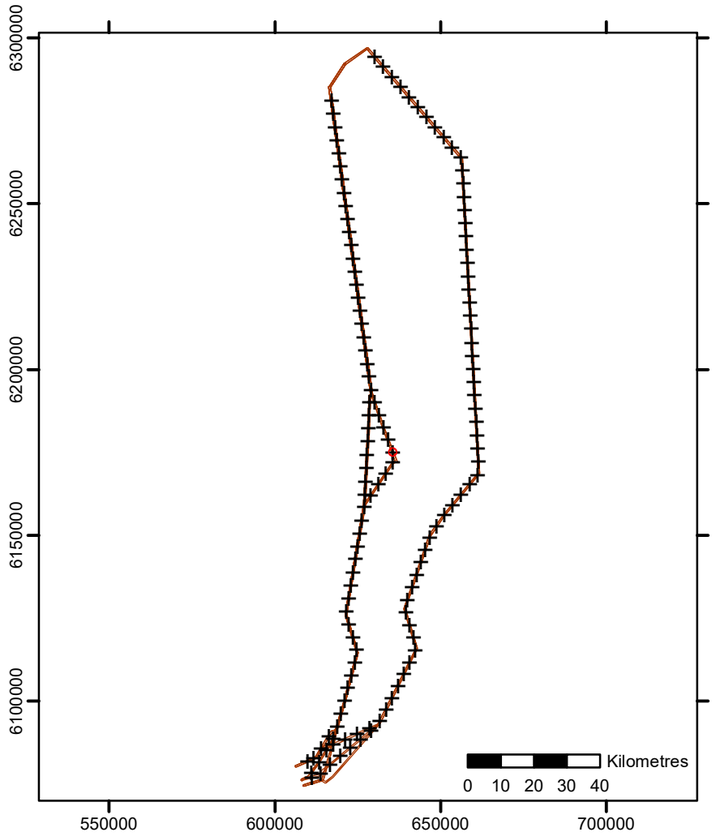
Station: ENV102
Fix: 178 **E:** 627847 **N:** 6174325 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV103

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

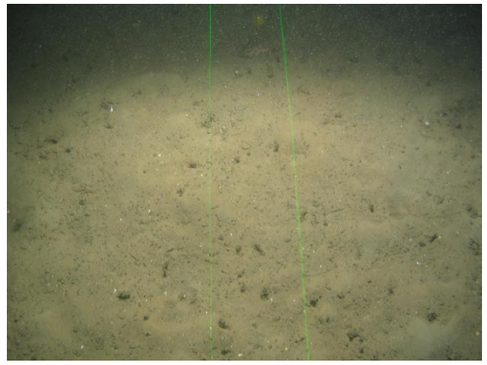
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

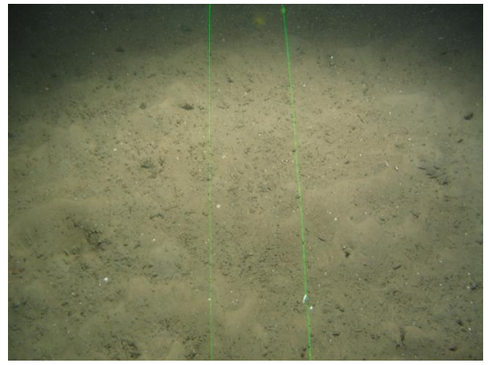
Easting



Station: ENV103
Fix: 5100 **E:** 635613 **N:** 6175066 **Depth (m):** 83

Sediment Description:
Slightly rippled soft sediment with shell fragments

Faunal Description:
Echinodermata (Asteroidea *stet.*)



Station: ENV103
Fix: 5140 **E:** 635568 **N:** 6175041 **Depth (m):** 83

Sediment Description:
Slightly rippled soft sediment with shell fragments

Faunal Description:
No visible fauna



Station: ENV103
Fix: 165 **E:** 635614 **N:** 6175058 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand with shell, shell fragments, gravel

Faunal Description:
Annelida (Polychaeta)

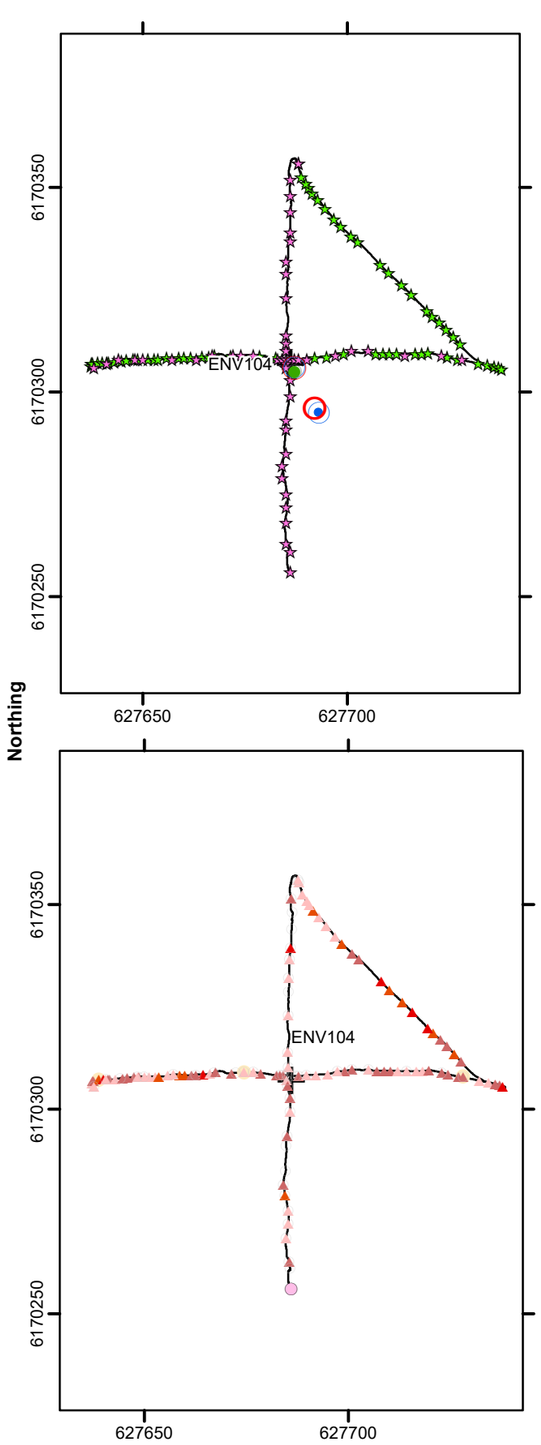


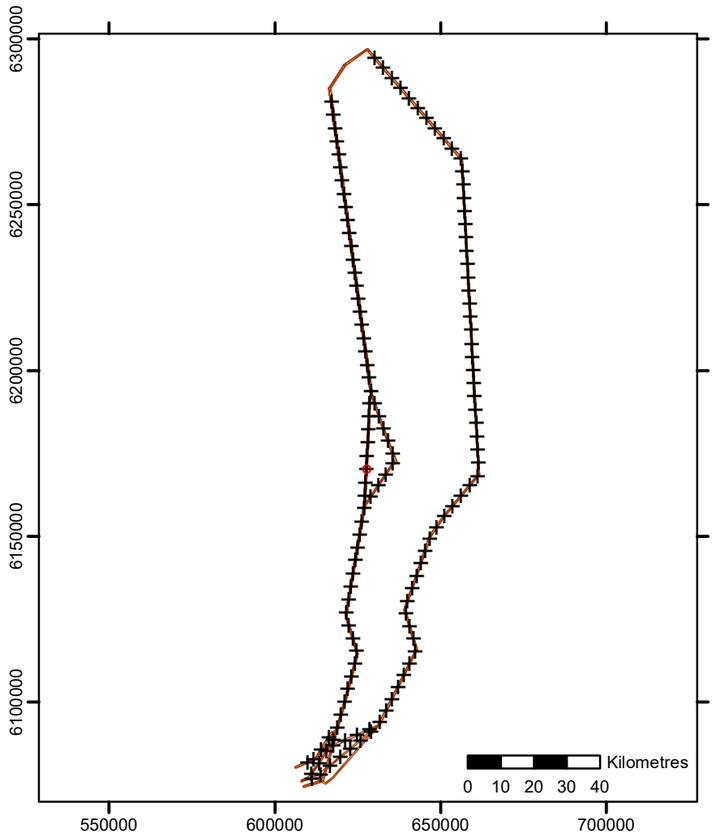
Station: ENV103
Fix: 165 **E:** 635614 **N:** 6175058 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand with shell, shell fragments, gravel

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV104

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

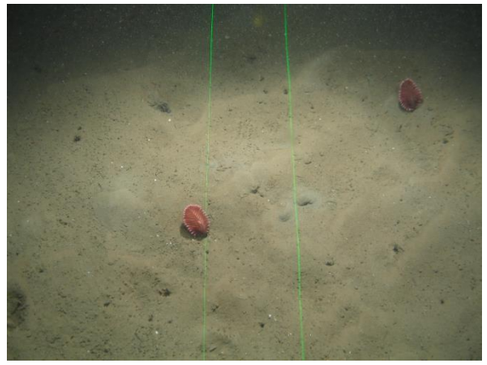
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

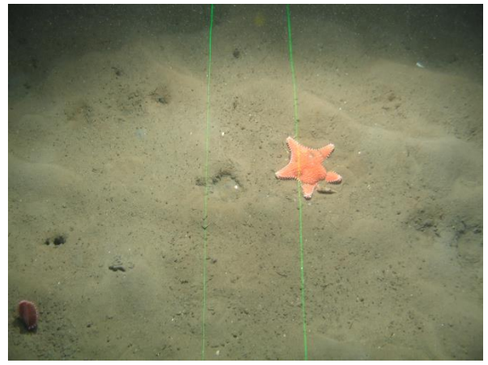
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV104
Fix: 5257 **E:** 627684 **N:** 6170308 **Depth (m):** 82

Sediment Description:
Slightly rippled soft sediment

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV104
Fix: 5293 **E:** 627685 **N:** 6170268 **Depth (m):** 81

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Pennatula phosphorea inc* GL0087), Echinodermata (*Hippasteria phrygiana*)



Station: ENV104
Fix: 182 **E:** 627687 **N:** 6170305 **Depth (m):** 85
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea), Echinodermata (Ophiuroidea)

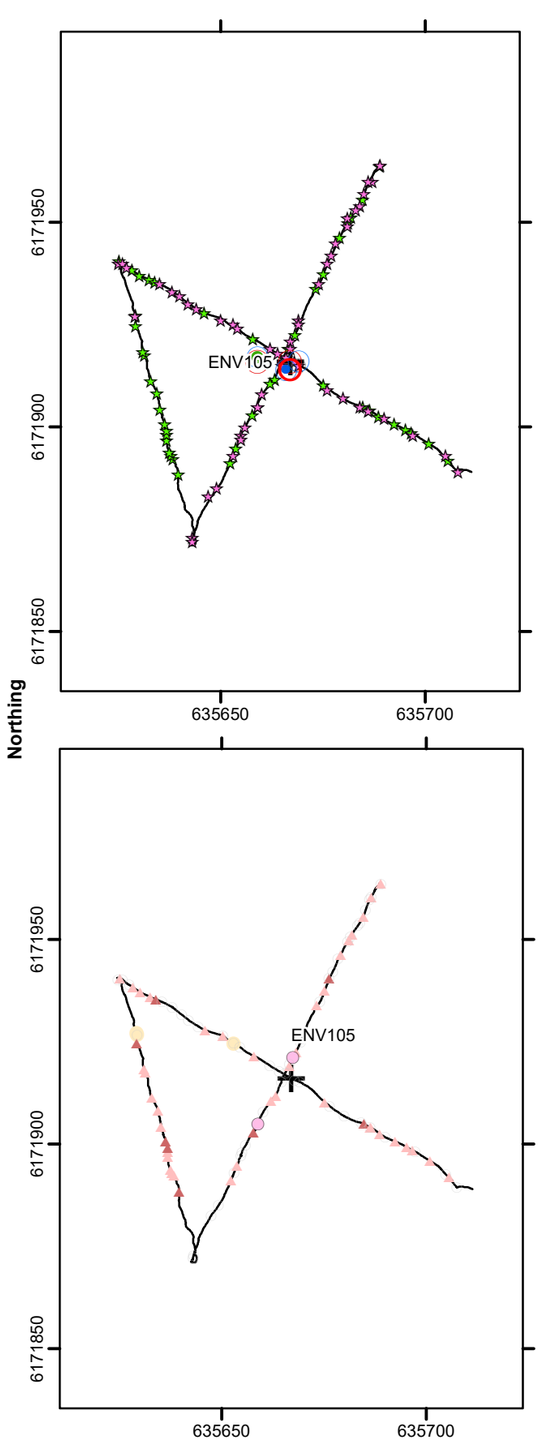


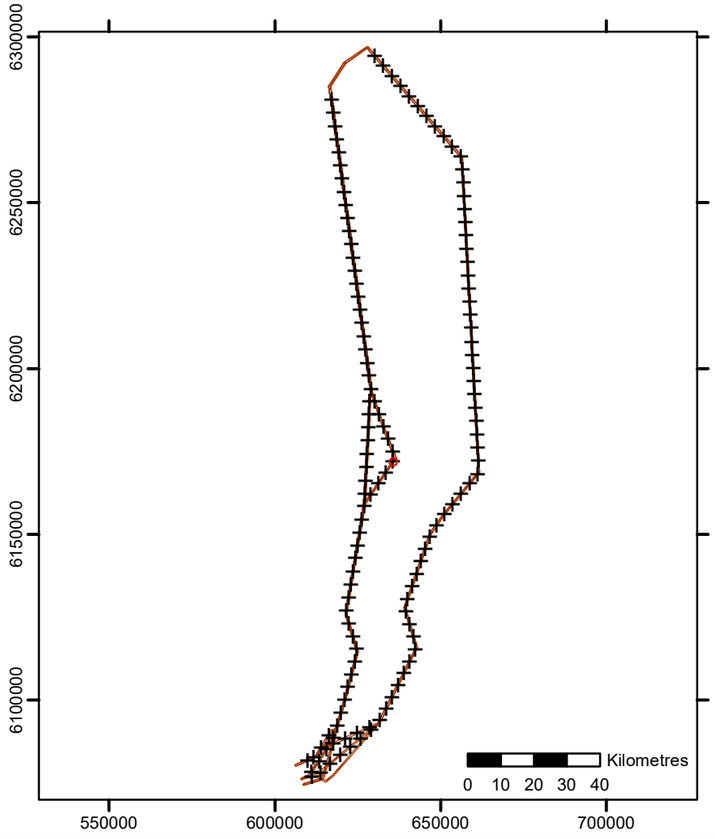
Station: ENV104
Fix: 182 **E:** 627687 **N:** 6170305 **Depth (m):** 85
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV105

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

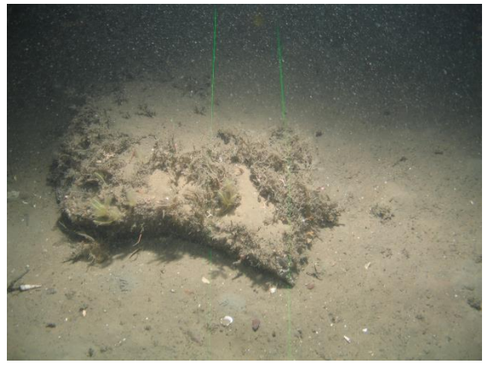
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

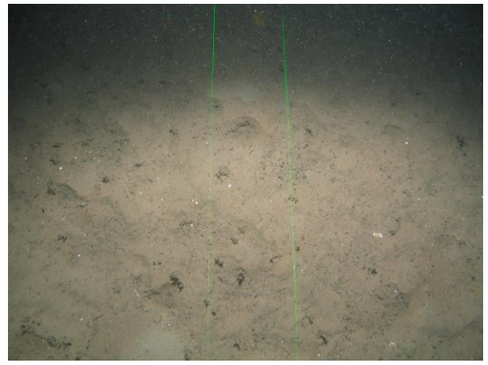
Easting



Station: ENV105
Fix: 5155 **E:** 635667 **N:** 6171921 **Depth (m):** 84

Sediment Description:
Soft sediment with a boulder

Faunal Description:
Animalia tube, Arthropoda (Caridea *stet.*), Cnidaria (Hydrozoa *stet.*, *Nemertesia stet*), Porifera (Hard Substrate Sponges)



Station: ENV105
Fix: 5172 **E:** 635626 **N:** 6171940 **Depth (m):** 84

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV105
Fix: 172 **E:** 635659 **N:** 6171917 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea)

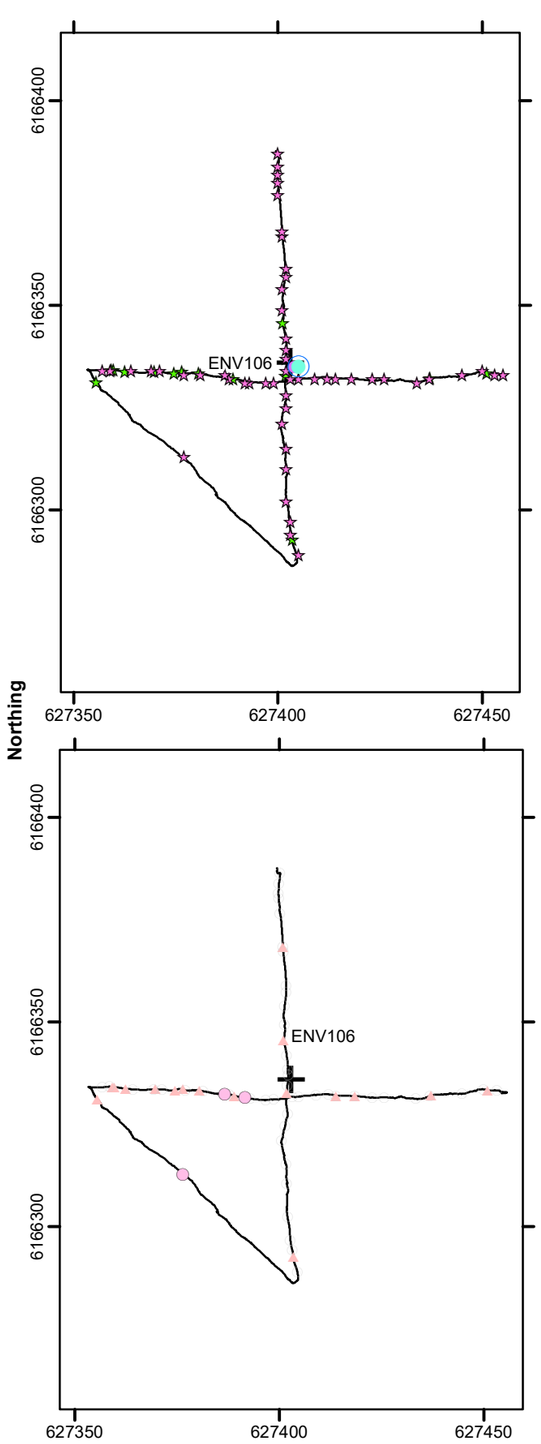


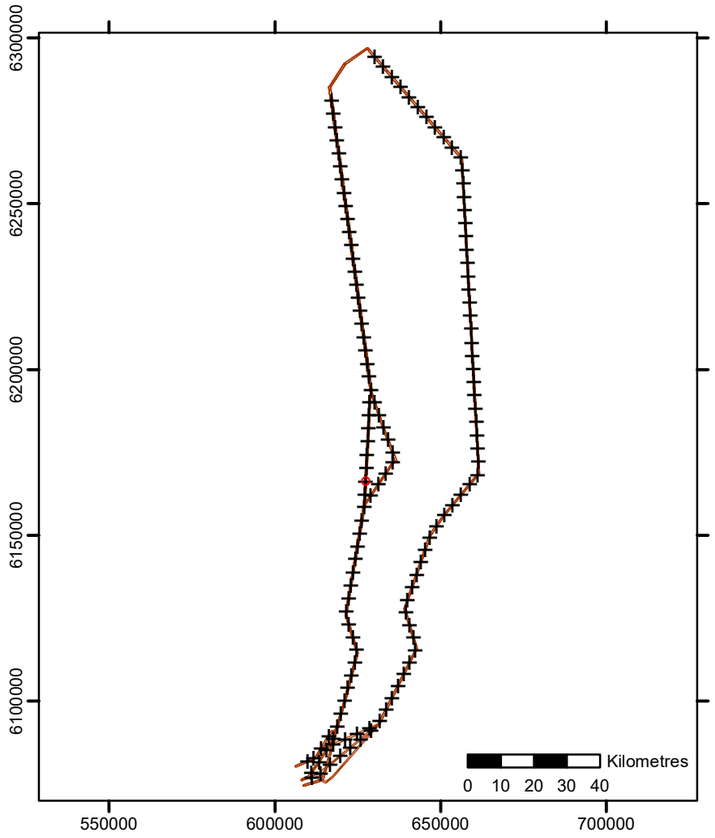
Station: ENV105
Fix: 172 **E:** 635659 **N:** 6171917 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV106

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

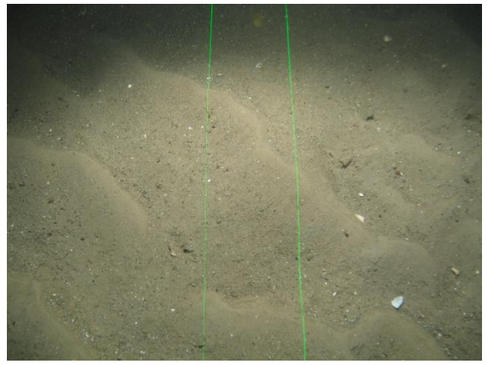
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

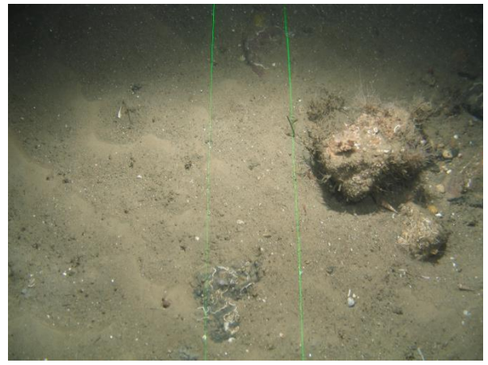
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV106
Fix: 5308 **E:** 627405 **N:** 6166332 **Depth (m):** 70

Sediment Description:
Soft rippled sediment with bioturbation and shell fragments

Faunal Description:
No visible fauna



Station: ENV106
Fix: 5313 **E:** 627392 **N:** 6166331 **Depth (m):** 70

Sediment Description:
Soft sediment with scattered cobbles and shell fragments

Faunal Description:
Animalia tube, Annelida (Serpulidae *stet.*), Cnidaria (*Epizoanthus papillosus inc*, Hydrozoa *stet.*, *Tubularia indivisa inc*), Faunal turf



Station: ENV106
Fix: 185 **E:** 627404 **N:** 6166334 **Depth (m):** 74
Retention: MFA

Sediment Description:
Coarse sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

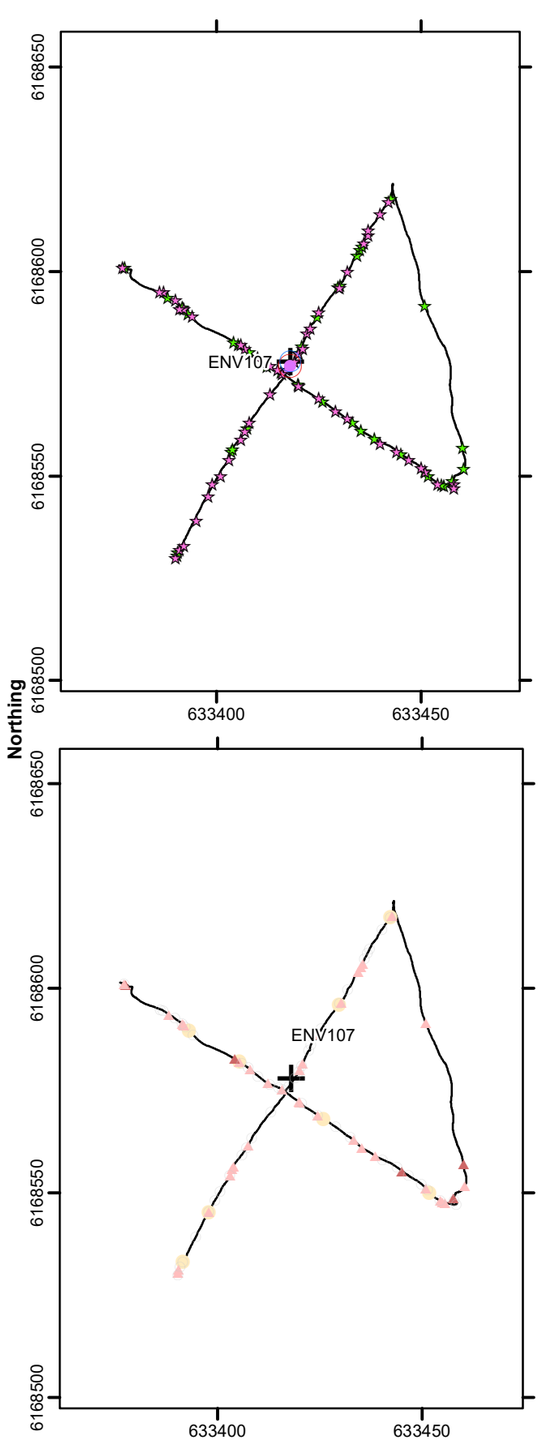


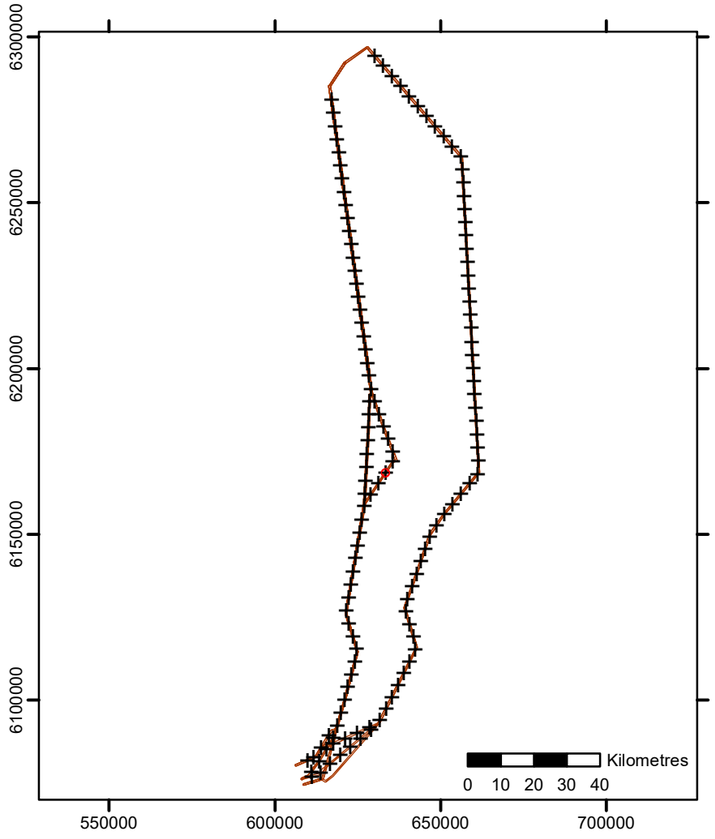
Station: ENV106
Fix: 185 **E:** 627404 **N:** 6166334 **Depth (m):** 74
Retention: MFA

Sediment Description:
Coarse sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV107

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

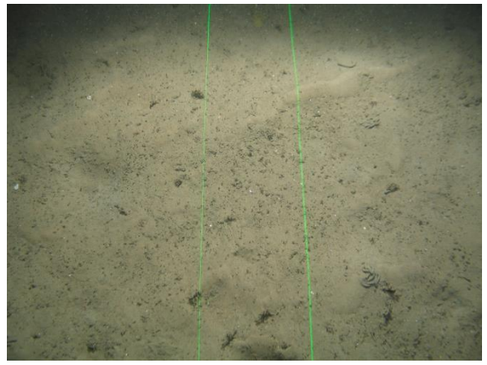
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

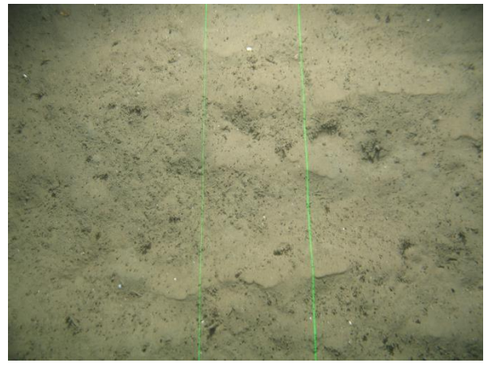
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV107
Fix: 5204 **E:** 633408 **N:** 6168563 **Depth (m):** 89

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV107
Fix: 5239 **E:** 633392 **N:** 6168591 **Depth (m):** 88

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV107
Fix: 175 **E:** 633418 **N:** 6168577 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

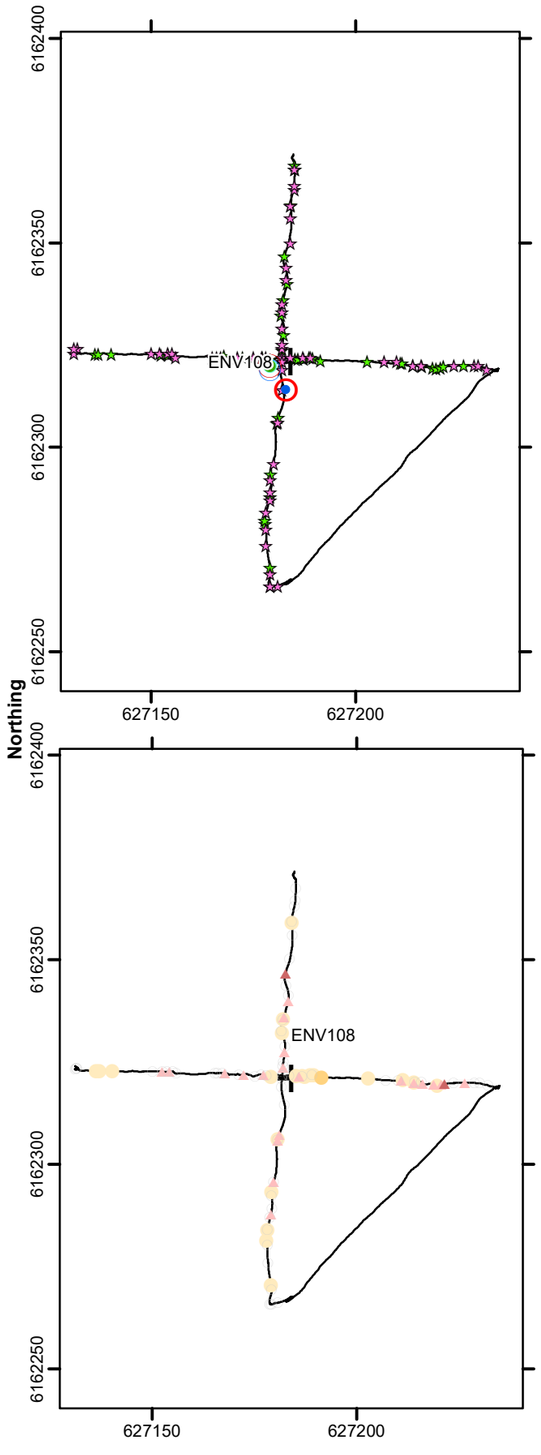


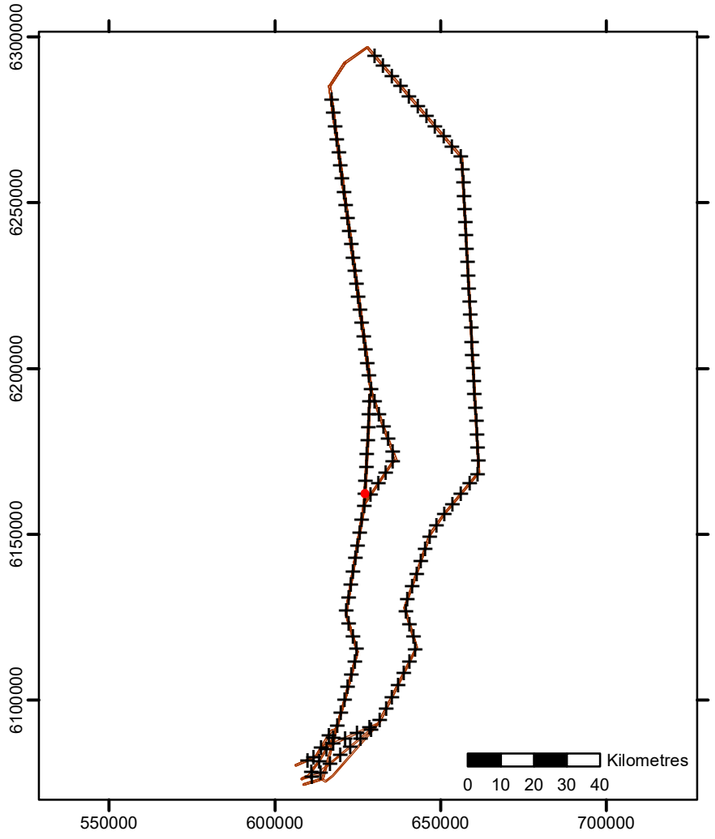
Station: ENV107
Fix: 175 **E:** 633418 **N:** 6168577 **Depth (m):** 90
Retention: MFA

Sediment Description:
Fine sand with shell and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV108

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

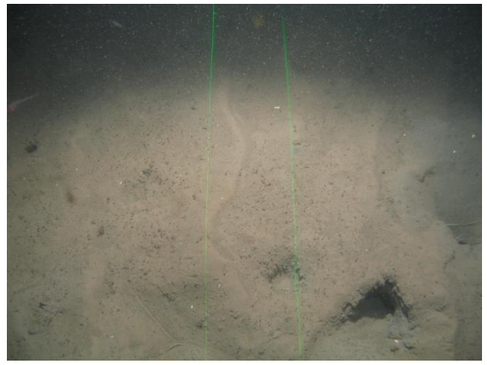
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

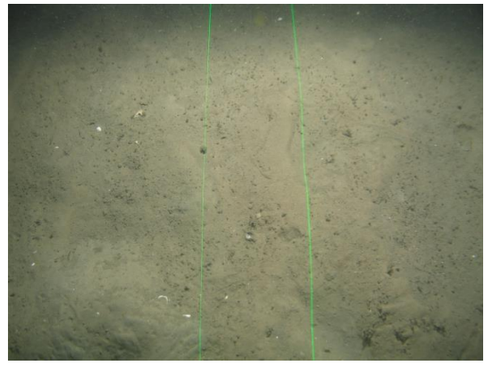
Easting



Station: ENV108
Fix: 5463 **E:** 627187 **N:** 6162322 **Depth (m):** 88

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ENV108
Fix: 5482 **E:** 627179 **N:** 6162292 **Depth (m):** 87

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV108
Fix: 198 **E:** 627179 **N:** 6162320 **Depth (m):** 88
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

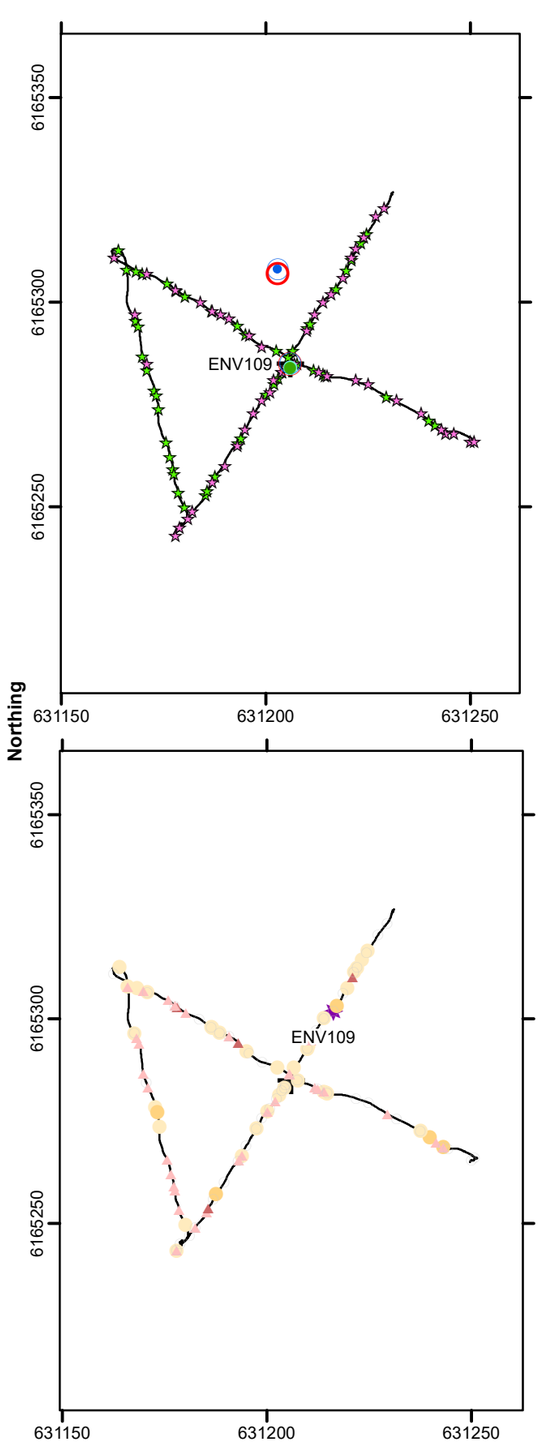


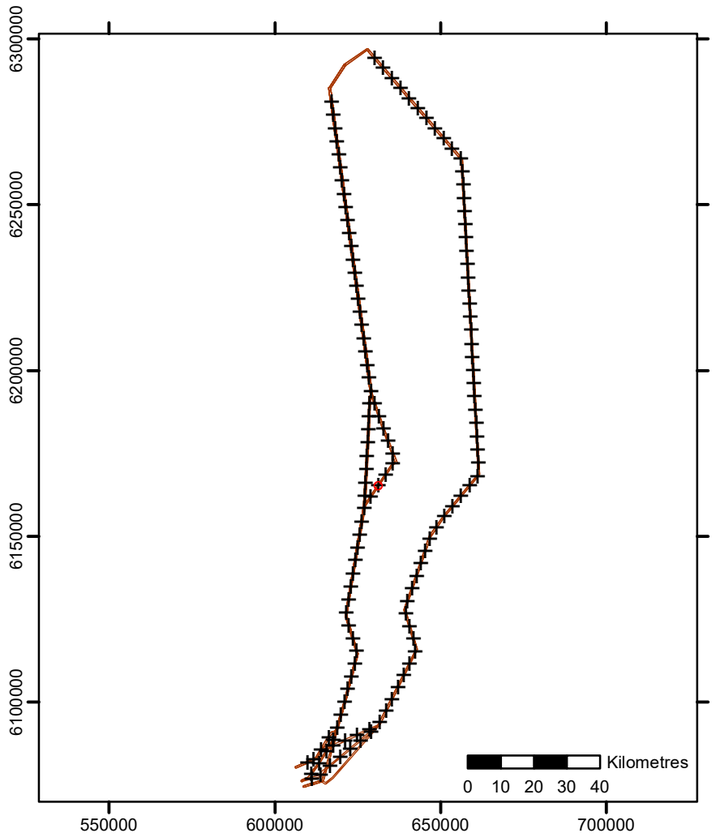
Station: ENV108
Fix: 198 **E:** 627179 **N:** 6162320 **Depth (m):** 88
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV109

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

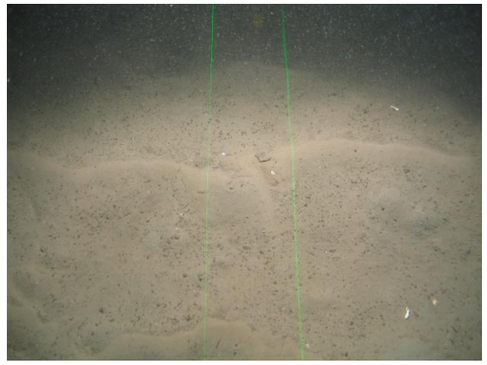
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

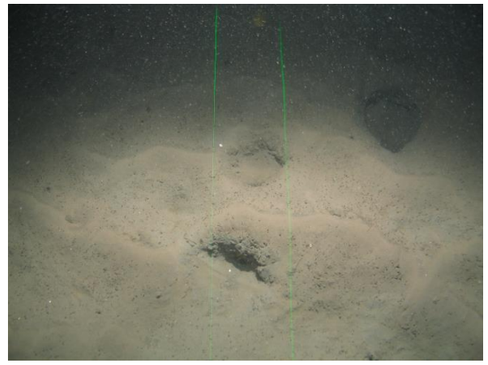
Easting



Station: ENV109
Fix: 5373 **E:** 631181 **N:** 6165247 **Depth (m):** 91

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV109
Fix: 5388 **E:** 631214 **N:** 6165300 **Depth (m):** 93

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ENV109
Fix: 192 **E:** 631206 **N:** 6165285 **Depth (m):** 95
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*, Ophiuroidea)

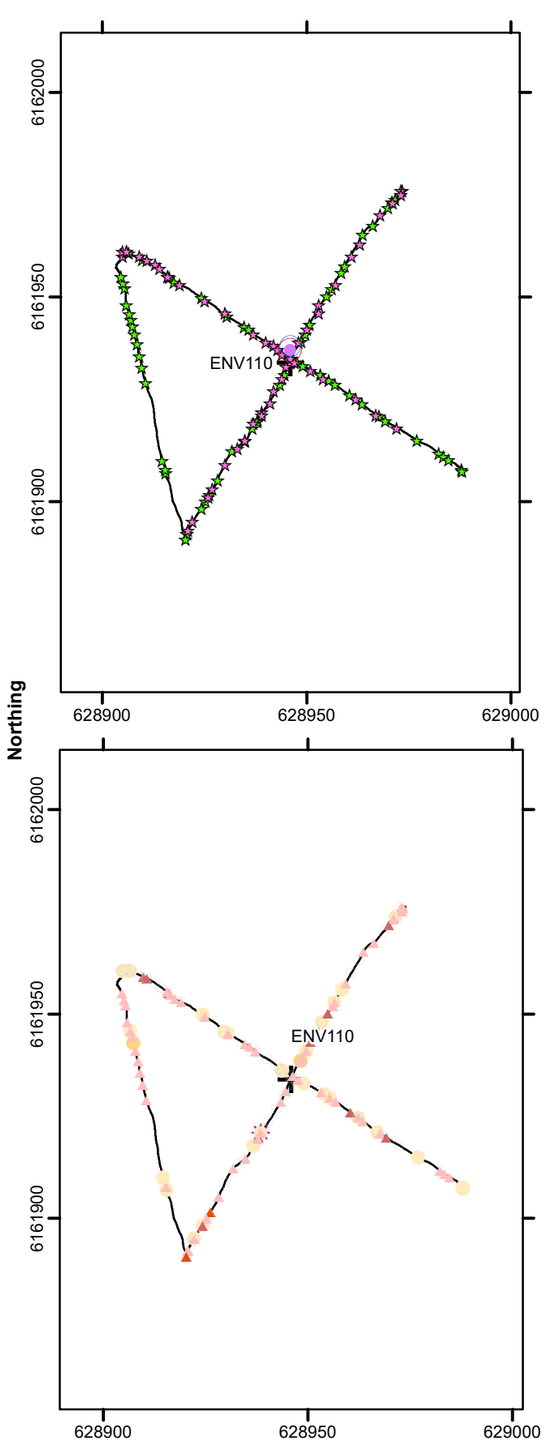


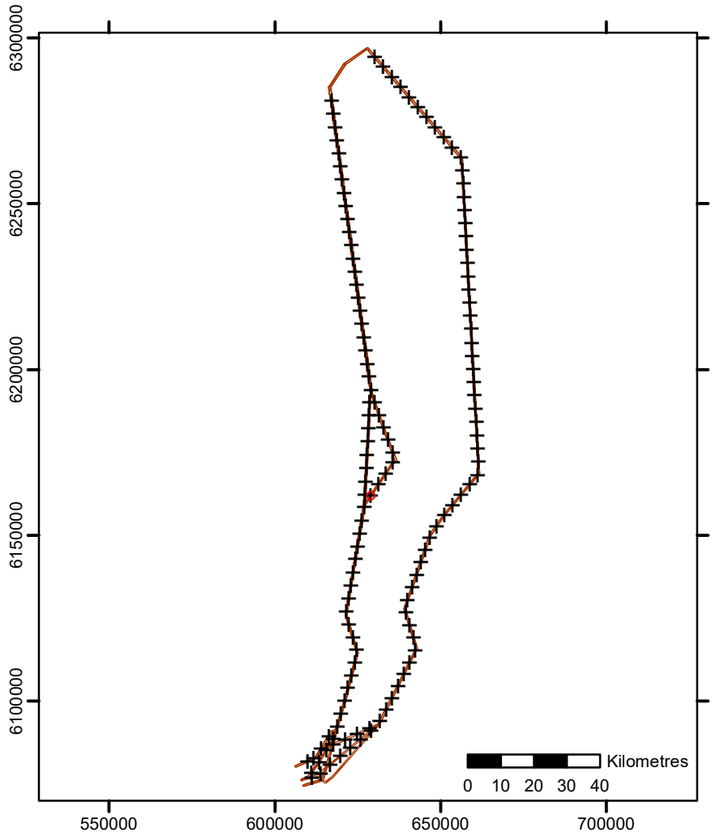
Station: ENV109
Fix: 192 **E:** 631206 **N:** 6165285 **Depth (m):** 95
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV110

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

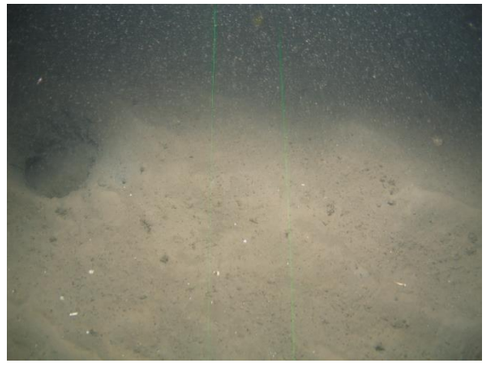
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

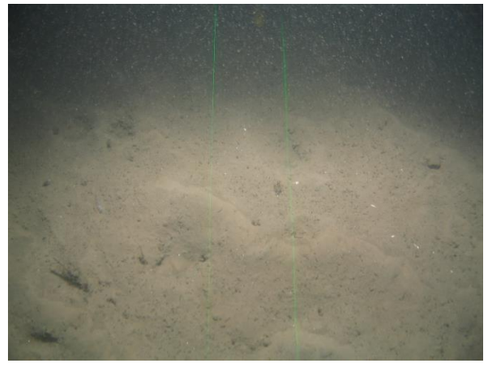
Easting



Station: ENV110
Fix: 5425 **E:** 628906 **N:** 6161961 **Depth (m):** 84

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV110
Fix: 5445 **E:** 628972 **N:** 6161918 **Depth (m):** 84

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube, Chordata (Pleuronectiformes *stet.*)



Station: ENV110
Fix: 194 **E:** 628946 **N:** 6161937 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

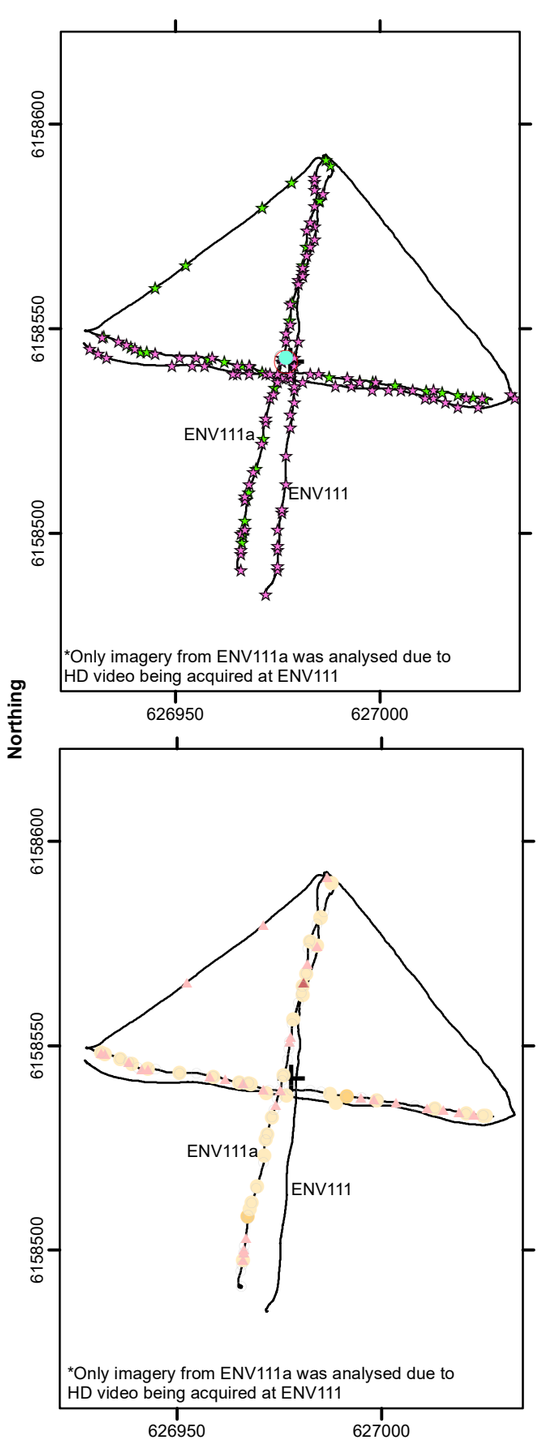


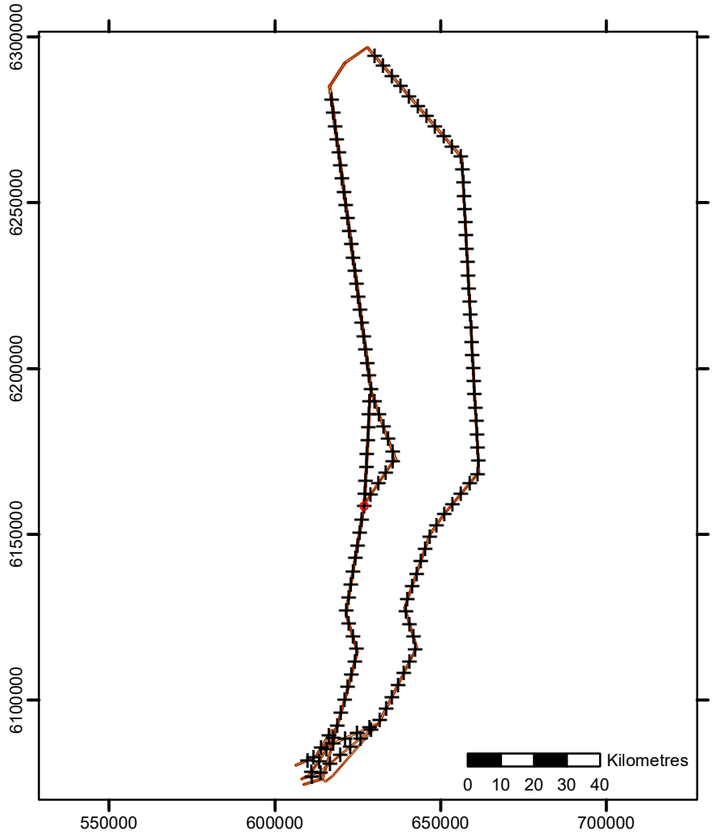
Station: ENV110
Fix: 194 **E:** 628946 **N:** 6161937 **Depth (m):** 86
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV111

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

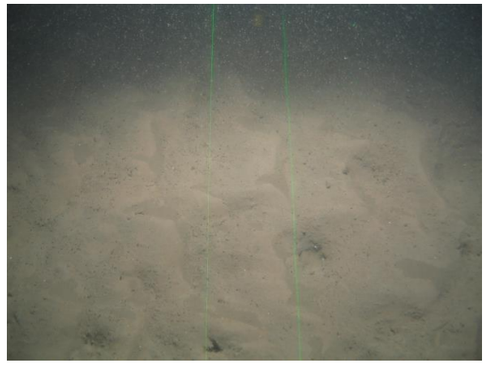
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

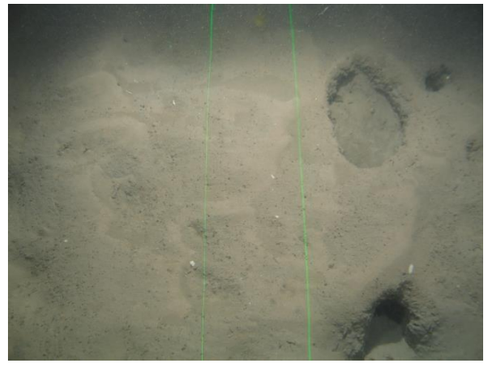
Easting



Station: ENV111A
Fix: 5715 **E:** 626967 **N:** 6158501 **Depth (m):** 93

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ENV111A
Fix: 5755 **E:** 626992 **N:** 6158538 **Depth (m):** 93

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV111
Fix: 202 **E:** 626977 **N:** 6158543 **Depth (m):** 94
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

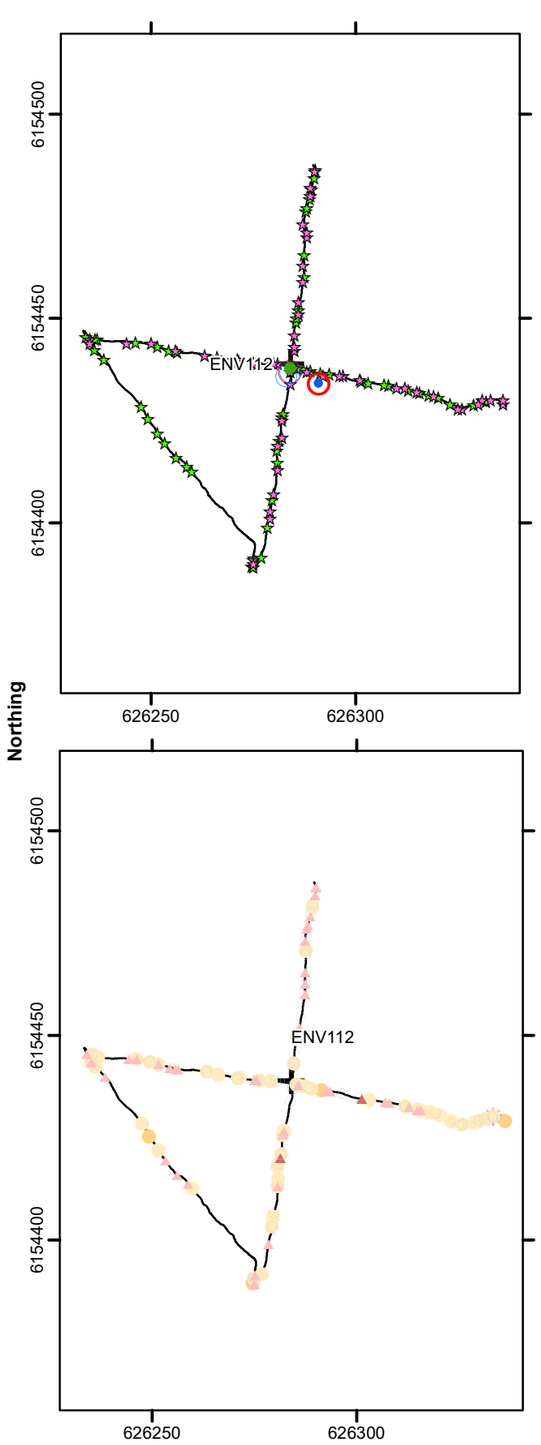


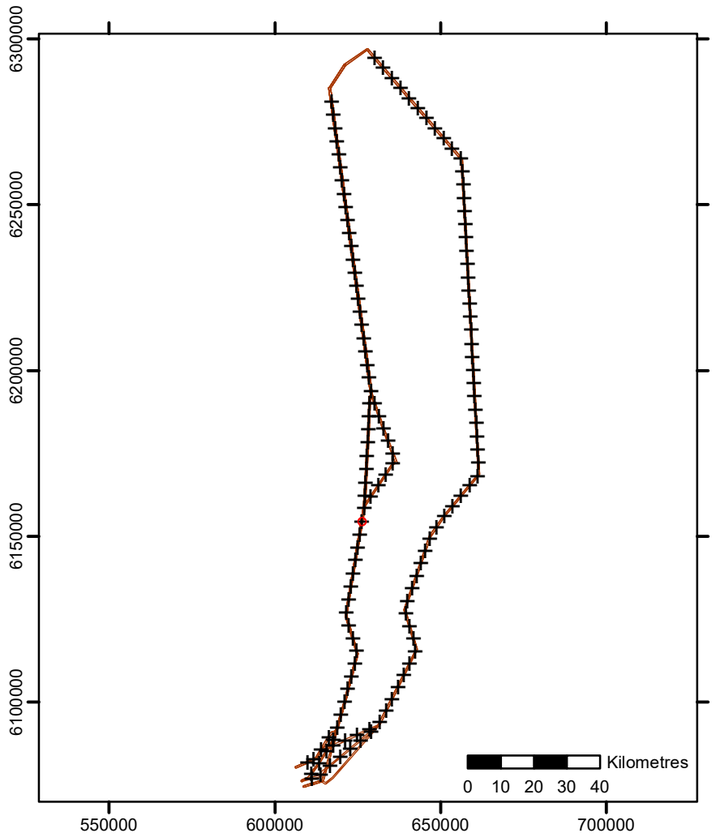
Station: ENV111
Fix: 202 **E:** 626977 **N:** 6158543 **Depth (m):** 94
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV112

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

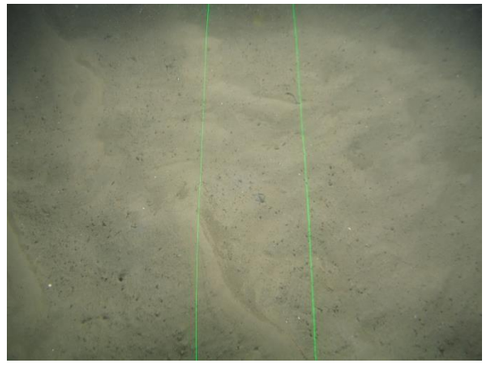
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

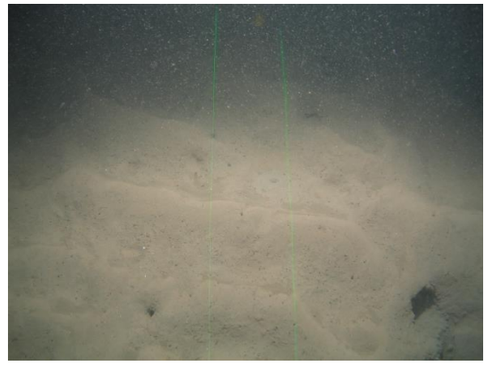
Easting



Station: ENV112
Fix: 5561 **E:** 626319 **N:** 6154431 **Depth (m):** 102

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV112
Fix: 5595 **E:** 626285 **N:** 6154443 **Depth (m):** 101

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV112
Fix: 207 **E:** 626284 **N:** 6154437 **Depth (m):** 104
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

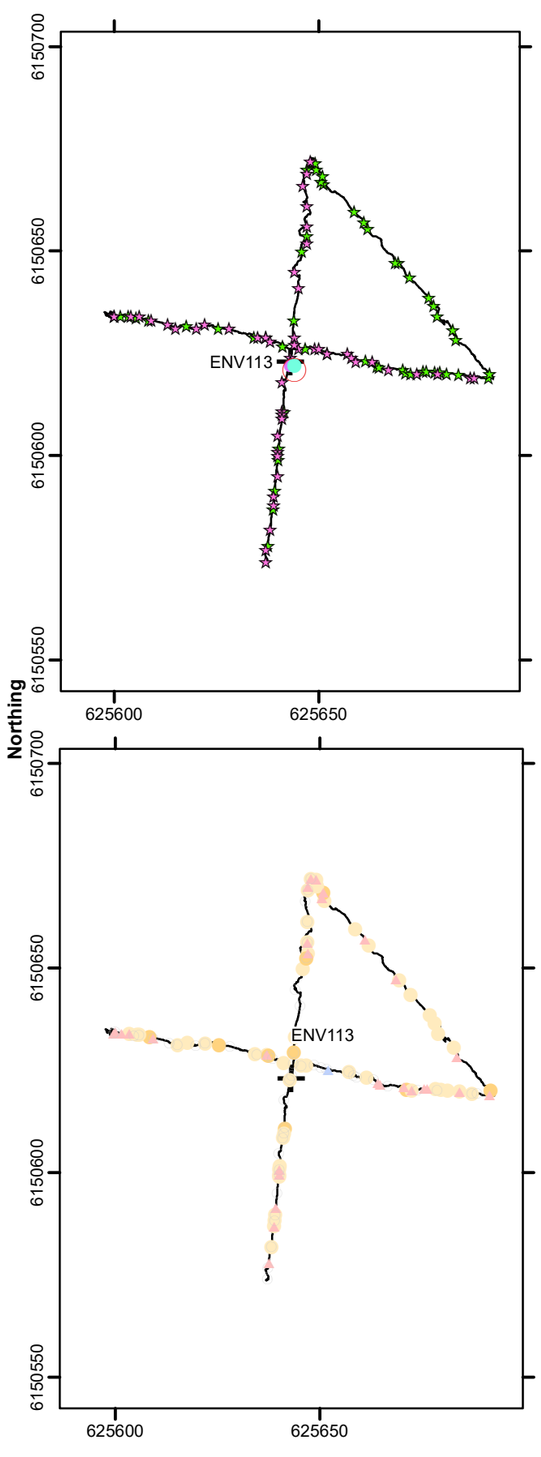


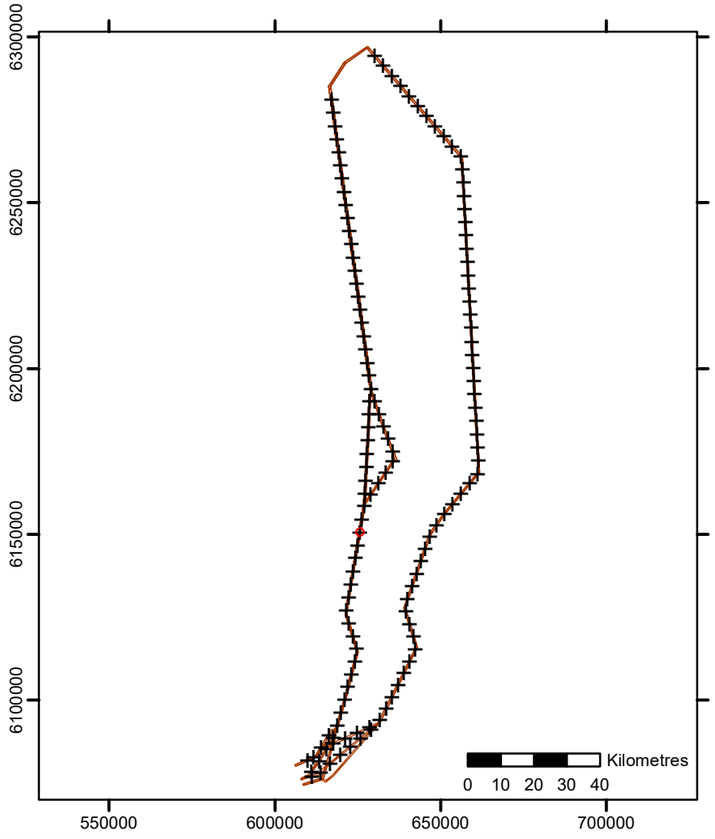
Station: ENV112
Fix: 207 **E:** 626284 **N:** 6154437 **Depth (m):** 104
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV113

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

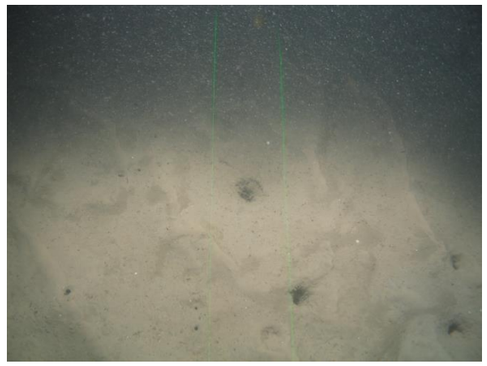
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

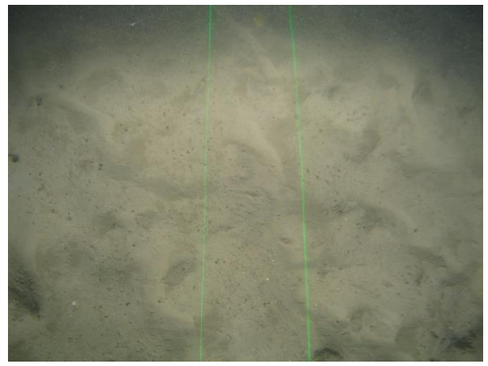
Easting



Station: ENV113
Fix: 5638 **E:** 625647 **N:** 6150652 **Depth (m):** 97

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ENV113
Fix: 5657 **E:** 625637 **N:** 6150574 **Depth (m):** 98

Sediment Description:
Rippled soft sediment with bioturbation.

Faunal Description:
No visible fauna



Station: ENV113
Fix: 209 **E:** 625643 **N:** 6150622 **Depth (m):** 101
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

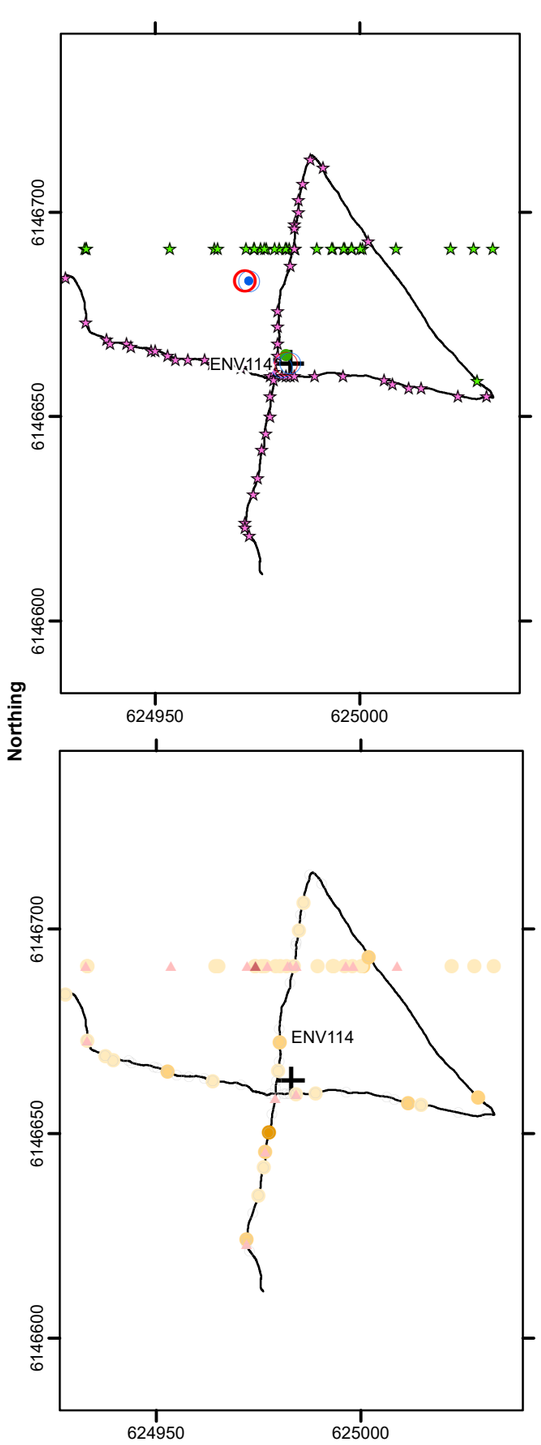


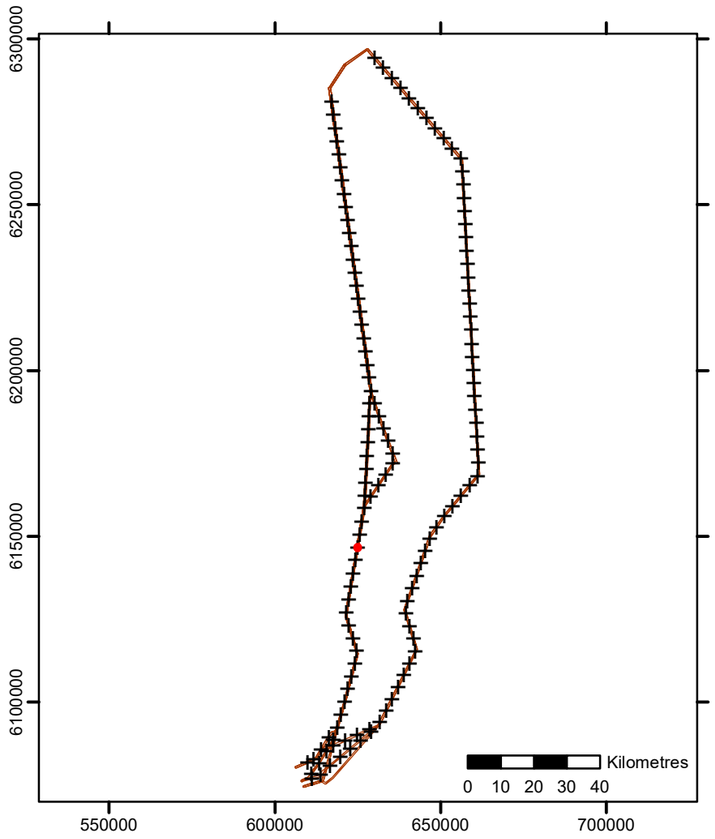
Station: ENV113
Fix: 209 **E:** 625643 **N:** 6150622 **Depth (m):** 101
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV114

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

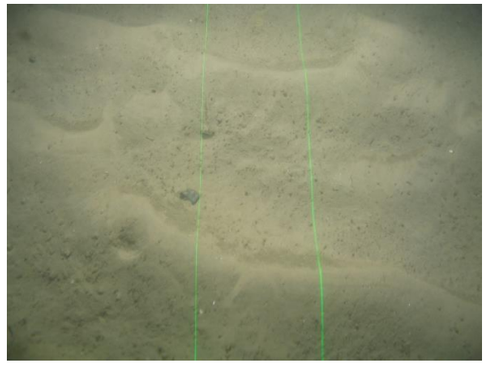
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

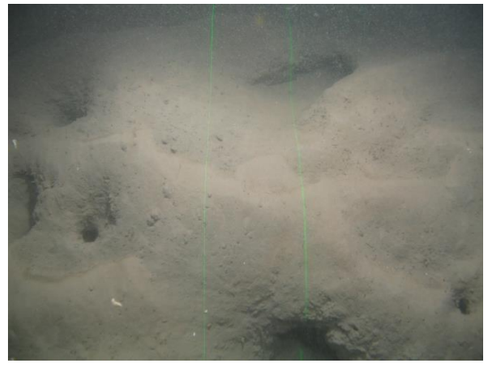
Easting



Station: ENV114
Fix: 5689 **E:** 624985 **N:** 6146703 **Depth (m):** 93

Sediment Description:
Rippled soft sediment with bioturbation.

Faunal Description:
No visible fauna



Station: ENV114
Fix: 5703 **E:** 624978 **N:** 6146650 **Depth (m):** 93

Sediment Description:
Heavily bioturbated soft rippled sediment

Faunal Description:
No visible fauna



Station: ENV114
Fix: 214 **E:** 624982 **N:** 6146663 **Depth (m):** 98
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

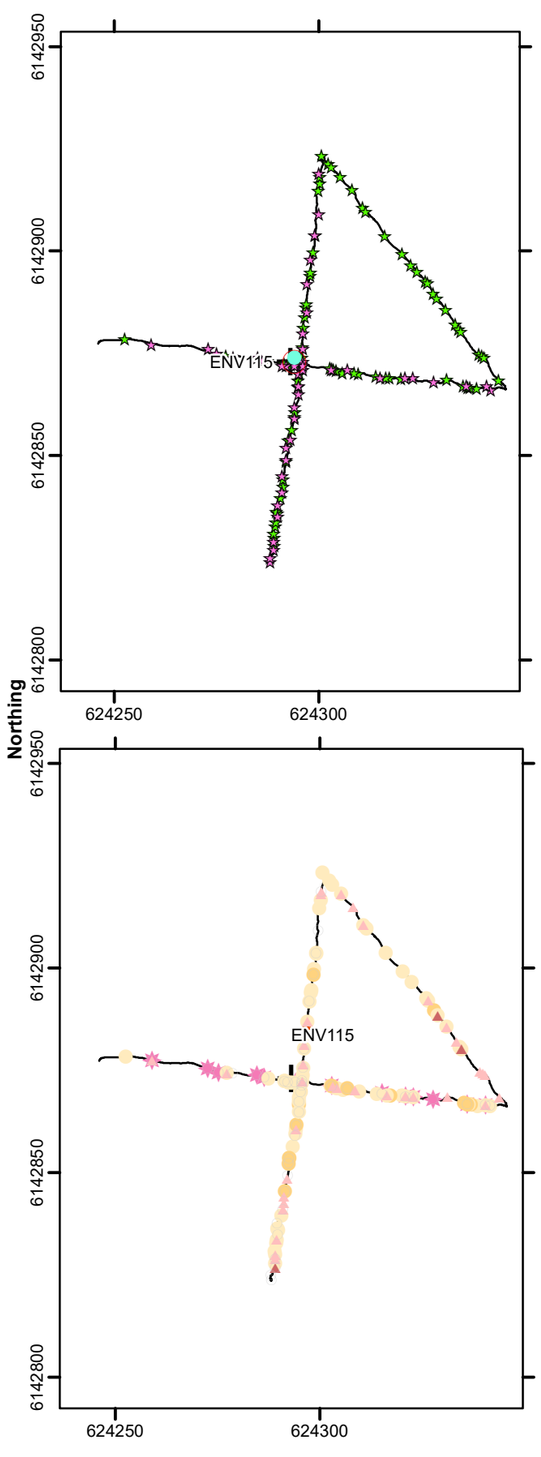


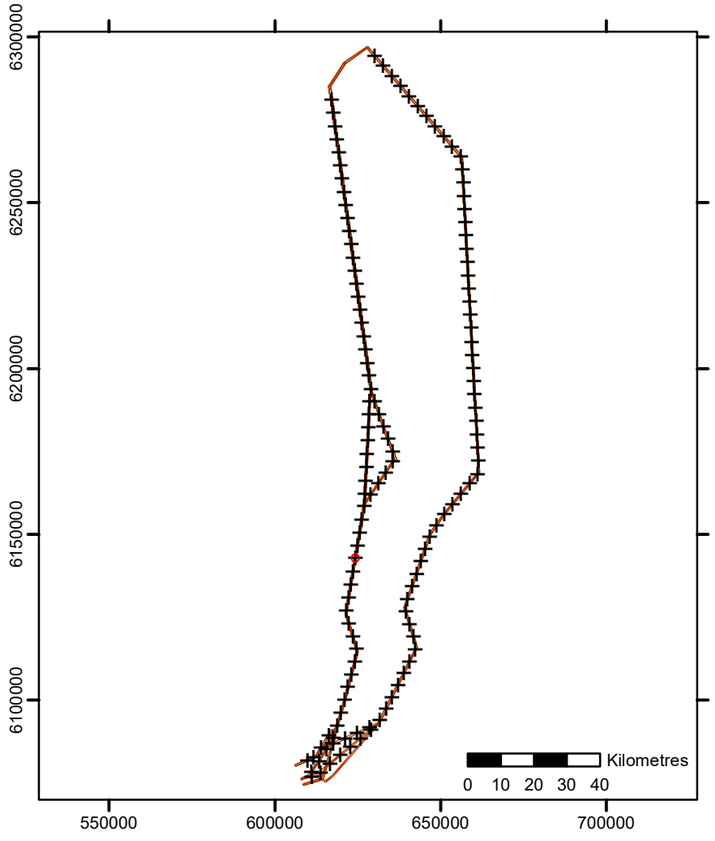
Station: ENV114
Fix: 214 **E:** 624982 **N:** 6146663 **Depth (m):** 98
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV115

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

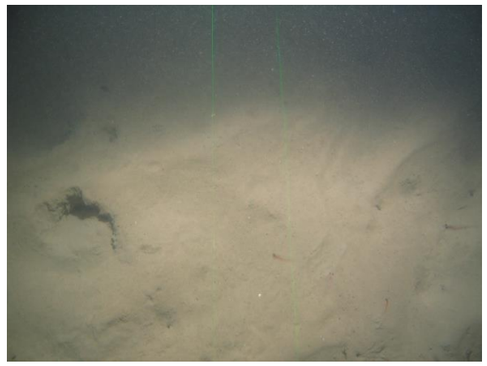
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

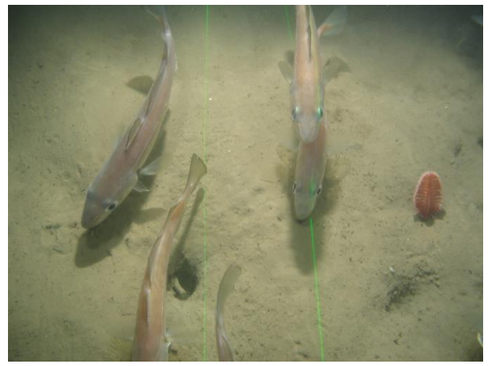
Easting



Station: ENV115
Fix: 7406 **E:** 624297 **N:** 6142892 **Depth (m):** 95

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ENV115
Fix: 7415 **E:** 624323 **N:** 6142869 **Depth (m):** 95

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube, Chordata (*Merlangius merlangus*), Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV115
Fix: 217 **E:** 624294 **N:** 6142874 **Depth (m):** 100
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

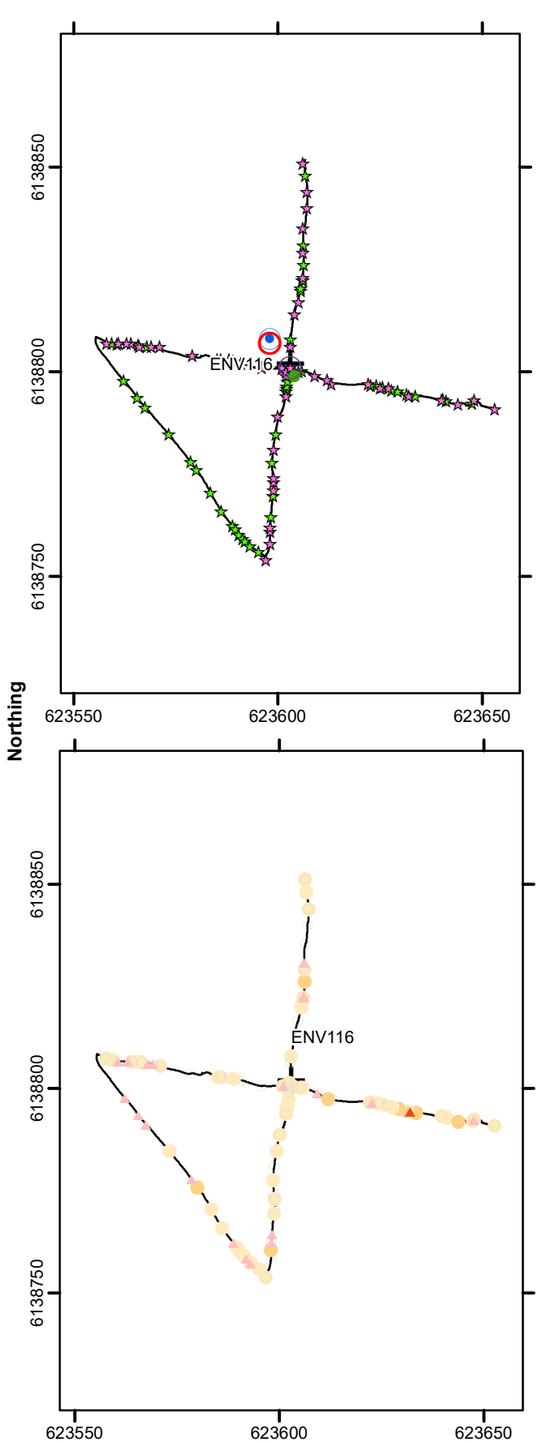


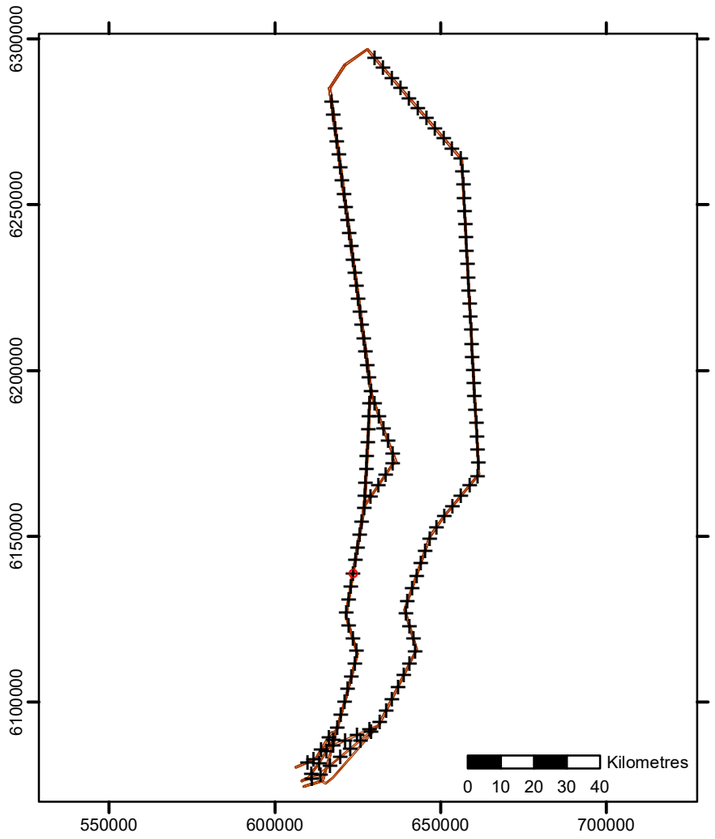
Station: ENV115
Fix: 217 **E:** 624294 **N:** 6142874 **Depth (m):** 100
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV116

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

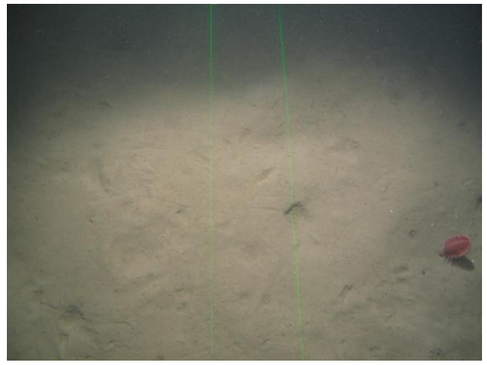
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

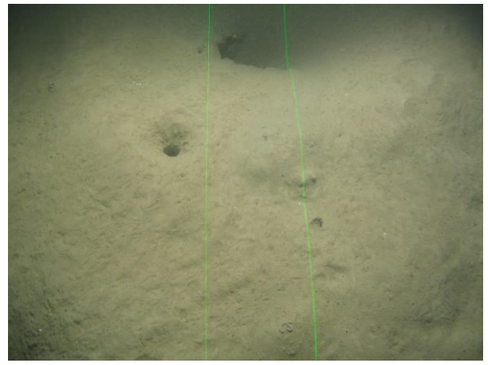
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV116
Fix: 7346 **E:** 623609 **N:** 6138799 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Cnidaria (*Pennatula phosphorea inc* GL0087)



Station: ENV116
Fix: 7384 **E:** 623606 **N:** 6138851 **Depth (m):** 86

Sediment Description:
Soft sediment with bioturbation.

Faunal Description:
No visible fauna



Station: ENV116
Fix: 221 **E:** 623603 **N:** 6138801 **Depth (m):** 89
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

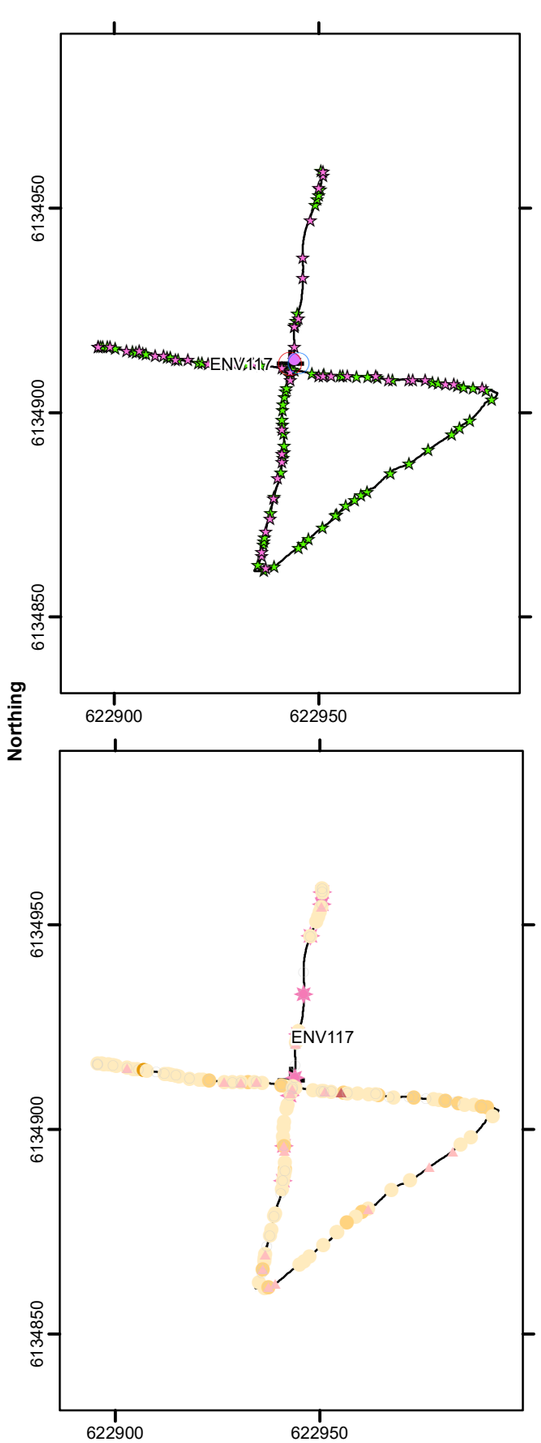


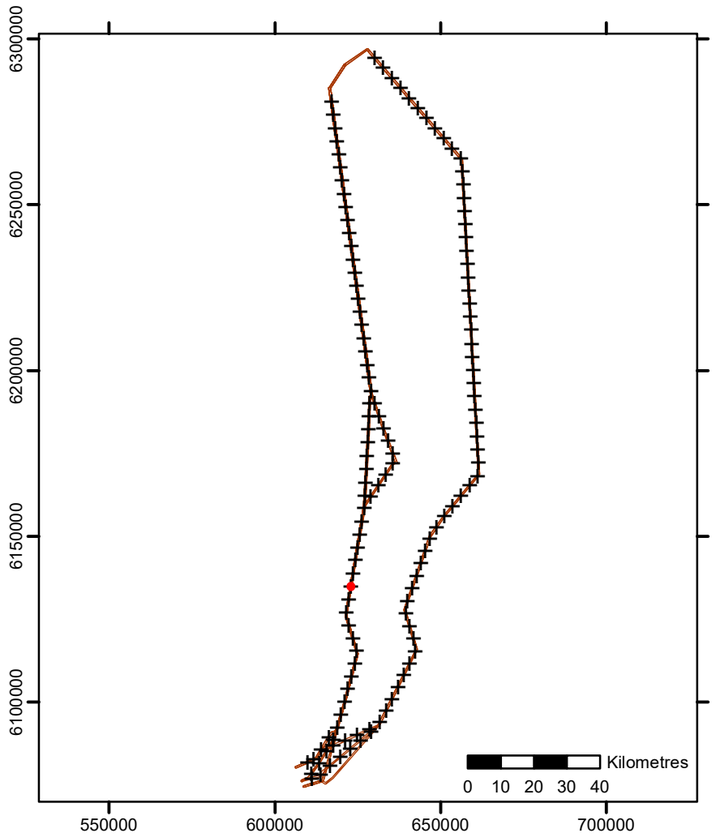
Station: ENV116
Fix: 221 **E:** 623603 **N:** 6138801 **Depth (m):** 89
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV117

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

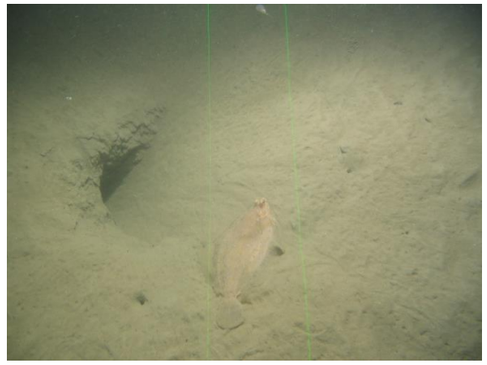
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

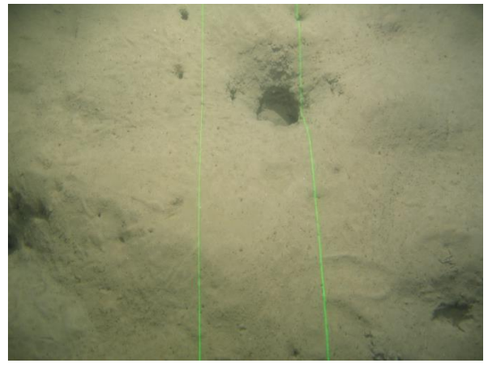
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV117
Fix: 7294 **E:** 622915 **N:** 6134913 **Depth (m):** 91

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Chordata (Pleuronectiformes *stet.*)



Station: ENV117
Fix: 7319 **E:** 622939 **N:** 6134879 **Depth (m):** 91

Sediment Description:
Soft sediment with bioturbation.

Faunal Description:
No visible fauna



Station: ENV117
Fix: 223 **E:** 622944 **N:** 6134913 **Depth (m):** 93
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Mollusca)

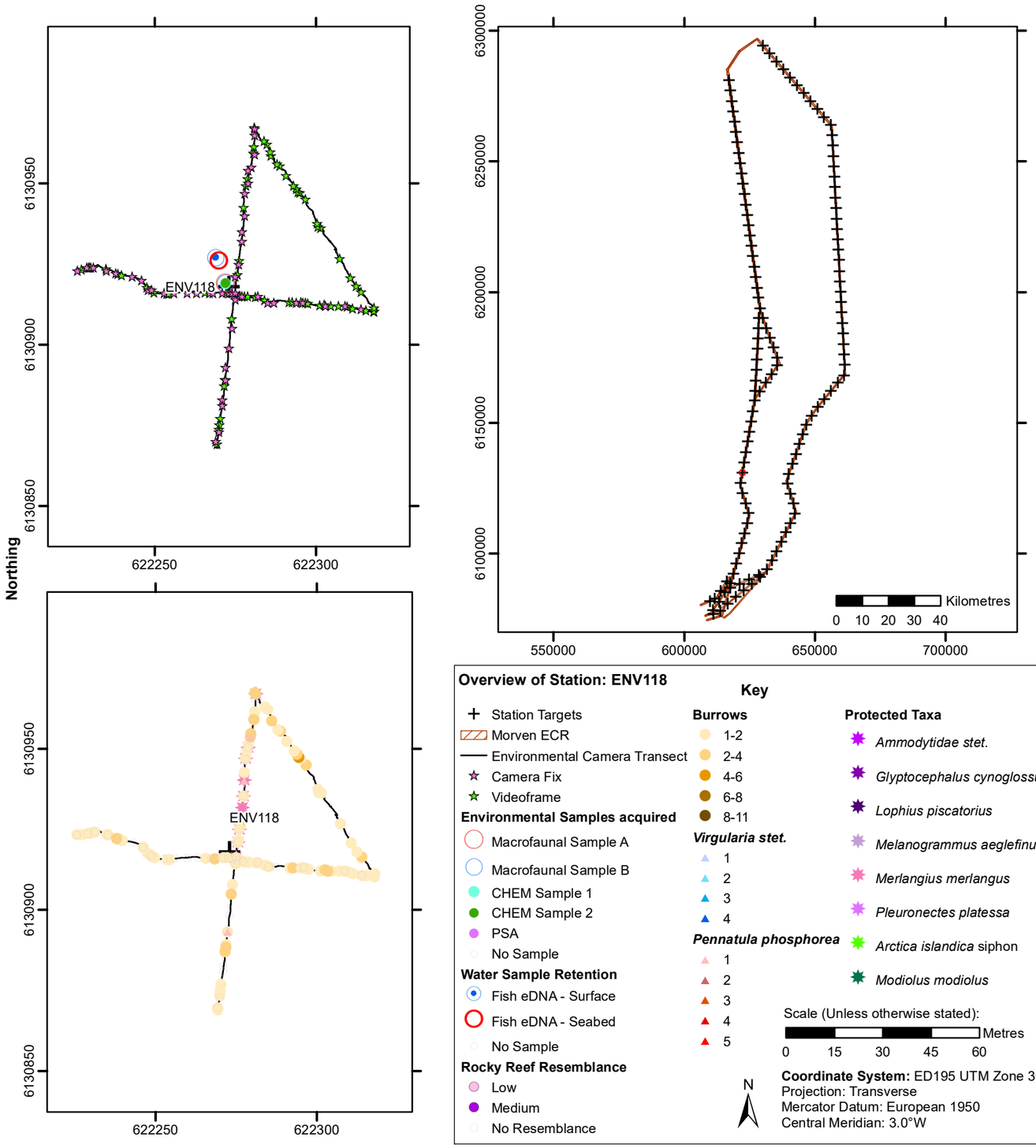


Station: ENV117
Fix: 223 **E:** 622944 **N:** 6134913 **Depth (m):** 93
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Mollusca)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS



Overview of Station: ENV118

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

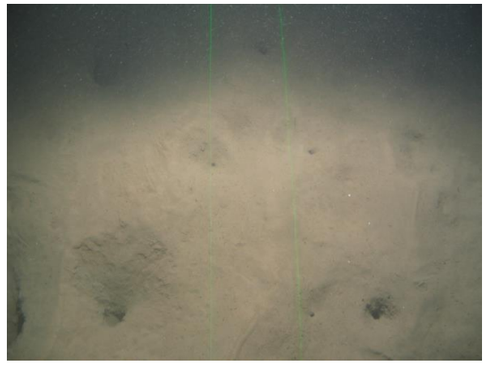
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

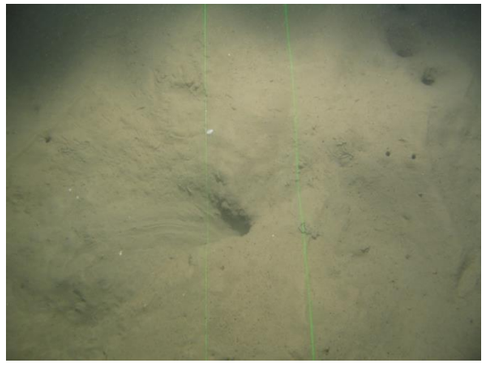
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV118
Fix: 7241 **E:** 622238 **N:** 6130922 **Depth (m):** 91

Sediment Description:
Soft sediment with bioturbation.

Faunal Description:
No visible fauna



Station: ENV118
Fix: 7262 **E:** 622303 **N:** 6130912 **Depth (m):** 91

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Animalia tube



Station: ENV118
Fix: 464 **E:** 622272 **N:** 6130919 **Depth (m):** 92
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

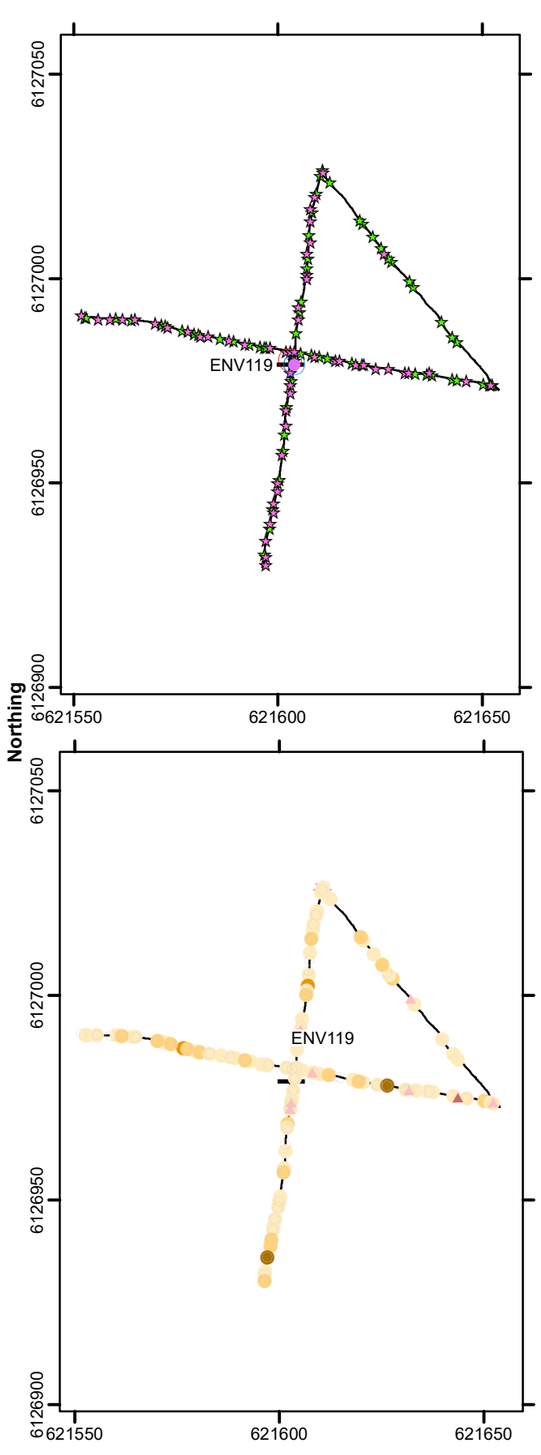


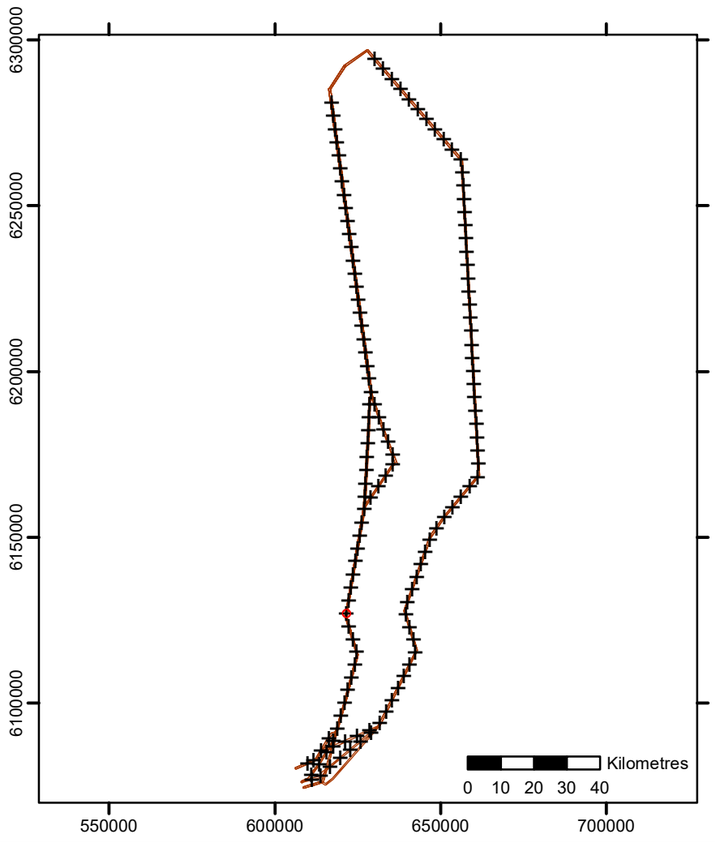
Station: ENV118
Fix: 464 **E:** 622272 **N:** 6130919 **Depth (m):** 92
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV119

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

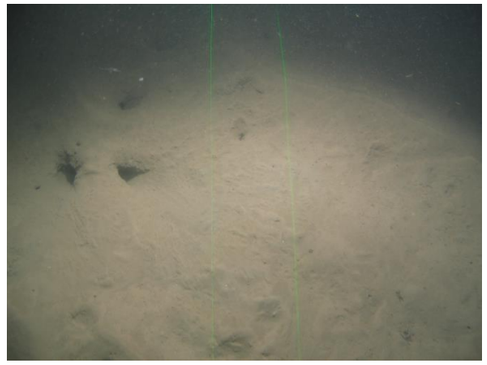
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV119
Fix: 7209 **E:** 621652 **N:** 6126974 **Depth (m):** 91

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV119
Fix: 7234 **E:** 621597 **N:** 6126936 **Depth (m):** 91

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV119
Fix: 459 **E:** 621603 **N:** 6126980 **Depth (m):** 93
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

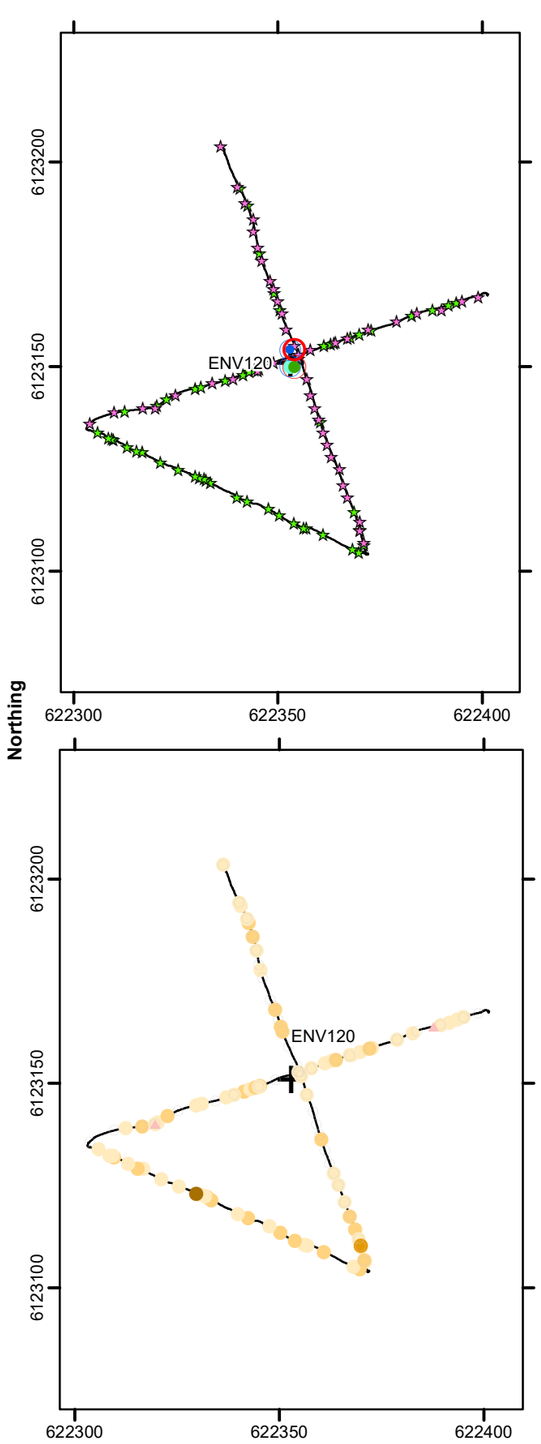


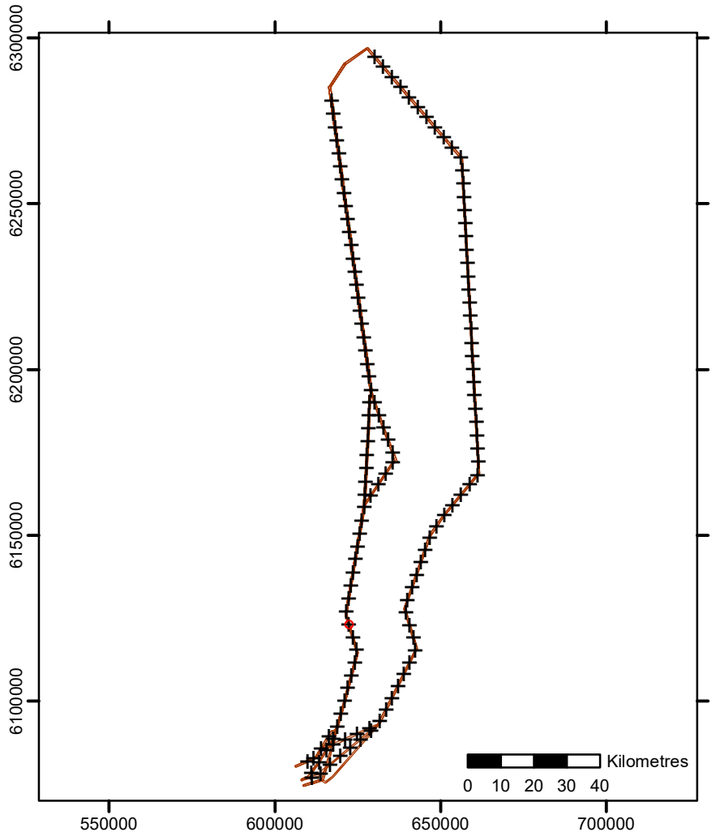
Station: ENV119
Fix: 459 **E:** 621603 **N:** 6126980 **Depth (m):** 93
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV120

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

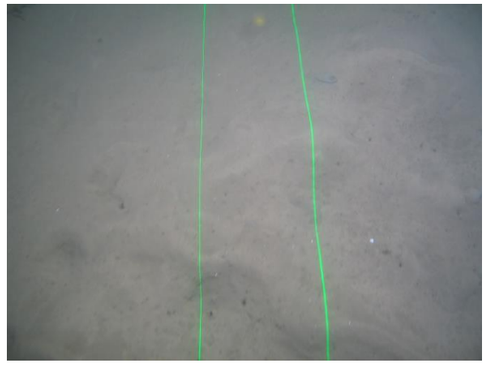
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

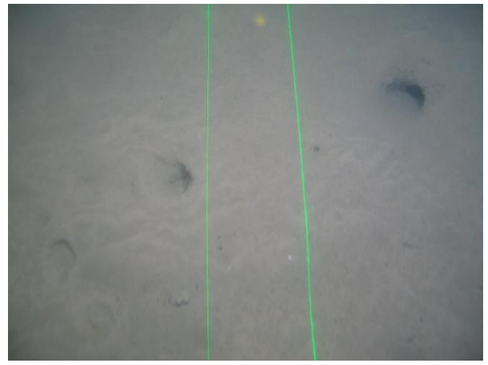
Easting



Station: ENV120
Fix: 7142 **E:** 622346 **N:** 6123176 **Depth (m):** 94

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV120
Fix: 7150 **E:** 622355 **N:** 6123152 **Depth (m):** 94

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV120
Fix: 457 **E:** 622353 **N:** 6123150 **Depth (m):** 96
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

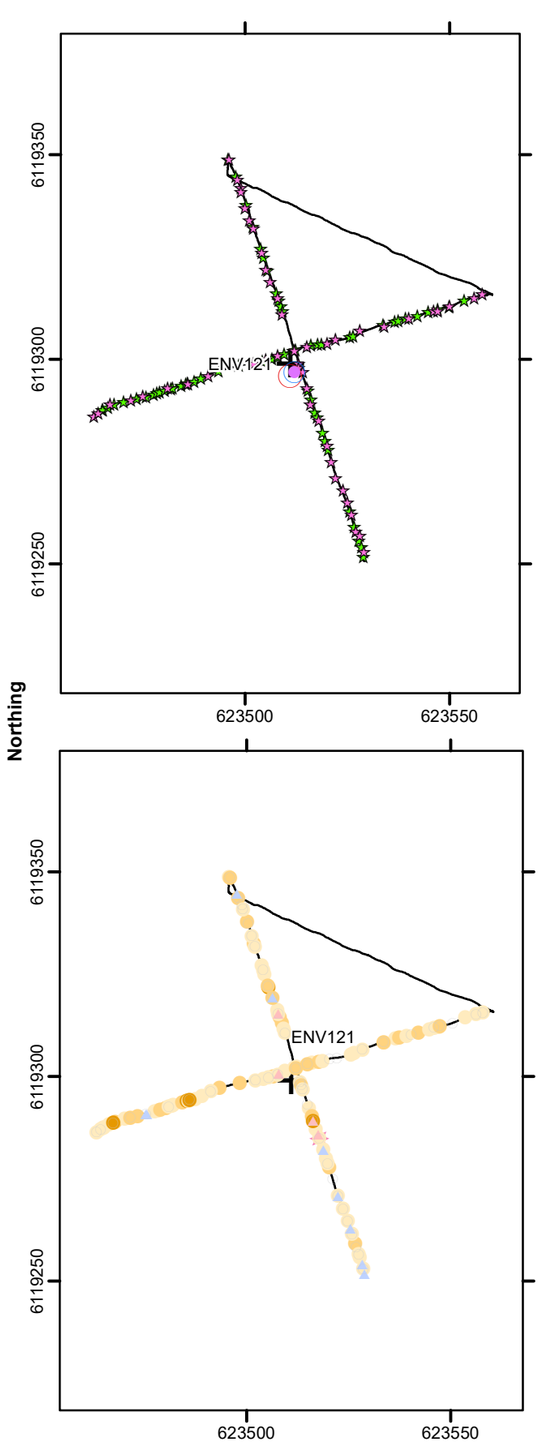


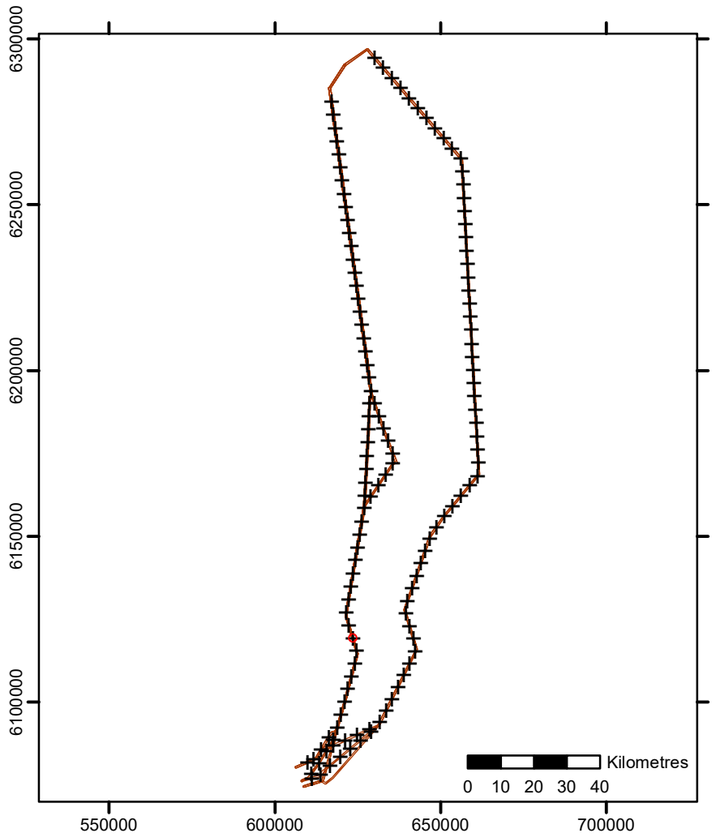
Station: ENV120
Fix: 457 **E:** 622353 **N:** 6123150 **Depth (m):** 96
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV121

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

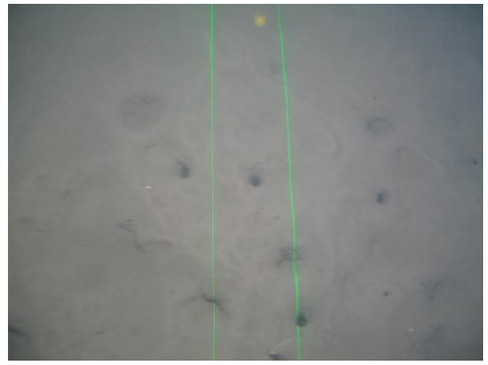
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV121
Fix: 7088 **E:** 623467 **N:** 6119289 **Depth (m):** 97

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
Echinodermata (Ophiuroidea *stet.*)



Station: ENV121
Fix: 7117 **E:** 623506 **N:** 6119319 **Depth (m):** 97

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
Cnidaria (*Virgularia stet*)



Station: ENV121
Fix: 453 **E:** 623512 **N:** 6119297 **Depth (m):** 99
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

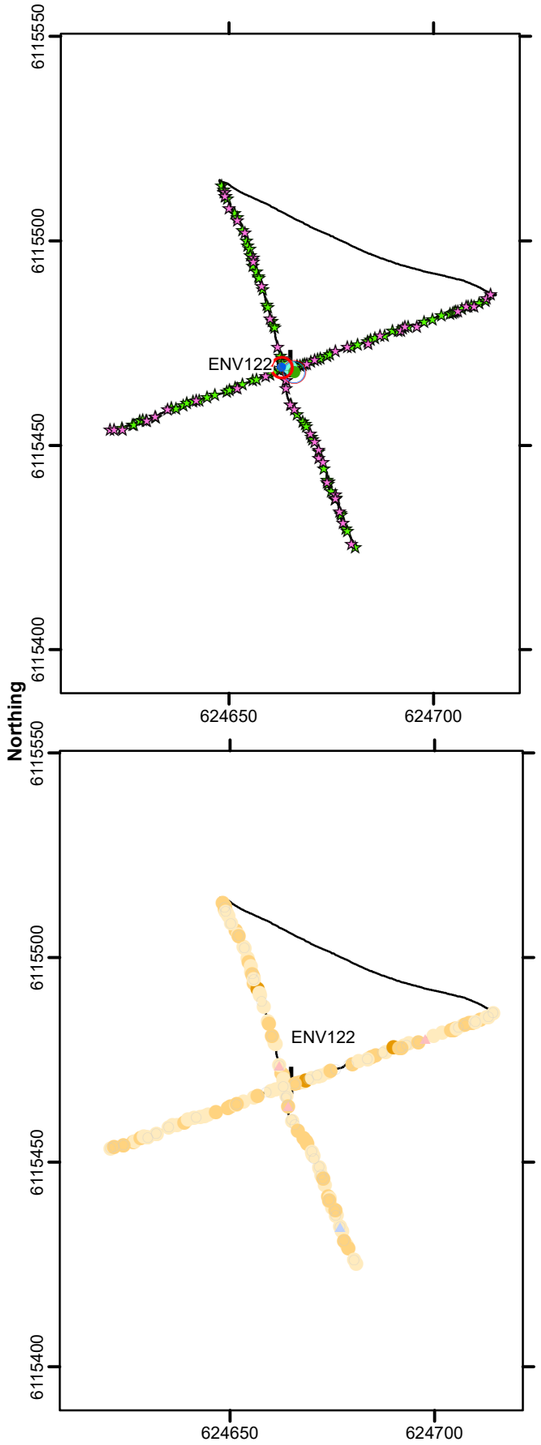


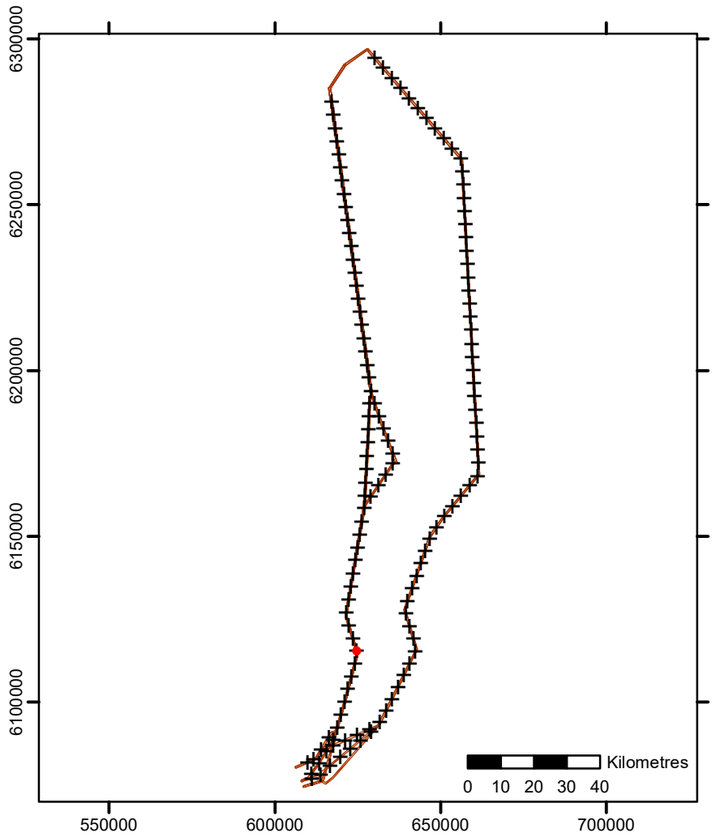
Station: ENV121
Fix: 453 **E:** 623512 **N:** 6119297 **Depth (m):** 99
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV122

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

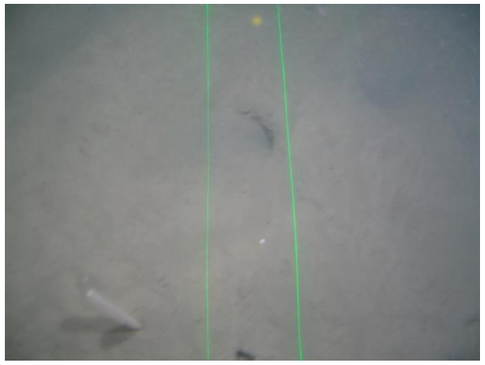
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

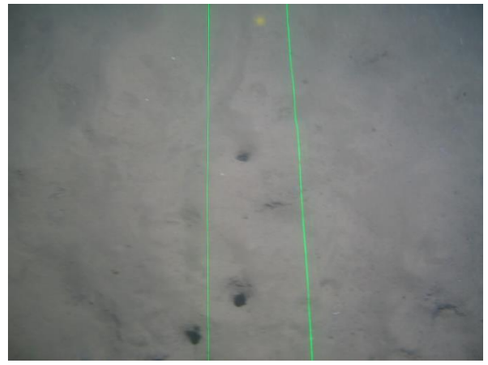
Easting



Station: ENV122
Fix: 7053 **E:** 624696 **N:** 6115479 **Depth (m):** 98

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV122
Fix: 7062 **E:** 624652 **N:** 6115505 **Depth (m):** 97

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV122
Fix: 449 **E:** 624666 **N:** 6115468 **Depth (m):** 101
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

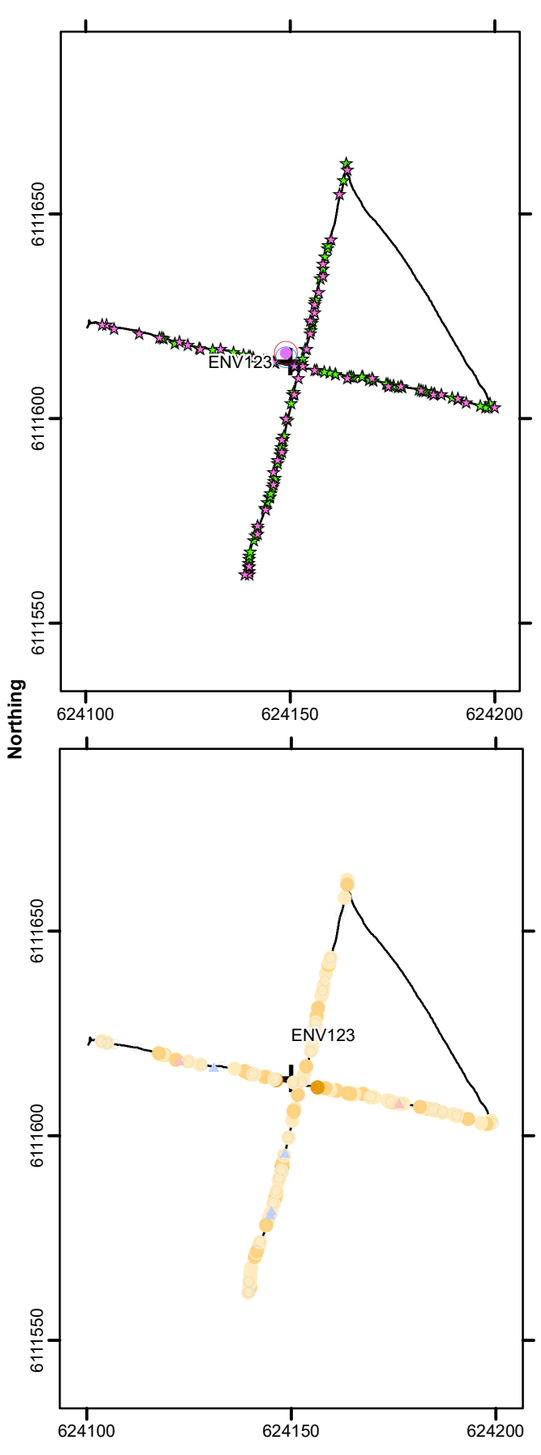


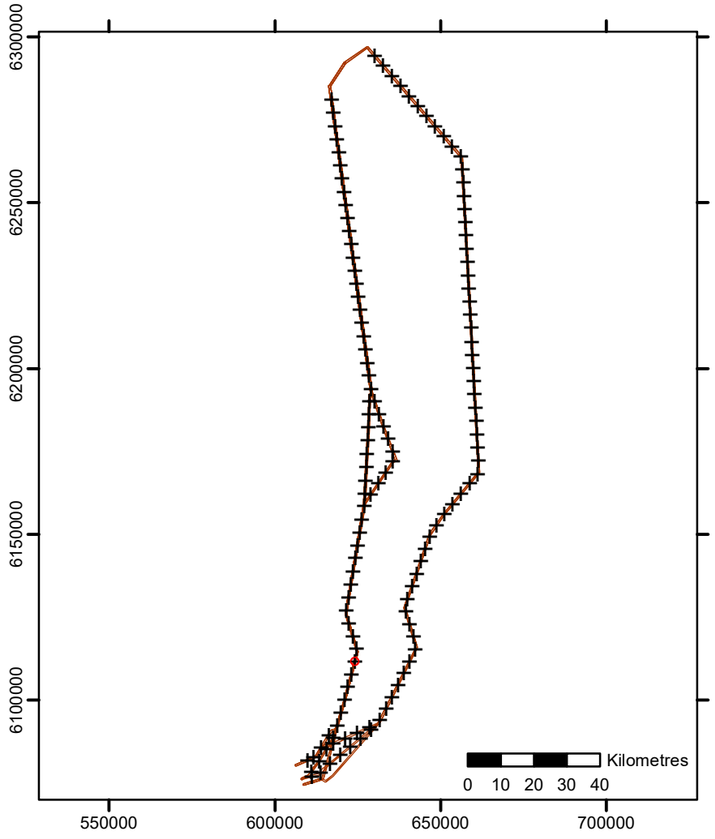
Station: ENV122
Fix: 449 **E:** 624666 **N:** 6115468 **Depth (m):** 101
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV123

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

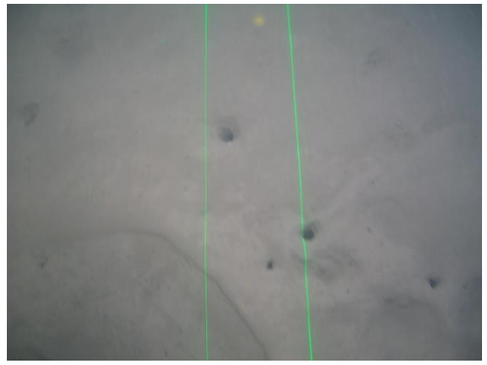
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

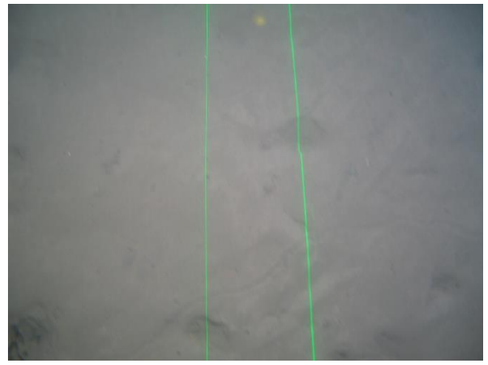
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV123
Fix: 7015 **E:** 624187 **N:** 6111606 **Depth (m):** 93

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV123
Fix: 7026 **E:** 624133 **N:** 6111617 **Depth (m):** 93

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV123
Fix: 445 **E:** 624149 **N:** 6111616 **Depth (m):** 96
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*, Ophiuroidea)

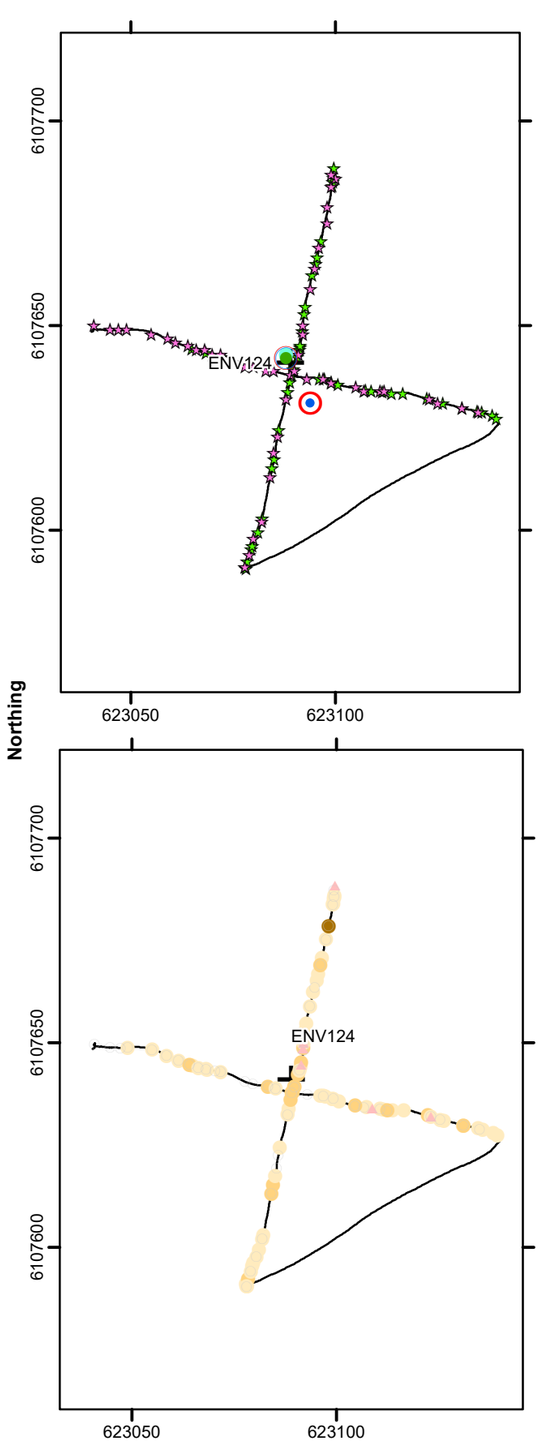


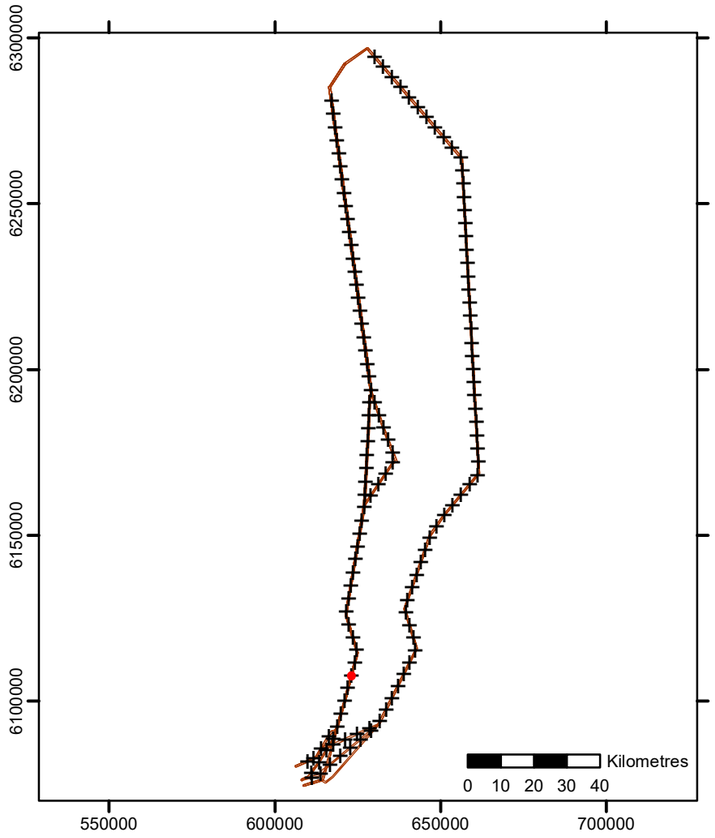
Station: ENV123
Fix: 445 **E:** 624149 **N:** 6111616 **Depth (m):** 96
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV124

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV124
Fix: 6966 **E:** 623078 **N:** 6107591 **Depth (m):** 88

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV124
Fix: 6985 **E:** 623099 **N:** 6107687 **Depth (m):** 89

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV124
Fix: 442 **E:** 623088 **N:** 6107642 **Depth (m):** 92
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

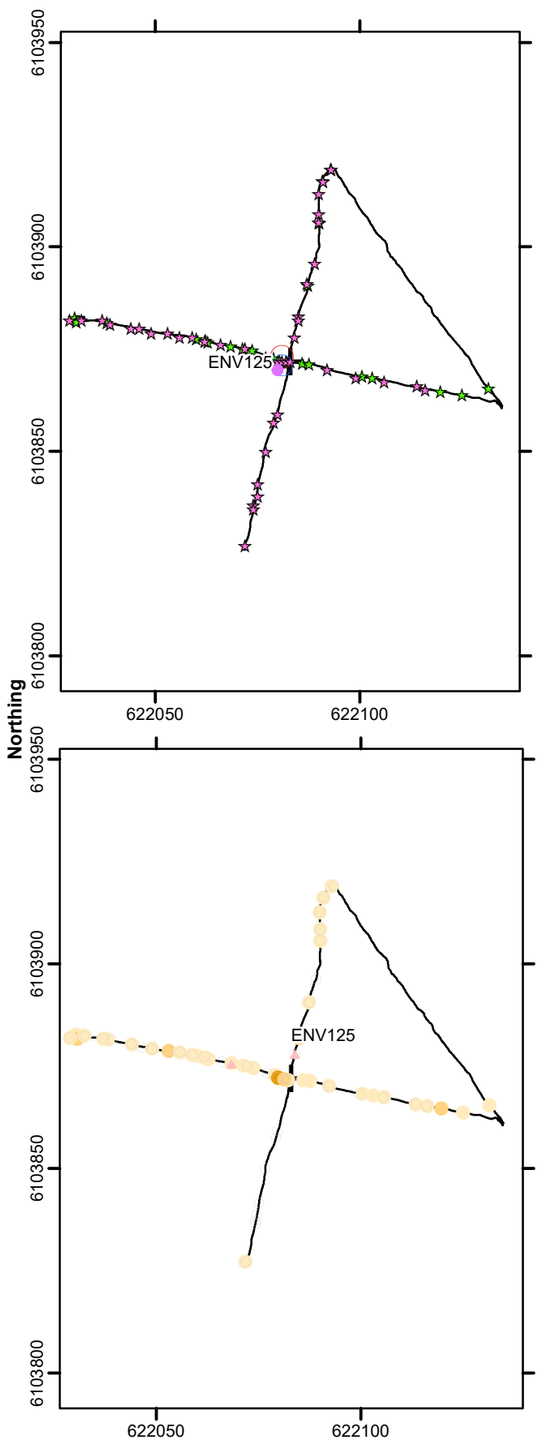


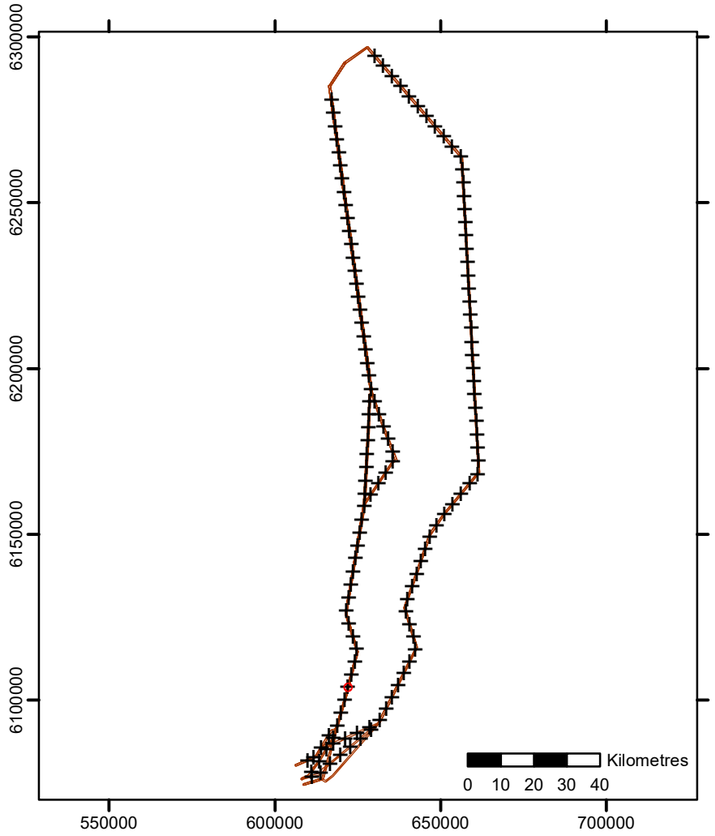
Station: ENV124
Fix: 442 **E:** 623088 **N:** 6107642 **Depth (m):** 92
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV125

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

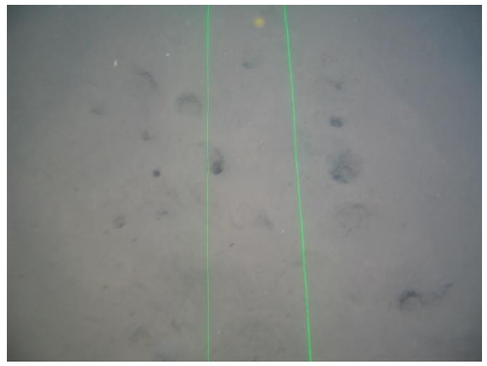
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

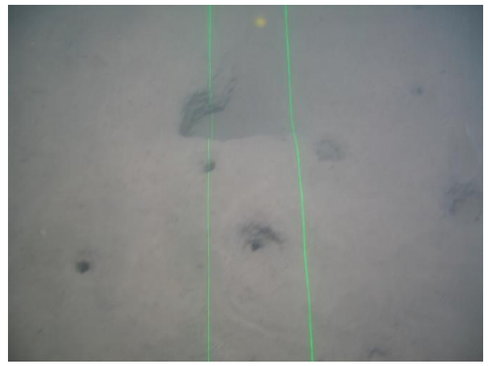
Easting



Station: ENV125
Fix: 6904 **E:** 622053 **N:** 6103879 **Depth (m):** 82

Sediment Description:
Slightly rippled soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV125
Fix: 6911 **E:** 622080 **N:** 6103872 **Depth (m):** 82

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV125
Fix: 438 **E:** 622081 **N:** 6103873 **Depth (m):** 85
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

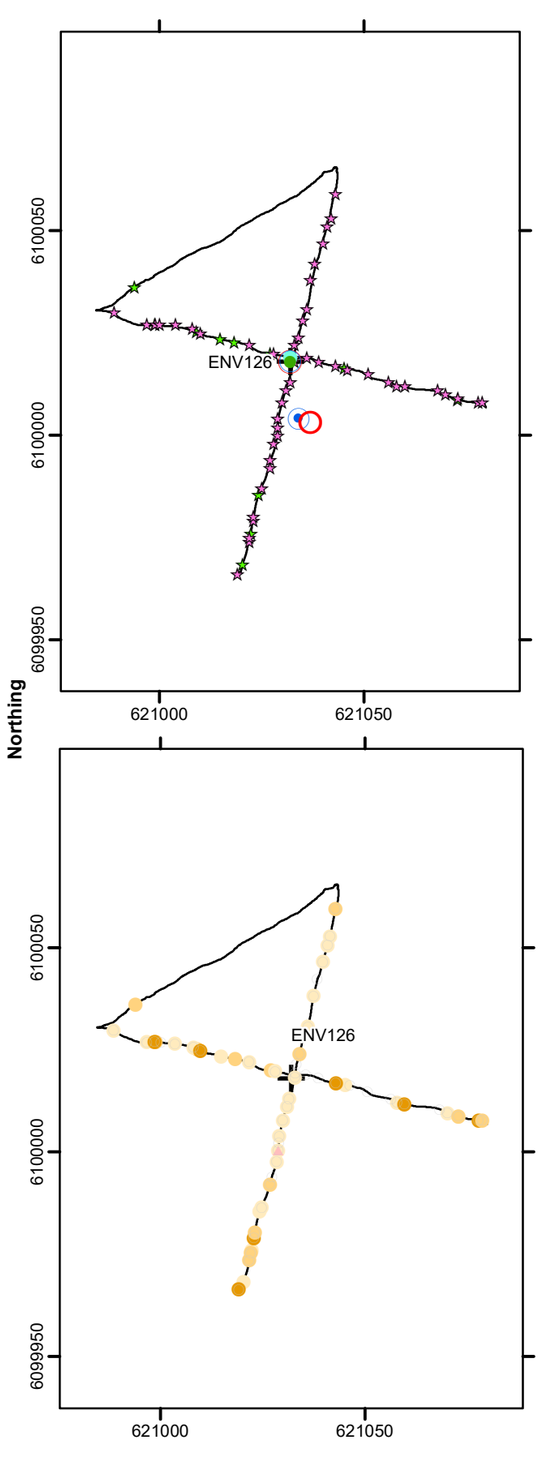


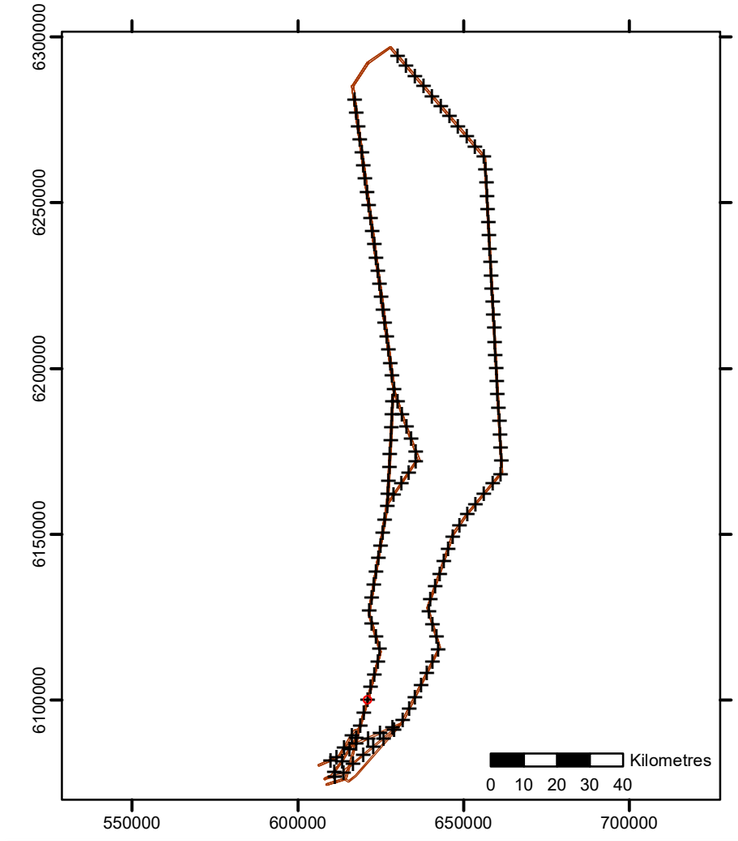
Station: ENV125
Fix: 438 **E:** 622081 **N:** 6103873 **Depth (m):** 85
Retention: MFA

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV126

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

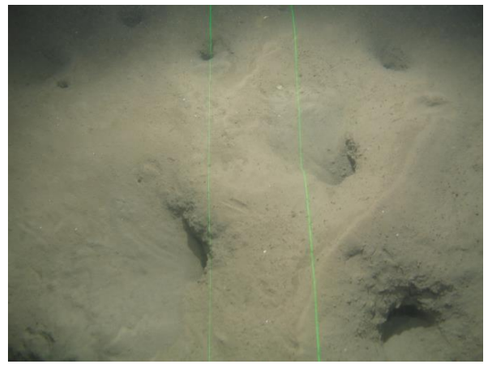
Easting



Station: ENV126
Fix: 5938 **E:** 620999 **N:** 6100027 **Depth (m):** 80

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Alcyonium digitatum*)



Station: ENV126
Fix: 5942 **E:** 621010 **N:** 6100025 **Depth (m):** 80

Sediment Description:
Soft sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV126
Fix: 436 **E:** 621032 **N:** 6100018 **Depth (m):** 83
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

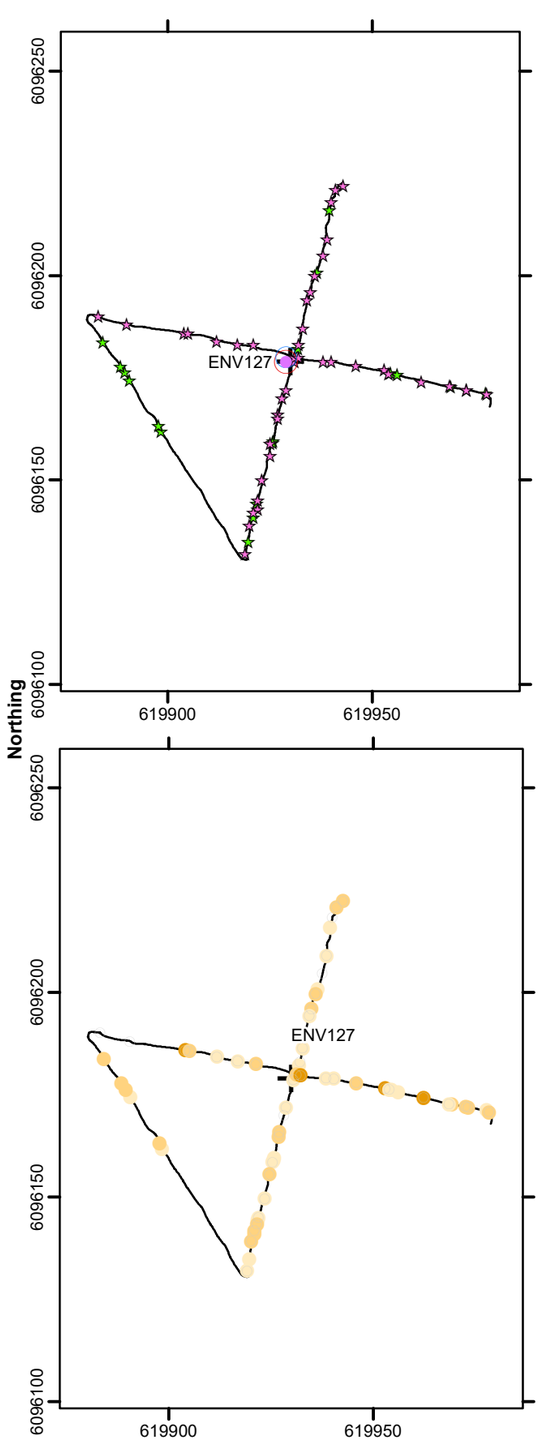


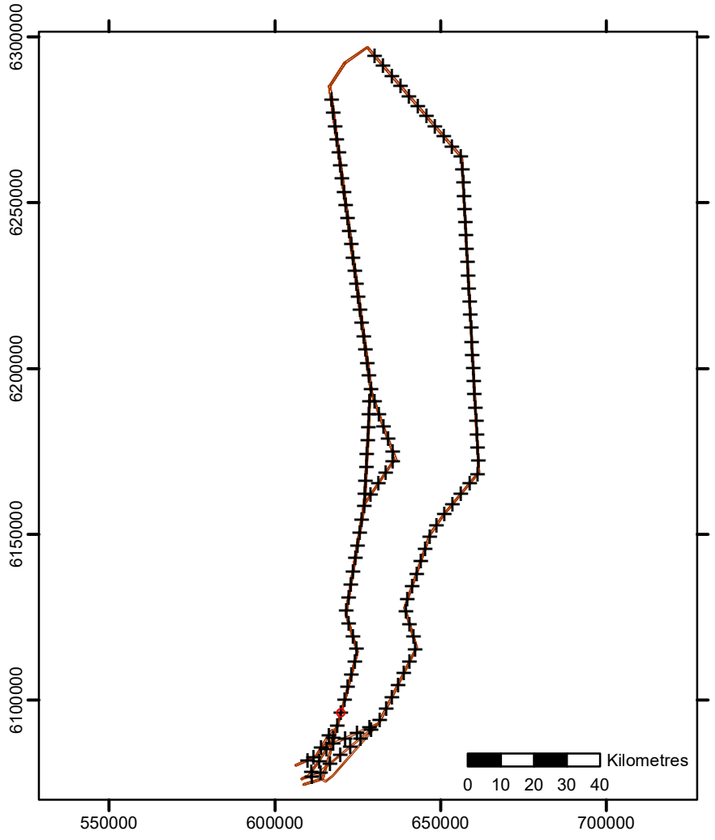
Station: ENV126
Fix: 436 **E:** 621032 **N:** 6100018 **Depth (m):** 83
Retention: MFB

Sediment Description:
Fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV127

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

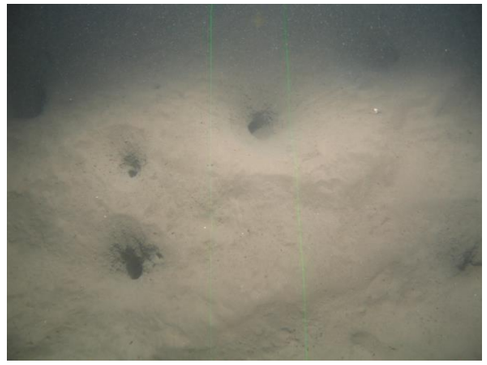
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

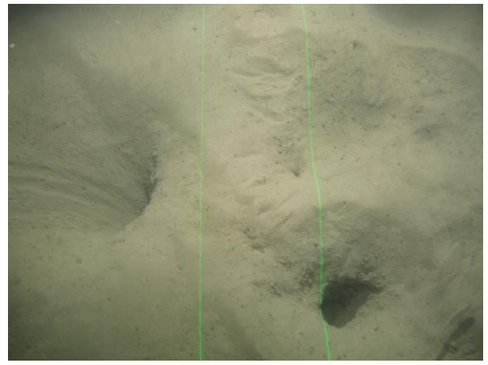
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV127
Fix: 5984 **E:** 619904 **N:** 6096186 **Depth (m):** 69

Sediment Description:
Soft sediment with faunal tracks

Faunal Description:
No visible fauna



Station: ENV127
Fix: 5997 **E:** 619969 **N:** 6096173 **Depth (m):** 71

Sediment Description:
Soft sediment with faunal tracks

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV127
Fix: 431 **E:** 619929 **N:** 6096179 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

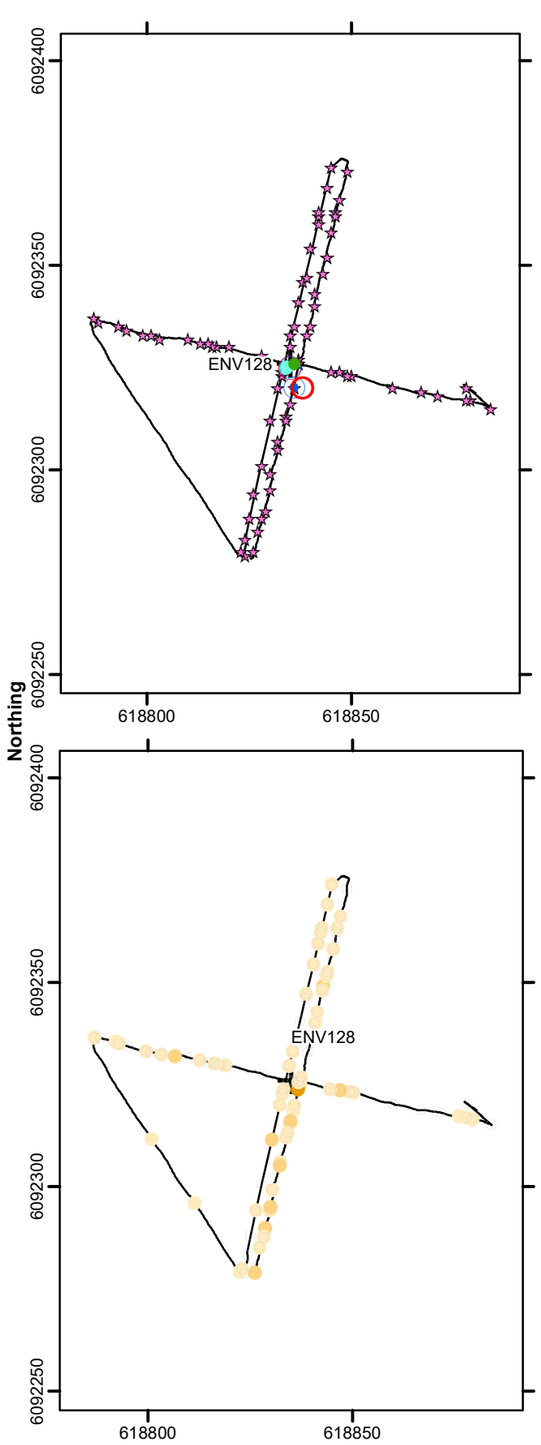


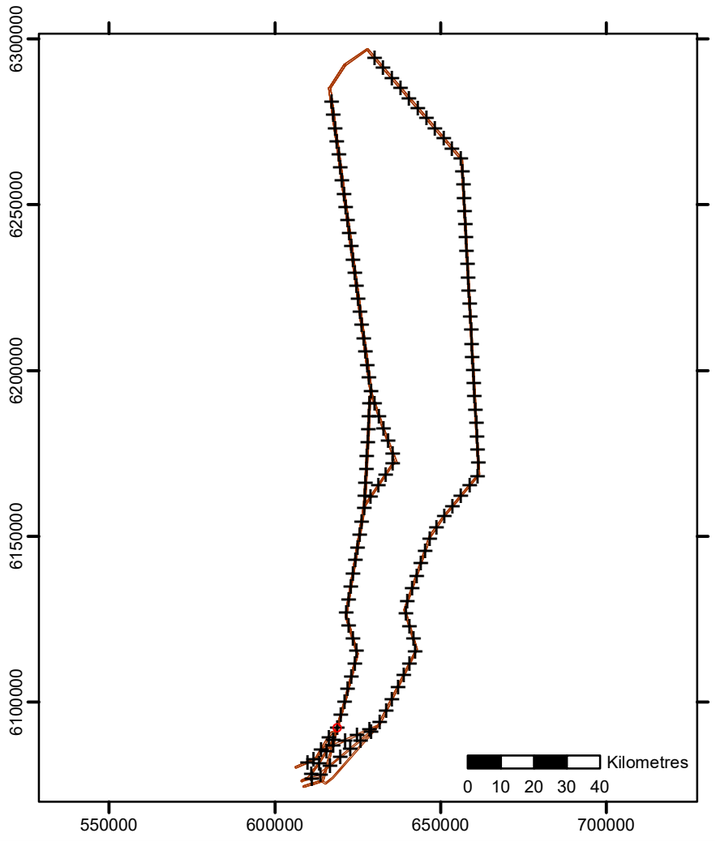
Station: ENV127
Fix: 431 **E:** 619929 **N:** 6096179 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV128

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

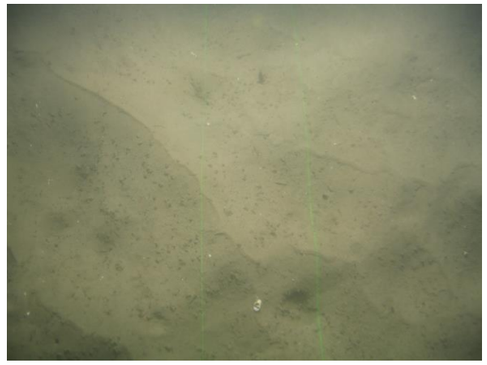
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV128
Fix: 6004 **E:** 618878 **N:** 6092317 **Depth (m):** 56

Sediment Description:
Slightly ripped soft sediment

Faunal Description:
Animalia tube



Station: ENV128
Fix: 6072 **E:** 618829 **N:** 6092290 **Depth (m):** 56

Sediment Description:
Slightly rippled soft sediment

Faunal Description:
No visible fauna



Station: ENV128
Fix: 428 **E:** 618835 **N:** 6092325 **Depth (m):** 59
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura)

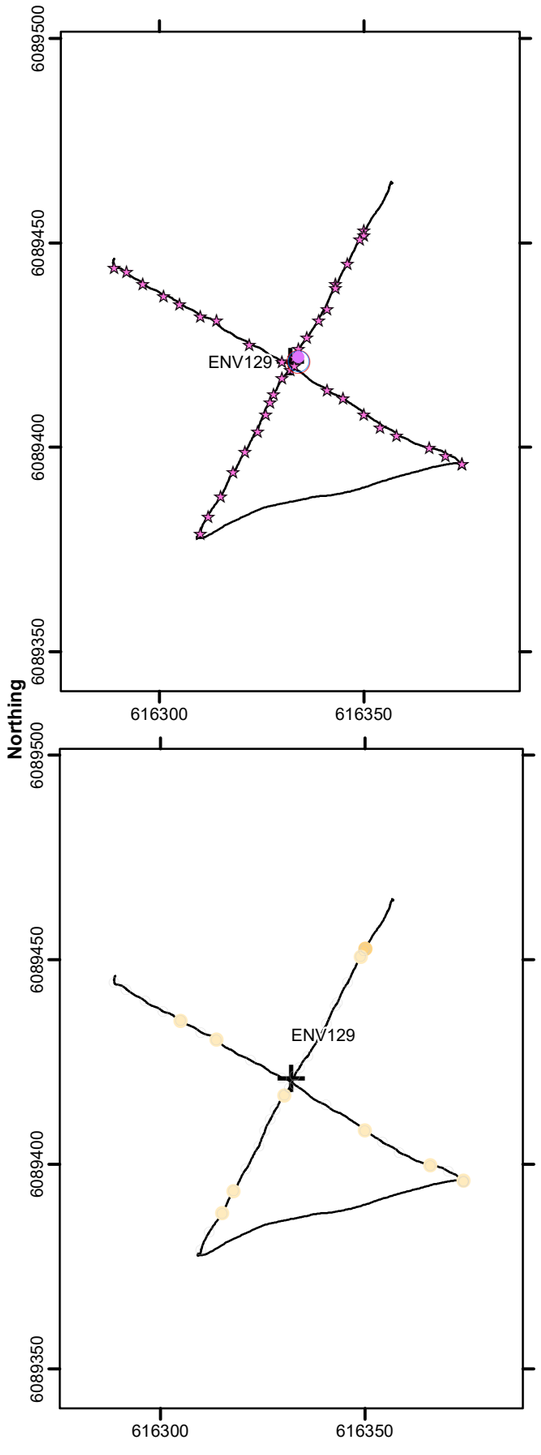


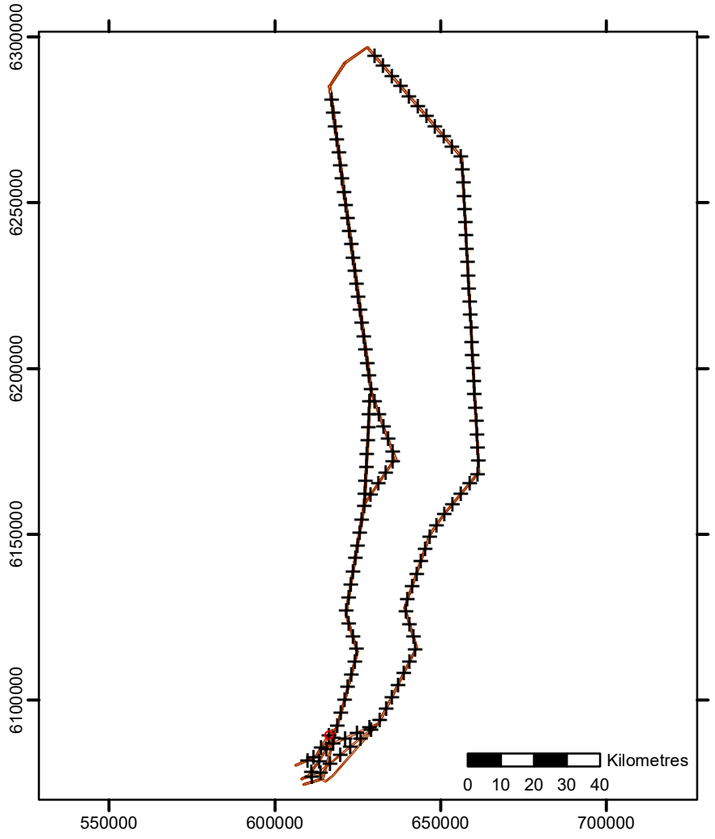
Station: ENV128
Fix: 428 **E:** 618835 **N:** 6092325 **Depth (m):** 59
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV129

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

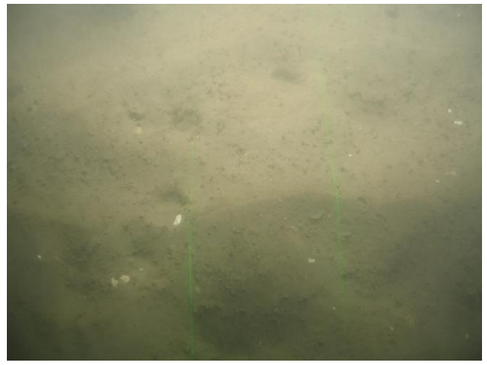
Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

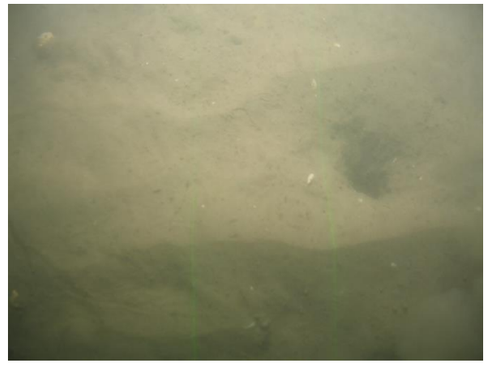
Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV129
Fix: 6084 **E:** 616336 **N:** 6089427 **Depth (m):** 50

Sediment Description:
Soft sediment with faunal tracks

Faunal Description:
Animalia tube



Station: ENV129
Fix: 6104 **E:** 616350 **N:** 6089408 **Depth (m):** 50

Sediment Description:
Soft sediment with faunal tracks

Faunal Description:
No visible fauna



Station: ENV129
Fix: 425 **E:** 616334 **N:** 6089421 **Depth (m):** 53
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

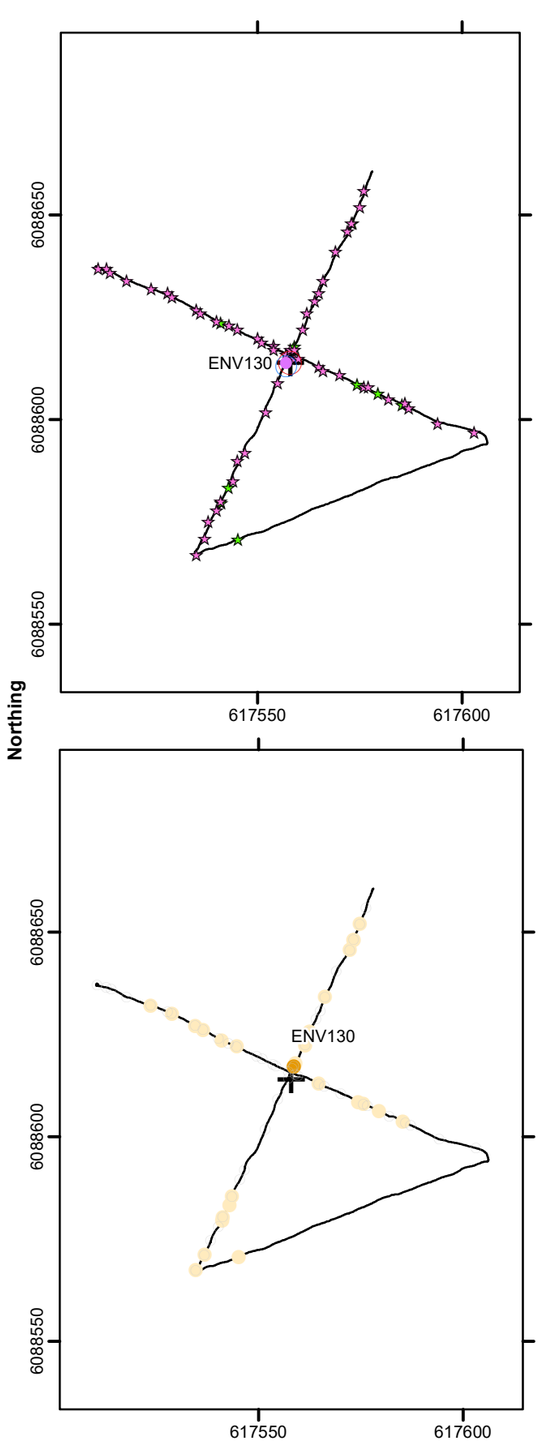


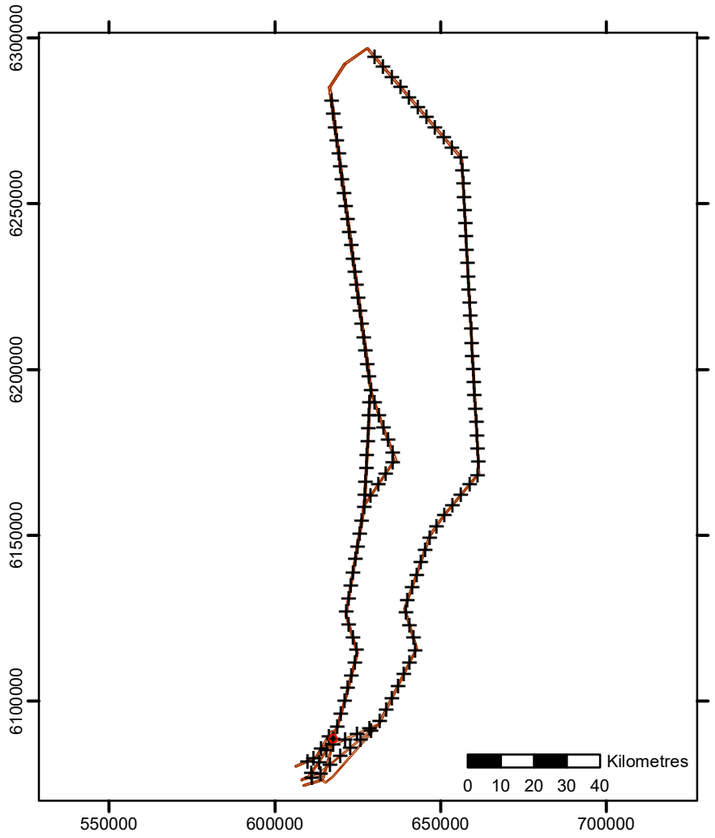
Station: ENV129
Fix: 425 **E:** 616334 **N:** 6089421 **Depth (m):** 53
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV130

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

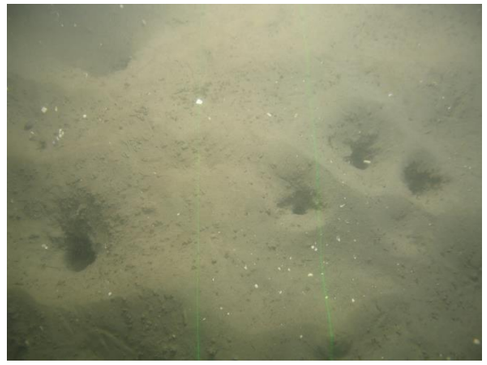
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

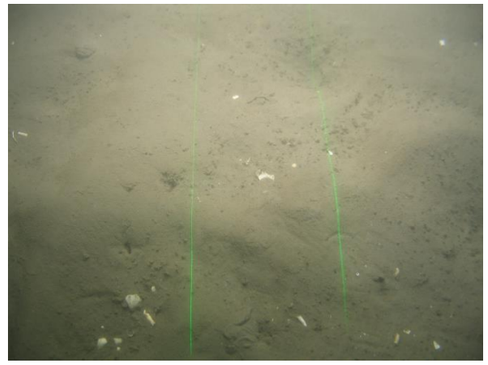
Easting



Station: ENV130
Fix: 6158 **E:** 617559 **N:** 6088617 **Depth (m):** 50

Sediment Description:
Soft sediment with shell fragments and faunal tracks

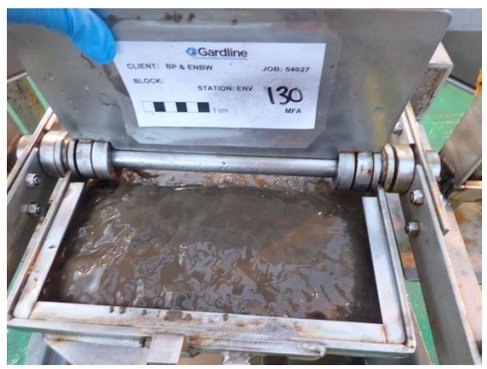
Faunal Description:
Animalia tube



Station: ENV130
Fix: 6163 **E:** 617566 **N:** 6088634 **Depth (m):** 50

Sediment Description:
Soft sediment wiht faunal tracks

Faunal Description:
Mollusca (Scaphopoda *stet.*)



Station: ENV130
Fix: 421 **E:** 617558 **N:** 6088614 **Depth (m):** 53
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)

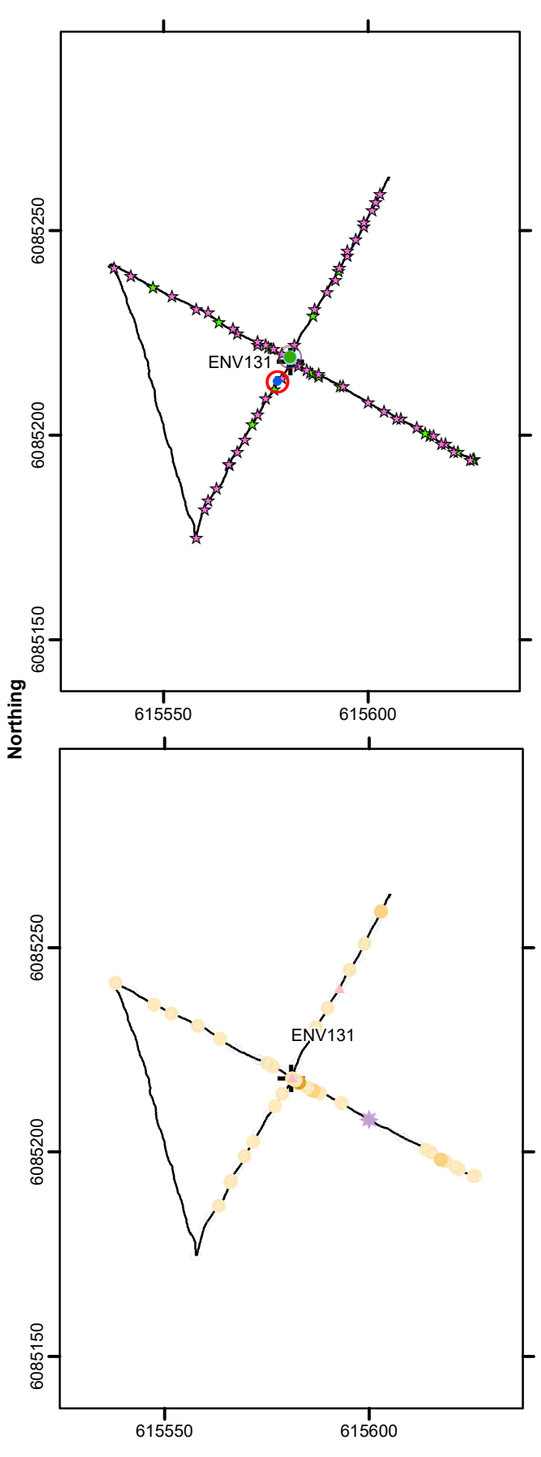


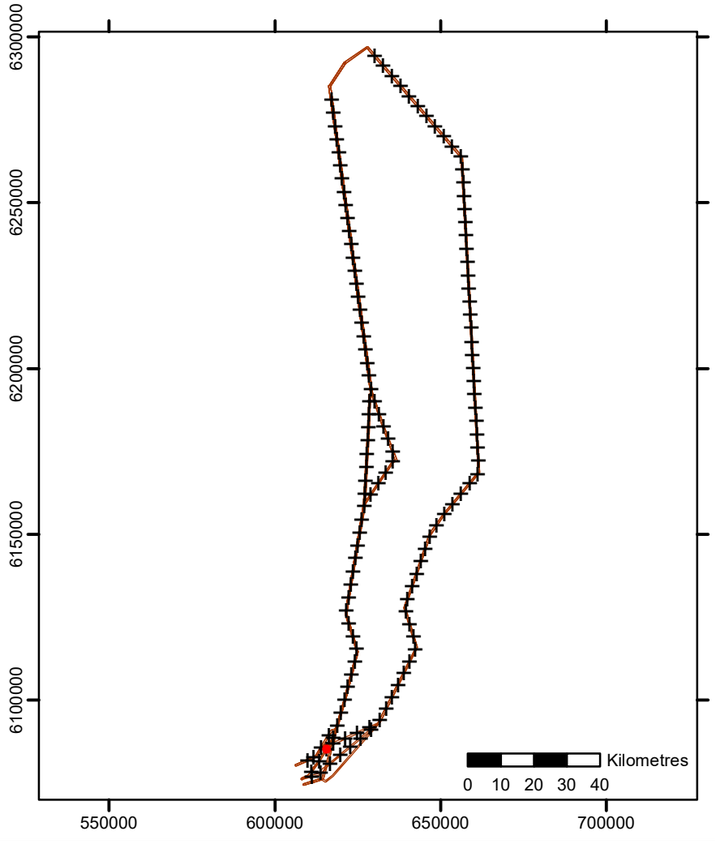
Station: ENV130
Fix: 421 **E:** 617558 **N:** 6088614 **Depth (m):** 53
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (*Echinocardium cordatum*), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV131

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

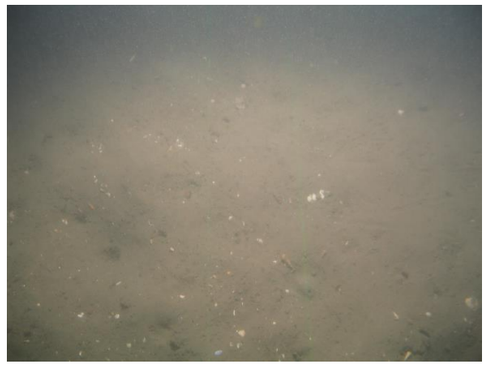
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
0 15 30 45 60 Metres

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

Easting



Station: ENV131
Fix: 6438 **E:** 615607 **N:** 6085204 **Depth (m):** 45

Sediment Description:
Soft sediment with shell fragments and faunal tracks

Faunal Description:
Mollusca (Gastropoda *stet.*)



Station: ENV131
Fix: 6470 **E:** 615587 **N:** 6085231 **Depth (m):** 45

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Animalia tube



Station: ENV131
Fix: 418 **E:** 615581 **N:** 6085219 **Depth (m):** 48
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda)

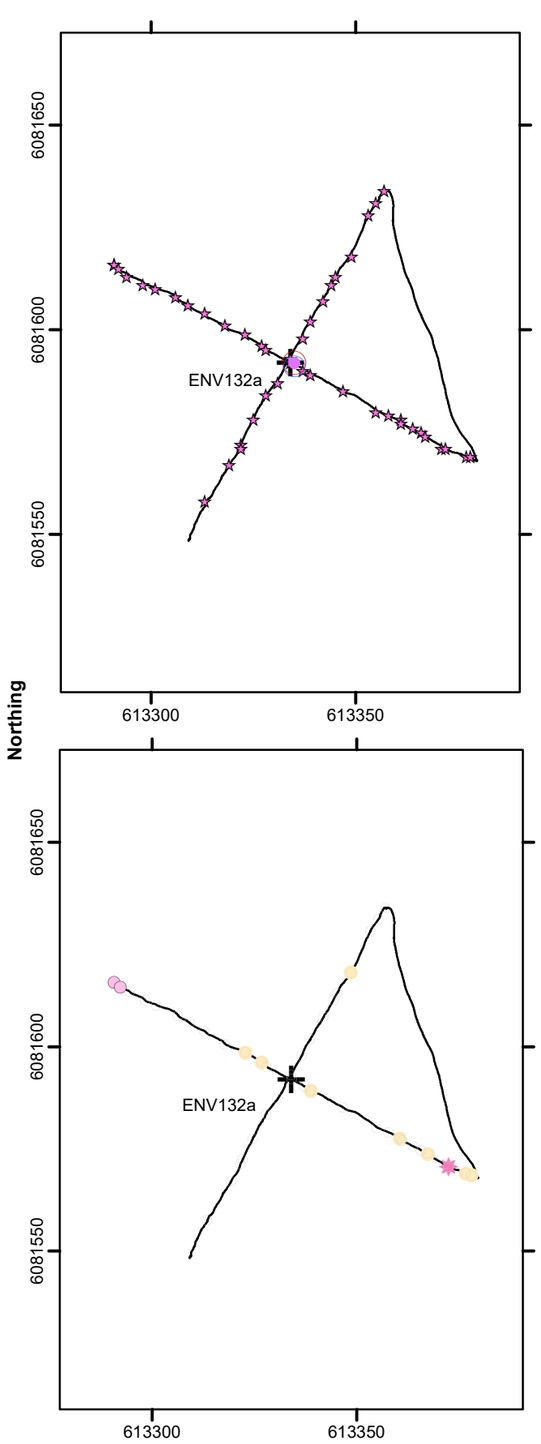


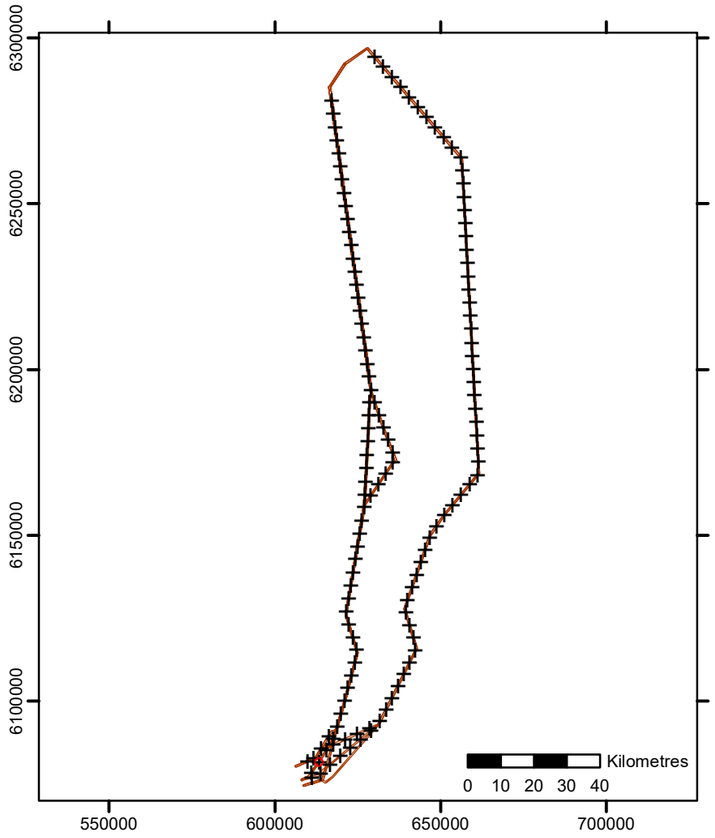
Station: ENV131
Fix: 418 **E:** 615581 **N:** 6085219 **Depth (m):** 48
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV132

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated): Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W



Station: ENV132A
Fix: 6630 **E:** 613291 **N:** 6081616 **Depth (m):** 36

Sediment Description:
Soft sediment with shell hash and scattered cobbles

Faunal Description:
Annelida (Serpulidae *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea *stet.*), Faunal turf, Mollusca (Pectinidae *stet.*)



Station: ENV132A
Fix: 6666 **E:** 613334 **N:** 6081593 **Depth (m):** 36

Sediment Description:
Soft sediment

Faunal Description:
No visible fauna



Station: ENV132
Fix: 411 **E:** 613335 **N:** 6081592 **Depth (m):** 39
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

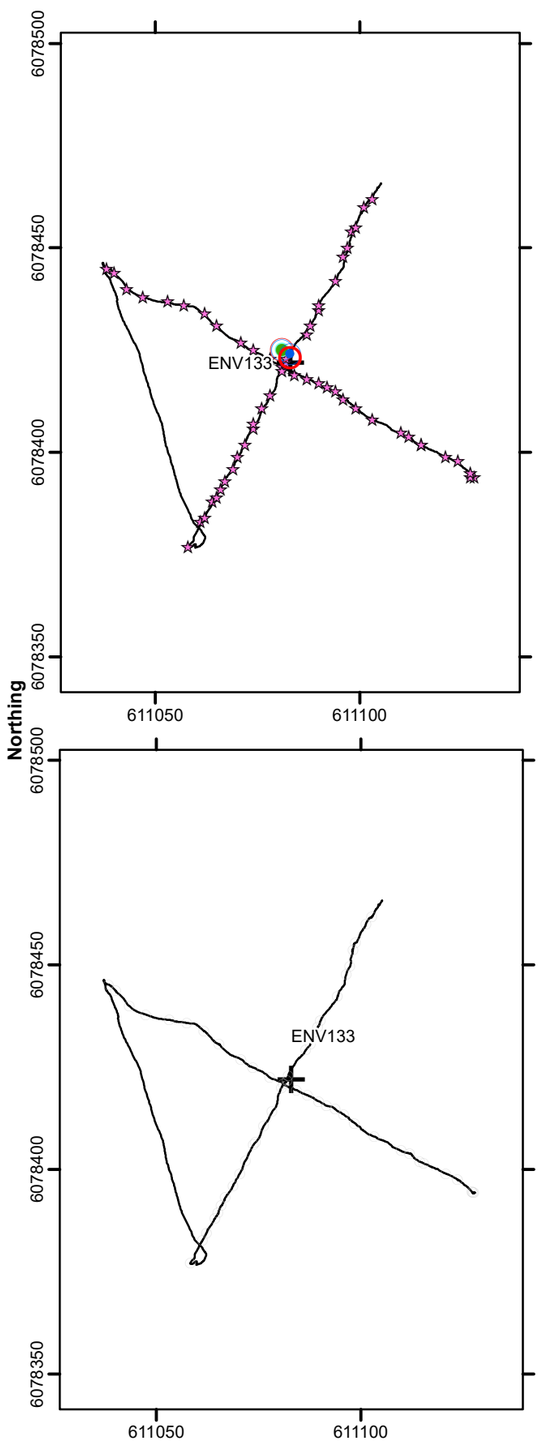


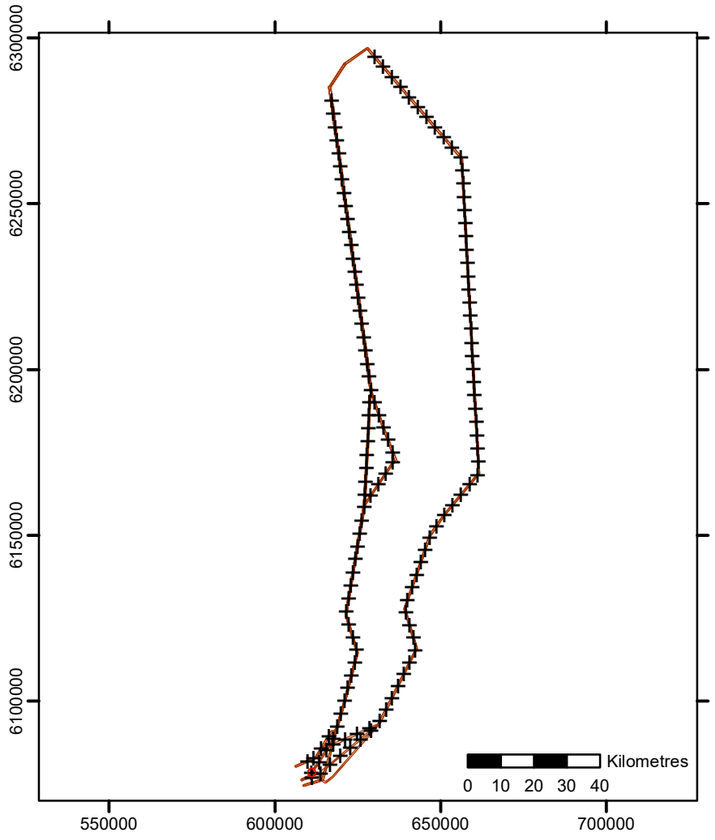
Station: ENV132
Fix: 411 **E:** 613335 **N:** 6081592 **Depth (m):** 39
Retention: MFA

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





Overview of Station: ENV133

Key

- Station Targets
- Morven ECR
- Environmental Camera Transect
- Camera Fix
- Videoframe

Environmental Samples acquired

- Macrofaunal Sample A
- Macrofaunal Sample B
- CHEM Sample 1
- CHEM Sample 2
- PSA
- No Sample

Water Sample Retention

- Fish eDNA - Surface
- Fish eDNA - Seabed
- No Sample

Rocky Reef Resemblance

- Low
- Medium
- No Resemblance

Burrows

- 1-2
- 2-4
- 4-6
- 6-8
- 8-11

Virgularia stet.

- 1
- 2
- 3
- 4

Pennatula phosphorea

- 1
- 2
- 3
- 4
- 5

Protected Taxa

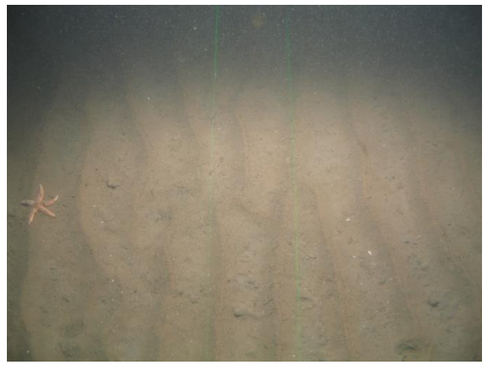
- *Ammodytidae stet.*
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*
- *Melanogrammus aeglefinus*
- *Merlangius merlangus*
- *Pleuronectes platessa*
- *Arctica islandica* siphon
- *Modiolus modiolus*

Scale (Unless otherwise stated):
Metres
0 15 30 45 60

N

Coordinate System: ED195 UTM Zone 30N
Projection: Transverse
Mercator Datum: European 1950
Central Meridian: 3.0°W

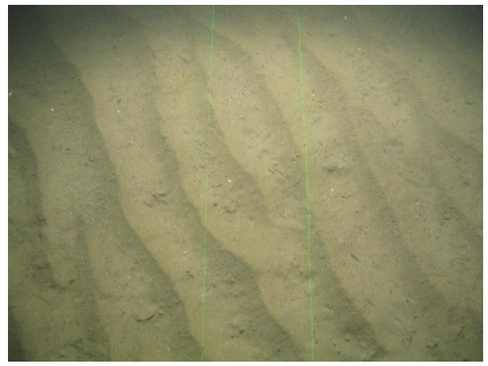
Easting



Station: ENV133
Fix: 6675 **E:** 611127 **N:** 6078394 **Depth (m):** 24

Sediment Description:
Soft rippled sediment with bioturbation

Faunal Description:
Echinodermata (*Astropecten irregularis*)



Station: ENV133
Fix: 6696 **E:** 611062 **N:** 6078434 **Depth (m):** 23

Sediment Description:
Soft rippled sediment with bioturbation

Faunal Description:
No visible fauna



Station: ENV133
Fix: 400 **E:** 611081 **N:** 6078425 **Depth (m):** 27
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)



Station: ENV133
Fix: 400 **E:** 611081 **N:** 6078425 **Depth (m):** 27
Retention: MFB

Sediment Description:
Fine sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

APPENDIX D FAUNAL OBSERVATION SUMMARY

APPENDIX D FAUNAL OBSERVATION SUMMARY

Appendix D Faunal Observation Summary can be found in the Excel document entitled:
54027.E4 Morven Habitat Assessment Appendices Rev0

Click here to open/close the attachment pane.

APPENDIX E FAUNAL CATALOGUE

APPENDIX E FAUNAL CATALOGUE



1. Animalia indet

Unidentified fauna burried in the sediment. Pink hue colouration



2. Annelida - Aphrodita aculeata

Large scale worm with irridescent bristles along both sides.



3. Annelida - Hyalinoecia tubicola

Long slender tube resting on the sediment.



4. Annelida - Myxicola stet

Cylindrical worm found emerging from the benthos. Crown of tentacles can be seen with coloured tips either white or black.

APPENDIX E FAUNAL CATALOGUE



5. Annelida - Oxydormus flexuosus

Predatory polychaete worm. Brown in colour with blue/green stripes.



6. Annelida - Serpulidae stet

White calcareous tube, encrusting.



7. Annelida - Terebellidae stet. OTU0148

Very fine feeding tentacles extending from a burrow in the sediment. Unable to identify further due to indistinguishable features.



8. Annelida stet

Long, thin worm. Dark red colouration, protruding from the sediment

APPENDIX E FAUNAL CATALOGUE



9. Arthropoda - Cancer pagurus OTU0118

Large crab with scalloped edge to the carapace. Large stocky claws with black tips.



10. Arthropoda - Caridea stet. OTU0005

Red to pale pink shrimp, white visible on some appendages. Eyes visible in imagery reflecting light. Unable to identify futher than Caridea due to need for physical specimen.



11. Arthropoda - Cirripedia stet. OTU0152

Encrusting barnacles. Lack of distinguishing features to identify further.



12. Arthropoda - Corystes cassivelaunus OTU0111

Carapace longer than it is wide. Large antennae which are positioned together. Males have long pincer arms, up to double the length of the body, whilst females have shorter ones.

APPENDIX E FAUNAL CATALOGUE



13. Arthropoda - Decapoda stet

Unidentifiable crabs with walking legs, no way to identify further.



14. Arthropoda - Ebalia stet

Diamond shaped carapace, with stocky front chelipeds.



15. Arthropoda - Galatheoidea stet

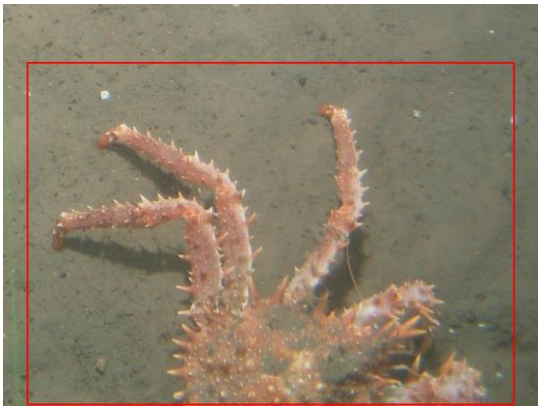
Squat lobster with large front claws that extend to twice the body length of the crab. Short body and pointed rostrum.



16. Arthropoda - Liocarcinus depurator

Swimming crab with last section of hind legs flattened to form a paddle. The paddle has a purplish hue. Some white dots on the top of the carapace forming a semicircle each side of the shell.

APPENDIX E FAUNAL CATALOGUE



17. Arthropoda - Lithodes maja

Large crab with a well-calcified and almost circular carapace with a well defined rim of irregular spines across the whole surface of the crab. Fifth legs are small and hidden. Shell may be light red to brown. May be hidden under hard substrate.



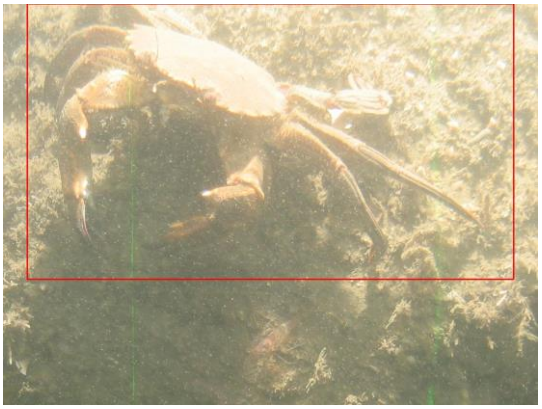
18. Arthropoda - Macropodia stet

Small spider crab with long thin legs. Legs behind the claws are large and often spread wide. Decorated with various fauna to give a fluffy appearance.



19. Arthropoda - Munida rugosa

Squat lobster. Pink to red in colour. Pincers and legs white tipped, with long claws. Water depth indicates rugosa and not sarsi.



20. Arthropoda - Necora puber

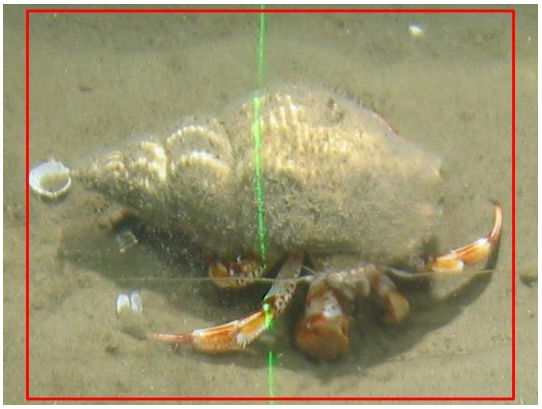
Swimming crab with fine velvety texture and red eyes.

APPENDIX E FAUNAL CATALOGUE



21. Arthropoda - Nephrops norvegicus OTU0120

Long, pale orange carapace with long spiny rostrum at the front. Long, slender claws with characterised longitudinal spiny ridges.



22. Arthropoda - Paguroidea stet

Hermit crabs living in gastropod shells. Pale red, pink, orange. Hermit crabs will only be identified to Paguroidea, no further identification is required (except for Pagurus prideaux).



23. Arthropoda - Pagurus prideaux OTU0097

Orange hermit crab. Adults often live in association with the cloak anemone, Calliactis palliata.



24. Arthropoda - Porcellanidae stet

Crab with large claws and flattened body.

APPENDIX E FAUNAL CATALOGUE



25. Bryozoa - Flustridae stet. OTU0124

Typically a bushy clump with broad lobed fronds. Flustra and Securiflustra not distinguished between.



26. Bryozoa - Reteporella beaniana OTU0010

White lacy looking bryozoa with lattice like folded sheet appearance.



27. Chordata - Actinopterygii indet. 01

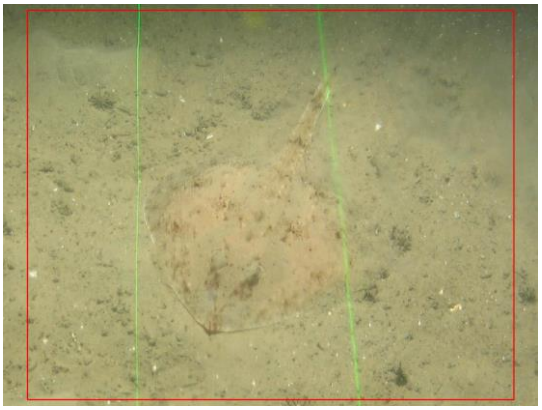
Unidentified fish with long, thin, tapering body and large eyes.



28. Chordata - Agonus cataphractus OTU0006

Dull brown and paler on the back with banding pattern. Covered in hard bony plates

APPENDIX E FAUNAL CATALOGUE



29. Chordata - Amblyraja radiata OTU0129

Rhomboid in shape. Snout short. Tail shorter than disc.Dorsum light brown with irregular scattered dark blotches.



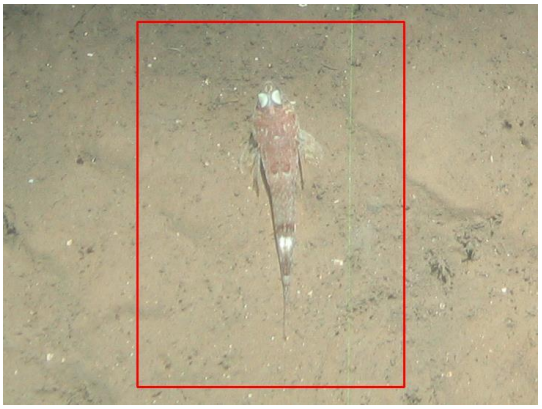
30. Chordata - Ammodytidae stet

Long slender silver fish, pointed snout and small head compared to body. Unable to identify further due to lack of distinguishing features in imagery.



31. Chordata - Ascidiacea indet. 01

Yellow tunicate with two siphons attached to hard substrate.



32. Chordata - Callionymus lyra

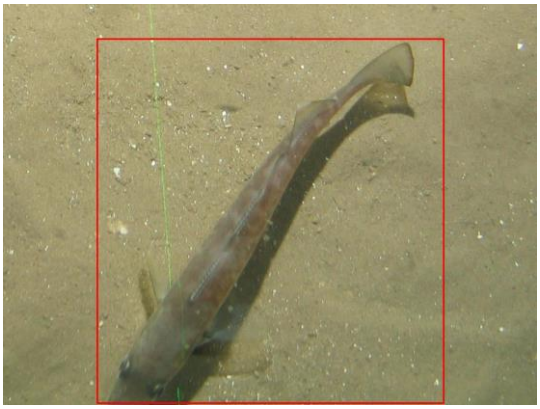
Large head and pectoral fins, tapering to a narrow tail. Banding colouration down the body. Eyes on the top of the head.

APPENDIX E FAUNAL CATALOGUE



33. Chordata - Chelidonichthys cuculus

Dark reddish/brown in colour. Three 'fingers' visible infront of the pectoral fins. Shiny lateral line spines visible from above.



34. Chordata - Gadidae indet. GL0001 OTU0163

Narrow fish with pale colouration. Three dorsal fins visible. Not able to identify further due to a lack of characteristic features



35. Chordata - Glyptocephalus cynoglossus

Right eyed flat fish. Lateral line is relatively straight. Some specimens have black tips to the pectoral fins.



36. Chordata - Lophius piscatorius

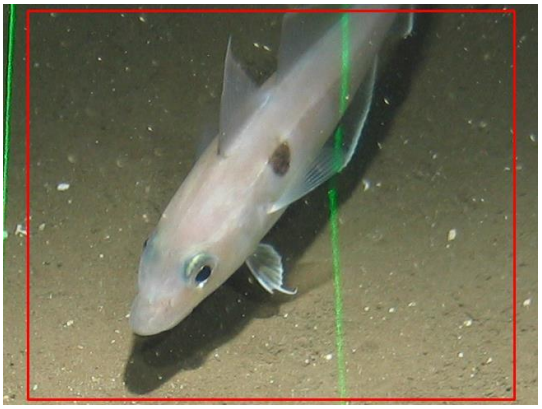
Very large, broad, flat head. Frills around the edge of the mouth and body to aid in camouflage.

APPENDIX E FAUNAL CATALOGUE



37. Chordata - Lotidae stet

Long slim fish with rounded pectoral fins and a long dorsal fin extending the full length of the body. Large rounded eyes with two barbels. Black spots are dotted along the dorsal fin.



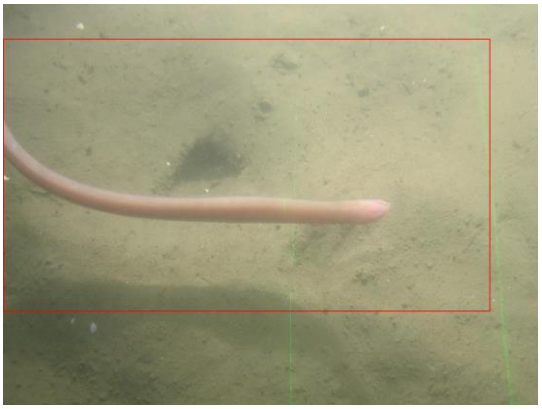
38. Chordata - Melanogrammus aeglefinus OTU0067

Three dorsal fins with first fin high and pointed. Grey in colour with black dot below the lateral line and behind the pectoral fin.



39. Chordata - Merlangius merlangus

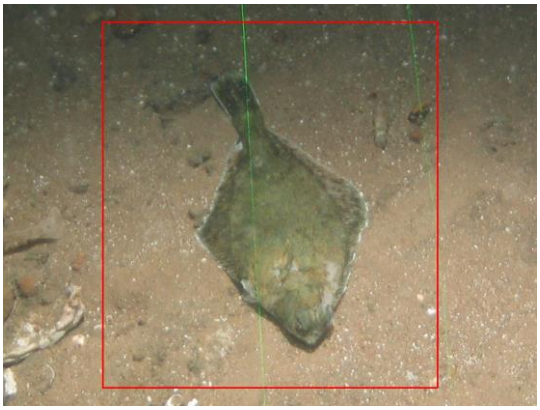
Elongated body with small head and pointed snout. Three dorsal fins and pale pink hue



40. Chordata - Myxine glutinosa OTU0099

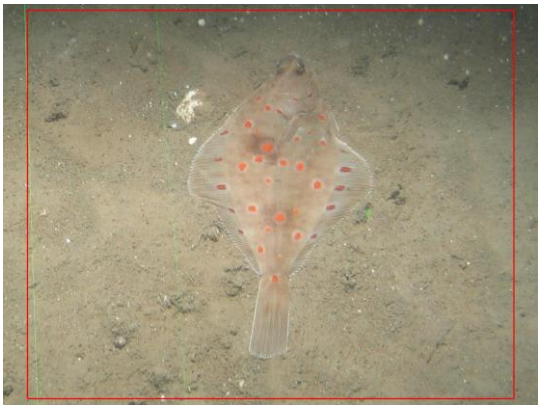
Long slender pale pink to white coloured eel-like fish. These fish may be seen swimming along the benthos or they may be buried in the sediment. May be able to see small barbels around mouth area.

APPENDIX E FAUNAL CATALOGUE



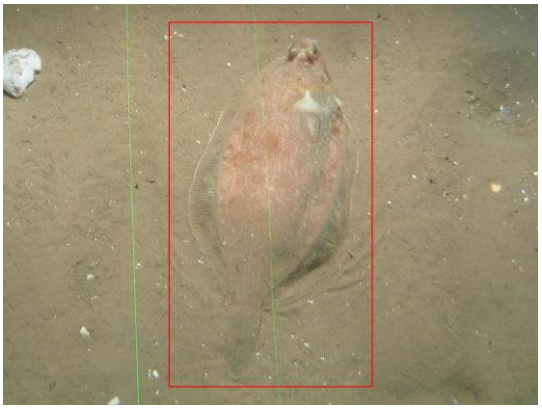
41. Chordata - Platichthys flesus

Right eyed flat fish. Dorsal and anal fins triangular in appearance with rounded edge to the tail. Colour variable.



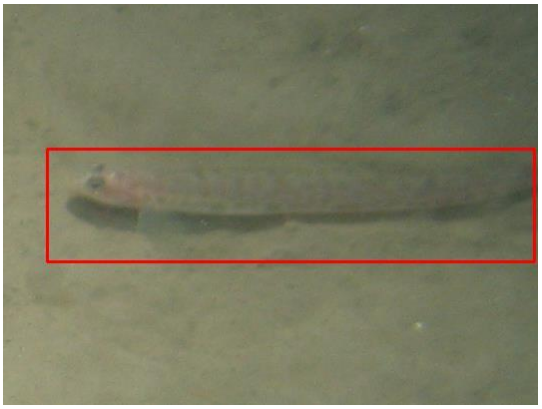
42. Chordata - Pleuronectes platessa OTU0131

Right-eyed flatfish. Characteristic reddish/brown spots on a brown background.



43. Chordata - Pleuronectiformes stet. OTU0167

Right-eyed flatfish on the sediment. Identifying features not visible.



44. Chordata - Stichaeidae indet. 01

Long slender fish. Mottled colouration, eyes on the top of it's head.

APPENDIX E FAUNAL CATALOGUE



45. Chordata - Triglidae stet

Red/pink fish with large pectoral fins. Square robust head.



46. Cnidaria - Actinaria indet. GL005 OTU0220

Small anemone with short tentacles attached to hard substrate. Pinkish Orange in colour. No further features visible.



47. Cnidaria - Actinauge richardi

Anemone with large bulbous column and short, often white tentacles. Typically found in muddy sediments, where the base may contain a ball of mud, anchoring it to the seabed.



48. Cnidaria - Actiniaria stet. OTU0158

Anemone with no defining features, tentacles inverted. Unable to identify further.

APPENDIX E FAUNAL CATALOGUE



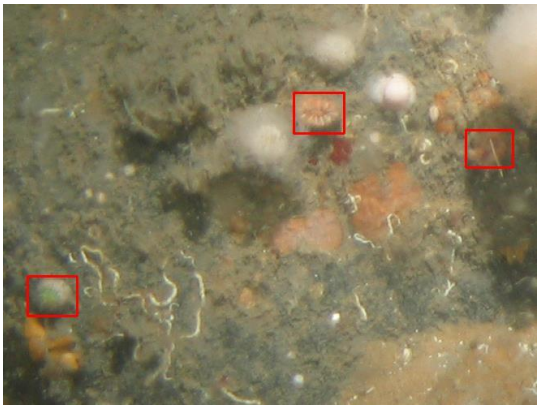
49. Cnidaria - Alcyonium digitatum OTU0102

Thick fleshy masses of irregular shape, typically of stout, finger-like lobes. Can occur in many colour forms including white or orange but may appear red or brown. Polyps may be retracted giving a leathery appearance or feeding giving a fluffy look.



50. Cnidaria - Calliactis palliata OTU0101

Cloak anemone associated with the hermit crab Pagarus prideaux.



51. Cnidaria - Caryophyllia stet. OTU0243

Cup coral, oval in shape with a zigzag pattern around the mouth. Tentacles not visible.



52. Cnidaria - Ceriantharia stet. OTU0024

Tube-dwelling burrowing anemone, thin transparent tentacles.

APPENDIX E FAUNAL CATALOGUE



53. Cnidaria - Epizoanthus papillosus inc. OTU0103

Colonial anemone. Polyps variable in size with column colour blending with the substrate.



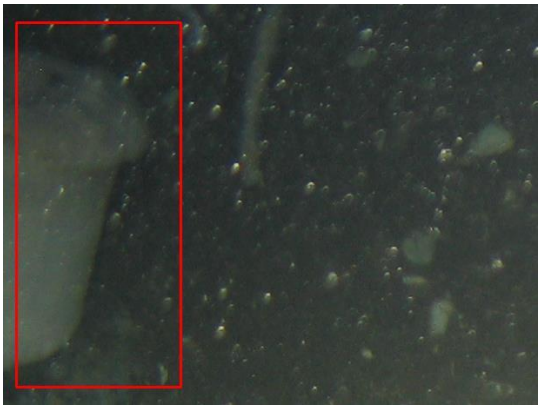
54. Cnidaria - Hydractinia echinata inc. OTU0104

Crust or mat growing on a shell, small polyps growing close to the shell, white to pale pink in colour. Often associated with gastropod shells occupied by hermit crabs.



55. Cnidaria - Hydrozoa stet

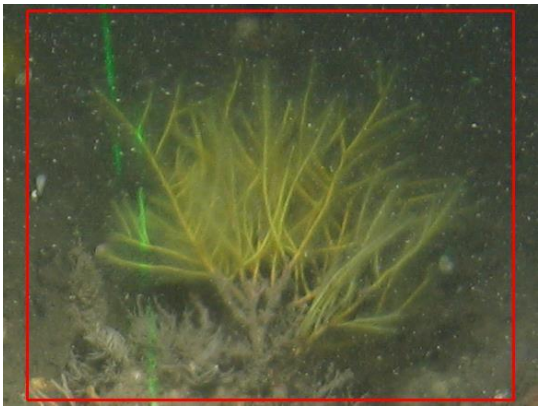
Dark patches of hydrozoa with a fluffy looking appearance. Seems to be attached at one central point



56. Cnidaria - Metridiidae stet

Long smooth column with dense, plume-like tentacles sometimes partically retracted. Unable to identify further due to difficulty in ID to species.

APPENDIX E FAUNAL CATALOGUE



57. Cnidaria - Nemertesia stet

Colonial hydroid with thick erect stems coming from a central point. The stems are typically pale in colour with a fluffy appearance.



58. Cnidaria - Pennatula phosphorea inc. GL0087

Stout red sea pen with white tips shaped like a fleshy feather.



59. Cnidaria - Thuiaria thuja OTU0182

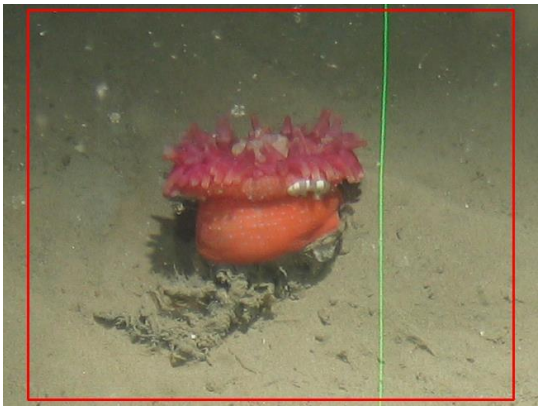
Bottlebrush like hydroid with central stalk and branching and bushy appearance.



60. Cnidaria - Tubularia indivisa inc

Stemmed hydroids with a polyp at the tip. Tough stem that may cluster together and form a colony base. The polyps are pale pink and consists of a central circlet of tentacles.

APPENDIX E FAUNAL CATALOGUE



61. Cnidaria - Urticina eques OTU0139

Large anemone with short tentacles, sometimes banded. Smooth column without detritus attached.



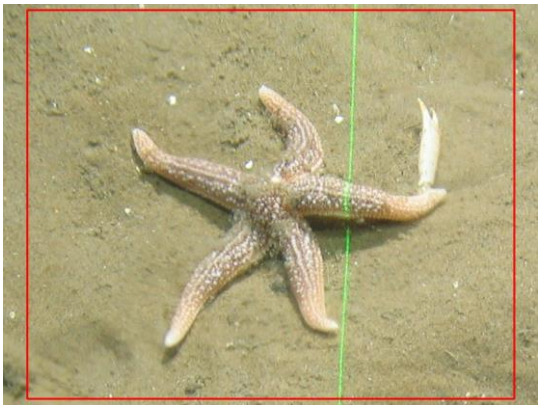
62. Cnidaria - Urticina stet. OTU0107

Large anemone with short tentacles, sometimes banded. Unable to identify to species due to not being about to see the column.



63. Cnidaria - Virgularia stet. OTU0031

Slender sea pen. Leaves small. Colour off white to creamy yellow. Identification of species from imagery difficult so leave at Genus.



64. Echinodermata - Asterias rubens OTU0088

Five armed starfish with orange colour and white/cream spines on the upper surface.

APPENDIX E FAUNAL CATALOGUE



65. Echinodermata - Asteroidea stet

Small starfish. Unable to identify further.



66. Echinodermata - Astropecten irregularis OTU0108

Five armed star fish with short, stocky arms evenly distributed. Pale orange to tan in colour.



67. Echinodermata - Crossaster papposus OTU0219

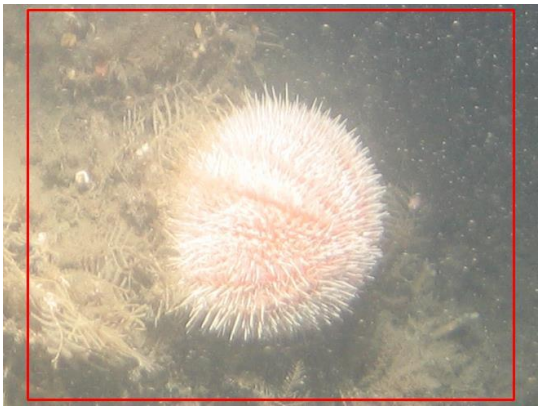
10 to 12 arms around a large central disc. Often highly patterned . Covered in small but visible spines.



68. Echinodermata - Echinocardium cordatum OTU0109

A yellow brown heart shaped urchin with dense spines, mostly directed backwards. Typically buried in soft sediment

APPENDIX E FAUNAL CATALOGUE



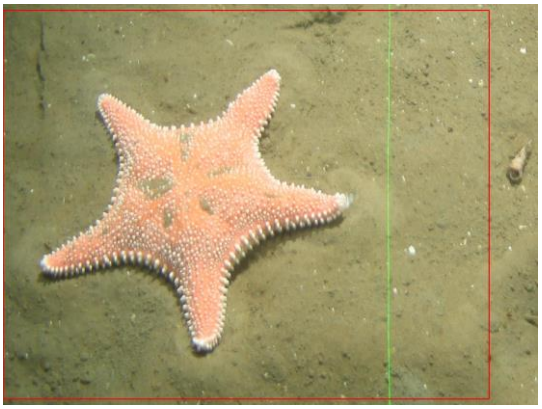
69. Echinodermata - Echinus esculentus inc. OTU0113

Spherical urchin, slightly flattened on the top and bottom. Shell is pink in colouration with white or pink spines.



70. Echinodermata - Henricia stet. OTU0036

Relatively small with five arms. Variety of colours occur: red, yellow, orange, pink. Arm tips may be pointing upwards. Colour variations within a project should not be tagged as separate morphotypes.



71. Echinodermata - Hippasteria phrygiana

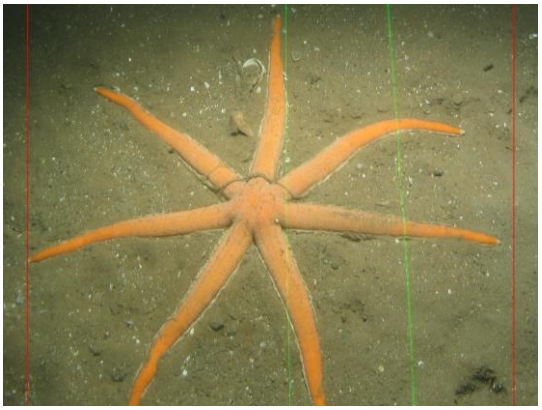
Pink starfish with five short arms. white granules cover the upper surface. Arms slightly curve upwards at the tips.



72. Echinodermata - Holothuroidea indet. 01

Vivid red holothurian with short appendages.

APPENDIX E FAUNAL CATALOGUE



73. Echinodermata - Luidia ciliaris OTU0190

Seven armed starfish. Pale orange in colour, with white spines on the margins of the legs.



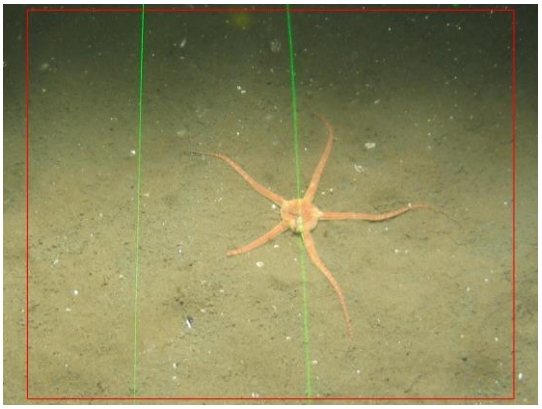
74. Echinodermata - Luidia sarsii OTU0090

Starfish with five gently tapering arms and is typically sand coloured or pale orange. This starfish has a band of white marginal spines along each leg.



75. Echinodermata - Ophiothrix fragilis

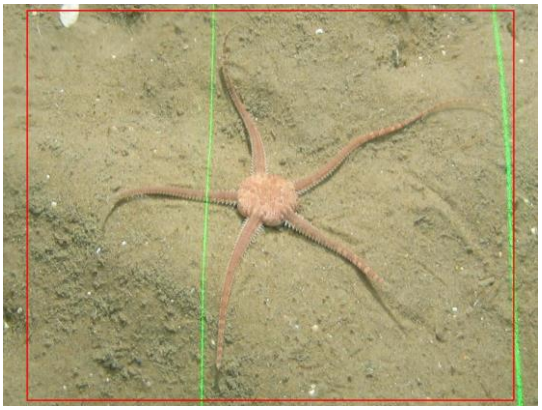
Central disc is about 1cm across with 5 arms about 5 times as long. The slender tapering arms have 7 spines on each segment giving them a spiky/fluffy appearance. Large range of colours.



76. Echinodermata - Ophiura albida inc. OTU0142

Large central disk with long tapering arms. Bristles extend from the underside of each arm, orange colouration with white spots where to arms join the central disc.

APPENDIX E FAUNAL CATALOGUE



77. Echinodermata - Ophiura ophiura inc. OTU0197

Cicular central disc and thin arms, with orange to pink colouration and bristles visible on the arms near the base.



78. Echinodermata - Ophiuroidea stet

Indistinct brittlestars. Only able to see arms with no distinguising features.



79. Echinodermata - Porania pulvillus

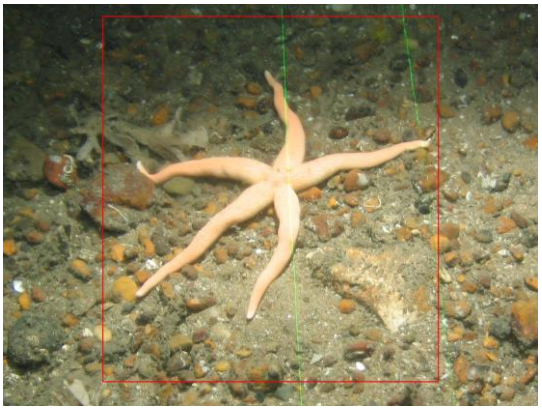
Red cushion star, with short arms, plump stature and velvet like appearance. Usually bright red with soft translucent projections along its back, and cream coloured markings



80. Echinodermata - Spatangus purpureus OTU0173

Large urchin typically found buried in soft sediment. Typical to see a purple colouration with a heary shaped appearance.

APPENDIX E FAUNAL CATALOGUE



81. Echinodermata - Stichastrella rosea

This starfish has five long stiff tapering arms with regular linear pattern of rounded plates on dorsal surface, orange in colour sometimes brighter



82. Faunal turf

Biological material growing on available substrates Indistinguishable between hydrozoa and bryozoa.



83. Mollusca - Arctica islandica - siphon

Orange mantle, two distinct siphons, side by side resembling a pig snout.



84. Mollusca - Bivalvia siphons

Bivalve siphons visible at the sediment surface.

APPENDIX E FAUNAL CATALOGUE



85. Mollusca - Buccinidae stet. 01

Large conical spiralled shell and white foot.



86. Mollusca - eggs

Mollusc eggs with a distinctive ring shape.



87. Mollusca - Gastropoda stet

Poor quality and non descript gastropods.



88. Mollusca - Loliginidae stet

Small squid. Unable to identify further due to image quality.

APPENDIX E FAUNAL CATALOGUE



89. Mollusca - Modiolus modiolus

Dark brown mussel shell with orange flesh often buried in the sediment.



90. Mollusca - Naticidae stet. GL0001 OTU0092

Coiled shell with a large food which when fully extended wraps around a large part of the shelll.



91. Mollusca - Nudibranchia indet. 01

Flat oval nudibranch with pale colouration and a pink middle.



92. Mollusca - Nudibranchia indet. 02

Flat elongated Nudibranch, pink in colour with pink tentacles and white tips

APPENDIX E FAUNAL CATALOGUE



93. Mollusca - Pecten maximus

Shell has a very curved outer edge with ribs radiating out from the centre of the hinge. Ridges and hollows of equal size. The 'ears' on the hinge ar of equal size and triangular. When the shell is open, there are long tentacles which may be seen. Adults capable of free-swimming.



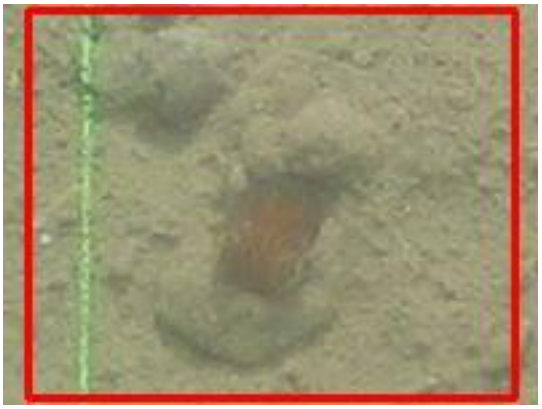
94. Mollusca - Pectinidae stet. OTU0136

Scallop with little identifying features. Fan shaped valves with ears on either side of the shell



95. Mollusca - Scaphopoda stet. OTU0093

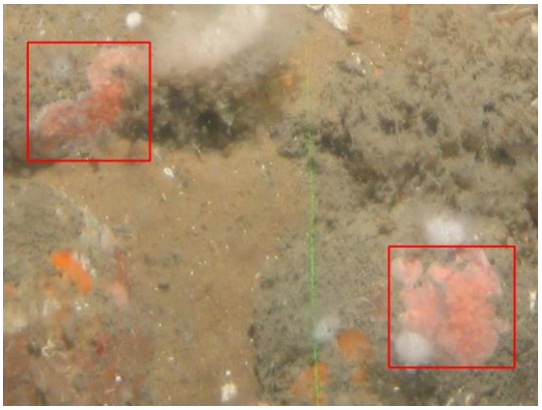
Tusk-shaped white shell typically seen lying on the benthos. Tapering shell with one end thicker than the other and the end of the shell ends with a blunt straight edge.



96. Mollusca - Sepiida stet

Small bobtail squid. Round mantle with eight arms and two tentacles. Large eyes in relation to body size. Often sit on or in sediment.

APPENDIX E FAUNAL CATALOGUE



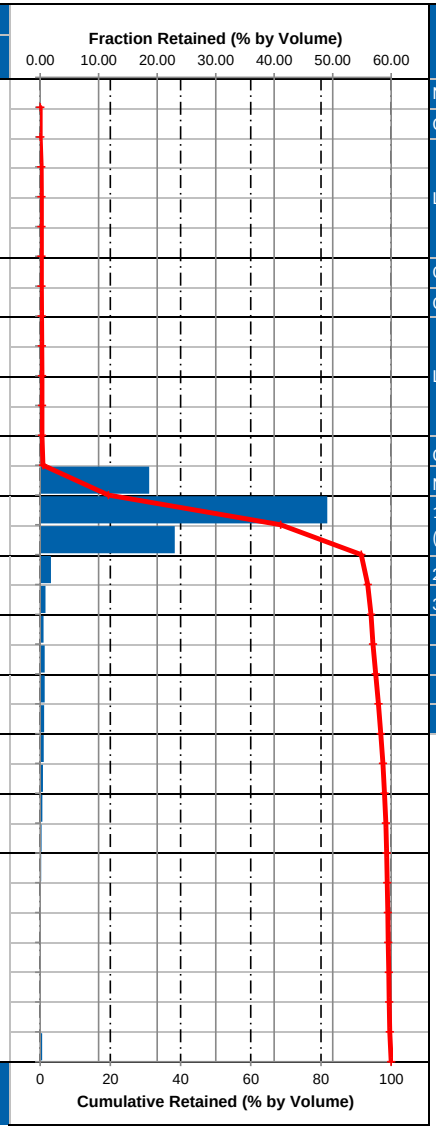
97. Porifera - Hard Substrate Sponges

Globular rounded sponge with large oscules. Colouration is orange/yellow/brown. Unable to identify further.

APPENDIX F PARTICLE SIZE ANALYSIS

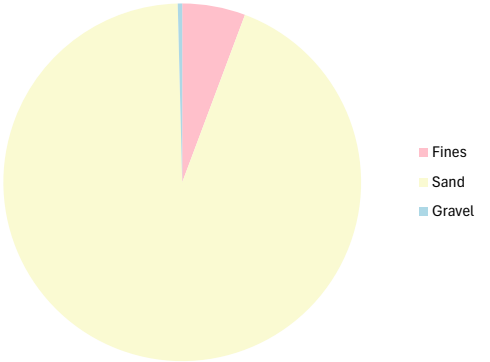
APPENDIX F PARTICLE SIZE ANALYSIS

ENV001				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.26	0.26	Pebble
8000.00	-3.00	0.06	0.32	
5656.85	-2.50	0.00	0.32	
4000.00	-2.00	0.02	0.35	
2828.43	-1.50	0.01	0.36	Granule
2000.00	-1.00	0.04	0.40	
1414.21	-0.50	0.06	0.46	Very coarse sand
1000.00	0.00	0.04	0.50	
707.11	0.50	0.00	0.50	Coarse sand
500.00	1.00	0.00	0.50	
353.55	1.50	0.26	0.77	Medium sand
250.00	2.00	18.63	19.40	
176.78	2.50	49.08	68.48	Fine sand
125.00	3.00	23.00	91.48	
88.39	3.50	1.83	93.31	Very fine sand
62.50	4.00	0.92	94.23	
44.19	4.50	0.59	94.82	Coarse silt
31.25	5.00	0.78	95.60	
22.10	5.50	0.76	96.36	Medium silt
15.63	6.00	0.67	97.03	
11.05	6.50	0.60	97.63	Fine silt
7.81	7.00	0.49	98.12	
5.52	7.50	0.36	98.48	Very fine silt
3.91	8.00	0.25	98.73	
2.76	8.50	0.16	98.89	
1.95	9.00	0.12	99.02	
1.38	9.50	0.14	99.15	
0.98	10.00	0.15	99.30	Clay
0.69	10.50	0.15	99.45	
0.49	11.00	0.14	99.59	
<0.49	>11	0.35	100.00	



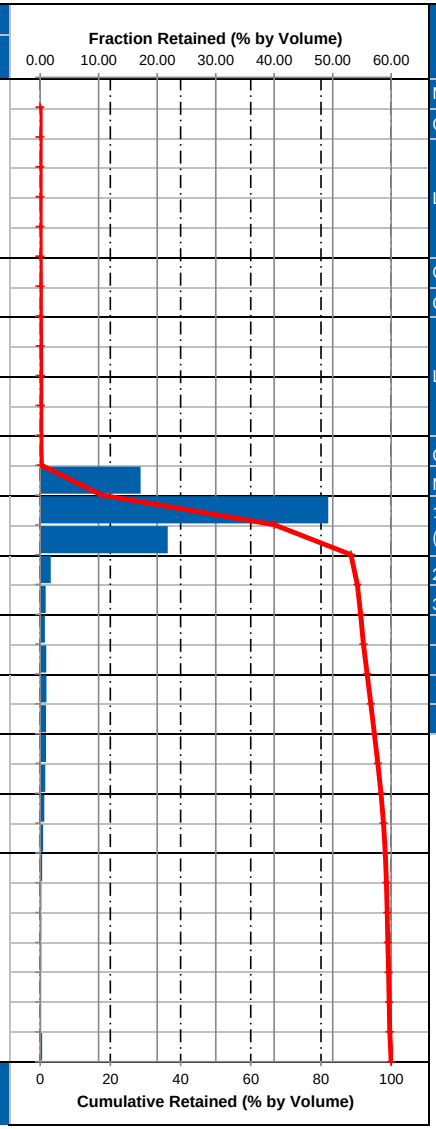
Method of Moments			
Geometric	Mean (µm)	172.89	Wentworth:
Logarithmic	Mean (Phi)	2.53	Fine sand
	Sorting	1.25	Poor
	Skewness	3.51	Very fine
	Kurtosis	25.33	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	195.79	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	0.69	Moderately well
	Skewness	0.33	Very fine
	Kurtosis	2.10	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.31	201.42	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.70%
EUNIS Folk	Sand and muddy sand	Sand	93.80%
Distribution	Unimodal	Gravel	0.40%



APPENDIX F PARTICLE SIZE ANALYSIS

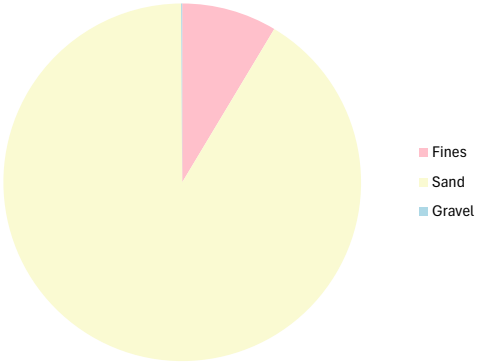
ENV002				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.04	Granule
2000.00	-1.00	0.03	0.08	
1414.21	-0.50	0.06	0.13	Very coarse sand
1000.00	0.00	0.07	0.20	
707.11	0.50	0.00	0.20	Coarse sand
500.00	1.00	0.00	0.20	
353.55	1.50	0.13	0.33	Medium sand
250.00	2.00	17.15	17.48	
176.78	2.50	49.25	66.73	Fine sand
125.00	3.00	21.80	88.53	
88.39	3.50	1.82	90.35	Very fine sand
62.50	4.00	0.95	91.30	
44.19	4.50	0.80	92.09	Coarse silt
31.25	5.00	1.05	93.14	
22.10	5.50	1.06	94.20	Medium silt
15.63	6.00	1.01	95.22	
11.05	6.50	1.01	96.23	Fine silt
7.81	7.00	0.88	97.10	
5.52	7.50	0.70	97.81	Very fine silt
3.91	8.00	0.51	98.32	
2.76	8.50	0.32	98.64	Clay
1.95	9.00	0.22	98.86	
1.38	9.50	0.20	99.05	
0.98	10.00	0.20	99.25	
0.69	10.50	0.18	99.43	
0.49	11.00	0.16	99.59	
<0.49	>11	0.35	100.00	



Method of Moments			
Geometric	Mean (µm)	156.18	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.39	Poor
	Skewness	3.49	Very fine
	Kurtosis	17.48	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	190.20	Wentworth:
Logarithmic	Mean (Phi)	2.39	Fine sand
	Sorting	0.88	Moderate
	Skewness	0.44	Very fine
	Kurtosis	2.84	Very leptokurtic

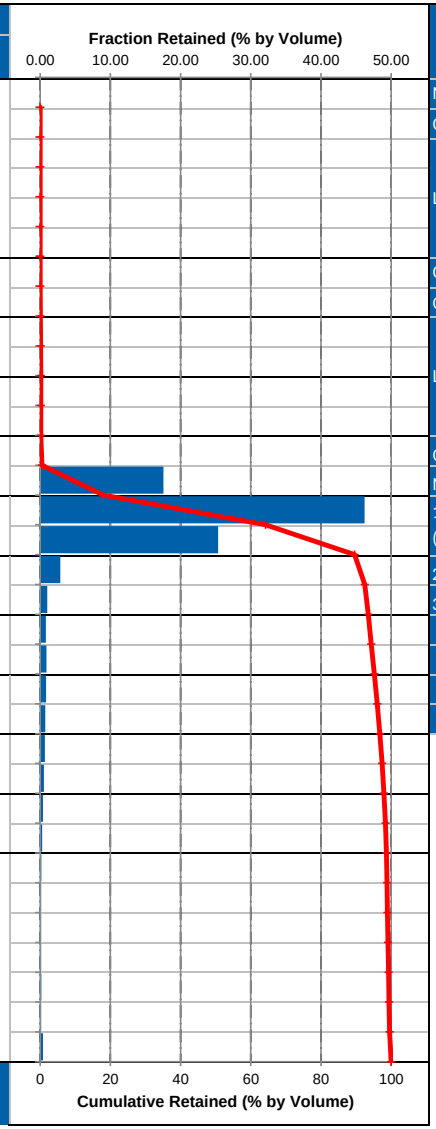
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.33	198.86	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.60%
EUNIS Folk	Sand and muddy sand	Sand	91.20%
Distribution	Bimodal	Gravel	0.10%



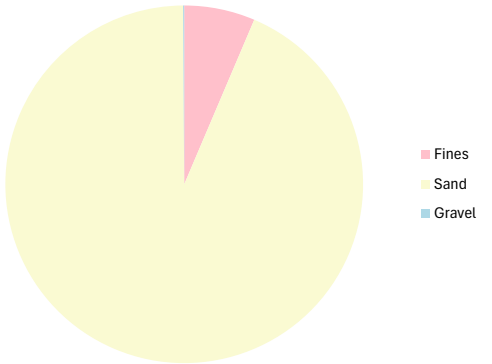
APPENDIX F PARTICLE SIZE ANALYSIS

ENV003				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.04	0.05	
1414.21	-0.50	0.06	0.12	Very coarse sand
1000.00	0.00	0.06	0.18	
707.11	0.50	0.00	0.18	Coarse sand
500.00	1.00	0.00	0.18	
353.55	1.50	0.30	0.48	Medium sand
250.00	2.00	17.54	18.02	
176.78	2.50	46.21	64.24	Fine sand
125.00	3.00	25.36	89.59	
88.39	3.50	2.88	92.47	Very fine sand
62.50	4.00	1.01	93.49	
44.19	4.50	0.80	94.29	Coarse silt
31.25	5.00	0.89	95.18	
22.10	5.50	0.84	96.02	Medium silt
15.63	6.00	0.74	96.76	
11.05	6.50	0.66	97.42	Fine silt
7.81	7.00	0.54	97.95	
5.52	7.50	0.40	98.35	Very fine silt
3.91	8.00	0.27	98.63	
2.76	8.50	0.17	98.80	Clay
1.95	9.00	0.13	98.94	
1.38	9.50	0.14	99.08	
0.98	10.00	0.16	99.23	
0.69	10.50	0.16	99.39	
0.49	11.00	0.15	99.54	
<0.49	>11	0.39	100.00	



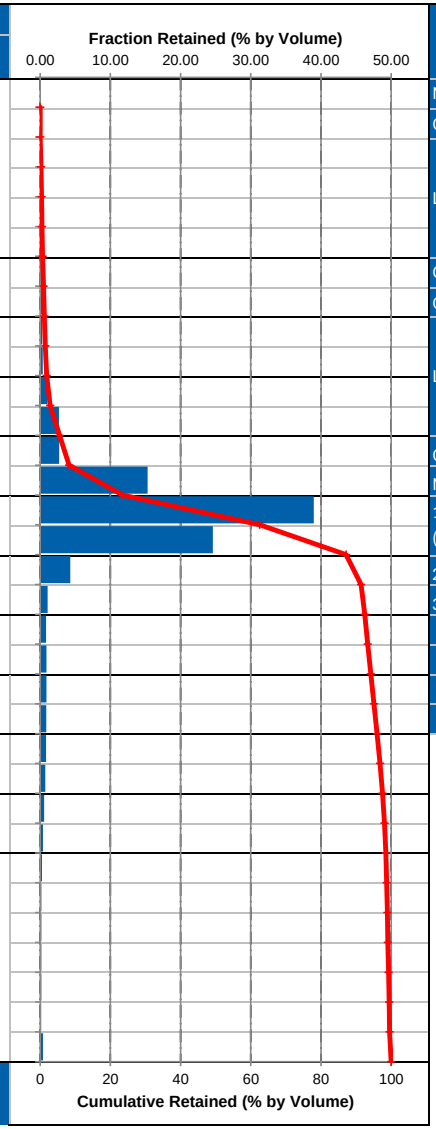
Method of Moments			
Geometric	Mean (µm)	163.97	Wentworth:
Logarithmic	Mean (Phi)	2.60	Fine sand
	Sorting	1.24	Poor
	Skewness	4.18	Very fine
	Kurtosis	25.03	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	190.43	Wentworth:
Logarithmic	Mean (Phi)	2.39	Fine sand
	Sorting	0.73	Moderate
	Skewness	0.35	Very fine
	Kurtosis	2.11	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.35	196.70	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.40%
EUNIS Folk	Sand and muddy sand	Sand	93.40%
Distribution	Unimodal	Gravel	0.10%



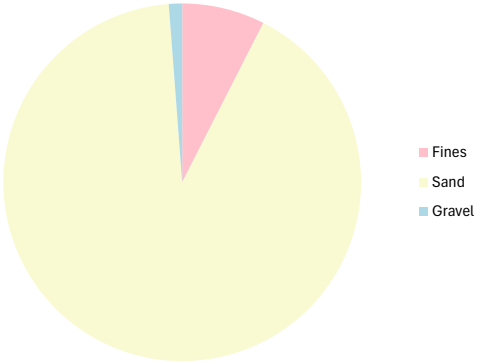
APPENDIX F PARTICLE SIZE ANALYSIS

ENV004				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.25	0.25	
8000.00	-3.00	0.14	0.39	
5656.85	-2.50	0.12	0.51	
4000.00	-2.00	0.19	0.70	
2828.43	-1.50	0.24	0.94	Granule
2000.00	-1.00	0.25	1.19	
1414.21	-0.50	0.29	1.48	Very coarse sand
1000.00	0.00	0.37	1.84	
707.11	0.50	1.02	2.86	Coarse sand
500.00	1.00	2.67	5.53	
353.55	1.50	2.69	8.22	Medium sand
250.00	2.00	15.31	23.53	
176.78	2.50	38.99	62.51	Fine sand
125.00	3.00	24.61	87.12	
88.39	3.50	4.30	91.42	Very fine sand
62.50	4.00	1.06	92.48	
44.19	4.50	0.82	93.31	Coarse silt
31.25	5.00	0.90	94.21	
22.10	5.50	0.90	95.11	Medium silt
15.63	6.00	0.87	95.98	
11.05	6.50	0.85	96.83	Fine silt
7.81	7.00	0.72	97.55	
5.52	7.50	0.56	98.10	Very fine silt
3.91	8.00	0.39	98.49	
2.76	8.50	0.24	98.73	Clay
1.95	9.00	0.17	98.90	
1.38	9.50	0.16	99.06	
0.98	10.00	0.17	99.24	
0.69	10.50	0.17	99.40	
0.49	11.00	0.15	99.55	
<0.49	>11	0.38	100.00	



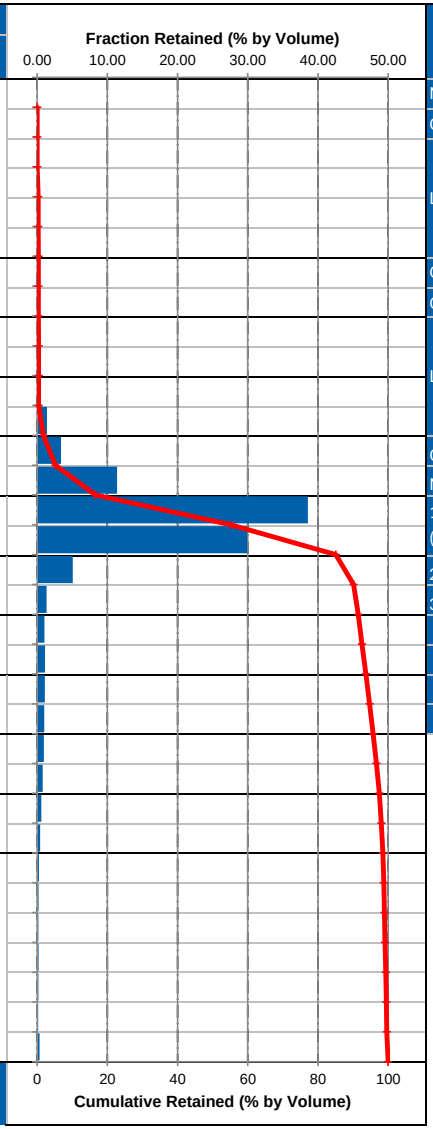
Method of Moments			
Geometric	Mean (µm)	173.83	Wentworth:
Logarithmic	Mean (Phi)	2.52	Fine sand
	Sorting	1.50	Poor
	Skewness	2.18	Very fine
	Kurtosis	15.08	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	197.05	Wentworth:
Logarithmic	Mean (Phi)	2.34	Fine sand
	Sorting	0.98	Moderate
	Skewness	0.19	Fine
	Kurtosis	2.53	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.34	197.58	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	7.50%
EUNIS Folk	Sand and muddy sand	Sand	91.30%
Distribution	Unimodal	Gravel	1.20%



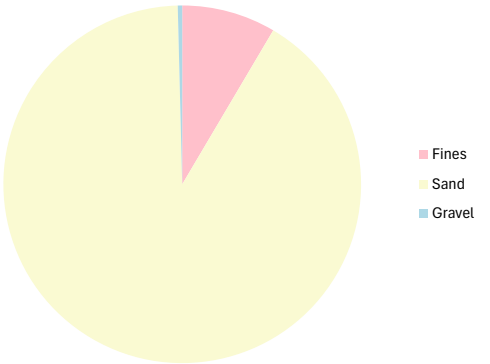
APPENDIX F PARTICLE SIZE ANALYSIS

ENV005				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.26	0.26	
5656.85	-2.50	0.05	0.31	
4000.00	-2.00	0.02	0.32	
2828.43	-1.50	0.03	0.35	Granule
2000.00	-1.00	0.01	0.36	
1414.21	-0.50	0.03	0.39	Very coarse sand
1000.00	0.00	0.03	0.41	
707.11	0.50	0.00	0.41	Coarse sand
500.00	1.00	1.39	1.80	
353.55	1.50	3.40	5.20	Medium sand
250.00	2.00	11.39	16.59	
176.78	2.50	38.57	55.16	Fine sand
125.00	3.00	29.93	85.09	
88.39	3.50	5.06	90.15	Very fine sand
62.50	4.00	1.33	91.49	
44.19	4.50	1.04	92.52	Coarse silt
31.25	5.00	1.10	93.63	
22.10	5.50	1.08	94.71	Medium silt
15.63	6.00	1.01	95.72	
11.05	6.50	0.95	96.67	Fine silt
7.81	7.00	0.78	97.45	
5.52	7.50	0.60	98.05	Very fine silt
3.91	8.00	0.42	98.48	
2.76	8.50	0.27	98.74	Clay
1.95	9.00	0.18	98.93	
1.38	9.50	0.18	99.11	
0.98	10.00	0.19	99.29	
0.69	10.50	0.17	99.47	
0.49	11.00	0.15	99.61	
<0.49	>11	0.33	100.00	



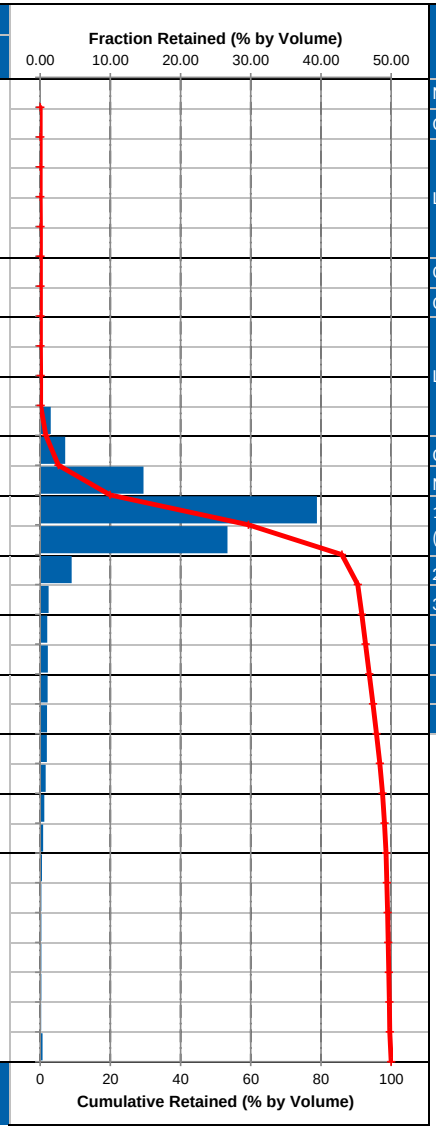
Method of Moments			
Geometric	Mean (µm)	154.12	Wentworth:
Logarithmic	Mean (Phi)	2.69	Fine sand
	Sorting	1.40	Poor
	Skewness	2.82	Very fine
	Kurtosis	16.44	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	181.36	Wentworth:
Logarithmic	Mean (Phi)	2.46	Fine sand
	Sorting	0.88	Moderate
	Skewness	0.31	Very fine
	Kurtosis	2.37	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.16	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.50%
EUNIS Folk	Sand and muddy sand	Sand	91.10%
Distribution	Unimodal	Gravel	0.40%



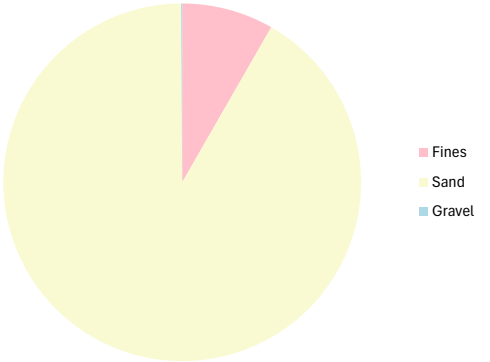
APPENDIX F PARTICLE SIZE ANALYSIS

ENV006				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.01	0.05	
2828.43	-1.50	0.02	0.06	Granule
2000.00	-1.00	0.01	0.07	
1414.21	-0.50	0.01	0.08	Very coarse sand
1000.00	0.00	0.02	0.10	
707.11	0.50	0.00	0.10	Coarse sand
500.00	1.00	1.50	1.60	
353.55	1.50	3.57	5.16	Medium sand
250.00	2.00	14.71	19.87	
176.78	2.50	39.43	59.30	Fine sand
125.00	3.00	26.68	85.98	
88.39	3.50	4.49	90.47	Very fine sand
62.50	4.00	1.20	91.67	
44.19	4.50	1.01	92.68	Coarse silt
31.25	5.00	1.09	93.77	
22.10	5.50	1.05	94.82	Medium silt
15.63	6.00	0.97	95.79	
11.05	6.50	0.94	96.73	Fine silt
7.81	7.00	0.78	97.51	
5.52	7.50	0.60	98.11	Very fine silt
3.91	8.00	0.42	98.52	
2.76	8.50	0.26	98.78	Clay
1.95	9.00	0.18	98.96	
1.38	9.50	0.17	99.13	
0.98	10.00	0.18	99.31	
0.69	10.50	0.17	99.47	
0.49	11.00	0.14	99.62	
<0.49	>11	0.33	100.00	



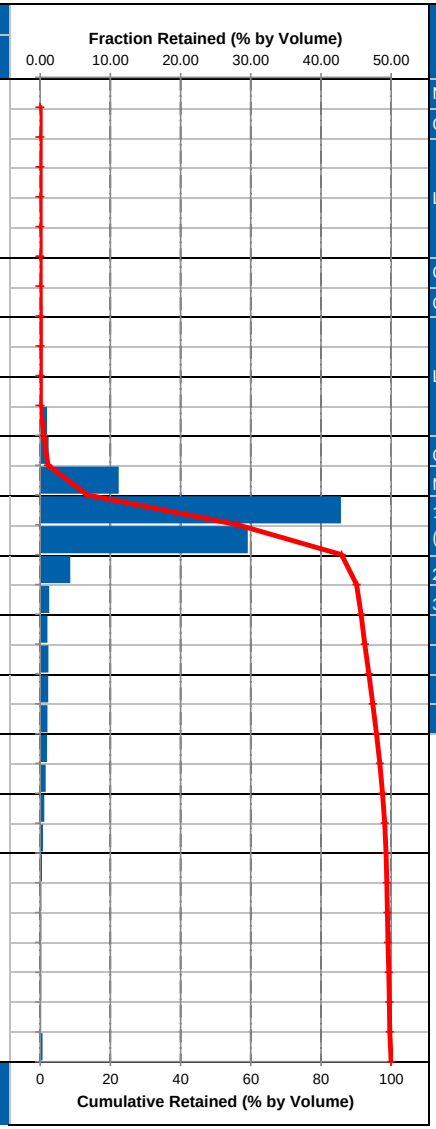
Method of Moments			
Geometric	Mean (µm)	157.94	Wentworth:
Logarithmic	Mean (Phi)	2.66	Fine sand
	Sorting	1.37	Poor
	Skewness	3.27	Very fine
	Kurtosis	17.25	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	188.88	Wentworth:
Logarithmic	Mean (Phi)	2.40	Fine sand
	Sorting	0.90	Moderate
	Skewness	0.31	Very fine
	Kurtosis	2.31	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.38	191.83	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.30%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

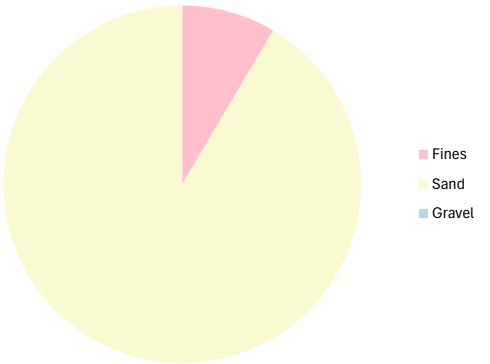
ENV007				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.01	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.02	0.05	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	0.99	1.05	
353.55	1.50	1.19	2.24	Medium sand
250.00	2.00	11.18	13.42	
176.78	2.50	42.84	56.26	Fine sand
125.00	3.00	29.58	85.84	
88.39	3.50	4.30	90.14	Very fine sand
62.50	4.00	1.28	91.41	
44.19	4.50	1.04	92.45	Coarse silt
31.25	5.00	1.17	93.62	
22.10	5.50	1.13	94.75	Medium silt
15.63	6.00	1.04	95.80	
11.05	6.50	0.97	96.77	Fine silt
7.81	7.00	0.78	97.55	
5.52	7.50	0.58	98.14	Very fine silt
3.91	8.00	0.40	98.53	
2.76	8.50	0.25	98.78	Clay
1.95	9.00	0.17	98.95	
1.38	9.50	0.17	99.12	
0.98	10.00	0.18	99.30	
0.69	10.50	0.17	99.46	
0.49	11.00	0.14	99.61	
<0.49	>11	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	150.31	Wentworth:
Logarithmic	Mean (Phi)	2.73	Fine sand
	Sorting	1.33	Poor
	Skewness	3.46	Very fine
	Kurtosis	18.25	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	179.83	Wentworth:
Logarithmic	Mean (Phi)	2.48	Fine sand
	Sorting	0.84	Moderate
	Skewness	0.38	Very fine
	Kurtosis	2.40	Very leptokurtic

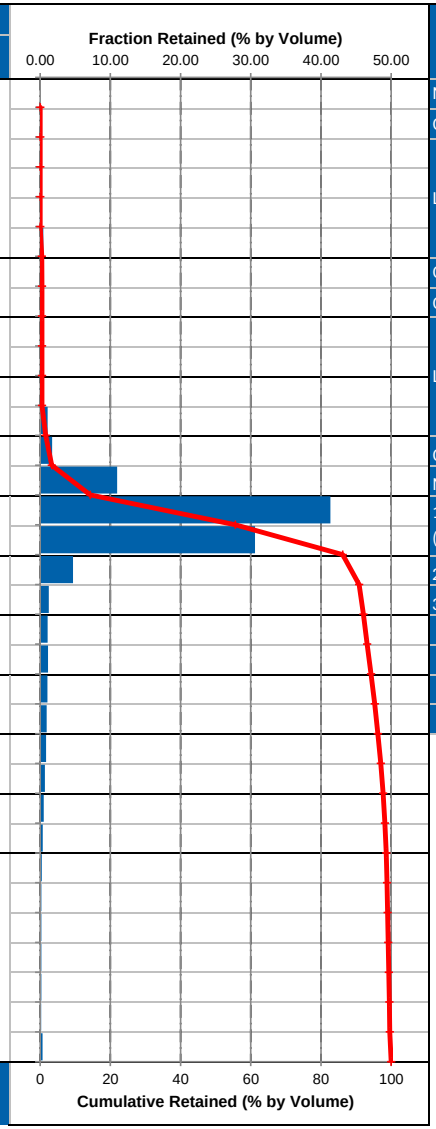
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.96	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.50%
EUNIS Folk	Sand and muddy sand	Sand	91.40%
Distribution	Unimodal	Gravel	0.00%



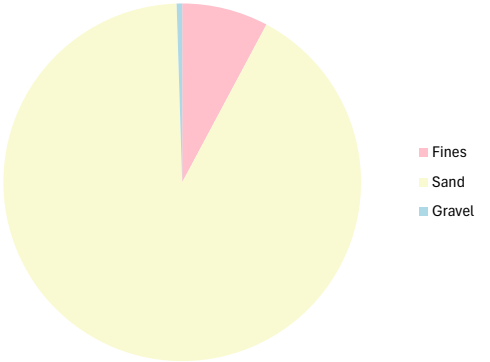
APPENDIX F PARTICLE SIZE ANALYSIS

ENV008				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.45	0.45	
2828.43	-1.50	0.04	0.48	Granule
2000.00	-1.00	0.01	0.49	
1414.21	-0.50	0.01	0.50	Very coarse sand
1000.00	0.00	0.01	0.52	
707.11	0.50	0.00	0.52	Coarse sand
500.00	1.00	1.05	1.57	
353.55	1.50	1.70	3.26	Medium sand
250.00	2.00	10.96	14.22	
176.78	2.50	41.35	55.57	Fine sand
125.00	3.00	30.61	86.18	
88.39	3.50	4.69	90.87	Very fine sand
62.50	4.00	1.23	92.10	
44.19	4.50	1.06	93.15	Coarse silt
31.25	5.00	1.12	94.27	
22.10	5.50	1.03	95.30	Medium silt
15.63	6.00	0.91	96.21	
11.05	6.50	0.83	97.04	Fine silt
7.81	7.00	0.68	97.72	
5.52	7.50	0.51	98.23	Very fine silt
3.91	8.00	0.35	98.58	
2.76	8.50	0.22	98.80	Clay
1.95	9.00	0.16	98.96	
1.38	9.50	0.16	99.13	
0.98	10.00	0.17	99.30	
0.69	10.50	0.16	99.47	
0.49	11.00	0.14	99.61	
<0.49	>11	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	155.09	Wentworth:
Logarithmic	Mean (Phi)	2.68	Fine sand
	Sorting	1.34	Poor
	Skewness	3.10	Very fine
	Kurtosis	18.55	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	180.14	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	0.81	Moderate
	Skewness	0.34	Very fine
	Kurtosis	2.25	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.22	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

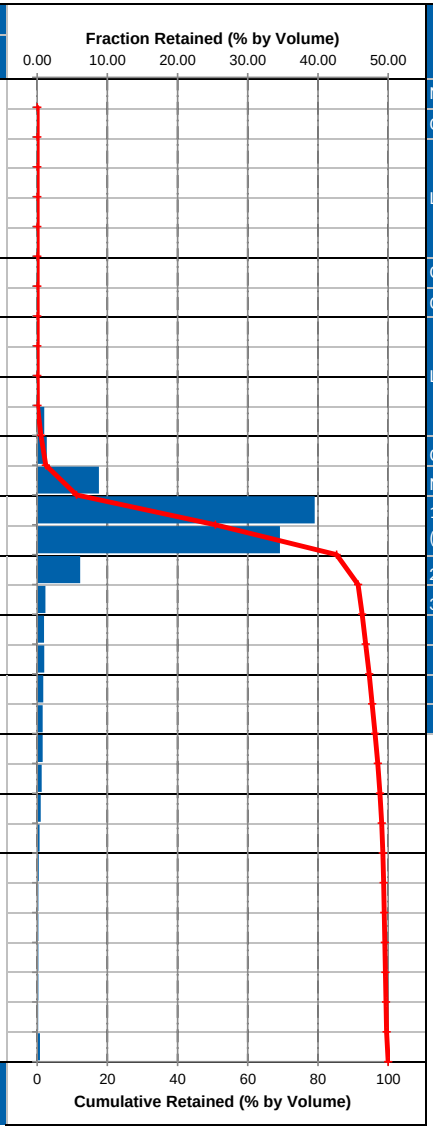
Classification		Composition	
Modified Folk	Sand	Fines	7.80%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.50%



APPENDIX F PARTICLE SIZE ANALYSIS

ENV009

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	1.02	1.05	
353.55	1.50	1.38	2.43	Medium sand
250.00	2.00	8.78	11.22	
176.78	2.50	39.53	50.75	Fine sand
125.00	3.00	34.57	85.32	
88.39	3.50	6.11	91.43	Very fine sand
62.50	4.00	1.17	92.60	
44.19	4.50	0.97	93.57	Coarse silt
31.25	5.00	1.01	94.58	
22.10	5.50	0.87	95.45	Medium silt
15.63	6.00	0.79	96.24	
11.05	6.50	0.78	97.02	Fine silt
7.81	7.00	0.65	97.67	
5.52	7.50	0.49	98.16	Very fine silt
3.91	8.00	0.34	98.50	
2.76	8.50	0.22	98.72	Clay
1.95	9.00	0.16	98.88	
1.38	9.50	0.16	99.05	
0.98	10.00	0.18	99.22	
0.69	10.50	0.17	99.39	
0.49	11.00	0.15	99.55	
<0.49	>11	0.38	100.00	

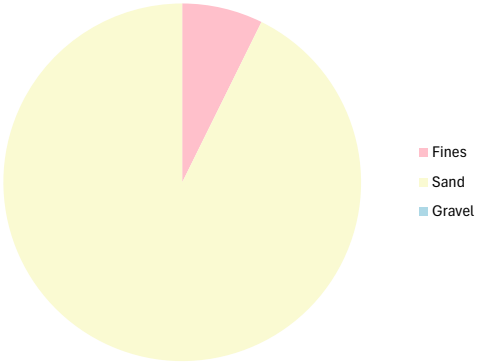


Method of Moments			
Geometric	Mean (µm)	148.96	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.29	Poor
	Skewness	3.79	Very fine
	Kurtosis	21.45	Very leptokurtic

Graphic Folk and Ward			
Geometric	Mean (µm)	175.48	Wentworth:
Logarithmic	Mean (Phi)	2.51	Fine sand
	Sorting	0.77	Moderate
	Skewness	0.30	Fine
	Kurtosis	2.18	Very leptokurtic

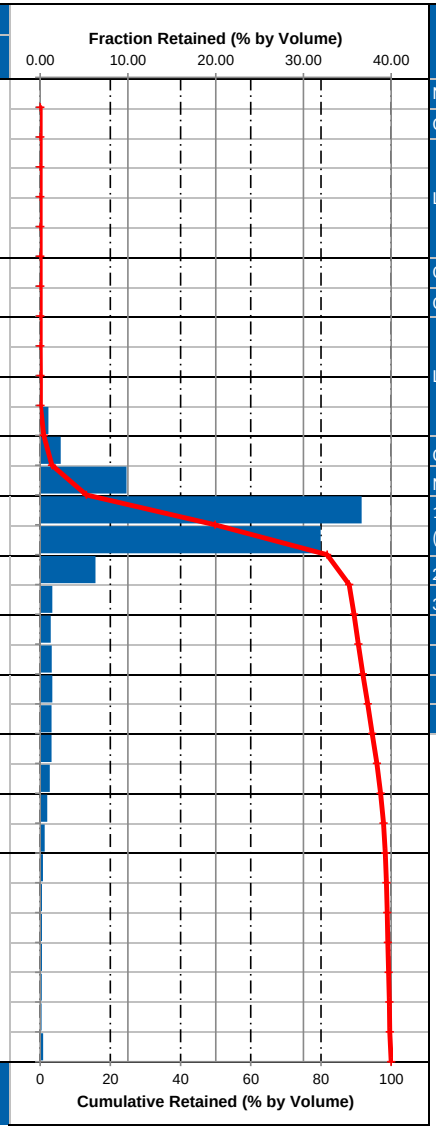
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.49	177.94	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.30%
EUNIS Folk	Sand and muddy sand	Sand	92.60%
Distribution	Unimodal	Gravel	0.00%



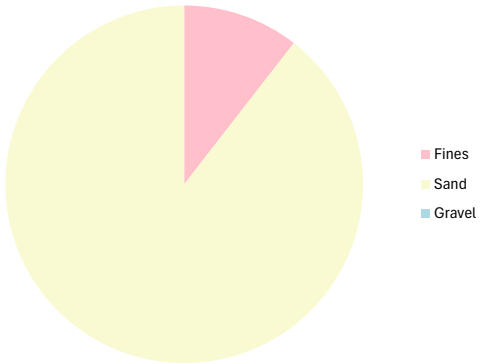
APPENDIX F PARTICLE SIZE ANALYSIS

ENV010				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.02	0.02	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.95	0.99	
353.55	1.50	2.34	3.33	Medium sand
250.00	2.00	9.83	13.16	
176.78	2.50	36.63	49.78	Fine sand
125.00	3.00	31.95	81.74	
88.39	3.50	6.30	88.04	Very fine sand
62.50	4.00	1.39	89.43	
44.19	4.50	1.20	90.63	Coarse silt
31.25	5.00	1.31	91.94	
22.10	5.50	1.37	93.32	Medium silt
15.63	6.00	1.30	94.61	
11.05	6.50	1.29	95.90	Fine silt
7.81	7.00	1.10	97.01	
5.52	7.50	0.81	97.81	Very fine silt
3.91	8.00	0.52	98.33	
2.76	8.50	0.31	98.64	Clay
1.95	9.00	0.21	98.86	
1.38	9.50	0.21	99.06	
0.98	10.00	0.21	99.28	
0.69	10.50	0.19	99.47	
0.49	11.00	0.16	99.62	
<0.49	>11	0.33	100.00	



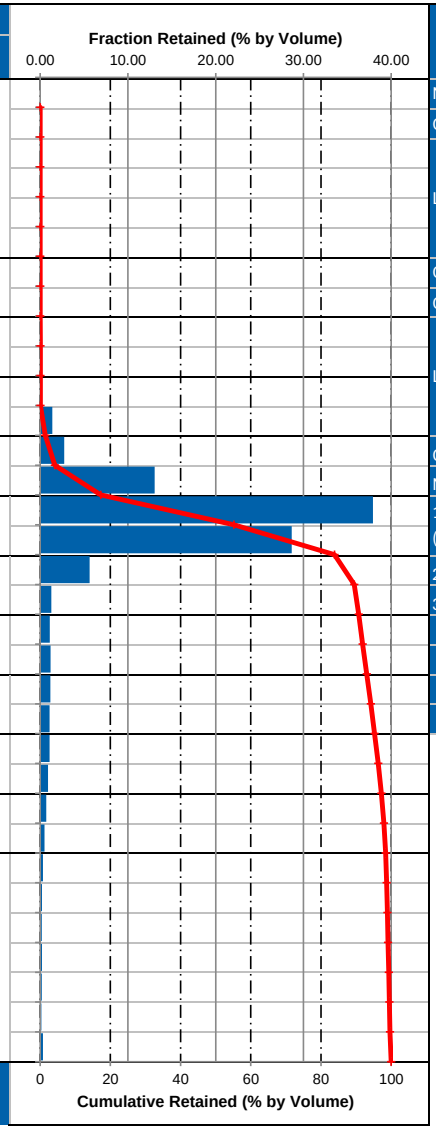
Method of Moments			
Geometric	Mean (µm)	139.10	Wentworth:
Logarithmic	Mean (Phi)	2.84	Fine sand
	Sorting	1.43	Poor
	Skewness	3.00	Very fine
	Kurtosis	14.13	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	167.95	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	0.98	Moderate
	Skewness	0.39	Very fine
	Kurtosis	2.55	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.50	176.36	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.50%
EUNIS Folk	Sand and muddy sand	Sand	89.40%
Distribution	Bimodal	Gravel	0.00%



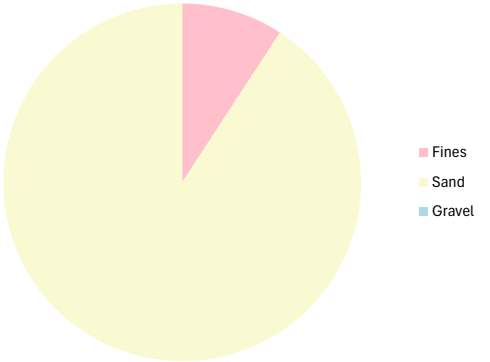
APPENDIX F PARTICLE SIZE ANALYSIS

ENV011				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.01	0.03	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.02	0.06	
707.11	0.50	0.01	0.07	Coarse sand
500.00	1.00	1.39	1.46	
353.55	1.50	2.74	4.21	Medium sand
250.00	2.00	13.05	17.26	
176.78	2.50	37.92	55.18	Fine sand
125.00	3.00	28.67	83.85	
88.39	3.50	5.64	89.49	Very fine sand
62.50	4.00	1.27	90.76	
44.19	4.50	1.09	91.85	Coarse silt
31.25	5.00	1.19	93.03	
22.10	5.50	1.15	94.19	Medium silt
15.63	6.00	1.08	95.26	
11.05	6.50	1.06	96.32	Fine silt
7.81	7.00	0.90	97.22	
5.52	7.50	0.70	97.92	Very fine silt
3.91	8.00	0.50	98.41	
2.76	8.50	0.31	98.72	
1.95	9.00	0.20	98.92	
1.38	9.50	0.19	99.12	
0.98	10.00	0.20	99.31	Clay
0.69	10.50	0.18	99.49	
0.49	11.00	0.15	99.64	
<0.49	>11	0.32	100.00	



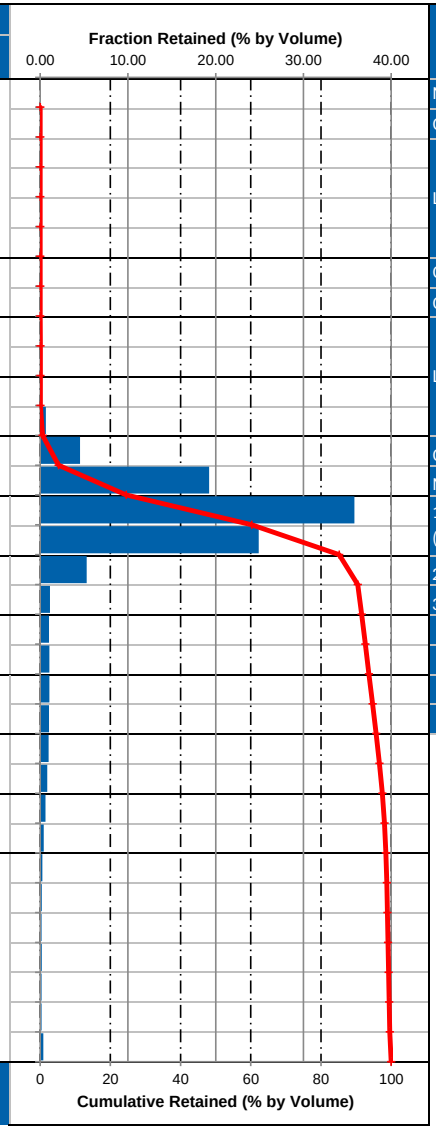
Method of Moments			
Geometric	Mean (µm)	149.46	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.40	Poor
	Skewness	3.14	Very fine
	Kurtosis	15.57	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	181.05	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	0.92	Moderate
	Skewness	0.34	Very fine
	Kurtosis	2.40	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.34	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.20%
EUNIS Folk	Sand and muddy sand	Sand	90.70%
Distribution	Unimodal	Gravel	0.00%



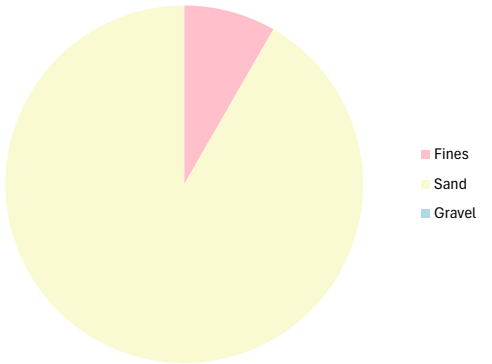
APPENDIX F PARTICLE SIZE ANALYSIS

ENV012				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.02	0.03	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.00	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.64	0.68	
353.55	1.50	4.55	5.23	Medium sand
250.00	2.00	19.24	24.47	
176.78	2.50	35.81	60.29	Fine sand
125.00	3.00	24.90	85.18	
88.39	3.50	5.31	90.49	Very fine sand
62.50	4.00	1.12	91.61	
44.19	4.50	1.01	92.62	Coarse silt
31.25	5.00	1.05	93.67	
22.10	5.50	1.04	94.71	Medium silt
15.63	6.00	0.99	95.71	
11.05	6.50	0.96	96.67	Fine silt
7.81	7.00	0.80	97.47	
5.52	7.50	0.60	98.08	Very fine silt
3.91	8.00	0.41	98.49	
2.76	8.50	0.25	98.74	Clay
1.95	9.00	0.17	98.91	
1.38	9.50	0.16	99.08	
0.98	10.00	0.18	99.25	
0.69	10.50	0.17	99.42	
0.49	11.00	0.15	99.57	
<0.49	>11	0.37	100.00	



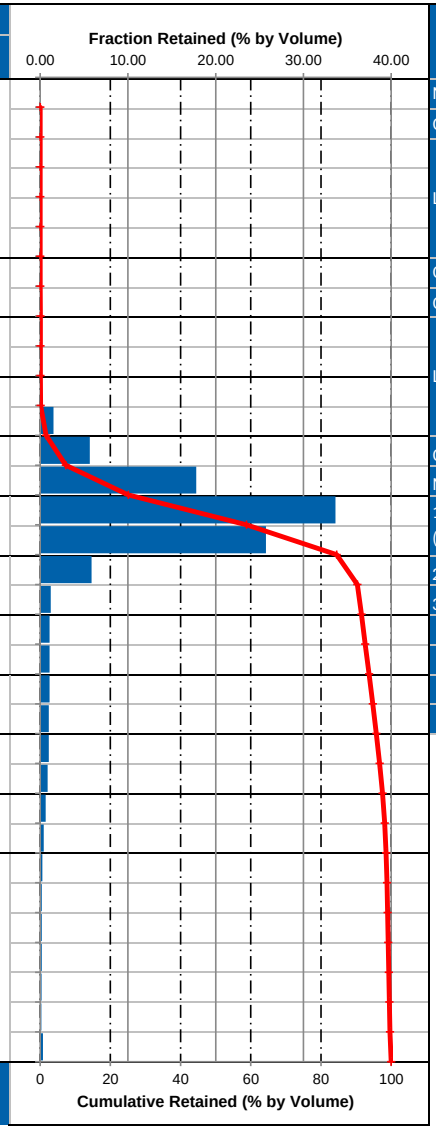
Method of Moments			
Geometric	Mean (µm)	159.45	Wentworth:
Logarithmic	Mean (Phi)	2.64	Fine sand
	Sorting	1.38	Poor
	Skewness	3.34	Very fine
	Kurtosis	17.30	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.33	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	0.93	Moderate
	Skewness	0.31	Very fine
	Kurtosis	2.17	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	195.28	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.30%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.00%



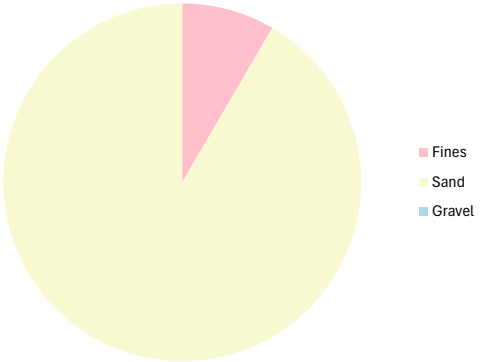
APPENDIX F PARTICLE SIZE ANALYSIS

ENV013				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.03	0.09	
707.11	0.50	0.05	0.13	Coarse sand
500.00	1.00	1.52	1.66	
353.55	1.50	5.65	7.31	Medium sand
250.00	2.00	17.78	25.09	
176.78	2.50	33.65	58.75	Fine sand
125.00	3.00	25.74	84.49	
88.39	3.50	5.86	90.34	Very fine sand
62.50	4.00	1.20	91.54	
44.19	4.50	1.07	92.61	Coarse silt
31.25	5.00	1.08	93.69	
22.10	5.50	1.07	94.76	Medium silt
15.63	6.00	0.97	95.73	
11.05	6.50	0.98	96.71	Fine silt
7.81	7.00	0.84	97.55	
5.52	7.50	0.62	98.17	Very fine silt
3.91	8.00	0.40	98.56	
2.76	8.50	0.24	98.80	Clay
1.95	9.00	0.17	98.97	
1.38	9.50	0.18	99.15	
0.98	10.00	0.18	99.33	
0.69	10.50	0.17	99.50	
0.49	11.00	0.14	99.64	
<0.49	>11	0.31	100.00	



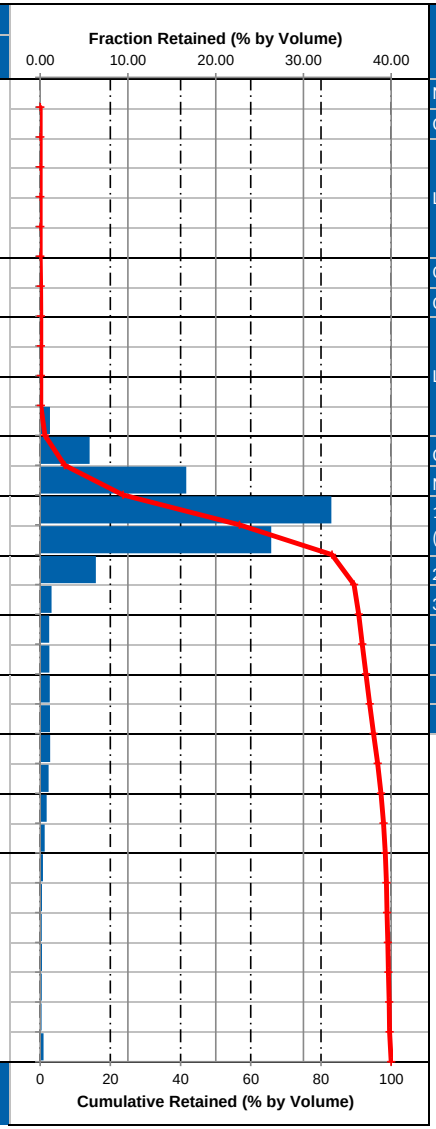
Method of Moments			
Geometric	Mean (µm)	160.68	Wentworth:
Logarithmic	Mean (Phi)	2.63	Fine sand
	Sorting	1.39	Poor
	Skewness	3.14	Very fine
	Kurtosis	16.13	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.67	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	0.97	Moderate
	Skewness	0.25	Fine
	Kurtosis	2.17	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.37	193.44	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.40%
EUNIS Folk	Sand and muddy sand	Sand	91.50%
Distribution	Unimodal	Gravel	0.00%



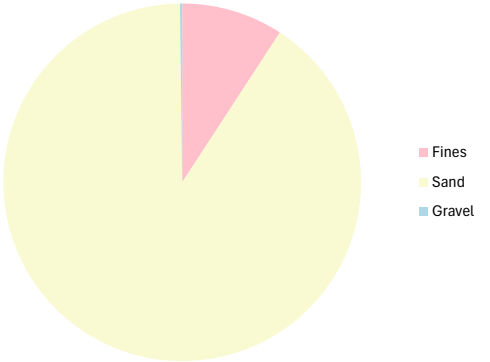
APPENDIX F PARTICLE SIZE ANALYSIS

ENV014				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.13	0.13	Granule
2000.00	-1.00	0.03	0.16	
1414.21	-0.50	0.03	0.18	Very coarse sand
1000.00	0.00	0.02	0.20	
707.11	0.50	0.00	0.20	Coarse sand
500.00	1.00	1.12	1.32	
353.55	1.50	5.63	6.95	Medium sand
250.00	2.00	16.65	23.60	
176.78	2.50	33.18	56.78	Fine sand
125.00	3.00	26.33	83.10	
88.39	3.50	6.34	89.44	Very fine sand
62.50	4.00	1.28	90.72	
44.19	4.50	1.02	91.74	Coarse silt
31.25	5.00	1.05	92.79	
22.10	5.50	1.10	93.89	Medium silt
15.63	6.00	1.11	94.99	
11.05	6.50	1.13	96.12	Fine silt
7.81	7.00	0.96	97.08	
5.52	7.50	0.74	97.82	Very fine silt
3.91	8.00	0.51	98.33	
2.76	8.50	0.31	98.63	Clay
1.95	9.00	0.20	98.83	
1.38	9.50	0.19	99.02	
0.98	10.00	0.20	99.22	
0.69	10.50	0.19	99.41	
0.49	11.00	0.16	99.57	
<0.49	>11	0.37	100.00	



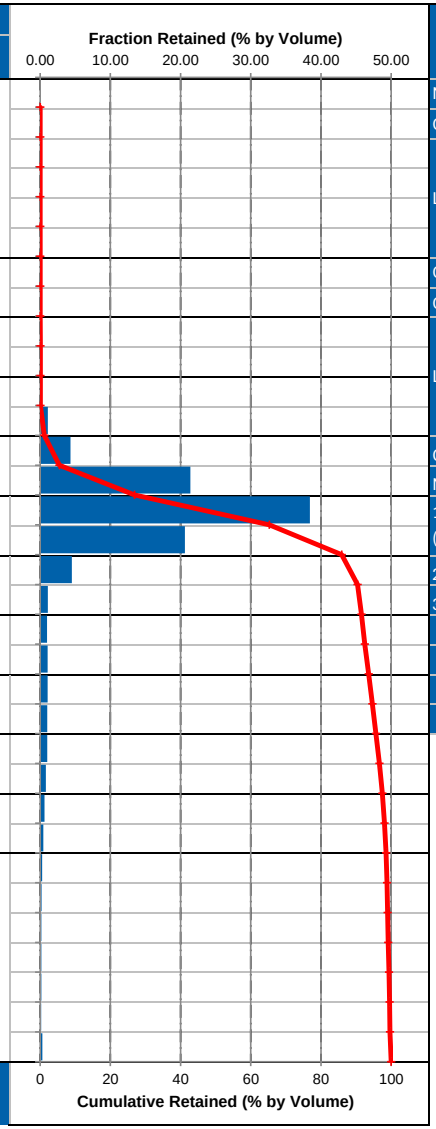
Method of Moments			
Geometric	Mean (µm)	153.87	Wentworth:
Logarithmic	Mean (Phi)	2.69	Fine sand
	Sorting	1.46	Poor
	Skewness	2.97	Very fine
	Kurtosis	14.66	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	187.71	Wentworth:
Logarithmic	Mean (Phi)	2.41	Fine sand
	Sorting	1.03	Poor
	Skewness	0.29	Fine
	Kurtosis	2.32	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	189.75	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.20%
EUNIS Folk	Sand and muddy sand	Sand	90.60%
Distribution	Bimodal	Gravel	0.20%



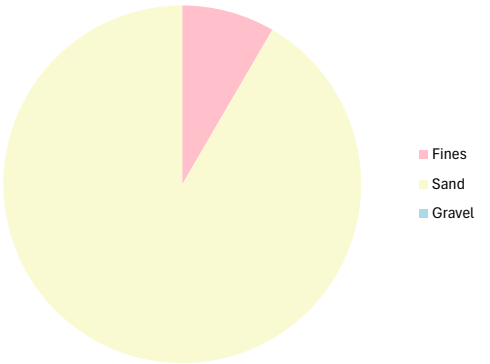
APPENDIX F PARTICLE SIZE ANALYSIS

ENV015				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.00	0.01	Granule
2000.00	-1.00	0.02	0.03	
1414.21	-0.50	0.03	0.06	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	1.08	1.16	
353.55	1.50	4.31	5.47	Medium sand
250.00	2.00	21.40	26.87	
176.78	2.50	38.42	65.29	Fine sand
125.00	3.00	20.62	85.91	
88.39	3.50	4.52	90.43	Very fine sand
62.50	4.00	1.09	91.52	
44.19	4.50	0.98	92.50	Coarse silt
31.25	5.00	1.06	93.56	
22.10	5.50	1.07	94.63	Medium silt
15.63	6.00	1.02	95.65	
11.05	6.50	1.00	96.65	Fine silt
7.81	7.00	0.82	97.47	
5.52	7.50	0.62	98.09	Very fine silt
3.91	8.00	0.44	98.53	
2.76	8.50	0.27	98.80	Clay
1.95	9.00	0.19	98.99	
1.38	9.50	0.18	99.17	
0.98	10.00	0.18	99.35	
0.69	10.50	0.17	99.52	
0.49	11.00	0.14	99.65	
<0.49	>11	0.30	100.00	



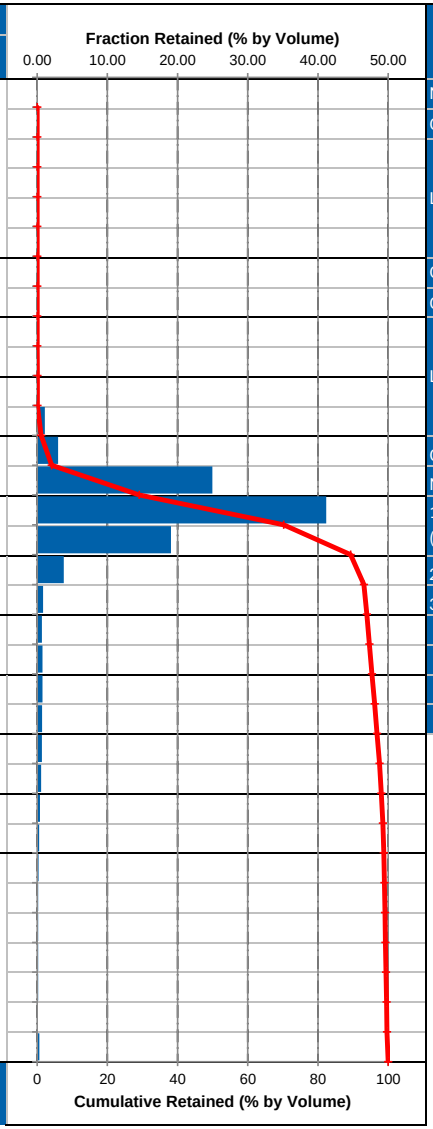
Method of Moments			
Geometric	Mean (µm)	164.50	Wentworth:
Logarithmic	Mean (Phi)	2.60	Fine sand
	Sorting	1.38	Poor
	Skewness	3.25	Very fine
	Kurtosis	16.39	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	198.39	Wentworth:
Logarithmic	Mean (Phi)	2.33	Fine sand
	Sorting	0.94	Moderate
	Skewness	0.34	Very fine
	Kurtosis	2.23	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.30	202.92	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.40%
EUNIS Folk	Sand and muddy sand	Sand	91.50%
Distribution	Bimodal	Gravel	0.00%



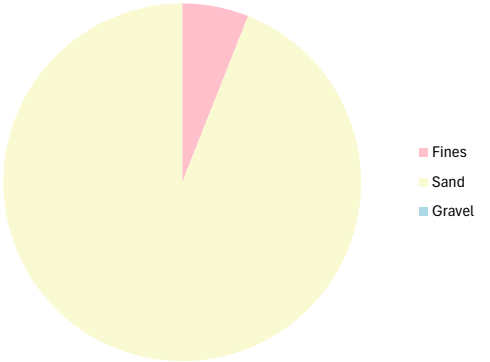
APPENDIX F PARTICLE SIZE ANALYSIS

ENV016				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.00	0.02	
1414.21	-0.50	0.00	0.02	Very coarse sand
1000.00	0.00	0.02	0.04	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	1.08	1.12	
353.55	1.50	2.98	4.11	Medium sand
250.00	2.00	24.94	29.05	
176.78	2.50	41.19	70.23	Fine sand
125.00	3.00	19.06	89.30	
88.39	3.50	3.79	93.09	Very fine sand
62.50	4.00	0.84	93.93	
44.19	4.50	0.68	94.62	Coarse silt
31.25	5.00	0.76	95.38	
22.10	5.50	0.75	96.13	Medium silt
15.63	6.00	0.71	96.83	
11.05	6.50	0.68	97.51	Fine silt
7.81	7.00	0.55	98.06	
5.52	7.50	0.40	98.47	Very fine silt
3.91	8.00	0.29	98.75	
2.76	8.50	0.19	98.94	Clay
1.95	9.00	0.14	99.08	
1.38	9.50	0.15	99.23	
0.98	10.00	0.15	99.38	
0.69	10.50	0.15	99.53	
0.49	11.00	0.13	99.65	
<0.49	>11	0.30	100.00	



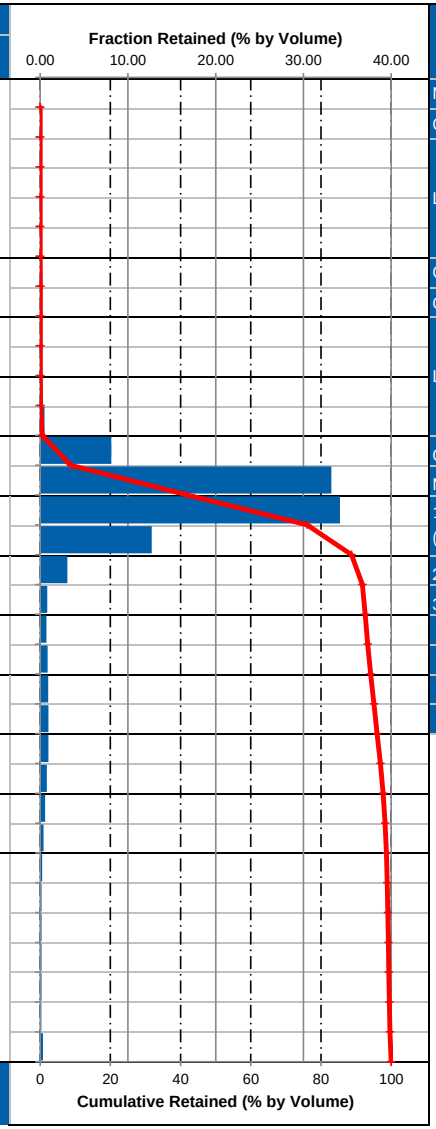
Method of Moments			
Geometric	Mean (µm)	178.20	Wentworth:
Logarithmic	Mean (Phi)	2.48	Fine sand
	Sorting	1.25	Poor
	Skewness	3.93	Very fine
	Kurtosis	23.00	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	205.24	Wentworth:
Logarithmic	Mean (Phi)	2.28	Fine sand
	Sorting	0.77	Moderate
	Skewness	0.31	Very fine
	Kurtosis	1.88	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.25	209.59	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.00%



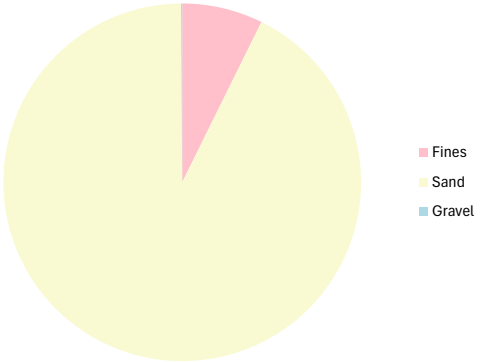
APPENDIX F PARTICLE SIZE ANALYSIS

ENV017				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.04	Granule
2000.00	-1.00	0.04	0.08	
1414.21	-0.50	0.01	0.08	Very coarse sand
1000.00	0.00	0.01	0.09	
707.11	0.50	0.00	0.09	Coarse sand
500.00	1.00	0.49	0.58	
353.55	1.50	8.10	8.67	Medium sand
250.00	2.00	33.17	41.85	
176.78	2.50	34.16	76.01	Fine sand
125.00	3.00	12.70	88.71	
88.39	3.50	3.10	91.80	Very fine sand
62.50	4.00	0.80	92.60	
44.19	4.50	0.70	93.31	Coarse silt
31.25	5.00	0.84	94.15	
22.10	5.50	0.92	95.07	Medium silt
15.63	6.00	0.94	96.01	
11.05	6.50	0.93	96.93	Fine silt
7.81	7.00	0.76	97.70	
5.52	7.50	0.57	98.26	Very fine silt
3.91	8.00	0.38	98.65	
2.76	8.50	0.23	98.88	Clay
1.95	9.00	0.15	99.03	
1.38	9.50	0.15	99.18	
0.98	10.00	0.16	99.34	
0.69	10.50	0.15	99.50	
0.49	11.00	0.13	99.63	
<0.49	>11	0.32	100.00	



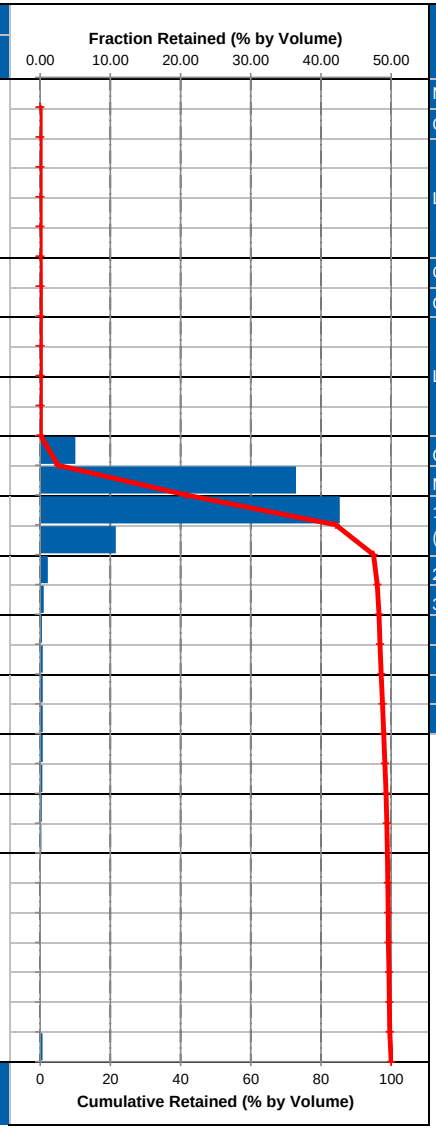
Method of Moments			
Geometric	Mean (µm)	186.87	Wentworth:
Logarithmic	Mean (Phi)	2.41	Fine sand
	Sorting	1.37	Poor
	Skewness	3.48	Very fine
	Kurtosis	18.22	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	220.45	Wentworth:
Logarithmic	Mean (Phi)	2.18	Fine sand
	Sorting	0.94	Moderate
	Skewness	0.38	Very fine
	Kurtosis	2.32	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.12	230.15	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.30%
EUNIS Folk	Sand and muddy sand	Sand	92.50%
Distribution	Unimodal	Gravel	0.10%



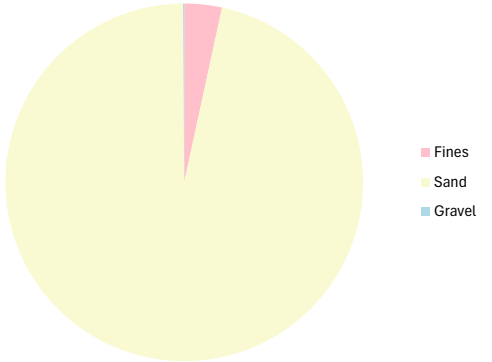
APPENDIX F PARTICLE SIZE ANALYSIS

ENV018				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.04	Granule
2000.00	-1.00	0.02	0.06	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.01	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.00	0.08	
353.55	1.50	5.01	5.09	Medium sand
250.00	2.00	36.45	41.53	
176.78	2.50	42.67	84.20	Fine sand
125.00	3.00	10.76	94.96	
88.39	3.50	1.09	96.05	Very fine sand
62.50	4.00	0.51	96.56	
44.19	4.50	0.25	96.81	Coarse silt
31.25	5.00	0.35	97.16	
22.10	5.50	0.35	97.51	Medium silt
15.63	6.00	0.36	97.87	
11.05	6.50	0.36	98.23	Fine silt
7.81	7.00	0.30	98.53	
5.52	7.50	0.23	98.77	Very fine silt
3.91	8.00	0.16	98.93	
2.76	8.50	0.11	99.04	Clay
1.95	9.00	0.09	99.13	
1.38	9.50	0.10	99.23	
0.98	10.00	0.12	99.35	
0.69	10.50	0.13	99.48	
0.49	11.00	0.12	99.60	
<0.49	>11	0.34	100.00	



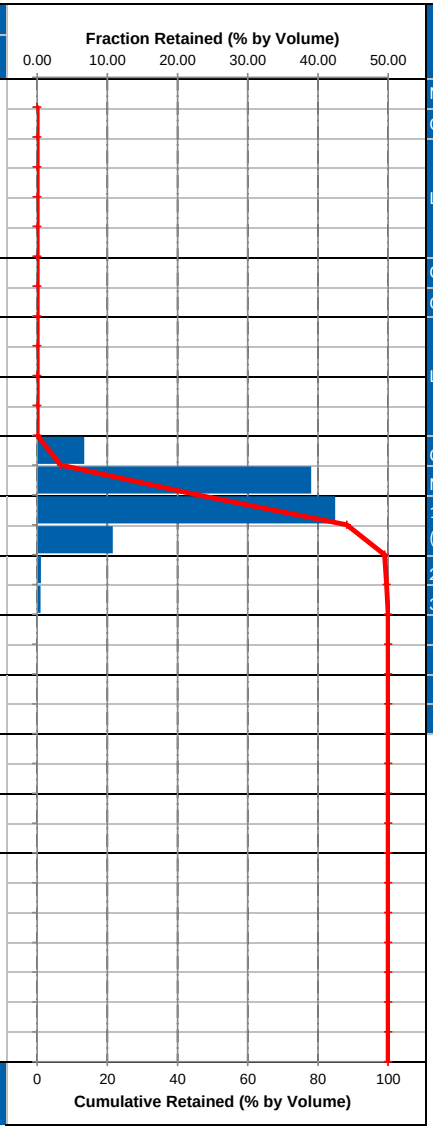
Method of Moments			
Geometric	Mean (µm)	208.89	Wentworth:
Logarithmic	Mean (Phi)	2.25	Fine sand
	Sorting	1.10	Poor
	Skewness	5.29	Very fine
	Kurtosis	38.57	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	236.16	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	0.44	Well
	Skewness	0.07	Symmetrical
	Kurtosis	1.01	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.10	233.39	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	3.40%
EUNIS Folk	Sand and muddy sand	Sand	96.50%
Distribution	Unimodal	Gravel	0.10%



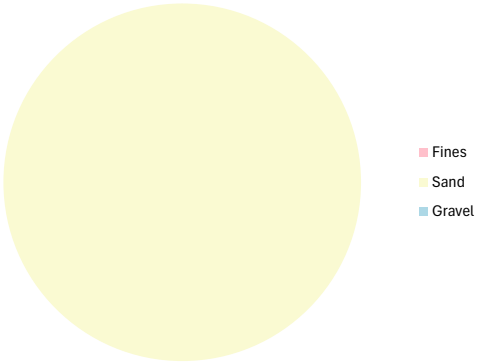
APPENDIX F PARTICLE SIZE ANALYSIS

ENV019				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.00	0.02	
353.55	1.50	6.70	6.72	Medium sand
250.00	2.00	39.04	45.76	
176.78	2.50	42.45	88.21	Fine sand
125.00	3.00	10.78	99.00	
88.39	3.50	0.53	99.52	Very fine sand
62.50	4.00	0.48	100.00	
44.19	4.50	0.00	100.00	Coarse silt
31.25	5.00	0.00	100.00	
22.10	5.50	0.00	100.00	Medium silt
15.63	6.00	0.00	100.00	
11.05	6.50	0.00	100.00	Fine silt
7.81	7.00	0.00	100.00	
5.52	7.50	0.00	100.00	Very fine silt
3.91	8.00	0.00	100.00	
2.76	8.50	0.00	100.00	Clay
1.95	9.00	0.00	100.00	
1.38	9.50	0.00	100.00	
0.98	10.00	0.00	100.00	
0.69	10.50	0.00	100.00	
0.49	11.00	0.00	100.00	
<0.49	>11	0.00	100.00	



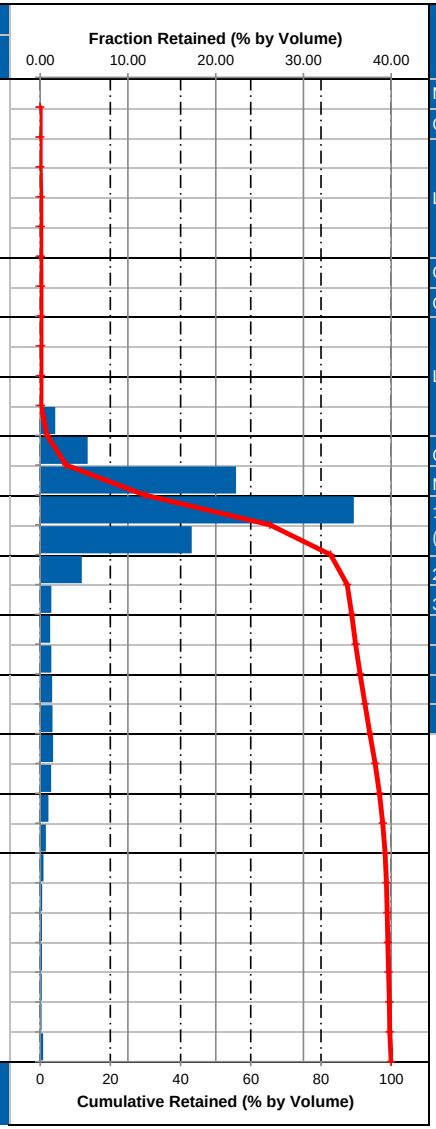
Method of Moments			
Geometric	Mean (µm)	240.91	Wentworth:
Logarithmic	Mean (Phi)	2.05	Fine sand
	Sorting	0.41	Well
	Skewness	0.29	Symmetrical
	Kurtosis	4.27	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	243.21	Wentworth:
Logarithmic	Mean (Phi)	2.04	Fine sand
	Sorting	0.43	Well
	Skewness	0.01	Symmetrical
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.05	241.50	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	0.00%
EUNIS Folk	Sand and muddy sand	Sand	100.00%
Distribution	Unimodal	Gravel	0.00%



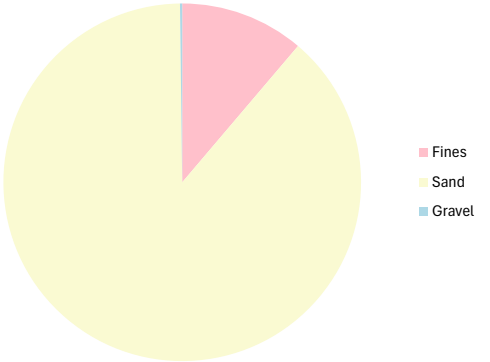
APPENDIX F PARTICLE SIZE ANALYSIS

ENV021				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.20	0.20	
5656.85	-2.50	0.00	0.20	
4000.00	-2.00	0.00	0.20	
2828.43	-1.50	0.01	0.21	Granule
2000.00	-1.00	0.00	0.21	
1414.21	-0.50	0.01	0.23	Very coarse sand
1000.00	0.00	0.02	0.25	
707.11	0.50	0.01	0.26	Coarse sand
500.00	1.00	1.72	1.98	
353.55	1.50	5.41	7.39	Medium sand
250.00	2.00	22.33	29.72	
176.78	2.50	35.73	65.45	Fine sand
125.00	3.00	17.27	82.72	
88.39	3.50	4.73	87.45	Very fine sand
62.50	4.00	1.27	88.73	
44.19	4.50	1.15	89.87	Coarse silt
31.25	5.00	1.28	91.15	
22.10	5.50	1.37	92.52	Medium silt
15.63	6.00	1.41	93.93	
11.05	6.50	1.48	95.42	Fine silt
7.81	7.00	1.25	96.66	
5.52	7.50	0.95	97.61	Very fine silt
3.91	8.00	0.65	98.26	
2.76	8.50	0.37	98.63	
1.95	9.00	0.23	98.86	
1.38	9.50	0.21	99.07	
0.98	10.00	0.21	99.27	Clay
0.69	10.50	0.19	99.46	
0.49	11.00	0.15	99.61	
<0.49	>11	0.33	100.00	



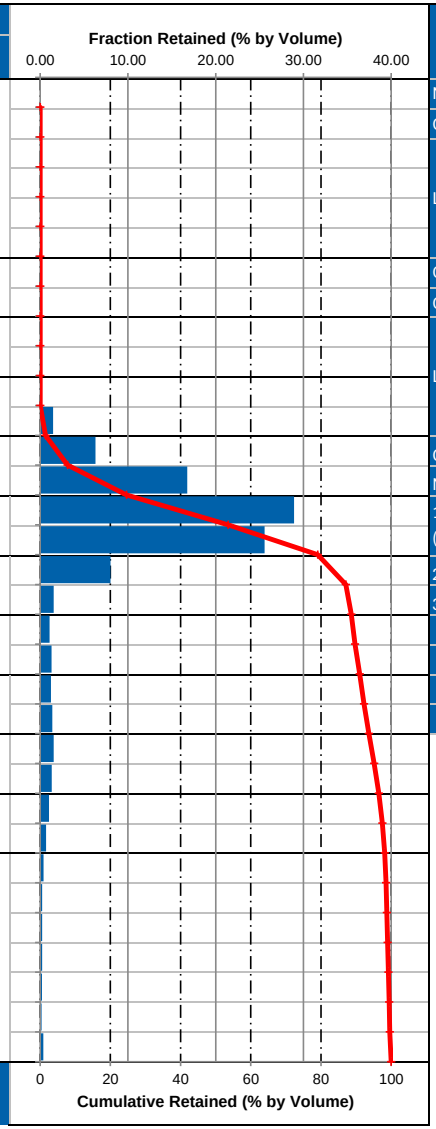
Method of Moments			
Geometric	Mean (µm)	156.71	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.58	Poor
	Skewness	2.53	Very fine
	Kurtosis	11.68	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	193.35	Wentworth:
Logarithmic	Mean (Phi)	2.37	Fine sand
	Sorting	1.13	Poor
	Skewness	0.39	Very fine
	Kurtosis	2.36	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.28	205.35	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.20%
EUNIS Folk	Sand and muddy sand	Sand	88.50%
Distribution	Bimodal	Gravel	0.20%



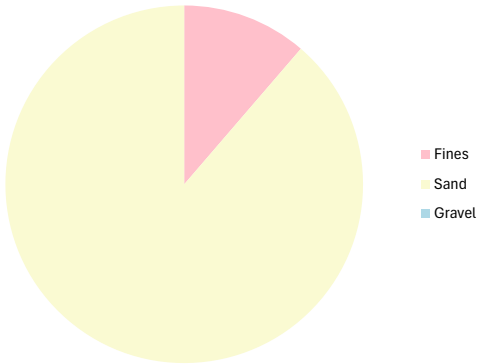
APPENDIX F PARTICLE SIZE ANALYSIS

ENV022				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.01	0.03	Coarse sand
500.00	1.00	1.48	1.51	
353.55	1.50	6.30	7.81	Medium sand
250.00	2.00	16.76	24.57	
176.78	2.50	28.94	53.52	Fine sand
125.00	3.00	25.57	79.09	
88.39	3.50	8.02	87.10	Very fine sand
62.50	4.00	1.53	88.64	
44.19	4.50	1.08	89.71	Coarse silt
31.25	5.00	1.30	91.01	
22.10	5.50	1.23	92.24	Medium silt
15.63	6.00	1.37	93.61	
11.05	6.50	1.54	95.16	Fine silt
7.81	7.00	1.32	96.48	
5.52	7.50	1.00	97.48	Very fine silt
3.91	8.00	0.68	98.16	
2.76	8.50	0.39	98.55	Clay
1.95	9.00	0.24	98.78	
1.38	9.50	0.21	99.00	
0.98	10.00	0.22	99.22	
0.69	10.50	0.20	99.42	
0.49	11.00	0.17	99.58	
<0.49	>11	0.36	100.00	



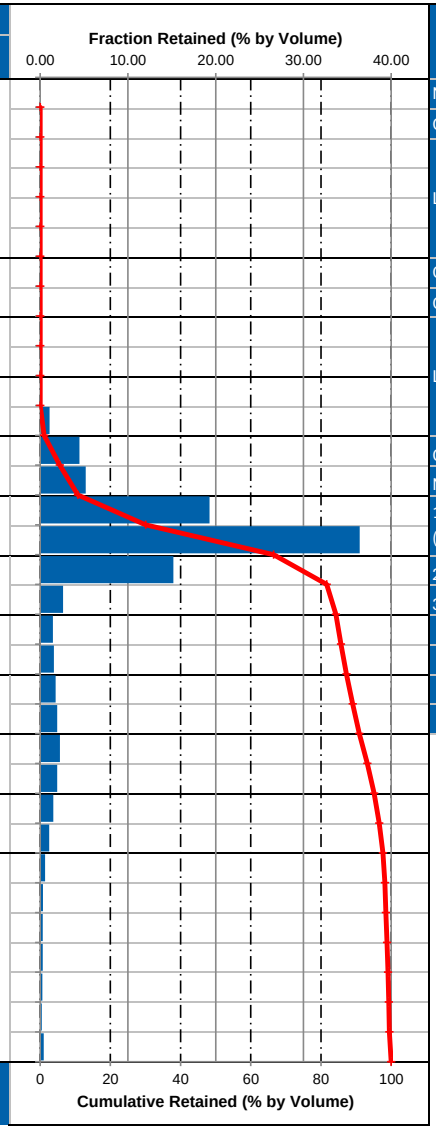
Method of Moments			
Geometric	Mean (µm)	143.80	Wentworth:
Logarithmic	Mean (Phi)	2.79	Fine sand
	Sorting	1.56	Poor
	Skewness	2.63	Very fine
	Kurtosis	11.51	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	177.19	Wentworth:
Logarithmic	Mean (Phi)	2.50	Fine sand
	Sorting	1.17	Poor
	Skewness	0.33	Very fine
	Kurtosis	2.32	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.44	184.38	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.30%
EUNIS Folk	Sand and muddy sand	Sand	88.60%
Distribution	Bimodal	Gravel	0.00%



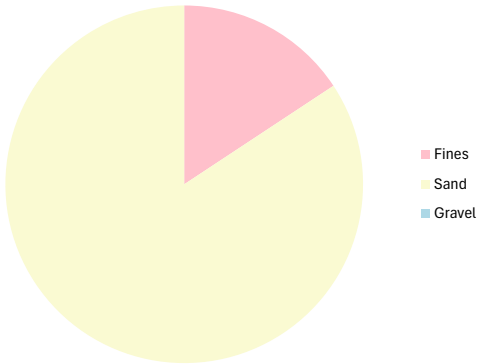
APPENDIX F PARTICLE SIZE ANALYSIS

ENV023				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	1.06	1.10	
353.55	1.50	4.48	5.58	Medium sand
250.00	2.00	5.18	10.76	
176.78	2.50	19.29	30.06	Fine sand
125.00	3.00	36.41	66.46	
88.39	3.50	15.17	81.64	Very fine sand
62.50	4.00	2.61	84.25	
44.19	4.50	1.45	85.69	Coarse silt
31.25	5.00	1.56	87.25	
22.10	5.50	1.75	89.01	Medium silt
15.63	6.00	1.93	90.94	
11.05	6.50	2.25	93.19	Fine silt
7.81	7.00	1.93	95.12	
5.52	7.50	1.49	96.60	Very fine silt
3.91	8.00	1.02	97.62	
2.76	8.50	0.56	98.18	Clay
1.95	9.00	0.32	98.50	
1.38	9.50	0.29	98.80	
0.98	10.00	0.29	99.09	
0.69	10.50	0.24	99.32	
0.49	11.00	0.18	99.51	
<0.49	>11	0.41	100.00	



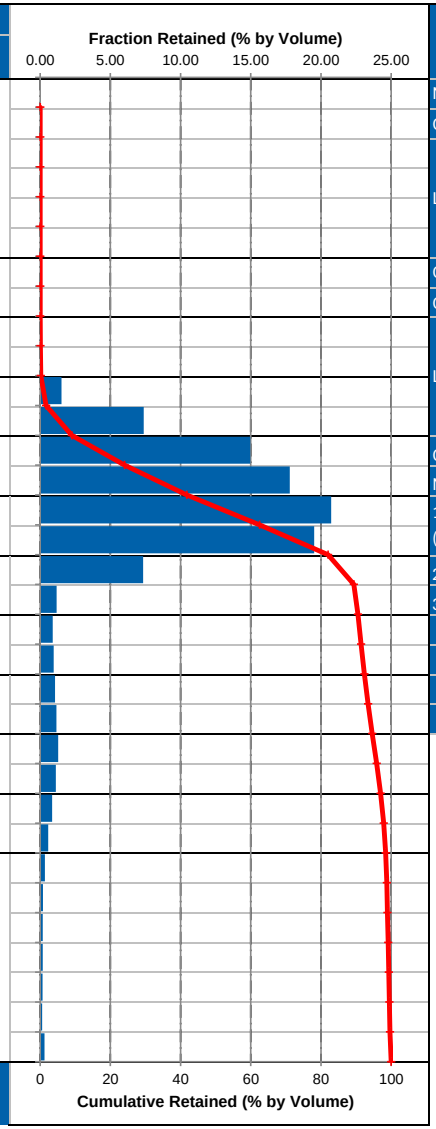
Method of Moments			
Geometric	Mean (µm)	108.24	Wentworth:
Logarithmic	Mean (Phi)	3.20	Very fine sand
	Sorting	1.66	Poor
	Skewness	2.21	Very fine
	Kurtosis	8.82	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	129.03	Wentworth:
Logarithmic	Mean (Phi)	2.95	Fine sand
	Sorting	1.29	Poor
	Skewness	0.41	Very fine
	Kurtosis	2.49	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.77	146.21	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	15.70%
EUNIS Folk	Sand and muddy sand	Sand	84.20%
Distribution	Bimodal	Gravel	0.00%



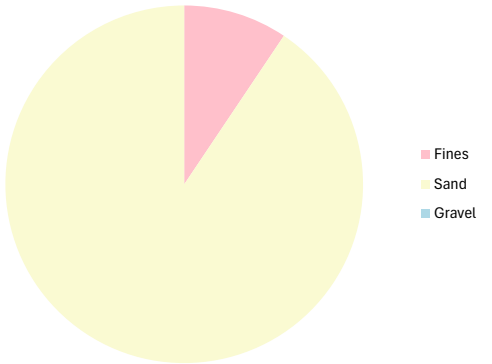
APPENDIX F PARTICLE SIZE ANALYSIS

ENV024				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.02	0.04	Very coarse sand
1000.00	0.00	0.11	0.15	
707.11	0.50	1.52	1.67	Coarse sand
500.00	1.00	7.37	9.05	
353.55	1.50	14.97	24.02	Medium sand
250.00	2.00	17.77	41.79	
176.78	2.50	20.73	62.51	Fine sand
125.00	3.00	19.52	82.03	
88.39	3.50	7.33	89.36	Very fine sand
62.50	4.00	1.17	90.53	
44.19	4.50	0.89	91.42	Coarse silt
31.25	5.00	0.96	92.38	
22.10	5.50	1.07	93.44	Medium silt
15.63	6.00	1.15	94.60	
11.05	6.50	1.28	95.88	Fine silt
7.81	7.00	1.11	96.99	
5.52	7.50	0.85	97.84	Very fine silt
3.91	8.00	0.58	98.42	
2.76	8.50	0.33	98.75	Clay
1.95	9.00	0.20	98.95	
1.38	9.50	0.18	99.13	
0.98	10.00	0.19	99.32	
0.69	10.50	0.17	99.49	
0.49	11.00	0.14	99.64	
<0.49	>11	0.31	100.00	



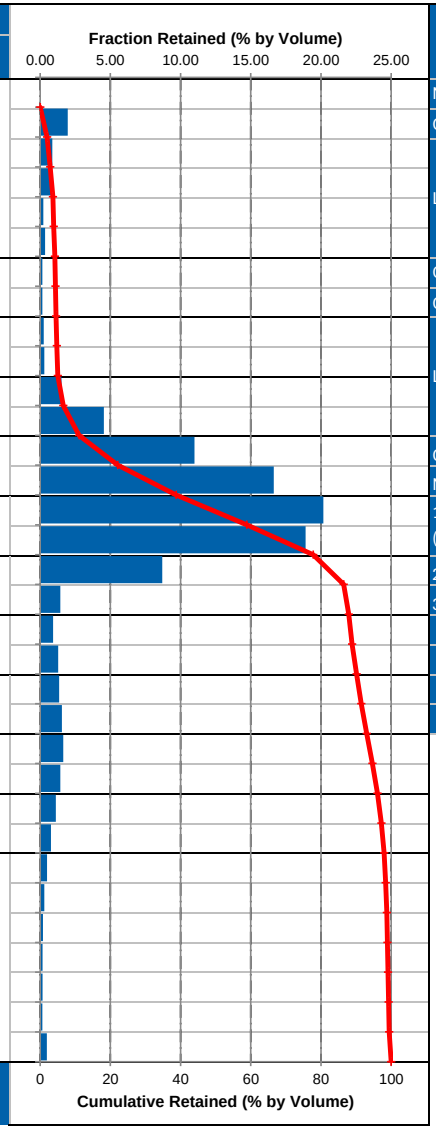
Method of Moments			
Geometric	Mean (µm)	181.26	Wentworth:
Logarithmic	Mean (Phi)	2.46	Fine sand
	Sorting	1.61	Poor
	Skewness	2.41	Very fine
	Kurtosis	10.92	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	219.42	Wentworth:
Logarithmic	Mean (Phi)	2.19	Fine sand
	Sorting	1.30	Poor
	Skewness	0.22	Fine
	Kurtosis	1.72	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	217.92	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.40%
EUNIS Folk	Sand and muddy sand	Sand	90.50%
Distribution	Bimodal	Gravel	0.00%



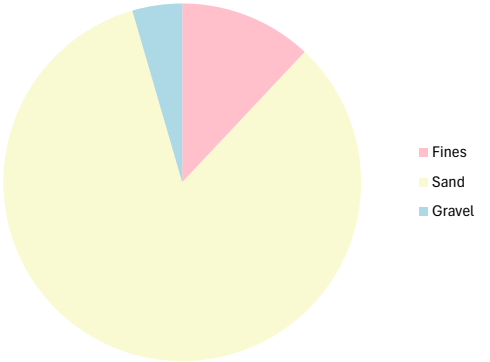
APPENDIX F PARTICLE SIZE ANALYSIS

ENV025				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	1.96	1.96	
11313.71	-3.50	0.86	2.82	Pebble
8000.00	-3.00	0.79	3.61	
5656.85	-2.50	0.22	3.83	
4000.00	-2.00	0.34	4.18	
2828.43	-1.50	0.15	4.33	Granule
2000.00	-1.00	0.16	4.49	
1414.21	-0.50	0.25	4.74	Very coarse sand
1000.00	0.00	0.29	5.03	
707.11	0.50	1.52	6.55	Coarse sand
500.00	1.00	4.54	11.09	
353.55	1.50	10.99	22.08	Medium sand
250.00	2.00	16.63	38.71	
176.78	2.50	20.17	58.88	Fine sand
125.00	3.00	18.90	77.79	
88.39	3.50	8.69	86.48	Very fine sand
62.50	4.00	1.44	87.92	
44.19	4.50	0.92	88.83	Coarse silt
31.25	5.00	1.28	90.11	
22.10	5.50	1.35	91.46	Medium silt
15.63	6.00	1.55	93.01	
11.05	6.50	1.64	94.65	Fine silt
7.81	7.00	1.44	96.09	
5.52	7.50	1.11	97.20	Very fine silt
3.91	8.00	0.77	97.97	
2.76	8.50	0.48	98.45	
1.95	9.00	0.29	98.75	
1.38	9.50	0.20	98.95	
0.98	10.00	0.17	99.12	Clay
0.69	10.50	0.16	99.28	
0.49	11.00	0.16	99.44	
<0.49	>11	0.48	100.00	



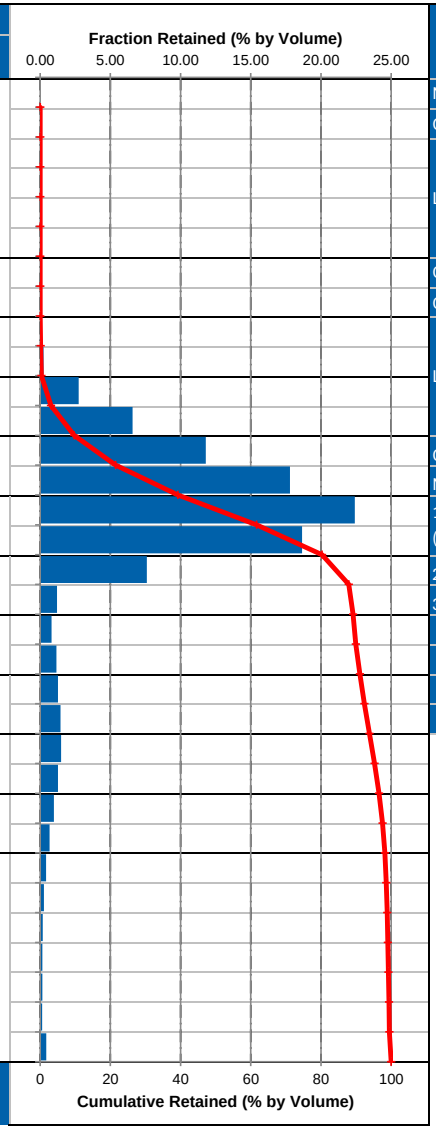
Method of Moments			
Geometric	Mean (µm)	187.78	Wentworth:
Logarithmic	Mean (Phi)	2.40	Fine sand
	Sorting	2.17	Very poor
	Skewness	0.38	Symmetrical
	Kurtosis	7.34	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	204.91	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.55	Poor
	Skewness	0.16	Fine
	Kurtosis	2.05	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.28	205.92	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-4.00	16000.00	Pebble
3rd Local Maxima	6.50	11.05	Fine silt

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	12.00%
EUNIS Folk	Sand and muddy sand	Sand	83.40%
Distribution	Multimodal	Gravel	4.50%



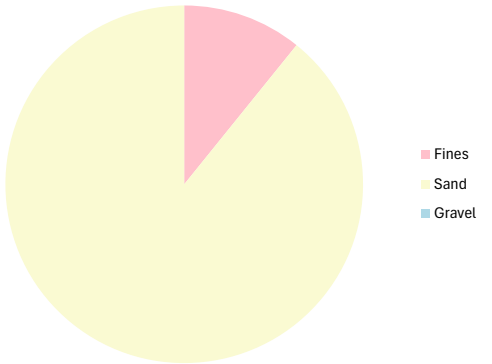
APPENDIX F PARTICLE SIZE ANALYSIS

ENV026				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.08	0.11	Very coarse sand
1000.00	0.00	0.23	0.35	
707.11	0.50	2.74	3.08	Coarse sand
500.00	1.00	6.58	9.67	
353.55	1.50	11.79	21.46	Medium sand
250.00	2.00	17.79	39.25	
176.78	2.50	22.41	61.66	Fine sand
125.00	3.00	18.65	80.31	
88.39	3.50	7.60	87.91	Very fine sand
62.50	4.00	1.20	89.11	
44.19	4.50	0.80	89.92	Coarse silt
31.25	5.00	1.15	91.07	
22.10	5.50	1.27	92.34	Medium silt
15.63	6.00	1.45	93.79	
11.05	6.50	1.49	95.28	Fine silt
7.81	7.00	1.27	96.55	
5.52	7.50	0.97	97.52	Very fine silt
3.91	8.00	0.67	98.19	
2.76	8.50	0.42	98.61	Clay
1.95	9.00	0.26	98.87	
1.38	9.50	0.18	99.05	
0.98	10.00	0.15	99.20	
0.69	10.50	0.15	99.35	
0.49	11.00	0.14	99.50	
<0.49	>11	0.43	100.00	



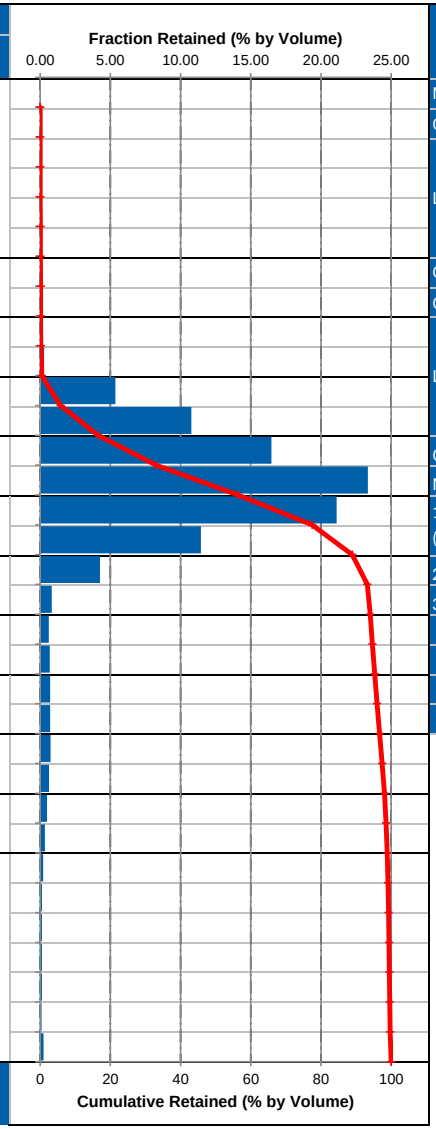
Method of Moments			
Geometric	Mean (µm)	171.84	Wentworth:
Logarithmic	Mean (Phi)	2.53	Fine sand
	Sorting	1.70	Poor
	Skewness	2.26	Very fine
	Kurtosis	9.95	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	210.18	Wentworth:
Logarithmic	Mean (Phi)	2.25	Fine sand
	Sorting	1.37	Poor
	Skewness	0.23	Fine
	Kurtosis	1.88	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.24	211.71	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.80%
EUNIS Folk	Sand and muddy sand	Sand	89.10%
Distribution	Bimodal	Gravel	0.00%



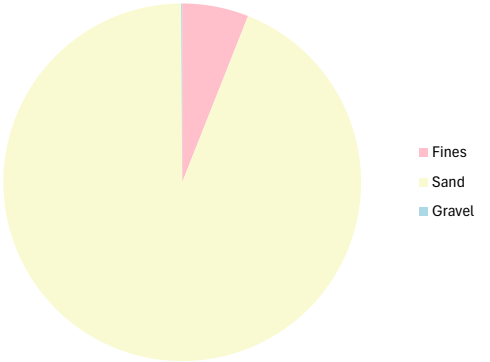
APPENDIX F PARTICLE SIZE ANALYSIS

ENV027				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.01	0.05	
2828.43	-1.50	0.05	0.09	Granule
2000.00	-1.00	0.01	0.11	
1414.21	-0.50	0.05	0.15	Very coarse sand
1000.00	0.00	0.28	0.43	
707.11	0.50	5.36	5.78	Coarse sand
500.00	1.00	10.76	16.55	
353.55	1.50	16.47	33.02	Medium sand
250.00	2.00	23.34	56.35	
176.78	2.50	21.12	77.47	Fine sand
125.00	3.00	11.45	88.92	
88.39	3.50	4.26	93.18	Very fine sand
62.50	4.00	0.82	94.01	
44.19	4.50	0.61	94.62	Coarse silt
31.25	5.00	0.68	95.29	
22.10	5.50	0.70	96.00	Medium silt
15.63	6.00	0.71	96.71	
11.05	6.50	0.74	97.45	Fine silt
7.81	7.00	0.63	98.07	
5.52	7.50	0.49	98.56	Very fine silt
3.91	8.00	0.34	98.90	
2.76	8.50	0.20	99.10	Clay
1.95	9.00	0.13	99.24	
1.38	9.50	0.12	99.36	
0.98	10.00	0.13	99.49	
0.69	10.50	0.12	99.62	
0.49	11.00	0.10	99.72	
<0.49	>11	0.24	100.00	



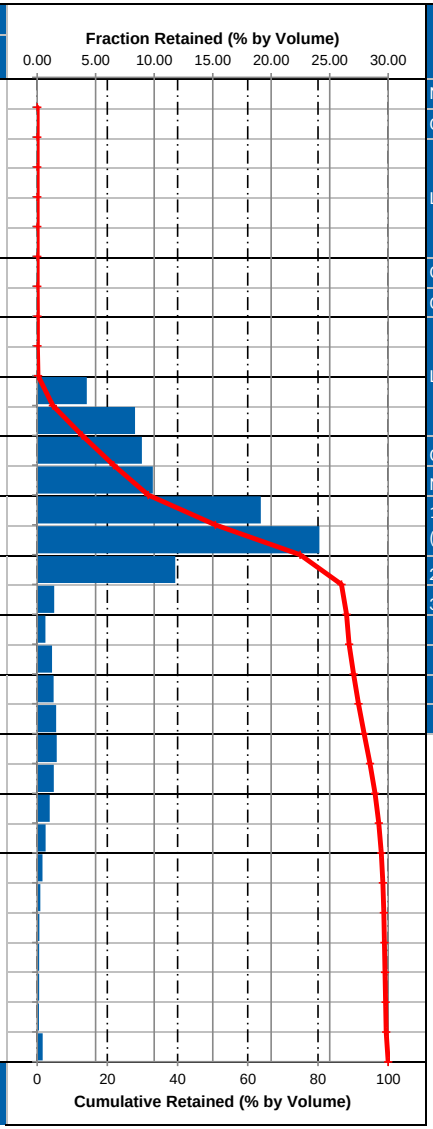
Method of Moments			
Geometric	Mean (µm)	239.91	Wentworth:
Logarithmic	Mean (Phi)	2.06	Fine sand
	Sorting	1.45	Poor
	Skewness	2.71	Very fine
	Kurtosis	14.53	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	272.72	Wentworth:
Logarithmic	Mean (Phi)	1.87	Medium sand
	Sorting	1.11	Poor
	Skewness	0.18	Fine
	Kurtosis	1.51	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.86	274.73	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.10%



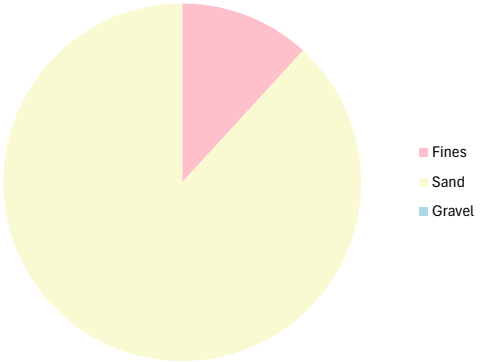
APPENDIX F PARTICLE SIZE ANALYSIS

ENV028				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.03	0.04	
1414.21	-0.50	0.02	0.06	Very coarse sand
1000.00	0.00	0.15	0.21	
707.11	0.50	4.24	4.44	Coarse sand
500.00	1.00	8.37	12.81	
353.55	1.50	8.94	21.75	Medium sand
250.00	2.00	9.88	31.63	
176.78	2.50	19.12	50.75	Fine sand
125.00	3.00	24.12	74.87	
88.39	3.50	11.81	86.68	Very fine sand
62.50	4.00	1.45	88.13	
44.19	4.50	0.70	88.84	Coarse silt
31.25	5.00	1.27	90.11	
22.10	5.50	1.40	91.51	Medium silt
15.63	6.00	1.63	93.14	
11.05	6.50	1.67	94.81	Fine silt
7.81	7.00	1.42	96.23	
5.52	7.50	1.07	97.31	Very fine silt
3.91	8.00	0.73	98.03	
2.76	8.50	0.45	98.48	Clay
1.95	9.00	0.27	98.76	
1.38	9.50	0.19	98.95	
0.98	10.00	0.17	99.12	
0.69	10.50	0.16	99.28	
0.49	11.00	0.16	99.44	
<0.49	>11	0.48	100.00	



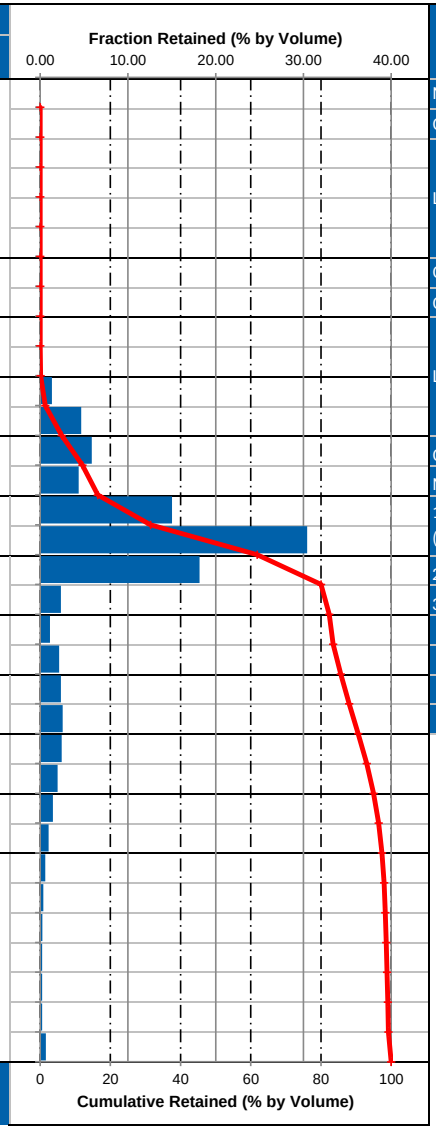
Method of Moments			
Geometric	Mean (µm)	156.58	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.77	Poor
	Skewness	1.97	Very fine
	Kurtosis	8.71	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	196.36	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.47	Poor
	Skewness	0.09	Symmetrical
	Kurtosis	1.84	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.48	179.20	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.80%
EUNIS Folk	Sand and muddy sand	Sand	88.10%
Distribution	Bimodal	Gravel	0.00%



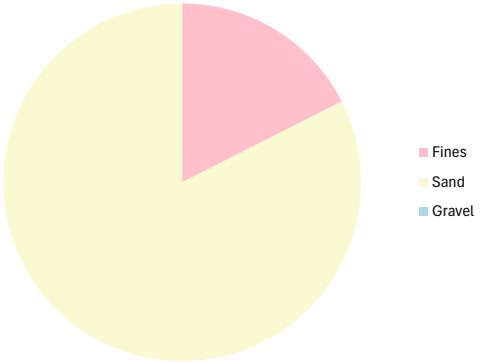
APPENDIX F PARTICLE SIZE ANALYSIS

ENV029				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.03	0.03	Very coarse sand
1000.00	0.00	0.06	0.10	
707.11	0.50	1.34	1.44	Coarse sand
500.00	1.00	4.69	6.13	
353.55	1.50	5.87	12.00	Medium sand
250.00	2.00	4.39	16.39	
176.78	2.50	15.03	31.42	Fine sand
125.00	3.00	30.42	61.84	
88.39	3.50	18.15	79.99	Very fine sand
62.50	4.00	2.36	82.35	
44.19	4.50	1.13	83.48	Coarse silt
31.25	5.00	2.17	85.65	
22.10	5.50	2.37	88.01	Medium silt
15.63	6.00	2.55	90.57	
11.05	6.50	2.44	93.01	Fine silt
7.81	7.00	1.98	94.99	
5.52	7.50	1.44	96.44	Very fine silt
3.91	8.00	0.95	97.39	
2.76	8.50	0.58	97.96	Clay
1.95	9.00	0.35	98.32	
1.38	9.50	0.25	98.57	
0.98	10.00	0.22	98.79	
0.69	10.50	0.22	99.01	
0.49	11.00	0.22	99.23	
<0.49	>11	0.65	100.00	



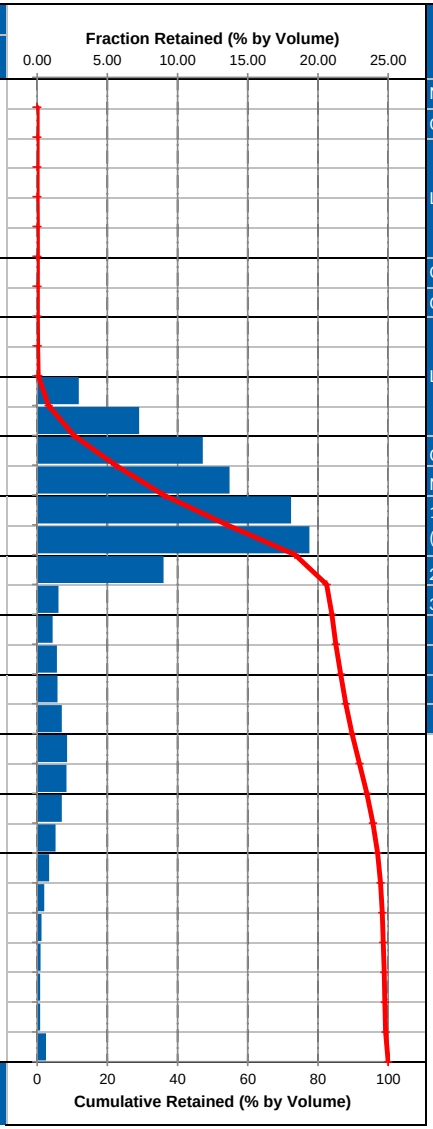
Method of Moments			
Geometric	Mean (µm)	109.81	Wentworth:
Logarithmic	Mean (Phi)	3.18	Very fine sand
	Sorting	1.83	Poor
	Skewness	1.83	Very fine
	Kurtosis	7.62	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	114.47	Wentworth:
Logarithmic	Mean (Phi)	3.13	Very fine sand
	Sorting	1.59	Poor
	Skewness	0.37	Very fine
	Kurtosis	2.33	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.81	143.05	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	6.00	15.63	Medium silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	17.50%
EUNIS Folk	Sand and muddy sand	Sand	82.30%
Distribution	Multimodal	Gravel	0.00%



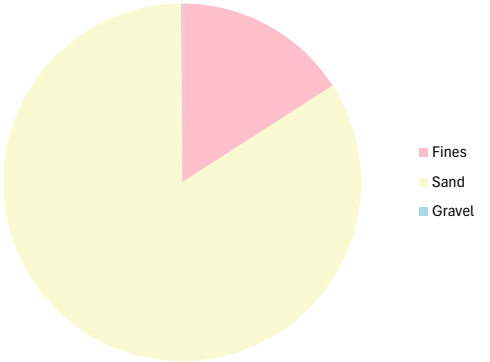
APPENDIX F PARTICLE SIZE ANALYSIS

ENV030				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.06	0.06	
4000.00	-2.00	0.00	0.06	
2828.43	-1.50	0.00	0.06	Granule
2000.00	-1.00	0.01	0.06	
1414.21	-0.50	0.04	0.10	Very coarse sand
1000.00	0.00	0.17	0.27	
707.11	0.50	2.96	3.23	Coarse sand
500.00	1.00	7.26	10.49	
353.55	1.50	11.80	22.28	Medium sand
250.00	2.00	13.70	35.99	
176.78	2.50	18.09	54.07	Fine sand
125.00	3.00	19.39	73.46	
88.39	3.50	9.00	82.46	Very fine sand
62.50	4.00	1.52	83.97	
44.19	4.50	1.11	85.08	Coarse silt
31.25	5.00	1.41	86.49	
22.10	5.50	1.44	87.93	Medium silt
15.63	6.00	1.76	89.69	
11.05	6.50	2.12	91.81	Fine silt
7.81	7.00	2.08	93.90	
5.52	7.50	1.76	95.66	Very fine silt
3.91	8.00	1.30	96.96	
2.76	8.50	0.85	97.81	Clay
1.95	9.00	0.50	98.31	
1.38	9.50	0.31	98.62	
0.98	10.00	0.23	98.85	
0.69	10.50	0.21	99.06	
0.49	11.00	0.20	99.27	
<0.49	>11	0.62	100.00	



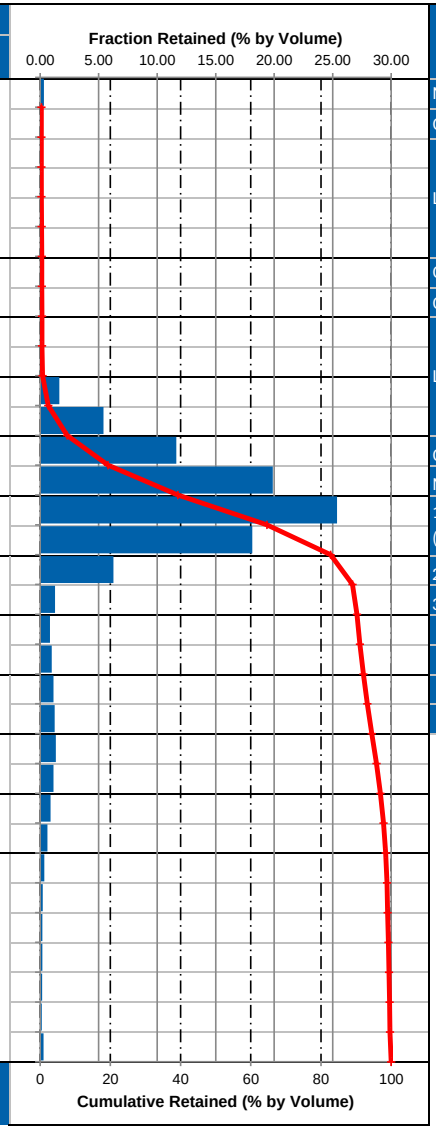
Method of Moments			
Geometric	Mean (µm)	141.35	Wentworth:
Logarithmic	Mean (Phi)	2.81	Fine sand
	Sorting	2.01	Very poor
	Skewness	1.81	Very fine
	Kurtosis	6.76	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	171.44	Wentworth:
Logarithmic	Mean (Phi)	2.54	Fine sand
	Sorting	1.71	Poor
	Skewness	0.32	Very fine
	Kurtosis	1.84	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.39	191.13	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	15.90%
EUNIS Folk	Sand and muddy sand	Sand	83.90%
Distribution	Bimodal	Gravel	0.10%



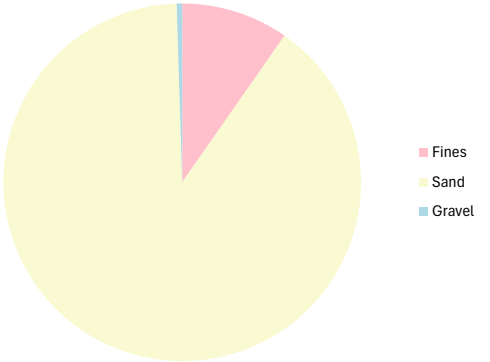
APPENDIX F PARTICLE SIZE ANALYSIS

ENV031				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.32	0.32	Pebble
16000.00	-4.00	0.00	0.32	
11313.71	-3.50	0.00	0.32	
8000.00	-3.00	0.04	0.36	
5656.85	-2.50	0.04	0.40	
4000.00	-2.00	0.04	0.44	
2828.43	-1.50	0.02	0.46	Granule
2000.00	-1.00	0.03	0.49	
1414.21	-0.50	0.04	0.53	Very coarse sand
1000.00	0.00	0.14	0.66	
707.11	0.50	1.63	2.30	Coarse sand
500.00	1.00	5.40	7.70	
353.55	1.50	11.63	19.33	Medium sand
250.00	2.00	19.89	39.22	
176.78	2.50	25.37	64.59	Fine sand
125.00	3.00	18.13	82.72	
88.39	3.50	6.26	88.98	Very fine sand
62.50	4.00	1.27	90.26	
44.19	4.50	0.84	91.09	Coarse silt
31.25	5.00	0.99	92.08	
22.10	5.50	1.14	93.22	Medium silt
15.63	6.00	1.24	94.46	
11.05	6.50	1.35	95.81	Fine silt
7.81	7.00	1.14	96.95	
5.52	7.50	0.88	97.83	Very fine silt
3.91	8.00	0.61	98.44	
2.76	8.50	0.35	98.79	Clay
1.95	9.00	0.21	99.01	
1.38	9.50	0.19	99.19	
0.98	10.00	0.19	99.38	
0.69	10.50	0.16	99.54	
0.49	11.00	0.13	99.67	
<0.49	>11	0.28	100.00	



Method of Moments			
Geometric	Mean (µm)	179.65	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	1.65	Poor
	Skewness	1.90	Very fine
	Kurtosis	10.84	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	214.09	Wentworth:
Logarithmic	Mean (Phi)	2.22	Fine sand
	Sorting	1.26	Poor
	Skewness	0.24	Fine
	Kurtosis	1.95	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.21	215.76	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

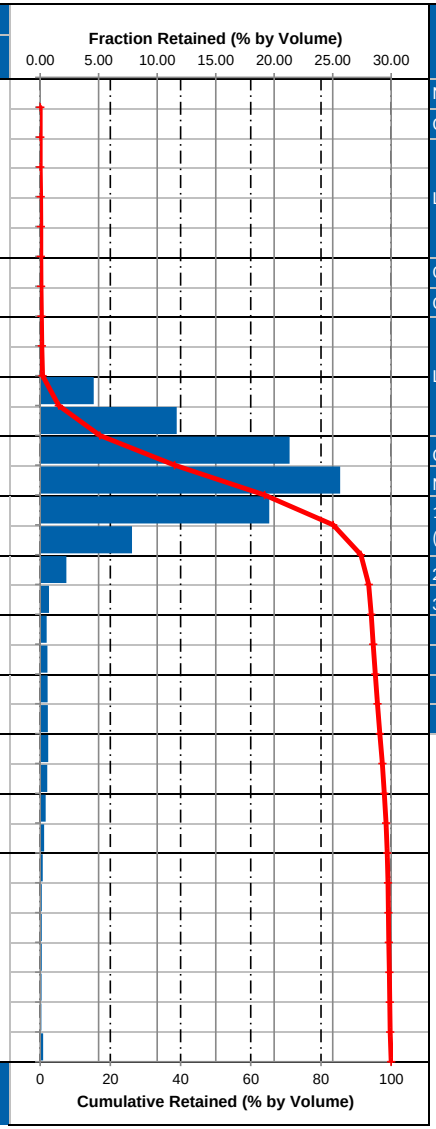
Classification		Composition	
Modified Folk	Sand	Fines	9.70%
EUNIS Folk	Sand and muddy sand	Sand	89.80%
Distribution	Bimodal	Gravel	0.50%



APPENDIX F PARTICLE SIZE ANALYSIS

ENV032

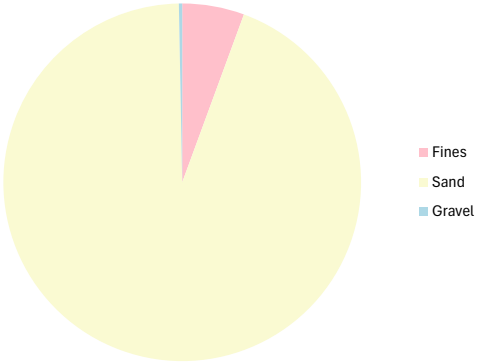
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.12	0.12	
5656.85	-2.50	0.04	0.16	
4000.00	-2.00	0.01	0.17	
2828.43	-1.50	0.05	0.22	Granule
2000.00	-1.00	0.10	0.31	
1414.21	-0.50	0.13	0.45	Very coarse sand
1000.00	0.00	0.25	0.70	
707.11	0.50	4.58	5.28	Coarse sand
500.00	1.00	11.67	16.95	
353.55	1.50	21.32	38.27	Medium sand
250.00	2.00	25.64	63.91	
176.78	2.50	19.58	83.49	Fine sand
125.00	3.00	7.85	91.34	
88.39	3.50	2.23	93.57	Very fine sand
62.50	4.00	0.75	94.32	
44.19	4.50	0.55	94.87	Coarse silt
31.25	5.00	0.61	95.49	
22.10	5.50	0.63	96.12	Medium silt
15.63	6.00	0.65	96.77	
11.05	6.50	0.69	97.46	Fine silt
7.81	7.00	0.60	98.05	
5.52	7.50	0.47	98.52	Very fine silt
3.91	8.00	0.34	98.86	
2.76	8.50	0.21	99.07	Clay
1.95	9.00	0.14	99.21	
1.38	9.50	0.13	99.34	
0.98	10.00	0.13	99.47	
0.69	10.50	0.12	99.60	
0.49	11.00	0.11	99.70	
<0.49	>11	0.26	100.00	



Method of Moments			
Geometric	Mean (µm)	260.26	Wentworth:
Logarithmic	Mean (Phi)	1.94	Medium sand
	Sorting	1.45	Poor
	Skewness	2.89	Very fine
	Kurtosis	16.07	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	299.33	Wentworth:
Logarithmic	Mean (Phi)	1.74	Medium sand
	Sorting	1.02	Poor
	Skewness	0.21	Fine
	Kurtosis	1.55	Very leptokurtic

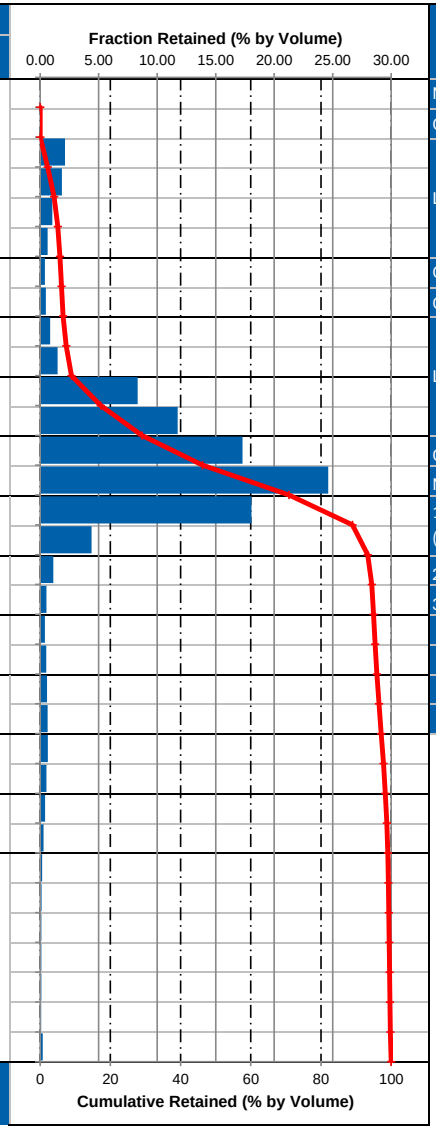
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.73	301.72	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.60%
EUNIS Folk	Sand and muddy sand	Sand	94.00%
Distribution	Unimodal	Gravel	0.30%



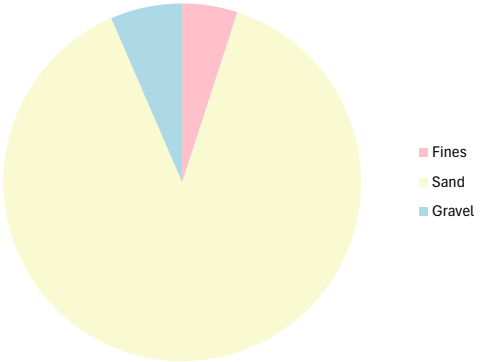
APPENDIX F PARTICLE SIZE ANALYSIS

ENV033				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	2.12	2.12	Pebble
8000.00	-3.00	1.86	3.98	
5656.85	-2.50	1.03	5.01	
4000.00	-2.00	0.64	5.65	
2828.43	-1.50	0.40	6.05	Granule
2000.00	-1.00	0.49	6.54	
1414.21	-0.50	0.86	7.40	Very coarse sand
1000.00	0.00	1.49	8.89	
707.11	0.50	8.33	17.23	Coarse sand
500.00	1.00	11.75	28.98	
353.55	1.50	17.29	46.26	Medium sand
250.00	2.00	24.62	70.89	
176.78	2.50	18.06	88.95	Fine sand
125.00	3.00	4.39	93.34	
88.39	3.50	1.13	94.46	Very fine sand
62.50	4.00	0.53	94.99	
44.19	4.50	0.40	95.40	Coarse silt
31.25	5.00	0.53	95.92	
22.10	5.50	0.59	96.52	Medium silt
15.63	6.00	0.63	97.15	
11.05	6.50	0.65	97.80	Fine silt
7.81	7.00	0.54	98.34	
5.52	7.50	0.41	98.75	Very fine silt
3.91	8.00	0.29	99.04	
2.76	8.50	0.17	99.21	Clay
1.95	9.00	0.11	99.33	
1.38	9.50	0.11	99.43	
0.98	10.00	0.11	99.54	
0.69	10.50	0.10	99.65	
0.49	11.00	0.09	99.74	
<0.49	>11	0.22	100.00	



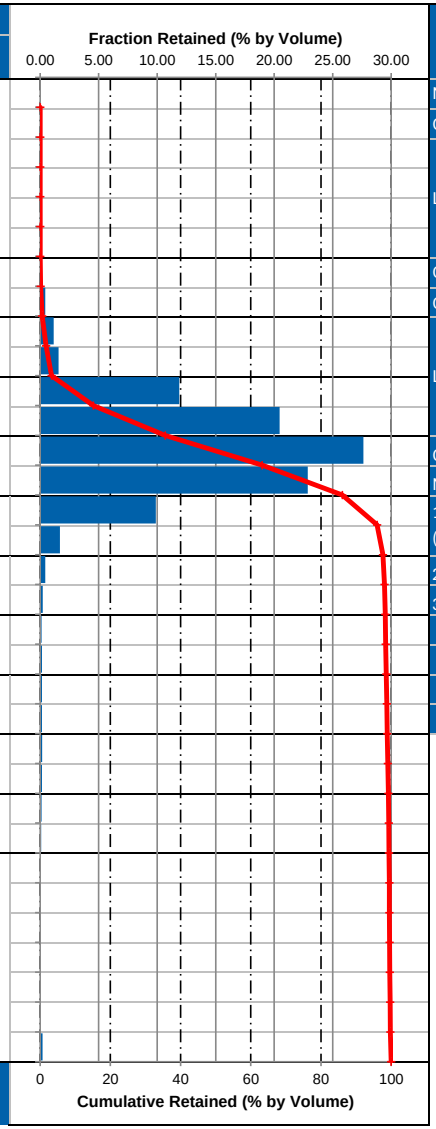
Method of Moments			
Geometric	Mean (µm)	361.49	Wentworth:
Logarithmic	Mean (Phi)	1.46	Medium sand
	Sorting	1.85	Poor
	Skewness	0.61	Fine
	Kurtosis	9.25	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	364.74	Wentworth:
Logarithmic	Mean (Phi)	1.46	Medium sand
	Sorting	1.47	Poor
	Skewness	-0.22	Coarse
	Kurtosis	2.08	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.58	335.44	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-3.50	11313.71	Pebble
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Gravelly sand	Fines	5.00%
EUNIS Folk	Coarse sediments	Sand	88.50%
Distribution	Bimodal	Gravel	6.50%



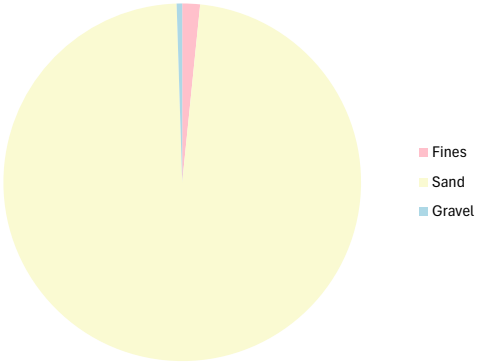
APPENDIX F PARTICLE SIZE ANALYSIS

ENV034				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.01	0.01	
4000.00	-2.00	0.01	0.02	
2828.43	-1.50	0.08	0.11	Granule
2000.00	-1.00	0.44	0.55	
1414.21	-0.50	1.15	1.69	Very coarse sand
1000.00	0.00	1.57	3.26	
707.11	0.50	11.89	15.14	Coarse sand
500.00	1.00	20.46	35.60	
353.55	1.50	27.62	63.22	Medium sand
250.00	2.00	22.88	86.10	
176.78	2.50	9.88	95.98	Fine sand
125.00	3.00	1.68	97.66	
88.39	3.50	0.44	98.10	Very fine sand
62.50	4.00	0.21	98.31	
44.19	4.50	0.11	98.43	Coarse silt
31.25	5.00	0.16	98.58	
22.10	5.50	0.15	98.74	Medium silt
15.63	6.00	0.15	98.89	
11.05	6.50	0.16	99.05	Fine silt
7.81	7.00	0.14	99.20	
5.52	7.50	0.12	99.31	Very fine silt
3.91	8.00	0.09	99.40	
2.76	8.50	0.06	99.46	
1.95	9.00	0.05	99.50	
1.38	9.50	0.05	99.56	
0.98	10.00	0.06	99.62	Clay
0.69	10.50	0.07	99.69	
0.49	11.00	0.07	99.76	
<0.49	>11	0.20	100.00	



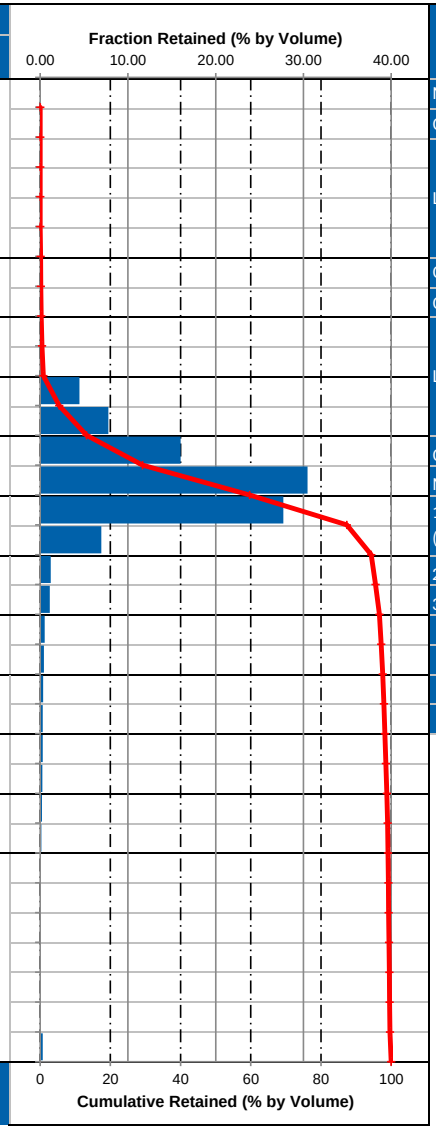
Method of Moments			
Geometric	Mean (µm)	398.83	Wentworth:
Logarithmic	Mean (Phi)	1.32	Medium sand
	Sorting	1.11	Poor
	Skewness	3.96	Very fine
	Kurtosis	33.23	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	421.84	Wentworth:
Logarithmic	Mean (Phi)	1.25	Medium sand
	Sorting	0.72	Moderate
	Skewness	-0.02	Symmetrical
	Kurtosis	0.96	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.26	417.36	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	1.60%
EUNIS Folk	Sand and muddy sand	Sand	97.80%
Distribution	Unimodal	Gravel	0.50%



APPENDIX F PARTICLE SIZE ANALYSIS

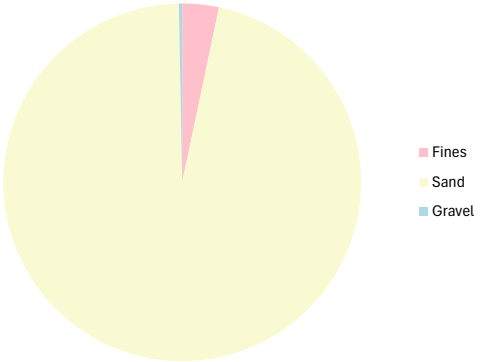
ENV036				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.10	0.10	
2828.43	-1.50	0.05	0.16	Granule
2000.00	-1.00	0.10	0.26	
1414.21	-0.50	0.27	0.53	Very coarse sand
1000.00	0.00	0.39	0.92	
707.11	0.50	4.48	5.40	Coarse sand
500.00	1.00	7.77	13.17	
353.55	1.50	16.00	29.17	Medium sand
250.00	2.00	30.46	59.64	
176.78	2.50	27.71	87.35	Fine sand
125.00	3.00	6.97	94.32	
88.39	3.50	1.21	95.53	Very fine sand
62.50	4.00	1.10	96.63	
44.19	4.50	0.53	97.15	Coarse silt
31.25	5.00	0.43	97.58	
22.10	5.50	0.33	97.92	Medium silt
15.63	6.00	0.29	98.21	
11.05	6.50	0.29	98.50	Fine silt
7.81	7.00	0.26	98.76	
5.52	7.50	0.20	98.96	Very fine silt
3.91	8.00	0.14	99.11	
2.76	8.50	0.10	99.20	
1.95	9.00	0.08	99.28	
1.38	9.50	0.08	99.36	
0.98	10.00	0.10	99.46	Clay
0.69	10.50	0.10	99.56	
0.49	11.00	0.10	99.66	
<0.49	>11	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	263.96	Wentworth:
Logarithmic	Mean (Phi)	1.92	Medium sand
	Sorting	1.22	Poor
	Skewness	3.57	Very fine
	Kurtosis	25.75	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	289.18	Wentworth:
Logarithmic	Mean (Phi)	1.79	Medium sand
	Sorting	0.77	Moderate
	Skewness	-0.05	Symmetrical
	Kurtosis	1.28	Leptokurtic

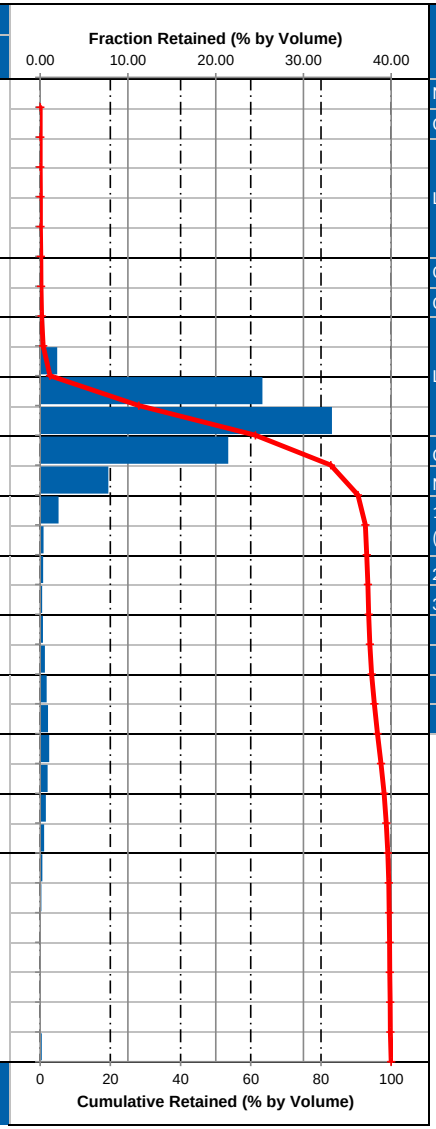
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.84	278.97	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	3.30%
EUNIS Folk	Sand and muddy sand	Sand	96.40%
Distribution	Unimodal	Gravel	0.30%



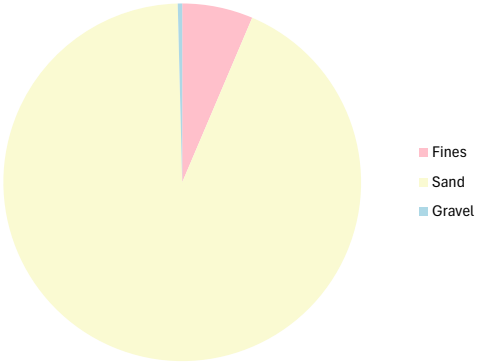
APPENDIX F PARTICLE SIZE ANALYSIS

ENV037				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.08	0.08	
5656.85	-2.50	0.00	0.08	
4000.00	-2.00	0.08	0.16	
2828.43	-1.50	0.09	0.25	Granule
2000.00	-1.00	0.13	0.38	
1414.21	-0.50	0.45	0.83	Very coarse sand
1000.00	0.00	1.94	2.77	
707.11	0.50	25.32	28.09	Coarse sand
500.00	1.00	33.25	61.34	
353.55	1.50	21.43	82.77	Medium sand
250.00	2.00	7.78	90.55	
176.78	2.50	2.10	92.65	Fine sand
125.00	3.00	0.38	93.03	
88.39	3.50	0.33	93.35	Very fine sand
62.50	4.00	0.24	93.59	
44.19	4.50	0.32	93.90	Coarse silt
31.25	5.00	0.54	94.45	
22.10	5.50	0.74	95.19	Medium silt
15.63	6.00	0.89	96.09	
11.05	6.50	1.03	97.11	Fine silt
7.81	7.00	0.86	97.97	
5.52	7.50	0.65	98.62	Very fine silt
3.91	8.00	0.44	99.06	
2.76	8.50	0.24	99.30	
1.95	9.00	0.13	99.42	
1.38	9.50	0.10	99.52	
0.98	10.00	0.10	99.62	Clay
0.69	10.50	0.09	99.71	
0.49	11.00	0.07	99.78	
<0.49	>11	0.18	100.00	



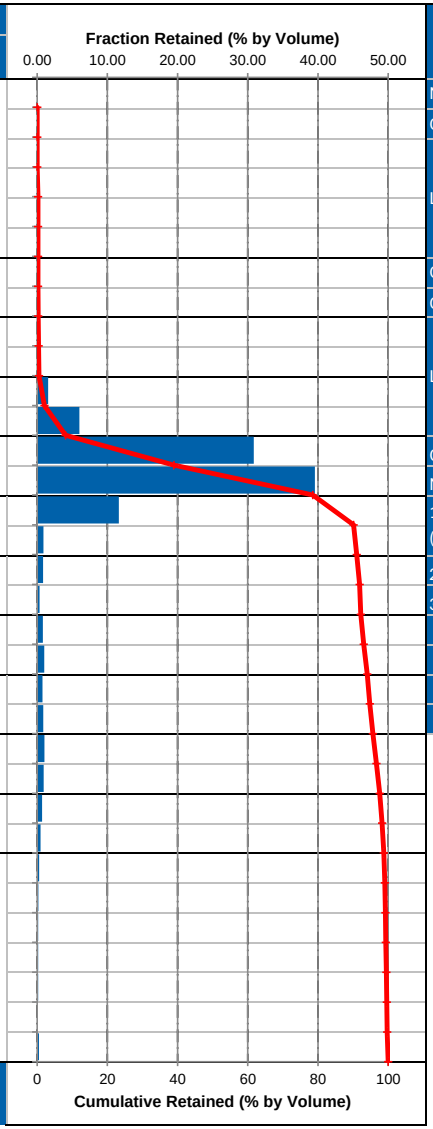
Method of Moments			
Geometric	Mean (µm)	434.51	Wentworth:
Logarithmic	Mean (Phi)	1.20	Medium sand
	Sorting	1.58	Poor
	Skewness	3.22	Very fine
	Kurtosis	15.11	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	539.63	Wentworth:
Logarithmic	Mean (Phi)	0.89	Coarse sand
	Sorting	1.14	Poor
	Skewness	0.42	Very fine
	Kurtosis	2.48	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.83	562.72	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.40%
EUNIS Folk	Sand and muddy sand	Sand	93.20%
Distribution	Bimodal	Gravel	0.40%



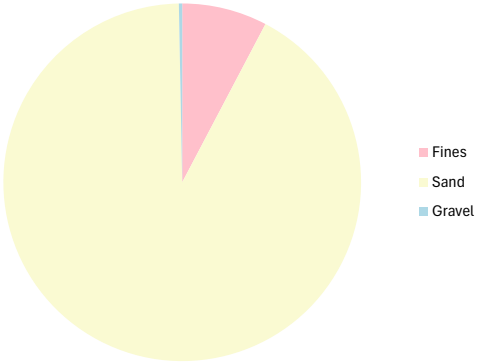
APPENDIX F PARTICLE SIZE ANALYSIS

ENV038				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.21	0.21	
5656.85	-2.50	0.03	0.24	
4000.00	-2.00	0.00	0.24	
2828.43	-1.50	0.00	0.24	Granule
2000.00	-1.00	0.05	0.29	
1414.21	-0.50	0.08	0.37	Very coarse sand
1000.00	0.00	0.14	0.51	
707.11	0.50	1.57	2.08	Coarse sand
500.00	1.00	6.01	8.09	
353.55	1.50	30.86	38.95	Medium sand
250.00	2.00	39.57	78.51	
176.78	2.50	11.64	90.16	Fine sand
125.00	3.00	0.89	91.05	
88.39	3.50	0.84	91.89	Very fine sand
62.50	4.00	0.33	92.22	
44.19	4.50	0.82	93.03	Coarse silt
31.25	5.00	1.00	94.03	
22.10	5.50	0.75	94.78	Medium silt
15.63	6.00	0.86	95.64	
11.05	6.50	1.03	96.67	Fine silt
7.81	7.00	0.91	97.58	
5.52	7.50	0.70	98.27	Very fine silt
3.91	8.00	0.47	98.75	
2.76	8.50	0.27	99.02	Clay
1.95	9.00	0.16	99.18	
1.38	9.50	0.14	99.32	
0.98	10.00	0.14	99.46	
0.69	10.50	0.13	99.59	
0.49	11.00	0.11	99.70	
<0.49	>11	0.26	100.00	



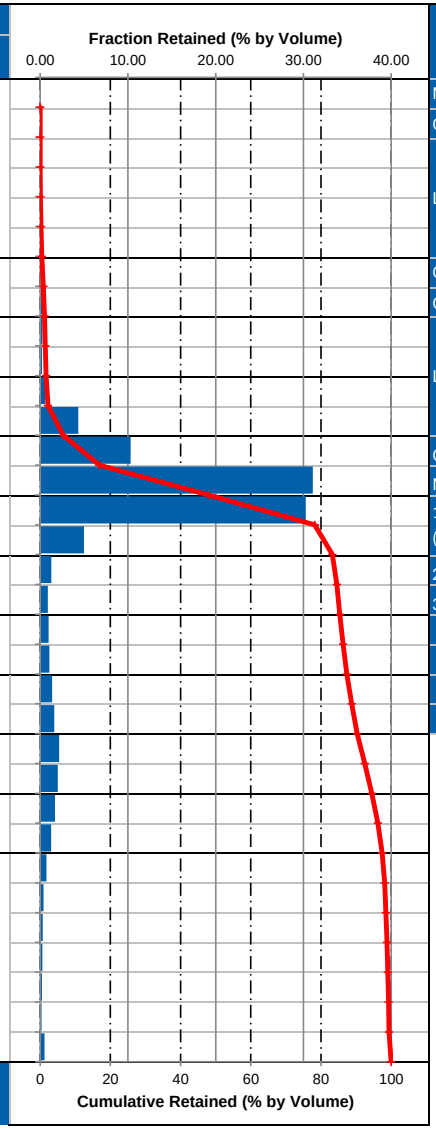
Method of Moments			
Geometric	Mean (µm)	258.71	Wentworth:
Logarithmic	Mean (Phi)	1.95	Medium sand
	Sorting	1.51	Poor
	Skewness	3.11	Very fine
	Kurtosis	15.43	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	314.73	Wentworth:
Logarithmic	Mean (Phi)	1.67	Medium sand
	Sorting	1.02	Poor
	Skewness	0.35	Very fine
	Kurtosis	2.94	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.64	320.93	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.70%
EUNIS Folk	Sand and muddy sand	Sand	91.90%
Distribution	Bimodal	Gravel	0.30%



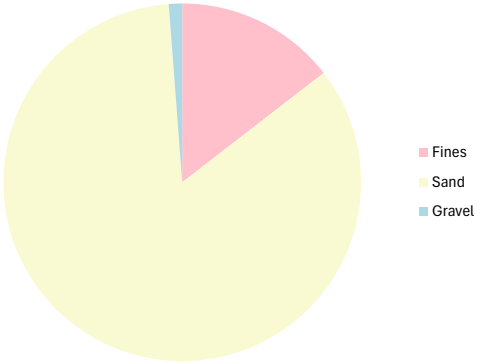
APPENDIX F PARTICLE SIZE ANALYSIS

ENV039				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.07	0.07	
5656.85	-2.50	0.18	0.25	
4000.00	-2.00	0.20	0.45	
2828.43	-1.50	0.45	0.89	Granule
2000.00	-1.00	0.34	1.23	
1414.21	-0.50	0.24	1.47	Very coarse sand
1000.00	0.00	0.20	1.67	
707.11	0.50	0.57	2.24	Coarse sand
500.00	1.00	4.35	6.59	
353.55	1.50	10.30	16.89	Medium sand
250.00	2.00	31.07	47.96	
176.78	2.50	30.28	78.24	Fine sand
125.00	3.00	4.99	83.23	
88.39	3.50	1.27	84.50	Very fine sand
62.50	4.00	0.87	85.36	
44.19	4.50	0.95	86.31	Coarse silt
31.25	5.00	1.04	87.36	
22.10	5.50	1.37	88.72	Medium silt
15.63	6.00	1.61	90.33	
11.05	6.50	2.16	92.49	Fine silt
7.81	7.00	2.01	94.50	
5.52	7.50	1.68	96.18	Very fine silt
3.91	8.00	1.24	97.42	
2.76	8.50	0.70	98.13	
1.95	9.00	0.38	98.51	
1.38	9.50	0.29	98.80	
0.98	10.00	0.25	99.05	Clay
0.69	10.50	0.19	99.24	
0.49	11.00	0.16	99.40	
<0.49	>11	0.50	100.00	



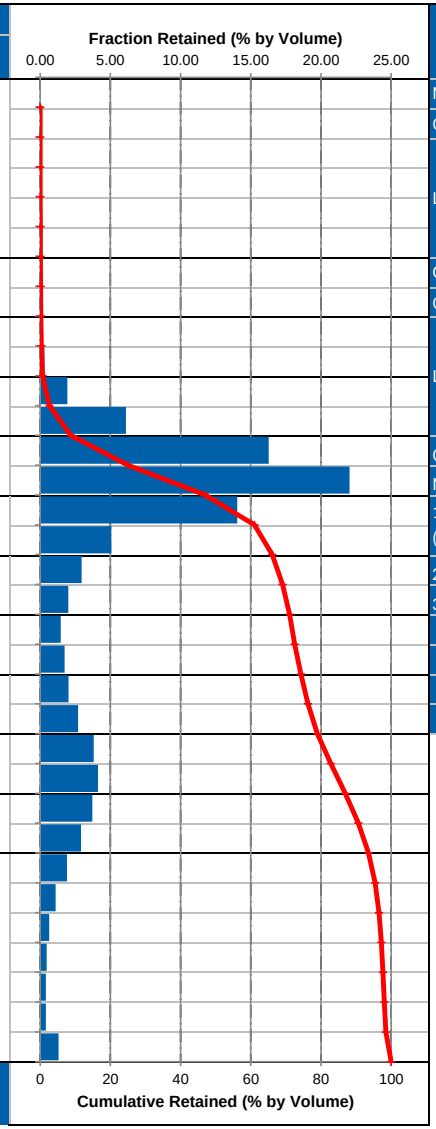
Method of Moments			
Geometric	Mean (µm)	169.04	Wentworth:
Logarithmic	Mean (Phi)	2.55	Fine sand
	Sorting	1.97	Poor
	Skewness	1.95	Very fine
	Kurtosis	7.69	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	208.08	Wentworth:
Logarithmic	Mean (Phi)	2.26	Fine sand
	Sorting	1.42	Poor
	Skewness	0.50	Very fine
	Kurtosis	3.18	Extremely leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.03	244.23	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	14.50%
EUNIS Folk	Sand and muddy sand	Sand	84.10%
Distribution	Bimodal	Gravel	1.20%



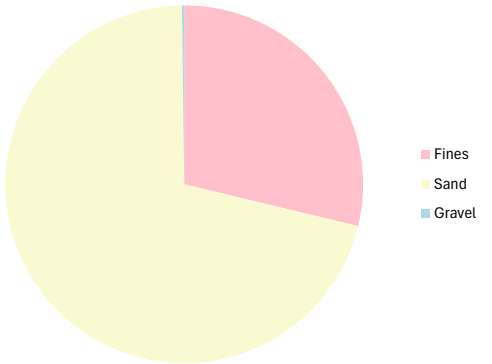
APPENDIX F PARTICLE SIZE ANALYSIS

ENV040				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.08	0.08	
4000.00	-2.00	0.00	0.08	
2828.43	-1.50	0.02	0.11	Granule
2000.00	-1.00	0.08	0.19	
1414.21	-0.50	0.17	0.36	Very coarse sand
1000.00	0.00	0.30	0.66	
707.11	0.50	1.94	2.60	Coarse sand
500.00	1.00	6.10	8.70	
353.55	1.50	16.27	24.97	Medium sand
250.00	2.00	22.03	47.01	
176.78	2.50	14.04	61.04	Fine sand
125.00	3.00	5.06	66.10	
88.39	3.50	2.95	69.05	Very fine sand
62.50	4.00	2.01	71.06	
44.19	4.50	1.46	72.53	Coarse silt
31.25	5.00	1.75	74.27	
22.10	5.50	2.01	76.28	Medium silt
15.63	6.00	2.69	78.98	
11.05	6.50	3.82	82.80	Fine silt
7.81	7.00	4.12	86.91	
5.52	7.50	3.72	90.63	Very fine silt
3.91	8.00	2.90	93.54	
2.76	8.50	1.91	95.45	Clay
1.95	9.00	1.10	96.55	
1.38	9.50	0.65	97.20	
0.98	10.00	0.46	97.66	
0.69	10.50	0.41	98.06	
0.49	11.00	0.40	98.46	
<0.49	>11	1.31	100.00	



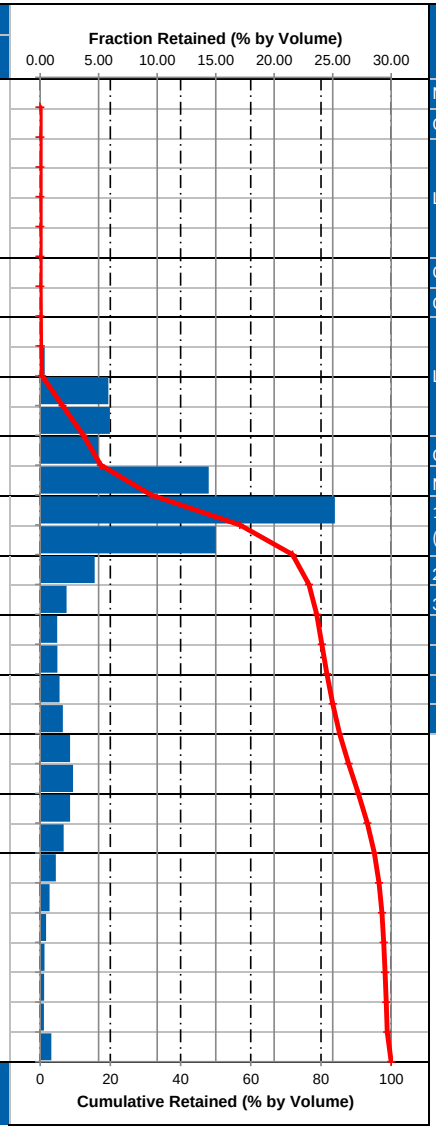
Method of Moments			
Geometric	Mean (µm)	101.61	Wentworth:
Logarithmic	Mean (Phi)	3.28	Very fine sand
	Sorting	2.64	Very poor
	Skewness	1.21	Fine
	Kurtosis	3.64	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	99.74	Wentworth:
Logarithmic	Mean (Phi)	3.33	Very fine sand
	Sorting	2.52	Very poor
	Skewness	0.65	Very fine
	Kurtosis	0.86	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.11	232.19	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	28.70%
EUNIS Folk	Mud and sandy mud	Sand	70.90%
Distribution	Bimodal	Gravel	0.20%



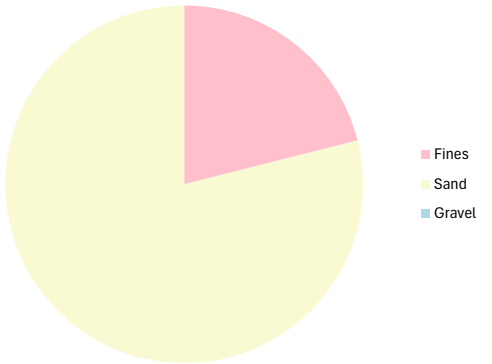
APPENDIX F PARTICLE SIZE ANALYSIS

ENV041				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.04	0.04	
1414.21	-0.50	0.10	0.13	Very coarse sand
1000.00	0.00	0.38	0.51	
707.11	0.50	5.82	6.34	Coarse sand
500.00	1.00	5.95	12.29	
353.55	1.50	4.97	17.26	Medium sand
250.00	2.00	14.41	31.67	
176.78	2.50	25.19	56.85	Fine sand
125.00	3.00	15.02	71.87	
88.39	3.50	4.67	76.54	Very fine sand
62.50	4.00	2.25	78.78	
44.19	4.50	1.45	80.24	Coarse silt
31.25	5.00	1.47	81.71	
22.10	5.50	1.65	83.36	Medium silt
15.63	6.00	1.93	85.29	
11.05	6.50	2.56	87.85	Fine silt
7.81	7.00	2.80	90.65	
5.52	7.50	2.56	93.21	Very fine silt
3.91	8.00	2.00	95.21	
2.76	8.50	1.34	96.55	
1.95	9.00	0.81	97.36	
1.38	9.50	0.51	97.86	
0.98	10.00	0.38	98.24	Clay
0.69	10.50	0.33	98.57	
0.49	11.00	0.31	98.89	
<0.49	>11	0.95	100.00	



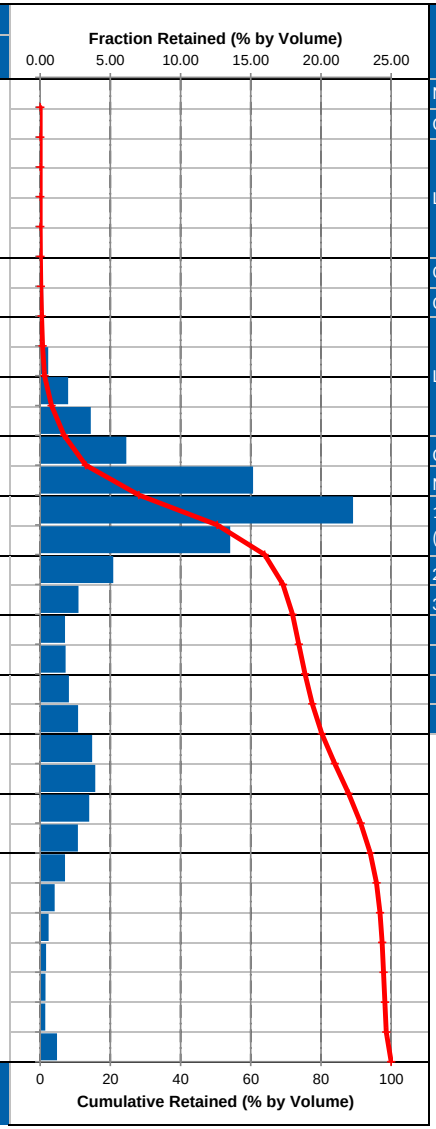
Method of Moments			
Geometric	Mean (µm)	119.28	Wentworth:
Logarithmic	Mean (Phi)	3.05	Very fine sand
	Sorting	2.31	Very poor
	Skewness	1.53	Very fine
	Kurtosis	5.15	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	113.90	Wentworth:
Logarithmic	Mean (Phi)	3.13	Very fine sand
	Sorting	2.22	Very poor
	Skewness	0.51	Very fine
	Kurtosis	1.98	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	194.26	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	1.00	500.00	Coarse sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	21.00%
EUNIS Folk	Mud and sandy mud	Sand	78.70%
Distribution	Multimodal	Gravel	0.00%



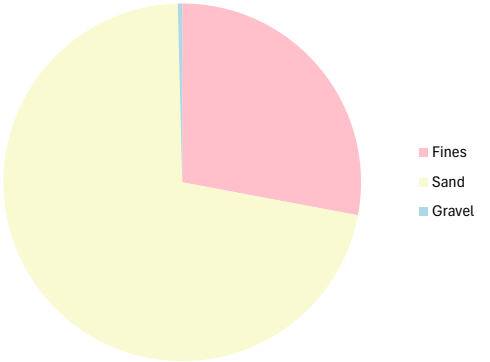
APPENDIX F PARTICLE SIZE ANALYSIS

ENV042				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.07	0.07	
2828.43	-1.50	0.13	0.20	Granule
2000.00	-1.00	0.21	0.40	
1414.21	-0.50	0.26	0.66	Very coarse sand
1000.00	0.00	0.57	1.23	
707.11	0.50	2.00	3.23	Coarse sand
500.00	1.00	3.60	6.82	
353.55	1.50	6.14	12.96	Medium sand
250.00	2.00	15.17	28.13	
176.78	2.50	22.29	50.41	Fine sand
125.00	3.00	13.53	63.94	
88.39	3.50	5.21	69.15	Very fine sand
62.50	4.00	2.73	71.89	
44.19	4.50	1.76	73.65	Coarse silt
31.25	5.00	1.82	75.46	
22.10	5.50	2.05	77.52	Medium silt
15.63	6.00	2.69	80.21	
11.05	6.50	3.69	83.90	Fine silt
7.81	7.00	3.93	87.83	
5.52	7.50	3.49	91.33	Very fine silt
3.91	8.00	2.69	94.02	
2.76	8.50	1.77	95.79	
1.95	9.00	1.03	96.82	
1.38	9.50	0.60	97.42	
0.98	10.00	0.42	97.84	Clay
0.69	10.50	0.38	98.22	
0.49	11.00	0.37	98.59	
<0.49	>11	1.20	100.00	



Method of Moments			
Geometric	Mean (µm)	90.45	Wentworth:
Logarithmic	Mean (Phi)	3.45	Very fine sand
	Sorting	2.47	Very poor
	Skewness	1.22	Fine
	Kurtosis	4.01	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	86.31	Wentworth:
Logarithmic	Mean (Phi)	3.53	Very fine sand
	Sorting	2.37	Very poor
	Skewness	0.59	Very fine
	Kurtosis	1.04	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.49	177.91	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

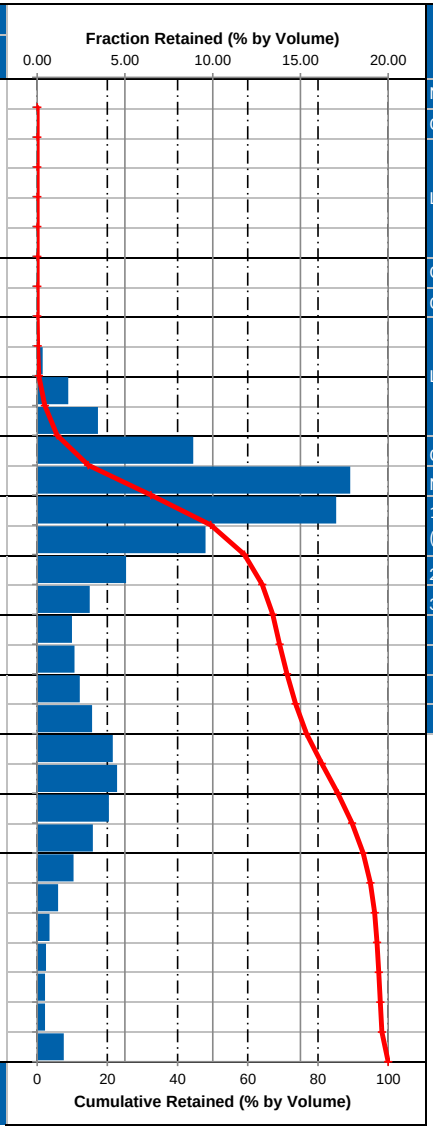
Classification		Composition	
Modified Folk	Muddy sand	Fines	27.90%
EUNIS Folk	Mud and sandy mud	Sand	71.50%
Distribution	Bimodal	Gravel	0.40%



APPENDIX F PARTICLE SIZE ANALYSIS

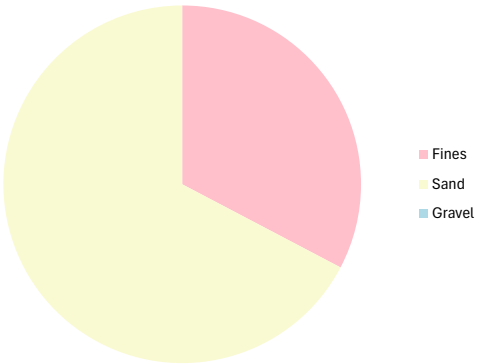
ENV043

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.00	0.02	
1414.21	-0.50	0.10	0.11	Very coarse sand
1000.00	0.00	0.32	0.43	
707.11	0.50	1.77	2.20	Coarse sand
500.00	1.00	3.46	5.66	
353.55	1.50	8.89	14.56	Medium sand
250.00	2.00	17.84	32.39	
176.78	2.50	17.04	49.43	Fine sand
125.00	3.00	9.59	59.02	
88.39	3.50	5.07	64.09	Very fine sand
62.50	4.00	2.99	67.08	
44.19	4.50	1.98	69.06	Coarse silt
31.25	5.00	2.12	71.18	
22.10	5.50	2.43	73.61	Medium silt
15.63	6.00	3.12	76.74	
11.05	6.50	4.31	81.05	Fine silt
7.81	7.00	4.56	85.61	
5.52	7.50	4.08	89.69	Very fine silt
3.91	8.00	3.17	92.86	
2.76	8.50	2.07	94.93	Clay
1.95	9.00	1.19	96.12	
1.38	9.50	0.70	96.83	
0.98	10.00	0.50	97.33	
0.69	10.50	0.44	97.77	
0.49	11.00	0.44	98.21	
<0.49	>11	1.51	100.00	



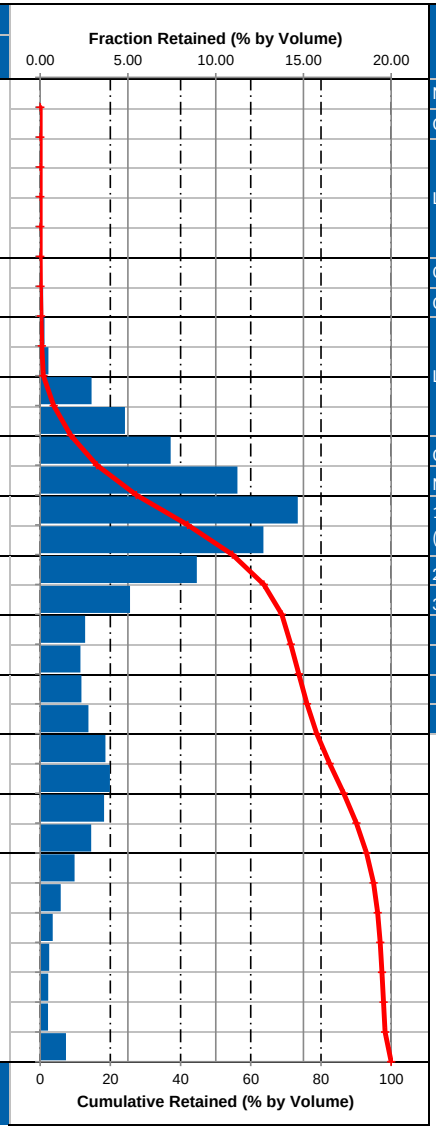
Method of Moments			
Geometric	Mean (µm)	78.21	Wentworth:
Logarithmic	Mean (Phi)	3.65	Very fine sand
	Sorting	2.60	Very poor
	Skewness	1.09	Fine
	Kurtosis	3.44	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	80.70	Wentworth:
Logarithmic	Mean (Phi)	3.63	Very fine sand
	Sorting	2.48	Very poor
	Skewness	0.60	Very fine
	Kurtosis	0.80	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.53	173.17	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	32.60%
EUNIS Folk	Mud and sandy mud	Sand	67.10%
Distribution	Bimodal	Gravel	0.00%



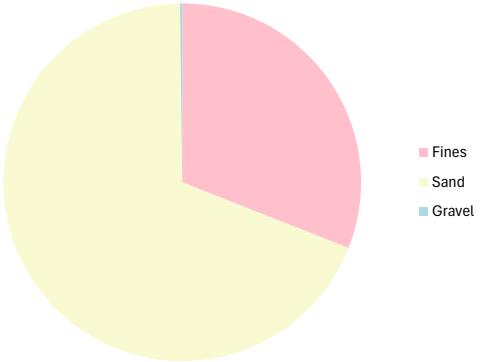
APPENDIX F PARTICLE SIZE ANALYSIS

ENV044				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.04	0.04	Granule
2000.00	-1.00	0.17	0.21	
1414.21	-0.50	0.25	0.45	Very coarse sand
1000.00	0.00	0.47	0.92	
707.11	0.50	2.93	3.85	Coarse sand
500.00	1.00	4.83	8.68	
353.55	1.50	7.44	16.12	Medium sand
250.00	2.00	11.24	27.36	
176.78	2.50	14.68	42.04	Fine sand
125.00	3.00	12.72	54.76	
88.39	3.50	8.92	63.68	Very fine sand
62.50	4.00	5.12	68.80	
44.19	4.50	2.57	71.37	Coarse silt
31.25	5.00	2.30	73.66	
22.10	5.50	2.35	76.01	Medium silt
15.63	6.00	2.75	78.77	
11.05	6.50	3.72	82.48	Fine silt
7.81	7.00	3.97	86.45	
5.52	7.50	3.64	90.09	Very fine silt
3.91	8.00	2.91	93.00	
2.76	8.50	1.96	94.96	Clay
1.95	9.00	1.17	96.14	
1.38	9.50	0.72	96.85	
0.98	10.00	0.52	97.37	
0.69	10.50	0.45	97.82	
0.49	11.00	0.44	98.26	
<0.49	>11	1.47	100.00	



Method of Moments			
Geometric	Mean (µm)	79.36	Wentworth:
Logarithmic	Mean (Phi)	3.63	Very fine sand
	Sorting	2.56	Very poor
	Skewness	1.09	Fine
	Kurtosis	3.70	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	78.82	Wentworth:
Logarithmic	Mean (Phi)	3.67	Very fine sand
	Sorting	2.50	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.95	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.81	142.30	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

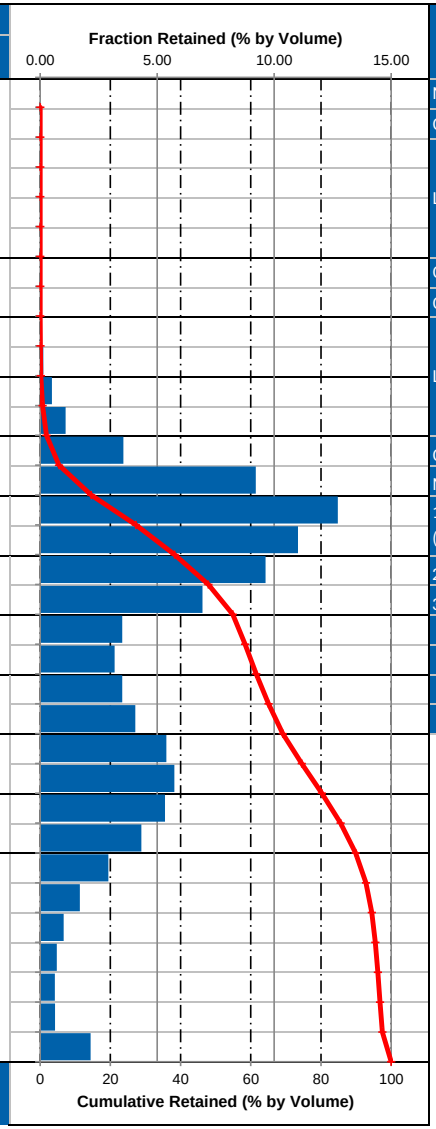
Classification		Composition	
Modified Folk	Muddy sand	Fines	30.90%
EUNIS Folk	Mud and sandy mud	Sand	68.60%
Distribution	Bimodal	Gravel	0.20%



APPENDIX F PARTICLE SIZE ANALYSIS

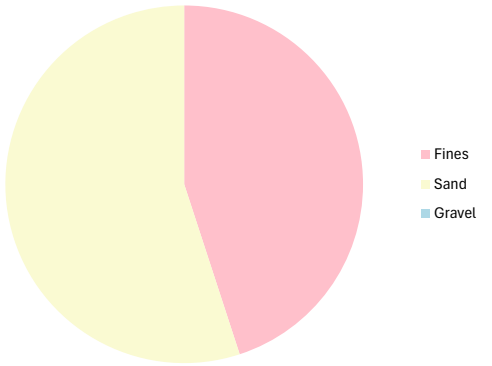
ENV045

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.06	0.06	Very coarse sand
1000.00	0.00	0.13	0.19	
707.11	0.50	0.50	0.69	Coarse sand
500.00	1.00	1.09	1.78	
353.55	1.50	3.55	5.34	Medium sand
250.00	2.00	9.21	14.55	
176.78	2.50	12.72	27.27	Fine sand
125.00	3.00	11.02	38.29	
88.39	3.50	9.63	47.92	Very fine sand
62.50	4.00	6.93	54.85	
44.19	4.50	3.51	58.36	Coarse silt
31.25	5.00	3.18	61.53	
22.10	5.50	3.51	65.04	Medium silt
15.63	6.00	4.06	69.10	
11.05	6.50	5.39	74.49	Fine silt
7.81	7.00	5.74	80.23	
5.52	7.50	5.33	85.56	Very fine silt
3.91	8.00	4.32	89.89	
2.76	8.50	2.91	92.80	Clay
1.95	9.00	1.70	94.49	
1.38	9.50	1.00	95.49	
0.98	10.00	0.71	96.20	
0.69	10.50	0.63	96.83	
0.49	11.00	0.64	97.47	
<0.49	>11	2.15	100.00	



Method of Moments			
Geometric	Mean (µm)	43.67	Wentworth:
Logarithmic	Mean (Phi)	4.48	Coarse silt
	Sorting	2.59	Very poor
	Skewness	0.81	Fine
	Kurtosis	2.99	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	48.91	Wentworth:
Logarithmic	Mean (Phi)	4.35	Coarse silt
	Sorting	2.51	Very poor
	Skewness	0.42	Very fine
	Kurtosis	0.77	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.65	79.64	Very fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

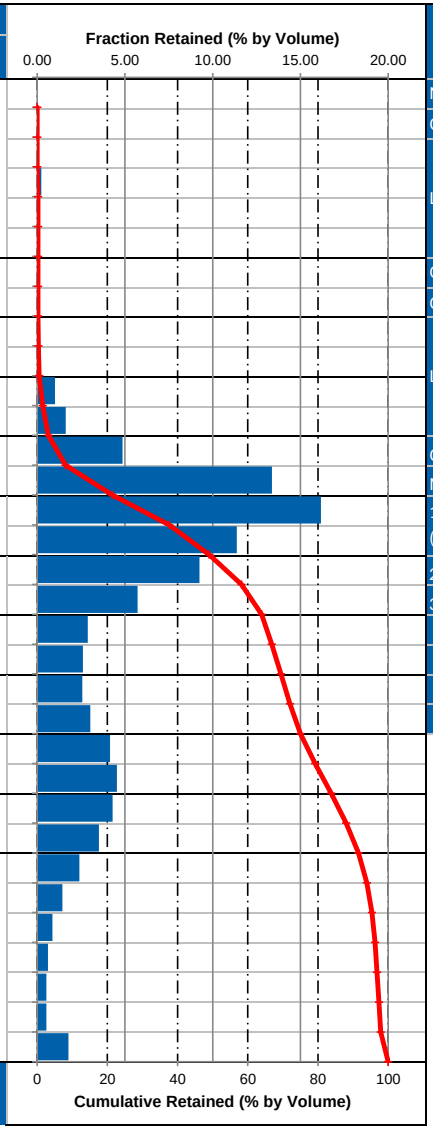
Classification		Composition	
Modified Folk	Muddy sand	Fines	44.80%
EUNIS Folk	Mud and sandy mud	Sand	54.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

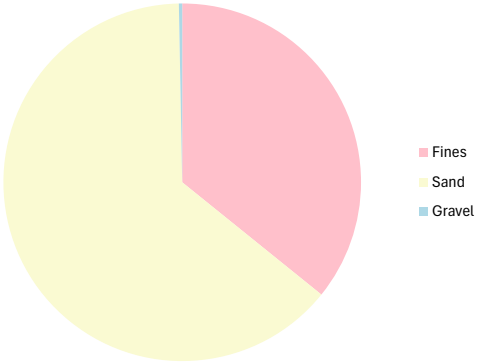
ENV046

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.23	0.23	
5656.85	-2.50	0.00	0.23	
4000.00	-2.00	0.00	0.23	
2828.43	-1.50	0.01	0.25	Granule
2000.00	-1.00	0.01	0.26	
1414.21	-0.50	0.09	0.35	Very coarse sand
1000.00	0.00	0.19	0.54	
707.11	0.50	1.01	1.56	Coarse sand
500.00	1.00	1.62	3.18	
353.55	1.50	4.87	8.05	Medium sand
250.00	2.00	13.38	21.43	
176.78	2.50	16.17	37.60	Fine sand
125.00	3.00	11.38	48.97	
88.39	3.50	9.25	58.22	Very fine sand
62.50	4.00	5.72	63.94	
44.19	4.50	2.89	66.83	Coarse silt
31.25	5.00	2.60	69.43	
22.10	5.50	2.57	72.00	Medium silt
15.63	6.00	3.03	75.03	
11.05	6.50	4.15	79.18	Fine silt
7.81	7.00	4.54	83.72	
5.52	7.50	4.29	88.01	Very fine silt
3.91	8.00	3.52	91.53	
2.76	8.50	2.40	93.93	Clay
1.95	9.00	1.43	95.36	
1.38	9.50	0.87	96.23	
0.98	10.00	0.61	96.84	
0.69	10.50	0.53	97.37	
0.49	11.00	0.52	97.89	
<0.49	>11	1.78	100.00	



Method of Moments			
Geometric	Mean (µm)	61.83	Wentworth:
Logarithmic	Mean (Phi)	3.98	Very fine sand
	Sorting	2.59	Very poor
	Skewness	0.98	Fine
	Kurtosis	3.48	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	64.18	Wentworth:
Logarithmic	Mean (Phi)	3.96	Very fine sand
	Sorting	2.47	Very poor
	Skewness	0.52	Very fine
	Kurtosis	0.81	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.06	120.28	Very fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

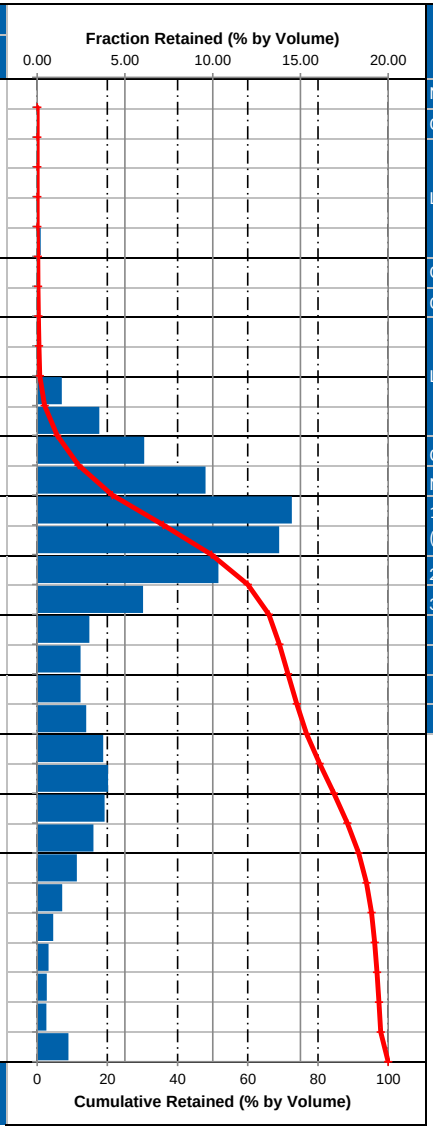
Classification		Composition	
Modified Folk	Muddy sand	Fines	35.70%
EUNIS Folk	Mud and sandy mud	Sand	63.70%
Distribution	Bimodal	Gravel	0.30%



APPENDIX F PARTICLE SIZE ANALYSIS

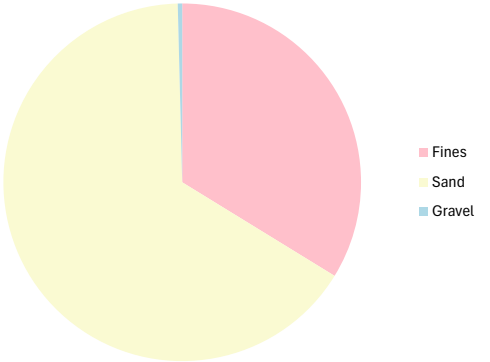
ENV047

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.20	0.20	
2828.43	-1.50	0.03	0.23	Granule
2000.00	-1.00	0.13	0.35	
1414.21	-0.50	0.17	0.52	Very coarse sand
1000.00	0.00	0.20	0.72	
707.11	0.50	1.41	2.12	Coarse sand
500.00	1.00	3.54	5.66	
353.55	1.50	6.10	11.76	Medium sand
250.00	2.00	9.59	21.36	
176.78	2.50	14.52	35.87	Fine sand
125.00	3.00	13.78	49.65	
88.39	3.50	10.33	59.98	Very fine sand
62.50	4.00	6.03	66.02	
44.19	4.50	2.97	68.99	Coarse silt
31.25	5.00	2.47	71.46	
22.10	5.50	2.47	73.93	Medium silt
15.63	6.00	2.79	76.72	
11.05	6.50	3.76	80.48	Fine silt
7.81	7.00	4.04	84.53	
5.52	7.50	3.84	88.36	Very fine silt
3.91	8.00	3.21	91.57	
2.76	8.50	2.26	93.83	Clay
1.95	9.00	1.43	95.26	
1.38	9.50	0.91	96.17	
0.98	10.00	0.65	96.82	
0.69	10.50	0.54	97.36	
0.49	11.00	0.52	97.89	
<0.49	>11	1.79	100.00	



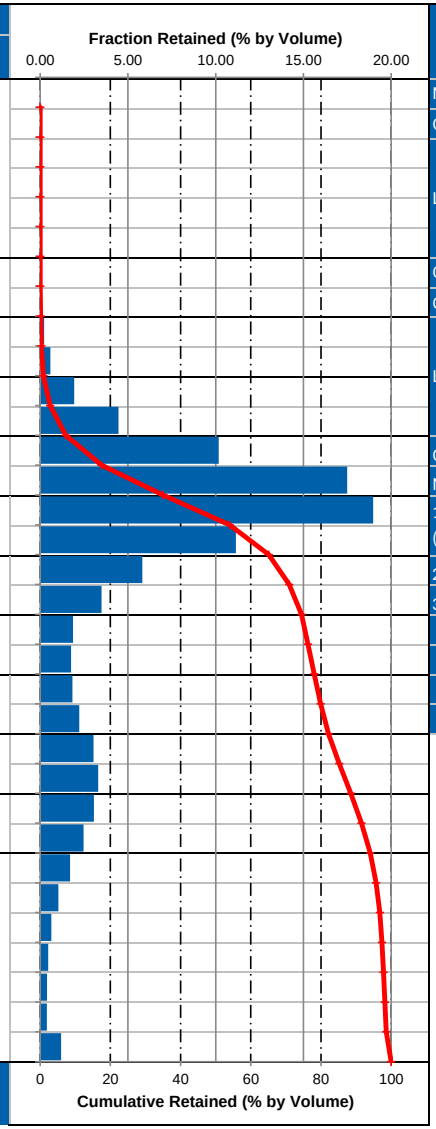
Method of Moments			
Geometric	Mean (µm)	66.13	Wentworth:
Logarithmic	Mean (Phi)	3.89	Very fine sand
	Sorting	2.59	Very poor
	Skewness	1.04	Fine
	Kurtosis	3.62	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	67.41	Wentworth:
Logarithmic	Mean (Phi)	3.89	Very fine sand
	Sorting	2.52	Very poor
	Skewness	0.49	Very fine
	Kurtosis	0.92	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.02	123.56	Very fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	33.70%
EUNIS Folk	Mud and sandy mud	Sand	65.70%
Distribution	Bimodal	Gravel	0.40%



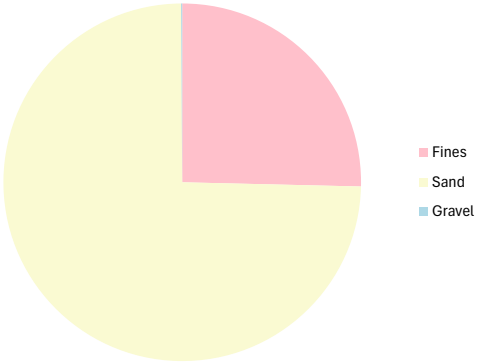
APPENDIX F PARTICLE SIZE ANALYSIS

ENV048				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.09	0.12	
1414.21	-0.50	0.22	0.34	Very coarse sand
1000.00	0.00	0.58	0.92	
707.11	0.50	1.94	2.86	Coarse sand
500.00	1.00	4.46	7.32	
353.55	1.50	10.18	17.50	Medium sand
250.00	2.00	17.49	34.99	
176.78	2.50	18.97	53.97	Fine sand
125.00	3.00	11.15	65.12	
88.39	3.50	5.82	70.94	Very fine sand
62.50	4.00	3.50	74.44	
44.19	4.50	1.87	76.31	Coarse silt
31.25	5.00	1.76	78.06	
22.10	5.50	1.84	79.90	Medium silt
15.63	6.00	2.22	82.13	
11.05	6.50	3.04	85.17	Fine silt
7.81	7.00	3.30	88.47	
5.52	7.50	3.06	91.53	Very fine silt
3.91	8.00	2.47	94.01	
2.76	8.50	1.70	95.70	Clay
1.95	9.00	1.04	96.74	
1.38	9.50	0.63	97.38	
0.98	10.00	0.45	97.83	
0.69	10.50	0.39	98.22	
0.49	11.00	0.37	98.59	
<0.49	>11	1.19	100.00	



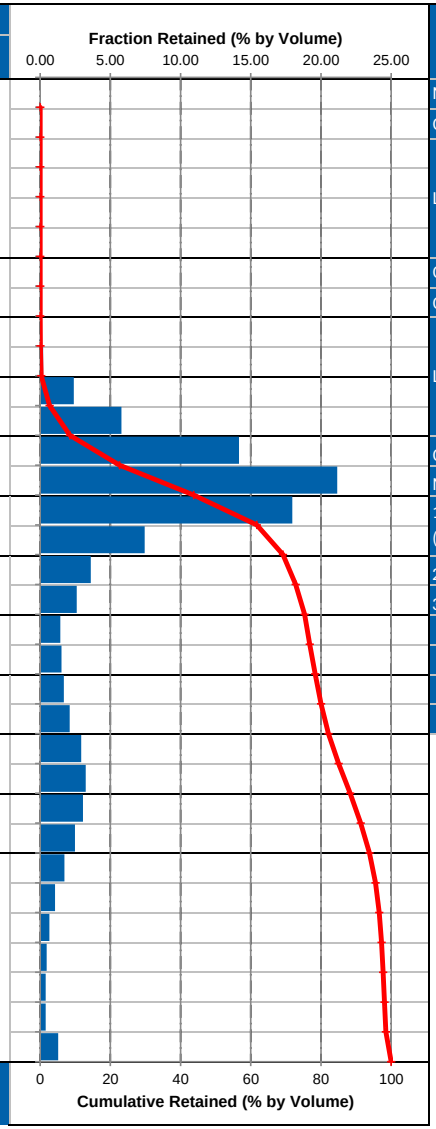
Method of Moments			
Geometric	Mean (µm)	100.68	Wentworth:
Logarithmic	Mean (Phi)	3.29	Very fine sand
	Sorting	2.45	Very poor
	Skewness	1.37	Very fine
	Kurtosis	4.36	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	96.28	Wentworth:
Logarithmic	Mean (Phi)	3.38	Very fine sand
	Sorting	2.36	Very poor
	Skewness	0.58	Very fine
	Kurtosis	1.27	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	190.06	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	25.30%
EUNIS Folk	Mud and sandy mud	Sand	74.30%
Distribution	Bimodal	Gravel	0.10%



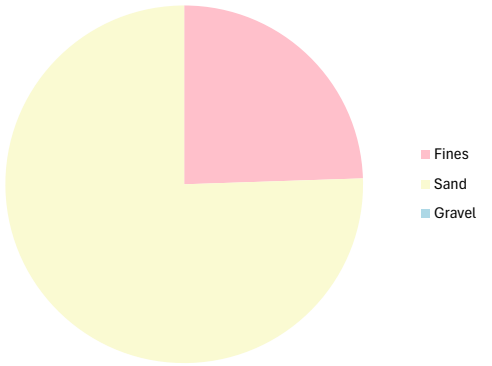
APPENDIX F PARTICLE SIZE ANALYSIS

ENV049				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.02	0.03	
1414.21	-0.50	0.03	0.07	Very coarse sand
1000.00	0.00	0.20	0.27	
707.11	0.50	2.39	2.66	Coarse sand
500.00	1.00	5.79	8.45	
353.55	1.50	14.15	22.60	Medium sand
250.00	2.00	21.16	43.76	
176.78	2.50	17.95	61.72	Fine sand
125.00	3.00	7.45	69.16	
88.39	3.50	3.60	72.76	Very fine sand
62.50	4.00	2.60	75.36	
44.19	4.50	1.44	76.80	Coarse silt
31.25	5.00	1.52	78.32	
22.10	5.50	1.68	80.00	Medium silt
15.63	6.00	2.10	82.10	
11.05	6.50	2.93	85.03	Fine silt
7.81	7.00	3.25	88.27	
5.52	7.50	3.04	91.32	Very fine silt
3.91	8.00	2.48	93.80	
2.76	8.50	1.73	95.52	Clay
1.95	9.00	1.06	96.59	
1.38	9.50	0.65	97.24	
0.98	10.00	0.46	97.70	
0.69	10.50	0.40	98.09	
0.49	11.00	0.39	98.48	
<0.49	>11	1.28	100.00	



Method of Moments			
Geometric	Mean (µm)	110.73	Wentworth:
Logarithmic	Mean (Phi)	3.15	Very fine sand
	Sorting	2.51	Very poor
	Skewness	1.46	Very fine
	Kurtosis	4.43	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	104.75	Wentworth:
Logarithmic	Mean (Phi)	3.25	Very fine sand
	Sorting	2.42	Very poor
	Skewness	0.63	Very fine
	Kurtosis	1.32	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.17	221.64	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

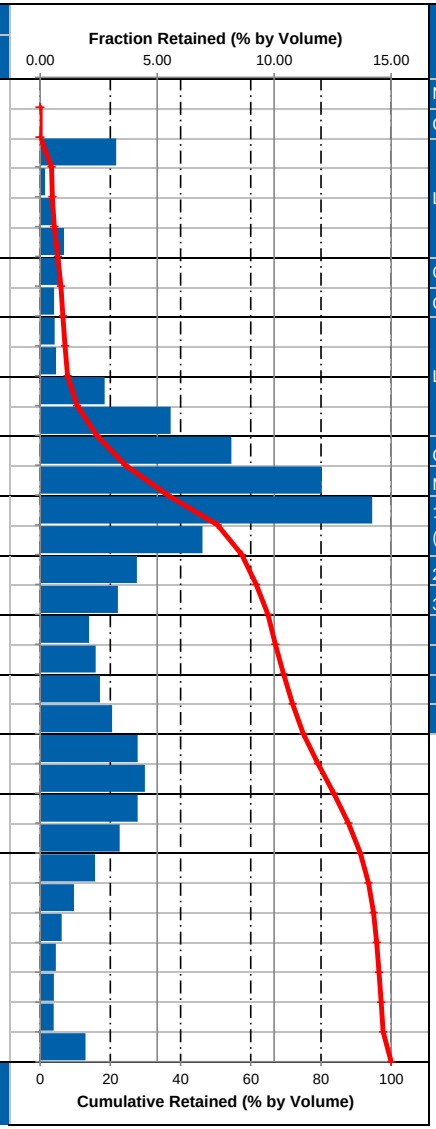
Classification		Composition	
Modified Folk	Muddy sand	Fines	24.40%
EUNIS Folk	Mud and sandy mud	Sand	75.30%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

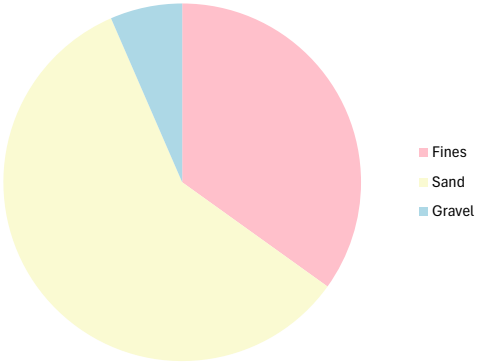
ENV050

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	3.24	3.24	Pebble
8000.00	-3.00	0.21	3.45	
5656.85	-2.50	0.55	4.00	
4000.00	-2.00	1.02	5.01	
2828.43	-1.50	0.87	5.88	Granule
2000.00	-1.00	0.59	6.48	
1414.21	-0.50	0.62	7.10	Very coarse sand
1000.00	0.00	0.67	7.77	
707.11	0.50	2.76	10.53	Coarse sand
500.00	1.00	5.58	16.11	
353.55	1.50	8.17	24.28	Medium sand
250.00	2.00	12.03	36.31	
176.78	2.50	14.19	50.50	Fine sand
125.00	3.00	6.93	57.43	
88.39	3.50	4.13	61.56	Very fine sand
62.50	4.00	3.32	64.88	
44.19	4.50	2.09	66.97	Coarse silt
31.25	5.00	2.37	69.34	
22.10	5.50	2.55	71.89	Medium silt
15.63	6.00	3.07	74.97	
11.05	6.50	4.17	79.13	Fine silt
7.81	7.00	4.47	83.61	
5.52	7.50	4.17	87.78	Very fine silt
3.91	8.00	3.40	91.18	
2.76	8.50	2.35	93.53	
1.95	9.00	1.45	94.97	
1.38	9.50	0.92	95.89	
0.98	10.00	0.67	96.56	Clay
0.69	10.50	0.59	97.15	
0.49	11.00	0.58	97.72	
<0.49	>11	1.93	100.00	



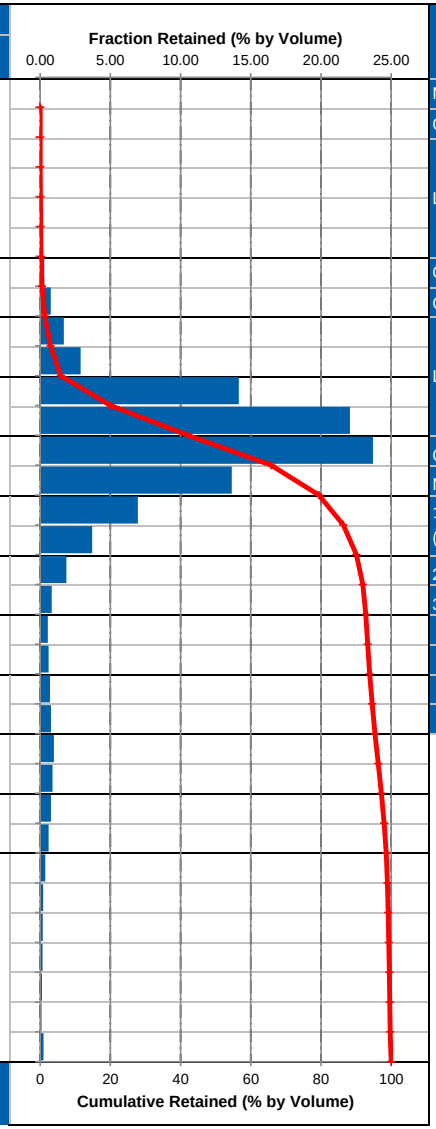
Method of Moments			
Geometric	Mean (µm)	92.64	Wentworth:
Logarithmic	Mean (Phi)	3.40	Very fine sand
	Sorting	3.22	Very poor
	Skewness	0.35	Symmetrical
	Kurtosis	3.14	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	87.98	Wentworth:
Logarithmic	Mean (Phi)	3.51	Very fine sand
	Sorting	3.18	Very poor
	Skewness	0.35	Very fine
	Kurtosis	1.01	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.48	178.94	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-3.50	11313.71	Pebble

Classification		Composition	
Modified Folk	Gravelly muddy sand	Fines	34.80%
EUNIS Folk	Mixed sediments	Sand	58.40%
Distribution	Multimodal	Gravel	6.50%



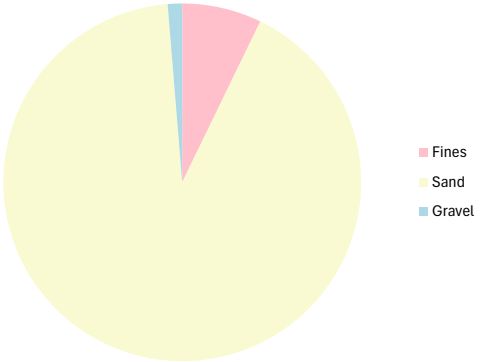
APPENDIX F PARTICLE SIZE ANALYSIS

ENV051				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.04	0.04	
5656.85	-2.50	0.06	0.10	
4000.00	-2.00	0.13	0.23	
2828.43	-1.50	0.29	0.52	Granule
2000.00	-1.00	0.75	1.27	
1414.21	-0.50	1.69	2.96	Very coarse sand
1000.00	0.00	2.89	5.85	
707.11	0.50	14.15	19.99	Coarse sand
500.00	1.00	22.06	42.06	
353.55	1.50	23.71	65.77	Medium sand
250.00	2.00	13.64	79.41	
176.78	2.50	6.96	86.37	Fine sand
125.00	3.00	3.70	90.07	
88.39	3.50	1.87	91.93	Very fine sand
62.50	4.00	0.82	92.75	
44.19	4.50	0.54	93.30	Coarse silt
31.25	5.00	0.59	93.89	
22.10	5.50	0.70	94.59	Medium silt
15.63	6.00	0.76	95.35	
11.05	6.50	0.98	96.33	Fine silt
7.81	7.00	0.88	97.21	
5.52	7.50	0.76	97.98	Very fine silt
3.91	8.00	0.60	98.57	
2.76	8.50	0.36	98.93	
1.95	9.00	0.21	99.14	
1.38	9.50	0.18	99.32	
0.98	10.00	0.17	99.49	Clay
0.69	10.50	0.13	99.62	
0.49	11.00	0.10	99.72	
<0.49	>11	0.23	100.00	



Method of Moments			
Geometric	Mean (µm)	344.60	Wentworth:
Logarithmic	Mean (Phi)	1.53	Medium sand
	Sorting	1.76	Poor
	Skewness	2.46	Very fine
	Kurtosis	11.06	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	410.27	Wentworth:
Logarithmic	Mean (Phi)	1.29	Medium sand
	Sorting	1.39	Poor
	Skewness	0.37	Very fine
	Kurtosis	1.98	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.17	445.18	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

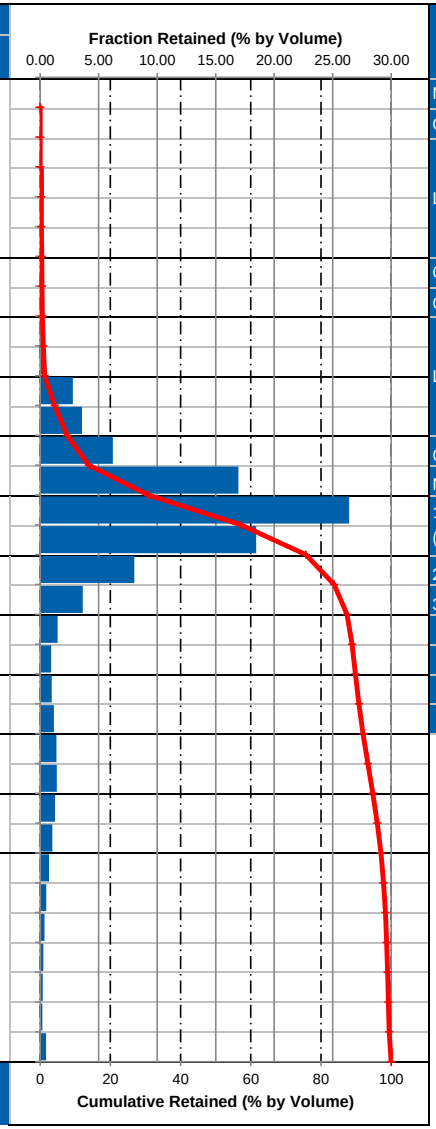
Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	7.20%
EUNIS Folk	Sand and muddy sand	Sand	91.50%
Distribution	Unimodal	Gravel	1.30%



APPENDIX F PARTICLE SIZE ANALYSIS

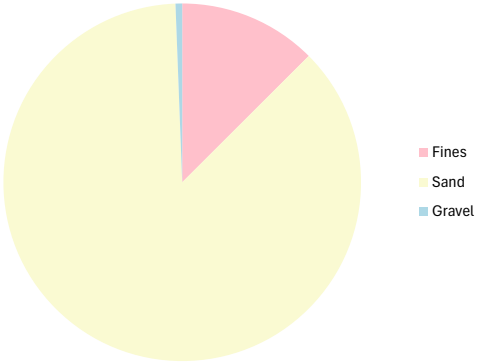
ENV052

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.32	0.32	
5656.85	-2.50	0.00	0.32	
4000.00	-2.00	0.11	0.43	
2828.43	-1.50	0.07	0.50	Granule
2000.00	-1.00	0.12	0.61	
1414.21	-0.50	0.29	0.91	Very coarse sand
1000.00	0.00	0.40	1.31	
707.11	0.50	2.79	4.10	Coarse sand
500.00	1.00	3.57	7.67	
353.55	1.50	6.21	13.88	Medium sand
250.00	2.00	16.95	30.83	
176.78	2.50	26.40	57.23	Fine sand
125.00	3.00	18.46	75.70	
88.39	3.50	8.04	83.74	Very fine sand
62.50	4.00	3.65	87.38	
44.19	4.50	1.49	88.88	Coarse silt
31.25	5.00	0.94	89.82	
22.10	5.50	0.98	90.81	Medium silt
15.63	6.00	1.17	91.97	
11.05	6.50	1.39	93.36	Fine silt
7.81	7.00	1.42	94.78	
5.52	7.50	1.27	96.05	Very fine silt
3.91	8.00	1.03	97.08	
2.76	8.50	0.76	97.84	Clay
1.95	9.00	0.52	98.36	
1.38	9.50	0.36	98.73	
0.98	10.00	0.27	99.00	
0.69	10.50	0.23	99.23	
0.49	11.00	0.19	99.42	
<0.49	>11	0.50	100.00	



Method of Moments			
Geometric	Mean (µm)	148.57	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.88	Poor
	Skewness	1.88	Very fine
	Kurtosis	8.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	178.36	Wentworth:
Logarithmic	Mean (Phi)	2.49	Fine sand
	Sorting	1.47	Poor
	Skewness	0.33	Very fine
	Kurtosis	2.30	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.36	194.39	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

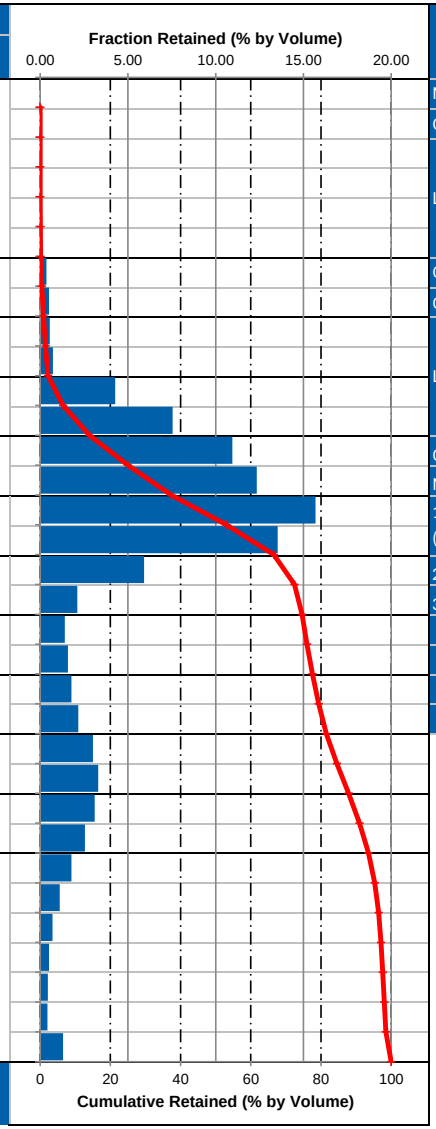
Classification		Composition	
Modified Folk	Muddy sand	Fines	12.50%
EUNIS Folk	Sand and muddy sand	Sand	86.80%
Distribution	Bimodal	Gravel	0.60%



APPENDIX F PARTICLE SIZE ANALYSIS

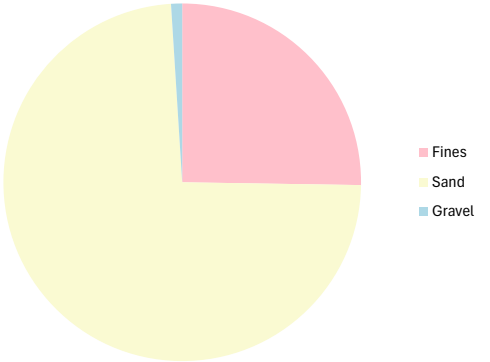
ENV053

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.08	0.11	
2828.43	-1.50	0.35	0.47	Granule
2000.00	-1.00	0.50	0.96	
1414.21	-0.50	0.55	1.51	Very coarse sand
1000.00	0.00	0.73	2.24	
707.11	0.50	4.27	6.51	Coarse sand
500.00	1.00	7.54	14.05	
353.55	1.50	10.95	25.00	Medium sand
250.00	2.00	12.34	37.34	
176.78	2.50	15.69	53.02	Fine sand
125.00	3.00	13.53	66.55	
88.39	3.50	5.92	72.47	Very fine sand
62.50	4.00	2.12	74.59	
44.19	4.50	1.41	76.00	Coarse silt
31.25	5.00	1.58	77.58	
22.10	5.50	1.78	79.36	Medium silt
15.63	6.00	2.17	81.53	
11.05	6.50	3.00	84.53	Fine silt
7.81	7.00	3.31	87.85	
5.52	7.50	3.11	90.96	Very fine silt
3.91	8.00	2.55	93.50	
2.76	8.50	1.78	95.29	Clay
1.95	9.00	1.11	96.40	
1.38	9.50	0.70	97.10	
0.98	10.00	0.51	97.61	
0.69	10.50	0.44	98.05	
0.49	11.00	0.41	98.46	
<0.49	>11	1.31	100.00	



Method of Moments			
Geometric	Mean (µm)	108.06	Wentworth:
Logarithmic	Mean (Phi)	3.19	Very fine sand
	Sorting	2.61	Very poor
	Skewness	1.22	Fine
	Kurtosis	4.06	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	101.45	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	2.56	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.25	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	188.99	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

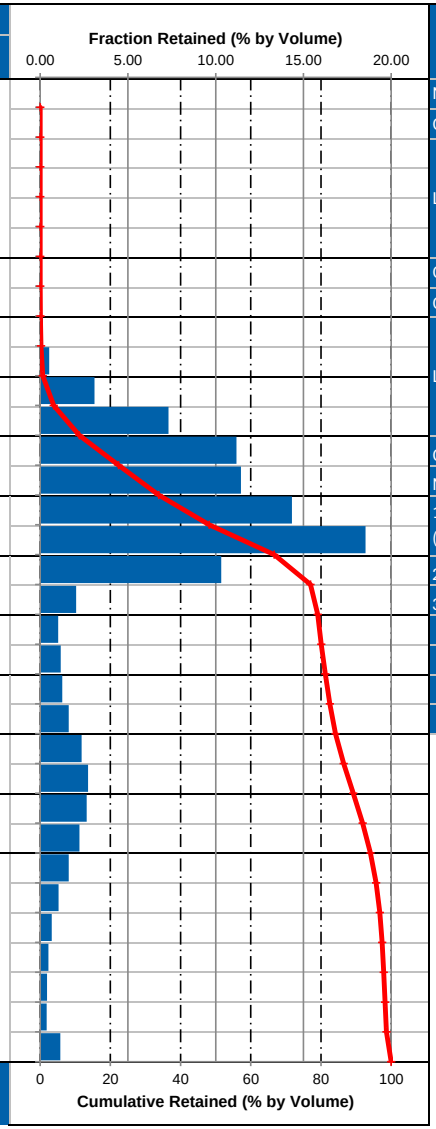
Classification		Composition	
Modified Folk	Muddy sand	Fines	25.20%
EUNIS Folk	Mud and sandy mud	Sand	73.60%
Distribution	Bimodal	Gravel	1.00%



APPENDIX F PARTICLE SIZE ANALYSIS

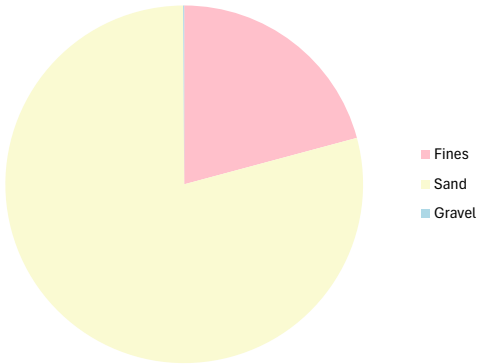
ENV054

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.05	0.08	
1414.21	-0.50	0.16	0.24	Very coarse sand
1000.00	0.00	0.51	0.75	
707.11	0.50	3.09	3.84	Coarse sand
500.00	1.00	7.31	11.16	
353.55	1.50	11.19	22.34	Medium sand
250.00	2.00	11.44	33.79	
176.78	2.50	14.35	48.14	Fine sand
125.00	3.00	18.53	66.67	
88.39	3.50	10.32	76.99	Very fine sand
62.50	4.00	2.05	79.04	
44.19	4.50	1.03	80.07	Coarse silt
31.25	5.00	1.17	81.24	
22.10	5.50	1.26	82.50	Medium silt
15.63	6.00	1.62	84.13	
11.05	6.50	2.36	86.49	Fine silt
7.81	7.00	2.72	89.21	
5.52	7.50	2.65	91.86	Very fine silt
3.91	8.00	2.24	94.09	
2.76	8.50	1.62	95.71	Clay
1.95	9.00	1.04	96.76	
1.38	9.50	0.66	97.42	
0.98	10.00	0.47	97.89	
0.69	10.50	0.40	98.28	
0.49	11.00	0.37	98.65	
<0.49	>11	1.14	100.00	



Method of Moments			
Geometric	Mean (µm)	111.26	Wentworth:
Logarithmic	Mean (Phi)	3.15	Very fine sand
	Sorting	2.40	Very poor
	Skewness	1.50	Very fine
	Kurtosis	4.94	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	105.66	Wentworth:
Logarithmic	Mean (Phi)	3.24	Very fine sand
	Sorting	2.35	Very poor
	Skewness	0.46	Very fine
	Kurtosis	1.77	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.55	170.73	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

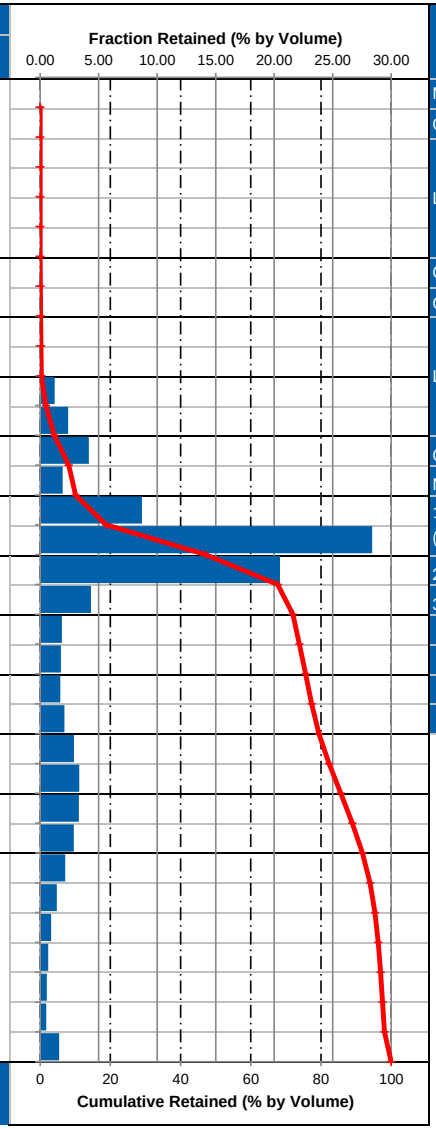
Classification		Composition	
Modified Folk	Muddy sand	Fines	20.80%
EUNIS Folk	Mud and sandy mud	Sand	79.00%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

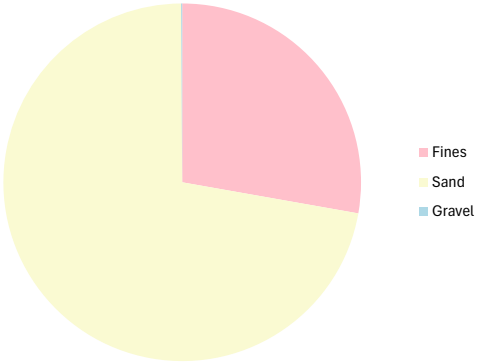
ENV055

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.06	0.06	Granule
2000.00	-1.00	0.04	0.11	
1414.21	-0.50	0.10	0.20	Very coarse sand
1000.00	0.00	0.15	0.35	
707.11	0.50	1.24	1.59	Coarse sand
500.00	1.00	2.39	3.99	
353.55	1.50	4.16	8.15	Medium sand
250.00	2.00	1.92	10.07	
176.78	2.50	8.69	18.77	Fine sand
125.00	3.00	28.37	47.14	
88.39	3.50	20.50	67.64	Very fine sand
62.50	4.00	4.34	71.98	
44.19	4.50	1.86	73.84	Coarse silt
31.25	5.00	1.77	75.61	
22.10	5.50	1.72	77.33	Medium silt
15.63	6.00	2.07	79.39	
11.05	6.50	2.89	82.28	Fine silt
7.81	7.00	3.33	85.62	
5.52	7.50	3.32	88.93	Very fine silt
3.91	8.00	2.88	91.81	
2.76	8.50	2.14	93.95	Clay
1.95	9.00	1.42	95.37	
1.38	9.50	0.94	96.31	
0.98	10.00	0.68	96.99	
0.69	10.50	0.57	97.56	
0.49	11.00	0.53	98.09	
<0.49	>11	1.62	100.00	



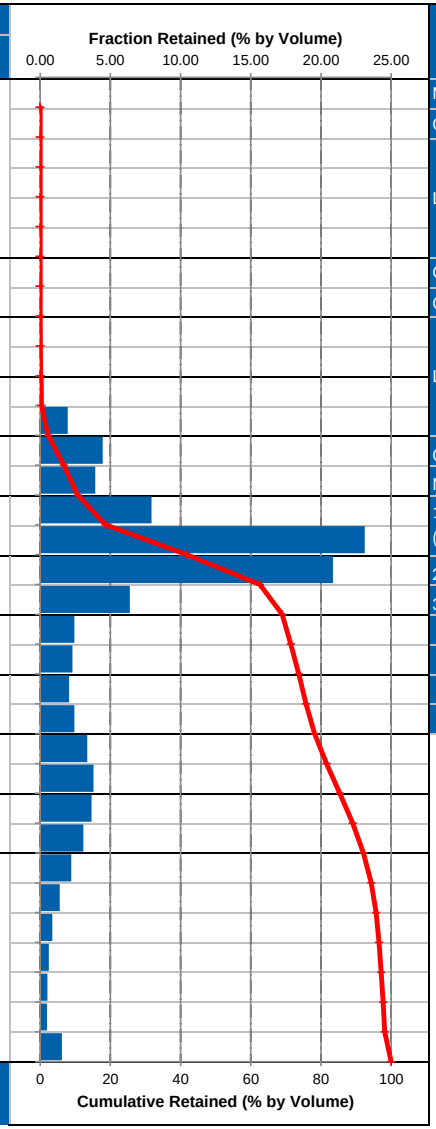
Method of Moments			
Geometric	Mean (µm)	65.10	Wentworth:
Logarithmic	Mean (Phi)	3.91	Very fine sand
	Sorting	2.38	Very poor
	Skewness	1.35	Very fine
	Kurtosis	4.46	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	60.12	Wentworth:
Logarithmic	Mean (Phi)	4.06	Coarse silt
	Sorting	2.28	Very poor
	Skewness	0.58	Very fine
	Kurtosis	1.43	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.07	119.10	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	27.70%
EUNIS Folk	Mud and sandy mud	Sand	71.90%
Distribution	Multimodal	Gravel	0.10%



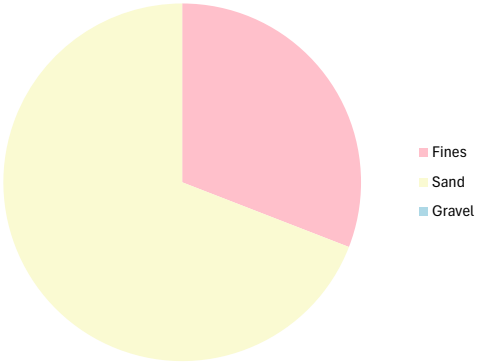
APPENDIX F PARTICLE SIZE ANALYSIS

ENV056				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.02	0.04	Very coarse sand
1000.00	0.00	0.07	0.12	
707.11	0.50	0.24	0.35	Coarse sand
500.00	1.00	1.96	2.31	
353.55	1.50	4.45	6.76	Medium sand
250.00	2.00	3.92	10.68	
176.78	2.50	7.93	18.61	Fine sand
125.00	3.00	23.12	41.74	
88.39	3.50	20.85	62.58	Very fine sand
62.50	4.00	6.38	68.97	
44.19	4.50	2.44	71.40	Coarse silt
31.25	5.00	2.29	73.70	
22.10	5.50	2.06	75.75	Medium silt
15.63	6.00	2.43	78.19	
11.05	6.50	3.36	81.55	Fine silt
7.81	7.00	3.79	85.34	
5.52	7.50	3.66	89.00	Very fine silt
3.91	8.00	3.08	92.08	
2.76	8.50	2.21	94.29	Clay
1.95	9.00	1.40	95.69	
1.38	9.50	0.87	96.56	
0.98	10.00	0.61	97.17	
0.69	10.50	0.52	97.69	
0.49	11.00	0.49	98.18	
<0.49	>11	1.54	100.00	



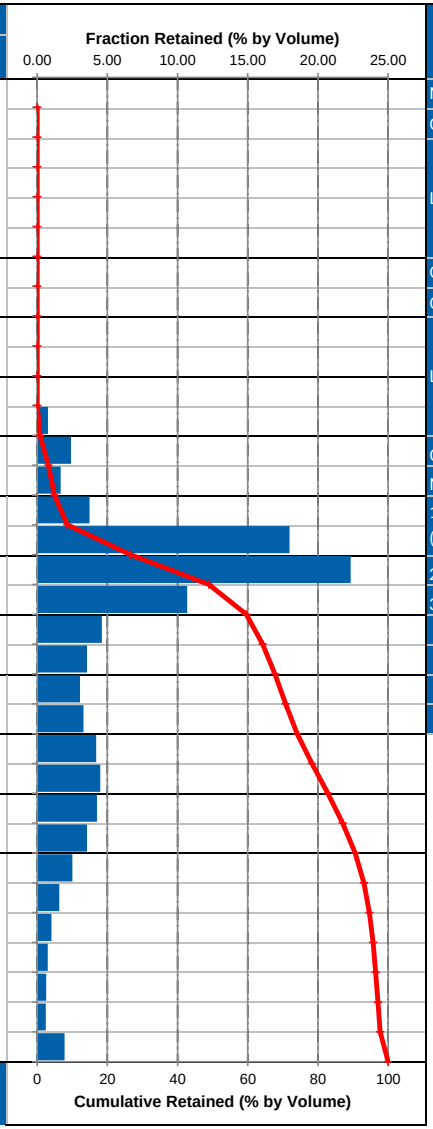
Method of Moments			
Geometric	Mean (µm)	59.85	Wentworth:
Logarithmic	Mean (Phi)	4.03	Coarse silt
	Sorting	2.34	Very poor
	Skewness	1.29	Fine
	Kurtosis	4.24	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	57.55	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	2.25	Very poor
	Skewness	0.55	Very fine
	Kurtosis	1.14	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.20	108.96	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	30.80%
EUNIS Folk	Mud and sandy mud	Sand	68.90%
Distribution	Multimodal	Gravel	0.00%



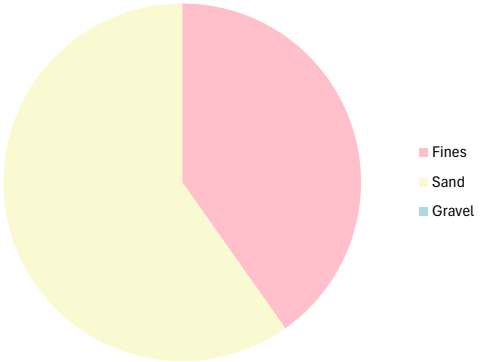
APPENDIX F PARTICLE SIZE ANALYSIS

ENV057				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.01	0.03	Coarse sand
500.00	1.00	0.77	0.80	
353.55	1.50	2.41	3.20	Medium sand
250.00	2.00	1.67	4.88	
176.78	2.50	3.72	8.60	Fine sand
125.00	3.00	17.97	26.57	
88.39	3.50	22.33	48.90	Very fine sand
62.50	4.00	10.68	59.58	
44.19	4.50	4.61	64.19	Coarse silt
31.25	5.00	3.54	67.74	
22.10	5.50	3.04	70.78	Medium silt
15.63	6.00	3.30	74.08	
11.05	6.50	4.21	78.28	Fine silt
7.81	7.00	4.50	82.78	
5.52	7.50	4.26	87.04	Very fine silt
3.91	8.00	3.54	90.59	
2.76	8.50	2.50	93.09	Clay
1.95	9.00	1.58	94.67	
1.38	9.50	1.02	95.69	
0.98	10.00	0.75	96.44	
0.69	10.50	0.65	97.09	
0.49	11.00	0.61	97.70	
<0.49	>11	1.95	100.00	



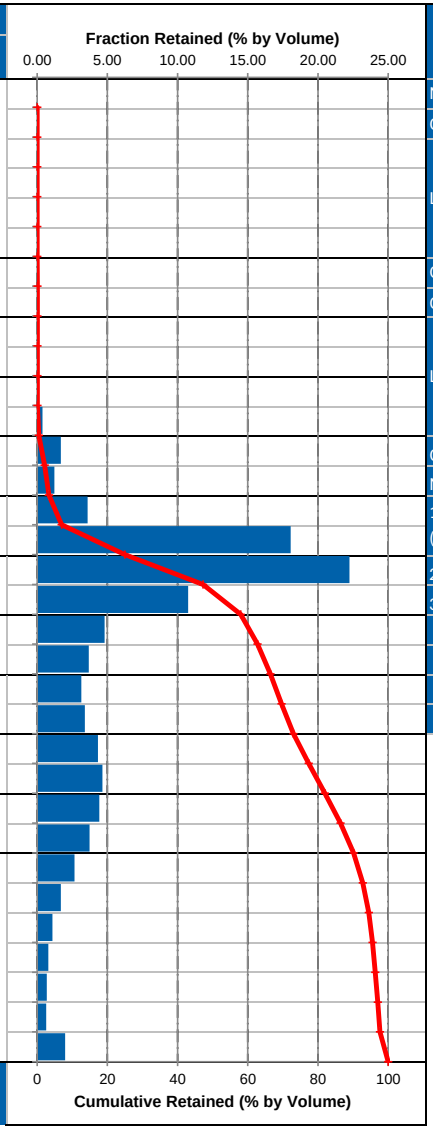
Method of Moments			
Geometric	Mean (µm)	42.86	Wentworth:
Logarithmic	Mean (Phi)	4.51	Coarse silt
	Sorting	2.32	Very poor
	Skewness	1.18	Fine
	Kurtosis	3.95	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	45.22	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.19	Very poor
	Skewness	0.59	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.55	85.29	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	40.10%
EUNIS Folk	Mud and sandy mud	Sand	59.60%
Distribution	Multimodal	Gravel	0.00%



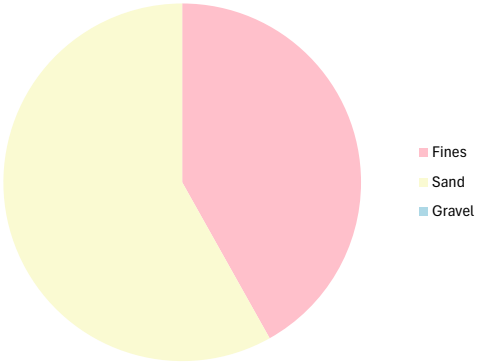
APPENDIX F PARTICLE SIZE ANALYSIS

ENV058				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.04	0.04	Granule
2000.00	-1.00	0.00	0.04	
1414.21	-0.50	0.01	0.05	Very coarse sand
1000.00	0.00	0.03	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.38	0.46	
353.55	1.50	1.68	2.14	Medium sand
250.00	2.00	1.22	3.36	
176.78	2.50	3.58	6.94	Fine sand
125.00	3.00	18.05	24.99	
88.39	3.50	22.24	47.23	Very fine sand
62.50	4.00	10.75	57.98	
44.19	4.50	4.79	62.78	Coarse silt
31.25	5.00	3.67	66.45	
22.10	5.50	3.15	69.59	Medium silt
15.63	6.00	3.40	73.00	
11.05	6.50	4.33	77.32	Fine silt
7.81	7.00	4.64	81.96	
5.52	7.50	4.43	86.39	Very fine silt
3.91	8.00	3.72	90.11	
2.76	8.50	2.65	92.77	Clay
1.95	9.00	1.69	94.46	
1.38	9.50	1.09	95.54	
0.98	10.00	0.80	96.34	
0.69	10.50	0.68	97.02	
0.49	11.00	0.63	97.65	
<0.49	>11	1.99	100.00	



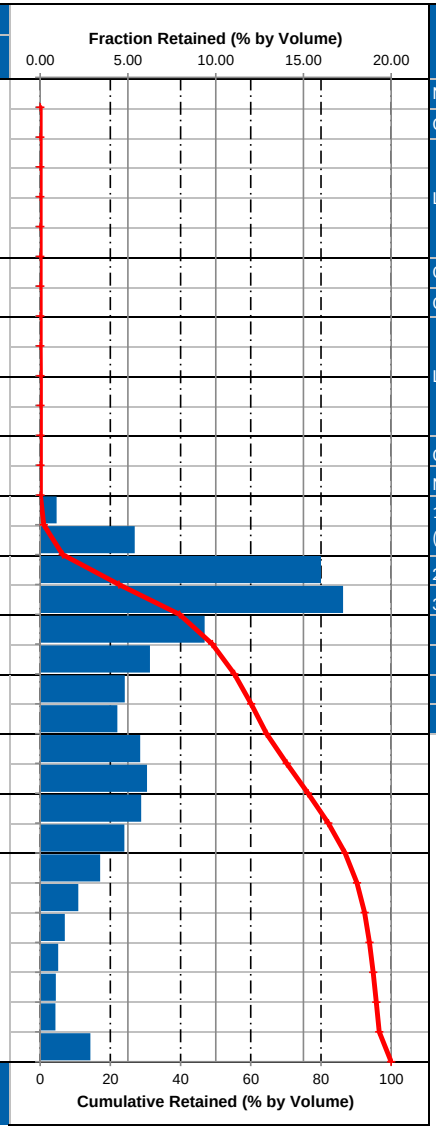
Method of Moments			
Geometric	Mean (µm)	40.26	Wentworth:
Logarithmic	Mean (Phi)	4.60	Coarse silt
	Sorting	2.32	Very poor
	Skewness	1.17	Fine
	Kurtosis	3.86	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	43.09	Wentworth:
Logarithmic	Mean (Phi)	4.54	Coarse silt
	Sorting	2.18	Very poor
	Skewness	0.60	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.63	80.84	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Muddy sand	Fines	41.70%
EUNIS Folk	Mud and sandy mud	Sand	57.90%
Distribution	Multimodal	Gravel	0.00%



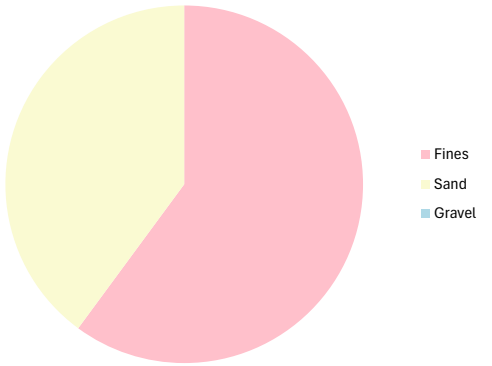
APPENDIX F PARTICLE SIZE ANALYSIS

ENV059				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.00	0.04	
353.55	1.50	0.00	0.04	Medium sand
250.00	2.00	0.05	0.08	
176.78	2.50	0.94	1.02	Fine sand
125.00	3.00	5.39	6.41	
88.39	3.50	16.01	22.42	Very fine sand
62.50	4.00	17.25	39.67	
44.19	4.50	9.37	49.04	Coarse silt
31.25	5.00	6.25	55.29	
22.10	5.50	4.82	60.12	Medium silt
15.63	6.00	4.39	64.51	
11.05	6.50	5.69	70.20	Fine silt
7.81	7.00	6.09	76.30	
5.52	7.50	5.75	82.05	Very fine silt
3.91	8.00	4.80	86.85	
2.76	8.50	3.41	90.26	
1.95	9.00	2.17	92.43	
1.38	9.50	1.40	93.83	
0.98	10.00	1.03	94.86	Clay
0.69	10.50	0.89	95.75	
0.49	11.00	0.87	96.62	
<0.49	>11	2.86	100.00	



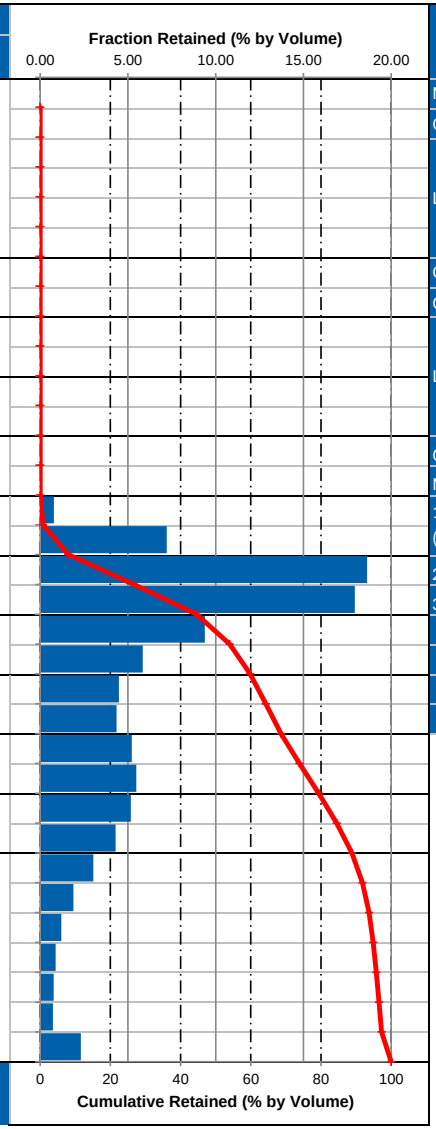
Method of Moments			
Geometric	Mean (µm)	24.13	Wentworth:
Logarithmic	Mean (Phi)	5.32	Medium silt
	Sorting	2.25	Very poor
	Skewness	1.06	Fine
	Kurtosis	3.59	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	27.33	Wentworth:
Logarithmic	Mean (Phi)	5.19	Medium silt
	Sorting	2.19	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.58	41.90	Coarse silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	59.80%
EUNIS Folk	Mud and sandy mud	Sand	39.70%
Distribution	Bimodal	Gravel	0.00%



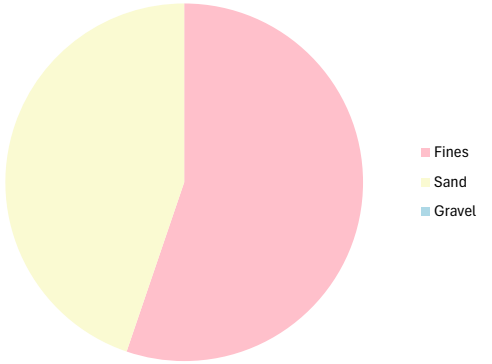
APPENDIX F PARTICLE SIZE ANALYSIS

ENV060				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.00	0.01	
176.78	2.50	0.78	0.80	Fine sand
125.00	3.00	7.21	8.01	
88.39	3.50	18.62	26.64	Very fine sand
62.50	4.00	17.93	44.56	
44.19	4.50	9.39	53.95	Coarse silt
31.25	5.00	5.84	59.79	
22.10	5.50	4.49	64.28	Medium silt
15.63	6.00	4.35	68.63	
11.05	6.50	5.22	73.85	Fine silt
7.81	7.00	5.47	79.32	
5.52	7.50	5.16	84.48	Very fine silt
3.91	8.00	4.29	88.77	
2.76	8.50	3.02	91.80	Clay
1.95	9.00	1.89	93.69	
1.38	9.50	1.20	94.89	
0.98	10.00	0.88	95.77	
0.69	10.50	0.77	96.54	
0.49	11.00	0.73	97.27	
<0.49	>11	2.32	100.00	



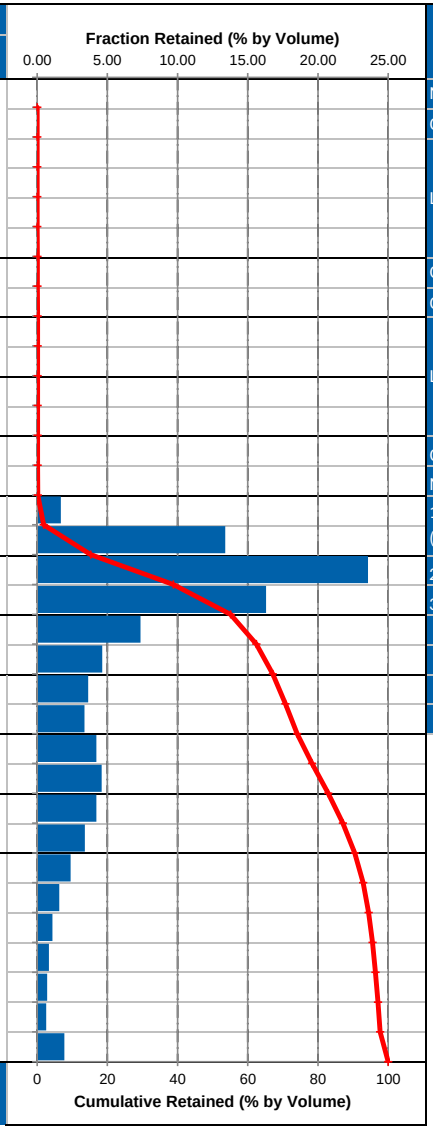
Method of Moments			
Geometric	Mean (µm)	28.28	Wentworth:
Logarithmic	Mean (Phi)	5.10	Medium silt
	Sorting	2.18	Very poor
	Skewness	1.18	Fine
	Kurtosis	3.89	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	31.56	Wentworth:
Logarithmic	Mean (Phi)	4.99	Coarse silt
	Sorting	2.09	Very poor
	Skewness	0.53	Very fine
	Kurtosis	0.88	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.29	51.14	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	55.00%
EUNIS Folk	Mud and sandy mud	Sand	44.60%
Distribution	Bimodal	Gravel	0.00%



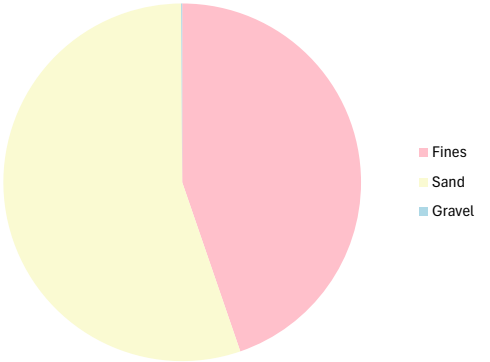
APPENDIX F PARTICLE SIZE ANALYSIS

ENV061				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.00	0.08	Granule
2000.00	-1.00	0.02	0.10	
1414.21	-0.50	0.01	0.12	Very coarse sand
1000.00	0.00	0.02	0.14	
707.11	0.50	0.00	0.14	Coarse sand
500.00	1.00	0.00	0.14	
353.55	1.50	0.00	0.14	Medium sand
250.00	2.00	0.01	0.15	
176.78	2.50	1.69	1.84	Fine sand
125.00	3.00	13.39	15.22	
88.39	3.50	23.56	38.78	Very fine sand
62.50	4.00	16.30	55.09	
44.19	4.50	7.35	62.44	Coarse silt
31.25	5.00	4.63	67.08	
22.10	5.50	3.63	70.71	Medium silt
15.63	6.00	3.37	74.08	
11.05	6.50	4.21	78.29	Fine silt
7.81	7.00	4.59	82.88	
5.52	7.50	4.22	87.09	Very fine silt
3.91	8.00	3.39	90.49	
2.76	8.50	2.38	92.87	Clay
1.95	9.00	1.57	94.44	
1.38	9.50	1.09	95.53	
0.98	10.00	0.84	96.37	
0.69	10.50	0.71	97.08	
0.49	11.00	0.65	97.73	
<0.49	>11	1.93	100.00	



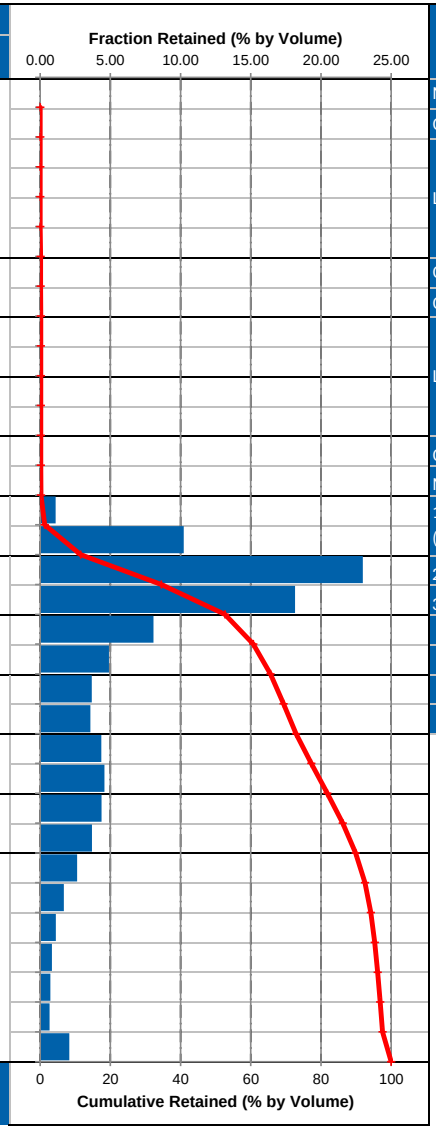
Method of Moments			
Geometric	Mean (µm)	36.84	Wentworth:
Logarithmic	Mean (Phi)	4.73	Coarse silt
	Sorting	2.17	Very poor
	Skewness	1.32	Very fine
	Kurtosis	4.39	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	39.43	Wentworth:
Logarithmic	Mean (Phi)	4.66	Coarse silt
	Sorting	2.03	Very poor
	Skewness	0.61	Very fine
	Kurtosis	0.94	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.84	69.64	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	44.60%
EUNIS Folk	Mud and sandy mud	Sand	55.00%
Distribution	Bimodal	Gravel	0.10%



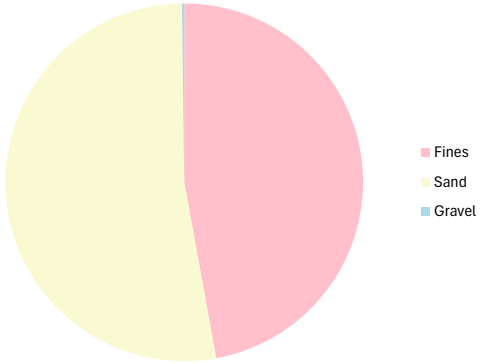
APPENDIX F PARTICLE SIZE ANALYSIS

ENV062				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.10	0.10	
2828.43	-1.50	0.00	0.10	Granule
2000.00	-1.00	0.08	0.17	
1414.21	-0.50	0.01	0.19	Very coarse sand
1000.00	0.00	0.01	0.20	
707.11	0.50	0.00	0.20	Coarse sand
500.00	1.00	0.00	0.20	
353.55	1.50	0.00	0.20	Medium sand
250.00	2.00	0.01	0.21	
176.78	2.50	1.10	1.31	Fine sand
125.00	3.00	10.22	11.53	
88.39	3.50	22.97	34.51	Very fine sand
62.50	4.00	18.15	52.66	
44.19	4.50	8.07	60.73	Coarse silt
31.25	5.00	4.89	65.62	
22.10	5.50	3.68	69.30	Medium silt
15.63	6.00	3.57	72.88	
11.05	6.50	4.35	77.23	Fine silt
7.81	7.00	4.58	81.81	
5.52	7.50	4.37	86.18	Very fine silt
3.91	8.00	3.69	89.87	
2.76	8.50	2.64	92.51	Clay
1.95	9.00	1.69	94.20	
1.38	9.50	1.12	95.32	
0.98	10.00	0.84	96.16	
0.69	10.50	0.72	96.88	
0.49	11.00	0.67	97.55	
<0.49	>11	2.08	100.00	



Method of Moments			
Geometric	Mean (µm)	34.20	Wentworth:
Logarithmic	Mean (Phi)	4.83	Coarse silt
	Sorting	2.18	Very poor
	Skewness	1.27	Fine
	Kurtosis	4.32	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	36.95	Wentworth:
Logarithmic	Mean (Phi)	4.76	Coarse silt
	Sorting	2.05	Very poor
	Skewness	0.61	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.93	65.76	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

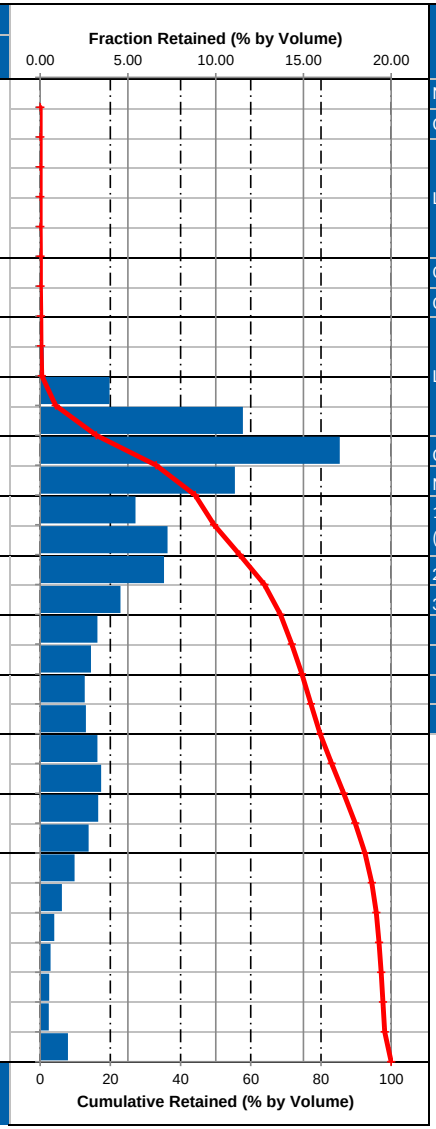
Classification		Composition	
Modified Folk	Muddy sand	Fines	47.00%
EUNIS Folk	Mud and sandy mud	Sand	52.50%
Distribution	Bimodal	Gravel	0.20%



APPENDIX F PARTICLE SIZE ANALYSIS

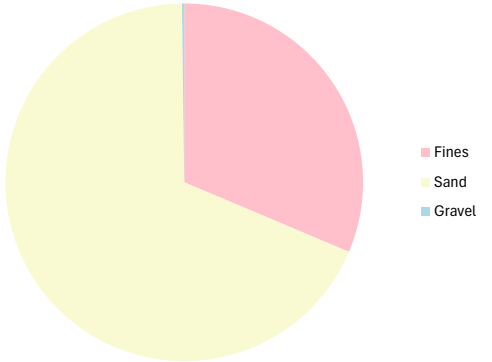
ENV063

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.01	0.05	Granule
2000.00	-1.00	0.11	0.16	
1414.21	-0.50	0.09	0.25	Very coarse sand
1000.00	0.00	0.20	0.45	
707.11	0.50	3.95	4.40	Coarse sand
500.00	1.00	11.55	15.95	
353.55	1.50	17.07	33.02	Medium sand
250.00	2.00	11.09	44.12	
176.78	2.50	5.43	49.54	Fine sand
125.00	3.00	7.26	56.80	
88.39	3.50	7.05	63.85	Very fine sand
62.50	4.00	4.58	68.43	
44.19	4.50	3.26	71.69	Coarse silt
31.25	5.00	2.89	74.58	
22.10	5.50	2.54	77.13	Medium silt
15.63	6.00	2.60	79.73	
11.05	6.50	3.26	82.99	Fine silt
7.81	7.00	3.48	86.47	
5.52	7.50	3.30	89.77	Very fine silt
3.91	8.00	2.77	92.53	
2.76	8.50	1.96	94.49	Clay
1.95	9.00	1.24	95.73	
1.38	9.50	0.80	96.53	
0.98	10.00	0.59	97.13	
0.69	10.50	0.51	97.64	
0.49	11.00	0.49	98.14	
<0.49	>11	1.58	100.00	



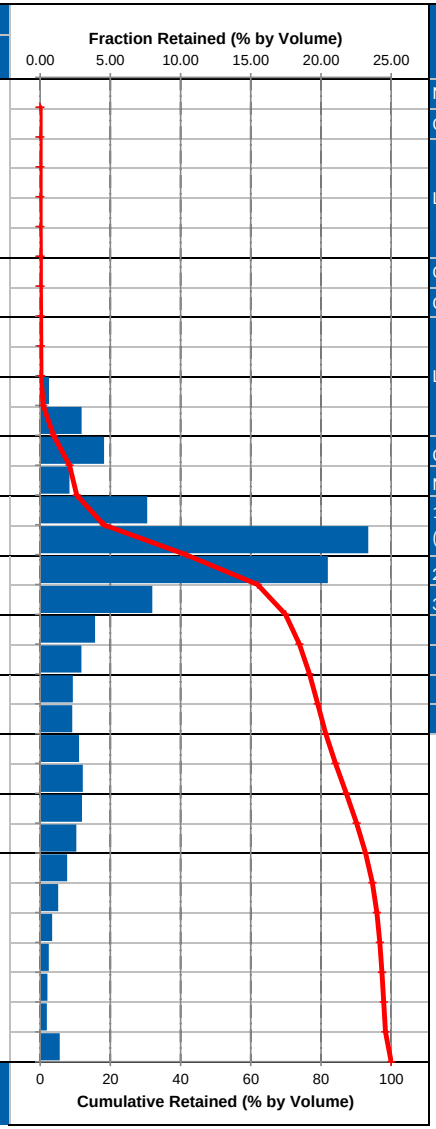
Method of Moments			
Geometric	Mean (µm)	94.83	Wentworth:
Logarithmic	Mean (Phi)	3.37	Very fine sand
	Sorting	2.73	Very poor
	Skewness	1.09	Fine
	Kurtosis	3.49	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	95.21	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.65	Very poor
	Skewness	0.48	Very fine
	Kurtosis	0.88	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.53	172.96	Fine sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	31.30%
EUNIS Folk	Mud and sandy mud	Sand	68.30%
Distribution	Bimodal	Gravel	0.20%



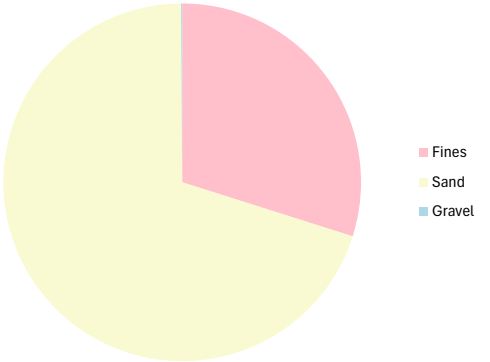
APPENDIX F PARTICLE SIZE ANALYSIS

ENV064				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.03	0.07	Granule
2000.00	-1.00	0.03	0.10	
1414.21	-0.50	0.05	0.15	Very coarse sand
1000.00	0.00	0.07	0.22	
707.11	0.50	0.63	0.85	Coarse sand
500.00	1.00	2.95	3.80	
353.55	1.50	4.55	8.36	Medium sand
250.00	2.00	2.08	10.44	
176.78	2.50	7.62	18.06	Fine sand
125.00	3.00	23.37	41.43	
88.39	3.50	20.49	61.92	Very fine sand
62.50	4.00	7.99	69.91	
44.19	4.50	3.90	73.82	Coarse silt
31.25	5.00	2.94	76.75	
22.10	5.50	2.32	79.07	Medium silt
15.63	6.00	2.29	81.36	
11.05	6.50	2.77	84.13	Fine silt
7.81	7.00	3.04	87.16	
5.52	7.50	2.97	90.14	Very fine silt
3.91	8.00	2.58	92.71	
2.76	8.50	1.92	94.63	Clay
1.95	9.00	1.28	95.91	
1.38	9.50	0.84	96.75	
0.98	10.00	0.62	97.37	
0.69	10.50	0.51	97.88	
0.49	11.00	0.47	98.35	
<0.49	>11	1.40	100.00	



Method of Moments			
Geometric	Mean (µm)	64.75	Wentworth:
Logarithmic	Mean (Phi)	3.92	Very fine sand
	Sorting	2.27	Very poor
	Skewness	1.35	Very fine
	Kurtosis	4.73	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	61.77	Wentworth:
Logarithmic	Mean (Phi)	4.02	Coarse silt
	Sorting	2.17	Very poor
	Skewness	0.52	Very fine
	Kurtosis	1.50	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.21	108.13	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

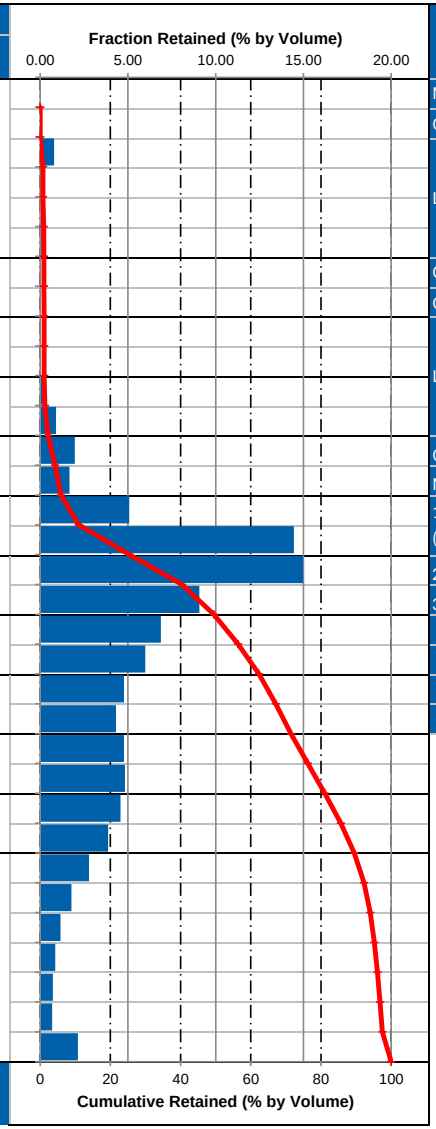
Classification		Composition	
Modified Folk	Muddy sand	Fines	29.80%
EUNIS Folk	Mud and sandy mud	Sand	69.80%
Distribution	Multimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

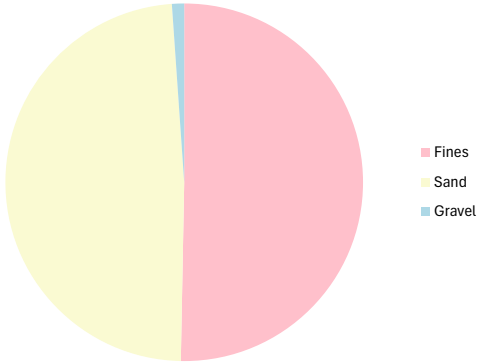
ENV065

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.79	0.79	Pebble
8000.00	-3.00	0.00	0.79	
5656.85	-2.50	0.20	0.98	
4000.00	-2.00	0.09	1.07	
2828.43	-1.50	0.00	1.07	Granule
2000.00	-1.00	0.02	1.10	
1414.21	-0.50	0.01	1.11	Very coarse sand
1000.00	0.00	0.02	1.13	
707.11	0.50	0.21	1.34	Coarse sand
500.00	1.00	0.90	2.24	
353.55	1.50	1.97	4.21	Medium sand
250.00	2.00	1.67	5.88	
176.78	2.50	5.07	10.95	Fine sand
125.00	3.00	14.46	25.41	
88.39	3.50	14.98	40.40	Very fine sand
62.50	4.00	9.07	49.47	
44.19	4.50	6.88	56.35	Coarse silt
31.25	5.00	5.99	62.34	
22.10	5.50	4.78	67.12	Medium silt
15.63	6.00	4.32	71.43	
11.05	6.50	4.78	76.21	Fine silt
7.81	7.00	4.83	81.04	
5.52	7.50	4.57	85.61	Very fine silt
3.91	8.00	3.87	89.49	
2.76	8.50	2.78	92.27	Clay
1.95	9.00	1.78	94.04	
1.38	9.50	1.16	95.21	
0.98	10.00	0.86	96.06	
0.69	10.50	0.72	96.79	
0.49	11.00	0.68	97.46	
<0.49	>11	2.15	100.00	



Method of Moments			
Geometric	Mean (µm)	38.15	Wentworth:
Logarithmic	Mean (Phi)	4.67	Coarse silt
	Sorting	2.51	Very poor
	Skewness	0.52	Fine
	Kurtosis	4.13	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	39.04	Wentworth:
Logarithmic	Mean (Phi)	4.68	Coarse silt
	Sorting	2.33	Very poor
	Skewness	0.41	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.04	60.84	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

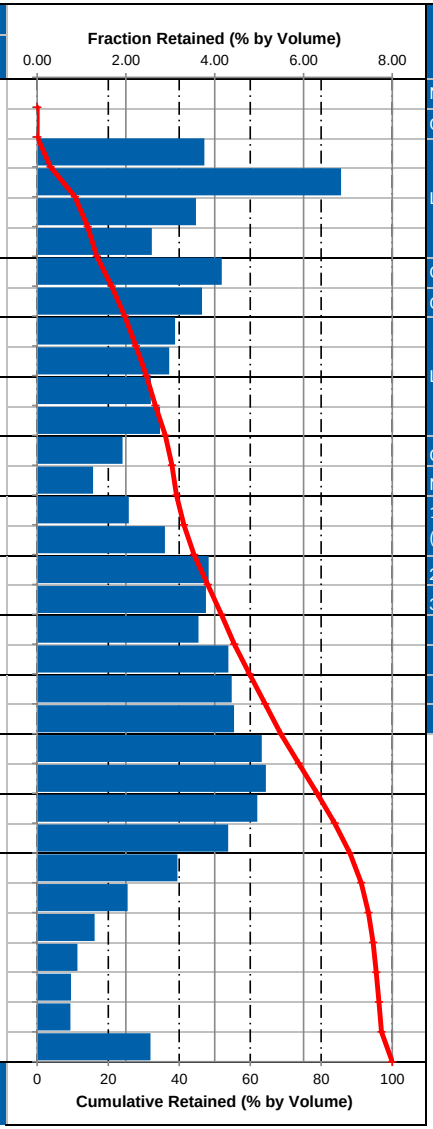
Classification		Composition	
Modified Folk	Slightly gravelly sandy muc	Fines	50.10%
EUNIS Folk	Mud and sandy mud	Sand	48.40%
Distribution	Multimodal	Gravel	1.10%



APPENDIX F PARTICLE SIZE ANALYSIS

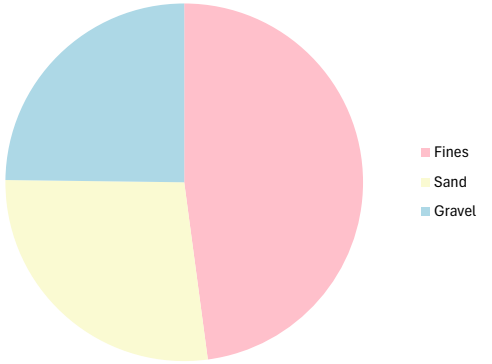
ENV066

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	3.77	3.77	Pebble
8000.00	-3.00	6.85	10.62	
5656.85	-2.50	3.58	14.20	
4000.00	-2.00	2.58	16.78	
2828.43	-1.50	4.16	20.94	Granule
2000.00	-1.00	3.71	24.65	
1414.21	-0.50	3.11	27.76	Very coarse sand
1000.00	0.00	2.97	30.73	
707.11	0.50	2.56	33.29	Coarse sand
500.00	1.00	2.77	36.06	
353.55	1.50	1.92	37.98	Medium sand
250.00	2.00	1.26	39.24	
176.78	2.50	2.07	41.31	Fine sand
125.00	3.00	2.88	44.18	
88.39	3.50	3.86	48.05	Very fine sand
62.50	4.00	3.80	51.85	
44.19	4.50	3.64	55.49	Coarse silt
31.25	5.00	4.31	59.79	
22.10	5.50	4.38	64.18	Medium silt
15.63	6.00	4.43	68.61	
11.05	6.50	5.06	73.67	Fine silt
7.81	7.00	5.15	78.82	
5.52	7.50	4.96	83.78	Very fine silt
3.91	8.00	4.30	88.09	
2.76	8.50	3.16	91.24	Clay
1.95	9.00	2.04	93.28	
1.38	9.50	1.30	94.58	
0.98	10.00	0.91	95.49	
0.69	10.50	0.76	96.25	
0.49	11.00	0.75	97.00	
<0.49	>11	2.55	100.00	



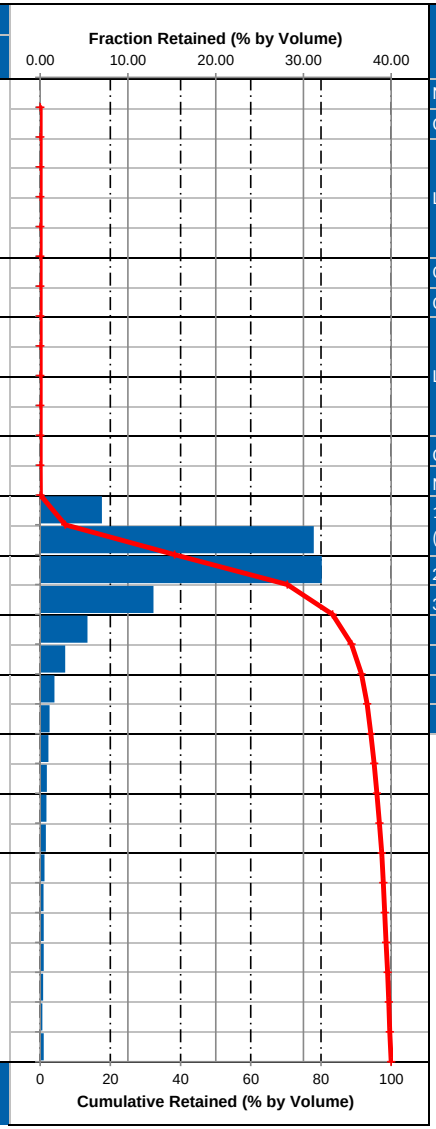
Method of Moments			
Geometric	Mean (µm)	112.45	Wentworth:
Logarithmic	Mean (Phi)	3.11	Very fine sand
	Sorting	4.28	Extremely poor
	Skewness	-0.03	Symmetrical
	Kurtosis	1.92	Platykurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	121.26	Wentworth:
Logarithmic	Mean (Phi)	3.04	Very fine sand
	Sorting	4.41	Extremely poor
	Skewness	-0.16	Coarse
	Kurtosis	0.71	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.76	73.98	Very fine sand
1st Local Maxima (Mode)	-3.00	8000.00	Pebble
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-1.50	2828.43	Granule

Classification		Composition	
Modified Folk	Gravelly mud	Fines	47.70%
EUNIS Folk	Mixed sediments	Sand	27.20%
Distribution	Multimodal	Gravel	24.70%



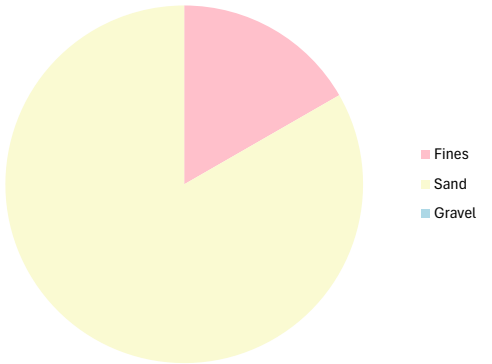
APPENDIX F PARTICLE SIZE ANALYSIS

ENV069				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.02	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.00	0.02	
353.55	1.50	0.00	0.02	Medium sand
250.00	2.00	0.05	0.07	
176.78	2.50	7.04	7.11	Fine sand
125.00	3.00	31.19	38.30	
88.39	3.50	32.09	70.39	Very fine sand
62.50	4.00	12.91	83.29	
44.19	4.50	5.39	88.69	Coarse silt
31.25	5.00	2.86	91.55	
22.10	5.50	1.62	93.17	Medium silt
15.63	6.00	1.06	94.23	
11.05	6.50	0.93	95.16	Fine silt
7.81	7.00	0.76	95.92	
5.52	7.50	0.72	96.64	Very fine silt
3.91	8.00	0.66	97.29	
2.76	8.50	0.48	97.78	
1.95	9.00	0.38	98.16	
1.38	9.50	0.40	98.56	
0.98	10.00	0.41	98.97	Clay
0.69	10.50	0.35	99.32	
0.49	11.00	0.26	99.57	
<0.49	>11	0.39	100.00	



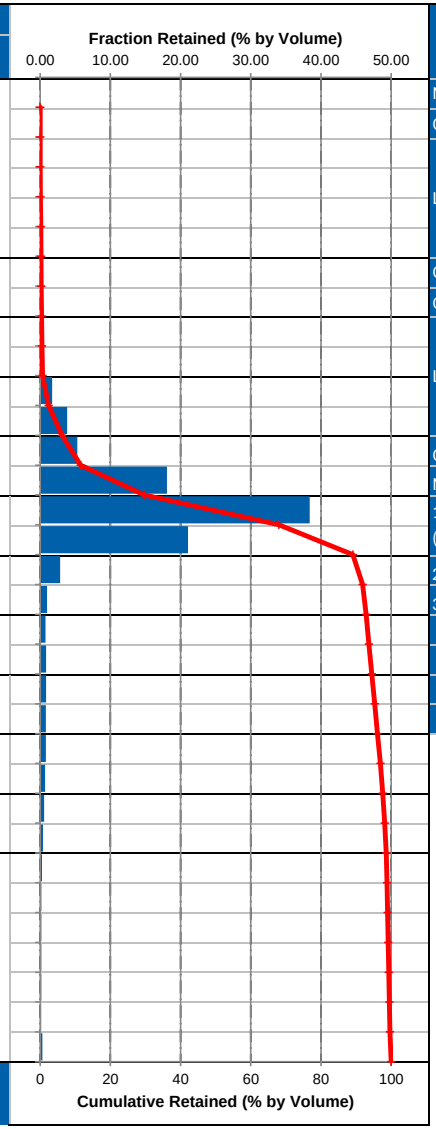
Method of Moments			
Geometric	Mean (µm)	86.56	Wentworth:
Logarithmic	Mean (Phi)	3.53	Very fine sand
	Sorting	1.39	Poor
	Skewness	3.08	Very fine
	Kurtosis	14.32	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	101.76	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	0.97	Moderate
	Skewness	0.42	Very fine
	Kurtosis	1.87	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.18	110.16	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	16.70%
EUNIS Folk	Sand and muddy sand	Sand	83.30%
Distribution	Unimodal	Gravel	0.00%



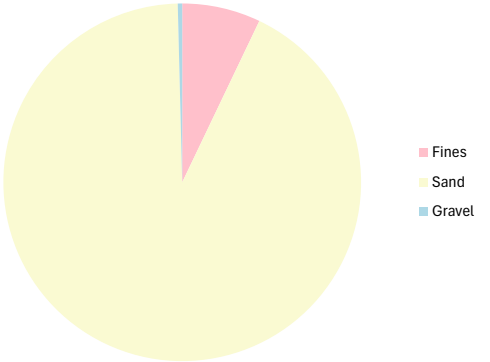
APPENDIX F PARTICLE SIZE ANALYSIS

ENV071				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.04	0.04	
5656.85	-2.50	0.13	0.18	
4000.00	-2.00	0.05	0.22	
2828.43	-1.50	0.05	0.27	Granule
2000.00	-1.00	0.11	0.38	
1414.21	-0.50	0.14	0.52	Very coarse sand
1000.00	0.00	0.18	0.70	
707.11	0.50	1.69	2.40	Coarse sand
500.00	1.00	3.84	6.24	
353.55	1.50	5.30	11.54	Medium sand
250.00	2.00	18.05	29.60	
176.78	2.50	38.40	68.00	Fine sand
125.00	3.00	21.05	89.05	
88.39	3.50	2.83	91.88	Very fine sand
62.50	4.00	0.98	92.86	
44.19	4.50	0.76	93.62	Coarse silt
31.25	5.00	0.84	94.46	
22.10	5.50	0.84	95.30	Medium silt
15.63	6.00	0.81	96.11	
11.05	6.50	0.81	96.92	Fine silt
7.81	7.00	0.70	97.62	
5.52	7.50	0.55	98.17	Very fine silt
3.91	8.00	0.40	98.57	
2.76	8.50	0.25	98.82	
1.95	9.00	0.17	99.00	
1.38	9.50	0.16	99.16	
0.98	10.00	0.17	99.33	Clay
0.69	10.50	0.16	99.49	
0.49	11.00	0.14	99.63	
<0.49	>11	0.32	100.00	



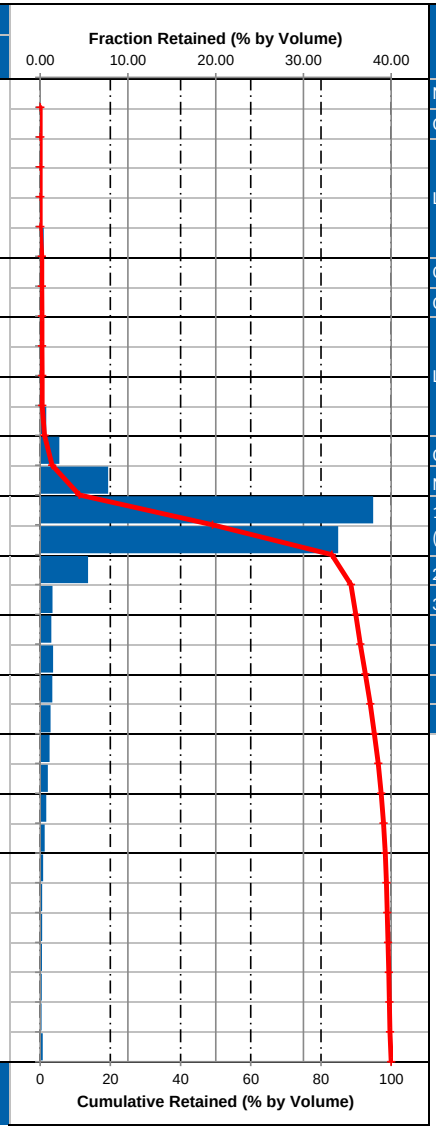
Method of Moments			
Geometric	Mean (µm)	182.92	Wentworth:
Logarithmic	Mean (Phi)	2.45	Fine sand
	Sorting	1.43	Poor
	Skewness	2.81	Very fine
	Kurtosis	16.07	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	209.30	Wentworth:
Logarithmic	Mean (Phi)	2.26	Fine sand
	Sorting	0.99	Moderate
	Skewness	0.17	Fine
	Kurtosis	2.31	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.27	207.96	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.10%
EUNIS Folk	Sand and muddy sand	Sand	92.50%
Distribution	Unimodal	Gravel	0.40%



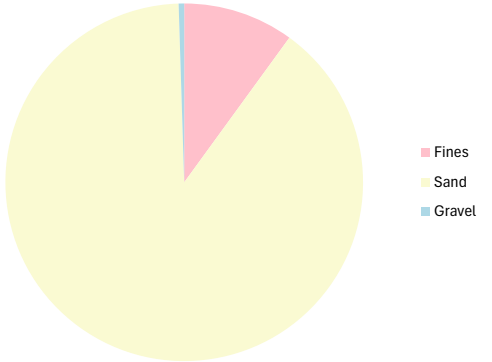
APPENDIX F PARTICLE SIZE ANALYSIS

ENV072				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.02	0.02	
4000.00	-2.00	0.41	0.43	
2828.43	-1.50	0.03	0.46	Granule
2000.00	-1.00	0.02	0.48	
1414.21	-0.50	0.04	0.52	Very coarse sand
1000.00	0.00	0.02	0.54	
707.11	0.50	0.00	0.54	Coarse sand
500.00	1.00	0.69	1.23	
353.55	1.50	2.19	3.42	Medium sand
250.00	2.00	7.74	11.15	
176.78	2.50	37.94	49.09	Fine sand
125.00	3.00	33.95	83.05	
88.39	3.50	5.46	88.51	Very fine sand
62.50	4.00	1.40	89.91	
44.19	4.50	1.28	91.19	Coarse silt
31.25	5.00	1.46	92.65	
22.10	5.50	1.38	94.04	Medium silt
15.63	6.00	1.19	95.22	
11.05	6.50	1.07	96.29	Fine silt
7.81	7.00	0.86	97.15	
5.52	7.50	0.68	97.84	Very fine silt
3.91	8.00	0.51	98.34	
2.76	8.50	0.33	98.67	
1.95	9.00	0.23	98.89	
1.38	9.50	0.21	99.11	
0.98	10.00	0.21	99.32	Clay
0.69	10.50	0.19	99.51	
0.49	11.00	0.15	99.66	
<0.49	>11	0.30	100.00	



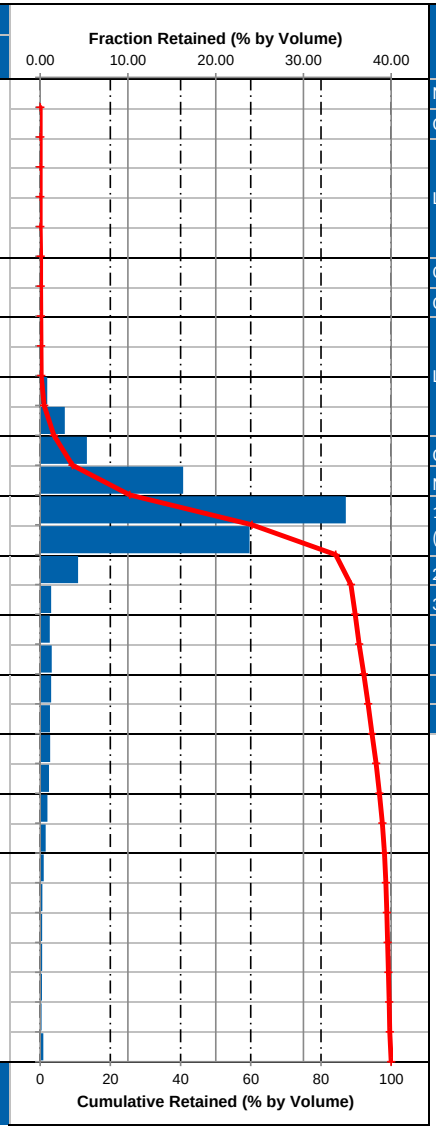
Method of Moments			
Geometric	Mean (µm)	142.11	Wentworth:
Logarithmic	Mean (Phi)	2.81	Fine sand
	Sorting	1.43	Poor
	Skewness	2.72	Very fine
	Kurtosis	14.60	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	170.18	Wentworth:
Logarithmic	Mean (Phi)	2.55	Fine sand
	Sorting	0.91	Moderate
	Skewness	0.35	Very fine
	Kurtosis	2.52	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.51	175.15	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.00%
EUNIS Folk	Sand and muddy sand	Sand	89.40%
Distribution	Bimodal	Gravel	0.50%



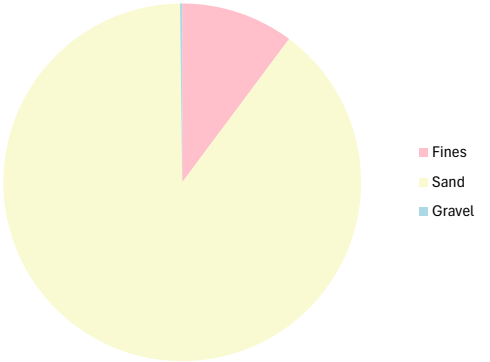
APPENDIX F PARTICLE SIZE ANALYSIS

ENV073				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.09	0.09	
2828.43	-1.50	0.03	0.12	Granule
2000.00	-1.00	0.04	0.16	
1414.21	-0.50	0.06	0.22	Very coarse sand
1000.00	0.00	0.08	0.29	
707.11	0.50	0.80	1.09	Coarse sand
500.00	1.00	2.81	3.90	
353.55	1.50	5.31	9.21	Medium sand
250.00	2.00	16.29	25.51	
176.78	2.50	34.84	60.34	Fine sand
125.00	3.00	23.86	84.20	
88.39	3.50	4.32	88.52	Very fine sand
62.50	4.00	1.24	89.76	
44.19	4.50	1.09	90.86	Coarse silt
31.25	5.00	1.32	92.18	
22.10	5.50	1.26	93.44	Medium silt
15.63	6.00	1.11	94.55	
11.05	6.50	1.13	95.68	Fine silt
7.81	7.00	0.99	96.67	
5.52	7.50	0.82	97.49	Very fine silt
3.91	8.00	0.62	98.11	
2.76	8.50	0.40	98.51	Clay
1.95	9.00	0.26	98.77	
1.38	9.50	0.22	98.99	
0.98	10.00	0.22	99.21	
0.69	10.50	0.20	99.41	
0.49	11.00	0.17	99.57	
<0.49	>11	0.37	100.00	



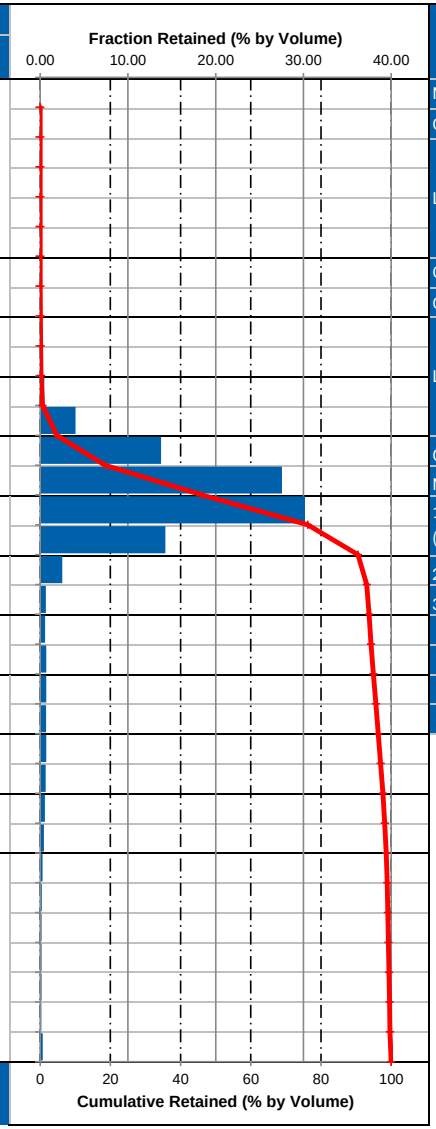
Method of Moments			
Geometric	Mean (µm)	157.44	Wentworth:
Logarithmic	Mean (Phi)	2.66	Fine sand
	Sorting	1.55	Poor
	Skewness	2.69	Very fine
	Kurtosis	12.70	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	195.89	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.09	Poor
	Skewness	0.26	Fine
	Kurtosis	2.54	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.35	195.93	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.20%
EUNIS Folk	Sand and muddy sand	Sand	89.60%
Distribution	Bimodal	Gravel	0.20%



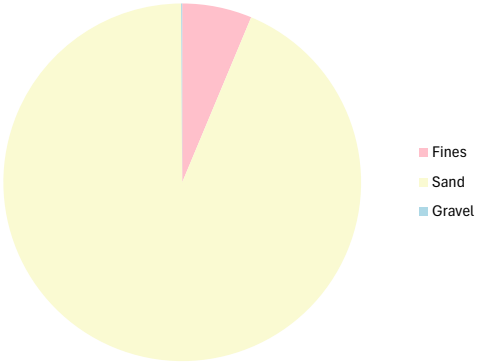
APPENDIX F PARTICLE SIZE ANALYSIS

ENV074				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.03	0.06	
1414.21	-0.50	0.06	0.12	Very coarse sand
1000.00	0.00	0.10	0.23	
707.11	0.50	0.46	0.69	Coarse sand
500.00	1.00	4.04	4.72	
353.55	1.50	13.77	18.50	Medium sand
250.00	2.00	27.56	46.06	
176.78	2.50	30.19	76.24	Fine sand
125.00	3.00	14.26	90.51	
88.39	3.50	2.53	93.03	Very fine sand
62.50	4.00	0.65	93.69	
44.19	4.50	0.56	94.25	Coarse silt
31.25	5.00	0.69	94.94	
22.10	5.50	0.70	95.64	Medium silt
15.63	6.00	0.68	96.32	
11.05	6.50	0.69	97.01	Fine silt
7.81	7.00	0.63	97.63	
5.52	7.50	0.54	98.17	Very fine silt
3.91	8.00	0.42	98.58	
2.76	8.50	0.27	98.86	
1.95	9.00	0.18	99.04	
1.38	9.50	0.16	99.21	
0.98	10.00	0.16	99.37	Clay
0.69	10.50	0.15	99.52	
0.49	11.00	0.13	99.65	
<0.49	>11	0.30	100.00	



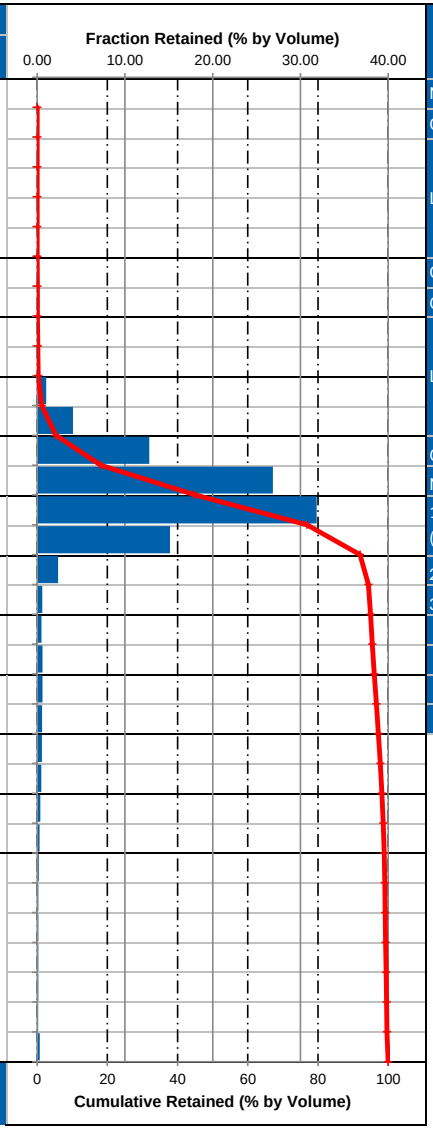
Method of Moments			
Geometric	Mean (µm)	204.37	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.39	Poor
	Skewness	3.36	Very fine
	Kurtosis	18.04	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	236.16	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	0.95	Moderate
	Skewness	0.26	Fine
	Kurtosis	1.92	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.07	238.93	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.30%
EUNIS Folk	Sand and muddy sand	Sand	93.60%
Distribution	Unimodal	Gravel	0.10%



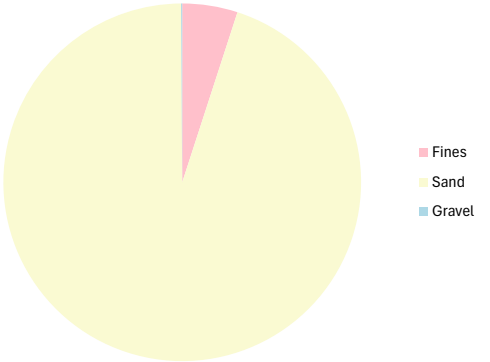
APPENDIX F PARTICLE SIZE ANALYSIS

ENV075				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.05	0.05	Granule
2000.00	-1.00	0.03	0.08	
1414.21	-0.50	0.08	0.16	Very coarse sand
1000.00	0.00	0.11	0.27	
707.11	0.50	1.03	1.30	Coarse sand
500.00	1.00	4.07	5.37	
353.55	1.50	12.77	18.14	Medium sand
250.00	2.00	26.87	45.01	
176.78	2.50	31.85	76.86	Fine sand
125.00	3.00	15.14	92.00	
88.39	3.50	2.38	94.39	Very fine sand
62.50	4.00	0.59	94.97	
44.19	4.50	0.48	95.46	Coarse silt
31.25	5.00	0.59	96.05	
22.10	5.50	0.59	96.64	Medium silt
15.63	6.00	0.56	97.20	
11.05	6.50	0.54	97.75	Fine silt
7.81	7.00	0.46	98.21	
5.52	7.50	0.37	98.58	Very fine silt
3.91	8.00	0.27	98.84	
2.76	8.50	0.17	99.02	
1.95	9.00	0.13	99.14	
1.38	9.50	0.13	99.27	
0.98	10.00	0.13	99.41	Clay
0.69	10.50	0.13	99.54	
0.49	11.00	0.12	99.65	
<0.49	>11	0.29	100.00	



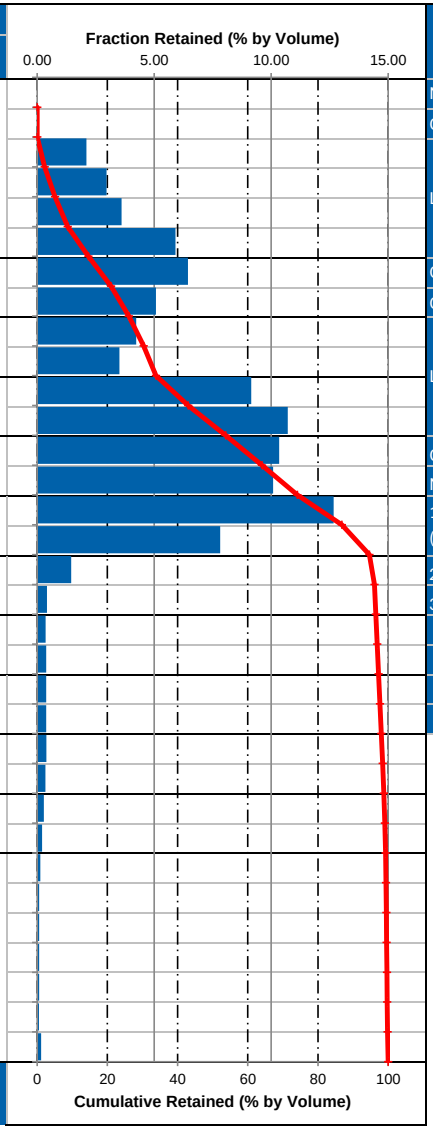
Method of Moments			
Geometric	Mean (µm)	212.53	Wentworth:
Logarithmic	Mean (Phi)	2.23	Fine sand
	Sorting	1.29	Poor
	Skewness	3.60	Very fine
	Kurtosis	21.92	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	237.04	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	0.80	Moderate
	Skewness	0.13	Fine
	Kurtosis	1.49	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.08	236.78	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.00%
EUNIS Folk	Sand and muddy sand	Sand	94.90%
Distribution	Unimodal	Gravel	0.10%



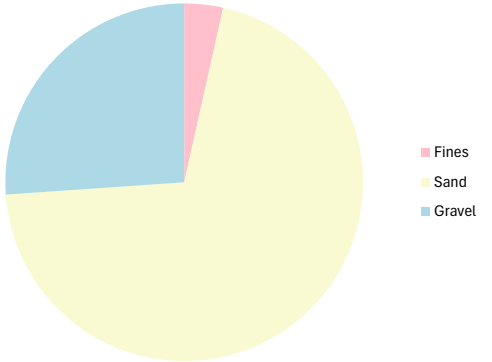
APPENDIX F PARTICLE SIZE ANALYSIS

ENV076				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	2.11	2.11	Pebble
8000.00	-3.00	2.96	5.07	
5656.85	-2.50	3.60	8.67	
4000.00	-2.00	5.91	14.59	
2828.43	-1.50	6.45	21.04	Granule
2000.00	-1.00	5.08	26.11	
1414.21	-0.50	4.23	30.35	Very coarse sand
1000.00	0.00	3.51	33.86	
707.11	0.50	9.15	43.01	Coarse sand
500.00	1.00	10.71	53.72	
353.55	1.50	10.34	64.06	Medium sand
250.00	2.00	10.09	74.14	
176.78	2.50	12.67	86.81	Fine sand
125.00	3.00	7.82	94.64	
88.39	3.50	1.45	96.09	Very fine sand
62.50	4.00	0.41	96.50	
44.19	4.50	0.36	96.86	Coarse silt
31.25	5.00	0.39	97.25	
22.10	5.50	0.39	97.63	Medium silt
15.63	6.00	0.38	98.01	
11.05	6.50	0.39	98.41	Fine silt
7.81	7.00	0.35	98.76	
5.52	7.50	0.29	99.04	Very fine silt
3.91	8.00	0.21	99.26	
2.76	8.50	0.13	99.39	
1.95	9.00	0.09	99.48	
1.38	9.50	0.08	99.56	
0.98	10.00	0.09	99.65	Clay
0.69	10.50	0.08	99.73	
0.49	11.00	0.07	99.80	
<0.49	>11	0.17	100.00	



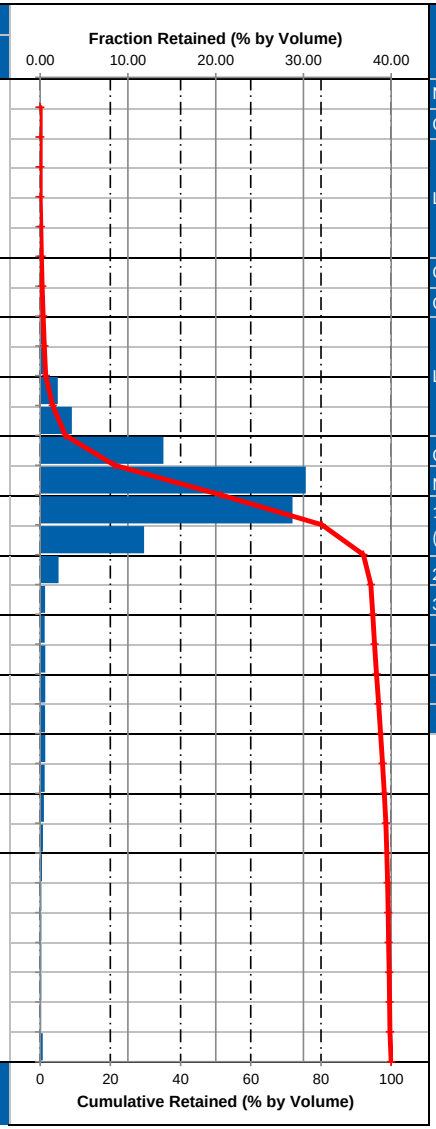
Method of Moments			
Geometric	Mean (µm)	667.67	Wentworth:
Logarithmic	Mean (Phi)	0.58	Coarse sand
	Sorting	2.20	Very poor
	Skewness	0.52	Fine
	Kurtosis	5.04	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	736.30	Wentworth:
Logarithmic	Mean (Phi)	0.44	Coarse sand
	Sorting	2.00	Poor
	Skewness	-0.26	Coarse
	Kurtosis	0.80	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.83	563.91	Coarse sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	1.00	500.00	Coarse sand
3rd Local Maxima	-1.50	2828.43	Granule

Classification		Composition	
Modified Folk	Gravelly sand	Fines	3.50%
EUNIS Folk	Coarse sediments	Sand	70.40%
Distribution	Multimodal	Gravel	26.10%



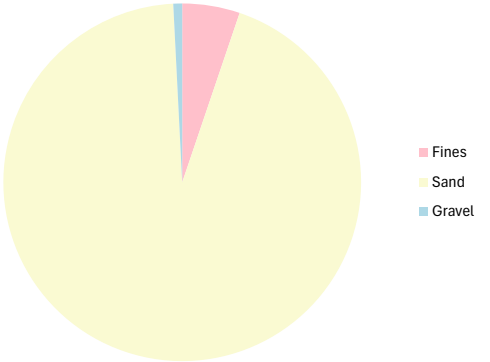
APPENDIX F PARTICLE SIZE ANALYSIS

ENV077				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.17	0.17	
4000.00	-2.00	0.17	0.34	
2828.43	-1.50	0.21	0.56	Granule
2000.00	-1.00	0.29	0.85	
1414.21	-0.50	0.35	1.19	Very coarse sand
1000.00	0.00	0.35	1.54	
707.11	0.50	2.01	3.56	Coarse sand
500.00	1.00	3.61	7.17	
353.55	1.50	14.05	21.23	Medium sand
250.00	2.00	30.27	51.49	
176.78	2.50	28.77	80.26	Fine sand
125.00	3.00	11.84	92.10	
88.39	3.50	2.09	94.19	Very fine sand
62.50	4.00	0.56	94.75	
44.19	4.50	0.50	95.26	Coarse silt
31.25	5.00	0.58	95.84	
22.10	5.50	0.57	96.41	Medium silt
15.63	6.00	0.56	96.97	
11.05	6.50	0.57	97.55	Fine silt
7.81	7.00	0.51	98.06	
5.52	7.50	0.42	98.48	Very fine silt
3.91	8.00	0.31	98.79	
2.76	8.50	0.20	98.99	Clay
1.95	9.00	0.14	99.13	
1.38	9.50	0.14	99.26	
0.98	10.00	0.14	99.40	
0.69	10.50	0.14	99.54	
0.49	11.00	0.12	99.66	
<0.49	>11	0.29	100.00	



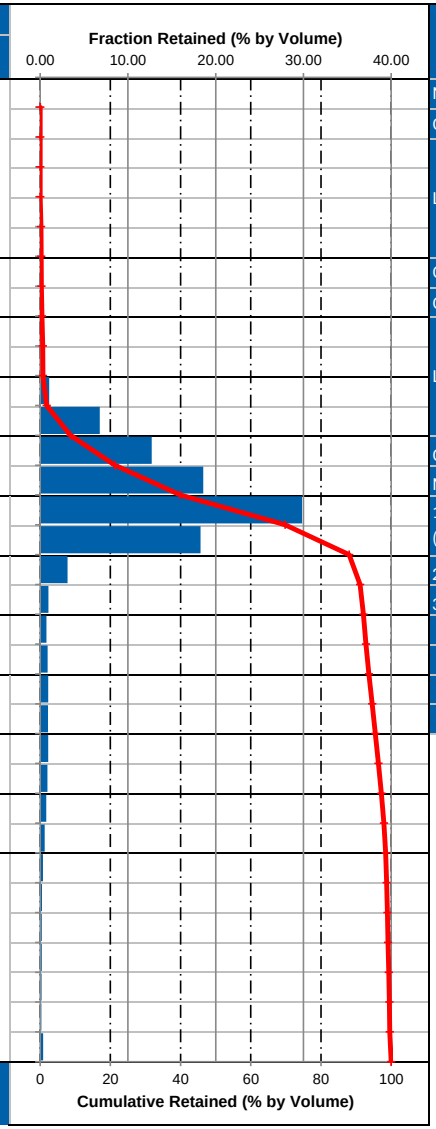
Method of Moments			
Geometric	Mean (µm)	227.26	Wentworth:
Logarithmic	Mean (Phi)	2.13	Fine sand
	Sorting	1.39	Poor
	Skewness	2.94	Very fine
	Kurtosis	18.43	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	253.06	Wentworth:
Logarithmic	Mean (Phi)	1.98	Medium sand
	Sorting	0.87	Moderate
	Skewness	0.15	Fine
	Kurtosis	1.72	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.98	254.31	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.20%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.80%



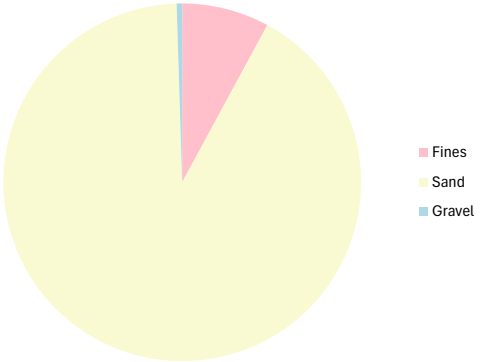
APPENDIX F PARTICLE SIZE ANALYSIS

ENV078				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.21	0.21	
4000.00	-2.00	0.06	0.26	
2828.43	-1.50	0.09	0.35	Granule
2000.00	-1.00	0.16	0.51	
1414.21	-0.50	0.19	0.71	Very coarse sand
1000.00	0.00	0.11	0.81	
707.11	0.50	1.02	1.84	Coarse sand
500.00	1.00	6.79	8.63	
353.55	1.50	12.71	21.34	Medium sand
250.00	2.00	18.58	39.92	
176.78	2.50	29.86	69.77	Fine sand
125.00	3.00	18.27	88.04	
88.39	3.50	3.11	91.15	Very fine sand
62.50	4.00	0.94	92.09	
44.19	4.50	0.71	92.80	Coarse silt
31.25	5.00	0.86	93.66	
22.10	5.50	0.92	94.57	Medium silt
15.63	6.00	0.89	95.46	
11.05	6.50	0.92	96.38	Fine silt
7.81	7.00	0.83	97.21	
5.52	7.50	0.69	97.90	Very fine silt
3.91	8.00	0.51	98.41	
2.76	8.50	0.32	98.73	
1.95	9.00	0.21	98.94	
1.38	9.50	0.18	99.12	
0.98	10.00	0.18	99.30	Clay
0.69	10.50	0.17	99.47	
0.49	11.00	0.14	99.61	
<0.49	>11	0.33	100.00	



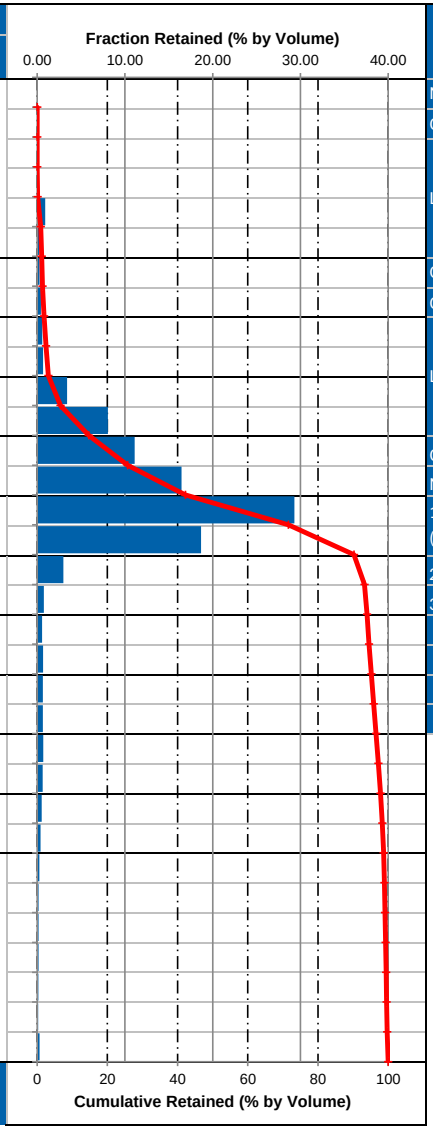
Method of Moments			
Geometric	Mean (µm)	194.09	Wentworth:
Logarithmic	Mean (Phi)	2.36	Fine sand
	Sorting	1.55	Poor
	Skewness	2.57	Very fine
	Kurtosis	13.32	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	230.67	Wentworth:
Logarithmic	Mean (Phi)	2.12	Fine sand
	Sorting	1.16	Poor
	Skewness	0.16	Fine
	Kurtosis	1.96	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.17	222.39	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.90%
EUNIS Folk	Sand and muddy sand	Sand	91.60%
Distribution	Unimodal	Gravel	0.50%



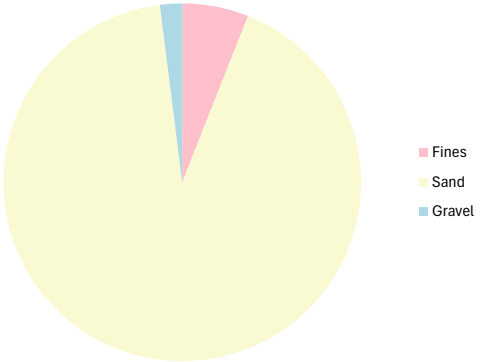
APPENDIX F PARTICLE SIZE ANALYSIS

ENV079				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.12	0.12	
5656.85	-2.50	0.91	1.03	
4000.00	-2.00	0.23	1.26	
2828.43	-1.50	0.26	1.52	Granule
2000.00	-1.00	0.43	1.95	
1414.21	-0.50	0.57	2.53	Very coarse sand
1000.00	0.00	0.68	3.20	
707.11	0.50	3.41	6.61	Coarse sand
500.00	1.00	8.06	14.67	
353.55	1.50	11.10	25.78	Medium sand
250.00	2.00	16.46	42.23	
176.78	2.50	29.32	71.55	Fine sand
125.00	3.00	18.68	90.24	
88.39	3.50	2.99	93.23	Very fine sand
62.50	4.00	0.76	93.98	
44.19	4.50	0.56	94.54	Coarse silt
31.25	5.00	0.66	95.21	
22.10	5.50	0.65	95.86	Medium silt
15.63	6.00	0.66	96.51	
11.05	6.50	0.69	97.21	Fine silt
7.81	7.00	0.62	97.83	
5.52	7.50	0.51	98.34	Very fine silt
3.91	8.00	0.38	98.72	
2.76	8.50	0.24	98.95	
1.95	9.00	0.16	99.11	
1.38	9.50	0.15	99.26	
0.98	10.00	0.16	99.42	Clay
0.69	10.50	0.14	99.56	
0.49	11.00	0.12	99.69	
<0.49	>11	0.27	100.00	



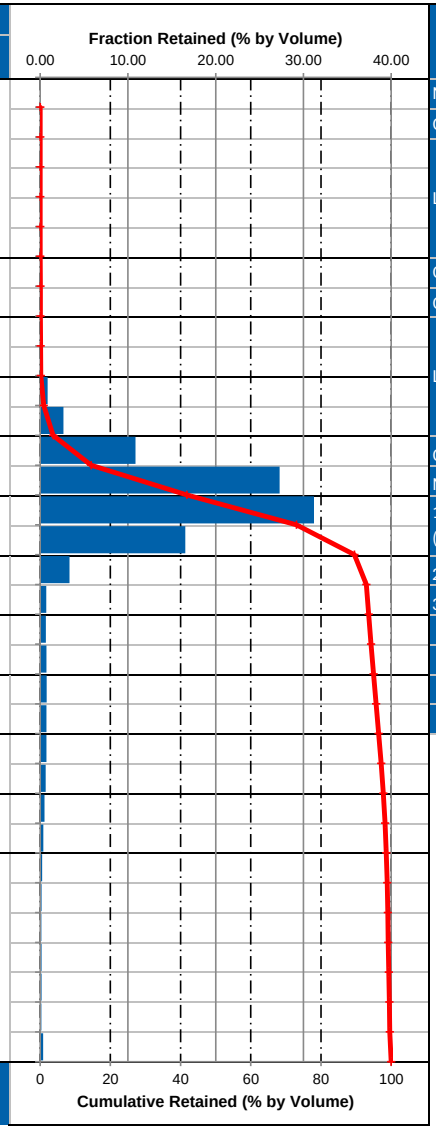
Method of Moments			
Geometric	Mean (µm)	225.24	Wentworth:
Logarithmic	Mean (Phi)	2.15	Fine sand
	Sorting	1.57	Poor
	Skewness	1.77	Very fine
	Kurtosis	12.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	248.55	Wentworth:
Logarithmic	Mean (Phi)	2.01	Fine sand
	Sorting	1.14	Poor
	Skewness	-0.01	Symmetrical
	Kurtosis	1.67	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.13	228.07	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	92.00%
Distribution	Unimodal	Gravel	2.00%



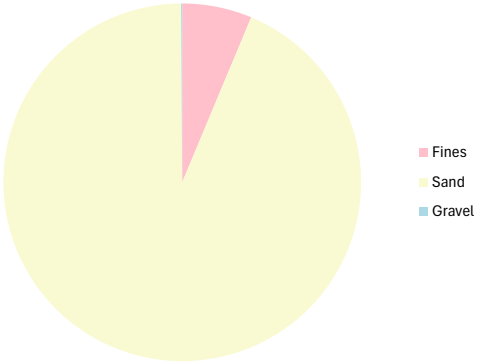
APPENDIX F PARTICLE SIZE ANALYSIS

ENV080				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.05	0.05	Granule
2000.00	-1.00	0.03	0.08	
1414.21	-0.50	0.04	0.12	Very coarse sand
1000.00	0.00	0.05	0.17	
707.11	0.50	0.85	1.02	Coarse sand
500.00	1.00	2.65	3.68	
353.55	1.50	10.86	14.53	Medium sand
250.00	2.00	27.28	41.82	
176.78	2.50	31.19	73.01	Fine sand
125.00	3.00	16.54	89.55	
88.39	3.50	3.35	92.90	Very fine sand
62.50	4.00	0.70	93.60	
44.19	4.50	0.65	94.24	Coarse silt
31.25	5.00	0.72	94.96	
22.10	5.50	0.73	95.70	Medium silt
15.63	6.00	0.72	96.41	
11.05	6.50	0.72	97.13	Fine silt
7.81	7.00	0.63	97.75	
5.52	7.50	0.50	98.25	Very fine silt
3.91	8.00	0.36	98.62	
2.76	8.50	0.23	98.85	Clay
1.95	9.00	0.16	99.01	
1.38	9.50	0.15	99.16	
0.98	10.00	0.15	99.31	
0.69	10.50	0.15	99.46	
0.49	11.00	0.13	99.60	
<0.49	>11	0.34	100.00	



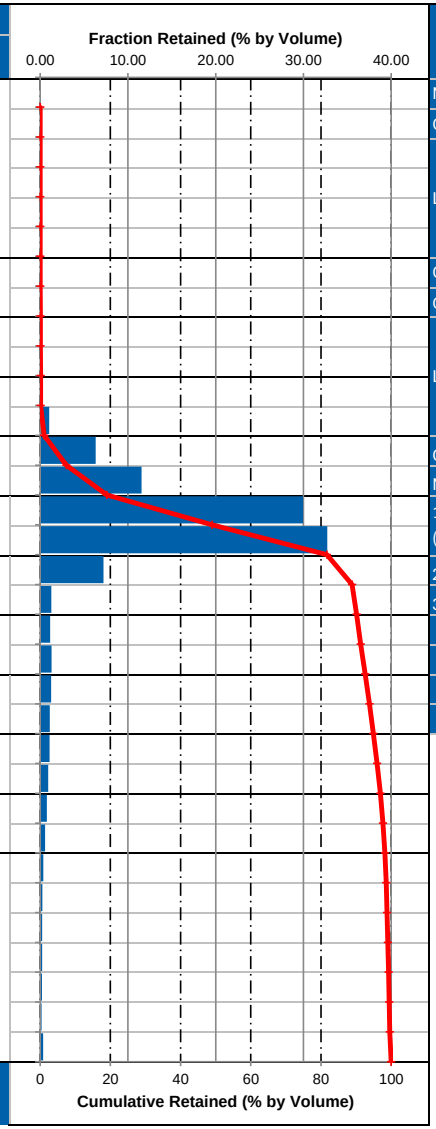
Method of Moments			
Geometric	Mean (µm)	195.28	Wentworth:
Logarithmic	Mean (Phi)	2.35	Fine sand
	Sorting	1.38	Poor
	Skewness	3.40	Very fine
	Kurtosis	18.79	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	223.22	Wentworth:
Logarithmic	Mean (Phi)	2.16	Fine sand
	Sorting	0.93	Moderate
	Skewness	0.27	Fine
	Kurtosis	1.87	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.13	228.27	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.30%
EUNIS Folk	Sand and muddy sand	Sand	93.50%
Distribution	Unimodal	Gravel	0.10%



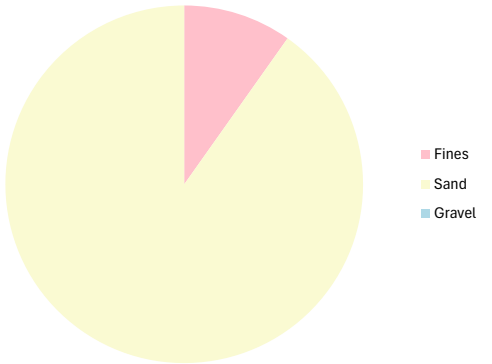
APPENDIX F PARTICLE SIZE ANALYSIS

ENV081				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.03	0.07	Very coarse sand
1000.00	0.00	0.02	0.09	
707.11	0.50	0.00	0.09	Coarse sand
500.00	1.00	1.03	1.12	
353.55	1.50	6.33	7.45	Medium sand
250.00	2.00	11.56	19.00	
176.78	2.50	29.96	48.96	Fine sand
125.00	3.00	32.71	81.67	
88.39	3.50	7.22	88.88	Very fine sand
62.50	4.00	1.28	90.16	
44.19	4.50	1.13	91.29	Coarse silt
31.25	5.00	1.29	92.58	
22.10	5.50	1.24	93.82	Medium silt
15.63	6.00	1.09	94.91	
11.05	6.50	1.06	95.98	Fine silt
7.81	7.00	0.92	96.90	
5.52	7.50	0.75	97.65	Very fine silt
3.91	8.00	0.56	98.22	
2.76	8.50	0.36	98.58	Clay
1.95	9.00	0.24	98.82	
1.38	9.50	0.22	99.04	
0.98	10.00	0.22	99.25	
0.69	10.50	0.19	99.45	
0.49	11.00	0.16	99.61	
<0.49	>11	0.34	100.00	



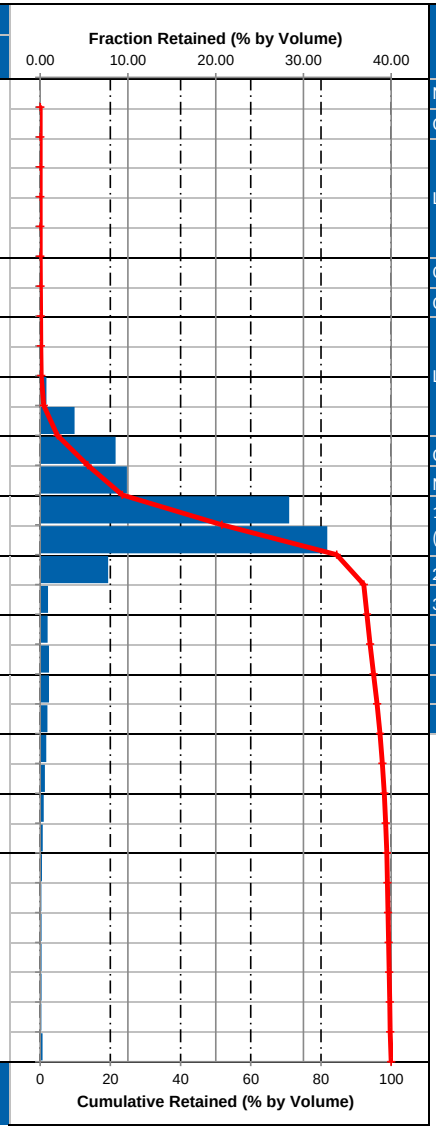
Method of Moments			
Geometric	Mean (µm)	145.29	Wentworth:
Logarithmic	Mean (Phi)	2.78	Fine sand
	Sorting	1.46	Poor
	Skewness	2.92	Very fine
	Kurtosis	14.08	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	174.84	Wentworth:
Logarithmic	Mean (Phi)	2.52	Fine sand
	Sorting	1.04	Poor
	Skewness	0.24	Fine
	Kurtosis	2.43	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.52	174.84	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.80%
EUNIS Folk	Sand and muddy sand	Sand	90.10%
Distribution	Bimodal	Gravel	0.00%



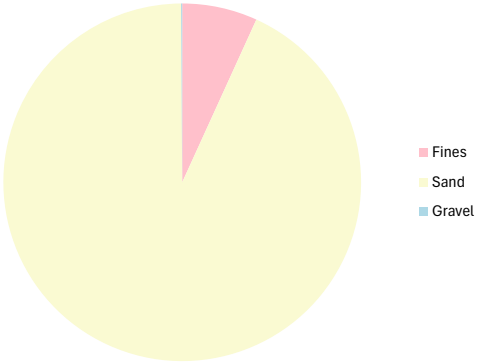
APPENDIX F PARTICLE SIZE ANALYSIS

ENV082				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.01	0.01	
4000.00	-2.00	0.01	0.02	
2828.43	-1.50	0.04	0.06	Granule
2000.00	-1.00	0.03	0.09	
1414.21	-0.50	0.06	0.15	Very coarse sand
1000.00	0.00	0.13	0.28	
707.11	0.50	0.71	0.99	Coarse sand
500.00	1.00	3.92	4.91	
353.55	1.50	8.59	13.50	Medium sand
250.00	2.00	9.89	23.39	
176.78	2.50	28.37	51.76	Fine sand
125.00	3.00	32.72	84.48	
88.39	3.50	7.75	92.22	Very fine sand
62.50	4.00	0.89	93.11	
44.19	4.50	0.86	93.97	Coarse silt
31.25	5.00	1.00	94.97	
22.10	5.50	1.00	95.98	Medium silt
15.63	6.00	0.83	96.81	
11.05	6.50	0.70	97.50	Fine silt
7.81	7.00	0.54	98.04	
5.52	7.50	0.41	98.45	Very fine silt
3.91	8.00	0.30	98.75	
2.76	8.50	0.19	98.94	
1.95	9.00	0.15	99.09	
1.38	9.50	0.16	99.24	
0.98	10.00	0.17	99.41	Clay
0.69	10.50	0.15	99.57	
0.49	11.00	0.13	99.70	
<0.49	>11	0.27	100.00	



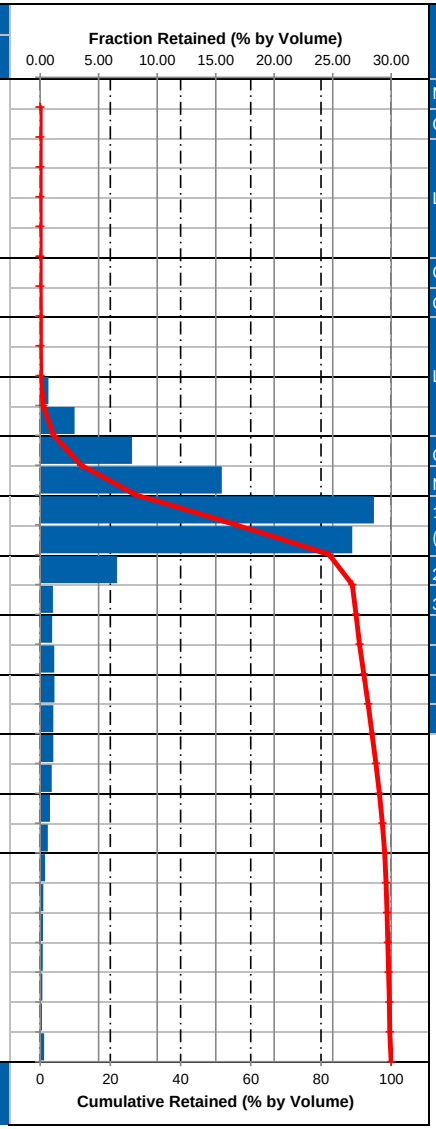
Method of Moments			
Geometric	Mean (µm)	167.94	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	1.33	Poor
	Skewness	2.89	Very fine
	Kurtosis	16.82	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	194.42	Wentworth:
Logarithmic	Mean (Phi)	2.36	Fine sand
	Sorting	0.95	Moderate
	Skewness	0.02	Symmetrical
	Kurtosis	1.99	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.47	180.62	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	6.80%
EUNIS Folk	Sand and muddy sand	Sand	93.00%
Distribution	Bimodal	Gravel	0.10%



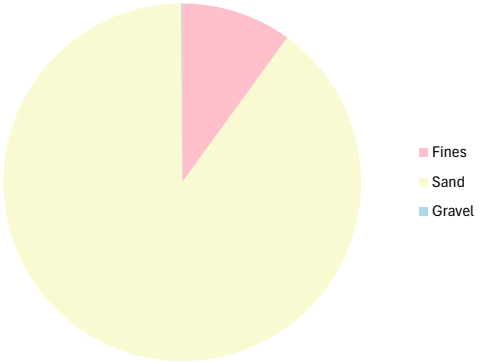
APPENDIX F PARTICLE SIZE ANALYSIS

ENV083				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.03	0.06	
1414.21	-0.50	0.02	0.08	Very coarse sand
1000.00	0.00	0.05	0.14	
707.11	0.50	0.70	0.84	Coarse sand
500.00	1.00	2.93	3.77	
353.55	1.50	7.84	11.62	Medium sand
250.00	2.00	15.52	27.14	
176.78	2.50	28.52	55.66	Fine sand
125.00	3.00	26.68	82.33	
88.39	3.50	6.56	88.89	Very fine sand
62.50	4.00	1.08	89.97	
44.19	4.50	1.02	90.99	Coarse silt
31.25	5.00	1.20	92.19	
22.10	5.50	1.23	93.42	Medium silt
15.63	6.00	1.12	94.54	
11.05	6.50	1.12	95.66	Fine silt
7.81	7.00	0.99	96.65	
5.52	7.50	0.84	97.49	Very fine silt
3.91	8.00	0.65	98.14	
2.76	8.50	0.41	98.55	
1.95	9.00	0.27	98.82	
1.38	9.50	0.23	99.05	
0.98	10.00	0.22	99.27	Clay
0.69	10.50	0.19	99.46	
0.49	11.00	0.15	99.62	
<0.49	>11	0.33	100.00	



Method of Moments			
Geometric	Mean (µm)	156.12	Wentworth:
Logarithmic	Mean (Phi)	2.67	Fine sand
	Sorting	1.55	Poor
	Skewness	2.64	Very fine
	Kurtosis	12.24	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	190.83	Wentworth:
Logarithmic	Mean (Phi)	2.39	Fine sand
	Sorting	1.15	Poor
	Skewness	0.23	Fine
	Kurtosis	2.26	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.40	189.36	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

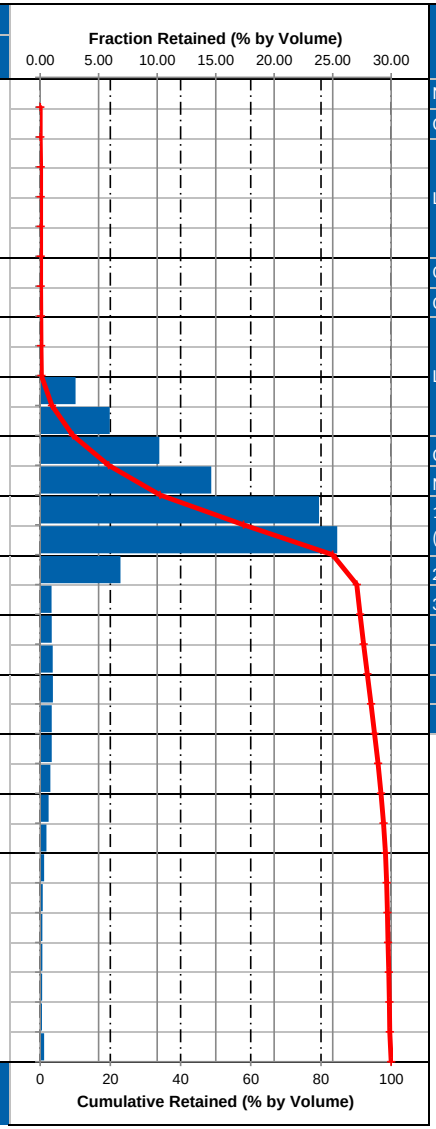
Classification		Composition	
Modified Folk	Sand	Fines	10.00%
EUNIS Folk	Sand and muddy sand	Sand	89.90%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

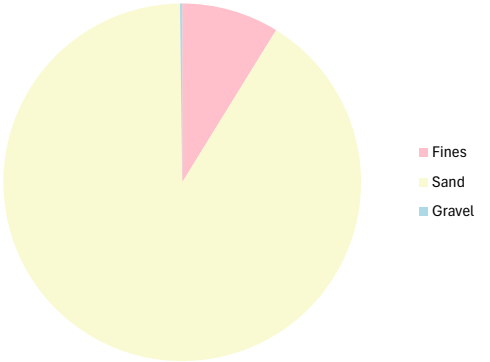
ENV084

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.14	0.14	
8000.00	-3.00	0.00	0.14	
5656.85	-2.50	0.00	0.14	
4000.00	-2.00	0.00	0.14	
2828.43	-1.50	0.01	0.14	Granule
2000.00	-1.00	0.03	0.17	
1414.21	-0.50	0.03	0.20	Very coarse sand
1000.00	0.00	0.12	0.32	
707.11	0.50	3.03	3.35	Coarse sand
500.00	1.00	5.94	9.29	
353.55	1.50	10.18	19.47	Medium sand
250.00	2.00	14.62	34.09	
176.78	2.50	23.83	57.93	Fine sand
125.00	3.00	25.39	83.31	
88.39	3.50	6.86	90.17	Very fine sand
62.50	4.00	0.96	91.14	
44.19	4.50	0.98	92.12	Coarse silt
31.25	5.00	1.08	93.20	
22.10	5.50	1.08	94.28	Medium silt
15.63	6.00	0.99	95.26	
11.05	6.50	0.98	96.24	Fine silt
7.81	7.00	0.87	97.11	
5.52	7.50	0.72	97.83	Very fine silt
3.91	8.00	0.53	98.36	
2.76	8.50	0.34	98.70	Clay
1.95	9.00	0.22	98.92	
1.38	9.50	0.19	99.11	
0.98	10.00	0.19	99.30	
0.69	10.50	0.17	99.47	
0.49	11.00	0.15	99.62	
<0.49	>11	0.33	100.00	



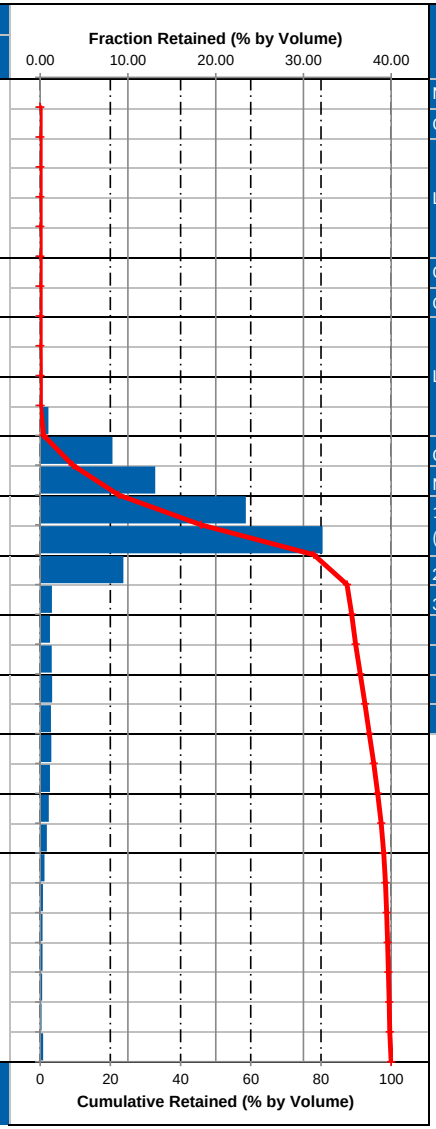
Method of Moments			
Geometric	Mean (µm)	176.42	Wentworth:
Logarithmic	Mean (Phi)	2.50	Fine sand
	Sorting	1.58	Poor
	Skewness	2.31	Very fine
	Kurtosis	11.91	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	212.02	Wentworth:
Logarithmic	Mean (Phi)	2.24	Fine sand
	Sorting	1.22	Poor
	Skewness	0.09	Symmetrical
	Kurtosis	1.87	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.33	198.37	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.80%
EUNIS Folk	Sand and muddy sand	Sand	91.00%
Distribution	Bimodal	Gravel	0.20%



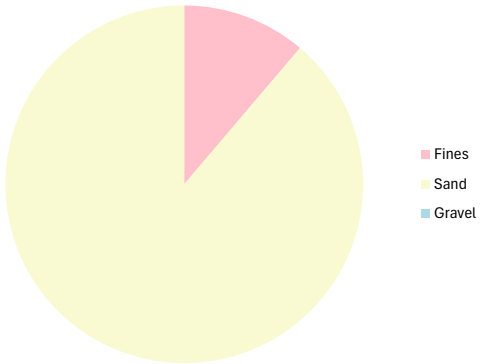
APPENDIX F PARTICLE SIZE ANALYSIS

ENV085				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.00	0.01	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.94	0.98	
353.55	1.50	8.24	9.22	Medium sand
250.00	2.00	13.12	22.33	
176.78	2.50	23.44	45.77	Fine sand
125.00	3.00	32.18	77.94	
88.39	3.50	9.49	87.43	Very fine sand
62.50	4.00	1.33	88.76	
44.19	4.50	1.12	89.88	Coarse silt
31.25	5.00	1.31	91.18	
22.10	5.50	1.35	92.53	Medium silt
15.63	6.00	1.23	93.77	
11.05	6.50	1.27	95.03	Fine silt
7.81	7.00	1.12	96.16	
5.52	7.50	0.97	97.13	Very fine silt
3.91	8.00	0.77	97.90	
2.76	8.50	0.49	98.39	Clay
1.95	9.00	0.31	98.70	
1.38	9.50	0.27	98.97	
0.98	10.00	0.26	99.23	
0.69	10.50	0.22	99.45	
0.49	11.00	0.16	99.61	
<0.49	>11	0.34	100.00	



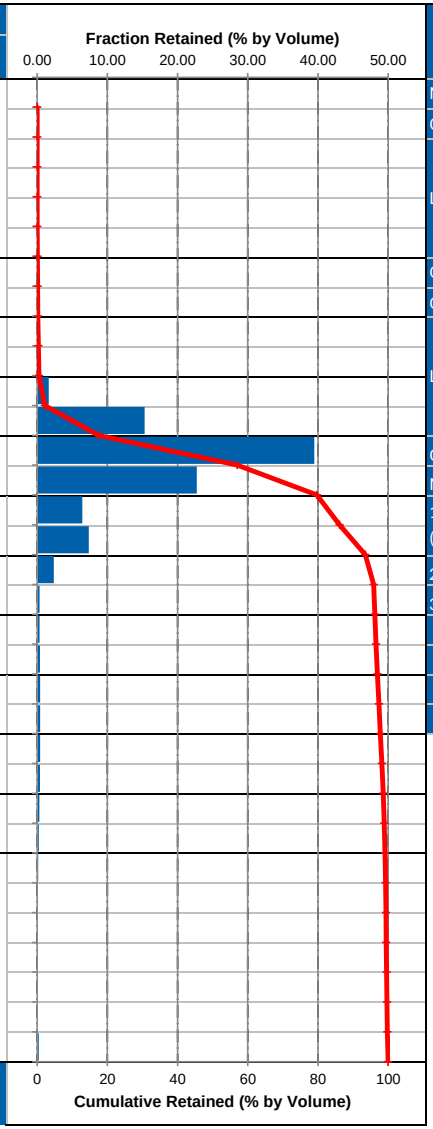
Method of Moments			
Geometric	Mean (µm)	138.82	Wentworth:
Logarithmic	Mean (Phi)	2.84	Fine sand
	Sorting	1.56	Poor
	Skewness	2.61	Very fine
	Kurtosis	11.46	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	171.01	Wentworth:
Logarithmic	Mean (Phi)	2.55	Fine sand
	Sorting	1.18	Poor
	Skewness	0.23	Fine
	Kurtosis	2.39	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.57	168.90	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.20%
EUNIS Folk	Sand and muddy sand	Sand	88.70%
Distribution	Bimodal	Gravel	0.00%



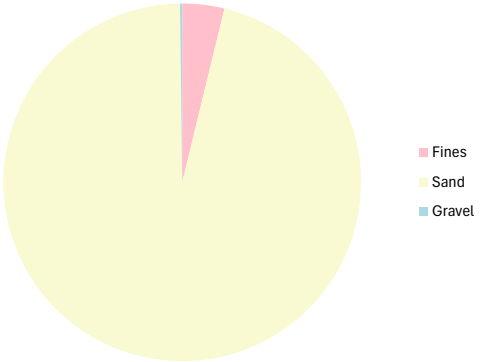
APPENDIX F PARTICLE SIZE ANALYSIS

ENV086				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.04	0.12	Granule
2000.00	-1.00	0.07	0.18	
1414.21	-0.50	0.16	0.34	Very coarse sand
1000.00	0.00	0.18	0.52	
707.11	0.50	1.63	2.15	Coarse sand
500.00	1.00	15.31	17.47	
353.55	1.50	39.49	56.96	Medium sand
250.00	2.00	22.74	79.70	
176.78	2.50	6.43	86.13	Fine sand
125.00	3.00	7.34	93.47	
88.39	3.50	2.38	95.85	Very fine sand
62.50	4.00	0.34	96.19	
44.19	4.50	0.35	96.53	Coarse silt
31.25	5.00	0.40	96.94	
22.10	5.50	0.42	97.36	Medium silt
15.63	6.00	0.41	97.77	
11.05	6.50	0.43	98.19	Fine silt
7.81	7.00	0.38	98.57	
5.52	7.50	0.31	98.88	Very fine silt
3.91	8.00	0.23	99.11	
2.76	8.50	0.14	99.25	Clay
1.95	9.00	0.10	99.35	
1.38	9.50	0.10	99.45	
0.98	10.00	0.10	99.55	
0.69	10.50	0.10	99.65	
0.49	11.00	0.09	99.74	
<0.49	>11	0.22	100.00	



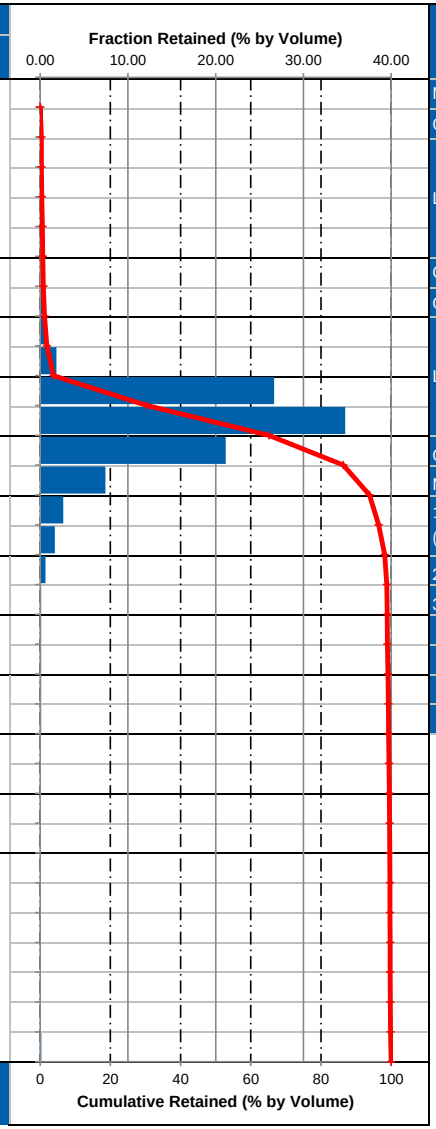
Method of Moments			
Geometric	Mean (µm)	307.07	Wentworth:
Logarithmic	Mean (Phi)	1.70	Medium sand
	Sorting	1.27	Poor
	Skewness	3.78	Very fine
	Kurtosis	23.47	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	337.70	Wentworth:
Logarithmic	Mean (Phi)	1.57	Medium sand
	Sorting	0.76	Moderate
	Skewness	0.37	Very fine
	Kurtosis	1.40	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.41	375.81	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	3.80%
EUNIS Folk	Sand and muddy sand	Sand	96.00%
Distribution	Unimodal	Gravel	0.20%



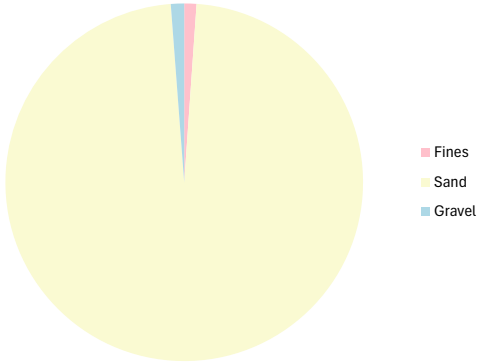
APPENDIX F PARTICLE SIZE ANALYSIS

ENV087				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.32	0.32	
11313.71	-3.50	0.00	0.32	Pebble
8000.00	-3.00	0.15	0.47	
5656.85	-2.50	0.15	0.62	
4000.00	-2.00	0.12	0.74	
2828.43	-1.50	0.15	0.89	Granule
2000.00	-1.00	0.34	1.23	
1414.21	-0.50	0.69	1.92	Very coarse sand
1000.00	0.00	1.85	3.77	
707.11	0.50	26.67	30.44	Coarse sand
500.00	1.00	34.77	65.22	
353.55	1.50	21.15	86.37	Medium sand
250.00	2.00	7.44	93.81	
176.78	2.50	2.64	96.45	Fine sand
125.00	3.00	1.68	98.13	
88.39	3.50	0.61	98.74	Very fine sand
62.50	4.00	0.11	98.85	
44.19	4.50	0.10	98.95	Coarse silt
31.25	5.00	0.12	99.07	
22.10	5.50	0.11	99.18	Medium silt
15.63	6.00	0.11	99.29	
11.05	6.50	0.10	99.39	Fine silt
7.81	7.00	0.09	99.48	
5.52	7.50	0.07	99.55	Very fine silt
3.91	8.00	0.05	99.59	
2.76	8.50	0.03	99.63	
1.95	9.00	0.03	99.66	
1.38	9.50	0.03	99.69	
0.98	10.00	0.04	99.73	Clay
0.69	10.50	0.05	99.78	
0.49	11.00	0.05	99.83	
<0.49	>11	0.14	100.00	



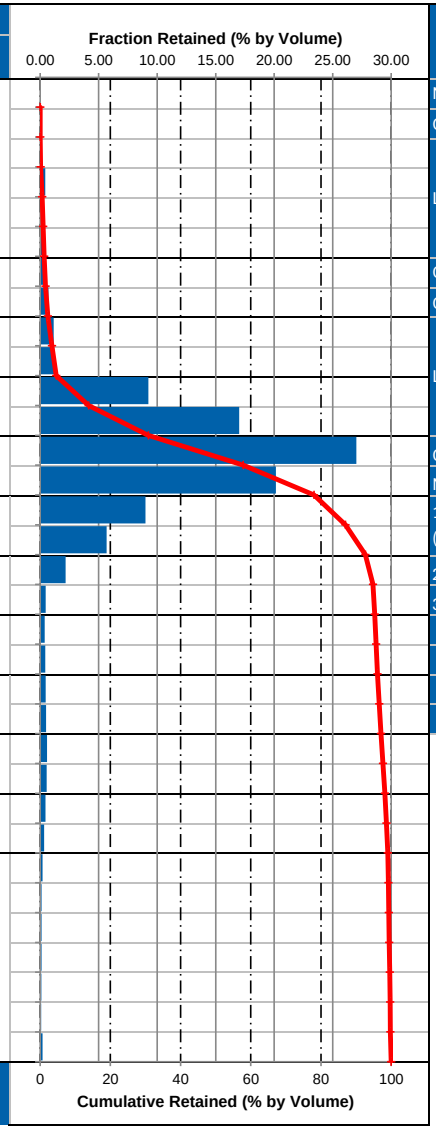
Method of Moments			
Geometric	Mean (µm)	537.74	Wentworth:
Logarithmic	Mean (Phi)	0.89	Coarse sand
	Sorting	1.05	Poor
	Skewness	3.48	Very fine
	Kurtosis	37.37	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	567.17	Wentworth:
Logarithmic	Mean (Phi)	0.82	Coarse sand
	Sorting	0.64	Moderately well
	Skewness	0.20	Fine
	Kurtosis	1.08	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.78	581.89	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	1.10%
EUNIS Folk	Sand and muddy sand	Sand	97.60%
Distribution	Unimodal	Gravel	1.20%



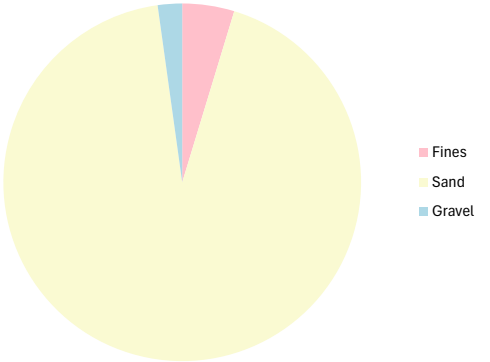
APPENDIX F PARTICLE SIZE ANALYSIS

ENV088				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.12	0.12	Pebble
8000.00	-3.00	0.44	0.56	
5656.85	-2.50	0.30	0.86	
4000.00	-2.00	0.26	1.12	
2828.43	-1.50	0.37	1.48	Granule
2000.00	-1.00	0.71	2.20	
1414.21	-0.50	1.16	3.36	Very coarse sand
1000.00	0.00	1.19	4.54	
707.11	0.50	9.25	13.80	Coarse sand
500.00	1.00	17.01	30.80	
353.55	1.50	27.03	57.83	Medium sand
250.00	2.00	20.15	77.99	
176.78	2.50	9.00	86.98	Fine sand
125.00	3.00	5.68	92.66	
88.39	3.50	2.17	94.83	Very fine sand
62.50	4.00	0.48	95.30	
44.19	4.50	0.38	95.68	Coarse silt
31.25	5.00	0.43	96.11	
22.10	5.50	0.46	96.58	Medium silt
15.63	6.00	0.50	97.07	
11.05	6.50	0.59	97.67	Fine silt
7.81	7.00	0.55	98.22	
5.52	7.50	0.46	98.68	Very fine silt
3.91	8.00	0.34	99.01	
2.76	8.50	0.20	99.22	
1.95	9.00	0.13	99.34	
1.38	9.50	0.11	99.45	
0.98	10.00	0.12	99.57	Clay
0.69	10.50	0.11	99.68	
0.49	11.00	0.09	99.77	
<0.49	>11	0.20	100.00	



Method of Moments			
Geometric	Mean (µm)	341.90	Wentworth:
Logarithmic	Mean (Phi)	1.55	Medium sand
	Sorting	1.54	Poor
	Skewness	2.22	Very fine
	Kurtosis	13.86	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	374.22	Wentworth:
Logarithmic	Mean (Phi)	1.42	Medium sand
	Sorting	1.00	Moderate
	Skewness	0.19	Fine
	Kurtosis	1.37	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.36	390.91	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

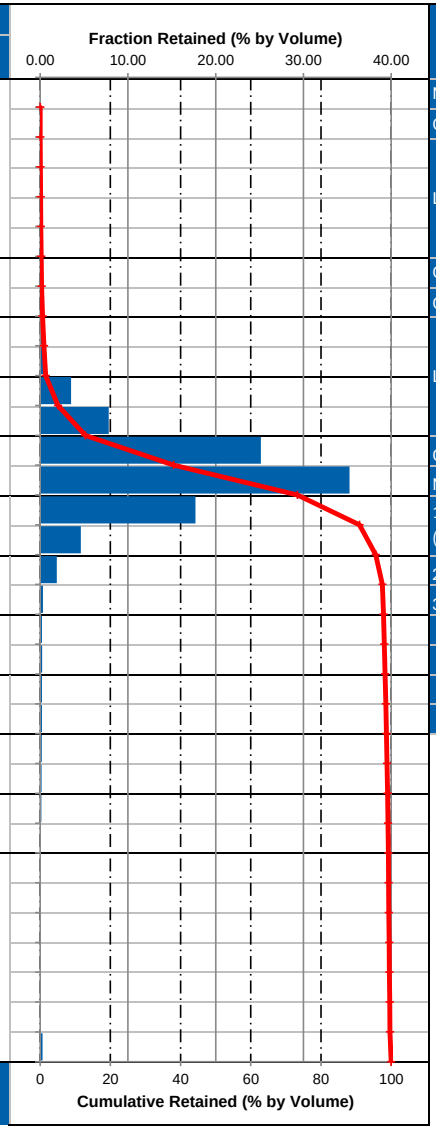
Classification		Composition	
Modified Folk	Slightly gravelly sand	Fines	4.70%
EUNIS Folk	Sand and muddy sand	Sand	93.10%
Distribution	Unimodal	Gravel	2.20%



APPENDIX F PARTICLE SIZE ANALYSIS

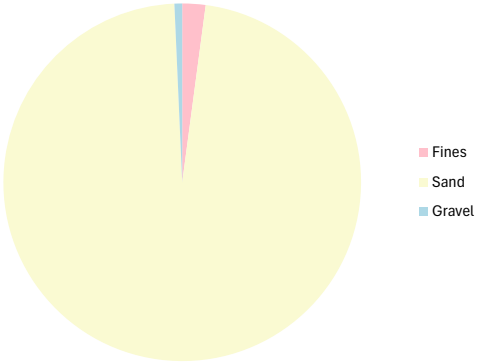
ENV089

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.07	0.07	Pebble
8000.00	-3.00	0.05	0.12	
5656.85	-2.50	0.05	0.18	
4000.00	-2.00	0.11	0.28	
2828.43	-1.50	0.13	0.41	Granule
2000.00	-1.00	0.26	0.67	
1414.21	-0.50	0.40	1.07	Very coarse sand
1000.00	0.00	0.47	1.54	
707.11	0.50	3.52	5.06	Coarse sand
500.00	1.00	7.82	12.88	
353.55	1.50	25.15	38.03	Medium sand
250.00	2.00	35.26	73.29	
176.78	2.50	17.69	90.98	Fine sand
125.00	3.00	4.63	95.61	
88.39	3.50	1.90	97.51	Very fine sand
62.50	4.00	0.32	97.82	
44.19	4.50	0.20	98.03	Coarse silt
31.25	5.00	0.23	98.25	
22.10	5.50	0.20	98.46	Medium silt
15.63	6.00	0.19	98.65	
11.05	6.50	0.18	98.83	Fine silt
7.81	7.00	0.15	98.98	
5.52	7.50	0.13	99.11	Very fine silt
3.91	8.00	0.10	99.20	
2.76	8.50	0.07	99.27	
1.95	9.00	0.06	99.34	
1.38	9.50	0.07	99.41	
0.98	10.00	0.09	99.49	Clay
0.69	10.50	0.09	99.59	
0.49	11.00	0.09	99.68	
<0.49	>11	0.27	100.00	



Method of Moments			
Geometric	Mean (µm)	298.96	Wentworth:
Logarithmic	Mean (Phi)	1.74	Medium sand
	Sorting	1.15	Poor
	Skewness	3.78	Very fine
	Kurtosis	32.26	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	312.49	Wentworth:
Logarithmic	Mean (Phi)	1.68	Medium sand
	Sorting	0.68	Moderately well
	Skewness	0.03	Symmetrical
	Kurtosis	1.24	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.67	314.32	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

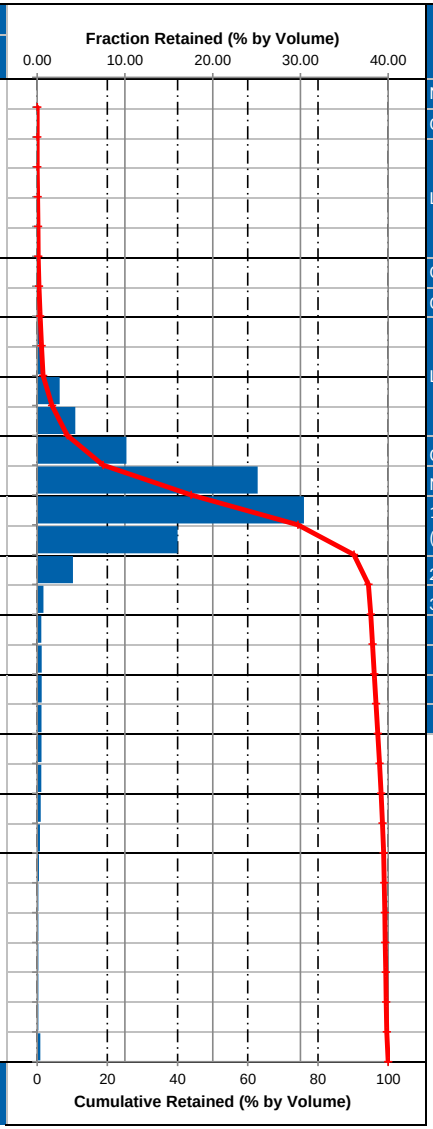
Classification		Composition	
Modified Folk	Sand	Fines	2.10%
EUNIS Folk	Sand and muddy sand	Sand	97.20%
Distribution	Unimodal	Gravel	0.70%



APPENDIX F PARTICLE SIZE ANALYSIS

ENV090

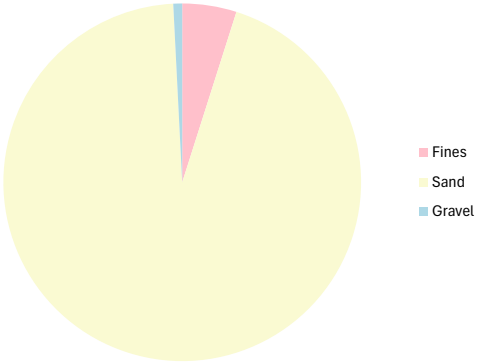
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.09	0.09	
5656.85	-2.50	0.12	0.21	
4000.00	-2.00	0.08	0.29	
2828.43	-1.50	0.24	0.53	Granule
2000.00	-1.00	0.28	0.81	
1414.21	-0.50	0.41	1.23	Very coarse sand
1000.00	0.00	0.44	1.67	
707.11	0.50	2.57	4.24	Coarse sand
500.00	1.00	4.34	8.58	
353.55	1.50	10.17	18.75	Medium sand
250.00	2.00	25.12	43.87	
176.78	2.50	30.40	74.27	Fine sand
125.00	3.00	16.00	90.27	
88.39	3.50	4.07	94.34	Very fine sand
62.50	4.00	0.71	95.05	
44.19	4.50	0.46	95.51	Coarse silt
31.25	5.00	0.51	96.03	
22.10	5.50	0.51	96.54	Medium silt
15.63	6.00	0.48	97.02	
11.05	6.50	0.50	97.52	Fine silt
7.81	7.00	0.47	97.99	
5.52	7.50	0.40	98.39	Very fine silt
3.91	8.00	0.30	98.69	
2.76	8.50	0.20	98.89	
1.95	9.00	0.14	99.03	
1.38	9.50	0.13	99.17	
0.98	10.00	0.14	99.31	Clay
0.69	10.50	0.14	99.45	
0.49	11.00	0.13	99.59	
<0.49	>11	0.35	100.00	



Method of Moments			
Geometric	Mean (µm)	215.44	Wentworth:
Logarithmic	Mean (Phi)	2.21	Fine sand
	Sorting	1.41	Poor
	Skewness	2.79	Very fine
	Kurtosis	18.19	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	234.89	Wentworth:
Logarithmic	Mean (Phi)	2.09	Fine sand
	Sorting	0.87	Moderate
	Skewness	0.04	Symmetrical
	Kurtosis	1.54	Very leptokurtic

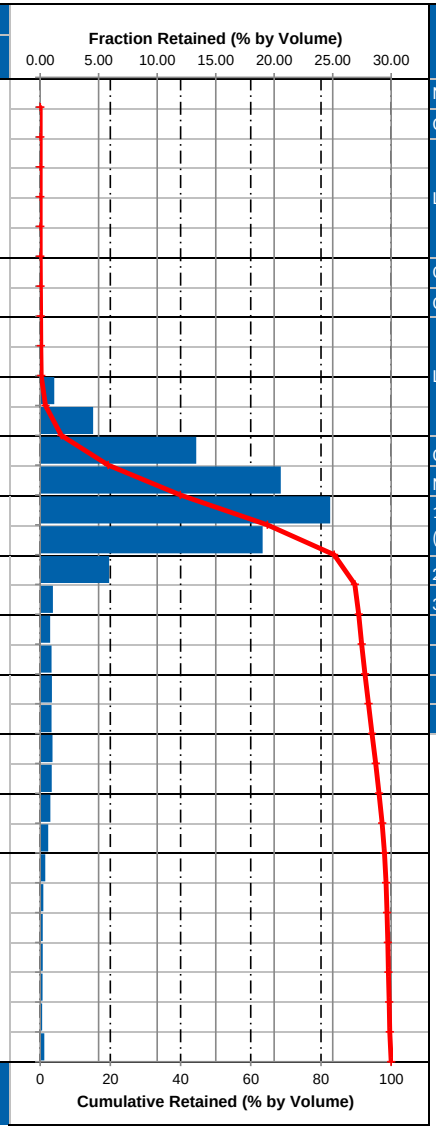
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.10	233.12	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	4.90%
EUNIS Folk	Sand and muddy sand	Sand	94.20%
Distribution	Unimodal	Gravel	0.80%



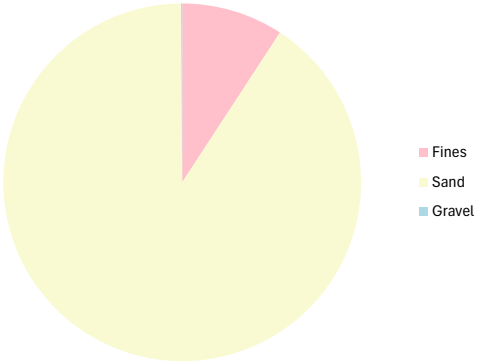
APPENDIX F PARTICLE SIZE ANALYSIS

ENV091				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.03	0.03	
2828.43	-1.50	0.05	0.08	Granule
2000.00	-1.00	0.03	0.11	
1414.21	-0.50	0.08	0.19	Very coarse sand
1000.00	0.00	0.11	0.31	
707.11	0.50	1.20	1.50	Coarse sand
500.00	1.00	4.52	6.02	
353.55	1.50	13.34	19.36	Medium sand
250.00	2.00	20.56	39.92	
176.78	2.50	24.79	64.71	Fine sand
125.00	3.00	19.01	83.73	
88.39	3.50	5.90	89.63	Very fine sand
62.50	4.00	1.09	90.72	
44.19	4.50	0.85	91.57	Coarse silt
31.25	5.00	0.97	92.54	
22.10	5.50	1.00	93.54	Medium silt
15.63	6.00	0.97	94.51	
11.05	6.50	1.05	95.57	Fine silt
7.81	7.00	0.98	96.55	
5.52	7.50	0.87	97.42	Very fine silt
3.91	8.00	0.68	98.09	
2.76	8.50	0.43	98.53	Clay
1.95	9.00	0.27	98.79	
1.38	9.50	0.22	99.01	
0.98	10.00	0.22	99.23	
0.69	10.50	0.19	99.42	
0.49	11.00	0.16	99.59	
<0.49	>11	0.36	100.00	



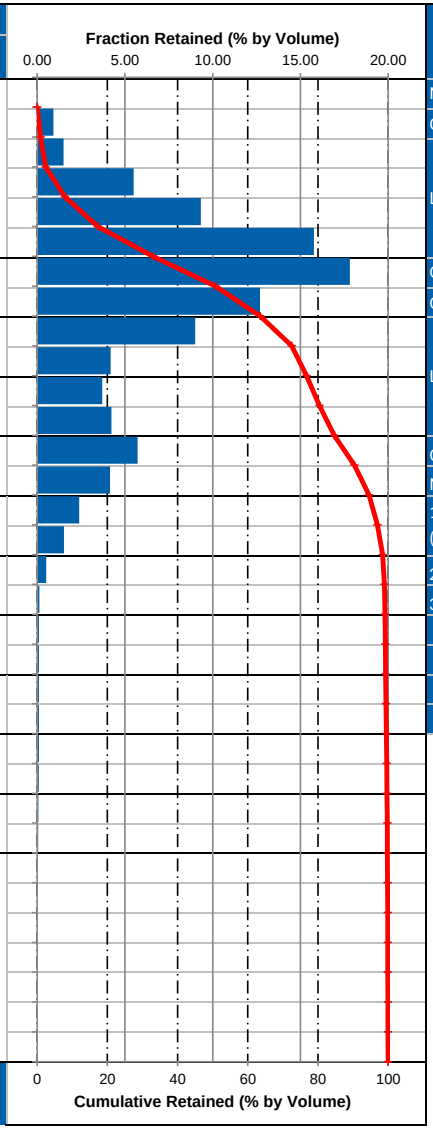
Method of Moments			
Geometric	Mean (µm)	177.03	Wentworth:
Logarithmic	Mean (Phi)	2.49	Fine sand
	Sorting	1.61	Poor
	Skewness	2.59	Very fine
	Kurtosis	11.89	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	217.61	Wentworth:
Logarithmic	Mean (Phi)	2.20	Fine sand
	Sorting	1.22	Poor
	Skewness	0.25	Fine
	Kurtosis	1.93	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	217.15	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	5.50	22.10	Medium silt

Classification		Composition	
Modified Folk	Sand	Fines	9.20%
EUNIS Folk	Sand and muddy sand	Sand	90.60%
Distribution	Multimodal	Gravel	0.10%



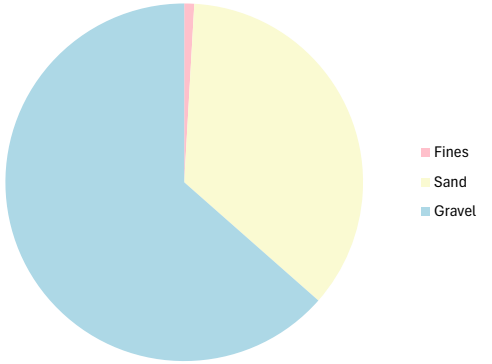
APPENDIX F PARTICLE SIZE ANALYSIS

ENV092				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.93	0.93	
11313.71	-3.50	1.50	2.42	Pebble
8000.00	-3.00	5.50	7.92	
5656.85	-2.50	9.32	17.25	
4000.00	-2.00	15.77	33.01	
2828.43	-1.50	17.82	50.83	Granule
2000.00	-1.00	12.70	63.53	
1414.21	-0.50	9.00	72.53	Very coarse sand
1000.00	0.00	4.19	76.71	
707.11	0.50	3.70	80.42	Coarse sand
500.00	1.00	4.23	84.64	
353.55	1.50	5.73	90.37	Medium sand
250.00	2.00	4.16	94.53	
176.78	2.50	2.39	96.92	Fine sand
125.00	3.00	1.52	98.44	
88.39	3.50	0.51	98.95	Very fine sand
62.50	4.00	0.13	99.08	
44.19	4.50	0.10	99.18	Coarse silt
31.25	5.00	0.10	99.28	
22.10	5.50	0.10	99.38	Medium silt
15.63	6.00	0.10	99.48	
11.05	6.50	0.10	99.58	Fine silt
7.81	7.00	0.09	99.67	
5.52	7.50	0.07	99.74	Very fine silt
3.91	8.00	0.05	99.79	
2.76	8.50	0.03	99.82	
1.95	9.00	0.02	99.85	
1.38	9.50	0.02	99.87	
0.98	10.00	0.03	99.90	Clay
0.69	10.50	0.02	99.92	
0.49	11.00	0.02	99.94	
<0.49	>11	0.05	100.00	



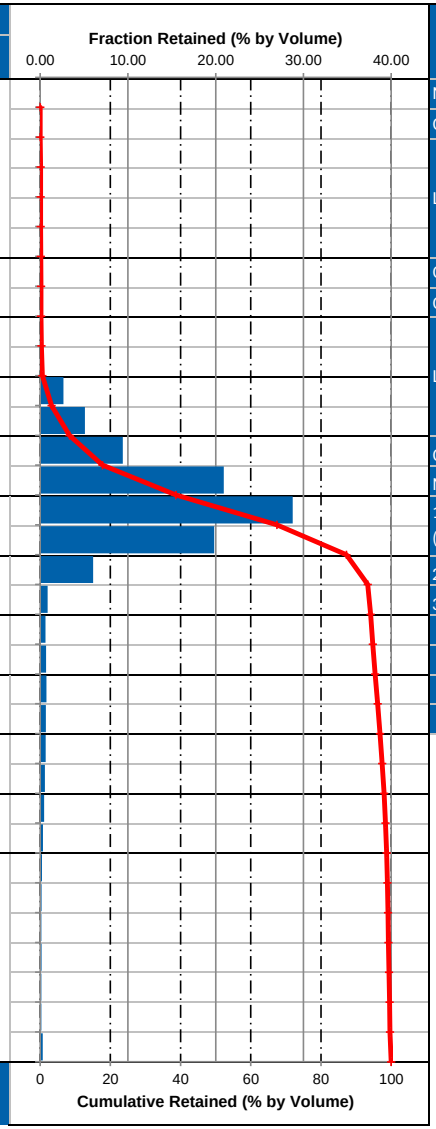
Method of Moments			
Geometric	Mean (µm)	2098.20	Wentworth:
Logarithmic	Mean (Phi)	-1.07	Granule
	Sorting	1.77	Poor
	Skewness	1.40	Very fine
	Kurtosis	7.10	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	2078.29	Wentworth:
Logarithmic	Mean (Phi)	-1.06	Granule
	Sorting	1.69	Poor
	Skewness	0.38	Very fine
	Kurtosis	1.07	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	-1.52	2874.38	Granule
1st Local Maxima (Mode)	-1.50	2828.43	Granule
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy gravel	Fines	0.90%
EUNIS Folk	Coarse sediments	Sand	35.60%
Distribution	Bimodal	Gravel	63.50%



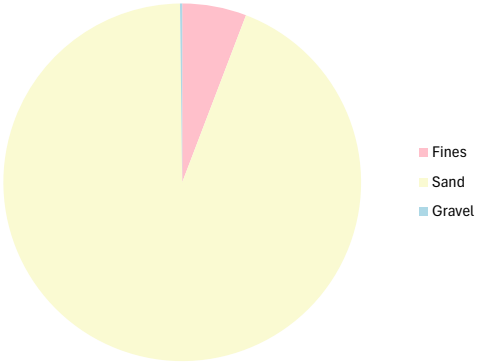
APPENDIX F PARTICLE SIZE ANALYSIS

ENV093				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.09	0.09	Pebble
8000.00	-3.00	0.00	0.09	
5656.85	-2.50	0.00	0.09	
4000.00	-2.00	0.07	0.16	
2828.43	-1.50	0.06	0.22	Granule
2000.00	-1.00	0.03	0.25	
1414.21	-0.50	0.07	0.32	Very coarse sand
1000.00	0.00	0.28	0.59	
707.11	0.50	2.64	3.24	Coarse sand
500.00	1.00	5.09	8.33	
353.55	1.50	9.41	17.74	Medium sand
250.00	2.00	20.93	38.67	
176.78	2.50	28.77	67.44	Fine sand
125.00	3.00	19.82	87.27	
88.39	3.50	6.04	93.30	Very fine sand
62.50	4.00	0.84	94.15	
44.19	4.50	0.61	94.75	Coarse silt
31.25	5.00	0.68	95.43	
22.10	5.50	0.71	96.14	Medium silt
15.63	6.00	0.66	96.80	
11.05	6.50	0.63	97.42	Fine silt
7.81	7.00	0.54	97.96	
5.52	7.50	0.44	98.40	Very fine silt
3.91	8.00	0.33	98.72	
2.76	8.50	0.21	98.93	
1.95	9.00	0.15	99.08	
1.38	9.50	0.15	99.23	
0.98	10.00	0.15	99.38	Clay
0.69	10.50	0.15	99.53	
0.49	11.00	0.13	99.66	
<0.49	>11	0.30	100.00	



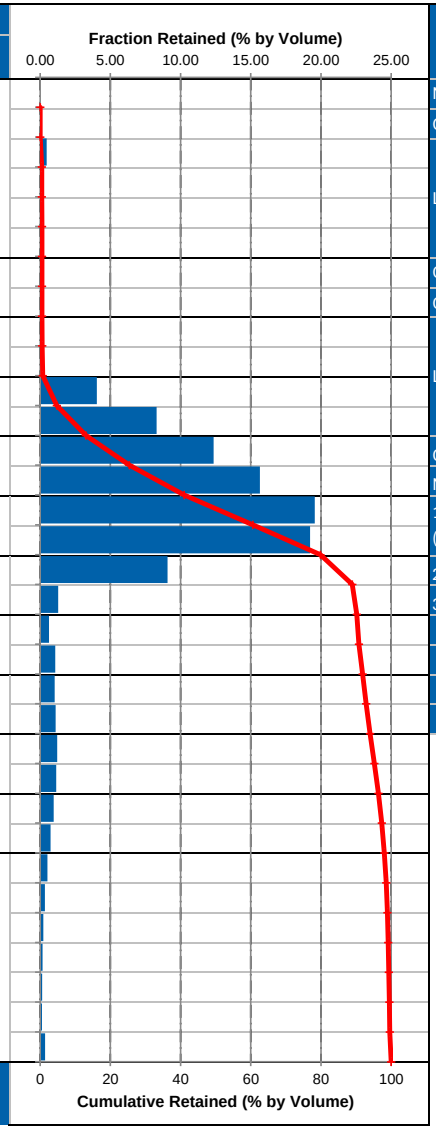
Method of Moments			
Geometric	Mean (µm)	198.30	Wentworth:
Logarithmic	Mean (Phi)	2.33	Fine sand
	Sorting	1.40	Poor
	Skewness	2.76	Very fine
	Kurtosis	16.63	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	221.59	Wentworth:
Logarithmic	Mean (Phi)	2.17	Fine sand
	Sorting	0.99	Moderate
	Skewness	0.10	Symmetrical
	Kurtosis	1.62	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	218.10	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.80%
EUNIS Folk	Sand and muddy sand	Sand	93.90%
Distribution	Unimodal	Gravel	0.20%



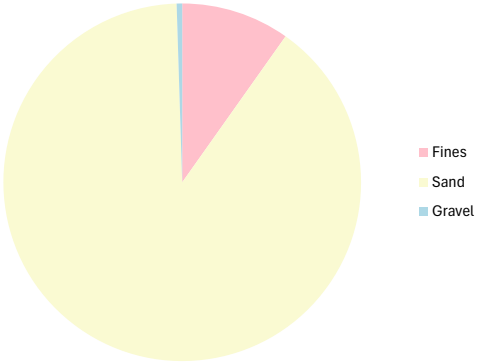
APPENDIX F PARTICLE SIZE ANALYSIS

ENV094				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.46	0.46	Pebble
8000.00	-3.00	0.00	0.46	
5656.85	-2.50	0.06	0.51	
4000.00	-2.00	0.00	0.51	
2828.43	-1.50	0.01	0.52	Granule
2000.00	-1.00	0.01	0.53	
1414.21	-0.50	0.02	0.56	Very coarse sand
1000.00	0.00	0.15	0.71	
707.11	0.50	4.04	4.75	Coarse sand
500.00	1.00	8.29	13.03	
353.55	1.50	12.35	25.38	Medium sand
250.00	2.00	15.65	41.04	
176.78	2.50	19.56	60.60	Fine sand
125.00	3.00	19.22	79.82	
88.39	3.50	9.07	88.89	Very fine sand
62.50	4.00	1.28	90.17	
44.19	4.50	0.63	90.80	Coarse silt
31.25	5.00	1.07	91.87	
22.10	5.50	1.03	92.89	Medium silt
15.63	6.00	1.11	94.00	
11.05	6.50	1.21	95.21	Fine silt
7.81	7.00	1.15	96.36	
5.52	7.50	0.96	97.32	Very fine silt
3.91	8.00	0.74	98.06	
2.76	8.50	0.51	98.57	
1.95	9.00	0.34	98.91	
1.38	9.50	0.23	99.14	
0.98	10.00	0.17	99.31	Clay
0.69	10.50	0.15	99.46	
0.49	11.00	0.13	99.59	
<0.49	>11	0.35	100.00	



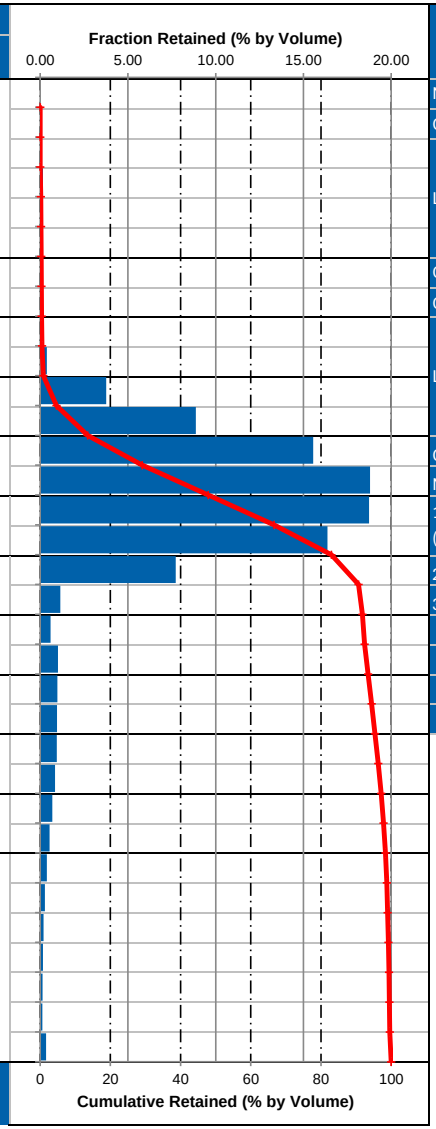
Method of Moments			
Geometric	Mean (µm)	182.47	Wentworth:
Logarithmic	Mean (Phi)	2.45	Fine sand
	Sorting	1.76	Poor
	Skewness	1.83	Very fine
	Kurtosis	9.39	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	218.67	Wentworth:
Logarithmic	Mean (Phi)	2.19	Fine sand
	Sorting	1.42	Poor
	Skewness	0.18	Fine
	Kurtosis	1.74	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.23	213.30	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.80%
EUNIS Folk	Sand and muddy sand	Sand	89.60%
Distribution	Bimodal	Gravel	0.50%



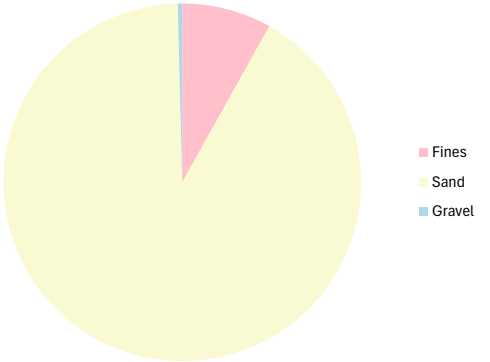
APPENDIX F PARTICLE SIZE ANALYSIS

ENV095				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.16	0.16	
5656.85	-2.50	0.06	0.22	
4000.00	-2.00	0.07	0.29	
2828.43	-1.50	0.04	0.33	Granule
2000.00	-1.00	0.06	0.38	
1414.21	-0.50	0.11	0.49	Very coarse sand
1000.00	0.00	0.38	0.87	
707.11	0.50	3.77	4.64	Coarse sand
500.00	1.00	8.87	13.50	
353.55	1.50	15.56	29.06	Medium sand
250.00	2.00	18.79	47.85	
176.78	2.50	18.74	66.59	Fine sand
125.00	3.00	16.37	82.96	
88.39	3.50	7.72	90.68	Very fine sand
62.50	4.00	1.15	91.82	
44.19	4.50	0.59	92.41	Coarse silt
31.25	5.00	1.01	93.42	
22.10	5.50	0.98	94.40	Medium silt
15.63	6.00	0.96	95.36	
11.05	6.50	0.94	96.30	Fine silt
7.81	7.00	0.84	97.14	
5.52	7.50	0.69	97.84	Very fine silt
3.91	8.00	0.53	98.37	
2.76	8.50	0.38	98.75	
1.95	9.00	0.26	99.01	
1.38	9.50	0.19	99.20	
0.98	10.00	0.16	99.36	Clay
0.69	10.50	0.14	99.49	
0.49	11.00	0.12	99.62	
<0.49	>11	0.33	100.00	



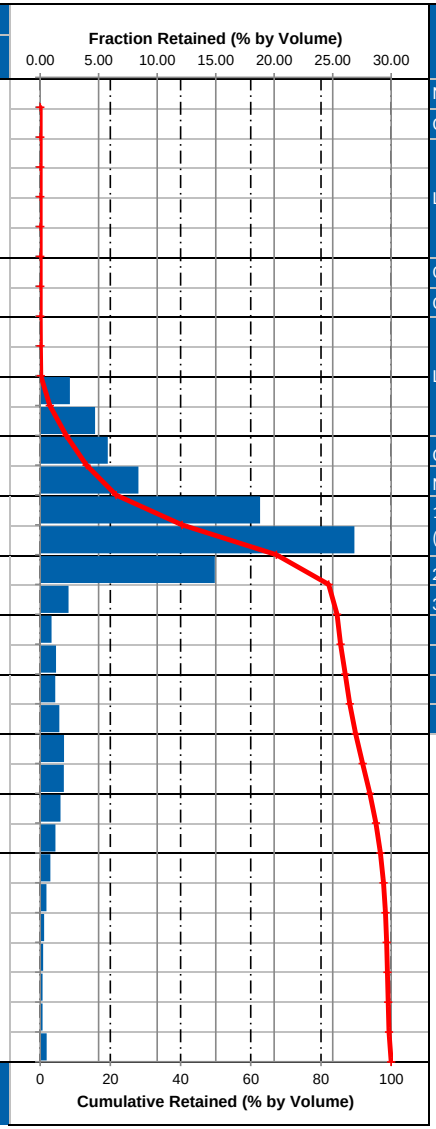
Method of Moments			
Geometric	Mean (µm)	203.22	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.64	Poor
	Skewness	2.22	Very fine
	Kurtosis	11.14	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	238.43	Wentworth:
Logarithmic	Mean (Phi)	2.07	Fine sand
	Sorting	1.30	Poor
	Skewness	0.22	Fine
	Kurtosis	1.56	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.06	240.27	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	8.10%
EUNIS Folk	Sand and muddy sand	Sand	91.40%
Distribution	Unimodal	Gravel	0.40%



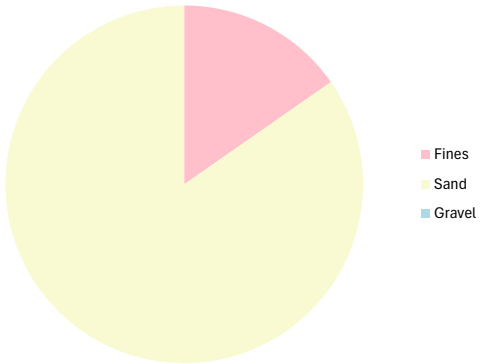
APPENDIX F PARTICLE SIZE ANALYSIS

ENV096				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.04	0.06	Very coarse sand
1000.00	0.00	0.13	0.18	
707.11	0.50	2.53	2.72	Coarse sand
500.00	1.00	4.68	7.40	
353.55	1.50	5.79	13.19	Medium sand
250.00	2.00	8.40	21.59	
176.78	2.50	18.80	40.38	Fine sand
125.00	3.00	26.86	67.25	
88.39	3.50	14.93	82.17	Very fine sand
62.50	4.00	2.43	84.60	
44.19	4.50	0.98	85.58	Coarse silt
31.25	5.00	1.35	86.93	
22.10	5.50	1.29	88.21	Medium silt
15.63	6.00	1.63	89.85	
11.05	6.50	2.03	91.88	Fine silt
7.81	7.00	2.03	93.91	
5.52	7.50	1.73	95.64	Very fine silt
3.91	8.00	1.31	96.95	
2.76	8.50	0.87	97.82	Clay
1.95	9.00	0.54	98.36	
1.38	9.50	0.34	98.70	
0.98	10.00	0.24	98.94	
0.69	10.50	0.21	99.15	
0.49	11.00	0.19	99.35	
<0.49	>11	0.56	100.00	



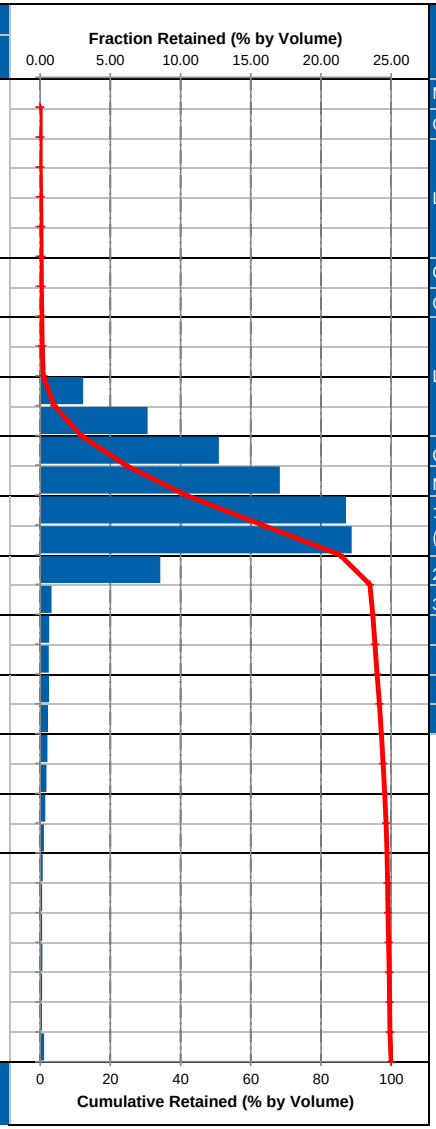
Method of Moments			
Geometric	Mean (µm)	120.90	Wentworth:
Logarithmic	Mean (Phi)	3.04	Very fine sand
	Sorting	1.89	Poor
	Skewness	1.84	Very fine
	Kurtosis	7.22	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	149.60	Wentworth:
Logarithmic	Mean (Phi)	2.74	Fine sand
	Sorting	1.55	Poor
	Skewness	0.25	Fine
	Kurtosis	2.30	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.68	156.15	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	15.30%
EUNIS Folk	Sand and muddy sand	Sand	84.60%
Distribution	Bimodal	Gravel	0.00%



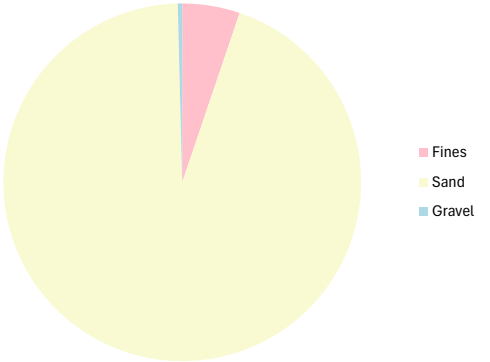
APPENDIX F PARTICLE SIZE ANALYSIS

ENV097				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.13	0.13	
5656.85	-2.50	0.08	0.20	
4000.00	-2.00	0.08	0.28	
2828.43	-1.50	0.06	0.34	Granule
2000.00	-1.00	0.08	0.43	
1414.21	-0.50	0.14	0.57	Very coarse sand
1000.00	0.00	0.33	0.90	
707.11	0.50	3.07	3.96	Coarse sand
500.00	1.00	7.66	11.62	
353.55	1.50	12.73	24.35	Medium sand
250.00	2.00	17.06	41.41	
176.78	2.50	21.78	63.19	Fine sand
125.00	3.00	22.19	85.38	
88.39	3.50	8.56	93.94	Very fine sand
62.50	4.00	0.81	94.74	
44.19	4.50	0.64	95.38	Coarse silt
31.25	5.00	0.62	96.00	
22.10	5.50	0.63	96.64	Medium silt
15.63	6.00	0.56	97.20	
11.05	6.50	0.52	97.72	Fine silt
7.81	7.00	0.44	98.16	
5.52	7.50	0.36	98.52	Very fine silt
3.91	8.00	0.27	98.79	
2.76	8.50	0.18	98.97	
1.95	9.00	0.14	99.11	
1.38	9.50	0.14	99.26	
0.98	10.00	0.15	99.41	Clay
0.69	10.50	0.14	99.55	
0.49	11.00	0.12	99.68	
<0.49	>11	0.28	100.00	



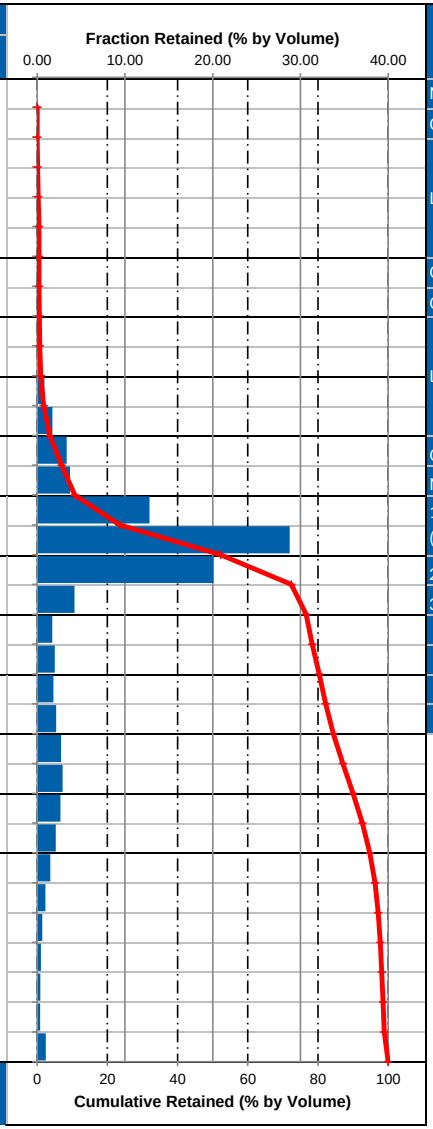
Method of Moments			
Geometric	Mean (µm)	207.05	Wentworth:
Logarithmic	Mean (Phi)	2.27	Fine sand
	Sorting	1.42	Poor
	Skewness	2.44	Very fine
	Kurtosis	15.48	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	231.20	Wentworth:
Logarithmic	Mean (Phi)	2.11	Fine sand
	Sorting	1.00	Moderate
	Skewness	-0.02	Symmetrical
	Kurtosis	1.19	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.20	218.05	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.20%
EUNIS Folk	Sand and muddy sand	Sand	94.30%
Distribution	Unimodal	Gravel	0.40%



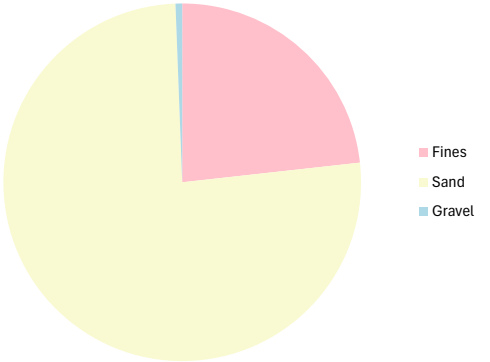
APPENDIX F PARTICLE SIZE ANALYSIS

ENV098				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.09	0.09	Pebble
8000.00	-3.00	0.22	0.31	
5656.85	-2.50	0.18	0.49	
4000.00	-2.00	0.02	0.51	
2828.43	-1.50	0.02	0.53	Granule
2000.00	-1.00	0.08	0.61	
1414.21	-0.50	0.13	0.74	Very coarse sand
1000.00	0.00	0.28	1.02	
707.11	0.50	0.83	1.85	Coarse sand
500.00	1.00	1.74	3.59	
353.55	1.50	3.35	6.94	Medium sand
250.00	2.00	3.74	10.68	
176.78	2.50	12.80	23.49	Fine sand
125.00	3.00	28.77	52.26	
88.39	3.50	20.10	72.36	Very fine sand
62.50	4.00	4.25	76.61	
44.19	4.50	1.72	78.34	Coarse silt
31.25	5.00	2.01	80.34	
22.10	5.50	1.86	82.20	Medium silt
15.63	6.00	2.15	84.35	
11.05	6.50	2.73	87.08	Fine silt
7.81	7.00	2.90	89.98	
5.52	7.50	2.64	92.62	Very fine silt
3.91	8.00	2.12	94.74	
2.76	8.50	1.49	96.23	
1.95	9.00	0.94	97.17	
1.38	9.50	0.59	97.75	
0.98	10.00	0.42	98.17	Clay
0.69	10.50	0.35	98.52	
0.49	11.00	0.33	98.85	
<0.49	>11	0.98	100.00	



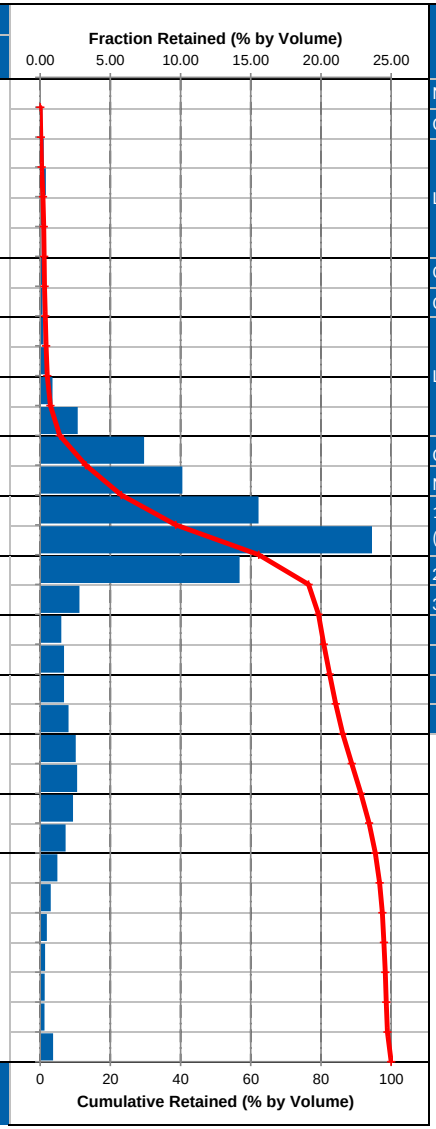
Method of Moments			
Geometric	Mean (µm)	81.80	Wentworth:
Logarithmic	Mean (Phi)	3.59	Very fine sand
	Sorting	2.15	Very poor
	Skewness	1.35	Very fine
	Kurtosis	5.64	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	77.19	Wentworth:
Logarithmic	Mean (Phi)	3.70	Very fine sand
	Sorting	1.97	Poor
	Skewness	0.54	Very fine
	Kurtosis	2.19	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.96	128.45	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	23.20%
EUNIS Folk	Mud and sandy mud	Sand	76.00%
Distribution	Bimodal	Gravel	0.60%



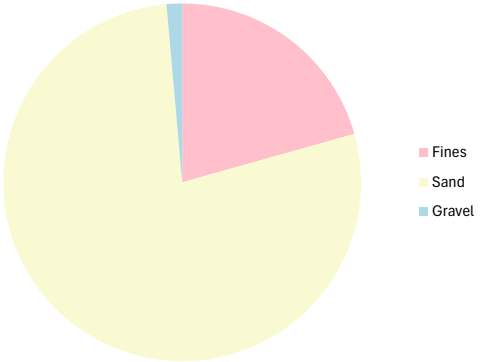
APPENDIX F PARTICLE SIZE ANALYSIS

ENV099				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.16	0.16	
11313.71	-3.50	0.25	0.40	Pebble
8000.00	-3.00	0.41	0.81	
5656.85	-2.50	0.21	1.02	
4000.00	-2.00	0.09	1.11	
2828.43	-1.50	0.15	1.25	Granule
2000.00	-1.00	0.18	1.43	
1414.21	-0.50	0.23	1.66	Very coarse sand
1000.00	0.00	0.34	2.01	
707.11	0.50	0.87	2.88	Coarse sand
500.00	1.00	2.67	5.55	
353.55	1.50	7.41	12.96	Medium sand
250.00	2.00	10.12	23.08	
176.78	2.50	15.56	38.63	Fine sand
125.00	3.00	23.63	62.27	
88.39	3.50	14.20	76.47	Very fine sand
62.50	4.00	2.80	79.28	
44.19	4.50	1.50	80.78	Coarse silt
31.25	5.00	1.69	82.47	
22.10	5.50	1.70	84.17	Medium silt
15.63	6.00	2.02	86.19	
11.05	6.50	2.53	88.72	Fine silt
7.81	7.00	2.62	91.34	
5.52	7.50	2.33	93.68	Very fine silt
3.91	8.00	1.82	95.49	
2.76	8.50	1.23	96.72	
1.95	9.00	0.75	97.47	
1.38	9.50	0.47	97.94	
0.98	10.00	0.36	98.30	Clay
0.69	10.50	0.32	98.61	
0.49	11.00	0.30	98.92	
<0.49	>11	0.92	100.00	



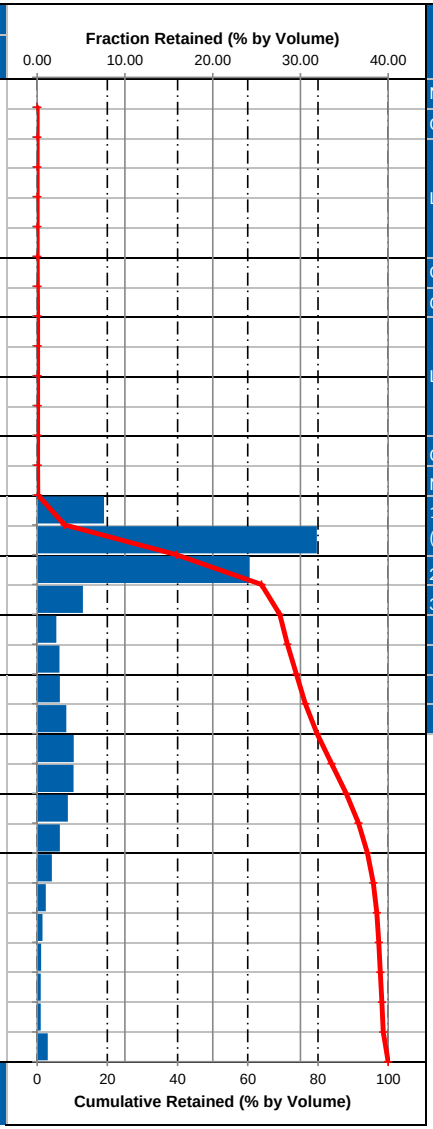
Method of Moments			
Geometric	Mean (µm)	105.48	Wentworth:
Logarithmic	Mean (Phi)	3.23	Very fine sand
	Sorting	2.24	Very poor
	Skewness	1.18	Fine
	Kurtosis	5.78	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	102.95	Wentworth:
Logarithmic	Mean (Phi)	3.28	Very fine sand
	Sorting	2.01	Very poor
	Skewness	0.45	Very fine
	Kurtosis	2.06	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.74	149.64	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	20.60%
EUNIS Folk	Mud and sandy mud	Sand	77.80%
Distribution	Bimodal	Gravel	1.40%



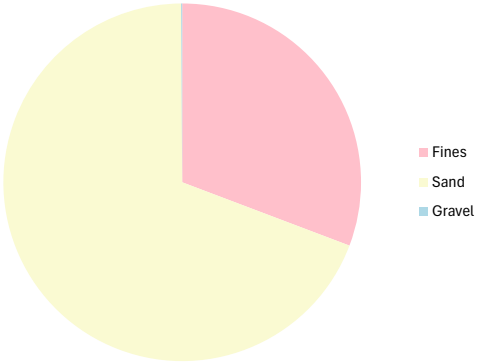
APPENDIX F PARTICLE SIZE ANALYSIS

ENV100				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.03	0.03	
2828.43	-1.50	0.02	0.05	Granule
2000.00	-1.00	0.05	0.10	
1414.21	-0.50	0.02	0.12	Very coarse sand
1000.00	0.00	0.02	0.14	
707.11	0.50	0.00	0.14	Coarse sand
500.00	1.00	0.00	0.14	
353.55	1.50	0.00	0.14	Medium sand
250.00	2.00	0.05	0.20	
176.78	2.50	7.61	7.81	Fine sand
125.00	3.00	31.87	39.68	
88.39	3.50	24.21	63.90	Very fine sand
62.50	4.00	5.21	69.10	
44.19	4.50	2.18	71.28	Coarse silt
31.25	5.00	2.55	73.83	
22.10	5.50	2.58	76.40	Medium silt
15.63	6.00	3.31	79.72	
11.05	6.50	4.16	83.88	Fine silt
7.81	7.00	4.14	88.01	
5.52	7.50	3.50	91.51	Very fine silt
3.91	8.00	2.59	94.11	
2.76	8.50	1.67	95.77	Clay
1.95	9.00	0.97	96.75	
1.38	9.50	0.59	97.34	
0.98	10.00	0.44	97.79	
0.69	10.50	0.41	98.19	
0.49	11.00	0.39	98.59	
<0.49	>11	1.20	100.00	



Method of Moments			
Geometric	Mean (µm)	57.06	Wentworth:
Logarithmic	Mean (Phi)	4.11	Coarse silt
	Sorting	2.06	Very poor
	Skewness	1.56	Very fine
	Kurtosis	5.10	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	57.56	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	1.87	Poor
	Skewness	0.70	Very fine
	Kurtosis	0.99	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.21	107.84	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

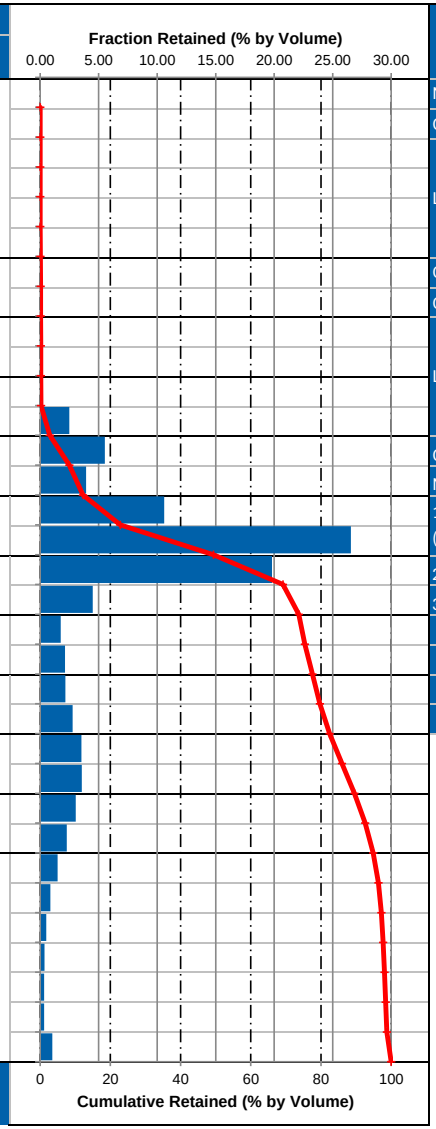
Classification		Composition	
Modified Folk	Muddy sand	Fines	30.70%
EUNIS Folk	Mud and sandy mud	Sand	69.00%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

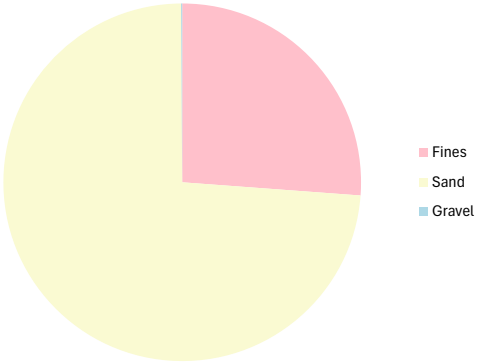
ENV101

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.02	0.10	Granule
2000.00	-1.00	0.03	0.13	
1414.21	-0.50	0.02	0.15	Very coarse sand
1000.00	0.00	0.02	0.17	
707.11	0.50	0.08	0.25	Coarse sand
500.00	1.00	2.50	2.74	
353.55	1.50	5.53	8.27	Medium sand
250.00	2.00	3.92	12.19	
176.78	2.50	10.61	22.80	Fine sand
125.00	3.00	26.56	49.36	
88.39	3.50	19.81	69.17	Very fine sand
62.50	4.00	4.49	73.66	
44.19	4.50	1.75	75.41	Coarse silt
31.25	5.00	2.13	77.54	
22.10	5.50	2.15	79.69	Medium silt
15.63	6.00	2.77	82.46	
11.05	6.50	3.52	85.99	Fine silt
7.81	7.00	3.55	89.54	
5.52	7.50	3.04	92.58	Very fine silt
3.91	8.00	2.28	94.86	
2.76	8.50	1.48	96.34	
1.95	9.00	0.87	97.21	
1.38	9.50	0.52	97.73	
0.98	10.00	0.37	98.10	Clay
0.69	10.50	0.34	98.44	
0.49	11.00	0.33	98.77	
<0.49	>11	1.04	100.00	



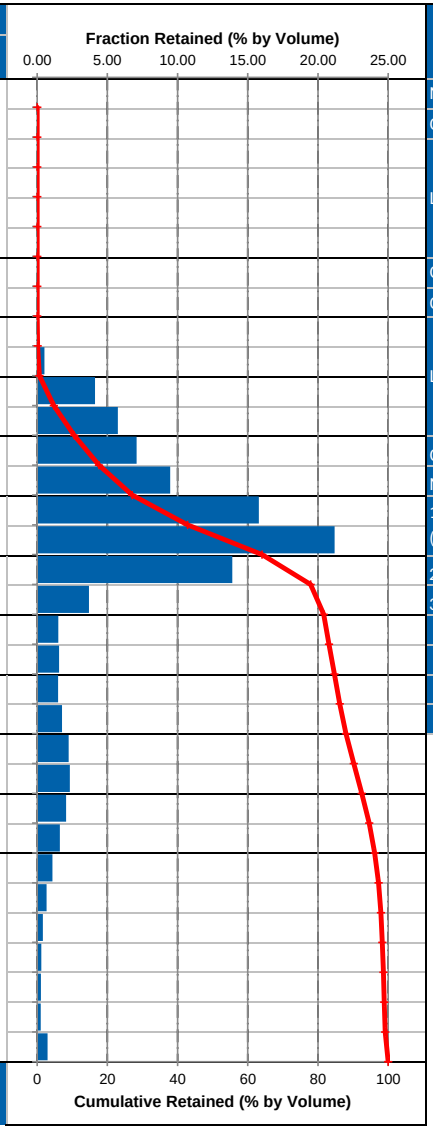
Method of Moments			
Geometric	Mean (µm)	75.06	Wentworth:
Logarithmic	Mean (Phi)	3.72	Very fine sand
	Sorting	2.15	Very poor
	Skewness	1.43	Very fine
	Kurtosis	5.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	71.56	Wentworth:
Logarithmic	Mean (Phi)	3.80	Very fine sand
	Sorting	2.05	Very poor
	Skewness	0.53	Very fine
	Kurtosis	1.52	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.02	123.60	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	26.10%
EUNIS Folk	Mud and sandy mud	Sand	73.50%
Distribution	Multimodal	Gravel	0.10%



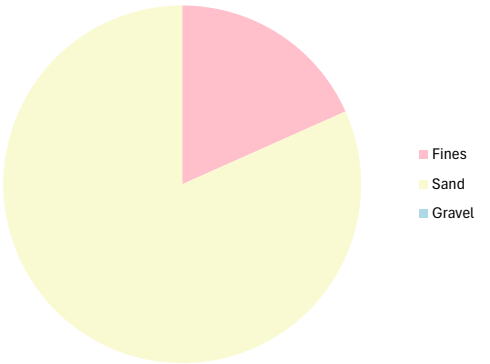
APPENDIX F PARTICLE SIZE ANALYSIS

ENV102				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.00	0.03	
1414.21	-0.50	0.08	0.11	Very coarse sand
1000.00	0.00	0.52	0.63	
707.11	0.50	4.12	4.75	Coarse sand
500.00	1.00	5.75	10.50	
353.55	1.50	7.08	17.58	Medium sand
250.00	2.00	9.47	27.05	
176.78	2.50	15.79	42.84	Fine sand
125.00	3.00	21.18	64.03	
88.39	3.50	13.89	77.92	Very fine sand
62.50	4.00	3.69	81.61	
44.19	4.50	1.51	83.12	Coarse silt
31.25	5.00	1.56	84.68	
22.10	5.50	1.50	86.17	Medium silt
15.63	6.00	1.77	87.95	
11.05	6.50	2.23	90.18	Fine silt
7.81	7.00	2.32	92.50	
5.52	7.50	2.06	94.56	Very fine silt
3.91	8.00	1.61	96.17	
2.76	8.50	1.09	97.26	
1.95	9.00	0.66	97.93	
1.38	9.50	0.41	98.33	
0.98	10.00	0.30	98.63	Clay
0.69	10.50	0.26	98.89	
0.49	11.00	0.25	99.14	
<0.49	>11	0.74	100.00	



Method of Moments			
Geometric	Mean (µm)	117.44	Wentworth:
Logarithmic	Mean (Phi)	3.08	Very fine sand
	Sorting	2.10	Very poor
	Skewness	1.57	Very fine
	Kurtosis	5.90	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	129.70	Wentworth:
Logarithmic	Mean (Phi)	2.95	Fine sand
	Sorting	1.93	Poor
	Skewness	0.32	Very fine
	Kurtosis	1.94	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.67	157.25	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

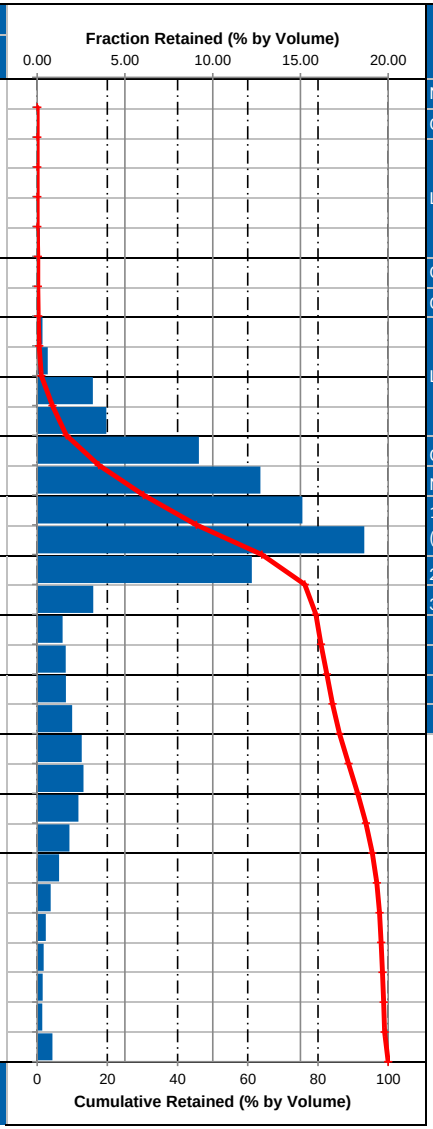
Classification		Composition	
Modified Folk	Muddy sand	Fines	18.30%
EUNIS Folk	Sand and muddy sand	Sand	81.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

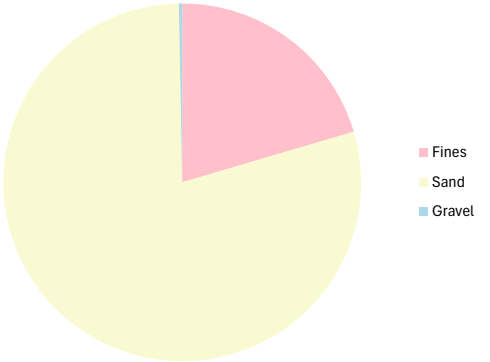
ENV103

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.16	0.16	
2828.43	-1.50	0.03	0.18	Granule
2000.00	-1.00	0.09	0.28	
1414.21	-0.50	0.30	0.58	Very coarse sand
1000.00	0.00	0.61	1.18	
707.11	0.50	3.18	4.36	Coarse sand
500.00	1.00	3.94	8.30	
353.55	1.50	9.22	17.52	Medium sand
250.00	2.00	12.72	30.25	
176.78	2.50	15.11	45.36	Fine sand
125.00	3.00	18.64	64.00	
88.39	3.50	12.23	76.23	Very fine sand
62.50	4.00	3.19	79.42	
44.19	4.50	1.44	80.86	Coarse silt
31.25	5.00	1.63	82.49	
22.10	5.50	1.64	84.13	Medium silt
15.63	6.00	1.99	86.12	
11.05	6.50	2.54	88.67	Fine silt
7.81	7.00	2.64	91.31	
5.52	7.50	2.35	93.66	Very fine silt
3.91	8.00	1.83	95.49	
2.76	8.50	1.25	96.74	Clay
1.95	9.00	0.77	97.51	
1.38	9.50	0.49	98.00	
0.98	10.00	0.36	98.37	
0.69	10.50	0.32	98.69	
0.49	11.00	0.30	98.98	
<0.49	>11	0.87	100.00	



Method of Moments			
Geometric	Mean (µm)	111.92	Wentworth:
Logarithmic	Mean (Phi)	3.14	Very fine sand
	Sorting	2.23	Very poor
	Skewness	1.48	Very fine
	Kurtosis	5.33	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	111.31	Wentworth:
Logarithmic	Mean (Phi)	3.17	Very fine sand
	Sorting	2.11	Very poor
	Skewness	0.42	Very fine
	Kurtosis	1.80	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.62	162.15	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

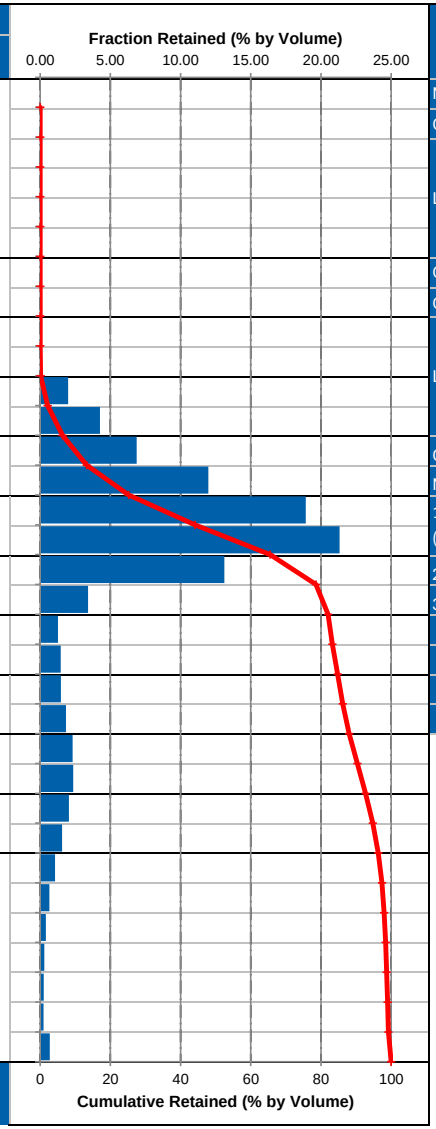
Classification		Composition	
Modified Folk	Muddy sand	Fines	20.40%
EUNIS Folk	Mud and sandy mud	Sand	79.10%
Distribution	Bimodal	Gravel	0.30%



APPENDIX F PARTICLE SIZE ANALYSIS

ENV104

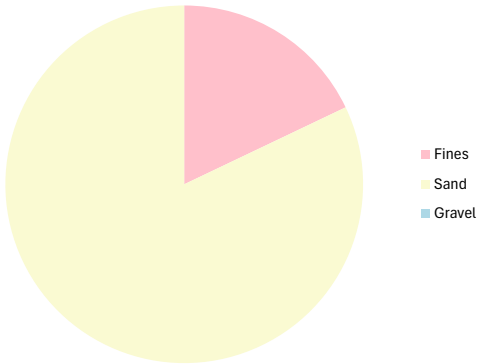
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.11	0.13	
707.11	0.50	1.98	2.11	Coarse sand
500.00	1.00	4.25	6.37	
353.55	1.50	6.88	13.24	Medium sand
250.00	2.00	11.98	25.23	
176.78	2.50	18.91	44.14	Fine sand
125.00	3.00	21.33	65.46	
88.39	3.50	13.12	78.58	Very fine sand
62.50	4.00	3.41	81.99	
44.19	4.50	1.26	83.26	Coarse silt
31.25	5.00	1.46	84.72	
22.10	5.50	1.48	86.20	Medium silt
15.63	6.00	1.84	88.03	
11.05	6.50	2.31	90.35	Fine silt
7.81	7.00	2.35	92.70	
5.52	7.50	2.04	94.74	Very fine silt
3.91	8.00	1.56	96.30	
2.76	8.50	1.06	97.36	Clay
1.95	9.00	0.65	98.01	
1.38	9.50	0.41	98.41	
0.98	10.00	0.30	98.71	
0.69	10.50	0.25	98.96	
0.49	11.00	0.24	99.20	
<0.49	>11	0.68	100.00	



Method of Moments			
Geometric	Mean (µm)	114.09	Wentworth:
Logarithmic	Mean (Phi)	3.12	Very fine sand
	Sorting	2.03	Very poor
	Skewness	1.74	Very fine
	Kurtosis	6.31	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	124.80	Wentworth:
Logarithmic	Mean (Phi)	3.00	Very fine sand
	Sorting	1.81	Poor
	Skewness	0.41	Very fine
	Kurtosis	2.01	Very leptokurtic

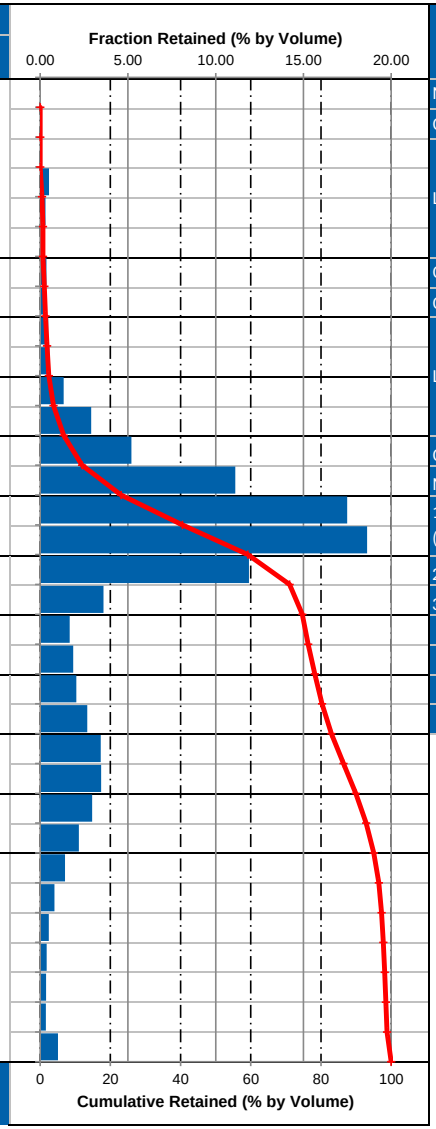
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.64	160.71	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	17.90%
EUNIS Folk	Sand and muddy sand	Sand	82.00%
Distribution	Bimodal	Gravel	0.00%



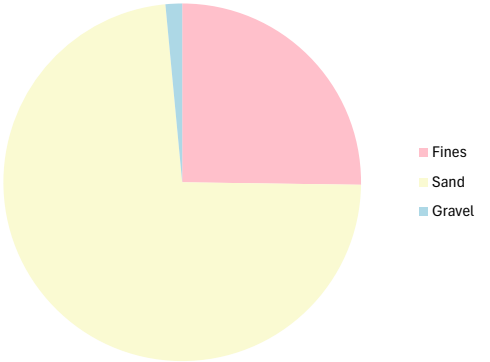
APPENDIX F PARTICLE SIZE ANALYSIS

ENV105				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.50	0.50	
5656.85	-2.50	0.30	0.80	
4000.00	-2.00	0.00	0.80	
2828.43	-1.50	0.36	1.16	Granule
2000.00	-1.00	0.32	1.49	
1414.21	-0.50	0.45	1.94	Very coarse sand
1000.00	0.00	0.53	2.47	
707.11	0.50	1.34	3.81	Coarse sand
500.00	1.00	2.90	6.71	
353.55	1.50	5.20	11.91	Medium sand
250.00	2.00	11.12	23.03	
176.78	2.50	17.50	40.52	Fine sand
125.00	3.00	18.63	59.16	
88.39	3.50	11.90	71.06	Very fine sand
62.50	4.00	3.60	74.66	
44.19	4.50	1.68	76.34	Coarse silt
31.25	5.00	1.88	78.22	
22.10	5.50	2.06	80.28	Medium silt
15.63	6.00	2.68	82.97	
11.05	6.50	3.45	86.42	Fine silt
7.81	7.00	3.47	89.89	
5.52	7.50	2.96	92.85	Very fine silt
3.91	8.00	2.20	95.05	
2.76	8.50	1.41	96.46	
1.95	9.00	0.82	97.28	
1.38	9.50	0.50	97.78	
0.98	10.00	0.37	98.15	Clay
0.69	10.50	0.34	98.48	
0.49	11.00	0.33	98.81	
<0.49	>11	1.01	100.00	



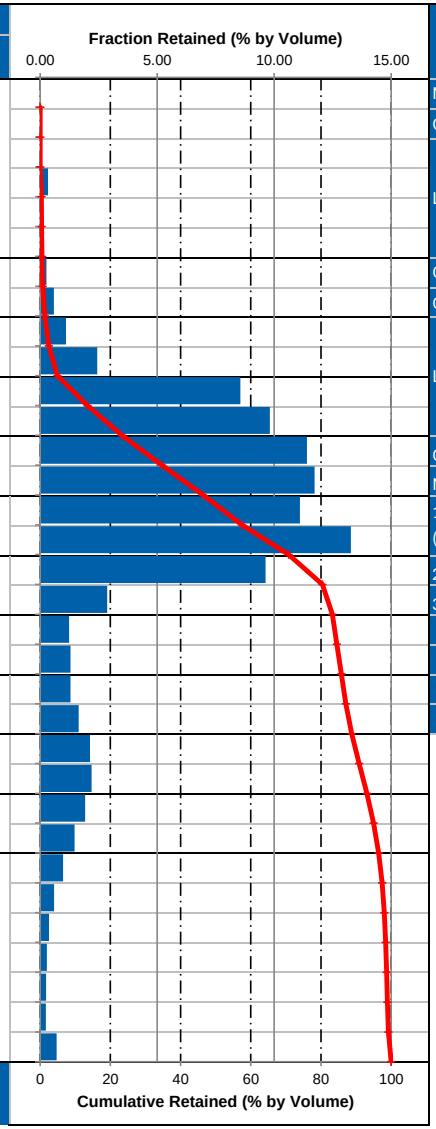
Method of Moments			
Geometric	Mean (µm)	94.12	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.36	Very poor
	Skewness	1.05	Fine
	Kurtosis	4.65	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	86.61	Wentworth:
Logarithmic	Mean (Phi)	3.53	Very fine sand
	Sorting	2.22	Very poor
	Skewness	0.48	Very fine
	Kurtosis	1.46	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.75	148.21	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	25.20%
EUNIS Folk	Mud and sandy mud	Sand	73.20%
Distribution	Bimodal	Gravel	1.50%



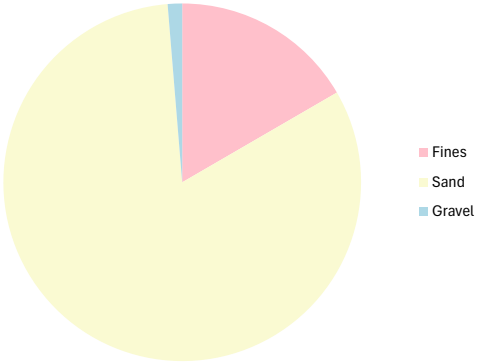
APPENDIX F PARTICLE SIZE ANALYSIS

ENV106				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.33	0.33	
5656.85	-2.50	0.08	0.41	
4000.00	-2.00	0.08	0.49	
2828.43	-1.50	0.27	0.75	Granule
2000.00	-1.00	0.59	1.34	
1414.21	-0.50	1.10	2.44	Very coarse sand
1000.00	0.00	2.44	4.89	
707.11	0.50	8.56	13.44	Coarse sand
500.00	1.00	9.82	23.26	
353.55	1.50	11.40	34.66	Medium sand
250.00	2.00	11.73	46.39	
176.78	2.50	11.10	57.49	Fine sand
125.00	3.00	13.28	70.77	
88.39	3.50	9.63	80.40	Very fine sand
62.50	4.00	2.86	83.27	
44.19	4.50	1.24	84.50	Coarse silt
31.25	5.00	1.29	85.79	
22.10	5.50	1.30	87.09	Medium silt
15.63	6.00	1.65	88.74	
11.05	6.50	2.13	90.87	Fine silt
7.81	7.00	2.20	93.06	
5.52	7.50	1.92	94.98	Very fine silt
3.91	8.00	1.47	96.45	
2.76	8.50	0.98	97.43	
1.95	9.00	0.60	98.02	
1.38	9.50	0.38	98.40	
0.98	10.00	0.29	98.69	Clay
0.69	10.50	0.25	98.94	
0.49	11.00	0.24	99.18	
<0.49	>11	0.70	100.00	



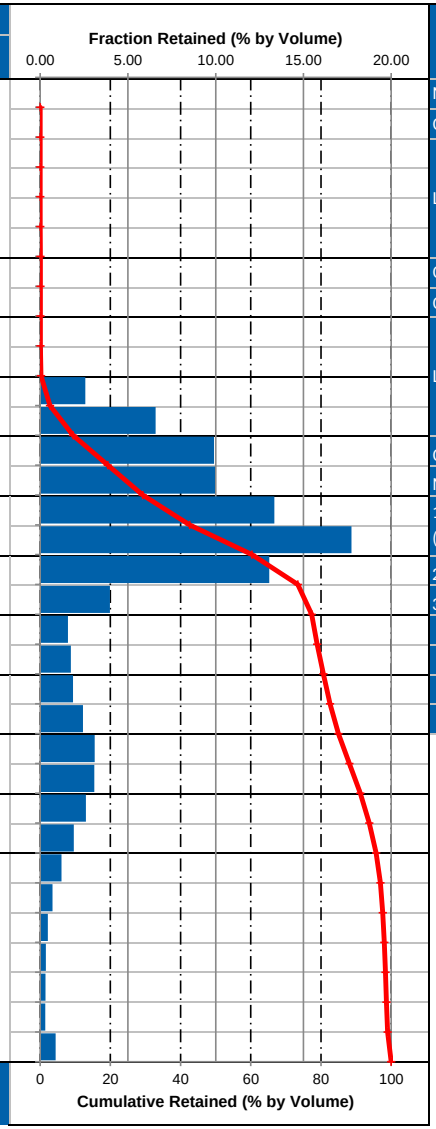
Method of Moments			
Geometric	Mean (µm)	166.03	Wentworth:
Logarithmic	Mean (Phi)	2.58	Fine sand
	Sorting	2.32	Very poor
	Skewness	1.34	Very fine
	Kurtosis	5.30	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	194.35	Wentworth:
Logarithmic	Mean (Phi)	2.36	Fine sand
	Sorting	2.05	Very poor
	Skewness	0.29	Fine
	Kurtosis	1.43	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.16	223.35	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	2.00	250.00	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	16.60%
EUNIS Folk	Sand and muddy sand	Sand	81.90%
Distribution	Multimodal	Gravel	1.30%



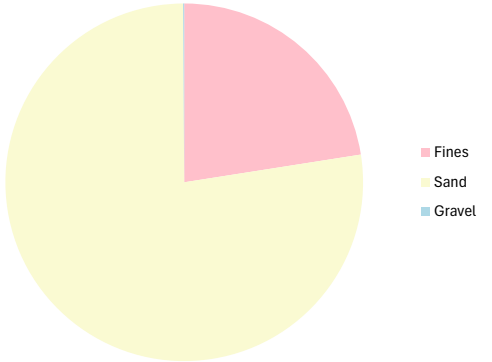
APPENDIX F PARTICLE SIZE ANALYSIS

ENV107				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.03	0.03	
4000.00	-2.00	0.02	0.05	
2828.43	-1.50	0.00	0.05	Granule
2000.00	-1.00	0.02	0.06	
1414.21	-0.50	0.01	0.08	Very coarse sand
1000.00	0.00	0.14	0.22	
707.11	0.50	2.57	2.79	Coarse sand
500.00	1.00	6.57	9.36	
353.55	1.50	9.90	19.26	Medium sand
250.00	2.00	9.96	29.23	
176.78	2.50	13.34	42.57	Fine sand
125.00	3.00	17.74	60.31	
88.39	3.50	13.05	73.36	Very fine sand
62.50	4.00	3.98	77.34	
44.19	4.50	1.58	78.93	Coarse silt
31.25	5.00	1.75	80.68	
22.10	5.50	1.87	82.55	Medium silt
15.63	6.00	2.44	84.99	
11.05	6.50	3.10	88.09	Fine silt
7.81	7.00	3.09	91.17	
5.52	7.50	2.60	93.77	Very fine silt
3.91	8.00	1.91	95.69	
2.76	8.50	1.22	96.90	Clay
1.95	9.00	0.70	97.61	
1.38	9.50	0.43	98.04	
0.98	10.00	0.33	98.37	
0.69	10.50	0.30	98.67	
0.49	11.00	0.29	98.96	
<0.49	>11	0.88	100.00	



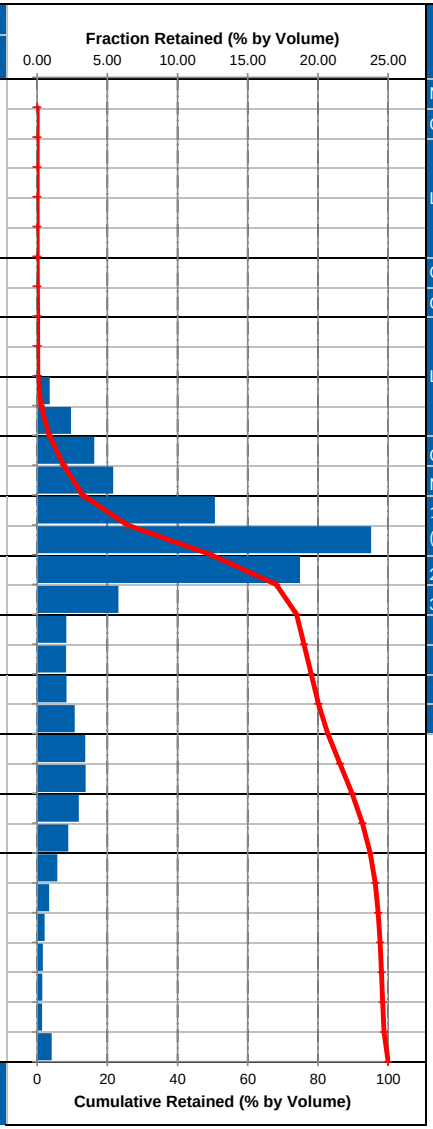
Method of Moments			
Geometric	Mean (µm)	104.53	Wentworth:
Logarithmic	Mean (Phi)	3.24	Very fine sand
	Sorting	2.24	Very poor
	Skewness	1.39	Very fine
	Kurtosis	4.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	102.90	Wentworth:
Logarithmic	Mean (Phi)	3.28	Very fine sand
	Sorting	2.20	Very poor
	Skewness	0.41	Very fine
	Kurtosis	1.53	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.71	152.90	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	22.50%
EUNIS Folk	Mud and sandy mud	Sand	77.30%
Distribution	Bimodal	Gravel	0.10%



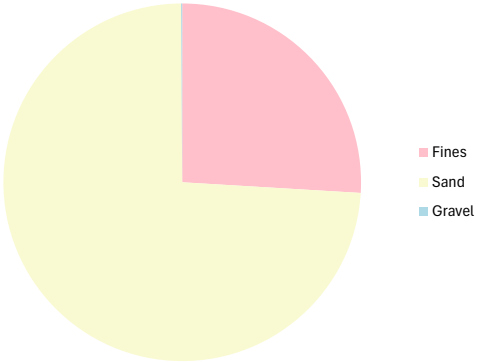
APPENDIX F PARTICLE SIZE ANALYSIS

ENV108				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.06	0.07	Granule
2000.00	-1.00	0.02	0.09	
1414.21	-0.50	0.01	0.10	Very coarse sand
1000.00	0.00	0.08	0.19	
707.11	0.50	0.89	1.08	Coarse sand
500.00	1.00	2.40	3.48	
353.55	1.50	4.06	7.54	Medium sand
250.00	2.00	5.41	12.95	
176.78	2.50	12.67	25.62	Fine sand
125.00	3.00	23.78	49.40	
88.39	3.50	18.72	68.12	Very fine sand
62.50	4.00	5.79	73.90	
44.19	4.50	2.08	75.98	Coarse silt
31.25	5.00	2.06	78.04	
22.10	5.50	2.09	80.13	Medium silt
15.63	6.00	2.68	82.81	
11.05	6.50	3.42	86.23	Fine silt
7.81	7.00	3.45	89.68	
5.52	7.50	2.96	92.64	Very fine silt
3.91	8.00	2.22	94.86	
2.76	8.50	1.44	96.30	Clay
1.95	9.00	0.85	97.15	
1.38	9.50	0.53	97.68	
0.98	10.00	0.40	98.08	
0.69	10.50	0.36	98.45	
0.49	11.00	0.35	98.80	
<0.49	>11	1.03	100.00	



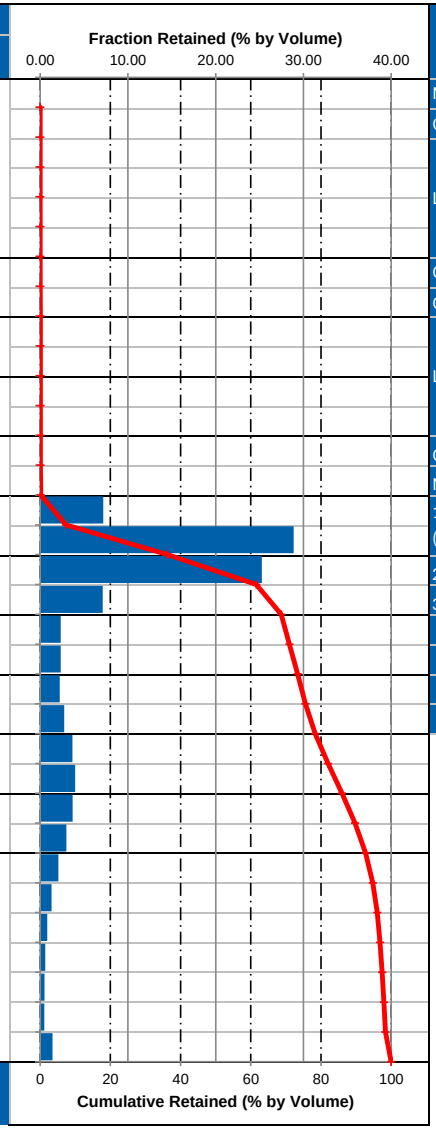
Method of Moments			
Geometric	Mean (µm)	76.56	Wentworth:
Logarithmic	Mean (Phi)	3.69	Very fine sand
	Sorting	2.16	Very poor
	Skewness	1.42	Very fine
	Kurtosis	5.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	73.29	Wentworth:
Logarithmic	Mean (Phi)	3.77	Very fine sand
	Sorting	2.05	Very poor
	Skewness	0.51	Very fine
	Kurtosis	1.57	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.02	123.61	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	25.90%
EUNIS Folk	Mud and sandy mud	Sand	73.80%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

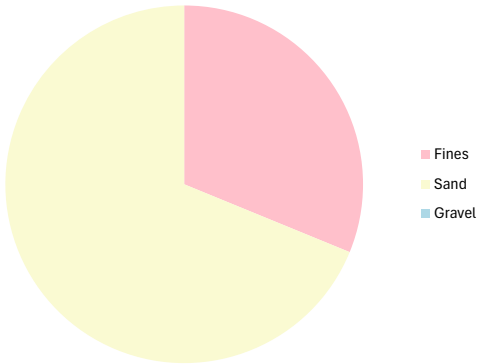
ENV109				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.02	0.04	
1414.21	-0.50	0.01	0.05	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	0.00	0.07	
353.55	1.50	0.00	0.07	Medium sand
250.00	2.00	0.10	0.17	
176.78	2.50	7.20	7.37	Fine sand
125.00	3.00	28.90	36.27	
88.39	3.50	25.26	61.53	Very fine sand
62.50	4.00	7.12	68.65	
44.19	4.50	2.35	71.00	Coarse silt
31.25	5.00	2.34	73.34	
22.10	5.50	2.24	75.58	Medium silt
15.63	6.00	2.75	78.33	
11.05	6.50	3.67	82.00	Fine silt
7.81	7.00	3.99	85.99	
5.52	7.50	3.70	89.68	Very fine silt
3.91	8.00	2.99	92.67	
2.76	8.50	2.08	94.75	
1.95	9.00	1.29	96.04	
1.38	9.50	0.80	96.84	
0.98	10.00	0.57	97.41	Clay
0.69	10.50	0.49	97.90	
0.49	11.00	0.46	98.36	
<0.49	>11	1.40	100.00	



Method of Moments			
Geometric	Mean (µm)	53.12	Wentworth:
Logarithmic	Mean (Phi)	4.21	Coarse silt
	Sorting	2.14	Very poor
	Skewness	1.54	Very fine
	Kurtosis	4.78	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	53.51	Wentworth:
Logarithmic	Mean (Phi)	4.22	Coarse silt
	Sorting	1.97	Poor
	Skewness	0.70	Very fine
	Kurtosis	1.00	Mesokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.27	103.53	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

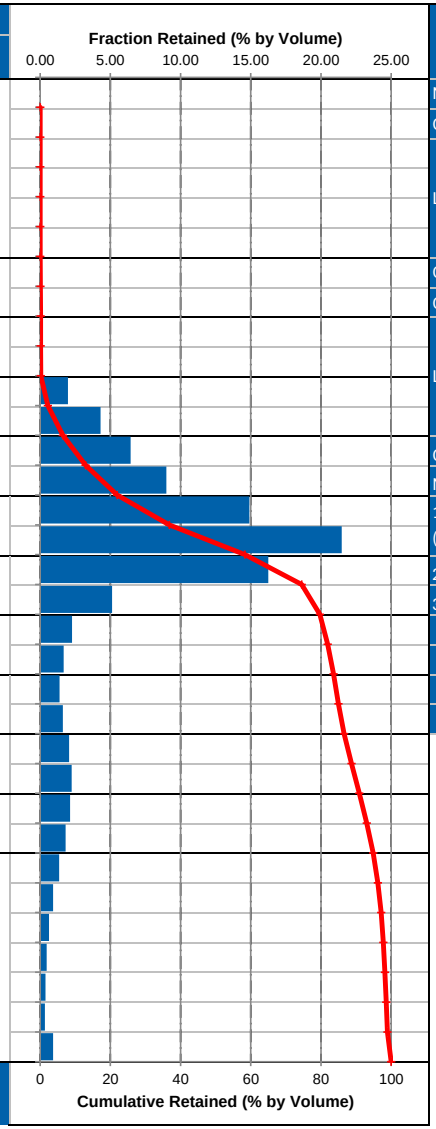
Classification		Composition	
Modified Folk	Muddy sand	Fines	31.10%
EUNIS Folk	Mud and sandy mud	Sand	68.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

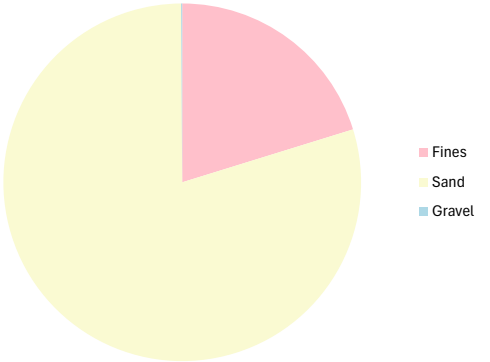
ENV110

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.06	0.07	Granule
2000.00	-1.00	0.03	0.10	
1414.21	-0.50	0.01	0.11	Very coarse sand
1000.00	0.00	0.07	0.19	
707.11	0.50	1.98	2.17	Coarse sand
500.00	1.00	4.30	6.47	
353.55	1.50	6.44	12.91	Medium sand
250.00	2.00	8.99	21.90	
176.78	2.50	14.90	36.81	Fine sand
125.00	3.00	21.48	58.29	
88.39	3.50	16.24	74.53	Very fine sand
62.50	4.00	5.13	79.65	
44.19	4.50	2.27	81.92	Coarse silt
31.25	5.00	1.68	83.60	
22.10	5.50	1.38	84.98	Medium silt
15.63	6.00	1.62	86.60	
11.05	6.50	2.07	88.67	Fine silt
7.81	7.00	2.24	90.91	
5.52	7.50	2.14	93.04	Very fine silt
3.91	8.00	1.82	94.86	
2.76	8.50	1.36	96.22	Clay
1.95	9.00	0.92	97.14	
1.38	9.50	0.62	97.76	
0.98	10.00	0.46	98.22	
0.69	10.50	0.38	98.60	
0.49	11.00	0.33	98.93	
<0.49	>11	0.92	100.00	



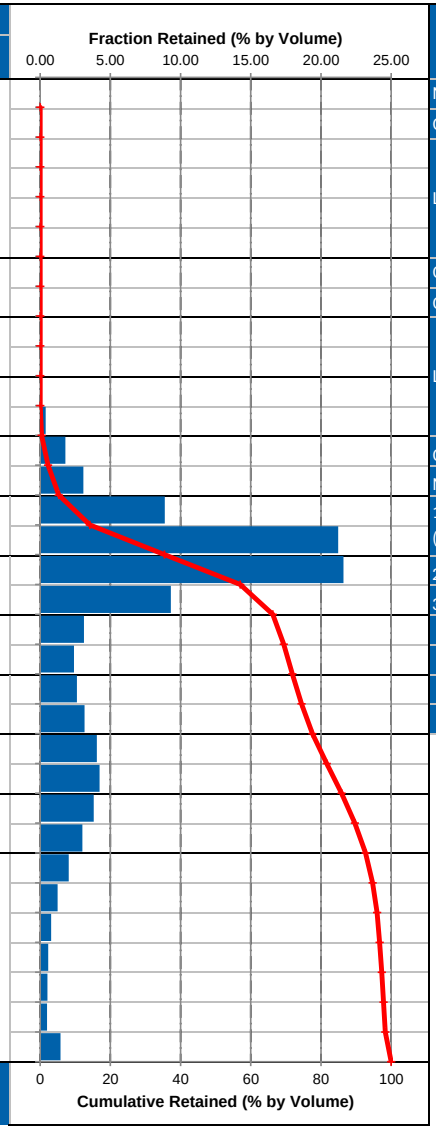
Method of Moments			
Geometric	Mean (µm)	99.41	Wentworth:
Logarithmic	Mean (Phi)	3.32	Very fine sand
	Sorting	2.15	Very poor
	Skewness	1.63	Very fine
	Kurtosis	5.82	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	108.22	Wentworth:
Logarithmic	Mean (Phi)	3.21	Very fine sand
	Sorting	1.96	Poor
	Skewness	0.40	Very fine
	Kurtosis	2.05	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.81	142.88	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	20.20%
EUNIS Folk	Mud and sandy mud	Sand	79.60%
Distribution	Bimodal	Gravel	0.10%



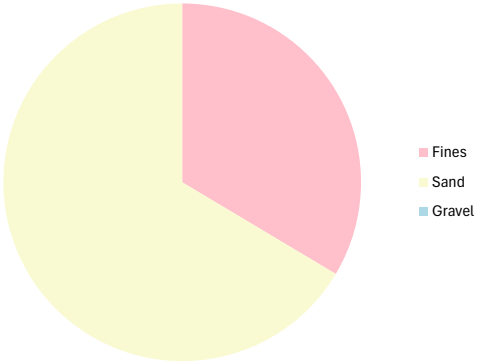
APPENDIX F PARTICLE SIZE ANALYSIS

ENV111				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.00	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.38	0.41	
353.55	1.50	1.79	2.21	Medium sand
250.00	2.00	3.08	5.28	
176.78	2.50	8.88	14.16	Fine sand
125.00	3.00	21.23	35.39	
88.39	3.50	21.60	56.98	Very fine sand
62.50	4.00	9.30	66.29	
44.19	4.50	3.11	69.40	Coarse silt
31.25	5.00	2.41	71.81	
22.10	5.50	2.62	74.43	Medium silt
15.63	6.00	3.15	77.58	
11.05	6.50	4.03	81.62	Fine silt
7.81	7.00	4.23	85.85	
5.52	7.50	3.82	89.66	Very fine silt
3.91	8.00	3.01	92.68	
2.76	8.50	2.04	94.71	
1.95	9.00	1.24	95.95	
1.38	9.50	0.78	96.73	
0.98	10.00	0.58	97.31	Clay
0.69	10.50	0.51	97.82	
0.49	11.00	0.48	98.30	
<0.49	>11	1.45	100.00	



Method of Moments			
Geometric	Mean (µm)	53.18	Wentworth:
Logarithmic	Mean (Phi)	4.21	Coarse silt
	Sorting	2.21	Very poor
	Skewness	1.34	Very fine
	Kurtosis	4.37	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	53.62	Wentworth:
Logarithmic	Mean (Phi)	4.22	Coarse silt
	Sorting	2.07	Very poor
	Skewness	0.60	Very fine
	Kurtosis	0.96	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.34	98.87	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

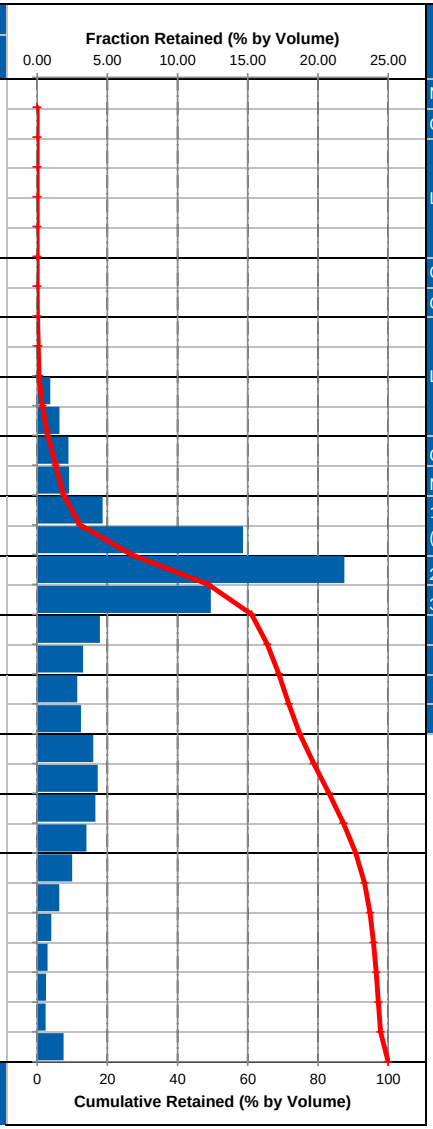
Classification		Composition	
Modified Folk	Muddy sand	Fines	33.50%
EUNIS Folk	Mud and sandy mud	Sand	66.30%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

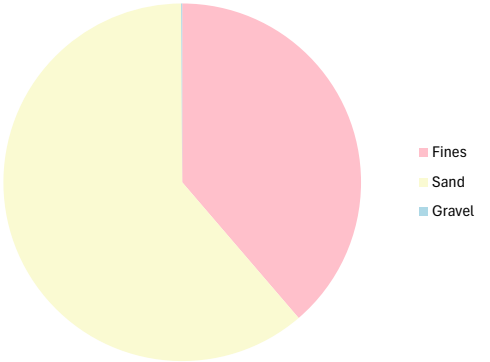
ENV112

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.07	0.07	
1414.21	-0.50	0.21	0.28	Very coarse sand
1000.00	0.00	0.23	0.51	
707.11	0.50	0.93	1.44	Coarse sand
500.00	1.00	1.59	3.02	
353.55	1.50	2.22	5.24	Medium sand
250.00	2.00	2.27	7.52	
176.78	2.50	4.66	12.18	Fine sand
125.00	3.00	14.66	26.84	
88.39	3.50	21.88	48.72	Very fine sand
62.50	4.00	12.37	61.09	
44.19	4.50	4.47	65.56	Coarse silt
31.25	5.00	3.27	68.82	
22.10	5.50	2.85	71.67	Medium silt
15.63	6.00	3.12	74.80	
11.05	6.50	4.00	78.79	Fine silt
7.81	7.00	4.31	83.10	
5.52	7.50	4.15	87.25	Very fine silt
3.91	8.00	3.50	90.76	
2.76	8.50	2.49	93.25	
1.95	9.00	1.57	94.82	
1.38	9.50	1.01	95.83	
0.98	10.00	0.74	96.57	Clay
0.69	10.50	0.63	97.20	
0.49	11.00	0.60	97.80	
<0.49	>11	1.87	100.00	



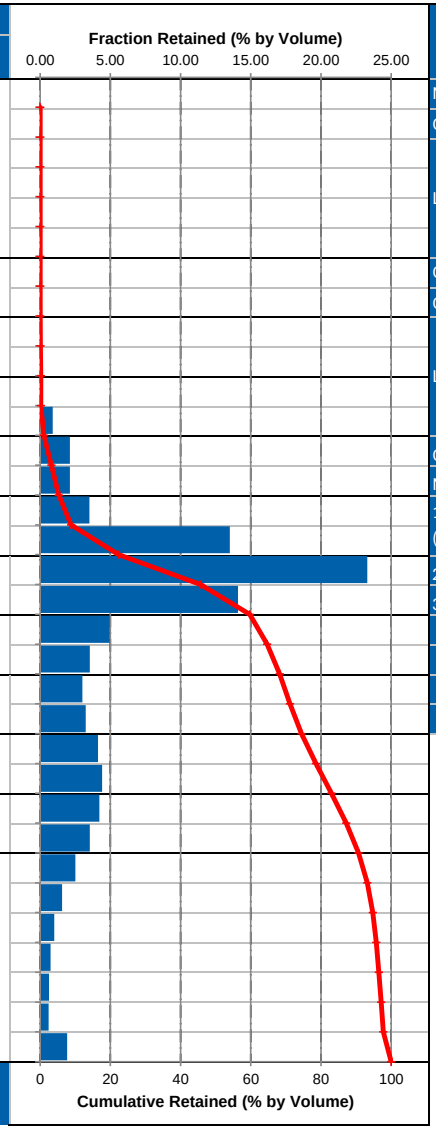
Method of Moments			
Geometric	Mean (µm)	46.00	Wentworth:
Logarithmic	Mean (Phi)	4.41	Coarse silt
	Sorting	2.38	Very poor
	Skewness	1.05	Fine
	Kurtosis	3.88	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	46.39	Wentworth:
Logarithmic	Mean (Phi)	4.43	Coarse silt
	Sorting	2.28	Very poor
	Skewness	0.52	Very fine
	Kurtosis	1.01	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.55	85.27	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	38.60%
EUNIS Folk	Mud and sandy mud	Sand	61.00%
Distribution	Bimodal	Gravel	0.10%



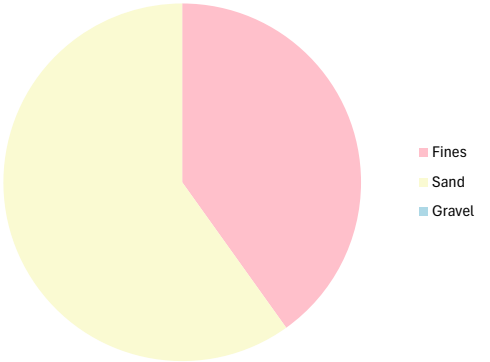
APPENDIX F PARTICLE SIZE ANALYSIS

ENV113				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.05	0.08	Very coarse sand
1000.00	0.00	0.08	0.16	
707.11	0.50	0.02	0.18	Coarse sand
500.00	1.00	0.89	1.07	
353.55	1.50	2.12	3.19	Medium sand
250.00	2.00	2.12	5.31	
176.78	2.50	3.50	8.81	Fine sand
125.00	3.00	13.50	22.31	
88.39	3.50	23.30	45.61	Very fine sand
62.50	4.00	14.09	59.70	
44.19	4.50	4.95	64.65	Coarse silt
31.25	5.00	3.54	68.19	
22.10	5.50	3.00	71.19	Medium silt
15.63	6.00	3.24	74.44	
11.05	6.50	4.12	78.55	Fine silt
7.81	7.00	4.41	82.96	
5.52	7.50	4.21	87.17	Very fine silt
3.91	8.00	3.54	90.71	
2.76	8.50	2.50	93.21	
1.95	9.00	1.56	94.77	
1.38	9.50	1.00	95.77	
0.98	10.00	0.73	96.51	Clay
0.69	10.50	0.63	97.14	
0.49	11.00	0.60	97.74	
<0.49	>11	1.92	100.00	



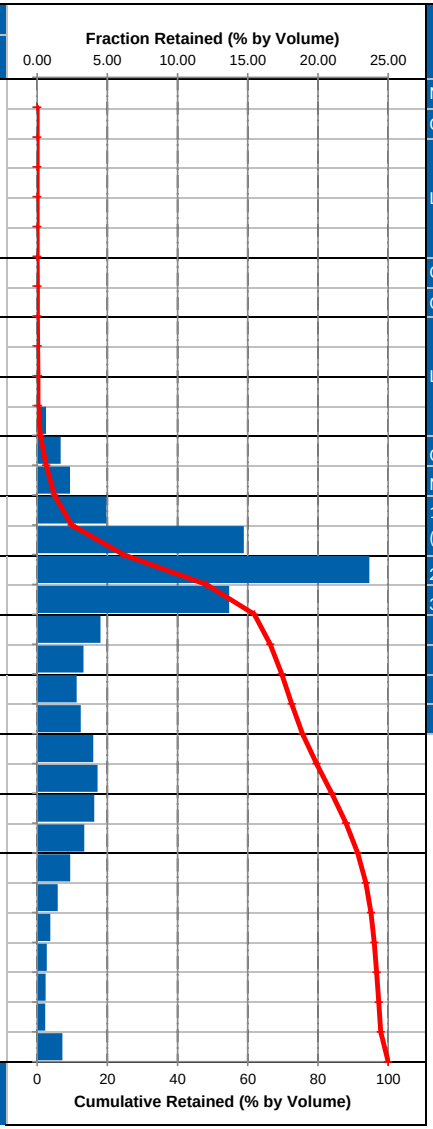
Method of Moments			
Geometric	Mean (µm)	42.37	Wentworth:
Logarithmic	Mean (Phi)	4.53	Coarse silt
	Sorting	2.29	Very poor
	Skewness	1.18	Fine
	Kurtosis	4.04	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	43.73	Wentworth:
Logarithmic	Mean (Phi)	4.52	Coarse silt
	Sorting	2.18	Very poor
	Skewness	0.56	Very fine
	Kurtosis	0.98	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.66	79.33	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	40.00%
EUNIS Folk	Mud and sandy mud	Sand	59.70%
Distribution	Bimodal	Gravel	0.00%



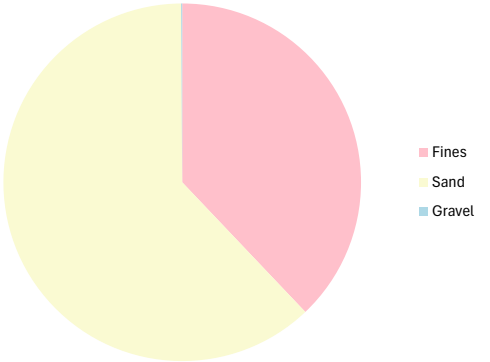
APPENDIX F PARTICLE SIZE ANALYSIS

ENV114				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.06	0.06	Granule
2000.00	-1.00	0.00	0.06	
1414.21	-0.50	0.06	0.12	Very coarse sand
1000.00	0.00	0.12	0.24	
707.11	0.50	0.01	0.25	Coarse sand
500.00	1.00	0.63	0.88	
353.55	1.50	1.67	2.55	Medium sand
250.00	2.00	2.34	4.89	
176.78	2.50	4.92	9.81	Fine sand
125.00	3.00	14.72	24.53	
88.39	3.50	23.66	48.19	Very fine sand
62.50	4.00	13.68	61.87	
44.19	4.50	4.51	66.38	Coarse silt
31.25	5.00	3.30	69.67	
22.10	5.50	2.82	72.49	Medium silt
15.63	6.00	3.10	75.59	
11.05	6.50	4.00	79.59	Fine silt
7.81	7.00	4.30	83.88	
5.52	7.50	4.06	87.94	Very fine silt
3.91	8.00	3.36	91.30	
2.76	8.50	2.35	93.65	Clay
1.95	9.00	1.46	95.11	
1.38	9.50	0.93	96.04	
0.98	10.00	0.69	96.73	
0.69	10.50	0.60	97.32	
0.49	11.00	0.57	97.89	
<0.49	>11	1.79	100.00	



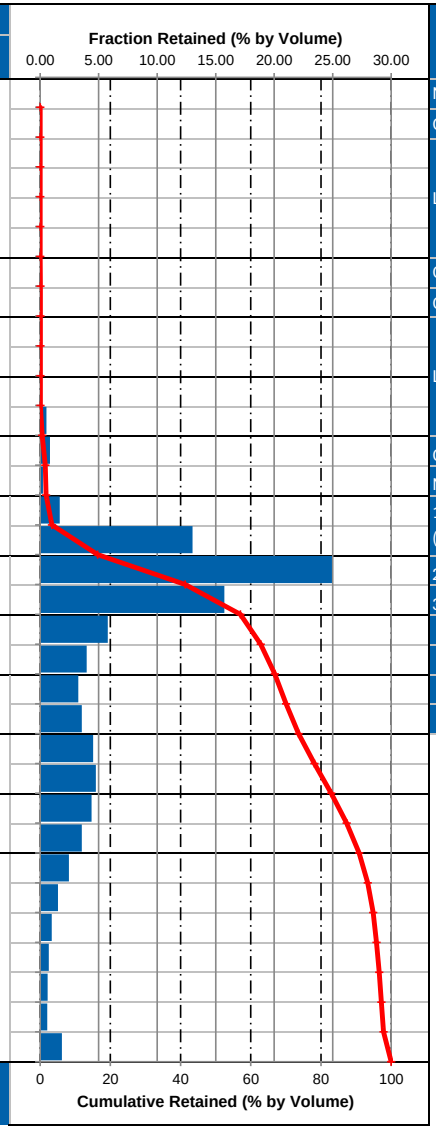
Method of Moments			
Geometric	Mean (µm)	45.05	Wentworth:
Logarithmic	Mean (Phi)	4.44	Coarse silt
	Sorting	2.26	Very poor
	Skewness	1.23	Fine
	Kurtosis	4.22	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	46.38	Wentworth:
Logarithmic	Mean (Phi)	4.43	Coarse silt
	Sorting	2.13	Very poor
	Skewness	0.58	Very fine
	Kurtosis	0.98	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.57	84.43	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	37.80%
EUNIS Folk	Mud and sandy mud	Sand	61.80%
Distribution	Bimodal	Gravel	0.10%



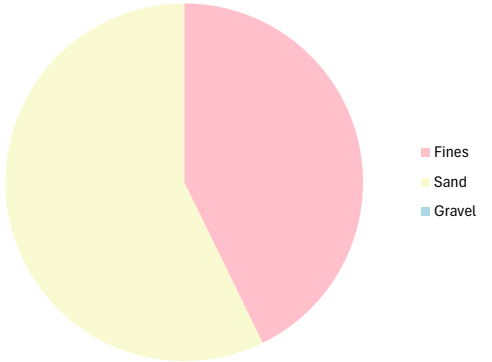
APPENDIX F PARTICLE SIZE ANALYSIS

ENV115				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.04	0.04	Granule
2000.00	-1.00	0.00	0.04	
1414.21	-0.50	0.00	0.04	Very coarse sand
1000.00	0.00	0.01	0.06	
707.11	0.50	0.00	0.06	Coarse sand
500.00	1.00	0.53	0.59	
353.55	1.50	0.84	1.44	Medium sand
250.00	2.00	0.24	1.67	
176.78	2.50	1.68	3.35	Fine sand
125.00	3.00	13.02	16.37	
88.39	3.50	24.93	41.30	Very fine sand
62.50	4.00	15.74	57.04	
44.19	4.50	5.78	62.82	Coarse silt
31.25	5.00	3.98	66.80	
22.10	5.50	3.25	70.05	Medium silt
15.63	6.00	3.56	73.61	
11.05	6.50	4.53	78.14	Fine silt
7.81	7.00	4.76	82.90	
5.52	7.50	4.40	87.30	Very fine silt
3.91	8.00	3.56	90.86	
2.76	8.50	2.46	93.32	
1.95	9.00	1.53	94.85	
1.38	9.50	0.99	95.84	
0.98	10.00	0.74	96.58	Clay
0.69	10.50	0.64	97.22	
0.49	11.00	0.60	97.82	
<0.49	>11	1.85	100.00	



Method of Moments			
Geometric	Mean (µm)	38.28	Wentworth:
Logarithmic	Mean (Phi)	4.67	Coarse silt
	Sorting	2.19	Very poor
	Skewness	1.25	Fine
	Kurtosis	4.20	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	40.41	Wentworth:
Logarithmic	Mean (Phi)	4.63	Coarse silt
	Sorting	2.02	Very poor
	Skewness	0.62	Very fine
	Kurtosis	0.90	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.78	72.98	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

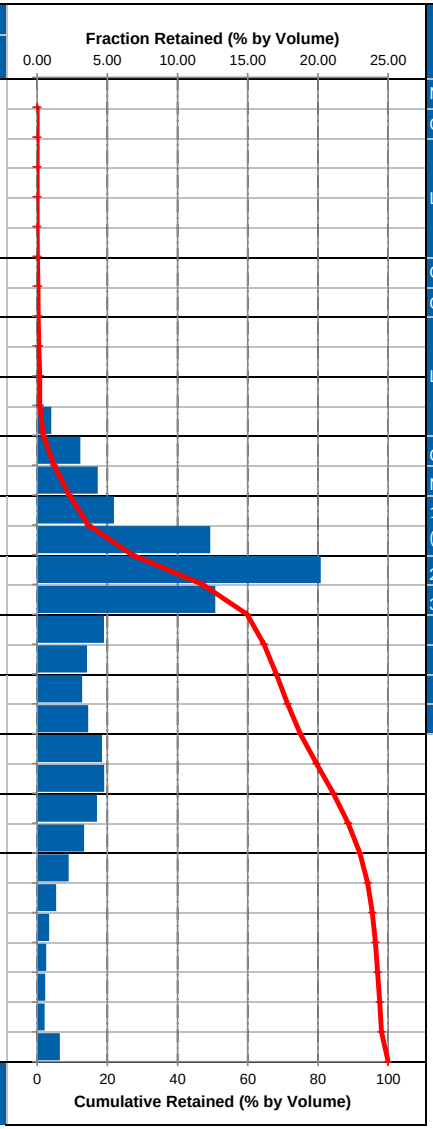
Classification		Composition	
Modified Folk	Muddy sand	Fines	42.60%
EUNIS Folk	Mud and sandy mud	Sand	57.00%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

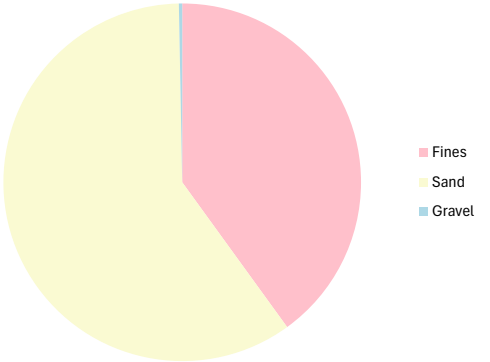
ENV116

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.07	0.07	
2828.43	-1.50	0.14	0.21	Granule
2000.00	-1.00	0.06	0.27	
1414.21	-0.50	0.17	0.44	Very coarse sand
1000.00	0.00	0.27	0.71	
707.11	0.50	0.02	0.74	Coarse sand
500.00	1.00	1.01	1.74	
353.55	1.50	3.08	4.82	Medium sand
250.00	2.00	4.32	9.14	
176.78	2.50	5.46	14.60	Fine sand
125.00	3.00	12.32	26.92	
88.39	3.50	20.20	47.13	Very fine sand
62.50	4.00	12.69	59.82	
44.19	4.50	4.76	64.58	Coarse silt
31.25	5.00	3.54	68.12	
22.10	5.50	3.19	71.32	Medium silt
15.63	6.00	3.63	74.94	
11.05	6.50	4.62	79.56	Fine silt
7.81	7.00	4.77	84.33	
5.52	7.50	4.26	88.58	Very fine silt
3.91	8.00	3.34	91.92	
2.76	8.50	2.24	94.16	Clay
1.95	9.00	1.35	95.51	
1.38	9.50	0.85	96.36	
0.98	10.00	0.64	97.00	
0.69	10.50	0.57	97.57	
0.49	11.00	0.54	98.10	
<0.49	>11	1.62	100.00	



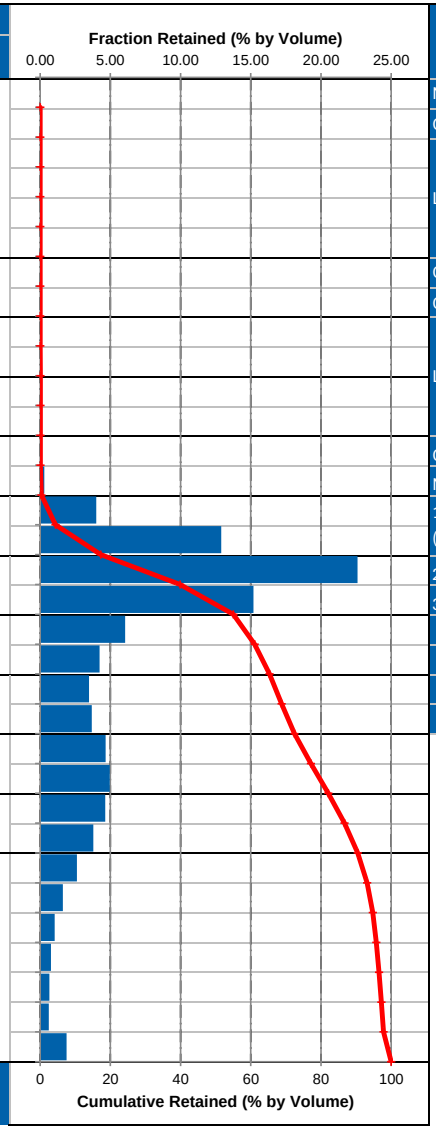
Method of Moments			
Geometric	Mean (µm)	46.92	Wentworth:
Logarithmic	Mean (Phi)	4.39	Coarse silt
	Sorting	2.32	Very poor
	Skewness	0.99	Fine
	Kurtosis	3.90	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	48.08	Wentworth:
Logarithmic	Mean (Phi)	4.38	Coarse silt
	Sorting	2.21	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.61	81.72	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	39.90%
EUNIS Folk	Mud and sandy mud	Sand	59.50%
Distribution	Bimodal	Gravel	0.30%



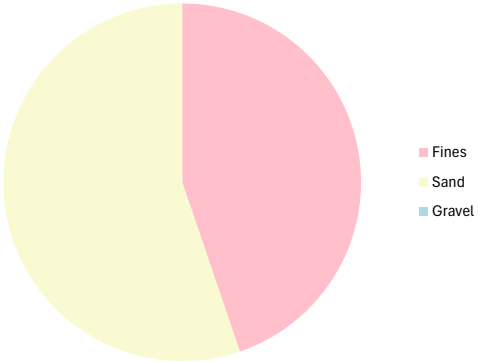
APPENDIX F PARTICLE SIZE ANALYSIS

ENV117				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.00	0.02	Very coarse sand
1000.00	0.00	0.03	0.05	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	0.00	0.05	
353.55	1.50	0.00	0.05	Medium sand
250.00	2.00	0.29	0.34	
176.78	2.50	3.99	4.34	Fine sand
125.00	3.00	12.89	17.23	
88.39	3.50	22.60	39.83	Very fine sand
62.50	4.00	15.19	55.02	
44.19	4.50	6.05	61.08	Coarse silt
31.25	5.00	4.23	65.31	
22.10	5.50	3.48	68.79	Medium silt
15.63	6.00	3.67	72.46	
11.05	6.50	4.66	77.13	Fine silt
7.81	7.00	4.96	82.08	
5.52	7.50	4.63	86.71	Very fine silt
3.91	8.00	3.78	90.50	
2.76	8.50	2.62	93.11	Clay
1.95	9.00	1.62	94.74	
1.38	9.50	1.04	95.77	
0.98	10.00	0.76	96.54	
0.69	10.50	0.65	97.19	
0.49	11.00	0.61	97.80	
<0.49	>11	1.87	100.00	



Method of Moments			
Geometric	Mean (µm)	36.48	Wentworth:
Logarithmic	Mean (Phi)	4.74	Coarse silt
	Sorting	2.20	Very poor
	Skewness	1.24	Fine
	Kurtosis	4.02	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	39.43	Wentworth:
Logarithmic	Mean (Phi)	4.66	Coarse silt
	Sorting	2.06	Very poor
	Skewness	0.59	Very fine
	Kurtosis	0.87	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.83	70.08	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

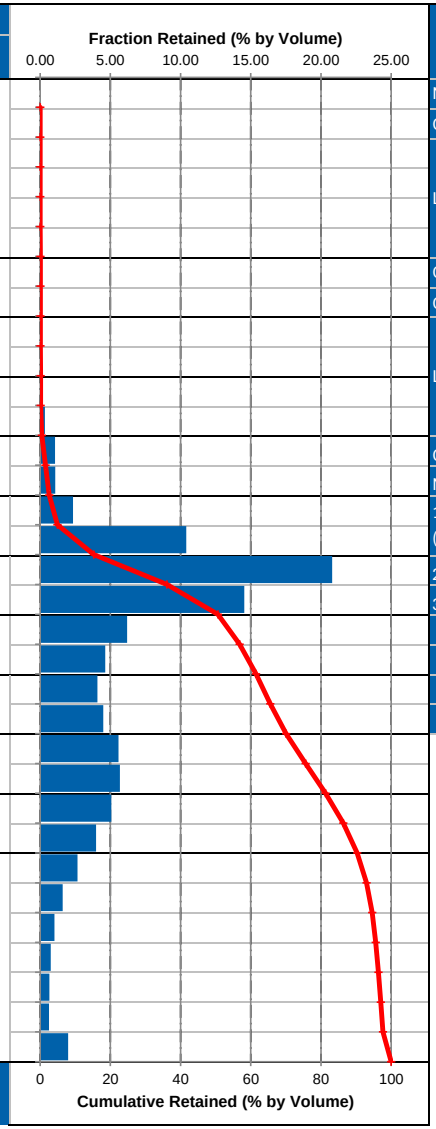
Classification		Composition	
Modified Folk	Muddy sand	Fines	44.60%
EUNIS Folk	Mud and sandy mud	Sand	55.00%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

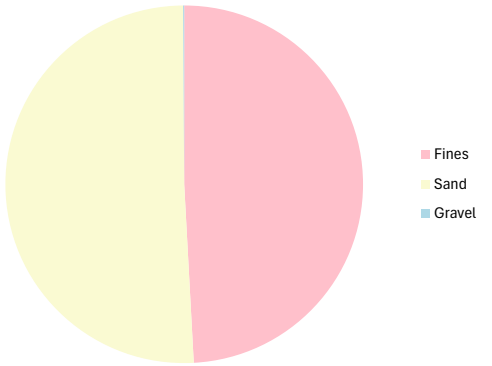
ENV118

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.00	0.04	Granule
2000.00	-1.00	0.01	0.05	
1414.21	-0.50	0.02	0.07	Very coarse sand
1000.00	0.00	0.02	0.09	
707.11	0.50	0.00	0.09	Coarse sand
500.00	1.00	0.34	0.44	
353.55	1.50	1.06	1.50	Medium sand
250.00	2.00	1.07	2.57	
176.78	2.50	2.34	4.91	Fine sand
125.00	3.00	10.40	15.31	
88.39	3.50	20.80	36.10	Very fine sand
62.50	4.00	14.53	50.64	
44.19	4.50	6.20	56.83	Coarse silt
31.25	5.00	4.63	61.46	
22.10	5.50	4.08	65.54	Medium silt
15.63	6.00	4.49	70.03	
11.05	6.50	5.58	75.62	Fine silt
7.81	7.00	5.67	81.29	
5.52	7.50	5.06	86.35	Very fine silt
3.91	8.00	3.98	90.33	
2.76	8.50	2.66	92.99	Clay
1.95	9.00	1.61	94.60	
1.38	9.50	1.01	95.61	
0.98	10.00	0.75	96.37	
0.69	10.50	0.66	97.03	
0.49	11.00	0.63	97.66	
<0.49	>11	1.99	100.00	



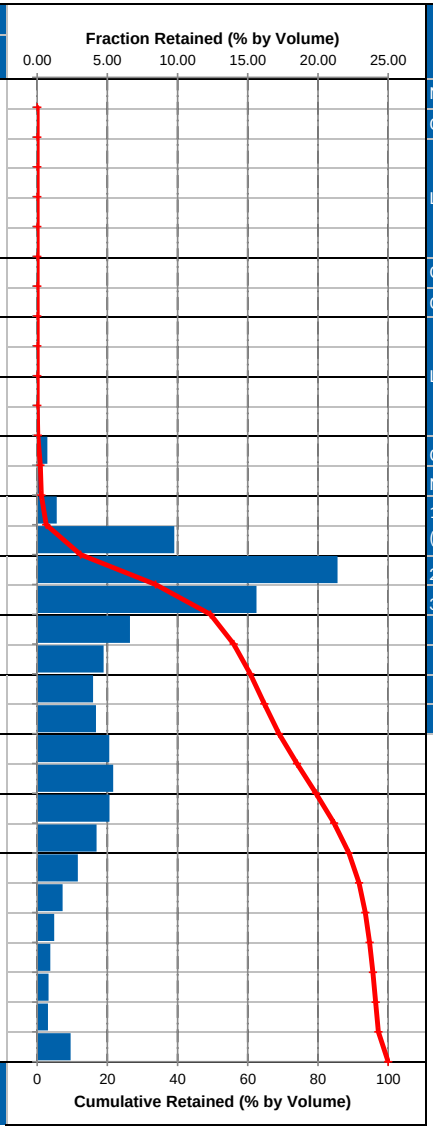
Method of Moments			
Geometric	Mean (µm)	33.71	Wentworth:
Logarithmic	Mean (Phi)	4.86	Coarse silt
	Sorting	2.24	Very poor
	Skewness	1.04	Fine
	Kurtosis	3.79	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	37.05	Wentworth:
Logarithmic	Mean (Phi)	4.75	Coarse silt
	Sorting	2.08	Very poor
	Skewness	0.55	Very fine
	Kurtosis	0.85	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.98	63.45	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	49.00%
EUNIS Folk	Mud and sandy mud	Sand	50.60%
Distribution	Bimodal	Gravel	0.10%



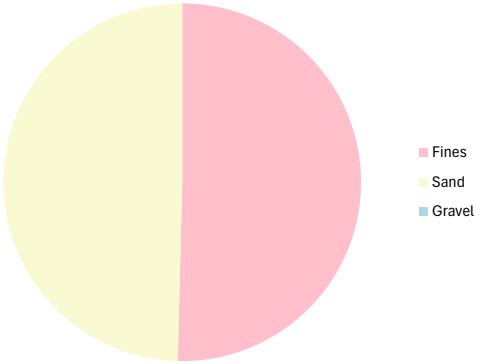
APPENDIX F PARTICLE SIZE ANALYSIS

ENV119				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.17	0.20	
353.55	1.50	0.72	0.92	Medium sand
250.00	2.00	0.28	1.19	
176.78	2.50	1.39	2.58	Fine sand
125.00	3.00	9.77	12.35	
88.39	3.50	21.39	33.74	Very fine sand
62.50	4.00	15.63	49.37	
44.19	4.50	6.61	55.98	Coarse silt
31.25	5.00	4.73	60.71	
22.10	5.50	3.97	64.68	Medium silt
15.63	6.00	4.18	68.87	
11.05	6.50	5.13	74.00	Fine silt
7.81	7.00	5.41	79.41	
5.52	7.50	5.15	84.55	Very fine silt
3.91	8.00	4.23	88.78	
2.76	8.50	2.90	91.68	Clay
1.95	9.00	1.81	93.49	
1.38	9.50	1.21	94.69	
0.98	10.00	0.93	95.63	
0.69	10.50	0.81	96.44	
0.49	11.00	0.77	97.21	
<0.49	>11	2.38	100.00	



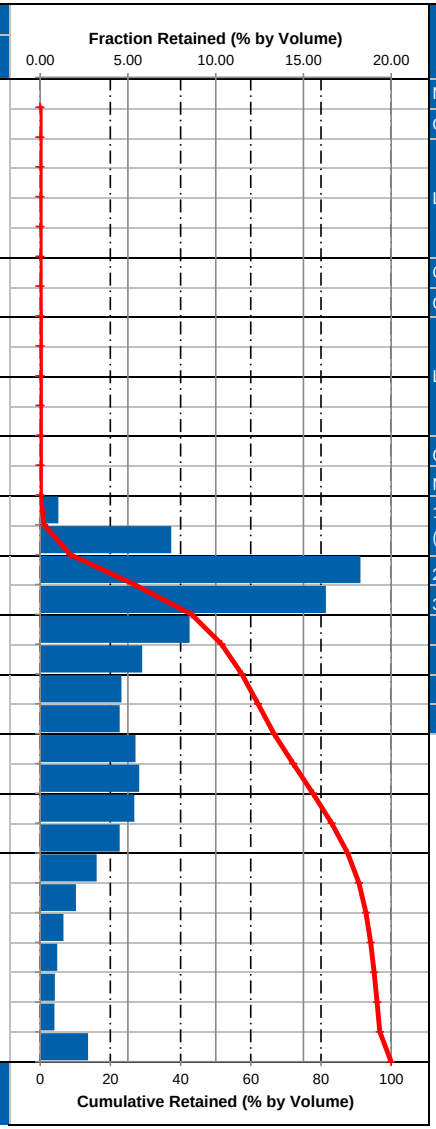
Method of Moments			
Geometric	Mean (µm)	30.67	Wentworth:
Logarithmic	Mean (Phi)	4.99	Coarse silt
	Sorting	2.27	Very poor
	Skewness	1.11	Fine
	Kurtosis	3.72	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	34.44	Wentworth:
Logarithmic	Mean (Phi)	4.86	Coarse silt
	Sorting	2.16	Very poor
	Skewness	0.58	Very fine
	Kurtosis	0.88	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.05	60.47	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	50.20%
EUNIS Folk	Mud and sandy mud	Sand	49.40%
Distribution	Bimodal	Gravel	0.00%



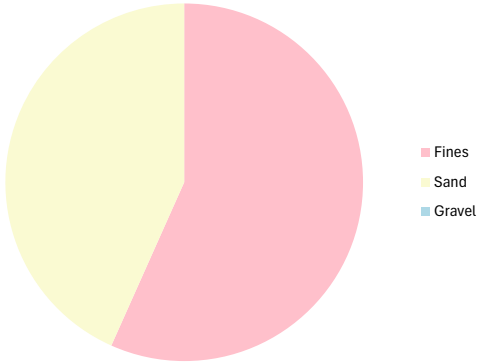
APPENDIX F PARTICLE SIZE ANALYSIS

ENV120				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.01	0.05	
707.11	0.50	0.00	0.05	Coarse sand
500.00	1.00	0.00	0.05	
353.55	1.50	0.00	0.05	Medium sand
250.00	2.00	0.02	0.07	
176.78	2.50	1.04	1.11	Fine sand
125.00	3.00	7.47	8.58	
88.39	3.50	18.25	26.83	Very fine sand
62.50	4.00	16.28	43.11	
44.19	4.50	8.51	51.62	Coarse silt
31.25	5.00	5.81	57.43	
22.10	5.50	4.64	62.07	Medium silt
15.63	6.00	4.53	66.60	
11.05	6.50	5.44	72.04	Fine silt
7.81	7.00	5.64	77.68	
5.52	7.50	5.36	83.04	Very fine silt
3.91	8.00	4.53	87.57	
2.76	8.50	3.22	90.79	Clay
1.95	9.00	2.04	92.83	
1.38	9.50	1.32	94.15	
0.98	10.00	0.97	95.13	
0.69	10.50	0.84	95.97	
0.49	11.00	0.81	96.78	
<0.49	>11	2.72	100.00	



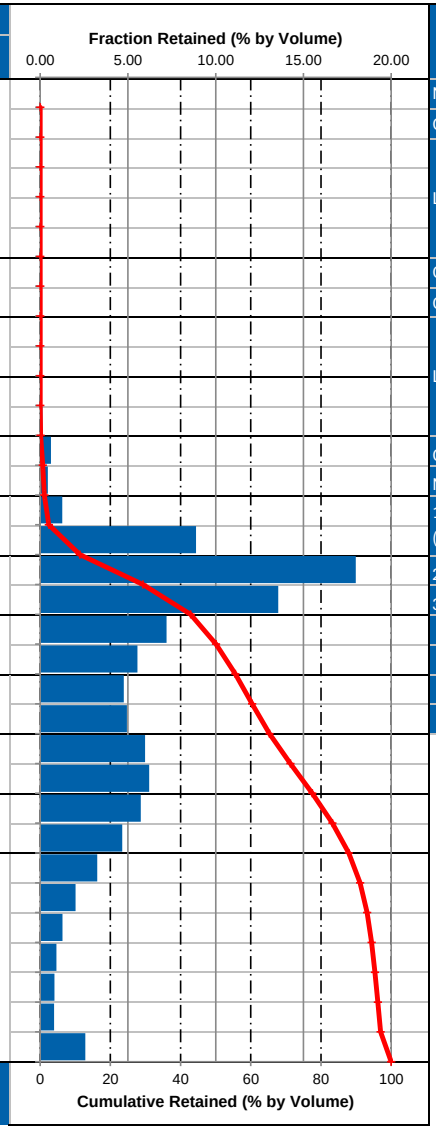
Method of Moments			
Geometric	Mean (µm)	26.40	Wentworth:
Logarithmic	Mean (Phi)	5.19	Medium silt
	Sorting	2.26	Very poor
	Skewness	1.10	Fine
	Kurtosis	3.69	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	29.74	Wentworth:
Logarithmic	Mean (Phi)	5.07	Medium silt
	Sorting	2.19	Very poor
	Skewness	0.50	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.40	47.21	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	56.40%
EUNIS Folk	Mud and sandy mud	Sand	43.10%
Distribution	Bimodal	Gravel	0.00%



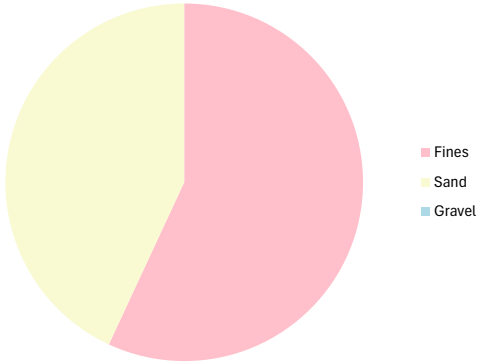
APPENDIX F PARTICLE SIZE ANALYSIS

ENV121				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.00	0.01	Very coarse sand
1000.00	0.00	0.00	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.12	0.14	
353.55	1.50	0.61	0.75	Medium sand
250.00	2.00	0.43	1.18	
176.78	2.50	1.25	2.44	Fine sand
125.00	3.00	8.88	11.32	
88.39	3.50	17.98	29.30	Very fine sand
62.50	4.00	13.57	42.86	
44.19	4.50	7.21	50.07	Coarse silt
31.25	5.00	5.54	55.61	
22.10	5.50	4.76	60.37	Medium silt
15.63	6.00	4.94	65.30	
11.05	6.50	5.97	71.28	Fine silt
7.81	7.00	6.21	77.49	
5.52	7.50	5.74	83.22	Very fine silt
3.91	8.00	4.68	87.90	
2.76	8.50	3.25	91.15	
1.95	9.00	2.02	93.17	
1.38	9.50	1.27	94.44	
0.98	10.00	0.93	95.37	Clay
0.69	10.50	0.81	96.18	
0.49	11.00	0.79	96.96	
<0.49	>11	2.57	100.00	



Method of Moments			
Geometric	Mean (µm)	26.68	Wentworth:
Logarithmic	Mean (Phi)	5.18	Medium silt
	Sorting	2.28	Very poor
	Skewness	0.97	Fine
	Kurtosis	3.49	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	29.78	Wentworth:
Logarithmic	Mean (Phi)	5.07	Medium silt
	Sorting	2.20	Very poor
	Skewness	0.43	Very fine
	Kurtosis	0.86	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.50	44.34	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

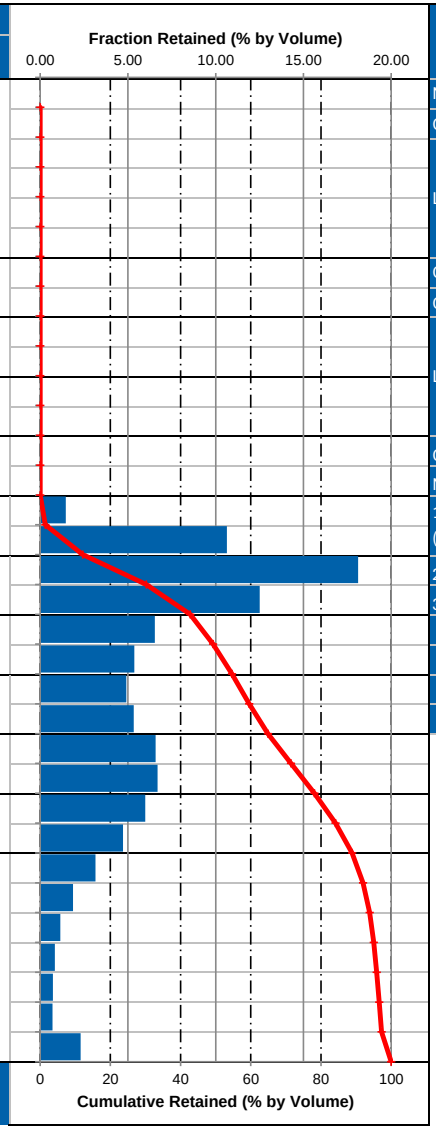
Classification		Composition	
Modified Folk	Sandy mud	Fines	56.70%
EUNIS Folk	Mud and sandy mud	Sand	42.90%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

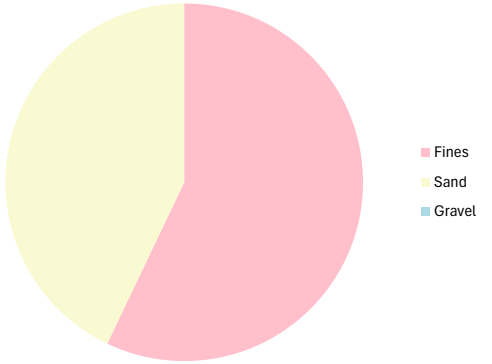
ENV122

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.01	0.01	
176.78	2.50	1.46	1.47	Fine sand
125.00	3.00	10.64	12.11	
88.39	3.50	18.12	30.23	Very fine sand
62.50	4.00	12.50	42.73	
44.19	4.50	6.53	49.27	Coarse silt
31.25	5.00	5.36	54.63	
22.10	5.50	4.91	59.54	Medium silt
15.63	6.00	5.33	64.87	
11.05	6.50	6.57	71.44	Fine silt
7.81	7.00	6.69	78.13	
5.52	7.50	5.99	84.12	Very fine silt
3.91	8.00	4.72	88.84	
2.76	8.50	3.15	91.99	Clay
1.95	9.00	1.87	93.86	
1.38	9.50	1.15	95.01	
0.98	10.00	0.83	95.84	
0.69	10.50	0.73	96.57	
0.49	11.00	0.71	97.28	
<0.49	>11	2.31	100.00	



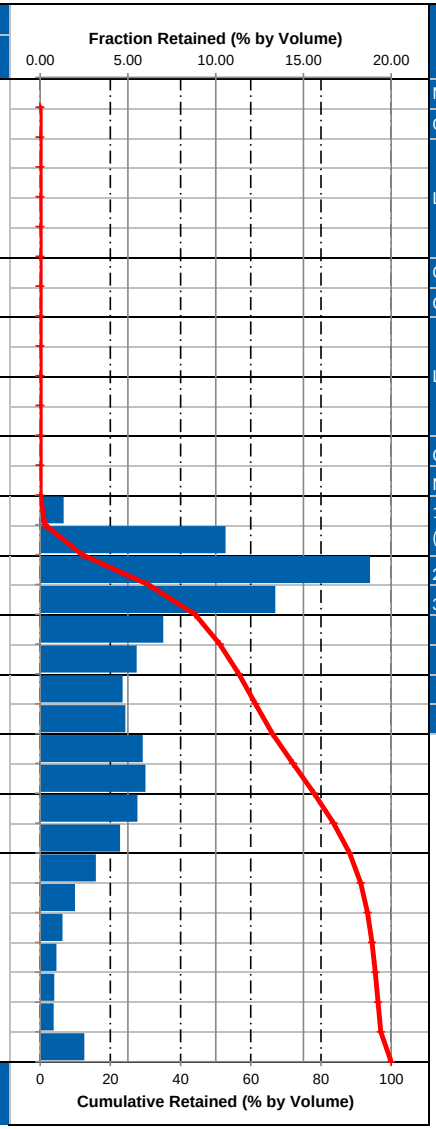
Method of Moments			
Geometric	Mean (µm)	26.83	Wentworth:
Logarithmic	Mean (Phi)	5.18	Medium silt
	Sorting	2.22	Very poor
	Skewness	0.98	Fine
	Kurtosis	3.49	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	30.08	Wentworth:
Logarithmic	Mean (Phi)	5.06	Medium silt
	Sorting	2.13	Very poor
	Skewness	0.39	Very fine
	Kurtosis	0.82	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.57	42.15	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	56.80%
EUNIS Folk	Mud and sandy mud	Sand	42.70%
Distribution	Bimodal	Gravel	0.00%



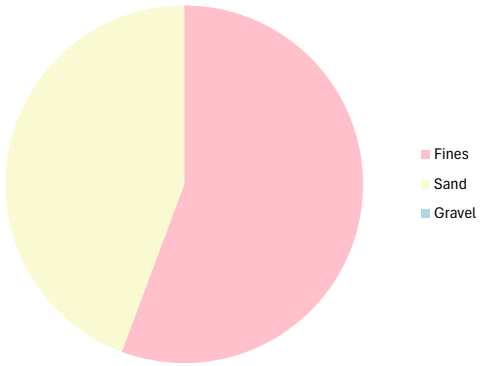
APPENDIX F PARTICLE SIZE ANALYSIS

ENV123				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.01	0.01	
176.78	2.50	1.34	1.35	Fine sand
125.00	3.00	10.56	11.91	
88.39	3.50	18.79	30.71	Very fine sand
62.50	4.00	13.40	44.10	
44.19	4.50	7.01	51.11	Coarse silt
31.25	5.00	5.50	56.61	
22.10	5.50	4.70	61.31	Medium silt
15.63	6.00	4.86	66.17	
11.05	6.50	5.84	72.01	Fine silt
7.81	7.00	5.99	78.01	
5.52	7.50	5.55	83.55	Very fine silt
3.91	8.00	4.56	88.11	
2.76	8.50	3.17	91.28	Clay
1.95	9.00	1.98	93.26	
1.38	9.50	1.27	94.53	
0.98	10.00	0.93	95.46	
0.69	10.50	0.80	96.26	
0.49	11.00	0.77	97.03	
<0.49	>11	2.52	100.00	



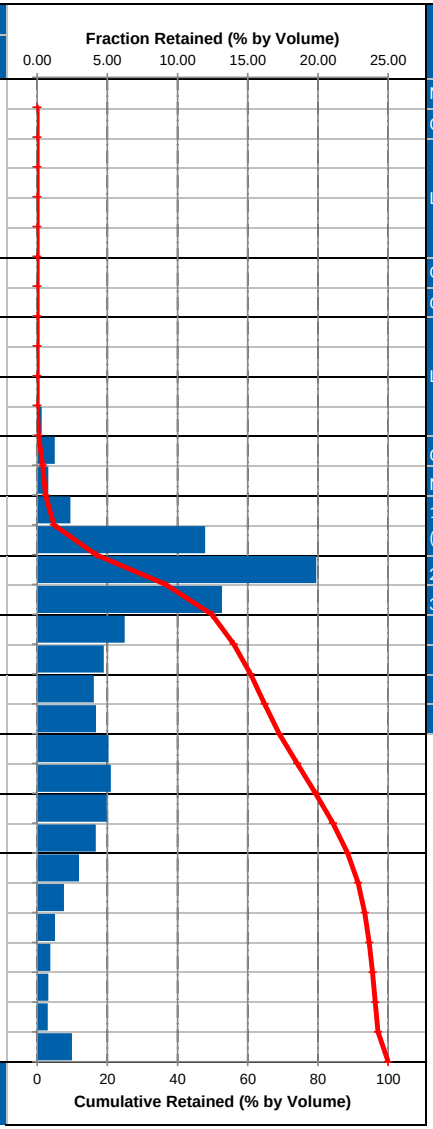
Method of Moments			
Geometric	Mean (µm)	27.27	Wentworth:
Logarithmic	Mean (Phi)	5.15	Medium silt
	Sorting	2.26	Very poor
	Skewness	1.05	Fine
	Kurtosis	3.56	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	30.69	Wentworth:
Logarithmic	Mean (Phi)	5.03	Medium silt
	Sorting	2.18	Very poor
	Skewness	0.46	Very fine
	Kurtosis	0.85	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.42	46.69	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	55.40%
EUNIS Folk	Mud and sandy mud	Sand	44.10%
Distribution	Bimodal	Gravel	0.00%



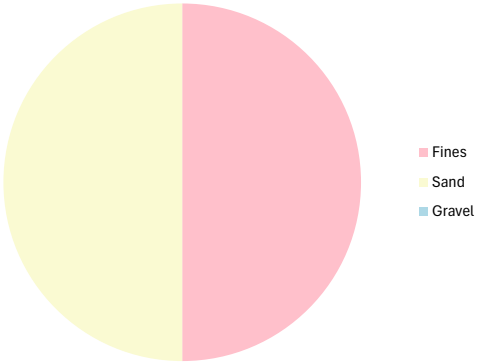
APPENDIX F PARTICLE SIZE ANALYSIS

ENV124				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.00	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.32	0.33	
353.55	1.50	1.25	1.58	Medium sand
250.00	2.00	0.79	2.38	
176.78	2.50	2.37	4.75	Fine sand
125.00	3.00	11.97	16.72	
88.39	3.50	19.88	36.60	Very fine sand
62.50	4.00	13.16	49.76	
44.19	4.50	6.23	55.99	Coarse silt
31.25	5.00	4.74	60.74	
22.10	5.50	4.04	64.78	Medium silt
15.63	6.00	4.19	68.97	
11.05	6.50	5.08	74.04	Fine silt
7.81	7.00	5.24	79.29	
5.52	7.50	4.96	84.25	Very fine silt
3.91	8.00	4.18	88.43	
2.76	8.50	2.98	91.40	Clay
1.95	9.00	1.91	93.31	
1.38	9.50	1.26	94.58	
0.98	10.00	0.94	95.51	
0.69	10.50	0.80	96.31	
0.49	11.00	0.76	97.07	
<0.49	>11	2.48	100.00	



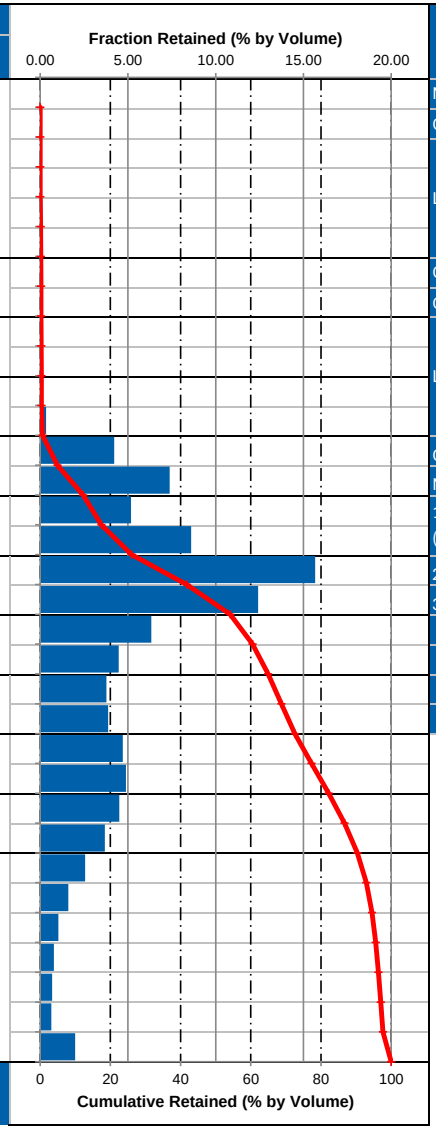
Method of Moments			
Geometric	Mean (µm)	31.76	Wentworth:
Logarithmic	Mean (Phi)	4.93	Coarse silt
	Sorting	2.34	Very poor
	Skewness	1.05	Fine
	Kurtosis	3.60	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	35.37	Wentworth:
Logarithmic	Mean (Phi)	4.82	Coarse silt
	Sorting	2.22	Very poor
	Skewness	0.56	Very fine
	Kurtosis	0.87	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.02	61.67	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	49.80%
EUNIS Folk	Mud and sandy mud	Sand	49.80%
Distribution	Multimodal	Gravel	0.00%



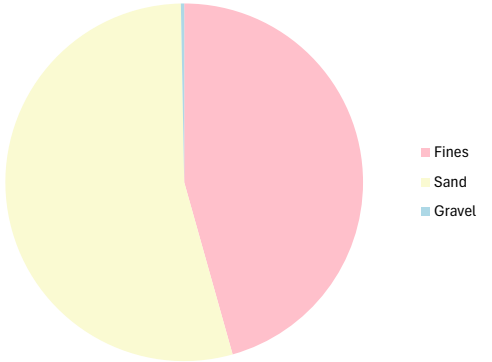
APPENDIX F PARTICLE SIZE ANALYSIS

ENV125				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.12	0.12	
4000.00	-2.00	0.07	0.20	
2828.43	-1.50	0.03	0.22	Granule
2000.00	-1.00	0.03	0.25	
1414.21	-0.50	0.03	0.28	Very coarse sand
1000.00	0.00	0.04	0.33	
707.11	0.50	0.00	0.33	Coarse sand
500.00	1.00	0.33	0.66	
353.55	1.50	4.22	4.88	Medium sand
250.00	2.00	7.38	12.26	
176.78	2.50	5.17	17.43	Fine sand
125.00	3.00	8.61	26.04	
88.39	3.50	15.67	41.71	Very fine sand
62.50	4.00	12.42	54.12	
44.19	4.50	6.33	60.46	Coarse silt
31.25	5.00	4.47	64.93	
22.10	5.50	3.77	68.71	Medium silt
15.63	6.00	3.87	72.58	
11.05	6.50	4.70	77.29	Fine silt
7.81	7.00	4.89	82.17	
5.52	7.50	4.51	86.68	Very fine silt
3.91	8.00	3.68	90.36	
2.76	8.50	2.56	92.92	
1.95	9.00	1.60	94.53	
1.38	9.50	1.04	95.57	
0.98	10.00	0.78	96.35	Clay
0.69	10.50	0.68	97.02	
0.49	11.00	0.64	97.66	
<0.49	>11	1.99	100.00	



Method of Moments			
Geometric	Mean (µm)	41.86	Wentworth:
Logarithmic	Mean (Phi)	4.54	Coarse silt
	Sorting	2.43	Very poor
	Skewness	0.89	Fine
	Kurtosis	3.58	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	45.24	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.38	Very poor
	Skewness	0.39	Very fine
	Kurtosis	0.95	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.83	70.13	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	2.00	250.00	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

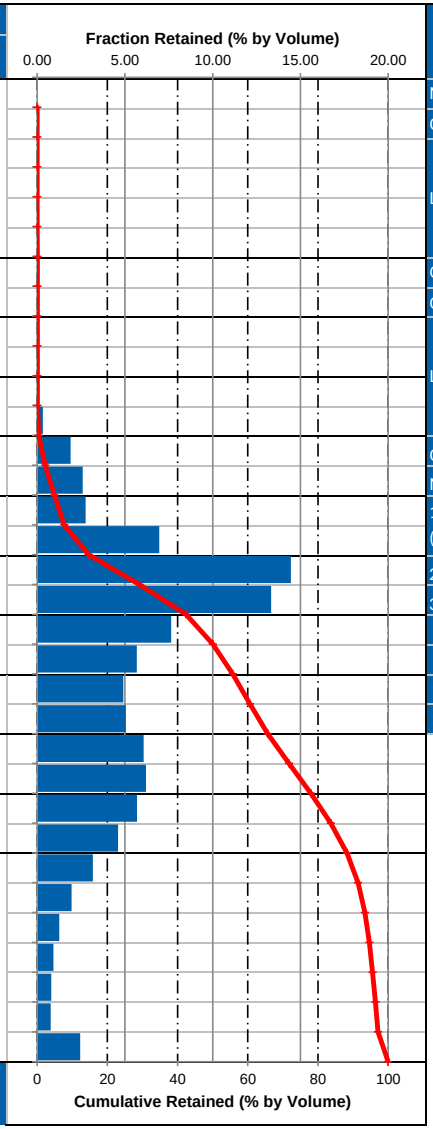
Classification		Composition	
Modified Folk	Muddy sand	Fines	45.50%
EUNIS Folk	Mud and sandy mud	Sand	53.90%
Distribution	Multimodal	Gravel	0.30%



APPENDIX F PARTICLE SIZE ANALYSIS

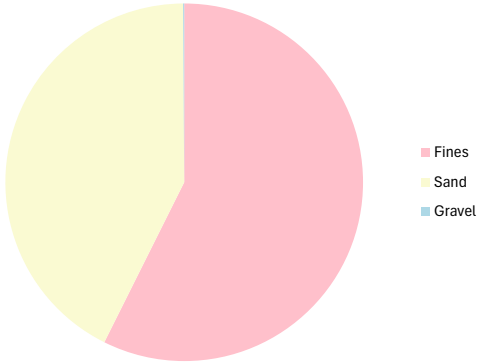
ENV126

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.00	0.05	Granule
2000.00	-1.00	0.00	0.05	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.02	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.33	0.41	
353.55	1.50	1.90	2.31	Medium sand
250.00	2.00	2.60	4.91	
176.78	2.50	2.77	7.67	Fine sand
125.00	3.00	6.95	14.62	
88.39	3.50	14.45	29.08	Very fine sand
62.50	4.00	13.33	42.41	
44.19	4.50	7.63	50.04	Coarse silt
31.25	5.00	5.67	55.71	
22.10	5.50	4.91	60.62	Medium silt
15.63	6.00	5.05	65.67	
11.05	6.50	6.07	71.74	Fine silt
7.81	7.00	6.20	77.94	
5.52	7.50	5.68	83.63	Very fine silt
3.91	8.00	4.61	88.24	
2.76	8.50	3.17	91.41	Clay
1.95	9.00	1.96	93.37	
1.38	9.50	1.25	94.63	
0.98	10.00	0.92	95.55	
0.69	10.50	0.80	96.35	
0.49	11.00	0.77	97.11	
<0.49	>11	2.45	100.00	



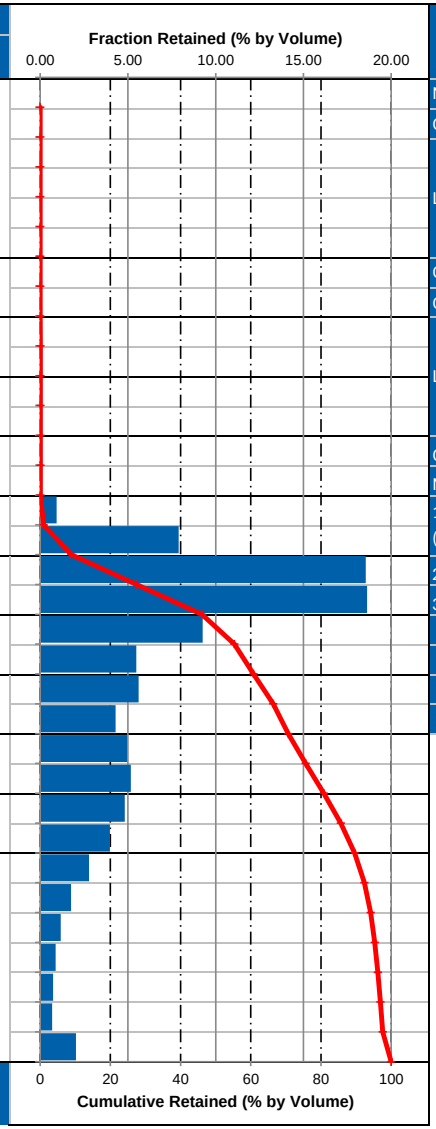
Method of Moments			
Geometric	Mean (µm)	28.33	Wentworth:
Logarithmic	Mean (Phi)	5.10	Medium silt
	Sorting	2.35	Very poor
	Skewness	0.81	Fine
	Kurtosis	3.38	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	30.64	Wentworth:
Logarithmic	Mean (Phi)	5.03	Medium silt
	Sorting	2.29	Very poor
	Skewness	0.35	Very fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.50	44.28	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	57.20%
EUNIS Folk	Mud and sandy mud	Sand	42.40%
Distribution	Bimodal	Gravel	0.10%



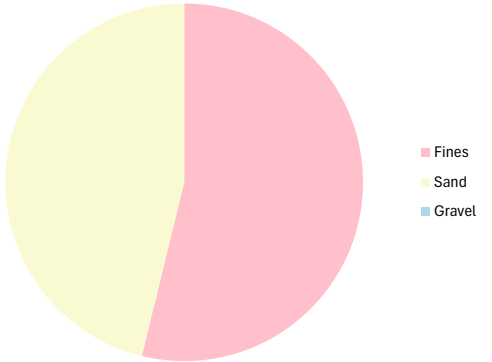
APPENDIX F PARTICLE SIZE ANALYSIS

ENV127				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.01	0.04	
707.11	0.50	0.00	0.04	Coarse sand
500.00	1.00	0.00	0.04	
353.55	1.50	0.00	0.04	Medium sand
250.00	2.00	0.01	0.05	
176.78	2.50	0.93	0.98	Fine sand
125.00	3.00	7.89	8.87	
88.39	3.50	18.55	27.42	Very fine sand
62.50	4.00	18.63	46.05	
44.19	4.50	9.25	55.30	Coarse silt
31.25	5.00	5.47	60.78	
22.10	5.50	5.61	66.39	Medium silt
15.63	6.00	4.30	70.68	
11.05	6.50	4.96	75.64	Fine silt
7.81	7.00	5.16	80.80	
5.52	7.50	4.82	85.62	Very fine silt
3.91	8.00	3.97	89.59	
2.76	8.50	2.78	92.37	Clay
1.95	9.00	1.76	94.13	
1.38	9.50	1.17	95.31	
0.98	10.00	0.88	96.19	
0.69	10.50	0.74	96.93	
0.49	11.00	0.68	97.61	
<0.49	>11	2.04	100.00	



Method of Moments			
Geometric	Mean (µm)	30.10	Wentworth:
Logarithmic	Mean (Phi)	5.02	Medium silt
	Sorting	2.14	Very poor
	Skewness	1.21	Fine
	Kurtosis	4.05	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	33.20	Wentworth:
Logarithmic	Mean (Phi)	4.91	Coarse silt
	Sorting	2.04	Very poor
	Skewness	0.53	Very fine
	Kurtosis	0.90	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.21	53.90	Coarse silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

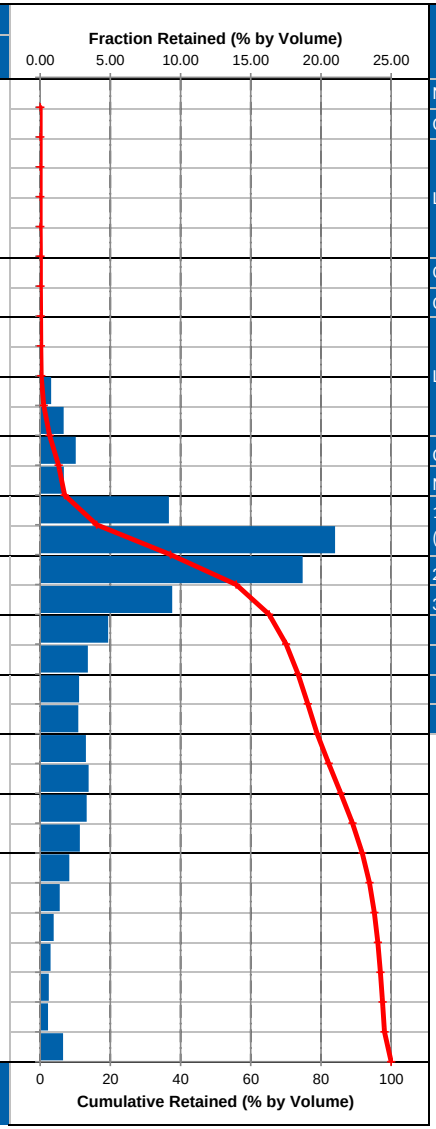
Classification		Composition	
Modified Folk	Sandy mud	Fines	53.60%
EUNIS Folk	Mud and sandy mud	Sand	46.00%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

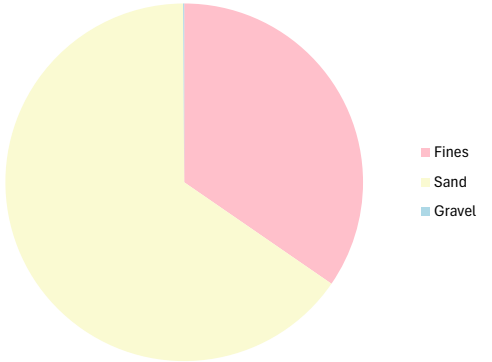
ENV128

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.07	0.07	
2828.43	-1.50	0.01	0.07	Granule
2000.00	-1.00	0.06	0.14	
1414.21	-0.50	0.02	0.16	Very coarse sand
1000.00	0.00	0.10	0.26	
707.11	0.50	0.77	1.03	Coarse sand
500.00	1.00	1.67	2.70	
353.55	1.50	2.54	5.24	Medium sand
250.00	2.00	1.69	6.94	
176.78	2.50	9.17	16.11	Fine sand
125.00	3.00	21.01	37.11	
88.39	3.50	18.69	55.80	Very fine sand
62.50	4.00	9.40	65.20	
44.19	4.50	4.84	70.04	Coarse silt
31.25	5.00	3.39	73.44	
22.10	5.50	2.76	76.20	Medium silt
15.63	6.00	2.72	78.92	
11.05	6.50	3.26	82.18	Fine silt
7.81	7.00	3.45	85.63	
5.52	7.50	3.31	88.94	Very fine silt
3.91	8.00	2.82	91.76	
2.76	8.50	2.07	93.83	Clay
1.95	9.00	1.39	95.22	
1.38	9.50	0.96	96.18	
0.98	10.00	0.73	96.92	
0.69	10.50	0.62	97.54	
0.49	11.00	0.56	98.09	
<0.49	>11	1.63	100.00	



Method of Moments			
Geometric	Mean (µm)	55.25	Wentworth:
Logarithmic	Mean (Phi)	4.15	Coarse silt
	Sorting	2.31	Very poor
	Skewness	1.26	Fine
	Kurtosis	4.39	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	54.38	Wentworth:
Logarithmic	Mean (Phi)	4.20	Coarse silt
	Sorting	2.20	Very poor
	Skewness	0.55	Very fine
	Kurtosis	1.19	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.34	98.43	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

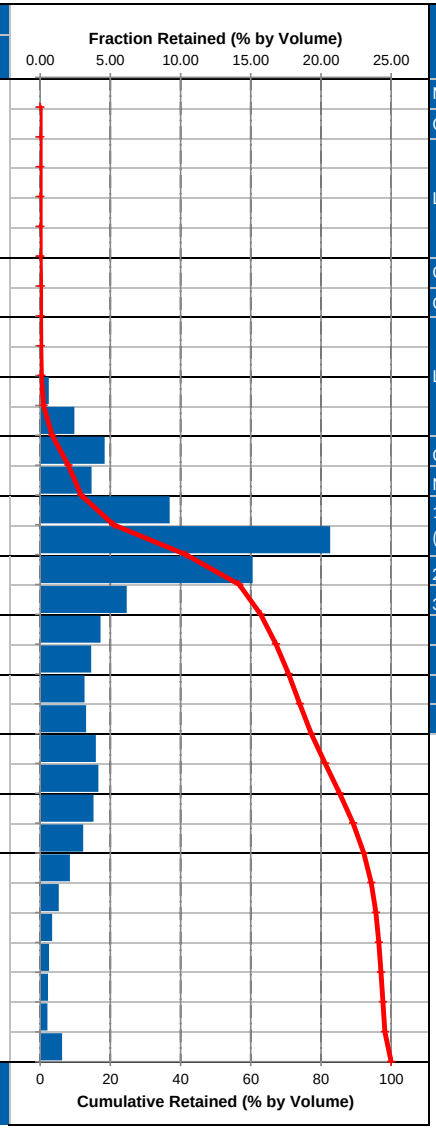
Classification		Composition	
Modified Folk	Muddy sand	Fines	34.50%
EUNIS Folk	Mud and sandy mud	Sand	65.10%
Distribution	Multimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

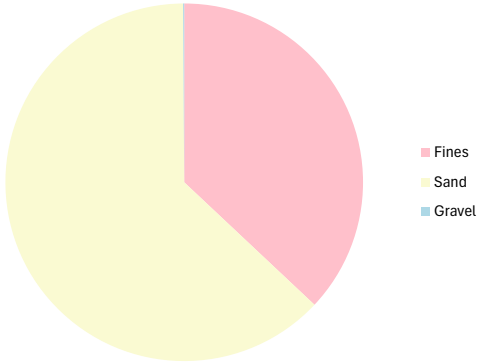
ENV129

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.08	0.11	Granule
2000.00	-1.00	0.03	0.14	
1414.21	-0.50	0.05	0.19	Very coarse sand
1000.00	0.00	0.16	0.35	
707.11	0.50	0.62	0.96	Coarse sand
500.00	1.00	2.44	3.40	
353.55	1.50	4.59	8.00	Medium sand
250.00	2.00	3.67	11.66	
176.78	2.50	9.22	20.88	Fine sand
125.00	3.00	20.65	41.54	
88.39	3.50	15.13	56.67	Very fine sand
62.50	4.00	6.16	62.84	
44.19	4.50	4.30	67.13	Coarse silt
31.25	5.00	3.64	70.77	
22.10	5.50	3.16	73.93	Medium silt
15.63	6.00	3.27	77.21	
11.05	6.50	3.97	81.18	Fine silt
7.81	7.00	4.15	85.32	
5.52	7.50	3.80	89.12	Very fine silt
3.91	8.00	3.07	92.19	
2.76	8.50	2.12	94.31	
1.95	9.00	1.32	95.63	
1.38	9.50	0.84	96.47	
0.98	10.00	0.63	97.10	Clay
0.69	10.50	0.55	97.66	
0.49	11.00	0.52	98.18	
<0.49	>11	1.55	100.00	



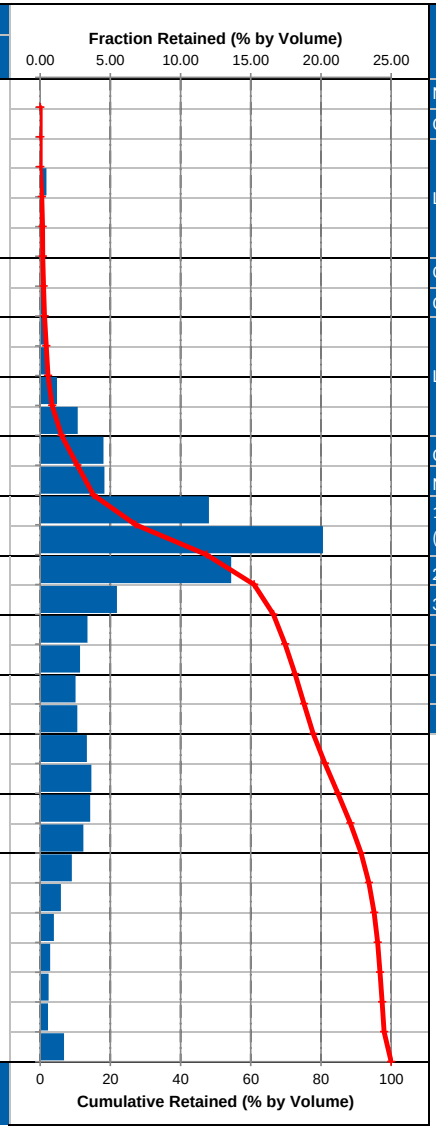
Method of Moments			
Geometric	Mean (µm)	56.66	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	2.39	Very poor
	Skewness	1.08	Fine
	Kurtosis	3.87	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	57.57	Wentworth:
Logarithmic	Mean (Phi)	4.12	Coarse silt
	Sorting	2.30	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.02	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.28	102.98	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	36.90%
EUNIS Folk	Mud and sandy mud	Sand	62.70%
Distribution	Multimodal	Gravel	0.10%



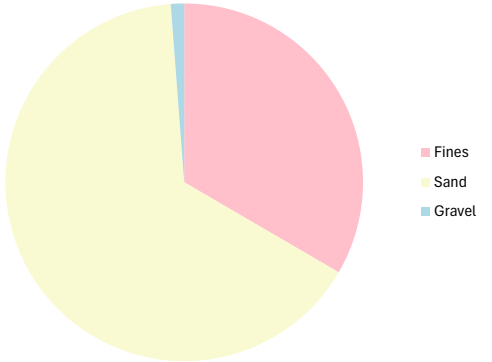
APPENDIX F PARTICLE SIZE ANALYSIS

ENV130				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.45	0.45	
5656.85	-2.50	0.24	0.68	
4000.00	-2.00	0.05	0.73	
2828.43	-1.50	0.21	0.94	Granule
2000.00	-1.00	0.31	1.24	
1414.21	-0.50	0.49	1.73	Very coarse sand
1000.00	0.00	0.48	2.21	
707.11	0.50	1.20	3.42	Coarse sand
500.00	1.00	2.68	6.09	
353.55	1.50	4.50	10.60	Medium sand
250.00	2.00	4.58	15.17	
176.78	2.50	12.03	27.20	Fine sand
125.00	3.00	20.15	47.34	
88.39	3.50	13.60	60.95	Very fine sand
62.50	4.00	5.47	66.42	
44.19	4.50	3.37	69.79	Coarse silt
31.25	5.00	2.84	72.63	
22.10	5.50	2.52	75.15	Medium silt
15.63	6.00	2.65	77.80	
11.05	6.50	3.32	81.12	Fine silt
7.81	7.00	3.65	84.77	
5.52	7.50	3.57	88.34	Very fine silt
3.91	8.00	3.07	91.41	
2.76	8.50	2.26	93.67	
1.95	9.00	1.48	95.15	
1.38	9.50	0.97	96.12	
0.98	10.00	0.72	96.84	Clay
0.69	10.50	0.61	97.45	
0.49	11.00	0.56	98.01	
<0.49	>11	1.70	100.00	



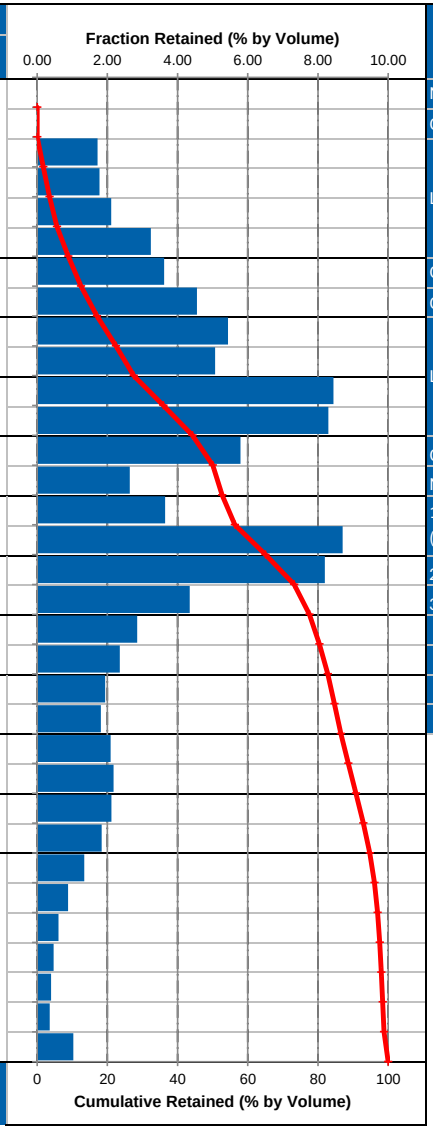
Method of Moments			
Geometric	Mean (µm)	65.15	Wentworth:
Logarithmic	Mean (Phi)	3.91	Very fine sand
	Sorting	2.59	Very poor
	Skewness	0.89	Fine
	Kurtosis	3.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	62.12	Wentworth:
Logarithmic	Mean (Phi)	4.01	Coarse silt
	Sorting	2.45	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.09	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.10	116.82	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	33.30%
EUNIS Folk	Mud and sandy mud	Sand	65.20%
Distribution	Bimodal	Gravel	1.20%



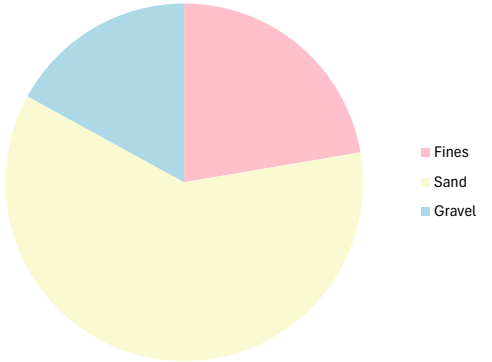
APPENDIX F PARTICLE SIZE ANALYSIS

ENV131				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	1.72	1.72	Pebble
8000.00	-3.00	1.78	3.50	
5656.85	-2.50	2.11	5.61	
4000.00	-2.00	3.24	8.84	
2828.43	-1.50	3.62	12.46	Granule
2000.00	-1.00	4.55	17.01	
1414.21	-0.50	5.44	22.45	Very coarse sand
1000.00	0.00	5.07	27.51	
707.11	0.50	8.44	35.95	Coarse sand
500.00	1.00	8.30	44.25	
353.55	1.50	5.79	50.05	Medium sand
250.00	2.00	2.64	52.68	
176.78	2.50	3.64	56.32	Fine sand
125.00	3.00	8.70	65.03	
88.39	3.50	8.20	73.23	Very fine sand
62.50	4.00	4.35	77.57	
44.19	4.50	2.85	80.42	Coarse silt
31.25	5.00	2.35	82.77	
22.10	5.50	1.94	84.71	Medium silt
15.63	6.00	1.82	86.53	
11.05	6.50	2.09	88.62	Fine silt
7.81	7.00	2.17	90.80	
5.52	7.50	2.12	92.91	Very fine silt
3.91	8.00	1.84	94.75	
2.76	8.50	1.34	96.09	
1.95	9.00	0.88	96.97	
1.38	9.50	0.61	97.58	
0.98	10.00	0.47	98.05	Clay
0.69	10.50	0.39	98.44	
0.49	11.00	0.36	98.79	
<0.49	>11	1.03	100.00	



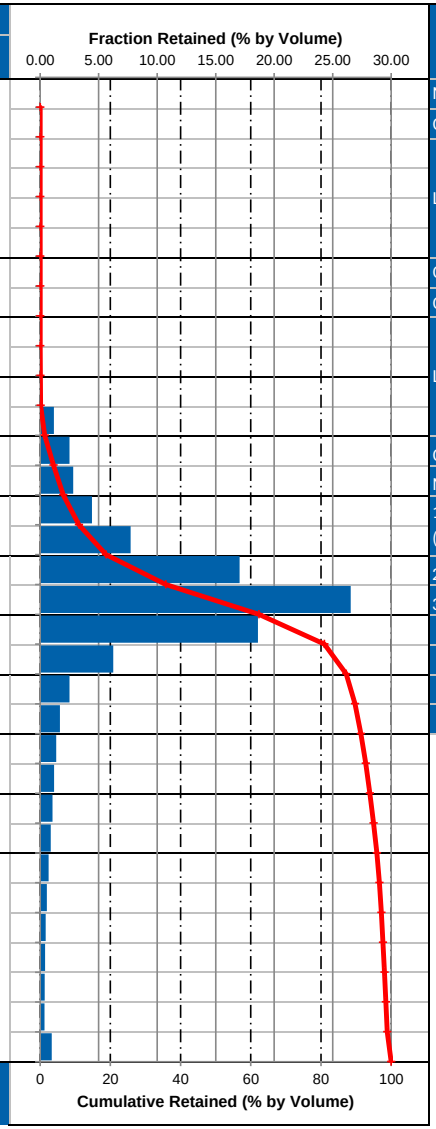
Method of Moments			
Geometric	Mean (µm)	242.11	Wentworth:
Logarithmic	Mean (Phi)	2.03	Fine sand
	Sorting	3.23	Very poor
	Skewness	0.63	Fine
	Kurtosis	3.15	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	267.86	Wentworth:
Logarithmic	Mean (Phi)	1.90	Medium sand
	Sorting	3.23	Very poor
	Skewness	0.21	Fine
	Kurtosis	1.11	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.50	354.51	Medium sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	0.50	707.11	Coarse sand
3rd Local Maxima	-0.50	1414.21	Very coarse sand

Classification		Composition	
Modified Folk	Gravelly muddy sand	Fines	22.30%
EUNIS Folk	Mixed sediments	Sand	60.60%
Distribution	Multimodal	Gravel	17.00%



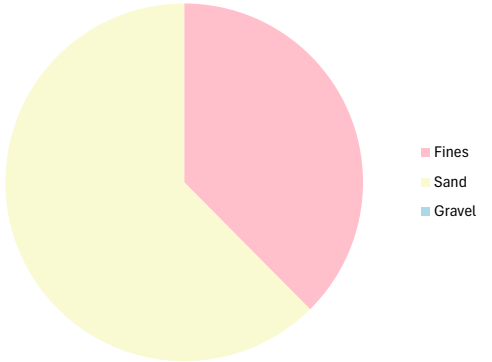
APPENDIX F PARTICLE SIZE ANALYSIS

ENV132				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	Pebble
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.03	0.04	
707.11	0.50	0.06	0.10	Coarse sand
500.00	1.00	1.17	1.27	
353.55	1.50	2.50	3.77	Medium sand
250.00	2.00	2.82	6.59	
176.78	2.50	4.42	11.01	Fine sand
125.00	3.00	7.74	18.75	
88.39	3.50	17.04	35.78	Very fine sand
62.50	4.00	26.55	62.33	
44.19	4.50	18.61	80.94	Coarse silt
31.25	5.00	6.24	87.18	
22.10	5.50	2.50	89.68	Medium silt
15.63	6.00	1.69	91.37	
11.05	6.50	1.38	92.75	Fine silt
7.81	7.00	1.19	93.94	
5.52	7.50	1.06	95.00	Very fine silt
3.91	8.00	0.90	95.91	
2.76	8.50	0.72	96.63	Clay
1.95	9.00	0.57	97.19	
1.38	9.50	0.47	97.67	
0.98	10.00	0.42	98.09	
0.69	10.50	0.39	98.49	
0.49	11.00	0.36	98.85	
<0.49	>11	0.99	100.00	



Method of Moments			
Geometric	Mean (µm)	63.05	Wentworth:
Logarithmic	Mean (Phi)	3.97	Very fine sand
	Sorting	1.69	Poor
	Skewness	1.99	Very fine
	Kurtosis	9.40	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	72.87	Wentworth:
Logarithmic	Mean (Phi)	3.78	Very fine sand
	Sorting	1.36	Poor
	Skewness	0.15	Fine
	Kurtosis	2.05	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.77	73.42	Very fine sand
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

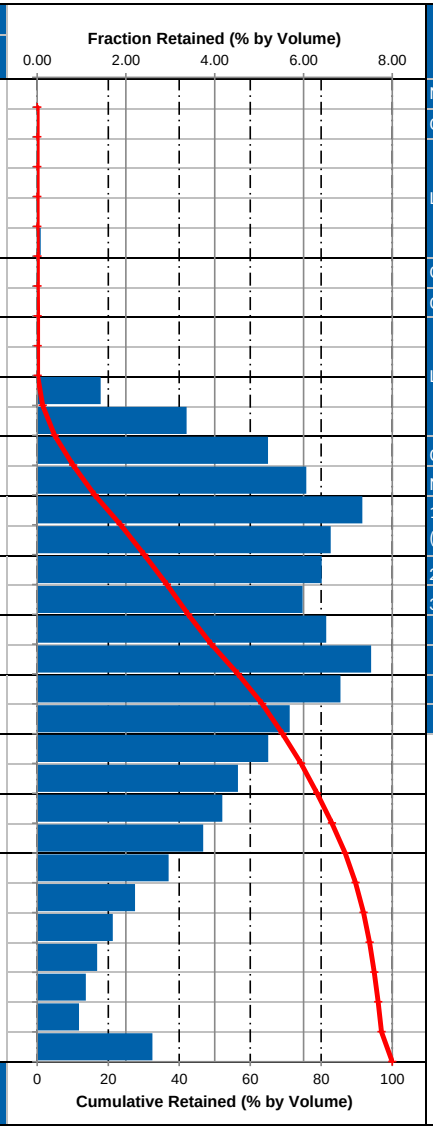
Classification		Composition	
Modified Folk	Muddy sand	Fines	37.50%
EUNIS Folk	Mud and sandy mud	Sand	62.30%
Distribution	Unimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

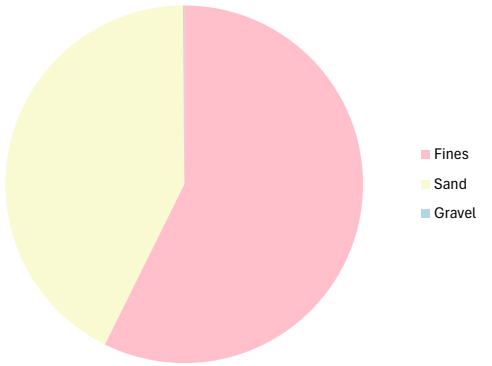
ENV133

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
22627.42	-4.50	0.00	0.00	
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	Pebble
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.08	0.08	
2828.43	-1.50	0.00	0.08	Granule
2000.00	-1.00	0.02	0.10	
1414.21	-0.50	0.01	0.10	Very coarse sand
1000.00	0.00	0.02	0.12	
707.11	0.50	1.43	1.55	Coarse sand
500.00	1.00	3.37	4.92	
353.55	1.50	5.20	10.12	Medium sand
250.00	2.00	6.06	16.19	
176.78	2.50	7.33	23.51	Fine sand
125.00	3.00	6.61	30.13	
88.39	3.50	6.41	36.54	Very fine sand
62.50	4.00	5.98	42.52	
44.19	4.50	6.51	49.03	Coarse silt
31.25	5.00	7.52	56.55	
22.10	5.50	6.83	63.39	Medium silt
15.63	6.00	5.69	69.08	
11.05	6.50	5.21	74.28	Fine silt
7.81	7.00	4.52	78.81	
5.52	7.50	4.17	82.98	Very fine silt
3.91	8.00	3.74	86.72	
2.76	8.50	2.96	89.68	
1.95	9.00	2.20	91.88	
1.38	9.50	1.70	93.59	
0.98	10.00	1.35	94.94	Clay
0.69	10.50	1.10	96.04	
0.49	11.00	0.94	96.98	
<0.49	>11	2.60	100.00	



Method of Moments			
Geometric	Mean (µm)	35.62	Wentworth:
Logarithmic	Mean (Phi)	4.77	Coarse silt
	Sorting	2.71	Very poor
	Skewness	0.58	Fine
	Kurtosis	2.87	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	37.72	Wentworth:
Logarithmic	Mean (Phi)	4.73	Coarse silt
	Sorting	2.78	Very poor
	Skewness	0.15	Fine
	Kurtosis	0.93	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.56	42.26	Coarse silt
1st Local Maxima (Mode)	5.00	31.25	Coarse silt
2nd Local Maxima	2.50	176.78	Fine sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	57.10%
EUNIS Folk	Mud and sandy mud	Sand	42.40%
Distribution	Bimodal	Gravel	0.10%



Appendix E Gardline Ltd. (2025) Environmental Baseline Report

Survey Report for:
Morven Offshore Wind Limited

Project:
Morven Grid Connection 1 Route Environmental Survey

Description:
Environmental Baseline Survey Report

Survey Date:
August and September 2024

Project Number:
59294

Client Reference:
CW204658

Report Status:
Rev0

REPORT AUTHORISATION AND DISTRIBUTION

Compilation	Geophysics	A Wuestner
	Surveying	R Grice
	Environmental	M Bishop
Authorisation	Checked	K Sanders/S Lines
	Approved	G Allen

Revision	Date	Title	Description
0	28-Feb-2025	Draft	pdf

Distribution

Morven Offshore Wind Ltd
Chertsey Road
Sunbury on Thames
TW16 7BP

For attention of

Simon Dykes
simon.dykes@se1.bp.com

EXECUTIVE SUMMARY

During August and September 2024, Gardline conducted a UXO pre-clearance and environmental survey on behalf of Morven Offshore Wind Limited along the proposed Morven Grid Connection 1 (GC1) route (hereafter; the route) from the proposed Morven offshore wind farm to landfall near Sunderland. The offshore survey was conducted onboard the motor vessel (MV) *Ocean Reliance* between 06-Aug-2024 and 21-Aug-2024, with the nearshore survey conducted onboard the MV *Titan Endeavour* between 30-Aug-2024 and 18-Sep-2024.

The aims of the environmental survey were to determine the characteristics of the seabed, benthic and pelagic communities and to identify any environmentally significant species or habitats.

A total of 54 stations were pre-selected along the route. This comprised 8 stations located within the northern area, mostly in Scottish waters, 13 stations in the central area and 33 stations in the southern area, located in English waters. A further 2 stations and 3 video transects were added to the nearshore survey during data acquisition. At all 59 locations drop-down camera data were successfully acquired. Sediment sampling was conducted at 52 stations along the route, of these the required suite of samples, as per the benthic scoping document (Gardline, 2023a), was obtained at 49 stations. All retained samples were acquired using a 0.1m^2 Day grab. Grab samples were acquired approximately every 2 to 4km. Further, water sampling was successfully conducted at all 34 planned stations. Observed water depth varied between 11 and 93m along the route.

Samples for particle size analysis (PSA) were collected at 49 stations along the route. Sediments were heterogeneous, displaying varied particle size distributions, ranging from very poorly to moderately sorted under Folk and Ward (1957). Most stations were classified as muddy sand (n=26; 53%) or sandy mud (n=12; 24%) under the modified Folk (1954), and mean particle diameter ranged between 12 and 927µm. Across the survey area, all stations had a negligible (<5%) gravel (≥2mm) content, except for Stations ENV214 and ENV222 which had 30% and 55% gravel content, respectively and were classified as muddy sandy gravel (Folk, 1954). All stations in the northern and central areas were dominated by sand (≥63µm and <2mm; >72%), whereas fifteen stations in the southern area were dominated (>50%) by sand and twelve were dominated (>50%) by fines (<63µm;silt and clay). Relative to the wider context, sediments along the route were broadly consistent with background for this region of the North Sea (UKOOA, 2001).

Concentrations of total organic carbon (TOC) were ≤0.28% in the northern and central areas and reached a maximum of 5.13% in the southern area other than at Stations ENV221 and ENV200 where significantly higher TOC concentrations of 9.23% and 12.40% were recorded, respectively. A similar spatial trend of variable TOC content along the southern end of the ECR was recorded in the comparison survey (Gardline, 2024b).

Total hydrocarbons (THC) were analysed using ultra-violet fluorescence spectroscopy (UVFS) at 30 stations to meet MMO (2023) guidelines. These THC by UVFS concentrations were ≤2.7µg g^{-1} in the northern and central areas and, correlating with TOC, ranged from 15.5µg g^{-1} at Station ENV186 to 572µg g^{-1} at Station ENV221 within the southern area. At ≥339µg g^{-1}, the THC by UVFS concentrations at four stations in the southern area (Stations ENV222, ENV221, ENV200 and ENV201), exceeded thresholds identified by Mair *et al.* (1987) as sufficient to potentially adversely affect the faunal community.

Additionally, concentrations of THC were analysed by gas chromatography flame ionisation (GC-FID) at four stations located in Scottish waters. These THC by GC-FID concentrations ranged from 2.2µg g^{-1} to 4.5µg g^{-1} with a mean of 3.5µg g^{-1} (±1.0SD), which is consistent with background for central North Sea (CNS) stations over 5km from existing infrastructure as reported by UKOOA (2001).

The MMO (2023) stipulated polycyclic aromatic hydrocarbon (PAH) compounds were analysed at 30 stations. These total PAH concentrations were ≤0.120µg g^{-1} in the northern and central areas. However, in the southern

area, these total PAH concentrations ranged from 1.042µg g^{-1} to 14.468µg g^{-1} and were significantly higher at Stations ENV221 and ENV200, where respective concentrations of 25.420µg g^{-1} and 28.080µg g^{-1} exceeded the ERM value (Long *et al.*, 1995) and may therefore have toxic effects on fauna. The molecular mass indices identified predominantly pyrogenic PAHs at all stations, with potentially mixed sources at Stations ENV201 and ENV237 for the 178 molecular weight index.

The four stations in Scottish waters were additionally analysed by GC mass spectroscopy (GC-MS), with these giving total PAH concentrations of ≤0.012µg g^{-1}. Low naphthalene, phenanthrene and dibenzothiophene (NPD) concentrations across the four Scottish stations further supports the lack of petrogenic contamination along the northern area of the route.

At 30 stations, concentrations of 25 polychlorinated biphenyl (PCB) congeners were analysed by GC-MS-MS with results below the limit of detection (LOD) other than at 17 stations in the southern area of the route. No concentrations exceeded the Cefas Action Level (CAL) 1 or the Long *et al*. (1995) effects range low (ERL) thresholds. The only OSPAR (2009a) Environmental Assessment Criteria (EAC) threshold exceeded was for PCB118 at Station ENV203. Concentrations of PCB118 were similar to those of PCB153, which according to OSPAR (2013) indicates that toxicological effects of PCBs may be apparent.

Following extraction by aqua regia to comply with MMO (2023) specification, metals were directly compared to CALs (MMO, 2023), Buchman (2008) apparent effects thresholds (AETs), Long *et al.* (1995) ERL and effects range median (ERM) values. Arsenic (As), lead, nickel and zinc recorded concentrations exceeding CAL 1 at one or more southern area stations, with no analyte exceeding CAL 2. Following hydrofluoric acid extraction, metal concentrations for the Scottish stations were below the relevant AET and ERL values, with the exception of As at Station ENV179 which was below the ERM. The spatial trend of lower metal concentrations at the northern and central stations, and variable metal concentrations at the southern stations was consistent with the previous survey along the ECR (Gardline, 2024b).

Organotin concentrations were below LOD at sixteen stations along the route. Where organotins were above LOD, no concentrations exceeded the CAL 1 value.

Concentrations of organochloropesticides were below LOD other than at the twenty stations in the southern area of the route. Where CALs were available, only p,p'-Dichlorodiphenyltrichloroethane (DDT) concentrations at Stations ENV205 and ENV221 were above CAL 1. Concentrations of dieldrin and/or p,p'- dichlorodiphenyldichloroethane (TDE) exceeded ERL at seven stations indicating that sensitive species may be impacted.

Analysis of environmental DNA (eDNA) detected a total of 1484 operational taxonomic units (OTUs) comprising 1197 sediment bacterial OTUs, 159 sediment infauna OTUs, 17 sediment fish OTUs, 73 water fish OTUs and 6 marine mammal OTUs. Dominant groups from these respective data sets included Gammaproteobacteria, Polychaeta and Copepoda, Pleuronectidae, Gadidae and Delphinidae and were consistent with those recorded in the comparison survey (Gardline, 2024b). The sediment bacterial community was distinct at nearshore stations in water depths <30m, as was the fish community in water samples from the three shallowest stations.

The macrofaunal analysis recorded 22583 individuals representing 353 taxa and 137.4817g of biomass from the 49 stations sampled along the route. The macrofaunal community was characterised by a dominance of Annelida (Polychaeta) most notably at the stations with muddy sand in the central area, with *Paramphinome jeffreysii* a characterising taxon. At nearshore stations, Mollusca was the more populous group, with *Spisula* a characterising taxon.

With consideration of the particle size analysis and macrofaunal results, the heterogeneous route was classified to three Level 5 EUNIS biotope codes comprising MB5238: *Spisula subtruncata* and *Nephtys hombergii* in Atlantic infralittoral muddy sand at most southern area stations in water depths of <40m, MD6218: *Paramphinome jeffreysii*, *Thyasira spp*. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud at central and northern area stations and MD6217: *Levinsenia gracilis* and *Heteromastus filiformis* in Atlantic offshore circalittoral mud and sandy mud across the remaining southern area stations.

Report	Report Number
Morven Grid Connection 1 Environmental Survey Operations Report	59294
Morven GC1 Route Benthic Scoping Document	59294.E0
Morven Grid Connection 1 Route Environmental Survey Offshore Field Report	59294.E1
Morven Grid Connection 1 Route Environmental Survey Nearshore Field Report	59294.E2
Morven Grid Connection 1 Route Environmental Survey Habitat Assessment Report	59294.E3
Morven Grid Connection 1 Route Environmental Survey Environmental Baseline Survey	59294.E4

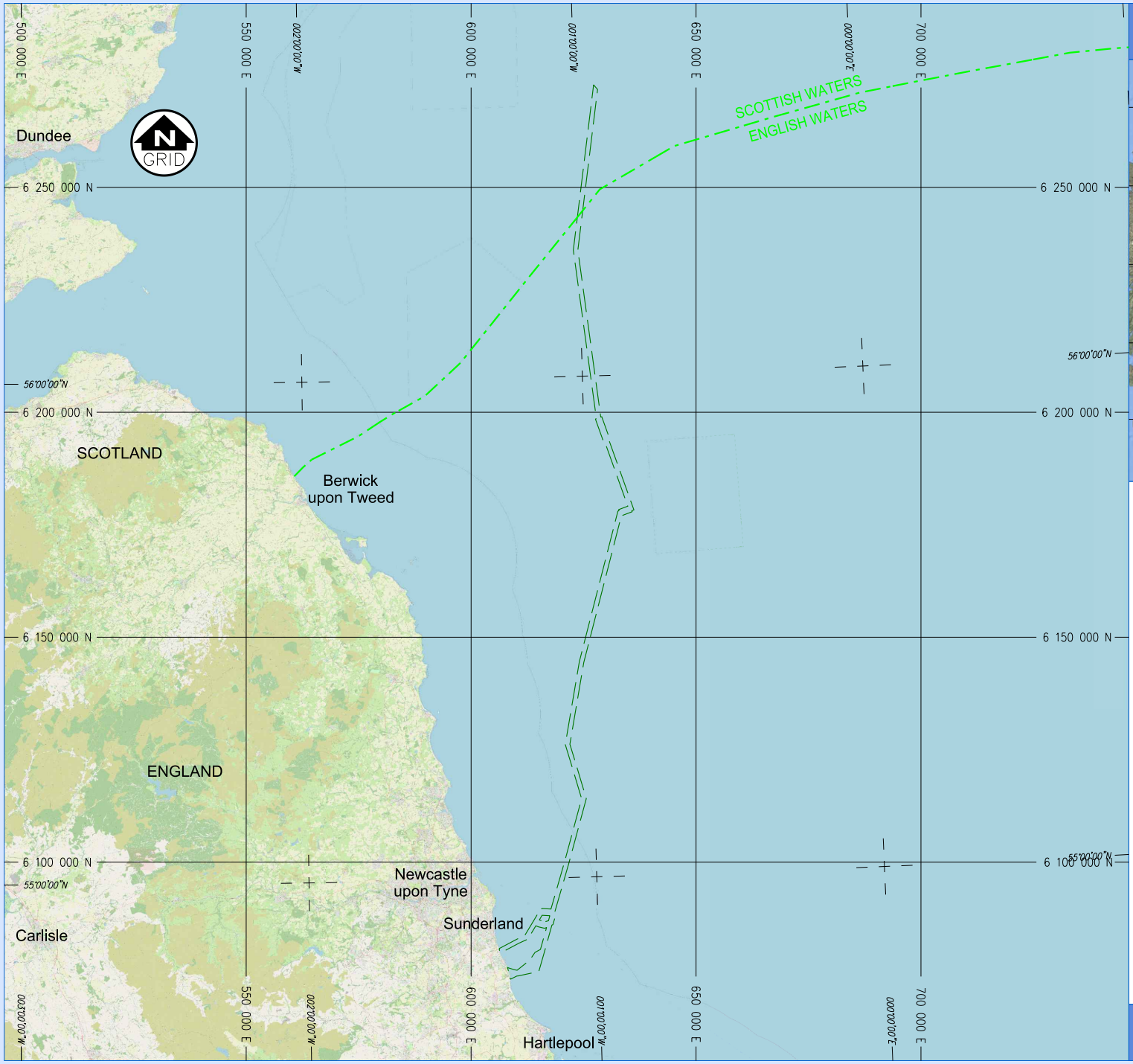
USE OF THIS REPORT

This report has been prepared with due care and diligence and with the skill reasonably expected of a reputable contractor experienced in the types of work carried out under the contract and as such the findings in this report are based on an interpretation of data which is a matter of opinion on which professionals may differ and unless clearly stated is not a recommendation of any course of action.

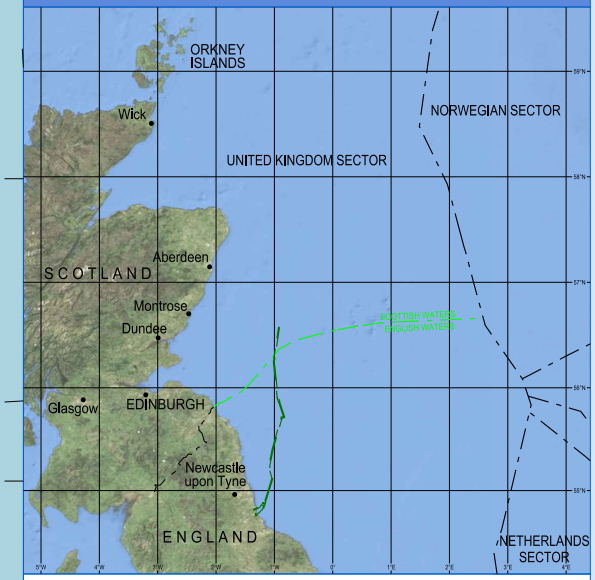
Gardline Limited has prepared this report for the client identified on the front cover in fulfilment of its contractual obligations under the referenced contract and the only liabilities Gardline Limited accept are those contained therein.

Please be aware that further distribution of this report, in whole or part, or the use of the data for a purpose not expressly stated within the contractual work scope is at the client's sole risk and Gardline Limited recommends that this disclaimer be included in any such distribution.

GARDLINE LIMITED
Endeavour House, Admiralty Road, Great Yarmouth, Norfolk, NR30 3NG, England
Telephone +44 (0) 1493 845 600 Fax +44 (0) 1493852106
www.gardline.com



LOCATION MAP
Morven Grid Connection 1 Route



LEGEND

CABLE ROUTE CORRIDOR
(POSITION SUPPLIED BY CLIENT)

MARITIME BOUNDARY (POSITION FROM
ADMIRALTY MARITIME DATA SOLUTIONS)

Scale 1 : 1 250 000
ED50/UTM Zone 30N (3°W)

Job No. 59294.E4

TABLE OF CONTENTS

REPORT AUTHORISATION AND DISTRIBUTION II
EXECUTIVE SUMMARY III
USE OF THIS REPORT VI
LOCATION MAP VII
TABLE OF CONTENTS VIII
LIST OF FIGURES IX
LIST OF TABLES XI
GLOSSARY OF TERMS AND ABBREVIATIONS XII
1 INTRODUCTION 1
1.1 Scope of Work 1
1.2 Environmental Survey Strategy 1
1.3 Comparison Data 7
1.4 Published Background Data 9
1.5 Existing Infrastructure 10
2 RESULTS AND DISCUSSION 11
2.1 Geophysical Survey Summary 11
2.2 Seabed Imagery Observations Summary 11
2.3 Sediment Sampling Summary 12
2.4 Sediment Characteristics 13
2.5 Hydrocarbon Concentrations 17
2.6 Metal Concentrations 31
2.7 Organochloropesticides 34
2.8 Statistical Analysis of Sediment Physico-Chemical Results 36
2.9 DNA Metabarcoding Results 41
2.10 OTU Community Structure Using Multivariate Analyses 58
2.11 Multivariate Comparison of Metabarcoding Results to Physico-Chemical Data 66
2.12 Macrofaunal Interpretation 66
2.13 EUNIS Habitat Classification 80
3 BIBLIOGRAPHY 83

APPENDICES
APPENDIX A FIELD SAMPLING LOGS
APPENDIX B METHODS
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS
APPENDIX D BACKGROUND INFORMATION
APPENDIX E PARTICLE SIZE ANALYSIS
APPENDIX F SPEARMAN'S RANK CORRELATION
APPENDIX G HYDROCARBON ANALYSIS
APPENDIX H METALS ANALYSIS
APPENDIX I EDNA ANALYSIS
APPENDIX J MACROFAUNA ANALYSIS
APPENDIX K EUNIS CLASSIFICATION

LIST OF FIGURES

Figure 1.1 Station Overview 6
Figure 2.1 Particle Size Analysis by Station 16
Figure 2.2 Total Hydrocarbon Concentrations and Vessel Density 20
Figure 2.3 PAH Molecular Weight Indices 25
Figure 2.4 Naphthalene and Phenanthrene Parents Versus Alkylated Homologue PAHs 28
Figure 2.5 Dendrogram Showing Analysis of 49 Stations with PSA Data 37
Figure 2.6 MDS Ordination Showing Groupings at Euclidean Distance of 2.5 and 1.5 at 49 Stations 37
Figure 2.7 MDS Ordination with Bubbles Representing the Percentage of Fines, Sand and Gravel at 49 Stations 37
Figure 2.8 Dendrogram Showing 30 Stations with PSA, TOC, PAH and Metal Data 39
Figure 2.9 MDS Ordination Showing Grouping at Euclidean Distance of 5 and 3 at 30 Stations 39
Figure 2.10 MDS Ordination with Bubbles Representing Mean Diameter and Concentrations of PAH, As, Cr and Pb at 30 Stations 39
Figure 2.11 Dendrogram Showing 20 Southern Area Stations with PSA, TOC, THC, PAH, PCBs, OCPs and Metal Data 40
Figure 2.12 MDS Ordination Showing Grouping at Euclidean Distance of 4.2 at 20 Stations 40
Figure 2.13 MDS Ordination with Bubbles Representing Mean Diameter and Concentrations of THC, Cu, Ni and Pb at 20 Stations 40
Figure 2.14 Contributions of Gross Bacterial Sediment OTU Taxonomic Groups 45
Figure 2.15 Contributions of Gross Sediment Infaunal OTU Taxonomic Groups 48
Figure 2.16 Contributions of Gross Sediment Fish OTU Taxonomic Groups (Bacterial Filter) 49
Figure 2.17 Sediment Bacterial Taxonomic Heat Trees of the Number of OTUs 50
Figure 2.18 Sediment Infauna Taxonomic Heat Trees of the Number of OTUs 50
Figure 2.19 Sediment Fish Taxonomic Heat Trees of the Number of OTUs 50
Figure 2.20 OTU Accumulation Curve – Sediment Bacteria 51
Figure 2.21 OTU Accumulation Curve – Sediment Infauna 52
Figure 2.22 OTU Accumulation Curve – Sediment Fish 52
Figure 2.23 Contributions of Gross Water Fish OTU Taxonomic Groups – Standard Filter 55
Figure 2.24 Contributions of Gross Water Fish OTU Taxonomic Groups – Bacterial Filter 55
Figure 2.25 Contributions of Gross Water Marine Mammals OTU Taxonomic Groups – Standard Filter 56
Figure 2.26 Contributions of Gross Water Marine Mammals OTU Taxonomic Groups – Bacterial Filter 56
Figure 2.27 Water Fish OTU Taxonomic Heat Tree – Standard Filter 57
Figure 2.28 Water Fish OTU Taxonomic Heat Tree – Bacterial Filter 57
Figure 2.29 OTU Accumulation Curve – Water Fish (Standard Filter) 58
Figure 2.30 OTU Accumulation Curve – Water Fish (Bacterial Filter) 58
Figure 2.31 Bray-Curtis Similarity Dendrogram of Sediment Bacteria Data 60
Figure 2.32 MDS Ordination Showing Grouping at Bray-Curtis Similarity of 40% 60
Figure 2.33 Bray-Curtis Similarity Dendrogram of Sediment Infauna Data 61
Figure 2.34 nMDS Ordination Plot of Sediment Infauna Data 61
Figure 2.35 Bray-Curtis Similarity Dendrogram of Sediment Fish Data 62
Figure 2.36 nMDS Ordination Plot of Sediment Fish Data 62
Figure 2.37 Bray-Curtis Similarity Dendrogram of Water Fish Data (Standard Filter) 64
Figure 2.38 nMDS Ordination Plot of Water Fish Data (Standard Filter) 64
Figure 2.39 Bray-Curtis Similarity Dendrogram of Water Fish Data (Bacterial Filter) 64
Figure 2.40 nMDS Ordination Plot of Water Fish Data (Bacterial Filter) 64
Figure 2.41 Bray-Curtis Similarity Dendrogram of Water Marine Mammal Water Data (Standard Filter) 65
Figure 2.42 nMDS Ordination Plot of Water Marine Mammal Water Data (Standard Filter) 65
Figure 2.43 Bray-Curtis Similarity Dendrogram of Water Marine Mammal Water Data (Bacterial Filter) 65

Figure 2.44 nMDS Ordination Plot of Water Marine Mammal Water Data (Bacterial Filter) 65
Figure 2.45 Contributions of Gross Taxonomic Groups - Individuals 69
Figure 2.46 Contributions of Gross Taxonomic Groups – Taxa 69
Figure 2.47 Contributions of Gross Taxonomic Groups – Biomass (g) 70
Figure 2.48 Adult Data Set Species Accumulation Curve 73
Figure 2.49 Bray-Curtis Similarity Dendrogram of the Adult Only Abundance Data 78
Figure 2.50 Bray-Curtis Similarity Dendrogram Showing Grouping by Route Section 78
Figure 2.51 MDS Ordinations Showing Grouping at Bray-Curtis Similarity of 35% 78
Figure 2.52 MDS Ordination with Bubbles Representing Four of the Top Ten Ranked Taxa by Abundance 78
Figure 2.53 Bray-Curtis Similarity Dendrogram of the Adult Only Biomass Data 79
Figure 2.54 MDS Ordination with Bubbles Representing Four of the Top Ten Ranked Taxa by Biomass 79

LIST OF TABLES

Table 1.1	Summary of Environmental Sampling Positions and Samples Acquired	3
Table 1.2	Details of Comparable Survey	8
Table 2.1	Sediment Characteristics	15
Table 2.2	THC by UVFS	19
Table 2.3	Summary of Sediment Hydrocarbon Analyses	21
Table 2.4	n-Alkane Concentrations	22
Table 2.5	PAH Concentrations for MMO (2023) Stipulated Compounds	26
Table 2.6	PAH Concentrations	27
Table 2.7	Total Concentrations of PCBs and ICES-7 PCBs at Stations in Southern Area of Route	30
Table 2.8	Sediment Metal Concentrations from Aqua Regia Digestion	32
Table 2.9	Sediment Metal Concentrations from HF Digest	33
Table 2.10	Concentrations of Organotins	34
Table 2.11	Concentrations of Organochloropesticides	35
Table 2.12	Summary of Multivariate Analysis Inputs and Outputs	36
Table 2.13	Protected Fish Species Detected by eDNA	42
Table 2.14	Protected Marine Mammal Species Detected by eDNA	42
Table 2.15	OTU Detections per Target and Percentrage Successfully Classified	43
Table 2.16	Contribution of Gross Sediment Bacteria OTU Taxonomic Groups	43
Table 2.17	Contribution of Gross Sediment Infauna OTU Taxonomic Groups	46
Table 2.18	Contribution of Gross Sediment Fish OTU Taxonomic Groups (Bacterial Filter)	49
Table 2.19	Summary of Sediment Bacteria, Infauna and Fish Taxonomic Richness	50
Table 2.20	Contribution of Gross Water Fish OTU Taxonomic Groups – Standard Filter	54
Table 2.21	Contribution of Gross Water Fish OTU Taxonomic Groups – Bacterial Filter	54
Table 2.22	Contribution of Gross Water Marine Mammal OTU Taxonomic Groups – Standard Filter	54
Table 2.23	Contribution of Gross Water Marine Mammal OTU Taxonomic Groups – Bacterial Filter	54
Table 2.24	Summary of Water Fish and Marine Mammal Taxonomic Richness - Standard Filter	57
Table 2.25	Summary of Water Fish and Marine Mammal Taxonomic Richness - Bacterial Filter	57
Table 2.26	Contribution of Gross Taxonomic Groups	68
Table 2.27	Species Ranking – Abundance	72
Table 2.28	Species Ranking – Biomass	72
Table 2.29	Faunal Univariate Statistics	75
Table 2.30	Taxa Influencing Adult Abundance SIMPROF Variation	77
Table 2.31	Taxa Influencing Adult Biomass SIMPROF Variation	77
Table 2.32	EUNIS Habitat Classification	82

GLOSSARY OF TERMS AND ABBREVIATIONS

AET	Apparent Effects Threshold
Aliphatic	An organic compound having open-chain structure (see Alkane)
Alkane	Any of a series of open-chain, saturated hydrocarbons C_nH_{2n+2} (*e.g.* methane, ethane)
α-HCH	alpha-Hexachlorocyclohexane
Anthropogenic	Produced or caused by human activity
BAC	Background Assessment Criteria
BC(s)	Background Concentration(s)
Benthic	Relating to the seabed
β-HCH	beta-Hexachlorocyclohexane
Biogenic	Produced by living organisms
BRC	Background/Reference Concentrations
BSI	British Standards Institute
CAL	Cefas Action Level
CCC	Continuing Calibration Check
CEMP	Coordinated Environmental Management Programme
Clay	Sediment grains <3.9µm in diameter
CM	Central Meridian
CNS	Central North Sea
CPI	Carbon Preference Index
CRM	Certified Reference Materials
DBT	Dibutyltin
DCM	Dichloromethane
DDE	p,p'-Dichlorodiphenyldichloroethylene
DDT	p,p'-Dichlorodiphenyltrichloroethane
DECC	Department of Energy and Climate Change
EAC	Environmental Assessment Criteria
EBS	Environmental Baseline Survey
ECR	Export Cable Route
eDNA	Environmental DNA
EEA	European Environment Agency
ERL	Effects Range Low
ERM	Effects Range Median
EUNIS	European Union Nature Identification System
Fines	Sediment grains <63µm in diameter (same as Mud)
γ-HCH	gamma-Hexachlorocyclohexane
GC	Gas Chromatography
GC1	Grid Connection 1
GC-FID	Gas Chromatography Flame Ionisation Detection
GC-MS	Gas Chromatography Mass Spectrometry
Gravel	Sediment grains >2mm in diameter
HF	Hydrofluoric Acid
HMW	High Molecular Weight
ICP-OES	Inductively Coupled Plasma Optical Emission Spectrometry
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
IUCN	International Union for Conservation of Nature
LAT	Lowest Astronomical Tide
LMW	Low Molecular Weight
LOD	Limit of Detection
Macrofauna	Organisms that are normally larger than the mesh size of the sieve used. In this case 0.5mm.
MBES	Multi-beam Echo Sounder
MBT	Monobutyltin
MDS	Multi Dimensional Scaling
Meiofauna	Organisms that are usually smaller than the mesh size of the sieve used. In this case 0.5mm.
MMO	Marine Management Organisation
Mud	Sediment grains <63µm (includes Silt and Clay)
MV	Motor Vessel
NDIR	Non-dispersive infrared
NOAA	National Oceanic and Atmospheric Administration
NPD	Naphthalenes, phenanthrenes and dibenzothiophenes
NSTA	North Sea Transition Authority
OCPs	Organochloro Pesticides
OSPAR	Oslo and Paris convention
OTU	Operational Taxonomic Unit
PAH(s)	Polycyclic aromatic hydrocarbon(s)
PCBs	Polychlorinated biphenyls
Petrogenic	Relating to unburned petroleum products
PMF	Priority Marine Feature
PRIMER	A statistical analysis program - Plymouth Routines in Multivariate Research
PSA	Particle Size Analysis
Pyrogenic	Produced under conditions involving intense heat
QC	Quality Control
Sand	Sediment grains ≥63µm and <2mm in diameter
SD	Standard deviation
Silt	Sediment grains ≥3.9µm and <63µm in diameter
Sobs	A species accumulation curve with samples added in label order
Sorting	Measure of the range of grain sizes in a sediment sample
SOW	Scope of Work
SSS	Side Scan Sonar
THC	Total Hydrocarbon
TBT	Tributyltin
TDE	p,p'-Dichlorodiphenyldichloroethane
TOC	Total Organic Carbon
TPT	Triphenyltin
TTBT	Tetrabutyltin
UCM	Unresolved Complex Mixture
UGE	A smoothed species accumulation curve based on samples being added randomly and averaged over several runs
UKOOA	United Kingdom Offshore Operators Association
US EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
UVFS	Ultra-violet fluorescence spectroscopy
UXO	Unexploded Ordinance

1 INTRODUCTION

1.1 Scope of Work

Between August and September 2024, Gardline conducted an UXO pre-clearance and environmental survey on behalf of Morven Offshore Wind Limited along the proposed Morven Grid Connection 1 (GC1) route (hereafter; the route) from the proposed Morven offshore windfarm to landfall near Sunderland, in the central North Sea. The offshore survey was conducted onboard the motor vessel (MV) *Ocean Reliance* between 06-Aug-2024 and 21-Aug-2024; while the nearshore survey was conducted on the MV *Titan Endeavour* between 30-Aug-2024 and 18-Aug-2024.

This report presents the results of the environmental baseline survey (EBS). The results of the habitat assessment are summarised where relevant, with full results reported separately (Gardline, 2025).

All positional information in this report is referenced to International 1924 Ellipsoid, European Datum 1950. All grid coordinates are projected using UTM Projection, Grid Zone 30N, CM 3°W.

As detailed in the scopes of work (SOW; bp, 2023; 2024), the objectives of the survey were to complete a site investigation to inform an environmental impact assessment of the route (approximately 265km in length). To do this a multi-disciplinary survey was required. The objectives of the survey included:

- an initial geophysical clearance phase of the route options to complete environmental operations,
- an environmental survey to provide sediment type, benthic characterisation of habitats and species assemblages (including EUNIS biotope determination and physico-chemistry analysis),
- seawater sampling using a Niskin water sampler for eDNA metabarcoding analysis to provide information on species present within the area.

1.2 Environmental Survey Strategy

To enable clear and concise reporting, the naming convention of the stations have been shortened by the removal of the BP24MVEXP-ENV-DC/GS/WS- or MVGC1-ENV-DC/GS/WS- station identifiers. These shortened names have been used throughout this report, though the original full name has been retained in the image file names and on the video overlays. The full and abbreviated names are presented in Table 1.1 along with details of station targets, reason for their selection and data acquired. An overview of the stations is presented spatially in Figure 1.1. The actual positions of the grab samples and seabed imagery, which may be offset from the intended target, are presented in the positional logs in Appendix A with details of sampling methods given in Appendix B. Data acquired at each station is plotted spatially in Appendix C.

To meet the objectives of the SOW, a total of 54 stations were pre-selected along the route. This included 8 stations spaced at approximately 4km intervals along the route within the northern area, mainly in Scottish waters, 13 stations in the central area and 33 stations in the southern area, which were spaced at approximately 2km intervals along the route in English waters. To ensure the route was clear of archaeological artefacts and UXO for the grab sampling operations, MBES, magnetometer and SSS reconnaissance lines were run over each station target. Stations were adjusted in the field to avoid seabed hazards and other obstructions.

Stations ENV236 and ENV237 were added during the nearshore survey following receiving sampling approval from Historic England. Three additional camera-only transects were added (Stations ENV238, ENV239 and ENV240) during the nearshore survey to investigate an area of potential stony reef habitat.

Following acquisition of Station ENV235, it was determined the positioning of the station was outside the route boundary; therefore, sampling was reacquired as Station ENV235A, with no further analysis of the data from Station ENV235.

At all 59 stations, drop-down camera data were successfully acquired. As per the SOW (bp, 2023; 2024), all camera tracks were no more than 305m in length.

A minimum of three grab samples were proposed every 2 to 4km using a 0.1m^2 Day grab for analysis of particle size, environmental DNA (eDNA) and macrofaunal community. An additional sample was acquired at 30 stations for chemical analysis and fish eDNA. Following several unsuccessful grab sampling attempts likely attributed to coarse sediments, three stations (Station ENV183, ENV197 and ENV198) were abandoned. Similarly, sampling was not attempted at four stations (Stations ENV182, ENV188, ENV199 and ENV219) after review of the seabed imagery due to the presence of cobbles and boulders.

Water samples for eDNA analysis were successfully acquired at all 34 planned stations.

Table 1.1 Summary of Environmental Sampling Positions and Samples Acquired

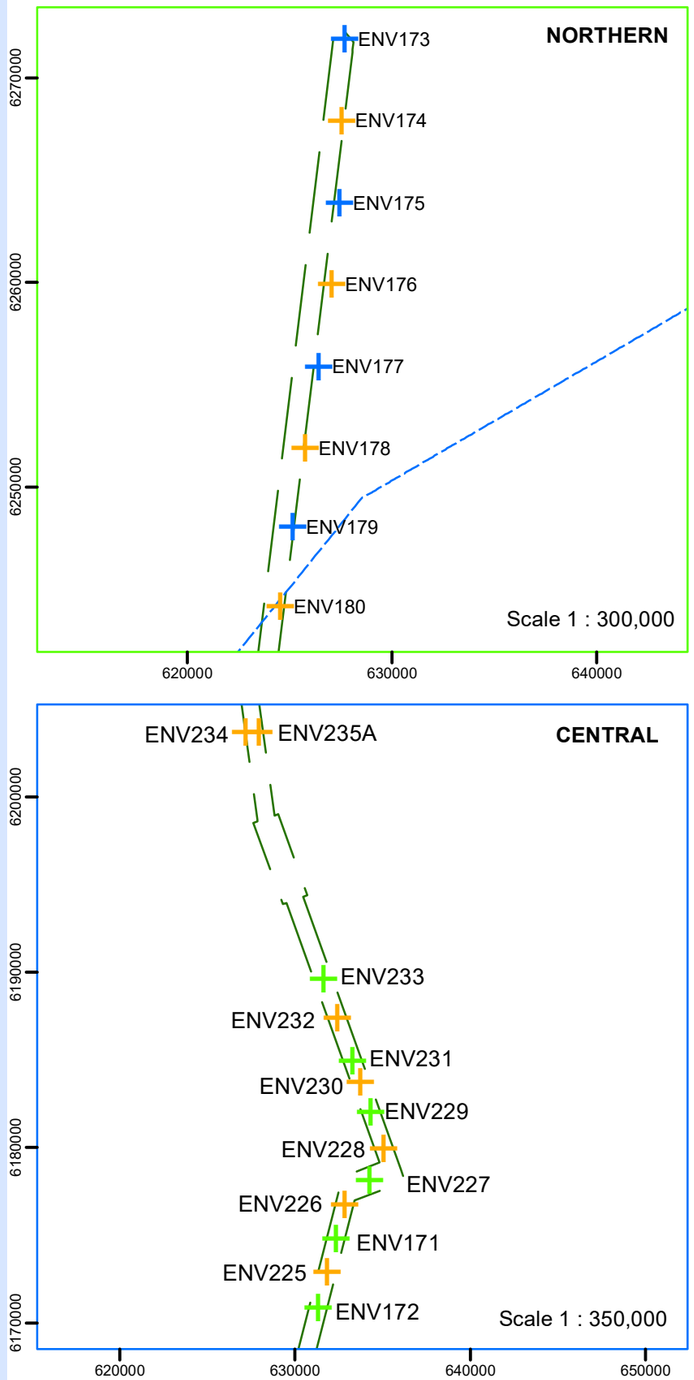
Area	Client ID	Name in this Report	Camera Acquisition Type	Target Easting[1]	Target Northing[1]	Stations Selection	Data Acquired												
											Sub-samples[3]							
							Camera	Rejected grab attempts	Acceptable grab samples	Benthic Macrofauna[2]	PSA	eDNA[4]	Fish eDNA	eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
Northern	MV24EXP-ENV-DC/WS/GS-173	ENV173	Station	627 676	6 271 898	Generally flat seabed; homogenous low SSS reflectivity seabed rippled, sandy sediment	Y	0	4	2	1	1	1	2	1	1	1	7
	MV24EXP-ENV-DC/GS-174	ENV174	Station	627 541	6 267 900	Generally flat seabed; homogenous low SSS reflectivity, sandy sediment.	Y	1	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-175	ENV175	Station	627 417	6 263 902	Generally flat seabed; homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	1	1	7
	MV24EXP-ENV-DC/GS-176	ENV176	Station	627 041	6 259 920	Generally flat seabed; homogenous low SSS reflectivity, sandy sediment.	Y	2	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-177	ENV177	Station	626 401	6 255 909	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	1	1	7
	MV24EXP-ENV-DC/GS-178	ENV178	Station	625 761	6 251 919	Generally flat seabed, generally homogenous low SSS reflectivity with scattered boulders, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-179	ENV179	Station	625 151	6 248 070	Rippled seabed, low to high SSS reflectivity seabed, rippled sandy sediments.	Y	1	4	2	1	1	1	2	1	1	1	7
	MV24EXP-ENV-DC/GS-180	ENV180	Station	624 523	6 244 160	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
Central	MV24EXP-ENV-DC/GS-235	ENV235	Station	628 496	6 203 641	Cancelled as area was outside the route boundary. Replaced by ENV235A	Y		3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/GS-235A	ENV235A	Station	627 952	6 203 640	Generally flat seabed, low to high SSS reflectivity with rare boulders, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/GS-234	ENV234	Station	627 184	6 203 640	Generally flat seabed, low to high SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-233	ENV233	Station	631 618	6 189 611	Generally flat seabed, low to high SSS reflectivity with rare boulders, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-232	ENV232	Station	632 418	6 187 381	Generally flat seabed, mottled low to high SSS reflectivity, sandy sediment with occasional coarser sediments	Y	1	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-231	ENV231	Station	633 292	6 184 926	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-230	ENV230	Station	633 726	6 183 710	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-229	ENV229	Station	634 328	6 182 007	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-228	ENV228	Station	635 066	6 179 941	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-227	ENV227	Station	634 270	6 178 112	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-226	ENV226	Station	632 825	6 176 748	Generally flat seabed, homogenous low SSS reflectivity with occasional boulders, sandy sediment.	Y	1	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-171	ENV171	Station	632 329	6 174 794	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-225	ENV225	Station	631 833	6 172 878	Generally flat seabed, homogenous low SSS reflectivity with rare boulders, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-172	ENV172	Station	631 319	6 170 858	Generally flat seabed, with shoaling observed to the south; homogenous low SSS reflectivity with scattered boulders, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
Southern	MV24EXP-ENV-DC/WS/GS-185	ENV185	Station	621 009	6 099 061	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	2	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-224	ENV224	Station	620 453	6 097 139	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-186	ENV186	Station	619 899	6 095 218	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-223	ENV223	Station	619 349	6 093 295	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-187	ENV187	Station	618 791	6 091 374	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	1	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-210	ENV210	Station	618 237	6 089 452	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/GS-209	ENV209	Station	615 665	6 088 945	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-208	ENV208	Station	615 011	6 087 874	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-207	ENV207	Station	613 980	6 086 158	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2

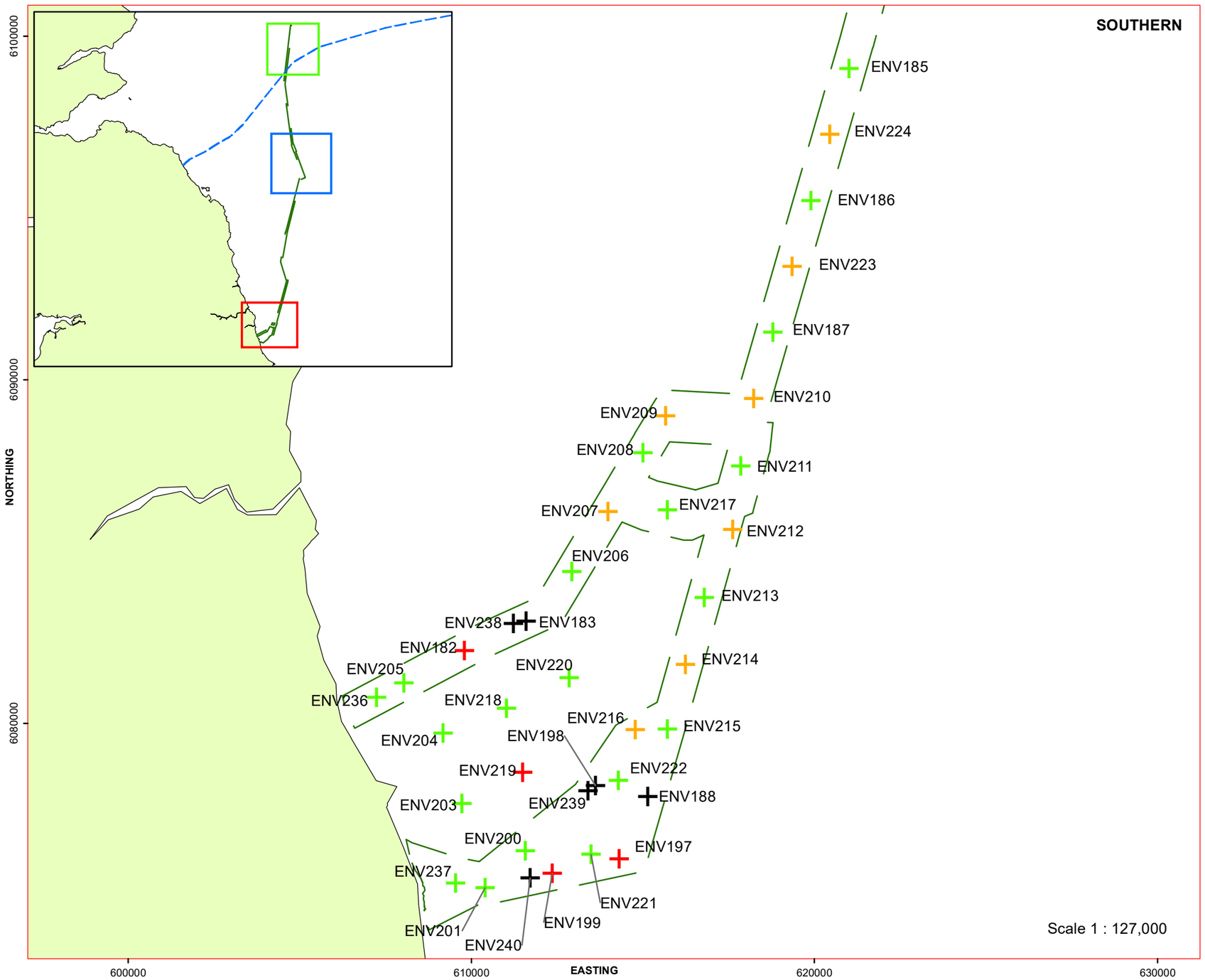
Area	Client ID	Name in this Report	Camera Acquisition Type	Target Easting[1]	Target Northing[1]	Stations Selection	Data Acquired											
							Camera	Rejected grab attempts	Acceptable grab samples	Benthic Macrofauna[2]	Sub-samples[3]							
											PSA	eDNA[4]	Fish eDNA	eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
Southern	MV24EXP-ENV-DC/WS/GS-206	ENV206	Station	612 927	6 084 402	Generally flat seabed, generally low SSS reflectivity and localised areas of high SSS reflectivity, sandy sediments, with localised accumulations of coarser sediment	Y	1	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-183	ENV183	Station	611 593	6 082 978	Variable seabed showing exposed bedrock, low SSS reflectivity, exposed bedrock; SSS also shows medium reflectivity, coarse sandy sediment.	Y	3	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MV24EXP-ENV-DC-238*	ENV238	Transect	611 226	6 082 898	Variable seabed showing exposed bedrock, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MV24EXP-ENV-DC/WS-182*	ENV182	Station	609 795	6 082 108	Variable seabed showing exposed bedrock, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	NA	NA	NA	NA	NA	NA	2[6]	NA	NA	NA	NA
	MV24EXP-ENV-DC/WS/GS-205*	ENV205	Station	608 039	6 081 180	Mottled seabed; medium SSS reflectivity, with frequent boulders, sandy sediment	Y	3	4	2	1	1	1	2[6]	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-236*	ENV236	Station	607 242	6 080 758	Generally flat seabed, homogenous low SSS reflectivity, fine sandy sediment	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-211	ENV211	Station	617 854	6 087 485	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-212	ENV212	Station	617 621	6 085 643	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-217	ENV217	Station	615 718	6 086 211	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-213	ENV213	Station	616 788	6 083 649	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-214	ENV214	Station	616 242	6 081 710	Generally flat seabed, high SSS reflectivity and a small area of lower SSS reflectivity, rippled coarse sediments and sandy sediments.	Y	3	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-215	ENV215	Station	615 717	6 079 828	Generally flat seabed, high SSS reflectivity, rippled coarse sandy sediments, south of location. North of location low SSS reflectivity, sandy sediments	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-216	ENV216	Station	614 785	6 079 813	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	1	3	2	1	1	NA	NA	NA	NA	NA	2
	MV24EXP-ENV-DC/WS/GS-220	ENV220	Station	612 857	6 081 334	Generally flat seabed, homogenous low SSS reflectivity with rare boulders, sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-222	ENV222	Station	614 286	6 078 326	Rippled seabed, high SSS reflectivity, coarse rippled sandy sediments, west of location. East of location low SSS reflectivity, with rare boulders, sandy sediment.	Y	1	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/GS-188	ENV188	Station	615 150	6 077 864	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MV24EXP-ENV-DC/GS-198	ENV198	Station	613 616	6 078 185	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	5	0	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MV24EXP-ENV-DC-240*	ENV240	Transect	611 717	6 075 484	Variable seabed showing exposed bedrock, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MV24EXP-ENV-DC/WS/GS-221	ENV221	Station	613 485	6 076 175	Generally flat seabed, generally homogenous low SSS reflectivity with occasional boulders, sandy sediment. Northwest of location very high SSS reflectivity with frequent boulders, coarse sandy sediment.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-197	ENV197	Station	614 311	6 076 047	Mottled seabed; medium SSS reflectivity, with frequent boulders, sandy sediment	Y	7	0	NA	NA	NA	NA	2	NA	NA	NA	NA
	MV24EXP-ENV-DC/WS/GS-200*	ENV200	Station	611 574	6 076 289	Generally flat seabed, generally low SSS reflectivity adjacent to areas of high SSS reflectivity, gravelly sediments. Station was relocated to ensure coverage of the transition zone between the two habitat types.	Y	0	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/WS-199*	ENV199	Station	612 355	6 075 629	Mottled seabed; medium SSS reflectivity, with frequent boulders, sandy sediment	Y	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	NA
	MV24EXP-ENV-DC-239*	ENV239	Transect	613 402	6 078 035	Variable seabed, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MV24EXP-ENV-DC/WS/GS-201*	ENV201	Station	610 399	6 075 205	Generally flat seabed, homogenous low SSS reflectivity, fine sandy sediment	Y	0	4	2	1	1	1	2[6]	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-237*	ENV237	Station	609 540	6 075 350	Generally flat seabed, homogenous low SSS reflectivity, fine sandy sediment	Y	2	4	2	1	1	1	2[6]	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-218*	ENV218	Station	611 024	6 080 438	Mottled seabed; medium SSS reflectivity, with frequent boulders, sandy sediment	Y	1	4	2	1	1	1	2	1	NA	NA	4
	MV24EXP-ENV-DC/WS-219*	ENV219	Station	611 495	6 078 574	Mottled seabed; medium SSS reflectivity, with frequent boulders, sandy sediment	Y	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	NA

Area	Client ID	Name in this Report	Camera Acquisition Type	Target Easting[1]	Target Northing[1]	Stations Selection	Data Acquired											
											Sub-samples[3]							
							Camera	Rejected grab attempts	Acceptable grab samples	Benthic Macrofauna[2]	PSA	eDNA[4]	Fish eDNA	eDNA (Water)	Chemistry (MMO)	Hydrocarbons	Metals	Spares[5]
Southern	MV24EXP-ENV-DC/WS/GS-204*	ENV204	Station	609 176	6 079 717	Generally flat seabed, generally low SSS reflectivity adjacent to areas of high SSS reflectivity, gravelly sediments	Y	0	4	2	1	1	1	2[6]	1	NA	NA	4
	MV24EXP-ENV-DC/WS/GS-203*	ENV203	Station	609 719	6 077 661	Generally flat seabed, generally low SSS reflectivity adjacent to areas of high SSS reflectivity, gravelly sediments. Station was relocated to ensure coverage of the transition zone between the two habitat types.	Y	2	4	2	1	1	1	2[6]	1	NA	NA	4
						Total number of stations investigated (excluding superseded Station ENV235)	59	52	49	49	49	49	30	34	30	4	4	49
						Total number of stations analysed	59	NA	NA	49	49	30	30	34	30	4	4	NA

* Station acquired during the nearshore phase of the survey
NA Not applicable
1 Environmental target locations; actual camera track and sampling positions for each individual grab and water sample are detailed in Appendix A.
2 One macrofauna sample was sent to be analysed and the other kept as a spare at room temperature. Analysis methods are as detailed in Appendix B.
3 Sub-samples were collected from sediment grab samples unless otherwise specified (e.g., (water)).
4 Grey number indicates sediment eDNA sample collected but not analysed
5 Where available and relevant, up to three spare sediment sub-samples were stored in a glass jar and available for hydrocarbon and MMO chemistry analysis and up to four sediment sub-samples were each stored in a double-lined zip-lock bag and available for analysis of metals, particle size, sediment eDNA and fish eDNA. Analysis methods are as detailed in Appendix B.
6 Bacterial filter were used instead of standard filters for one or both of these samples.

STATION OVERVIEW





LEGEND

- CABLE ROUTE CORRIDOR

ENVIRONMENTAL STATION TYPE

- CAMERA ONLY
- MACROFAUNA, PSA AND SEDIMENT eDNA
- MACROFAUNA, PSA, SEDIMENT eDNA, WATER eDNA AND CHEMISTRY
- MACROFAUNA, PSA, SEDIMENT eDNA, WATER eDNA, CHEMISTRY, HYDROCARBONS AND METALS
- WATER eDNA
- NATIONAL LIMIT (UKHO, 2022)

Overview Scale 1 : 2,700,000
ED50/UTM Zone 30N (3°W)

Figure 1.1

Job No. 59294.E4

1.3 Comparison Data

Where possible the results obtained from the current survey were compared to the findings of the previous survey undertaken along the Morven Export Cable Route (ECR) by Gardline (2024b).

For the current and comparison survey (Gardline, 2024b) particle size analysis (PSA) was undertaken using wet and dry sieving with the <1mm fraction analysed by laser diffraction particle sizer. No dispersants were used and the sediments were not treated to remove the organic fraction prior to analysis. The PSA statistics were calculated using Folk and Ward (1957). In the current and comparison survey, total organic carbon (TOC) was analysed following inorganic carbon removal with acid by induction, fitted with a non-dispersive infrared (NDIR) cell.

Methods conducted to MMO (2023) specification (hydrocarbons and metals) were comparable for a group of 30 stations in the current survey and 66 stations from the comparison survey (2024b). Total hydrocarbons (THC; MMO, 2023) were ultrasonically extracted followed by analysis using ultra-violet fluorescence screening (UVFS) with polycyclic aromatic hydrocarbons (PAHs) extracted by dichloromethane (DCM) solvent extraction, followed by gas chromatography mass spectrometry (GC-MS).

For the four stations located in Scottish waters, which were comparable to a group of eleven stations in the comparison survey, hydrocarbons were extracted using DCM solvent extraction followed by analysis with gas chromatography flame ionisation detection (GC-FID) for THC concentrations and aliphatic (n-alkanes) fractions. N-alkanes are reported between nC_{10} to nC_{37} for both surveys and GC-MS was used for the determination of the PAH fractions.

The analyses of polychlorinated biphenyls (PCBs) and organochloropesticides (OCPs) were by ultrasonic solvent extraction followed by gas chromatography tandem mass spectrometry (GC-MS-MS) for both the current and comparison survey (Gardline, 2024b), while organotins were analysed following hydrochloric acid and methanol digest.

For the 30 stations in the current survey and 66 stations from the comparison survey (Gardline, 2024b), analysis methods for arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni), lead (Pb) and zinc (Zn) involved extraction by aqua regia followed by analysis using an inductively coupled plasma mass spectrometer (ICP-MS).

For the four stations in Scottish waters from the current survey and eleven stations from the comparison survey (Gardline, 2024b), analysis methods for As, barium (Ba), Cd, Cr, Cu, Hg, Ni, Pb, vanadium (V) and Zn involved hydrofluoric (HF) acid extraction followed by subsequent analysis using an ICP-MS or inductively coupled plasma optical emission spectrometry (ICP-OES) in the case of Ba.

Faunal samples in the current and comparison survey were screened through a 0.5mm sieve prior to analysis with separate sediment eDNA sub-samples acquired for metabarcoding.

In both the current and comparison survey, water eDNA samples were also acquired for metabarcoding.

Table 1.2 Details of Comparable Survey

Survey reference	Current Survey	54027 Gardline (2024b)
Survey date	Aug to Sep-2024	Jun to Nov 2023
Survey type and number of stations	EBS site, 54 stations PSA at 49 stations MMO chemistry at 30 stations Additional chemistry at 4 stations Sediment eDNA at 30 stations Fish eDNA at 30 stations Water eDNA at 34 stations	EBS, 133 Stations PSA at 128 stations MMO chemistry at 66 stations Additional chemistry at 11 stations Sediment eDNA at 65 stations Fish eDNA at 56 stations Water eDNA at 68 stations
Predominant sediment type[1]	Muddy sand (very fine to medium) to muddy sandy gravel (pebble) Sand (fine to medium) Sandy mud (fine silt to very fine sand)	Muddy sand (very fine to medium) to gravelly muddy sand Sand (fine to coarse) to sandy gravel (granule) Sandy mud (coarse silt to very fine sand) to gravelly mud
Water depth (m LAT) sampled	11m to 93m	24 to 104m
Comparison data available	*MMO Specification* • PSA (Folk and Ward sorting) • TOC by induction furnace (FOC) • PCBs and OCPs by ultrasonic solvent extraction and GC-MS-MS • Organotins by hydrochloric acid and methanol digest • THC by UVFS • PAH by solvent extraction and GC-MS • Metals – As, Cd, Cr, Cu, Hg, Ni, Pb, Zn by aqua regia extraction followed by ICP-MS analysis • Macrofauna 0.5mm mesh size • eDNA analysis of sediment and water *Additional Analysis – Scottish Stations only* • THC/PAH by wet vortex extraction and GC (THC prior to fractionation) • Metals – As, Ba, Cd, Cr, Cu, Hg, Ni, Pb, V and Zn by HF extraction	As per current survey

1 Predominant seabed type according to the modified Folk classification (with the Wentworth classification of mode grain size in parenthesis).

1.4 Published Background Data

Reference, where possible, has been made to suitable published background data for marine sediments from the North-East Atlantic and North Sea such as Cefas Action Levels (CALs; MMO, 2023), UKOOA (2001) and OSPAR (2005), along with toxicity information including effects range low (ERL) and effects range median (ERM; Long *et al.*, 1995) and the apparent effects thresholds (AETs) as detailed by Buchman (2008). Background information is also provided in Appendix D.

The MMO (2023) CALs are used to assess dredging material and its suitability for disposal at sea. The values can be used in conjunction with other assessment methods to monitor the contaminant levels of metals, organotins, PAHs and PCBs. In general, contaminant levels in dredged material below CAL 1 are of no concern and are unlikely to influence the licencing decision. Dredged material with contamination levels between CAL 1 and CAL 2 would require further consideration and testing before a decision can be made. Dredged material with contamination levels above CAL 2 is generally considered unsuitable for sea disposal.

The UKOOA commissioned an analysis of seabed environmental surveys carried out on behalf of UK North Sea offshore oil operators. The purpose of these surveys was to monitor the seabed in the vicinity of offshore operations with the aim of detecting environmental impact. The analysis was completed in three phases. Phase 1 consisted of the compilation of an inventory of surveys carried out in the UK sector. This initially summarised the results of 472 environmental surveys carried out between 1975 and 1998 by environmental monitoring contractors, government agencies and universities. Background contaminant levels were recorded in three different sectors of the North Sea and the presence of oil installation clusters situated successively further north allowed the region to be separated into northern (north of latitude 60°N), central (between latitudes 55°N and 60°N) and southern (south of latitude 55°N) sectors. Phase 2 involved the production of database files containing detailed biological, chemical and location data. Phase 3 examined the extent of contamination from offshore exploration and production activities and impacts on the biota and attempted to determine any large-scale trends over wider geographical areas. This final phase was completed in April 2001. Care was taken to record the database in a format that ensures the contaminant concentrations measured by different analytical methods are kept separate. UKOOA (2001) background reference concentrations were averaged from stations >5km from the nearest platform in each of the three sections of the North Sea, with hydrocarbon concentrations determined by gas chromatography (GC) and metal concentrations as given by sodium fusion or similar extraction methods. Mean data and 95th percentiles are available; the latter representing the threshold, which 95% of stations recorded a concentration below. Although the majority of the stations in the southern area were located just south of latitude 55°N, comparison and reference are made throughout this report to findings from the published report (UKOOA, 2001) with reference to the UKOOA defined central North Sea sector, with reference to specific subsets of stations with sandy, silt and clay, muddy sand and fine sand sediment where relevant.

A set of background concentrations (BC) published by OSPAR (2005), represent the concentrations of certain hazardous substances that would be expected in the North-East Atlantic if certain industrial developments had not happened. OSPAR has also described background assessment criteria (BACs), a set of statistical tools that enable testing of whether mean observed concentrations (*i.e.* collected during a seabed survey) can be near background concentrations. Where no updated BCs have been developed, the upper limit of the range of background/reference concentrations (BRC) have been used. Comparison to OSPAR (2005) data required normalisation of the hydrocarbon concentrations to 2.5% TOC. However, OSPAR (2015) acknowledge that the current BC and BAC may be inappropriate for application throughout the Convention area, as they were derived from a data set that emphasises the northern part of the Convention area and within other areas there may be differences in origin and composition of the sediment. OSPAR (2015) point out that if the composition of the sampled sediments is very different to the sediment type defined for the assessment criteria, normalisation will require a large extrapolation and may cause an unacceptable uncertainty. As such, where OSPAR (2005) BC,

BAC and BRC values are compared with predominantly sandy or coarse sediments, particularly in the southern part of the convention area, interpretation should be treated with some caution.

The best estimates of the potential toxicity of PAHs in marine sediments are ERL and ERM concentrations for total low molecular weight (2- to 3-ring, LMW), total high molecular weight (4- to 6-ring, HMW) and total 2-6 ring PAHs (Neff, 2004) as given by Long *et al.* (1995) and OSPAR (2009c). These concentrations are not actual thresholds of toxicity but delineate concentration ranges with associated probabilities of toxicity. More information on the ERL and ERM for PAHs can be found in Appendix D. Long *et al.* (1995) also define ERL and ERM values for selected metals.

Environmental Assessment Criteria (EAC) for PAHs, PCBs and the metals Cd, Hg and Pb were defined by OSPAR as part of their Coordinated Environmental Management Programme (CEMP; OSPAR, 2009c). The EACs represent the contaminant concentration in the environment below which no chronic effects are expected to occur in marine species, including the most sensitive species. Therefore, concentrations below the EACs are considered to present no significant risk to the environment. EACs for a range of contaminants were proposed in 2004 and updated EACs for polychlorinated biphenyls (PCBs) were proposed in 2008. Further EACs continue to be developed for use in data assessments. Comparison with EACs required normalisation of PAH and PCB concentrations to 2.5% TOC and metals to 1% TOC. Where EACs are not available, OSPAR instead advise using the afore mentioned ERL and ERM values.

Buchman's (2008) AETs were obtained by establishing relationships between the sediment metal concentrations and benthic community toxicological impacts and correspond to the highest concentrations at which no toxicological effects were observed.

1.5 Existing Infrastructure

Based on data from NSTA (2023) there is no existing infrastructure within 5km of the route.

2 RESULTS AND DISCUSSION

2.1 Geophysical Survey Summary

2.1.1 Survey Overview

The survey area along the route was divided up into three areas: a northern, central and southern area. To provide clearance from potential UXO and other obstructions, MBES, SSS and magnetometer data were acquired over all target environmental sampling locations. These data were for UXO pre-clearance only; therefore, no further interpretation or analysis of the data was conducted onshore.

2.2 Seabed Imagery Observations Summary

Seabed imagery acquired with a digital camera system at 56 stations and 3 transects was analysed. Results are summarised below, with full details of the habitat assessment reported separately (Gardline, 2025). A selection of seabed photographs, together with descriptions and positions, are presented in Appendix C.

Overall, 38% of useable stills contained visible fauna, and similarly sparse fauna was recorded in the comparison survey (Gardline, 2024a). The sparsity in the current survey was most notable in the northern area where only 26% of useable stills contained visible fauna, whereas almost half (45%) of useable stills from the central area contained visible fauna.

Along the route the most frequently observed taxa and/or features were;

- burrows, present at 29 stations from the central and southern areas and in 13% of usable stills,
- faunal turf, present at 25 stations and in 10% of usable stills, mainly from the southern area,
- *Alcyonium digitatum,* present at 33 stations from the northern and southern areas and in 9% of useable stills,
- *Pennatula phosphorea,* present at 11 stations in the central area and in 6% of useable stills.

These were consistent with the most frequently observed taxa in the comparison survey (Gardline, 2025).

A total of 576 burrows were recorded in the imagery across 29 stations, with densities ranging from 0.05 burrows m^{-2} at Station ENV172 to 8.15 burrows m^{-2} at Station ENV224. In accordance with the SACFOR scale (JNCC, 2013), burrow densities were classified within a range that encompassed frequent at 23 stations; all of which were in English waters. Further, burrowing fauna was rarely sighted with only seven individuals of *Nephrops norvegicus* observed across the survey area; therefore; burrows could not be confidently attributed to any of the classified megafauna species within the sea pen and burrowing megafauna communities habitat classification.

A total of 210 sea pen individuals comprising 188 individuals of *P. phosphorea* and 22 individuals of *Virgularia* were observed across 15 stations. In accordance with SACFOR, where observed, *P. phosphorea* were classified in a range that encompassed frequent at 10 stations, whilst *Virgularia* encompassed frequent at 3 stations. In accordance with SACFOR and the JNCC clarification report (2014), 5 stations (ENV187, ENV210 to ENV212 and ENV230) could be considered as showing the greatest similarity to a sea pen and burrowing megafauna communities habitat in that burrows encompassed the SACFOR ranges frequent to common.

Whilst this habitat is on the OSPAR (2008) list of threatened and/or declining species and habitats, it is widespread throughout the central North Sea, around the south and west coasts of Norway and around the north of the British Isles (OSPAR, 2010; Hill *et al.*, 2022). This habitat is also listed as a component biotope of the burrowed mud habitat which is a priority marine feature (PMF; NatureScot, 2020); however, no burrows were observed at any station in Scottish waters.

Areas of cobbles and boulders were noted during imagery analysis. As such stations were reviewed for their resemblance to a stony reef habitat based on the criteria adopted by Irving (2009). A total of twelve stations were observed to be matrix supported with three stations (ENV182, ENV188 and ENV240) predominantly clast supported. Following analysis, nine stations (ENV183, ENV197 to ENV200, ENV203, ENV205, ENV218 and ENV239) showed low resemblance to a stony reef, with a further six stations (ENV182, ENV188, ENV204, ENV219, ENV238 and ENV240) showing a medium resemblance.

A total of eight pairs of siphons, thought to be the bivalve *Arctica islandica*, were observed in imagery across three stations (ENV174, ENV175 and ENV178). This species is on the OSPAR (2008) list of threatened and/or declining species and habitats. In addition, it is listed as a low or limited mobility species PMF in Scottish offshore waters (NatureScot, 2020); however, this species is commonly found within this area of the North Sea.

A total of fifteen individuals of witch flounder (*Glyptocephalus cynoglossus*) were observed across twelve stations. This species is classified as vulnerable on the IUCN Red List (2025).

Two individuals of angler fish (*Lophius piscatorius*) were observed in imagery across two stations in English waters. This species is listed on the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012) as a priority species.

Sixteen individuals of plaice (*Pleuronectes platessa*) were observed in imagery across nine stations. This species is classified as a priority species under the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012) and is listed on the Scottish Biodiversity List (NatureScot, 2020).

A total of thirty-five individuals of the urchin *Echinus esculentus* were identified across seven stations. This species is listed as near threatened on the Global Red List (IUCN, 2024).

Other than those habitats and species detailed above and in Section 2.4.1, there was no further evidence from the seabed imagery of any habitats listed under Annex I of the Habitats Directive (1992), habitats or species classified as features of conservation importance under the Marine Environment Regulations (2018), species or habitats selected as PMFs (NatureScot, 2020), species listed on the Scottish Biodiversity List (NatureScot, 2020), species or habitats on the OSPAR (2008) list of threatened and/or declining species and habitats or species on the IUCN (2025) Global Red List of threatened species.

2.3 Sediment Sampling Summary

Sediment sampling was conducted at 52 stations along the route, with the required suite of samples collected at 49 stations as per the SOW (bp, 2023; 2024). All successful samples were acquired using a 0.1m^2 Day grab. Environmental deck and positioning logs are presented in Appendix A, with example images presented in Appendix C.

Of the 52 stations, sampling was attempted at the Stations ENV197, ENV198 and ENV183 but was abandoned after multiple sampling attempts, likely due to the presence of cobbles. The grabs at these stations frequently did not trigger and gravel was commonly found in the jaws of the grab. Sampling was not attempted at Stations ENV182, ENV188, ENV199 and ENV219 due to the observation of cobbles and boulders during seabed imagery which would have impacted sampling attempts.

Excluding sampling at the superseded Station ENV235, a total of 177 grab samples were acquired from 215 attempts (82% success rate). Of these retained samples, 99% were acquired within 10m of the target location and the remaining sample (from nearshore Station ENV200) was acquired 20m from the target. On average,

samples were obtained within 1.6m of their target location (±1.8SD). The 38 unsuccessful sampling attempts occurred across 18 stations, most of which were from the southern area. Samples were largely rejected due to low sample retention, stones in the grab jaws and misfiring of the grab associated with coarse sediments, other than at Station ENV226 in the central area, where the presence of Myxinidae resulted in sample rejection.

Seabed sampling supported the initial interpretation of the seabed imagery findings at these stations, confirming that the seabed comprised sandy sediment with varying amounts of fines, shell fragments and occasional areas of muddy sediment with cobbles; the latter being restricted to stations in the southern area.

Visible fauna observed within the retrieved grab were limited and included:

- Annelida (Polychaeta)
- Arthropoda (Brachyura, Crustacea, Corystidae, Paguroidea)
- Cnidaria (Alcyoniidae, Pennatuloidea)
- Echinodermata (Echinoidea, Ophiuroidea, Spatangoidea)
- Mollusca (Bivalvia, Gastropoda, Pharidae, Scaphopoda)

2.4 Sediment Characteristics

2.4.1 Particle Size Analysis

The results of the PSA, determined by wet and dry sieving and laser diffraction, are summarised in Table 2.1, along with comparable and published data. Full results, including histograms illustrating the particle size distribution at each of the 49 sampled stations, are presented in Appendix E. The results of the PSA were consistent with observations from geophysical reconnaissance data, seabed imagery and the recovered sediment samples.

Along the route, sediments were heterogenous, with particle size distributions ranging from very poor to moderately sorted under Folk & Ward (1957). Mean particle diameter varied from 12µm at Station ENV215 to 927µm at neighbouring Station ENV214, which are sizes described under Wentworth classification (1922) as fine silt to coarse sand. Excluding two significant outlier stations in the southern area (Grubbs' $p<0.01$, Appendix F; Stations ENV214 and ENV222), the mean particle diameter was ≤341µm along the route.

Of the 49 stations where PSA was collected, all stations had negligible (<5%) gravel (>2µm) content, except for the two outlier stations (Grubbs' $p<0.01$, Appendix F; Stations ENV214 and ENV222) which had 30.2% and 54.6% gravel content, respectively. All stations in the northern and central areas were dominated by sand (≥63µm and <2mm; >72%). Of the stations located in the southern area, fifteen were dominated by sand (>50%), while a further twelve stations were dominated by fines (>50%; <63µm; silt and clay).

Most stations recorded poorly to very poorly sorted sediment (n=44, 90%) with fine slewed distributions (fine to very fine skewness; n=43, 88%). When classified under the modified Folk (1954) sediments were predominantly muddy sand (n=26; 53%) or sandy mud (n=12; 24%) and these stations recorded modal phi values between 1.5 and 7.0 (Appendix E).

The sediments along the route were broadly consistent with those recorded in the comparison survey conducted along the ECR (Gardline, 2024b). Both surveys had a wide range of grain diameters with sediments in the northern area of the route containing higher proportions of sand whereas those in the southern area of the route exhibited higher proportions of fines, likely due to the proximity to the coastline and major riverine systems, as illustrated in Figure 2.1.

The mean grain size and fines content as presented by UKOOA (2001) for stations over 5km from existing infrastructure in the central North Sea (between latitudes 55°N and 60°N), sampled between 1975 and 1995 (hereafter referred to as background stations) are presented in Table 2.1. Relative to the wider context, sediments along the route were broadly consistent with background levels, with only Station ENV215 recording sediment notably finer.

The stations along the route coincide with a potential herring nursery ground (Ellis *et al.*, 2012). The results of the analysis, (Gardline, 2025), concluded that only Stations ENV214 and ENV222 met the suitability criteria recording >10% gravel and a Wentworth (1922) classification of coarse sand. However, none of the stations where PSA was collected recorded sufficiently low percentage fines (<5%) in combination with high enough (>10%) gravel content to be considered prime in terms of habitat sediment preference for herring spawning.

The stations along the route also coincided with low intensity spawning and nursery grounds for sand eels (Ellis *et al.*, 2012). Based on the results of the PSA, six stations recorded <10% fines and >50% sand, meeting the suitable habitat sediment preference criteria. These stations also met the preferred habitat sediment classification of sand under the modified Folk (1954).

2.4.2 Total Organic Carbon

The results of the TOC analysis are presented in Table 2.1. The TOC content is measured as a percentage of the total sample mass, representing the organic carbon constituent of the organic matter. Organic matter in marine sediments primarily comprises detrital matter and naphthenic materials (carboxylic acid and humic substances with a small proportion of biological biomass).

Across the 30 stations where TOC was analysed, concentrations were ≤0.28% in the northern and central areas and, with the exception of Stations ENV221 and ENV200, ranged from 0.52% to 5.13% in the southern area. The TOC content at Stations ENV221 and ENV200 was significantly higher at 9.23% and 12.40%, respectively (Grubbs' $p<0.01$, Appendix F). The higher TOC content recorded in the southern area is likely attributed to the proximity to the coastline and the rivers Tyne and Wear. A significant negative correlation was observed between TOC and depth (Spearman's; $r=-0.60$, $p<0.01$; Appendix F), with a positive correlation between TOC and percentage fines (Spearman's $r=0.71$, $p<0.01$; Appendix F).

In general, for continental shelf sediments there is a close relationship between the organic carbon content and the surface area of the mineral matrix (Mayer, 1994). Increased TOC content is expected with fine sediments, as it adsorbs to the increased surface area provided by the fine grain particles. As such, the positive correlation between TOC content and fines was expected.

Overall, these TOC concentrations were significantly higher (t-test $p<0.05$) than previously recorded along the ECR by Gardline (2024b). However, the spatial trend of lower TOC content at the northern and central stations, and variable TOC content at the southern stations was consistent with the previous survey (Gardline, 2024b).

Table 2.1 Sediment Characteristics

Area	Station	Mean Diameter (µm)[1]	Mean Diameter (phi)[1]	Fines %	Sand %	Gravel %	Wentworth Classification of Mean Grain Size	Sorting[1]	Modified Folk Classification	Total Organic Carbon %
Northern	ENV173	235	2.1	7.5	92.5	0.05	Fine sand	Poor	Sand	0.13
	ENV174	204	2.3	9.3	90.6	0.12	Fine sand	Poor	Sand	NA
	ENV175	189	2.4	10.2	89.8	0.04	Fine sand	Poor	Muddy sand	0.17
	ENV176	180	2.5	10.8	89.1	0.03	Fine sand	Poor	Muddy sand	NA
	ENV177	204	2.3	11.1	88.7	0.18	Fine sand	Poor	Muddy sand	0.16
	ENV178	208	2.3	10.2	89.5	0.35	Fine sand	Poor	Muddy sand	NA
	ENV179	341	1.6	4.6	95.1	0.32	Medium sand	Moderate	Sand	0.13
	ENV180	198	2.3	10.8	89.2	0.08	Fine sand	Poor	Muddy sand	NA
Central	ENV235A	257	2.0	5.3	94.5	0.17	Medium sand	Moderate	Sand	NA
	ENV234	271	1.9	5.3	94.4	0.32	Medium sand	Moderate	Sand	NA
	ENV233	214	2.2	11.9	88.0	0.09	Fine sand	Poor	Muddy sand	0.15
	ENV232	239	2.1	6.0	93.8	0.21	Fine sand	Poor	Sand	NA
	ENV231	215	2.2	13.2	86.8	0.04	Fine sand	Poor	Muddy sand	0.19
	ENV230	87	3.5	20.6	79.4	0.05	Very fine sand	Poor	Muddy sand	NA
	ENV229	89	3.5	22.2	77.7	0.12	Very fine sand	Poor	Muddy sand	0.28
	ENV228	63	4.0	27.5	72.4	0.07	Very fine sand	Poor	Muddy sand	NA
	ENV227	156	2.7	16.9	83.0	0.07	Fine sand	Poor	Muddy sand	0.23
	ENV226	173	2.5	15.7	84.2	0.02	Fine sand	Poor	Muddy sand	NA
	ENV171	162	2.6	17.7	82.3	0.00	Fine sand	Poor	Muddy sand	0.23
	ENV225	96	3.4	22.6	77.2	0.17	Very fine sand	Very poor	Muddy sand	NA
	ENV172	128	3.0	18.9	81.0	0.01	Fine sand	Very poor	Muddy sand	0.23
Southern	ENV185	22	5.5	67.1	32.9	0.01	Medium silt	Very poor	Sandy mud	1.69
	ENV224	24	5.4	71.1	28.9	0.00	Medium silt	Very poor	Sandy mud	NA
	ENV186	45	4.5	40.6	59.3	0.01	Coarse silt	Very poor	Muddy sand	0.79
	ENV223	35	4.8	52.9	47.1	0.03	Coarse silt	Very poor	Sandy mud	NA
	ENV187	32	4.9	56.8	43.2	0.00	Coarse silt	Very poor	Sandy mud	1.19
	ENV210	64	4.0	33.1	66.7	0.27	Very fine sand	Very poor	Muddy sand	NA
	ENV209	67	3.9	31.4	68.5	0.07	Very fine sand	Very poor	Muddy sand	NA
	ENV208	40	4.6	50.5	49.1	0.33	Coarse silt	Very poor	Sandy mud	2.60
	ENV207	38	4.7	50.4	49.6	0.04	Coarse silt	Very poor	Sandy mud	NA
	ENV206	20	5.6	73.2	26.7	0.13	Medium silt	Very poor	Sandy mud	4.26
	ENV205	22	5.5	67.2	32.8	0.01	Medium silt	Very poor	Sandy mud	1.59
	ENV236	142	2.8	11.4	88.6	0.01	Fine sand	Moderate	Muddy sand	0.52
	ENV211	89	3.5	28.0	71.9	0.10	Very fine sand	Very poor	Muddy sand	0.61
	ENV212	151	2.7	19.6	78.9	1.53	Fine sand	Very poor	Slightly gravelly muddy sand	NA
	ENV217	34	4.9	55.7	44.2	0.14	Coarse silt	Very poor	Sandy mud	4.14
	ENV213	94	3.4	31.4	66.7	1.90	Very fine sand	Very poor	Slightly gravelly muddy sand	1.25
	ENV214	927	0.1	10.4	59.4	30.24	Coarse sand	Very poor	Muddy sandy gravel	NA
	ENV215	12	6.4	88.2	11.8	0.00	Fine silt	Very poor	Sandy mud	5.13
	ENV216	36	4.8	56.6	42.9	0.44	Coarse silt	Very poor	Sandy mud	NA
	ENV220	88	3.5	22.3	77.7	0.00	Very fine sand	Poor	Muddy sand	2.94
	ENV222	905	0.1	22.1	23.3	54.62	Coarse sand	Very poor	Muddy sandy gravel	4.65
	ENV221	73	3.8	45.8	50.7	3.47	Very fine sand	Poor	Slightly gravelly muddy sand	9.23
	ENV200	91	3.5	43.1	56.7	0.21	Very fine sand	Very poor	Muddy sand	12.40
	ENV201	80	3.6	26.9	72.9	0.14	Very fine sand	Poor	Muddy sand	4.69
	ENV237	135	2.9	10.3	89.4	0.27	Fine sand	Poor	Muddy sand	3.12
	ENV218	71	3.8	23.1	76.9	0.00	Very fine sand	Poor	Muddy sand	0.69
	ENV204	120	3.1	11.2	88.8	0.05	Very fine sand	Moderate	Muddy sand	0.69
	ENV203	38	4.7	50.8	49.1	0.09	Coarse silt	Very poor	Sandy mud	3.59
This Survey	Minimum	12	0.1	4.6	11.8	0.00	Fine silt to coarse sand	Very poor to moderate	Muddy sand to muddy sandy gravel, sand and sandy mud	0.13
	Maximum	927	6.4	88.2	95.1	54.62				12.40
	Mean	151	3.4	29.2	68.9	1.97				2.26
	±SD	178	1.4	21.7	22.6	8.81				2.88
Gardline (2024b)	Minimum	27	-1.1	0.0	27.2	0.0	Medium silt to granule	Extremely poor to well	Muddy sand to gravelly muddy sand, sand to sandy gravel and sandy mud to gravelly mud	0.13
	Maximum	2078	5.2	60.2	100.0	63.5				14.80
	Mean	173	3.0	21.6	76.9	1.4				0.68
	±SD	206	1.2	16.9	17.5	6.6				1.79
UKOOA (2001) for CNS	Mean	121	3.1	17.4	NA	NA	Very fine sand	NA	NA	NA
	95th Percentile	NA	5.0	77.6			Coarse silt			
	Sand subset	163	2.6	6.3			Fine sand			
	Silt and clay subset	34	4.9	64.7			Coarse silt			
	Muddy sand subset	74	3.8	33.6			Very fine sand			
	Fine sand subset	177	2.5	4.1			Fine sand			

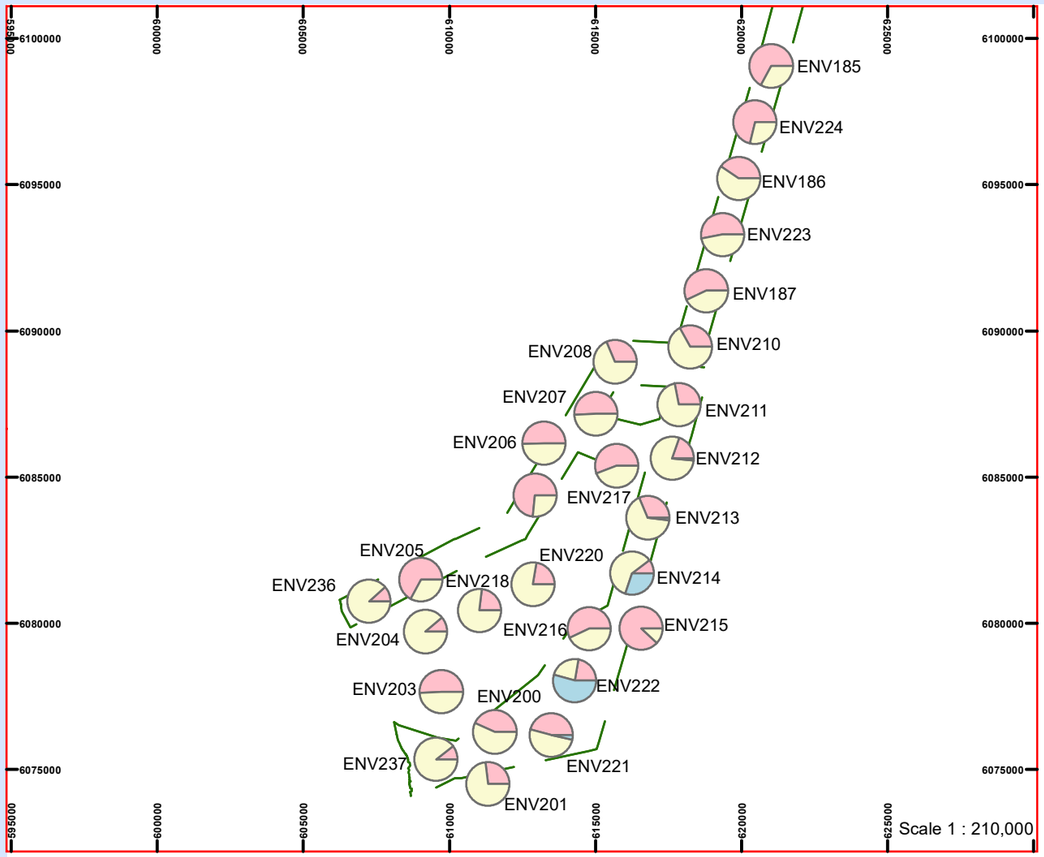
Sediments were not treated to remove carbonates prior to PSA.

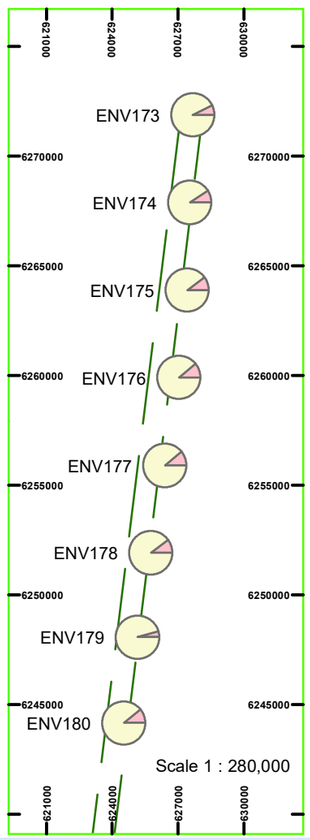
1 Statistics according to Folk and Ward (1957).

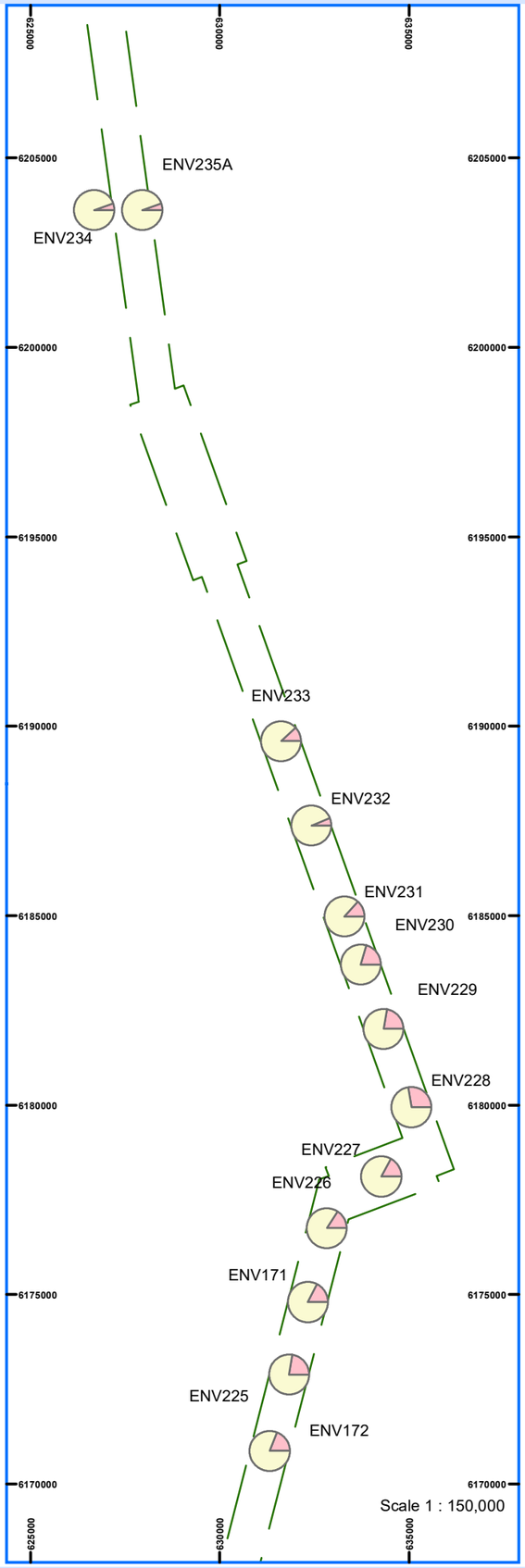
Results in blue are from comparable surveys, see Section 1.3.

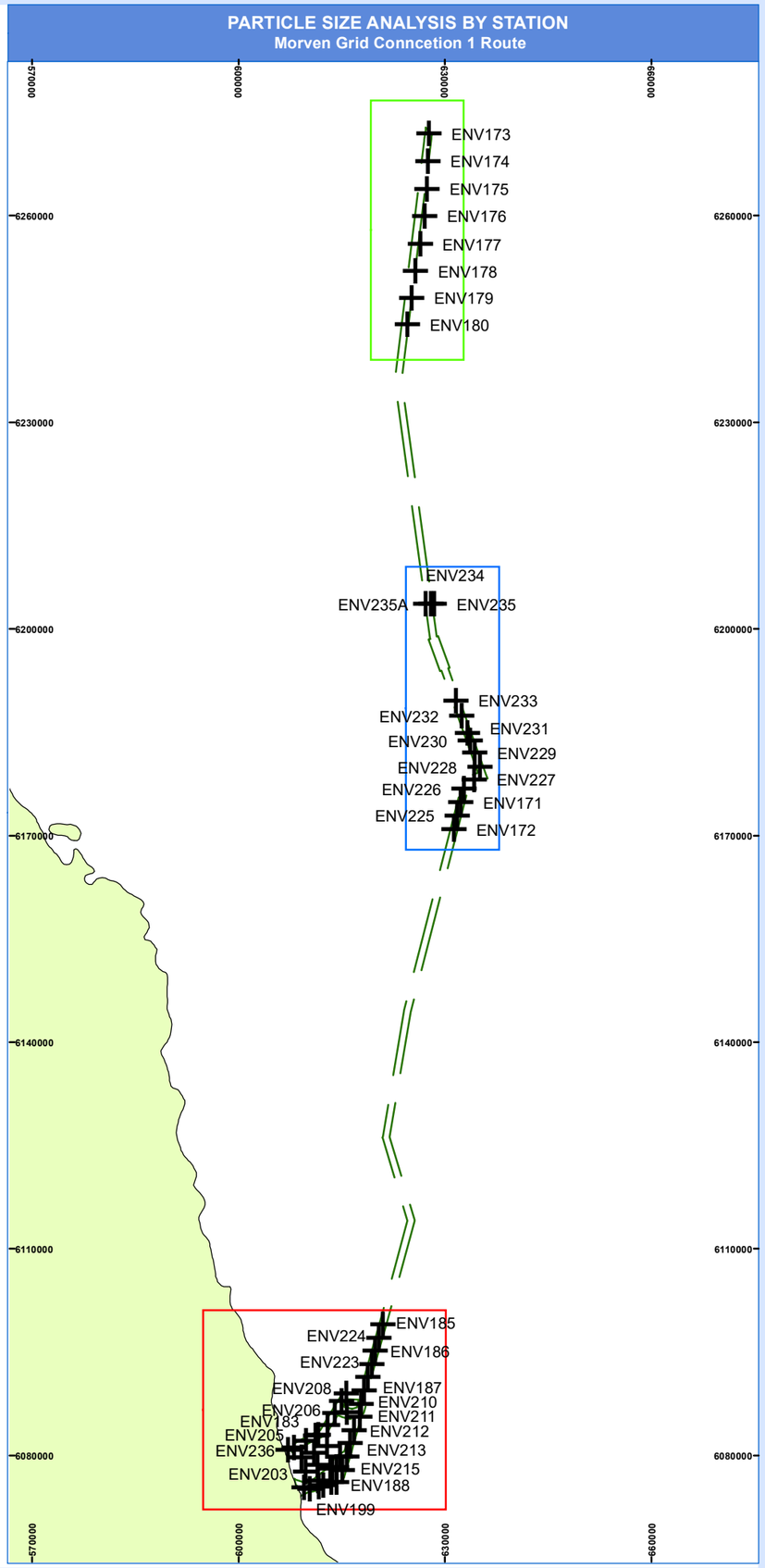
Results in green are from published background data, see Section 1.4. Diameter data from UKOOA (2001), including Wentworth classification, relate to median rather than mean grain size.

PARTICLE SIZE ANALYSIS BY STATION
Morven Grid Conncetion 1 Route









LEGEND

MORVEN GRID CONNECTION 1 ROUTE CORRIDOR

ENVIRONMENTAL STATION TARGET

SEDIMENT FRACTION (%)

FINES

SAND

GRAVEL

N GRID

Unless otherwise stated:
Overview Scale 1 : 50 000
ED50/UTM Zone 30N (3°W)

Figure 2.1

Job No. 59294.E4

2.5 Hydrocarbon Concentrations

2.5.1 Total Hydrocarbons and Alkanes

At 30 stations along the route, concentrations of THC were analysed using UVFS to meet MMO (2023) guidelines (Table 2.2). Of these 30 stations, 4 were located in Scottish waters and at these, concentrations of THC were additionally analysed by GC-FID. Details of analytical methods are presented in Appendix B.

Concentrations of THC by UVFS ranged from ≤2.7µg g^{-1} in the northern and central areas and, within the southern area, ranged from 15.5µg g^{-1} at Station ENV186 to 572µg g^{-1} at Station ENV221. Significant variation between the 20 stations along the southern area of route was observed, with THC significantly positively correlated with TOC content (Spearman's; r=0.79, p<0.01, Appendix F). Concentrations of THC were also observed to be the higher near the coast, in regions of higher densities of vessel traffic, presented in Figure 2.2 with THC values overlaid on weekly vessel traffic for 2019 (EMODnet, 2023). Overall, these concentrations were significantly higher (t-test p<0.05) than previously recorded along the ECR by Gardline (2024b). However, the spatial trend of lower THC concentrations at the northern and central stations, and variable THC concentrations at the southern stations was consistent with the previous survey (Gardline, 2024b).

A summary of the results of the hydrocarbon analyses conducted in Scottish waters is presented in Table 2.3 together with the concentrations of n-alkanes nC_{10} to nC_{37}, pristane and phytane. Individual n-alkane concentrations are tabulated in Table 2.4, with bar charts for the four Scottish stations in Appendix G. Concentrations of THC analysed by GC-FID (comprising n-alkanes, pristane, phytane, unresolved complex matrix (UCM) and PAHs) ranged from 2.2µg g^{-1} at Station ENV179 to 4.5µg g^{-1} at Station ENV173 with a mean of 3.5µg g^{-1} (±1.0SD). Concentrations of THC analysed by GC-FID were lower (t-test; p<0.05) than those recorded in the comparison survey (Gardline, 2024b).

To put these into a wider context, UKOOA (2001) reported a mean THC concentration of 9.51µg g^{-1} (measured by GC, n=159) and a 95th percentile of 40.1µg g^{-1} for CNS stations over 5km from existing infrastructure, sampled between 1975 and 1995. No stations in Scottish waters exceeded these levels and could therefore be considered consistent with background concentrations.

It has previously been shown that benthic macrofauna may suffer adverse effects when THC concentrations are in excess of 50µg g^{-1} (Kjeilen-Eilertsen *et al.*, 2004; UKOOA, 2002; 2005) and as such, this value represents the threshold above which hydrocarbons are expected to have significant environmental impact. Kingston (1992) also previously reported that benthic macrofauna suffer adverse effects, namely reduced diversity, when THC concentrations are more than 50 to 60µg g^{-1} and that specific sensitive species may be impacted at levels greater than 10µg g^{-1}. Mair *et al.* (1987) observed a notable increase in the dominance of opportunistic species at THC levels greater than 291.4µg g^{-1}. The THC by UVFS concentrations exceeded 50µg g^{-1} at thirteen stations along the southern area of the route, and at four of these stations (ENV222, ENV221, ENV200 and ENV201), the concentrations exceeded 291.4µg g^{-1}, therefore the faunal community may be adversely affected by THC at these stations. This is explored further in Section 2.9.

Although THC concentrations give an indication of the total oil in the sediment at each station, it does not give an indication of the source. Analysis of the GC chromatograms (Appendix G) may provide an indication of the origin of hydrocarbons in marine sediments and the extent to which they are weathered. Peaks in the gas chromatograms correspond to individual n-alkanes and other compounds, with carbon numbers increasing with elution time. The area beneath the trace constitutes the UCM (see Appendix D for further information) of hydrocarbons that could not be resolved by GC. This UCM includes cycloalkane compounds, which remain after substantial weathering and biodegradation of petrogenic inputs to the sediment (McDougall, 2000).

The chromatograms from the Scottish stations generally presented a consistent pattern of low level, HMW resolved n-alkanes and UCM ranging from approximately nC_{24} to nC_{35} with a peak between nC_{32} and nC_{34}. Such distributions are considered typical of background levels of hydrocarbon inputs in areas of historical oil and gas exploration, which include a relatively low level UCM distributed between nC_{20} to nC_{33} (McDougall, 2000). Overall, the UCM accounted for 56 to 76% of THC across the four stations, indicating that hydrocarbons were from a mixture of both weathered and fresher inputs. Typically, hydrocarbons in the molecular weight range nC_{24} to nC_{36} commonly originate from terrestrial plant sources (Harborne, 1999), or may represent the residue of highly weathered or biodegradable petrogenic material, including natural seeps, shipping discharge and oil and gas exploration and extraction (Bouloubassi *et al.*, 2001; McDougall, 2000). The chromatograms display larger resolved peaks over HMW n-alkanes with a general predominance of heavier weight n-alkanes and compounds with odd carbon numbers over those with even carbon numbers. This profile is characteristic of background hydrocarbons in North Sea sediments and indicative of low-level sedimentary biogenic hydrocarbons from a terrestrial plant source (Harborne, 1999; Tran *et al.*, 1995; Wang & Fingas, 2005).

Further insight into the origin of hydrocarbons in marine sediments can be gained by measuring concentrations of individual n-alkanes (Table 2.4). Total n-alkane concentrations varied between 0.049µg g^{-1} at Station ENV179 and 0.080µg g^{-1} at Station ENV177. The concentrations of n-alkanes were distributed with a greater proportion of HMW n-alkanes (nC_{21} to nC_{37}) which accounted for 71 to 98% of the total n-alkanes across the four stations sampled in Scottish waters. Peaks in n-alkane concentrations at all stations were at odd numbers within the range nC_{25} and nC_{31}, with the highest peaks around nC_{29} and nC_{31}. Their distribution within the HMW range indicated the presence of biogenic n-alkanes most likely derived from diffuse higher terrestrial plant waxes (Bouloubassi *et al.*, 2001). Furthermore, the secondary peak in n-alkane concentrations centred on nC_{15} at Station ENV177 is consistent with biogenic sources such as phytoplankton (Zhang *et al.*, 2024).

In general, the distribution of n-alkanes and concentrations were consistent to those of the comparison survey (Gardline, 2024b). To put these into a wider context, UKOOA (2001) reported a mean n-alkane concentration of 0.400µg g^{-1} (measured by GC, n=307) and a 95th percentile of 1.180µg g^{-1} for CNS stations over 5km from existing infrastructure, sampled between 1975 and 1995. No stations in Scottish waters exceeded these levels and could therefore be considered consistent with background concentrations.

The ratio of odd to even numbered n-alkanes within the HMW range (nC_{26} to nC_{30}), commonly referred to as the carbon preference index (CPI), can provide further insight into the origin of alkanes in marine sediment. Marine sediments containing a high level of biogenically derived (odd carbon number) n-alkanes are known to have CPI ≥2.0, with values ≥4.0 suggesting a virtual absence of petrogenic hydrocarbons (McDougall, 2000). CPI values close to 0 indicate a predominance of petrogenic hydrocarbons. Across the four stations where analysis was conducted, CPI values ranged from 3.0 to 4.4 with a mean 3.7 (±0.6SD) suggesting a dominance of biogenic inputs. Station ENV173 recorded a CPI value of 4.4 indicating a virtual absence of petrogenic hydrocarbons.

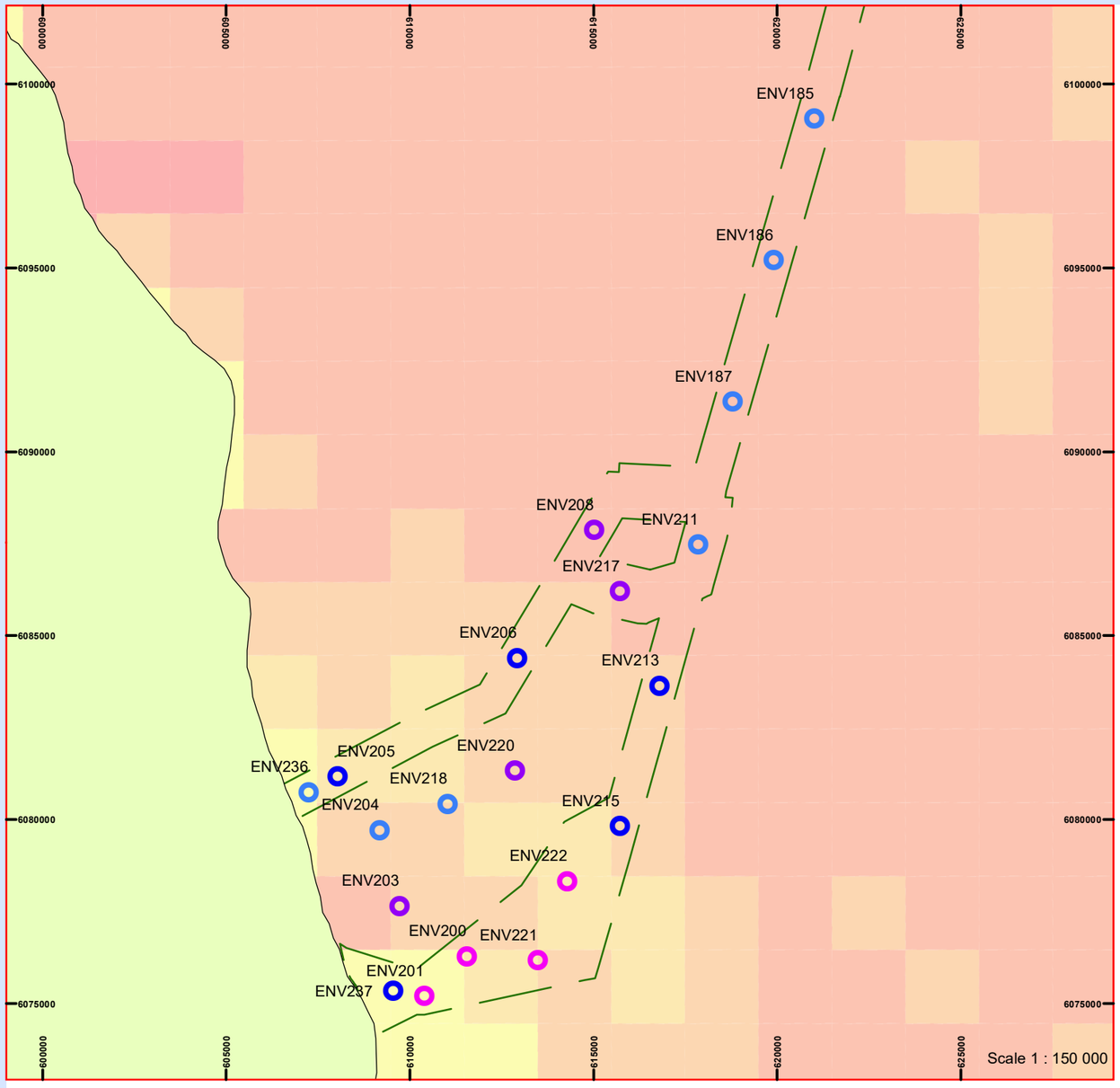
To put this into context, CPI across the stations analysed was within the range recorded in the comparison survey (Gardline, 2024b).

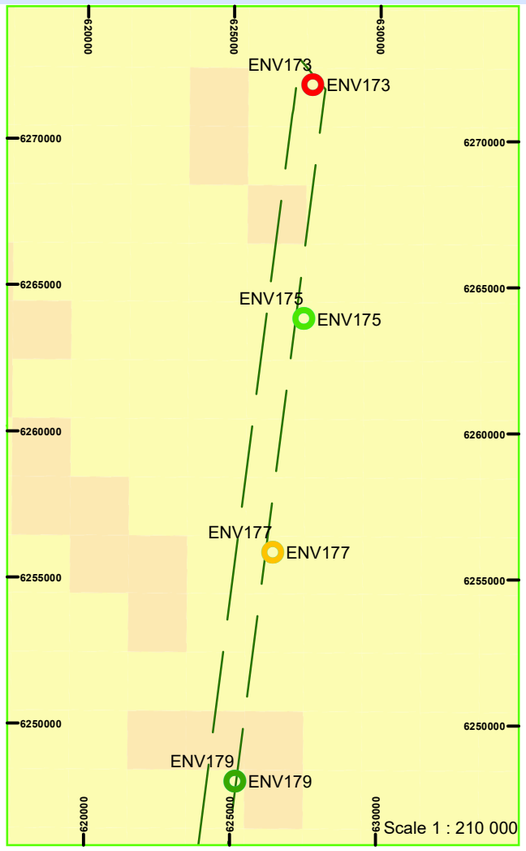
The ratio of isoprenoids pristane and phytane can be used to derive similar information to the CPI where a high pristane:phytane ratio is indicative of biogenic hydrocarbons most commonly originating from the decomposition of the phytol side chain of chlorophyll (Muniz *et al.*, 2004). The isoprenoid pristane is primarily biogenic in origin (Bouloubassi *et al.*, 2001; Muniz *et al.*, 2004) while phytane is rarely produced biogenically but is a common component of crude oil (Steinhauer & Boehm, 1992). Pristane concentrations ranged from 0.007µg g^{-1} at Station ENV175 to 0.014µg g^{-1} at Station ENV177, whereas phytane was <0.001µg g^{-1} at all four stations consistent with a predominance of biogenic hydrocarbons.

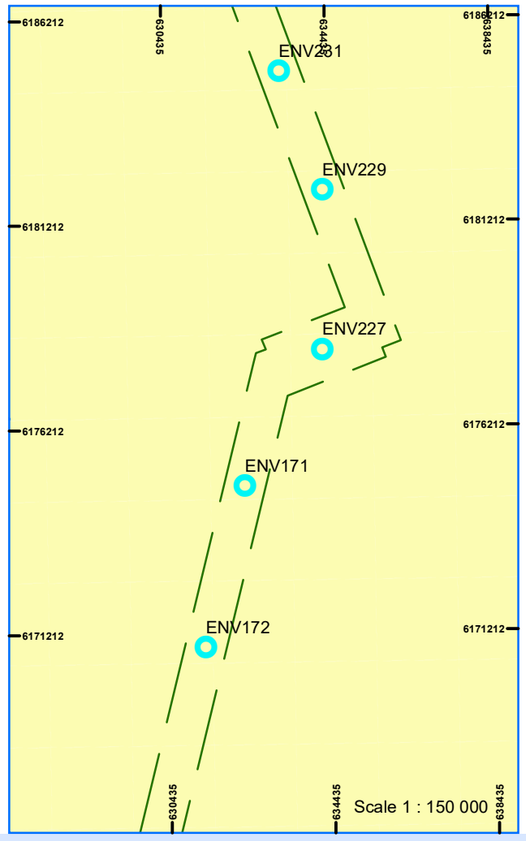
Table 2.2 THC by UVFS

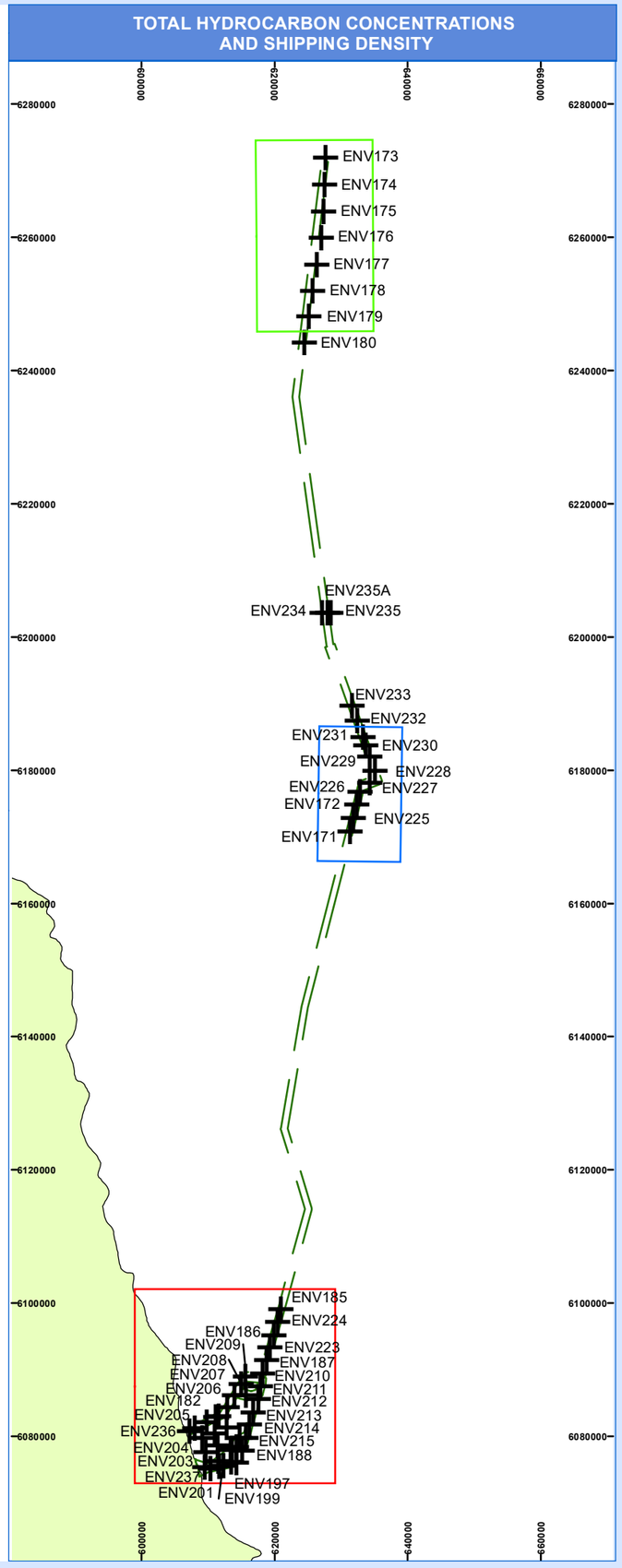
Area	Station	THC by UVFS
Northern	ENV173	<1.0
	ENV175	<1.0
	ENV177	<1.0
	ENV179	<1.0
Central	ENV233	<1.0
	ENV231	<1.0
	ENV229	1.4
	ENV227	2.7
	ENV171	2.1
	ENV172	1.8
Southern	ENV185	20.8
	ENV186	15.5
	ENV187	31.8
	ENV208	178.0
	ENV206	92.5
	ENV205	91.1
	ENV236	37.9
	ENV211	23.6
	ENV217	147.0
	ENV213	130.0
	ENV215	93.9
	ENV220	158.0
	ENV222	447.0
	ENV221	572.0
	ENV200	471.0
	ENV201	339.0
	ENV237	97.0
	ENV218	27.4
	ENV204	45.2
	ENV203	183.0
This Survey	Minimum	<1.0
	Maximum	572.0
	Mean	NC
	±SD	NC
Gardline (2024b)	Minimum	<1.0
	Maximum	269.0
	Mean	21.0
	±SD	50.4

Concentrations expressed as µg g^{-1}
Grey text indicates concentrations below LOD
Results in blue are from comparison survey data, see Section 1.3









LEGEND

MORVEN GC1 ROUTE CORRIDOR

ENVIRONMENTAL TARGET STATIONS

THC BY GC-FID (µg g^{-1})

- 0 - 2.2
- 2.2 - 3.6
- 3.6 - 3.9
- 3.9 - 4.5

THC BY UV FLUORESCENCE SPECTROSCOPY (µg g^{-1})

- <0.1 - 3.0
- 3.0 - 45.0
- 45.0 - 130.0
- 130.0 - 183.0
- 183.0 - 572.0

Weekly Average Vessel Transits for Whole Year 2019 (EMODnet, 2023)

- 1 - 200
- >200 - 500
- >500 - 1000
- >1000 - 10000
- >10000

Only Stations with THC concentrations above the LOD are presented.

Unless otherwise Stated:
Overview Scale 1 : 850 000
ED50/UTM Zone 30N (3°W)

Figure 2.2

Job No. 59294.E4

Table 2.3 Summary of Sediment Hydrocarbon Analyses

Area	Station	GC-FID									GC-MS		
				n-alkanes				Isoprenoids					
		THC	UCM	nC10-20	nC21-37	nC10-37	CPI[1]	Pristane	Phytane	Pristane/ Phytane Ratio	NPD[2]	Total PAH	NPD[2]/4-6 Ring
Northern	ENV173	4.5	2.9	0.006	0.071	0.078	4.4	0.013	<0.001	NC	0.001	0.008	0.218
	ENV175	3.6	2.8	0.005	0.071	0.076	3.0	0.007	<0.001	NC	0.001	0.012	0.141
	ENV177	3.9	2.5	0.023	0.057	0.080	3.5	0.014	<0.001	NC	0.005	0.012	0.661
	ENV179	2.2	1.2	0.001	0.048	0.049	3.7	0.011	<0.001	NC	NC	NC	NC
This Study	Minimum	2.2	1.2	0.001	0.048	0.049	3.0	0.007	<0.001	NC	NC	NC	NC
	Maximum	4.5	2.9	0.023	0.071	0.080	4.4	0.014	<0.001	NC	0.005	0.012	0.661
	Mean	3.5	2.3	0.009	0.062	0.071	3.7	0.011	NC	NC	NC	NC	NC
	±SD	1.0	0.8	0.010	0.011	0.015	0.6	0.003	NC	NC	NC	NC	NC
Gardline (2024b)	Minimum	3.9	2.2	0.002	0.050	0.054	1.3	0.007	NC	NC	NC	0.003	0.145
	Maximum	9.8	5.5	0.015	0.109	0.119	4.6	0.015	NC	NC	0.006	0.024	0.523
	Mean	6.5	3.8	0.009	0.076	0.085	2.7	0.009	NC	NC	NC	0.011	0.279
	±SD	2.0	1.0	0.004	0.018	0.021	1.1	0.002	NC	NC	NC	0.007	0.143
UKOOA (2001) for CNS	Mean	9.5	NA	NA	NA	0.400	2.0	NA	NA	NA	0.105	0.287	NA
	95th Percentile	40.1				1.180	2.8				NA	NA	
	Sand subset	11.1				0.380	2.1				0.142	0.268	
	Fine sand subset	8.7				0.370	2.0				0.193	0.310	

Unless indicated, concentrations expressed as µg g^{-1} dry sediment

1 Calculated using $2(nC_{27} + nC_{29})/nC_{26} + 2(nC_{28}) + nC_{30}$ (Farrington & Tripp, 1977).

2 Naphthalenes, phenanthrenes and dibenzothiophenes (total).

NA Not available

NC Not calculated due to values below LOD

Grey text indicates concentrations below LOD

Results in blue are from comparable surveys, see Section 1.3.

Results in green are from published background data, see Section 1.4.

Table 2.4 n-Alkane Concentrations

Station	ENV173	ENV175	ENV177	ENV179
nC_{10}	<1	<1	<1	<1
nC_{11}	<1	<1	<1	<1
nC_{12}	<1	<1	<1	<1
nC_{13}	<1	<1	<1	<1
nC_{14}	<1	<1	2	<1
nC_{15}	3	2	7	<1
nC_{16}	1	<1	4	<1
nC_{17}	1	1	3	1
nC_{18}	1	<1	2	<1
nC_{19}	<1	1	2	<1
nC_{20}	<1	<1	1	<1
nC_{21}	<1	1	1	1
nC_{22}	<1	<1	1	<1
nC_{23}	<1	1	2	2
nC_{24}	2	2	3	3
nC_{25}	4	6	4	3
nC_{26}	2	2	2	1
nC_{27}	11	6	6	4
nC_{28}	4	2	2	1
nC_{29}	19	13	12	10
nC_{30}	4	6	5	4
nC_{31}	15	15	10	11
nC_{32}	3	1	1	1
nC_{33}	3	2	1	1
nC_{34}	3	3	2	2
nC_{35}	3	5	2	2
nC_{36}	<1	4	1	2
nC_{37}	<1	<1	<1	<1
Total	**78**	**76**	**80**	**49**

Concentrations expressed as ng g^{-1} dry weight sediment.
Grey text indicates concentrations below LOD

2.5.2 Polycyclic Aromatic Hydrocarbons

A summary of the total 2-6 ring PAH and total naphthalene, phenanthrene and dibenzothiophene (NPD;2-3 ring) concentrations for the four Scottish stations are presented in Table 2.3, while the results of MMO (2023) accredited PAH analysis at all sampled stations are presented in Table 2.5. For the four Scottish stations, a breakdown of the individual PAHs and their alkyl derivatives is presented in Table 2.6 and as bar charts showing the proportion of parent compounds and alkylated homologues for each PAH molecular weight class in Appendix G. In addition, the United States Environmental Protection Agency (US EPA) sixteen priority PAH concentrations for all sampled stations are presented in Appendix G. Detailed information on analytical methods is presented in Appendix B.

Total PAH concentrations of analytes quantified under MMO (2023) accredited analysis (Table 2.6) were ≤0.006µg g^{-1} in the northern area and ≤0.120µg g^{-1} in the central area. However, within the southern area,

concentrations ranged from 1.042µg g^{-1} at Station ENV211 to 14.468µg g^{-1} at Station ENV201 and were significantly higher at Stations ENV221 and ENV200, recording concentrations of 25.420µg g^{-1} and 28.080µg g^{-1}, respectively (Grubbs' r=3.12, p<0.01; Appendix F). Across the 30 stations, total PAH concentrations showed a significant positive correlation with sediment fines and TOC (Spearman's r=0.67; r=0.98, p<0.01; Appendix F). Overall, these concentrations were significantly higher (t-test p<0.05) than previously recorded along the ECR by Gardline (2024b). However, the spatial trend of lower PAH concentrations at the northern and central stations, and variable THC concentrations at the southern stations was consistent with the previous survey (Gardline, 2024b).

Information on the origins of PAHs can be derived from the parent compound molecular weight indices as detailed by Yunker *et al.* (2002) and adopted in Fisner *et al.* (2013), these are presented in Figure 2.3. The molecular mass indices identified predominantly pyrogenic PAHs with potentially mixed sources at Stations ENV201 and ENV237 for the 178 molecular weight index.

Further evidence of petrogenic inputs can be observed from the prevalence of alkylated homologues over parent compounds (Wang & Fingas, 2005). As illustrated in Figure 2.4, it is evident that the alkylated homologues of the LMW naphthalene and phenanthrene are more abundant than their parent compounds which indicates there are PAHs from petrogenic sources present. This pattern is consistent with the comparison survey.

The best estimates of the potential toxicity of PAHs in marine sediments are the ERL and ERM values (Long *et al.*, 1995), as described in Section 1.4 and Appendix D. Total PAH concentrations at stations along the northern and central areas of the route were well below their respective ERL values (4.022µg g^{-1}) and therefore indicate that toxic effects to fauna by PAHs are unlikely in these areas of the route. Table 2.5 highlights that of the 20 stations in the southern area, 11 recorded total PAH concentrations above the ERL and, other than Stations ENV186 and ENV211, all 20 stations recorded concentrations above ERL for one or more PAH analytes. Further, the concentration of phenanthrene at Stations ENV200 and ENV221 exceeded their respective ERM value (1.500µg g^{-1}).

The AET (Buchman, 2008) represents the concentration above which adverse biological impacts would be expected on the biological indicator due to exposure to that contaminant alone. Individual PAH concentrations, including naphthalene, were above their respective AETs at several stations in the southern area of the route, further indicating that adverse biological impacts are possible in this area.

OSPAR (2005) published BC, BAC and BRC tools to assess concentrations of certain hazardous substances (see 1.4). Comparison to OSPAR BC, BAC and BRC (OSPAR, 2005; 2009a) data required normalisation of the PAH concentrations to 2.5% TOC, as presented in Appendix G. Where concentrations were above LOD, most compounds at the southern area stations and at Stations ENV229, ENV227 and ENV171 in the central area exceeded their exceeded their respective BCs. The BRC max for the northern North Sea (as defined by OSPAR (2005)) was exceeded at all stations where concentration were above LOD for acenaphthylene, acenaphthene and fluorene, with dibenzo[a,h]anthracene above BRC max at nine stations. Further, the survey averages for above LOD concentrations of nine US EPA PAHs exceeded their respective BACs. Additionally, concentrations of naphthalene, anthracene, fluoranthene and pyrene exceed EAC thresholds at several stations in the southern area. As mentioned in Section 1.4 normalisation to 2.5% TOC within coarser or predominantly sandy substrate areas with low TOC means these thresholds are subject to greater extrapolation and uncertainty.

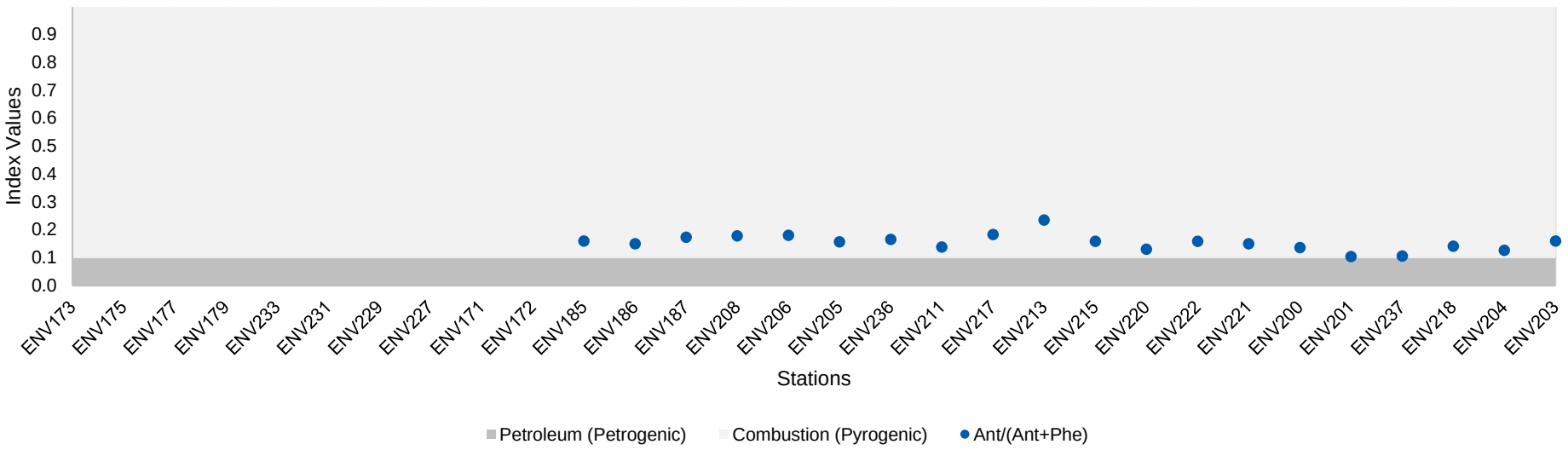
Total PAHs for the four Scottish stations reached 0.012µg g^{-1} at Stations ENV175 and ENV177 (Table 2.3). These values were similar to those previously recorded in the comparison survey (Gardline, 2024b). Further, concentrations were below the UKOOA (2001) mean of 0.287µg g^{-1}.

The 2-3 ring NPD concentrations for the four Scottish stations reached 0.005µg g^{-1} at Station ENV177 (Table 2.3), consistent with a lack of petrogenic contamination in the northern area of the route. The NPD concentrations for these stations is consistent with the comparison survey (Gardline, 2024b) along with all concentrations being below the UKOOA (2001) mean of 0.105µg g^{-1} for CNS stations.

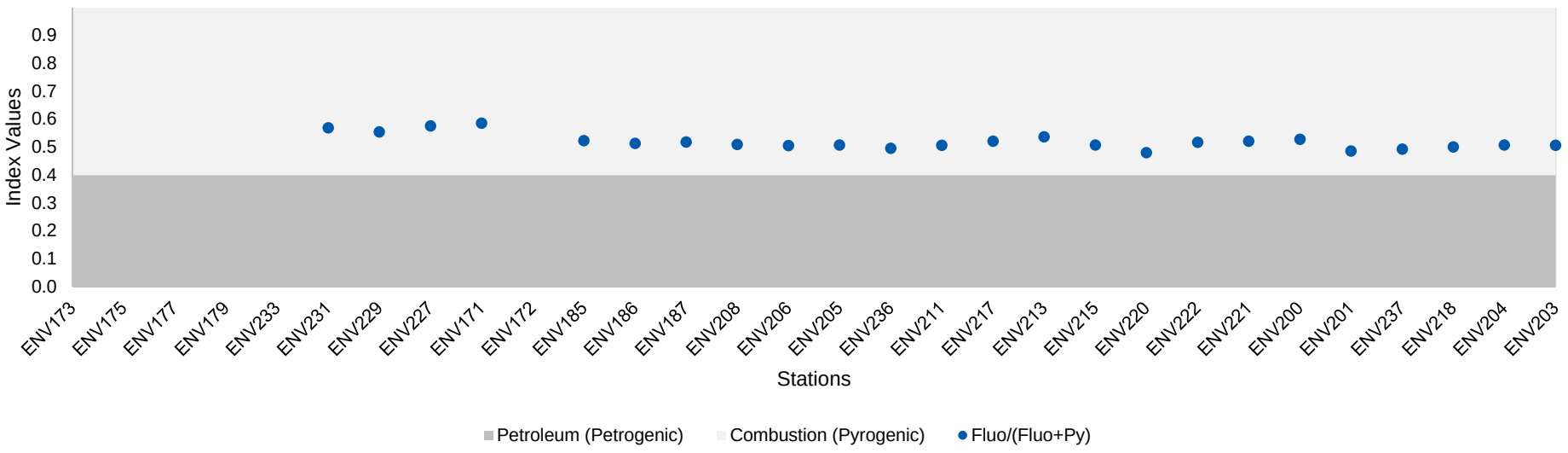
When compared against OSPAR (2005) BC, BAC and BRC in Appendix G, none of the EPA 16 PAH compounds analysed at the Scottish stations exceeded their respective BC values, or AET thresholds (Buchman, 2008).

Figure 2.3 PAH Molecular Weight Indices

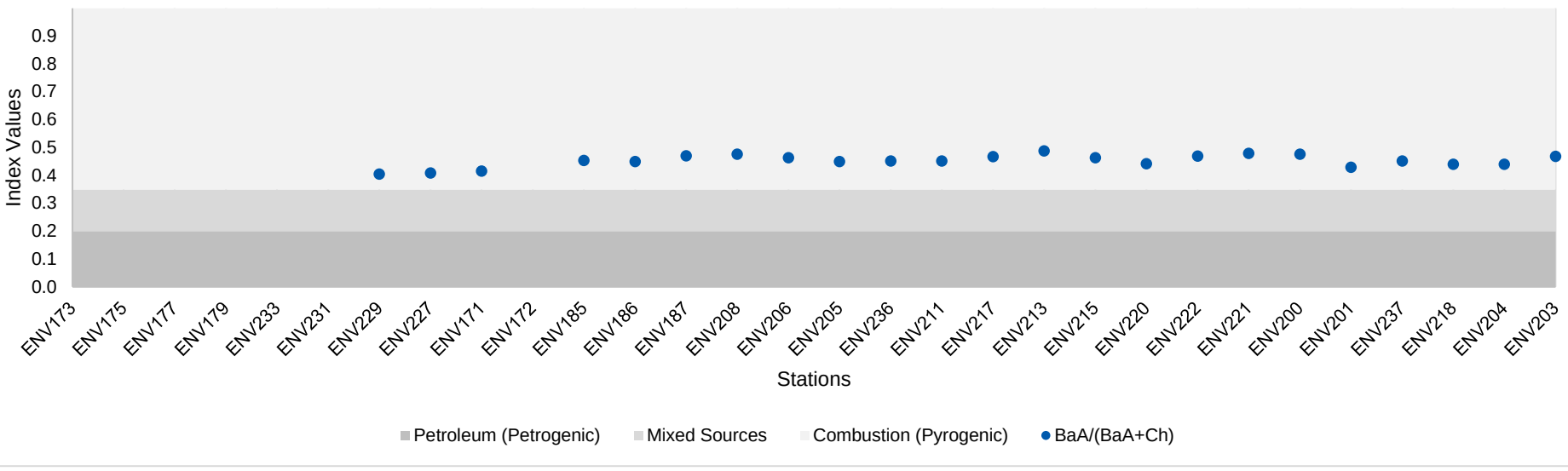
a) Calculated Ratio of 178 Molecular Weight PAH Index



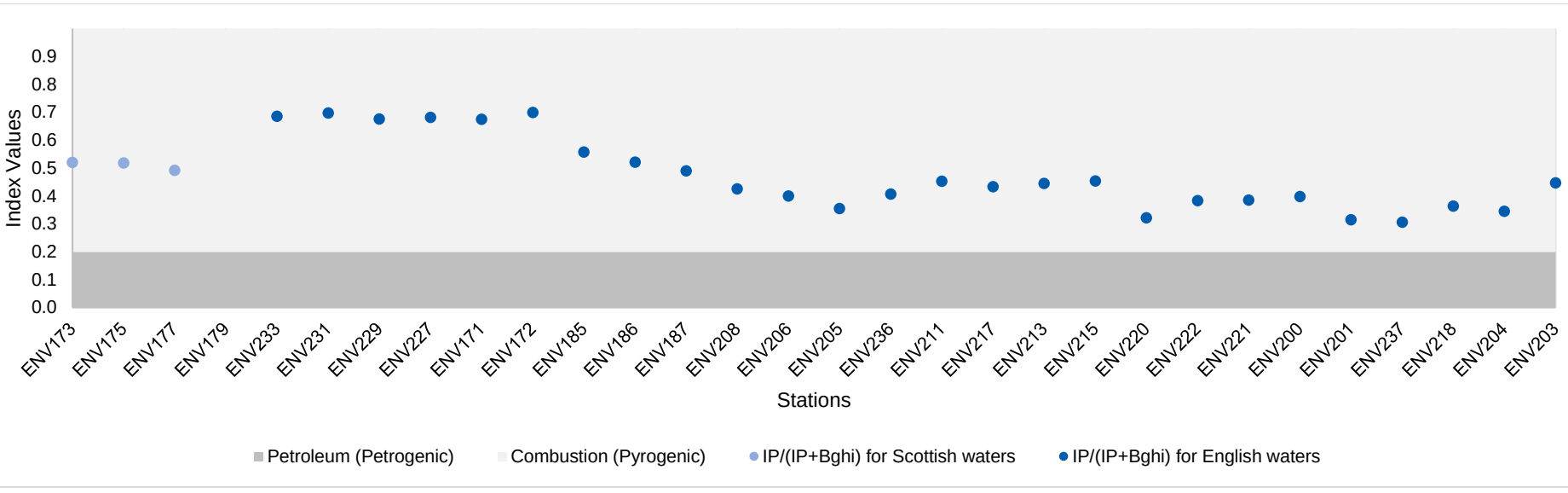
b) Calculated Ratio of 202 Molecular Weight PAH Index



c) Calculated Ratio of 228 Molecular Weight PAH Index



d) Calculated Ratio of 276 Molecular Weight PAH Index



Ratios have been plotted where the concentrations of both compounds were >LOD.

Northern	Central	Southern

Table 2.5 PAH Concentrations for MMO (2023) Stipulated Compounds

Area	Station	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[e]pyrene	Benzo[ghi]perylene	Benzo[k]fluoranthene	C1-naphthalenes	C1-phenanthrene	C2-naphthalenes	C3-naphthalenes	Chrysene	Dibenzo[ah]anthracene	Fluoranthene	Fluorene	Indeno[1,2,3-cd]pyrene	Naphthalene	Perylene	Phenanthrene	Pyrene	Total MMO PAH	Total EPA 16 PAH
Northern	ENV173	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	5	2
	ENV175	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	6	2
	ENV177	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	6	2
	ENV179	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	3	2
Central	ENV233	<1	<1	<1	<1	<1	4	5	2	3	<1	<1	3	1	<1	<1	2	<1	5	<1	<1	<1	<1	24	15
	ENV231	<1	<1	<1	<1	<1	4	5	2	3	2	2	3	2	<1	<1	2	<1	5	<1	<1	<1	1	30	18
	ENV229	<1	<1	<1	3	4	10	15	7	8	6	9	11	4	5	2	7	<1	15	3	<1	6	6	120	75
	ENV227	<1	<1	<1	2	3	9	11	5	7	4	5	5	4	3	<1	5	<1	11	2	<1	3	3	82	54
	ENV171	<1	<1	<1	2	3	9	10	5	7	5	5	6	5	3	1	5	<1	11	2	<1	3	3	84	54
	ENV172	<1	<1	<1	<1	1	4	4	2	2	2	2	3	2	<1	<1	2	<1	4	<1	<1	2	<1	30	17
Southern	ENV185	12	7	20	60	70	**102**	**101**	72	89	**177**	**140**	**170**	**181**	72	18	**111**	20	91	59	17	**102**	**101**	1791	1006
	ENV186	9	5	15	44	50	67	66	51	55	**140**	**112**	**139**	**148**	54	12	79	15	55	43	11	86	75	1331	716
	ENV187	24	10	39	96	**103**	**114**	**106**	90	98	**253**	**229**	**255**	**293**	**108**	21	**171**	34	87	78	23	**182**	**159**	2573	1414
	ENV208	49	17	78	**165**	**165**	**164**	**159**	**140**	**139**	**573**	**472**	**556**	**633**	**181**	32	**302**	72	**104**	**200**	34	**358**	**291**	4883	2457
	ENV206	83	33	**139**	**247**	**228**	**229**	**206**	**199**	**196**	**1520**	**785**	**1310**	**1300**	**286**	40	**477**	**131**	**133**	**484**	52	**625**	**466**	9168	3996
	ENV205	20	9	34	60	55	57	45	51	39	**452**	**227**	**367**	**312**	73	14	**127**	32	28	**144**	11	**180**	**123**	2460	1046
	ENV236	14	5	19	36	35	34	30	29	29	**264**	**113**	**201**	**170**	43	6	67	20	20	81	7	93	68	1382	597
	ENV211	9	4	12	31	32	41	41	33	29	**130**	97	**133**	**140**	37	7	56	14	27	42	5	71	54	1042	497
	ENV217	78	38	**133**	**269**	**258**	**245**	**216**	**209**	**220**	**857**	**664**	**806**	**881**	**306**	42	**547**	**106**	**160**	**278**	56	**587**	**503**	7459	3980
	ENV213	35	21	84	**182**	**172**	**163**	**134**	**126**	**143**	**365**	**322**	**347**	**402**	**191**	30	**242**	49	**101**	**127**	36	**269**	**209**	3750	2143
	ENV215	**120**	40	**179**	**391**	**391**	**392**	**362**	**327**	**304**	**2140**	**1220**	**1830**	**1740**	**452**	75	**704**	**194**	**272**	**700**	76	**937**	**684**	13530	6162
	ENV220	55	22	72	**119**	**101**	83	89	**101**	81	**1550**	**573**	**1210**	**1000**	**150**	17	**224**	99	48	**472**	18	**473**	**242**	6798	2358
	ENV222	**123**	44	**182**	**366**	**339**	**308**	**268**	**283**	**271**	**2340**	**1140**	**1890**	**1740**	**413**	57	**685**	**187**	**176**	**746**	60	**949**	**638**	13205	5767
	ENV221	**188**	**104**	**323**	**646**	**574**	**464**	**394**	**435**	**441**	**4990**	**2090**	**3950**	**3530**	**701**	84	**1210**	**331**	**273**	**1660**	**112**	**1810**	**1110**	25420	10354
	ENV200	**260**	**109**	**340**	**779**	**717**	**608**	**511**	**543**	**559**	**5160**	**2300**	**4130**	**3510**	**855**	**110**	**1520**	**410**	**359**	**1670**	**140**	**2130**	**1360**	28080	12329
	ENV201	**123**	41	**139**	**221**	**194**	**173**	**172**	**190**	**143**	**2830**	**1480**	**2620**	**2650**	**294**	33	**391**	**275**	87	**790**	38	**1170**	**414**	14468	4678
	ENV237	46	18	50	**119**	89	76	64	86	71	**1330**	**497**	**1110**	**874**	**144**	15	**219**	89	38	**377**	18	**419**	**225**	5973	2081
	ENV218	13	6	20	36	31	29	23	30	27	**329**	**124**	**250**	**194**	46	7	81	22	17	98	10	**117**	81	1589	659
	ENV204	15	9	22	48	41	39	31	38	33	**417**	**167**	**322**	**258**	61	14	**104**	28	20	**124**	11	**151**	**101**	2053	847
	ENV203	76	48	**118**	**272**	**283**	**267**	**249**	**231**	**227**	**1740**	**742**	**1440**	**1180**	**308**	52	**453**	**142**	**187**	**535**	58	**612**	**441**	9662	4253
Long *et al.* (1995)	ERL	16	44	85.3	261	430	NA	NA	85	NA	NA	NA	NA	NA	384	63.4	600	19	240	160	NA	240	665	**4022**	
	ERM	500	640	1100	1600	1600	NA	NA	NA	NA	NA	NA	NA	NA	2800	260	5100	540	NA	2100	NA	1500	2600	**44792**	NA
Buchman (2008)	AET	130	71	280	960	1100	1800	NA	670	1800	NA	NA	NA	NA	950	230	1300	120	600	230	NA	660	2400	**NA**	
MMO (2023)	CAL1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	**NA**	**NA**

Concentrations expressed as ng g^{-1} dry weight sediment
Blue cells correspond to concentrations above ERL (Long *et al.*, 1995)
Green cells correspond to concentrations above ERM (Long *et al.*, 1995)
Red cells correspond to concentrations above AET (Buchman, 2008)
Bold values correspond to concentrations above CAL 1 (MMO, 2023)

* Benzo[k]fluoranthene (including Benzo[j]fluoranthene)
** Chrysene (including Triphenylene)
Grey text indicates concentrations below LOD
Results in green are from published background data, see Section 1.4.

Table 2.6 PAH Concentrations

Station	ENV173	ENV175	ENV177	ENV179
Naphthalene (128)	<1	<1	<1	<1
C1 128	<1	<1	<1	<1
C2 128	1	1	2	<1
C3 128	<1	<1	2	<1
C4 128	<1	<1	<1	<1
Total 128	**1**	**1**	**4**	**NC**
Phenanthrene/anthracene (178)	NC	NC	NC	NC
C1 178	<1	<1	<1	<1
C2 178	<1	<1	1	<1
C3 178	<1	<1	<1	<1
Total 178	**NC**	**NC**	**1**	**NC**
Dibenzothiophene (184)	<1	<1	<1	<1
C1 184	<1	<1	<1	<1
C2 184	<1	<1	<1	<1
C3 184	<1	<1	<1	<1
Total 184	**NC**	**NC**	**NC**	**NC**
Fluoranthene/pyrene (202)	NC	NC	NC	NC
C1 202	<1	<1	<1	<1
C2 202	<1	<1	<1	<1
C3 202	<1	<1	<1	<1
Total 202	**NC**	**NC**	**NC**	**NC**
Benzoanthracene/chrysene (228)	NC	NC	NC	NC
C1 228	<1	<1	<1	<1
C2 228	<1	<1	<1	<1
Total 228	**NC**	**NC**	**NC**	**NC**
Benzofluoranthenes/benzopyrenes (252)	NC	NC	2	NC
C1 252	2	2	2	<1
C2 252	<1	2	<1	<1
Total 252	**2**	**3**	**3**	**NC**
Dibenzoanthracene/indenopyrene/benzoperylene (276)	5	4	4	NC
C1 276	<1	1	<1	<1
C2 276	<1	2	<1	<1
Total 276	**5**	**7**	**4**	**NC**
Total NPD[1]	**1**	**1**	**5**	**0**
Total 2 to 6 ring PAH	**8**	**12**	**12**	**0**

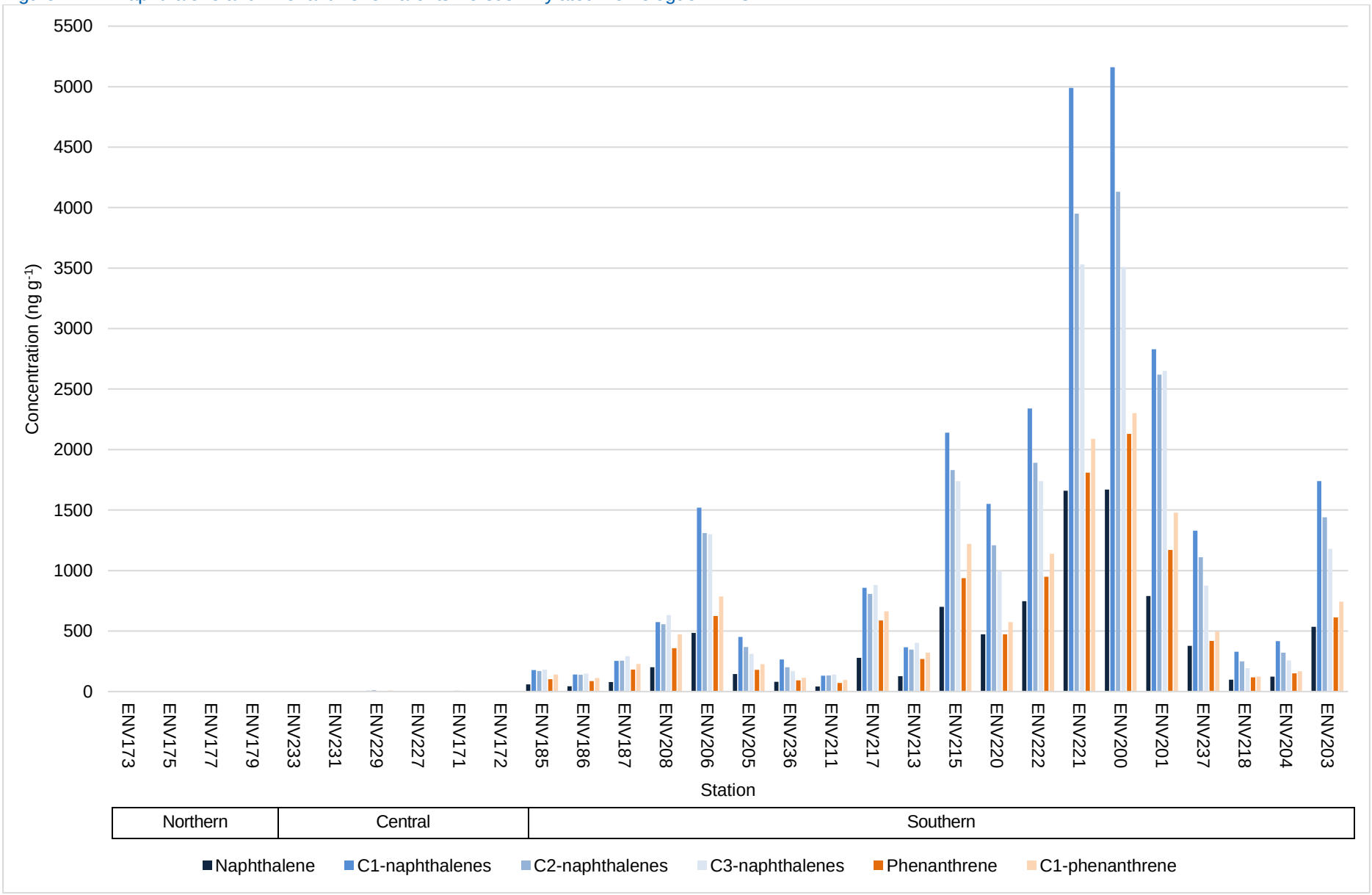
Concentrations expressed as ng g^{-1} dry weight sediment

1 Naphthalenes, phenanthrenes and dibenzothiophenes

NC Not calculated due to one or more values below the LOD

Grey text indicates concentrations below LOD

Figure 2.4 Naphthalene and Phenanthrene Parents Versus Alkylated Homologue PAHs



2.5.3 Polychlorinated Biphenyl Concentrations

At 30 stations along the route, concentrations of PCBs were analysed by ultrasonic solvent extraction followed by GC-MS-MS. Further details of analytical methods are presented in Appendix B. Concentrations of all 25 PCB congeners were below LOD at stations along the northern and central areas of the route and at three of the stations in the southern area of the route. Concentrations of each of the ICES 7 PCBs, together with totals for both the ICES 7 and 25 PCB Congeners are presented for all stations in the southern area of the route in Table 2.7. Full results for each of the 25 PCB congeners across all 30 stations are presented in Appendix G.

Of the seventeen stations with concentrations above LOD, none exceeded the CAL 1 concentration or Long *et al*. (1995) ERL concentration (Table 2.7).

The ICES-7 PCBs, which are congeners that cover the range of toxicological properties of the group, were compared against OSPAR (2009a) thresholds after normalisation to 2.5% TOC (Appendix G). The only EAC threshold exceeded was for PCB118 at Station ENV203. As mentioned in Section 1.4 normalisation to TOC within coarser or predominantly sandy substrate areas means these thresholds are subject to greater extrapolation and uncertainty. Concentrations PCBs for stations with values above LOD, were similar (t-test; $p>0.05$) to those recorded for the comparison survey (Gardline, 2024b), other than for PCB 118 and total ICES-7 PCBs, for which concentration were higher than the previous survey (t-test; $p<0.05$).

According to OSPAR (2013), PCB153 is generally present in the highest concentrations and correlates well with other analysed PCBs, while PCB118 is representative of the more toxicologically relevant mono-ortho/planar PCBs. In the current survey PCB118 was recorded at similar concentrations to that of PCB153 (t-test; $p<0.05$) indicating that toxicological effects of PCBs may be apparent.

Table 2.7 Total Concentrations of PCBs and ICES-7 PCBs at Stations in Southern Area of Route

Area	Station	PCB28	PCB52	PCB101	PCB118	PCB138	PCB153	PCB180	Total 25 PCB Congeners	Total ICES-7 PCBs
Southern	ENV185	0.13	<0.08	0.15	0.23	0.23	0.22	0.10	**1.58**	**0.23**
	ENV186	<0.08	<0.08	<0.08	<0.08	0.09	0.12	<0.08	**0.21**	**0.09**
	ENV187	0.11	0.08	0.13	0.22	0.13	0.15	0.11	**1.36**	**0.13**
	ENV208	0.22	0.20	0.32	0.46	0.39	0.40	0.21	**3.98**	**0.99**
	ENV206	0.29	0.27	0.46	0.53	0.35	0.57	0.25	**5.71**	**1.14**
	ENV205	0.09	<0.08	0.14	0.18	0.16	0.23	<0.08	**1.21**	**0.16**
	ENV236	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**NC**	**NC**
	ENV211	<0.08	<0.08	<0.08	0.10	0.09	0.07	<0.08	**0.26**	**0.09**
	ENV217	0.31	0.43	0.43	0.62	0.40	0.52	0.28	**6.02**	**1.31**
	ENV213	0.10	0.10	0.17	0.14	0.16	0.18	<0.08	**1.40**	**0.16**
	ENV215	0.39	0.38	0.53	0.63	0.75	0.77	0.38	**7.72**	**1.84**
	ENV220	0.17	0.22	0.31	0.33	0.33	0.29	0.21	**3.33**	**0.67**
	ENV222	0.34	0.29	0.43	0.53	0.45	0.47	0.26	**5.47**	**1.29**
	ENV221	0.25	0.23	0.27	0.36	0.28	0.33	0.21	**3.88**	**0.83**
	ENV200	0.44	0.49	0.60	0.67	0.66	0.77	0.41	**8.44**	**1.99**
	ENV201	0.14	0.14	0.20	0.22	0.28	0.23	0.13	**2.43**	**0.49**
	ENV237	0.11	0.15	0.22	0.23	0.25	0.26	0.14	**2.23**	**0.34**
	ENV218	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**NC**	**NC**
	ENV204	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**NC**	**NC**
	ENV203	0.42	0.48	0.91	1.23	0.99	1.11	0.80	**15.37**	**3.46**
This Survey	Minimum	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**NC**	**NC**
	Maximum	0.44	0.49	0.91	1.23	0.99	1.11	0.80	**15.37**	**3.46**
	Mean	NC	NC	NC	NC	NC	NC	NC	**NC**	**NC**
	±SD	NC	NC	NC	NC	NC	NC	NC	**NC**	**NC**
Gardline (2024b)	Minimum[1]	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**NC**	**NC**
	Maximum	0.71	0.65	0.84	0.79	0.99	1.04	0.60	**11.91**	**4.83**
	Mean	NC	NC	NC	NC	NC	NC	NC	**NC**	**NC**
	±SD	NC	NC	NC	NC	NC	NC	NC	**NC**	**NC**
MMO (2023)	CAL 1	NA	NA	NA	NA	NA	NA	NA	**20**	**10**
	CAL 2	NA	NA	NA	NA	NA	NA	NA	**200**	NA
Long et al. (1995)	ERL	NA	NA	NA	NA	NA	NA	NA	**NA**	**11.5**

Concentrations expressed as ng g^{-1} dry weight sediment
NC Not Calculated due to values below LOD
NA Not Available
Grey text indicates concentrations below LOD
Results in blue are from comparison survey data, see Section 1.3
Results in green are from published background data, see Section 1.4.

2.6 Metal Concentrations

2.6.1 Trace Metal Concentrations

Following extraction by aqua regia, concentrations of As, Cd, Cr, Cu, Hg, Ni, Pb and Zn were determined by ICP-MS at 30 stations, with results presented in Table 2.8. In addition, at four stations located in Scottish waters following HF acid extraction, concentrations of As, Cd, Cr, Cu, Pb, Hg, Ni, V and Zn were determined by ICP-MS whilst Ba was determined by ICP-OES, with results presented in Table 2.9. A direct comparison between the current data and the respective Long *et al*. (1995) ERL, ERM and Buchman (2008) AET levels are also presented in Table 2.9. Further details of analytical methods are presented in Appendix B. As aluminium (Al) was not tested for, the normalisation to 5% Al concentrations for comparison with the OSPAR (2005) BC, BAC and BRC values could not be carried out. Therefore, normalisation to 1% TOC was conducted to allow comparison to the OSPAR (2009c) EACs and presented in Appendix H.

The highest concentrations of the metals following aqua regia digest were recorded at the southern area Stations ENV200, ENV203 and ENV215, corresponding with higher proportions of fine sediment and or highest concentrations of TOC, indicating these concentrations were consistent with natural variation. When all 30 stations were considered, metals strongly correlated with the increasing proportion of fines, TOC and total PAH concentrations (Spearman's $p<0.01$, Appendix F). All metals, except Cr, were also negatively correlated with depth ($p<0.01$; Appendix F). When looking specifically at the 20 stations in the southern area, these correlations with natural physico-chemical variables remained other than for Cd, which only correlated with total ICES-7 PCB concentrations (Spearman's $p<0.01$, Appendix F).

Metal concentrations following aqua regia digest were directly compared to CALs (MMO, 2023). Of the metals that were analysed, four (As, Ni, Pb and Zn) reported concentration above CAL 1 at one or more stations, with Stations ENV200 and ENV203 recording concentrations above CAL1 for all four of these metals. No analyte was reported to exceed CAL 2. Three or more metals were at concentrations above the UKOOA (2001) 95th percentile for bioavailable metals at all stations within the southern area of the route, with Cu ,Pb and Zn exceeding the threshold at all twenty stations, indicating that the concentrations of these metals may be considered above the bioavailable background for the CNS. Overall, metals concentrations were significantly higher (t-test $p<0.05$) than previously recorded along the ECR by Gardline (2024b). However, the spatial trend of lower metal concentrations at the northern and central stations, and variable metal concentrations at the southern stations was consistent with the previous survey (Gardline, 2024b).

Barium can be an important element in the detection of localised anthropogenic sediment pollution. It is often used in the form of barite (barium sulphate, $BaSO_4$) as a weighting agent in drilling fluids. Barium concentrations following HF digest at the four Scottish stations ranged from 253µg g^{-1} to 269µg g^{-1}. To put this into the wider context, all four stations were below the UKOOA (2001) mean for the CNS and can therefore be considered consistent with background concentrations. Further, Neff (2004) suggested that sediments not contaminated by drilling cuttings may contain Ba concentrations up to 2000µg g^{-1}, a concentration that was not exceeded at any sampled station within the current survey.

Concentrations of all metals analysed by HF digest at the four stations in Scottish waters were below their respective Long *et al*. (1995) ERL, ERM and Buchman (2008) AET values, with the exception of As at Station ENV179 which exceeded its respective ERL. Concentrations were also below their respective UKOOA (2001) 95th percentile where available, indicating most metal concentrations can be considered typical of background sediments in the wider area. Concentrations of Ba, Ni and Zn were higher (t-test, $p<0.05$) than at Scottish stations in the comparison survey (Gardline, 2024b) with the remaining metal concentrations comparable or lower than previously recorded.

When normalised to 1% TOC, both aqua regia and HF digest concentrations of Pb exceeded the OSPAR (2009c) EACs at all stations, with Cd by aqua regia exceeding its respective EAC at twelve stations in the southern area, indicating that toxicological effects of these metals may be apparent. As outlined in Section 1.4 normalisation to TOC within coarser and predominantly sandy substrate areas introduces greater uncertainty to these comparisons.

Table 2.8 Sediment Metal Concentrations from Aqua Regia Digestion

Area	Station	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
Northern	ENV173	3.1	<0.04	9.1	1.3	<0.01	2.8	3.6	13
	ENV175	2.4	<0.04	8.8	1.3	0.03	2.9	3.4	13
	ENV177	3.1	<0.04	9.5	1.6	<0.01	3.0	3.9	13
	ENV179	4.6	<0.04	7.5	1.2	<0.01	2.8	4.2	12
Central	ENV233	4.5	<0.04	11.3	1.8	<0.01	4.4	5.7	19
	ENV231	4.6	<0.04	12.6	1.9	<0.01	4.6	6.4	17
	ENV229	4.5	<0.04	12.0	2.4	<0.01	5.3	8.0	18
	ENV227	3.6	<0.04	10.5	2.3	<0.01	5.4	7.4	19
	ENV171	4.8	<0.04	12.8	3.0	<0.01	6.6	7.8	23
	ENV172	5.2	<0.04	15.3	3.6	<0.01	7.8	9.4	25
Southern	ENV185	9.2	0.10	31.3	10.5	0.08	20.8	31.0	65
	ENV186	6.1	0.09	20.4	6.6	0.04	13.3	20.8	44
	ENV187	7.2	0.09	21.9	8.3	0.06	14.9	26.1	54
	ENV208	12.2	0.19	27.0	17.2	0.18	19.3	53.3	96
	ENV206	18.1	0.21	30.8	25.8	0.19	24.1	81.6	132
	ENV205	15.4	0.18	19.7	14.3	0.10	14.5	55.0	98
	ENV236	12.8	0.22	14.2	11.3	0.05	11.8	46.0	96
	ENV211	6.2	0.06	15.2	6.2	0.06	9.8	19.2	42
	ENV217	15.8	0.16	30.2	18.8	0.21	22.1	59.5	97
	ENV213	12.1	0.08	19.7	9.2	0.06	13.4	34.2	72
	ENV215	22.4	0.19	36.8	27.6	0.25	28.5	90.8	123
	ENV220	19.4	0.16	16.3	20.8	0.12	15.6	52.6	97
	ENV222	25.3	0.18	29.3	24.5	0.21	24.0	71.1	111
	ENV221	20.8	0.14	17.7	21.1	0.16	16.2	51.3	88
	ENV200	30.1	0.24	28.4	34.9	0.27	26.5	94.7	132
	ENV201	17.6	0.16	14.7	17.8	0.14	14.2	50.1	92
	ENV237	20.6	0.20	11.7	22.1	0.09	13.8	49.6	106
	ENV218	12.3	0.11	12.8	9.9	0.06	11.1	44.0	89
	ENV204	12.0	0.13	12.7	9.6	0.08	10.3	41.8	86
	ENV203	20.7	0.21	30.1	27.6	0.18	23.8	96.5	138

Area	Station	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
This Survey	Minimum	2.4	<0.04	7.5	1.2	<0.01	2.8	3.4	12
	Maximum	30.1	0.24	36.8	34.9	0.27	28.5	96.5	138
	Mean	11.9	NC	18.3	12.2	NC	13.1	37.6	68
	±SD	7.7	NC	8.3	9.9	NC	7.8	29.6	43
Gardline (2024b)	Minimum	2.5	<0.04	6.9	1.7	<0.01	3.1	3.0	8
	Maximum	24.7	0.29	45.8	37.5	0.34	26.8	109.0	123
	Mean	5.6	NC	14.1	4.0	NC	7.9	10.8	25
	±SD	3.6	NC	6.6	4.6	NC	5.0	14.0	19
MMO (2023)	CAL 1	20.0	0.4	40.0	40.0	0.30	20.0	50.0	130
	CAL 2	100.0	5.0	400.0	400.0	3.00	200.0	500.0	800
UKOOA (2001) CNS	Mean	NA	0.03	9.13	2.41	0.03	7.13	6.75	13.48
	95th Percentile		0.12	31.04	6.00	0.12	19.00	16.70	32.59

Concentrations expressed as µg g^{-1} dry weight sediment.
NC Not calculated due to one or more values below the LOD.
Grey text indicates concentrations below LOD
Blue cells indicate concentrations above CAL 1
Results in blue are from comparable surveys, see Section 1.3.
Results in green are from published background data, see Section 1.4

Table 2.9 Sediment Metal Concentrations from HF Digest

Station		As	Ba	Cd	Cr	Cu	Hg	Ni	Pb	V	Zn
ENV173		7.1	259	<0.03	15.1	2.6	<0.01	4.7	8.9	21.6	14.7
ENV175		8.0	253	<0.03	16.9	3.4	<0.01	5.3	8.9	22.7	14.7
ENV177		7.5	269	<0.03	15.9	3.0	<0.01	4.7	8.4	21.6	14.0
ENV179		8.4	250	<0.03	13.8	3.1	<0.01	4.6	8.5	24.5	14.8
This Study	Minimum	7.1	250	<0.03	13.8	2.6	<0.01	4.6	8.4	21.6	14.0
	Maximum	8.4	269	<0.03	16.9	3.4	<0.01	5.3	8.9	24.5	14.8
	Mean	7.8	258	NC	15.4	3.0	NC	4.8	8.7	22.6	14.6
	±SD	0.6	8	NC	1.3	0.3	NC	0.3	0.3	1.4	0.4
Gardline (2024b)	Minimum	6.8	186	<0.03	12.0	3.3	<0.01	2.5	7.2	16.1	10.0
	Maximum	10.5	252	<0.03	17.4	9.6	<0.01	3.6	10.2	25.1	14.5
	Mean	9.0	212	NC	13.9	7.6	NC	3.2	8.4	21.8	13.0
	±SD	1.3	19	NC	1.6	2.2	NC	0.4	1.0	2.8	1.1
UKOOA (2001)	Mean	NA	348	0.76	23.9	6.3	0.17	11.5	12.6	21.5	21.3
	95th Percentile		720	1.00	54.0	18.0	0.58	21.8	26.8	41.0	43.4
	Fine sand sediment		306	1.00	17.8	4.0	0.11	8.5	13.9	19.7	15.2
Long *et al.* (1995)	ERL	8.2	NA	1.2	81.0	34.0	0.15	20.9	46.7	NA	150.0
	ERM	70.0		9.6	370.0	270.0	0.71	51.6	218.0		410.0
Buchman (2008)	AET	35.0	NA	3.0	62.0	390.0	0.41	110.0	400.0	57.0	410.0

Concentrations expressed as µg g^{-1} dry weight sediment.
NC Not calculated due to values below LOD
NA Not available
Grey text indicates concentrations below LOD
Green cells indicate concentrations above Long *et al* (1995) ERL.
Results in blue are from the comparison survey data, see Section 1.3
Results in green are from published background data, see Section 1.4

2.6.2 Organotins

Concentrations of the organotins, dibutyltin (DBT), tributyltin (TBT), monobutyltin (MBT), tetrabutyltin (TTBT) and triphenyltin (TPT), where recorded above LOD, are presented in Table 2.10.

All concentrations were below the CAL 1 value of 0.1µg g^{-1}. There are currently no background concentrations or assessment criteria for organotin concentrations in sediment and the full ecological effects of organotins have not been established (OSPAR, 2017b). Polychaetes have been shown to have their growth impaired by 25% at TBT concentrations of 0.093µg g^{-1} (Meador & Rice, 2002), a concentration well above those recorded in the current survey.

Concentrations of the organotins DBT and TBT in the current survey were higher than those recorded at the only station in the comparison survey (Gardline, 2024b) with values above the LOD.

Table 2.10 Concentrations of Organotins

Area	Station	Dibutyltin (DBT)	Tributyltin (TBT)	Monobutyltin (MBT)	Tetrabutyltin (TTBT)	Triphenyltin (TPT)
Northern	ENV173	0.004	<0.001	<0.01	<0.001	<0.001
	ENV175	0.002	<0.001	<0.01	<0.001	<0.001
Central	ENV227	0.007	<0.001	<0.01	<0.001	<0.001
	ENV171	0.003	<0.001	<0.01	<0.001	<0.001
Southern	ENV185	<0.005	<0.005	0.025	0.015	<0.005
	ENV186	<0.005	<0.005	<0.01	<0.005	0.008
	ENV187	<0.005	<0.005	<0.01	0.009	<0.005
	ENV208	<0.005	<0.005	0.047	<0.005	<0.005
	ENV206	<0.005	<0.005	0.036	<0.005	<0.005
	ENV211	<0.005	<0.005	0.042	<0.005	<0.005
	ENV213	<0.005	<0.005	0.018	<0.005	<0.005
	ENV215	<0.005	<0.005	0.023	<0.005	<0.005
	ENV221	<0.005	0.008	<0.01	<0.005	<0.005
	ENV203	<0.005	<0.005	0.012	<0.005	<0.005
MMO (2023)	CAL 1	0.1	0.1	0.1	NA	NA
	CAL 2	1	1	1	NA	NA

Concentrations expressed as µg g^{-1} dry weight sediment.
NA Not available
Grey text indicates concentrations below LOD
Results in green are from published background data, see Section 1.4

2.7 Organochloropesticides

Across the thirty stations analysed for OCPs, concentrations were below LOD at all but the twenty stations in the southern area, detailed in Table 2.11.

Dieldrin was recorded at concentrations above LOD (0.1ng g^{-1}) at five stations (ENV203, ENV206, ENV215, ENV218 and ENV222); thereby exceeding the Long *et al*. (1995) ERL of 0.02ng g^{-1}. The OCP TDE exceeded the ERL value of 2.0ng g^{-1} at Stations ENV200, ENV203, ENV215 and ENV221 with DDT exceeding both the Long *et al*. (1995) ERL and the MMO (2023) CAL 1 value at Stations ENV205 and ENV221, indicating that sensitive species may be impacted at these stations. All remaining OCP concentrations were below their

respective MMO (2023) CAL 1 and Long *et al*. (1995) ERL values. Further, all OCP concentrations were below the Long *et al*. (1995) ERM and Buchman (2008) AET concentrations.

Table 2.11 Concentrations of Organochloropesticides

Area	Station	alpha-Hexachlorocyclohexane (α-HCH)	beta-Hexachlorocyclohexane (β-HCH)	gamma-Hexachlorocyclohexane (γ-HCH)	Dieldrin	Hexachlorobenzene	p,p'-Dichlorodiphenyldichloroethane (TDE)	p,p'-Dichlorodiphenyldichloroethylene (DDE)	p,p'-Dichlorodiphenyltrichloroethane (DDT)	**Total**
Southern	ENV185	<0.1	<0.1	<0.1	<0.1	0.3	0.6	0.3	<0.1	**1.2**
	ENV186	<0.1	<0.1	<0.1	<0.1	0.1	0.3	0.2	0.2	**0.8**
	ENV187	<0.1	<0.1	<0.1	<0.1	0.3	0.5	0.3	0.1	**1.2**
	ENV208	<0.1	<0.1	<0.1	<0.1	0.4	1.3	0.4	0.1	**2.2**
	ENV206	0.1	<0.1	<0.1	0.3	0.6	1.7	0.6	0.1	**3.4**
	ENV205	<0.1	<0.1	<0.1	<0.1	0.2	1.3	0.2	2.1	**3.8**
	ENV236	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	**0.3**
	ENV211	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	**0.3**
	ENV217	<0.1	<0.1	<0.1	<0.1	0.5	1.4	0.6	0.2	**2.7**
	ENV213	<0.1	<0.1	<0.1	<0.1	0.3	0.3	0.2	<0.1	**0.8**
	ENV215	0.1	<0.1	0.1	0.6	0.8	2.2	0.9	0.5	**5.2**
	ENV220	<0.1	<0.1	0.1	<0.1	0.3	1.1	0.3	<0.1	**1.8**
	ENV222	0.1	<0.1	0.1	0.5	<0.1	1.5	0.5	0.2	**2.9**
	ENV221	<0.1	<0.1	0.1	<0.1	0.4	4.2	0.4	5.7	**10.8**
	ENV200	0.2	<0.1	0.2	<0.1	<0.1	2.4	0.9	<0.1	**3.7**
	ENV201	<0.1	<0.1	<0.1	<0.1	0.2	0.8	0.2	<0.1	**1.2**
	ENV237	<0.1	<0.1	<0.1	<0.1	0.1	0.6	<0.1	<0.1	**0.7**
	ENV218	<0.1	<0.1	<0.1	0.1	<0.1	0.4	<0.1	<0.1	**0.5**
	ENV204	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	**0.2**
	ENV203	0.2	0.4	0.3	0.5	0.5	2.0	0.9	0.8	**5.6**
MMO (2023)	CAL 1	NA	NA	NA	5	NA	NA	NA	1.0	NA
Long *et al*. (1995)	ERL	NA	NA	NA	0.02	NA	2.0	2.2	1.0	NA
	ERM	NA	NA	NA	8.0	NA	20.0	27	7.0	NA
Buchman (2008)	AET	NA	NA	4.8	1.9	NA	16.0	9	12.0	NA

Concentrations expressed at ng g^{-1}

Only stations with one or more values above LOD have been displayed.

Grey text indicates concentrations below LOD

NA Not available

Green cells indicate concentrations above Long *et al.* (1995) ERL.

Blue cells indicate concentrations above Long *et al.* (1995) ERL and MMO (2023) CAL 1.

Results in green are from published background data, see Section 1.4.

2.8 Statistical Analysis of Sediment Physico-Chemical Results

2.8.1 Preparation of Data Sets

Multivariate analyses were performed using PRIMER v7 on the physico-chemical data conducted to MMO (2023) specification to ascertain similarities and differences within the environmental data set. Prior to undertaking analyses, certain variables were excluded from the sediment multivariate analyses and some of those that remained were transformed. A summary of the excluded and transformed variables for each data set is given in Table 2.12, together with the rationale for exclusion. Values were typically excluded from consideration if they were below LOD for a significant proportion of the stations. If a variable was retained but it had some stations recording concentrations below LOD, these stations were assigned a value just below the LOD to allow appropriate ranking. Variables were also excluded if they were found through PRIMER's Draftsman plot to correlate >99% with another variable. Intrinsically linked groups of variables (*e.g.,* all PSA variables) were log transformed to down-weight the influence of any high or low outliers identified through the Grubbs' test (Appendix F).

Table 2.12 Summary of Multivariate Analysis Inputs and Outputs

Data set	Excluded Variables	Rationale for Exclusion	Transformed Variables
49 Stations with PSA	None	NA	All
30 stations with PSA, TOC, Hydrocarbons, PCBs, OCPs, Organotins and Metals	Cd, Hg, OCPs, PCBs, THC by UVFS	Values below the LOD	PSA, TOC, PAH
	NPD	Correlation with Total PAHs	
20 southern area stations with PSA, TOC, Hydrocarbons, PCBs, OCPs, Organotins and Metals	Organotins	Values below the LOD	PSA, TOC, PCBs
	NPD	Correlation with Total PAHs	
	ICES-7 PCBs	Correlation with Total PCBs	

The data sets were then normalised to make variables unitless and a Euclidean distance resemblance matrix was produced. A CLUSTER analysis was performed to graphically represent the (dis)similarities between the stations, with a SIMPROF routine run in conjunction, to show whether the differences between stations were statistically significant. Stations joined by red lines are statistically indistinguishable from each other while those joined by black lines are statistically distinct. Only three or more stations can be considered a true cluster due to the permutative nature of SIMPROF. A non-metric multidimensional scaling (nMDS) routine was also run, which creates a two-dimensional plot of the stations from the similarity matrix. The configuration of the stations on the MDS plot reflects similarity with distances between stations being representative of their Euclidean distance or relative (dis)similarity.

2.8.2 Multivariate Analysis of 49 Stations with PSA Data

The Euclidean similarity dendrogram for the 49 station sediment characteristics data set is presented in Figure 2.5. The SIMPROF routine identified thirteen statistically distinct groups comprising five clusters (SIMPROF *c, d, g, h* and *m*), four closely associated pairs (SIMPROF *a, e, j* and *k*) and four outliers (Stations ENV186, ENV200, ENV215 and ENV221). SIMPROF group *a* (Stations ENV214 and ENV222) was the most distinct due to its significantly higher (>30%) gravel content. SIMPROF group *b* (Station ENV215) recorded a significantly higher (88%) fines content. SIMPROF groups *i* to *m* then separated from the remaining stations at a Euclidean distance of 2.9 and comprised southern area stations with <50% sand. A further split at a Euclidean distance of 2.2 saw the separation of SIMPROF groups *c* and *d* from the remaining stations. These comprised central and southern area stations with >80% sand. The observed patterns in the CLUSTER dendrogram were equally presented within the MDS ordination plot (Figure 2.6) and with a low stress value (0.01) this can be considered a near perfect representation of the rank (dis)similarities. The proportions of fines, sand and gravel are presented in Figure 2.7 to illustrate the trends.

Figure 2.5 Dendrogram Showing Analysis of 49 Stations with PSA Data

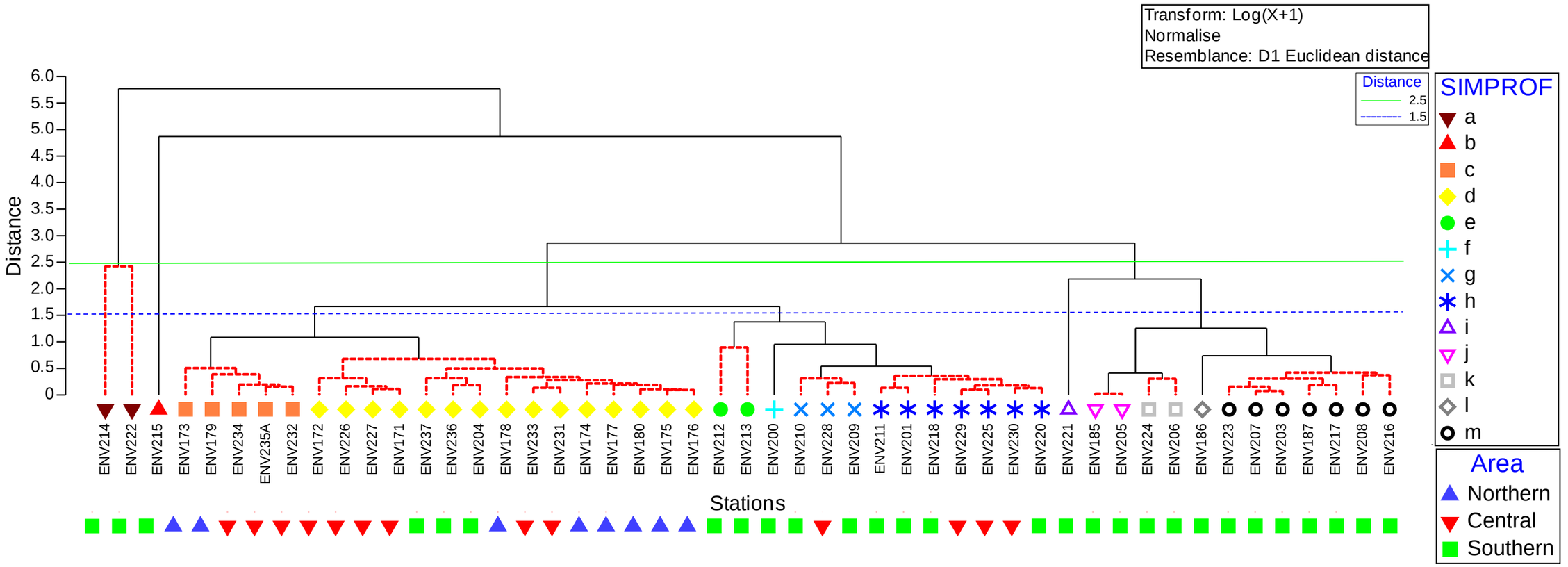


Figure 2.6 MDS Ordination Showing Groupings at Euclidean Distance of 2.5 and 1.5 at 49 Stations

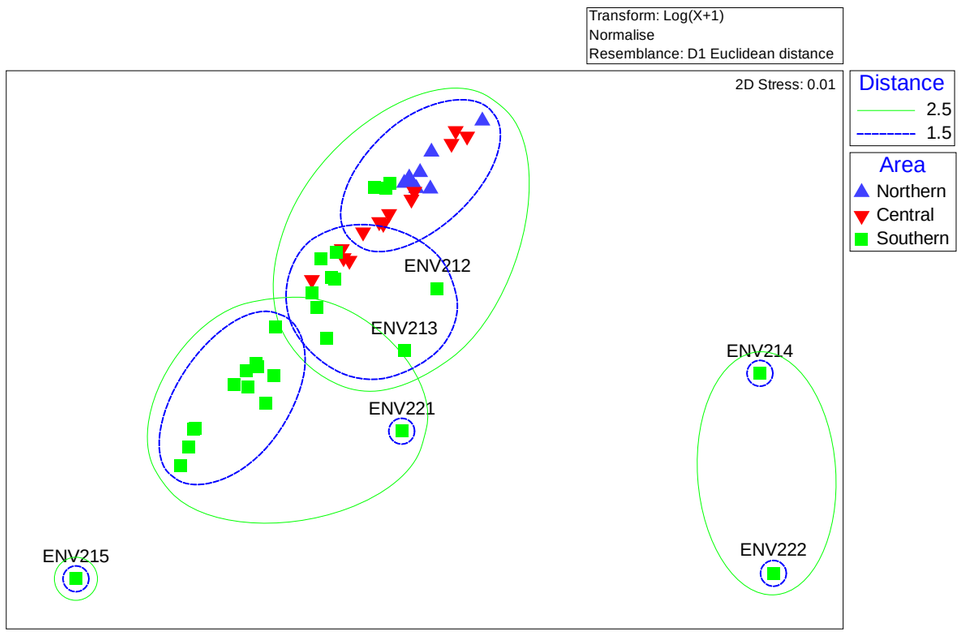
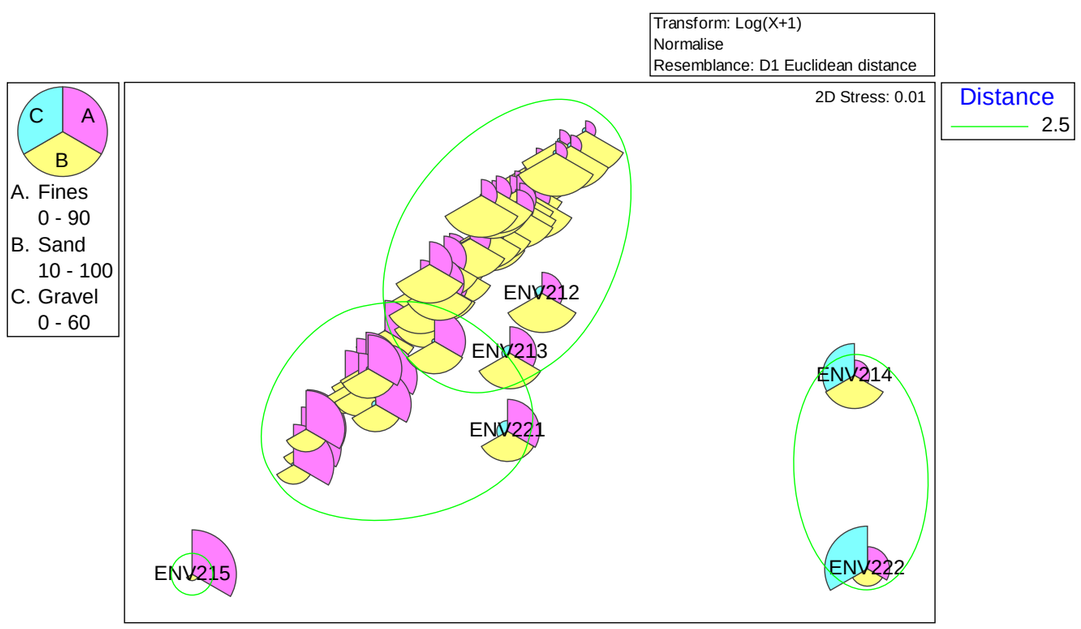


Figure 2.7 MDS Ordination with Bubbles Representing the Percentage of Fines, Sand and Gravel at 49 Stations



2.8.3 Multivariate Analysis of 30 Stations with MMO Specification Physico-Chemical Data

The Euclidean similarity dendrogram for the 30 station physico-chemical data set is presented in Figure 2.8. The SIMPROF routine identified fourteen statistically distinct groups, consisting of seven outliers (Stations ENV179, ENV185, ENV200, ENV211, ENV213, ENV215, ENV221 and ENV222), two closely associated pairs (SIMPROF *h* and *n*) and five clusters (SIMPROF *c, d, e, k* and *l*). Station ENV222 (SIMPROF group *a*) was again the most distinct due to its significantly higher (>55%) gravel content.

SIMPROF groups *i* to *n* then separated from the remaining stations at a Euclidean distance of 5.5 and comprised southern area stations with the highest TOC and metal concentrations. A further split at a Euclidean distance of 3.2 saw the separation of all central and northern stations (SIMPROF groups *b* and *d*) from the remaining southern area stations. The observed patterns in the CLUSTER dendrogram were consistent with the MDS ordination plot (Figure 2.9) and with a stress value of 0.04, this can be considered a near perfect representation of the rank (dis)similarities and overall pattern observed.

The results of the BIO-ENV analysis indicated that five analytes, comprising mean diameter, PAH, As, Cr and Pb showed a 99% correlation with the overall multivariate pattern, and these have been presented as bubbles in Figure 2.10 to illustrate their trends.

2.8.4 Multivariate Analysis of 20 Southern Area Stations with MMO Specification Physico-Chemical Data

The Euclidean similarity dendrogram for the southern area 20 station physico-chemical data set including THC, PCBs and OCPs is presented in Figure 2.11. The SIMPROF routine identified thirteen statistically distinct groups comprising two clusters (SIMPROF *f, g* and *m*), two closely associated pairs (SIMPROF *e* and *l*) and six outliers (Stations ENV185, ENV200, ENV205, ENV211, ENV213, ENV221 and ENV222). Station ENV222 (SIMPROF group *a*) was again the most distinct due to its significantly higher (>55%) gravel content.

SIMPROF groups *i* to *m* then separated from the remaining stations at a Euclidean distance of 6.4 and comprised outlier Stations ENV221 and ENV200 with their higher PAH concentrations along with six other stations (ENV203, ENV205, ENV206, ENV207, ENV208, ENV215 and ENV217) that recorded the highest total OCP concentrations and generally higher metal concentrations. A further split at a nominal Euclidean distance of 4.3 saw the separation of five stations (ENV185, ENV186, ENV187, ENV211 and ENV213; SIMPROF groups *b* and *e*) from the remainder due to their lower metal concentrations, but finer sediments. The observed patterns in the CLUSTER dendrogram were consistent with the MDS ordination plot (Figure 2.12) and with a stress value of 0.08, this can be considered a good representation of the rank (dis)similarities and overall pattern observed.

The results of the BIO-ENV analysis indicated that five analytes, comprising mean diameter, THC, Cu, Ni and Pb showed a 97% correlation with the overall multivariate pattern, and these have been presented as bubbles in Figure 2.13 to illustrate their trends.

Figure 2.8 Dendrogram Showing 30 Stations with PSA, TOC, PAH and Metal Data

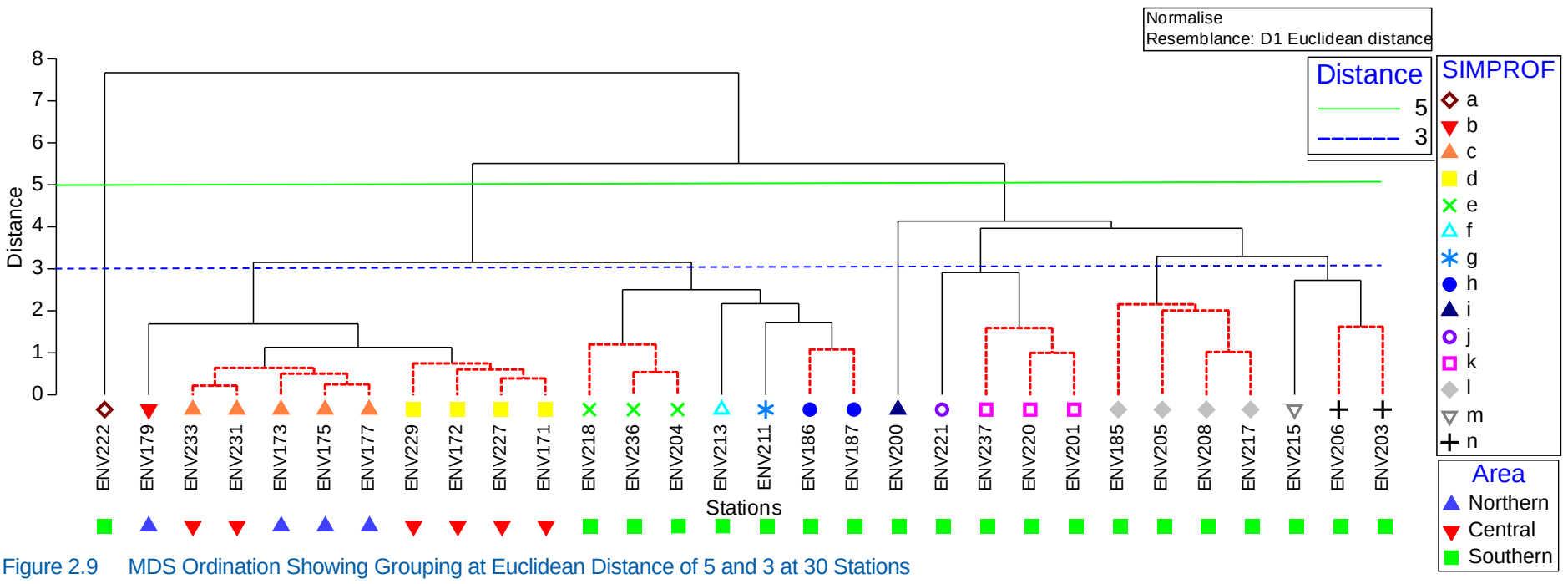


Figure 2.9 MDS Ordination Showing Grouping at Euclidean Distance of 5 and 3 at 30 Stations

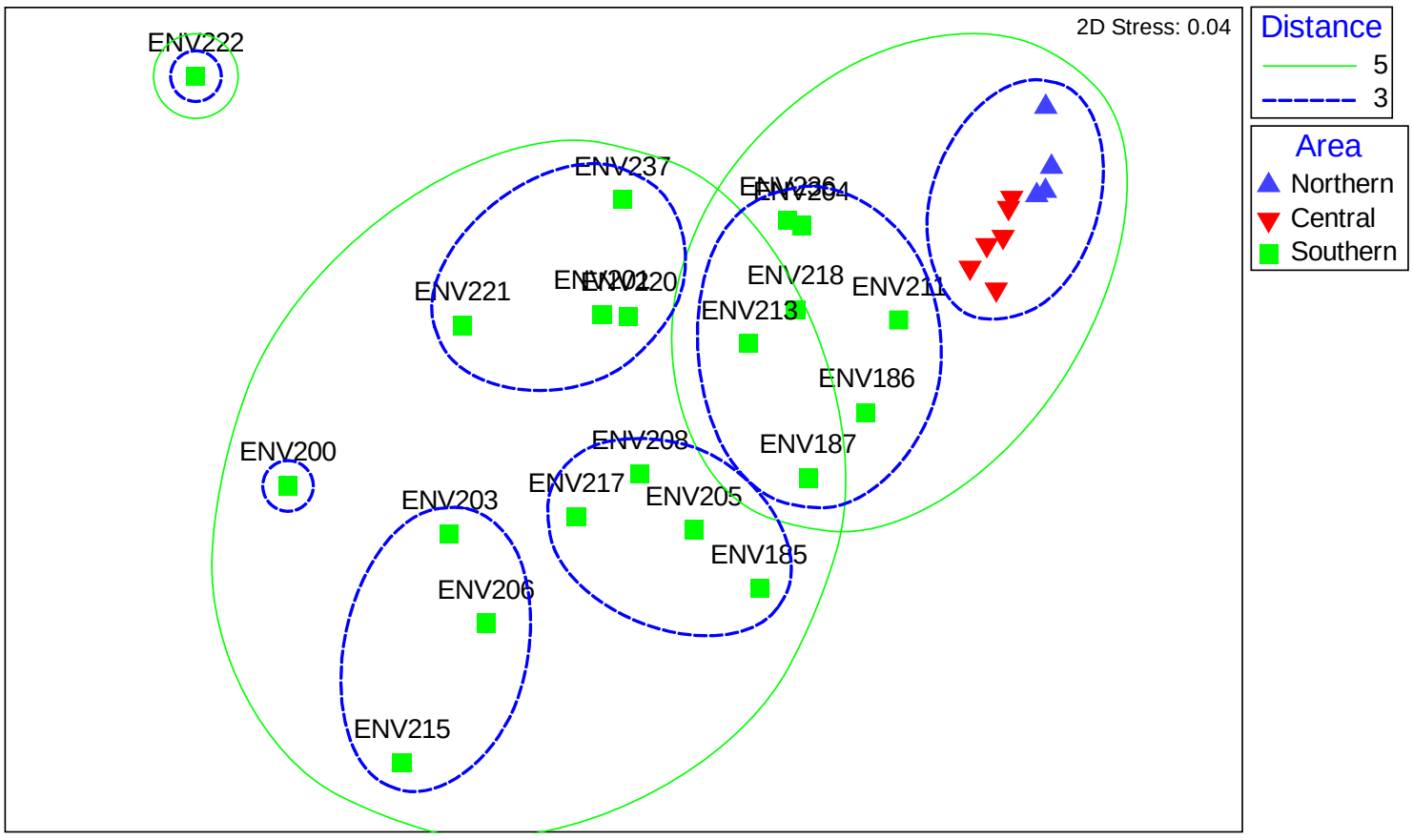


Figure 2.10 MDS Ordination with Bubbles Representing Mean Diameter and Concentrations of PAH, As, Cr and Pb at 30 Stations

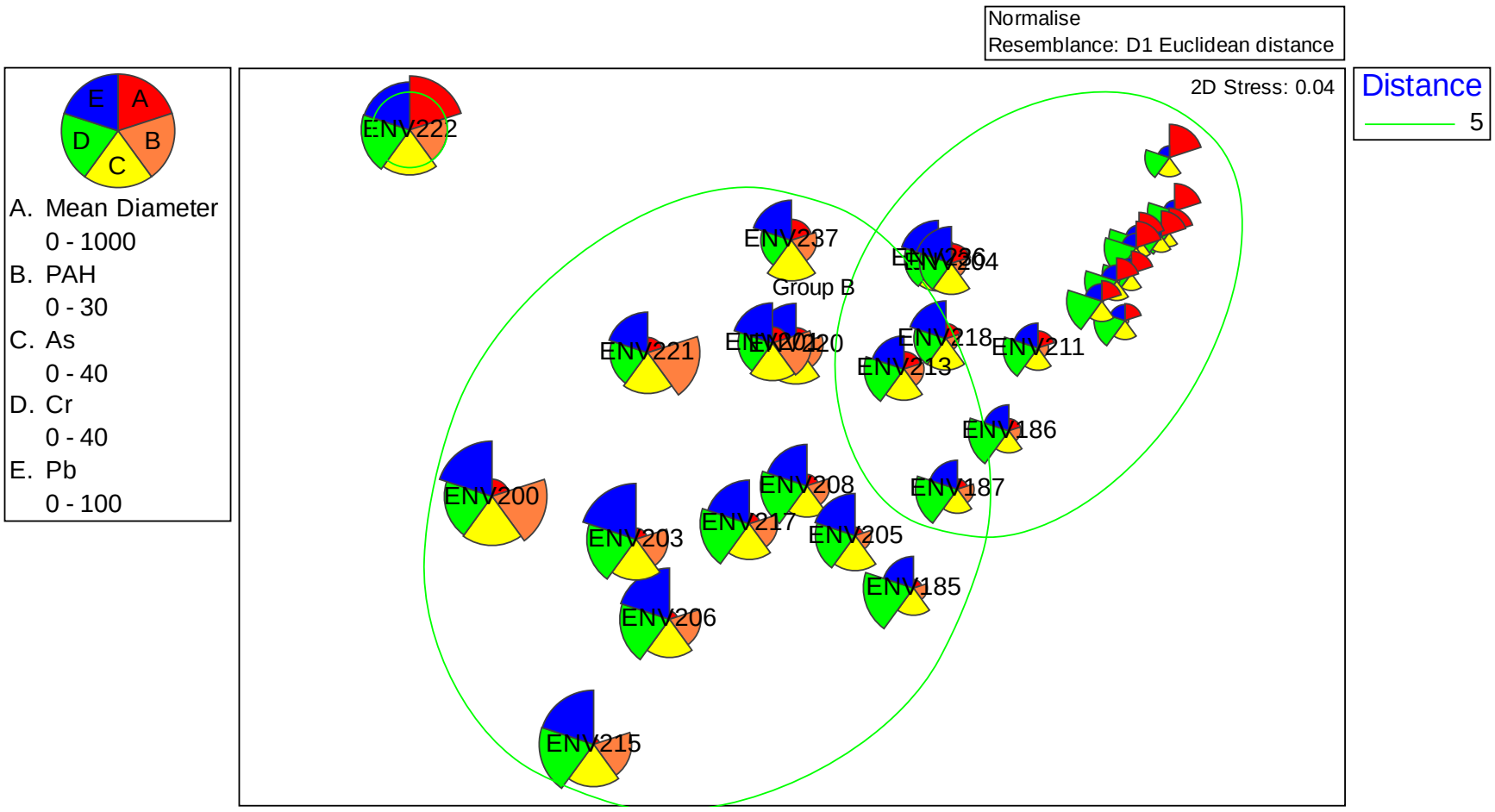


Figure 2.11 Dendrogram Showing 20 Southern Area Stations with PSA, TOC, THC, PAH, PCBs, OCPs and Metal Data

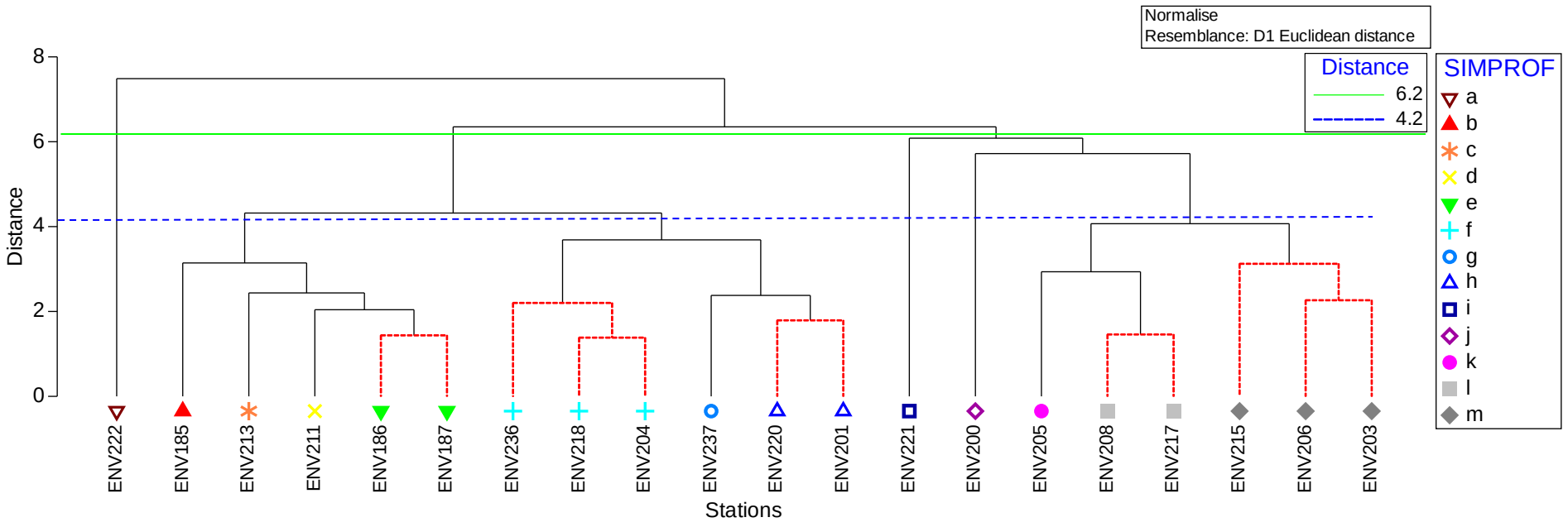


Figure 2.12 MDS Ordination Showing Grouping at Euclidean Distance of 4.2 at 20 Stations

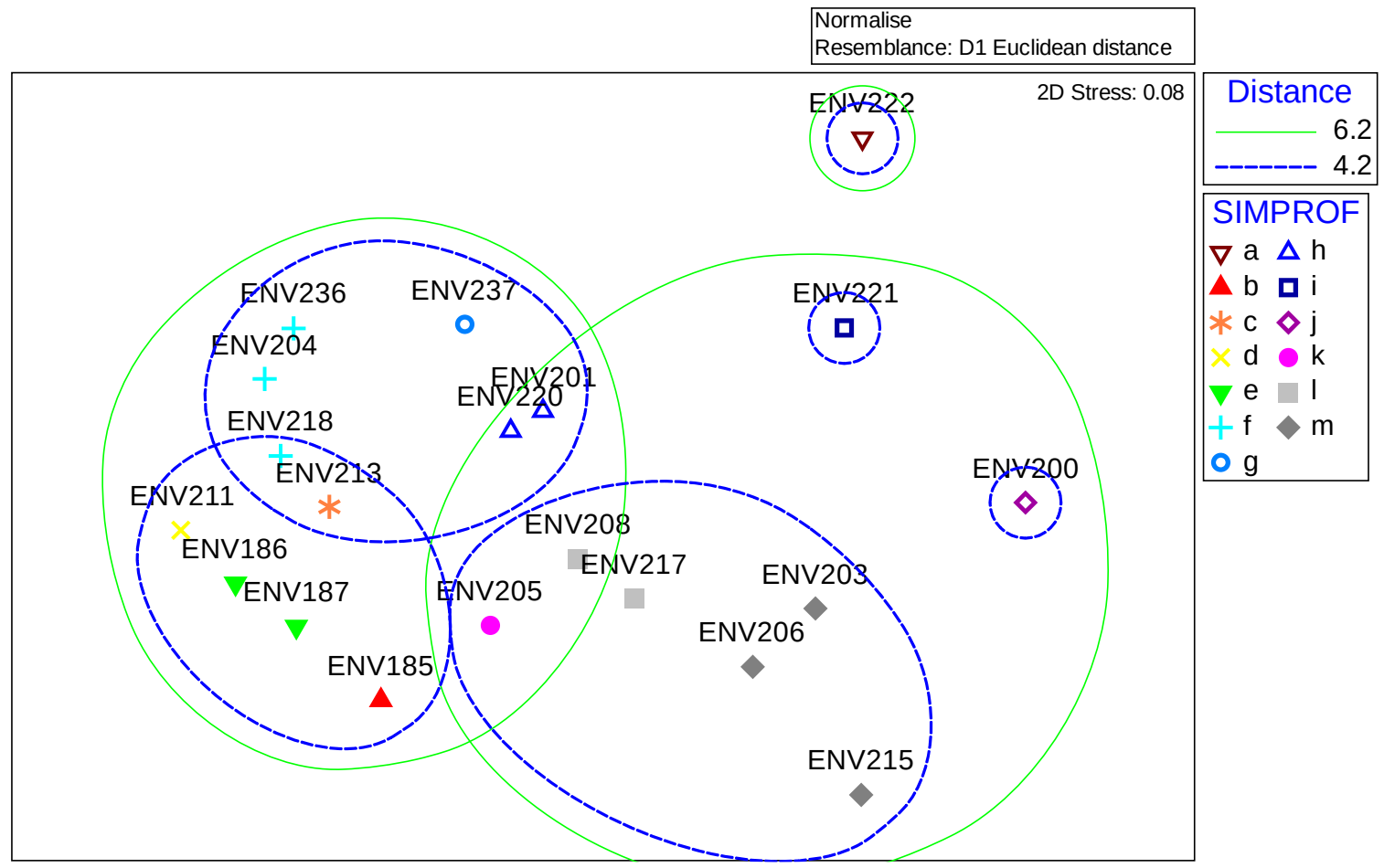
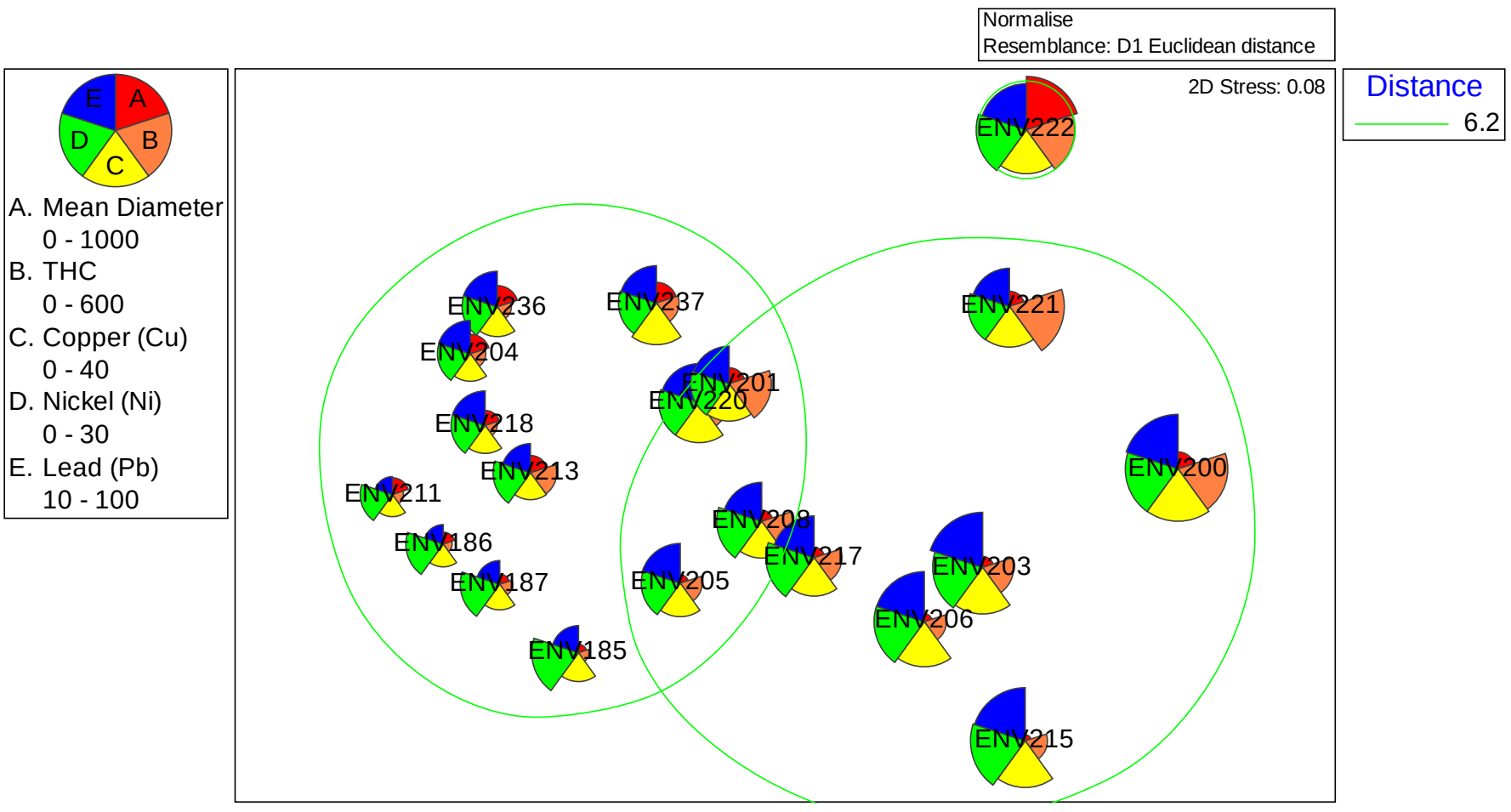


Figure 2.13 MDS Ordination with Bubbles Representing Mean Diameter and Concentrations of THC, Cu, Ni and Pb at 20 Stations



2.9 DNA Metabarcoding Results

2.9.1 Overview

As summarised in Table 1.1, sediment eDNA samples (primary and spare) for infauna and bacterial analysis were acquired where macrofauna sampling was conducted at 49 stations. In addition, at 30 stations where physico-chemistry samples were acquired, sub-samples (primary and spare) were taken for sediment fish eDNA analysis. The primary sediment samples from 30 of these stations were sent to the laboratory for analysis. Further, at these 30 and an additional 4 stations, water sampling for fish (excluding rays and sharks) and marine mammals was undertaken. Samples were acquired at the near surface and near seabed and sent to the laboratory. All remaining samples were retained as spares. All records are provided in Appendix I. Each row represents one operational taxonomic unit (OTU), shown with the lowest possible taxonomic assignment based on current available reference data. Each column represents a sample, showing the proportion of sequence reads per detected OTU. Care should be taken in interpreting the numbers of reads in terms of relative species abundance or biomass as unavoidable biases introduced during the laboratory process can have a major effect on this relationship, for example, some species amplify more readily than others during processing. Additionally, multiple OTUs relating to the same species may be detected which may create analytical bias. Whilst each analysis (bacterial, infaunal, fish or mammal) targets a specific taxonomic group, a single taxon may be detected in multiple analyses.

The most conservative approach is to analyse the data in terms of presence-absence. Due to the number of taxa included in the analysis, presence-absence data still have a high statistical power for demonstrating change. If abundance data for a particular species are important to the project, then incidence across multiple samples can be used as a proxy for abundance (*e.g.* a species detected in every sample replicate is likely to be more abundant than one found in a small proportion of replicates).

Due to the methodology employed, other species beyond the targeted group were identified. These species were removed from analysis but are included in the full data set presented in Appendix I.

2.9.2 Summary of Notable Species

The presence of eDNA does not exhaustively determine the presence of a taxon as the eDNA can persist in the environment after the organism has left the area or perished.

Several species of fish were identified within samples, including ten classified as protected under legislation, see Table 2.13 for details. Of these, Atlantic cod (*Gadus morhua*) and Atlantic horse mackerel (*Trachurus trachurus*) were also detected from eDNA in the comparison survey (Gardline, 2024b). The bivalve *A. islandica,* which was detected in both the current and comparison survey (Gardline, 2024b), is a species listed as a threatened and/or declining under OSPAR (2008). Additionally, the tube building worm *Sabellaria spinulosa* was detected. This species is known to form biogenic reefs which are a habitat listed under Annex I of the EU Habitats Directive (1992) and on the OSPAR (2008) list of threatened and/or declining species and habitats. It is also recognised as a PMF in Scottish waters (NatureScot, 2020).

Further, five marine mammals species were recorded, all of which are protected species under legislation, see Table 2.14 for further details. Of these, the dolphin *Lagenorhynchus albirostris* and porpoise *Phocoena phocoena* were also detected in the comparison survey (Gardline, 2024b).

Table 2.13 Protected Fish Species Detected by eDNA

Species	UK Priority List (JNCC and Defra, 2012)	Scottish Biodiversity List[2] (2020)	Scottish PMF[2] (2020)	OSPAR (2008)
Clupea harengus	Yes	Yes	NA	NA
Gadus morhua	Yes	NA	Yes	Yes
Lophius piscatorius	Yes	NA	Yes	NA
Merlangius merlangus	Yes	Yes	Yes	NA
Merluccius merluccius	Yes	NA	NA	NA
Molva molva	Yes	NA	Yes	NA
Pleuronectes platessa	Yes	Yes	NA	NA
Scomber scombrus	Yes	Yes	Yes	NA
Solea solea	Yes	NA	NA	NA
Trachurus trachurus	Yes	NA	Yes	NA

1 IUCN (2025) Red List assessment based on European stocks
2 Only species detected in Scottish waters listed

Table 2.14 Protected Marine Mammal Species Detected by eDNA

Species	UK Priority List (JNCC and Defra, 2012)	Scottish Biodiversity List[2] (2020)	Scottish PMF[2] (2020)	OSPAR (2008)
Halichoerus grypus	NA	NA	Yes	NA
Balaenoptera acutorostrata	Yes	NA	NA	NA
Grampus griseus	Yes	NA	NA	NA
Lagenorhynchus albirostris	Yes	Yes	Yes	NA
Tursiops truncatus	Yes	NA	NA	NA
Phocoena phocoena	Yes	NA	NA	Yes

1 IUCN (2025) Red List assessment based on European stocks
2 Only species detected in Scottish waters listed

2.9.3 Sediment eDNA Summary Statistics

A total of 1484 OTUs were detected along the route as reported in Table 2.15. Of the 1484 detected OTUs, a lower percentage (1%) of bacterial OTUs were identified to species level when compared to other targets, possibly related to a smaller pool of reference material for bacterial OTUs. The number of OTUs was slightly higher than recorded in the comparison survey (n=1025; Gardline, 2024b).

Table 2.15 OTU Detections per Target and Percentrage Successfully Classified

Sample Type	Target	Samples Analysed	Number of OTUs	% Contribution					
				Phylum	Class	Order	Family	Genus	Species
Sediment	Bacteria	30	1197	84	64	45	30	6	1
Sediment	Invertebrates	30	159	99	92	86	81	69	52
Sediment[1]	Fish	30	17	100	100	100	100	94	71
Water	Fish	58	68	100	100	100	99	88	81
Water[1]	Fish	10	34	100	100	100	100	100	100
Water	Marine Mammal	58	6	100	100	100	100	100	77
Water[1]	Marine Mammal	10	3	100	100	100	100	100	100
Total			**1484**	**87**	**80**	**77**	**76**	**48**	**65**

1 Sample acquired using a bacterial filter

Bacteria

The sediment bacterial data set detected 1179 OTUs across 39 taxonomic groups based on class, with the proportional contributions of these taxonomic groups to the overall structure of the survey area detailed in Table 2.16 and presented for each of the 30 stations in Figure 2.14. The Others category comprised 433 OTUs which could not be identified to class.

The most detected taxonomic group along the route was Others (n=433) which accounted for 36% of the OTUs. The second most detected group was Gammaproteobacteria (n=85) accounting for 14% of OTUs. The dominance of Gammaproteobacteria is somewhat expected given it is one of the richest classes of bacteria (Williams *et al.*, 2010). The relative dominance of Others within the proportional was partly due to the inability to resolve to further than Phylum (n=177) or Kingdom (n=187).

A total of 85 bacterial OTUs (7%) were detected in all sediment samples, while 196 OTUs (16%) were identified at only one station along the route. These numbers of widespread taxa and lone taxa along the route suggest that the community had been subjected to relatively little disturbance.

Similar trends were recorded for the comparison survey (Gardline, 2024b), where 30 taxonomic groups were detected. The most abundant taxonomic groups were previously also Others (35% of OTUs (n=218)) and Gammaproteobacteria (21% of OTUs (n=128)). Despite there being fewer samples collected in the current survey (n=30) than in the comparison survey (n=65), overall there were more classes detected with only three of the previously detected classes being absent in the current survey and all have been included in Table 2.16 for comparison.

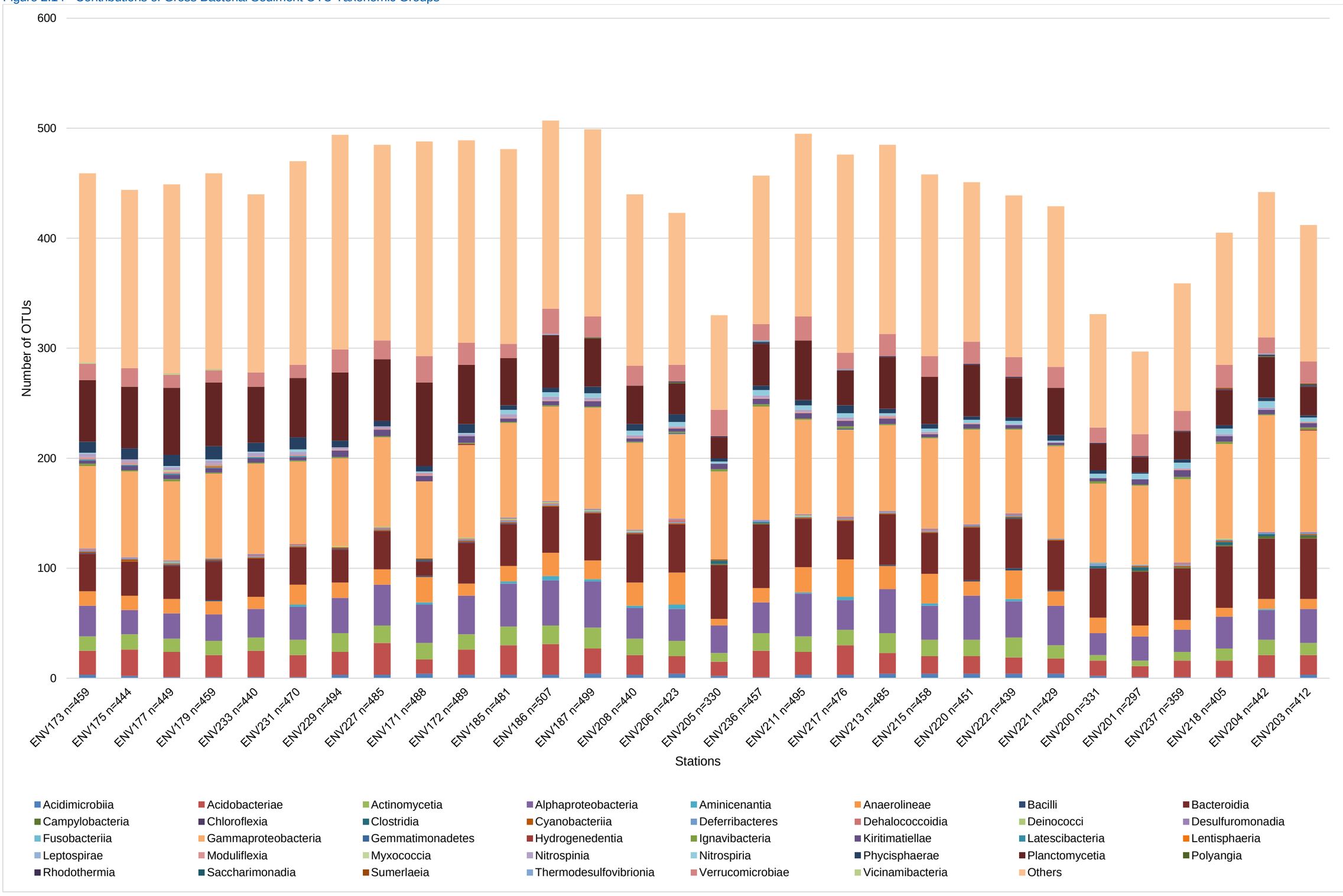
Table 2.16 Contribution of Gross Sediment Bacteria OTU Taxonomic Groups

Group	Current Survey		Gardline (2024)	
	OTUs	% Proportional Contribution	OTUs	% Proportional Contribution
Acidimicrobiia	4	<1	6	1
Acidobacteriae	49	4	25	4
Actinomycetia	30	3	28	5
Alphaproteobacteria	69	6	59	10
Aminicenantia	4	<1	3	<1
Anaerolineae	48	4	13	2

Group	Current Survey		Gardline (2024)	
	OTUs	% Proportional Contribution	OTUs	% Proportional Contribution
Bacilli	4	<1	1	<1
Bacteroidia	105	9	66	11
Campylobacteria	4	<1	1	<1
Chloroflexia	1	<1	NA	NA
Clostridia	5	<1	1	<1
Cyanobacteriia	2	<1	2	<1
Deferribacteres	1	<1	NA	NA
Dehalococcoidia	3	<1	2	<1
Deinococci	1	<1	NA	NA
Desulfuromonadia	2	<1	2	<1
Fusobacteriia	1	<1	1	<1
Gammaproteobacteria	173	14	128	21
Gemmatimonadetes	1	<1	2	<1
Hydrogenedentia	2	<1	NA	NA
Ignavibacteria	3	<1	1	<1
Kiritimatiellae	8	<1	3	<1
Latescibacteria	1	<1	1	<1
Lentisphaeria	1	<1	NA	NA
Leptospirae	1	<1	NA	NA
Moduliflexia	2	<1	1	<1
Myxococcia	1	<1	NA	NA
Nitrososphaeria	NA	NA	2	<1
Nitrospinia	3	<1	4	1
Nitrospiria	6	<1	2	<1
Others	433	36	218	35
Phycisphaerae	17	1	2	<1
Planctomycetia	161	13	24	4
Polyangia	3	<1	NA	NA
Rhodothermia	1	<1	NA	NA
Saccharimonadia	1	<1	NA	NA
Sumerlaeia	1	<1	NA	NA
Thermodesulfovibrionia	2	<1	1	<1
Thermoleophilia	NA	NA	1	<2
Thermoplasmata	NA	NA	2	<3
Verrucomicrobiae	42	4	18	3
Vicinamibacteria	1	<1	NA	NA
Total OTUs	**1197**	**100**	**620**	**100**
Total Classes	**39**	**100**	**30**	**100**

Results in blue are from the comparison survey data, see Section 1.3.

Figure 2.14 Contributions of Gross Bacterial Sediment OTU Taxonomic Groups



Infauna

A total of 159 OTUs across 26 taxonomic groups based on class were detected from the sediment infaunal data sets, with the proportional contribution of the taxonomic groups to the overall structure of the survey area detailed in Table 2.17 and presented for each of the 30 stations in Figure 2.15. The Others category comprised 13 OTUs that could not be identified to class.

Polychaeta (n=54) was the most detected taxonomic group along the route, accounting for 34% of OTUs. The next most detected group was Copepoda (n=28; 18%) and this was to be expected as copepods are some of the most common zooplankton in the North Sea (Broekhuizen & McKenzie, 1995). Thirteen infaunal taxonomic groups were represented by a single OTU (Table 2.17).

The most widespread OTU was the gastropod *Turbonila* IM-I55NUH, which was detected at 26 of the 30 stations. Of the 159 infaunal OTUs, a total of 58 (36%) were present in a single sample along the route. However, unlike the bacterial data set, none was detected in all samples. The absence of a consistent infaunal community is somewhat expected given the geographical spread of the stations, however, the relatively high proportion of lone OTUs suggests community heterogeneity along the route that may have been under sampled for the infaunal size class.

When compared to the comparison survey (Gardline, 2024b), both Polychaeta and Copepoda were also the most detected groups previously; however, overall, there were fewer OTUs detected in the current survey, with 303 having previously been sampled across 65 stations.

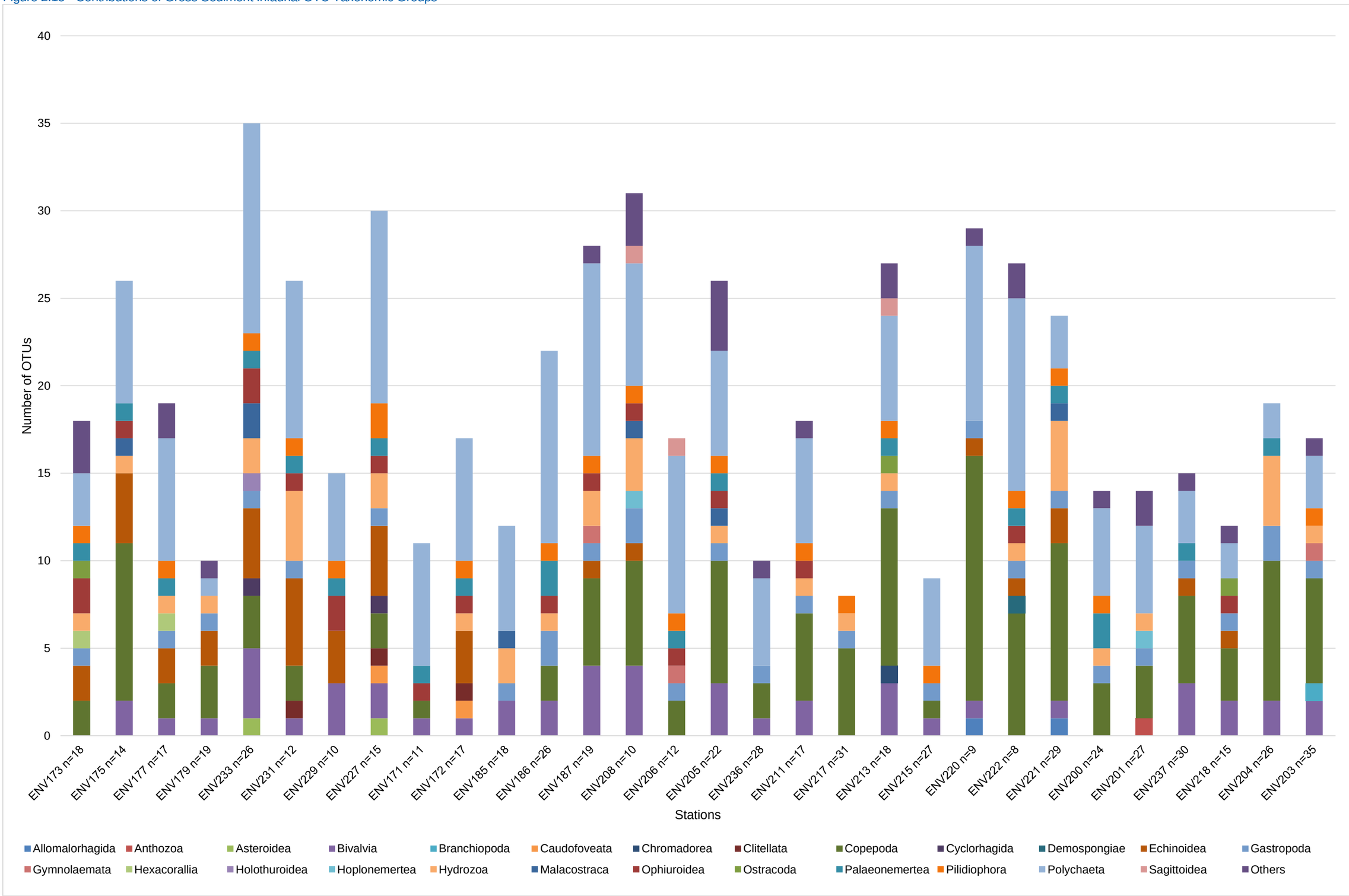
Table 2.17 Contribution of Gross Sediment Infauna OTU Taxonomic Groups

Phylum	Group	Current Survey		Gardline (2024b)	
		OTUs	Proportional Contribution %	OTUs	Proportional Contribution %
Amoebozoa	Discosea	NA	NA	6	2
Annelida	Clitellata	1	<1	4	1
Annelida	Polychaeta	54	34	79	26
Arthropoda	Copepoda	28	18	34	11
Arthropoda	Thecostraca	NA	NA	2	1
Arthropoda	Malacostraca	5	3	8	3
Arthropoda	Ostracoda	1	<1	1	<1
Arthropoda	Branchiopoda	1	<1	NA	NA
Ascomycota	Eurotiomycetes	NA	NA	2	1
Ascomycota	Leotiomycetes	NA	NA	1	<1
Ascomycota	Sordariomycetes	NA	NA	1	<1
Bacillariophyta	Bacillariophyceae	NA	NA	10	3
Basidiomycota	Tremellomycetes	NA	NA	1	<1
Bryozoa	Gymnolaemata	2	1	2	1
Chaetognatha	Sagittoidea	1	<1	1	<1
Chlorophyta	Chloropicophyceae	NA	NA	1	<1
Chlorophyta	Mamiellophyceae	NA	NA	4	1
Chlorophyta	Pyramimonadophyceae	NA	NA	1	<1
Chordata	Leptocardii	NA	NA	1	<1
Chordata	Myxini	NA	NA	1	<1
Chordata	Teleostei	NA	NA	1	<1

Phylum	Group	Current Survey		Gardline (2024b)	
		OTUs	Proportional Contribution %	OTUs	Proportional Contribution %
Cnidaria	Anthozoa	1	<1	4	1
Cnidaria	Hydrozoa	10	6	18	6
Cnidaria	Scyphozoa	NA	<1	2	1
Cnidaria	Hexacorallia	1	1	NA	NA
Echinodermata	Asteroidea	2	1	4	1
Echinodermata	Echinoidea	7	4	5	2
Echinodermata	Holothuroidea	1	<1	1	<1
Echinodermata	Ophiuroidea	5	3	5	2
Haptophyta	Coccolithophyceae	NA	NA	1	<1
Kinorhyncha	Allomalorhagida	1	<1	2	1
Kinorhyncha	Cyclorhagida	1	<1	2	1
Mollusca	Bivalvia	11	7	14	5
Mollusca	Caudofoveata	1	1	1	<1
Mollusca	Gastropoda	4	3	14	5
Myzozoa	Dinophyceae	NA	NA	27	9
Nematoda	Chromadorea	1	<1	3	1
Nemertea	Hoplonemertea	1	<1	2	1
Nemertea	Palaeonemertea	3	2	2	1
Nemertea	Pilidiophora	2	1	3	1
Ochrophyta	Dictyochophyceae	NA	NA	1	<1
Ochrophyta	Pelagophyceae	NA	NA	1	<1
Ochrophyta	Phaeophyceae	NA	NA	1	<1
Porifera	Demospongiae	1	<1	6	2
Rotifera	Eurotatoria	NA	NA	1	<1
Others	Others	13	8	22	7
Total OTUs		**159**	**100**	**303**	**100**
Total Classes		**26**	**100**	**44**	**100**

Results in blue are from the comparison survey data, see Section 1.3.

Figure 2.15 Contributions of Gross Sediment Infaunal OTU Taxonomic Groups



Fish

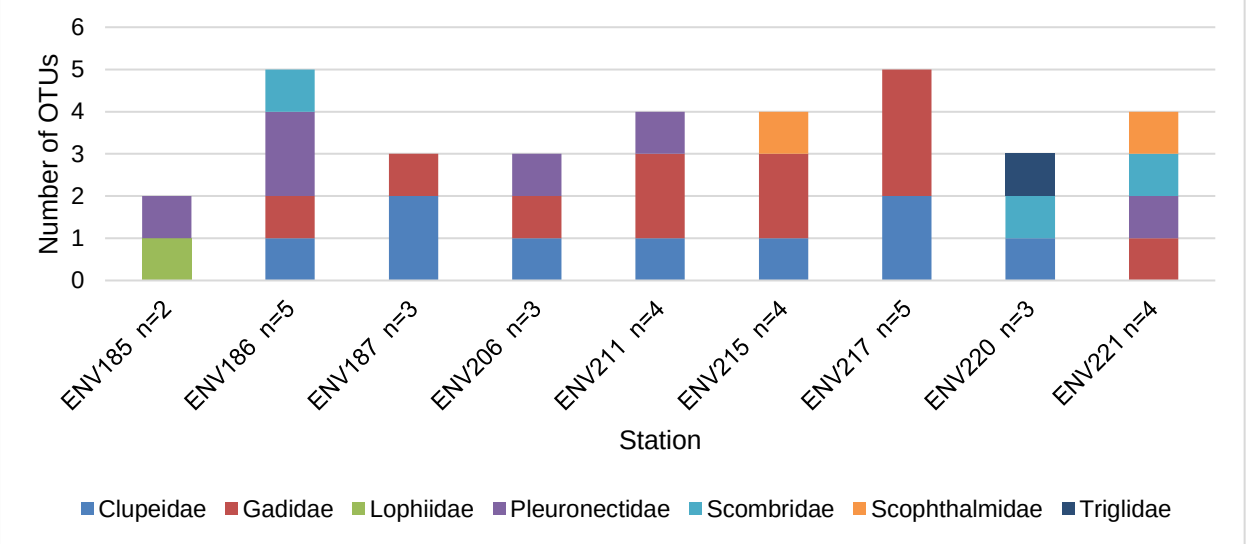
Of the 30 fish eDNA samples analysed, target species were identified in 9 samples, no eDNA was amplifiable in 6 samples, no target species were identified in 10 samples and data QC failed at 5 samples. All results described below are derived from the bacterial filter extraction; however, these data should be treated with caution as the preservative and filter pore size were not optimised for the extraction of vertebrate eDNA and therefore cannot be compared with the comparison data.

A total of seventeen OTUs across seven taxonomic groups based on family were detected, with the proportional contribution of these taxonomic groups to the overall structure of the survey area detailed in Table 2.18 and presented for each of the 30 stations in Figure 2.16. Pleuronectidae (n=5) was the most detected group along the route, accounting for 29% of OTUs. The second most detected group was Gadidae (n=4; 24%) with three taxonomic groups represented by a single OTU.

Table 2.18 Contribution of Gross Sediment Fish OTU Taxonomic Groups (Bacterial Filter)

Group	Current Survey	
	OTUs	Proportional Contribution %
Clupeidae	3	18
Gadidae	4	24
Lophiidae	1	6
Pleuronectidae	5	29
Scombridae	1	6
Scophthalmidae	2	12
Triglidae	1	6
Total OTUs	**17**	**100**
Total Families	**7**	**100**

Figure 2.16 Contributions of Gross Sediment Fish OTU Taxonomic Groups (Bacterial Filter)



Comparative taxonomic heat trees detailing the number of OTUs along the route from sediment samples for bacterial, infaunal and fish data sets down to the order rank are presented in Figure 2.17, Figure 2.18 and Figure 2.19, respectively. The nodes (circles) represent a taxon, whilst the lines detail the hierarchical relationships between taxa. The colour scale and relative width of the nodes represent the number of OTUs for each taxon. Labels without nodes represent missing taxa. Summary statistics for the sediment eDNA richness are detailed in Table 2.19.

Figure 2.17 Sediment Bacterial Taxonomic Heat Trees of the Number of OTUs

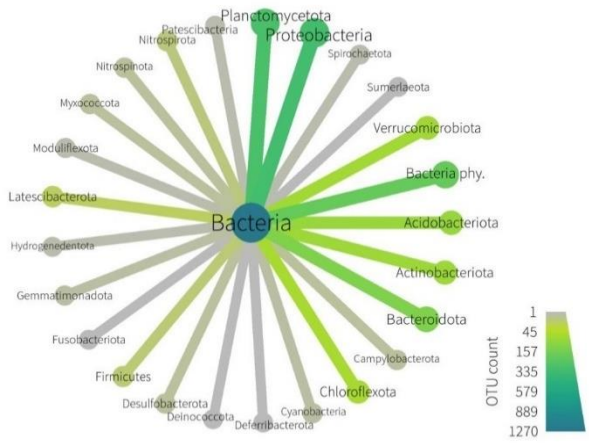


Figure 2.18 Sediment Infauna Taxonomic Heat Trees of the Number of OTUs

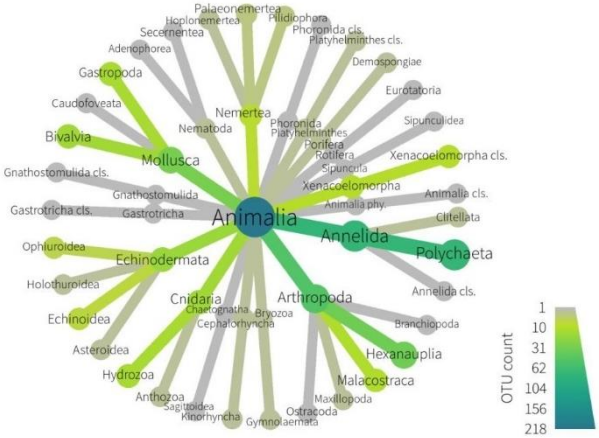


Figure 2.19 Sediment Fish Taxonomic Heat Trees of the Number of OTUs

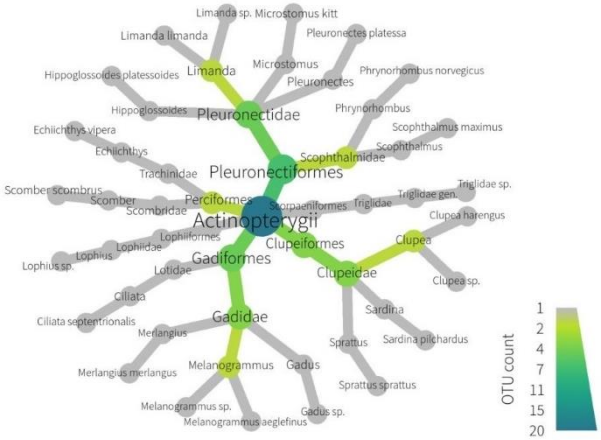


Table 2.19 Summary of Sediment Bacteria, Infauna and Fish Taxonomic Richness

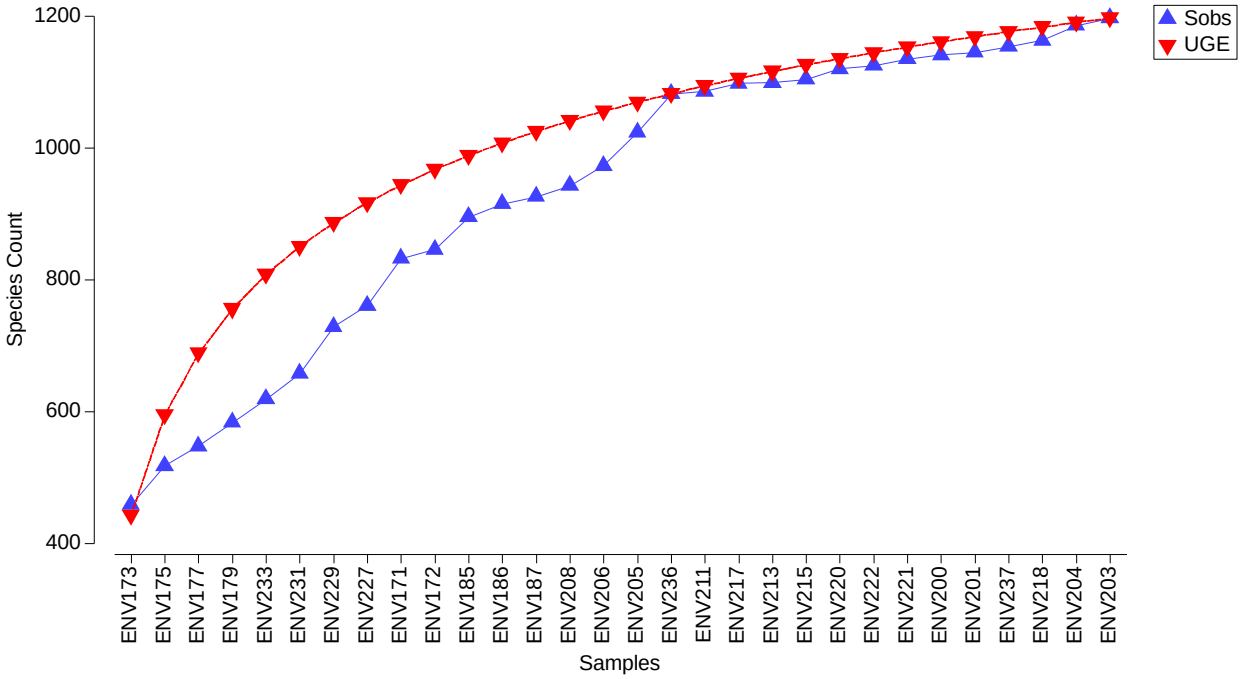
	Bacteria		Infauna		Fish*
	Current Survey	Gardline (2024b)	Current Survey	Gardline (2024b)	Current survey
Minimum	297	148	8	4	0
Maximum	507	282	35	50	5
Mean	443	235	20	24	4
±SD	53	26	8	10	1

* Fish data not comparable with the comparison survey (Gardline, 2024b)
Results in blue are from the comparison survey data, see Section 1.3.

Accumulation plots of OTUs for the sediment bacterial, invertebrate and fish data sets along the route are presented in Figure 2.20, Figure 2.21 and Figure 2.22, respectively. These plots show the increasing total number of different OTUs observed as samples are pooled. Two lines are plotted; the first (plotted in blue and often referred to as a Sobs curve) adds the new taxa to those already recorded, in sample order. The second line (plotted in red and often referred to as the UGE curve) is smooth, as it is an average output based on the samples being added in a random order 999 times (Ugland *et al.*, 2003). Sharp changes in the slope of the Sobs curve reflect notable changes in community between samples. Further, the relative position of the Sobs curve to that of the UGE curve can reflect the number of OTUs versus expectations had all samples been equal.

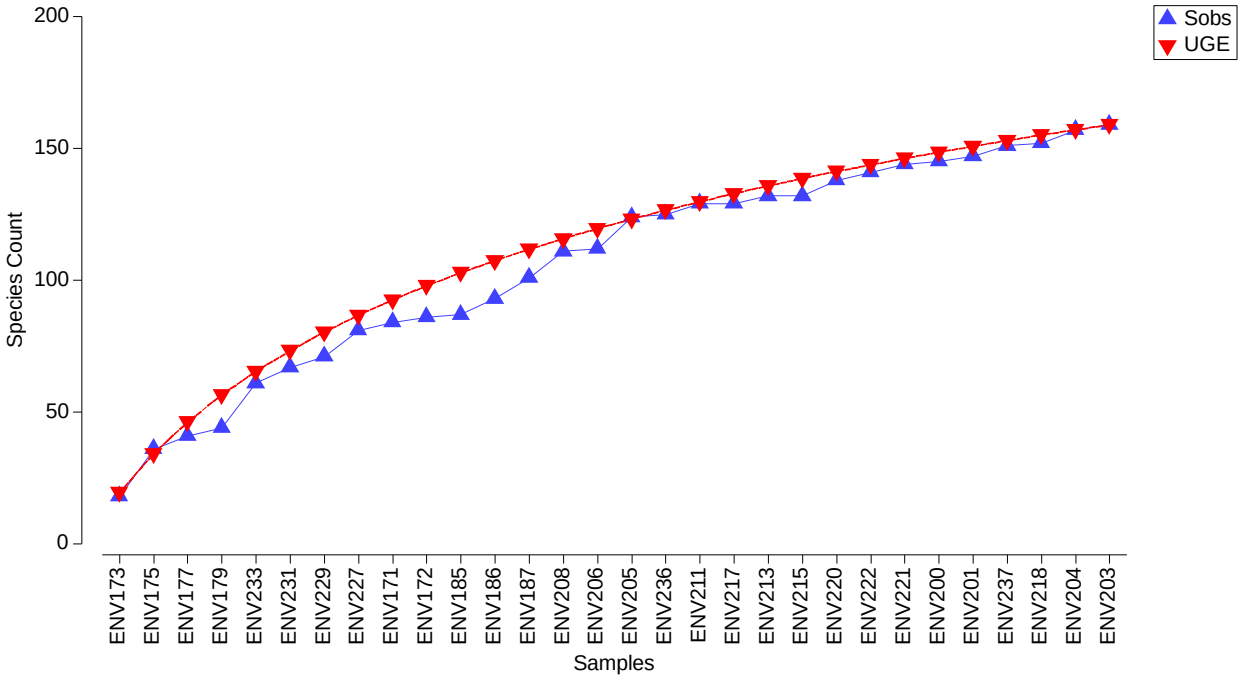
Although the Sobs curve for the sediment bacterial data set (Figure 2.20) began above the UGE curve it immediately went below, with the gap narrowing to equality at Station ENV236. Notable steps in the Sobs curve were noted where southern area Stations ENV205, ENV236 and ENV204 elicited up to 4.5 times more OTUs than the UGE curve, indicating a potential shift in bacterial community associated with these neighbouring very stations in shallow nearshore waters (≤16m depth). The Sobs and UGE curves continued to rise towards the end of the plot, suggesting that additional sampling may elicit additional OTUs, although the rate of increase was low.

Figure 2.20 OTU Accumulation Curve – Sediment Bacteria



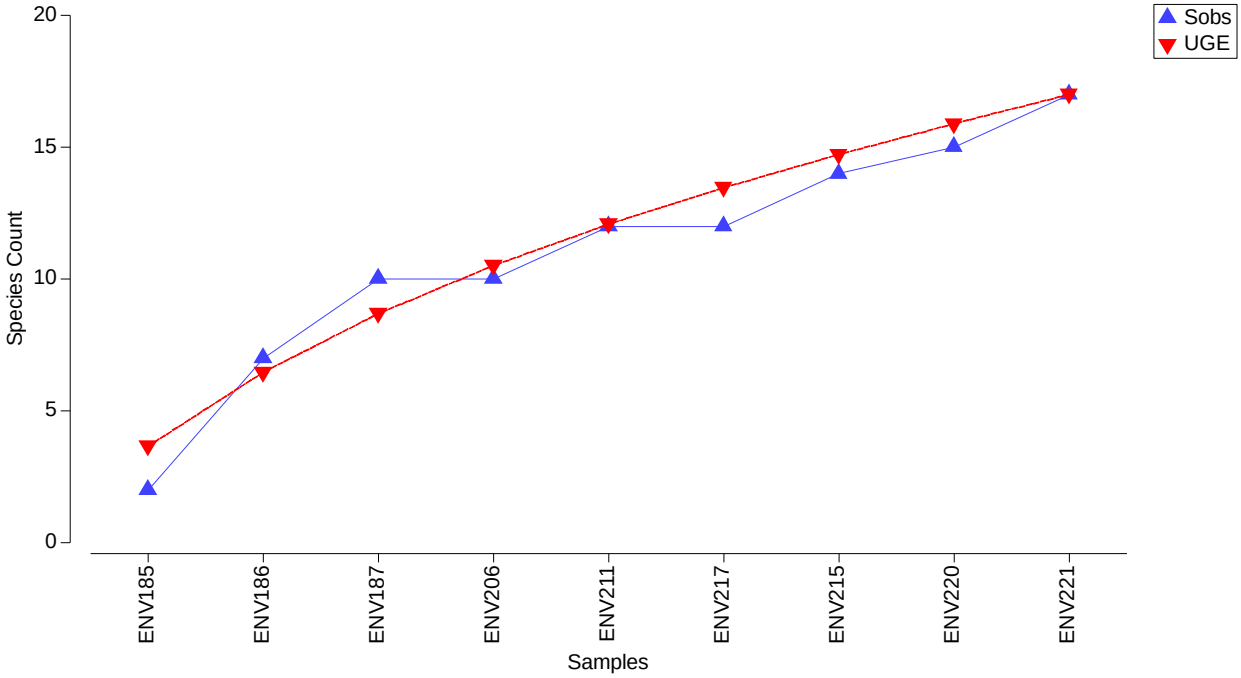
The Sobs curve for the sediment infauna data set (Figure 2.21) began approximately in line with the UGE curve, dropping below with the addition of Station ENV177 and remaining there until the addition of Station ENV205. This station elicited 3.5 times more OTUs than the UGE curve, indicating a potential shift in infaunal community associated with sampling in shallow nearshore waters (15m depth). After Station ENV205, the Sobs curve dropped below once again, remaining roughly parallel with the UGE curve until the addition of the last sample.

Figure 2.21 OTU Accumulation Curve – Sediment Infauna



The Sobs curve for the sediment fish data set (Figure 2.22) once again began below the UGE curve. The most notable shifts in the community occurred at Stations ENV186, ENV215 and ENV221 where the Sobs curve was steepest relative to the UGE curve. Both the UGE and Sobs curve continued to rise after the addition of the last sample, indicating that further sampling along the route may elicit additional OTUs to those reported during the current sampling campaign.

Figure 2.22 OTU Accumulation Curve – Sediment Fish



2.9.4 Water eDNA Summary Statistics

Near surface and near seabed water samples from 34 stations were analysed for the presence of marine mammals and fish eDNA, excluding sharks and rays. Of the 68 samples, 58 were sampled with standard filters (including Station ENV204 surface and Station ENV205 bottom samples). The remaining 10 samples (from Stations ENV201, ENV237, ENV203 and ENV182 as well as Station ENV204 bottom and Station ENV205 surface samples) were sampled with a bacterial filter.

Fish

The standard filter from the surface sample at Station ENV199 and the bacterial filter from the surface sample at Station ENV182 failed to amplify any eDNA.

A total of 68 OTUs across 29 taxonomic groups based on family were identified from the standard filters data set with 34 OTUs across 16 taxonomic groups identified from the bacterial filters, giving a combined total of 73 OTUs across 30 groups based on family. The proportional contribution of these taxonomic groups to the overall structure of the route, from each filter type, are detailed in Table 2.20 and Table 2.21, with contributions presented as stacked bar charts for each station in Figure 2.23 and Figure 2.24.

Regarding the results derived from the standard filter, Gadidae (n=12) was the most detected taxonomic group across the survey area and accounted for 18% of OTUs. The next most detected taxonomic group was Pleuronectidae (n=8) accounting for 12% of OTUs. Fifteen taxonomic groups were represented by a single OTU (Table 2.20). A similar trend was observed in the comparison survey (Gardline, 2024b) with Gadidae being the most detected OTU, the second most detected OTUs in the comparison survey were Pleuronectidae and Gobiidae. Of the 68 fish OTUs, a total of 20 (29%) were present in a single sample; however, none was present in all samples. Like with sediment invertebrates, it is likely that the community has been under sampled.

Comparing to the results derived from the bacterial filter, Gadidae and Pleuronectidae remain the most detected OTUs with a total of 34 OTUs detected.

Marine Mammals

Standard filters from nine samples and the bacterial filters from seven samples failed to detect any species.

A total of six OTUs across four taxonomic groups based on family were identified from the standard filters data set with three of these OTUs across two taxonomic groups also identified from the bacterial filters. The proportional contribution of these taxonomic groups to the overall structure of the route, from each filter type, are detailed in Table 2.22 and Table 2.23 and presented for each station in Figure 2.25 and Figure 2.26.

Overall, Delphinidae (n=3) was the most detected taxonomic group along the route and accounted for 50% of OTUs. One OTU (*Halichoerus grypus*) was present in a single sample; however, none was identified in all samples.

Table 2.20 Contribution of Gross Water Fish OTU Taxonomic Groups – Standard Filter

Group	Current Survey		Gardline (2024)	
	OTUs	Proportional Contribution (%)	OTUs	Proportional Contribution (%)
Agonidae	1	1	1	2
Alosidae	1	1	1	2
Ammodytidae	2	3	2	4
Anarhichadidae	1	1	NA	NA
Anguillidae	NA	NA	1	2
Argentinidae	NA	NA	1	2
Belonidae	1	1	1	2
Blenniidae	NA	NA	1	2
Callionymidae	3	4	2	4
Carangidae	2	3	1	2
Cichlidae	NA	NA	1	2
Clupeidae	3	4	2	4
Cottidae	3	4	3	5
Cyclopteridae	NA	NA	1	2
Gadidae	12	18	8	14
Gasterosteidae	1	1	1	2
Gobiidae	4	6	5	9
Labridae	2	3	2	4
Lophiidae	2	3	1	2
Lotidae	4	6	1	2
Merlucciidae	1	1	NA	NA
Moronidae	1	1	NA	NA
Mullidae	NA	NA	1	2
Others	1	1	NA	NA
Petromyzontidae	1	1	NA	NA
Phocoenidae	NA	NA	1	2
Pholidae	1	1	1	2
Pleuronectidae	8	12	5	9
Ranicipitidae	1	1	NA	NA
Salmonidae	NA	NA	2	4
Scombridae	1	1	1	2
Scophthalmidae	3	4	2	4
Soleidae	2	3	2	4
Stichaeidae	3	4	2	4
Syngnathidae	1	1	NA	NA
Trachinidae	1	1	1	2
Triglidae	1	1	1	2
Zoarcidae	NA	NA	2	4
Total OTUs	**68**	**100**	**57**	**100**
Total Families	**29**	**100**	**31**	**100**

Table 2.21 Contribution of Gross Water Fish OTU Taxonomic Groups – Bacterial Filter

Group	Current Survey	
	OTUs	Proportional Contribution (%)
Ammodytidae	2	6
Callionymidae	2	6
Clupeidae	3	9
Cottidae	1	3
Gadidae	7	21
Gobiidae	3	9
Labridae	1	3
Lophiidae	1	3
Lotidae	3	9
Pholidae	1	3
Pleuronectidae	5	15
Scombridae	1	3
Soleidae	1	3
Trachinidae	1	3
Triglidae	1	3
Zoarcidae	1	3
Total OTUs	**34**	**100**
Total Families	**16**	**100**

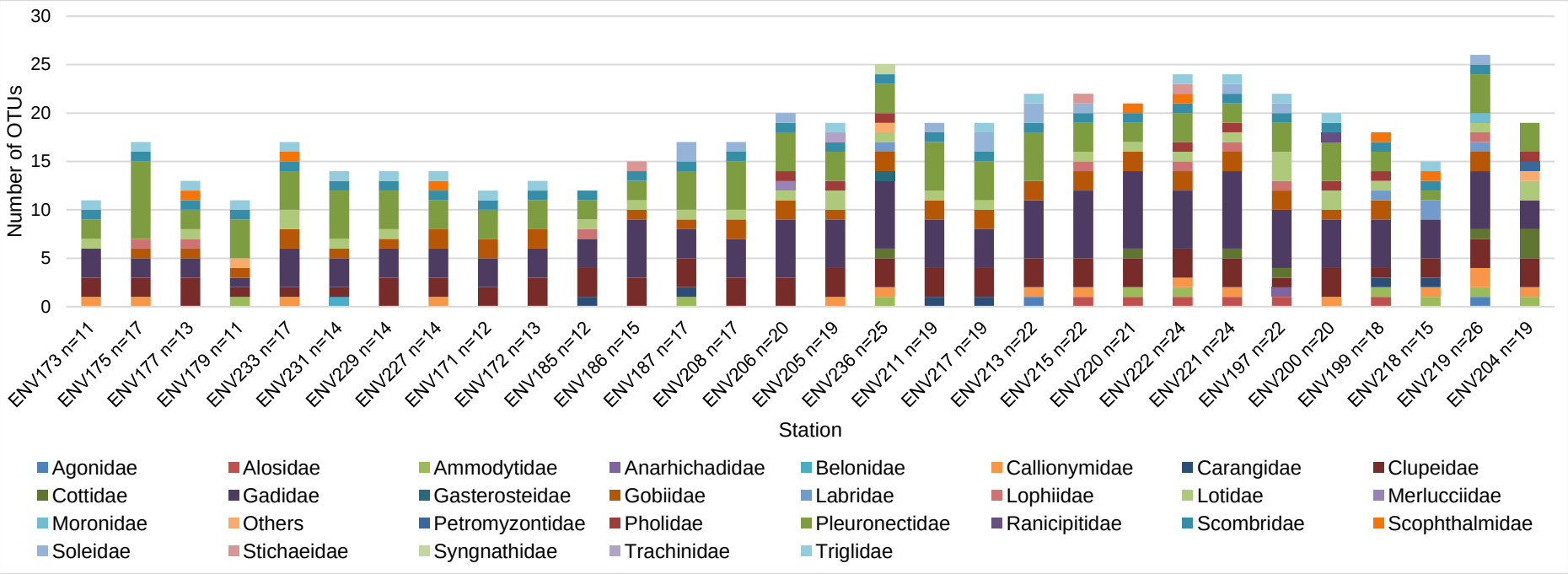
Table 2.22 Contribution of Gross Water Marine Mammal OTU Taxonomic Groups – Standard Filter

Group	Current Survey		Gardline (2023)	
	OTUs	Proportional Contribution (%)	Taxa	Proportional Contribution (%)
Balaenopteridae	1	17	1	14
Delphinidae	3	50	2	29
Phocidae	1	17	1	14
Phocoenidae	1	17	3	43
Total OTUs	**6**	**100**	**7**	**100**
Total Families	**4**	**100**	**4**	**100**

Table 2.23 Contribution of Gross Water Marine Mammal OTU Taxonomic Groups – Bacterial Filter

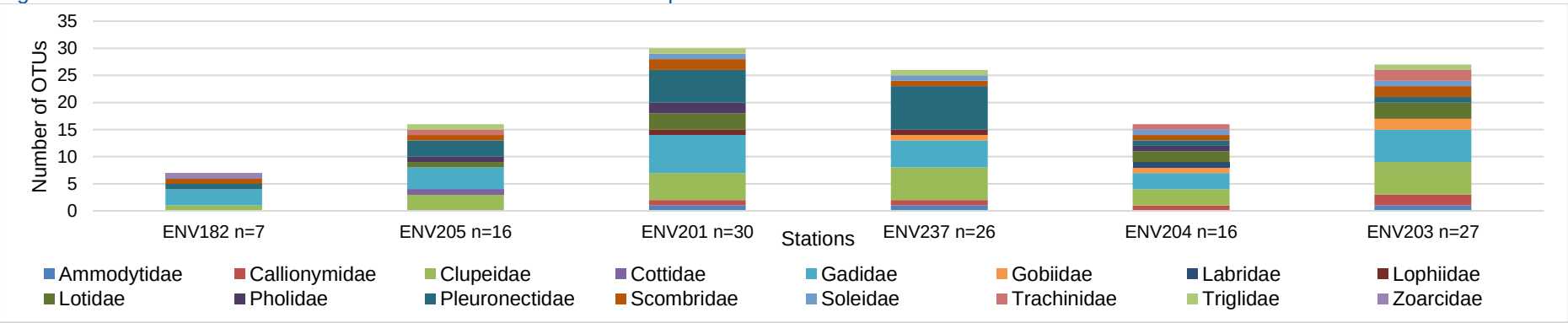
Group	Current Survey	
	OTU	Proportional Contribution (%)
Delphinidae	2	67
Phocoenidae	1	33
Total OTUs	**3**	**100**
Total Families	**2**	**100**

Figure 2.23 Contributions of Gross Water Fish OTU Taxonomic Groups – Standard Filter



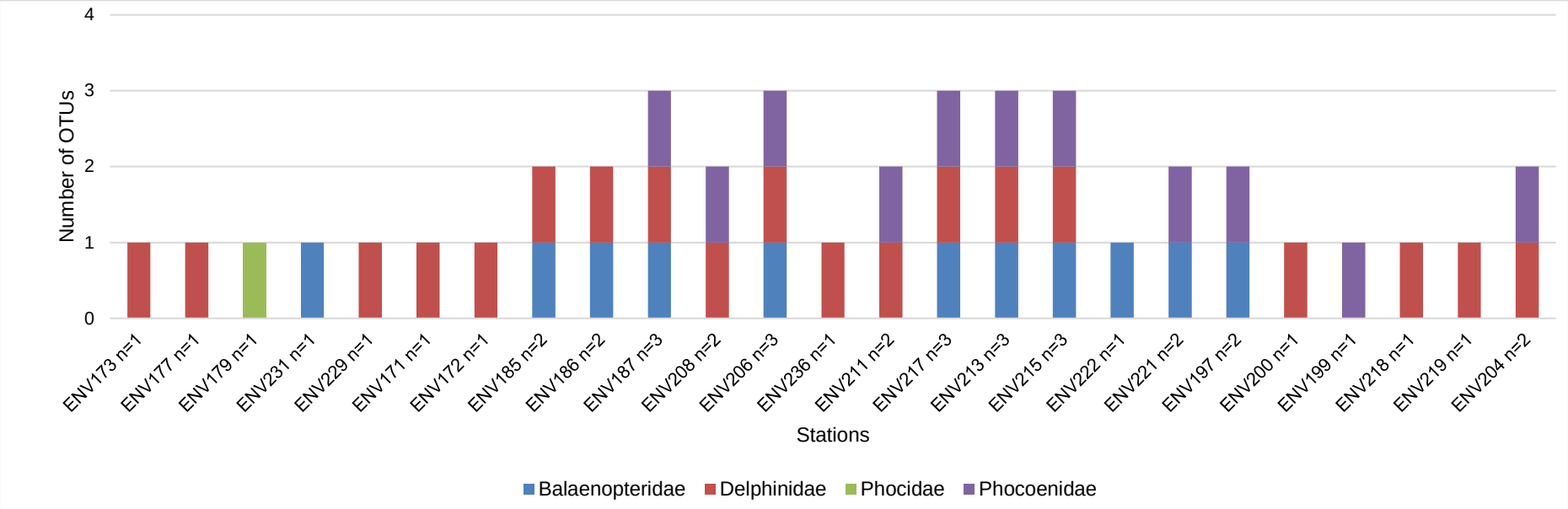
Station ENV204 relates to near surface sample only and Station ENV205 relates to near seabed sample only.

Figure 2.24 Contributions of Gross Water Fish OTU Taxonomic Groups – Bacterial Filter



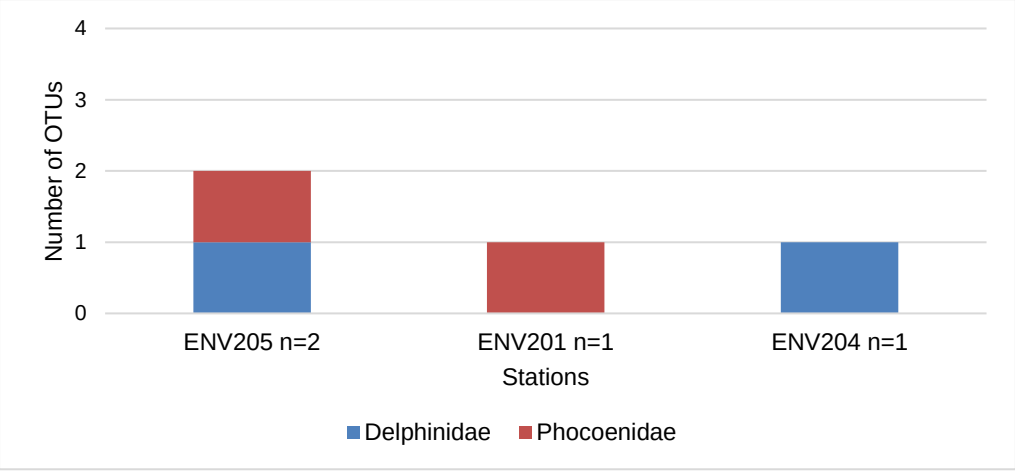
Station ENV204 relates to near seabed sample only and Station ENV205 relates to near surface sample only.

Figure 2.25 Contributions of Gross Water Marine Mammals OTU Taxonomic Groups – Standard Filter



Station ENV204 relates to near surface sample only and Station ENV205 relates to near seabed sample only.

Figure 2.26 Contributions of Gross Water Marine Mammals OTU Taxonomic Groups – Bacterial Filter



Station ENV204 relates to near seabed sample only and Station ENV205 relates to near surface sample only.

A comparative taxonomic heat tree detailing the number of fish OTUs by filter type along the route down to the family rank is presented in Figure 2.27 and Figure 2.28. Summary statistics for water fish and marine mammal analyses by filter type are provided in Table 2.24 and Table 2.25.

Figure 2.27 Water Fish OTU Taxonomic Heat Tree – Standard Filter

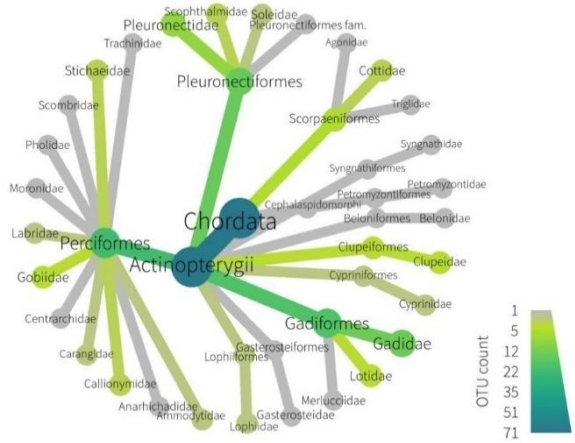


Figure 2.28 Water Fish OTU Taxonomic Heat Tree – Bacterial Filter

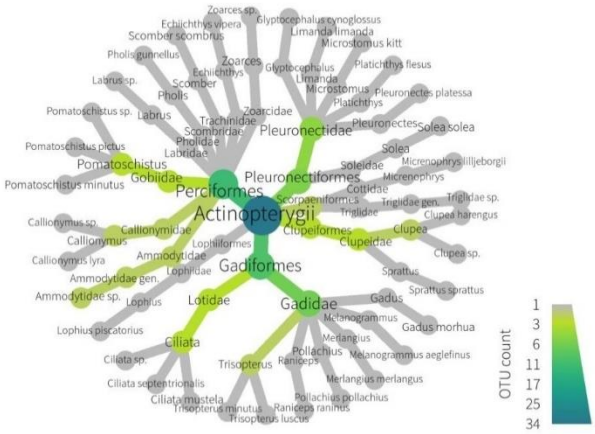


Table 2.24 Summary of Water Fish and Marine Mammal Taxonomic Richness - Standard Filter

	Fish		Marine Mammal	
	Current Survey	Gardline (2024b)	Current Survey	Gardline (2024b)
Minimum	0	5	0	0
Maximum	23	27	3	11
Mean	11	11	<1	4
±SD	6	4	<1	2

Results in blue are from comparison survey data, see 1.3

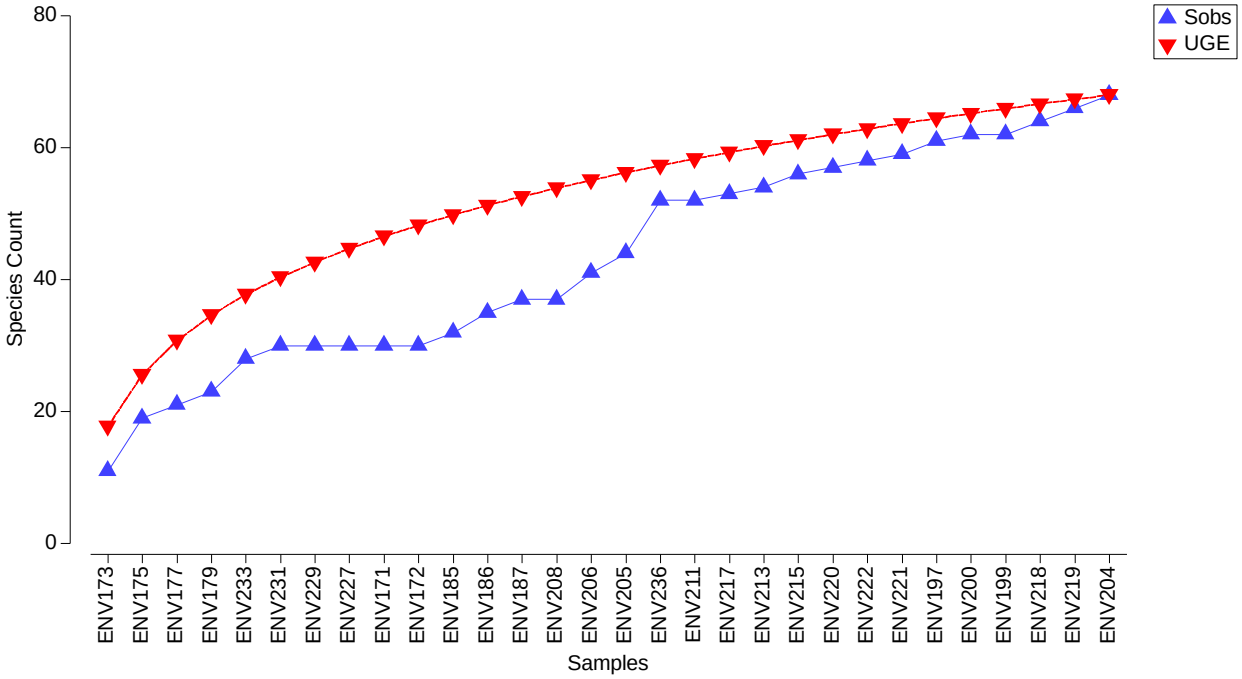
Table 2.25 Summary of Water Fish and Marine Mammal Taxonomic Richness - Bacterial Filter

	Fish	Marine Mammal
Minimum	0	0
Maximum	19	2
Mean	12	<1
±SD	5	<1

The OTU accumulation plots for fish water analysis data sets are presented in Figure 2.29 and Figure 2.30. The steepest rise in the Sobs curve for the standard filter fish (Figure 2.29) analysis data was with the addition of the nearshore Station ENV236 where eight new OTUs were added, indicating a shift in fish community in the shallowest waters sampled along the route (11m). The Sobs curve for the fish eDNA (Figure 2.30) extracted from the bacterial filter showed a relatively steep rise in the Sobs curve with the addition of nearshore Station ENV201 and ENV205 eliciting more new OTUs than the remaining stations. Both the UGE and Sobs curve continued to rise after the addition of the last sample indicating that further sampling may elicit additional taxa.

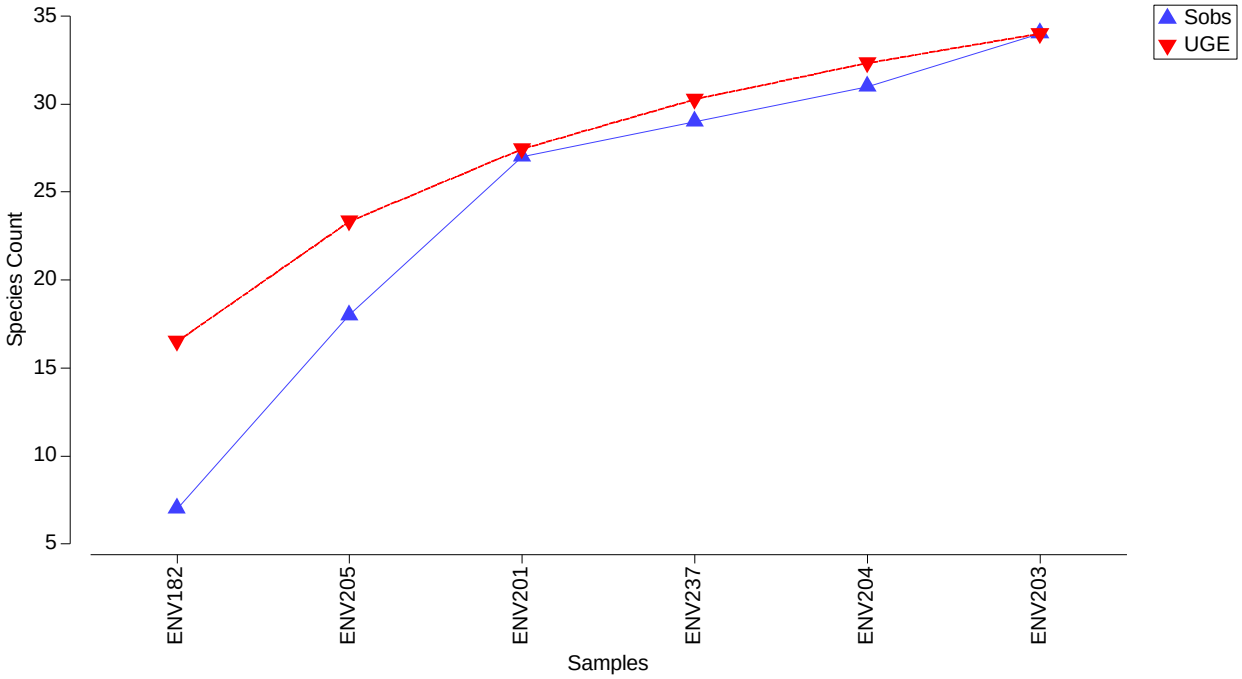
Given the relatively small data set, OTU accumulation plots for marine mammal eDNA would be of limited interpretive value and have therefore not been presented.

Figure 2.29 OTU Accumulation Curve – Water Fish (Standard Filter)



Station ENV204 relates to near surface sample only and Station ENV205 relates to near seabed sample only.

Figure 2.30 OTU Accumulation Curve – Water Fish (Bacterial Filter)



Station ENV204 relates to near seabed sample only and Station ENV205 relates to near surface sample only.

2.10 OTU Community Structure Using Multivariate Analyses

2.10.1 Sediment eDNA

Bacteria

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the sediment bacteria samples are displayed in Figure 2.31 and Figure 2.32.

The CLUSTER analysis and resulting dendrogram (Figure 2.31) identified nineteen SIMPROF groups which comprised nine outliers (Stations ENV171, ENV172, ENV179, ENV185, ENV200, ENV206, ENV208, ENV217 and ENV237), nine closely related pairs (SIMPROF *b, d, e, g, l, k, n, p* and *q*) and one true cluster (SIMPROF *s*). Overall, samples were at least 29% similar to one another. The generally low similarities are potentially due to bacterial communities being far richer than equivalent metazoan communities and less discriminately bound to the sediment given their established variation with both overlying water quality along with direct sediment physico-chemistry (Allison & Martiny, 2008; Frühe *et al.*, 2021). However, they still provide a suitable sensitive receptor to environmental pressures for environmental monitoring (Horton *et al.*, 2019). At a nominal Bray-Curtis similarity of 40%, the dendrogram could be separated into two broad groups A (containing all samples from water depths <30m) and B and one outlier (*c*, Station ENV171, one of the deepest stations).

The nMDS ordination of the sediment infauna data set (Figure 2.32) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.09, this can be considered a good two-dimensional representation of rank (dis)similarities and the overall pattern observed in the data set.

Examination of the sediment bacteria data set together with the results of the SIMPER analyses at a group level showed differences due to subtle variations in taxa community structure within particular SIMPROF groups.

Infauna

The results of the CLUSTER analysis including SIMPROF, in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the sediment invertebrates samples are displayed in Figure 2.33 and Figure 2.34.

The CLUSTER analysis and resulting dendrogram identified ten SIMPROF groups which comprised three outliers (Stations ENV206, ENV222 and ENV233), two closely related pairs (SIMPROF *h* and *i*) and five true clusters (SIMPROF *a, c, d, e* and *j*). All samples were considered more dissimilar than similar and grouped at <50% similarity.

The nMDS ordination of the sediment infauna data set (Figure 2.33) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.23, this should be treated with caution as a two-dimensional representation of rank (dis)similarities and overall pattern observed in the data set.

Examination of the sediment infauna sample data together with the results of the SIMPER analyses at a group level showed differences due to subtle variations in taxa community structure within particular SIMPROF groups.

Fish

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the sediment fish samples are displayed in Figure 2.35.

The CLUSTER analysis and resulting dendrogram identified a single SIMPROF group. Samples were considered more dissimilar than similar as they grouped at *c.*3% similarity.

The nMDS ordination of the sediment fish data set (Figure 2.36) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.06, this is considered a good two-dimensional representation of rank (dis)similarities and overall pattern of the data set.

Figure 2.31 Bray-Curtis Similarity Dendrogram of Sediment Bacteria Data

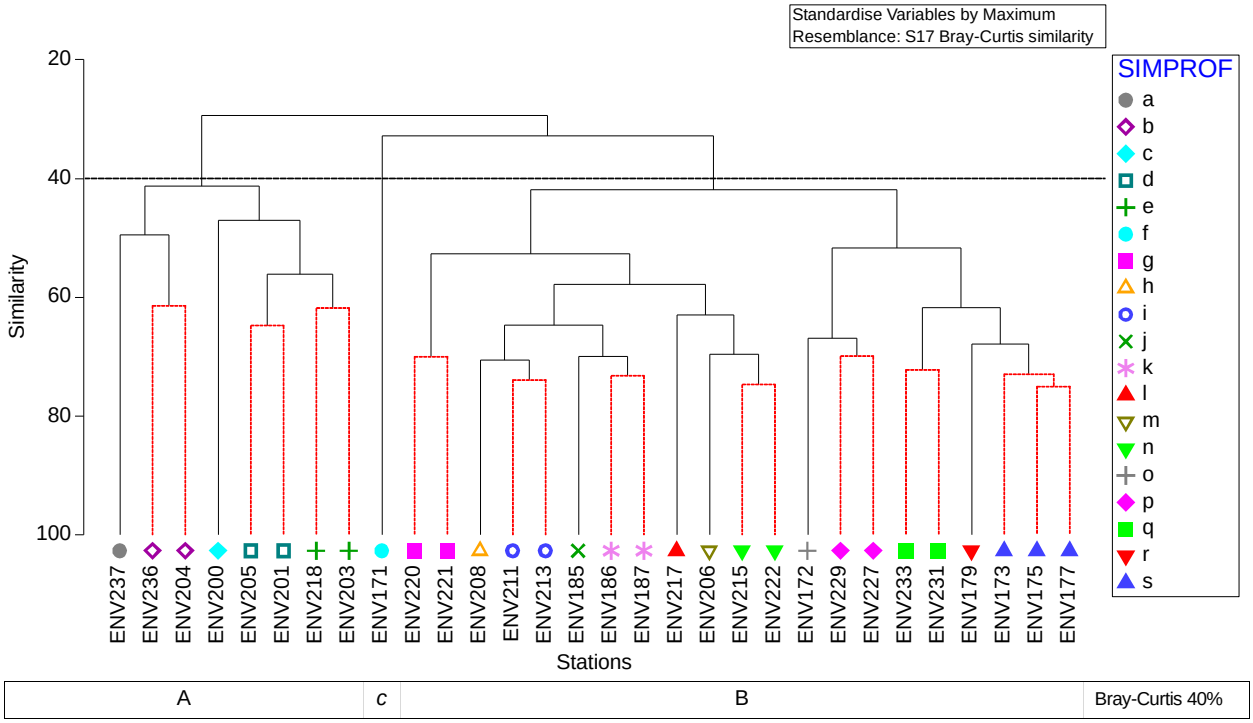


Figure 2.32 MDS Ordination Showing Grouping at Bray-Curtis Similarity of 40%

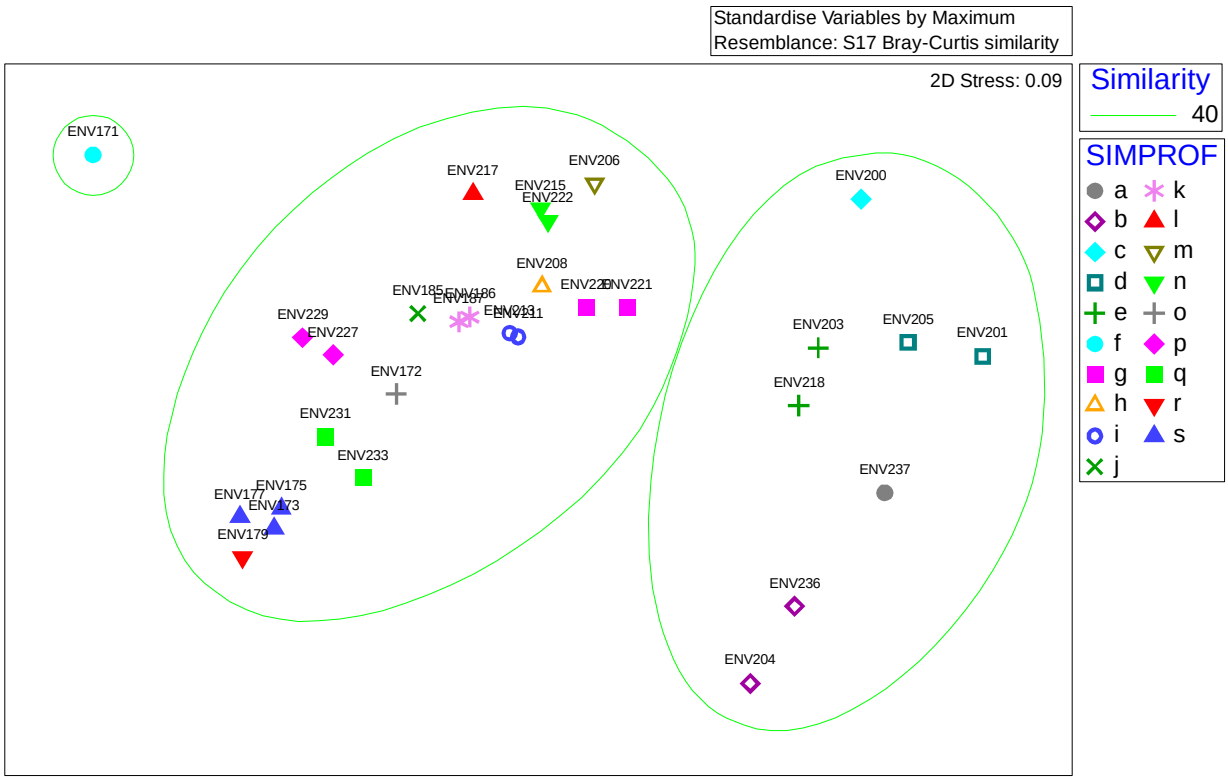


Figure 2.33 Bray-Curtis Similarity Dendrogram of Sediment Infauna Data

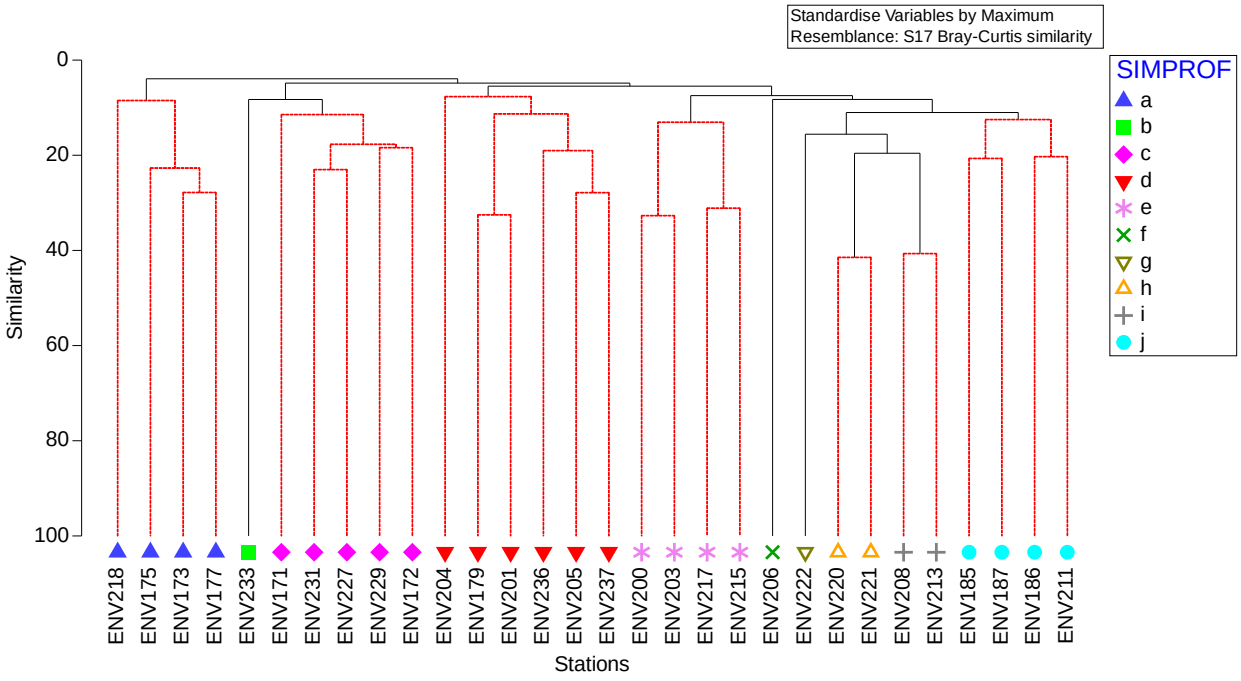


Figure 2.34 nMDS Ordination Plot of Sediment Infauna Data

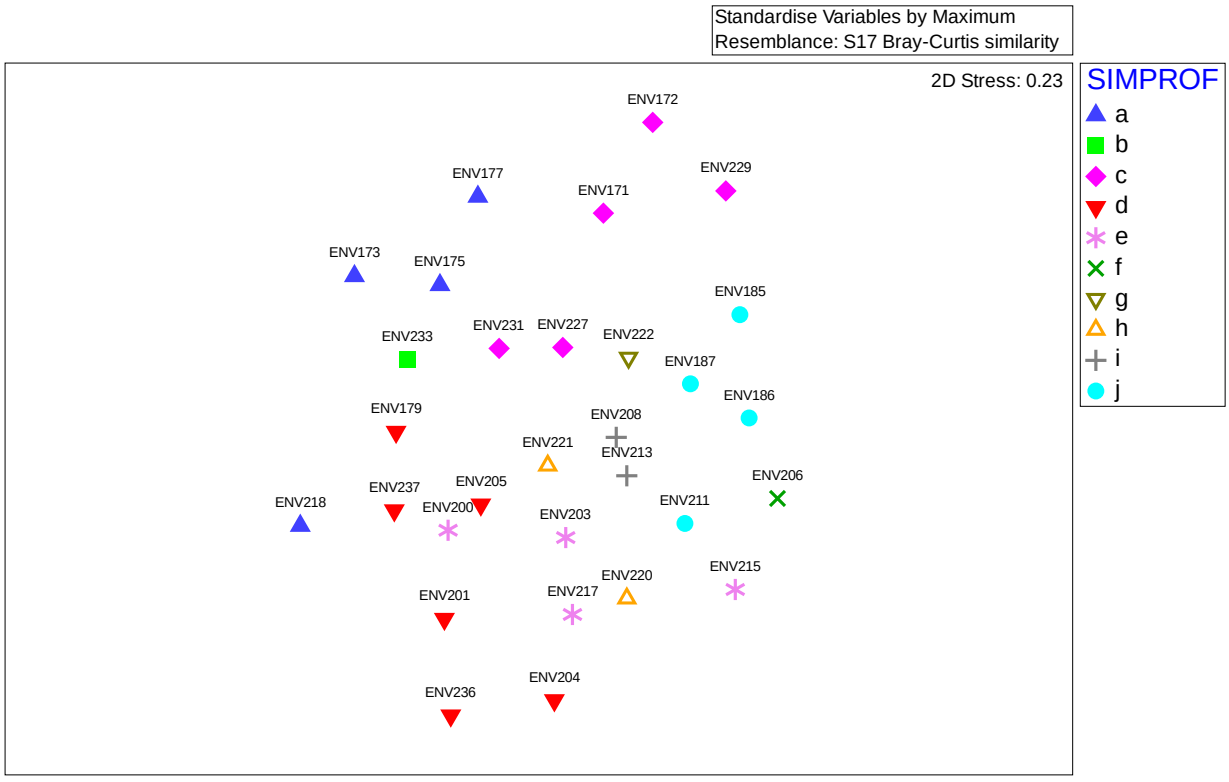


Figure 2.35 Bray-Curtis Similarity Dendrogram of Sediment Fish Data

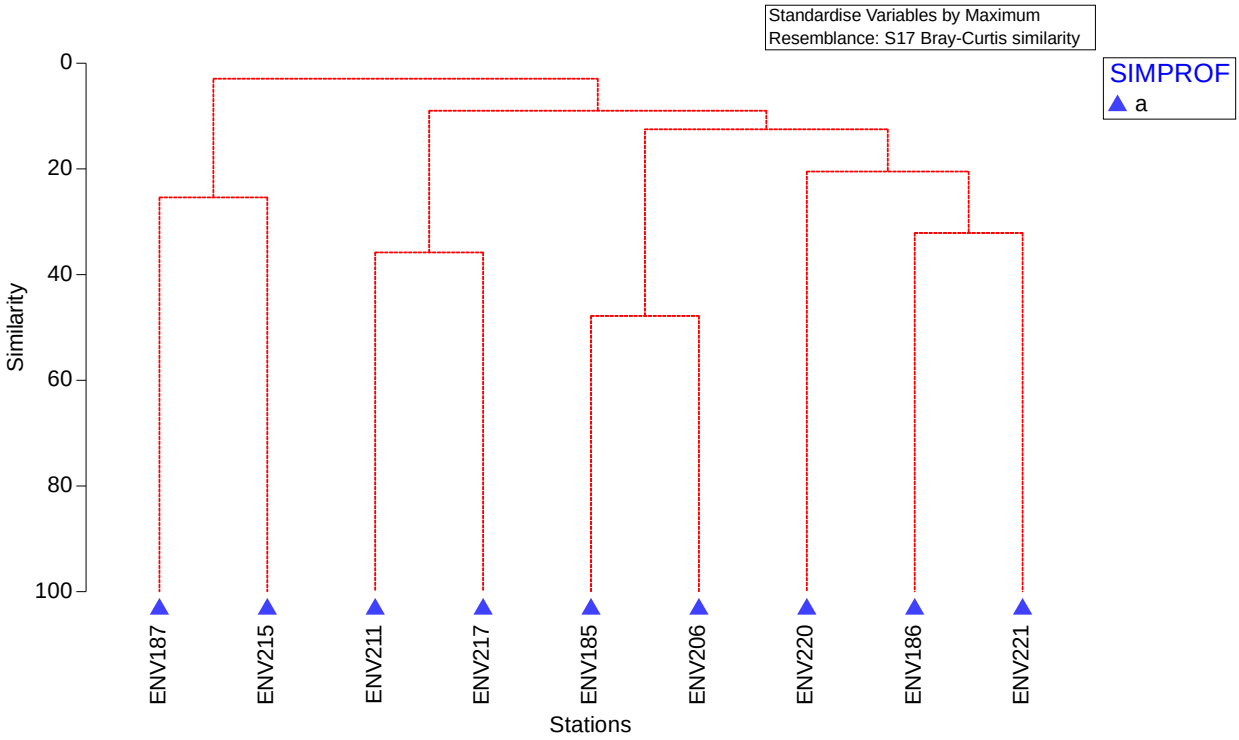
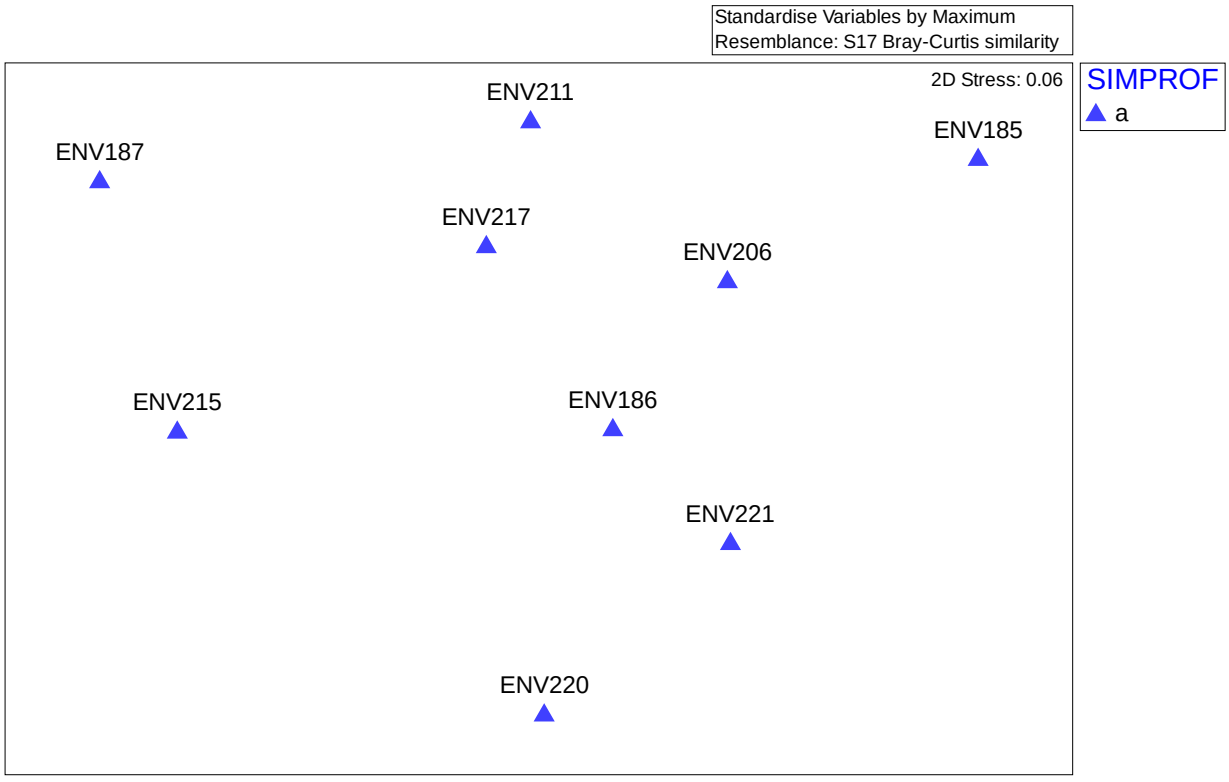


Figure 2.36 nMDS Ordination Plot of Sediment Fish Data



2.10.2 Water eDNA

Fish (Standard Filter)

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the water fish samples are displayed in Figure 2.37 and Figure 2.38.

The CLUSTER analysis and resulting dendrogram (Figure 2.37) identified one closely associated pair of samples from the northern area (SIMPROF *a*) and three true clusters including SIMPROF *d* which comprised the three shallowest stations (ENV204, ENV205 and ENV236). Overall, samples were 12 to 60% similar to one another. The nMDS ordination of the water fish (standard filter) data set (Figure 2.38) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.21, this two-dimensional representation of rank (dis)similarities and overall pattern of the data set should be treated with some caution.

Examination of the sediment fish sample data together with the results of the SIMPER analysis indicated that several OTUs contributed to the groupings and separation of the samples.

Fish (Bacterial Filter)

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the sediment fish samples are displayed in Figure 2.39 and Figure 2.40.

Partly due to the small sample size, the CLUSTER analysis and resulting dendrogram (Figure 2.39) identified a single SIMPROF group. Samples were considered more dissimilar than similar each grouping at <50% similarity. The nMDS ordination of the water fish (bacterial filter) data set (Figure 2.40) revealed a similar pattern to the CLUSTER analysis with a stress value of 0 can be considered a perfect representation of the rank (dis)similarity and overall pattern of the data.

Marine Mammal (Standard Filter)

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the water marine mammal samples are displayed in Figure 2.41 and Figure 2.42. Due to the limited number of target OTUs detected in the samples, the CLUSTER analysis and resulting dendrogram identified a single SIMPROF group.

The nMDS ordination of the water marine mammal data set (Figure 2.42) revealed a similar pattern to the CLUSTER analysis with a stress value of 0.01, this is considered a near perfect two-dimensional representation of rank (dis)similarities and overall pattern of the data set. Of the samples where target OTUs were detected, Station ENV179 and ENV218 were the most distinct as they recorded unique detections of *Halichoerus grypus* and *Grampus griseus*, respectively.

Marine Mammal (Bacterial Filter)

The results of the CLUSTER analysis including SIMPROF analysis in the form of a Bray-Curtis similarity dendrogram and nMDS plot based on standardised data for the water marine mammal samples are displayed in Figure 2.43 and Figure 2.44. Due to the limited number of stations and target OTUs detected in the samples the CLUSTER analysis and resulting dendrogram identified a single SIMPROF group. Samples were considered more dissimilar than similar as they grouped at <30% similarity.

The nMDS ordination of the water marine mammal data set (Figure 2.44) revealed a similar pattern to the CLUSTER analysis with a stress value of 0, this is considered a perfect two-dimensional representation of rank (dis)similarities and overall pattern of the data set.

Figure 2.37 Bray-Curtis Similarity Dendrogram of Water Fish Data (Standard Filter)

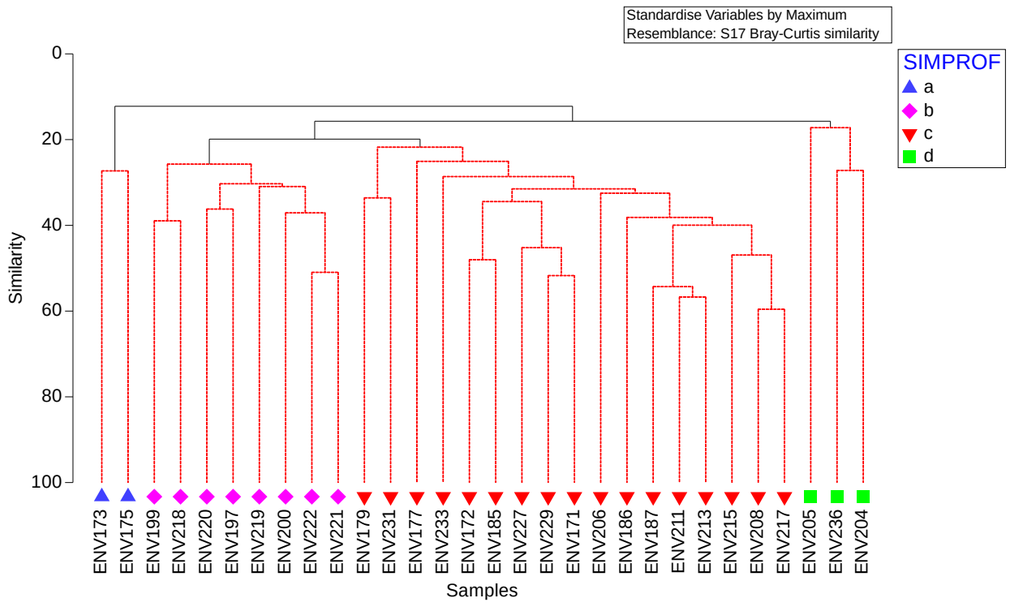


Figure 2.38 nMDS Ordination Plot of Water Fish Data (Standard Filter)

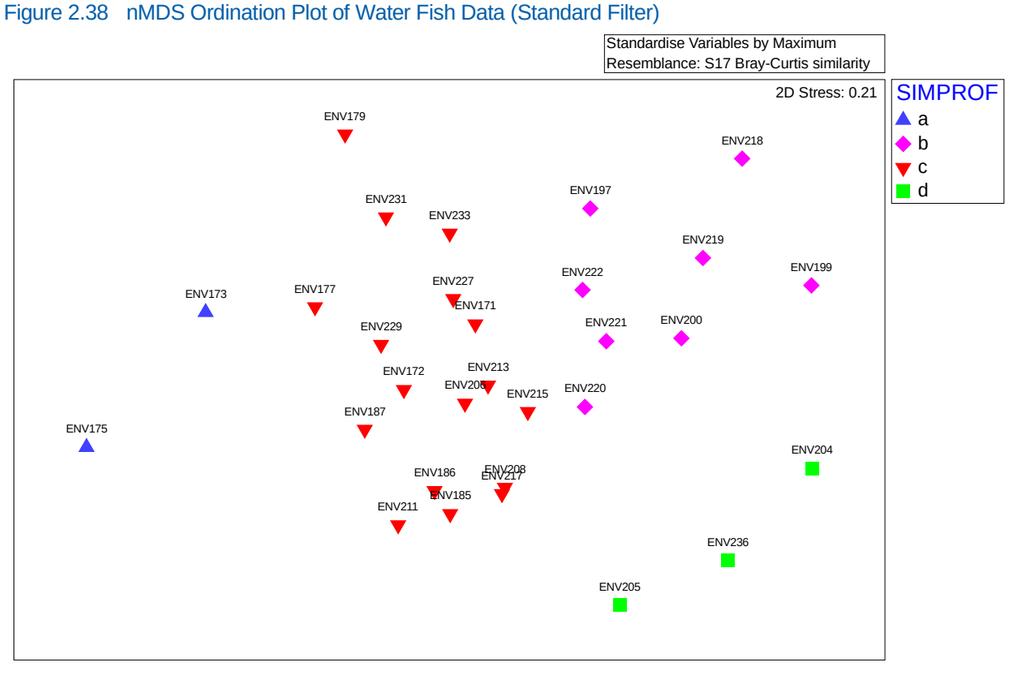


Figure 2.39 Bray-Curtis Similarity Dendrogram of Water Fish Data (Bacterial Filter)

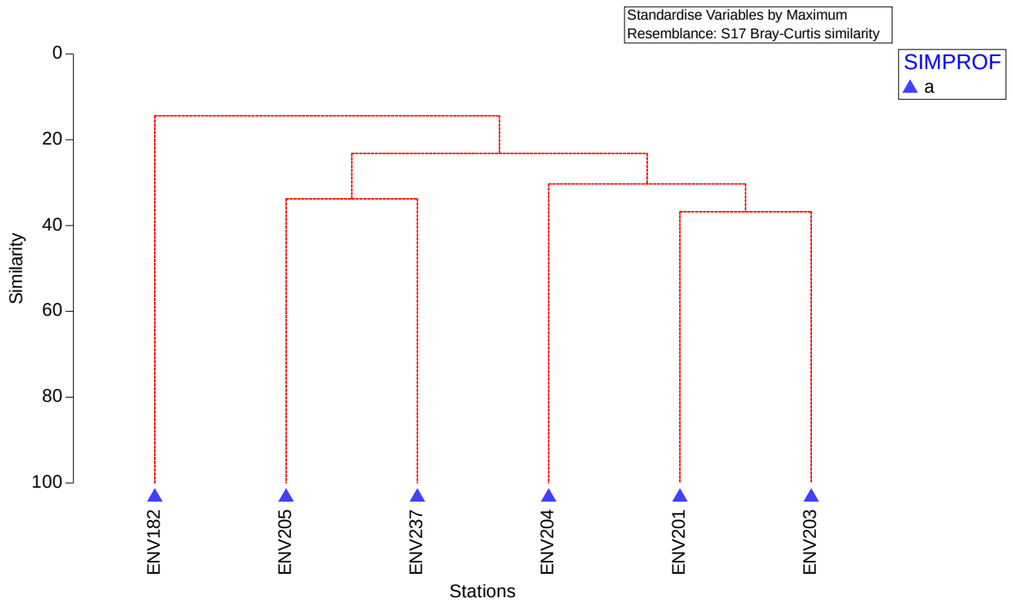


Figure 2.40 nMDS Ordination Plot of Water Fish Data (Bacterial Filter)

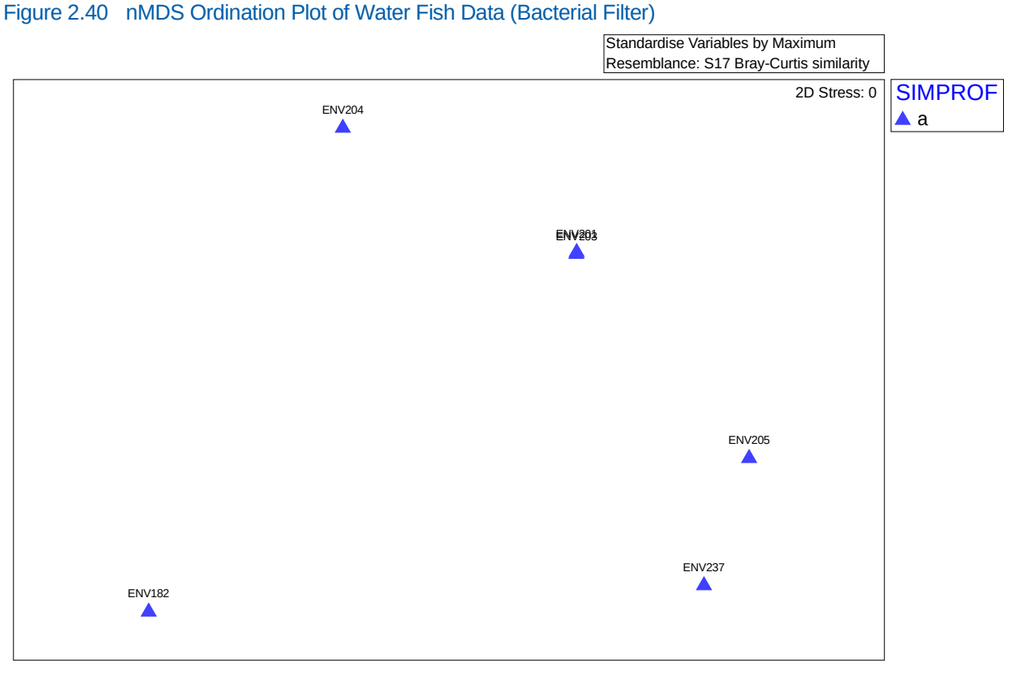


Figure 2.41 Bray-Curtis Similarity Dendrogram of Water Marine Mammal Water Data (Standard Filter)

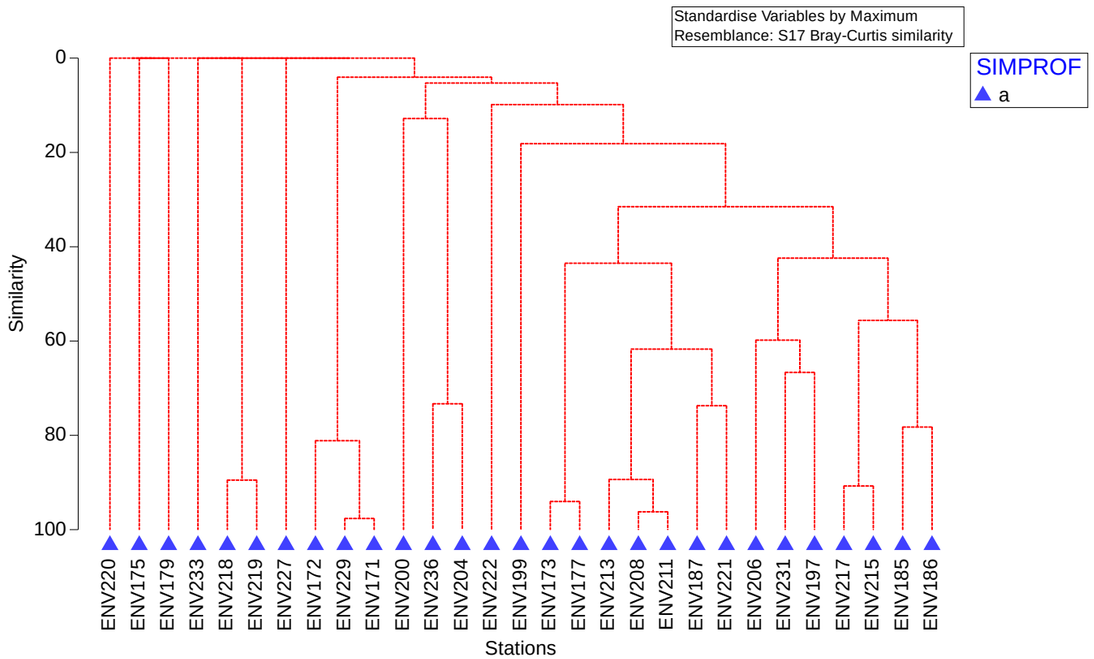


Figure 2.42 nMDS Ordination Plot of Water Marine Mammal Water Data (Standard Filter)

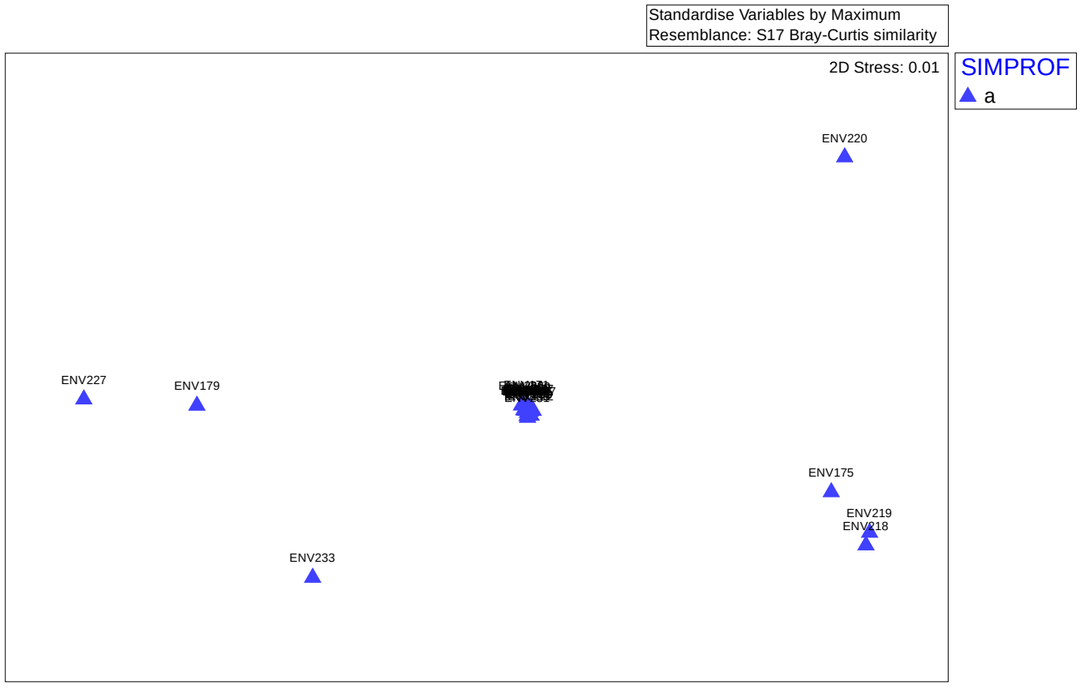


Figure 2.43 Bray-Curtis Similarity Dendrogram of Water Marine Mammal Water Data (Bacterial Filter)

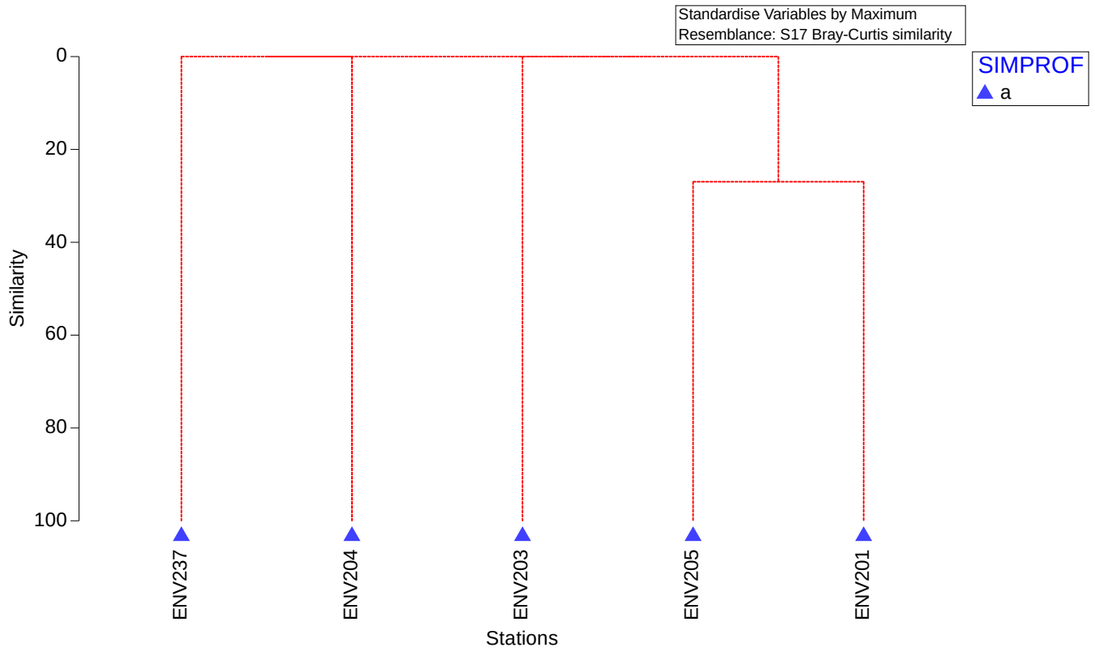
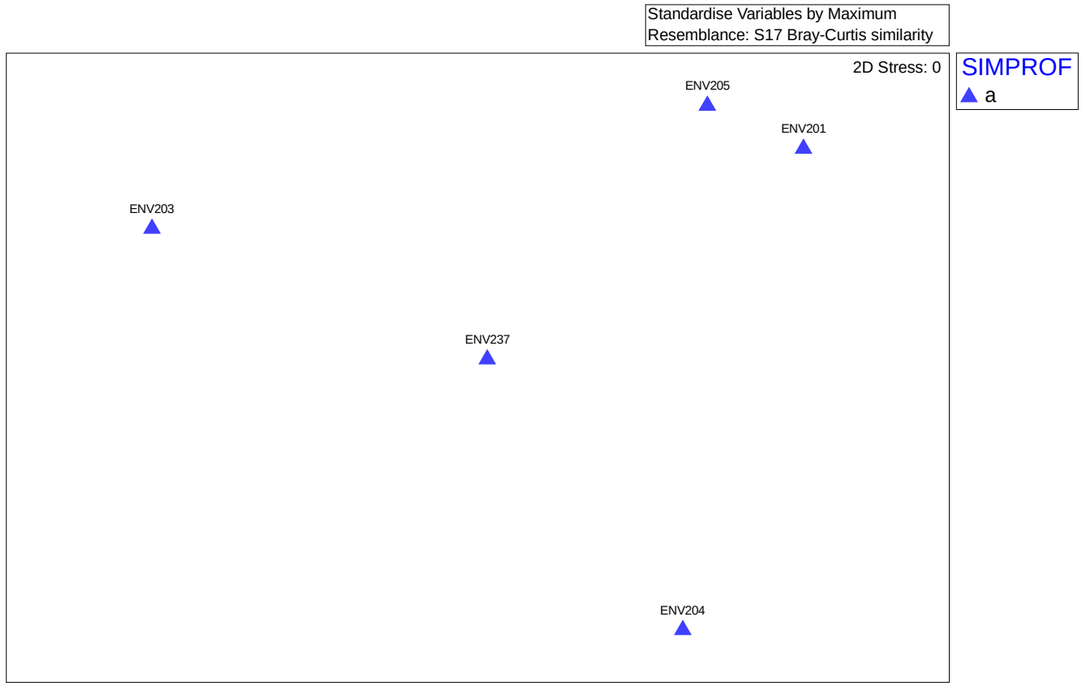


Figure 2.44 nMDS Ordination Plot of Water Marine Mammal Water Data (Bacterial Filter)



2.11 Multivariate Comparison of Metabarcoding Results to Physico-Chemical Data

The multivariate patterns for all seven DNA data sets were individually compared to the 30 station physico-chemical data to determine if any correlations were present. This was not possible for five stations due either to no grab sampling being attempted (ENV182, ENV199, ENV219) or to unsuccessful grab sampling (ENV197, ENV198).

BIO-ENV analysis conducted on the seven DNA data sets against the 30 station physico-chemical data set identified;

- A sub set of one variable; Ni, showed a 72% correlation with the sediment trace bacteria DNA multivariate pattern.
- A sub set of two variables; percentage fines and Zn, showed a 33% correlation with the sediment infauna DNA multivariate pattern.
- A sub set of one variable; mean particle diameter, showed a 15% correlation with the sediment fish DNA multivariate pattern.
- A sub set of one variable; Ni, showed a 49% correlation with the water fish (standard filter) DNA multivariate pattern
- A sub set of two variables; percentage sand and percentage gravel, showed a 26% correlation with the water fish (bacterial filter) DNA multivariate pattern.
- A sub set of one variable; Ni, showed a 31% correlation with the water marine mammal (standard filter) DNA multivariate pattern
- A sub set of one variable; As, showed a 55% correlation with the water marine mammal (bacterial filter) DNA multivariate pattern

Further sampling including additional stations and replication would allow further investigation of the relationship between DNA data and the physico-chemical variables. As a result of the current sample sizes for each of the seven data sets with amplified and target DNA present (sediment bacterial; n=30; sediment infauna; n=30; sediment fish; n=9; water fish (standard filter); n=30, water fish (bacterial filter); n=6, water marine mammal (standard filter); n=29 and water marine mammal (bacterial filter); n=5) and the use of single DNA replicates per station the statistical robustness of the analysis patterns are limited and may be obscured.

2.12 Macrofaunal Interpretation

2.12.1 Overview

Two 0.1m^2 faunal samples (MFA and MFB) were collected from 49 stations, one of which (the MFA sample) was worked up and the second retained and appropriately stored as a spare. All faunal samples were screened through a 0.5mm mesh sieve. Before analysing the data set provided by the laboratory, several taxa were removed as per our stated methods; however, all records, regardless of whether they were included in statistical analyses, are listed in Appendix J.

2.12.2 Summary of Notable Species

A total of four *P. phosphorea*, recording a biomass of 0.8408g and eleven *Virgularia mirabilis* with a biomass of 0.012g, were recorded across ten stations (*P. phosphorea* at Stations ENV230, ENV231 and ENV233 and *V. mirabilis* at Stations ENV214, ENV215, ENV216, ENV217, ENV220, ENV221, ENV222) along the route. Sea pens are included as a defining species of the 'Sea pen and burrowing megafauna communities' habitat as defined by OSPAR (2010).

Sixty juvenile individuals of *A. islandica* with a combined biomass of 0.0322g and an average biomass of <0.001g per individual, were recorded along the route, being present at 19 stations. This is a long-lived species with a slow growth rate and is on the OSPAR (2008) list of threatened and/or declining species and habitats. However, *A. islandica* is commonly found in this area of the North Sea, where populations of 40- to 80-year-old specimens have been recorded, with a substantial proportion over 100 years old (OSPAR, 2009b).

2.12.3 Summary Statistics

A total of 22583 individuals representing 353 taxa and 137.4817g of biomass were recorded from across the 49 sampled stations. Of these, juveniles accounted for 3480 individuals from 18 taxa and 2.8878g of biomass; representing 15% of individuals, 5% of the taxa and 2% of the biomass recorded. Juveniles, although a valid part of the community, are ephemeral in their nature due to high levels of mortality and can temporarily disturb the normal balance of relative abundance amongst species (and consequently measures of diversity). A RELATE analysis was conducted in PRIMER to determine whether the presence of juveniles caused significant variation between the rationalised full and adult only faunal community structure. The test showed that the two data sets were 98% similar, indicting no significant difference between the two faunal communities. When ranked by abundance, one juvenile taxon (Spatangoida) was ranked within the top ten taxa. OSPAR (2017a) recommends that should juvenile taxa appear among the top ten taxa in the data set, statistical analysis of the faunal community should be conducted both with and without juveniles to illustrate their influence on the faunal community. Consequently, the adult data set will be presented within this report, with the full data set discussed where relevant.

The data sets (full and adult) were divided into five taxonomic groups: Annelida (Polychaeta), Arthropoda (Malacostraca), Mollusca, Echinodermata and Others. The Others category comprised Annelida (Clitellata and Sipuncula), Arthropoda (Pycnogonida), Cnidaria (Hexacorallia, Octocorallia), Hemichordata (Enteropneusta), Nemertea, Platyhelminthes, Priapulida and Phoronida. The absolute and proportional contributions of these five taxonomic groups to the overall community structure of adult and full fauna are summarised in Table 2.26. The contributions of each taxonomic group to the total individuals, taxa and biomass are illustrated as stacked bar charts in Figure 2.45, Figure 2.46, and Figure 2.47.

In the adult only data set, Annelida (Polychaeta; n=8205) was the most abundant taxonomic group accounting for 42% of the individuals, 37% of the taxa and 20% of the biomass. Overall, Annelida had the highest number of individuals recorded and was the most abundant group at 69% (n=34) of stations, most notably at the stations with muddy sand in the central area. *Paramphinome jeffreysii* (n=2202) accounted for 27% of annelid abundance, 12% of the overall adult abundance but less than 1% of the total biomass. The polychaete *P. jeffreysii* is one of the most encountered polychaetes in the North Sea and is often abundant in grab samples. Abundance of this species in the North Sea is reportedly increasing in general (Rees *et al.*, 2007). Gage (2001) showed that polychaetes in Atlantic waters consistently dominate soft bottom benthos from the continental shelves to abyssal plains and over 50% of macrofaunal individuals generally comprise polychaete worms, indicating that the survey area is typical for the region.

Overall, the second most abundant group was Mollusca (n=5760), accounting for 30% of total individuals, 21% of adult taxa and 27% of the adult biomass. Figure 2.45 shows that Mollusca was the most populous group at five nearshore stations. A single taxon; *Spisula* contributed 36% of the Mollusca abundance, 11% of the overall adult abundance and 2% of the adult biomass. Arthropoda (Malacostraca) accounted for 13% of adult individuals, however it accounted for 30% of the adult taxa indicating that this taxonomic group was relatively diverse.

Of the 353 adult and juvenile taxa recorded along the route, none was present at every station. A total of 91 taxa (26% of total taxa) were recorded at a single station, of those 74 (21% of total taxa) were represented by a single individual. It is generally accepted that ecological communities which are frequently

subjected to a local disturbance or contamination events will be dominated by a limited number of tolerant taxa, which will be represented by high individual abundances (Clarke & Warwick, 2006). There was no evidence of localised super abundance of pollution tolerant taxa in this survey suggesting a reasonably diverse community that has been subjected to relatively little disturbance or contamination.

Table 2.26 Contribution of Gross Taxonomic Groups

Group	Current Survey						Gardline (2024b)					
	Individuals		Taxa		Biomass (g)		Individuals		Taxa		Biomass (g)	
	Abundance	Proportional Contribution %	Abundance	Proportional Contribution %	Abundance	Proportional Contribution %	Abundance	Proportional Contribution %	Abundance	Proportional Contribution %	Abundance	Proportional Contribution %
Adult only Fauna												
Annelida - Polychaeta	8205	43	128	38	27	20	25556	58	185	42	92	26
Arthropoda - Malacostraca	2522	13	103	30	10	7	5005	11	125	28	26	7
Mollusca	5760	30	72	21	37	27	6896	16	85	19	82	24
Echinodermata	1611	8	15	4	57	43	3712	8	18	4	134	39
Others	1085	6	20	6	4	3	2844	6	27	6	14	4
Total	**19183**	**100**	**338**	**100**	**135**	**100**	**44013**	**100**	**440**	**100**	**348**	**100**
Full Fauna												
Annelida - Polychaeta	8256	37	131	37	27	20	25673	49	190	41	92	26
Arthropoda - Malacostraca	2535	11	109	31	10	7	5019	10	130	28	26	7
Mollusca	5938	26	75	21	37	27	7350	14	89	19	83	23
Echinodermata	4848	21	19	5	60	44	11219	22	24	5	139	39
Others	1006	4	19	5	4	3	2846	5	28	6	14	4
Total	**22583**	**100**	**353**	**100**	**137**	**100**	**52107**	**100**	**461**	**100**	**354**	**100**

Results in blue are from comparable surveys, see 1.3.

When considering the adult data set in terms of biomass, a total wet weight of 134.5939g was recorded along the route (Table 2.26). As was to be expected, Echinodermata (n=57.3946g) was the dominant group by weight and accounted for 43% of the sampled biomass along the route, with most notable contributions occurring at Station ENV173 and ENV228 due to single specimens of *Echinocardium cordatum* and *Brissopsis lyrifera,* respectively. Mollusca was the second ranked by weight and accounted for 27% of the sampled biomass. Proportional contributions by biomass were similar to the comparison survey (Gardline, 2024b).

Figure 2.45 Contributions of Gross Taxonomic Groups - Individuals

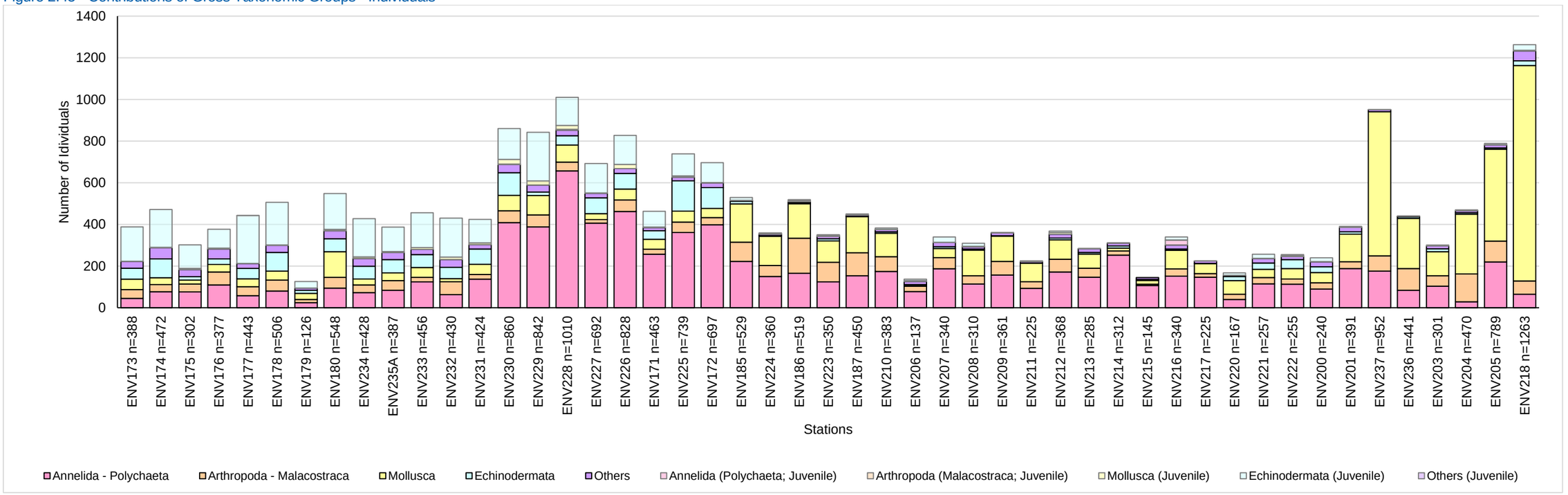


Figure 2.46 Contributions of Gross Taxonomic Groups – Taxa

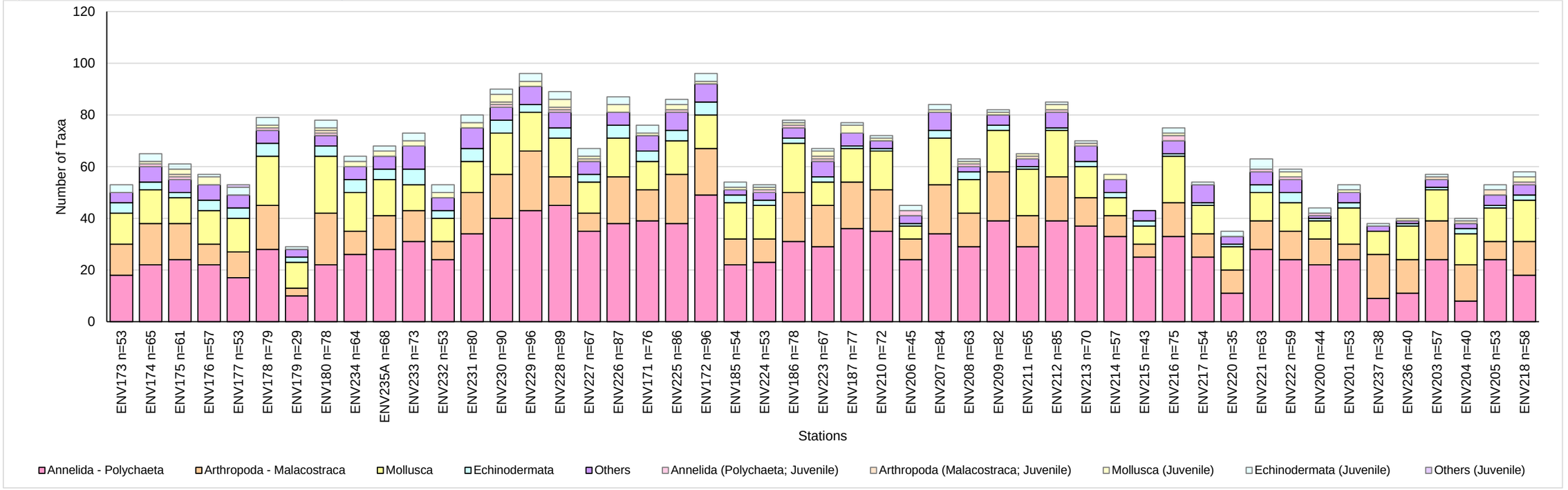
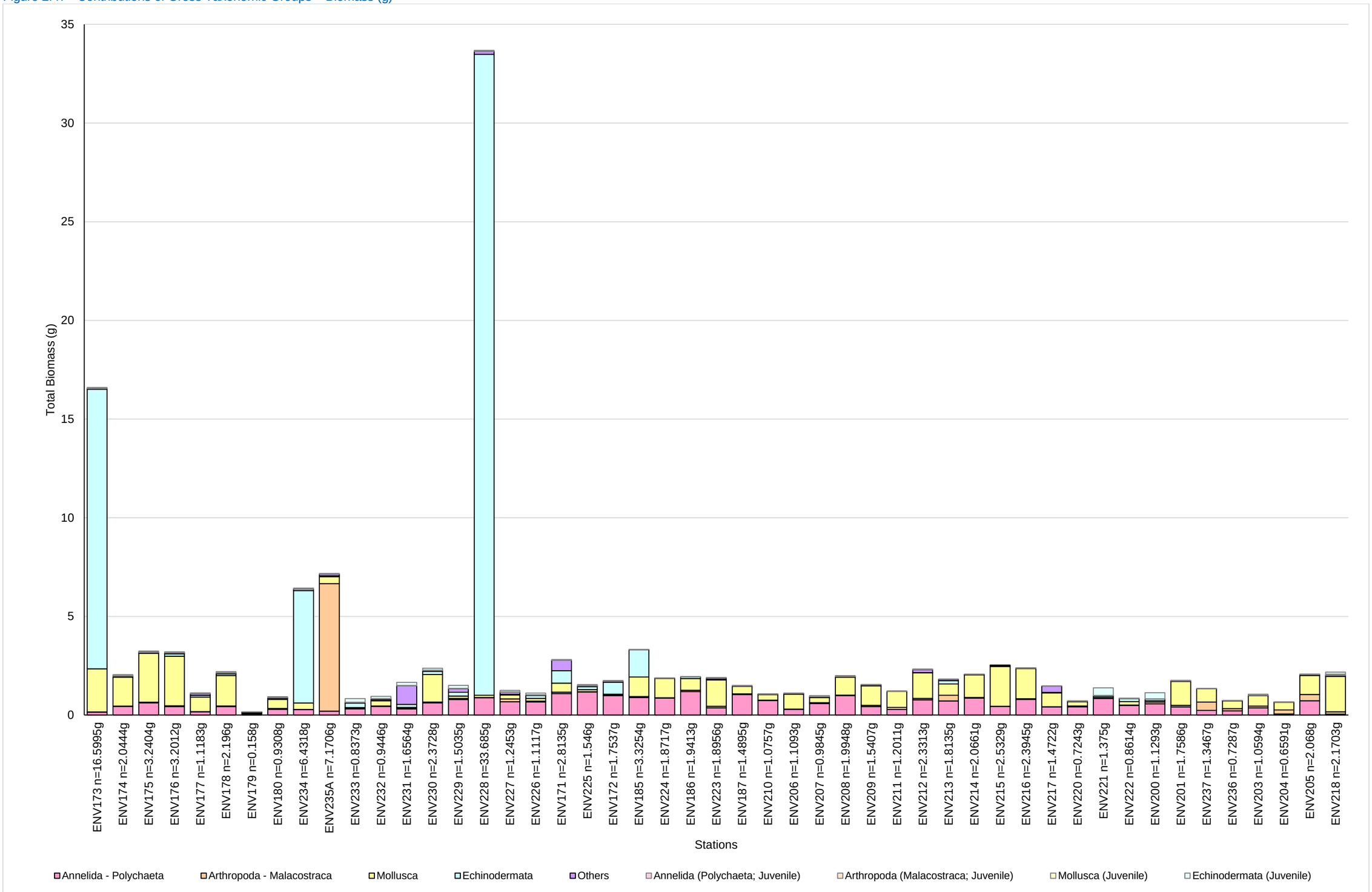


Figure 2.47 Contributions of Gross Taxonomic Groups – Biomass (g)



Species ranking provides additional information on the dominance structure of the faunal community along the route. Results based on abundance are presented in Table 2.27, with biomass presented in Table 2.28. In the adult only data set, the top 10 ranking taxa comprised four Annelida, two Echinodermata, three Mollusca and two Others. In the full fauna data set, the Juvenile taxon (Spatangoida) was the top-ranking taxon and Edwardsiidae was no longer ranked within the top ten.

Results of the species ranking and fidelity scores can give a further indication of a taxon's distribution, with results ≥0.8 and ≤1.2 indicating a generally even distribution of a taxon, whilst values outside of this range represent a patchier distribution, which is to be expected given the geographical spread of the stations. Of the top-ranking adult taxa from the abundance data set (Table 2.27), only one taxon (*Ophiocten affinis*) fell within this range, indicating an even distribution. Of the nine taxa potentially exhibiting a patchier distribution, two taxa were notably more abundant than their rank by score would suggest, consistent with localised high abundances of these taxa. Specifically, *P. jeffreysii* was particularly abundant at the deeper, muddy sand stations of the central area whereas *Spisula* was most populous at the shallowest stations nearshore.

The faunal community for the route was consistent with that previously recorded in the Gardline (2024b) comparison survey. Seven of the adult only top ten listed taxa were also ranked within the comparison survey adult only data set.

When considering species ranking based on the adult biomass data set (Table 2.28), there was notable reordering in terms of species ranking compared to the abundance data set. Along the route, all top-ranking taxa in the abundance data set were replaced by a generally more patchily distributed group of six relatively larger polychaetes, five molluscs and four echinoderms and an arthropod.

Table 2.27 Species Ranking – Abundance

Rank		Species/Taxon	Total Rank Score	Fidelity	Total Abundance
Score	Abundance				
Adult Fauna					
1	3	**Amphiuridae**	229	0.47	1020
2	4	***Abra***	189	0.43	890
3	1	***Paramphinome jeffreysii***	147	0.38	2202
4	8	**Nemertea**	134	0.39	389
5	10	***Galathowenia***	124	0.42	371
6	7	*Chaetozone pseudosetosa*	113	0.46	400
7	6	*Ennucula tenuis*	101	0.52	415
8	5	***Spiophanes bombyx***	96	0.65	556
9	9	***Ophiocten affinis***	92	0.94	386
10	19	Edwardsiidae	88	1.80	213
12	2	*Spisula*	82	NA	2057
Full Fauna					
1	1	Spatangoida (Juvenile)	246	0.50	2803
2	4	**Amphiuridae**	207	0.47	1020
3	5	***Abra***	165	0.42	890
4	2	***Paramphinome jeffreysii***	139	0.41	2202
5	9	**Nemertea**	110	0.37	389
6	8	*Chaetozone pseudosetosa*	108	0.44	400
7	11	***Galathowenia***	100	0.51	371
8	7	*Ennucula tenuis*	95	0.65	415
9	6	***Spiophanes bombyx***	87	0.89	556
10	3	*Spisula*	81	1.65	2057
11	10	***Ophiocten affinis***	77	NA	386

Taxa are coloured according to their taxonomic groupings: Annelida (Polychaeta), Mollusca, Echinodermata and Others.
Cells in green relate to fidelity vales >0.8 and <1.2 indicating an even distribution of a taxon
Taxa in **bold** were in the top ten ranked species (by score) in the Gardline (2024b) comparison survey.

Table 2.28 Species Ranking – Biomass

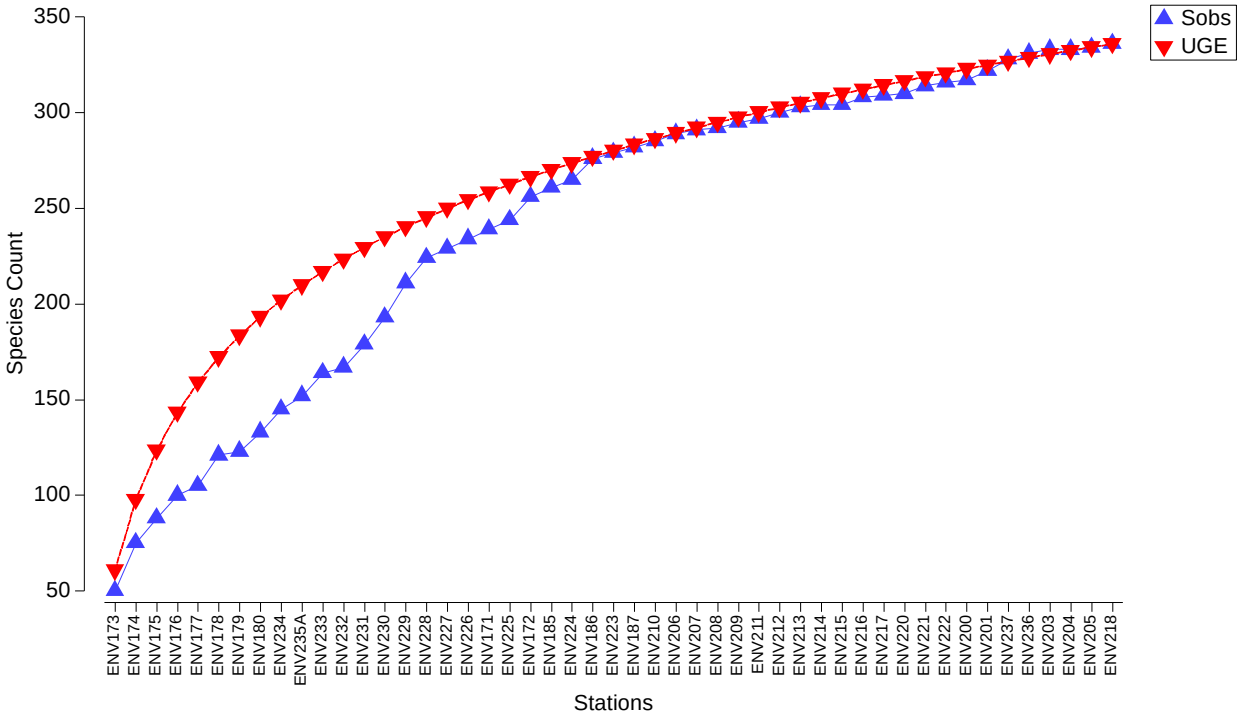
Rank		Species/Taxon	Total Rank Score	Fidelity	Total Biomass (g)
Score	Biomass				
Adult Fauna					
1	13	***Amphiura filiformis***	139	0.28	2.2983
2	8	***Nephtys hombergii***	120	0.27	2.8696
3	14	*Ophelina acuminata*	116	0.30	2.0811
4	3	*Chamelea striatula*	114	0.33	11.2251
5	25	***Scoloplos armiger***	94	0.32	0.9184
6	11	***Praxillella affinis***	87	0.36	2.3648
7	9	*Abra nitida*	84	0.43	2.8074
8	6	*Turritellinella tricarinata*	82	0.56	4.6301
9	16	*Lumbrineris aniara*	77	0.79	1.5158
9	10	*Spisula*	77	0.79	2.6423
10	30	*Sthenelais limicola*	73	1.49	0.7399
31	7	*Dosinia lupinus*	20	NA	3.5682
39	4	*Corystes cassivelaunus*	11	NA	6.5052
40	1	*Brissopsis lyrifera*	10	NA	32.316
40	2	*Echinocardium cordatum*	10	NA	14.1132
40	5	*Echinocardium flavescens*	10	NA	5.5846
Full Fauna					
1	11	**Spatangoida (Juvenile)**	164	0.33	2.4776
2	14	***Amphiura filiformis***	133	0.30	2.2983
3	8	***Nephtys hombergii***	115	0.29	2.8696
4	3	*Chamelea striatula*	114	0.33	11.2251
5	15	*Ophelina acuminata*	113	0.38	2.0811
6	12	***Praxillella affinis***	86	0.35	2.3648
7	26	***Scoloplos armiger***	84	0.43	0.9184
7	9	*Abra nitida*	84	0.43	2.8074
8	6	*Turritellinella tricarinata*	82	0.56	4.6301
9	10	*Spisula*	76	0.78	2.6423
10	17	*Lumbrineris aniara*	74	1.51	1.5158
30	7	*Dosinia lupinus*	20	NA	3.5682
38	4	*Corystes cassivelaunus*	11	NA	6.5052
39	1	*Brissopsis lyrifera*	10	NA	32.3160
39	2	*Echinocardium cordatum*	10	NA	14.1132
39	5	*Echinocardium flavescens*	10	NA	5.5846

Taxa are coloured according to their taxonomic groupings: Annelida (Polychaeta), Mollusca, Echinodermata.
Taxa in **bold** were in the top ten ranked species (by score) in the Gardline (2024b) comparison survey.

A species accumulation plot for the adult only data set is presented in Figure 2.48. The Sobs curve began below the UGE curve indicating that fewer taxa were elicited than average from the samples in the northern and central areas. The Sobs curve rose relatively steeply when stations in the deeper, muddy sand of the central area were added (*e.g.* ENV229 and ENV172), as well as at Station ENV186, which was the first muddy sand station in the southern area to be added.

Both the UGE and Sobs curve continued to rise with the addition of the last sample, reflecting that further sampling along the route may elicit additional taxa. The species accumulation curve for the full faunal data set shows an almost identical pattern to the adult only data set suggesting it provides an accurate representation of the overall survey area and the taxa present. The pattern presented in the current survey was very similar to that shown in the comparison survey (Gardline, 2024b).

Figure 2.48 Adult Data Set Species Accumulation Curve



2.12.4 Diversity using Univariate Statistics

The full and adult data sets were analysed to provide to the total number of individuals and taxa, Shannon-Weiner diversity index (H'); calculated with logarithm base 2 (Shannon & Weaver, 1949), Pielou's evenness (*J'*), Simpson's dominance (λ) and Margalef's Richness index (*d*). Increasing values of the Shannon-Weiner diversity index correspond to increasing diversity of the community. Values for Pielou's evenness and Simpsons dominance both range from 0 to 1, with 1 indicating an even community for the former and a dominated community for the latter. Margalef's index takes account of the number of species present for a given number of individuals. Detailed information on the methods for univariate statistics are presented in Appendix B.

The univariate statistics for the adult only data set and summary statistics for the full fauna data set are displayed in Table 2.29. The number of taxa were higher (t-test $p<0.05$) than the comparison survey (Gardline, 2024b), while the number of individuals was consistent with (t-test $p>0.05$) the comparison survey.

Shannon-Weiner diversity values ranged from 2.24 at Station ENV237 to 5.73 at Station ENV207 with a mean of 4.57 (±0.70SD), which is broadly in line with the background of 4.36 (n=144) for the CNS (UKOOA, 2001).

These values are also within range recorded in the comparison survey (Gardline, 2024b). Margalef's index along the route showed a relatively large range in species richness between stations; Station ENV237 had the lowest index (5.25) while Station ENV172 had the highest index (14.23).

Rarefaction (ES(24)) estimated that across 24 individuals, the number of taxa would range from 6 at Station ENV237 to 19 at Station ENV207, consistent with the range observed for the comparison survey (Gardline, 2024b). This range of values together with Pielou's Evenness were positively correlated with percentage gravel (Spearman's $p<0.01$, Appendix F).

Pielou's evenness suggested the community was overall more even than uneven, with values ranging from 0.43 at Stations ENV218 and ENV237 to 0.92 at Station ENV179 with a mean of 0.78 (±0.11SD). This was further supported by the low Simpson's dominance values for diversity which ranged from 0.03 at Stations ENV207 and ENV213 and 0.45 at Station ENV218. Samples showed similar values for diversity indices when compared to the UKOOA (2001) averages for the CNS, indicating that values were as expected for the region.

To quantitatively assess the changes in diversity across the wider region, beta diversity between the current and comparison survey (Gardline, 2024b) was calculated using the Jacquard similarity index (Jaccard, 1908). Beta diversity indices measure the change in diversity of taxa from one environment to another by calculating the number of taxa that are different between the two environments. The Jacquard (1908) similarity index ranges from 0 to 1 with 1 indicating 100% similarity in the species composition of the community; however, these values do not reflect relative abundance differences. With a resulting index of 0.57 this suggests there was some degree of similarity between the current survey and comparison survey.

Table 2.29 Faunal Univariate Statistics

Area	Station	Taxa	Individuals	Margalef's Richness (*d*)	Simpson's Dominance (λ)	Pielou's Evenness (J)	Shannon-Weiner Diversity ($H'log_2$)	ES(24)
Adult Fauna								
Northern	ENV173	50	223	9.06	0.07	0.82	4.62	14.5
	ENV174	60	288	10.42	0.09	0.77	4.57	14.2
	ENV175	55	183	10.37	0.04	0.88	5.11	17.0
	ENV176	53	282	9.22	0.07	0.82	4.68	14.7
	ENV177	49	212	8.96	0.06	0.85	4.76	15.5
	ENV178	74	299	12.81	0.07	0.81	5.00	15.7
	ENV179	28	94	5.94	0.06	0.92	4.42	15.2
	ENV180	72	369	12.01	0.05	0.83	5.14	16.2
Central	ENV235A	64	265	11.29	0.05	0.85	5.10	16.4
	ENV234	60	236	10.80	0.05	0.86	5.07	16.5
	ENV233	68	280	11.89	0.08	0.81	4.92	15.4
	ENV232	48	231	8.64	0.09	0.78	4.33	13.3
	ENV231	75	303	12.95	0.08	0.79	4.93	15.3
	ENV230	83	687	12.55	0.14	0.68	4.35	12.8
	ENV229	91	589	14.11	0.13	0.73	4.76	14.5
	ENV228	81	853	11.85	0.30	0.54	3.43	10.2
	ENV227	62	549	9.67	0.23	0.60	3.59	10.6
	ENV226	81	668	12.30	0.16	0.67	4.24	12.5
	ENV171	72	385	11.93	0.10	0.76	4.66	14.2
	ENV225	81	627	12.42	0.15	0.66	4.18	12.0
	ENV172	92	599	14.23	0.16	0.65	4.24	12.1
Southern	ENV185	51	515	8.01	0.06	0.81	4.62	14.5
	ENV224	50	354	8.35	0.07	0.81	4.57	14.3
	ENV186	75	510	11.87	0.06	0.77	4.81	14.6
	ENV223	62	343	10.45	0.05	0.82	4.90	15.4
	ENV187	73	445	11.81	0.07	0.77	4.77	14.4
	ENV210	70	375	11.64	0.05	0.84	5.12	16.3
	ENV209	80	359	13.43	0.05	0.83	5.28	16.8
	ENV208	60	292	10.39	0.05	0.86	5.06	16.4
	ENV207	81	313	13.92	0.03	0.90	5.73	19.0
	ENV206	41	126	8.27	0.06	0.87	4.68	15.7
	ENV205	49	781	7.21	0.15	0.64	3.62	10.0
	ENV236	39	440	6.24	0.15	0.69	3.65	10.7
	ENV211	63	222	11.48	0.04	0.87	5.21	17.2
	ENV212	81	353	13.64	0.04	0.86	5.48	17.7
	ENV217	53	224	9.61	0.09	0.81	4.66	15.0
	ENV213	68	283	11.87	0.03	0.89	5.43	18.0
	ENV214	55	310	9.41	0.10	0.77	4.47	13.8
	ENV215	43	145	8.44	0.05	0.89	4.82	16.2
	ENV216	70	301	12.09	0.04	0.88	5.42	17.8
	ENV220	33	155	6.34	0.11	0.81	4.10	13.2
	ENV222	55	246	9.81	0.06	0.82	4.75	15.0
	ENV221	58	236	10.43	0.04	0.88	5.13	16.9
	ENV200	41	220	7.42	0.06	0.86	4.58	14.8
	ENV201	50	386	8.23	0.10	0.76	4.31	13.2
	ENV237	37	951	5.25	0.41	0.43	2.24	6.2
	ENV218	53	1233	7.31	0.45	0.43	2.45	7.3
	ENV204	38	466	6.02	0.21	0.65	3.40	10.1
	ENV203	55	297	9.48	0.06	0.82	4.75	15.1
This Survey	Minimum	28	94	5.25	0.03	0.43	2.24	6.2
	Maximum	92	1233	14.23	0.45	0.92	5.73	19.0
	Mean	61	390	10.24	0.10	0.78	4.57	14.4
	±SD	16	225	2.37	0.09	0.11	0.70	2.6
Gardline (2024b)	Minimum	12	24	3.46	0.03	0.40	2.38	7.2
	Maximum	98	926	14.55	0.49	0.93	5.44	18.1
	Mean	56	347	9.53	0.10	0.79	4.53	14.4
	±SD	15	204	2.01	0.08	0.10	0.61	2.3
Full Fauna								
This Survey	Minimum	29	126	5.39	0.03	0.43	2.25	6.3
	Maximum	96	1263	14.51	0.43	0.89	5.71	18.7
	Mean	65	461	10.53	0.11	0.75	4.46	13.8
	±SD	17	242	2.40	0.08	0.11	0.70	2.7
Gardline (2024b)	Minimum	12	24	3.46	0.04	0.46	2.77	7.7
	Maximum	104	1125	15.36	0.39	0.93	5.31	18.2
	Mean	59	410	9.89	0.10	0.78	4.51	14.2
	±SD	16	264	2.15	0.07	0.10	0.58	2.2
UKOOA (2001)	Mean CNS	75	383	NA	0.13	0.72	4.36	NA

Results in blue are from comparable surveys, see 1.3
Results in green are from published background data, see 1.4.

2.12.5 Faunal Community Structure using Multivariate Analyses

In comparison to the univariate statistics, multivariate analyses enable subtle trends within the full and adult data sets to be identified. Multivariate analyses were performed on the rationalised data using PRIMER v7. Bray-Curtis similarity matrices were produced based on the square root transformed abundance data sets. This transformation was chosen to down-weight the influence of the numerically dominant taxa and to ensure that the intermediately abundant and sparse species contributed to the multivariate pattern.

A SIMPROF permutation test was conducted in conjunction with CLUSTER analyses and the results illustrated on a dendrogram. The Bray-Curtis similarity dendrogram and nMDS plots for the adult only abundance data are presented in Figure 2.49 to Figure 2.52.

The CLUSTER analysis and dendrogram for the adult only abundance data (Figure 2.49) identified thirteen SIMPROF groups comprising eight clusters (SIMPROF *b, c, e, g, h, k, l* and *m*), two closely associated pairs (SIMPROF *d* and *j*) and three outliers (Stations ENV179, ENV217 and ENV218). At a nominal Bray-Curtis similarity of 35%, the dendrogram could be separated into three broad groups aligned with geographical area (Figure 2.50), water depth and sediment type. Most distinct was the faunal community within broad group A, which comprised all southern area stations in water depths of <40m other than the gravelly Station ENV222, which formed Broad Group C with all other southern area stations.

The nMDS ordination (Figure 2.51) revealed a similar pattern to the CLUSTER analysis and with a stress value of 0.12, it can be considered a useful representation of overall rank (dis)similarities in the data. The key taxa responsible for the separation of these broad groups are displayed in Table 2.30, based on SIMPER analysis and a review of the raw data. Bubbles representing the relative abundance of top ten ranked species; Amphiuridae, *P. jeffreysii, S. bombyx* and *Spisula*, are shown in Figure 2.52.

The CLUSTER analysis and dendrogram for the adult only biomass data identified twelve SIMPROF groups (Figure 2.53) which comprised three outliers (Stations ENV217, ENV214 and ENV179), two closely associated pairs (SIMPROF *a* and *i*) and seven true clusters (SIMPROF *b, c, e, f, h, j* and *l*). Similar to the abundance data, the dendrogram could be separated into three broad groups aligned with geographical area, water depth and sediment type. However, Broad group A comprised all southern area stations in water depths of <40m including gravelly Station ENV222.

With a stress value of 0.13, the nMDS can be considered a useful 2D representation of rank (dis)similarities of the overall pattern observed in the data set. The key taxa responsible for the separation of the SIMPROF groups are displayed in Table 2.31, based on SIMPER analysis and a review of the raw data. Bubbles representing the relative abundance of top ten ranked species; *O. acuminata, T. tricarinata, A. nitida* and *Spisula* are shown in Figure 2.54.

Table 2.30 Taxa Influencing Adult Abundance SIMPROF Variation

Stations	Broad Group	Bray-Curtis Dissimilarity (%)	Taxa Affecting Separation from Remaining Stations (and % contribution to dissimilarity)
ENV201, ENV203, ENV204, ENV205, ENV218, ENV200, ENV220, ENV221, ENV236 and ENV237 *vs* all remaining stations	Broad Group A *vs* Broad Groups B,C	78.94	• Higher abundance of *Spisula*, ***Spiophanes bombyx***, ***Abra***, *Chamelea striatula*, *Obtusella intersecta* (*c*. 14.1%) • Lower abundance of **Amphiuridae** (*c*. 1.5%) • Absence of ***P. jeffreysii*** (*c* .2.5%) • Presence of *Diastylis bradyi* (*c*. 2.2%)
ENV171 to ENV180 and ENV225 to ENV235A *vs* ENV185 to ENV187, ENV206 to ENV217 and ENV222 to ENV224	Broad Group B *vs* Broad Group C	70.37	• Higher abundance of ***P. jeffreysii***, **Amphiuridae**, ***Ophiocten affinis***, *Scoloplos armiger* and **Edwardsiidae** (*c*. 10.9%) • Lower abundance of ***Chaetozone pseudosetosa***, ***Ennucula tenuis***, *Abra nitida*, *Lumbrineris aniara, Ophelina acuminata* and ***Abra*** (c. 9.4%)

Taxa in **bold** are included in the top ten ranked taxa (adult abundance data)

Table 2.31 Taxa Influencing Adult Biomass SIMPROF Variation

Stations	Broad Group	Bray-Curtis Dissimilarity (%)	Taxa Affecting Separation from Remaining Stations (and % contribution to dissimilarity)
ENV201, ENV203 to ENV205, ENV200, ENV218, ENV220 to ENV222, ENV236 and ENV237 *vs* all remaining stations	Broad Group A *vs* Broad Groups B,C	76.49	• Absence of *P. jeffreysii* (*c*. 1.1%) • Presence of *D. bradyi* and *Mactra stultorum* (*c*. 3.0%) • Higher biomass of ***Spisula***, ***C. striatula***, ***N. hombergii***, ***O. acuminata***, *Lagis koreni*, *Ampelisca brevicornis*, ***L. aniara***, *S. bombyx* and *Chaetozone christiei* (*c*. 13.1%) • Lower biomass of ***A. filiformis***, ***S. armiger*** and *Galathowenia* (c. 4.2%)
ENV185 to ENV187, ENV206, ENV207 to ENV217, ENV223 and ENV224 *vs* ENV171 to ENV180 and ENV225 to ENV235A	Broad Group B *vs* Broad Group C	70.24	• Presence of ***T. tricarinata*** (c. 1.9%) • Higher biomass of ***A. nitida***, *C. pseudosetosa*, ***O. acuminata***, ***L. aniara***, *L. koreni* and *Glycera unicornis* (c. 8.4%) • Lower biomass of ***C. striatula***, ***S. armiger***, ***A. filiformis***, ***P. affinis***, ***N. hombergii***, *Phoronis* and *Antalis entalis* (c. 9.4%)

Taxa in **bold** are included in the top ten ranked taxa (adult biomass data)

Figure 2.49 Bray-Curtis Similarity Dendrogram of the Adult Only Abundance Data

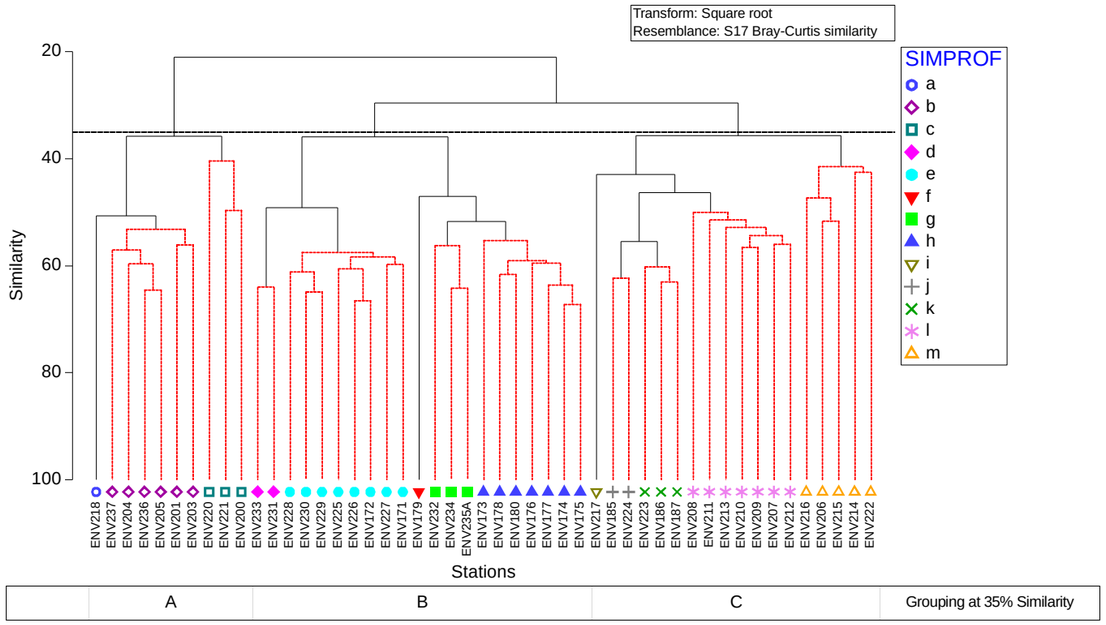


Figure 2.50 Bray-Curtis Similarity Dendrogram Showing Grouping by Route Section

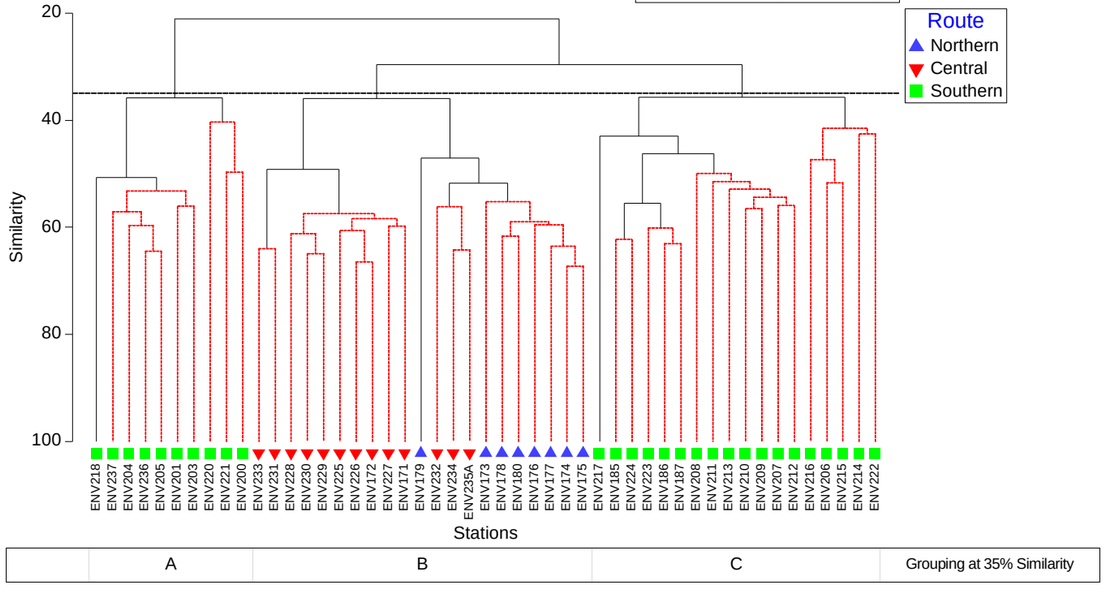


Figure 2.51 MDS Ordinations Showing Grouping at Bray-Curtis Similarity of 35%

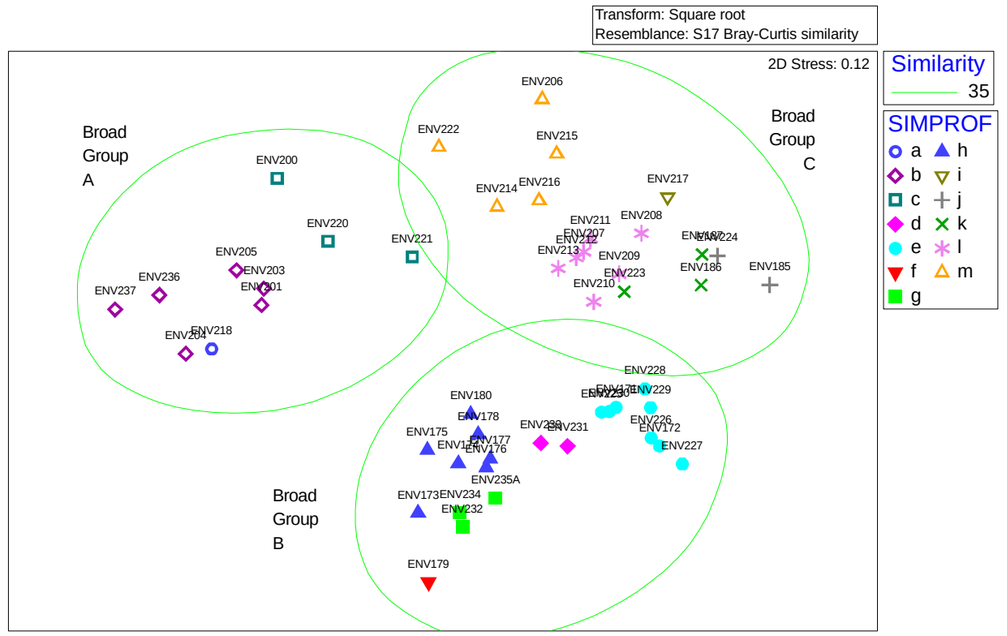


Figure 2.52 MDS Ordination with Bubbles Representing Four of the Top Ten Ranked Taxa by Abundance

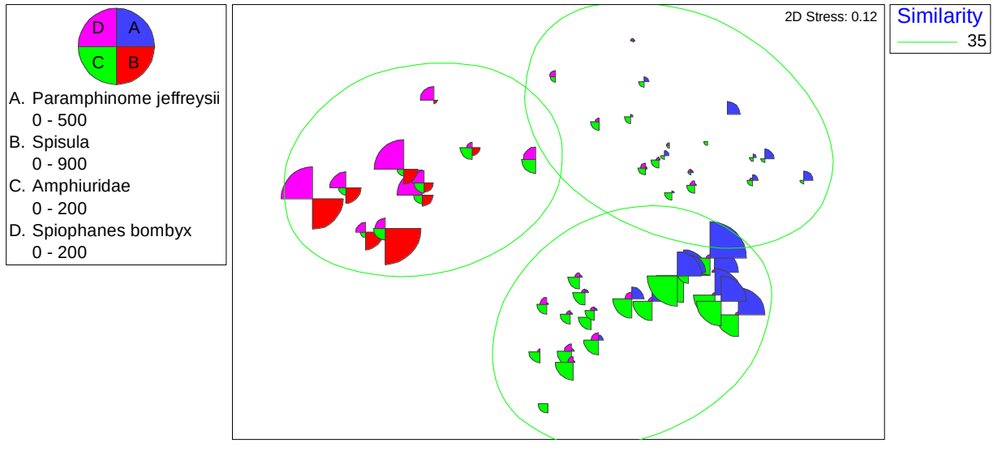


Figure 2.53 Bray-Curtis Similarity Dendrogram of the Adult Only Biomass Data

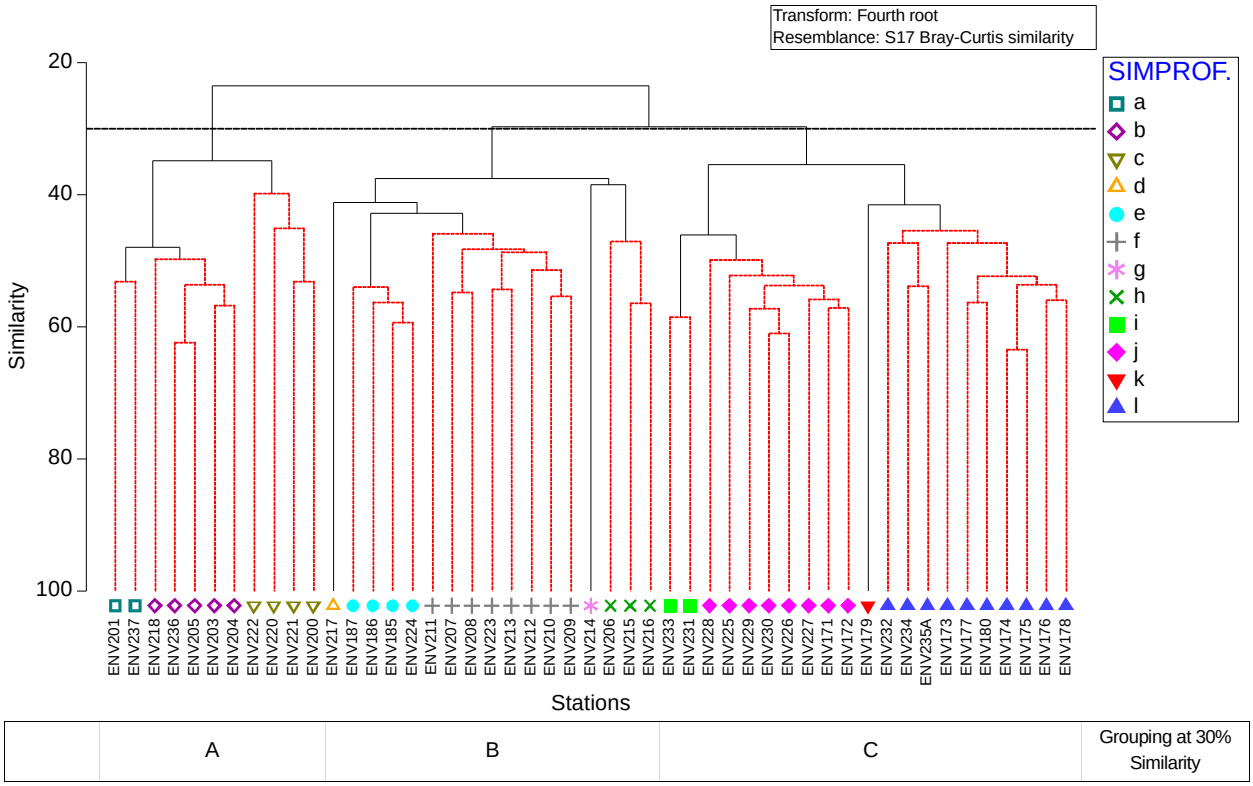
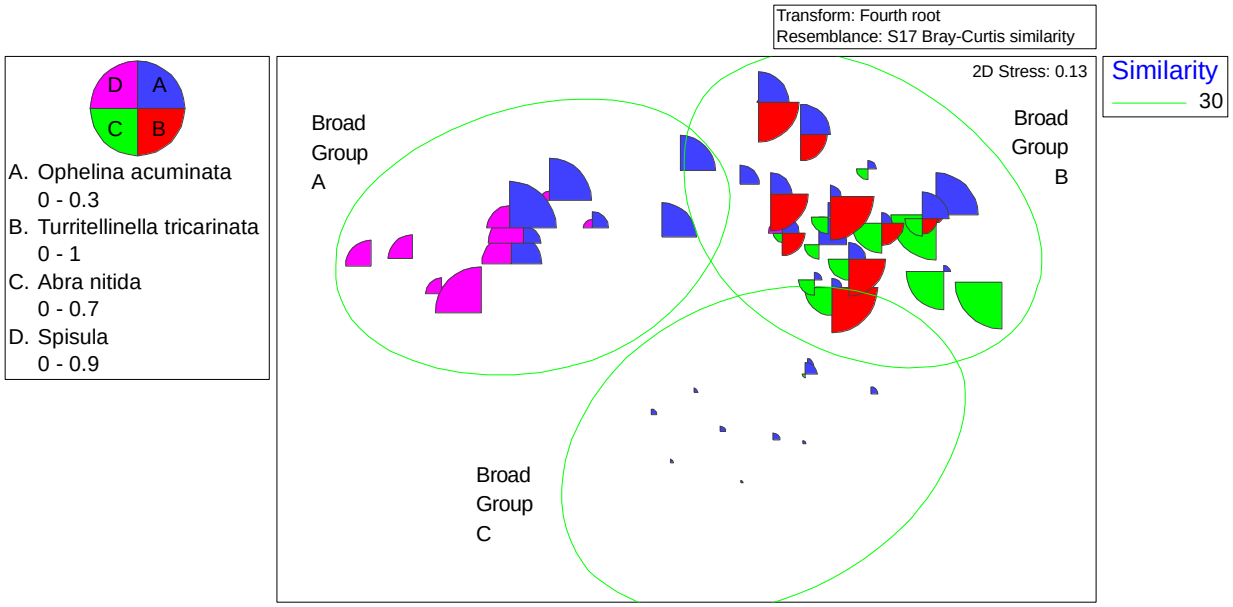


Figure 2.54 MDS Ordination with Bubbles Representing Four of the Top Ten Ranked Taxa by Biomass



2.12.6 Multivariate Comparison of Faunal and Physico-Chemical Data Sets

A sub set of the macrofaunal community adult data set was compared to the 30 station physico-chemical data in PRIMER v7 to determine if any patterns in the faunal community correlated with the environmental factors assessed. A BIO-ENV test was run on the sub set of the adult only abundance data for stations which also acquired the MMO physico-chemical samples.

The BIO-ENV analysis identified a significant 53% correlation between the adult abundance multivariate pattern with three physico-chemical variables: Ni and Zn concentrations and the percentage of fines. This suggests that along the route, shifts in the faunal community reflect variations in the physical sediment characteristics and associated sediment metal concentrations. Consistent with the findings of the Spearman's rank correlation showing significant positive correlations between both Ni and Zn and the percentage of fines (Spearman's $p<0.01$, Appendix F)

2.13 EUNIS Habitat Classification

For the 49 stations with PSA and macrofauna samples, results of the EUNIS habitat classification (EEA, 2019) based on these data are summarised in Table 2.32 and detailed in full in Appendix K. These data were reviewed alongside geophysical and seabed imagery data to assign a EUNIS habitat code to each distinct macrofaunal community group identified in Section 2.12 (Figure 2.49; Broad Groups A to C). It should be noted that due to the inclusion of macrofaunal data, there are some differences to the EUNIS level 4 biotopes reported in the Habitat Assessment (Gardline, 2025).

All habitats observed along the route related to EUNIS Level 1 environment 'Marine benthic habitats' (EUNIS habitat code M). One level two broad habitat was identified as infralittoral (EUNIS habitat type code MB) and two habitats as offshore circalittoral (EUNIS habitat type code MD).

The following level 3 main habitats were present along the route:

- Areas of sand with patches of gravel and cobbles, generally below 20m were assigned EUNIS habitat MB5 (infralittoral sand)
- Areas of mud to muddy sand generally below 60m water depth, were assigned EUNIS habitat MD5 (offshore circalittoral mud)

EUNIS level 4 main habitat classification was determined considering the habitat descriptions of both the EUNIS website and associated documentation (Davies *et al.*, 2004; EEA, 2019). Along the route, the following EUNIS biotope complexes were identified:

- EUNIS biotype MB523 (Faunal communities of full salinity Atlantic infralittoral sand) described as sands which occur in shallow water, either on the open coast or in tide-swept channels of marine inlets. Incorporating both clean sands and non-cohesive muddy sand (with 5% to 20% silt/clay).
- EUNIS biotype MD621 (Faunal communities of Atlantic offshore circalittoral mud) described as sublittoral muds, occurring below moderate depths of 15-20m, either on the open coast or in marine inlets such as sea lochs.

In addition, three level 5 EUNIS biotope complexes were identified:

- EUNIS biotope MB5238: *Spisula subtruncata* and *Nephtys hombergii* in Atlantic infralittoral muddy sand, which is described as shallow non-cohesive muddy sands, in fully marine conditions, a community characterised by the bivalve *S. subtruncata* and the polychaete *N. hombergii* may occur. The sediments in which this community is found may vary with regard to silt content, but they generally have less than 20% silt/clay and in some areas may contain a degree of shell debris.

- EUNIS biotope MD6217: *Levinsenia gracilis* and *Heteromastus filiformis* in Atlantic offshore circalittoral mud and sandy mud, which is described as deep offshore mud and sandy mud, where the community is characterised by the polychaetes *L. gracilis* and *H. filiformis* may occur. Other important taxa may include *P. jeffreysii*, *Nephtys hystricis* and *Nephtys incisa*, *S. kroyeri*, *Orbinia norvegica*, *Terebellides stroemi*, *Thyasira gouldi* and *Thyasira equalis*. Burrowing megafauna such as *Calocaris macandreae* may also be found in this biotope. This biotope has been found in the central and northern North Sea.
- EUNIS biotope MD6218: *Paramphinome jeffreysii*, *Thyasira spp*. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud, which is described as deep, offshore cohesive sandy mud communities characterised by the polychaete *P. jeffreysii*, bivalves such as *Thyasira equalis* and *Thyasira gouldi* and the brittlestar *A. filiformis*.

Table 2.32 EUNIS Habitat Classification

Adult Station Multivariate Cluster	Station	Water Depth (m)	EUNIS Folk Classification from PSA Data	EUNIS Level 3	EUNIS Habitat Classification		EUNIS Habitat Type
					Level	Code	
Broad Group A	ENV220	37	Mud and sandy mud	MB5	Level 5	MB5238	*Spisula subtruncata* and *Nephtys hombergii* in Atlantic infralittoral muddy sand
	ENV221	32	Mud and sandy mud				
	ENV200	26	Mud and sandy mud				
	ENV201	22	Mud and sandy mud				
	ENV237	14	Sand and muddy sand				
	ENV236	11	Sand and muddy sand				
	ENV203	20	Mud and sandy mud				
	ENV204	16	Sand and muddy sand				
	ENV205	15	Mud and sandy mud				
	ENV218	21	Mud and sandy mud				
Broad Group B	ENV173	71	Sand and muddy sand	MD6	Level 5	MD6218	*Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud
	ENV174	71	Sand and muddy sand				
	ENV175	73	Sand and muddy sand				
	ENV176	74	Sand and muddy sand				
	ENV177	73	Sand and muddy sand				
	ENV178	70	Sand and muddy sand				
	ENV179	71	Sand and muddy sand				
	ENV180	69	Sand and muddy sand				
	ENV233	71	Sand and muddy sand				
	ENV231	77	Sand and muddy sand				
	ENV229	82	Mud and sandy mud				
	ENV227	89	Sand and muddy sand				
	ENV225	93	Mud and sandy mud				
	ENV226	88	Sand and muddy sand				
	ENV234	68	Sand and muddy sand				
	ENV235A	66	Sand and muddy sand				
	ENV172	88	Sand and muddy sand				
	ENV171	86	Sand and muddy sand				
Broad Group C	ENV185	84	Mud and sandy mud	MD6	Level 5	MD6217	*Levinsenia gracilis* and *Heteromastus filiformis* in Atlantic offshore circalittoral mud and sandy mud
	ENV224	79	Mud and sandy mud				
	ENV186	65	Mud and sandy mud				
	ENV223	59	Mud and sandy mud				
	ENV187	57	Mud and sandy mud				
	ENV210	55	Mud and sandy mud				
	ENV206	42	Mud and sandy mud				
	ENV207	45	Mud and sandy mud				
	ENV208	51	Mud and sandy mud				
	ENV209	54	Mud and sandy mud				
	ENV211	54	Mud and sandy mud				
	ENV212	51	Sand and muddy sand				
	ENV213	47	Mud and sandy mud				
	ENV214	44	Mixed sediments				
	ENV215	44	Mud and sandy mud				
	ENV216	41	Mud and sandy mud				
	ENV217	48	Mud and sandy mud				
	ENV222	35	Mixed sediments				

3 BIBLIOGRAPHY

Allison, S.D. & Martiny, J.B.H., 2008. Resistance, resilience, and redundancy in microbial communities. *Proceedings of the National Academy of Sciences of the United States of America*, [PDF] 12 August. pp.11512-19. Available at: https://www.pnas.org/doi/epdf/10.1073/pnas.0801925105 [Accessed 1st Feb 2023].

Bence, A.E., Kvenvolden, K.A. & Kennicutt, M.C., 1996. Organic geochemistry applied to environmental assessments of Prince William Sound, Alaska, after the Exxon Valdez oil spill - a review. *Organic Geochemistry*, 24(1), pp.7-42.

Berthou, F. & Friocourt, M.P., 1981. Gas chromatographic separation of diastereomeric isoprenoids as molecular markers of oil pollution. *Journal of Chromatography*, 219, pp.393-402.

Bouloubassi, I., Fillaux, J. & Saliot, A., 2001. Hydrocarbons in Surface Sediments from the Changjiang (Yangtze River) Estuary, East China Sea. *Marine Pollution Bulletin*, pp.1335-46.

bp, 2023. *Morven - Grid Connection 1 Route - UXO Clearance and Environmental Survey*. Scope of Work Rev 04. Issued: 09-Aug-2024. Rochdale, UK: bp Solutions.

bp, 2024. *Morven - Grid Connection 1 Route Nearshore Area*. Scope of Work Rev 00. Issued 12-Aug-2024. Rochdale UK: bp Solutions.

Breuer, E., Stevenson, A.G., Howe, A.G., Carroll, J. & Shimmield, G.B., 2004. Drill cutting accumulation in the Northern and Central North Sea: a review of environmental interactions and chemical fate. *Marine Pollution Bulletin*, 48, pp.12-25.

Broekhuizen, N. & McKenzie, E., 1995. Patterns of abundance for Calanus and smaller copepods in the North Sea: time series decomposition of two CPR data sets. *Marine Ecology Progress Series*, 118, pp.103-20.

Bryan, G.W. & Langston, W.J., 1992. Bioavailability, accumulation and effects of heavy metals in sediments with special reference to United Kingdom estuaries: a review. *Environmental Pollution*, 76, pp.89-131.

BSI, 2014. *Water quality - Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna*. BS EN ISO 16665:2013. BSI Standards Publication.

Buchman, M.F., 2008. *NOAA Screening Quick Reference Tables*. NOAA NOAA OR&R Report 08-1. Seattle WA: NOAA Office of Response and Restoration Division, National Oceanic and Atmospheric Administration.

Clarke, K.R. & Warwick, R.M., 2006. *Change in Marine Communities: An Approach to Statistical Analysis and Interpretation*. 2nd ed. Plymouth, UK: PRIMER-E, Plymouth Marine Laboratory.

Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northern, K.O. & Reker, J.B., 2004. *The Marine Habitat Classification for Britain and Ireland Version 04.05. JNCC, Peterborough ISBN 1 861 07561 8 (internet version)*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1027/04_05_introduction.pdf [Accessed 31st Jan 2023].

Davies, J.M., Addy, J.M., Blackman, R.A., Blanchard, J.R., Ferbrache, J.E., Moore, D.C., Somerville, H.J., Whitehead, A. & Wilkinson, T., 1984. Environmental Effects of the Use of Oil-based Drilling Muds in the North Sea. *Marine Pollution Bulletin*, 15(10), pp.363-70.

Davies, C.E., Moss, D. & Hill, M.O., 2004. *EUNIS Habitat Classification Revised 2004*. [pdf] Report to European Environmental Agenct, European Topic Centre on Nature Protection and Biodiversity Available at: http://www.eea.europa.eu/themes/biodiversity/eunis/eunis-habitat-classification/documentation/eunis-2004-report.pdf/download [Accessed 08 Nov 2021].

Douglas, G., Hall, P.B., Bowler, B. & Williams, P.F.V., 1981. Analysis of hydrocarbons in sediments as indicators of pollution. *Proceedings of the Royal Society of Edinburgh Section B (Biology)*, 80B, pp.113-34.

DTI, 1992. *Conditions for the Discharge of Oil Contaminated Cuttings Resulting from Offshore Drilling Operations*.

EEA, 2019. *EUNIS habitat type hierarchical view 2021/2022*. [Online] Available at: https://eunis.eea.europa.eu/habitats.jsp [Accessed 6th Feb 2023].

Eleftheriou, A. & Basford, D.J., 1989. The macrobenthic infauna of the offshore northern North Sea. *Journal of the Marine Biological Association of the UK*, (69), pp.123-43.

Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. & Brown, M.J., 2012. *Spawning and Nursery Grounds of Selected Fish Species in UK Waters*. [Online] Lowestoft Available at: http://data.cefas.co.uk/#/View/153 [Accessed 05 Nov 2021].

EMODnet, 2023. *Human Activites*. [Online] Available at: https://emodnet.ec.europa.eu/geoviewer/ [Accessed 23rd Jan 2025].

ESGOSS, 1994. *The Environmental Impact of the Wreck of the Braer. The Ecological Steering Group on the Oil Spill in Shetland.* Edinburgh: The Scottish Office.

Farrington, J.W. & Tripp, B.W., 1977. Hydrocarbons in western North Atlantic surface sediments. *Geochimica et Cosmochimica Acta*, 41, pp.1627-41.

Fisner, B., Taniguchi, S., Moreira, F., Bicego, M.C. & Turra, A., 2013. Polycyclic aromatic hydrocarbons (PAHs) in plastic pellets: variability in the concentration and composition at different sediment depths in a sandy beach. *Marine Pollution Bulletin*, 70(1-2), pp.219-26.

Folk, R.L., 1954. The Distinction between Grain Size and Mineral Composition in Sedimentary Rock Nomenclature. *Journal of Geology*, 62, pp.344-59.

Folk, R.L. & Ward, W.C., 1957. Brazos river bar: a study of the significance of grain size parameters. *Journal of Sedimentary Petrology*, 27, pp.3-26.

Frühe, L., Dully, V., Forster, D., Keeley, N.B., Laroche, O., Pochon, X., Robinson, S., Wilding, T.A. & Thorsten, S., 2021. Global Trends of Benthic Bacterial Diversity and Community Composition Along Organic Enrichment Gradients of Salmon Farms. *Frontiers in Microbiology*, [PDF].29 Apr, p.17. Available at: https://www.readcube.com/articles/10.3389/fmicb.2021.637811 [Accessed 6th Feb 2023].

Gage, J.D., 2001. Deep-sea benthic community and environmental impact assessment at the Atlantic Frontier. *Continental Shelf Research*, 21(8), pp.957-86.

Gage, J.D. & Tyler, P.A., 1992. *Deep-Sea Biology: A Natural History of Organisms at the Deep-Sea Floor*. Cambridge: Cambridge University Press.

Gardline, 2023a. *Morven Export Cable Route Benthic Scoping Document*. Gardline Ref: 54027 Final. Great Yarmouth, UK: Gardline Limited.

Gardline, 2023b. *Treatment of North Sea Soft-Sediment Faunal Data sets. February 2023*. Great Yarmouth: Gardline Ltd.

Gardline, 2024a. *Morven Export Cable Route 2023*. Habitat Assessment Report, Gardline Ref: 54027.E4 (Final). Great Yarmouth, UK: Gardline Limited.

Gardline, 2024b. *Morven Offshore Wind Farm Integrated Survey, Environmental Baseline Survey Report*. Enviornmental Baseline Suvey Report. Gardline Ref: 54027.E3 Final. Great Yarmouth, UK: Gardline Limited.

Gardline, 2025. *Morven Grid Connection 1 Route Environmental Survey Habitat Assessment Report*. Habitat Assessment Report, Gardline Ref: 59294.E3 Rev0 (Draft). Dated: 07-Feb-2025. Great Yarmouth, UK: Gardline Limited.

Gerrard, S., Grant, A., Marsh, R. & London, C., 1999. *Drill Cuttings Piles in the North Sea: Management Options During Platform Decommissioning.* Report No 31. University of East Anglia.

Gibson, R.N., Atkinson, R.J.A. & Gordon, J.D.M., 2005. *Oceanography and Marine Biology: An Annual Review*. Florida, USA: CRC Press.

Habitats Directive 92/43/EEC, 1992. *Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora*. [Online] Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31992L0043&qid=1401972918085&from=EN [Accessed 05 June 2014].

Harborne, J.B., 1999. *Phytochemical Dictionary: A Handbook of Bioactive Compounds from Plants*. Boca Raton, Florida, USA: CRC Press.

Hill, J.M., Tyler-Walters, H. & Garrard, S.L., 2022. *Seapens and burrowing megafauna in circalittoral fine mud. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. [Online] Available at: https://www.marlin.ac.uk/habitats/detail/131 [Accessed 21 May 2024].

Horton, D.J., Theis, K.R., Uzarski, D.G. & Learman, D.R., 2019. Microbial community structure and microbial networks correspond to nutrient gradients within coastal wetlands of the Laurentian Great Lakes. *FEMS Microbiology Ecology*, [PDF].11 Mar, 95(4), p.34. Available at: https://academic.oup.com/femsec/article/95/4/fiz033/5374519 [Accessed 6th Feb 2023].

Irving, R., 2009. *The identification of the main characteristics of stony reef habitats under the Habitats Directive*. JNCC Report No. 432. Peterborough, UK: JNCC Joint Nature Conservation Committee. Summary report of an inter-agency workshop 26-27 March 2008.

IUCN, 2024. *The IUCN Red List of Threatened Species*. [Online] (2024-2) Available at: https://www.iucnredlist.org/ [Accessed 21 November 2024].

IUCN, 2025. *The IUCN Red List of Threatened Species*. [Online] (2024-2) Available at: https://www.iucnredlist.org/search?query=Echinus%20esculentus&searchType=species [Accessed 23 January 2025].

Jaccard, P., 1908. Nouvelles Recherches Sur la Distribution Florale. *Bulletin de la Societe Vaudoise des Sciences Naturelles*, 44, pp.223-70.

JNCC and Defra, 2012. *UK Post-2010 Biodiversity Framework*. [pdf] Produced on behalf of the Four Countries' Biodiversity Group Available at: https://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf [Accessed 05 Nov 2021].

JNCC, 2013. *SACFOR abundance scale used for both littoral and sublittoral taxa from 1990 onwards*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1009/sacfor.pdf [Accessed 20 May 2024].

JNCC, 2014. *JNCC clarifications on the habitat definitions of two habitat FOCI*. [Online] Peterborough, UK. Available at: https://data.jncc.gov.uk/data/91e7f80a-5693-4b8c-8901-11f16e663a12/3-AdviceDocument-MudHabitats-Seapen-definitions-v1.0.pdf [Accessed 20 May 2024].

Kingston, P.F., 1992. Impact of offshore oil production installations on the benthos of the North Sea. *ICES Journal of Marine Science*, 49(1), pp.45-53.

Kjeilen-Eilertsen, G., Westerlund, S., Bamber, S., Tandber, A.H., Myhre, L.P. & Tvedten, O., 2004. *UKOOA phase III- Characterisation of Beryl, Brent A, Brent S, Clyde and Miller cuttings piles through field work, laboratory studies and chemical analysis*. Final Report – 2004-197.

Laflamme, R.E. & Hites, R.A., 1978. The global distribution of polycyclic aromatic hydrocarbons in recent sediments. *Geochim Cosmochim Acta*, 42, pp.289-303.

Larsen, P.F., Gadbois, D.F. & Johnson, A.C., 1986. Polycyclic Aromatic Hydrocarbons in Gulf of Maine Sediments: Distributions and Mode of Transport. *Marine Environmental Research,* 18, pp.231-44.

Leahy, J.G. & Colwell, R.R., 1990. Microbial Degradation of Hydrocarbons in the Environment. *Microbiological Review*, 54, pp.305-15.

Lemke, M.J., Brown, B.J. & Leff, L.G., 1997. The Response of Three Bacterial Populations to Pollution in a Stream. *Microbial Ecology*, 34, pp.224-31.

Long, E.R., MacDonald, D.D., Smith, S.L. & Calder, F.D., 1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. *Environmental Management*, 19, pp.81-97.

Luoma, S.N. & Davis, J.A., 1983. Requirements for modelling trace metal partitioning in oxidised estuarine sediments. *Marine Chemistry*, 12, pp.159-81.

Lyons, W.C. & Plisga, G.J., 2005. *Standard Handbook of Petroleum and Natural Gas Engineering*. Oxford, UK: Gulf Professional Publishing.

Mair, J.M., Matheson, I. & Appelbee, J.F., 1987. Offshore Macrobenthic Recovery in the Murchison Field Following the Termination of Drill-Cuttings Discharges. *Marine Pollution Bulletin*, 18(12), pp.628-34.

Mason, C., 2016. *NMBAQC's Best Practice Guidance Particle Size Analysis (PSA) for Supporting Biological Analysis*. [Online] Available at: https://www.nmbaqcs.org/media/qiybf5sd/best-practice-guidance.pdf [Accessed 21 October 2024].

Mayer, L.M., 1994. Surface area control on organic carbon accumulation in continental shelf sediments. *Geochimica et Cosmochimica Acta*, 58, pp.1271-84.

McDougall, J., 2000. Section 5.1. The significance of hydrocarbons in surficial sediments from the Altantic Margin regions. In *Hydrocarbons in environmental surveys of the seafloor of the UK Atlantic Margin*. Daventry, Northants NN11 5EA, UK.: Geotek Limited ISBN 09538399-0-7.

Meador, J.P. & Rice, C.A., 2002. Impaired growth in the polychaete *Armandia brevis* exposed to tributylin in sediment. *Marine Environmental Research*, [PDF].21 Jan, 51(2), pp.113-29. Available at: https://www.researchgate.net/publication/11873251_Impaired_growth_in_the_polychaete_Armandia_brevis_exposed_to_tributyltin_in_sediment [Accessed 30th Jan 2023].

MMO, 2023. *Marine Licensing: sediment analysis and sample plans*. [Online] Available at: https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans###Suitability%20of%20material [Accessed 05 Feb 2024].

Muniz, P., Danulat, E., Yannicelli, B., García-Alonso, J., Medina, G. & Bícego, M.C., 2004. Assessment of contamination by heavy metals and petroleum hydrocarbons in sediments of Montevideo Harbour (Uruguay). *Environment International*, 29, pp.1019-28.

NatureScot, 2020. *Priority Marine Features in Scotland's seas*. [Online] Available at: https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats [Accessed 20 May 2024].

Neff, J.M., 1979. *Polycyclic aromatic hydrocarbons in the aquatic environment. Sources, fates and environmental effects*. Essex, England: Applied Science Publishers Ltd.

Neff, J.M., 2004. *Bioaccumulation in Marine Organisms: Effect of Contaminants from Oil Well Produced Water*. Oxford, UK: Elsevier.

Neff, J.M., 2005. *Composition, environmental fates, and biological effect of water based drilling muds and cuttings discharged to the marine environment. A synthesis and annotated bibliography*. Petroleum Environmental Research Forum (PERF) and American Petroleum Institute.

NSTA, 2023. *North Sea Transition Authority Open Data*. [Online] Available at: https://www.nstauthority.co.uk/data-centre/nsta-open-data/ [Accessed 09 Dec 2022].

OSPAR, 2005. *Agreement on background concentrations for contaminants in seawater, biota and sediment*. [Online] (OSPAR agreement 2005-6.) Available at: https://www.ospar.org/convention/agreements?q=OSPA&t=32281&a=7455.

OSPAR, 2008. *OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR Reference Number: 2008-6)*. [Online] Available at: https://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats [Accessed 20 May 2024].

OSPAR, 2009a. *Agreement on CEMP Assessment Criteria for the QSR 2010. (OSPAR Reference Number: 2009-2)*. [Online] Available at: http://qsr2010.ospar.org/media/assessments/p00390_supplements/09-02e_Agreement_CEMP_Assessment_Criteria.pdf.

OSPAR, 2009b. *Background Document for Ocean quahog arctica islandica*. [Online] Available at: https://www.ospar.org/documents?v=7171 [Accessed 05 Nov 2021].

OSPAR, 2009c. *CEMP. Background Document on CEMP Assessment Criteria for the QSR 2010 (Publication 461)*. [pdf] Available at: https://www.ospar.org/work-areas/cross-cutting-issues/cemp [Accessed 30 January 2018].

OSPAR, 2010. *Background Document for Seapen and Burrowing megafauna communities*. Biodiversity Series. London, UK: OSPAR Commission OSPAR Commission.

OSPAR, 2013. *Levels and trends in marine contaminants and their biological effects - CEMP Assessment Report 2012*. [pdf] Available at: https://www.ospar.org/ospar-data/p00596_assessment_report_2012_cemp.pdf [Accessed 2 April 2024].

OSPAR, 2015. *CEMP - JAMP Guidelines for Monitoring Contaminants in Sediments (Agreement 2002-16). 2015 Update.* [Online] Available at: http://www.ospar.org/work-areas/cross-cutting-issues/cemp [Accessed 2nd December 2016].

OSPAR, 2017a. *Decisions, Recommendations & Agreements*. [Document] (OSPAR Guidelines for Monitoring the Environmental Impact of Offshore Oil and Gas Activities Agreement 2017-02) Available at: https://www.ospar.org/convention/agreements?q=monitoring&t=32281&a=7458&s= [Accessed 29 January 2018].

OSPAR, 2017b. *Trends of Organotins in Sediments in the Southern North Sea*. OSPAR Intermediate Assessment 2017. London, UK: OSPAR Commission OSPAR Commission.

Page, D.S., Boehm, G.S., Douglas, G.S., Bence, A.E., Burns, W.A. & Manciewicz, P.J., 1998. Petroleum sources in the western Gulf of Alaska/Shelikoff Straight area. *Marine Pollution Bulletin*, 36, pp.1004-12.

Parry, M.E.V., 2019. *Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Revised 2019)*. JNCC Report No. 546. ISSN 0963-8091. Peterborough, UK: JNCC.

Rees, H.L., Eggeleton, J.D., Rachor, E. & Vanden Bergh, E., 2007. Structure and dynamics of the North Sea benthos. *ICES Cooperative Research Report*, 288, p.258.

Rygg, B., 1985. Distribution of Species along Pollution induced Diversity Gradients in Benthic Communities in Norwegian Fjords. *Marine Pollution Bulletin*, 16, pp.469-74.

Scottish Biodiversity List, 2020. *Scottish Biodiversity List*. [Online] Available at: https://www.nature.scot/scottish-biodiversity-list [Accessed 9 December 2024].

Shannon, C.E. & Weaver, W., 1949. *The mathematical theory of communication*. Urbana: University of Illinois Press.

Steinhauer, M.S. & Boehm, P.D., 1992. The composition and distribution of saturated and aromatic hydrocarbons in near shore sediments, river sediments, and coastal peat of the Alaskan Beaufort Sea: implications for detecting anthropogenic hydrocarbon inputs. *Marine Environmental Research*, 33, pp.223-53.

The Marine Environment (Amendment) (EU Exit) Regulations 2018, 2018. *legislation.gov.uk*. [pdf] Available at: https://www.legislation.gov.uk/uksi/2018/1399/pdfs/uksi_20181399_en.pdf [Accessed 9 December 2024].

Tran, K., Yu, C. & Zeng, E., 1995. *Petrogenic and Biogenic Sources of N-alkanes off San Diego, California.* [Online] Available at: ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/1994_95AnnualReport/ar05.pdf [Accessed 03 March 2010].

Ugland, K.I., Gray, J.S. & Ellingsen, K.E., 2003. The species-accumulation curve and estimation of species richness. *Journal of Animal Ecology*, 72, pp.888-97.

UKOOA, 2001. *An Analysis of U.K. Offshore Oil and Gas Environmental Surveys 1975-95*. Heriot-University.

UKOOA, 2002. *UKOOA Drill Cuttings Initiative Final Report, February 2002*. UKOOA Drill Cuttings Initiative Executive Committee.

UKOOA, 2005. *UKOOAJIP 2004 Drill Cuttings Initiative Phase III. Final Report*. 20132900. UKOOA.

US EPA, 2008. *Introduction to the Clean Water Act - Glossary*. [Online] Available at: http://www.epa.gov/owow/watershed/wacademy/acad2000/pdf/IntrotoCWA.pdf [Accessed 03 March 2010].

Wang, Z. & Fingas, M.F., 2005. Oil and Petroleum Product Fingerprinting Analysis by Gas Chromatographic Techniques. In L.M.L. Nollet, ed. *Chromatographic Analysis of the Environment*. 3rd ed. CRC Press. pp.1027-101.

Warwick, R.M. & Clarke, K.R., 1991. A comparison of some methods for analysing changes in benthic community structure. *Journal of the Marine Biological Association of the U.K.*, 71, pp.225-44.

Wentworth, C.K., 1922. A scale of grade and class terms for clastic sediments. *Journal of geology*, (30), pp.377-92.

Williams, K.P., Gillespie, J.J., Sobral, B.W.S., Nordburg, E.K., Snyder, E.E., Shallom, J.M. & Dickerson, A.W., 2010. Phylogeny of Gammaproteobacteria. *Journal of Bacteriology*, [PDF].1st May, 192(9), pp.2305-14. Available at: https://journals.asm.org/doi/epub/10.1128/JB.01480-09 [Accessed 2nd Feb 2023].

Youngblood, W.W. & Blumer, M., 1975. Polycyclic aromatic hydrocarbons in the environment: homologues series in soils and recent marine sediments. *Geochim Cosmochim Acta*, 39, pp.1303-14.

Yunker, M.B., Macdonald, R.W., Vingarzan, R., Mitchell, R.H., Goyette, D. & Sylvestre, S., 2002. PAHs in the Fraser River basin; a critical appraisal of PAH ratios as indicators of PAH source and composition. *Organic Geochemistry*, 33(1), pp.489-515.

Zhang, J., Hao, Q., Li, Q., Zhao, X., Fu, X., Wang, W., He, D., Li, Y., Zhang, Z., Zhang, X. & Song, Z., 2024. Source identification of sedimentary organic carbon in coastal wetlands of the western Bohai Sea. *Science of the Total Environment*, 913(169282, 25-Feb-2024), Available at: https://www.sciencedirect.com/science/article/abs/pii/S0048969723079123#preview-section-references.

APPENDICES

APPENDIX A FIELD SAMPLING LOGS

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	06:33:41	1	MV24EXP-ENV-DC-173			Camera	70	627713	6271880	627676	6271898	37	-19	41	-63		(Corr'd Nav, Kongsberg 14208, img#1) (B)
11-Aug-2024	06:34:04	2	MV24EXP-ENV-DC-173			Camera	70	627710	6271881	627676	6271898	33	-17	37	-63		(Corr'd Nav, Kongsberg 14208, img#2) (B)
11-Aug-2024	06:34:19	3	MV24EXP-ENV-DC-173			Camera	70	627707	6271882	627676	6271898	31	-17	35	-62		(Corr'd Nav, Kongsberg 14208, img#3) (B)
11-Aug-2024	06:34:36	4	MV24EXP-ENV-DC-173			Camera	70	627705	6271883	627676	6271898	29	-15	33	-62		(Corr'd Nav, Kongsberg 14208, img#4) (B)
11-Aug-2024	06:35:23	5	MV24EXP-ENV-DC-173			Camera	70	627699	6271886	627676	6271898	23	-12	26	-62		(Corr'd Nav, Kongsberg 14208, img#5) (B)
11-Aug-2024	06:36:01	6	MV24EXP-ENV-DC-173			Camera	70	627694	6271889	627676	6271898	18	-10	20	-62		(Corr'd Nav, Kongsberg 14208, img#6) (B)
11-Aug-2024	06:36:12	7	MV24EXP-ENV-DC-173			Camera	70	627693	6271889	627676	6271898	17	-9	19	-62		(Corr'd Nav, Kongsberg 14208, img#7) (B)
11-Aug-2024	06:36:37	8	MV24EXP-ENV-DC-173			Camera	70	627689	6271890	627676	6271898	13	-8	15	-59		(Corr'd Nav, Kongsberg 14208, img#8) (B)
11-Aug-2024	06:37:04	9	MV24EXP-ENV-DC-173			Camera	70	627685	6271892	627676	6271898	8	-6	10	-53		(Corr'd Nav, Kongsberg 14208, img#9) (B)
11-Aug-2024	06:37:29	10	MV24EXP-ENV-DC-173			Camera	70	627681	6271894	627676	6271898	5	-5	7	-45		(Corr'd Nav, Kongsberg 14208, img#10) (B)
11-Aug-2024	06:38:06	11	MV24EXP-ENV-DC-173			Camera	70	627676	6271896	627676	6271898	0	-2	2	13		(Corr'd Nav, Kongsberg 14208, img#11) (B)
11-Aug-2024	06:38:17	12	MV24EXP-ENV-DC-173			Camera	70	627675	6271897	627676	6271898	-2	-1	2	56		(Corr'd Nav, Kongsberg 14208, img#12) (B)
11-Aug-2024	06:38:58	13	MV24EXP-ENV-DC-173			Camera	70	627670	6271899	627676	6271898	-7	1	7	98		(Corr'd Nav, Kongsberg 14208, img#13) (B)
11-Aug-2024	06:39:16	14	MV24EXP-ENV-DC-173			Camera	70	627667	6271900	627676	6271898	-10	2	10	103		(Corr'd Nav, Kongsberg 14208, img#14) (B)
11-Aug-2024	06:39:58	15	MV24EXP-ENV-DC-173			Camera	70	627661	6271903	627676	6271898	-16	5	17	108		(Corr'd Nav, Kongsberg 14208, img#15) (B)
11-Aug-2024	06:40:20	16	MV24EXP-ENV-DC-173			Camera	70	627658	6271904	627676	6271898	-19	6	20	108		(Corr'd Nav, Kongsberg 14208, img#16) (B)
11-Aug-2024	06:41:07	17	MV24EXP-ENV-DC-173			Camera	70	627651	6271907	627676	6271898	-25	9	27	110		(Corr'd Nav, Kongsberg 14208, img#17) (B)
11-Aug-2024	06:41:42	18	MV24EXP-ENV-DC-173			Camera	70	627646	6271910	627676	6271898	-30	11	32	111		(Corr'd Nav, Kongsberg 14208, img#18) (B)
11-Aug-2024	06:42:24	19	MV24EXP-ENV-DC-173			Camera	70	627640	6271913	627676	6271898	-36	14	39	112		(Corr'd Nav, Kongsberg 14208, img#19) (B)
11-Aug-2024	06:43:14	20	MV24EXP-ENV-DC-173			Camera	70	627633	6271916	627676	6271898	-43	18	47	112		(Corr'd Nav, Kongsberg 14208, img#20) (B)
11-Aug-2024	06:43:31	21	MV24EXP-ENV-DC-173			Camera	70	627631	6271917	627676	6271898	-45	19	49	112		(Corr'd Nav, Kongsberg 14208, img#21) (B)
11-Aug-2024	06:44:02	22	MV24EXP-ENV-DC-173			Camera	70	627626	6271919	627676	6271898	-50	20	54	112		(Corr'd Nav, Kongsberg 14208, img#22) (B)
11-Aug-2024	06:55:18	23	MV24EXP-ENV-DC-173			Camera	70	627692	6271952	627676	6271898	16	54	56	-164		(Corr'd Nav, Kongsberg 14208, img#23) (B)
11-Aug-2024	06:56:48	24	MV24EXP-ENV-DC-173			Camera	70	627689	6271947	627676	6271898	13	49	50	-166		(Corr'd Nav, Kongsberg 14208, img#24) (B)
11-Aug-2024	06:57:08	25	MV24EXP-ENV-DC-173			Camera	70	627688	6271945	627676	6271898	12	46	48	-166		(Corr'd Nav, Kongsberg 14208, img#25) (B)
11-Aug-2024	06:57:16	26	MV24EXP-ENV-DC-173			Camera	70	627688	6271943	627676	6271898	12	45	47	-166		(Corr'd Nav, Kongsberg 14208, img#26) (B)
11-Aug-2024	06:57:33	27	MV24EXP-ENV-DC-173			Camera	70	627688	6271941	627676	6271898	11	43	44	-165		(Corr'd Nav, Kongsberg 14208, img#27) (B)
11-Aug-2024	06:57:55	28	MV24EXP-ENV-DC-173			Camera	70	627687	6271938	627676	6271898	11	40	41	-165		(Corr'd Nav, Kongsberg 14208, img#28) (B)
11-Aug-2024	06:58:23	29	MV24EXP-ENV-DC-173			Camera	70	627686	6271934	627676	6271898	9	36	37	-165		(Corr'd Nav, Kongsberg 14208, img#29) (B)
11-Aug-2024	06:58:44	30	MV24EXP-ENV-DC-173			Camera	70	627684	6271930	627676	6271898	8	32	33	-166		(Corr'd Nav, Kongsberg 14208, img#30) (B)
11-Aug-2024	06:59:18	31	MV24EXP-ENV-DC-173			Camera	70	627683	6271924	627676	6271898	7	26	27	-165		(Corr'd Nav, Kongsberg 14208, img#31) (B)
11-Aug-2024	07:00:05	32	MV24EXP-ENV-DC-173			Camera	70	627682	6271916	627676	6271898	5	18	19	-163		(Corr'd Nav, Kongsberg 14208, img#32) (B)
11-Aug-2024	07:00:38	33	MV24EXP-ENV-DC-173			Camera	70	627681	6271912	627676	6271898	4	14	15	-162		(Corr'd Nav, Kongsberg 14208, img#33) (B)
11-Aug-2024	07:01:11	34	MV24EXP-ENV-DC-173			Camera	70	627680	6271907	627676	6271898	4	9	10	-155		(Corr'd Nav, Kongsberg 14208, img#34) (B)
11-Aug-2024	07:01:24	35	MV24EXP-ENV-DC-173			Camera	70	627680	6271905	627676	6271898	3	7	7	-152		(Corr'd Nav, Kongsberg 14208, img#35) (B)
11-Aug-2024	07:02:03	36	MV24EXP-ENV-DC-173			Camera	70	627678	6271899	627676	6271898	2	1	2	-116		(Corr'd Nav, Kongsberg 14208, img#36) (B)
11-Aug-2024	07:02:17	37	MV24EXP-ENV-DC-173			Camera	70	627677	6271897	627676	6271898	1	-1	2	-40		(Corr'd Nav, Kongsberg 14208, img#37) (B)
11-Aug-2024	07:03:16	38	MV24EXP-ENV-DC-173			Camera	70	627675	6271890	627676	6271898	-1	-9	9	10		(Corr'd Nav, Kongsberg 14208, img#38) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	07:03:27	39	MV24EXP-ENV-DC-173			Camera	70	627676	6271888	627676	6271898	-1	-10	10	5		(Corr'd Nav, Kongsberg 14208, img#39) (B)
11-Aug-2024	07:03:50	40	MV24EXP-ENV-DC-173			Camera	70	627675	6271884	627676	6271898	-2	-15	15	7		(Corr'd Nav, Kongsberg 14208, img#40) (B)
11-Aug-2024	07:04:02	41	MV24EXP-ENV-DC-173			Camera	70	627674	6271882	627676	6271898	-2	-17	17	8		(Corr'd Nav, Kongsberg 14208, img#41) (B)
11-Aug-2024	07:04:20	42	MV24EXP-ENV-DC-173			Camera	70	627674	6271879	627676	6271898	-3	-20	20	8		(Corr'd Nav, Kongsberg 14208, img#42) (B)
11-Aug-2024	07:04:47	43	MV24EXP-ENV-DC-173			Camera	70	627673	6271874	627676	6271898	-3	-24	24	8		(Corr'd Nav, Kongsberg 14208, img#43) (B)
11-Aug-2024	07:05:21	44	MV24EXP-ENV-DC-173			Camera	70	627672	6271869	627676	6271898	-5	-29	30	9		(Corr'd Nav, Kongsberg 14208, img#44) (B)
11-Aug-2024	07:06:14	45	MV24EXP-ENV-DC-173			Camera	70	627669	6271861	627676	6271898	-7	-38	38	10		(Corr'd Nav, Kongsberg 14208, img#45) (B)
11-Aug-2024	07:06:32	46	MV24EXP-ENV-DC-173			Camera	70	627669	6271858	627676	6271898	-8	-41	41	11		(Corr'd Nav, Kongsberg 14208, img#46) (B)
11-Aug-2024	07:07:10	47	MV24EXP-ENV-DC-173			Camera	70	627666	6271852	627676	6271898	-10	-46	47	12		(Corr'd Nav, Kongsberg 14208, img#47) (B)
11-Aug-2024	07:07:19	48	MV24EXP-ENV-DC-173			Camera	70	627666	6271851	627676	6271898	-10	-47	48	12		(Corr'd Nav, Kongsberg 14208, img#48) (B)
11-Aug-2024	07:07:42	49	MV24EXP-ENV-DC-173			Camera	70	627666	6271847	627676	6271898	-11	-51	52	12		(Corr'd Nav, Kongsberg 14208, img#49) (B)
11-Aug-2024	10:00:29	50	MV24EXP-ENV-DC-174			Camera	71	627585	6267929	627541	6267900	45	29	53	-123		(Corr'd Nav, Kongsberg 14208, img#1) (B)
11-Aug-2024	10:01:12	51	MV24EXP-ENV-DC-174			Camera	72	627580	6267927	627541	6267900	40	27	48	-124		(Corr'd Nav, Kongsberg 14208, img#2) (B)
11-Aug-2024	10:01:27	52	MV24EXP-ENV-DC-174			Camera	72	627578	6267926	627541	6267900	38	26	46	-125		(Corr'd Nav, Kongsberg 14208, img#3) (B)
11-Aug-2024	10:02:21	53	MV24EXP-ENV-DC-174			Camera	72	627571	6267923	627541	6267900	31	22	38	-126		(Corr'd Nav, Kongsberg 14208, img#4) (B)
11-Aug-2024	10:14:01	54	MV24EXP-ENV-DC-174			Camera	71	627567	6267913	627541	6267900	26	13	29	-116		(Corr'd Nav, Kongsberg 14208, img#5) (B)
11-Aug-2024	10:14:38	55	MV24EXP-ENV-DC-174			Camera	71	627567	6267913	627541	6267900	26	13	29	-116		(Corr'd Nav, Kongsberg 14208, img#6) (B)
11-Aug-2024	10:15:39	56	MV24EXP-ENV-DC-174			Camera	71	627565	6267912	627541	6267900	25	12	27	-116		(Corr'd Nav, Kongsberg 14208, img#7) (B)
11-Aug-2024	10:16:17	57	MV24EXP-ENV-DC-174			Camera	72	627561	6267911	627541	6267900	21	10	23	-116		(Corr'd Nav, Kongsberg 14208, img#8) (B)
11-Aug-2024	10:16:49	58	MV24EXP-ENV-DC-174			Camera	72	627556	6267909	627541	6267900	16	9	18	-119		(Corr'd Nav, Kongsberg 14208, img#9) (B)
11-Aug-2024	10:17:10	59	MV24EXP-ENV-DC-174			Camera	72	627553	6267908	627541	6267900	12	7	15	-121		(Corr'd Nav, Kongsberg 14208, img#10) (B)
11-Aug-2024	10:17:26	60	MV24EXP-ENV-DC-174			Camera	72	627550	6267907	627541	6267900	10	6	12	-123		(Corr'd Nav, Kongsberg 14208, img#11) (B)
11-Aug-2024	10:17:37	61	MV24EXP-ENV-DC-174			Camera	72	627549	6267906	627541	6267900	8	6	10	-125		(Corr'd Nav, Kongsberg 14208, img#12) (B)
11-Aug-2024	10:18:17	62	MV24EXP-ENV-DC-174			Camera	72	627543	6267904	627541	6267900	2	3	4	-146		(Corr'd Nav, Kongsberg 14208, img#13) (B)
11-Aug-2024	10:18:33	63	MV24EXP-ENV-DC-174			Camera	72	627541	6267903	627541	6267900	0	2	2	179		(Corr'd Nav, Kongsberg 14208, img#14) (B)
11-Aug-2024	10:19:02	64	MV24EXP-ENV-DC-174			Camera	72	627537	6267901	627541	6267900	-4	1	4	100		(Corr'd Nav, Kongsberg 14208, img#15) (B)
11-Aug-2024	10:19:34	65	MV24EXP-ENV-DC-174			Camera	72	627532	6267899	627541	6267900	-9	-2	9	78		(Corr'd Nav, Kongsberg 14208, img#16) (B)
11-Aug-2024	10:19:44	66	MV24EXP-ENV-DC-174			Camera	72	627531	6267898	627541	6267900	-10	-3	10	76		(Corr'd Nav, Kongsberg 14208, img#17) (B)
11-Aug-2024	10:20:35	67	MV24EXP-ENV-DC-174			Camera	72	627523	6267895	627541	6267900	-17	-5	18	75		(Corr'd Nav, Kongsberg 14208, img#18) (B)
11-Aug-2024	10:21:09	68	MV24EXP-ENV-DC-174			Camera	72	627518	6267894	627541	6267900	-23	-7	23	74		(Corr'd Nav, Kongsberg 14208, img#19) (B)
11-Aug-2024	10:21:40	69	MV24EXP-ENV-DC-174			Camera	72	627514	6267892	627541	6267900	-27	-8	28	73		(Corr'd Nav, Kongsberg 14208, img#20) (B)
11-Aug-2024	10:22:14	70	MV24EXP-ENV-DC-174			Camera	72	627510	6267891	627541	6267900	-31	-10	33	73		(Corr'd Nav, Kongsberg 14208, img#21) (B)
11-Aug-2024	10:22:54	71	MV24EXP-ENV-DC-174			Camera	72	627514	6267892	627541	6267900	-27	-8	28	73		(Corr'd Nav, Kongsberg 14208, img#22) (B)
11-Aug-2024	10:25:16	72	MV24EXP-ENV-DC-174			Camera	72	627499	6267886	627541	6267900	-42	-14	44	71		(Corr'd Nav, Kongsberg 14208, img#23) (B)
11-Aug-2024	10:25:43	73	MV24EXP-ENV-DC-174			Camera	72	627496	6267883	627541	6267900	-45	-17	48	69		(Corr'd Nav, Kongsberg 14208, img#24) (B)
11-Aug-2024	10:34:09	74	MV24EXP-ENV-DC-174			Camera	71	627524	6267917	627541	6267900	-17	17	24	135		(Corr'd Nav, Kongsberg 14208, img#25) (B)
11-Aug-2024	10:35:46	75	MV24EXP-ENV-DC-174			Camera	71	627533	6267928	627541	6267900	-8	28	29	165		(Corr'd Nav, Kongsberg 14208, img#26) (B)
11-Aug-2024	10:35:56	76	MV24EXP-ENV-DC-174			Camera	71	627534	6267930	627541	6267900	-6	30	30	168		(Corr'd Nav, Kongsberg 14208, img#27) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	10:36:15	77	MV24EXP-ENV-DC-174			Camera	72	627536	6267932	627541	6267900	-4	32	32	172		(Corr'd Nav, Kongsberg 14208, img#28) (B)
11-Aug-2024	10:37:28	78	MV24EXP-ENV-DC-174			Camera	71	627543	6267941	627541	6267900	3	41	41	-176		(Corr'd Nav, Kongsberg 14208, img#29) (B)
11-Aug-2024	10:37:40	79	MV24EXP-ENV-DC-174			Camera	71	627544	6267942	627541	6267900	4	42	42	-175		(Corr'd Nav, Kongsberg 14208, img#30) (B)
11-Aug-2024	10:38:36	80	MV24EXP-ENV-DC-174			Camera	71	627550	6267949	627541	6267900	9	49	50	-170		(Corr'd Nav, Kongsberg 14208, img#31) (B)
11-Aug-2024	10:42:55	81	MV24EXP-ENV-DC-174			Camera	71	627553	6267953	627541	6267900	12	53	54	-167		(Corr'd Nav, Kongsberg 14208, img#32) (B)
11-Aug-2024	10:43:33	82	MV24EXP-ENV-DC-174			Camera	71	627552	6267948	627541	6267900	11	48	49	-167		(Corr'd Nav, Kongsberg 14208, img#33) (B)
11-Aug-2024	10:44:04	83	MV24EXP-ENV-DC-174			Camera	71	627550	6267944	627541	6267900	9	43	44	-168		(Corr'd Nav, Kongsberg 14208, img#34) (B)
11-Aug-2024	10:44:43	84	MV24EXP-ENV-DC-174			Camera	71	627547	6267939	627541	6267900	6	38	39	-171		(Corr'd Nav, Kongsberg 14208, img#35) (B)
11-Aug-2024	10:45:27	85	MV24EXP-ENV-DC-174			Camera	71	627543	6267933	627541	6267900	2	33	33	-176		(Corr'd Nav, Kongsberg 14208, img#36) (B)
11-Aug-2024	10:45:39	86	MV24EXP-ENV-DC-174			Camera	71	627542	6267931	627541	6267900	1	31	31	-178		(Corr'd Nav, Kongsberg 14208, img#37) (B)
11-Aug-2024	10:45:46	87	MV24EXP-ENV-DC-174			Camera	71	627542	6267930	627541	6267900	1	30	30	-178		(Corr'd Nav, Kongsberg 14208, img#38) (B)
11-Aug-2024	10:46:27	88	MV24EXP-ENV-DC-174			Camera	72	627541	6267924	627541	6267900	0	23	23	180		(Corr'd Nav, Kongsberg 14208, img#39) (B)
11-Aug-2024	10:47:12	89	MV24EXP-ENV-DC-174			Camera	72	627539	6267917	627541	6267900	-2	17	17	175		(Corr'd Nav, Kongsberg 14208, img#40) (B)
11-Aug-2024	10:47:43	90	MV24EXP-ENV-DC-174			Camera	72	627537	6267913	627541	6267900	-4	13	14	165		(Corr'd Nav, Kongsberg 14208, img#41) (B)
11-Aug-2024	10:48:29	91	MV24EXP-ENV-DC-174			Camera	72	627535	6267908	627541	6267900	-6	8	10	143		(Corr'd Nav, Kongsberg 14208, img#42) (B)
11-Aug-2024	10:49:30	92	MV24EXP-ENV-DC-174			Camera	72	627533	6267900	627541	6267900	-7	0	7	90		(Corr'd Nav, Kongsberg 14208, img#43) (B)
11-Aug-2024	10:50:32	93	MV24EXP-ENV-DC-174			Camera	72	627532	6267892	627541	6267900	-8	-8	12	45		(Corr'd Nav, Kongsberg 14208, img#44) (B)
11-Aug-2024	10:51:17	94	MV24EXP-ENV-DC-174			Camera	72	627532	6267885	627541	6267900	-8	-16	18	29		(Corr'd Nav, Kongsberg 14208, img#45) (B)
11-Aug-2024	10:51:49	95	MV24EXP-ENV-DC-174			Camera	72	627532	6267880	627541	6267900	-9	-21	23	24		(Corr'd Nav, Kongsberg 14208, img#46) (B)
11-Aug-2024	10:52:28	96	MV24EXP-ENV-DC-174			Camera	72	627531	6267874	627541	6267900	-10	-27	28	20		(Corr'd Nav, Kongsberg 14208, img#47) (B)
11-Aug-2024	10:52:38	97	MV24EXP-ENV-DC-174			Camera	72	627531	6267872	627541	6267900	-10	-28	30	20		(Corr'd Nav, Kongsberg 14208, img#48) (B)
11-Aug-2024	10:52:50	98	MV24EXP-ENV-DC-174			Camera	72	627530	6267870	627541	6267900	-10	-30	32	19		(Corr'd Nav, Kongsberg 14208, img#49) (B)
11-Aug-2024	10:53:40	99	MV24EXP-ENV-DC-174			Camera	72	627529	6267862	627541	6267900	-11	-38	39	17		(Corr'd Nav, Kongsberg 14208, img#50) (B)
11-Aug-2024	10:53:50	100	MV24EXP-ENV-DC-174			Camera	72	627529	6267861	627541	6267900	-12	-39	41	17		(Corr'd Nav, Kongsberg 14208, img#51) (B)
11-Aug-2024	10:53:59	101	MV24EXP-ENV-DC-174			Camera	72	627529	6267860	627541	6267900	-12	-40	42	17		(Corr'd Nav, Kongsberg 14208, img#52) (B)
11-Aug-2024	10:54:40	102	MV24EXP-ENV-DC-174			Camera	72	627528	6267854	627541	6267900	-12	-46	48	15		(Corr'd Nav, Kongsberg 14208, img#53) (B)
11-Aug-2024	10:55:38	103	MV24EXP-ENV-DC-174			Camera	72	627529	6267851	627541	6267900	-12	-49	50	13		(Corr'd Nav, Kongsberg 14208, img#54) (B)
11-Aug-2024	13:32:58	104	MV24EXP-ENV-DC-175			Camera	73	627421	6263952	627417	6263902	4	50	50	-176		(Corr'd Nav, Kongsberg 14208, img#1) (B)
11-Aug-2024	13:33:40	105	MV24EXP-ENV-DC-175			Camera	73	627420	6263946	627417	6263902	3	43	43	-176		(Corr'd Nav, Kongsberg 14208, img#2) (B)
11-Aug-2024	13:34:22	106	MV24EXP-ENV-DC-175			Camera	73	627420	6263939	627417	6263902	3	37	37	-176		(Corr'd Nav, Kongsberg 14208, img#3) (B)
11-Aug-2024	13:34:46	107	MV24EXP-ENV-DC-175			Camera	73	627420	6263935	627417	6263902	2	33	33	-176		(Corr'd Nav, Kongsberg 14208, img#4) (B)
11-Aug-2024	13:35:17	108	MV24EXP-ENV-DC-175			Camera	73	627419	6263931	627417	6263902	2	29	29	-177		(Corr'd Nav, Kongsberg 14208, img#5) (B)
11-Aug-2024	13:35:33	109	MV24EXP-ENV-DC-175			Camera	73	627419	6263929	627417	6263902	2	26	26	-177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
11-Aug-2024	13:35:45	110	MV24EXP-ENV-DC-175			Camera	73	627419	6263927	627417	6263902	2	25	25	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B)
11-Aug-2024	13:36:16	111	MV24EXP-ENV-DC-175			Camera	73	627418	6263922	627417	6263902	1	20	20	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B)
11-Aug-2024	13:36:35	112	MV24EXP-ENV-DC-175			Camera	73	627418	6263919	627417	6263902	1	17	17	-177		(Corr'd Nav, Kongsberg 14208, img#9) (B)
11-Aug-2024	13:36:58	113	MV24EXP-ENV-DC-175			Camera	73	627418	6263915	627417	6263902	1	13	13	-177		(Corr'd Nav, Kongsberg 14208, img#10) (B)
11-Aug-2024	13:37:05	114	MV24EXP-ENV-DC-175			Camera	73	627418	6263914	627417	6263902	1	12	12	-178		(Corr'd Nav, Kongsberg 14208, img#11) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	13:37:15	115	MV24EXP-ENV-DC-175			Camera	73	627418	6263912	627417	6263902	0	10	10	-177		(Corr'd Nav, Kongsberg 14208, img#12) (B)
11-Aug-2024	13:37:35	116	MV24EXP-ENV-DC-175			Camera	73	627418	6263909	627417	6263902	0	7	7	-177		(Corr'd Nav, Kongsberg 14208, img#13) (B)
11-Aug-2024	13:38:06	117	MV24EXP-ENV-DC-175			Camera	73	627417	6263905	627417	6263902	0	2	2	177		(Corr'd Nav, Kongsberg 14208, img#14) (B)
11-Aug-2024	13:38:16	118	MV24EXP-ENV-DC-175			Camera	73	627417	6263903	627417	6263902	0	1	1	168		(Corr'd Nav, Kongsberg 14208, img#15) (B)
11-Aug-2024	13:38:34	119	MV24EXP-ENV-DC-175			Camera	73	627417	6263900	627417	6263902	-1	-2	2	18		(Corr'd Nav, Kongsberg 14208, img#16) (B)
11-Aug-2024	13:39:07	120	MV24EXP-ENV-DC-175			Camera	73	627416	6263895	627417	6263902	-1	-7	7	9		(Corr'd Nav, Kongsberg 14208, img#17) (B)
11-Aug-2024	13:40:00	121	MV24EXP-ENV-DC-175			Camera	73	627416	6263893	627417	6263902	-1	-9	10	8		(Corr'd Nav, Kongsberg 14208, img#18) (B)
11-Aug-2024	13:40:50	122	MV24EXP-ENV-DC-175			Camera	73	627416	6263888	627417	6263902	-2	-15	15	7		(Corr'd Nav, Kongsberg 14208, img#19) (B)
11-Aug-2024	13:41:12	123	MV24EXP-ENV-DC-175			Camera	73	627415	6263883	627417	6263902	-2	-20	20	7		(Corr'd Nav, Kongsberg 14208, img#20) (B)
11-Aug-2024	13:41:57	124	MV24EXP-ENV-DC-175			Camera	73	627413	6263876	627417	6263902	-4	-26	26	9		(Corr'd Nav, Kongsberg 14208, img#21) (B)
11-Aug-2024	13:42:22	125	MV24EXP-ENV-DC-175			Camera	73	627412	6263874	627417	6263902	-5	-28	29	10		(Corr'd Nav, Kongsberg 14208, img#22) (B)
11-Aug-2024	13:42:58	126	MV24EXP-ENV-DC-175			Camera	73	627412	6263868	627417	6263902	-6	-34	35	9		(Corr'd Nav, Kongsberg 14208, img#23) (B)
11-Aug-2024	13:43:07	127	MV24EXP-ENV-DC-175			Camera	73	627412	6263867	627417	6263902	-6	-36	36	9		(Corr'd Nav, Kongsberg 14208, img#24) (B)
11-Aug-2024	13:46:54	128	MV24EXP-ENV-DC-175			Camera	73	627416	6263864	627417	6263902	-1	-39	39	2		(Corr'd Nav, Kongsberg 14208, img#25) (B)
11-Aug-2024	13:48:45	129	MV24EXP-ENV-DC-175			Camera	73	627429	6263876	627417	6263902	11	-26	28	-24		(Corr'd Nav, Kongsberg 14208, img#26) (B)
11-Aug-2024	13:50:00	130	MV24EXP-ENV-DC-175			Camera	73	627437	6263885	627417	6263902	20	-18	26	-48		(Corr'd Nav, Kongsberg 14208, img#27) (B)
11-Aug-2024	13:57:01	131	MV24EXP-ENV-DC-175			Camera	73	627461	6263916	627417	6263902	44	13	46	-107		(Corr'd Nav, Kongsberg 14208, img#28) (B)
11-Aug-2024	13:57:26	132	MV24EXP-ENV-DC-175			Camera	73	627458	6263914	627417	6263902	40	12	42	-107		(Corr'd Nav, Kongsberg 14208, img#29) (B)
11-Aug-2024	13:58:01	133	MV24EXP-ENV-DC-175			Camera	73	627452	6263913	627417	6263902	34	10	36	-107		(Corr'd Nav, Kongsberg 14208, img#30) (B)
11-Aug-2024	13:59:55	134	MV24EXP-ENV-DC-175			Camera	73	627440	6263909	627417	6263902	22	6	23	-106		(Corr'd Nav, Kongsberg 14208, img#31) (B)
11-Aug-2024	14:02:44	135	MV24EXP-ENV-DC-175			Camera	73	627421	6263903	627417	6263902	4	1	4	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B)
11-Aug-2024	14:03:45	136	MV24EXP-ENV-DC-175			Camera	73	627412	6263900	627417	6263902	-5	-2	6	65		(Corr'd Nav, Kongsberg 14208, img#33) (B)
11-Aug-2024	14:04:19	137	MV24EXP-ENV-DC-175			Camera	73	627407	6263898	627417	6263902	-10	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#34) (B)
11-Aug-2024	14:06:30	138	MV24EXP-ENV-DC-175			Camera	73	627388	6263893	627417	6263902	-30	-10	31	72		(Corr'd Nav, Kongsberg 14208, img#35) (B)
11-Aug-2024	14:07:55	139	MV24EXP-ENV-DC-175			Camera	73	627375	6263888	627417	6263902	-42	-14	45	71		(Corr'd Nav, Kongsberg 14208, img#36) (B)
11-Aug-2024	14:08:43	140	MV24EXP-ENV-DC-175			Camera	73	627370	6263886	627417	6263902	-48	-16	51	72		(Corr'd Nav, Kongsberg 14208, img#37) (B)
12-Aug-2024	04:35:11	141	MV24EXP-ENV-DC-176			Camera	73	627000	6259953	627041	6259920	-42	33	53	128		(Corr'd Nav, Kongsberg 14208, img#1) (B)
12-Aug-2024	04:36:12	142	MV24EXP-ENV-DC-176			Camera	73	627007	6259946	627041	6259920	-34	26	43	127		(Corr'd Nav, Kongsberg 14208, img#2) (B)
12-Aug-2024	04:37:01	143	MV24EXP-ENV-DC-176			Camera	73	627012	6259942	627041	6259920	-29	22	36	127		(Corr'd Nav, Kongsberg 14208, img#3) (B)
12-Aug-2024	04:37:33	144	MV24EXP-ENV-DC-176			Camera	73	627016	6259939	627041	6259920	-25	19	31	127		(Corr'd Nav, Kongsberg 14208, img#4) (B)
12-Aug-2024	04:37:52	145	MV24EXP-ENV-DC-176			Camera	73	627019	6259937	627041	6259920	-22	17	28	127		(Corr'd Nav, Kongsberg 14208, img#5) (B)
12-Aug-2024	04:38:19	146	MV24EXP-ENV-DC-176			Camera	73	627022	6259934	627041	6259920	-19	14	24	127		(Corr'd Nav, Kongsberg 14208, img#6) (B)
12-Aug-2024	04:39:02	147	MV24EXP-ENV-DC-176			Camera	73	627027	6259930	627041	6259920	-14	10	17	125		(Corr'd Nav, Kongsberg 14208, img#7) (B)
12-Aug-2024	04:39:44	148	MV24EXP-ENV-DC-176			Camera	73	627031	6259925	627041	6259920	-10	5	11	118		(Corr'd Nav, Kongsberg 14208, img#8) (B)
12-Aug-2024	04:40:19	149	MV24EXP-ENV-DC-176			Camera	73	627035	6259923	627041	6259920	-6	3	7	118		(Corr'd Nav, Kongsberg 14208, img#9) (B)
12-Aug-2024	04:40:54	150	MV24EXP-ENV-DC-176			Camera	73	627040	6259920	627041	6259920	-1	0	1	60		(Corr'd Nav, Kongsberg 14208, img#10) (B)
12-Aug-2024	04:41:09	151	MV24EXP-ENV-DC-176			Camera	73	627042	6259918	627041	6259920	1	-2	3	-31		(Corr'd Nav, Kongsberg 14208, img#11) (B)
12-Aug-2024	04:41:33	152	MV24EXP-ENV-DC-176			Camera	73	627045	6259915	627041	6259920	4	-5	6	-42		(Corr'd Nav, Kongsberg 14208, img#12) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2024	04:41:59	153	MV24EXP-ENV-DC-176			Camera	73	627048	6259913	627041	6259920	7	-7	10	-42		(Corr'd Nav, Kongsberg 14208, img#13) (B)
12-Aug-2024	04:42:51	154	MV24EXP-ENV-DC-176			Camera	73	627054	6259907	627041	6259920	13	-13	18	-45		(Corr'd Nav, Kongsberg 14208, img#14) (B)
12-Aug-2024	04:43:07	155	MV24EXP-ENV-DC-176			Camera	73	627056	6259906	627041	6259920	15	-15	21	-46		(Corr'd Nav, Kongsberg 14208, img#15) (B)
12-Aug-2024	04:43:20	156	MV24EXP-ENV-DC-176			Camera	73	627058	6259904	627041	6259920	17	-16	23	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B)
12-Aug-2024	04:44:07	157	MV24EXP-ENV-DC-176			Camera	73	627062	6259900	627041	6259920	21	-20	29	-46		(Corr'd Nav, Kongsberg 14208, img#17) (B)
12-Aug-2024	04:44:29	158	MV24EXP-ENV-DC-176			Camera	73	627065	6259898	627041	6259920	24	-22	32	-47		(Corr'd Nav, Kongsberg 14208, img#18) (B)
12-Aug-2024	04:45:49	159	MV24EXP-ENV-DC-176			Camera	73	627076	6259891	627041	6259920	35	-30	46	-49		(Corr'd Nav, Kongsberg 14208, img#19) (B)
12-Aug-2024	04:46:45	160	MV24EXP-ENV-DC-176			Camera	73	627080	6259886	627041	6259920	39	-34	52	-49		(Corr'd Nav, Kongsberg 14208, img#20) (B)
12-Aug-2024	04:51:10	161	MV24EXP-ENV-DC-176			Camera	73	627057	6259878	627041	6259920	16	-43	46	-21		(Corr'd Nav, Kongsberg 14208, img#21) (B)
12-Aug-2024	04:51:47	162	MV24EXP-ENV-DC-176			Camera	73	627053	6259875	627041	6259920	12	-45	47	-15		(Corr'd Nav, Kongsberg 14208, img#22) (B)
12-Aug-2024	04:52:23	163	MV24EXP-ENV-DC-176			Camera	73	627048	6259873	627041	6259920	7	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#23) (B)
12-Aug-2024	04:52:49	164	MV24EXP-ENV-DC-176			Camera	73	627044	6259872	627041	6259920	3	-48	48	-3		(Corr'd Nav, Kongsberg 14208, img#24) (B)
12-Aug-2024	04:56:12	165	MV24EXP-ENV-DC-176			Camera	73	627029	6259870	627041	6259920	-12	-50	51	14		(Corr'd Nav, Kongsberg 14208, img#25) (B)
12-Aug-2024	04:57:06	166	MV24EXP-ENV-DC-176			Camera	73	627029	6259879	627041	6259920	-12	-41	43	16		(Corr'd Nav, Kongsberg 14208, img#26) (B)
12-Aug-2024	04:57:49	167	MV24EXP-ENV-DC-176			Camera	73	627027	6259887	627041	6259920	-14	-33	36	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
12-Aug-2024	04:58:29	168	MV24EXP-ENV-DC-176			Camera	73	627027	6259895	627041	6259920	-15	-26	29	30		(Corr'd Nav, Kongsberg 14208, img#28) (B)
12-Aug-2024	04:59:12	169	MV24EXP-ENV-DC-176			Camera	73	627030	6259900	627041	6259920	-11	-20	23	30		(Corr'd Nav, Kongsberg 14208, img#29) (B)
12-Aug-2024	04:59:37	170	MV24EXP-ENV-DC-176			Camera	73	627032	6259903	627041	6259920	-10	-17	19	30		(Corr'd Nav, Kongsberg 14208, img#30) (B)
12-Aug-2024	04:59:52	171	MV24EXP-ENV-DC-176			Camera	73	627032	6259906	627041	6259920	-9	-15	17	32		(Corr'd Nav, Kongsberg 14208, img#31) (B)
12-Aug-2024	05:00:01	172	MV24EXP-ENV-DC-176			Camera	73	627032	6259907	627041	6259920	-9	-13	16	34		(Corr'd Nav, Kongsberg 14208, img#32) (B)
12-Aug-2024	05:00:45	173	MV24EXP-ENV-DC-176			Camera	73	627035	6259913	627041	6259920	-7	-7	10	43		(Corr'd Nav, Kongsberg 14208, img#33) (B)
12-Aug-2024	05:01:01	174	MV24EXP-ENV-DC-176			Camera	73	627037	6259915	627041	6259920	-5	-5	7	41		(Corr'd Nav, Kongsberg 14208, img#34) (B)
12-Aug-2024	05:01:10	175	MV24EXP-ENV-DC-176			Camera	73	627038	6259916	627041	6259920	-4	-4	6	38		(Corr'd Nav, Kongsberg 14208, img#35) (B)
12-Aug-2024	05:01:18	176	MV24EXP-ENV-DC-176			Camera	73	627039	6259917	627041	6259920	-2	-4	4	35		(Corr'd Nav, Kongsberg 14208, img#36) (B)
12-Aug-2024	05:01:59	177	MV24EXP-ENV-DC-176			Camera	73	627043	6259921	627041	6259920	2	1	2	-116		(Corr'd Nav, Kongsberg 14208, img#37) (B)
12-Aug-2024	05:02:20	178	MV24EXP-ENV-DC-176			Camera	73	627045	6259923	627041	6259920	3	3	5	-132		(Corr'd Nav, Kongsberg 14208, img#38) (B)
12-Aug-2024	05:02:32	179	MV24EXP-ENV-DC-176			Camera	73	627046	6259925	627041	6259920	5	5	6	-135		(Corr'd Nav, Kongsberg 14208, img#39) (B)
12-Aug-2024	05:03:36	180	MV24EXP-ENV-DC-176			Camera	73	627052	6259933	627041	6259920	11	13	17	-138		(Corr'd Nav, Kongsberg 14208, img#40) (B)
12-Aug-2024	05:04:13	181	MV24EXP-ENV-DC-176			Camera	73	627057	6259937	627041	6259920	16	17	23	-138		(Corr'd Nav, Kongsberg 14208, img#41) (B)
12-Aug-2024	05:04:42	182	MV24EXP-ENV-DC-176			Camera	73	627060	6259941	627041	6259920	19	21	28	-138		(Corr'd Nav, Kongsberg 14208, img#42) (B)
12-Aug-2024	05:05:13	183	MV24EXP-ENV-DC-176			Camera	73	627062	6259944	627041	6259920	21	24	32	-139		(Corr'd Nav, Kongsberg 14208, img#43) (B)
12-Aug-2024	05:05:21	184	MV24EXP-ENV-DC-176			Camera	73	627063	6259945	627041	6259920	22	24	33	-139		(Corr'd Nav, Kongsberg 14208, img#44) (B)
12-Aug-2024	05:06:01	185	MV24EXP-ENV-DC-176			Camera	73	627067	6259949	627041	6259920	25	28	38	-138		(Corr'd Nav, Kongsberg 14208, img#45) (B)
12-Aug-2024	05:06:35	186	MV24EXP-ENV-DC-176			Camera	73	627069	6259952	627041	6259920	28	32	42	-138		(Corr'd Nav, Kongsberg 14208, img#46) (B)
12-Aug-2024	05:06:59	187	MV24EXP-ENV-DC-176			Camera	73	627071	6259955	627041	6259920	30	34	46	-139		(Corr'd Nav, Kongsberg 14208, img#47) (B)
12-Aug-2024	05:07:17	188	MV24EXP-ENV-DC-176			Camera	73	627073	6259957	627041	6259920	32	37	48	-139		(Corr'd Nav, Kongsberg 14208, img#48) (B)
12-Aug-2024	05:07:42	189	MV24EXP-ENV-DC-176			Camera	73	627075	6259960	627041	6259920	34	40	52	-139		(Corr'd Nav, Kongsberg 14208, img#49) (B)
13-Aug-2024	01:09:54	190	MV24EXP-ENV-DC-177			Camera	73	626369	6255940	626401	6255909	-32	30	44	134		(Corr'd Nav, Kongsberg 14208, img#1) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	01:10:14	191	MV24EXP-ENV-DC-177			Camera	72	626372	6255937	626401	6255909	-29	28	40	314		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	01:10:36	192	MV24EXP-ENV-DC-177			Camera	72	626375	6255934	626401	6255909	-26	25	36	315		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	01:11:11	193	MV24EXP-ENV-DC-177			Camera	72	626380	6255929	626401	6255909	-21	19	28	313		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	01:11:34	194	MV24EXP-ENV-DC-177			Camera	73	626384	6255926	626401	6255909	-17	17	24	134		(Corr'd Nav, Kongsberg 14208, img#5) (B)
13-Aug-2024	01:11:48	195	MV24EXP-ENV-DC-177			Camera	73	626385	6255925	626401	6255909	-16	15	22	134		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	01:12:10	196	MV24EXP-ENV-DC-177			Camera	73	626388	6255922	626401	6255909	-13	12	18	133		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	01:12:29	197	MV24EXP-ENV-DC-177			Camera	73	626390	6255919	626401	6255909	-11	10	15	131		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	01:12:50	198	MV24EXP-ENV-DC-177			Camera	73	626392	6255916	626401	6255909	-8	6	11	127		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	01:13:09	199	MV24EXP-ENV-DC-177			Camera	73	626395	6255912	626401	6255909	-6	3	6	117		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	01:13:36	200	MV24EXP-ENV-DC-177			Camera	73	626400	6255907	626401	6255909	-1	-2	2	32		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	01:13:46	201	MV24EXP-ENV-DC-177			Camera	73	626401	6255906	626401	6255909	0	-3	3	-3		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	01:14:09	202	MV24EXP-ENV-DC-177			Camera	73	626404	6255903	626401	6255909	3	-7	7	-27		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	01:14:19	203	MV24EXP-ENV-DC-177			Camera	73	626406	6255901	626401	6255909	5	-8	9	-31		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	01:14:41	204	MV24EXP-ENV-DC-177			Camera	73	626409	6255898	626401	6255909	8	-11	14	-36		(Corr'd Nav, Kongsberg 14208, img#15) (B)
13-Aug-2024	01:15:02	205	MV24EXP-ENV-DC-177			Camera	73	626412	6255895	626401	6255909	11	-14	18	-38		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	01:15:11	206	MV24EXP-ENV-DC-177			Camera	73	626413	6255894	626401	6255909	12	-15	20	-39		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	01:16:11	207	MV24EXP-ENV-DC-177			Camera	73	626421	6255885	626401	6255909	20	-24	31	-40		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	01:16:22	208	MV24EXP-ENV-DC-177			Camera	73	626422	6255884	626401	6255909	21	-26	33	-39		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	01:16:32	209	MV24EXP-ENV-DC-177			Camera	73	626423	6255882	626401	6255909	23	-27	35	-40		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	01:17:01	210	MV24EXP-ENV-DC-177			Camera	72	626427	6255879	626401	6255909	27	-30	40	-41		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	01:17:53	211	MV24EXP-ENV-DC-177			Camera	72	626433	6255874	626401	6255909	32	-36	48	-42		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	01:24:34	212	MV24EXP-ENV-DC-177			Camera	72	626400	6255871	626401	6255909	-1	-38	38	1		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	01:26:26	213	MV24EXP-ENV-DC-177			Camera	72	626392	6255871	626401	6255909	-9	-39	40	13		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	01:27:12	214	MV24EXP-ENV-DC-177			Camera	72	626386	6255872	626401	6255909	-15	-38	40	22		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	01:28:48	215	MV24EXP-ENV-DC-177			Camera	72	626377	6255871	626401	6255909	-24	-38	45	32		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	01:29:57	216	MV24EXP-ENV-DC-177			Camera	72	626371	6255870	626401	6255909	-30	-39	49	37		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	01:31:57	217	MV24EXP-ENV-DC-177			Camera	72	626365	6255874	626401	6255909	-36	-35	50	45		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	01:32:57	218	MV24EXP-ENV-DC-177			Camera	72	626365	6255875	626401	6255909	-36	-34	49	46		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	01:33:25	219	MV24EXP-ENV-DC-177			Camera	72	626366	6255877	626401	6255909	-35	-32	48	47		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	01:34:10	220	MV24EXP-ENV-DC-177			Camera	72	626371	6255881	626401	6255909	-30	-28	41	47		(Corr'd Nav, Kongsberg 14208, img#31) (B)
13-Aug-2024	01:34:23	221	MV24EXP-ENV-DC-177			Camera	72	626372	6255884	626401	6255909	-29	-26	39	48		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	01:34:40	222	MV24EXP-ENV-DC-177			Camera	73	626374	6255886	626401	6255909	-27	-24	35	48		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	01:35:11	223	MV24EXP-ENV-DC-177			Camera	73	626379	6255891	626401	6255909	-22	-19	28	49		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	01:35:31	224	MV24EXP-ENV-DC-177			Camera	73	626383	6255894	626401	6255909	-18	-15	23	49		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	01:36:12	225	MV24EXP-ENV-DC-177			Camera	73	626390	6255902	626401	6255909	-11	-8	13	55		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	01:36:39	226	MV24EXP-ENV-DC-177			Camera	73	626394	6255907	626401	6255909	-7	-2	7	71		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	01:37:11	227	MV24EXP-ENV-DC-177			Camera	73	626399	6255913	626401	6255909	-2	3	4	154		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	01:37:56	228	MV24EXP-ENV-DC-177			Camera	73	626405	6255920	626401	6255909	4	11	11	-159		(Corr'd Nav, Kongsberg 14208, img#39) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	01:38:50	229	MV24EXP-ENV-DC-177			Camera	73	626412	6255925	626401	6255909	11	16	19	-144		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	01:39:19	230	MV24EXP-ENV-DC-177			Camera	73	626417	6255929	626401	6255909	16	19	25	-140		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	01:39:41	231	MV24EXP-ENV-DC-177			Camera	73	626420	6255932	626401	6255909	20	23	30	-139		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	01:40:01	232	MV24EXP-ENV-DC-177			Camera	73	626423	6255936	626401	6255909	22	27	35	-140		(Corr'd Nav, Kongsberg 14208, img#43) (B)
13-Aug-2024	01:40:32	233	MV24EXP-ENV-DC-177			Camera	73	626427	6255941	626401	6255909	26	31	41	-140		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	01:41:06	234	MV24EXP-ENV-DC-177			Camera	73	626432	6255944	626401	6255909	31	35	47	-138		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	01:41:39	235	MV24EXP-ENV-DC-177			Camera	73	626435	6255947	626401	6255909	34	38	50	-138		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	04:22:47	236	MV24EXP-ENV-DC-178			Camera	69	625716	6251949	625761	6251919	-45	30	54	124		(Corr'd Nav, Kongsberg 14208, img#1) (B)
13-Aug-2024	04:23:11	237	MV24EXP-ENV-DC-178			Camera	69	625719	6251947	625761	6251919	-42	28	50	123		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	04:23:38	238	MV24EXP-ENV-DC-178			Camera	69	625723	6251944	625761	6251919	-38	25	45	123		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	04:23:48	239	MV24EXP-ENV-DC-178			Camera	69	625725	6251943	625761	6251919	-36	24	43	124		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	04:24:13	240	MV24EXP-ENV-DC-178			Camera	69	625729	6251941	625761	6251919	-32	22	38	124		(Corr'd Nav, Kongsberg 14208, img#5) (B)
13-Aug-2024	04:24:57	241	MV24EXP-ENV-DC-178			Camera	69	625734	6251936	625761	6251919	-27	17	32	123		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	04:25:07	242	MV24EXP-ENV-DC-178			Camera	69	625736	6251935	625761	6251919	-25	16	30	123		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	04:25:21	243	MV24EXP-ENV-DC-178			Camera	69	625738	6251933	625761	6251919	-23	14	27	122		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	04:25:44	244	MV24EXP-ENV-DC-178			Camera	69	625741	6251931	625761	6251919	-19	12	22	121		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	04:26:20	245	MV24EXP-ENV-DC-178			Camera	69	625748	6251926	625761	6251919	-13	7	15	120		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	04:26:40	246	MV24EXP-ENV-DC-178			Camera	69	625751	6251925	625761	6251919	-9	5	11	121		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	04:27:01	247	MV24EXP-ENV-DC-178			Camera	69	625755	6251922	625761	6251919	-5	3	6	116		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	04:27:39	248	MV24EXP-ENV-DC-178			Camera	69	625763	6251917	625761	6251919	2	-2	3	-41		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	04:27:57	249	MV24EXP-ENV-DC-178			Camera	69	625765	6251914	625761	6251919	5	-5	7	-45		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	04:28:26	250	MV24EXP-ENV-DC-178			Camera	69	625770	6251911	625761	6251919	9	-8	12	-48		(Corr'd Nav, Kongsberg 14208, img#15) (B)
13-Aug-2024	04:28:45	251	MV24EXP-ENV-DC-178			Camera	69	625773	6251909	625761	6251919	12	-10	16	-49		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	04:29:16	252	MV24EXP-ENV-DC-178			Camera	69	625778	6251906	625761	6251919	17	-14	22	-51		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	04:29:24	253	MV24EXP-ENV-DC-178			Camera	69	625779	6251905	625761	6251919	18	-14	23	-51		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	04:29:44	254	MV24EXP-ENV-DC-178			Camera	69	625782	6251903	625761	6251919	22	-16	27	-53		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	04:30:04	255	MV24EXP-ENV-DC-178			Camera	69	625786	6251901	625761	6251919	25	-18	31	-54		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	04:30:20	256	MV24EXP-ENV-DC-178			Camera	69	625788	6251899	625761	6251919	27	-20	34	-54		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	04:30:50	257	MV24EXP-ENV-DC-178			Camera	69	625793	6251895	625761	6251919	33	-25	41	-53		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	04:31:04	258	MV24EXP-ENV-DC-178			Camera	69	625796	6251893	625761	6251919	36	-26	44	-53		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	04:31:24	259	MV24EXP-ENV-DC-178			Camera	69	625800	6251890	625761	6251919	39	-29	49	-54		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	04:31:46	260	MV24EXP-ENV-DC-178			Camera	69	625804	6251888	625761	6251919	44	-31	54	-54		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	04:33:30	261	MV24EXP-ENV-DC-178			Camera	69	625806	6251887	625761	6251919	45	-32	55	-55		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	04:38:51	262	MV24EXP-ENV-DC-178			Camera	70	625762	6251871	625761	6251919	2	-48	48	-2		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	04:40:49	263	MV24EXP-ENV-DC-178			Camera	70	625753	6251864	625761	6251919	-7	-55	56	7		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	04:43:13	264	MV24EXP-ENV-DC-178			Camera	70	625749	6251874	625761	6251919	-11	-45	47	14		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	04:43:32	265	MV24EXP-ENV-DC-178			Camera	70	625749	6251877	625761	6251919	-12	-42	44	16		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	04:43:57	266	MV24EXP-ENV-DC-178			Camera	70	625749	6251882	625761	6251919	-11	-38	39	17		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	04:44:28	267	MV24EXP-ENV-DC-178			Camera	70	625749	6251887	625761	6251919	-12	-33	35	19		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	04:45:09	268	MV24EXP-ENV-DC-178			Camera	70	625750	6251893	625761	6251919	-11	-26	28	22		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	04:45:46	269	MV24EXP-ENV-DC-178			Camera	69	625751	6251899	625761	6251919	-10	-21	23	26		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	04:45:54	270	MV24EXP-ENV-DC-178			Camera	70	625751	6251900	625761	6251919	-10	-19	22	27		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	04:46:47	271	MV24EXP-ENV-DC-178			Camera	69	625752	6251907	625761	6251919	-8	-12	15	35		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	04:47:28	272	MV24EXP-ENV-DC-178			Camera	69	625755	6251911	625761	6251919	-6	-8	10	37		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	04:47:56	273	MV24EXP-ENV-DC-178			Camera	69	625757	6251914	625761	6251919	-4	-5	6	40		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	04:48:34	274	MV24EXP-ENV-DC-178			Camera	69	625761	6251918	625761	6251919	0	-1	1	3		(Corr'd Nav, Kongsberg 14208, img#39) (B)
13-Aug-2024	04:48:58	275	MV24EXP-ENV-DC-178			Camera	69	625764	6251920	625761	6251919	3	1	4	-105		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	04:49:07	276	MV24EXP-ENV-DC-178			Camera	69	625765	6251921	625761	6251919	4	2	5	-110		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	04:50:00	277	MV24EXP-ENV-DC-178			Camera	69	625770	6251926	625761	6251919	10	7	12	-126		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	04:50:15	278	MV24EXP-ENV-DC-178			Camera	69	625772	6251928	625761	6251919	11	9	14	-129		(Corr'd Nav, Kongsberg 14208, img#43) (B)
13-Aug-2024	04:50:42	279	MV24EXP-ENV-DC-178			Camera	69	625773	6251932	625761	6251919	13	13	18	-135		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	04:50:58	280	MV24EXP-ENV-DC-178			Camera	70	625774	6251934	625761	6251919	13	15	20	-139		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	04:51:15	281	MV24EXP-ENV-DC-178			Camera	70	625774	6251937	625761	6251919	14	18	22	-142		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	04:51:47	282	MV24EXP-ENV-DC-178			Camera	70	625776	6251941	625761	6251919	15	22	27	-146		(Corr'd Nav, Kongsberg 14208, img#47) (B)
13-Aug-2024	04:52:01	283	MV24EXP-ENV-DC-178			Camera	69	625777	6251943	625761	6251919	16	24	29	-147		(Corr'd Nav, Kongsberg 14208, img#48) (B)
13-Aug-2024	04:52:46	284	MV24EXP-ENV-DC-178			Camera	69	625780	6251950	625761	6251919	19	31	36	-148		(Corr'd Nav, Kongsberg 14208, img#49) (B)
13-Aug-2024	04:53:06	285	MV24EXP-ENV-DC-178			Camera	69	625781	6251953	625761	6251919	20	34	39	-149		(Corr'd Nav, Kongsberg 14208, img#50) (B)
13-Aug-2024	04:53:31	286	MV24EXP-ENV-DC-178			Camera	70	625782	6251957	625761	6251919	21	38	43	-151		(Corr'd Nav, Kongsberg 14208, img#51) (B)
13-Aug-2024	04:53:49	287	MV24EXP-ENV-DC-178			Camera	69	625782	6251960	625761	6251919	21	41	46	-153		(Corr'd Nav, Kongsberg 14208, img#52) (B)
13-Aug-2024	04:53:56	288	MV24EXP-ENV-DC-178			Camera	69	625782	6251961	625761	6251919	21	41	46	-153		(Corr'd Nav, Kongsberg 14208, img#53) (B)
13-Aug-2024	04:54:14	289	MV24EXP-ENV-DC-178			Camera	69	625782	6251964	625761	6251919	21	44	49	-155		(Corr'd Nav, Kongsberg 14208, img#54) (B)
13-Aug-2024	06:37:57	290	MV24EXP-ENV-DC-179			Camera	69	625109	6248105	625151	6248070	-42	35	55	130		(Corr'd Nav, Kongsberg 14208, img#1) (B)
13-Aug-2024	06:39:03	291	MV24EXP-ENV-DC-179			Camera	69	625114	6248101	625151	6248070	-36	31	48	130		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	06:39:50	292	MV24EXP-ENV-DC-179			Camera	69	625119	6248096	625151	6248070	-32	26	41	129		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	06:40:27	293	MV24EXP-ENV-DC-179			Camera	69	625123	6248092	625151	6248070	-27	22	35	129		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	06:41:09	294	MV24EXP-ENV-DC-179			Camera	69	625129	6248087	625151	6248070	-22	17	28	128		(Corr'd Nav, Kongsberg 14208, img#5) (B)
13-Aug-2024	06:41:37	295	MV24EXP-ENV-DC-179			Camera	69	625133	6248085	625151	6248070	-18	15	23	129		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	06:42:09	296	MV24EXP-ENV-DC-179			Camera	69	625137	6248082	625151	6248070	-14	12	18	130		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	06:42:17	297	MV24EXP-ENV-DC-179			Camera	69	625137	6248081	625151	6248070	-13	11	17	130		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	06:42:54	298	MV24EXP-ENV-DC-179			Camera	69	625141	6248079	625151	6248070	-10	9	13	132		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	06:43:29	299	MV24EXP-ENV-DC-179			Camera	70	625145	6248075	625151	6248070	-5	5	7	132		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	06:43:47	300	MV24EXP-ENV-DC-179			Camera	70	625147	6248073	625151	6248070	-4	3	5	130		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	06:44:44	301	MV24EXP-ENV-DC-179			Camera	69	625152	6248067	625151	6248070	1	-3	3	-23		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	06:45:02	302	MV24EXP-ENV-DC-179			Camera	69	625154	6248065	625151	6248070	3	-5	6	-32		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	06:45:38	303	MV24EXP-ENV-DC-179			Camera	69	625159	6248060	625151	6248070	8	-10	13	-38		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	06:46:14	304	MV24EXP-ENV-DC-179			Camera	70	625163	6248056	625151	6248070	12	-14	18	-42		(Corr'd Nav, Kongsberg 14208, img#15) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	06:46:49	305	MV24EXP-ENV-DC-179			Camera	70	625167	6248053	625151	6248070	17	-17	24	-44		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	06:47:09	306	MV24EXP-ENV-DC-179			Camera	70	625170	6248050	625151	6248070	20	-20	28	-45		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	06:47:34	307	MV24EXP-ENV-DC-179			Camera	70	625174	6248047	625151	6248070	23	-23	32	-45		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	06:47:53	308	MV24EXP-ENV-DC-179			Camera	70	625176	6248045	625151	6248070	25	-25	35	-45		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	06:48:09	309	MV24EXP-ENV-DC-179			Camera	70	625177	6248044	625151	6248070	26	-26	37	-45		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	06:48:45	310	MV24EXP-ENV-DC-179			Camera	70	625182	6248040	625151	6248070	31	-30	43	-46		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	06:49:03	311	MV24EXP-ENV-DC-179			Camera	70	625184	6248038	625151	6248070	33	-32	46	-46		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	06:49:27	312	MV24EXP-ENV-DC-179			Camera	70	625186	6248036	625151	6248070	35	-34	49	-46		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	06:49:58	313	MV24EXP-ENV-DC-179			Camera	70	625189	6248034	625151	6248070	38	-36	53	-47		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	06:53:37	314	MV24EXP-ENV-DC-179			Camera	70	625174	6248030	625151	6248070	23	-40	46	-31		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	06:57:05	315	MV24EXP-ENV-DC-179			Camera	70	625147	6248015	625151	6248070	-4	-55	55	4		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	06:59:59	316	MV24EXP-ENV-DC-179			Camera	70	625139	6248024	625151	6248070	-12	-46	48	14		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	07:00:15	317	MV24EXP-ENV-DC-179			Camera	70	625141	6248025	625151	6248070	-10	-45	46	13		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	07:00:41	318	MV24EXP-ENV-DC-179			Camera	70	625143	6248029	625151	6248070	-8	-41	41	10		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	07:01:10	319	MV24EXP-ENV-DC-179			Camera	70	625145	6248034	625151	6248070	-6	-36	37	9		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	07:01:32	320	MV24EXP-ENV-DC-179			Camera	70	625146	6248038	625151	6248070	-5	-32	33	8		(Corr'd Nav, Kongsberg 14208, img#31) (B)
13-Aug-2024	07:02:03	321	MV24EXP-ENV-DC-179			Camera	70	625146	6248043	625151	6248070	-4	-27	27	9		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	07:02:14	322	MV24EXP-ENV-DC-179			Camera	70	625147	6248045	625151	6248070	-4	-25	25	9		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	07:02:47	323	MV24EXP-ENV-DC-179			Camera	70	625147	6248051	625151	6248070	-4	-19	20	12		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	07:03:10	324	MV24EXP-ENV-DC-179			Camera	70	625147	6248055	625151	6248070	-4	-15	16	14		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	07:03:32	325	MV24EXP-ENV-DC-179			Camera	70	625148	6248058	625151	6248070	-3	-12	13	15		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	07:03:43	326	MV24EXP-ENV-DC-179			Camera	70	625148	6248060	625151	6248070	-3	-10	11	16		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	07:04:12	327	MV24EXP-ENV-DC-179			Camera	70	625148	6248065	625151	6248070	-3	-5	6	28		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	07:04:41	328	MV24EXP-ENV-DC-179			Camera	70	625149	6248069	625151	6248070	-2	-1	2	63		(Corr'd Nav, Kongsberg 14208, img#39) (B)
13-Aug-2024	07:05:15	329	MV24EXP-ENV-DC-179			Camera	70	625151	6248074	625151	6248070	0	4	4	-177		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	07:05:35	330	MV24EXP-ENV-DC-179			Camera	69	625152	6248077	625151	6248070	1	7	7	-174		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	07:06:14	331	MV24EXP-ENV-DC-179			Camera	69	625152	6248083	625151	6248070	2	13	13	-173		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	07:06:40	332	MV24EXP-ENV-DC-179			Camera	69	625153	6248087	625151	6248070	3	17	17	-171		(Corr'd Nav, Kongsberg 14208, img#43) (B)
13-Aug-2024	07:07:45	333	MV24EXP-ENV-DC-179			Camera	69	625156	6248097	625151	6248070	5	27	28	-169		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	07:08:17	334	MV24EXP-ENV-DC-179			Camera	69	625158	6248101	625151	6248070	7	31	32	-168		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	07:08:31	335	MV24EXP-ENV-DC-179			Camera	69	625158	6248103	625151	6248070	7	33	34	-168		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	07:09:36	336	MV24EXP-ENV-DC-179			Camera	69	625160	6248114	625151	6248070	9	44	45	-168		(Corr'd Nav, Kongsberg 14208, img#47) (B)
13-Aug-2024	07:10:32	337	MV24EXP-ENV-DC-179			Camera	69	625162	6248121	625151	6248070	11	52	53	-168		(Corr'd Nav, Kongsberg 14208, img#48) (B)
13-Aug-2024	09:34:05	338	MV24EXP-ENV-DC-180			Camera	69	624510	6244214	624523	6244160	-14	53	55	346		(Corr'd Nav, Kongsberg 14208, img#1) (B)
13-Aug-2024	09:34:31	339	MV24EXP-ENV-DC-180			Camera	68	624510	6244213	624523	6244160	-13	52	54	166		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	09:35:03	340	MV24EXP-ENV-DC-180			Camera	69	624512	6244209	624523	6244160	-12	49	50	167		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	09:35:25	341	MV24EXP-ENV-DC-180			Camera	69	624512	6244205	624523	6244160	-11	44	45	166		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	09:35:52	342	MV24EXP-ENV-DC-180			Camera	69	624513	6244200	624523	6244160	-10	40	41	166		(Corr'd Nav, Kongsberg 14208, img#5) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	09:36:11	343	MV24EXP-ENV-DC-180			Camera	69	624514	6244197	624523	6244160	-9	37	38	166		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	09:36:37	344	MV24EXP-ENV-DC-180			Camera	69	624516	6244193	624523	6244160	-8	33	34	167		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	09:36:49	345	MV24EXP-ENV-DC-180			Camera	69	624517	6244192	624523	6244160	-7	31	32	167		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	09:37:22	346	MV24EXP-ENV-DC-180			Camera	69	624518	6244187	624523	6244160	-5	27	27	169		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	09:37:35	347	MV24EXP-ENV-DC-180			Camera	69	624518	6244186	624523	6244160	-5	26	26	169		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	09:38:23	348	MV24EXP-ENV-DC-180			Camera	69	624521	6244179	624523	6244160	-3	18	18	172		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	09:38:34	349	MV24EXP-ENV-DC-180			Camera	69	624522	6244177	624523	6244160	-2	16	16	174		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	09:38:47	350	MV24EXP-ENV-DC-180			Camera	69	624522	6244175	624523	6244160	-1	15	15	176		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	09:39:43	351	MV24EXP-ENV-DC-180			Camera	69	624526	6244167	624523	6244160	3	6	7	-159		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	09:39:56	352	MV24EXP-ENV-DC-180			Camera	69	624527	6244165	624523	6244160	3	5	6	-147		(Corr'd Nav, Kongsberg 14208, img#15) (B)
13-Aug-2024	09:40:25	353	MV24EXP-ENV-DC-180			Camera	69	624527	6244163	624523	6244160	4	2	5	-119		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	09:41:00	354	MV24EXP-ENV-DC-180			Camera	69	624527	6244160	624523	6244160	3	-1	3	-79		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	09:41:19	355	MV24EXP-ENV-DC-180			Camera	69	624527	6244157	624523	6244160	3	-4	5	-41		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	09:41:34	356	MV24EXP-ENV-DC-180			Camera	69	624527	6244154	624523	6244160	4	-6	7	-33		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	09:41:59	357	MV24EXP-ENV-DC-180			Camera	69	624529	6244150	624523	6244160	5	-11	12	-27		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	09:42:29	358	MV24EXP-ENV-DC-180			Camera	69	624531	6244144	624523	6244160	8	-16	18	-25		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	09:42:42	359	MV24EXP-ENV-DC-180			Camera	69	624532	6244142	624523	6244160	8	-18	20	-25		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	09:43:06	360	MV24EXP-ENV-DC-180			Camera	69	624532	6244139	624523	6244160	9	-22	24	-22		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	09:43:26	361	MV24EXP-ENV-DC-180			Camera	69	624533	6244136	624523	6244160	9	-24	26	-21		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	09:44:02	362	MV24EXP-ENV-DC-180			Camera	69	624534	6244131	624523	6244160	10	-30	31	-19		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	09:44:20	363	MV24EXP-ENV-DC-180			Camera	69	624534	6244128	624523	6244160	11	-33	34	-18		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	09:44:46	364	MV24EXP-ENV-DC-180			Camera	69	624535	6244124	624523	6244160	12	-37	38	-18		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	09:45:46	365	MV24EXP-ENV-DC-180			Camera	69	624537	6244115	624523	6244160	13	-46	48	-16		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	09:46:03	366	MV24EXP-ENV-DC-180			Camera	69	624537	6244113	624523	6244160	14	-48	50	-16		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	09:48:34	367	MV24EXP-ENV-DC-180			Camera	69	624536	6244110	624523	6244160	13	-50	52	-14		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	09:49:15	368	MV24EXP-ENV-DC-180			Camera	69	624534	6244114	624523	6244160	11	-47	48	-13		(Corr'd Nav, Kongsberg 14208, img#31) (B)
13-Aug-2024	09:58:45	369	MV24EXP-ENV-DC-180			Camera	69	624471	6244150	624523	6244160	-52	-10	53	79		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	09:59:44	370	MV24EXP-ENV-DC-180			Camera	69	624475	6244152	624523	6244160	-49	-8	49	80		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	10:00:24	371	MV24EXP-ENV-DC-180			Camera	69	624480	6244154	624523	6244160	-43	-7	44	81		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	10:00:57	372	MV24EXP-ENV-DC-180			Camera	69	624486	6244154	624523	6244160	-38	-6	38	81		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	10:01:10	373	MV24EXP-ENV-DC-180			Camera	69	624488	6244155	624523	6244160	-36	-6	36	81		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	10:01:57	374	MV24EXP-ENV-DC-180			Camera	69	624495	6244157	624523	6244160	-28	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	10:02:53	375	MV24EXP-ENV-DC-180			Camera	69	624504	6244159	624523	6244160	-20	-2	20	84		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	10:03:05	376	MV24EXP-ENV-DC-180			Camera	69	624506	6244159	624523	6244160	-18	-2	18	85		(Corr'd Nav, Kongsberg 14208, img#39) (B)
13-Aug-2024	10:03:38	377	MV24EXP-ENV-DC-180			Camera	69	624511	6244160	624523	6244160	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	10:04:11	378	MV24EXP-ENV-DC-180			Camera	69	624515	6244161	624523	6244160	-8	0	8	93		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	10:04:20	379	MV24EXP-ENV-DC-180			Camera	69	624516	6244161	624523	6244160	-7	0	7	93		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	10:04:43	380	MV24EXP-ENV-DC-180			Camera	69	624518	6244161	624523	6244160	-5	0	5	95		(Corr'd Nav, Kongsberg 14208, img#43) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	10:05:05	381	MV24EXP-ENV-DC-180			Camera	69	624521	6244161	624523	6244160	-2	0	2	98		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	10:05:40	382	MV24EXP-ENV-DC-180			Camera	69	624526	6244161	624523	6244160	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	10:06:12	383	MV24EXP-ENV-DC-180			Camera	69	624532	6244160	624523	6244160	8	0	8	-89		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	10:06:32	384	MV24EXP-ENV-DC-180			Camera	69	624535	6244160	624523	6244160	11	-1	11	-86		(Corr'd Nav, Kongsberg 14208, img#47) (B)
13-Aug-2024	10:06:56	385	MV24EXP-ENV-DC-180			Camera	69	624539	6244159	624523	6244160	16	-1	16	-85		(Corr'd Nav, Kongsberg 14208, img#48) (B)
13-Aug-2024	10:07:09	386	MV24EXP-ENV-DC-180			Camera	69	624541	6244159	624523	6244160	18	-2	18	-85		(Corr'd Nav, Kongsberg 14208, img#49) (B)
13-Aug-2024	10:07:48	387	MV24EXP-ENV-DC-180			Camera	69	624548	6244160	624523	6244160	25	-1	25	-89		(Corr'd Nav, Kongsberg 14208, img#50) (B)
13-Aug-2024	10:08:01	388	MV24EXP-ENV-DC-180			Camera	69	624550	6244160	624523	6244160	27	0	27	-90		(Corr'd Nav, Kongsberg 14208, img#51) (B)
13-Aug-2024	10:08:44	389	MV24EXP-ENV-DC-180			Camera	69	624556	6244161	624523	6244160	32	1	32	88		(Corr'd Nav, Kongsberg 14208, img#52) (B)
13-Aug-2024	10:09:34	390	MV24EXP-ENV-DC-180			Camera	70	624563	6244163	624523	6244160	39	3	39	86		(Corr'd Nav, Kongsberg 14208, img#53) (B)
13-Aug-2024	10:10:18	391	MV24EXP-ENV-DC-180			Camera	69	624570	6244163	624523	6244160	46	3	46	87		(Corr'd Nav, Kongsberg 14208, img#54) (B)
13-Aug-2024	10:10:29	392	MV24EXP-ENV-DC-180			Camera	69	624571	6244163	624523	6244160	48	3	48	86		(Corr'd Nav, Kongsberg 14208, img#55) (B)
14-Aug-2024	06:37:09	393	MV24GC1-ENV-DC-234			Camera	68	627148	6203671	627184	6203640	-36	31	48	311		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	06:37:48	394	MV24GC1-ENV-DC-234			Camera	67	627151	6203667	627184	6203640	-32	27	42	130		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	06:38:15	395	MV24GC1-ENV-DC-234			Camera	67	627155	6203664	627184	6203640	-29	24	38	130		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	06:38:25	396	MV24GC1-ENV-DC-234			Camera	67	627157	6203663	627184	6203640	-27	23	36	130		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	06:38:39	397	MV24GC1-ENV-DC-234			Camera	67	627159	6203661	627184	6203640	-25	22	33	131		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	06:38:51	398	MV24GC1-ENV-DC-234			Camera	67	627160	6203660	627184	6203640	-24	20	31	130		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	06:39:11	399	MV24GC1-ENV-DC-234			Camera	67	627163	6203657	627184	6203640	-21	18	27	131		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	06:39:40	400	MV24GC1-ENV-DC-234			Camera	67	627167	6203655	627184	6203640	-16	15	22	132		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	06:40:05	401	MV24GC1-ENV-DC-234			Camera	67	627170	6203653	627184	6203640	-14	13	19	133		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	06:40:18	402	MV24GC1-ENV-DC-234			Camera	67	627171	6203652	627184	6203640	-13	12	17	133		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	06:41:02	403	MV24GC1-ENV-DC-234			Camera	67	627175	6203646	627184	6203640	-8	7	11	128		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	06:41:41	404	MV24GC1-ENV-DC-234			Camera	67	627179	6203642	627184	6203640	-4	2	5	120		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	06:41:53	405	MV24GC1-ENV-DC-234			Camera	67	627181	6203641	627184	6203640	-3	1	3	112		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	06:42:01	406	MV24GC1-ENV-DC-234			Camera	67	627181	6203640	627184	6203640	-2	1	2	104		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	06:42:15	407	MV24GC1-ENV-DC-234			Camera	67	627183	6203639	627184	6203640	-1	-1	1	58		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	06:42:22	408	MV24GC1-ENV-DC-234			Camera	67	627184	6203638	627184	6203640	0	-1	1	5		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	06:42:49	409	MV24GC1-ENV-DC-234			Camera	67	627187	6203636	627184	6203640	3	-3	4	-39		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	06:42:57	410	MV24GC1-ENV-DC-234			Camera	67	627187	6203635	627184	6203640	4	-4	6	-39		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	06:43:26	411	MV24GC1-ENV-DC-234			Camera	67	627191	6203632	627184	6203640	7	-8	10	-41		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	06:43:54	412	MV24GC1-ENV-DC-234			Camera	67	627194	6203629	627184	6203640	10	-11	15	-43		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	06:44:37	413	MV24GC1-ENV-DC-234			Camera	67	627200	6203624	627184	6203640	16	-15	22	-47		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	06:44:52	414	MV24GC1-ENV-DC-234			Camera	67	627201	6203623	627184	6203640	18	-17	24	-47		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	06:45:27	415	MV24GC1-ENV-DC-234			Camera	67	627205	6203619	627184	6203640	22	-21	30	-46		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	06:45:39	416	MV24GC1-ENV-DC-234			Camera	67	627207	6203618	627184	6203640	23	-22	32	-46		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	06:46:12	417	MV24GC1-ENV-DC-234			Camera	67	627212	6203615	627184	6203640	28	-24	37	-49		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	06:46:47	418	MV24GC1-ENV-DC-234			Camera	67	627216	6203612	627184	6203640	32	-28	42	-49		(Corr'd Nav, Kongsberg 14208, img#26) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	06:47:08	419	MV24GC1-ENV-DC-234			Camera	67	627219	6203610	627184	6203640	35	-30	46	-50		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	06:47:39	420	MV24GC1-ENV-DC-234			Camera	67	627222	6203607	627184	6203640	38	-33	50	-49		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	06:51:41	421	MV24GC1-ENV-DC-234			Camera	67	627217	6203599	627184	6203640	33	-41	53	-39		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	06:53:02	422	MV24GC1-ENV-DC-234			Camera	67	627204	6203591	627184	6203640	20	-49	53	-23		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	06:53:32	423	MV24GC1-ENV-DC-234			Camera	67	627200	6203588	627184	6203640	16	-52	54	-17		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	06:54:22	424	MV24GC1-ENV-DC-234			Camera	67	627192	6203585	627184	6203640	9	-55	56	-9		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	06:55:39	425	MV24GC1-ENV-DC-234			Camera	67	627184	6203584	627184	6203640	0	-56	56	0		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	06:55:48	426	MV24GC1-ENV-DC-234			Camera	67	627183	6203584	627184	6203640	-1	-56	56	1		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	06:56:02	427	MV24GC1-ENV-DC-234			Camera	67	627181	6203584	627184	6203640	-3	-55	56	3		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	06:57:27	428	MV24GC1-ENV-DC-234			Camera	67	627171	6203582	627184	6203640	-13	-57	59	13		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	06:57:45	429	MV24GC1-ENV-DC-234			Camera	67	627170	6203582	627184	6203640	-14	-58	59	13		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	06:58:29	430	MV24GC1-ENV-DC-234			Camera	67	627169	6203582	627184	6203640	-15	-58	59	14		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	06:58:36	431	MV24GC1-ENV-DC-234			Camera	67	627169	6203582	627184	6203640	-15	-57	59	14		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	06:58:43	432	MV24GC1-ENV-DC-234			Camera	67	627169	6203583	627184	6203640	-14	-57	59	14		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	07:00:34	433	MV24GC1-ENV-DC-234			Camera	67	627172	6203596	627184	6203640	-12	-43	45	16		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	07:00:45	434	MV24GC1-ENV-DC-234			Camera	67	627172	6203598	627184	6203640	-12	-42	43	16		(Corr'd Nav, Kongsberg 14208, img#42) (B)
14-Aug-2024	07:01:51	435	MV24GC1-ENV-DC-234			Camera	67	627175	6203608	627184	6203640	-9	-32	33	16		(Corr'd Nav, Kongsberg 14208, img#43) (B)
14-Aug-2024	07:02:32	436	MV24GC1-ENV-DC-234			Camera	67	627177	6203614	627184	6203640	-7	-26	26	15		(Corr'd Nav, Kongsberg 14208, img#44) (B)
14-Aug-2024	07:03:26	437	MV24GC1-ENV-DC-234			Camera	67	627181	6203623	627184	6203640	-3	-17	17	9		(Corr'd Nav, Kongsberg 14208, img#45) (B)
14-Aug-2024	07:04:15	438	MV24GC1-ENV-DC-234			Camera	67	627182	6203630	627184	6203640	-2	-10	10	13		(Corr'd Nav, Kongsberg 14208, img#46) (B)
14-Aug-2024	07:05:03	439	MV24GC1-ENV-DC-234			Camera	67	627183	6203638	627184	6203640	0	-2	2	10		(Corr'd Nav, Kongsberg 14208, img#47) (B)
14-Aug-2024	07:05:20	440	MV24GC1-ENV-DC-234			Camera	67	627184	6203640	627184	6203640	0	1	1	-149		(Corr'd Nav, Kongsberg 14208, img#48) (B)
14-Aug-2024	07:05:37	441	MV24GC1-ENV-DC-234			Camera	67	627185	6203643	627184	6203640	1	3	3	-164		(Corr'd Nav, Kongsberg 14208, img#49) (B)
14-Aug-2024	07:05:56	442	MV24GC1-ENV-DC-234			Camera	67	627185	6203646	627184	6203640	1	6	6	-166		(Corr'd Nav, Kongsberg 14208, img#50) (B)
14-Aug-2024	07:06:58	443	MV24GC1-ENV-DC-234			Camera	67	627186	6203655	627184	6203640	2	16	16	-172		(Corr'd Nav, Kongsberg 14208, img#51) (B)
14-Aug-2024	07:07:33	444	MV24GC1-ENV-DC-234			Camera	67	627187	6203661	627184	6203640	4	21	21	-170		(Corr'd Nav, Kongsberg 14208, img#52) (B)
14-Aug-2024	07:08:10	445	MV24GC1-ENV-DC-234			Camera	67	627189	6203666	627184	6203640	5	27	27	-169		(Corr'd Nav, Kongsberg 14208, img#53) (B)
14-Aug-2024	07:08:25	446	MV24GC1-ENV-DC-234			Camera	67	627190	6203669	627184	6203640	6	29	30	-168		(Corr'd Nav, Kongsberg 14208, img#54) (B)
14-Aug-2024	07:09:36	447	MV24GC1-ENV-DC-234			Camera	67	627192	6203679	627184	6203640	8	39	40	-168		(Corr'd Nav, Kongsberg 14208, img#55) (B)
14-Aug-2024	07:09:51	448	MV24GC1-ENV-DC-234			Camera	67	627193	6203681	627184	6203640	9	42	43	-168		(Corr'd Nav, Kongsberg 14208, img#56) (B)
14-Aug-2024	07:10:23	449	MV24GC1-ENV-DC-234			Camera	67	627193	6203686	627184	6203640	10	46	47	-168		(Corr'd Nav, Kongsberg 14208, img#57) (B)
14-Aug-2024	07:10:50	450	MV24GC1-ENV-DC-234			Camera	67	627194	6203690	627184	6203640	11	51	52	-168		(Corr'd Nav, Kongsberg 14208, img#58) (B)
14-Aug-2024	08:44:08	451	MV24GC1-ENV-DC-235			Camera	67	628511	6203588	628496	6203641	15	-53	55	-16		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	08:45:38	452	MV24GC1-ENV-DC-235			Camera	67	628508	6203594	628496	6203641	13	-47	48	-15		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	08:45:51	453	MV24GC1-ENV-DC-235			Camera	67	628508	6203597	628496	6203641	12	-45	46	-15		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	08:46:03	454	MV24GC1-ENV-DC-235			Camera	67	628507	6203598	628496	6203641	11	-43	44	-14		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	08:46:26	455	MV24GC1-ENV-DC-235			Camera	67	628506	6203602	628496	6203641	10	-39	40	-14		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	08:46:51	456	MV24GC1-ENV-DC-235			Camera	67	628504	6203606	628496	6203641	8	-36	37	-13		(Corr'd Nav, Kongsberg 14208, img#6) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	08:47:18	457	MV24GC1-ENV-DC-235			Camera	67	628503	6203609	628496	6203641	7	-32	33	-13		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	08:47:24	458	MV24GC1-ENV-DC-235			Camera	67	628503	6203610	628496	6203641	7	-31	32	-12		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	08:47:51	459	MV24GC1-ENV-DC-235			Camera	67	628501	6203614	628496	6203641	5	-27	28	-11		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	08:48:06	460	MV24GC1-ENV-DC-235			Camera	67	628501	6203615	628496	6203641	5	-26	26	-10		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	08:49:00	461	MV24GC1-ENV-DC-235			Camera	67	628499	6203624	628496	6203641	3	-17	17	-10		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	08:50:02	462	MV24GC1-ENV-DC-235			Camera	67	628497	6203633	628496	6203641	1	-9	9	-4		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	08:50:25	463	MV24GC1-ENV-DC-235			Camera	67	628496	6203636	628496	6203641	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	08:51:07	464	MV24GC1-ENV-DC-235			Camera	67	628495	6203641	628496	6203641	-1	0	1	105		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	08:52:06	465	MV24GC1-ENV-DC-235			Camera	67	628492	6203650	628496	6203641	-4	9	9	156		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	08:52:46	466	MV24GC1-ENV-DC-235			Camera	67	628490	6203656	628496	6203641	-6	15	16	159		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	08:52:53	467	MV24GC1-ENV-DC-235			Camera	67	628490	6203657	628496	6203641	-6	16	17	160		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	08:53:58	468	MV24GC1-ENV-DC-235			Camera	67	628488	6203667	628496	6203641	-8	26	27	163		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	08:54:35	469	MV24GC1-ENV-DC-235			Camera	67	628487	6203672	628496	6203641	-9	31	33	164		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	08:55:13	470	MV24GC1-ENV-DC-235			Camera	67	628485	6203678	628496	6203641	-11	37	39	164		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	08:55:43	471	MV24GC1-ENV-DC-235			Camera	67	628485	6203683	628496	6203641	-11	42	43	165		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	08:56:26	472	MV24GC1-ENV-DC-235			Camera	67	628483	6203689	628496	6203641	-13	48	50	165		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	09:02:41	473	MV24GC1-ENV-DC-235			Camera	67	628513	6203692	628496	6203641	17	51	53	-161		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	09:08:49	474	MV24GC1-ENV-DC-235			Camera	67	628529	6203675	628496	6203641	33	34	47	-135		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	09:09:16	475	MV24GC1-ENV-DC-235			Camera	67	628525	6203671	628496	6203641	30	30	42	-135		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	09:09:43	476	MV24GC1-ENV-DC-235			Camera	67	628522	6203667	628496	6203641	27	26	37	-135		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	09:10:10	477	MV24GC1-ENV-DC-235			Camera	67	628520	6203664	628496	6203641	24	23	33	-133		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	09:10:53	478	MV24GC1-ENV-DC-235			Camera	67	628515	6203658	628496	6203641	20	17	26	-132		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	09:11:24	479	MV24GC1-ENV-DC-235			Camera	67	628512	6203654	628496	6203641	16	13	20	-130		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	09:11:33	480	MV24GC1-ENV-DC-235			Camera	67	628510	6203653	628496	6203641	14	12	19	-129		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	09:12:22	481	MV24GC1-ENV-DC-235			Camera	67	628505	6203647	628496	6203641	9	6	11	-124		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	09:13:11	482	MV24GC1-ENV-DC-235			Camera	67	628500	6203642	628496	6203641	4	1	4	-101		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	09:13:41	483	MV24GC1-ENV-DC-235			Camera	67	628497	6203639	628496	6203641	1	-2	3	-21		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	09:14:17	484	MV24GC1-ENV-DC-235			Camera	67	628493	6203634	628496	6203641	-3	-7	7	24		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	09:14:52	485	MV24GC1-ENV-DC-235			Camera	67	628489	6203630	628496	6203641	-6	-11	13	31		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	09:15:23	486	MV24GC1-ENV-DC-235			Camera	67	628486	6203626	628496	6203641	-10	-15	17	33		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	09:15:43	487	MV24GC1-ENV-DC-235			Camera	67	628485	6203624	628496	6203641	-11	-17	20	34		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	09:16:00	488	MV24GC1-ENV-DC-235			Camera	67	628484	6203623	628496	6203641	-12	-18	22	34		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	09:16:32	489	MV24GC1-ENV-DC-235			Camera	67	628481	6203619	628496	6203641	-15	-22	27	35		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	09:16:50	490	MV24GC1-ENV-DC-235			Camera	67	628479	6203617	628496	6203641	-17	-24	30	36		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	09:17:15	491	MV24GC1-ENV-DC-235			Camera	67	628476	6203614	628496	6203641	-20	-27	33	37		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	09:17:48	492	MV24GC1-ENV-DC-235			Camera	67	628473	6203611	628496	6203641	-23	-30	38	38		(Corr'd Nav, Kongsberg 14208, img#42) (B)
14-Aug-2024	09:18:08	493	MV24GC1-ENV-DC-235			Camera	67	628470	6203608	628496	6203641	-26	-33	42	38		(Corr'd Nav, Kongsberg 14208, img#43) (B)
14-Aug-2024	09:18:48	494	MV24GC1-ENV-DC-235			Camera	67	628466	6203603	628496	6203641	-30	-38	48	39		(Corr'd Nav, Kongsberg 14208, img#44) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	09:19:10	495	MV24GC1-ENV-DC-235			Camera	67	628463	6203601	628496	6203641	-33	-40	52	39		(Corr'd Nav, Kongsberg 14208, img#45) (B)
14-Aug-2024	11:39:02	496	MV24GC1-ENV-DC-235A			Camera	66	628003	6203621	627952	6203640	51	-20	55	-69		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	11:40:16	497	MV24GC1-ENV-DC-235A			Camera	66	628000	6203622	627952	6203640	48	-18	51	-69		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	11:40:57	498	MV24GC1-ENV-DC-235A			Camera	67	627993	6203625	627952	6203640	40	-16	43	111		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	11:41:29	499	MV24GC1-ENV-DC-235A			Camera	67	627986	6203628	627952	6203640	34	-12	36	110		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	11:41:59	500	MV24GC1-ENV-DC-235A			Camera	66	627980	6203630	627952	6203640	28	-10	29	-70		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	11:43:03	501	MV24GC1-ENV-DC-235A			Camera	66	627968	6203635	627952	6203640	16	-6	17	-70		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	11:43:36	502	MV24GC1-ENV-DC-235A			Camera	66	627962	6203637	627952	6203640	10	-4	10	-69		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	11:44:04	503	MV24GC1-ENV-DC-235A			Camera	66	627957	6203638	627952	6203640	5	-2	5	-67		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	11:44:26	504	MV24GC1-ENV-DC-235A			Camera	66	627952	6203640	627952	6203640	0	0	0	14		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	11:44:38	505	MV24GC1-ENV-DC-235A			Camera	66	627950	6203641	627952	6203640	-3	1	3	106		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	11:45:02	506	MV24GC1-ENV-DC-235A			Camera	66	627945	6203643	627952	6203640	-7	3	8	111		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	11:45:33	507	MV24GC1-ENV-DC-235A			Camera	66	627939	6203646	627952	6203640	-13	5	14	113		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	11:46:00	508	MV24GC1-ENV-DC-235A			Camera	66	627934	6203648	627952	6203640	-18	8	20	113		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	11:46:25	509	MV24GC1-ENV-DC-235A			Camera	66	627930	6203650	627952	6203640	-22	10	24	114		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	11:46:48	510	MV24GC1-ENV-DC-235A			Camera	66	627926	6203652	627952	6203640	-27	11	29	113		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	11:47:08	511	MV24GC1-ENV-DC-235A			Camera	66	627922	6203653	627952	6203640	-31	13	33	113		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	11:48:06	512	MV24GC1-ENV-DC-235A			Camera	66	627911	6203657	627952	6203640	-42	17	45	112		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	11:48:33	513	MV24GC1-ENV-DC-235A			Camera	66	627907	6203658	627952	6203640	-45	18	49	111		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	11:49:26	514	MV24GC1-ENV-DC-235A			Camera	66	627902	6203660	627952	6203640	-51	19	54	111		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	11:52:48	515	MV24GC1-ENV-DC-235A			Camera	66	627907	6203660	627952	6203640	-45	19	49	113		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	11:55:12	516	MV24GC1-ENV-DC-235A			Camera	66	627925	6203672	627952	6203640	-27	31	41	139		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	11:57:26	517	MV24GC1-ENV-DC-235A			Camera	66	627943	6203682	627952	6203640	-9	42	43	168		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	11:58:34	518	MV24GC1-ENV-DC-235A			Camera	66	627953	6203688	627952	6203640	0	47	47	-179		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	12:00:58	519	MV24GC1-ENV-DC-235A			Camera	66	627958	6203691	627952	6203640	5	50	51	-174		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	12:01:54	520	MV24GC1-ENV-DC-235A			Camera	66	627956	6203684	627952	6203640	4	44	44	-175		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	12:02:31	521	MV24GC1-ENV-DC-235A			Camera	66	627955	6203677	627952	6203640	3	37	37	-176		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	12:03:00	522	MV24GC1-ENV-DC-235A			Camera	66	627954	6203671	627952	6203640	2	31	31	-177		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	12:03:42	523	MV24GC1-ENV-DC-235A			Camera	66	627954	6203663	627952	6203640	1	23	23	-177		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	12:04:26	524	MV24GC1-ENV-DC-235A			Camera	66	627954	6203657	627952	6203640	1	16	16	-176		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	12:04:44	525	MV24GC1-ENV-DC-235A			Camera	66	627953	6203654	627952	6203640	1	14	14	-176		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	12:05:23	526	MV24GC1-ENV-DC-235A			Camera	66	627952	6203649	627952	6203640	0	8	8	178		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	12:06:19	527	MV24GC1-ENV-DC-235A			Camera	66	627951	6203641	627952	6203640	-1	0	1	97		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	12:06:49	528	MV24GC1-ENV-DC-235A			Camera	66	627950	6203636	627952	6203640	-2	-5	5	25		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	12:07:05	529	MV24GC1-ENV-DC-235A			Camera	66	627950	6203633	627952	6203640	-3	-7	8	21		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	12:07:38	530	MV24GC1-ENV-DC-235A			Camera	66	627950	6203629	627952	6203640	-3	-12	12	13		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	12:08:26	531	MV24GC1-ENV-DC-235A			Camera	66	627949	6203621	627952	6203640	-3	-19	19	10		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	12:09:07	532	MV24GC1-ENV-DC-235A			Camera	66	627948	6203615	627952	6203640	-5	-26	26	10		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	12:10:24	533	MV24GC1-ENV-DC-235A			Camera	66	627946	6203603	627952	6203640	-6	-38	38	9		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	12:10:38	534	MV24GC1-ENV-DC-235A			Camera	66	627946	6203601	627952	6203640	-6	-40	40	9		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	12:11:18	535	MV24GC1-ENV-DC-235A			Camera	66	627945	6203594	627952	6203640	-7	-46	46	9		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	12:12:10	536	MV24GC1-ENV-DC-235A			Camera	66	627945	6203591	627952	6203640	-8	-50	50	9		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	15:52:11	537	MV24GC1-ENV-DC-233			Camera	71	631587	6189641	631618	6189611	-32	30	44	133		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	15:53:06	538	MV24GC1-ENV-DC-233			Camera	71	631587	6189641	631618	6189611	-32	30	43	133		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	15:53:27	539	MV24GC1-ENV-DC-233			Camera	71	631588	6189640	631618	6189611	-31	29	42	134		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	15:53:39	540	MV24GC1-ENV-DC-233			Camera	71	631589	6189639	631618	6189611	-29	28	40	134		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	15:54:41	541	MV24GC1-ENV-DC-233			Camera	71	631596	6189633	631618	6189611	-23	22	31	134		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	15:55:52	542	MV24GC1-ENV-DC-233			Camera	71	631604	6189625	631618	6189611	-15	14	20	134		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	15:56:30	543	MV24GC1-ENV-DC-233			Camera	71	631608	6189621	631618	6189611	-10	10	14	134		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	15:57:03	544	MV24GC1-ENV-DC-233			Camera	71	631612	6189617	631618	6189611	-7	6	9	133		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	15:57:26	545	MV24GC1-ENV-DC-233			Camera	71	631614	6189615	631618	6189611	-4	4	6	131		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	15:58:06	546	MV24GC1-ENV-DC-233			Camera	71	631619	6189611	631618	6189611	0	0	1	-60		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	15:58:17	547	MV24GC1-ENV-DC-233			Camera	71	631620	6189610	631618	6189611	2	-2	2	-50		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	15:58:24	548	MV24GC1-ENV-DC-233			Camera	71	631621	6189609	631618	6189611	3	-2	3	-49		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	15:59:10	549	MV24GC1-ENV-DC-233			Camera	71	631626	6189604	631618	6189611	8	-8	11	-45		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	15:59:37	550	MV24GC1-ENV-DC-233			Camera	71	631629	6189601	631618	6189611	10	-10	14	-46		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	16:00:15	551	MV24GC1-ENV-DC-233			Camera	71	631633	6189597	631618	6189611	15	-14	20	-46		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	16:01:11	552	MV24GC1-ENV-DC-233			Camera	71	631640	6189591	631618	6189611	21	-20	29	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	16:01:31	553	MV24GC1-ENV-DC-233			Camera	71	631642	6189589	631618	6189611	23	-22	32	-46		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	16:01:54	554	MV24GC1-ENV-DC-233			Camera	71	631644	6189586	631618	6189611	26	-25	36	-46		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	16:02:11	555	MV24GC1-ENV-DC-233			Camera	71	631646	6189585	631618	6189611	28	-26	38	-47		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	16:02:31	556	MV24GC1-ENV-DC-233			Camera	71	631648	6189583	631618	6189611	30	-28	41	-47		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	16:02:54	557	MV24GC1-ENV-DC-233			Camera	71	631651	6189580	631618	6189611	33	-31	45	-47		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	16:03:48	558	MV24GC1-ENV-DC-233			Camera	71	631657	6189575	631618	6189611	39	-37	53	-47		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	16:12:42	559	MV24GC1-ENV-DC-233			Camera	70	631599	6189558	631618	6189611	-20	-53	56	21		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	16:13:42	560	MV24GC1-ENV-DC-233			Camera	70	631601	6189567	631618	6189611	-17	-44	47	22		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	16:14:21	561	MV24GC1-ENV-DC-233			Camera	71	631604	6189575	631618	6189611	-14	-37	39	22		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	16:15:51	562	MV24GC1-ENV-DC-233			Camera	71	631609	6189588	631618	6189611	-9	-23	25	23		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	16:16:13	563	MV24GC1-ENV-DC-233			Camera	71	631609	6189591	631618	6189611	-9	-20	22	24		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	16:17:09	564	MV24GC1-ENV-DC-233			Camera	71	631611	6189600	631618	6189611	-8	-11	14	34		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	16:17:36	565	MV24GC1-ENV-DC-233			Camera	71	631612	6189604	631618	6189611	-7	-7	10	43		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	16:18:44	566	MV24GC1-ENV-DC-233			Camera	71	631617	6189612	631618	6189611	-1	1	2	134		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	16:19:08	567	MV24GC1-ENV-DC-233			Camera	71	631619	6189616	631618	6189611	1	5	5	-172		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	16:19:37	568	MV24GC1-ENV-DC-233			Camera	71	631621	6189620	631618	6189611	3	9	9	-160		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	16:20:26	569	MV24GC1-ENV-DC-233			Camera	71	631625	6189626	631618	6189611	7	15	16	-156		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	16:20:51	570	MV24GC1-ENV-DC-233			Camera	71	631627	6189629	631618	6189611	9	18	20	-155		(Corr'd Nav, Kongsberg 14208, img#34) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	16:21:53	571	MV24GC1-ENV-DC-233			Camera	71	631632	6189638	631618	6189611	13	27	30	-153		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	16:22:21	572	MV24GC1-ENV-DC-233			Camera	71	631634	6189641	631618	6189611	16	30	34	-153		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	16:22:54	573	MV24GC1-ENV-DC-233			Camera	71	631636	6189646	631618	6189611	18	35	39	-153		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	16:23:49	574	MV24GC1-ENV-DC-233			Camera	71	631640	6189653	631618	6189611	22	42	48	-152		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	16:24:03	575	MV24GC1-ENV-DC-233			Camera	71	631642	6189655	631618	6189611	23	44	50	-152		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	16:24:18	576	MV24GC1-ENV-DC-233			Camera	71	631643	6189657	631618	6189611	24	46	52	-152		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	16:24:30	577	MV24GC1-ENV-DC-233			Camera	71	631643	6189658	631618	6189611	25	47	53	-152		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	19:33:36	578	MV24GC1-ENV-DC-232			Camera	69	632394	6187435	632418	6187381	-24	54	59	156		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	19:34:11	579	MV24GC1-ENV-DC-232			Camera	68	632395	6187431	632418	6187381	-22	50	55	156		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	19:35:08	580	MV24GC1-ENV-DC-232			Camera	68	632400	6187419	632418	6187381	-18	38	42	155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	19:35:47	581	MV24GC1-ENV-DC-232			Camera	68	632405	6187412	632418	6187381	-13	31	34	157		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	19:36:27	582	MV24GC1-ENV-DC-232			Camera	68	632408	6187404	632418	6187381	-10	24	26	157		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	19:36:58	583	MV24GC1-ENV-DC-232			Camera	68	632410	6187399	632418	6187381	-8	18	20	156		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	19:37:49	584	MV24GC1-ENV-DC-232			Camera	68	632414	6187389	632418	6187381	-4	8	9	155		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	19:38:17	585	MV24GC1-ENV-DC-232			Camera	68	632416	6187384	632418	6187381	-1	3	3	153		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	19:38:44	586	MV24GC1-ENV-DC-232			Camera	68	632419	6187379	632418	6187381	1	-2	2	-24		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	19:38:52	587	MV24GC1-ENV-DC-232			Camera	68	632419	6187378	632418	6187381	2	-3	4	-25		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	19:39:34	588	MV24GC1-ENV-DC-232			Camera	68	632423	6187370	632418	6187381	6	-11	12	-27		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	19:39:48	589	MV24GC1-ENV-DC-232			Camera	68	632425	6187367	632418	6187381	7	-14	15	-27		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	19:40:08	590	MV24GC1-ENV-DC-232			Camera	68	632426	6187364	632418	6187381	8	-17	19	-26		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	19:40:26	591	MV24GC1-ENV-DC-232			Camera	68	632428	6187360	632418	6187381	10	-21	23	-25		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	19:41:16	592	MV24GC1-ENV-DC-232			Camera	68	632432	6187351	632418	6187381	14	-30	33	-25		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	19:42:07	593	MV24GC1-ENV-DC-232			Camera	68	632436	6187341	632418	6187381	18	-39	43	-25		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	19:42:23	594	MV24GC1-ENV-DC-232			Camera	68	632437	6187338	632418	6187381	20	-43	47	-25		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	19:42:53	595	MV24GC1-ENV-DC-232			Camera	68	632440	6187333	632418	6187381	22	-48	53	-25		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	19:45:33	596	MV24GC1-ENV-DC-232			Camera	68	632439	6187334	632418	6187381	21	-47	52	-24		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	19:51:29	597	MV24GC1-ENV-DC-232			Camera	68	632392	6187360	632418	6187381	-26	-20	33	52		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	19:51:40	598	MV24GC1-ENV-DC-232			Camera	68	632390	6187361	632418	6187381	-27	-20	34	54		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	19:53:40	599	MV24GC1-ENV-DC-232			Camera	68	632372	6187366	632418	6187381	-46	-15	48	72		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	19:57:10	600	MV24GC1-ENV-DC-232			Camera	68	632373	6187370	632418	6187381	-45	-11	46	76		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	19:57:18	601	MV24GC1-ENV-DC-232			Camera	68	632374	6187370	632418	6187381	-44	-10	45	77		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	19:59:08	602	MV24GC1-ENV-DC-232			Camera	68	632392	6187377	632418	6187381	-26	-4	26	81		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	19:59:32	603	MV24GC1-ENV-DC-232			Camera	68	632395	6187378	632418	6187381	-23	-3	23	82		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	19:59:47	604	MV24GC1-ENV-DC-232			Camera	68	632398	6187378	632418	6187381	-20	-3	20	82		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	20:00:25	605	MV24GC1-ENV-DC-232			Camera	68	632403	6187379	632418	6187381	-15	-2	15	82		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	20:00:37	606	MV24GC1-ENV-DC-232			Camera	68	632405	6187379	632418	6187381	-13	-2	13	81		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	20:01:58	607	MV24GC1-ENV-DC-232			Camera	68	632417	6187377	632418	6187381	-1	-4	4	15		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	20:02:15	608	MV24GC1-ENV-DC-232			Camera	68	632419	6187377	632418	6187381	1	-3	4	-23		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	20:02:24	609	MV24GC1-ENV-DC-232			Camera	68	632421	6187378	632418	6187381	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	20:03:39	610	MV24GC1-ENV-DC-232			Camera	68	632431	6187379	632418	6187381	14	-2	14	-84		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	20:04:52	611	MV24GC1-ENV-DC-232			Camera	68	632440	6187385	632418	6187381	22	4	22	-100		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	20:06:00	612	MV24GC1-ENV-DC-232			Camera	68	632450	6187387	632418	6187381	32	6	33	-101		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	20:06:32	613	MV24GC1-ENV-DC-232			Camera	68	632455	6187387	632418	6187381	37	6	38	-99		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	20:07:11	614	MV24GC1-ENV-DC-232			Camera	68	632461	6187387	632418	6187381	43	6	44	-98		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	20:07:42	615	MV24GC1-ENV-DC-232			Camera	68	632466	6187387	632418	6187381	49	6	49	-97		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	20:08:07	616	MV24GC1-ENV-DC-232			Camera	68	632469	6187388	632418	6187381	51	7	52	-98		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	20:08:19	617	MV24GC1-ENV-DC-232			Camera	68	632470	6187389	632418	6187381	52	8	53	-98		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	22:23:04	618	MV24GC1-ENV-DC-231			Camera	76	633296	6184979	633292	6184926	4	53	54	-176		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	22:23:47	619	MV24GC1-ENV-DC-231			Camera	76	633296	6184980	633292	6184926	4	54	54	-176		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	22:25:12	620	MV24GC1-ENV-DC-231			Camera	76	633295	6184968	633292	6184926	3	43	43	-176		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	22:25:38	621	MV24GC1-ENV-DC-231			Camera	76	633295	6184964	633292	6184926	3	38	38	-175		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	22:26:04	622	MV24GC1-ENV-DC-231			Camera	76	633295	6184959	633292	6184926	3	34	34	-175		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	22:26:30	623	MV24GC1-ENV-DC-231			Camera	76	633295	6184955	633292	6184926	3	29	30	-174		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	22:28:29	624	MV24GC1-ENV-DC-231			Camera	76	633295	6184950	633292	6184926	3	24	25	-173		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	22:29:58	625	MV24GC1-ENV-DC-231			Camera	76	633295	6184946	633292	6184926	2	20	20	-173		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	22:30:52	626	MV24GC1-ENV-DC-231			Camera	76	633294	6184937	633292	6184926	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	22:31:22	627	MV24GC1-ENV-DC-231			Camera	76	633293	6184935	633292	6184926	1	9	9	-174		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	22:32:41	628	MV24GC1-ENV-DC-231			Camera	76	633294	6184926	633292	6184926	2	0	2	-101		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	22:35:08	629	MV24GC1-ENV-DC-231			Camera	76	633295	6184923	633292	6184926	3	-3	4	-50		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	22:35:58	630	MV24GC1-ENV-DC-231			Camera	76	633293	6184915	633292	6184926	1	-11	11	-6		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	22:36:18	631	MV24GC1-ENV-DC-231			Camera	76	633293	6184913	633292	6184926	1	-13	13	-5		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	22:36:44	632	MV24GC1-ENV-DC-231			Camera	76	633293	6184909	633292	6184926	1	-17	17	-2		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	22:37:56	633	MV24GC1-ENV-DC-231			Camera	76	633293	6184899	633292	6184926	0	-27	27	-1		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	22:39:18	634	MV24GC1-ENV-DC-231			Camera	76	633293	6184897	633292	6184926	1	-29	29	-1		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	22:39:37	635	MV24GC1-ENV-DC-231			Camera	76	633292	6184894	633292	6184926	0	-32	32	0		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	22:40:29	636	MV24GC1-ENV-DC-231			Camera	76	633292	6184886	633292	6184926	0	-40	40	0		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	22:40:42	637	MV24GC1-ENV-DC-231			Camera	76	633292	6184884	633292	6184926	0	-42	42	0		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	22:41:56	638	MV24GC1-ENV-DC-231			Camera	76	633290	6184874	633292	6184926	-2	-52	52	2		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	22:50:16	639	MV24GC1-ENV-DC-231			Camera	76	633255	6184912	633292	6184926	-37	-13	40	70		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	22:52:09	640	MV24GC1-ENV-DC-231			Camera	77	633239	6184920	633292	6184926	-53	-6	53	84		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	22:54:57	641	MV24GC1-ENV-DC-231			Camera	77	633239	6184922	633292	6184926	-53	-3	53	87		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	22:56:00	642	MV24GC1-ENV-DC-231			Camera	76	633246	6184923	633292	6184926	-46	-2	46	87		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	22:57:03	643	MV24GC1-ENV-DC-231			Camera	76	633257	6184926	633292	6184926	-35	0	35	90		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	22:58:16	644	MV24GC1-ENV-DC-231			Camera	76	633269	6184927	633292	6184926	-23	1	23	93		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	22:58:29	645	MV24GC1-ENV-DC-231			Camera	76	633271	6184927	633292	6184926	-21	2	21	95		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	22:58:55	646	MV24GC1-ENV-DC-231			Camera	76	633275	6184928	633292	6184926	-17	2	17	97		(Corr'd Nav, Kongsberg 14208, img#29) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	22:59:11	647	MV24GC1-ENV-DC-231			Camera	76	633278	6184929	633292	6184926	-15	3	15	101		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	22:59:29	648	MV24GC1-ENV-DC-231			Camera	76	633280	6184929	633292	6184926	-12	3	12	105		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	23:00:09	649	MV24GC1-ENV-DC-231			Camera	76	633287	6184928	633292	6184926	-5	2	6	115		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	23:00:20	650	MV24GC1-ENV-DC-231			Camera	76	633289	6184927	633292	6184926	-3	2	4	116		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	23:01:08	651	MV24GC1-ENV-DC-231			Camera	76	633295	6184926	633292	6184926	3	0	3	-89		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	23:01:39	652	MV24GC1-ENV-DC-231			Camera	76	633300	6184924	633292	6184926	8	-1	8	-81		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	23:02:09	653	MV24GC1-ENV-DC-231			Camera	76	633305	6184923	633292	6184926	13	-3	13	-76		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	23:02:44	654	MV24GC1-ENV-DC-231			Camera	76	633310	6184922	633292	6184926	18	-4	19	-77		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	23:03:12	655	MV24GC1-ENV-DC-231			Camera	76	633315	6184920	633292	6184926	23	-6	23	-76		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	23:03:44	656	MV24GC1-ENV-DC-231			Camera	76	633319	6184919	633292	6184926	27	-7	28	-75		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	23:04:33	657	MV24GC1-ENV-DC-231			Camera	76	633326	6184917	633292	6184926	34	-9	35	-76		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	23:05:03	658	MV24GC1-ENV-DC-231			Camera	76	633331	6184916	633292	6184926	39	-10	40	-76		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	23:05:28	659	MV24GC1-ENV-DC-231			Camera	76	633334	6184915	633292	6184926	42	-11	44	-76		(Corr'd Nav, Kongsberg 14208, img#42) (B)
14-Aug-2024	23:06:12	660	MV24GC1-ENV-DC-231			Camera	76	633341	6184913	633292	6184926	49	-13	50	-75		(Corr'd Nav, Kongsberg 14208, img#43) (B)
14-Aug-2024	23:06:38	661	MV24GC1-ENV-DC-231			Camera	76	633344	6184912	633292	6184926	52	-14	54	-75		(Corr'd Nav, Kongsberg 14208, img#44) (B)
15-Aug-2024	00:57:05	662	MV24GC1-ENV-DC-230			Camera	83	633704	6183757	633726	6183710	-22	47	52	155		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	00:58:29	663	MV24GC1-ENV-DC-230			Camera	83	633707	6183752	633726	6183710	-19	42	46	155		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	00:59:00	664	MV24GC1-ENV-DC-230			Camera	83	633709	6183746	633726	6183710	-17	36	40	155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
15-Aug-2024	00:59:22	665	MV24GC1-ENV-DC-230			Camera	83	633712	6183741	633726	6183710	-15	32	35	155		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	00:59:42	666	MV24GC1-ENV-DC-230			Camera	83	633714	6183737	633726	6183710	-12	27	30	156		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	00:59:59	667	MV24GC1-ENV-DC-230			Camera	83	633715	6183734	633726	6183710	-11	24	27	156		(Corr'd Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	01:00:43	668	MV24GC1-ENV-DC-230			Camera	83	633719	6183725	633726	6183710	-8	15	17	154		(Corr'd Nav, Kongsberg 14208, img#7) (B)
15-Aug-2024	01:01:01	669	MV24GC1-ENV-DC-230			Camera	83	633720	6183722	633726	6183710	-6	12	14	152		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	01:01:19	670	MV24GC1-ENV-DC-230			Camera	83	633721	6183719	633726	6183710	-5	9	10	150		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	01:01:28	671	MV24GC1-ENV-DC-230			Camera	83	633722	6183717	633726	6183710	-5	7	9	148		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	01:01:43	672	MV24GC1-ENV-DC-230			Camera	83	633723	6183714	633726	6183710	-3	5	6	143		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	01:02:03	673	MV24GC1-ENV-DC-230			Camera	83	633724	6183711	633726	6183710	-2	1	2	116		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	01:02:12	674	MV24GC1-ENV-DC-230			Camera	83	633725	6183709	633726	6183710	-1	-1	1	59		(Corr'd Nav, Kongsberg 14208, img#13) (B)
15-Aug-2024	01:02:39	675	MV24GC1-ENV-DC-230			Camera	83	633727	6183704	633726	6183710	1	-6	6	-6		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	01:02:48	676	MV24GC1-ENV-DC-230			Camera	83	633728	6183702	633726	6183710	1	-7	8	-11		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	01:03:28	677	MV24GC1-ENV-DC-230			Camera	83	633731	6183695	633726	6183710	5	-15	16	-17		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	01:04:19	678	MV24GC1-ENV-DC-230			Camera	83	633735	6183685	633726	6183710	9	-25	26	-20		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	01:04:33	679	MV24GC1-ENV-DC-230			Camera	83	633736	6183682	633726	6183710	10	-27	29	-20		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	01:05:18	680	MV24GC1-ENV-DC-230			Camera	83	633740	6183674	633726	6183710	13	-35	38	-20		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	01:05:46	681	MV24GC1-ENV-DC-230			Camera	83	633741	6183670	633726	6183710	15	-40	43	-20		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	01:06:38	682	MV24GC1-ENV-DC-230			Camera	83	633743	6183666	633726	6183710	16	-44	47	-21		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	01:06:54	683	MV24GC1-ENV-DC-230			Camera	83	633743	6183666	633726	6183710	17	-44	47	-21		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	01:09:04	684	MV24GC1-ENV-DC-230			Camera	83	633747	6183672	633726	6183710	20	-37	43	-29		(Corr'd Nav, Kongsberg 14208, img#23) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	01:10:57	685	MV24GC1-ENV-DC-230			Camera	83	633759	6183685	633726	6183710	33	-25	41	-53		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	01:12:25	686	MV24GC1-ENV-DC-230			Camera	83	633772	6183700	633726	6183710	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	01:13:50	687	MV24GC1-ENV-DC-230			Camera	83	633780	6183715	633726	6183710	54	6	54	-96		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	01:14:00	688	MV24GC1-ENV-DC-230			Camera	83	633781	6183716	633726	6183710	54	6	55	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	01:15:20	689	MV24GC1-ENV-DC-230			Camera	83	633778	6183717	633726	6183710	51	7	52	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	01:15:55	690	MV24GC1-ENV-DC-230			Camera	83	633773	6183716	633726	6183710	47	6	47	-98		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	01:16:21	691	MV24GC1-ENV-DC-230			Camera	83	633769	6183716	633726	6183710	43	6	44	-98		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	01:17:16	692	MV24GC1-ENV-DC-230			Camera	83	633763	6183717	633726	6183710	37	7	38	-101		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	01:21:03	693	MV24GC1-ENV-DC-230			Camera	83	633760	6183716	633726	6183710	34	6	34	-101		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	01:21:21	694	MV24GC1-ENV-DC-230			Camera	83	633758	6183717	633726	6183710	31	7	32	-103		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	01:21:41	695	MV24GC1-ENV-DC-230			Camera	83	633754	6183716	633726	6183710	28	7	29	-103		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	01:22:22	696	MV24GC1-ENV-DC-230			Camera	83	633747	6183716	633726	6183710	21	6	22	-106		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	01:23:07	697	MV24GC1-ENV-DC-230			Camera	83	633742	6183716	633726	6183710	16	6	17	-112		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	01:23:22	698	MV24GC1-ENV-DC-230			Camera	83	633741	6183716	633726	6183710	14	6	16	-114		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	01:24:31	699	MV24GC1-ENV-DC-230			Camera	83	633733	6183715	633726	6183710	6	5	8	-127		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	01:25:13	700	MV24GC1-ENV-DC-230			Camera	83	633729	6183713	633726	6183710	2	4	4	-148		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	01:25:33	701	MV24GC1-ENV-DC-230			Camera	83	633727	6183713	633726	6183710	0	3	3	-176		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	01:26:31	702	MV24GC1-ENV-DC-230			Camera	83	633721	6183712	633726	6183710	-5	2	6	116		(Corr'd Nav, Kongsberg 14208, img#41) (B)
15-Aug-2024	01:27:07	703	MV24GC1-ENV-DC-230			Camera	83	633717	6183711	633726	6183710	-10	2	10	100		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	01:27:48	704	MV24GC1-ENV-DC-230			Camera	83	633711	6183711	633726	6183710	-16	1	16	93		(Corr'd Nav, Kongsberg 14208, img#43) (B)
15-Aug-2024	01:28:39	705	MV24GC1-ENV-DC-230			Camera	83	633703	6183709	633726	6183710	-23	-1	23	88		(Corr'd Nav, Kongsberg 14208, img#44) (B)
15-Aug-2024	01:29:21	706	MV24GC1-ENV-DC-230			Camera	83	633696	6183708	633726	6183710	-30	-2	30	86		(Corr'd Nav, Kongsberg 14208, img#45) (B)
15-Aug-2024	01:30:30	707	MV24GC1-ENV-DC-230			Camera	83	633686	6183706	633726	6183710	-41	-4	41	85		(Corr'd Nav, Kongsberg 14208, img#46) (B)
15-Aug-2024	01:30:41	708	MV24GC1-ENV-DC-230			Camera	83	633684	6183706	633726	6183710	-42	-4	43	85		(Corr'd Nav, Kongsberg 14208, img#47) (B)
15-Aug-2024	01:31:40	709	MV24GC1-ENV-DC-230			Camera	83	633676	6183705	633726	6183710	-50	-5	51	84		(Corr'd Nav, Kongsberg 14208, img#48) (B)
15-Aug-2024	02:44:52	710	MV24GC1-ENV-DC-229			Camera	84	634326	6182063	634328	6182007	-2	56	56	178		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	02:45:51	711	MV24GC1-ENV-DC-229			Camera	84	634326	6182056	634328	6182007	-2	49	49	177		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	02:46:20	712	MV24GC1-ENV-DC-229			Camera	83	634326	6182052	634328	6182007	-2	44	44	178		(Corr'd Nav, Kongsberg 14208, img#3) (B)
15-Aug-2024	02:47:06	713	MV24GC1-ENV-DC-229			Camera	83	634327	6182044	634328	6182007	-1	37	37	179		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	02:47:28	714	MV24GC1-ENV-DC-229			Camera	83	634327	6182045	634328	6182007	-2	38	38	178		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	02:50:28	715	MV24GC1-ENV-DC-229			Camera	83	634326	6182044	634328	6182007	-2	37	37	177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	02:52:05	716	MV24GC1-ENV-DC-229			Camera	83	634322	6182030	634328	6182007	-6	23	24	165		(Corr'd Nav, Kongsberg 14208, img#7) (B)
15-Aug-2024	02:52:35	717	MV24GC1-ENV-DC-229			Camera	83	634321	6182026	634328	6182007	-7	19	20	161		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	02:53:22	718	MV24GC1-ENV-DC-229			Camera	83	634321	6182022	634328	6182007	-7	14	16	153		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	02:53:38	719	MV24GC1-ENV-DC-229			Camera	83	634321	6182021	634328	6182007	-7	14	16	154		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	02:54:41	720	MV24GC1-ENV-DC-229			Camera	83	634321	6182020	634328	6182007	-7	13	14	152		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	02:55:21	721	MV24GC1-ENV-DC-229			Camera	83	634323	6182017	634328	6182007	-5	10	11	155		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	02:56:21	722	MV24GC1-ENV-DC-229			Camera	83	634326	6182008	634328	6182007	-2	1	3	297		(Corr'd Nav, Kongsberg 14208, img#13) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	02:56:38	723	MV24GC1-ENV-DC-229			Camera	83	634327	6182006	634328	6182007	-1	-1	1	238		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	02:57:12	724	MV24GC1-ENV-DC-229			Camera	82	634329	6182001	634328	6182007	1	-6	6	173		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	02:57:19	725	MV24GC1-ENV-DC-229			Camera	82	634329	6182000	634328	6182007	1	-7	7	170		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	02:58:20	726	MV24GC1-ENV-DC-229			Camera	82	634331	6181991	634328	6182007	3	-16	16	170		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	02:58:51	727	MV24GC1-ENV-DC-229			Camera	82	634332	6181986	634328	6182007	4	-21	21	168		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	02:59:46	728	MV24GC1-ENV-DC-229			Camera	82	634335	6181979	634328	6182007	7	-28	29	166		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	03:00:04	729	MV24GC1-ENV-DC-229			Camera	82	634336	6181976	634328	6182007	8	-31	32	166		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	03:02:06	730	MV24GC1-ENV-DC-229			Camera	82	634343	6181960	634328	6182007	14	-47	50	163		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	03:02:20	731	MV24GC1-ENV-DC-229			Camera	82	634343	6181958	634328	6182007	15	-49	52	163		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	03:03:19	732	MV24GC1-ENV-DC-229			Camera	82	634345	6181955	634328	6182007	17	-52	55	162		(Corr'd Nav, Kongsberg 14208, img#23) (B)
15-Aug-2024	03:09:41	733	MV24GC1-ENV-DC-229			Camera	82	634296	6181958	634328	6182007	-32	-49	59	33		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	03:11:36	734	MV24GC1-ENV-DC-229			Camera	82	634301	6181969	634328	6182007	-28	-38	47	36		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	03:13:23	735	MV24GC1-ENV-DC-229			Camera	83	634310	6181984	634328	6182007	-18	-24	30	37		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	03:14:02	736	MV24GC1-ENV-DC-229			Camera	83	634312	6181989	634328	6182007	-16	-19	24	41		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	03:14:44	737	MV24GC1-ENV-DC-229			Camera	83	634314	6181995	634328	6182007	-14	-13	19	49		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	03:15:11	738	MV24GC1-ENV-DC-229			Camera	83	634316	6181999	634328	6182007	-12	-8	15	57		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	03:15:56	739	MV24GC1-ENV-DC-229			Camera	83	634321	6182006	634328	6182007	-7	-1	8	80		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	03:16:30	740	MV24GC1-ENV-DC-229			Camera	83	634325	6182008	634328	6182007	-3	1	3	111		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	03:16:41	741	MV24GC1-ENV-DC-229			Camera	83	634327	6182009	634328	6182007	-1	2	2	148		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	03:16:59	742	MV24GC1-ENV-DC-229			Camera	83	634330	6182009	634328	6182007	2	2	3	-141		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	03:17:57	743	MV24GC1-ENV-DC-229			Camera	83	634338	6182016	634328	6182007	10	9	13	-133		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	03:18:37	744	MV24GC1-ENV-DC-229			Camera	83	634341	6182021	634328	6182007	12	14	19	-139		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	03:19:05	745	MV24GC1-ENV-DC-229			Camera	83	634343	6182024	634328	6182007	15	17	23	-140		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	03:19:22	746	MV24GC1-ENV-DC-229			Camera	83	634344	6182027	634328	6182007	16	20	25	-141		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	03:19:50	747	MV24GC1-ENV-DC-229			Camera	83	634347	6182030	634328	6182007	18	23	29	-141		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	03:20:04	748	MV24GC1-ENV-DC-229			Camera	83	634348	6182032	634328	6182007	20	24	31	-141		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	03:20:18	749	MV24GC1-ENV-DC-229			Camera	83	634349	6182033	634328	6182007	21	26	33	-141		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	03:20:32	750	MV24GC1-ENV-DC-229			Camera	83	634351	6182035	634328	6182007	23	27	36	-140		(Corr'd Nav, Kongsberg 14208, img#41) (B)
15-Aug-2024	03:20:51	751	MV24GC1-ENV-DC-229			Camera	83	634353	6182036	634328	6182007	25	29	38	-140		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	03:21:43	752	MV24GC1-ENV-DC-229			Camera	83	634358	6182043	634328	6182007	30	36	47	-140		(Corr'd Nav, Kongsberg 14208, img#43) (B)
15-Aug-2024	03:22:14	753	MV24GC1-ENV-DC-229			Camera	83	634361	6182046	634328	6182007	33	39	51	-140		(Corr'd Nav, Kongsberg 14208, img#44) (B)
15-Aug-2024	04:50:43	754	MV24GC1-ENV-DC-228			Camera	90	635036	6179990	635066	6179941	-30	49	57	148		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	04:52:07	755	MV24GC1-ENV-DC-228			Camera	90	635041	6179982	635066	6179941	-26	41	48	148		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	04:52:56	756	MV24GC1-ENV-DC-228			Camera	90	635045	6179976	635066	6179941	-22	34	40	148		(Corr'd Nav, Kongsberg 14208, img#3) (B)
15-Aug-2024	04:53:19	757	MV24GC1-ENV-DC-228			Camera	90	635046	6179972	635066	6179941	-20	31	37	147		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	04:53:51	758	MV24GC1-ENV-DC-228			Camera	90	635049	6179968	635066	6179941	-18	27	32	147		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	04:54:24	759	MV24GC1-ENV-DC-228			Camera	90	635052	6179964	635066	6179941	-14	23	27	148		(Corr'd Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	04:54:55	760	MV24GC1-ENV-DC-228			Camera	90	635055	6179960	635066	6179941	-11	19	22	149		(Corr'd Nav, Kongsberg 14208, img#7) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	04:55:28	761	MV24GC1-ENV-DC-228			Camera	90	635057	6179955	635066	6179941	-9	14	17	147		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	04:55:56	762	MV24GC1-ENV-DC-228			Camera	90	635059	6179952	635066	6179941	-7	10	13	144		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	04:56:40	763	MV24GC1-ENV-DC-228			Camera	90	635063	6179946	635066	6179941	-3	5	6	144		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	04:57:05	764	MV24GC1-ENV-DC-228			Camera	90	635065	6179943	635066	6179941	-1	1	2	134		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	04:57:15	765	MV24GC1-ENV-DC-228			Camera	90	635066	6179941	635066	6179941	0	0	0	90		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	04:57:51	766	MV24GC1-ENV-DC-228			Camera	90	635069	6179937	635066	6179941	3	-4	5	-36		(Corr'd Nav, Kongsberg 14208, img#13) (B)
15-Aug-2024	04:58:15	767	MV24GC1-ENV-DC-228			Camera	90	635071	6179934	635066	6179941	5	-7	9	-35		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	04:58:59	768	MV24GC1-ENV-DC-228			Camera	90	635074	6179928	635066	6179941	8	-13	15	-32		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	04:59:15	769	MV24GC1-ENV-DC-228			Camera	90	635076	6179926	635066	6179941	10	-15	18	-33		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	04:59:52	770	MV24GC1-ENV-DC-228			Camera	90	635079	6179921	635066	6179941	13	-20	24	-32		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	05:00:56	771	MV24GC1-ENV-DC-228			Camera	90	635085	6179913	635066	6179941	19	-29	34	-33		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	05:01:09	772	MV24GC1-ENV-DC-228			Camera	90	635086	6179911	635066	6179941	20	-30	36	-33		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	05:01:19	773	MV24GC1-ENV-DC-228			Camera	90	635087	6179910	635066	6179941	21	-32	38	-33		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	05:01:49	774	MV24GC1-ENV-DC-228			Camera	90	635090	6179906	635066	6179941	23	-36	42	-33		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	05:02:22	775	MV24GC1-ENV-DC-228			Camera	90	635092	6179901	635066	6179941	26	-40	48	-33		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	05:02:41	776	MV24GC1-ENV-DC-228			Camera	90	635094	6179899	635066	6179941	27	-42	50	-33		(Corr'd Nav, Kongsberg 14208, img#23) (B)
15-Aug-2024	05:09:01	777	MV24GC1-ENV-DC-228			Camera	89	635048	6179891	635066	6179941	-19	-50	53	21		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	05:09:13	778	MV24GC1-ENV-DC-228			Camera	89	635046	6179891	635066	6179941	-20	-50	54	22		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	05:11:34	779	MV24GC1-ENV-DC-228			Camera	90	635052	6179906	635066	6179941	-14	-35	38	22		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	05:12:09	780	MV24GC1-ENV-DC-228			Camera	90	635054	6179913	635066	6179941	-12	-29	31	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	05:12:40	781	MV24GC1-ENV-DC-228			Camera	90	635056	6179917	635066	6179941	-10	-24	26	23		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	05:13:36	782	MV24GC1-ENV-DC-228			Camera	90	635059	6179923	635066	6179941	-7	-19	20	21		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	05:14:08	783	MV24GC1-ENV-DC-228			Camera	90	635061	6179927	635066	6179941	-5	-14	15	20		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	05:15:15	784	MV24GC1-ENV-DC-228			Camera	90	635065	6179937	635066	6179941	-2	-5	5	18		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	05:15:35	785	MV24GC1-ENV-DC-228			Camera	90	635065	6179940	635066	6179941	-1	-1	2	33		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	05:16:09	786	MV24GC1-ENV-DC-228			Camera	90	635067	6179946	635066	6179941	1	4	5	-171		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	05:16:59	787	MV24GC1-ENV-DC-228			Camera	90	635068	6179954	635066	6179941	2	12	13	-171		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	05:17:42	788	MV24GC1-ENV-DC-228			Camera	90	635071	6179959	635066	6179941	4	18	19	-166		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	05:18:50	789	MV24GC1-ENV-DC-228			Camera	90	635074	6179970	635066	6179941	7	29	29	-165		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	05:19:36	790	MV24GC1-ENV-DC-228			Camera	90	635076	6179976	635066	6179941	10	35	36	-164		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	05:19:53	791	MV24GC1-ENV-DC-228			Camera	90	635077	6179979	635066	6179941	11	38	39	-164		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	05:20:19	792	MV24GC1-ENV-DC-228			Camera	90	635078	6179983	635066	6179941	12	42	43	-164		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	05:20:46	793	MV24GC1-ENV-DC-228			Camera	90	635079	6179987	635066	6179941	13	46	47	-165		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	05:21:14	794	MV24GC1-ENV-DC-228			Camera	91	635079	6179991	635066	6179941	13	50	51	-166		(Corr'd Nav, Kongsberg 14208, img#41) (B)
15-Aug-2024	05:21:29	795	MV24GC1-ENV-DC-228			Camera	91	635079	6179994	635066	6179941	13	52	54	-166		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	22:28:29	796	MV24GC1-ENV-DC-227			Camera	88	634332	6178110	634270	6178112	62	-1	62	-89		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	22:29:26	797	MV24GC1-ENV-DC-227			Camera	88	634328	6178109	634270	6178112	58	-2	58	-88		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	22:29:56	798	MV24GC1-ENV-DC-227			Camera	88	634323	6178109	634270	6178112	53	-3	53	-87		(Corr'd Nav, Kongsberg 14208, img#3) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	22:30:30	799	MV24GC1-ENV-DC-227			Camera	88	634317	6178108	634270	6178112	47	-4	47	-86		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	22:31:58	800	MV24GC1-ENV-DC-227			Camera	88	634304	6178107	634270	6178112	34	-5	35	-82		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	22:32:48	801	MV24GC1-ENV-DC-227			Camera	89	634297	6178107	634270	6178112	27	-5	27	-80		(Raw Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	22:33:55	802	MV24GC1-ENV-DC-227			Camera	88	634287	6178106	634270	6178112	17	-6	18	-71		(Corr'd Nav, Kongsberg 14208, img#7) (B)
15-Aug-2024	22:34:34	803	MV24GC1-ENV-DC-227			Camera	88	634282	6178105	634270	6178112	12	-6	13	-62		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	22:36:01	804	MV24GC1-ENV-DC-227			Camera	88	634269	6178107	634270	6178112	-1	-5	5	7		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	22:38:27	805	MV24GC1-ENV-DC-227			Camera	87	634260	6178108	634270	6178112	-10	-4	10	67		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	22:40:40	806	MV24GC1-ENV-DC-227			Camera	87	634240	6178108	634270	6178112	-30	-4	30	83		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	22:41:34	807	MV24GC1-ENV-DC-227			Camera	87	634232	6178109	634270	6178112	-38	-3	38	86		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	22:42:19	808	MV24GC1-ENV-DC-227			Camera	87	634224	6178109	634270	6178112	-46	-2	46	87		(Corr'd Nav, Kongsberg 14208, img#13) (B)
15-Aug-2024	22:42:39	809	MV24GC1-ENV-DC-227			Camera	87	634221	6178110	634270	6178112	-49	-2	49	88		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	22:43:20	810	MV24GC1-ENV-DC-227			Camera	87	634219	6178110	634270	6178112	-51	-1	51	89		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	22:45:12	811	MV24GC1-ENV-DC-227			Camera	87	634221	6178110	634270	6178112	-49	-1	49	89		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	22:48:20	812	MV24GC1-ENV-DC-227			Camera	87	634242	6178127	634270	6178112	-28	16	32	119		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	22:53:41	813	MV24GC1-ENV-DC-227			Camera	88	634275	6178164	634270	6178112	6	52	52	-174		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	22:56:31	814	MV24GC1-ENV-DC-227			Camera	88	634277	6178165	634270	6178112	7	53	54	-172		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	22:57:22	815	MV24GC1-ENV-DC-227			Camera	88	634276	6178158	634270	6178112	7	47	47	-172		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	22:58:04	816	MV24GC1-ENV-DC-227			Camera	88	634275	6178152	634270	6178112	5	41	41	-173		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	22:58:10	817	MV24GC1-ENV-DC-227			Camera	88	634275	6178152	634270	6178112	5	40	40	-173		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	22:58:57	818	MV24GC1-ENV-DC-227			Camera	88	634274	6178145	634270	6178112	4	34	34	-173		(Corr'd Nav, Kongsberg 14208, img#23) (B)
15-Aug-2024	22:59:19	819	MV24GC1-ENV-DC-227			Camera	88	634273	6178142	634270	6178112	3	30	31	-174		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	22:59:52	820	MV24GC1-ENV-DC-227			Camera	88	634272	6178137	634270	6178112	2	25	25	-174		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	23:00:23	821	MV24GC1-ENV-DC-227			Camera	88	634272	6178131	634270	6178112	2	19	19	-174		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	23:01:15	822	MV24GC1-ENV-DC-227			Camera	88	634272	6178122	634270	6178112	2	11	11	-171		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	23:01:39	823	MV24GC1-ENV-DC-227			Camera	88	634271	6178119	634270	6178112	1	7	8	-171		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	23:02:01	824	MV24GC1-ENV-DC-227			Camera	88	634271	6178116	634270	6178112	1	4	4	-169		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	23:02:26	825	MV24GC1-ENV-DC-227			Camera	88	634271	6178111	634270	6178112	1	-1	1	-56		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	23:02:37	826	MV24GC1-ENV-DC-227			Camera	88	634271	6178109	634270	6178112	1	-3	3	-20		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	23:02:55	827	MV24GC1-ENV-DC-227			Camera	88	634270	6178107	634270	6178112	0	-5	5	-5		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	23:03:55	828	MV24GC1-ENV-DC-227			Camera	88	634267	6178099	634270	6178112	-2	-12	13	11		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	23:04:17	829	MV24GC1-ENV-DC-227			Camera	88	634267	6178096	634270	6178112	-3	-16	16	10		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	23:04:36	830	MV24GC1-ENV-DC-227			Camera	88	634266	6178093	634270	6178112	-3	-18	19	11		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	23:04:55	831	MV24GC1-ENV-DC-227			Camera	88	634266	6178089	634270	6178112	-4	-22	22	10		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	23:05:41	832	MV24GC1-ENV-DC-227			Camera	88	634266	6178081	634270	6178112	-4	-31	31	8		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	23:06:15	833	MV24GC1-ENV-DC-227			Camera	88	634265	6178075	634270	6178112	-5	-37	37	8		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	23:06:48	834	MV24GC1-ENV-DC-227			Camera	88	634266	6178069	634270	6178112	-4	-43	43	6		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	23:07:13	835	MV24GC1-ENV-DC-227			Camera	88	634265	6178066	634270	6178112	-5	-46	46	6		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	23:07:42	836	MV24GC1-ENV-DC-227			Camera	88	634264	6178062	634270	6178112	-6	-50	50	7		(Corr'd Nav, Kongsberg 14208, img#41) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	23:08:18	837	MV24GC1-ENV-DC-227			Camera	88	634264	6178058	634270	6178112	-6	-54	54	7		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	23:08:28	838	MV24GC1-ENV-DC-227			Camera	88	634264	6178057	634270	6178112	-6	-54	55	6		(Corr'd Nav, Kongsberg 14208, img#43) (B)
16-Aug-2024	01:15:59	839	MV24GC1-ENV-DC-226			Camera	88	632876	6176752	632825	6176748	51	5	51	-95		(Corr'd Nav, Kongsberg 14208, img#1) (B)
16-Aug-2024	01:17:08	840	MV24GC1-ENV-DC-226			Camera	88	632869	6176751	632825	6176748	44	3	44	-94		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	01:17:57	841	MV24GC1-ENV-DC-226			Camera	88	632859	6176751	632825	6176748	34	3	34	-96		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	01:18:26	842	MV24GC1-ENV-DC-226			Camera	88	632854	6176751	632825	6176748	29	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	01:19:04	843	MV24GC1-ENV-DC-226			Camera	88	632847	6176749	632825	6176748	22	2	22	-94		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	01:19:45	844	MV24GC1-ENV-DC-226			Camera	88	632838	6176748	632825	6176748	13	0	13	-92		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	01:20:23	845	MV24GC1-ENV-DC-226			Camera	88	632830	6176747	632825	6176748	5	-1	5	-82		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	01:20:45	846	MV24GC1-ENV-DC-226			Camera	87	632826	6176746	632825	6176748	1	-1	2	-34		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	01:21:11	847	MV24GC1-ENV-DC-226			Camera	87	632821	6176746	632825	6176748	-3	-2	4	64		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	01:22:44	848	MV24GC1-ENV-DC-226			Camera	87	632803	6176744	632825	6176748	-22	-3	22	81		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	01:23:35	849	MV24GC1-ENV-DC-226			Camera	87	632793	6176743	632825	6176748	-32	-5	32	82		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	01:24:07	850	MV24GC1-ENV-DC-226			Camera	87	632786	6176742	632825	6176748	-39	-5	39	82		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	01:24:19	851	MV24GC1-ENV-DC-226			Camera	87	632783	6176742	632825	6176748	-41	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	01:24:26	852	MV24GC1-ENV-DC-226			Camera	87	632782	6176743	632825	6176748	-43	-5	44	83		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	01:24:41	853	MV24GC1-ENV-DC-226			Camera	87	632780	6176743	632825	6176748	-45	-5	45	84		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	01:24:51	854	MV24GC1-ENV-DC-226			Camera	87	632779	6176743	632825	6176748	-46	-5	46	84		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	01:32:48	855	MV24GC1-ENV-DC-226			Camera	89	632830	6176798	632825	6176748	6	50	51	-174		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	01:34:11	856	MV24GC1-ENV-DC-226			Camera	89	632830	6176794	632825	6176748	5	46	47	-173		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	01:34:27	857	MV24GC1-ENV-DC-226			Camera	89	632830	6176792	632825	6176748	5	44	45	-173		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	01:34:44	858	MV24GC1-ENV-DC-226			Camera	89	632830	6176789	632825	6176748	5	42	42	-173		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	01:35:09	859	MV24GC1-ENV-DC-226			Camera	88	632830	6176785	632825	6176748	5	38	38	-173		(Corr'd Nav, Kongsberg 14208, img#21) (B)
16-Aug-2024	01:35:34	860	MV24GC1-ENV-DC-226			Camera	88	632829	6176779	632825	6176748	4	32	32	-173		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	01:35:50	861	MV24GC1-ENV-DC-226			Camera	88	632828	6176775	632825	6176748	3	28	28	-173		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	01:36:41	862	MV24GC1-ENV-DC-226			Camera	88	632826	6176764	632825	6176748	1	17	17	-176		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	01:37:34	863	MV24GC1-ENV-DC-226			Camera	88	632824	6176753	632825	6176748	-1	5	5	173		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	01:37:57	864	MV24GC1-ENV-DC-226			Camera	87	632823	6176748	632825	6176748	-2	0	2	95		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	01:38:14	865	MV24GC1-ENV-DC-226			Camera	87	632823	6176744	632825	6176748	-2	-4	4	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	01:38:39	866	MV24GC1-ENV-DC-226			Camera	87	632822	6176739	632825	6176748	-3	-8	9	17		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	01:39:53	867	MV24GC1-ENV-DC-226			Camera	87	632821	6176725	632825	6176748	-4	-23	23	10		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	01:41:03	868	MV24GC1-ENV-DC-226			Camera	87	632820	6176714	632825	6176748	-5	-34	34	8		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	01:41:30	869	MV24GC1-ENV-DC-226			Camera	86	632820	6176711	632825	6176748	-5	-37	37	8		(Corr'd Nav, Kongsberg 14208, img#31) (B)
16-Aug-2024	01:42:02	870	MV24GC1-ENV-DC-226			Camera	86	632819	6176707	632825	6176748	-6	-40	41	9		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	01:42:44	871	MV24GC1-ENV-DC-226			Camera	86	632817	6176704	632825	6176748	-8	-44	45	10		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	01:42:57	872	MV24GC1-ENV-DC-226			Camera	86	632817	6176702	632825	6176748	-8	-45	46	10		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	01:43:35	873	MV24GC1-ENV-DC-226			Camera	86	632818	6176699	632825	6176748	-7	-49	49	8		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	03:12:19	874	MV24GC1-ENV-DC-171			Camera	86	632382	6174803	632329	6174794	53	9	54	-99		(Corr'd Nav, Kongsberg 14208, img#1) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	03:12:53	875	MV24GC1-ENV-DC-171			Camera	86	632377	6174803	632329	6174794	48	9	49	-100		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	03:13:16	876	MV24GC1-ENV-DC-171			Camera	86	632374	6174802	632329	6174794	46	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	03:13:55	877	MV24GC1-ENV-DC-171			Camera	86	632370	6174801	632329	6174794	41	7	42	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	03:14:18	878	MV24GC1-ENV-DC-171			Camera	86	632366	6174801	632329	6174794	37	7	37	-100		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	03:14:35	879	MV24GC1-ENV-DC-171			Camera	86	632363	6174800	632329	6174794	34	6	35	-100		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	03:15:01	880	MV24GC1-ENV-DC-171			Camera	86	632359	6174799	632329	6174794	30	5	30	-99		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	03:15:17	881	MV24GC1-ENV-DC-171			Camera	86	632356	6174799	632329	6174794	27	5	28	-100		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	03:15:46	882	MV24GC1-ENV-DC-171			Camera	86	632352	6174797	632329	6174794	24	3	24	-98		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	03:16:12	883	MV24GC1-ENV-DC-171			Camera	86	632349	6174797	632329	6174794	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	03:16:30	884	MV24GC1-ENV-DC-171			Camera	86	632346	6174796	632329	6174794	17	2	18	-97		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	03:16:58	885	MV24GC1-ENV-DC-171			Camera	86	632342	6174796	632329	6174794	14	1	14	-96		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	03:17:23	886	MV24GC1-ENV-DC-171			Camera	86	632339	6174795	632329	6174794	10	1	10	-94		(Corr'd Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	03:18:13	887	MV24GC1-ENV-DC-171			Camera	86	632330	6174794	632329	6174794	1	0	1	-100		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	03:18:46	888	MV24GC1-ENV-DC-171			Camera	87	632325	6174794	632329	6174794	-4	0	4	89		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	03:19:15	889	MV24GC1-ENV-DC-171			Camera	86	632320	6174793	632329	6174794	-8	-1	8	84		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	03:19:54	890	MV24GC1-ENV-DC-171			Camera	87	632314	6174792	632329	6174794	-15	-2	15	83		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	03:20:41	891	MV24GC1-ENV-DC-171			Camera	87	632308	6174791	632329	6174794	-21	-4	21	81		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	03:21:51	892	MV24GC1-ENV-DC-171			Camera	87	632297	6174789	632329	6174794	-32	-5	32	81		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	03:22:21	893	MV24GC1-ENV-DC-171			Camera	87	632292	6174788	632329	6174794	-37	-6	37	81		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	03:22:50	894	MV24GC1-ENV-DC-171			Camera	87	632287	6174788	632329	6174794	-42	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#21) (B)
16-Aug-2024	03:23:36	895	MV24GC1-ENV-DC-171			Camera	87	632279	6174786	632329	6174794	-49	-8	50	80		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	03:23:55	896	MV24GC1-ENV-DC-171			Camera	87	632276	6174785	632329	6174794	-52	-9	53	81		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	03:26:13	897	MV24GC1-ENV-DC-171			Camera	87	632277	6174797	632329	6174794	-52	3	52	94		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	03:29:30	898	MV24GC1-ENV-DC-171			Camera	87	632281	6174829	632329	6174794	-48	35	59	126		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	03:31:10	899	MV24GC1-ENV-DC-171			Camera	87	632292	6174831	632329	6174794	-37	37	52	135		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	03:32:27	900	MV24GC1-ENV-DC-171			Camera	87	632298	6174828	632329	6174794	-31	34	46	138		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	03:33:21	901	MV24GC1-ENV-DC-171			Camera	87	632305	6174824	632329	6174794	-24	30	38	141		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	03:33:28	902	MV24GC1-ENV-DC-171			Camera	87	632305	6174823	632329	6174794	-23	29	37	141		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	03:34:00	903	MV24GC1-ENV-DC-171			Camera	87	632308	6174819	632329	6174794	-20	25	32	141		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	03:34:51	904	MV24GC1-ENV-DC-171			Camera	87	632313	6174812	632329	6174794	-16	18	24	140		(Corr'd Nav, Kongsberg 14208, img#31) (B)
16-Aug-2024	03:35:16	905	MV24GC1-ENV-DC-171			Camera	87	632316	6174809	632329	6174794	-12	15	19	141		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	03:35:49	906	MV24GC1-ENV-DC-171			Camera	86	632321	6174805	632329	6174794	-8	11	14	145		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	03:36:20	907	MV24GC1-ENV-DC-171			Camera	86	632324	6174802	632329	6174794	-4	8	9	150		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	03:36:47	908	MV24GC1-ENV-DC-171			Camera	86	632328	6174799	632329	6174794	-1	5	5	167		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	03:37:18	909	MV24GC1-ENV-DC-171			Camera	86	632331	6174796	632329	6174794	3	2	3	-127		(Corr'd Nav, Kongsberg 14208, img#36) (B)
16-Aug-2024	03:37:34	910	MV24GC1-ENV-DC-171			Camera	86	632333	6174795	632329	6174794	4	1	4	-98		(Corr'd Nav, Kongsberg 14208, img#37) (B)
16-Aug-2024	03:37:57	911	MV24GC1-ENV-DC-171			Camera	86	632335	6174793	632329	6174794	7	-1	7	-79		(Corr'd Nav, Kongsberg 14208, img#38) (B)
16-Aug-2024	03:38:34	912	MV24GC1-ENV-DC-171			Camera	86	632339	6174790	632329	6174794	10	-5	11	-66		(Corr'd Nav, Kongsberg 14208, img#39) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	03:38:44	913	MV24GC1-ENV-DC-171			Camera	86	632340	6174789	632329	6174794	11	-6	12	-63		(Corr'd Nav, Kongsberg 14208, img#40) (B)
16-Aug-2024	03:39:35	914	MV24GC1-ENV-DC-171			Camera	86	632346	6174784	632329	6174794	17	-11	20	-59		(Corr'd Nav, Kongsberg 14208, img#41) (B)
16-Aug-2024	03:40:14	915	MV24GC1-ENV-DC-171			Camera	86	632352	6174780	632329	6174794	23	-14	27	-58		(Corr'd Nav, Kongsberg 14208, img#42) (B)
16-Aug-2024	03:40:34	916	MV24GC1-ENV-DC-171			Camera	86	632354	6174778	632329	6174794	25	-17	30	-57		(Corr'd Nav, Kongsberg 14208, img#43) (B)
16-Aug-2024	03:41:15	917	MV24GC1-ENV-DC-171			Camera	86	632358	6174774	632329	6174794	29	-21	36	-55		(Corr'd Nav, Kongsberg 14208, img#44) (B)
16-Aug-2024	03:41:47	918	MV24GC1-ENV-DC-171			Camera	86	632362	6174770	632329	6174794	33	-24	41	-54		(Corr'd Nav, Kongsberg 14208, img#45) (B)
16-Aug-2024	03:42:24	919	MV24GC1-ENV-DC-171			Camera	86	632366	6174765	632329	6174794	37	-29	47	-52		(Corr'd Nav, Kongsberg 14208, img#46) (B)
16-Aug-2024	05:24:56	920	MV24GC1-ENV-DC-225			Camera	94	631887	6172893	631833	6172878	54	15	56	-105		(Corr'd Nav, Kongsberg 14208, img#1) (B)
16-Aug-2024	05:26:43	921	MV24GC1-ENV-DC-225			Camera	94	631871	6172889	631833	6172878	39	12	40	-107		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	05:27:05	922	MV24GC1-ENV-DC-225			Camera	93	631868	6172889	631833	6172878	35	12	37	-109		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	05:27:19	923	MV24GC1-ENV-DC-225			Camera	93	631866	6172889	631833	6172878	33	12	35	-109		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	05:27:52	924	MV24GC1-ENV-DC-225			Camera	93	631861	6172887	631833	6172878	28	9	30	-108		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	05:28:03	925	MV24GC1-ENV-DC-225			Camera	93	631860	6172886	631833	6172878	27	9	28	-108		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	05:29:23	926	MV24GC1-ENV-DC-225			Camera	93	631848	6172883	631833	6172878	15	5	16	-109		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	05:30:41	927	MV24GC1-ENV-DC-225			Camera	93	631835	6172882	631833	6172878	2	4	4	-153		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	05:30:56	928	MV24GC1-ENV-DC-225			Camera	93	631832	6172881	631833	6172878	0	3	3	171		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	05:31:17	929	MV24GC1-ENV-DC-225			Camera	93	631829	6172880	631833	6172878	-4	2	4	123		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	05:31:39	930	MV24GC1-ENV-DC-225			Camera	93	631826	6172880	631833	6172878	-7	2	7	105		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	05:32:10	931	MV24GC1-ENV-DC-225			Camera	93	631822	6172878	631833	6172878	-11	1	11	93		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	05:32:26	932	MV24GC1-ENV-DC-225			Camera	93	631820	6172877	631833	6172878	-13	-1	13	87		(Raw Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	05:32:49	932	MV24GC1-ENV-DC-225			Camera	93	631816	6172876	631833	6172878	-16	-2	17	84		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	05:33:35	933	MV24GC1-ENV-DC-225			Camera	93	631809	6172875	631833	6172878	-23	-2	24	84		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	05:33:57	934	MV24GC1-ENV-DC-225			Camera	93	631805	6172875	631833	6172878	-27	-2	28	85		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	05:34:24	935	MV24GC1-ENV-DC-225			Camera	93	631801	6172875	631833	6172878	-32	-3	32	84		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	05:34:46	936	MV24GC1-ENV-DC-225			Camera	93	631797	6172874	631833	6172878	-36	-4	36	84		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	05:35:06	937	MV24GC1-ENV-DC-225			Camera	93	631794	6172873	631833	6172878	-39	-5	39	83		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	05:35:26	938	MV24GC1-ENV-DC-225			Camera	93	631791	6172872	631833	6172878	-42	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	05:35:56	939	MV24GC1-ENV-DC-225			Camera	93	631787	6172871	631833	6172878	-46	-7	47	82		(Corr'd Nav, Kongsberg 14208, img#21) (B)
16-Aug-2024	05:36:06	940	MV24GC1-ENV-DC-225			Camera	93	631785	6172871	631833	6172878	-48	-7	48	81		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	05:36:19	941	MV24GC1-ENV-DC-225			Camera	93	631783	6172870	631833	6172878	-49	-8	50	81		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	05:36:37	942	MV24GC1-ENV-DC-225			Camera	93	631781	6172869	631833	6172878	-52	-8	53	81		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	05:41:39	943	MV24GC1-ENV-DC-225			Camera	93	631784	6172901	631833	6172878	-49	23	54	116		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	05:42:36	944	MV24GC1-ENV-DC-225			Camera	93	631786	6172909	631833	6172878	-47	32	57	124		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	05:47:31	945	MV24GC1-ENV-DC-225			Camera	93	631804	6172908	631833	6172878	-29	30	42	136		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	05:47:55	946	MV24GC1-ENV-DC-225			Camera	93	631806	6172906	631833	6172878	-26	28	38	137		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	05:48:12	947	MV24GC1-ENV-DC-225			Camera	93	631808	6172904	631833	6172878	-25	26	36	137		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	05:48:50	948	MV24GC1-ENV-DC-225			Camera	93	631813	6172900	631833	6172878	-20	22	30	139		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	05:49:19	949	MV24GC1-ENV-DC-225			Camera	93	631817	6172898	631833	6172878	-16	20	26	141		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	05:49:46	950	MV24GC1-ENV-DC-225			Camera	93	631820	6172896	631833	6172878	-13	18	22	145		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	05:50:02	951	MV24GC1-ENV-DC-225			Camera	93	631822	6172894	631833	6172878	-10	17	20	148		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	05:51:01	952	MV24GC1-ENV-DC-225			Camera	93	631830	6172889	631833	6172878	-3	11	11	166		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	05:51:27	953	MV24GC1-ENV-DC-225			Camera	93	631832	6172885	631833	6172878	0	8	8	177		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	05:51:49	954	MV24GC1-ENV-DC-225			Camera	93	631834	6172882	631833	6172878	1	4	5	-163		(Corr'd Nav, Kongsberg 14208, img#36) (B)
16-Aug-2024	05:52:18	955	MV24GC1-ENV-DC-225			Camera	93	631835	6172878	631833	6172878	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#37) (B)
16-Aug-2024	05:52:34	956	MV24GC1-ENV-DC-225			Camera	93	631836	6172876	631833	6172878	3	-2	4	-56		(Corr'd Nav, Kongsberg 14208, img#38) (B)
16-Aug-2024	05:53:21	957	MV24GC1-ENV-DC-225			Camera	93	631838	6172869	631833	6172878	5	-9	11	-30		(Corr'd Nav, Kongsberg 14208, img#39) (B)
16-Aug-2024	05:53:29	958	MV24GC1-ENV-DC-225			Camera	93	631839	6172867	631833	6172878	6	-10	12	-29		(Corr'd Nav, Kongsberg 14208, img#40) (B)
16-Aug-2024	05:54:20	959	MV24GC1-ENV-DC-225			Camera	93	631842	6172860	631833	6172878	9	-18	20	-26		(Corr'd Nav, Kongsberg 14208, img#41) (B)
16-Aug-2024	05:54:43	960	MV24GC1-ENV-DC-225			Camera	93	631843	6172857	631833	6172878	10	-21	23	-26		(Corr'd Nav, Kongsberg 14208, img#42) (B)
16-Aug-2024	05:55:26	961	MV24GC1-ENV-DC-225			Camera	93	631846	6172851	631833	6172878	13	-27	30	-26		(Corr'd Nav, Kongsberg 14208, img#43) (B)
16-Aug-2024	05:55:58	962	MV24GC1-ENV-DC-225			Camera	93	631848	6172846	631833	6172878	15	-32	35	-25		(Corr'd Nav, Kongsberg 14208, img#44) (B)
16-Aug-2024	05:56:29	963	MV24GC1-ENV-DC-225			Camera	93	631850	6172841	631833	6172878	17	-37	40	-25		(Corr'd Nav, Kongsberg 14208, img#45) (B)
16-Aug-2024	05:57:07	964	MV24GC1-ENV-DC-225			Camera	93	631852	6172836	631833	6172878	20	-42	46	-25		(Corr'd Nav, Kongsberg 14208, img#46) (B)
16-Aug-2024	05:57:31	965	MV24GC1-ENV-DC-225			Camera	93	631854	6172832	631833	6172878	21	-45	50	-25		(Corr'd Nav, Kongsberg 14208, img#47) (B)
16-Aug-2024	05:57:48	966	MV24GC1-ENV-DC-225			Camera	93	631855	6172830	631833	6172878	22	-48	52	-25		(Corr'd Nav, Kongsberg 14208, img#48) (B)
16-Aug-2024	07:20:55	967	MV24GC1-ENV-DC-172			Camera	88	631355	6170900	631319	6170858	36	42	55	-139		(Corr'd Nav, Kongsberg 14208, img#1) (B)
16-Aug-2024	07:22:57	968	MV24GC1-ENV-DC-172			Camera	87	631347	6170894	631319	6170858	29	36	46	-142		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	07:23:29	969	MV24GC1-ENV-DC-172			Camera	87	631344	6170891	631319	6170858	25	33	41	-143		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	07:23:52	970	MV24GC1-ENV-DC-172			Camera	87	631341	6170888	631319	6170858	23	30	37	-143		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	07:24:26	971	MV24GC1-ENV-DC-172			Camera	87	631338	6170884	631319	6170858	19	26	32	-143		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	07:25:07	972	MV24GC1-ENV-DC-172			Camera	88	631336	6170879	631319	6170858	17	21	27	-141		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	07:25:46	973	MV24GC1-ENV-DC-172			Camera	88	631335	6170875	631319	6170858	16	17	23	-137		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	07:26:37	974	MV24GC1-ENV-DC-172			Camera	88	631331	6170870	631319	6170858	12	12	17	-135		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	07:27:59	975	MV24GC1-ENV-DC-172			Camera	88	631322	6170862	631319	6170858	4	4	6	-140		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	07:28:49	976	MV24GC1-ENV-DC-172			Camera	88	631317	6170858	631319	6170858	-2	0	2	89		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	07:29:03	977	MV24GC1-ENV-DC-172			Camera	88	631315	6170856	631319	6170858	-4	-1	4	71		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	07:29:10	978	MV24GC1-ENV-DC-172			Camera	88	631314	6170856	631319	6170858	-5	-2	5	68		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	07:29:30	979	MV24GC1-ENV-DC-172			Camera	88	631311	6170854	631319	6170858	-7	-4	8	62		(Corr'd Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	07:30:19	980	MV24GC1-ENV-DC-172			Camera	88	631306	6170849	631319	6170858	-13	-8	15	56		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	07:30:31	981	MV24GC1-ENV-DC-172			Camera	88	631305	6170848	631319	6170858	-14	-10	17	56		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	07:31:32	982	MV24GC1-ENV-DC-172			Camera	88	631298	6170843	631319	6170858	-21	-15	26	55		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	07:31:53	983	MV24GC1-ENV-DC-172			Camera	88	631295	6170841	631319	6170858	-24	-17	29	55		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	07:32:14	984	MV24GC1-ENV-DC-172			Camera	88	631292	6170839	631319	6170858	-27	-19	32	55		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	07:32:50	985	MV24GC1-ENV-DC-172			Camera	88	631288	6170836	631319	6170858	-31	-22	38	54		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	07:33:28	986	MV24GC1-ENV-DC-172			Camera	88	631284	6170832	631319	6170858	-35	-26	43	53		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	07:44:57	987	MV24GC1-ENV-DC-172			Camera	87	631273	6170890	631319	6170858	-46	32	56	124		(Corr'd Nav, Kongsberg 14208, img#21) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	07:46:24	988	MV24GC1-ENV-DC-172			Camera	87	631281	6170885	631319	6170858	-38	27	47	126		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	07:47:15	989	MV24GC1-ENV-DC-172			Camera	88	631289	6170883	631319	6170858	-30	25	39	131		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	07:47:55	990	MV24GC1-ENV-DC-172			Camera	88	631296	6170881	631319	6170858	-23	23	33	136		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	07:48:09	991	MV24GC1-ENV-DC-172			Camera	88	631298	6170880	631319	6170858	-21	23	31	137		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	07:48:56	992	MV24GC1-ENV-DC-172			Camera	88	631305	6170878	631319	6170858	-14	20	24	145		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	07:49:07	993	MV24GC1-ENV-DC-172			Camera	88	631306	6170877	631319	6170858	-13	19	23	146		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	07:49:43	994	MV24GC1-ENV-DC-172			Camera	88	631310	6170874	631319	6170858	-8	16	18	152		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	07:49:52	995	MV24GC1-ENV-DC-172			Camera	88	631311	6170873	631319	6170858	-8	15	17	153		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	07:50:13	996	MV24GC1-ENV-DC-172			Camera	88	631312	6170870	631319	6170858	-6	12	14	152		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	07:50:44	997	MV24GC1-ENV-DC-172			Camera	88	631314	6170866	631319	6170858	-4	8	10	152		(Corr'd Nav, Kongsberg 14208, img#31) (B)
16-Aug-2024	07:51:19	998	MV24GC1-ENV-DC-172			Camera	88	631318	6170863	631319	6170858	-1	5	5	171		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	07:51:44	999	MV24GC1-ENV-DC-172			Camera	88	631320	6170861	631319	6170858	1	3	3	-156		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	07:52:11	1000	MV24GC1-ENV-DC-172			Camera	88	631323	6170858	631319	6170858	4	0	4	-91		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	07:52:40	1001	MV24GC1-ENV-DC-172			Camera	88	631325	6170855	631319	6170858	6	-3	7	-62		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	07:53:09	1002	MV24GC1-ENV-DC-172			Camera	88	631327	6170851	631319	6170858	8	-7	11	-51		(Corr'd Nav, Kongsberg 14208, img#36) (B)
16-Aug-2024	07:54:00	1003	MV24GC1-ENV-DC-172			Camera	88	631331	6170844	631319	6170858	13	-13	18	-43		(Corr'd Nav, Kongsberg 14208, img#37) (B)
16-Aug-2024	07:54:23	1004	MV24GC1-ENV-DC-172			Camera	88	631333	6170842	631319	6170858	15	-16	22	-42		(Corr'd Nav, Kongsberg 14208, img#38) (B)
16-Aug-2024	07:55:16	1005	MV24GC1-ENV-DC-172			Camera	88	631338	6170834	631319	6170858	19	-24	30	-38		(Corr'd Nav, Kongsberg 14208, img#39) (B)
16-Aug-2024	07:55:48	1006	MV24GC1-ENV-DC-172			Camera	88	631341	6170830	631319	6170858	22	-28	35	-38		(Corr'd Nav, Kongsberg 14208, img#40) (B)
16-Aug-2024	07:56:17	1007	MV24GC1-ENV-DC-172			Camera	88	631343	6170826	631319	6170858	25	-32	40	-38		(Corr'd Nav, Kongsberg 14208, img#41) (B)
16-Aug-2024	07:56:57	1008	MV24GC1-ENV-DC-172			Camera	88	631347	6170821	631319	6170858	29	-37	47	-38		(Corr'd Nav, Kongsberg 14208, img#42) (B)
16-Aug-2024	07:57:42	1009	MV24GC1-ENV-DC-172			Camera	88	631352	6170818	631319	6170858	33	-40	52	-39		(Corr'd Nav, Kongsberg 14208, img#43) (B)
17-Aug-2024	22:14:42	1010	MV24GC1-ENV-DC-185			Camera	82	621042	6099099	621009	6099061	33	38	50	-139		(Corr'd Nav, Kongsberg 14208, img#1) (B)
17-Aug-2024	22:15:35	1011	MV24GC1-ENV-DC-185			Camera	82	621040	6099097	621009	6099061	32	36	48	-139		(Corr'd Nav, Kongsberg 14208, img#2) (B)
17-Aug-2024	22:15:45	1012	MV24GC1-ENV-DC-185			Camera	82	621039	6099096	621009	6099061	30	35	46	-139		(Corr'd Nav, Kongsberg 14208, img#3) (B)
17-Aug-2024	22:15:59	1013	MV24GC1-ENV-DC-185			Camera	82	621037	6099094	621009	6099061	28	33	43	-139		(Corr'd Nav, Kongsberg 14208, img#4) (B)
17-Aug-2024	22:16:24	1014	MV24GC1-ENV-DC-185			Camera	82	621034	6099091	621009	6099061	26	30	40	-139		(Corr'd Nav, Kongsberg 14208, img#5) (B)
17-Aug-2024	22:17:13	1015	MV24GC1-ENV-DC-185			Camera	83	621029	6099085	621009	6099061	21	24	32	-140		(Corr'd Nav, Kongsberg 14208, img#6) (B)
17-Aug-2024	22:17:54	1016	MV24GC1-ENV-DC-185			Camera	83	621026	6099081	621009	6099061	17	20	26	-139		(Corr'd Nav, Kongsberg 14208, img#7) (B)
17-Aug-2024	22:18:04	1017	MV24GC1-ENV-DC-185			Camera	83	621025	6099080	621009	6099061	17	19	25	-139		(Corr'd Nav, Kongsberg 14208, img#8) (B)
17-Aug-2024	22:18:29	1018	MV24GC1-ENV-DC-185			Camera	83	621026	6099080	621009	6099061	18	19	26	-138		(Corr'd Nav, Kongsberg 14208, img#9) (B)
17-Aug-2024	22:19:05	1019	MV24GC1-ENV-DC-185			Camera	83	621026	6099080	621009	6099061	17	19	26	-138		(Corr'd Nav, Kongsberg 14208, img#10) (B)
17-Aug-2024	22:20:40	1020	MV24GC1-ENV-DC-185			Camera	83	621027	6099082	621009	6099061	18	21	28	-139		(Corr'd Nav, Kongsberg 14208, img#11) (B)
17-Aug-2024	22:21:53	1021	MV24GC1-ENV-DC-185			Camera	83	621026	6099081	621009	6099061	18	20	27	-139		(Corr'd Nav, Kongsberg 14208, img#12) (B)
17-Aug-2024	22:24:40	1022	MV24GC1-ENV-DC-185			Camera	83	621025	6099079	621009	6099061	16	18	24	-138		(Corr'd Nav, Kongsberg 14208, img#13) (B)
17-Aug-2024	22:24:52	1023	MV24GC1-ENV-DC-185			Camera	83	621023	6099077	621009	6099061	14	16	21	-138		(Corr'd Nav, Kongsberg 14208, img#14) (B)
17-Aug-2024	22:25:02	1024	MV24GC1-ENV-DC-185			Camera	83	621021	6099075	621009	6099061	13	14	19	-138		(Corr'd Nav, Kongsberg 14208, img#15) (B)
17-Aug-2024	22:25:56	1025	MV24GC1-ENV-DC-185			Camera	83	621016	6099069	621009	6099061	7	8	11	-138		(Corr'd Nav, Kongsberg 14208, img#16) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
17-Aug-2024	22:26:21	1026	MV24GC1-ENV-DC-185			Camera	83	621014	6099067	621009	6099061	5	6	8	-136		(Corr'd Nav, Kongsberg 14208, img#17) (B)
17-Aug-2024	22:26:49	1027	MV24GC1-ENV-DC-185			Camera	83	621012	6099064	621009	6099061	3	3	4	-134		(Corr'd Nav, Kongsberg 14208, img#18) (B)
17-Aug-2024	22:27:33	1028	MV24GC1-ENV-DC-185			Camera	83	621007	6099058	621009	6099061	-2	-3	3	39		(Corr'd Nav, Kongsberg 14208, img#19) (B)
17-Aug-2024	22:27:50	1029	MV24GC1-ENV-DC-185			Camera	83	621005	6099056	621009	6099061	-4	-5	6	41		(Corr'd Nav, Kongsberg 14208, img#20) (B)
17-Aug-2024	22:28:14	1030	MV24GC1-ENV-DC-185			Camera	83	621002	6099054	621009	6099061	-7	-7	10	42		(Corr'd Nav, Kongsberg 14208, img#21) (B)
17-Aug-2024	22:28:22	1031	MV24GC1-ENV-DC-185			Camera	83	621001	6099053	621009	6099061	-7	-8	11	42		(Corr'd Nav, Kongsberg 14208, img#22) (B)
17-Aug-2024	22:28:50	1032	MV24GC1-ENV-DC-185			Camera	83	620998	6099050	621009	6099061	-10	-11	15	43		(Corr'd Nav, Kongsberg 14208, img#23) (B)
17-Aug-2024	22:28:57	1033	MV24GC1-ENV-DC-185			Camera	83	620998	6099049	621009	6099061	-11	-12	16	43		(Corr'd Nav, Kongsberg 14208, img#24) (B)
17-Aug-2024	22:29:34	1034	MV24GC1-ENV-DC-185			Camera	83	620994	6099045	621009	6099061	-15	-16	22	43		(Corr'd Nav, Kongsberg 14208, img#25) (B)
17-Aug-2024	22:29:43	1035	MV24GC1-ENV-DC-185			Camera	83	620993	6099044	621009	6099061	-16	-17	23	43		(Corr'd Nav, Kongsberg 14208, img#26) (B)
17-Aug-2024	22:30:20	1036	MV24GC1-ENV-DC-185			Camera	83	620989	6099040	621009	6099061	-19	-21	28	43		(Corr'd Nav, Kongsberg 14208, img#27) (B)
17-Aug-2024	22:31:11	1037	MV24GC1-ENV-DC-185			Camera	83	620983	6099034	621009	6099061	-25	-27	37	43		(Corr'd Nav, Kongsberg 14208, img#28) (B)
17-Aug-2024	22:31:40	1038	MV24GC1-ENV-DC-185			Camera	83	620980	6099031	621009	6099061	-28	-30	41	44		(Corr'd Nav, Kongsberg 14208, img#29) (B)
17-Aug-2024	22:32:25	1039	MV24GC1-ENV-DC-185			Camera	83	620975	6099026	621009	6099061	-33	-35	48	44		(Corr'd Nav, Kongsberg 14208, img#30) (B)
17-Aug-2024	22:32:36	1040	MV24GC1-ENV-DC-185			Camera	83	620974	6099025	621009	6099061	-34	-36	50	43		(Corr'd Nav, Kongsberg 14208, img#31) (B)
17-Aug-2024	22:33:01	1041	MV24GC1-ENV-DC-185			Camera	83	620973	6099023	621009	6099061	-36	-38	52	43		(Corr'd Nav, Kongsberg 14208, img#32) (B)
17-Aug-2024	22:34:35	1042	MV24GC1-ENV-DC-185			Camera	83	620974	6099025	621009	6099061	-34	-36	50	44		(Corr'd Nav, Kongsberg 14208, img#33) (B)
17-Aug-2024	22:43:21	1043	MV24GC1-ENV-DC-185			Camera	83	620971	6099102	621009	6099061	-37	41	55	137		(Corr'd Nav, Kongsberg 14208, img#34) (B)
17-Aug-2024	22:44:31	1044	MV24GC1-ENV-DC-185			Camera	83	620971	6099102	621009	6099061	-38	41	56	137		(Corr'd Nav, Kongsberg 14208, img#35) (B)
17-Aug-2024	22:46:18	1045	MV24GC1-ENV-DC-185			Camera	83	620980	6099092	621009	6099061	-28	31	42	138		(Corr'd Nav, Kongsberg 14208, img#36) (B)
17-Aug-2024	22:47:23	1046	MV24GC1-ENV-DC-185			Camera	83	620987	6099086	621009	6099061	-21	25	32	140		(Corr'd Nav, Kongsberg 14208, img#37) (B)
17-Aug-2024	22:48:01	1047	MV24GC1-ENV-DC-185			Camera	83	620990	6099082	621009	6099061	-18	21	28	139		(Corr'd Nav, Kongsberg 14208, img#38) (B)
17-Aug-2024	22:48:20	1048	MV24GC1-ENV-DC-185			Camera	83	620992	6099080	621009	6099061	-17	19	25	138		(Corr'd Nav, Kongsberg 14208, img#39) (B)
17-Aug-2024	22:48:52	1049	MV24GC1-ENV-DC-185			Camera	83	620994	6099076	621009	6099061	-14	15	21	137		(Corr'd Nav, Kongsberg 14208, img#40) (B)
17-Aug-2024	22:50:04	1050	MV24GC1-ENV-DC-185			Camera	83	621000	6099068	621009	6099061	-8	7	11	129		(Corr'd Nav, Kongsberg 14208, img#41) (B)
17-Aug-2024	22:51:03	1051	MV24GC1-ENV-DC-185			Camera	83	621007	6099063	621009	6099061	-2	2	3	139		(Corr'd Nav, Kongsberg 14208, img#42) (B)
17-Aug-2024	22:51:30	1052	MV24GC1-ENV-DC-185			Camera	83	621009	6099060	621009	6099061	1	-1	1	-48		(Corr'd Nav, Kongsberg 14208, img#43) (B)
17-Aug-2024	22:52:17	1053	MV24GC1-ENV-DC-185			Camera	83	621014	6099054	621009	6099061	6	-7	9	-41		(Corr'd Nav, Kongsberg 14208, img#44) (B)
17-Aug-2024	22:53:03	1054	MV24GC1-ENV-DC-185			Camera	83	621019	6099049	621009	6099061	11	-12	16	-42		(Corr'd Nav, Kongsberg 14208, img#45) (B)
17-Aug-2024	22:53:26	1055	MV24GC1-ENV-DC-185			Camera	83	621022	6099046	621009	6099061	13	-15	20	-42		(Corr'd Nav, Kongsberg 14208, img#46) (B)
17-Aug-2024	22:53:45	1056	MV24GC1-ENV-DC-185			Camera	83	621024	6099044	621009	6099061	15	-17	23	-42		(Corr'd Nav, Kongsberg 14208, img#47) (B)
17-Aug-2024	22:54:18	1057	MV24GC1-ENV-DC-185			Camera	83	621027	6099040	621009	6099061	19	-21	28	-42		(Corr'd Nav, Kongsberg 14208, img#48) (B)
17-Aug-2024	22:54:42	1058	MV24GC1-ENV-DC-185			Camera	83	621029	6099037	621009	6099061	21	-24	32	-41		(Corr'd Nav, Kongsberg 14208, img#49) (B)
17-Aug-2024	22:55:26	1059	MV24GC1-ENV-DC-185			Camera	83	621033	6099032	621009	6099061	25	-29	38	-40		(Corr'd Nav, Kongsberg 14208, img#50) (B)
17-Aug-2024	22:55:43	1060	MV24GC1-ENV-DC-185			Camera	83	621035	6099030	621009	6099061	27	-31	41	-40		(Corr'd Nav, Kongsberg 14208, img#51) (B)
17-Aug-2024	22:56:07	1061	MV24GC1-ENV-DC-185			Camera	83	621038	6099027	621009	6099061	29	-34	45	-41		(Corr'd Nav, Kongsberg 14208, img#52) (B)
17-Aug-2024	22:56:32	1062	MV24GC1-ENV-DC-185			Camera	83	621040	6099024	621009	6099061	32	-37	49	-41		(Corr'd Nav, Kongsberg 14208, img#53) (B)
17-Aug-2024	22:56:57	1063	MV24GC1-ENV-DC-185			Camera	83	621043	6099021	621009	6099061	34	-40	52	-41		(Corr'd Nav, Kongsberg 14208, img#54) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	01:34:36	1064	MV24GC1-ENV-DC-224			Camera	77	620505	6097126	620453	6097139	52	-14	54	-75		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	01:35:40	1065	MV24GC1-ENV-DC-224			Camera	77	620502	6097126	620453	6097139	49	-13	50	-75		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	01:36:39	1066	MV24GC1-ENV-DC-224			Camera	77	620494	6097127	620453	6097139	41	-12	43	-73		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	01:37:03	1067	MV24GC1-ENV-DC-224			Camera	77	620493	6097128	620453	6097139	40	-12	42	-74		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	01:37:36	1068	MV24GC1-ENV-DC-224			Camera	77	620492	6097129	620453	6097139	39	-11	40	-74		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	01:40:41	1069	MV24GC1-ENV-DC-224			Camera	77	620485	6097130	620453	6097139	32	-9	33	-74		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	01:41:35	1070	MV24GC1-ENV-DC-224			Camera	77	620484	6097131	620453	6097139	31	-9	32	-74		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	01:41:54	1071	MV24GC1-ENV-DC-224			Camera	77	620484	6097131	620453	6097139	30	-8	31	-75		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	01:42:43	1072	MV24GC1-ENV-DC-224			Camera	77	620483	6097131	620453	6097139	30	-8	31	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	01:45:14	1073	MV24GC1-ENV-DC-224			Camera	77	620485	6097132	620453	6097139	31	-7	32	-77		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	01:46:17	1074	MV24GC1-ENV-DC-224			Camera	77	620484	6097132	620453	6097139	31	-7	32	-77		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	01:47:43	1075	MV24GC1-ENV-DC-224			Camera	77	620479	6097133	620453	6097139	26	-7	27	-75		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	01:48:13	1076	MV24GC1-ENV-DC-224			Camera	77	620477	6097133	620453	6097139	23	-7	24	-74		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	01:48:25	1077	MV24GC1-ENV-DC-224			Camera	77	620475	6097133	620453	6097139	22	-7	23	-74		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	01:49:13	1078	MV24GC1-ENV-DC-224			Camera	77	620471	6097133	620453	6097139	17	-6	18	-71		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	01:49:45	1079	MV24GC1-ENV-DC-224			Camera	77	620467	6097134	620453	6097139	14	-5	15	-70		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	01:50:38	1080	MV24GC1-ENV-DC-224			Camera	77	620462	6097135	620453	6097139	9	-4	10	-63		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	01:51:44	1081	MV24GC1-ENV-DC-224			Camera	77	620456	6097137	620453	6097139	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	01:52:39	1082	MV24GC1-ENV-DC-224			Camera	77	620450	6097138	620453	6097139	-3	-2	3	62		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	01:53:20	1083	MV24GC1-ENV-DC-224			Camera	77	620446	6097139	620453	6097139	-7	-1	7	85		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	01:54:30	1084	MV24GC1-ENV-DC-224			Camera	77	620439	6097139	620453	6097139	-14	0	14	89		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	01:56:26	1085	MV24GC1-ENV-DC-224			Camera	77	620427	6097141	620453	6097139	-26	2	26	94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	01:57:08	1086	MV24GC1-ENV-DC-224			Camera	77	620423	6097142	620453	6097139	-30	3	30	95		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	01:57:28	1087	MV24GC1-ENV-DC-224			Camera	77	620421	6097142	620453	6097139	-32	3	32	95		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	01:58:47	1088	MV24GC1-ENV-DC-224			Camera	77	620413	6097144	620453	6097139	-40	5	41	96		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	01:59:53	1089	MV24GC1-ENV-DC-224			Camera	76	620407	6097145	620453	6097139	-46	5	46	97		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	02:00:02	1090	MV24GC1-ENV-DC-224			Camera	76	620407	6097145	620453	6097139	-46	6	46	97		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	02:03:55	1091	MV24GC1-ENV-DC-224			Camera	77	620413	6097153	620453	6097139	-40	13	42	108		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	02:05:47	1092	MV24GC1-ENV-DC-224			Camera	77	620424	6097161	620453	6097139	-30	22	37	126		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	02:08:13	1093	MV24GC1-ENV-DC-224			Camera	77	620440	6097177	620453	6097139	-13	38	40	161		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	02:09:47	1094	MV24GC1-ENV-DC-224			Camera	77	620450	6097187	620453	6097139	-3	48	48	176		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	02:12:09	1095	MV24GC1-ENV-DC-224			Camera	77	620454	6097186	620453	6097139	1	47	47	-178		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	02:12:25	1096	MV24GC1-ENV-DC-224			Camera	77	620454	6097184	620453	6097139	1	45	45	-178		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	02:12:54	1097	MV24GC1-ENV-DC-224			Camera	77	620454	6097181	620453	6097139	1	41	41	-178		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	02:13:36	1098	MV24GC1-ENV-DC-224			Camera	77	620455	6097177	620453	6097139	2	38	38	-177		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	02:16:02	1099	MV24GC1-ENV-DC-224			Camera	77	620454	6097171	620453	6097139	1	32	31	-178		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	02:17:28	1100	MV24GC1-ENV-DC-224			Camera	77	620455	6097170	620453	6097139	2	31	31	-176		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	02:18:37	1101	MV24GC1-ENV-DC-224			Camera	77	620456	6097165	620453	6097139	3	26	26	-173		(Corr'd Nav, Kongsberg 14208, img#38) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	02:18:46	1102	MV24GC1-ENV-DC-224			Camera	77	620456	6097165	620453	6097139	3	26	26	-173		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	02:26:05	1103	MV24GC1-ENV-DC-224			Camera	77	620460	6097162	620453	6097139	7	23	24	-164		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	02:28:16	1104	MV24GC1-ENV-DC-224			Camera	77	620458	6097153	620453	6097139	4	13	14	-161		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	02:29:08	1105	MV24GC1-ENV-DC-224			Camera	77	620456	6097147	620453	6097139	3	8	8	-157		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	02:29:56	1106	MV24GC1-ENV-DC-224			Camera	77	620456	6097143	620453	6097139	2	3	4	-143		(Corr'd Nav, Kongsberg 14208, img#43) (B)
18-Aug-2024	02:30:27	1107	MV24GC1-ENV-DC-224			Camera	77	620455	6097139	620453	6097139	2	0	2	-81		(Corr'd Nav, Kongsberg 14208, img#44) (B)
18-Aug-2024	02:31:52	1108	MV24GC1-ENV-DC-224			Camera	77	620453	6097130	620453	6097139	0	-10	10	1		(Corr'd Nav, Kongsberg 14208, img#45) (B)
18-Aug-2024	02:33:00	1109	MV24GC1-ENV-DC-224			Camera	77	620452	6097123	620453	6097139	-2	-17	17	5		(Corr'd Nav, Kongsberg 14208, img#46) (B)
18-Aug-2024	02:34:04	1110	MV24GC1-ENV-DC-224			Camera	77	620450	6097116	620453	6097139	-3	-23	23	7		(Corr'd Nav, Kongsberg 14208, img#47) (B)
18-Aug-2024	02:34:43	1111	MV24GC1-ENV-DC-224			Camera	77	620449	6097112	620453	6097139	-4	-27	27	8		(Corr'd Nav, Kongsberg 14208, img#48) (B)
18-Aug-2024	02:35:11	1112	MV24GC1-ENV-DC-224			Camera	77	620449	6097110	620453	6097139	-5	-30	30	9		(Corr'd Nav, Kongsberg 14208, img#49) (B)
18-Aug-2024	02:36:07	1113	MV24GC1-ENV-DC-224			Camera	77	620447	6097105	620453	6097139	-6	-35	35	10		(Corr'd Nav, Kongsberg 14208, img#50) (B)
18-Aug-2024	02:37:05	1114	MV24GC1-ENV-DC-224			Camera	77	620446	6097098	620453	6097139	-7	-41	42	10		(Corr'd Nav, Kongsberg 14208, img#51) (B)
18-Aug-2024	02:37:40	1115	MV24GC1-ENV-DC-224			Camera	77	620445	6097095	620453	6097139	-8	-44	45	10		(Corr'd Nav, Kongsberg 14208, img#52) (B)
18-Aug-2024	02:38:20	1116	MV24GC1-ENV-DC-224			Camera	77	620444	6097091	620453	6097139	-9	-48	49	10		(Corr'd Nav, Kongsberg 14208, img#53) (B)
18-Aug-2024	02:38:32	1117	MV24GC1-ENV-DC-224			Camera	77	620444	6097090	620453	6097139	-9	-50	50	10		(Corr'd Nav, Kongsberg 14208, img#54) (B)
18-Aug-2024	03:53:14	1118	MV24GC1-ENV-DC-186			Camera	65	619940	6095252	619899	6095218	41	35	54	-130		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	03:53:48	1119	MV24GC1-ENV-DC-186			Camera	65	619939	6095251	619899	6095218	40	34	52	-130		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	03:54:34	1120	MV24GC1-ENV-DC-186			Camera	65	619934	6095246	619899	6095218	35	28	45	-129		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	03:54:53	1121	MV24GC1-ENV-DC-186			Camera	65	619932	6095244	619899	6095218	33	26	42	-129		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	03:55:22	1122	MV24GC1-ENV-DC-186			Camera	65	619928	6095241	619899	6095218	29	23	37	-128		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	03:55:58	1123	MV24GC1-ENV-DC-186			Camera	65	619924	6095237	619899	6095218	25	19	31	-128		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	03:56:32	1124	MV24GC1-ENV-DC-186			Camera	65	619920	6095234	619899	6095218	21	16	26	-128		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	03:57:30	1125	MV24GC1-ENV-DC-186			Camera	65	619913	6095228	619899	6095218	14	11	17	-128		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	03:57:46	1126	MV24GC1-ENV-DC-186			Camera	65	619911	6095227	619899	6095218	12	9	15	-128		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	03:58:04	1127	MV24GC1-ENV-DC-186			Camera	65	619909	6095225	619899	6095218	10	7	12	-127		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	03:59:01	1128	MV24GC1-ENV-DC-186			Camera	65	619902	6095220	619899	6095218	3	2	3	-121		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	03:59:37	1129	MV24GC1-ENV-DC-186			Camera	65	619898	6095216	619899	6095218	-1	-2	2	34		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	04:00:48	1130	MV24GC1-ENV-DC-186			Camera	65	619889	6095209	619899	6095218	-10	-9	13	47		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	04:01:22	1131	MV24GC1-ENV-DC-186			Camera	65	619885	6095205	619899	6095218	-14	-12	18	48		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	04:01:53	1132	MV24GC1-ENV-DC-186			Camera	65	619882	6095203	619899	6095218	-17	-15	23	48		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	04:02:20	1133	MV24GC1-ENV-DC-186			Camera	65	619879	6095200	619899	6095218	-20	-18	27	48		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	04:03:10	1134	MV24GC1-ENV-DC-186			Camera	65	619873	6095195	619899	6095218	-26	-23	34	49		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	04:03:57	1135	MV24GC1-ENV-DC-186			Camera	65	619868	6095191	619899	6095218	-31	-27	42	49		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	04:04:59	1136	MV24GC1-ENV-DC-186			Camera	65	619860	6095183	619899	6095218	-39	-35	52	48		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	04:11:44	1137	MV24GC1-ENV-DC-186			Camera	65	619841	6095232	619899	6095218	-59	14	60	103		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	04:12:31	1138	MV24GC1-ENV-DC-186			Camera	65	619841	6095231	619899	6095218	-58	13	59	103		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	04:13:38	1139	MV24GC1-ENV-DC-186			Camera	65	619853	6095229	619899	6095218	-47	11	48	103		(Corr'd Nav, Kongsberg 14208, img#22) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	04:13:49	1140	MV24GC1-ENV-DC-186			Camera	65	619855	6095228	619899	6095218	-44	10	45	103		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	04:14:30	1141	MV24GC1-ENV-DC-186			Camera	65	619863	6095227	619899	6095218	-36	9	37	104		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	04:15:23	1142	MV24GC1-ENV-DC-186			Camera	65	619871	6095226	619899	6095218	-28	8	29	107		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	04:16:03	1143	MV24GC1-ENV-DC-186			Camera	65	619877	6095225	619899	6095218	-22	7	24	108		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	04:16:44	1144	MV24GC1-ENV-DC-186			Camera	65	619882	6095224	619899	6095218	-17	6	18	111		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	04:17:02	1145	MV24GC1-ENV-DC-186			Camera	65	619885	6095224	619899	6095218	-14	6	15	113		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	04:17:11	1146	MV24GC1-ENV-DC-186			Camera	65	619887	6095224	619899	6095218	-12	6	14	116		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	04:17:41	1147	MV24GC1-ENV-DC-186			Camera	65	619891	6095223	619899	6095218	-8	5	9	123		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	04:18:55	1148	MV24GC1-ENV-DC-186			Camera	65	619901	6095217	619899	6095218	2	-1	2	-71		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	04:19:07	1149	MV24GC1-ENV-DC-186			Camera	65	619903	6095216	619899	6095218	4	-2	4	-66		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	04:19:26	1150	MV24GC1-ENV-DC-186			Camera	65	619905	6095215	619899	6095218	6	-3	7	-65		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	04:20:22	1151	MV24GC1-ENV-DC-186			Camera	65	619913	6095211	619899	6095218	14	-7	15	-62		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	04:20:46	1152	MV24GC1-ENV-DC-186			Camera	65	619916	6095209	619899	6095218	17	-9	19	-62		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	04:21:53	1153	MV24GC1-ENV-DC-186			Camera	65	619925	6095204	619899	6095218	26	-14	29	-61		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	04:22:23	1154	MV24GC1-ENV-DC-186			Camera	65	619928	6095201	619899	6095218	30	-16	34	-61		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	04:23:03	1155	MV24GC1-ENV-DC-186			Camera	65	619934	6095198	619899	6095218	35	-20	40	-60		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	04:23:36	1156	MV24GC1-ENV-DC-186			Camera	65	619938	6095196	619899	6095218	40	-22	45	-61		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	04:24:09	1157	MV24GC1-ENV-DC-186			Camera	65	619943	6095193	619899	6095218	44	-25	50	-61		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	05:56:33	1158	MV24GC1-ENV-DC-223			Camera	60	619323	6093337	619349	6093295	-27	41	49	147		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	05:57:13	1159	MV24GC1-ENV-DC-223			Camera	60	619327	6093332	619349	6093295	-22	36	43	148		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	05:57:45	1160	MV24GC1-ENV-DC-223			Camera	60	619330	6093328	619349	6093295	-19	32	38	149		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	05:58:19	1161	MV24GC1-ENV-DC-223			Camera	60	619333	6093323	619349	6093295	-16	28	32	150		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	05:58:58	1162	MV24GC1-ENV-DC-223			Camera	60	619336	6093318	619349	6093295	-13	23	26	150		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	05:59:34	1163	MV24GC1-ENV-DC-223			Camera	60	619339	6093314	619349	6093295	-10	18	21	152		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	06:00:21	1164	MV24GC1-ENV-DC-223			Camera	60	619343	6093308	619349	6093295	-6	12	14	154		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	06:00:53	1165	MV24GC1-ENV-DC-223			Camera	60	619346	6093304	619349	6093295	-3	9	9	161		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	06:01:00	1166	MV24GC1-ENV-DC-223			Camera	60	619347	6093303	619349	6093295	-2	7	8	164		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	06:01:15	1167	MV24GC1-ENV-DC-223			Camera	60	619348	6093301	619349	6093295	-1	5	6	167		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	06:01:38	1168	MV24GC1-ENV-DC-223			Camera	60	619350	6093298	619349	6093295	1	3	3	-161		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	06:01:59	1169	MV24GC1-ENV-DC-223			Camera	60	619352	6093295	619349	6093295	3	0	3	-84		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	06:02:45	1170	MV24GC1-ENV-DC-223			Camera	60	619356	6093289	619349	6093295	7	-6	10	-48		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	06:02:53	1171	MV24GC1-ENV-DC-223			Camera	60	619357	6093288	619349	6093295	8	-7	11	-47		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	06:03:26	1172	MV24GC1-ENV-DC-223			Camera	60	619360	6093284	619349	6093295	11	-11	16	-43		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	06:04:25	1173	MV24GC1-ENV-DC-223			Camera	60	619365	6093277	619349	6093295	16	-19	25	-41		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	06:05:03	1174	MV24GC1-ENV-DC-223			Camera	60	619368	6093272	619349	6093295	19	-23	30	-40		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	06:05:48	1175	MV24GC1-ENV-DC-223			Camera	60	619373	6093267	619349	6093295	24	-28	37	-40		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	06:06:29	1176	MV24GC1-ENV-DC-223			Camera	60	619376	6093263	619349	6093295	27	-33	43	-40		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	06:06:56	1177	MV24GC1-ENV-DC-223			Camera	60	619379	6093259	619349	6093295	30	-36	47	-40		(Corr'd Nav, Kongsberg 14208, img#20) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	06:07:31	1178	MV24GC1-ENV-DC-223			Camera	60	619382	6093255	619349	6093295	33	-40	52	-40		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	06:15:36	1179	MV24GC1-ENV-DC-223			Camera	60	619338	6093248	619349	6093295	-11	-47	48	13		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	06:16:22	1180	MV24GC1-ENV-DC-223			Camera	60	619340	6093256	619349	6093295	-9	-39	40	13		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	06:17:01	1181	MV24GC1-ENV-DC-223			Camera	60	619341	6093263	619349	6093295	-8	-33	34	14		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	06:17:49	1182	MV24GC1-ENV-DC-223			Camera	60	619342	6093270	619349	6093295	-7	-26	27	16		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	06:18:48	1183	MV24GC1-ENV-DC-223			Camera	60	619343	6093279	619349	6093295	-6	-16	17	20		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	06:19:23	1184	MV24GC1-ENV-DC-223			Camera	60	619345	6093285	619349	6093295	-4	-10	11	21		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	06:20:02	1185	MV24GC1-ENV-DC-223			Camera	60	619348	6093291	619349	6093295	-1	-5	5	11		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	06:20:41	1186	MV24GC1-ENV-DC-223			Camera	60	619351	6093296	619349	6093295	2	1	2	-111		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	06:21:36	1187	MV24GC1-ENV-DC-223			Camera	60	619355	6093304	619349	6093295	6	8	10	-146		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	06:22:08	1188	MV24GC1-ENV-DC-223			Camera	60	619357	6093308	619349	6093295	8	13	15	-149		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	06:22:21	1189	MV24GC1-ENV-DC-223			Camera	60	619358	6093310	619349	6093295	9	15	17	-150		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	06:22:50	1190	MV24GC1-ENV-DC-223			Camera	60	619359	6093314	619349	6093295	10	18	21	-151		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	06:23:35	1191	MV24GC1-ENV-DC-223			Camera	60	619362	6093320	619349	6093295	13	24	28	-152		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	06:24:01	1192	MV24GC1-ENV-DC-223			Camera	60	619364	6093323	619349	6093295	15	28	32	-152		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	06:24:35	1193	MV24GC1-ENV-DC-223			Camera	60	619366	6093328	619349	6093295	17	33	37	-153		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	06:25:10	1194	MV24GC1-ENV-DC-223			Camera	60	619369	6093334	619349	6093295	20	38	43	-153		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	06:25:25	1195	MV24GC1-ENV-DC-223			Camera	60	619370	6093336	619349	6093295	21	40	45	-153		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	06:25:42	1196	MV24GC1-ENV-DC-223			Camera	60	619371	6093338	619349	6093295	22	42	48	-152		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	06:25:54	1197	MV24GC1-ENV-DC-223			Camera	61	619372	6093339	619349	6093295	23	44	50	-152		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	06:26:18	1198	MV24GC1-ENV-DC-223			Camera	60	619374	6093342	619349	6093295	25	47	53	-153		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	07:32:21	1199	MV24GC1-ENV-DC-187			Camera	59	618784	6091433	618791	6091374	-7	59	59	173		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	07:33:33	1200	MV24GC1-ENV-DC-187			Camera	59	618784	6091430	618791	6091374	-8	55	56	172		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	07:34:27	1201	MV24GC1-ENV-DC-187			Camera	59	618785	6091422	618791	6091374	-7	48	48	172		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	07:34:58	1202	MV24GC1-ENV-DC-187			Camera	59	618785	6091418	618791	6091374	-6	44	44	172		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	07:35:39	1203	MV24GC1-ENV-DC-187			Camera	59	618786	6091412	618791	6091374	-5	37	38	172		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	07:36:07	1204	MV24GC1-ENV-DC-187			Camera	59	618788	6091408	618791	6091374	-4	33	33	173		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	07:36:44	1205	MV24GC1-ENV-DC-187			Camera	59	618789	6091404	618791	6091374	-3	29	29	175		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	07:37:25	1206	MV24GC1-ENV-DC-187			Camera	59	618789	6091398	618791	6091374	-3	24	24	174		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	07:38:08	1207	MV24GC1-ENV-DC-187			Camera	59	618789	6091392	618791	6091374	-2	18	18	173		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	07:38:42	1208	MV24GC1-ENV-DC-187			Camera	59	618790	6091387	618791	6091374	-2	13	13	173		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	07:38:50	1209	MV24GC1-ENV-DC-187			Camera	59	618790	6091386	618791	6091374	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	07:39:02	1210	MV24GC1-ENV-DC-187			Camera	59	618790	6091384	618791	6091374	-1	10	10	172		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	07:39:55	1211	MV24GC1-ENV-DC-187			Camera	59	618791	6091376	618791	6091374	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	07:40:12	1212	MV24GC1-ENV-DC-187			Camera	59	618792	6091374	618791	6091374	0	-1	1	-16		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	07:40:25	1213	MV24GC1-ENV-DC-187			Camera	59	618792	6091371	618791	6091374	1	-3	3	-11		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	07:41:14	1214	MV24GC1-ENV-DC-187			Camera	59	618793	6091364	618791	6091374	2	-11	11	-11		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	07:42:18	1215	MV24GC1-ENV-DC-187			Camera	59	618794	6091354	618791	6091374	3	-20	21	-8		(Corr'd Nav, Kongsberg 14208, img#17) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	07:43:00	1216	MV24GC1-ENV-DC-187			Camera	59	618795	6091348	618791	6091374	3	-27	27	-7		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	07:44:11	1217	MV24GC1-ENV-DC-187			Camera	59	618796	6091337	618791	6091374	5	-37	38	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	07:44:46	1218	MV24GC1-ENV-DC-187			Camera	59	618797	6091332	618791	6091374	6	-42	43	-8		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	07:45:17	1219	MV24GC1-ENV-DC-187			Camera	59	618798	6091327	618791	6091374	6	-47	48	-8		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	07:48:12	1220	MV24GC1-ENV-DC-187			Camera	59	618794	6091330	618791	6091374	3	-44	44	-4		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	07:53:58	1221	MV24GC1-ENV-DC-187			Camera	59	618753	6091366	618791	6091374	-38	-8	39	78		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	07:57:41	1222	MV24GC1-ENV-DC-187			Camera	59	618738	6091379	618791	6091374	-53	5	54	95		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	07:58:31	1223	MV24GC1-ENV-DC-187			Camera	59	618743	6091379	618791	6091374	-48	4	48	95		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	07:58:57	1224	MV24GC1-ENV-DC-187			Camera	59	618746	6091379	618791	6091374	-45	4	45	95		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	07:59:37	1225	MV24GC1-ENV-DC-187			Camera	59	618752	6091378	618791	6091374	-39	4	39	96		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	07:59:53	1226	MV24GC1-ENV-DC-187			Camera	59	618754	6091378	618791	6091374	-37	4	37	96		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	08:00:30	1227	MV24GC1-ENV-DC-187			Camera	59	618760	6091378	618791	6091374	-31	4	31	97		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	08:01:05	1228	MV24GC1-ENV-DC-187			Camera	59	618765	6091378	618791	6091374	-26	4	26	98		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	08:01:43	1229	MV24GC1-ENV-DC-187			Camera	59	618771	6091378	618791	6091374	-20	3	20	99		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	08:02:09	1230	MV24GC1-ENV-DC-187			Camera	59	618776	6091378	618791	6091374	-16	3	16	103		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	08:02:59	1231	MV24GC1-ENV-DC-187			Camera	59	618783	6091378	618791	6091374	-8	4	9	115		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	08:03:40	1232	MV24GC1-ENV-DC-187			Camera	59	618789	6091378	618791	6091374	-2	4	4	155		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	08:04:18	1233	MV24GC1-ENV-DC-187			Camera	59	618795	6091378	618791	6091374	3	4	5	-136		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	08:04:33	1234	MV24GC1-ENV-DC-187			Camera	59	618797	6091377	618791	6091374	6	3	6	-119		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	08:04:52	1235	MV24GC1-ENV-DC-187			Camera	59	618800	6091377	618791	6091374	9	3	9	-107		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	08:05:35	1236	MV24GC1-ENV-DC-187			Camera	59	618807	6091377	618791	6091374	16	3	16	-99		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	08:06:19	1237	MV24GC1-ENV-DC-187			Camera	59	618813	6091378	618791	6091374	22	3	22	-98		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	08:06:49	1238	MV24GC1-ENV-DC-187			Camera	59	618818	6091377	618791	6091374	26	3	26	-97		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	08:07:30	1239	MV24GC1-ENV-DC-187			Camera	59	618824	6091377	618791	6091374	33	2	33	-94		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	08:08:04	1240	MV24GC1-ENV-DC-187			Camera	59	618830	6091377	618791	6091374	38	2	38	-93		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	08:08:31	1241	MV24GC1-ENV-DC-187			Camera	59	618834	6091377	618791	6091374	42	3	42	-93		(Corr'd Nav, Kongsberg 14208, img#43) (B)
18-Aug-2024	08:09:07	1242	MV24GC1-ENV-DC-187			Camera	59	618839	6091376	618791	6091374	48	2	47	-92		(Corr'd Nav, Kongsberg 14208, img#44) (B)
18-Aug-2024	08:09:45	1243	MV24GC1-ENV-DC-187			Camera	59	618842	6091376	618791	6091374	50	2	50	-92		(Corr'd Nav, Kongsberg 14208, img#45) (B)
18-Aug-2024	10:08:15	1244	MV24GC1-ENV-DC-210			Camera	55	618285	6089462	618237	6089452	47	9	48	-101		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	10:08:43	1245	MV24GC1-ENV-DC-210			Camera	55	618280	6089461	618237	6089452	43	9	44	-101		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	10:08:58	1246	MV24GC1-ENV-DC-210			Camera	55	618278	6089461	618237	6089452	40	8	41	-102		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	10:09:28	1247	MV24GC1-ENV-DC-210			Camera	55	618274	6089460	618237	6089452	36	8	37	-102		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	10:09:52	1248	MV24GC1-ENV-DC-210			Camera	55	618271	6089460	618237	6089452	33	7	34	-102		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	10:10:39	1249	MV24GC1-ENV-DC-210			Camera	55	618264	6089457	618237	6089452	26	4	27	-99		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	10:10:58	1250	MV24GC1-ENV-DC-210			Camera	55	618261	6089456	618237	6089452	24	4	24	-99		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	10:11:28	1251	MV24GC1-ENV-DC-210			Camera	55	618258	6089455	618237	6089452	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	10:12:22	1252	MV24GC1-ENV-DC-210			Camera	55	618250	6089454	618237	6089452	13	1	13	-95		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	10:12:53	1253	MV24GC1-ENV-DC-210			Camera	55	618246	6089453	618237	6089452	8	0	8	-91		(Corr'd Nav, Kongsberg 14208, img#10) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	10:13:25	1254	MV24GC1-ENV-DC-210			Camera	55	618241	6089452	618237	6089452	3	-1	3	-81		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	10:13:51	1255	MV24GC1-ENV-DC-210			Camera	55	618237	6089451	618237	6089452	-1	-1	1	36		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	10:14:57	1256	MV24GC1-ENV-DC-210			Camera	55	618227	6089450	618237	6089452	-11	-3	11	77		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	10:15:14	1257	MV24GC1-ENV-DC-210			Camera	55	618224	6089449	618237	6089452	-13	-3	13	77		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	10:15:30	1258	MV24GC1-ENV-DC-210			Camera	55	618222	6089449	618237	6089452	-16	-4	16	77		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	10:16:11	1259	MV24GC1-ENV-DC-210			Camera	55	618216	6089448	618237	6089452	-22	-4	22	79		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	10:16:51	1260	MV24GC1-ENV-DC-210			Camera	55	618210	6089448	618237	6089452	-28	-5	28	80		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	10:17:06	1261	MV24GC1-ENV-DC-210			Camera	55	618207	6089447	618237	6089452	-30	-5	31	81		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	10:17:59	1262	MV24GC1-ENV-DC-210			Camera	55	618200	6089446	618237	6089452	-38	-7	38	80		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	10:18:12	1263	MV24GC1-ENV-DC-210			Camera	55	618198	6089446	618237	6089452	-40	-7	40	80		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	10:19:11	1264	MV24GC1-ENV-DC-210			Camera	54	618188	6089444	618237	6089452	-49	-8	50	80		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	10:27:37	1265	MV24GC1-ENV-DC-210			Camera	55	618200	6089485	618237	6089452	-37	32	49	131		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	10:27:59	1266	MV24GC1-ENV-DC-210			Camera	55	618203	6089482	618237	6089452	-35	30	46	131		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	10:28:19	1267	MV24GC1-ENV-DC-210			Camera	55	618205	6089480	618237	6089452	-32	28	42	130		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	10:29:00	1268	MV24GC1-ENV-DC-210			Camera	55	618211	6089475	618237	6089452	-27	22	35	130		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	10:29:21	1269	MV24GC1-ENV-DC-210			Camera	55	618214	6089472	618237	6089452	-24	20	31	130		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	10:29:34	1270	MV24GC1-ENV-DC-210			Camera	55	618215	6089471	618237	6089452	-22	19	29	130		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	10:30:17	1271	MV24GC1-ENV-DC-210			Camera	55	618221	6089467	618237	6089452	-17	15	22	131		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	10:30:36	1272	MV24GC1-ENV-DC-210			Camera	55	618223	6089465	618237	6089452	-15	13	19	131		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	10:30:47	1273	MV24GC1-ENV-DC-210			Camera	55	618224	6089464	618237	6089452	-13	11	18	130		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	10:31:13	1274	MV24GC1-ENV-DC-210			Camera	55	618227	6089461	618237	6089452	-11	9	14	130		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	10:31:42	1275	MV24GC1-ENV-DC-210			Camera	55	618230	6089459	618237	6089452	-7	6	10	130		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	10:31:59	1276	MV24GC1-ENV-DC-210			Camera	55	618232	6089457	618237	6089452	-5	5	7	131		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	10:32:17	1277	MV24GC1-ENV-DC-210			Camera	55	618234	6089455	618237	6089452	-3	3	4	132		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	10:32:58	1278	MV24GC1-ENV-DC-210			Camera	55	618239	6089451	618237	6089452	2	-1	2	-52		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	10:33:25	1279	MV24GC1-ENV-DC-210			Camera	55	618242	6089448	618237	6089452	5	-4	6	-46		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	10:34:16	1280	MV24GC1-ENV-DC-210			Camera	55	618248	6089443	618237	6089452	11	-10	15	-47		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	10:35:03	1281	MV24GC1-ENV-DC-210			Camera	55	618254	6089438	618237	6089452	16	-14	22	-48		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	10:35:56	1282	MV24GC1-ENV-DC-210			Camera	55	618260	6089433	618237	6089452	22	-20	30	-48		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	10:37:02	1283	MV24GC1-ENV-DC-210			Camera	55	618267	6089426	618237	6089452	29	-27	40	-48		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	10:38:19	1284	MV24GC1-ENV-DC-210			Camera	55	618275	6089419	618237	6089452	38	-34	51	-48		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	12:32:38	1285	MV24GC1-ENV-DC-211			Camera	52	617891	6087446	617854	6087485	37	-39	54	-44		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	12:33:35	1286	MV24GC1-ENV-DC-211			Camera	52	617885	6087451	617854	6087485	32	-34	47	-43		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	12:34:20	1287	MV24GC1-ENV-DC-211			Camera	52	617881	6087455	617854	6087485	27	-30	40	-42		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	12:35:00	1288	MV24GC1-ENV-DC-211			Camera	52	617876	6087459	617854	6087485	23	-26	35	-41		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	12:35:25	1289	MV24GC1-ENV-DC-211			Camera	52	617874	6087461	617854	6087485	20	-24	31	-40		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	12:36:15	1290	MV24GC1-ENV-DC-211			Camera	52	617869	6087467	617854	6087485	15	-18	23	-40		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	12:36:48	1291	MV24GC1-ENV-DC-211			Camera	52	617865	6087470	617854	6087485	12	-15	19	-39		(Corr'd Nav, Kongsberg 14208, img#7) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	12:37:44	1292	MV24GC1-ENV-DC-211			Camera	52	617859	6087477	617854	6087485	5	-8	9	-33		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	12:38:32	1293	MV24GC1-ENV-DC-211			Camera	52	617853	6087482	617854	6087485	0	-3	3	8		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	12:39:07	1294	MV24GC1-ENV-DC-211			Camera	52	617850	6087486	617854	6087485	-4	1	4	105		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	12:39:31	1295	MV24GC1-ENV-DC-211			Camera	52	617847	6087489	617854	6087485	-7	4	8	118		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	12:40:11	1296	MV24GC1-ENV-DC-211			Camera	52	617842	6087493	617854	6087485	-12	8	14	123		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	12:40:36	1297	MV24GC1-ENV-DC-211			Camera	52	617839	6087495	617854	6087485	-14	10	18	125		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	12:41:24	1298	MV24GC1-ENV-DC-211			Camera	52	617835	6087501	617854	6087485	-19	16	25	129		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	12:42:04	1299	MV24GC1-ENV-DC-211			Camera	52	617830	6087505	617854	6087485	-24	20	31	131		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	12:42:49	1300	MV24GC1-ENV-DC-211			Camera	52	617826	6087510	617854	6087485	-28	25	38	132		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	12:43:29	1301	MV24GC1-ENV-DC-211			Camera	52	617821	6087514	617854	6087485	-32	29	44	132		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	12:44:27	1302	MV24GC1-ENV-DC-211			Camera	52	617819	6087517	617854	6087485	-35	32	47	133		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	12:47:16	1303	MV24GC1-ENV-DC-211			Camera	52	617817	6087518	617854	6087485	-37	33	49	132		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	12:49:09	1304	MV24GC1-ENV-DC-211			Camera	52	617813	6087510	617854	6087485	-41	25	48	122		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	12:53:33	1305	MV24GC1-ENV-DC-211			Camera	52	617807	6087481	617854	6087485	-47	-4	47	86		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	12:53:58	1306	MV24GC1-ENV-DC-211			Camera	52	617810	6087481	617854	6087485	-44	-4	44	85		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	12:54:32	1307	MV24GC1-ENV-DC-211			Camera	52	617814	6087482	617854	6087485	-40	-3	40	86		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	12:55:24	1308	MV24GC1-ENV-DC-211			Camera	52	617822	6087482	617854	6087485	-32	-3	32	85		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	12:55:31	1309	MV24GC1-ENV-DC-211			Camera	52	617823	6087482	617854	6087485	-31	-3	31	84		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	12:56:05	1310	MV24GC1-ENV-DC-211			Camera	52	617828	6087481	617854	6087485	-26	-4	26	82		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	12:57:02	1311	MV24GC1-ENV-DC-211			Camera	52	617837	6087480	617854	6087485	-17	-5	17	74		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	12:57:59	1312	MV24GC1-ENV-DC-211			Camera	52	617840	6087480	617854	6087485	-14	-5	15	70		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	12:58:55	1313	MV24GC1-ENV-DC-211			Camera	52	617846	6087481	617854	6087485	-8	-4	9	61		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	13:00:09	1314	MV24GC1-ENV-DC-211			Camera	52	617853	6087482	617854	6087485	-1	-3	3	13		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	13:00:54	1315	MV24GC1-ENV-DC-211			Camera	52	617858	6087483	617854	6087485	4	-2	5	-60		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	13:01:52	1316	MV24GC1-ENV-DC-211			Camera	52	617864	6087483	617854	6087485	10	-2	10	-79		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	13:02:40	1317	MV24GC1-ENV-DC-211			Camera	52	617869	6087483	617854	6087485	15	-2	15	-83		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	13:03:17	1318	MV24GC1-ENV-DC-211			Camera	52	617872	6087484	617854	6087485	19	-1	19	-87		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	13:03:55	1319	MV24GC1-ENV-DC-211			Camera	52	617876	6087485	617854	6087485	23	0	23	-89		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	13:04:16	1320	MV24GC1-ENV-DC-211			Camera	52	617878	6087485	617854	6087485	25	0	25	-91		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	13:04:41	1321	MV24GC1-ENV-DC-211			Camera	52	617881	6087485	617854	6087485	27	0	27	-91		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	13:05:11	1322	MV24GC1-ENV-DC-211			Camera	52	617884	6087485	617854	6087485	30	0	30	-90		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	13:05:35	1323	MV24GC1-ENV-DC-211			Camera	52	617886	6087485	617854	6087485	32	0	32	-91		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	13:06:12	1324	MV24GC1-ENV-DC-211			Camera	52	617890	6087485	617854	6087485	37	0	37	-91		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	13:06:49	1325	MV24GC1-ENV-DC-211			Camera	52	617894	6087486	617854	6087485	40	1	40	-91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	13:07:19	1326	MV24GC1-ENV-DC-211			Camera	52	617897	6087486	617854	6087485	43	1	43	-92		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	13:08:05	1327	MV24GC1-ENV-DC-211			Camera	52	617902	6087487	617854	6087485	49	2	49	-93		(Corr'd Nav, Kongsberg 14208, img#43) (B)
18-Aug-2024	13:08:22	1328	MV24GC1-ENV-DC-211			Camera	52	617904	6087487	617854	6087485	51	2	51	-93		(Corr'd Nav, Kongsberg 14208, img#44) (B)
18-Aug-2024	13:08:46	1329	MV24GC1-ENV-DC-211			Camera	52	617907	6087488	617854	6087485	53	3	53	-93		(Corr'd Nav, Kongsberg 14208, img#45) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	13:08:56	1330	MV24GC1-ENV-DC-211			Camera	52	617907	6087487	617854	6087485	54	3	54	-93		(Corr'd Nav, Kongsberg 14208, img#46) (B)
18-Aug-2024	15:18:46	1331	MV24GC1-ENV-DC-212			Camera	50	617663	6085621	617621	6085643	42	-22	48	-63		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	15:19:02	1332	MV24GC1-ENV-DC-212			Camera	50	617661	6085623	617621	6085643	40	-21	45	-63		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	15:19:38	1333	MV24GC1-ENV-DC-212			Camera	49	617656	6085625	617621	6085643	36	-18	40	-63		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	15:20:11	1334	MV24GC1-ENV-DC-212			Camera	49	617651	6085627	617621	6085643	30	-16	34	-62		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	15:20:44	1335	MV24GC1-ENV-DC-212			Camera	49	617647	6085629	617621	6085643	26	-14	30	-62		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	15:21:19	1336	MV24GC1-ENV-DC-212			Camera	49	617642	6085631	617621	6085643	21	-12	24	-60		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	15:21:41	1337	MV24GC1-ENV-DC-212			Camera	50	617638	6085633	617621	6085643	18	-10	21	-60		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	15:22:07	1338	MV24GC1-ENV-DC-212			Camera	50	617635	6085635	617621	6085643	14	-9	17	-59		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	15:22:15	1339	MV24GC1-ENV-DC-212			Camera	49	617634	6085635	617621	6085643	13	-8	15	-58		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	15:22:37	1340	MV24GC1-ENV-DC-212			Camera	49	617631	6085637	617621	6085643	10	-7	12	-57		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	15:23:39	1341	MV24GC1-ENV-DC-212			Camera	49	617622	6085641	617621	6085643	1	-3	3	-28		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	15:24:09	1342	MV24GC1-ENV-DC-212			Camera	49	617618	6085642	617621	6085643	-2	-1	3	70		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	15:24:30	1343	MV24GC1-ENV-DC-212			Camera	49	617615	6085644	617621	6085643	-6	1	6	96		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	15:24:59	1344	MV24GC1-ENV-DC-212			Camera	49	617611	6085646	617621	6085643	-9	2	10	104		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	15:26:06	1345	MV24GC1-ENV-DC-212			Camera	49	617602	6085650	617621	6085643	-19	7	20	111		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	15:26:27	1346	MV24GC1-ENV-DC-212			Camera	49	617599	6085652	617621	6085643	-22	9	24	112		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	15:26:58	1347	MV24GC1-ENV-DC-212			Camera	49	617594	6085655	617621	6085643	-27	11	29	113		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	15:27:33	1348	MV24GC1-ENV-DC-212			Camera	49	617589	6085657	617621	6085643	-32	14	34	113		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	15:28:11	1349	MV24GC1-ENV-DC-212			Camera	49	617584	6085659	617621	6085643	-37	16	40	113		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	15:29:13	1350	MV24GC1-ENV-DC-212			Camera	49	617575	6085664	617621	6085643	-46	20	50	114		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	15:33:00	1351	MV24GC1-ENV-DC-212			Camera	49	617586	6085683	617621	6085643	-34	40	53	139		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	15:37:52	1352	MV24GC1-ENV-DC-212			Camera	50	617610	6085690	617621	6085643	-11	47	48	167		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	15:38:20	1353	MV24GC1-ENV-DC-212			Camera	50	617611	6085686	617621	6085643	-9	43	44	168		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	15:38:37	1354	MV24GC1-ENV-DC-212			Camera	49	617612	6085683	617621	6085643	-9	40	41	168		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	15:38:57	1355	MV24GC1-ENV-DC-212			Camera	49	617612	6085680	617621	6085643	-8	37	38	168		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	15:39:31	1356	MV24GC1-ENV-DC-212			Camera	49	617614	6085675	617621	6085643	-6	32	33	169		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	15:40:14	1357	MV24GC1-ENV-DC-212			Camera	49	617617	6085669	617621	6085643	-4	26	26	172		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	15:40:23	1358	MV24GC1-ENV-DC-212			Camera	49	617617	6085667	617621	6085643	-3	24	24	173		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	15:41:26	1359	MV24GC1-ENV-DC-212			Camera	50	617621	6085658	617621	6085643	0	14	14	-179		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	15:42:16	1360	MV24GC1-ENV-DC-212			Camera	49	617621	6085650	617621	6085643	0	7	7	-178		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	15:43:32	1361	MV24GC1-ENV-DC-212			Camera	49	617621	6085638	617621	6085643	0	-6	6	-1		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	15:44:56	1362	MV24GC1-ENV-DC-212			Camera	49	617623	6085622	617621	6085643	2	-21	21	-6		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	15:45:23	1363	MV24GC1-ENV-DC-212			Camera	49	617623	6085619	617621	6085643	3	-25	25	-6		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	15:46:08	1364	MV24GC1-ENV-DC-212			Camera	49	617623	6085612	617621	6085643	2	-31	31	-4		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	15:46:33	1365	MV24GC1-ENV-DC-212			Camera	49	617623	6085608	617621	6085643	2	-35	35	-4		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	15:47:11	1366	MV24GC1-ENV-DC-212			Camera	49	617623	6085601	617621	6085643	2	-42	42	-3		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	15:47:43	1367	MV24GC1-ENV-DC-212			Camera	49	617623	6085596	617621	6085643	2	-48	48	-3		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	15:48:08	1368	MV24GC1-ENV-DC-212			Camera	49	617622	6085594	617621	6085643	2	-49	49	-2		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	17:30:19	1369	MV24GC1-ENV-DC-213			Camera	48	616843	6083665	616788	6083649	55	15	57	-105		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	17:31:08	1370	MV24GC1-ENV-DC-213			Camera	48	616838	6083664	616788	6083649	50	15	52	-106		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	17:32:01	1371	MV24GC1-ENV-DC-213			Camera	48	616830	6083661	616788	6083649	41	12	43	-106		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	17:32:20	1372	MV24GC1-ENV-DC-213			Camera	48	616826	6083660	616788	6083649	38	11	40	-106		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	17:33:01	1373	MV24GC1-ENV-DC-213			Camera	48	616822	6083658	616788	6083649	34	9	35	-104		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	17:33:37	1374	MV24GC1-ENV-DC-213			Camera	48	616816	6083657	616788	6083649	28	7	29	-104		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	17:34:11	1375	MV24GC1-ENV-DC-213			Camera	48	616812	6083655	616788	6083649	23	6	24	-104		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	17:34:46	1376	MV24GC1-ENV-DC-213			Camera	48	616806	6083654	616788	6083649	18	5	19	-104		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	17:35:26	1377	MV24GC1-ENV-DC-213			Camera	48	616800	6083652	616788	6083649	12	3	12	-103		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	17:35:52	1378	MV24GC1-ENV-DC-213			Camera	48	616797	6083651	616788	6083649	9	2	9	-102		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	17:36:35	1379	MV24GC1-ENV-DC-213			Camera	48	616790	6083649	616788	6083649	2	0	2	-83		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	17:37:24	1380	MV24GC1-ENV-DC-213			Camera	48	616783	6083647	616788	6083649	-5	-3	6	63		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	17:38:02	1381	MV24GC1-ENV-DC-213			Camera	48	616778	6083645	616788	6083649	-10	-4	11	66		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	17:38:25	1382	MV24GC1-ENV-DC-213			Camera	48	616775	6083644	616788	6083649	-13	-5	14	69		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	17:38:49	1383	MV24GC1-ENV-DC-213			Camera	48	616771	6083643	616788	6083649	-17	-6	18	71		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	17:40:05	1384	MV24GC1-ENV-DC-213			Camera	48	616759	6083641	616788	6083649	-29	-9	30	73		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	17:41:20	1385	MV24GC1-ENV-DC-213			Camera	48	616748	6083637	616788	6083649	-40	-13	42	72		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	17:42:01	1386	MV24GC1-ENV-DC-213			Camera	48	616742	6083635	616788	6083649	-46	-14	48	73		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	17:42:10	1387	MV24GC1-ENV-DC-213			Camera	48	616741	6083635	616788	6083649	-47	-15	49	73		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	17:42:34	1388	MV24GC1-ENV-DC-213			Camera	48	616738	6083634	616788	6083649	-51	-16	53	73		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	17:46:56	1389	MV24GC1-ENV-DC-213			Camera	48	616740	6083666	616788	6083649	-48	17	51	109		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	17:51:48	1390	MV24GC1-ENV-DC-213			Camera	48	616758	6083681	616788	6083649	-30	31	44	136		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	17:52:13	1391	MV24GC1-ENV-DC-213			Camera	48	616761	6083678	616788	6083649	-27	29	40	136		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	17:53:08	1392	MV24GC1-ENV-DC-213			Camera	48	616768	6083673	616788	6083649	-20	23	31	139		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	17:53:30	1393	MV24GC1-ENV-DC-213			Camera	48	616770	6083671	616788	6083649	-18	21	28	140		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	17:54:32	1394	MV24GC1-ENV-DC-213			Camera	48	616779	6083665	616788	6083649	-10	16	18	148		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	17:56:25	1395	MV24GC1-ENV-DC-213			Camera	48	616788	6083651	616788	6083649	-1	2	2	155		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	17:57:05	1396	MV24GC1-ENV-DC-213			Camera	48	616788	6083646	616788	6083649	0	-4	4	0		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	17:58:29	1397	MV24GC1-ENV-DC-213			Camera	48	616793	6083634	616788	6083649	5	-15	16	-17		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	17:58:55	1398	MV24GC1-ENV-DC-213			Camera	48	616794	6083630	616788	6083649	6	-19	20	-18		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	17:59:38	1399	MV24GC1-ENV-DC-213			Camera	48	616797	6083624	616788	6083649	9	-26	27	-18		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	18:00:35	1400	MV24GC1-ENV-DC-213			Camera	48	616800	6083615	616788	6083649	12	-35	37	-19		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	18:01:04	1401	MV24GC1-ENV-DC-213			Camera	48	616802	6083611	616788	6083649	14	-39	41	-20		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	18:01:40	1402	MV24GC1-ENV-DC-213			Camera	48	616804	6083606	616788	6083649	16	-44	46	-20		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	18:02:24	1403	MV24GC1-ENV-DC-213			Camera	48	616807	6083600	616788	6083649	18	-50	53	-20		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	18:02:54	1404	MV24GC1-ENV-DC-213			Camera	48	616808	6083596	616788	6083649	20	-54	58	-20		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	18:03:03	1405	MV24GC1-ENV-DC-213			Camera	48	616809	6083594	616788	6083649	21	-55	59	-20		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	19:52:57	1406	MV24GC1-ENV-DC-214			Camera	45	616290	6081730	616242	6081710	48	19	51	-112		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	19:53:37	1407	MV24GC1-ENV-DC-214			Camera	45	616289	6081730	616242	6081710	47	20	51	-113		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	19:54:27	1408	MV24GC1-ENV-DC-214			Camera	45	616283	6081727	616242	6081710	41	17	44	-113		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	19:55:28	1409	MV24GC1-ENV-DC-214			Camera	45	616273	6081723	616242	6081710	31	13	34	-112		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	19:56:18	1410	MV24GC1-ENV-DC-214			Camera	45	616266	6081721	616242	6081710	24	10	26	-113		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	19:57:01	1411	MV24GC1-ENV-DC-214			Camera	45	616260	6081718	616242	6081710	18	8	19	-114		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	19:57:32	1412	MV24GC1-ENV-DC-214			Camera	45	616256	6081717	616242	6081710	13	6	15	-115		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	19:58:29	1413	MV24GC1-ENV-DC-214			Camera	45	616248	6081714	616242	6081710	5	4	6	-124		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	19:58:47	1414	MV24GC1-ENV-DC-214			Camera	45	616245	6081713	616242	6081710	3	3	4	-136		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	19:59:33	1415	MV24GC1-ENV-DC-214			Camera	45	616238	6081711	616242	6081710	-4	0	4	94		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	19:59:48	1416	MV24GC1-ENV-DC-214			Camera	45	616236	6081710	616242	6081710	-6	-1	6	85		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	20:00:02	1417	MV24GC1-ENV-DC-214			Camera	45	616234	6081709	616242	6081710	-9	-1	9	82		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	20:00:25	1418	MV24GC1-ENV-DC-214			Camera	45	616231	6081708	616242	6081710	-12	-2	12	79		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	20:01:04	1419	MV24GC1-ENV-DC-214			Camera	45	616225	6081706	616242	6081710	-17	-4	18	77		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	20:01:31	1420	MV24GC1-ENV-DC-214			Camera	45	616221	6081704	616242	6081710	-21	-6	22	74		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	20:02:16	1421	MV24GC1-ENV-DC-214			Camera	45	616215	6081702	616242	6081710	-28	-8	29	73		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	20:03:25	1422	MV24GC1-ENV-DC-214			Camera	45	616205	6081699	616242	6081710	-38	-12	39	73		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	20:04:19	1423	MV24GC1-ENV-DC-214			Camera	45	616196	6081696	616242	6081710	-46	-14	48	73		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	20:04:42	1424	MV24GC1-ENV-DC-214			Camera	45	616193	6081695	616242	6081710	-49	-16	51	72		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	20:10:50	1425	MV24GC1-ENV-DC-214			Camera	45	616200	6081739	616242	6081710	-43	29	51	124		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	20:11:34	1426	MV24GC1-ENV-DC-214			Camera	45	616201	6081745	616242	6081710	-41	35	54	130		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	20:13:41	1427	MV24GC1-ENV-DC-214			Camera	45	616207	6081742	616242	6081710	-36	32	48	132		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	20:29:32	1428	MV24GC1-ENV-DC-214			Camera	45	616197	6081743	616242	6081710	-45	33	56	126		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	20:32:48	1429	MV24GC1-ENV-DC-214			Camera	45	616212	6081732	616242	6081710	-30	22	37	126		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	20:33:54	1430	MV24GC1-ENV-DC-214			Camera	45	616221	6081726	616242	6081710	-21	16	26	127		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	20:34:17	1431	MV24GC1-ENV-DC-214			Camera	45	616224	6081724	616242	6081710	-18	14	22	127		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	20:34:47	1432	MV24GC1-ENV-DC-214			Camera	45	616228	6081721	616242	6081710	-14	11	18	128		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	20:35:21	1433	MV24GC1-ENV-DC-214			Camera	45	616233	6081718	616242	6081710	-9	8	12	130		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	20:35:54	1434	MV24GC1-ENV-DC-214			Camera	45	616237	6081715	616242	6081710	-5	5	7	136		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	20:36:18	1435	MV24GC1-ENV-DC-214			Camera	45	616241	6081714	616242	6081710	-2	4	4	157		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	20:36:36	1436	MV24GC1-ENV-DC-214			Camera	45	616243	6081713	616242	6081710	1	2	2	-165		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	20:36:50	1437	MV24GC1-ENV-DC-214			Camera	45	616245	6081711	616242	6081710	2	1	3	-108		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	20:37:18	1438	MV24GC1-ENV-DC-214			Camera	45	616248	6081709	616242	6081710	6	-2	6	-73		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	20:37:52	1439	MV24GC1-ENV-DC-214			Camera	45	616252	6081706	616242	6081710	10	-5	11	-66		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	20:38:31	1440	MV24GC1-ENV-DC-214			Camera	45	616257	6081703	616242	6081710	15	-7	17	-64		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	20:39:10	1441	MV24GC1-ENV-DC-214			Camera	45	616262	6081700	616242	6081710	20	-11	23	-61		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	20:39:51	1442	MV24GC1-ENV-DC-214			Camera	45	616267	6081696	616242	6081710	25	-14	29	-60		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	20:40:31	1443	MV24GC1-ENV-DC-214			Camera	45	616273	6081693	616242	6081710	30	-18	35	-60		(Corr'd Nav, Kongsberg 14208, img#38) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	20:41:03	1444	MV24GC1-ENV-DC-214			Camera	45	616277	6081690	616242	6081710	35	-20	40	-60		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	20:41:29	1445	MV24GC1-ENV-DC-214			Camera	45	616280	6081688	616242	6081710	38	-23	44	-59		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	20:42:08	1446	MV24GC1-ENV-DC-214			Camera	45	616285	6081684	616242	6081710	43	-26	50	-59		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	20:42:30	1447	MV24GC1-ENV-DC-214			Camera	45	616286	6081683	616242	6081710	44	-27	52	-58		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	22:39:35	1448	MV24GC1-ENV-DC-215			Camera	44	615718	6079882	615717	6079828	1	54	54	-179		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	22:40:16	1449	MV24GC1-ENV-DC-215			Camera	44	615718	6079877	615717	6079828	1	49	49	-179		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	22:40:54	1450	MV24GC1-ENV-DC-215			Camera	44	615717	6079871	615717	6079828	0	43	43	-179		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	22:41:23	1451	MV24GC1-ENV-DC-215			Camera	44	615717	6079866	615717	6079828	0	38	38	-180		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	22:42:02	1452	MV24GC1-ENV-DC-215			Camera	44	615717	6079861	615717	6079828	0	33	33	-180		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	22:42:40	1453	MV24GC1-ENV-DC-215			Camera	44	615717	6079855	615717	6079828	1	27	27	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	22:43:21	1454	MV24GC1-ENV-DC-215			Camera	44	615718	6079850	615717	6079828	1	22	22	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	22:44:29	1455	MV24GC1-ENV-DC-215			Camera	44	615718	6079839	615717	6079828	1	11	11	-173		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	22:45:22	1456	MV24GC1-ENV-DC-215			Camera	44	615718	6079831	615717	6079828	1	3	3	-161		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	22:45:37	1457	MV24GC1-ENV-DC-215			Camera	44	615717	6079829	615717	6079828	1	1	1	-130		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	22:45:57	1458	MV24GC1-ENV-DC-215			Camera	44	615718	6079826	615717	6079828	1	-2	2	-27		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	22:46:28	1459	MV24GC1-ENV-DC-215			Camera	44	615717	6079822	615717	6079828	1	-6	6	-6		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	22:47:10	1460	MV24GC1-ENV-DC-215			Camera	44	615717	6079814	615717	6079828	0	-14	14	-2		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	22:48:07	1461	MV24GC1-ENV-DC-215			Camera	44	615717	6079806	615717	6079828	0	-22	22	0		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	22:48:49	1462	MV24GC1-ENV-DC-215			Camera	44	615716	6079799	615717	6079828	0	-29	28	1		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	22:49:36	1463	MV24GC1-ENV-DC-215			Camera	44	615716	6079792	615717	6079828	0	-36	36	0		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	22:50:24	1464	MV24GC1-ENV-DC-215			Camera	44	615716	6079785	615717	6079828	0	-43	43	0		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	22:51:19	1465	MV24GC1-ENV-DC-215			Camera	44	615716	6079776	615717	6079828	0	-52	52	0		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	23:00:58	1466	MV24GC1-ENV-DC-215			Camera	44	615664	6079830	615717	6079828	-53	2	53	93		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	23:02:27	1467	MV24GC1-ENV-DC-215			Camera	44	615661	6079831	615717	6079828	-55	3	55	93		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	23:03:19	1468	MV24GC1-ENV-DC-215			Camera	44	615667	6079831	615717	6079828	-50	3	50	93		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	23:04:39	1469	MV24GC1-ENV-DC-215			Camera	44	615681	6079830	615717	6079828	-35	2	35	94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	23:05:12	1470	MV24GC1-ENV-DC-215			Camera	44	615687	6079830	615717	6079828	-30	2	30	94		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	23:05:49	1471	MV24GC1-ENV-DC-215			Camera	44	615693	6079830	615717	6079828	-24	2	24	95		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	23:06:54	1472	MV24GC1-ENV-DC-215			Camera	44	615703	6079830	615717	6079828	-14	2	14	97		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	23:07:30	1473	MV24GC1-ENV-DC-215			Camera	44	615708	6079830	615717	6079828	-8	2	9	101		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	23:08:13	1474	MV24GC1-ENV-DC-215			Camera	44	615715	6079829	615717	6079828	-2	2	2	130		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	23:08:34	1475	MV24GC1-ENV-DC-215			Camera	44	615718	6079829	615717	6079828	1	2	2	-137		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	23:09:05	1476	MV24GC1-ENV-DC-215			Camera	44	615723	6079829	615717	6079828	6	1	7	-103		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	23:09:27	1477	MV24GC1-ENV-DC-215			Camera	44	615726	6079829	615717	6079828	10	1	10	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	23:10:01	1478	MV24GC1-ENV-DC-215			Camera	44	615732	6079828	615717	6079828	15	0	15	-92		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	23:10:39	1479	MV24GC1-ENV-DC-215			Camera	44	615737	6079828	615717	6079828	21	0	21	-90		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	23:11:49	1480	MV24GC1-ENV-DC-215			Camera	44	615748	6079828	615717	6079828	32	0	32	-89		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	23:12:11	1481	MV24GC1-ENV-DC-215			Camera	44	615751	6079827	615717	6079828	35	0	35	-89		(Corr'd Nav, Kongsberg 14208, img#34) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	23:13:03	1482	MV24GC1-ENV-DC-215			Camera	44	615759	6079827	615717	6079828	43	-1	43	-89		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	00:47:50	1483	MV24GC1-ENV-DC-188			Camera	34	615129	6077914	615150	6077864	-21	50	54	157		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	00:48:49	1484	MV24GC1-ENV-DC-188			Camera	34	615130	6077914	615150	6077864	-20	50	54	158		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	00:48:59	1485	MV24GC1-ENV-DC-188			Camera	34	615131	6077913	615150	6077864	-19	49	53	158		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	00:49:16	1486	MV24GC1-ENV-DC-188			Camera	34	615132	6077910	615150	6077864	-19	46	49	158		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	00:49:37	1487	MV24GC1-ENV-DC-188			Camera	34	615133	6077906	615150	6077864	-18	42	45	157		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	00:49:47	1488	MV24GC1-ENV-DC-188			Camera	34	615133	6077905	615150	6077864	-17	41	44	157		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	00:49:57	1489	MV24GC1-ENV-DC-188			Camera	34	615134	6077903	615150	6077864	-16	39	42	157		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	00:50:14	1490	MV24GC1-ENV-DC-188			Camera	34	615135	6077901	615150	6077864	-16	37	40	157		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	00:50:56	1491	MV24GC1-ENV-DC-188			Camera	35	615137	6077896	615150	6077864	-13	32	35	158		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	00:51:08	1492	MV24GC1-ENV-DC-188			Camera	35	615138	6077894	615150	6077864	-12	30	33	158		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	00:52:04	1493	MV24GC1-ENV-DC-188			Camera	35	615141	6077887	615150	6077864	-9	23	25	158		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	00:52:32	1494	MV24GC1-ENV-DC-188			Camera	34	615142	6077883	615150	6077864	-8	19	20	157		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	00:53:07	1495	MV24GC1-ENV-DC-188			Camera	34	615144	6077877	615150	6077864	-6	14	15	156		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	00:53:38	1496	MV24GC1-ENV-DC-188			Camera	34	615146	6077873	615150	6077864	-4	9	10	154		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	00:53:57	1497	MV24GC1-ENV-DC-188			Camera	34	615147	6077870	615150	6077864	-3	6	7	152		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	00:54:14	1498	MV24GC1-ENV-DC-188			Camera	34	615148	6077868	615150	6077864	-2	4	4	149		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	00:54:23	1499	MV24GC1-ENV-DC-188			Camera	34	615148	6077866	615150	6077864	-2	2	3	143		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	00:54:39	1500	MV24GC1-ENV-DC-188			Camera	34	615150	6077864	615150	6077864	-1	0	1	76		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	00:55:02	1501	MV24GC1-ENV-DC-188			Camera	34	615151	6077860	615150	6077864	1	-4	4	-9		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	00:55:13	1502	MV24GC1-ENV-DC-188			Camera	34	615152	6077859	615150	6077864	1	-5	5	-14		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	00:55:50	1503	MV24GC1-ENV-DC-188			Camera	34	615154	6077854	615150	6077864	3	-10	10	-20		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	00:56:21	1504	MV24GC1-ENV-DC-188			Camera	34	615155	6077850	615150	6077864	5	-14	15	-20		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	00:56:44	1505	MV24GC1-ENV-DC-188			Camera	34	615157	6077846	615150	6077864	7	-18	19	-20		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	00:57:13	1506	MV24GC1-ENV-DC-188			Camera	34	615158	6077842	615150	6077864	8	-22	24	-20		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	00:57:47	1507	MV24GC1-ENV-DC-188			Camera	34	615161	6077837	615150	6077864	10	-27	29	-21		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	00:58:32	1508	MV24GC1-ENV-DC-188			Camera	33	615163	6077831	615150	6077864	13	-33	36	-21		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	00:59:17	1509	MV24GC1-ENV-DC-188			Camera	34	615165	6077824	615150	6077864	15	-40	42	-20		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	00:59:45	1510	MV24GC1-ENV-DC-188			Camera	34	615166	6077820	615150	6077864	16	-44	46	-20		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	01:07:37	1511	MV24GC1-ENV-DC-188			Camera	34	615135	6077843	615150	6077864	-16	-21	26	37		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	01:08:42	1512	MV24GC1-ENV-DC-188			Camera	34	615129	6077847	615150	6077864	-21	-17	27	51		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	01:09:29	1513	MV24GC1-ENV-DC-188			Camera	34	615124	6077849	615150	6077864	-26	-15	30	60		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	01:10:52	1514	MV24GC1-ENV-DC-188			Camera	34	615117	6077853	615150	6077864	-33	-11	35	71		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	01:12:26	1515	MV24GC1-ENV-DC-188			Camera	34	615106	6077859	615150	6077864	-44	-5	44	83		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	01:13:19	1516	MV24GC1-ENV-DC-188			Camera	34	615103	6077860	615150	6077864	-48	-4	48	85		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	01:13:46	1517	MV24GC1-ENV-DC-188			Camera	34	615102	6077861	615150	6077864	-49	-3	49	87		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	01:14:02	1518	MV24GC1-ENV-DC-188			Camera	34	615101	6077862	615150	6077864	-49	-2	49	87		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	01:15:35	1519	MV24GC1-ENV-DC-188			Camera	34	615099	6077864	615150	6077864	-51	0	51	90		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	01:16:42	1520	MV24GC1-ENV-DC-188			Camera	34	615102	6077863	615150	6077864	-48	0	48	90		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	01:17:02	1521	MV24GC1-ENV-DC-188			Camera	34	615105	6077863	615150	6077864	-45	0	45	89		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	01:17:13	1522	MV24GC1-ENV-DC-188			Camera	34	615106	6077863	615150	6077864	-44	-1	44	89		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	01:18:46	1523	MV24GC1-ENV-DC-188			Camera	34	615124	6077863	615150	6077864	-26	-1	26	89		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	01:19:12	1524	MV24GC1-ENV-DC-188			Camera	34	615130	6077863	615150	6077864	-20	-1	20	89		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	01:19:57	1525	MV24GC1-ENV-DC-188			Camera	34	615139	6077863	615150	6077864	-11	-1	11	83		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	01:20:12	1526	MV24GC1-ENV-DC-188			Camera	34	615143	6077862	615150	6077864	-8	-2	8	78		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	01:20:43	1527	MV24GC1-ENV-DC-188			Camera	34	615149	6077862	615150	6077864	-1	-2	2	23		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	01:21:01	1528	MV24GC1-ENV-DC-188			Camera	34	615153	6077862	615150	6077864	3	-2	4	-55		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	01:21:11	1529	MV24GC1-ENV-DC-188			Camera	34	615155	6077862	615150	6077864	5	-2	6	-69		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	01:21:42	1530	MV24GC1-ENV-DC-188			Camera	34	615162	6077861	615150	6077864	12	-2	12	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	01:22:02	1531	MV24GC1-ENV-DC-188			Camera	34	615166	6077861	615150	6077864	16	-3	16	-81		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	01:22:19	1532	MV24GC1-ENV-DC-188			Camera	34	615170	6077861	615150	6077864	19	-2	20	-83		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	01:22:30	1533	MV24GC1-ENV-DC-188			Camera	34	615172	6077861	615150	6077864	22	-2	22	-84		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	01:22:42	1534	MV24GC1-ENV-DC-188			Camera	34	615174	6077861	615150	6077864	24	-2	24	-84		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	01:23:05	1535	MV24GC1-ENV-DC-188			Camera	34	615179	6077862	615150	6077864	29	-2	29	-85		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	01:23:30	1536	MV24GC1-ENV-DC-188			Camera	34	615185	6077862	615150	6077864	35	-2	35	-86		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	01:23:40	1537	MV24GC1-ENV-DC-188			Camera	34	615187	6077861	615150	6077864	37	-2	37	-86		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	01:24:05	1538	MV24GC1-ENV-DC-188			Camera	34	615192	6077861	615150	6077864	42	-3	42	-86		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	01:24:25	1539	MV24GC1-ENV-DC-188			Camera	34	615196	6077861	615150	6077864	46	-3	46	-86		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	01:24:34	1540	MV24GC1-ENV-DC-188			Camera	34	615198	6077861	615150	6077864	47	-3	47	-86		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	01:24:41	1541	MV24GC1-ENV-DC-188			Camera	34	615199	6077861	615150	6077864	49	-3	49	-87		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	01:25:10	1542	MV24GC1-ENV-DC-188			Camera	34	615202	6077861	615150	6077864	52	-3	52	-87		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	02:24:31	1543	MV24GC1-ENV-DC-197			Camera	33	614353	6076016	614311	6076047	42	-31	52	-53		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	02:24:57	1544	MV24GC1-ENV-DC-197			Camera	33	614352	6076016	614311	6076047	41	-31	51	-53		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	02:25:15	1545	MV24GC1-ENV-DC-197			Camera	33	614350	6076017	614311	6076047	39	-30	49	-52		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	02:25:39	1546	MV24GC1-ENV-DC-197			Camera	33	614347	6076020	614311	6076047	35	-27	45	-52		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	02:26:03	1547	MV24GC1-ENV-DC-197			Camera	32	614343	6076022	614311	6076047	31	-25	40	-52		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	02:26:39	1548	MV24GC1-ENV-DC-197			Camera	32	614337	6076027	614311	6076047	25	-20	32	-51		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	02:27:10	1549	MV24GC1-ENV-DC-197			Camera	32	614332	6076031	614311	6076047	20	-16	26	-51		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	02:27:34	1550	MV24GC1-ENV-DC-197			Camera	32	614328	6076034	614311	6076047	16	-14	21	-51		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	02:27:54	1551	MV24GC1-ENV-DC-197			Camera	32	614325	6076036	614311	6076047	13	-11	17	-49		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	02:28:18	1552	MV24GC1-ENV-DC-197			Camera	32	614320	6076039	614311	6076047	9	-8	12	-48		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	02:28:33	1553	MV24GC1-ENV-DC-197			Camera	32	614318	6076041	614311	6076047	6	-6	9	-46		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	02:29:01	1554	MV24GC1-ENV-DC-197			Camera	32	614314	6076044	614311	6076047	2	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	02:29:09	1555	MV24GC1-ENV-DC-197			Camera	32	614312	6076045	614311	6076047	1	-2	2	-29		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	02:29:36	1556	MV24GC1-ENV-DC-197			Camera	32	614308	6076048	614311	6076047	-3	1	4	113		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	02:29:46	1557	MV24GC1-ENV-DC-197			Camera	32	614306	6076050	614311	6076047	-5	3	6	119		(Corr'd Nav, Kongsberg 14208, img#15) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	02:29:59	1558	MV24GC1-ENV-DC-197			Camera	32	614304	6076052	614311	6076047	-7	5	9	123		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	02:30:16	1559	MV24GC1-ENV-DC-197			Camera	32	614301	6076054	614311	6076047	-11	7	13	123		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	02:30:42	1560	MV24GC1-ENV-DC-197			Camera	32	614297	6076057	614311	6076047	-15	10	18	125		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	02:31:09	1561	MV24GC1-ENV-DC-197			Camera	32	614293	6076060	614311	6076047	-19	13	23	125		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	02:31:25	1562	MV24GC1-ENV-DC-197			Camera	32	614290	6076062	614311	6076047	-22	15	27	125		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	02:31:34	1563	MV24GC1-ENV-DC-197			Camera	32	614288	6076063	614311	6076047	-23	16	29	125		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	02:31:48	1564	MV24GC1-ENV-DC-197			Camera	32	614286	6076065	614311	6076047	-26	18	31	125		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	02:32:13	1565	MV24GC1-ENV-DC-197			Camera	32	614282	6076068	614311	6076047	-30	21	36	125		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	02:32:29	1566	MV24GC1-ENV-DC-197			Camera	32	614279	6076070	614311	6076047	-33	23	40	126		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	02:32:48	1567	MV24GC1-ENV-DC-197			Camera	32	614276	6076072	614311	6076047	-36	25	44	125		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	02:33:11	1568	MV24GC1-ENV-DC-197			Camera	32	614272	6076075	614311	6076047	-39	28	48	126		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	02:34:44	1569	MV24GC1-ENV-DC-197			Camera	32	614273	6076078	614311	6076047	-39	31	49	128		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	02:35:18	1570	MV24GC1-ENV-DC-197			Camera	32	614278	6076077	614311	6076047	-33	30	45	132		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	02:36:07	1571	MV24GC1-ENV-DC-197			Camera	32	614290	6076078	614311	6076047	-22	31	38	144		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	02:36:39	1572	MV24GC1-ENV-DC-197			Camera	32	614296	6076078	614311	6076047	-15	31	35	154		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	02:37:32	1573	MV24GC1-ENV-DC-197			Camera	32	614307	6076080	614311	6076047	-5	33	33	172		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	02:37:46	1574	MV24GC1-ENV-DC-197			Camera	32	614310	6076080	614311	6076047	-2	33	33	177		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	02:38:11	1575	MV24GC1-ENV-DC-197			Camera	32	614315	6076081	614311	6076047	3	34	34	-174		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	02:39:21	1576	MV24GC1-ENV-DC-197			Camera	32	614329	6076082	614311	6076047	18	35	39	-153		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	02:40:12	1577	MV24GC1-ENV-DC-197			Camera	33	614339	6076083	614311	6076047	28	36	45	-142		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	02:40:26	1578	MV24GC1-ENV-DC-197			Camera	33	614342	6076083	614311	6076047	31	36	47	-140		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	02:42:24	1579	MV24GC1-ENV-DC-197			Camera	33	614346	6076083	614311	6076047	34	36	50	-136		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	02:43:06	1580	MV24GC1-ENV-DC-197			Camera	33	614344	6076081	614311	6076047	33	34	47	-136		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	02:43:43	1581	MV24GC1-ENV-DC-197			Camera	33	614341	6076078	614311	6076047	29	31	43	-136		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	02:44:09	1582	MV24GC1-ENV-DC-197			Camera	32	614338	6076075	614311	6076047	26	28	38	-136		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	02:45:03	1583	MV24GC1-ENV-DC-197			Camera	32	614332	6076068	614311	6076047	20	21	30	-136		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	02:45:33	1584	MV24GC1-ENV-DC-197			Camera	32	614331	6076067	614311	6076047	20	20	28	-135		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	02:47:23	1585	MV24GC1-ENV-DC-197			Camera	32	614330	6076066	614311	6076047	18	19	27	-137		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	02:49:28	1586	MV24GC1-ENV-DC-197			Camera	32	614322	6076059	614311	6076047	11	12	16	-137		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	02:50:44	1587	MV24GC1-ENV-DC-197			Camera	32	614316	6076052	614311	6076047	5	5	7	-134		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	02:51:03	1588	MV24GC1-ENV-DC-197			Camera	32	614314	6076050	614311	6076047	3	3	4	-138		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	02:51:18	1589	MV24GC1-ENV-DC-197			Camera	32	614313	6076049	614311	6076047	1	2	2	-141		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	02:51:36	1590	MV24GC1-ENV-DC-197			Camera	32	614311	6076047	614311	6076047	-1	0	1	69		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	02:51:53	1591	MV24GC1-ENV-DC-197			Camera	32	614309	6076045	614311	6076047	-3	-2	3	52		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	02:52:16	1592	MV24GC1-ENV-DC-197			Camera	32	614307	6076043	614311	6076047	-4	-4	6	47		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	02:55:09	1593	MV24GC1-ENV-DC-197			Camera	32	614309	6076040	614311	6076047	-3	-7	7	22		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	02:56:25	1594	MV24GC1-ENV-DC-197			Camera	32	614304	6076037	614311	6076047	-7	-10	12	36		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	02:57:07	1595	MV24GC1-ENV-DC-197			Camera	32	614301	6076034	614311	6076047	-11	-13	17	39		(Corr'd Nav, Kongsberg 14208, img#53) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	02:57:45	1596	MV24GC1-ENV-DC-197			Camera	32	614298	6076031	614311	6076047	-14	-16	21	41		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	02:58:33	1597	MV24GC1-ENV-DC-197			Camera	32	614294	6076027	614311	6076047	-17	-20	27	40		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	02:59:23	1598	MV24GC1-ENV-DC-197			Camera	32	614291	6076023	614311	6076047	-21	-24	32	41		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	03:00:29	1599	MV24GC1-ENV-DC-197			Camera	32	614286	6076018	614311	6076047	-26	-29	39	41		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	03:01:11	1600	MV24GC1-ENV-DC-197			Camera	32	614283	6076015	614311	6076047	-28	-33	43	41		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	03:01:44	1601	MV24GC1-ENV-DC-197			Camera	32	614281	6076012	614311	6076047	-30	-35	46	41		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	03:02:18	1602	MV24GC1-ENV-DC-197			Camera	32	614279	6076009	614311	6076047	-33	-38	50	41		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	04:10:24	1603	MV24GC1-ENV-DC-221			Camera	31	613534	6076179	613485	6076175	49	4	49	-94		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	04:11:00	1604	MV24GC1-ENV-DC-221			Camera	31	613527	6076178	613485	6076175	42	3	42	-94		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	04:11:21	1605	MV24GC1-ENV-DC-221			Camera	31	613523	6076178	613485	6076175	39	3	39	-94		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	04:11:40	1606	MV24GC1-ENV-DC-221			Camera	31	613521	6076178	613485	6076175	37	3	37	-94		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	04:14:26	1607	MV24GC1-ENV-DC-221			Camera	31	613514	6076178	613485	6076175	30	3	30	-96		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	04:14:57	1608	MV24GC1-ENV-DC-221			Camera	31	613509	6076176	613485	6076175	24	1	24	-93		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	04:15:31	1609	MV24GC1-ENV-DC-221			Camera	31	613503	6076175	613485	6076175	19	0	19	-89		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	04:16:00	1610	MV24GC1-ENV-DC-221			Camera	31	613500	6076174	613485	6076175	15	-1	15	-85		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	04:16:20	1611	MV24GC1-ENV-DC-221			Camera	31	613499	6076174	613485	6076175	14	-1	14	-86		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	04:17:34	1612	MV24GC1-ENV-DC-221			Camera	31	613495	6076175	613485	6076175	10	0	10	-93		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	04:18:16	1613	MV24GC1-ENV-DC-221			Camera	31	613494	6076176	613485	6076175	10	1	10	-96		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	04:18:47	1614	MV24GC1-ENV-DC-221			Camera	31	613489	6076175	613485	6076175	5	0	5	-89		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	04:19:12	1615	MV24GC1-ENV-DC-221			Camera	31	613485	6076175	613485	6076175	1	0	1	-59		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	04:19:28	1616	MV24GC1-ENV-DC-221			Camera	31	613483	6076174	613485	6076175	-2	-1	2	74		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	04:19:49	1617	MV24GC1-ENV-DC-221			Camera	31	613479	6076174	613485	6076175	-6	-1	6	82		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	04:20:21	1618	MV24GC1-ENV-DC-221			Camera	31	613474	6076174	613485	6076175	-11	-1	11	86		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	04:21:13	1619	MV24GC1-ENV-DC-221			Camera	31	613466	6076175	613485	6076175	-19	0	19	89		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	04:21:36	1620	MV24GC1-ENV-DC-221			Camera	31	613462	6076175	613485	6076175	-22	0	22	89		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	04:22:10	1621	MV24GC1-ENV-DC-221			Camera	31	613457	6076175	613485	6076175	-27	0	27	89		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	04:22:38	1622	MV24GC1-ENV-DC-221			Camera	31	613453	6076175	613485	6076175	-31	0	31	90		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	04:23:11	1623	MV24GC1-ENV-DC-221			Camera	31	613448	6076175	613485	6076175	-36	0	36	90		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	04:23:20	1624	MV24GC1-ENV-DC-221			Camera	31	613447	6076175	613485	6076175	-38	0	38	90		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	04:23:27	1625	MV24GC1-ENV-DC-221			Camera	31	613446	6076175	613485	6076175	-39	0	39	90		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	04:23:36	1626	MV24GC1-ENV-DC-221			Camera	31	613444	6076174	613485	6076175	-40	0	40	89		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	04:23:44	1627	MV24GC1-ENV-DC-221			Camera	31	613443	6076174	613485	6076175	-42	-1	42	89		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	04:23:55	1628	MV24GC1-ENV-DC-221			Camera	31	613441	6076174	613485	6076175	-44	-1	44	89		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	04:24:03	1629	MV24GC1-ENV-DC-221			Camera	31	613440	6076174	613485	6076175	-45	-1	45	89		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	04:24:18	1630	MV24GC1-ENV-DC-221			Camera	31	613437	6076174	613485	6076175	-48	-1	48	89		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	04:24:33	1631	MV24GC1-ENV-DC-221			Camera	31	613434	6076175	613485	6076175	-51	0	51	90		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	04:24:44	1632	MV24GC1-ENV-DC-221			Camera	31	613432	6076175	613485	6076175	-53	0	52	90		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	04:25:24	1633	MV24GC1-ENV-DC-221			Camera	31	613428	6076177	613485	6076175	-57	2	57	92		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	04:25:47	1634	MV24GC1-ENV-DC-221			Camera	31	613427	6076177	613485	6076175	-58	2	58	92		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	04:26:08	1635	MV24GC1-ENV-DC-221			Camera	31	613426	6076177	613485	6076175	-58	2	58	92		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	04:26:42	1636	MV24GC1-ENV-DC-221			Camera	31	613428	6076176	613485	6076175	-56	1	56	91		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	04:27:23	1637	MV24GC1-ENV-DC-221			Camera	31	613431	6076171	613485	6076175	-53	-4	53	86		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	04:30:40	1643	MV24GC1-ENV-DC-221			Camera	31	613447	6076143	613485	6076175	-38	-32	50	49		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	04:31:21	1644	MV24GC1-ENV-DC-221			Camera	31	613450	6076138	613485	6076175	-35	-37	51	44		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	04:32:08	1645	MV24GC1-ENV-DC-221			Camera	31	613452	6076133	613485	6076175	-32	-42	53	37		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	04:32:40	1646	MV24GC1-ENV-DC-221			Camera	31	613454	6076129	613485	6076175	-30	-46	55	33		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	04:32:49	1647	MV24GC1-ENV-DC-221			Camera	31	613455	6076128	613485	6076175	-30	-47	55	32		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	04:33:30	1648	MV24GC1-ENV-DC-221			Camera	31	613459	6076131	613485	6076175	-26	-44	51	30		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	04:34:44	1649	MV24GC1-ENV-DC-221			Camera	31	613466	6076141	613485	6076175	-19	-34	39	29		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	04:35:13	1650	MV24GC1-ENV-DC-221			Camera	31	613468	6076145	613485	6076175	-17	-30	34	30		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	04:36:09	1651	MV24GC1-ENV-DC-221			Camera	31	613472	6076153	613485	6076175	-13	-22	26	30		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	04:36:54	1652	MV24GC1-ENV-DC-221			Camera	31	613475	6076159	613485	6076175	-10	-16	19	31		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	04:37:35	1653	MV24GC1-ENV-DC-221			Camera	31	613478	6076164	613485	6076175	-6	-11	13	31		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	04:38:12	1654	MV24GC1-ENV-DC-221			Camera	31	613481	6076169	613485	6076175	-4	-6	7	32		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	04:38:35	1655	MV24GC1-ENV-DC-221			Camera	31	613483	6076172	613485	6076175	-2	-3	3	32		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	04:39:05	1656	MV24GC1-ENV-DC-221			Camera	31	613485	6076176	613485	6076175	1	1	1	-153		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	04:39:37	1657	MV24GC1-ENV-DC-221			Camera	31	613488	6076181	613485	6076175	3	6	6	-152		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	04:40:13	1658	MV24GC1-ENV-DC-221			Camera	31	613490	6076185	613485	6076175	5	10	12	-152		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	04:40:45	1659	MV24GC1-ENV-DC-221			Camera	31	613493	6076190	613485	6076175	8	15	17	-151		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	04:41:15	1660	MV24GC1-ENV-DC-221			Camera	31	613495	6076193	613485	6076175	10	18	21	-151		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	04:41:27	1661	MV24GC1-ENV-DC-221			Camera	31	613496	6076195	613485	6076175	11	20	23	-150		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	04:42:15	1662	MV24GC1-ENV-DC-221			Camera	31	613500	6076201	613485	6076175	15	26	30	-150		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	04:42:58	1663	MV24GC1-ENV-DC-221			Camera	31	613503	6076207	613485	6076175	19	32	37	-150		(Corr'd Nav, Kongsberg 14208, img#61) (B)
19-Aug-2024	04:44:04	1664	MV24GC1-ENV-DC-221			Camera	31	613509	6076216	613485	6076175	24	41	47	-150		(Corr'd Nav, Kongsberg 14208, img#62) (B)
19-Aug-2024	06:05:34	1665	MV24GC1-ENV-DC-198			Camera	31	613574	6078225	613616	6078185	-42	40	58	134		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	06:06:55	1666	MV24GC1-ENV-DC-198			Camera	31	613581	6078219	613616	6078185	-35	34	49	134		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	06:07:17	1667	MV24GC1-ENV-DC-198			Camera	31	613584	6078217	613616	6078185	-32	32	45	135		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	06:07:33	1668	MV24GC1-ENV-DC-198			Camera	31	613586	6078215	613616	6078185	-30	30	43	135		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	06:08:01	1669	MV24GC1-ENV-DC-198			Camera	31	613589	6078213	613616	6078185	-27	28	39	136		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	06:08:45	1670	MV24GC1-ENV-DC-198			Camera	31	613594	6078208	613616	6078185	-22	23	32	136		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	06:09:09	1671	MV24GC1-ENV-DC-198			Camera	32	613597	6078206	613616	6078185	-19	21	29	138		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	06:09:19	1672	MV24GC1-ENV-DC-198			Camera	32	613598	6078205	613616	6078185	-18	20	27	138		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	06:09:40	1673	MV24GC1-ENV-DC-198			Camera	32	613600	6078203	613616	6078185	-16	18	24	139		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	06:10:07	1674	MV24GC1-ENV-DC-198			Camera	32	613603	6078200	613616	6078185	-13	16	20	141		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	06:10:35	1675	MV24GC1-ENV-DC-198			Camera	32	613606	6078197	613616	6078185	-10	12	15	141		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	06:10:48	1676	MV24GC1-ENV-DC-198			Camera	32	613608	6078196	613616	6078185	-8	11	14	143		(Corr'd Nav, Kongsberg 14208, img#12) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	06:11:09	1677	MV24GC1-ENV-DC-198			Camera	32	613610	6078194	613616	6078185	-6	9	11	146		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	06:11:49	1678	MV24GC1-ENV-DC-198			Camera	32	613613	6078190	613616	6078185	-3	5	6	152		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	06:12:04	1679	MV24GC1-ENV-DC-198			Camera	32	613614	6078188	613616	6078185	-2	3	4	150		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	06:12:23	1680	MV24GC1-ENV-DC-198			Camera	32	613615	6078186	613616	6078185	-1	1	1	131		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	06:12:44	1681	MV24GC1-ENV-DC-198			Camera	32	613616	6078182	613616	6078185	0	-3	3	-10		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	06:13:13	1682	MV24GC1-ENV-DC-198			Camera	32	613619	6078180	613616	6078185	3	-5	6	-31		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	06:13:26	1683	MV24GC1-ENV-DC-198			Camera	32	613620	6078179	613616	6078185	4	-6	7	-37		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	06:14:03	1684	MV24GC1-ENV-DC-198			Camera	32	613624	6078176	613616	6078185	8	-9	12	-43		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	06:14:33	1685	MV24GC1-ENV-DC-198			Camera	32	613628	6078173	613616	6078185	12	-12	17	-45		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	06:14:52	1686	MV24GC1-ENV-DC-198			Camera	32	613630	6078171	613616	6078185	14	-14	20	-45		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	06:15:36	1687	MV24GC1-ENV-DC-198			Camera	32	613635	6078167	613616	6078185	20	-18	27	-47		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	06:16:06	1688	MV24GC1-ENV-DC-198			Camera	32	613639	6078164	613616	6078185	23	-21	31	-48		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	06:16:40	1689	MV24GC1-ENV-DC-198			Camera	32	613642	6078160	613616	6078185	27	-25	36	-47		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	06:17:09	1690	MV24GC1-ENV-DC-198			Camera	32	613646	6078157	613616	6078185	30	-28	41	-47		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	06:18:10	1691	MV24GC1-ENV-DC-198			Camera	32	613653	6078151	613616	6078185	37	-34	50	-47		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	06:27:59	1692	MV24GC1-ENV-DC-198			Camera	32	613598	6078143	613616	6078185	-18	-42	46	23		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	06:29:39	1693	MV24GC1-ENV-DC-198			Camera	32	613603	6078154	613616	6078185	-13	-31	34	23		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	06:30:00	1694	MV24GC1-ENV-DC-198			Camera	32	613603	6078153	613616	6078185	-13	-32	34	23		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	06:30:27	1695	MV24GC1-ENV-DC-198			Camera	32	613602	6078153	613616	6078185	-14	-32	35	24		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	06:30:53	1696	MV24GC1-ENV-DC-198			Camera	32	613602	6078156	613616	6078185	-14	-30	33	25		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	06:31:30	1697	MV24GC1-ENV-DC-198			Camera	32	613604	6078160	613616	6078185	-12	-25	28	25		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	06:32:18	1698	MV24GC1-ENV-DC-198			Camera	32	613607	6078164	613616	6078185	-9	-21	23	23		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	06:32:42	1699	MV24GC1-ENV-DC-198			Camera	32	613608	6078165	613616	6078185	-8	-20	21	23		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	06:33:13	1700	MV24GC1-ENV-DC-198			Camera	32	613608	6078167	613616	6078185	-8	-18	20	23		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	06:33:28	1701	MV24GC1-ENV-DC-198			Camera	31	613608	6078170	613616	6078185	-7	-15	17	26		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	06:33:44	1702	MV24GC1-ENV-DC-198			Camera	31	613609	6078172	613616	6078185	-7	-13	15	30		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	06:34:06	1703	MV24GC1-ENV-DC-198			Camera	31	613609	6078175	613616	6078185	-6	-10	12	32		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	06:34:17	1704	MV24GC1-ENV-DC-198			Camera	31	613610	6078176	613616	6078185	-6	-9	10	33		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	06:34:33	1705	MV24GC1-ENV-DC-198			Camera	32	613611	6078179	613616	6078185	-5	-6	8	42		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	06:34:54	1706	MV24GC1-ENV-DC-198			Camera	32	613612	6078183	613616	6078185	-4	-2	4	57		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	06:35:14	1707	MV24GC1-ENV-DC-198			Camera	32	613614	6078185	613616	6078185	-2	0	2	102		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	06:35:25	1708	MV24GC1-ENV-DC-198			Camera	32	613615	6078186	613616	6078185	-1	1	2	152		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	06:35:44	1709	MV24GC1-ENV-DC-198			Camera	32	613617	6078189	613616	6078185	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	06:35:57	1710	MV24GC1-ENV-DC-198			Camera	32	613618	6078191	613616	6078185	2	6	6	-158		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	06:36:07	1711	MV24GC1-ENV-DC-198			Camera	32	613619	6078193	613616	6078185	3	8	8	-158		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	06:36:22	1712	MV24GC1-ENV-DC-198			Camera	32	613620	6078195	613616	6078185	5	10	11	-156		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	06:36:44	1713	MV24GC1-ENV-DC-198			Camera	32	613622	6078198	613616	6078185	7	13	15	-153		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	06:37:12	1714	MV24GC1-ENV-DC-198			Camera	32	613625	6078202	613616	6078185	9	17	19	-151		(Corr'd Nav, Kongsberg 14208, img#50) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	06:37:30	1715	MV24GC1-ENV-DC-198			Camera	32	613626	6078204	613616	6078185	11	19	22	-151		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	06:37:49	1716	MV24GC1-ENV-DC-198			Camera	32	613628	6078206	613616	6078185	12	21	25	-151		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	06:38:03	1717	MV24GC1-ENV-DC-198			Camera	32	613629	6078208	613616	6078185	13	23	27	-150		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	06:38:43	1718	MV24GC1-ENV-DC-198			Camera	32	613632	6078214	613616	6078185	16	29	33	-151		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	06:38:56	1719	MV24GC1-ENV-DC-198			Camera	32	613633	6078216	613616	6078185	17	31	35	-151		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	06:39:20	1720	MV24GC1-ENV-DC-198			Camera	32	613635	6078219	613616	6078185	19	34	39	-150		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	06:39:31	1721	MV24GC1-ENV-DC-198			Camera	32	613636	6078220	613616	6078185	20	35	40	-150		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	06:39:51	1722	MV24GC1-ENV-DC-198			Camera	32	613637	6078223	613616	6078185	22	38	44	-150		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	06:40:06	1723	MV24GC1-ENV-DC-198			Camera	32	613639	6078225	613616	6078185	23	40	46	-150		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	06:40:41	1724	MV24GC1-ENV-DC-198			Camera	32	613641	6078229	613616	6078185	25	44	51	-150		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	07:54:49	1725	MV24GC1-ENV-DC-222			Camera	37	614265	6078370	614286	6078326	-21	44	49	154		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	07:55:21	1726	MV24GC1-ENV-DC-222			Camera	37	614267	6078366	614286	6078326	-19	40	45	154		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	07:55:47	1727	MV24GC1-ENV-DC-222			Camera	37	614269	6078363	614286	6078326	-18	37	41	155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	07:56:32	1728	MV24GC1-ENV-DC-222			Camera	37	614272	6078356	614286	6078326	-14	30	34	155		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	07:56:51	1729	MV24GC1-ENV-DC-222			Camera	37	614273	6078353	614286	6078326	-13	27	30	154		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	07:57:11	1730	MV24GC1-ENV-DC-222			Camera	37	614275	6078350	614286	6078326	-12	24	27	154		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	07:57:37	1731	MV24GC1-ENV-DC-222			Camera	37	614277	6078346	614286	6078326	-10	20	23	154		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	07:57:51	1732	MV24GC1-ENV-DC-222			Camera	37	614277	6078344	614286	6078326	-9	18	20	154		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	07:58:19	1733	MV24GC1-ENV-DC-222			Camera	37	614279	6078341	614286	6078326	-7	15	17	155		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	07:58:36	1734	MV24GC1-ENV-DC-222			Camera	37	614280	6078338	614286	6078326	-6	12	14	155		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	07:58:57	1735	MV24GC1-ENV-DC-222			Camera	37	614282	6078336	614286	6078326	-4	9	10	156		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	07:59:31	1736	MV24GC1-ENV-DC-222			Camera	37	614284	6078331	614286	6078326	-2	5	5	154		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	07:59:49	1737	MV24GC1-ENV-DC-222			Camera	37	614285	6078328	614286	6078326	-1	2	2	156		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	08:00:14	1738	MV24GC1-ENV-DC-222			Camera	37	614287	6078325	614286	6078326	0	-1	1	-33		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	08:00:33	1739	MV24GC1-ENV-DC-222			Camera	37	614288	6078323	614286	6078326	2	-4	4	-27		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	08:01:14	1740	MV24GC1-ENV-DC-222			Camera	37	614291	6078317	614286	6078326	5	-9	10	-27		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	08:01:35	1741	MV24GC1-ENV-DC-222			Camera	36	614292	6078314	614286	6078326	6	-12	14	-27		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	08:01:51	1742	MV24GC1-ENV-DC-222			Camera	37	614294	6078312	614286	6078326	7	-15	16	-27		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	08:02:21	1743	MV24GC1-ENV-DC-222			Camera	37	614296	6078308	614286	6078326	9	-19	21	-27		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	08:02:52	1744	MV24GC1-ENV-DC-222			Camera	37	614298	6078303	614286	6078326	12	-23	26	-26		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	08:03:18	1745	MV24GC1-ENV-DC-222			Camera	37	614300	6078299	614286	6078326	13	-27	30	-26		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	08:03:48	1746	MV24GC1-ENV-DC-222			Camera	37	614302	6078295	614286	6078326	15	-31	35	-26		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	08:04:17	1747	MV24GC1-ENV-DC-222			Camera	37	614304	6078291	614286	6078326	17	-35	39	-26		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	08:04:51	1748	MV24GC1-ENV-DC-222			Camera	37	614306	6078287	614286	6078326	20	-39	44	-26		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	08:05:17	1749	MV24GC1-ENV-DC-222			Camera	37	614307	6078283	614286	6078326	21	-43	48	-26		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	08:06:08	1750	MV24GC1-ENV-DC-222			Camera	37	614308	6078281	614286	6078326	22	-45	50	-26		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	08:10:42	1751	MV24GC1-ENV-DC-222			Camera	37	614272	6078291	614286	6078326	-15	-35	38	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	08:14:42	1752	MV24GC1-ENV-DC-222			Camera	37	614249	6078295	614286	6078326	-37	-31	49	50		(Corr'd Nav, Kongsberg 14208, img#28) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	08:15:39	1753	MV24GC1-ENV-DC-222			Camera	37	614254	6078300	614286	6078326	-32	-26	42	51		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	08:16:03	1754	MV24GC1-ENV-DC-222			Camera	36	614258	6078303	614286	6078326	-29	-24	37	51		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	08:16:20	1755	MV24GC1-ENV-DC-222			Camera	37	614260	6078304	614286	6078326	-27	-22	34	51		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	08:16:54	1756	MV24GC1-ENV-DC-222			Camera	37	614265	6078308	614286	6078326	-22	-18	28	51		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	08:17:26	1757	MV24GC1-ENV-DC-222			Camera	37	614269	6078312	614286	6078326	-18	-14	23	51		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	08:17:38	1758	MV24GC1-ENV-DC-222			Camera	37	614270	6078313	614286	6078326	-17	-13	21	52		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	08:17:59	1759	MV24GC1-ENV-DC-222			Camera	37	614272	6078315	614286	6078326	-14	-11	18	52		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	08:18:26	1760	MV24GC1-ENV-DC-222			Camera	37	614275	6078318	614286	6078326	-11	-8	14	53		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	08:18:43	1761	MV24GC1-ENV-DC-222			Camera	37	614277	6078320	614286	6078326	-9	-6	11	56		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	08:19:01	1762	MV24GC1-ENV-DC-222			Camera	37	614279	6078321	614286	6078326	-7	-5	9	57		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	08:19:33	1763	MV24GC1-ENV-DC-222			Camera	37	614283	6078325	614286	6078326	-4	-1	4	72		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	08:19:49	1764	MV24GC1-ENV-DC-222			Camera	37	614284	6078326	614286	6078326	-2	0	2	100		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	08:20:08	1765	MV24GC1-ENV-DC-222			Camera	37	614286	6078328	614286	6078326	0	2	2	-178		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	08:20:44	1766	MV24GC1-ENV-DC-222			Camera	37	614290	6078333	614286	6078326	4	6	8	-147		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	08:21:06	1767	MV24GC1-ENV-DC-222			Camera	37	614293	6078335	614286	6078326	7	9	11	-142		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	08:21:43	1768	MV24GC1-ENV-DC-222			Camera	36	614297	6078338	614286	6078326	11	12	17	-138		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	08:22:27	1769	MV24GC1-ENV-DC-222			Camera	37	614303	6078343	614286	6078326	16	17	24	-137		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	08:23:40	1770	MV24GC1-ENV-DC-222			Camera	37	614311	6078350	614286	6078326	25	24	35	-135		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	08:24:02	1771	MV24GC1-ENV-DC-222			Camera	37	614313	6078353	614286	6078326	27	27	38	-135		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	08:24:42	1772	MV24GC1-ENV-DC-222			Camera	37	614318	6078357	614286	6078326	32	31	44	-134		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	08:25:23	1773	MV24GC1-ENV-DC-222			Camera	37	614323	6078361	614286	6078326	37	35	51	-133		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	10:01:37	1774	MV24GC1-ENV-DC-216			Camera	42	614770	6079865	614785	6079813	-15	52	54	164		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	10:02:15	1775	MV24GC1-ENV-DC-216			Camera	42	614771	6079860	614785	6079813	-14	46	48	164		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	10:02:42	1776	MV24GC1-ENV-DC-216			Camera	42	614772	6079855	614785	6079813	-12	42	44	164		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	10:03:02	1777	MV24GC1-ENV-DC-216			Camera	42	614773	6079852	614785	6079813	-12	39	40	163		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	10:03:27	1778	MV24GC1-ENV-DC-216			Camera	42	614774	6079848	614785	6079813	-11	35	37	163		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	10:03:50	1779	MV24GC1-ENV-DC-216			Camera	42	614775	6079845	614785	6079813	-10	32	33	163		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	10:04:23	1780	MV24GC1-ENV-DC-216			Camera	42	614776	6079840	614785	6079813	-9	27	28	163		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	10:05:09	1781	MV24GC1-ENV-DC-216			Camera	42	614778	6079834	614785	6079813	-7	20	21	161		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	10:05:37	1782	MV24GC1-ENV-DC-216			Camera	42	614779	6079829	614785	6079813	-6	16	17	160		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	10:06:09	1783	MV24GC1-ENV-DC-216			Camera	42	614780	6079824	614785	6079813	-4	11	12	159		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	10:06:50	1784	MV24GC1-ENV-DC-216			Camera	42	614782	6079819	614785	6079813	-3	5	6	153		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	10:07:24	1785	MV24GC1-ENV-DC-216			Camera	42	614783	6079813	614785	6079813	-1	0	1	88		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	10:07:49	1786	MV24GC1-ENV-DC-216			Camera	42	614784	6079810	614785	6079813	0	-4	4	5		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	10:08:22	1787	MV24GC1-ENV-DC-216			Camera	42	614785	6079805	614785	6079813	1	-8	8	-4		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	10:09:15	1788	MV24GC1-ENV-DC-216			Camera	42	614787	6079797	614785	6079813	3	-16	16	-9		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	10:09:52	1789	MV24GC1-ENV-DC-216			Camera	42	614788	6079792	614785	6079813	4	-22	22	-10		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	10:10:34	1790	MV24GC1-ENV-DC-216			Camera	42	614790	6079786	614785	6079813	5	-28	28	-11		(Corr'd Nav, Kongsberg 14208, img#17) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	10:11:09	1791	MV24GC1-ENV-DC-216			Camera	42	614791	6079781	614785	6079813	6	-33	33	-11		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	10:11:30	1792	MV24GC1-ENV-DC-216			Camera	42	614792	6079778	614785	6079813	7	-36	36	-11		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	10:12:12	1793	MV24GC1-ENV-DC-216			Camera	42	614793	6079772	614785	6079813	9	-42	43	-12		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	10:12:50	1794	MV24GC1-ENV-DC-216			Camera	42	614794	6079767	614785	6079813	10	-47	48	-12		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	10:25:15	1795	MV24GC1-ENV-DC-216			Camera	42	614740	6079813	614785	6079813	-44	-1	44	89		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	10:25:39	1796	MV24GC1-ENV-DC-216			Camera	42	614743	6079813	614785	6079813	-42	-1	42	89		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	10:26:05	1797	MV24GC1-ENV-DC-216			Camera	42	614747	6079813	614785	6079813	-37	-1	37	89		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	10:26:46	1798	MV24GC1-ENV-DC-216			Camera	42	614754	6079813	614785	6079813	-31	-1	31	88		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	10:27:31	1799	MV24GC1-ENV-DC-216			Camera	42	614761	6079812	614785	6079813	-24	-1	24	88		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	10:28:29	1800	MV24GC1-ENV-DC-216			Camera	42	614770	6079813	614785	6079813	-15	0	15	89		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	10:29:54	1801	MV24GC1-ENV-DC-216			Camera	42	614782	6079812	614785	6079813	-3	-1	3	70		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	10:30:15	1802	MV24GC1-ENV-DC-216			Camera	42	614785	6079813	614785	6079813	1	-1	1	-37		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	10:30:54	1803	MV24GC1-ENV-DC-216			Camera	42	614791	6079813	614785	6079813	6	-1	6	-83		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	10:31:40	1804	MV24GC1-ENV-DC-216			Camera	42	614798	6079813	614785	6079813	14	-1	14	-86		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	10:32:23	1805	MV24GC1-ENV-DC-216			Camera	42	614805	6079813	614785	6079813	21	-1	20	-88		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	10:33:00	1806	MV24GC1-ENV-DC-216			Camera	42	614811	6079813	614785	6079813	26	0	26	-89		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	10:33:28	1807	MV24GC1-ENV-DC-216			Camera	42	614815	6079814	614785	6079813	30	0	30	-90		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	10:34:20	1808	MV24GC1-ENV-DC-216			Camera	42	614823	6079814	614785	6079813	38	1	38	-91		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	10:34:46	1809	MV24GC1-ENV-DC-216			Camera	42	614827	6079814	614785	6079813	43	1	43	-91		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	10:35:36	1810	MV24GC1-ENV-DC-216			Camera	42	614833	6079814	614785	6079813	48	0	48	-90		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	12:25:16	1811	MV24GC1-ENV-DC-220			Camera	35	612852	6081385	612857	6081334	-6	51	51	173		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	12:26:44	1812	MV24GC1-ENV-DC-220			Camera	35	612853	6081370	612857	6081334	-5	36	36	173		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	12:27:09	1813	MV24GC1-ENV-DC-220			Camera	35	612853	6081367	612857	6081334	-5	32	32	172		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	12:27:37	1814	MV24GC1-ENV-DC-220			Camera	35	612854	6081363	612857	6081334	-4	28	28	172		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	12:28:34	1815	MV24GC1-ENV-DC-220			Camera	35	612855	6081354	612857	6081334	-2	19	19	174		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	12:29:37	1816	MV24GC1-ENV-DC-220			Camera	35	612856	6081345	612857	6081334	-1	10	10	174		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	12:30:13	1817	MV24GC1-ENV-DC-220			Camera	35	612857	6081338	612857	6081334	0	4	4	174		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	12:30:50	1818	MV24GC1-ENV-DC-220			Camera	35	612857	6081333	612857	6081334	0	-1	1	2		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	12:31:11	1819	MV24GC1-ENV-DC-220			Camera	35	612858	6081330	612857	6081334	0	-5	5	-6		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	12:32:30	1820	MV24GC1-ENV-DC-220			Camera	35	612859	6081318	612857	6081334	2	-17	17	-6		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	12:33:28	1821	MV24GC1-ENV-DC-220			Camera	35	612860	6081309	612857	6081334	2	-26	26	-5		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	12:35:34	1822	MV24GC1-ENV-DC-220			Camera	36	612861	6081289	612857	6081334	4	-45	45	-5		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	12:36:19	1823	MV24GC1-ENV-DC-220			Camera	36	612862	6081284	612857	6081334	5	-51	51	-5		(Raw Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	12:43:27	1823	MV24GC1-ENV-DC-220			Camera	35	612836	6081302	612857	6081334	-21	-32	39	33		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	12:44:56	1824	MV24GC1-ENV-DC-220			Camera	35	612829	6081307	612857	6081334	-29	-27	40	47		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	12:47:05	1825	MV24GC1-ENV-DC-220			Camera	35	612817	6081314	612857	6081334	-40	-21	45	63		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	12:51:17	1826	MV24GC1-ENV-DC-220			Camera	35	612812	6081325	612857	6081334	-45	-9	46	78		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	12:52:41	1827	MV24GC1-ENV-DC-220			Camera	35	612820	6081327	612857	6081334	-38	-7	38	79		(Corr'd Nav, Kongsberg 14208, img#18) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	12:53:23	1828	MV24GC1-ENV-DC-220			Camera	35	612826	6081329	612857	6081334	-32	-5	32	80		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	12:53:43	1829	MV24GC1-ENV-DC-220			Camera	35	612829	6081329	612857	6081334	-28	-5	29	80		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	12:54:24	1830	MV24GC1-ENV-DC-220			Camera	35	612836	6081330	612857	6081334	-22	-5	22	78		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	12:54:49	1831	MV24GC1-ENV-DC-220			Camera	35	612840	6081330	612857	6081334	-18	-4	18	76		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	12:55:18	1832	MV24GC1-ENV-DC-220			Camera	35	612845	6081331	612857	6081334	-13	-4	13	74		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	12:55:45	1833	MV24GC1-ENV-DC-220			Camera	35	612849	6081331	612857	6081334	-8	-3	9	69		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	12:56:23	1834	MV24GC1-ENV-DC-220			Camera	35	612856	6081333	612857	6081334	-2	-2	3	43		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	12:56:56	1835	MV24GC1-ENV-DC-220			Camera	35	612861	6081334	612857	6081334	3	-1	3	-74		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	12:57:09	1836	MV24GC1-ENV-DC-220			Camera	35	612863	6081334	612857	6081334	5	-1	5	-84		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	12:57:32	1837	MV24GC1-ENV-DC-220			Camera	35	612866	6081335	612857	6081334	9	0	9	-92		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	12:59:04	1838	MV24GC1-ENV-DC-220			Camera	35	612880	6081337	612857	6081334	22	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	12:59:27	1839	MV24GC1-ENV-DC-220			Camera	35	612883	6081337	612857	6081334	26	3	26	-97		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	12:59:32	1840	MV24GC1-ENV-DC-220			Camera	35	612884	6081338	612857	6081334	27	3	27	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	12:59:48	1841	MV24GC1-ENV-DC-220			Camera	35	612886	6081338	612857	6081334	29	4	29	-97		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	13:00:08	1842	MV24GC1-ENV-DC-220			Camera	35	612890	6081339	612857	6081334	32	4	33	-97		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	13:00:44	1843	MV24GC1-ENV-DC-220			Camera	35	612896	6081340	612857	6081334	39	5	39	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	13:01:47	1844	MV24GC1-ENV-DC-220			Camera	35	612907	6081342	612857	6081334	49	7	50	-98		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	13:02:08	1845	MV24GC1-ENV-DC-220			Camera	35	612909	6081342	612857	6081334	52	8	52	-98		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	15:29:29	1846	MV24GC1-ENV-DC-183			Camera	32	611614	6083026	611593	6082978	22	49	53	-156		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	15:29:54	1847	MV24GC1-ENV-DC-183			Camera	32	611614	6083026	611593	6082978	22	48	53	-156		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	15:30:37	1848	MV24GC1-ENV-DC-183			Camera	32	611612	6083019	611593	6082978	20	41	46	-155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	15:31:21	1849	MV24GC1-ENV-DC-183			Camera	32	611609	6083012	611593	6082978	17	34	38	-154		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	15:31:32	1850	MV24GC1-ENV-DC-183			Camera	32	611609	6083010	611593	6082978	16	32	36	-154		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	15:31:46	1851	MV24GC1-ENV-DC-183			Camera	32	611608	6083008	611593	6082978	15	31	34	-154		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	15:31:57	1852	MV24GC1-ENV-DC-183			Camera	32	611607	6083007	611593	6082978	15	29	33	-153		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	15:32:12	1853	MV24GC1-ENV-DC-183			Camera	32	611606	6083005	611593	6082978	13	27	30	-154		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	15:32:37	1854	MV24GC1-ENV-DC-183			Camera	32	611604	6083002	611593	6082978	12	24	27	-154		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	15:32:47	1855	MV24GC1-ENV-DC-183			Camera	32	611604	6083001	611593	6082978	11	24	26	-154		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	15:33:14	1856	MV24GC1-ENV-DC-183			Camera	32	611603	6082998	611593	6082978	10	21	23	-154		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	15:33:30	1857	MV24GC1-ENV-DC-183			Camera	32	611602	6082996	611593	6082978	9	18	20	-154		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	15:33:41	1858	MV24GC1-ENV-DC-183			Camera	32	611601	6082995	611593	6082978	8	17	19	-154		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	15:34:15	1859	MV24GC1-ENV-DC-183			Camera	32	611599	6082989	611593	6082978	6	12	13	-152		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	15:34:23	1860	MV24GC1-ENV-DC-183			Camera	32	611598	6082988	611593	6082978	6	11	12	-152		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	15:34:42	1861	MV24GC1-ENV-DC-183			Camera	32	611597	6082985	611593	6082978	5	8	9	-149		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	15:34:52	1862	MV24GC1-ENV-DC-183			Camera	32	611596	6082984	611593	6082978	4	6	7	-148		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	15:35:11	1863	MV24GC1-ENV-DC-183			Camera	32	611595	6082982	611593	6082978	3	4	5	-148		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	15:35:35	1864	MV24GC1-ENV-DC-183			Camera	32	611594	6082979	611593	6082978	1	2	2	-150		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	15:35:42	1865	MV24GC1-ENV-DC-183			Camera	32	611593	6082978	611593	6082978	1	1	1	-141		(Corr'd Nav, Kongsberg 14208, img#20) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	15:35:59	1866	MV24GC1-ENV-DC-183			Camera	32	611592	6082976	611593	6082978	-1	-2	2	24		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	15:36:15	1867	MV24GC1-ENV-DC-183			Camera	32	611591	6082974	611593	6082978	-2	-4	4	28		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	15:36:29	1868	MV24GC1-ENV-DC-183			Camera	32	611590	6082972	611593	6082978	-3	-6	7	27		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	15:36:41	1869	MV24GC1-ENV-DC-183			Camera	32	611589	6082970	611593	6082978	-4	-7	8	27		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	15:36:50	1870	MV24GC1-ENV-DC-183			Camera	32	611588	6082969	611593	6082978	-4	-8	9	27		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	15:37:07	1871	MV24GC1-ENV-DC-183			Camera	32	611587	6082967	611593	6082978	-5	-10	12	26		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	15:37:28	1872	MV24GC1-ENV-DC-183			Camera	32	611586	6082964	611593	6082978	-7	-13	15	27		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	15:37:40	1873	MV24GC1-ENV-DC-183			Camera	32	611585	6082962	611593	6082978	-8	-15	17	26		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	15:38:06	1874	MV24GC1-ENV-DC-183			Camera	32	611583	6082958	611593	6082978	-9	-19	21	25		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	15:38:30	1875	MV24GC1-ENV-DC-183			Camera	32	611582	6082955	611593	6082978	-10	-22	25	25		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	15:39:15	1876	MV24GC1-ENV-DC-183			Camera	32	611579	6082950	611593	6082978	-14	-27	30	26		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	15:39:44	1877	MV24GC1-ENV-DC-183			Camera	32	611577	6082949	611593	6082978	-16	-29	33	29		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	15:40:03	1878	MV24GC1-ENV-DC-183			Camera	32	611576	6082947	611593	6082978	-17	-31	35	29		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	15:40:25	1879	MV24GC1-ENV-DC-183			Camera	32	611574	6082943	611593	6082978	-19	-35	39	28		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	15:40:41	1880	MV24GC1-ENV-DC-183			Camera	32	611572	6082941	611593	6082978	-20	-37	42	29		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	15:41:37	1881	MV24GC1-ENV-DC-183			Camera	32	611569	6082933	611593	6082978	-24	-45	51	28		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	15:53:36	1882	MV24GC1-ENV-DC-183			Camera	32	611550	6082977	611593	6082978	-42	-1	42	89		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	15:54:08	1883	MV24GC1-ENV-DC-183			Camera	32	611555	6082978	611593	6082978	-38	0	38	90		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	15:54:22	1884	MV24GC1-ENV-DC-183			Camera	32	611557	6082978	611593	6082978	-36	0	36	91		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	15:54:34	1885	MV24GC1-ENV-DC-183			Camera	32	611559	6082978	611593	6082978	-34	0	34	91		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	15:55:05	1886	MV24GC1-ENV-DC-183			Camera	32	611563	6082978	611593	6082978	-29	0	29	91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	15:55:28	1887	MV24GC1-ENV-DC-183			Camera	32	611567	6082978	611593	6082978	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	15:56:04	1888	MV24GC1-ENV-DC-183			Camera	32	611572	6082977	611593	6082978	-20	0	20	89		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	15:56:53	1889	MV24GC1-ENV-DC-183			Camera	32	611579	6082977	611593	6082978	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	15:57:59	1890	MV24GC1-ENV-DC-183			Camera	32	611590	6082978	611593	6082978	-3	1	3	103		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	15:58:49	1891	MV24GC1-ENV-DC-183			Camera	32	611598	6082977	611593	6082978	5	-1	5	-83		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	15:59:31	1892	MV24GC1-ENV-DC-183			Camera	32	611604	6082977	611593	6082978	12	-1	12	-86		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	16:00:02	1893	MV24GC1-ENV-DC-183			Camera	32	611609	6082977	611593	6082978	16	0	16	-89		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	16:00:29	1894	MV24GC1-ENV-DC-183			Camera	32	611613	6082978	611593	6082978	20	0	20	-91		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	16:00:39	1895	MV24GC1-ENV-DC-183			Camera	32	611614	6082978	611593	6082978	22	1	22	-91		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	16:01:04	1896	MV24GC1-ENV-DC-183			Camera	32	611618	6082978	611593	6082978	25	0	25	-91		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	16:01:24	1897	MV24GC1-ENV-DC-183			Camera	32	611621	6082978	611593	6082978	29	0	29	-90		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	16:02:06	1898	MV24GC1-ENV-DC-183			Camera	32	611628	6082977	611593	6082978	35	0	35	-90		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	16:02:23	1899	MV24GC1-ENV-DC-183			Camera	32	611631	6082977	611593	6082978	38	0	38	-89		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	16:02:43	1900	MV24GC1-ENV-DC-183			Camera	32	611634	6082977	611593	6082978	41	-1	41	-89		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	16:03:07	1901	MV24GC1-ENV-DC-183			Camera	32	611637	6082976	611593	6082978	45	-1	45	-88		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	16:03:28	1902	MV24GC1-ENV-DC-183			Camera	32	611640	6082976	611593	6082978	48	-2	48	-88		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	16:03:48	1903	MV24GC1-ENV-DC-183			Camera	32	611644	6082976	611593	6082978	51	-2	51	-88		(Corr'd Nav, Kongsberg 14208, img#58) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	16:04:01	1904	MV24GC1-ENV-DC-183			Camera	32	611645	6082976	611593	6082978	53	-2	53	-88		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	17:17:38	1905	MV24GC1-ENV-DC-206			Camera	42	612927	6084353	612927	6084402	0	-49	49	0		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	17:18:13	1906	MV24GC1-ENV-DC-206			Camera	42	612927	6084358	612927	6084402	0	-44	44	-1		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	17:18:41	1907	MV24GC1-ENV-DC-206			Camera	42	612927	6084362	612927	6084402	0	-40	40	0		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	17:19:10	1908	MV24GC1-ENV-DC-206			Camera	42	612928	6084367	612927	6084402	1	-35	34	-1		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	17:19:58	1909	MV24GC1-ENV-DC-206			Camera	42	612927	6084373	612927	6084402	0	-29	28	-1		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	17:21:20	1910	MV24GC1-ENV-DC-206			Camera	42	612925	6084387	612927	6084402	-1	-15	15	6		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	17:21:57	1911	MV24GC1-ENV-DC-206			Camera	42	612925	6084394	612927	6084402	-2	-8	8	13		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	17:22:25	1912	MV24GC1-ENV-DC-206			Camera	42	612925	6084398	612927	6084402	-1	-4	4	19		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	17:22:54	1913	MV24GC1-ENV-DC-206			Camera	42	612925	6084402	612927	6084402	-1	0	1	103		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	17:23:24	1914	MV24GC1-ENV-DC-206			Camera	42	612925	6084407	612927	6084402	-2	5	5	157		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	17:23:57	1915	MV24GC1-ENV-DC-206			Camera	42	612925	6084412	612927	6084402	-2	10	10	171		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	17:24:52	1916	MV24GC1-ENV-DC-206			Camera	42	612925	6084420	612927	6084402	-2	18	18	175		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	17:25:48	1917	MV24GC1-ENV-DC-206			Camera	42	612925	6084428	612927	6084402	-2	27	27	176		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	17:26:11	1918	MV24GC1-ENV-DC-206			Camera	42	612925	6084432	612927	6084402	-1	30	30	177		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	17:26:35	1919	MV24GC1-ENV-DC-206			Camera	42	612925	6084435	612927	6084402	-2	34	34	177		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	17:27:33	1920	MV24GC1-ENV-DC-206			Camera	42	612924	6084446	612927	6084402	-3	44	44	177		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	17:27:54	1921	MV24GC1-ENV-DC-206			Camera	42	612925	6084449	612927	6084402	-2	47	47	177		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	17:28:27	1922	MV24GC1-ENV-DC-206			Camera	42	612925	6084453	612927	6084402	-2	52	52	178		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	17:36:08	1923	MV24GC1-ENV-DC-206			Camera	42	612881	6084430	612927	6084402	-46	28	54	121		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	17:37:25	1924	MV24GC1-ENV-DC-206			Camera	42	612894	6084422	612927	6084402	-33	20	38	122		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	17:37:42	1925	MV24GC1-ENV-DC-206			Camera	42	612897	6084420	612927	6084402	-30	19	35	122		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	17:37:58	1926	MV24GC1-ENV-DC-206			Camera	42	612899	6084419	612927	6084402	-28	17	33	121		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	17:38:49	1927	MV24GC1-ENV-DC-206			Camera	42	612904	6084414	612927	6084402	-23	13	26	119		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	17:39:14	1928	MV24GC1-ENV-DC-206			Camera	42	612907	6084412	612927	6084402	-20	11	22	119		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	17:39:44	1929	MV24GC1-ENV-DC-206			Camera	42	612911	6084410	612927	6084402	-16	9	18	118		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	17:40:33	1930	MV24GC1-ENV-DC-206			Camera	42	612916	6084406	612927	6084402	-11	5	12	113		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	17:41:22	1931	MV24GC1-ENV-DC-206			Camera	42	612921	6084405	612927	6084402	-5	3	6	122		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	17:41:52	1932	MV24GC1-ENV-DC-206			Camera	42	612926	6084404	612927	6084402	0	2	2	168		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	17:42:04	1933	MV24GC1-ENV-DC-206			Camera	42	612929	6084404	612927	6084402	2	2	3	-142		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	17:42:21	1934	MV24GC1-ENV-DC-206			Camera	42	612931	6084403	612927	6084402	4	2	5	-110		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	17:42:47	1935	MV24GC1-ENV-DC-206			Camera	42	612935	6084402	612927	6084402	9	1	9	-95		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	17:43:35	1936	MV24GC1-ENV-DC-206			Camera	42	612942	6084400	612927	6084402	15	-1	15	-85		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	17:44:30	1937	MV24GC1-ENV-DC-206			Camera	42	612950	6084398	612927	6084402	23	-4	24	-81		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	17:45:04	1938	MV24GC1-ENV-DC-206			Camera	42	612956	6084396	612927	6084402	29	-5	29	-80		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	17:45:43	1939	MV24GC1-ENV-DC-206			Camera	42	612961	6084395	612927	6084402	35	-7	35	-79		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	17:46:09	1940	MV24GC1-ENV-DC-206			Camera	42	612965	6084394	612927	6084402	38	-8	39	-79		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	17:46:43	1941	MV24GC1-ENV-DC-206			Camera	42	612970	6084393	612927	6084402	43	-9	44	-78		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	17:47:07	1942	MV24GC1-ENV-DC-206			Camera	42	612974	6084392	612927	6084402	47	-10	48	-78		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	17:47:41	1943	MV24GC1-ENV-DC-206			Camera	42	612979	6084392	612927	6084402	52	-10	53	-80		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	17:47:55	1944	MV24GC1-ENV-DC-206			Camera	42	612981	6084392	612927	6084402	54	-9	55	-80		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	19:51:44	1945	MV24GC1-ENV-DC-207			Camera	47	613979	6086216	613980	6086158	-1	58	58	179		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	19:53:18	1946	MV24GC1-ENV-DC-207			Camera	47	613979	6086205	613980	6086158	-1	47	47	178		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	19:53:37	1947	MV24GC1-ENV-DC-207			Camera	47	613979	6086202	613980	6086158	-1	43	43	179		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	19:53:55	1948	MV24GC1-ENV-DC-207			Camera	47	613980	6086198	613980	6086158	-1	40	40	179		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	19:54:29	1949	MV24GC1-ENV-DC-207			Camera	47	613979	6086191	613980	6086158	-1	33	33	178		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	19:54:46	1950	MV24GC1-ENV-DC-207			Camera	47	613979	6086188	613980	6086158	-1	29	29	177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	19:55:17	1951	MV24GC1-ENV-DC-207			Camera	47	613978	6086181	613980	6086158	-2	23	23	175		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	19:55:52	1952	MV24GC1-ENV-DC-207			Camera	47	613980	6086175	613980	6086158	-1	16	16	178		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	19:56:59	1953	MV24GC1-ENV-DC-207			Camera	47	613980	6086160	613980	6086158	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	19:57:15	1954	MV24GC1-ENV-DC-207			Camera	47	613980	6086157	613980	6086158	0	-1	1	19		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	19:57:34	1955	MV24GC1-ENV-DC-207			Camera	47	613980	6086153	613980	6086158	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	19:57:58	1956	MV24GC1-ENV-DC-207			Camera	47	613981	6086149	613980	6086158	0	-9	9	-3		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	19:58:06	1957	MV24GC1-ENV-DC-207			Camera	47	613981	6086148	613980	6086158	1	-10	10	-3		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	19:58:41	1958	MV24GC1-ENV-DC-207			Camera	47	613980	6086143	613980	6086158	0	-16	16	1		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	19:58:53	1959	MV24GC1-ENV-DC-207			Camera	47	613980	6086141	613980	6086158	0	-17	17	1		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	19:59:17	1960	MV24GC1-ENV-DC-207			Camera	47	613980	6086139	613980	6086158	0	-20	20	1		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	19:59:30	1961	MV24GC1-ENV-DC-207			Camera	47	613980	6086137	613980	6086158	-1	-22	22	2		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	19:59:55	1962	MV24GC1-ENV-DC-207			Camera	47	613980	6086132	613980	6086158	-1	-26	26	1		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	20:00:31	1963	MV24GC1-ENV-DC-207			Camera	47	613982	6086127	613980	6086158	1	-31	31	-2		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	20:01:27	1964	MV24GC1-ENV-DC-207			Camera	47	613981	6086118	613980	6086158	1	-40	40	-2		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	20:02:11	1965	MV24GC1-ENV-DC-207			Camera	47	613981	6086112	613980	6086158	1	-47	47	-1		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	20:12:51	1966	MV24GC1-ENV-DC-207			Camera	47	613926	6086162	613980	6086158	-54	3	54	94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	20:14:57	1967	MV24GC1-ENV-DC-207			Camera	47	613934	6086163	613980	6086158	-47	5	47	96		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	20:15:23	1968	MV24GC1-ENV-DC-207			Camera	47	613938	6086163	613980	6086158	-42	5	43	96		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	20:16:18	1969	MV24GC1-ENV-DC-207			Camera	47	613948	6086162	613980	6086158	-33	4	33	97		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	20:16:48	1970	MV24GC1-ENV-DC-207			Camera	47	613952	6086161	613980	6086158	-28	3	28	96		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	20:17:29	1971	MV24GC1-ENV-DC-207			Camera	47	613957	6086161	613980	6086158	-24	3	24	97		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	20:18:23	1972	MV24GC1-ENV-DC-207			Camera	47	613966	6086162	613980	6086158	-15	3	15	102		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	20:18:40	1973	MV24GC1-ENV-DC-207			Camera	47	613968	6086161	613980	6086158	-12	3	12	104		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	20:19:25	1974	MV24GC1-ENV-DC-207			Camera	47	613976	6086162	613980	6086158	-5	3	6	125		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	20:19:53	1975	MV24GC1-ENV-DC-207			Camera	47	613980	6086162	613980	6086158	0	3	4	173		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	20:20:13	1976	MV24GC1-ENV-DC-207			Camera	47	613982	6086161	613980	6086158	2	3	3	-143		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	20:21:00	1977	MV24GC1-ENV-DC-207			Camera	47	613990	6086161	613980	6086158	9	3	10	-109		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	20:21:34	1978	MV24GC1-ENV-DC-207			Camera	47	613995	6086160	613980	6086158	15	2	15	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	20:22:17	1979	MV24GC1-ENV-DC-207			Camera	47	614003	6086160	613980	6086158	23	2	23	-95		(Corr'd Nav, Kongsberg 14208, img#35) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	20:23:04	1980	MV24GC1-ENV-DC-207			Camera	47	614010	6086160	613980	6086158	30	2	30	-94		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	20:23:47	1981	MV24GC1-ENV-DC-207			Camera	47	614017	6086160	613980	6086158	37	1	37	-92		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	20:24:26	1982	MV24GC1-ENV-DC-207			Camera	47	614023	6086159	613980	6086158	42	1	42	-91		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	20:24:51	1983	MV24GC1-ENV-DC-207			Camera	47	614026	6086160	613980	6086158	46	1	46	-91		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	20:25:08	1984	MV24GC1-ENV-DC-207			Camera	47	614029	6086160	613980	6086158	49	1	49	-91		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	20:25:34	1985	MV24GC1-ENV-DC-207			Camera	47	614031	6086159	613980	6086158	51	1	51	-91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	20:25:48	1986	MV24GC1-ENV-DC-207			Camera	47	614033	6086158	613980	6086158	52	0	52	-90		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	21:56:51	1987	MV24GC1-ENV-DC-217			Camera	49	615721	6086264	615718	6086211	3	53	53	-177		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	21:57:30	1988	MV24GC1-ENV-DC-217			Camera	49	615721	6086261	615718	6086211	3	49	49	-176		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	21:58:04	1989	MV24GC1-ENV-DC-217			Camera	49	615719	6086257	615718	6086211	1	46	46	-179		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	21:58:25	1990	MV24GC1-ENV-DC-217			Camera	49	615719	6086255	615718	6086211	0	44	44	-180		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	21:59:40	1991	MV24GC1-ENV-DC-217			Camera	49	615719	6086243	615718	6086211	1	32	32	-178		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	22:00:07	1992	MV24GC1-ENV-DC-217			Camera	49	615719	6086239	615718	6086211	0	27	27	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	22:00:57	1993	MV24GC1-ENV-DC-217			Camera	49	615718	6086231	615718	6086211	0	20	20	179		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	22:02:01	1994	MV24GC1-ENV-DC-217			Camera	49	615717	6086220	615718	6086211	-1	8	9	174		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	22:02:25	1995	MV24GC1-ENV-DC-217			Camera	49	615717	6086217	615718	6086211	-1	5	5	170		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	22:02:56	1996	MV24GC1-ENV-DC-217			Camera	49	615717	6086213	615718	6086211	-1	1	2	126		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	22:03:33	1997	MV24GC1-ENV-DC-217			Camera	49	615715	6086207	615718	6086211	-3	-5	6	34		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	22:04:25	1998	MV24GC1-ENV-DC-217			Camera	49	615714	6086199	615718	6086211	-4	-13	13	18		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	22:04:57	1999	MV24GC1-ENV-DC-217			Camera	49	615714	6086194	615718	6086211	-4	-18	18	14		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	22:05:27	2000	MV24GC1-ENV-DC-217			Camera	49	615712	6086190	615718	6086211	-7	-22	23	17		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	22:06:31	2001	MV24GC1-ENV-DC-217			Camera	49	615713	6086178	615718	6086211	-5	-33	33	9		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	22:07:00	2002	MV24GC1-ENV-DC-217			Camera	49	615713	6086173	615718	6086211	-5	-38	38	8		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	22:07:46	2003	MV24GC1-ENV-DC-217			Camera	49	615712	6086169	615718	6086211	-6	-43	43	8		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	22:08:42	2004	MV24GC1-ENV-DC-217			Camera	49	615712	6086163	615718	6086211	-7	-49	49	8		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	22:10:04	2005	MV24GC1-ENV-DC-217			Camera	49	615711	6086161	615718	6086211	-7	-50	51	8		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	22:18:32	2006	MV24GC1-ENV-DC-217			Camera	49	615753	6086204	615718	6086211	35	-8	36	-78		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	22:19:01	2007	MV24GC1-ENV-DC-217			Camera	49	615756	6086208	615718	6086211	38	-4	38	-84		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	22:22:21	2008	MV24GC1-ENV-DC-217			Camera	49	615771	6086215	615718	6086211	53	4	53	-94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	22:23:54	2009	MV24GC1-ENV-DC-217			Camera	49	615762	6086213	615718	6086211	44	2	44	-93		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	22:25:02	2010	MV24GC1-ENV-DC-217			Camera	49	615752	6086213	615718	6086211	34	1	34	-92		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	22:25:13	2011	MV24GC1-ENV-DC-217			Camera	49	615750	6086212	615718	6086211	32	1	32	-92		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	22:26:03	2012	MV24GC1-ENV-DC-217			Camera	49	615743	6086213	615718	6086211	24	1	24	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	22:26:23	2013	MV24GC1-ENV-DC-217			Camera	49	615739	6086213	615718	6086211	20	1	20	-94		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	22:27:02	2014	MV24GC1-ENV-DC-217			Camera	49	615732	6086213	615718	6086211	14	1	14	-95		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	22:27:31	2015	MV24GC1-ENV-DC-217			Camera	49	615728	6086212	615718	6086211	10	0	10	-91		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	22:28:00	2016	MV24GC1-ENV-DC-217			Camera	49	615722	6086212	615718	6086211	4	1	4	-97		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	22:29:07	2017	MV24GC1-ENV-DC-217			Camera	49	615713	6086211	615718	6086211	-5	0	6	85		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	22:30:16	2018	MV24GC1-ENV-DC-217			Camera	49	615703	6086211	615718	6086211	-16	-1	16	87		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	22:31:11	2019	MV24GC1-ENV-DC-217			Camera	49	615693	6086211	615718	6086211	-25	0	25	90		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	22:31:26	2020	MV24GC1-ENV-DC-217			Camera	49	615691	6086210	615718	6086211	-27	-1	27	88		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	22:31:46	2021	MV24GC1-ENV-DC-217			Camera	49	615688	6086210	615718	6086211	-30	-2	30	87		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	22:32:12	2022	MV24GC1-ENV-DC-217			Camera	49	615684	6086210	615718	6086211	-34	-2	34	87		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	22:32:24	2023	MV24GC1-ENV-DC-217			Camera	49	615683	6086210	615718	6086211	-36	-1	36	88		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	22:33:18	2024	MV24GC1-ENV-DC-217			Camera	49	615675	6086210	615718	6086211	-44	-2	44	88		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	22:33:50	2025	MV24GC1-ENV-DC-217			Camera	49	615671	6086210	615718	6086211	-47	-1	47	88		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	22:34:11	2026	MV24GC1-ENV-DC-217			Camera	49	615669	6086210	615718	6086211	-49	-1	49	89		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	22:34:28	2027	MV24GC1-ENV-DC-217			Camera	49	615666	6086213	615718	6086211	-52	1	52	91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	22:34:43	2028	MV24GC1-ENV-DC-217			Camera	49	615663	6086214	615718	6086211	-55	2	55	92		(Corr'd Nav, Kongsberg 14208, img#42) (B)
20-Aug-2024	00:37:28	2029	MV24GC1-ENV-DC-208			Camera	50	615015	6087924	615011	6087874	4	49	50	-175		(Corr'd Nav, Kongsberg 14208, img#1) (B)
20-Aug-2024	00:37:43	2030	MV24GC1-ENV-DC-208			Camera	50	615014	6087923	615011	6087874	4	48	49	-175		(Corr'd Nav, Kongsberg 14208, img#2) (B)
20-Aug-2024	00:38:02	2031	MV24GC1-ENV-DC-208			Camera	50	615014	6087921	615011	6087874	4	46	46	-176		(Corr'd Nav, Kongsberg 14208, img#3) (B)
20-Aug-2024	00:38:18	2032	MV24GC1-ENV-DC-208			Camera	50	615014	6087919	615011	6087874	3	45	45	-176		(Corr'd Nav, Kongsberg 14208, img#4) (B)
20-Aug-2024	00:38:36	2033	MV24GC1-ENV-DC-208			Camera	50	615013	6087917	615011	6087874	3	43	43	-176		(Corr'd Nav, Kongsberg 14208, img#5) (B)
20-Aug-2024	00:39:28	2034	MV24GC1-ENV-DC-208			Camera	50	615012	6087909	615011	6087874	2	34	34	-177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
20-Aug-2024	00:39:48	2035	MV24GC1-ENV-DC-208			Camera	50	615013	6087905	615011	6087874	3	30	30	-175		(Corr'd Nav, Kongsberg 14208, img#7) (B)
20-Aug-2024	00:40:02	2036	MV24GC1-ENV-DC-208			Camera	50	615013	6087902	615011	6087874	3	28	28	-174		(Corr'd Nav, Kongsberg 14208, img#8) (B)
20-Aug-2024	00:40:17	2037	MV24GC1-ENV-DC-208			Camera	50	615013	6087900	615011	6087874	2	26	26	-175		(Corr'd Nav, Kongsberg 14208, img#9) (B)
20-Aug-2024	00:41:08	2038	MV24GC1-ENV-DC-208			Camera	50	615012	6087892	615011	6087874	2	17	17	-174		(Corr'd Nav, Kongsberg 14208, img#10) (B)
20-Aug-2024	00:41:18	2039	MV24GC1-ENV-DC-208			Camera	50	615013	6087890	615011	6087874	2	16	16	-173		(Corr'd Nav, Kongsberg 14208, img#11) (B)
20-Aug-2024	00:41:41	2040	MV24GC1-ENV-DC-208			Camera	50	615012	6087886	615011	6087874	2	12	12	-171		(Corr'd Nav, Kongsberg 14208, img#12) (B)
20-Aug-2024	00:42:17	2041	MV24GC1-ENV-DC-208			Camera	50	615012	6087880	615011	6087874	1	6	6	-170		(Corr'd Nav, Kongsberg 14208, img#13) (B)
20-Aug-2024	00:42:38	2042	MV24GC1-ENV-DC-208			Camera	50	615011	6087877	615011	6087874	0	3	3	-176		(Corr'd Nav, Kongsberg 14208, img#14) (B)
20-Aug-2024	00:42:48	2043	MV24GC1-ENV-DC-208			Camera	50	615011	6087876	615011	6087874	0	1	1	178		(Corr'd Nav, Kongsberg 14208, img#15) (B)
20-Aug-2024	00:43:31	2044	MV24GC1-ENV-DC-208			Camera	50	615010	6087869	615011	6087874	0	-6	6	5		(Corr'd Nav, Kongsberg 14208, img#16) (B)
20-Aug-2024	00:43:42	2045	MV24GC1-ENV-DC-208			Camera	50	615011	6087867	615011	6087874	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#17) (B)
20-Aug-2024	00:43:54	2046	MV24GC1-ENV-DC-208			Camera	50	615011	6087865	615011	6087874	0	-10	10	-2		(Corr'd Nav, Kongsberg 14208, img#18) (B)
20-Aug-2024	00:44:11	2047	MV24GC1-ENV-DC-208			Camera	50	615010	6087862	615011	6087874	-1	-12	12	3		(Corr'd Nav, Kongsberg 14208, img#19) (B)
20-Aug-2024	00:44:20	2048	MV24GC1-ENV-DC-208			Camera	50	615009	6087861	615011	6087874	-1	-13	13	5		(Corr'd Nav, Kongsberg 14208, img#20) (B)
20-Aug-2024	00:45:22	2049	MV24GC1-ENV-DC-208			Camera	50	615009	6087852	615011	6087874	-1	-22	22	3		(Corr'd Nav, Kongsberg 14208, img#21) (B)
20-Aug-2024	00:46:13	2050	MV24GC1-ENV-DC-208			Camera	50	615007	6087845	615011	6087874	-4	-29	30	7		(Corr'd Nav, Kongsberg 14208, img#22) (B)
20-Aug-2024	00:46:23	2051	MV24GC1-ENV-DC-208			Camera	50	615007	6087843	615011	6087874	-4	-31	31	7		(Corr'd Nav, Kongsberg 14208, img#23) (B)
20-Aug-2024	00:47:17	2052	MV24GC1-ENV-DC-208			Camera	50	615005	6087835	615011	6087874	-5	-39	40	8		(Corr'd Nav, Kongsberg 14208, img#24) (B)
20-Aug-2024	00:47:37	2053	MV24GC1-ENV-DC-208			Camera	50	615005	6087832	615011	6087874	-5	-42	43	7		(Corr'd Nav, Kongsberg 14208, img#25) (B)
20-Aug-2024	00:47:47	2054	MV24GC1-ENV-DC-208			Camera	50	615005	6087831	615011	6087874	-5	-44	44	7		(Corr'd Nav, Kongsberg 14208, img#26) (B)
20-Aug-2024	00:49:13	2055	MV24GC1-ENV-DC-208			Camera	50	615005	6087822	615011	6087874	-6	-52	52	6		(Corr'd Nav, Kongsberg 14208, img#27) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Aug-2024	00:49:47	2056	MV24GC1-ENV-DC-208			Camera	50	615007	6087823	615011	6087874	-4	-52	52	4		(Corr'd Nav, Kongsberg 14208, img#28) (B)
20-Aug-2024	00:50:52	2057	MV24GC1-ENV-DC-208			Camera	50	615003	6087827	615011	6087874	-7	-48	48	9		(Corr'd Nav, Kongsberg 14208, img#29) (B)
20-Aug-2024	00:51:14	2058	MV24GC1-ENV-DC-208			Camera	50	615002	6087829	615011	6087874	-8	-45	46	10		(Corr'd Nav, Kongsberg 14208, img#30) (B)
20-Aug-2024	00:51:36	2059	MV24GC1-ENV-DC-208			Camera	50	615000	6087831	615011	6087874	-11	-43	45	14		(Corr'd Nav, Kongsberg 14208, img#31) (B)
20-Aug-2024	00:52:22	2060	MV24GC1-ENV-DC-208			Camera	50	614995	6087838	615011	6087874	-16	-36	40	24		(Corr'd Nav, Kongsberg 14208, img#32) (B)
20-Aug-2024	00:52:32	2061	MV24GC1-ENV-DC-208			Camera	50	614993	6087839	615011	6087874	-17	-35	39	26		(Corr'd Nav, Kongsberg 14208, img#33) (B)
20-Aug-2024	00:53:24	2062	MV24GC1-ENV-DC-208			Camera	50	614987	6087847	615011	6087874	-24	-27	36	41		(Corr'd Nav, Kongsberg 14208, img#34) (B)
20-Aug-2024	00:54:04	2063	MV24GC1-ENV-DC-208			Camera	50	614983	6087852	615011	6087874	-28	-23	36	51		(Corr'd Nav, Kongsberg 14208, img#35) (B)
20-Aug-2024	00:55:25	2064	MV24GC1-ENV-DC-208			Camera	50	614977	6087859	615011	6087874	-33	-16	37	65		(Corr'd Nav, Kongsberg 14208, img#36) (B)
20-Aug-2024	00:56:04	2065	MV24GC1-ENV-DC-208			Camera	50	614976	6087862	615011	6087874	-35	-13	37	70		(Corr'd Nav, Kongsberg 14208, img#37) (B)
20-Aug-2024	00:56:49	2066	MV24GC1-ENV-DC-208			Camera	50	614974	6087865	615011	6087874	-36	-10	38	75		(Corr'd Nav, Kongsberg 14208, img#38) (B)
20-Aug-2024	00:57:39	2067	MV24GC1-ENV-DC-208			Camera	50	614971	6087868	615011	6087874	-39	-7	40	80		(Corr'd Nav, Kongsberg 14208, img#39) (B)
20-Aug-2024	00:58:09	2068	MV24GC1-ENV-DC-208			Camera	50	614969	6087871	615011	6087874	-42	-4	42	85		(Corr'd Nav, Kongsberg 14208, img#40) (B)
20-Aug-2024	01:01:42	2069	MV24GC1-ENV-DC-208			Camera	50	614966	6087883	615011	6087874	-45	9	46	101		(Corr'd Nav, Kongsberg 14208, img#41) (B)
20-Aug-2024	01:02:33	2070	MV24GC1-ENV-DC-208			Camera	50	614972	6087882	615011	6087874	-39	8	40	101		(Corr'd Nav, Kongsberg 14208, img#42) (B)
20-Aug-2024	01:03:16	2071	MV24GC1-ENV-DC-208			Camera	50	614978	6087881	615011	6087874	-32	7	33	102		(Corr'd Nav, Kongsberg 14208, img#43) (B)
20-Aug-2024	01:03:55	2072	MV24GC1-ENV-DC-208			Camera	50	614985	6087880	615011	6087874	-26	5	27	101		(Corr'd Nav, Kongsberg 14208, img#44) (B)
20-Aug-2024	01:04:11	2073	MV24GC1-ENV-DC-208			Camera	50	614987	6087879	615011	6087874	-23	5	24	101		(Corr'd Nav, Kongsberg 14208, img#45) (B)
20-Aug-2024	01:04:33	2074	MV24GC1-ENV-DC-208			Camera	50	614990	6087878	615011	6087874	-20	4	21	100		(Corr'd Nav, Kongsberg 14208, img#46) (B)
20-Aug-2024	01:05:06	2075	MV24GC1-ENV-DC-208			Camera	50	614996	6087877	615011	6087874	-15	3	15	101		(Corr'd Nav, Kongsberg 14208, img#47) (B)
20-Aug-2024	01:06:06	2076	MV24GC1-ENV-DC-208			Camera	50	615005	6087875	615011	6087874	-6	1	6	96		(Corr'd Nav, Kongsberg 14208, img#48) (B)
20-Aug-2024	01:06:27	2077	MV24GC1-ENV-DC-208			Camera	50	615008	6087874	615011	6087874	-2	0	2	82		(Corr'd Nav, Kongsberg 14208, img#49) (B)
20-Aug-2024	01:06:38	2078	MV24GC1-ENV-DC-208			Camera	50	615010	6087874	615011	6087874	-1	0	1	62		(Corr'd Nav, Kongsberg 14208, img#50) (B)
20-Aug-2024	01:06:57	2079	MV24GC1-ENV-DC-208			Camera	50	615013	6087873	615011	6087874	2	-1	2	-61		(Corr'd Nav, Kongsberg 14208, img#51) (B)
20-Aug-2024	01:07:29	2080	MV24GC1-ENV-DC-208			Camera	50	615017	6087872	615011	6087874	6	-3	7	-69		(Corr'd Nav, Kongsberg 14208, img#52) (B)
20-Aug-2024	01:07:47	2081	MV24GC1-ENV-DC-208			Camera	50	615020	6087872	615011	6087874	9	-3	10	-73		(Corr'd Nav, Kongsberg 14208, img#53) (B)
20-Aug-2024	01:07:56	2082	MV24GC1-ENV-DC-208			Camera	50	615021	6087871	615011	6087874	10	-3	11	-73		(Corr'd Nav, Kongsberg 14208, img#54) (B)
20-Aug-2024	01:08:31	2083	MV24GC1-ENV-DC-208			Camera	50	615026	6087870	615011	6087874	16	-4	16	-74		(Corr'd Nav, Kongsberg 14208, img#55) (B)
20-Aug-2024	01:09:05	2084	MV24GC1-ENV-DC-208			Camera	50	615031	6087870	615011	6087874	21	-5	21	-76		(Corr'd Nav, Kongsberg 14208, img#56) (B)
20-Aug-2024	01:09:27	2085	MV24GC1-ENV-DC-208			Camera	50	615035	6087869	615011	6087874	24	-6	25	-76		(Corr'd Nav, Kongsberg 14208, img#57) (B)
20-Aug-2024	01:09:50	2086	MV24GC1-ENV-DC-208			Camera	50	615038	6087868	615011	6087874	28	-7	28	-76		(Corr'd Nav, Kongsberg 14208, img#58) (B)
20-Aug-2024	01:10:55	2087	MV24GC1-ENV-DC-208			Camera	50	615048	6087866	615011	6087874	37	-8	38	-77		(Corr'd Nav, Kongsberg 14208, img#59) (B)
20-Aug-2024	01:11:46	2088	MV24GC1-ENV-DC-208			Camera	50	615055	6087865	615011	6087874	45	-9	46	-78		(Corr'd Nav, Kongsberg 14208, img#60) (B)
20-Aug-2024	03:02:18	2089	MV24GC1-ENV-DC-209			Camera	52	615687	6088903	615665	6088945	22	-42	48	-28		(Corr'd Nav, Kongsberg 14208, img#1) (B)
20-Aug-2024	03:04:23	2090	MV24GC1-ENV-DC-209			Camera	52	615682	6088911	615665	6088945	17	-34	37	-27		(Corr'd Nav, Kongsberg 14208, img#2) (B)
20-Aug-2024	03:04:39	2091	MV24GC1-ENV-DC-209			Camera	52	615681	6088913	615665	6088945	16	-31	35	-27		(Corr'd Nav, Kongsberg 14208, img#3) (B)
20-Aug-2024	03:05:03	2092	MV24GC1-ENV-DC-209			Camera	52	615679	6088916	615665	6088945	14	-29	32	-26		(Corr'd Nav, Kongsberg 14208, img#4) (B)
20-Aug-2024	03:05:13	2093	MV24GC1-ENV-DC-209			Camera	52	615678	6088918	615665	6088945	13	-27	30	-26		(Corr'd Nav, Kongsberg 14208, img#5) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Aug-2024	03:05:30	2094	MV24GC1-ENV-DC-209			Camera	52	615677	6088920	615665	6088945	12	-25	28	-26		(Corr'd Nav, Kongsberg 14208, img#6) (B)
20-Aug-2024	03:06:20	2095	MV24GC1-ENV-DC-209			Camera	52	615675	6088927	615665	6088945	10	-18	20	-28		(Corr'd Nav, Kongsberg 14208, img#7) (B)
20-Aug-2024	03:06:51	2096	MV24GC1-ENV-DC-209			Camera	52	615672	6088931	615665	6088945	8	-14	16	-28		(Corr'd Nav, Kongsberg 14208, img#8) (B)
20-Aug-2024	03:07:06	2097	MV24GC1-ENV-DC-209			Camera	52	615671	6088933	615665	6088945	6	-12	14	-28		(Corr'd Nav, Kongsberg 14208, img#9) (B)
20-Aug-2024	03:07:52	2098	MV24GC1-ENV-DC-209			Camera	52	615668	6088939	615665	6088945	3	-6	6	-28		(Corr'd Nav, Kongsberg 14208, img#10) (B)
20-Aug-2024	03:08:23	2099	MV24GC1-ENV-DC-209			Camera	52	615665	6088943	615665	6088945	0	-2	2	-15		(Corr'd Nav, Kongsberg 14208, img#11) (B)
20-Aug-2024	03:08:31	2100	MV24GC1-ENV-DC-209			Camera	52	615665	6088944	615665	6088945	0	-1	1	17		(Corr'd Nav, Kongsberg 14208, img#12) (B)
20-Aug-2024	03:08:41	2101	MV24GC1-ENV-DC-209			Camera	52	615664	6088946	615665	6088945	-1	1	1	123		(Corr'd Nav, Kongsberg 14208, img#13) (B)
20-Aug-2024	03:08:54	2102	MV24GC1-ENV-DC-209			Camera	52	615663	6088947	615665	6088945	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#14) (B)
20-Aug-2024	03:09:18	2103	MV24GC1-ENV-DC-209			Camera	52	615661	6088951	615665	6088945	-4	6	7	145		(Corr'd Nav, Kongsberg 14208, img#15) (B)
20-Aug-2024	03:09:56	2104	MV24GC1-ENV-DC-209			Camera	52	615658	6088956	615665	6088945	-7	11	12	149		(Corr'd Nav, Kongsberg 14208, img#16) (B)
20-Aug-2024	03:10:25	2105	MV24GC1-ENV-DC-209			Camera	52	615656	6088960	615665	6088945	-9	15	17	150		(Corr'd Nav, Kongsberg 14208, img#17) (B)
20-Aug-2024	03:11:16	2106	MV24GC1-ENV-DC-209			Camera	52	615652	6088967	615665	6088945	-13	22	25	149		(Corr'd Nav, Kongsberg 14208, img#18) (B)
20-Aug-2024	03:11:47	2107	MV24GC1-ENV-DC-209			Camera	52	615649	6088971	615665	6088945	-16	26	30	148		(Corr'd Nav, Kongsberg 14208, img#19) (B)
20-Aug-2024	03:12:18	2108	MV24GC1-ENV-DC-209			Camera	52	615647	6088975	615665	6088945	-18	30	35	149		(Corr'd Nav, Kongsberg 14208, img#20) (B)
20-Aug-2024	03:13:22	2109	MV24GC1-ENV-DC-209			Camera	52	615642	6088983	615665	6088945	-22	38	44	150		(Corr'd Nav, Kongsberg 14208, img#21) (B)
20-Aug-2024	03:13:57	2110	MV24GC1-ENV-DC-209			Camera	52	615639	6088988	615665	6088945	-26	43	50	149		(Corr'd Nav, Kongsberg 14208, img#22) (B)
20-Aug-2024	03:19:59	2111	MV24GC1-ENV-DC-209			Camera	52	615670	6088998	615665	6088945	5	53	54	-174		(Corr'd Nav, Kongsberg 14208, img#23) (B)
20-Aug-2024	03:20:18	2112	MV24GC1-ENV-DC-209			Camera	52	615673	6088998	615665	6088945	8	53	54	-171		(Corr'd Nav, Kongsberg 14208, img#24) (B)
20-Aug-2024	03:21:39	2113	MV24GC1-ENV-DC-209			Camera	52	615685	6088996	615665	6088945	20	52	55	-159		(Corr'd Nav, Kongsberg 14208, img#25) (B)
20-Aug-2024	03:22:20	2114	MV24GC1-ENV-DC-209			Camera	52	615691	6088996	615665	6088945	26	51	57	-153		(Corr'd Nav, Kongsberg 14208, img#26) (B)
20-Aug-2024	03:22:46	2115	MV24GC1-ENV-DC-209			Camera	52	615692	6088994	615665	6088945	27	49	56	-151		(Corr'd Nav, Kongsberg 14208, img#27) (B)
20-Aug-2024	03:23:45	2116	MV24GC1-ENV-DC-209			Camera	52	615691	6088988	615665	6088945	26	43	50	-149		(Corr'd Nav, Kongsberg 14208, img#28) (B)
20-Aug-2024	03:24:30	2117	MV24GC1-ENV-DC-209			Camera	52	615691	6088983	615665	6088945	26	38	46	-146		(Corr'd Nav, Kongsberg 14208, img#29) (B)
20-Aug-2024	03:26:33	2118	MV24GC1-ENV-DC-209			Camera	52	615689	6088979	615665	6088945	24	34	42	-145		(Corr'd Nav, Kongsberg 14208, img#30) (B)
20-Aug-2024	03:27:25	2119	MV24GC1-ENV-DC-209			Camera	52	615685	6088972	615665	6088945	21	27	34	-143		(Corr'd Nav, Kongsberg 14208, img#31) (B)
20-Aug-2024	03:28:22	2120	MV24GC1-ENV-DC-209			Camera	52	615686	6088971	615665	6088945	21	26	33	-141		(Corr'd Nav, Kongsberg 14208, img#32) (B)
20-Aug-2024	03:29:34	2121	MV24GC1-ENV-DC-209			Camera	52	615682	6088965	615665	6088945	18	20	27	-139		(Corr'd Nav, Kongsberg 14208, img#33) (B)
20-Aug-2024	03:29:49	2122	MV24GC1-ENV-DC-209			Camera	52	615681	6088964	615665	6088945	16	19	25	-139		(Corr'd Nav, Kongsberg 14208, img#34) (B)
20-Aug-2024	03:30:57	2123	MV24GC1-ENV-DC-209			Camera	52	615676	6088955	615665	6088945	11	11	15	-134		(Corr'd Nav, Kongsberg 14208, img#35) (B)
20-Aug-2024	03:31:31	2124	MV24GC1-ENV-DC-209			Camera	52	615673	6088951	615665	6088945	8	6	10	-128		(Corr'd Nav, Kongsberg 14208, img#36) (B)
20-Aug-2024	03:31:41	2125	MV24GC1-ENV-DC-209			Camera	52	615672	6088950	615665	6088945	7	5	9	-125		(Corr'd Nav, Kongsberg 14208, img#37) (B)
20-Aug-2024	03:32:32	2126	MV24GC1-ENV-DC-209			Camera	52	615668	6088943	615665	6088945	3	-2	4	-63		(Corr'd Nav, Kongsberg 14208, img#38) (B)
20-Aug-2024	03:32:47	2127	MV24GC1-ENV-DC-209			Camera	52	615667	6088941	615665	6088945	2	-4	4	-33		(Corr'd Nav, Kongsberg 14208, img#39) (B)
20-Aug-2024	03:33:04	2128	MV24GC1-ENV-DC-209			Camera	52	615666	6088939	615665	6088945	1	-6	6	-9		(Corr'd Nav, Kongsberg 14208, img#40) (B)
20-Aug-2024	03:33:22	2129	MV24GC1-ENV-DC-209			Camera	52	615664	6088936	615665	6088945	-1	-9	9	4		(Corr'd Nav, Kongsberg 14208, img#41) (B)
20-Aug-2024	03:34:31	2130	MV24GC1-ENV-DC-209			Camera	52	615659	6088927	615665	6088945	-6	-18	19	19		(Corr'd Nav, Kongsberg 14208, img#42) (B)
20-Aug-2024	03:35:22	2131	MV24GC1-ENV-DC-209			Camera	52	615654	6088920	615665	6088945	-10	-25	27	23		(Corr'd Nav, Kongsberg 14208, img#43) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*							
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97	
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon							
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Aug-2024	03:35:54	2132	MV24GC1-ENV-DC-209			Camera	52	615652	6088916	615665	6088945	-13	-29	32	24		(Corr'd Nav, Kongsberg 14208, img#44) (B)
20-Aug-2024	03:36:54	2133	MV24GC1-ENV-DC-209			Camera	52	615647	6088908	615665	6088945	-18	-37	41	26		(Corr'd Nav, Kongsberg 14208, img#45) (B)
20-Aug-2024	03:37:10	2134	MV24GC1-ENV-DC-209			Camera	52	615646	6088906	615665	6088945	-19	-39	44	26		(Corr'd Nav, Kongsberg 14208, img#46) (B)
20-Aug-2024	03:37:45	2135	MV24GC1-ENV-DC-209			Camera	52	615643	6088901	615665	6088945	-21	-44	49	26		(Corr'd Nav, Kongsberg 14208, img#47) (B)

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	59294	Area: UKCS Quads: 27, 34, 35, and 40	Scale: 100mm Line Laser
Project:	Morven Grid Connection 1 Route Environmental Survey		Equipment: Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk4 / Mk6
Client:	Morven Offshore Wind Limited		Vessel: MV *Ocean Reliance*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
MV24EXP-ENV-DC-173	11-Aug-2024	06:32:16	07:07:47	4 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Echinodermata (Asteroidea)	AS, MP, AA	49	1	49	
MV24EXP-ENV-DC-174	11-Aug-2024	09:59:35	10:01:45	5 x HD Video MTS-files 4 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea), Mollusca (Bivalvia)	AS, MP, AA	54	50	103	Kongsberg video disappeared after first 2 minutes The transect was paused and resumed after 10 minutes Possible Arctica islandica (siphons)
		10:13:40	10:55:46								
MV24EXP-ENV-DC-175	11-Aug-2024	13:31:51	14:09:34	4 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments and faunal burrows	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea), Mollusca (Bilvalvia)	IO, MP, PP	37	104	140	Possible *Arctica islandica* (siphons)
MV24EXP-ENV-DC-176	12-Aug-2024	04:34:52	05:07:59	1 x HD Video MTS-file 2 x SD Video MP4-files	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	AS, MP, AA	49	141	189	Possible *A. islandica* (siphons)
MV24EXP-ENV-DC-177	13-Aug-2024	01:08:37	01:41:54	2 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Ophiuroidea)	AS, AA	46	190	235	EELS lost fix 191, 192, 193 Fixes restored from manual fix file
MV24EXP-ENV-DC-178	13-Aug-2024	03:55:32	03:56:56	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes, Rajidae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea), Mollusca (Bivalvia)	AS, AA	54	236	289	HD Camera lost comms. Transect was interrupted and resumed. Possible *Arctica islandica* (siphon).
		04:21:54	04:55:05								
MV24EXP-ENV-DC-179	13-Aug-2024	06:37:04	07:10:46	2 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea)	AS, AA, MP	48	290	337	
MV24EXP-ENV-DC-180	13-Aug-2024	09:32:27	10:11:25	1 x HD Video MTS-file 2 x SD Video MP4-files	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	AS, AA, MP	55	338	392	EELS lost fix 338 and 389-392 Fixes restored from manual fix file
MV24EXP-ENV-DC-234	14-Aug-2024	06:36:44	07:11:02	1 x HD Video MTS-file 2 x SD Video MP4-files	Rippled sand with shell fragments. Occasional boulders	Annelida (Aphroditidae), Arthropoda (Munididae, Paguroidea), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	AS, AA, MP	58	393	450	EELS lost fix 393. Fixes restored from manual fix file.
MV24EXP-ENV-DC-235	14-Aug-2024	08:43:19	09:19:46	1 x HD Video MTS-file 2 x SD Video MP4-files	Sand with shell fragments. Less frequent shell fragments in the centre, changing to very shelly with some gravel at the end of the transect	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Cnidaria (Pennatuloidea)	AS, AA, MP	45	451	495	
MV24EXP-ENV-DC-235A	14-Aug-2024	11:38:49	12:12:45	1 x HD Video MTS-file 2 x SD Video MP4-files	Sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea)	IO, MP, PP	41	496	536	EELS lost fix 498 and 499 Fixes restored from manual fix file
MV24EXP-ENV-DC-233	14-Aug-2024	15:16:35	15:18:09	7 x HD Video MTS-file 6 x SD Video MP4-files	Rippled sand with shell fragments and faunal burrows	Cnidaria (Pennatuloidea)	IO, MP, PP	41	537	577	Issues connecting EELS to Voyager to receive control. DVR crashed and restarted. 1CAM wasn't recording. Primary Topside and DVR were changed to Secondary system.
		15:21:39	15:24:09								
		15:51:57	16:24:52								
MV24EXP-ENV-DC-232	14-Aug-2024	19:32:51	20:08:36	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled sand with shell fragments and faunal burrows	Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea)	IO, PP	40	578	617	
MV24EXP-ENV-DC-231	14-Aug-2024	22:22:47	23:06:58	1 x HD Video MTS-file 4 x SD Video MP4-files	Sand with shell fragments and faunal burrows	Arthropoda (Malacostraca, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Ceriantharia, Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea)	IO, PP	44	618	661	Transect was stopped 3 times because the beacon lost its signal. DVR crashed and restarted
MV24EXP-ENV-DC-230	15-Aug-2024	00:56:40	01:31:48	1 x HD Video MTS-file 4 x SD Video MP4-files	Sand with shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Ceriantharia, Pennatuloidea), Mollusca (Bivalvia)	AS, AA	48	662	709	
MV24EXP-ENV-DC-229	15-Aug-2024	02:44:32	02:58:51	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Decapoda, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Ceriantharia, Pennatuloidea), Echinodermata (Asteroidea)	AS, AA	44	710	753	EELS lost fixes 722-731. Fixes restored from manual fix file. DVR crashed and restarted.
		03:09:07	03:22:24								
MV24EXP-ENV-DC-228	15-Aug-2024	04:50:25	05:21:35	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes, *Pleuronectes platessa*), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	AS, AA, MP	42	754	795	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	59294	Area: UKCS Quads: 27, 34, 35, and 40	Scale: 100mm Line Laser
Project:	Morven Grid Connection 1 Route Environmental Survey		Equipment: Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk4 / Mk6
Client:	Morven Offshore Wind Limited		Vessel: MV *Ocean Reliance*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
MV24EXP-ENV-DC-227	15-Aug-2024	22:27:18 22:28:34	22:27:37 23:08:49	1 x HD Video MTS-file 6 x SD Video MP4-files	Sand with shell fragments and fauna burrows	Annelida (Polychaeta), Arthropoda (Brachyura, Malacostraca, Paguroidea), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	IO, PP	42	796	838	DVR crashed and restarted. Photo 801 no fix.
MV24EXP-ENV-DC-226	16-Aug-2024	01:15:37 01:29:16	01:27:28 01:43:51	2 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Chordata (Actinopterygii), Cnidaria (Pennatuloidea)	AS, AA	35	839	873	Issues with 1Cam comms and recording HD and SD. Video was stopped and resumed two times.
MV24EXP-ENV-DC-171	16-Aug-2024	03:11:56	03:43:12	3 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Ceriantharia, Pennatuloidea), Echinodermata (Asteroidea)	AS, AA	46	874	919	1Cam and HD camera in-sea adaptor were changed to spare ones
MV24EXP-ENV-DC-225	16-Aug-2024	05:24:38	05:58:01	4 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Decapoda), Chordata (Batoidea, Gadidae, *Lophius* , Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	AS, AA, MP	47	920	966	Photo 1822A no fix.
MV24EXP-ENV-DC-172	16-Aug-2024	07:20:31	07:57:55	4 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Brachyura), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	AS, AA, MP	43	967	1009	Poor visibility due to strong current and fine sediment. Flash was restarted.
MV24EXP-ENV-DC-185	17-Aug-2024	22:14:27	22:57:12	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Annelida (Polychaeta, Sabellidae), Arthropoda (Nephropidae), Chordata (Actinopterygii), Cnidaria (Pennatuloidea)	IO, PP	54	1010	1063	Poor visibility due to strong current and fine sediment. Flash was restarted.
MV24EXP-ENV-DC-224	18-Aug-2024	01:34:21	02:38:45	1 x HD Video MTS-file 6 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Annelida (Sabellidae), Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (*Alcyonium digitatum*, Pennatuloidea), Mollusca (Gastropoda)	AS, AA	54	1064	1117	Poor visibility due to strong current and fine sediment.
MV24EXP-ENV-DC-186	18-Aug-2024	03:52:55	04:24:24	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Annelida (Sabellidae), Arthropoda (Nephropidae), Cnidaria (*Alcyonium digitatum*)	AS, AA	40	1118	1157	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-223	18-Aug-2024	05:54:51	06:26:33	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Arthropoda (Paguroidea), Chordata (Gadidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*)	AS, AA, MP	41	1158	1198	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-187	18-Aug-2024	07:31:52	08:09:53	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows and occasional shell fragments	Arthropoda (Brachyura, Decapoda, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*)	AS, AA, MP	45	1199	1243	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-210	18-Aug-2024	10:05:43	10:38:27	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with occasional shell fragments and faunal burrows	Annelida, Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (*Alcyonium digitatum*)	AS, AA, MP	40	1244	1284	Fix 1256 no photo Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-211	18-Aug-2024	12:31:53	13:09:13	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine sediment with faunal burrows	Arthropoda (Decapoda, Paguroidea), Chordata (Gadidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Pennatuloidea)	IO, PP, MP	46	1285	1330	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-212	18-Aug-2024	15:17:13	15:49:50	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine sediment with faunal burrows	Arthropoda (Brachyura, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea)	IO, PP, MP	38	1331	1368	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-213	18-Aug-2024	17:30:09	18:03:15	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine sediment with faunal burrows	Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	IO, PP	37	1369	1405	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-214	18-Aug-2024	19:52:40	20:42:44	1 x HD Video MTS-file 4 x SD Video MP4-files	Sandy sediment, seabed covered with cobbles, shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum* , Ceriantharia), Echinodermata (Asteroidea)	IO, PP	42	1406	1447	Poor visibility due to strong current and fine sediment. The vessel needed to reposition and the second transect was restarted (the video kept recording). Station was repositioned due to cobbles at the center point.
MV24EXP-ENV-DC-215	18-Aug-2024	22:39:21	23:14:11	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine silty/clayey sediment with faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes, Triglidae), Echinodermata (Asteroidea), Mollusca (Gastropoda)	IO, PP	35	1448	1482	
MV24EXP-ENV-DC-188	19-Aug-2024	00:47:41	01:25:18	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy seabed covered with boulders, cobbles and gravel	Arthropoda (Brachyura, Malacostraca, Munididae), Chordata (Actinopterygii), Cnidaria (Actinaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	AS, AA	60	1483	1542	
MV24EXP-ENV-DC-197	19-Aug-2024	02:24:09	03:02:27	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy seabed covered by boulders, cobbles and gravel	Arthropoda (Munididae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea), Porifera	AS, AA	60	1543	1602	Some clear patches with gravel and shells in centre. Camera angle changed.
MV24EXP-ENV-DC-221	19-Aug-2024 19-Aug-2024	04:09:16 04:31:01	04:29:47 04:44:32	3 x HD Video MTS-files 4 x SD Video MP4-files	Silty sandy sediment with faunal burrows and occasional shell fragments	Arthropoda (Brachyura), Chordata (Actinopterygii, Pleuronectiformes, Triglidae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	AS, AA	57	1603	1664	Boulders and cobbles in western part of the area. Fixes 1638-1642 were without photos. After fix 1642 the Kongsberg camera stopped taking photos. Both videos were stopped, and the camera was reset. Videos were resumed while repositioning. Photos with fixes resumed from fix 1643.
MV24EXP-ENV-DC-198	19-Aug-2024	06:05:03	06:41:11	1 x HD Video MTS-file 4 x SD Video MP4-files	Soft sediment covered with boulders, cobbles and gravel	Arthropoda (Munididae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	AS, MP, AA	60	1665	1724	Some clear patches with gravel
MV24EXP-ENV-DC-222	19-Aug-2024	07:53:09	08:25:40	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment, partially gravelly with occasional cobbles and faunal burrows	Arthropoda (Paguroidea), Echinodermata (Asteroidea)	AS, MP, AA	49	1725	1773	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	59294	Area: UKCS Quads: 27, 34, 35, and 40	Scale: 100mm Line Laser
Project:	Morven Grid Connection 1 Route Environmental Survey		Equipment: Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk4 / Mk6
Client:	Morven Offshore Wind Limited		Vessel: MV *Ocean Reliance*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
MV24EXP-ENV-DC-216	19-Aug-2024	10:00:01	10:36:33	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment with shell fragments and faunal burrows	Arthropoda (Brachyura, Paguroidea), Cnidaria	AS, MP, AA	37	1774	1810	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-220	19-Aug-2024	12:24:45	13:02:26	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment with faunal burrows	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Echinodermata (Asteroidea)	IO, MP, PP	35	1811	1845	Photo 1822A no fix. Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-183	19-Aug-2024	15:29:16	16:04:13	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment with shell fragments, cobbles and boulders	Arthropoda (Brachyura, Decapoda), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	IO, MP, PP	59	1846	1904	
MV24EXP-ENV-DC-206	19-Aug-2024	17:16:53	17:47:58	1 x HD Video MTS-file 4 x SD Video MP4-files	Soft silty sediment with faunal burrows	Arthropoda (Brachyura, Decapoda, Paguroidea), Chordata (Pleuronectiformes, Scyliorhinidae), Echinodermata (Asteroidea)	IO, PP	40	1905	1944	
MV24EXP-ENV-DC-207	19-Aug-2024	19:51:37	20:25:51	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft silty sediment with faunal burrows	Annelida (Sabellidae), Arthropoda (Decapoda, Paguroidea), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*, Pennatuloidea)	IO, PP	42	1945	1986	
MV24EXP-ENV-DC-217	19-Aug-2024	21:56:42	22:34:55	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft silty sediment with faunal burrows	Arthropoda (Brachyura, Nephropidae, Paguroidea), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*)	IO, PP	42	1987	2028	
MV24EXP-ENV-DC-208	20-Aug-2024	00:36:55	01:12:24	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy sediment with faunal burrows	Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*, Pennatuloidea)	AS, AA	60	2029	2088	Poor visibility due to strong current and swell. The flash didn't work iin the first few images.
MV24EXP-ENV-DC-209	20-Aug-2024	02:59:33	03:38:26	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy sediment with faunal burrows	Annelida (Sabellidae), Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*)	AS, AA	47	2089	2135	Poor visibility due to strong current and swell

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	11:08:58	1	BP24MVEXP-ENV-DC-201			Camera	17	610441	6075093	610399	6075205	42	-112	120	160	BH	
15-Sep-2024	11:09:07	2	BP24MVEXP-ENV-DC-201			Camera	17	610441	6075094	610399	6075205	42	-111	119	160	BH	
15-Sep-2024	11:09:22	3	BP24MVEXP-ENV-DC-201			Camera	17	610440	6075096	610399	6075205	41	-109	116	160	BH	
15-Sep-2024	11:09:37	4	BP24MVEXP-ENV-DC-201			Camera	17	610440	6075098	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:09:44	5	BP24MVEXP-ENV-DC-201			Camera	17	610440	6075099	610399	6075205	40	-107	114	159	BH	
15-Sep-2024	11:09:53	6	BP24MVEXP-ENV-DC-201			Camera	17	610439	6075100	610399	6075205	40	-106	113	159	BH	
15-Sep-2024	11:10:02	7	BP24MVEXP-ENV-DC-201			Camera	17	610438	6075101	610399	6075205	39	-104	111	160	BH	
15-Sep-2024	11:10:23	8	BP24MVEXP-ENV-DC-201			Camera	17	610436	6075105	610399	6075205	36	-101	107	160	BH	
15-Sep-2024	11:10:44	9	BP24MVEXP-ENV-DC-201			Camera	17	610434	6075107	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:10:58	10	BP24MVEXP-ENV-DC-201			Camera	17	610432	6075109	610399	6075205	33	-96	101	161	BH	
15-Sep-2024	11:11:48	11	BP24MVEXP-ENV-DC-201			Camera	17	610417	6075121	610399	6075205	18	-84	86	168	BH	
15-Sep-2024	11:12:43	12	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075122	610399	6075205	21	-83	86	166	BH	
15-Sep-2024	11:13:00	13	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075123	610399	6075205	21	-82	85	166	BH	
15-Sep-2024	11:13:09	14	BP24MVEXP-ENV-DC-201			Camera	17	610421	6075124	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:13:26	15	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075126	610399	6075205	23	-80	83	164	BH	
15-Sep-2024	11:13:36	16	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075127	610399	6075205	23	-78	81	164	BH	
15-Sep-2024	11:13:50	17	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075129	610399	6075205	23	-76	79	163	BH	
15-Sep-2024	11:14:08	18	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075132	610399	6075205	23	-73	77	163	BH	
15-Sep-2024	11:14:27	19	BP24MVEXP-ENV-DC-201			Camera	17	610423	6075134	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:14:51	20	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075139	610399	6075205	22	-67	70	162	BH	
15-Sep-2024	11:15:10	21	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075141	610399	6075205	22	-65	68	161	BH	
15-Sep-2024	11:15:32	22	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075144	610399	6075205	23	-61	65	159	BH	
15-Sep-2024	11:15:49	23	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075147	610399	6075205	22	-58	62	159	BH	
15-Sep-2024	11:16:05	24	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075150	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:16:31	25	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075154	610399	6075205	23	-52	56	156	BH	
15-Sep-2024	11:16:47	26	BP24MVEXP-ENV-DC-201			Camera	17	610421	6075157	610399	6075205	22	-49	53	156	BH	
15-Sep-2024	11:17:01	27	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075160	610399	6075205	21	-46	50	156	BH	
15-Sep-2024	11:17:21	28	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075164	610399	6075205	20	-42	47	154	BH	
15-Sep-2024	11:17:40	29	BP24MVEXP-ENV-DC-201			Camera	17	610418	6075167	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:17:58	30	BP24MVEXP-ENV-DC-201			Camera	17	610417	6075170	610399	6075205	18	-36	40	154	BH	
15-Sep-2024	11:18:16	31	BP24MVEXP-ENV-DC-201			Camera	17	610415	6075172	610399	6075205	15	-34	37	156	BH	
15-Sep-2024	11:18:53	32	BP24MVEXP-ENV-DC-201			Camera	17	610412	6075176	610399	6075205	12	-30	32	158	BH	
15-Sep-2024	11:19:11	33	BP24MVEXP-ENV-DC-201			Camera	17	610410	6075178	610399	6075205	10	-27	29	159	BH	
15-Sep-2024	11:19:28	34	BP24MVEXP-ENV-DC-201			Camera	17	610408	6075181	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:19:49	35	BP24MVEXP-ENV-DC-201			Camera	17	610406	6075184	610399	6075205	6	-21	22	164	BH	
15-Sep-2024	11:20:14	36	BP24MVEXP-ENV-DC-201			Camera	17	610406	6075187	610399	6075205	6	-19	20	161	BH	
15-Sep-2024	11:20:50	37	BP24MVEXP-ENV-DC-201			Camera	17	610404	6075191	610399	6075205	5	-14	15	161	BH	
15-Sep-2024	11:21:06	38	BP24MVEXP-ENV-DC-201			Camera	17	610405	6075193	610399	6075205	5	-12	13	157	BH	
15-Sep-2024	11:21:30	39	BP24MVEXP-ENV-DC-201			Camera	17	610404	6075197	610399	6075205	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	11:21:49	40	BP24MVEXP-ENV-DC-201			Camera	17	610403	6075201	610399	6075205	3	-5	6	144	BH	
15-Sep-2024	11:22:12	41	BP24MVEXP-ENV-DC-201			Camera	17	610402	6075204	610399	6075205	2	-2	3	129	BH	
15-Sep-2024	11:22:37	42	BP24MVEXP-ENV-DC-201			Camera	17	610401	6075207	610399	6075205	1	1	2	47	BH	
15-Sep-2024	11:23:17	43	BP24MVEXP-ENV-DC-201			Camera	17	610398	6075211	610399	6075205	-2	5	6	344	BH	
15-Sep-2024	11:23:26	44	BP24MVEXP-ENV-DC-201			Camera	17	610397	6075212	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:23:52	45	BP24MVEXP-ENV-DC-201			Camera	17	610397	6075215	610399	6075205	-3	10	10	344	BH	
15-Sep-2024	11:24:12	46	BP24MVEXP-ENV-DC-201			Camera	17	610395	6075217	610399	6075205	-4	12	12	341	BH	
15-Sep-2024	11:24:42	47	BP24MVEXP-ENV-DC-201			Camera	17	610396	6075222	610399	6075205	-3	16	17	349	BH	
15-Sep-2024	11:25:13	48	BP24MVEXP-ENV-DC-201			Camera	17	610394	6075226	610399	6075205	-5	21	21	346	BH	
15-Sep-2024	11:25:36	49	BP24MVEXP-ENV-DC-201			Camera	17	610393	6075229	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:26:10	50	BP24MVEXP-ENV-DC-201			Camera	17	610391	6075232	610399	6075205	-9	26	28	342	BH	
15-Sep-2024	11:26:24	51	BP24MVEXP-ENV-DC-201			Camera	17	610390	6075233	610399	6075205	-9	27	29	342	BH	
15-Sep-2024	11:26:48	52	BP24MVEXP-ENV-DC-201			Camera	17	610389	6075234	610399	6075205	-10	29	30	340	BH	
15-Sep-2024	11:27:24	53	BP24MVEXP-ENV-DC-201			Camera	17	610387	6075237	610399	6075205	-13	32	34	338	BH	
15-Sep-2024	11:27:53	54	BP24MVEXP-ENV-DC-201			Camera	17	610386	6075240	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:28:02	55	BP24MVEXP-ENV-DC-201			Camera	17	610386	6075241	610399	6075205	-14	36	39	339	BH	
15-Sep-2024	11:28:23	56	BP24MVEXP-ENV-DC-201			Camera	17	610387	6075244	610399	6075205	-13	38	40	341	BH	
15-Sep-2024	11:28:46	57	BP24MVEXP-ENV-DC-201			Camera	17	610386	6075247	610399	6075205	-14	41	44	342	BH	
15-Sep-2024	11:29:26	58	BP24MVEXP-ENV-DC-201			Camera	17	610383	6075249	610399	6075205	-17	44	47	339	BH	
15-Sep-2024	11:30:00	59	BP24MVEXP-ENV-DC-201			Camera	17	610380	6075252	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:30:14	60	BP24MVEXP-ENV-DC-201			Camera	17	610380	6075253	610399	6075205	-19	48	51	338	BH	
15-Sep-2024	11:30:34	61	BP24MVEXP-ENV-DC-201			Camera	17	610379	6075255	610399	6075205	-21	50	54	337	BH	
15-Sep-2024	11:30:53	62	BP24MVEXP-ENV-DC-201			Camera	17	610377	6075257	610399	6075205	-23	51	56	336	BH	
15-Sep-2024	11:31:07	63	BP24MVEXP-ENV-DC-201			Camera	17	610377	6075258	610399	6075205	-23	53	57	337	BH	
15-Sep-2024	11:31:29	64	BP24MVEXP-ENV-DC-201			Camera	17	610375	6075259	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:32:10	65	BP24MVEXP-ENV-DC-201			Camera	17	610371	6075262	610399	6075205	-29	57	64	333	BH	
15-Sep-2024	11:32:29	66	BP24MVEXP-ENV-DC-201			Camera	17	610370	6075264	610399	6075205	-30	58	66	333	BH	
15-Sep-2024	11:32:56	67	BP24MVEXP-ENV-DC-201			Camera	17	610368	6075265	610399	6075205	-31	60	67	332	BH	
15-Sep-2024	11:33:45	68	BP24MVEXP-ENV-DC-201			Camera	17	610366	6075269	610399	6075205	-33	63	71	332	BH	
15-Sep-2024	11:34:26	69	BP24MVEXP-ENV-DC-201			Camera	17	610367	6075273	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:35:06	70	BP24MVEXP-ENV-DC-201			Camera	17	610367	6075276	610399	6075205	-33	71	78	335	BH	
15-Sep-2024	11:35:49	71	BP24MVEXP-ENV-DC-201			Camera	17	610364	6075279	610399	6075205	-36	73	82	334	BH	
15-Sep-2024	11:36:01	72	BP24MVEXP-ENV-DC-201			Camera	17	610363	6075279	610399	6075205	-36	74	82	334	BH	
15-Sep-2024	11:36:47	73	BP24MVEXP-ENV-DC-201			Camera	17	610362	6075282	610399	6075205	-38	77	86	334	BH	
15-Sep-2024	11:37:00	74	BP24MVEXP-ENV-DC-201			Camera	17	610362	6075284	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:38:03	75	BP24MVEXP-ENV-DC-201			Camera	17	610368	6075289	610399	6075205	-31	83	89	339	BH	
15-Sep-2024	11:38:41	76	BP24MVEXP-ENV-DC-201			Camera	17	610367	6075292	610399	6075205	-32	86	92	339	BH	
15-Sep-2024	12:05:18	77	BP24MVEXP-ENV-DC-237			Camera	12	609584	6075235	609540	6075350	45	-115	124	159	BH	
15-Sep-2024	12:05:34	78	BP24MVEXP-ENV-DC-237			Camera	12	609583	6075237	609540	6075350	43	-113	121	159	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*									
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG									
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600			
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon									
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)						Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	12:06:00	79	BP24MVEXP-ENV-DC-237			Camera	12	609581	6075241	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:06:23	80	BP24MVEXP-ENV-DC-237			Camera	12	609577	6075243	609540	6075350	37	-108	114	161	BH	
15-Sep-2024	12:06:40	81	BP24MVEXP-ENV-DC-237			Camera	12	609576	6075244	609540	6075350	36	-106	112	161	BH	
15-Sep-2024	12:07:08	82	BP24MVEXP-ENV-DC-237			Camera	12	609575	6075246	609540	6075350	35	-104	110	161	BH	
15-Sep-2024	12:09:30	83	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075253	609540	6075350	28	-97	101	164	BH	
15-Sep-2024	12:09:52	84	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075259	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:10:21	85	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075263	609540	6075350	28	-87	92	162	BH	
15-Sep-2024	12:10:43	86	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075266	609540	6075350	29	-84	89	161	BH	
15-Sep-2024	12:11:27	87	BP24MVEXP-ENV-DC-237			Camera	12	609565	6075270	609540	6075350	25	-80	84	163	BH	
15-Sep-2024	12:11:50	88	BP24MVEXP-ENV-DC-237			Camera	12	609562	6075272	609540	6075350	22	-78	81	164	BH	
15-Sep-2024	12:12:03	89	BP24MVEXP-ENV-DC-237			Camera	12	609562	6075274	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:12:21	90	BP24MVEXP-ENV-DC-237			Camera	12	609560	6075275	609540	6075350	21	-75	78	165	BH	
15-Sep-2024	12:12:41	91	BP24MVEXP-ENV-DC-237			Camera	12	609557	6075277	609540	6075350	18	-74	76	167	BH	
15-Sep-2024	12:13:04	92	BP24MVEXP-ENV-DC-237			Camera	12	609555	6075277	609540	6075350	15	-74	75	168	BH	
15-Sep-2024	12:13:16	93	BP24MVEXP-ENV-DC-237			Camera	12	609554	6075277	609540	6075350	14	-74	75	169	BH	
15-Sep-2024	12:13:47	94	BP24MVEXP-ENV-DC-237			Camera	12	609554	6075284	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:14:11	95	BP24MVEXP-ENV-DC-237			Camera	12	609556	6075289	609540	6075350	16	-61	63	165	BH	
15-Sep-2024	12:14:29	96	BP24MVEXP-ENV-DC-237			Camera	12	609555	6075293	609540	6075350	15	-57	59	165	BH	
15-Sep-2024	12:14:39	97	BP24MVEXP-ENV-DC-237			Camera	12	609555	6075295	609540	6075350	15	-56	57	165	BH	
15-Sep-2024	12:15:02	98	BP24MVEXP-ENV-DC-237			Camera	12	609553	6075300	609540	6075350	13	-50	52	166	BH	
15-Sep-2024	12:15:18	99	BP24MVEXP-ENV-DC-237			Camera	12	609551	6075304	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:15:26	100	BP24MVEXP-ENV-DC-237			Camera	12	609552	6075304	609540	6075350	12	-46	47	166	BH	
15-Sep-2024	12:15:58	101	BP24MVEXP-ENV-DC-237			Camera	12	609554	6075309	609540	6075350	14	-42	44	161	BH	
15-Sep-2024	12:16:09	102	BP24MVEXP-ENV-DC-237			Camera	12	609553	6075311	609540	6075350	13	-40	42	161	BH	
15-Sep-2024	12:16:41	103	BP24MVEXP-ENV-DC-237			Camera	12	609552	6075315	609540	6075350	12	-35	37	162	BH	
15-Sep-2024	12:17:05	104	BP24MVEXP-ENV-DC-237			Camera	12	609550	6075318	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:17:28	105	BP24MVEXP-ENV-DC-237			Camera	12	609548	6075319	609540	6075350	8	-31	32	165	BH	
15-Sep-2024	12:18:01	106	BP24MVEXP-ENV-DC-237			Camera	12	609546	6075324	609540	6075350	6	-27	27	167	BH	
15-Sep-2024	12:18:43	107	BP24MVEXP-ENV-DC-237			Camera	12	609546	6075329	609540	6075350	7	-22	23	163	BH	
15-Sep-2024	12:19:23	108	BP24MVEXP-ENV-DC-237			Camera	12	609543	6075333	609540	6075350	3	-17	17	170	BH	
15-Sep-2024	12:19:56	109	BP24MVEXP-ENV-DC-237			Camera	12	609542	6075337	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:20:16	110	BP24MVEXP-ENV-DC-237			Camera	12	609542	6075340	609540	6075350	2	-10	10	170	BH	
15-Sep-2024	12:20:56	111	BP24MVEXP-ENV-DC-237			Camera	12	609544	6075347	609540	6075350	4	-3	5	126	BH	
15-Sep-2024	12:21:12	112	BP24MVEXP-ENV-DC-237			Camera	12	609543	6075349	609540	6075350	3	-2	3	117	BH	
15-Sep-2024	12:21:34	113	BP24MVEXP-ENV-DC-237			Camera	12	609541	6075352	609540	6075350	1	2	2	30	BH	
15-Sep-2024	12:21:48	114	BP24MVEXP-ENV-DC-237			Camera	12	609540	6075353	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:22:06	115	BP24MVEXP-ENV-DC-237			Camera	12	609538	6075355	609540	6075350	-2	5	5	339	BH	
15-Sep-2024	12:22:35	116	BP24MVEXP-ENV-DC-237			Camera	12	609536	6075358	609540	6075350	-3	8	8	336	BH	
15-Sep-2024	12:22:52	117	BP24MVEXP-ENV-DC-237			Camera	12	609535	6075360	609540	6075350	-5	9	11	332	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	12:23:41	118	BP24MVEXP-ENV-DC-237			Camera	12	609532	6075367	609540	6075350	-7	17	18	336	BH	
15-Sep-2024	12:23:58	119	BP24MVEXP-ENV-DC-237			Camera	12	609530	6075369	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:24:35	120	BP24MVEXP-ENV-DC-237			Camera	12	609527	6075374	609540	6075350	-13	24	28	331	BH	
15-Sep-2024	12:25:15	121	BP24MVEXP-ENV-DC-237			Camera	12	609530	6075382	609540	6075350	-9	31	33	343	BH	
15-Sep-2024	12:25:52	122	BP24MVEXP-ENV-DC-237			Camera	12	609528	6075387	609540	6075350	-12	36	38	342	BH	
15-Sep-2024	12:26:30	123	BP24MVEXP-ENV-DC-237			Camera	12	609526	6075390	609540	6075350	-14	40	43	341	BH	
15-Sep-2024	12:27:32	124	BP24MVEXP-ENV-DC-237			Camera	12	609518	6075396	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:28:07	125	BP24MVEXP-ENV-DC-237			Camera	12	609515	6075401	609540	6075350	-25	50	56	334	BH	
15-Sep-2024	12:29:03	126	BP24MVEXP-ENV-DC-237			Camera	11	609509	6075406	609540	6075350	-31	56	64	331	BH	
15-Sep-2024	12:30:13	127	BP24MVEXP-ENV-DC-237			Camera	12	609507	6075414	609540	6075350	-33	64	72	333	BH	
15-Sep-2024	12:30:46	128	BP24MVEXP-ENV-DC-237			Camera	12	609507	6075420	609540	6075350	-32	70	77	335	BH	
15-Sep-2024	12:31:05	129	BP24MVEXP-ENV-DC-237			Camera	12	609506	6075423	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:31:36	130	BP24MVEXP-ENV-DC-237			Camera	12	609505	6075426	609540	6075350	-35	76	83	335	BH	
15-Sep-2024	12:32:04	131	BP24MVEXP-ENV-DC-237			Camera	12	609502	6075429	609540	6075350	-37	78	87	335	BH	
15-Sep-2024	12:33:28	132	BP24MVEXP-ENV-DC-237			Camera	11	609496	6075434	609540	6075350	-43	84	95	333	BH	
15-Sep-2024	13:00:45	133	BP24MVEXP-ENV-DC-203			Camera	17	609770	6077547	609719	6077661	50	-114	125	156	BH	
15-Sep-2024	13:01:11	134	BP24MVEXP-ENV-DC-203			Camera	18	609768	6077555	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:01:27	135	BP24MVEXP-ENV-DC-203			Camera	18	609767	6077558	609719	6077661	47	-103	113	155	BH	
15-Sep-2024	13:01:36	136	BP24MVEXP-ENV-DC-203			Camera	18	609768	6077559	609719	6077661	48	-101	112	155	BH	
15-Sep-2024	13:02:05	137	BP24MVEXP-ENV-DC-203			Camera	18	609769	6077563	609719	6077661	49	-98	110	153	BH	
15-Sep-2024	13:02:26	138	BP24MVEXP-ENV-DC-203			Camera	18	609768	6077565	609719	6077661	49	-96	108	153	BH	
15-Sep-2024	13:02:40	139	BP24MVEXP-ENV-DC-203			Camera	18	609769	6077566	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:02:47	140	BP24MVEXP-ENV-DC-203			Camera	18	609769	6077567	609719	6077661	50	-94	106	152	BH	
15-Sep-2024	13:04:03	141	BP24MVEXP-ENV-DC-203			Camera	18	609766	6077573	609719	6077661	46	-88	99	152	BH	
15-Sep-2024	13:04:30	142	BP24MVEXP-ENV-DC-203			Camera	18	609764	6077577	609719	6077661	45	-83	95	152	BH	
15-Sep-2024	13:05:05	143	BP24MVEXP-ENV-DC-203			Camera	18	609761	6077581	609719	6077661	42	-80	90	152	BH	
15-Sep-2024	13:06:37	144	BP24MVEXP-ENV-DC-203			Camera	18	609758	6077591	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:06:58	145	BP24MVEXP-ENV-DC-203			Camera	18	609754	6077592	609719	6077661	35	-69	77	153	BH	
15-Sep-2024	13:07:34	146	BP24MVEXP-ENV-DC-203			Camera	19	609751	6077595	609719	6077661	32	-66	73	154	BH	
15-Sep-2024	13:09:13	147	BP24MVEXP-ENV-DC-203			Camera	18	609745	6077607	609719	6077661	25	-54	60	155	BH	
15-Sep-2024	13:09:32	148	BP24MVEXP-ENV-DC-203			Camera	18	609741	6077609	609719	6077661	22	-52	56	157	BH	
15-Sep-2024	13:09:57	149	BP24MVEXP-ENV-DC-203			Camera	18	609740	6077613	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:10:05	150	BP24MVEXP-ENV-DC-203			Camera	19	609739	6077614	609719	6077661	20	-47	51	157	BH	
15-Sep-2024	13:11:09	151	BP24MVEXP-ENV-DC-203			Camera	18	609736	6077626	609719	6077661	17	-35	38	154	BH	
15-Sep-2024	13:11:28	152	BP24MVEXP-ENV-DC-203			Camera	19	609735	6077630	609719	6077661	15	-31	35	154	BH	
15-Sep-2024	13:11:43	153	BP24MVEXP-ENV-DC-203			Camera	19	609734	6077631	609719	6077661	14	-30	33	155	BH	
15-Sep-2024	13:11:55	154	BP24MVEXP-ENV-DC-203			Camera	18	609732	6077632	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:12:37	155	BP24MVEXP-ENV-DC-203			Camera	18	609728	6077637	609719	6077661	8	-24	25	161	BH	
15-Sep-2024	13:12:50	156	BP24MVEXP-ENV-DC-203			Camera	19	609727	6077638	609719	6077661	7	-22	23	162	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	13:13:10	157	BP24MVEXP-ENV-DC-203			Camera	19	609726	6077639	609719	6077661	7	-21	22	163	BH	
15-Sep-2024	13:13:39	158	BP24MVEXP-ENV-DC-203			Camera	18	609724	6077642	609719	6077661	5	-19	19	165	BH	
15-Sep-2024	13:14:14	159	BP24MVEXP-ENV-DC-203			Camera	18	609722	6077644	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:14:28	160	BP24MVEXP-ENV-DC-203			Camera	19	609722	6077646	609719	6077661	2	-14	14	172	BH	
15-Sep-2024	13:14:45	161	BP24MVEXP-ENV-DC-203			Camera	19	609723	6077649	609719	6077661	3	-12	12	165	BH	
15-Sep-2024	13:15:02	162	BP24MVEXP-ENV-DC-203			Camera	19	609721	6077652	609719	6077661	2	-9	9	168	BH	
15-Sep-2024	13:15:43	163	BP24MVEXP-ENV-DC-203			Camera	18	609720	6077658	609719	6077661	0	-3	3	171	BH	
15-Sep-2024	13:16:09	164	BP24MVEXP-ENV-DC-203			Camera	18	609719	6077660	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:16:27	165	BP24MVEXP-ENV-DC-203			Camera	18	609720	6077663	609719	6077661	0	2	2	11	BH	
15-Sep-2024	13:16:52	166	BP24MVEXP-ENV-DC-203			Camera	18	609720	6077668	609719	6077661	1	7	7	6	BH	
15-Sep-2024	13:17:08	167	BP24MVEXP-ENV-DC-203			Camera	18	609717	6077670	609719	6077661	-2	9	10	347	BH	
15-Sep-2024	13:17:41	168	BP24MVEXP-ENV-DC-203			Camera	18	609718	6077675	609719	6077661	-2	14	15	353	BH	
15-Sep-2024	13:17:57	169	BP24MVEXP-ENV-DC-203			Camera	18	609718	6077678	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:18:12	170	BP24MVEXP-ENV-DC-203			Camera	18	609717	6077681	609719	6077661	-2	20	21	353	BH	
15-Sep-2024	13:18:27	171	BP24MVEXP-ENV-DC-203			Camera	18	609717	6077684	609719	6077661	-3	23	23	353	BH	
15-Sep-2024	13:18:48	172	BP24MVEXP-ENV-DC-203			Camera	18	609714	6077687	609719	6077661	-5	26	26	349	BH	
15-Sep-2024	13:19:00	173	BP24MVEXP-ENV-DC-203			Camera	18	609714	6077688	609719	6077661	-5	27	28	349	BH	
15-Sep-2024	13:19:19	174	BP24MVEXP-ENV-DC-203			Camera	19	609712	6077689	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:19:58	175	BP24MVEXP-ENV-DC-203			Camera	18	609709	6077691	609719	6077661	-11	30	32	340	BH	
15-Sep-2024	13:20:29	176	BP24MVEXP-ENV-DC-203			Camera	18	609709	6077699	609719	6077661	-11	38	40	344	BH	
15-Sep-2024	13:21:01	177	BP24MVEXP-ENV-DC-203			Camera	18	609707	6077704	609719	6077661	-13	44	45	344	BH	
15-Sep-2024	13:21:15	178	BP24MVEXP-ENV-DC-203			Camera	18	609707	6077706	609719	6077661	-13	46	48	344	BH	
15-Sep-2024	13:22:04	179	BP24MVEXP-ENV-DC-203			Camera	18	609706	6077713	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:22:43	180	BP24MVEXP-ENV-DC-203			Camera	18	609700	6077716	609719	6077661	-19	55	59	341	BH	
15-Sep-2024	13:23:04	181	BP24MVEXP-ENV-DC-203			Camera	18	609696	6077716	609719	6077661	-24	55	60	337	BH	
15-Sep-2024	13:24:38	182	BP24MVEXP-ENV-DC-203			Camera	18	609695	6077725	609719	6077661	-25	64	69	339	BH	
15-Sep-2024	13:25:22	183	BP24MVEXP-ENV-DC-203			Camera	18	609693	6077732	609719	6077661	-26	72	76	340	BH	
15-Sep-2024	13:26:06	184	BP24MVEXP-ENV-DC-203			Camera	18	609692	6077740	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:26:33	185	BP24MVEXP-ENV-DC-203			Camera	18	609692	6077743	609719	6077661	-28	83	87	341	BH	
15-Sep-2024	13:27:15	186	BP24MVEXP-ENV-DC-203			Camera	18	609690	6077748	609719	6077661	-29	88	92	342	BH	
15-Sep-2024	13:52:43	187	BP24MVEXP-ENV-DC-204			Camera	15	609237	6079561	609176	6079717	60	-156	167	159	BH	
15-Sep-2024	13:53:00	188	BP24MVEXP-ENV-DC-204			Camera	15	609237	6079566	609176	6079717	61	-151	163	158	BH	
15-Sep-2024	13:53:08	189	BP24MVEXP-ENV-DC-204			Camera	15	609236	6079568	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:53:34	190	BP24MVEXP-ENV-DC-204			Camera	15	609232	6079573	609176	6079717	56	-144	154	159	BH	
15-Sep-2024	13:53:46	191	BP24MVEXP-ENV-DC-204			Camera	15	609231	6079576	609176	6079717	55	-141	152	159	BH	
15-Sep-2024	13:54:04	192	BP24MVEXP-ENV-DC-204			Camera	15	609230	6079580	609176	6079717	54	-137	147	159	BH	
15-Sep-2024	13:54:19	193	BP24MVEXP-ENV-DC-204			Camera	15	609230	6079582	609176	6079717	54	-135	145	158	BH	
15-Sep-2024	13:54:40	194	BP24MVEXP-ENV-DC-204			Camera	15	609229	6079585	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:54:59	195	BP24MVEXP-ENV-DC-204			Camera	15	609226	6079588	609176	6079717	50	-129	138	159	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	13:55:23	196	BP24MVEXP-ENV-DC-204			Camera	16	609225	6079593	609176	6079717	48	-125	134	159	BH	
15-Sep-2024	13:55:39	197	BP24MVEXP-ENV-DC-204			Camera	16	609224	6079596	609176	6079717	48	-122	131	158	BH	
15-Sep-2024	13:55:52	198	BP24MVEXP-ENV-DC-204			Camera	15	609224	6079598	609176	6079717	48	-119	129	158	BH	
15-Sep-2024	13:55:58	199	BP24MVEXP-ENV-DC-204			Camera	15	609224	6079599	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:56:35	200	BP24MVEXP-ENV-DC-204			Camera	16	609219	6079605	609176	6079717	43	-113	120	159	BH	
15-Sep-2024	13:56:45	201	BP24MVEXP-ENV-DC-204			Camera	16	609217	6079606	609176	6079717	41	-111	118	160	BH	
15-Sep-2024	13:57:06	202	BP24MVEXP-ENV-DC-204			Camera	16	609215	6079609	609176	6079717	39	-108	115	160	BH	
15-Sep-2024	13:57:28	203	BP24MVEXP-ENV-DC-204			Camera	16	609215	6079611	609176	6079717	38	-106	113	160	BH	
15-Sep-2024	13:57:57	204	BP24MVEXP-ENV-DC-204			Camera	16	609214	6079614	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:58:06	205	BP24MVEXP-ENV-DC-204			Camera	16	609213	6079615	609176	6079717	37	-102	109	160	BH	
15-Sep-2024	13:58:38	206	BP24MVEXP-ENV-DC-204			Camera	16	609210	6079616	609176	6079717	34	-101	107	162	BH	
15-Sep-2024	13:58:53	207	BP24MVEXP-ENV-DC-204			Camera	16	609208	6079616	609176	6079717	31	-101	106	163	BH	
15-Sep-2024	13:59:20	208	BP24MVEXP-ENV-DC-204			Camera	16	609205	6079616	609176	6079717	29	-101	105	164	BH	
15-Sep-2024	13:59:56	209	BP24MVEXP-ENV-DC-204			Camera	16	609206	6079622	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:00:11	210	BP24MVEXP-ENV-DC-204			Camera	16	609206	6079625	609176	6079717	29	-93	97	162	BH	
15-Sep-2024	14:01:05	211	BP24MVEXP-ENV-DC-204			Camera	16	609203	6079631	609176	6079717	26	-86	90	163	BH	
15-Sep-2024	14:01:15	212	BP24MVEXP-ENV-DC-204			Camera	16	609204	6079632	609176	6079717	27	-85	89	162	BH	
15-Sep-2024	14:01:53	213	BP24MVEXP-ENV-DC-204			Camera	16	609204	6079638	609176	6079717	27	-79	84	161	BH	
15-Sep-2024	14:02:29	214	BP24MVEXP-ENV-DC-204			Camera	16	609202	6079641	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:03:04	215	BP24MVEXP-ENV-DC-204			Camera	16	609198	6079641	609176	6079717	22	-76	79	164	BH	
15-Sep-2024	14:03:27	216	BP24MVEXP-ENV-DC-204			Camera	16	609195	6079640	609176	6079717	19	-77	79	166	BH	
15-Sep-2024	14:03:50	217	BP24MVEXP-ENV-DC-204			Camera	16	609196	6079643	609176	6079717	20	-74	77	165	BH	
15-Sep-2024	14:04:22	218	BP24MVEXP-ENV-DC-204			Camera	16	609199	6079650	609176	6079717	23	-67	71	161	BH	
15-Sep-2024	14:04:58	219	BP24MVEXP-ENV-DC-204			Camera	16	609200	6079655	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:05:51	220	BP24MVEXP-ENV-DC-204			Camera	16	609198	6079660	609176	6079717	22	-57	61	159	BH	
15-Sep-2024	14:06:16	221	BP24MVEXP-ENV-DC-204			Camera	16	609197	6079662	609176	6079717	21	-55	59	159	BH	
15-Sep-2024	14:06:37	222	BP24MVEXP-ENV-DC-204			Camera	16	609195	6079663	609176	6079717	18	-54	57	161	BH	
15-Sep-2024	14:07:42	223	BP24MVEXP-ENV-DC-204			Camera	16	609193	6079668	609176	6079717	16	-49	52	162	BH	
15-Sep-2024	14:07:56	224	BP24MVEXP-ENV-DC-204			Camera	16	609192	6079668	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:08:16	225	BP24MVEXP-ENV-DC-204			Camera	16	609191	6079669	609176	6079717	15	-48	51	163	BH	
15-Sep-2024	14:08:43	226	BP24MVEXP-ENV-DC-204			Camera	16	609193	6079666	609176	6079717	17	-51	54	161	BH	
15-Sep-2024	14:09:51	227	BP24MVEXP-ENV-DC-204			Camera	16	609196	6079682	609176	6079717	20	-35	41	150	BH	
15-Sep-2024	14:10:12	228	BP24MVEXP-ENV-DC-204			Camera	16	609195	6079685	609176	6079717	18	-32	37	150	BH	
15-Sep-2024	14:11:36	229	BP24MVEXP-ENV-DC-204			Camera	16	609185	6079689	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:12:44	230	BP24MVEXP-ENV-DC-204			Camera	16	609184	6079702	609176	6079717	8	-15	17	152	BH	
15-Sep-2024	14:13:38	231	BP24MVEXP-ENV-DC-204			Camera	16	609180	6079705	609176	6079717	3	-12	13	165	BH	
15-Sep-2024	14:14:32	232	BP24MVEXP-ENV-DC-204			Camera	16	609179	6079709	609176	6079717	3	-8	8	158	BH	
15-Sep-2024	14:14:55	233	BP24MVEXP-ENV-DC-204			Camera	16	609180	6079714	609176	6079717	4	-3	5	131	BH	
15-Sep-2024	14:15:27	234	BP24MVEXP-ENV-DC-204			Camera	16	609177	6079716	609176	6079717	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	14:15:59	235	BP24MVEXP-ENV-DC-204			Camera	16	609174	6079718	609176	6079717	-3	1	3	292	BH	
15-Sep-2024	14:16:15	236	BP24MVEXP-ENV-DC-204			Camera	16	609173	6079720	609176	6079717	-3	3	4	308	BH	
15-Sep-2024	14:17:13	237	BP24MVEXP-ENV-DC-204			Camera	16	609174	6079724	609176	6079717	-2	7	7	345	BH	
15-Sep-2024	14:18:19	238	BP24MVEXP-ENV-DC-204			Camera	16	609166	6079723	609176	6079717	-10	6	12	302	BH	
15-Sep-2024	14:19:26	239	BP24MVEXP-ENV-DC-204			Camera	16	609171	6079728	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:20:01	240	BP24MVEXP-ENV-DC-204			Camera	16	609181	6079736	609176	6079717	5	19	19	14	BH	
15-Sep-2024	14:20:19	241	BP24MVEXP-ENV-DC-204			Camera	16	609182	6079739	609176	6079717	6	22	23	15	BH	
15-Sep-2024	14:20:58	242	BP24MVEXP-ENV-DC-204			Camera	16	609174	6079742	609176	6079717	-2	25	25	355	BH	
15-Sep-2024	14:22:11	243	BP24MVEXP-ENV-DC-204			Camera	16	609166	6079746	609176	6079717	-11	29	31	340	BH	
15-Sep-2024	14:22:49	244	BP24MVEXP-ENV-DC-204			Camera	16	609164	6079752	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:23:31	245	BP24MVEXP-ENV-DC-204			Camera	16	609162	6079759	609176	6079717	-14	42	44	342	BH	
15-Sep-2024	14:53:03	246	BP24MVEXP-ENV-DC-236			Camera	10	607284	6080651	607242	6080758	41	-107	115	159	BH	
15-Sep-2024	14:53:17	247	BP24MVEXP-ENV-DC-236			Camera	10	607280	6080651	607242	6080758	38	-106	113	160	BH	
15-Sep-2024	14:53:48	248	BP24MVEXP-ENV-DC-236			Camera	10	607273	6080651	607242	6080758	30	-107	111	164	BH	
15-Sep-2024	14:54:16	249	BP24MVEXP-ENV-DC-236			Camera	10	607274	6080657	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	14:55:00	250	BP24MVEXP-ENV-DC-236			Camera	10	607280	6080669	607242	6080758	37	-89	97	157	BH	
15-Sep-2024	14:55:59	251	BP24MVEXP-ENV-DC-236			Camera	10	607277	6080678	607242	6080758	35	-80	87	156	BH	
15-Sep-2024	14:56:47	252	BP24MVEXP-ENV-DC-236			Camera	10	607270	6080680	607242	6080758	27	-78	83	161	BH	
15-Sep-2024	14:57:49	253	BP24MVEXP-ENV-DC-236			Camera	10	607276	6080693	607242	6080758	33	-65	73	153	BH	
15-Sep-2024	14:58:32	254	BP24MVEXP-ENV-DC-236			Camera	10	607277	6080699	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	14:59:31	255	BP24MVEXP-ENV-DC-236			Camera	10	607267	6080702	607242	6080758	24	-56	61	157	BH	
15-Sep-2024	14:59:46	256	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080705	607242	6080758	24	-53	58	156	BH	
15-Sep-2024	15:00:00	257	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080709	607242	6080758	24	-49	54	154	BH	
15-Sep-2024	15:00:12	258	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080712	607242	6080758	24	-46	51	152	BH	
15-Sep-2024	15:00:30	259	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080717	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:00:55	260	BP24MVEXP-ENV-DC-236			Camera	10	607264	6080723	607242	6080758	22	-35	41	148	BH	
15-Sep-2024	15:01:20	261	BP24MVEXP-ENV-DC-236			Camera	10	607259	6080726	607242	6080758	17	-32	36	152	BH	
15-Sep-2024	15:01:56	262	BP24MVEXP-ENV-DC-236			Camera	10	607257	6080729	607242	6080758	15	-29	33	153	BH	
15-Sep-2024	15:02:24	263	BP24MVEXP-ENV-DC-236			Camera	10	607258	6080737	607242	6080758	16	-21	26	142	BH	
15-Sep-2024	15:03:13	264	BP24MVEXP-ENV-DC-236			Camera	10	607254	6080740	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:03:45	265	BP24MVEXP-ENV-DC-236			Camera	10	607251	6080745	607242	6080758	8	-13	15	148	BH	
15-Sep-2024	15:04:16	266	BP24MVEXP-ENV-DC-236			Camera	10	607250	6080756	607242	6080758	7	-2	7	105	BH	
15-Sep-2024	15:04:42	267	BP24MVEXP-ENV-DC-236			Camera	10	607247	6080763	607242	6080758	4	5	7	40	BH	
15-Sep-2024	15:05:07	268	BP24MVEXP-ENV-DC-236			Camera	10	607242	6080767	607242	6080758	0	9	9	359	BH	
15-Sep-2024	15:05:30	269	BP24MVEXP-ENV-DC-236			Camera	10	607238	6080770	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:06:02	270	BP24MVEXP-ENV-DC-236			Camera	10	607237	6080781	607242	6080758	-6	23	24	346	BH	
15-Sep-2024	15:06:18	271	BP24MVEXP-ENV-DC-236			Camera	10	607236	6080787	607242	6080758	-7	30	30	347	BH	
15-Sep-2024	15:06:44	272	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080795	607242	6080758	-8	37	38	347	BH	
15-Sep-2024	15:06:53	273	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080797	607242	6080758	-9	39	40	348	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	15:07:12	274	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080800	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:07:28	275	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080803	607242	6080758	-9	46	46	349	BH	
15-Sep-2024	15:07:42	276	BP24MVEXP-ENV-DC-236			Camera	11	607232	6080804	607242	6080758	-10	46	47	347	BH	
15-Sep-2024	15:08:11	277	BP24MVEXP-ENV-DC-236			Camera	10	607228	6080802	607242	6080758	-15	45	47	342	BH	
15-Sep-2024	15:09:14	278	BP24MVEXP-ENV-DC-236			Camera	10	607217	6080813	607242	6080758	-26	55	61	335	BH	
15-Sep-2024	15:09:36	279	BP24MVEXP-ENV-DC-236			Camera	10	607221	6080818	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:09:50	280	BP24MVEXP-ENV-DC-236			Camera	10	607223	6080823	607242	6080758	-20	66	68	343	BH	
15-Sep-2024	15:10:05	281	BP24MVEXP-ENV-DC-236			Camera	10	607226	6080827	607242	6080758	-17	69	71	346	BH	
15-Sep-2024	15:10:23	282	BP24MVEXP-ENV-DC-236			Camera	10	607227	6080832	607242	6080758	-15	75	76	348	BH	
15-Sep-2024	15:10:40	283	BP24MVEXP-ENV-DC-236			Camera	11	607227	6080838	607242	6080758	-16	80	82	349	BH	
15-Sep-2024	15:11:17	284	BP24MVEXP-ENV-DC-236			Camera	11	607231	6080847	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:29:14	285	BP24MVEXP-ENV-DC-205			Camera	14	607962	6081262	608039	6081180	-77	82	112	317	BH	
15-Sep-2024	15:29:41	286	BP24MVEXP-ENV-DC-205			Camera	14	607968	6081254	608039	6081180	-71	74	103	316	BH	
15-Sep-2024	15:30:11	287	BP24MVEXP-ENV-DC-205			Camera	14	607974	6081248	608039	6081180	-65	68	94	316	BH	
15-Sep-2024	15:30:34	288	BP24MVEXP-ENV-DC-205			Camera	14	607980	6081243	608039	6081180	-58	63	86	317	BH	
15-Sep-2024	15:30:59	289	BP24MVEXP-ENV-DC-205			Camera	14	607986	6081238	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:31:27	290	BP24MVEXP-ENV-DC-205			Camera	14	607992	6081234	608039	6081180	-46	55	72	320	BH	
15-Sep-2024	15:32:15	291	BP24MVEXP-ENV-DC-205			Camera	14	608002	6081226	608039	6081180	-37	47	59	322	BH	
15-Sep-2024	15:32:32	292	BP24MVEXP-ENV-DC-205			Camera	14	608007	6081221	608039	6081180	-32	42	52	323	BH	
15-Sep-2024	15:32:58	293	BP24MVEXP-ENV-DC-205			Camera	15	608012	6081215	608039	6081180	-27	36	45	323	BH	
15-Sep-2024	15:33:14	294	BP24MVEXP-ENV-DC-205			Camera	14	608015	6081212	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:33:44	295	BP24MVEXP-ENV-DC-205			Camera	14	608019	6081205	608039	6081180	-20	26	33	322	BH	
15-Sep-2024	15:33:57	296	BP24MVEXP-ENV-DC-205			Camera	15	608020	6081202	608039	6081180	-19	22	29	319	BH	
15-Sep-2024	15:34:22	297	BP24MVEXP-ENV-DC-205			Camera	15	608025	6081197	608039	6081180	-14	18	22	322	BH	
15-Sep-2024	15:34:42	298	BP24MVEXP-ENV-DC-205			Camera	15	608030	6081193	608039	6081180	-9	14	16	327	BH	
15-Sep-2024	15:35:12	299	BP24MVEXP-ENV-DC-205			Camera	15	608037	6081189	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:35:46	300	BP24MVEXP-ENV-DC-205			Camera	15	608043	6081181	608039	6081180	5	1	5	77	BH	
15-Sep-2024	15:36:02	301	BP24MVEXP-ENV-DC-205			Camera	15	608048	6081180	608039	6081180	9	1	9	86	BH	
15-Sep-2024	15:37:56	302	BP24MVEXP-ENV-DC-205			Camera	15	608052	6081132	608039	6081180	14	-48	49	164	BH	
15-Sep-2024	15:39:14	303	BP24MVEXP-ENV-DC-205			Camera	15	608060	6081160	608039	6081180	21	-20	29	134	BH	
15-Sep-2024	15:39:38	304	BP24MVEXP-ENV-DC-205			Camera	15	608056	6081166	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:39:52	305	BP24MVEXP-ENV-DC-205			Camera	15	608053	6081165	608039	6081180	14	-14	20	136	BH	
15-Sep-2024	15:40:16	306	BP24MVEXP-ENV-DC-205			Camera	15	608046	6081168	608039	6081180	7	-12	14	150	BH	
15-Sep-2024	15:40:46	307	BP24MVEXP-ENV-DC-205			Camera	15	608047	6081176	608039	6081180	9	-4	9	113	BH	
15-Sep-2024	15:41:29	308	BP24MVEXP-ENV-DC-205			Camera	14	608048	6081185	608039	6081180	9	5	10	62	BH	
15-Sep-2024	15:41:44	309	BP24MVEXP-ENV-DC-205			Camera	14	608050	6081187	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:41:52	310	BP24MVEXP-ENV-DC-205			Camera	14	608051	6081188	608039	6081180	12	9	15	55	BH	
15-Sep-2024	15:42:01	311	BP24MVEXP-ENV-DC-205			Camera	14	608053	6081189	608039	6081180	14	9	16	56	BH	
15-Sep-2024	15:43:11	312	BP24MVEXP-ENV-DC-205			Camera	14	608043	6081181	608039	6081180	4	1	4	73	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	15:43:30	313	BP24MVEXP-ENV-DC-205			Camera	15	608047	6081176	608039	6081180	8	-4	9	116	BH	
15-Sep-2024	15:43:43	314	BP24MVEXP-ENV-DC-205			Camera	15	608051	6081173	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:43:55	315	BP24MVEXP-ENV-DC-205			Camera	15	608054	6081168	608039	6081180	16	-11	19	126	BH	
15-Sep-2024	15:44:28	316	BP24MVEXP-ENV-DC-205			Camera	15	608062	6081161	608039	6081180	23	-19	30	129	BH	
15-Sep-2024	15:44:45	317	BP24MVEXP-ENV-DC-205			Camera	15	608066	6081158	608039	6081180	28	-22	35	128	BH	
15-Sep-2024	15:44:56	318	BP24MVEXP-ENV-DC-205			Camera	15	608070	6081157	608039	6081180	31	-23	38	126	BH	
15-Sep-2024	15:45:09	319	BP24MVEXP-ENV-DC-205			Camera	15	608074	6081157	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:45:32	320	BP24MVEXP-ENV-DC-205			Camera	15	608081	6081153	608039	6081180	42	-27	50	122	BH	
15-Sep-2024	15:45:49	321	BP24MVEXP-ENV-DC-205			Camera	15	608086	6081153	608039	6081180	47	-26	54	119	BH	
15-Sep-2024	15:46:08	322	BP24MVEXP-ENV-DC-205			Camera	15	608090	6081151	608039	6081180	51	-29	59	119	BH	
15-Sep-2024	15:46:17	323	BP24MVEXP-ENV-DC-205			Camera	15	608093	6081151	608039	6081180	54	-29	61	118	BH	
15-Sep-2024	15:46:39	324	BP24MVEXP-ENV-DC-205			Camera	15	608098	6081151	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:46:50	325	BP24MVEXP-ENV-DC-205			Camera	15	608101	6081150	608039	6081180	62	-30	69	116	BH	
15-Sep-2024	15:47:04	326	BP24MVEXP-ENV-DC-205			Camera	15	608106	6081148	608039	6081180	67	-32	75	116	BH	
15-Sep-2024	15:47:22	327	BP24MVEXP-ENV-DC-205			Camera	15	608112	6081145	608039	6081180	74	-35	81	115	BH	
15-Sep-2024	15:47:31	328	BP24MVEXP-ENV-DC-205			Camera	15	608116	6081144	608039	6081180	77	-36	85	115	BH	
15-Sep-2024	15:47:48	329	BP24MVEXP-ENV-DC-205			Camera	15	608120	6081143	608039	6081180	-2	-2	2	228	BH	
16-Sep-2024	07:00:28	330	BP24MVEXP-ENV-DC-199			Camera	19	612454	6075652	612355	6075629	99	23	102	77	BH	
16-Sep-2024	07:00:47	331	BP24MVEXP-ENV-DC-199			Camera	19	612450	6075651	612355	6075629	95	22	97	77	BH	
16-Sep-2024	07:01:07	332	BP24MVEXP-ENV-DC-199			Camera	19	612447	6075649	612355	6075629	92	19	94	78	BH	
16-Sep-2024	07:01:22	333	BP24MVEXP-ENV-DC-199			Camera	19	612445	6075647	612355	6075629	90	17	92	79	BH	
16-Sep-2024	07:01:41	334	BP24MVEXP-ENV-DC-199			Camera	19	612443	6075646	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:02:05	335	BP24MVEXP-ENV-DC-199			Camera	19	612440	6075647	612355	6075629	85	18	87	78	BH	
16-Sep-2024	07:02:35	336	BP24MVEXP-ENV-DC-199			Camera	19	612434	6075647	612355	6075629	79	18	81	77	BH	
16-Sep-2024	07:03:43	337	BP24MVEXP-ENV-DC-199			Camera	19	612425	6075644	612355	6075629	70	14	71	78	BH	
16-Sep-2024	07:04:05	338	BP24MVEXP-ENV-DC-199			Camera	19	612421	6075643	612355	6075629	66	14	68	78	BH	
16-Sep-2024	07:05:00	339	BP24MVEXP-ENV-DC-199			Camera	18	612416	6075640	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:07:04	340	BP24MVEXP-ENV-DC-199			Camera	18	612404	6075636	612355	6075629	49	6	49	83	BH	
16-Sep-2024	07:07:22	341	BP24MVEXP-ENV-DC-199			Camera	19	612403	6075636	612355	6075629	48	7	48	82	BH	
16-Sep-2024	07:08:28	342	BP24MVEXP-ENV-DC-199			Camera	18	612392	6075636	612355	6075629	37	7	38	80	BH	
16-Sep-2024	07:09:23	343	BP24MVEXP-ENV-DC-199			Camera	18	612381	6075634	612355	6075629	26	5	26	80	BH	
16-Sep-2024	07:09:43	344	BP24MVEXP-ENV-DC-199			Camera	18	612377	6075633	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:09:57	345	BP24MVEXP-ENV-DC-199			Camera	18	612374	6075633	612355	6075629	19	4	20	79	BH	
16-Sep-2024	07:10:10	346	BP24MVEXP-ENV-DC-199			Camera	18	612373	6075633	612355	6075629	18	3	19	79	BH	
16-Sep-2024	07:10:34	347	BP24MVEXP-ENV-DC-199			Camera	18	612366	6075633	612355	6075629	11	4	12	71	BH	
16-Sep-2024	07:10:45	348	BP24MVEXP-ENV-DC-199			Camera	18	612363	6075633	612355	6075629	8	4	9	64	BH	
16-Sep-2024	07:10:53	349	BP24MVEXP-ENV-DC-199			Camera	18	612361	6075633	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:11:14	350	BP24MVEXP-ENV-DC-199			Camera	18	612355	6075632	612355	6075629	0	2	2	2	BH	
16-Sep-2024	07:11:24	351	BP24MVEXP-ENV-DC-199			Camera	18	612353	6075631	612355	6075629	-2	1	2	307	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	07:11:46	352	BP24MVEXP-ENV-DC-199			Camera	18	612351	6075630	612355	6075629	-4	1	4	280	BH	
16-Sep-2024	07:12:10	353	BP24MVEXP-ENV-DC-199			Camera	17	612347	6075630	612355	6075629	-8	0	8	272	BH	
16-Sep-2024	07:12:21	354	BP24MVEXP-ENV-DC-199			Camera	18	612345	6075628	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:12:39	355	BP24MVEXP-ENV-DC-199			Camera	18	612343	6075625	612355	6075629	-12	-4	12	250	BH	
16-Sep-2024	07:13:16	356	BP24MVEXP-ENV-DC-199			Camera	18	612340	6075623	612355	6075629	-15	-7	16	246	BH	
16-Sep-2024	07:13:53	357	BP24MVEXP-ENV-DC-199			Camera	17	612336	6075623	612355	6075629	-19	-6	20	253	BH	
16-Sep-2024	07:14:09	358	BP24MVEXP-ENV-DC-199			Camera	17	612333	6075623	612355	6075629	-22	-6	23	254	BH	
16-Sep-2024	07:14:27	359	BP24MVEXP-ENV-DC-199			Camera	17	612329	6075623	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:14:55	360	BP24MVEXP-ENV-DC-199			Camera	17	612321	6075625	612355	6075629	-34	-4	34	263	BH	
16-Sep-2024	07:15:19	361	BP24MVEXP-ENV-DC-199			Camera	17	612315	6075625	612355	6075629	-40	-5	40	263	BH	
16-Sep-2024	07:15:42	362	BP24MVEXP-ENV-DC-199			Camera	17	612310	6075624	612355	6075629	-45	-5	46	263	BH	
16-Sep-2024	07:16:13	363	BP24MVEXP-ENV-DC-199			Camera	17	612304	6075620	612355	6075629	-51	-10	52	259	BH	
16-Sep-2024	07:16:34	364	BP24MVEXP-ENV-DC-199			Camera	17	612301	6075619	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:17:23	365	BP24MVEXP-ENV-DC-199			Camera	17	612296	6075615	612355	6075629	-59	-14	60	256	BH	
16-Sep-2024	07:17:40	366	BP24MVEXP-ENV-DC-199			Camera	17	612294	6075614	612355	6075629	-61	-15	62	256	BH	
16-Sep-2024	07:17:48	367	BP24MVEXP-ENV-DC-199			Camera	17	612294	6075615	612355	6075629	-61	-15	63	257	BH	
16-Sep-2024	07:18:34	368	BP24MVEXP-ENV-DC-199			Camera	17	612287	6075613	612355	6075629	-68	-16	69	257	BH	
16-Sep-2024	07:18:59	369	BP24MVEXP-ENV-DC-199			Camera	17	612284	6075613	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:19:44	370	BP24MVEXP-ENV-DC-199			Camera	17	612277	6075614	612355	6075629	-77	-16	79	258	BH	
16-Sep-2024	07:20:44	371	BP24MVEXP-ENV-DC-199			Camera	17	612266	6075612	612355	6075629	-89	-17	91	259	BH	
16-Sep-2024	07:21:08	372	BP24MVEXP-ENV-DC-199			Camera	17	612260	6075612	612355	6075629	-95	-17	96	260	BH	
16-Sep-2024	07:43:58	373	BP24MVEXP-ENV-DC-200			Camera	17	611728	6076435	611574	6076289	154	146	212	46	BH	
16-Sep-2024	07:44:09	374	BP24MVEXP-ENV-DC-200			Camera	17	611726	6076433	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:44:42	375	BP24MVEXP-ENV-DC-200			Camera	17	611721	6076429	611574	6076289	147	140	203	46	BH	
16-Sep-2024	07:45:08	376	BP24MVEXP-ENV-DC-200			Camera	17	611717	6076425	611574	6076289	143	136	197	46	BH	
16-Sep-2024	07:45:22	377	BP24MVEXP-ENV-DC-200			Camera	17	611714	6076423	611574	6076289	140	134	194	46	BH	
16-Sep-2024	07:45:47	378	BP24MVEXP-ENV-DC-200			Camera	17	611711	6076420	611574	6076289	137	131	189	46	BH	
16-Sep-2024	07:46:03	379	BP24MVEXP-ENV-DC-200			Camera	17	611708	6076418	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:46:29	380	BP24MVEXP-ENV-DC-200			Camera	18	611704	6076414	611574	6076289	130	125	180	46	BH	
16-Sep-2024	07:47:13	381	BP24MVEXP-ENV-DC-200			Camera	18	611699	6076405	611574	6076289	125	116	170	47	BH	
16-Sep-2024	07:47:46	382	BP24MVEXP-ENV-DC-200			Camera	18	611695	6076401	611574	6076289	121	112	165	47	BH	
16-Sep-2024	07:48:30	383	BP24MVEXP-ENV-DC-200			Camera	17	611685	6076395	611574	6076289	111	106	154	46	BH	
16-Sep-2024	07:48:56	384	BP24MVEXP-ENV-DC-200			Camera	18	611679	6076392	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:49:05	385	BP24MVEXP-ENV-DC-200			Camera	18	611676	6076390	611574	6076289	102	101	144	45	BH	
16-Sep-2024	07:49:23	386	BP24MVEXP-ENV-DC-200			Camera	18	611673	6076387	611574	6076289	99	98	139	45	BH	
16-Sep-2024	07:49:51	387	BP24MVEXP-ENV-DC-200			Camera	18	611672	6076380	611574	6076289	97	91	133	47	BH	
16-Sep-2024	07:50:26	388	BP24MVEXP-ENV-DC-200			Camera	18	611671	6076375	611574	6076289	97	86	130	49	BH	
16-Sep-2024	07:51:18	389	BP24MVEXP-ENV-DC-200			Camera	18	611667	6076368	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:52:15	390	BP24MVEXP-ENV-DC-200			Camera	18	611656	6076363	611574	6076289	81	74	110	48	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	07:52:57	391	BP24MVEXP-ENV-DC-200			Camera	18	611644	6076361	611574	6076289	70	72	100	44	BH	
16-Sep-2024	07:53:22	392	BP24MVEXP-ENV-DC-200			Camera	18	611635	6076360	611574	6076289	61	71	94	41	BH	
16-Sep-2024	07:53:48	393	BP24MVEXP-ENV-DC-200			Camera	18	611629	6076356	611574	6076289	55	67	87	39	BH	
16-Sep-2024	07:54:14	394	BP24MVEXP-ENV-DC-200			Camera	18	611626	6076350	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:54:34	395	BP24MVEXP-ENV-DC-200			Camera	18	611625	6076345	611574	6076289	51	56	76	42	BH	
16-Sep-2024	07:54:45	396	BP24MVEXP-ENV-DC-200			Camera	18	611626	6076343	611574	6076289	52	54	75	44	BH	
16-Sep-2024	07:54:58	397	BP24MVEXP-ENV-DC-200			Camera	18	611625	6076339	611574	6076289	51	50	72	46	BH	
16-Sep-2024	07:55:34	398	BP24MVEXP-ENV-DC-200			Camera	18	611623	6076333	611574	6076289	49	44	66	48	BH	
16-Sep-2024	07:56:11	399	BP24MVEXP-ENV-DC-200			Camera	18	611622	6076328	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:56:26	400	BP24MVEXP-ENV-DC-200			Camera	18	611621	6076327	611574	6076289	47	38	60	51	BH	
16-Sep-2024	07:56:51	401	BP24MVEXP-ENV-DC-200			Camera	18	611619	6076325	611574	6076289	45	36	58	51	BH	
16-Sep-2024	07:57:07	402	BP24MVEXP-ENV-DC-200			Camera	18	611618	6076324	611574	6076289	44	35	56	52	BH	
16-Sep-2024	07:58:09	403	BP24MVEXP-ENV-DC-200			Camera	18	611616	6076321	611574	6076289	41	32	52	52	BH	
16-Sep-2024	07:58:29	404	BP24MVEXP-ENV-DC-200			Camera	18	611614	6076320	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:59:51	405	BP24MVEXP-ENV-DC-200			Camera	17	611602	6076319	611574	6076289	28	30	40	43	BH	
16-Sep-2024	08:00:08	406	BP24MVEXP-ENV-DC-200			Camera	18	611597	6076317	611574	6076289	23	28	37	40	BH	
16-Sep-2024	08:00:35	407	BP24MVEXP-ENV-DC-200			Camera	18	611591	6076312	611574	6076289	17	23	29	36	BH	
16-Sep-2024	08:00:59	408	BP24MVEXP-ENV-DC-200			Camera	18	611589	6076308	611574	6076289	15	19	24	38	BH	
16-Sep-2024	08:01:36	409	BP24MVEXP-ENV-DC-200			Camera	18	611587	6076303	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:01:48	410	BP24MVEXP-ENV-DC-200			Camera	18	611586	6076302	611574	6076289	12	13	18	43	BH	
16-Sep-2024	08:02:06	411	BP24MVEXP-ENV-DC-200			Camera	17	611586	6076300	611574	6076289	12	11	16	48	BH	
16-Sep-2024	08:02:21	412	BP24MVEXP-ENV-DC-200			Camera	18	611587	6076298	611574	6076289	13	9	16	54	BH	
16-Sep-2024	08:02:47	413	BP24MVEXP-ENV-DC-200			Camera	18	611585	6076295	611574	6076289	11	6	13	59	BH	
16-Sep-2024	08:03:22	414	BP24MVEXP-ENV-DC-200			Camera	18	611582	6076292	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:04:07	415	BP24MVEXP-ENV-DC-200			Camera	17	611577	6076290	611574	6076289	3	1	4	67	BH	
16-Sep-2024	08:04:21	416	BP24MVEXP-ENV-DC-200			Camera	18	611575	6076289	611574	6076289	0	0	0	95	BH	
16-Sep-2024	08:05:02	417	BP24MVEXP-ENV-DC-200			Camera	18	611569	6076284	611574	6076289	-5	-5	8	224	BH	
16-Sep-2024	08:06:06	418	BP24MVEXP-ENV-DC-200			Camera	18	611567	6076277	611574	6076289	-8	-12	14	212	BH	
16-Sep-2024	08:06:51	419	BP24MVEXP-ENV-DC-200			Camera	18	611562	6076273	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:07:39	420	BP24MVEXP-ENV-DC-200			Camera	17	611556	6076269	611574	6076289	-18	-20	27	222	BH	
16-Sep-2024	08:07:52	421	BP24MVEXP-ENV-DC-200			Camera	18	611554	6076267	611574	6076289	-20	-22	30	222	BH	
16-Sep-2024	08:08:34	422	BP24MVEXP-ENV-DC-200			Camera	18	611550	6076263	611574	6076289	-24	-26	35	223	BH	
16-Sep-2024	08:09:10	423	BP24MVEXP-ENV-DC-200			Camera	18	611546	6076259	611574	6076289	-28	-30	41	224	BH	
16-Sep-2024	08:09:27	424	BP24MVEXP-ENV-DC-200			Camera	18	611543	6076256	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:09:49	425	BP24MVEXP-ENV-DC-200			Camera	18	611540	6076252	611574	6076289	-34	-37	50	223	BH	
16-Sep-2024	08:38:22	426	BP24MVEXP-ENV-DC-219			Camera	19	611462	6078673	611495	6078574	-34	99	105	341	BH	
16-Sep-2024	08:38:41	427	BP24MVEXP-ENV-DC-219			Camera	19	611463	6078669	611495	6078574	-33	95	100	341	BH	
16-Sep-2024	08:38:55	428	BP24MVEXP-ENV-DC-219			Camera	19	611463	6078665	611495	6078574	-33	91	97	340	BH	
16-Sep-2024	08:39:17	429	BP24MVEXP-ENV-DC-219			Camera	19	611462	6078661	611495	6078574	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	08:39:37	430	BP24MVEXP-ENV-DC-219			Camera	19	611463	6078655	611495	6078574	-32	81	87	339	BH	
16-Sep-2024	08:39:57	431	BP24MVEXP-ENV-DC-219			Camera	19	611464	6078651	611495	6078574	-31	77	83	338	BH	
16-Sep-2024	08:40:16	432	BP24MVEXP-ENV-DC-219			Camera	19	611465	6078647	611495	6078574	-30	73	79	337	BH	
16-Sep-2024	08:40:32	433	BP24MVEXP-ENV-DC-219			Camera	19	611466	6078643	611495	6078574	-30	69	75	337	BH	
16-Sep-2024	08:40:59	434	BP24MVEXP-ENV-DC-219			Camera	19	611465	6078635	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:41:12	435	BP24MVEXP-ENV-DC-219			Camera	19	611467	6078631	611495	6078574	-29	57	64	334	BH	
16-Sep-2024	08:41:31	436	BP24MVEXP-ENV-DC-219			Camera	19	611468	6078628	611495	6078574	-27	54	61	333	BH	
16-Sep-2024	08:41:56	437	BP24MVEXP-ENV-DC-219			Camera	19	611471	6078623	611495	6078574	-25	49	55	334	BH	
16-Sep-2024	08:42:10	438	BP24MVEXP-ENV-DC-219			Camera	19	611473	6078620	611495	6078574	-22	46	51	334	BH	
16-Sep-2024	08:42:25	439	BP24MVEXP-ENV-DC-219			Camera	19	611475	6078616	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:42:42	440	BP24MVEXP-ENV-DC-219			Camera	19	611478	6078613	611495	6078574	-18	39	43	336	BH	
16-Sep-2024	08:43:07	441	BP24MVEXP-ENV-DC-219			Camera	19	611482	6078607	611495	6078574	-13	33	36	338	BH	
16-Sep-2024	08:43:27	442	BP24MVEXP-ENV-DC-219			Camera	19	611485	6078602	611495	6078574	-11	28	30	339	BH	
16-Sep-2024	08:43:40	443	BP24MVEXP-ENV-DC-219			Camera	19	611485	6078598	611495	6078574	-10	24	26	337	BH	
16-Sep-2024	08:44:02	444	BP24MVEXP-ENV-DC-219			Camera	19	611487	6078593	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:44:16	445	BP24MVEXP-ENV-DC-219			Camera	19	611489	6078589	611495	6078574	-7	15	17	337	BH	
16-Sep-2024	08:44:30	446	BP24MVEXP-ENV-DC-219			Camera	19	611490	6078586	611495	6078574	-5	12	13	337	BH	
16-Sep-2024	08:44:48	447	BP24MVEXP-ENV-DC-219			Camera	19	611492	6078583	611495	6078574	-3	9	9	340	BH	
16-Sep-2024	08:45:03	448	BP24MVEXP-ENV-DC-219			Camera	19	611494	6078579	611495	6078574	-2	5	5	341	BH	
16-Sep-2024	08:45:58	450	BP24MVEXP-ENV-DC-219			Camera	19	611491	6078567	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:46:20	451	BP24MVEXP-ENV-DC-219			Camera	19	611493	6078565	611495	6078574	-2	-9	9	193	BH	
16-Sep-2024	08:46:50	452	BP24MVEXP-ENV-DC-219			Camera	19	611495	6078559	611495	6078574	0	-15	15	180	BH	
16-Sep-2024	08:47:08	453	BP24MVEXP-ENV-DC-219			Camera	19	611495	6078555	611495	6078574	-1	-19	19	182	BH	
16-Sep-2024	08:47:46	454	BP24MVEXP-ENV-DC-219			Camera	19	611499	6078549	611495	6078574	3	-25	25	172	BH	
16-Sep-2024	08:47:56	455	BP24MVEXP-ENV-DC-219			Camera	19	611500	6078547	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:48:12	456	BP24MVEXP-ENV-DC-219			Camera	19	611502	6078544	611495	6078574	7	-31	31	167	BH	
16-Sep-2024	08:48:27	457	BP24MVEXP-ENV-DC-219			Camera	20	611504	6078540	611495	6078574	9	-34	35	166	BH	
16-Sep-2024	08:48:51	458	BP24MVEXP-ENV-DC-219			Camera	20	611505	6078534	611495	6078574	10	-40	41	166	BH	
16-Sep-2024	08:49:12	459	BP24MVEXP-ENV-DC-219			Camera	19	611505	6078529	611495	6078574	10	-45	46	168	BH	
16-Sep-2024	08:49:34	460	BP24MVEXP-ENV-DC-219			Camera	19	611506	6078525	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:49:49	461	BP24MVEXP-ENV-DC-219			Camera	19	611507	6078522	611495	6078574	11	-52	53	168	BH	
16-Sep-2024	08:50:10	462	BP24MVEXP-ENV-DC-219			Camera	19	611509	6078516	611495	6078574	14	-58	59	167	BH	
16-Sep-2024	08:50:23	463	BP24MVEXP-ENV-DC-219			Camera	19	611510	6078513	611495	6078574	15	-61	62	166	BH	
16-Sep-2024	08:50:38	464	BP24MVEXP-ENV-DC-219			Camera	19	611512	6078510	611495	6078574	17	-64	66	165	BH	
16-Sep-2024	08:50:59	465	BP24MVEXP-ENV-DC-219			Camera	19	611516	6078505	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:51:13	466	BP24MVEXP-ENV-DC-219			Camera	19	611519	6078502	611495	6078574	23	-72	76	162	BH	
16-Sep-2024	08:51:26	467	BP24MVEXP-ENV-DC-219			Camera	19	611520	6078499	611495	6078574	25	-75	80	162	BH	
16-Sep-2024	08:52:06	468	BP24MVEXP-ENV-DC-219			Camera	19	611523	6078488	611495	6078574	28	-86	91	162	BH	
16-Sep-2024	09:19:43	469	BP24MVEXP-ENV-DC-218			Camera	18	610969	6080529	611024	6080438	-55	91	106	329	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	09:20:00	470	BP24MVEXP-ENV-DC-218			Camera	19	610971	6080526	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:20:08	471	BP24MVEXP-ENV-DC-218			Camera	19	610971	6080525	611024	6080438	-53	87	102	329	BH	
16-Sep-2024	09:20:29	472	BP24MVEXP-ENV-DC-218			Camera	19	610974	6080520	611024	6080438	-51	82	97	328	BH	
16-Sep-2024	09:20:48	473	BP24MVEXP-ENV-DC-218			Camera	19	610975	6080517	611024	6080438	-49	79	93	328	BH	
16-Sep-2024	09:21:16	474	BP24MVEXP-ENV-DC-218			Camera	19	610977	6080512	611024	6080438	-47	74	87	327	BH	
16-Sep-2024	09:21:33	475	BP24MVEXP-ENV-DC-218			Camera	19	610980	6080508	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:21:59	476	BP24MVEXP-ENV-DC-218			Camera	19	610981	6080502	611024	6080438	-43	64	77	326	BH	
16-Sep-2024	09:22:22	477	BP24MVEXP-ENV-DC-218			Camera	19	610981	6080497	611024	6080438	-43	59	73	324	BH	
16-Sep-2024	09:22:58	478	BP24MVEXP-ENV-DC-218			Camera	19	610983	6080489	611024	6080438	-42	51	66	320	BH	
16-Sep-2024	09:23:14	479	BP24MVEXP-ENV-DC-218			Camera	19	610982	6080484	611024	6080438	-42	46	62	318	BH	
16-Sep-2024	09:23:29	480	BP24MVEXP-ENV-DC-218			Camera	19	610984	6080480	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:23:54	481	BP24MVEXP-ENV-DC-218			Camera	19	610985	6080478	611024	6080438	-39	40	56	316	BH	
16-Sep-2024	09:24:14	482	BP24MVEXP-ENV-DC-218			Camera	19	610989	6080476	611024	6080438	-36	38	52	316	BH	
16-Sep-2024	09:24:35	483	BP24MVEXP-ENV-DC-218			Camera	18	610993	6080474	611024	6080438	-31	36	47	319	BH	
16-Sep-2024	09:24:53	484	BP24MVEXP-ENV-DC-218			Camera	19	610998	6080473	611024	6080438	-27	35	44	322	BH	
16-Sep-2024	09:25:20	485	BP24MVEXP-ENV-DC-218			Camera	19	611004	6080470	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:25:37	486	BP24MVEXP-ENV-DC-218			Camera	19	611007	6080466	611024	6080438	-17	28	33	329	BH	
16-Sep-2024	09:26:02	487	BP24MVEXP-ENV-DC-218			Camera	19	611010	6080461	611024	6080438	-15	23	27	327	BH	
16-Sep-2024	09:26:08	488	BP24MVEXP-ENV-DC-218			Camera	19	611010	6080459	611024	6080438	-15	21	26	325	BH	
16-Sep-2024	09:26:22	489	BP24MVEXP-ENV-DC-218			Camera	19	611011	6080455	611024	6080438	-14	17	22	321	BH	
16-Sep-2024	09:27:20	490	BP24MVEXP-ENV-DC-218			Camera	19	611014	6080444	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:27:44	491	BP24MVEXP-ENV-DC-218			Camera	19	611016	6080441	611024	6080438	-8	3	8	288	BH	
16-Sep-2024	09:27:58	492	BP24MVEXP-ENV-DC-218			Camera	19	611018	6080438	611024	6080438	-6	0	6	274	BH	
16-Sep-2024	09:28:12	493	BP24MVEXP-ENV-DC-218			Camera	19	611020	6080438	611024	6080438	-5	0	5	268	BH	
16-Sep-2024	09:28:57	494	BP24MVEXP-ENV-DC-218			Camera	19	611023	6080435	611024	6080438	-1	-3	3	198	BH	
16-Sep-2024	09:29:18	495	BP24MVEXP-ENV-DC-218			Camera	19	611022	6080430	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:29:47	496	BP24MVEXP-ENV-DC-218			Camera	19	611024	6080425	611024	6080438	0	-13	13	182	BH	
16-Sep-2024	09:30:22	497	BP24MVEXP-ENV-DC-218			Camera	19	611029	6080419	611024	6080438	5	-19	20	167	BH	
16-Sep-2024	09:30:37	498	BP24MVEXP-ENV-DC-218			Camera	18	611031	6080416	611024	6080438	6	-22	23	164	BH	
16-Sep-2024	09:30:49	499	BP24MVEXP-ENV-DC-218			Camera	19	611032	6080412	611024	6080438	8	-26	27	164	BH	
16-Sep-2024	09:31:11	500	BP24MVEXP-ENV-DC-218			Camera	18	611034	6080407	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:31:42	501	BP24MVEXP-ENV-DC-218			Camera	19	611037	6080401	611024	6080438	12	-37	39	162	BH	
16-Sep-2024	09:32:01	502	BP24MVEXP-ENV-DC-218			Camera	19	611039	6080396	611024	6080438	14	-42	44	161	BH	
16-Sep-2024	09:32:18	503	BP24MVEXP-ENV-DC-218			Camera	19	611040	6080392	611024	6080438	16	-46	49	161	BH	
16-Sep-2024	09:32:47	504	BP24MVEXP-ENV-DC-218			Camera	18	611042	6080387	611024	6080438	18	-51	54	161	BH	
16-Sep-2024	09:33:02	505	BP24MVEXP-ENV-DC-218			Camera	18	611044	6080383	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:33:18	506	BP24MVEXP-ENV-DC-218			Camera	18	611046	6080380	611024	6080438	22	-58	62	159	BH	
16-Sep-2024	09:33:31	507	BP24MVEXP-ENV-DC-218			Camera	19	611047	6080377	611024	6080438	23	-61	65	159	BH	
16-Sep-2024	09:33:47	508	BP24MVEXP-ENV-DC-218			Camera	18	611049	6080375	611024	6080438	25	-63	67	159	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	09:33:59	509	BP24MVEXP-ENV-DC-218			Camera	19	611051	6080374	611024	6080438	26	-65	70	158	BH	
16-Sep-2024	09:34:25	510	BP24MVEXP-ENV-DC-218			Camera	18	611055	6080369	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:34:49	511	BP24MVEXP-ENV-DC-218			Camera	19	611059	6080364	611024	6080438	35	-74	81	155	BH	
16-Sep-2024	09:35:03	512	BP24MVEXP-ENV-DC-218			Camera	19	611061	6080363	611024	6080438	37	-75	84	154	BH	
16-Sep-2024	09:35:41	513	BP24MVEXP-ENV-DC-218			Camera	19	611067	6080356	611024	6080438	43	-82	93	152	BH	
16-Sep-2024	10:04:48	514	BP24MVEXP-ENV-DC-182			Camera	16	609756	6082211	609795	6082108	-39	103	110	339	BH	
16-Sep-2024	10:05:11	515	BP24MVEXP-ENV-DC-182			Camera	16	609757	6082206	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:05:41	516	BP24MVEXP-ENV-DC-182			Camera	16	609758	6082199	609795	6082108	-37	91	98	338	BH	
16-Sep-2024	10:05:57	517	BP24MVEXP-ENV-DC-182			Camera	16	609760	6082195	609795	6082108	-35	87	94	338	BH	
16-Sep-2024	10:06:13	518	BP24MVEXP-ENV-DC-182			Camera	16	609762	6082191	609795	6082108	-33	83	90	338	BH	
16-Sep-2024	10:06:30	519	BP24MVEXP-ENV-DC-182			Camera	16	609763	6082188	609795	6082108	-32	80	86	339	BH	
16-Sep-2024	10:07:00	520	BP24MVEXP-ENV-DC-182			Camera	16	609768	6082182	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:07:16	521	BP24MVEXP-ENV-DC-182			Camera	16	609770	6082179	609795	6082108	-25	71	75	340	BH	
16-Sep-2024	10:07:25	522	BP24MVEXP-ENV-DC-182			Camera	16	609771	6082177	609795	6082108	-24	69	73	341	BH	
16-Sep-2024	10:07:39	523	BP24MVEXP-ENV-DC-182			Camera	16	609773	6082173	609795	6082108	-22	65	69	341	BH	
16-Sep-2024	10:07:55	524	BP24MVEXP-ENV-DC-182			Camera	16	609774	6082170	609795	6082108	-21	62	66	341	BH	
16-Sep-2024	10:08:13	525	BP24MVEXP-ENV-DC-182			Camera	16	609775	6082165	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:09:17	526	BP24MVEXP-ENV-DC-182			Camera	16	609777	6082148	609795	6082108	-18	40	44	335	BH	
16-Sep-2024	10:09:29	527	BP24MVEXP-ENV-DC-182			Camera	16	609778	6082145	609795	6082108	-17	37	41	336	BH	
16-Sep-2024	10:09:51	528	BP24MVEXP-ENV-DC-182			Camera	16	609781	6082139	609795	6082108	-14	31	34	335	BH	
16-Sep-2024	10:10:17	529	BP24MVEXP-ENV-DC-182			Camera	16	609783	6082132	609795	6082108	-12	24	27	332	BH	
16-Sep-2024	10:10:30	530	BP24MVEXP-ENV-DC-182			Camera	16	609783	6082129	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:10:45	531	BP24MVEXP-ENV-DC-182			Camera	16	609785	6082125	609795	6082108	-11	17	20	329	BH	
16-Sep-2024	10:11:10	532	BP24MVEXP-ENV-DC-182			Camera	16	609786	6082119	609795	6082108	-9	11	14	322	BH	
16-Sep-2024	10:11:40	533	BP24MVEXP-ENV-DC-182			Camera	17	609791	6082112	609795	6082108	-4	4	6	315	BH	
16-Sep-2024	10:11:53	534	BP24MVEXP-ENV-DC-182			Camera	17	609792	6082109	609795	6082108	-3	1	3	284	BH	
16-Sep-2024	10:12:16	535	BP24MVEXP-ENV-DC-182			Camera	17	609793	6082102	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:12:35	536	BP24MVEXP-ENV-DC-182			Camera	17	609793	6082097	609795	6082108	-2	-11	11	188	BH	
16-Sep-2024	10:12:47	537	BP24MVEXP-ENV-DC-182			Camera	17	609794	6082094	609795	6082108	-1	-14	14	185	BH	
16-Sep-2024	10:12:58	538	BP24MVEXP-ENV-DC-182			Camera	17	609794	6082090	609795	6082108	-1	-18	18	183	BH	
16-Sep-2024	10:13:18	539	BP24MVEXP-ENV-DC-182			Camera	17	609796	6082086	609795	6082108	1	-22	22	177	BH	
16-Sep-2024	10:13:31	540	BP24MVEXP-ENV-DC-182			Camera	17	609798	6082084	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:13:43	541	BP24MVEXP-ENV-DC-182			Camera	17	609800	6082081	609795	6082108	5	-27	27	170	BH	
16-Sep-2024	10:14:00	542	BP24MVEXP-ENV-DC-182			Camera	17	609801	6082077	609795	6082108	6	-31	32	168	BH	
16-Sep-2024	10:14:11	543	BP24MVEXP-ENV-DC-182			Camera	17	609803	6082075	609795	6082108	7	-33	34	167	BH	
16-Sep-2024	10:14:32	544	BP24MVEXP-ENV-DC-182			Camera	17	609805	6082071	609795	6082108	10	-37	39	165	BH	
16-Sep-2024	10:14:45	545	BP24MVEXP-ENV-DC-182			Camera	17	609807	6082068	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:15:02	546	BP24MVEXP-ENV-DC-182			Camera	17	609808	6082065	609795	6082108	13	-43	45	164	BH	
16-Sep-2024	10:15:39	547	BP24MVEXP-ENV-DC-182			Camera	17	609809	6082058	609795	6082108	14	-50	52	164	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*									
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG									
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600			
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon									
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)						Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	10:15:59	548	BP24MVEXP-ENV-DC-182			Camera	17	609810	6082054	609795	6082108	15	-54	57	164	BH	
16-Sep-2024	10:16:13	549	BP24MVEXP-ENV-DC-182			Camera	17	609811	6082051	609795	6082108	16	-57	59	164	BH	
16-Sep-2024	10:16:35	550	BP24MVEXP-ENV-DC-182			Camera	17	609813	6082048	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:16:54	551	BP24MVEXP-ENV-DC-182			Camera	17	609818	6082043	609795	6082108	23	-65	69	161	BH	
16-Sep-2024	10:17:20	552	BP24MVEXP-ENV-DC-182			Camera	17	609820	6082038	609795	6082108	25	-70	74	160	BH	
16-Sep-2024	10:17:39	553	BP24MVEXP-ENV-DC-182			Camera	17	609822	6082034	609795	6082108	27	-74	78	160	BH	
16-Sep-2024	10:18:04	554	BP24MVEXP-ENV-DC-182			Camera	17	609826	6082029	609795	6082108	31	-79	85	159	BH	
16-Sep-2024	10:18:22	555	BP24MVEXP-ENV-DC-182			Camera	17	609829	6082024	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:18:42	556	BP24MVEXP-ENV-DC-182			Camera	17	609831	6082018	609795	6082108	36	-90	97	158	BH	
16-Sep-2024	10:46:07	557	BP24MVEXP-ENV-DC-238			Camera	25	611420	6082797	611226	6082898	194	-101	219	117	BH	
16-Sep-2024	10:46:34	558	BP24MVEXP-ENV-DC-238			Camera	25	611416	6082798	611226	6082898	190	-100	215	118	BH	
16-Sep-2024	10:46:48	559	BP24MVEXP-ENV-DC-238			Camera	25	611413	6082799	611226	6082898	188	-99	212	118	BH	
16-Sep-2024	10:47:01	560	BP24MVEXP-ENV-DC-238			Camera	25	611411	6082800	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:47:24	561	BP24MVEXP-ENV-DC-238			Camera	25	611406	6082802	611226	6082898	180	-96	204	118	BH	
16-Sep-2024	10:47:48	562	BP24MVEXP-ENV-DC-238			Camera	25	611401	6082804	611226	6082898	176	-94	199	118	BH	
16-Sep-2024	10:48:10	563	BP24MVEXP-ENV-DC-238			Camera	24	611398	6082806	611226	6082898	173	-92	196	118	BH	
16-Sep-2024	10:48:26	564	BP24MVEXP-ENV-DC-238			Camera	24	611396	6082808	611226	6082898	171	-90	193	118	BH	
16-Sep-2024	10:48:44	565	BP24MVEXP-ENV-DC-238			Camera	24	611393	6082811	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:49:03	566	BP24MVEXP-ENV-DC-238			Camera	24	611391	6082813	611226	6082898	165	-85	186	117	BH	
16-Sep-2024	10:49:13	567	BP24MVEXP-ENV-DC-238			Camera	24	611389	6082814	611226	6082898	164	-84	184	117	BH	
16-Sep-2024	10:49:25	568	BP24MVEXP-ENV-DC-238			Camera	24	611387	6082815	611226	6082898	161	-83	182	117	BH	
16-Sep-2024	10:49:34	569	BP24MVEXP-ENV-DC-238			Camera	24	611386	6082817	611226	6082898	160	-82	180	117	BH	
16-Sep-2024	10:49:49	570	BP24MVEXP-ENV-DC-238			Camera	24	611383	6082820	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:50:11	571	BP24MVEXP-ENV-DC-238			Camera	24	611381	6082819	611226	6082898	155	-79	174	117	BH	
16-Sep-2024	10:50:33	572	BP24MVEXP-ENV-DC-238			Camera	24	611376	6082821	611226	6082898	150	-77	169	117	BH	
16-Sep-2024	10:50:43	573	BP24MVEXP-ENV-DC-238			Camera	25	611374	6082822	611226	6082898	149	-76	167	117	BH	
16-Sep-2024	10:50:56	574	BP24MVEXP-ENV-DC-238			Camera	25	611373	6082822	611226	6082898	147	-76	166	117	BH	
16-Sep-2024	10:51:12	575	BP24MVEXP-ENV-DC-238			Camera	25	611370	6082822	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:51:31	576	BP24MVEXP-ENV-DC-238			Camera	25	611365	6082823	611226	6082898	140	-75	158	118	BH	
16-Sep-2024	10:51:46	577	BP24MVEXP-ENV-DC-238			Camera	25	611362	6082825	611226	6082898	137	-74	155	118	BH	
16-Sep-2024	10:52:31	578	BP24MVEXP-ENV-DC-238			Camera	24	611357	6082827	611226	6082898	132	-71	150	118	BH	
16-Sep-2024	10:52:46	579	BP24MVEXP-ENV-DC-238			Camera	24	611357	6082828	611226	6082898	131	-70	149	118	BH	
16-Sep-2024	10:53:25	580	BP24MVEXP-ENV-DC-238			Camera	24	611356	6082833	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:53:55	581	BP24MVEXP-ENV-DC-238			Camera	24	611354	6082835	611226	6082898	128	-63	143	116	BH	
16-Sep-2024	10:54:36	582	BP24MVEXP-ENV-DC-238			Camera	24	611352	6082834	611226	6082898	126	-64	141	117	BH	
16-Sep-2024	10:54:58	583	BP24MVEXP-ENV-DC-238			Camera	24	611350	6082837	611226	6082898	124	-61	138	116	BH	
16-Sep-2024	10:55:30	584	BP24MVEXP-ENV-DC-238			Camera	24	611348	6082838	611226	6082898	122	-61	136	116	BH	
16-Sep-2024	10:56:03	585	BP24MVEXP-ENV-DC-238			Camera	24	611346	6082836	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:56:40	586	BP24MVEXP-ENV-DC-238			Camera	24	611343	6082837	611226	6082898	117	-61	132	117	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV					Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50		Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	10:57:38	587	BP24MVEXP-ENV-DC-238			Camera	24	611335	6082841	611226	6082898	110	-57	123	117	BH	
16-Sep-2024	10:57:55	588	BP24MVEXP-ENV-DC-238			Camera	23	611332	6082841	611226	6082898	107	-57	121	118	BH	
16-Sep-2024	10:58:12	589	BP24MVEXP-ENV-DC-238			Camera	23	611329	6082844	611226	6082898	104	-54	117	118	BH	
16-Sep-2024	10:58:35	590	BP24MVEXP-ENV-DC-238			Camera	23	611327	6082844	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:59:08	591	BP24MVEXP-ENV-DC-238			Camera	23	611321	6082846	611226	6082898	96	-53	109	119	BH	
16-Sep-2024	11:00:05	592	BP24MVEXP-ENV-DC-238			Camera	23	611313	6082849	611226	6082898	87	-50	100	120	BH	
16-Sep-2024	11:00:19	593	BP24MVEXP-ENV-DC-238			Camera	23	611310	6082850	611226	6082898	85	-48	97	119	BH	
16-Sep-2024	11:00:32	594	BP24MVEXP-ENV-DC-238			Camera	23	611309	6082852	611226	6082898	83	-46	95	119	BH	
16-Sep-2024	11:00:47	595	BP24MVEXP-ENV-DC-238			Camera	23	611307	6082853	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:01:27	596	BP24MVEXP-ENV-DC-238			Camera	23	611302	6082856	611226	6082898	76	-42	87	119	BH	
16-Sep-2024	11:02:01	597	BP24MVEXP-ENV-DC-238			Camera	23	611298	6082860	611226	6082898	72	-38	82	118	BH	
16-Sep-2024	11:02:28	598	BP24MVEXP-ENV-DC-238			Camera	23	611296	6082860	611226	6082898	71	-38	80	118	BH	
16-Sep-2024	11:02:41	599	BP24MVEXP-ENV-DC-238			Camera	23	611295	6082859	611226	6082898	70	-39	80	119	BH	
16-Sep-2024	11:02:48	600	BP24MVEXP-ENV-DC-238			Camera	23	611294	6082859	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:03:00	601	BP24MVEXP-ENV-DC-238			Camera	25	611293	6082861	611226	6082898	67	-37	77	119	BH	
16-Sep-2024	11:03:29	602	BP24MVEXP-ENV-DC-238			Camera	24	611290	6082862	611226	6082898	65	-36	74	119	BH	
16-Sep-2024	11:03:48	603	BP24MVEXP-ENV-DC-238			Camera	23	611289	6082863	611226	6082898	64	-35	73	119	BH	
16-Sep-2024	11:04:03	604	BP24MVEXP-ENV-DC-238			Camera	23	611288	6082864	611226	6082898	62	-34	71	119	BH	
16-Sep-2024	11:05:07	605	BP24MVEXP-ENV-DC-238			Camera	23	611283	6082866	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:05:58	606	BP24MVEXP-ENV-DC-238			Camera	24	611283	6082870	611226	6082898	57	-28	64	116	BH	
16-Sep-2024	11:06:16	607	BP24MVEXP-ENV-DC-238			Camera	24	611283	6082872	611226	6082898	57	-27	63	115	BH	
16-Sep-2024	11:07:00	608	BP24MVEXP-ENV-DC-238			Camera	24	611280	6082871	611226	6082898	55	-27	61	116	BH	
16-Sep-2024	11:07:27	609	BP24MVEXP-ENV-DC-238			Camera	23	611279	6082872	611226	6082898	53	-27	59	117	BH	
16-Sep-2024	11:08:22	610	BP24MVEXP-ENV-DC-238			Camera	24	611273	6082875	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:08:42	611	BP24MVEXP-ENV-DC-238			Camera	23	611268	6082876	611226	6082898	42	-22	48	117	BH	
16-Sep-2024	11:08:59	612	BP24MVEXP-ENV-DC-238			Camera	23	611264	6082878	611226	6082898	38	-21	44	118	BH	
16-Sep-2024	11:55:16	613	BP24MVEXP-ENV-DC-240			Camera	28	613616	6078030	613402	6078035	214	-5	214	91	BH	
16-Sep-2024	11:55:33	614	BP24MVEXP-ENV-DC-240			Camera	28	613612	6078030	613402	6078035	210	-5	210	91	BH	
16-Sep-2024	11:55:50	615	BP24MVEXP-ENV-DC-240			Camera	28	613609	6078030	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	11:56:09	616	BP24MVEXP-ENV-DC-240			Camera	28	613604	6078029	613402	6078035	202	-6	202	92	BH	
16-Sep-2024	11:56:37	617	BP24MVEXP-ENV-DC-240			Camera	28	613597	6078027	613402	6078035	195	-8	195	92	BH	
16-Sep-2024	11:56:58	618	BP24MVEXP-ENV-DC-240			Camera	27	613590	6078026	613402	6078035	189	-9	189	93	BH	
16-Sep-2024	11:57:10	619	BP24MVEXP-ENV-DC-240			Camera	27	613586	6078026	613402	6078035	184	-9	184	93	BH	
16-Sep-2024	11:57:29	620	BP24MVEXP-ENV-DC-240			Camera	27	613581	6078025	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	11:57:43	621	BP24MVEXP-ENV-DC-240			Camera	28	613577	6078025	613402	6078035	176	-10	176	93	BH	
16-Sep-2024	11:57:59	622	BP24MVEXP-ENV-DC-240			Camera	27	613573	6078025	613402	6078035	171	-10	171	93	BH	
16-Sep-2024	11:58:07	623	BP24MVEXP-ENV-DC-240			Camera	28	613571	6078026	613402	6078035	169	-9	170	93	BH	
16-Sep-2024	11:58:40	624	BP24MVEXP-ENV-DC-240			Camera	27	613564	6078027	613402	6078035	162	-8	163	93	BH	
16-Sep-2024	11:58:49	625	BP24MVEXP-ENV-DC-240			Camera	27	613563	6078027	613402	6078035	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	11:59:05	626	BP24MVEXP-ENV-DC-240			Camera	27	613559	6078028	613402	6078035	158	-7	158	93	BH	
16-Sep-2024	11:59:29	627	BP24MVEXP-ENV-DC-240			Camera	27	613556	6078029	613402	6078035	154	-6	154	92	BH	
16-Sep-2024	11:59:44	628	BP24MVEXP-ENV-DC-240			Camera	27	613553	6078029	613402	6078035	151	-6	151	92	BH	
16-Sep-2024	12:00:16	629	BP24MVEXP-ENV-DC-240			Camera	27	613548	6078030	613402	6078035	146	-5	146	92	BH	
16-Sep-2024	12:00:38	630	BP24MVEXP-ENV-DC-240			Camera	27	613545	6078031	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:01:02	631	BP24MVEXP-ENV-DC-240			Camera	27	613541	6078030	613402	6078035	139	-4	139	92	BH	
16-Sep-2024	12:01:17	632	BP24MVEXP-ENV-DC-240			Camera	27	613538	6078031	613402	6078035	136	-4	136	92	BH	
16-Sep-2024	12:01:36	633	BP24MVEXP-ENV-DC-240			Camera	27	613534	6078031	613402	6078035	132	-4	132	92	BH	
16-Sep-2024	12:01:56	634	BP24MVEXP-ENV-DC-240			Camera	27	613529	6078031	613402	6078035	127	-4	128	92	BH	
16-Sep-2024	12:02:19	635	BP24MVEXP-ENV-DC-240			Camera	27	613525	6078031	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:02:34	636	BP24MVEXP-ENV-DC-240			Camera	27	613522	6078031	613402	6078035	120	-4	120	92	BH	
16-Sep-2024	12:02:53	637	BP24MVEXP-ENV-DC-240			Camera	26	613519	6078030	613402	6078035	117	-5	117	92	BH	
16-Sep-2024	12:03:09	638	BP24MVEXP-ENV-DC-240			Camera	26	613516	6078030	613402	6078035	114	-5	114	92	BH	
16-Sep-2024	12:03:28	639	BP24MVEXP-ENV-DC-240			Camera	27	613512	6078031	613402	6078035	110	-4	110	92	BH	
16-Sep-2024	12:04:04	640	BP24MVEXP-ENV-DC-240			Camera	26	613506	6078032	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:04:13	641	BP24MVEXP-ENV-DC-240			Camera	26	613505	6078033	613402	6078035	103	-2	103	91	BH	
16-Sep-2024	12:04:28	642	BP24MVEXP-ENV-DC-240			Camera	26	613502	6078034	613402	6078035	100	-1	100	91	BH	
16-Sep-2024	12:04:57	643	BP24MVEXP-ENV-DC-240			Camera	26	613498	6078032	613402	6078035	96	-3	96	92	BH	
16-Sep-2024	12:05:37	644	BP24MVEXP-ENV-DC-240			Camera	25	613493	6078032	613402	6078035	91	-3	91	92	BH	
16-Sep-2024	12:05:58	645	BP24MVEXP-ENV-DC-240			Camera	26	613489	6078032	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:06:20	646	BP24MVEXP-ENV-DC-240			Camera	26	613485	6078032	613402	6078035	83	-3	83	92	BH	
16-Sep-2024	12:06:35	647	BP24MVEXP-ENV-DC-240			Camera	25	613482	6078031	613402	6078035	80	-4	80	93	BH	
16-Sep-2024	12:06:50	648	BP24MVEXP-ENV-DC-240			Camera	25	613480	6078031	613402	6078035	78	-4	78	93	BH	
16-Sep-2024	12:07:06	649	BP24MVEXP-ENV-DC-240			Camera	25	613476	6078030	613402	6078035	74	-5	74	93	BH	
16-Sep-2024	12:07:22	650	BP24MVEXP-ENV-DC-240			Camera	25	613473	6078031	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:07:44	651	BP24MVEXP-ENV-DC-240			Camera	24	613471	6078032	613402	6078035	69	-3	69	93	BH	
16-Sep-2024	12:07:59	652	BP24MVEXP-ENV-DC-240			Camera	24	613468	6078032	613402	6078035	66	-3	66	93	BH	
16-Sep-2024	12:08:24	653	BP24MVEXP-ENV-DC-240			Camera	25	613466	6078034	613402	6078035	64	-1	64	91	BH	
16-Sep-2024	12:08:42	654	BP24MVEXP-ENV-DC-240			Camera	25	613465	6078035	613402	6078035	63	0	63	90	BH	
16-Sep-2024	12:08:57	655	BP24MVEXP-ENV-DC-240			Camera	25	613464	6078034	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:09:33	656	BP24MVEXP-ENV-DC-240			Camera	25	613461	6078035	613402	6078035	59	0	59	90	BH	
16-Sep-2024	12:09:47	657	BP24MVEXP-ENV-DC-240			Camera	25	613458	6078034	613402	6078035	56	-1	56	91	BH	
16-Sep-2024	12:09:58	658	BP24MVEXP-ENV-DC-240			Camera	25	613456	6078034	613402	6078035	54	-1	54	91	BH	
16-Sep-2024	12:10:18	659	BP24MVEXP-ENV-DC-240			Camera	25	613451	6078034	613402	6078035	50	-1	50	91	BH	
16-Sep-2024	12:10:36	660	BP24MVEXP-ENV-DC-240			Camera	25	613448	6078034	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:10:58	661	BP24MVEXP-ENV-DC-240			Camera	24	613443	6078033	613402	6078035	41	-2	41	93	BH	
16-Sep-2024	12:11:11	662	BP24MVEXP-ENV-DC-240			Camera	25	613440	6078033	613402	6078035	38	-2	38	93	BH	
16-Sep-2024	12:11:28	663	BP24MVEXP-ENV-DC-240			Camera	25	613437	6078033	613402	6078035	35	-2	35	93	BH	
16-Sep-2024	12:11:56	664	BP24MVEXP-ENV-DC-240			Camera	25	613429	6078032	613402	6078035	27	-3	28	96	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	12:12:11	665	BP24MVEXP-ENV-DC-240			Camera	25	613425	6078032	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:12:39	666	BP24MVEXP-ENV-DC-240			Camera	25	613419	6078032	613402	6078035	17	-3	17	102	BH	
16-Sep-2024	12:41:42	667	BP24MVEXP-ENV-DC-239			Camera	19	611920	6075519	611717	6075484	204	35	207	80	BH	
16-Sep-2024	12:42:02	668	BP24MVEXP-ENV-DC-239			Camera	20	611915	6075517	611717	6075484	198	33	201	81	BH	
16-Sep-2024	12:42:15	669	BP24MVEXP-ENV-DC-239			Camera	20	611911	6075516	611717	6075484	195	32	197	81	BH	
16-Sep-2024	12:42:39	670	BP24MVEXP-ENV-DC-239			Camera	20	611905	6075515	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:42:57	671	BP24MVEXP-ENV-DC-239			Camera	20	611901	6075515	611717	6075484	184	31	187	80	BH	
16-Sep-2024	12:43:11	672	BP24MVEXP-ENV-DC-239			Camera	20	611897	6075514	611717	6075484	180	30	182	81	BH	
16-Sep-2024	12:43:24	673	BP24MVEXP-ENV-DC-239			Camera	20	611893	6075514	611717	6075484	177	30	179	81	BH	
16-Sep-2024	12:43:40	674	BP24MVEXP-ENV-DC-239			Camera	20	611888	6075512	611717	6075484	172	28	174	81	BH	
16-Sep-2024	12:44:16	675	BP24MVEXP-ENV-DC-239			Camera	20	611879	6075510	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:44:30	676	BP24MVEXP-ENV-DC-239			Camera	20	611877	6075511	611717	6075484	160	27	162	80	BH	
16-Sep-2024	12:44:39	677	BP24MVEXP-ENV-DC-239			Camera	20	611875	6075512	611717	6075484	158	27	161	80	BH	
16-Sep-2024	12:45:00	678	BP24MVEXP-ENV-DC-239			Camera	20	611871	6075512	611717	6075484	154	28	157	80	BH	
16-Sep-2024	12:45:26	679	BP24MVEXP-ENV-DC-239			Camera	20	611865	6075511	611717	6075484	149	27	151	80	BH	
16-Sep-2024	12:45:38	680	BP24MVEXP-ENV-DC-239			Camera	20	611862	6075512	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:45:59	681	BP24MVEXP-ENV-DC-239			Camera	20	611858	6075511	611717	6075484	141	26	144	79	BH	
16-Sep-2024	12:46:08	682	BP24MVEXP-ENV-DC-239			Camera	20	611855	6075510	611717	6075484	138	26	141	79	BH	
16-Sep-2024	12:46:35	683	BP24MVEXP-ENV-DC-239			Camera	20	611848	6075508	611717	6075484	131	24	134	80	BH	
16-Sep-2024	12:46:57	684	BP24MVEXP-ENV-DC-239			Camera	20	611842	6075506	611717	6075484	126	22	128	80	BH	
16-Sep-2024	12:47:16	685	BP24MVEXP-ENV-DC-239			Camera	20	611837	6075506	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:47:43	686	BP24MVEXP-ENV-DC-239			Camera	20	611832	6075506	611717	6075484	116	22	118	79	BH	
16-Sep-2024	12:48:05	687	BP24MVEXP-ENV-DC-239			Camera	21	611828	6075505	611717	6075484	112	21	114	79	BH	
16-Sep-2024	12:48:19	688	BP24MVEXP-ENV-DC-239			Camera	21	611825	6075504	611717	6075484	109	20	111	79	BH	
16-Sep-2024	12:48:29	689	BP24MVEXP-ENV-DC-239			Camera	20	611823	6075504	611717	6075484	107	20	109	79	BH	
16-Sep-2024	12:48:50	690	BP24MVEXP-ENV-DC-239			Camera	21	611819	6075503	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:49:17	691	BP24MVEXP-ENV-DC-239			Camera	20	611813	6075502	611717	6075484	97	18	99	79	BH	
16-Sep-2024	12:49:28	692	BP24MVEXP-ENV-DC-239			Camera	21	611811	6075502	611717	6075484	94	18	96	79	BH	
16-Sep-2024	12:49:48	693	BP24MVEXP-ENV-DC-239			Camera	21	611807	6075500	611717	6075484	90	16	92	80	BH	
16-Sep-2024	12:49:58	694	BP24MVEXP-ENV-DC-239			Camera	21	611804	6075500	611717	6075484	88	16	89	80	BH	
16-Sep-2024	12:50:13	695	BP24MVEXP-ENV-DC-239			Camera	20	611800	6075499	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:50:43	696	BP24MVEXP-ENV-DC-239			Camera	20	611792	6075495	611717	6075484	75	11	76	82	BH	
16-Sep-2024	12:51:04	697	BP24MVEXP-ENV-DC-239			Camera	20	611785	6075493	611717	6075484	68	9	69	83	BH	
16-Sep-2024	12:51:18	698	BP24MVEXP-ENV-DC-239			Camera	21	611781	6075493	611717	6075484	64	9	65	82	BH	
16-Sep-2024	12:51:49	699	BP24MVEXP-ENV-DC-239			Camera	20	611773	6075492	611717	6075484	56	8	57	82	BH	
16-Sep-2024	12:52:06	700	BP24MVEXP-ENV-DC-239			Camera	21	611769	6075492	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:52:22	701	BP24MVEXP-ENV-DC-239			Camera	20	611766	6075492	611717	6075484	50	8	50	81	BH	
16-Sep-2024	12:52:40	702	BP24MVEXP-ENV-DC-239			Camera	20	611762	6075493	611717	6075484	46	9	47	79	BH	
16-Sep-2024	12:52:58	703	BP24MVEXP-ENV-DC-239			Camera	20	611759	6075494	611717	6075484	42	10	43	76	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	12:53:25	704	BP24MVEXP-ENV-DC-239			Camera	20	611754	6075493	611717	6075484	37	9	38	76	BH	
16-Sep-2024	12:53:40	705	BP24MVEXP-ENV-DC-239			Camera	20	611751	6075493	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:54:02	706	BP24MVEXP-ENV-DC-239			Camera	20	611747	6075493	611717	6075484	31	9	32	74	BH	
16-Sep-2024	12:54:16	707	BP24MVEXP-ENV-DC-239			Camera	21	611746	6075491	611717	6075484	29	7	30	76	BH	
16-Sep-2024	12:54:38	708	BP24MVEXP-ENV-DC-239			Camera	20	611742	6075490	611717	6075484	25	6	26	76	BH	
16-Sep-2024	12:54:51	709	BP24MVEXP-ENV-DC-239			Camera	20	611740	6075490	611717	6075484	23	6	24	76	BH	
16-Sep-2024	12:55:09	710	BP24MVEXP-ENV-DC-239			Camera	20	611737	6075489	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:55:28	711	BP24MVEXP-ENV-DC-239			Camera	20	611733	6075487	611717	6075484	17	3	17	79	BH	
16-Sep-2024	12:55:46	712	BP24MVEXP-ENV-DC-239			Camera	20	611729	6075485	611717	6075484	13	1	13	84	BH	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)												FOR-ENV-0538
Job No:	59294			Area:	UKCS Quad 40			Scale:	109mm			
Project:	Morven Grid Connection 1 Route Environment Survey							Equipment:	Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk2			
Client:	Morven Offshore Wind Limited							Vessel:	MV *Titan Endeavour*			
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments	
BP24MVEXP-ENV-DC-201	15-Sep-2024	11:08:52	11:39:18	BP24MVEXP-ENV-DC-201.MTS BP24MVEXP-ENV-DC-201 (1). MTS	Muddy fine sand with shell fragments	Chordata (*Agonus cataphractus*)	RH	76	1	76		
BP24MVEXP-ENV-DC-237	15-Sep-2024	12:05:15	12:34:03	BP24MVEXP-ENV-DC-237.MTS	Muddy fine sand with shell fragments	Arthropoda (Paguroidea), Chordata (Actinopterygii)	RH	56	77	132		
BP24MVEXP-ENV-DC-203	15-Sep-2024	13:00:33	13:27:58	BP24MVEXP-ENV-DC-203.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Actinopterygii, *Pleuronectes platessa*), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	RH	54	133	186		
BP24MVEXP-ENV-DC-204	15-Sep-2024	13:52:46	14:24:04	BP24MVEXP-ENV-DC-204.MTS BP24MVEXP-ENV-DC-204 (1)	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*)	RH	59	187	245		
BP24MVEXP-ENV-DC-236	15-Sep-2024	14:53:04	15:11:52	BP24MVEXP-ENV-DC-236.MTS	Muddy fine sand with shell fragments	Arthropoda (Brachyura, Paguroidea), Chordata (Actinopterygii)	RH	39	246	284		
BP24MVEXP-ENV-DC-205	15-Sep-2024	15:29:24	15:48:21	BP24MVEXP-ENV-DC-205.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Chordata (Pleuronectidae), Cnidaria (*Alcyonium digitatum*)	RH	45	285	329		
BP24MVEXP-ENV-DC-199	16-Sep-2024	07:00:14	07:21:33	BP24MVEXP-ENV-DC-199.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea), Porifera	RH	43	330	372		
BP24MVEXP-ENV-DC-200	16-Sep-2024	07:44:09	08:10:19	BP24MVEXP-ENV-DC-200.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	53	373	425		
BP24MVEXP-ENV-DC-219	16-Sep-2024	08:37:40	08:52:41	BP24MVEXP-ENV-DC-219.MTS	Boulders, cobbles and gravel with muddy fine sand	Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	43	426	468		
BP24MVEXP-ENV-DC-218	16-Sep-2024	09:19:47	09:36:17	BP24MVEXP-ENV-DC-218.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*)	RH	45	469	513		
BP24MVEXP-ENV-DC-182	16-Sep-2024	10:04:51	10:19:08	BP24MVEXP-ENV-DC-182.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	43	514	556		
BP24MVEXP-ENV-DC-238	16-Sep-2024	10:46:15	11:10:07	BP24MVEXP-ENV-DC-238.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	56	557	612		
BP24MVEXP-ENV-DC-240	16-Sep-2024	11:55:24	12:13:25	BP24MVEXP-ENV-DC-240.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Cnidaria (*Alcyonium digitatum*), Echinodermata (Echinoidea, Ophiuroidea), Porifera	RH	54	613	666		
BP24MVEXP-ENV-DC-239	16-Sep-2024	12:41:54	12:56:21	BP24MVEXP-ENV-DC-239.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	46	667	712		

APPENDIX A FIELD SAMPLING LOGS

Gardline

Seafloor Sampling Positioning Summary

Job No	59294						Vessel	MV *Ocean Reliance*									
Client	Morven Offshore Wind Limited						Vessel Reference Point (VRP)	COG									
Project Name	Morven Grid Connection 1 Route Environmental Survey						Deployment Location	Starboard A-Frame Mid		x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)						Actual Coordinates derived from	Deployment Location									
Geodetic Reference System	Datum	WGS 84 (18) to ED50			Ellipsoid	International 1924		Projection	UTM Zone 30N (3°W)				Vertical / Tidal Datum	LAT			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	08:02	1	MV24EXP-ENV-GS-173	60%	MFA	DG	71	627675	6271901	627676	6271898	-1	3	3	340	AP	
11-Aug-2024	08:12	2	MV24EXP-ENV-GS-173	60%	MFB	DG	71	627675	6271901	627676	6271898	-1	3	3	341	AP	
11-Aug-2024	08:22	3	MV24EXP-ENV-GS-173	60%	CHEM1	DG	71	627675	6271900	627676	6271898	-1	2	2	330	AP	
11-Aug-2024	08:40	4	MV24EXP-ENV-GS-173	60%	CHEM2	DG	70	627676	6271901	627676	6271898	0	3	3	351	AP	
11-Aug-2024	11:22	5	MV24EXP-ENV-GS-174	70%	MFA	DG	71	627541	6267901	627541	6267900	0	0	0	359	RA	
11-Aug-2024	11:38	6	MV24EXP-ENV-GS-174	30%	NS	DG	71	627540	6267901	627541	6267900	0	1	1	322	RA	Low retention
11-Aug-2024	11:51	7	MV24EXP-ENV-GS-174	40%	MFB	DG	71	627541	6267901	627541	6267900	0	0	0	0	RA	
11-Aug-2024	12:05	8	MV24EXP-ENV-GS-174	75%	PSA	DG	71	627541	6267902	627541	6267900	0	1	1	17	RA	
11-Aug-2024	14:56	9	MV24EXP-ENV-GS-175	50%	MFA	DG	73	627417	6263903	627417	6263903	0	0	0	270	RA	
11-Aug-2024	15:08	10	MV24EXP-ENV-GS-175	40%	MFB	DG	73	627417	6263903	627417	6263903	0	0	0	317	RA	
11-Aug-2024	15:22	11	MV24EXP-ENV-GS-175	60%	CHEM1	DG	73	627417	6263903	627417	6263903	-1	0	1	290	RA	
11-Aug-2024	15:46	12	MV24EXP-ENV-GS-175	50%	CHEM2	DG	73	627416	6263902	627417	6263903	-1	0	1	254	RA	
12-Aug-2024	05:28	13	MV24EXP-ENV-GS-176	10%	NS	DG	74	627040	6259920	627041	6259920	-1	0	1	270	AP	Low retention, grab stuck on the lift wire
12-Aug-2024	05:35	14	MV24EXP-ENV-GS-176	0%	NS	DG	74	627041	6259922	627041	6259920	0	1	1	6	AP	Grab did not sample due to marginal weather conditions, e.g. either pretriggered in water or
12-Aug-2024	05:45	15	MV24EXP-ENV-GS-176	60%	MFA	DG	74	627042	6259923	627041	6259920	1	3	3	13	AP	
12-Aug-2024	05:52	16	MV24EXP-ENV-GS-176	50%	MFB	DG	74	627043	6259921	627041	6259920	2	1	2	73	AP	
12-Aug-2024	06:00	17	MV24EXP-ENV-GS-176	50%	PSA	DG	74	627042	6259920	627041	6259920	1	0	1	105	AP	
13-Aug-2024	02:21	18	MV24EXP-ENV-GS-177	50%	MFA	DG	73	626402	6255909	626401	6255909	1	-1	1	126	AP	
13-Aug-2024	02:32	19	MV24EXP-ENV-GS-177	60%	MFB	DG	73	626400	6255911	626401	6255909	-1	2	2	330	AP	
13-Aug-2024	02:41	20	MV24EXP-ENV-GS-177	50%	CHEM1	DG	73	626401	6255909	626401	6255909	1	0	1	95	AP	
13-Aug-2024	02:54	21	MV24EXP-ENV-GS-177	60%	CHEM2	DG	73	626401	6255909	626401	6255909	0	0	0	16	AP	
13-Aug-2024	05:15	22	MV24EXP-ENV-GS-178	60%	MFA	DG	70	625762	6251919	625761	6251919	2	0	2	85	AP	
13-Aug-2024	05:25	23	MV24EXP-ENV-GS-178	70%	MFB	DG	70	625762	6251917	625761	6251919	1	-2	2	143	AP	
13-Aug-2024	05:33	24	MV24EXP-ENV-GS-178	60%	PSA	DG	70	625762	6251920	625761	6251919	1	0	1	66	AP	
13-Aug-2024	07:50	25	MV24EXP-ENV-GS-179	20%	NS	DG	71	625152	6248072	625151	6248070	1	2	3	33	AP	Sample whashed out due to shell in the jaws
13-Aug-2024	07:58	26	MV24EXP-ENV-GS-179	70%	MFA	DG	71	625151	6248071	625151	6248070	0	2	2	15	AP	
13-Aug-2024	08:06	27	MV24EXP-ENV-GS-179	70%	MFB	DG	71	625151	6248070	625151	6248070	0	0	0	31	AP	
13-Aug-2024	08:15	28	MV24EXP-ENV-GS-179	70%	CHEM1	DG	71	625150	6248071	625151	6248070	-1	1	1	318	AP	
13-Aug-2024	08:27	29	MV24EXP-ENV-GS-179	60%	CHEM2	DG	71	625151	6248070	625151	6248070	0	0	0	50	AP	
13-Aug-2024	10:39	30	MV24EXP-ENV-GS-180	40%	MFA	DG	69	624524	6244162	624523	6244160	1	2	2	17	AP	
13-Aug-2024	10:49	31	MV24EXP-ENV-GS-180	45%	MFB	DG	69	624524	6244162	624523	6244160	1	1	1	33	AP	
13-Aug-2024	10:57	32	MV24EXP-ENV-GS-180	40%	PSA	DG	69	624524	6244161	624523	6244160	0	1	1	26	AP	
14-Aug-2024	07:32	33	MV24EXP-ENV-GS-234	70%	MFA	DG	68	627184	6203638	627184	6203640	0	-2	2	172	AP	
14-Aug-2024	07:42	34	MV24EXP-ENV-GS-234	50%	MFB	DG	68	627185	6203638	627184	6203640	1	-1	2	130	AP	
14-Aug-2024	07:51	35	MV24EXP-ENV-GS-234	60%	PSA	DG	68	627185	6203639	627184	6203640	1	-1	2	136	AP	
14-Aug-2024	09:45	36	MV24EXP-ENV-GS-235	60%	MFA	DG	68	628497	6203642	628496	6203641	1	1	2	57	AP	
14-Aug-2024	09:53	37	MV24EXP-ENV-GS-235	70%	MFB	DG	68	628497	6203642	628496	6203641	1	1	1	65	AP	
14-Aug-2024	10:02	38	MV24EXP-ENV-GS-235	60%	PSA	DG	68	628496	6203642	628496	6203641	1	1	1	34	AP	
14-Aug-2024	12:31	39	MV24EXP-ENV-GS-235A	70%	MFA	DG	66	627952	6203639	627952	6203640	0	-1	1	181	RA	
14-Aug-2024	12:43	40	MV24EXP-ENV-GS-235A	45%	MFB	DG	66	627952	6203640	627952	6203640	0	0	1	224	RA	
14-Aug-2024	12:55	41	MV24EXP-ENV-GS-235A	45%	PSA	DG	66	627952	6203640	627952	6203640	0	0	1	222	RA	
14-Aug-2024	17:57	42	MV24EXP-ENV-GS-233	40%	MFA	DG	71	631619	6189612	631618	6189611	0	1	1	14	RA	
14-Aug-2024	18:08	43	MV24EXP-ENV-GS-233	40%	MFB	DG	71	631619	6189612	631618	6189611	1	1	1	47	RA	
14-Aug-2024	18:19	44	MV24EXP-ENV-GS-233	50%	CHEM1	DG	71	631618	6189611	631618	6189611	0	0	0	22	RA	
14-Aug-2024	18:34	45	MV24EXP-ENV-GS-233	45%	CHEM2	DG	71	631618	6189612	631618	6189611	0	1	1	330	RA	
14-Aug-2024	20:32	46	MV24EXP-ENV-GS-232	60%	MFA	DG	69	632418	6187383	632418	6187381	0	2	2	9	RA	
14-Aug-2024	20:41	47	MV24EXP-ENV-GS-232	15%	NS	DG	69	632419	6187382	632418	6187381	1	1	1	32	RA	Low retention
14-Aug-2024	21:05	48	MV24EXP-ENV-GS-232	60%	MFB	DG	69	632419	6187382	632418	6187381	1	1	2	44	RA	
14-Aug-2024	21:14	49	MV24EXP-ENV-GS-232	65%	PSA	DG	69	632419	6187382	632418	6187381	2	1	2	50	RA	
14-Aug-2024	23:46	50	MV24EXP-ENV-GS-231	50%	MFA	DG	77	633293	6184926	633292	6184926	0	0	0	92	AP	
14-Aug-2024	23:55	51	MV24EXP-ENV-GS-231	50%	MFB	DG	77	633292	6184925	633292	6184926	0	0	0	156	AP	
15-Aug-2024	00:03	52	MV24EXP-ENV-GS-231	50%	CHEM1	DG	77	633293	6184926	633292	6184926	1	0	1	95	AP	
15-Aug-2024	00:12	53	MV24EXP-ENV-GS-231	50%	CHEM2	DG	77	633292	6184926	633292	6184926	0	0	0	44	AP	
15-Aug-2024	01:49	54	MV24EXP-ENV-GS-230	60%	MFA	DG	83	633726	6183708	633726	6183710	0	-1	1	197	AP	
15-Aug-2024	01:56	55	MV24EXP-ENV-GS-230	60%	MFB	DG	83	633726	6183709	633726	6183710	0	-1	1	205	AP	
15-Aug-2024	02:02	56	MV24EXP-ENV-GS-230	60%	PSA	DG	83	633727	6183709	633726	6183710	0	0	1	120	AP	
15-Aug-2024	03:49	57	MV24EXP-ENV-GS-229	60%	MFA	DG	82	634328	6182007	634328	6182007	-1	0	1	296	AP	
15-Aug-2024	03:57	58	MV24EXP-ENV-GS-229	60%	MFB	DG	83	634327	6182008	634328	6182007	-1	1	2	311	AP	
15-Aug-2024	04:03	59	MV24EXP-ENV-GS-229	60%	CHEM1	DG	82	634327	6182008	634328	6182007	-1	1	1	312	AP	
15-Aug-2024	04:12	60	MV24EXP-ENV-GS-229	60%	CHEM2	DG	82	634327	6182008	634328	6182007	-1	1	2	327	AP	
15-Aug-2024	05:38	61	MV24EXP-ENV-GS-228	80%	MFA	DG	90	635067	6179942	635066	6179941	1	0	1	67	AP	
15-Aug-2024	05:46	62	MV24EXP-ENV-GS-228	80%	MFB	DG	90	635066	6179941	635066	6179941	-1	0	1	263	AP	
15-Aug-2024	05:53	63	MV24EXP-ENV-GS-228	80%	PSA	DG	90	635066	6179941	635066	6179941	-1	0	1	277	AP	
15-Aug-2024	23:55	64	MV24EXP-ENV-GS-227	90%	MFA	DG	89	634270	6178111	634270	6178112	0	-1	1	163	AP	
16-Aug-2024	00:07	65	MV24EXP-ENV-GS-227	70%	MFB	DG	89	634270	6178111	634270	6178112	0	-1	1	173	AP	
16-Aug-2024	00:15	66	MV24EXP-ENV-GS-227	70%	CHEM1	DG	89	634268	6178112	634270	6178112	-2	0	2	273	AP	

APPENDIX A FIELD SAMPLING LOGS

Gardline

Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*							
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97	
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Deployment Location							
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM Zone 30N (3°W)			Vertical / Tidal Datum		LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	00:25	67	MV24EXP-ENV-GS-227	50%	CHEM2	DG	89	634270	6178112	634270	6178112	0	0	0	325	AP	
16-Aug-2024	02:02	68	MV24EXP-ENV-GS-226	NS	NS	DG	88	632825	6176748	632825	6176748	0	0	0	114	AP	Myxinidae (Hagfish) in the grab
16-Aug-2024	02:10	69	MV24EXP-ENV-GS-226	60%	MFA	DG	88	632824	6176749	632825	6176748	-1	1	1	320	AP	
16-Aug-2024	02:17	70	MV24EXP-ENV-GS-226	60%	MFB	DG	88	632825	6176747	632825	6176748	0	-1	1	189	AP	
16-Aug-2024	02:25	71	MV24EXP-ENV-GS-226	60%	PSA	DG	88	632826	6176746	632825	6176748	1	-2	2	159	AP	
16-Aug-2024	04:12	72	MV24EXP-ENV-GS-171	70%	MFA	DG	86	632329	6174795	632329	6174794	0	1	1	356	AP	
16-Aug-2024	04:21	73	MV24EXP-ENV-GS-171	70%	MFB	DG	86	632329	6174793	632329	6174794	0	-1	1	152	AP	
16-Aug-2024	04:28	74	MV24EXP-ENV-GS-171	70%	CHEM1	DG	86	632329	6174794	632329	6174794	0	0	0	69	AP	
16-Aug-2024	04:38	75	MV24EXP-ENV-GS-171	60%	CHEM2	DG	86	632329	6174794	632329	6174794	0	0	0	151	AP	
16-Aug-2024	06:20	76	MV24EXP-ENV-GS-225	80%	MFA	DG	93	631831	6172879	631833	6172878	-2	1	2	301	AP	
16-Aug-2024	06:30	77	MV24EXP-ENV-GS-225	80%	MFB	DG	93	631833	6172877	631833	6172878	0	0	1	218	AP	
16-Aug-2024	06:39	78	MV24EXP-ENV-GS-225	80%	PSA	DG	93	631834	6172878	631833	6172878	1	0	1	55	AP	
16-Aug-2024	08:31	79	MV24EXP-ENV-GS-172	70%	MFA	DG	88	631318	6170859	631319	6170858	-1	1	1	338	AP	
16-Aug-2024	08:41	80	MV24EXP-ENV-GS-172	80%	MFB	DG	88	631319	6170859	631319	6170858	0	1	1	357	AP	
16-Aug-2024	08:50	81	MV24EXP-ENV-GS-172	50%	CHEM1	DG	88	631319	6170860	631319	6170858	0	2	2	15	AP	
16-Aug-2024	09:03	82	MV24EXP-ENV-GS-172	80%	CHEM2	DG	88	631320	6170860	631319	6170858	1	2	2	26	AP	
17-Aug-2024	23:45	83	MV24EXP-ENV-GS-185	NS	NS	DG	84	621010	6099060	621009	6099061	2	-1	2	110	AP	No sample due to overfilled grab
17-Aug-2024	23:52	84	MV24EXP-ENV-GS-185	NS	NS	DG	84	621009	6099061	621009	6099061	0	0	0	114	AP	Removed half of weight - No sample due to overfilled grab
17-Aug-2024	23:59	85	MV24EXP-ENV-GS-185	90%	MFA	DG	84	621008	6099061	621009	6099061	-1	0	1	292	AP	All weight removed from grab
18-Aug-2024	00:09	86	MV24EXP-ENV-GS-185	90%	MFB	DG	84	621007	6099061	621009	6099061	-2	0	2	276	AP	
18-Aug-2024	00:25	87	MV24EXP-ENV-GS-185	90%	CHEM1	DG	84	621011	6099061	621009	6099061	2	0	2	79	AP	
18-Aug-2024	00:36	88	MV24EXP-ENV-GS-185	90%	CHEM2	DG	84	621009	6099061	621009	6099061	1	0	1	96	AP	
18-Aug-2024	02:56	89	MV24EXP-ENV-GS-224	90%	MFA	DG	79	620453	6097139	620453	6097139	0	-1	1	195	AP	
18-Aug-2024	03:03	90	MV24EXP-ENV-GS-224	90%	MFB	DG	79	620452	6097138	620453	6097139	-1	-1	2	231	AP	
18-Aug-2024	03:09	91	MV24EXP-ENV-GS-224	90%	PSA	DG	79	620453	6097140	620453	6097139	0	1	1	333	AP	
18-Aug-2024	04:51	92	MV24EXP-ENV-GS-186	90%	MFA	DG	65	619899	6095217	619899	6095218	0	-1	1	220	AP	
18-Aug-2024	05:00	93	MV24EXP-ENV-GS-186	90%	MFB	DG	65	619899	6095218	619899	6095218	0	0	0	237	AP	
18-Aug-2024	05:07	94	MV24EXP-ENV-GS-186	90%	CHEM1	DG	65	619898	6095217	619899	6095218	-1	0	1	232	AP	
18-Aug-2024	05:16	95	MV24EXP-ENV-GS-186	90%	CHEM2	DG	65	619898	6095217	619899	6095218	-1	0	1	236	AP	
18-Aug-2024	06:41	96	MV24EXP-ENV-GS-223	70%	MFA	DG	60	619351	6093296	619349	6093295	1	1	2	52	AP	
18-Aug-2024	06:49	97	MV24EXP-ENV-GS-223	80%	MFB	DG	59	619349	6093296	619349	6093295	0	1	1	349	AP	
18-Aug-2024	06:57	98	MV24EXP-ENV-GS-223	90%	PSA	DG	59	619349	6093295	619349	6093295	0	0	0	281	AP	
18-Aug-2024	08:53	99	MV24EXP-ENV-GS-187	80%	MFA	DG	57	618791	6091374	618791	6091374	0	0	0	122	AP	
18-Aug-2024	09:00	100	MV24EXP-ENV-GS-187	80%	MFB	DG	57	618792	6091375	618791	6091374	1	1	1	55	AP	
18-Aug-2024	09:07	101	MV24EXP-ENV-GS-187	90%	CHEM1	DG	57	618793	6091375	618791	6091374	1	1	2	56	AP	
18-Aug-2024	09:15	102	MV24EXP-ENV-GS-187	NS	NS	DG	57	618792	6091375	618791	6091374	1	1	1	62	AP	One bucket didn't trigger
18-Aug-2024	09:20	103	MV24EXP-ENV-GS-187	80%	CHEM2	DG	57	618792	6091375	618791	6091374	1	0	1	63	AP	
18-Aug-2024	11:15	104	MV24EXP-ENV-GS-210	70%	MFA	DG	55	618239	6089451	618237	6089452	2	-2	2	134	RA	
18-Aug-2024	11:24	105	MV24EXP-ENV-GS-210	80%	MFB	DG	55	618238	6089452	618237	6089452	1	0	1	88	RA	
18-Aug-2024	11:31	106	MV24EXP-ENV-GS-210	80%	PSA	DG	55	618238	6089452	618237	6089452	0	-1	1	147	RA	
18-Aug-2024	13:43	107	MV24EXP-ENV-GS-211	75%	MFA	DG	54	617855	6087484	617854	6087485	2	-1	2	116	RA	
18-Aug-2024	13:52	108	MV24EXP-ENV-GS-211	50%	MFB	DG	54	617854	6087484	617854	6087485	0	-1	1	183	RA	
18-Aug-2024	14:02	109	MV24EXP-ENV-GS-211	70%	CHEM1	DG	54	617854	6087483	617854	6087485	0	-2	2	183	RA	
18-Aug-2024	14:17	110	MV24EXP-ENV-GS-211	80%	CHEM2	DG	54	617854	6087484	617854	6087485	0	-1	1	185	RA	
18-Aug-2024	16:25	111	MV24EXP-ENV-GS-212	80%	MFA	DG	51	617619	6085642	617621	6085643	-1	-1	2	228	FT	
18-Aug-2024	16:36	112	MV24EXP-ENV-GS-212	75%	MFB	DG	51	617620	6085643	617621	6085643	0	0	0	238	FT	
18-Aug-2024	16:46	113	MV24EXP-ENV-GS-212	70%	PSA	DG	51	617621	6085643	617621	6085643	0	0	0	181	RA	
18-Aug-2024	18:35	114	MV24EXP-ENV-GS-213	80%	MFA	DG	47	616788	6083649	616788	6083649	0	-1	1	171	RA	
18-Aug-2024	18:42	115	MV24EXP-ENV-GS-213	90%	MFB	DG	47	616787	6083648	616788	6083649	-1	-1	1	223	RA	
18-Aug-2024	18:50	116	MV24EXP-ENV-GS-213	80%	CHEM1	DG	47	616788	6083649	616788	6083649	-1	0	1	233	RA	
18-Aug-2024	19:02	117	MV24EXP-ENV-GS-213	80%	CHEM2	DG	47	616787	6083649	616788	6083649	-1	-1	1	237	RA	
18-Aug-2024	21:12	118	MV24EXP-ENV-GS-214	30%	NS	DG	44	616245	6081706	616242	6081710	3	-4	5	148	RA	Low retention
18-Aug-2024	21:21	119	MV24EXP-ENV-GS-214	NS	NS	DG	44	616244	6081707	616242	6081710	2	-4	4	150	RA	Grab did not trigger
18-Aug-2024	21:27	120	MV24EXP-ENV-GS-214	30%	NS	DG	44	616244	6081706	616242	6081710	2	-4	4	154	RA	Low retention
18-Aug-2024	21:43	121	MV24EXP-ENV-GS-214	80%	MFA	DG	44	616247	6081711	616242	6081710	5	1	5	79	RA	
18-Aug-2024	21:51	122	MV24EXP-ENV-GS-214	50%	MFB	DG	44	616247	6081711	616242	6081710	5	1	5	78	RA	
18-Aug-2024	21:59	123	MV24EXP-ENV-GS-214	50%	PSA	DG	44	616247	6081711	616242	6081710	5	1	5	79	RA	
18-Aug-2024	23:38	124	MV24EXP-ENV-GS-215	90%	MFA	DG	44	615716	6079829	615717	6079828	0	1	1	346	AP	
18-Aug-2024	23:45	125	MV24EXP-ENV-GS-215	90%	MFB	DG	44	615717	6079829	615717	6079828	0	1	1	1	AP	
18-Aug-2024	23:51	126	MV24EXP-ENV-GS-215	90%	CHEM1	DG	44	615716	6079829	615717	6079828	0	1	1	352	AP	
18-Aug-2024	23:59	127	MV24EXP-ENV-GS-215	90%	CHEM2	DG	45	615717	6079829	615717	6079828	0	1	1	13	AP	
19-Aug-2024	03:23	128	MV24EXP-ENV-GS-197	20%	NS	DG	34	614312	6076047	614311	6076047	1	0	1	98	AP	Low retention
19-Aug-2024	03:28	129	MV24EXP-ENV-GS-197	NS	NS	DG	34	614312	6076047	614311	6076047	1	0	1	82	AP	Grab did not trigger
19-Aug-2024	03:31	130	MV24EXP-ENV-GS-197	NS	NS	DG	34	614313	6076047	614311	6076047	2	0	2	82	AP	Stones in jaw
19-Aug-2024	03:35	131	MV24EXP-ENV-GS-197	NS	NS	DG	34	614311	6076047	614311	6076047	0	0	1	307	AP	Empty grab
19-Aug-2024	03:40	132	MV24EXP-ENV-GS-197	NS	NS	DG	34	614307	6076051	614311	6076047	-4	4	6	311	AP	Moving 5m NW - Stone in jaw

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*					
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG					
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM Zone 30N (3°W)		Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	03:44	133	MV24EXP-ENV-GS-197	NS	NS	DG	34	614308	6076052	614311	6076047	-4	5	6	322	AP	One bucket didn't trigger
19-Aug-2024	03:47	134	MV24EXP-ENV-GS-197	30%	NS	DG	34	614308	6076051	614311	6076047	-4	4	6	320	AP	Stones in jaw - abandoning station
19-Aug-2024	05:07	135	MV24EXP-ENV-GS-221	50%	MFA	DG	32	613484	6076176	613485	6076175	0	1	1	332	AP	
19-Aug-2024	05:13	136	MV24EXP-ENV-GS-221	40%	MFB	DG	32	613484	6076175	613485	6076175	-1	1	1	315	AP	
19-Aug-2024	05:19	137	MV24EXP-ENV-GS-221	40%	CHEM1	DG	32	613484	6076176	613485	6076175	-1	1	1	333	AP	
19-Aug-2024	05:28	138	MV24EXP-ENV-GS-221	80%	CHEM2	DG	32	613483	6076175	613485	6076175	-1	0	1	289	AP	
19-Aug-2024	06:58	139	MV24EXP-ENV-GS-198	NS	NS	DG	31	613624	6078178	613616	6078185	8	-7	11	129	AP	Moved away from target based on camera transects FIX1684 - One bucket did not trigger
19-Aug-2024	07:02	140	MV24EXP-ENV-GS-198	NS	NS	DG	31	613623	6078179	613616	6078185	8	-6	10	129	AP	One bucket didn't trigger
19-Aug-2024	07:08	141	MV24EXP-ENV-GS-198	NS	NS	DG	31	613621	6078180	613616	6078185	5	-5	7	134	AP	Moved away from target based on camera transects FIX1683 - Stone in jaw
19-Aug-2024	07:15	142	MV24EXP-ENV-GS-198	NS	NS	DG	31	613619	6078181	613616	6078185	3	-4	6	142	AP	Moved away from target based on camera transects FIX1682 - grab didn't trigger
19-Aug-2024	07:17	143	MV24EXP-ENV-GS-198	NS	NS	DG	31	613617	6078180	613616	6078185	2	-5	6	163	AP	Stone in jaw
19-Aug-2024	08:48	144	MV24EXP-ENV-GS-222	NS	NS	DG	35	614285	6078327	614286	6078326	-1	1	2	311	AP	No sample due to overfilled grab
19-Aug-2024	08:55	145	MV24EXP-ENV-GS-222	90%	MFA	DG	35	614284	6078328	614286	6078326	-2	2	3	307	AP	
19-Aug-2024	09:01	146	MV24EXP-ENV-GS-222	90%	MFB	DG	35	614286	6078328	614286	6078326	-1	2	2	340	AP	
19-Aug-2024	09:07	147	MV24EXP-ENV-GS-222	80%	CHEM1	DG	35	614286	6078329	614286	6078326	-1	3	3	348	AP	
19-Aug-2024	09:20	148	MV24EXP-ENV-GS-222	90%	CHEM2	DG	35	614286	6078329	614286	6078326	0	3	3	353	AP	
19-Aug-2024	10:54	149	MV24EXP-ENV-GS-216	60%	MFA	DG	41	614784	6079815	614785	6079813	-1	1	2	327	AP	
19-Aug-2024	11:04	150	MV24EXP-ENV-GS-216	90%	NS	DG	41	614784	6079815	614785	6079813	-1	1	1	339	RA	Hagfish in grab
19-Aug-2024	11:18	151	MV24EXP-ENV-GS-216	90%	MFB	DG	41	614784	6079815	614785	6079813	0	1	2	344	RA	
19-Aug-2024	11:27	152	MV24EXP-ENV-GS-216	85%	PSA	DG	42	614784	6079815	614785	6079813	-1	1	2	334	RA	
19-Aug-2024	13:37	153	MV24EXP-ENV-GS-220	40%	MFA	DG	37	612858	6081335	612857	6081334	1	0	1	67	RA	
19-Aug-2024	13:47	154	MV24EXP-ENV-GS-220	45%	MFB	DG	37	612859	6081335	612857	6081334	1	0	1	76	RA	
19-Aug-2024	13:58	155	MV24EXP-ENV-GS-220	60%	CHEM1	DG	37	612856	6081333	612857	6081334	-2	-1	2	238	RA	
19-Aug-2024	14:11	156	MV24EXP-ENV-GS-220	40%	CHEM2	DG	37	612856	6081334	612857	6081334	-1	-1	2	249	RA	
19-Aug-2024	16:23	157	MV24EXP-ENV-GS-183	10%	NS	DG	34	611605	6083006	611593	6082978	12	28	30	24	FT	Retention below 10%
19-Aug-2024	16:31	158	MV24EXP-ENV-GS-183	10%	NS	DG	34	611606	6083006	611593	6082978	13	28	31	25	FT	Low retention
19-Aug-2024	16:36	159	MV24EXP-ENV-GS-183	10%	NS	DG	34	611606	6083007	611593	6082978	14	30	33	25	FT	Low retention
19-Aug-2024	18:16	160	MV24EXP-ENV-GS-206	100%	NS	DG	42	612926	6084402	612927	6084402	-1	1	1	322	RA	Overfilled
19-Aug-2024	18:25	161	MV24EXP-ENV-GS-206	95%	MFA	DG	42	612927	6084401	612927	6084402	0	0	0	192	RA	
19-Aug-2024	18:36	162	MV24EXP-ENV-GS-206	90%	MFB	DG	42	612927	6084401	612927	6084402	0	-1	1	187	RA	
19-Aug-2024	18:44	163	MV24EXP-ENV-GS-206	80%	CHEM1	DG	42	612925	6084401	612927	6084402	-1	0	1	257	RA	
19-Aug-2024	18:57	164	MV24EXP-ENV-GS-206	85%	CHEM2	DG	41	612926	6084400	612927	6084402	-1	-2	2	208	RA	
19-Aug-2024	20:45	165	MV24EXP-ENV-GS-207	90%	MFA	DG	45	613981	6086159	613980	6086158	0	1	1	17	RA	
19-Aug-2024	20:53	166	MV24EXP-ENV-GS-207	90%	MFB	DG	45	613981	6086160	613980	6086158	0	2	2	13	RA	
19-Aug-2024	21:02	167	MV24EXP-ENV-GS-207	90%	PSA	DG	45	613982	6086160	613980	6086158	2	1	2	53	RA	
19-Aug-2024	23:07	168	MV24EXP-ENV-GS-217	80%	MFA	DG	48	615719	6086213	615718	6086211	1	1	2	46	AP	
19-Aug-2024	23:18	169	MV24EXP-ENV-GS-217	80%	MFB	DG	48	615721	6086213	615718	6086211	2	1	3	57	AP	
19-Aug-2024	23:25	170	MV24EXP-ENV-GS-217	80%	CHEM1	DG	48	615721	6086212	615718	6086211	2	1	2	68	AP	
19-Aug-2024	23:33	171	MV24EXP-ENV-GS-217	80%	CHEM2	DG	49	615720	6086213	615718	6086211	1	2	2	38	AP	
20-Aug-2024	01:39	172	MV24EXP-ENV-GS-208	80%	MFA	DG	51	615011	6087875	615011	6087874	0	1	1	17	AP	
20-Aug-2024	01:46	173	MV24EXP-ENV-GS-208	80%	MFB	DG	52	615010	6087874	615011	6087874	0	-1	1	218	AP	
20-Aug-2024	01:54	174	MV24EXP-ENV-GS-208	80%	CHEM1	DG	52	615012	6087874	615011	6087874	1	-1	1	127	AP	
20-Aug-2024	02:02	175	MV24EXP-ENV-GS-208	90%	CHEM2	DG	52	615012	6087874	615011	6087874	2	0	2	98	AP	
20-Aug-2024	03:54	176	MV24EXP-ENV-GS-209	70%	MFA	DG	54	615664	6088945	615665	6088945	-1	0	1	265	AP	
20-Aug-2024	03:59	177	MV24EXP-ENV-GS-209	70%	MFB	DG	54	615665	6088944	615665	6088945	0	-1	1	196	AP	
20-Aug-2024	04:06	178	MV24EXP-ENV-GS-209	70%	PSA	DG	54	615665	6088944	615665	6088945	0	-1	1	170	AP	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
1	MV24EXP-ENV-GS-173	11-Aug-2024	08:02	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/2	Echinodermata (Spatangoidea)	AS, MP, AA	
2	MV24EXP-ENV-GS-173	11-Aug-2024	08:12	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	
3	MV24EXP-ENV-GS-173	11-Aug-2024	08:22	60%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	Redox: 1cm (8.19pH, 12.3˚C, 236mV), 10cm (7.90pH, 11.7˚C, 122mV)
4	MV24EXP-ENV-GS-173	11-Aug-2024	08:40	60%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	
5	MV24EXP-ENV-GS-174	11-Aug-2024	11:22	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)	IO, PP, MP	
6	MV24EXP-ENV-GS-174	11-Aug-2024	11:38	30%	NS	NA	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	NA	IO, PP, MP	Low retention
7	MV24EXP-ENV-GS-174	11-Aug-2024	11:51	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	IO, PP, MP	
8	MV24EXP-ENV-GS-174	11-Aug-2024	12:05	75%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	No visible fauna	IO, PP, MP	Redox: 1cm (8.01pH, 12.3˚C, 195mV), 10cm (7.99pH, 13.4˚C, 204mV)
9	MV24EXP-ENV-GS-175	11-Aug-2024	14:56	50%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)	IO, PP, MP	
10	MV24EXP-ENV-GS-175	11-Aug-2024	15:08	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	IO, PP, MP	
11	MV24EXP-ENV-GS-175	11-Aug-2024	15:22	60%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	No visible fauna	IO, PP, MP	Redox: 1cm (8.65pH, 13.0˚C, 378mV), 10cm (8.36pH, 12.5˚C, 205mV)
12	MV24EXP-ENV-GS-175	11-Aug-2024	15:46	50%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	No visible fauna	IO, PP, MP	
13	MV24EXP-ENV-GS-176	12-Aug-2024	05:28	10%	NS	NA	NA	NA	AS, MP, AA	Low retention, grab stuck on the lift wire Marginal weather conditions
14	MV24EXP-ENV-GS-176	12-Aug-2024	05:35	0%	NS	NA	NA	NA	AS, MP, AA	Grab did not sample due to marginal weather conditions, e.g. either pretriggered in water or did not scoop
15	MV24EXP-ENV-GS-176	12-Aug-2024	05:45	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	AS, MP, AA	
16	MV24EXP-ENV-GS-176	12-Aug-2024	05:52	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, MP, AA	
17	MV24EXP-ENV-GS-176	12-Aug-2024	06:00	50%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.14pH, 12.3˚C, 131mV), 10cm (7.84pH, 11.0˚C, -45mV)
18	MV24EXP-ENV-GS-177	13-Aug-2024	02:21	50%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, AA	
19	MV24EXP-ENV-GS-177	13-Aug-2024	02:32	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, AA	
20	MV24EXP-ENV-GS-177	13-Aug-2024	02:41	50%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (8.16pH, 12.0˚C, 3,07mV), 10cm (8.06pH, 11.2˚C, 114mV)
21	MV24EXP-ENV-GS-177	13-Aug-2024	02:54	60%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, AA	
22	MV24EXP-ENV-GS-178	13-Aug-2024	05:15	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Bivalvia)	AS, MP, AA	
23	MV24EXP-ENV-GS-178	13-Aug-2024	05:25	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	AS, MP, AA	
24	MV24EXP-ENV-GS-178	13-Aug-2024	05:33	60%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 4/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.12pH, 11.9˚C, 304mV), 10cm (8.01pH, 11.5˚C, 213mV)
25	MV24EXP-ENV-GS-179	13-Aug-2024	07:50	20%	NS	NA	Fine to medium sand with shell fragments Munsel: 5YR 4/1	NA	AS, MP, AA	Low retention due to shell in the jaws. Sample washed out.

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40				Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
26	MV24EXP-ENV-GS-179	13-Aug-2024	07:58	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, MP, AA	
27	MV24EXP-ENV-GS-179	13-Aug-2024	08:06	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta)	AS, MP, AA	
28	MV24EXP-ENV-GS-179	13-Aug-2024	08:15	70%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/1	No visible fauna	AS, MP, AA	
29	MV24EXP-ENV-GS-179	13-Aug-2024	08:27	60%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.20pH, 12.7˚C, 284mV), 10cm (7.80pH, 11.6˚C, 202mV)
30	MV24EXP-ENV-GS-180	13-Aug-2024	10:39	40%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, MP, AA	
31	MV24EXP-ENV-GS-180	13-Aug-2024	10:49	45%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)	AS, MP, AA, IO, PP	
32	MV24EXP-ENV-GS-180	13-Aug-2024	10:57	40%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, MP, AA, IO, PP	Redox: 1cm (8.08pH, 13.6˚C, 328mV), 10cm (7.70pH, 12.5˚C, 307mV)
33	MV24EXP-ENV-GS-234	14-Aug-2024	07:32	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Echinodermata (Echinoidea), Mollusca (Scaphopoda)	AS, MP, AA	
34	MV24EXP-ENV-GS-234	14-Aug-2024	07:42	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Mollusca (Bivalvia, Scaphopoda)	AS, MP, AA	
35	MV24EXP-ENV-GS-234	14-Aug-2024	07:51	60%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 4/3	No visible fauna	AS, MP, AA	Redox: 1cm (8.06pH, 12.3˚C, 245mV), 10cm (7.80pH, 11.4˚C, 64mV)
36	MV24EXP-ENV-GS-235	14-Aug-2024	09:45	60%	(MFA / eDNA)	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, MP, AA	Superseded by MV24EXP-ENV-GS-235A
37	MV24EXP-ENV-GS-235	14-Aug-2024	09:53	70%	(MFB / eDNA (spare))	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, MP, AA	Superseded by MV24EXP-ENV-GS-235A
38	MV24EXP-ENV-GS-235	14-Aug-2024	10:02	60%	(PSA)	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 4/3	No visible fauna	AS, MP, AA	Redox: 1cm (8.05pH, 12.1˚C, 255mV), 10cm (7.92pH, 11.5˚C, 35mV). Superseded by MV24EXP-ENV-GS-235A
39	MV24EXP-ENV-GS-235A	14-Aug-2024	12:31	70%	MFA / eDNA	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 3/3	Annelida (Polychaeta), Arthropoda (Corystidae),	IO, PP, MP	
40	MV24EXP-ENV-GS-235A	14-Aug-2024	12:43	45%	MFB / eDNA (spare)	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 3/3	Annelida (Polychaeta), Arthropoda (Crustacea), Echinodermata (Echinoidea), Mollusca (Bivalvia)	IO, PP, MP	
41	MV24EXP-ENV-GS-235A	14-Aug-2024	12:55	45%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 3/3	No visible fauna	IO, PP, MP	Redox: 1cm (8.11pH, 13.4˚C, 278mV), 10cm (7.75pH, 12˚C, 90mV)
42	MV24EXP-ENV-GS-233	14-Aug-2024	17:57	40%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta), Arthropoda (Crustacea), Cnidaria (Pennatuloidea)	IO, PP	
43	MV24EXP-ENV-GS-233	14-Aug-2024	18:08	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophuiroidea), Mollusca (Pharidae)	IO, PP	
44	MV24EXP-ENV-GS-233	14-Aug-2024	18:19	50%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/4	No visible fauna	IO, PP	Redox: 1cm (7.96pH, 12.2˚C, 259mV), 10cm (7.60pH, 12.1˚C, 260mV)
45	MV24EXP-ENV-GS-233	14-Aug-2024	18:34	45%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/4	No visible fauna	IO, PP	
46	MV24EXP-ENV-GS-232	14-Aug-2024	20:32	60%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta)	IO, PP	
47	MV24EXP-ENV-GS-232	14-Aug-2024	20:41	15%	NS	NA	Fine to medium sand with shell fragments Munsel: 5YR 3/4	NA	IO, PP	Low retention
48	MV24EXP-ENV-GS-232	14-Aug-2024	21:05	60%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta)	IO, PP	
49	MV24EXP-ENV-GS-232	14-Aug-2024	21:14	65%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 3/4	No visible fauna	IO, PP	Redox: 1cm (7.90pH, 11.3˚C, 263mV), 10cm (7.70pH, 10.5˚C, 230mV)
50	MV24EXP-ENV-GS-231	14-Aug-2024	23:46	50%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
51	MV24EXP-ENV-GS-231	14-Aug-2024	23:55	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	AS, AA	
52	MV24EXP-ENV-GS-231	15-Aug-2024	00:03	50%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/1	No visible fauna	AS, AA	
53	MV24EXP-ENV-GS-231	15-Aug-2024	00:12	50%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (8.04pH, 11.1˚C, 254mV), 10cm (7.81pH, 11.1˚C, 32mV)
54	MV24EXP-ENV-GS-230	15-Aug-2024	01:49	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	AS, AA	
55	MV24EXP-ENV-GS-230	15-Aug-2024	01:56	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	AS, AA	
56	MV24EXP-ENV-GS-230	15-Aug-2024	02:02	60%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.71pH, 10.9˚C, 287mV), 10cm (7.71pH, 11.1˚C, 15mV)
57	MV24EXP-ENV-GS-229	15-Aug-2024	03:49	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty fine sand Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, AA	
58	MV24EXP-ENV-GS-229	15-Aug-2024	03:57	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty fine sand Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, AA	
59	MV24EXP-ENV-GS-229	15-Aug-2024	04:03	60%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty fine sand Munsel: 5YR 3/1	No visible fauna	AS, AA	
60	MV24EXP-ENV-GS-229	15-Aug-2024	04:12	60%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.68pH, 11.0˚C, 300mV), 10cm (7.78pH, 10.3˚C, 121mV)
61	MV24EXP-ENV-GS-228	15-Aug-2024	05:38	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)	AS, MP, AA	
62	MV24EXP-ENV-GS-228	15-Aug-2024	05:46	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Echinoidea)	AS, MP, AA	
63	MV24EXP-ENV-GS-228	15-Aug-2024	05:53	80%	PSA	2 x Ziplock Bags	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.00pH, 11.6˚C, 277mV), 10cm (7.86pH, 10.6˚C, 5mV)
64	MV24EXP-ENV-GS-227	15-Aug-2024	23:55	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, AA	
65	MV24EXP-ENV-GS-227	16-Aug-2024	00:07	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Arthropoda (Brachyura), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	AS, AA	
66	MV24EXP-ENV-GS-227	16-Aug-2024	00:15	70%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	
67	MV24EXP-ENV-GS-227	16-Aug-2024	00:25	50%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (7.97pH, 10.9˚C, 283mV), 10cm (7.92pH, 11.0˚C, -43mV)
68	MV24EXP-ENV-GS-226	16-Aug-2024	02:02	NA	NS	NA	NA	Chordata (Myxinidae)	AS, AA	Hagfish in the grab
69	MV24EXP-ENV-GS-226	16-Aug-2024	02:10	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, AA	
70	MV24EXP-ENV-GS-226	16-Aug-2024	02:17	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	AS, AA	
71	MV24EXP-ENV-GS-226	16-Aug-2024	02:25	60%	PSA	2 x Ziplock Bags	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (7.98pH, 10.7˚C, 307mV), 10cm (7.94pH, 11.1˚C, 29mV)
72	MV24EXP-ENV-GS-171	16-Aug-2024	04:12	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, AA	
73	MV24EXP-ENV-GS-171	16-Aug-2024	04:21	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, AA	
74	MV24EXP-ENV-GS-171	16-Aug-2024	04:28	70%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	
75	MV24EXP-ENV-GS-171	16-Aug-2024	04:38	60%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (7.77pH, 10.7˚C, 295mV), 10cm (7.79pH, 10.4˚C, 246mV)
76	MV24EXP-ENV-GS-225	16-Aug-2024	06:20	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta)	AS, MP, AA	
77	MV24EXP-ENV-GS-225	16-Aug-2024	06:30	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)	AS, MP, AA	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
78	MV24EXP-ENV-GS-225	16-Aug-2024	06:39	80%	PSA	2 x Ziplock Bags	Silty clayey sand Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	Redox: 1cm (7.86pH, 10.7˚C, 307mV), 10cm (8.00pH, 10.3˚C, -26mV)
79	MV24EXP-ENV-GS-172	16-Aug-2024	08:31	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, MP, AA	
80	MV24EXP-ENV-GS-172	16-Aug-2024	08:41	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, MP, AA	
81	MV24EXP-ENV-GS-172	16-Aug-2024	08:50	50%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey sand Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	
82	MV24EXP-ENV-GS-172	16-Aug-2024	09:03	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey sand Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	Redox: 1cm (7.73pH, 11.5˚C, 53mV), 10cm (7.86pH, 11.6˚C, 105mV)
83	MV24EXP-ENV-GS-185	17-Aug-2024	23:45	100%	NS	NA	Soft silty sandy clay/mud Munsel: 5YR 3/1	NA	AS, AA	Grab overfilled due to very soft sediment
84	MV24EXP-ENV-GS-185	17-Aug-2024	23:52	100%	NS	NA	Soft silty sandy clay/mud Munsel: 5YR 3/1	NA	AS, AA	Half of the weights were removed as the grab overfilled.
85	MV24EXP-ENV-GS-185	17-Aug-2024	23:59	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, AA	All weights were removed.
86	MV24EXP-ENV-GS-185	18-Aug-2024	00:09	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, AA	
87	MV24EXP-ENV-GS-185	18-Aug-2024	00:25	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	
88	MV24EXP-ENV-GS-185	18-Aug-2024	00:36	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.68pH, 10.0˚C, -86mV), 10cm (7.64pH, 10.5˚C, -75mV)
89	MV24EXP-ENV-GS-224	18-Aug-2024	02:56	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta)	AS, MP, AA	
90	MV24EXP-ENV-GS-224	18-Aug-2024	03:03	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, MP, AA	
91	MV24EXP-ENV-GS-224	18-Aug-2024	03:09	90%	PSA	2 x Ziplock Bags	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	Redox: 1cm (7.67pH, 11.1˚C, -89mV), 10cm (7.73pH, 11.2˚C, -130mV)
92	MV24EXP-ENV-GS-186	18-Aug-2024	04:51	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	
93	MV24EXP-ENV-GS-186	18-Aug-2024	05:00	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	
94	MV24EXP-ENV-GS-186	18-Aug-2024	05:07	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	
95	MV24EXP-ENV-GS-186	18-Aug-2024	05:16	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.68pH, 11.3˚C, -53mV), 10cm (7.79pH, 11.8C, -116mV)
96	MV24EXP-ENV-GS-223	18-Aug-2024	06:41	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Cnidaria (Alcyoniidae), Mollusca (Gastropoda)	AS, MP, AA	
97	MV24EXP-ENV-GS-223	18-Aug-2024	06:49	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, MP, AA	
98	MV24EXP-ENV-GS-223	18-Aug-2024	06:57	90%	PSA	2 x Ziplock Bags	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.66pH, 11.9˚C,292mV), 10cm (7.57pH, 11.2˚C, -93mV)
99	MV24EXP-ENV-GS-187	18-Aug-2024	08:53	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Gastropoda)	AS, MP, AA	
100	MV24EXP-ENV-GS-187	18-Aug-2024	09:00	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, MP, AA	
101	MV24EXP-ENV-GS-187	18-Aug-2024	09:07	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	
102	MV24EXP-ENV-GS-187	18-Aug-2024	09:15	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
103	MV24EXP-ENV-GS-187	18-Aug-2024	09:20	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.68pH, 11.6˚C, 277mV), 10cm (7.60pH, 11.4˚C, -47mV)
104	MV24EXP-ENV-GS-210	18-Aug-2024	11:15	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft clay sand with pebbles Munsel: 5YR 2.5/1	Annelida (Polychaeta). Mollusca (Bivalvia, Gastropoda)	IO, PP, MP	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40				Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
105	MV24EXP-ENV-GS-210	18-Aug-2024	11:24	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft clay sand with pebbles Munsel: 5YR 2.5/1	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia, Pharidae)	IO, PP, MP	
106	MV24EXP-ENV-GS-210	18-Aug-2024	11:31	80%	PSA	2 x Ziplock Bags	Soft clay sand with pebbles Munsel: 5YR 2.5/1	No visible fauna	IO, PP, MP	Redox: 1cm (7.65pH, 12˚C, 113mV), 10cm (7.65pH, 11.9˚C, -68mV)
107	MV24EXP-ENV-GS-211	18-Aug-2024	13:43	75%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	Annelida (Polychaeta), Mollusca (Bivalvia)	IO, PP, MP	
108	MV24EXP-ENV-GS-211	18-Aug-2024	13:52	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	Annelida, Arthropoda (Paguroidea)	IO, PP, MP	
109	MV24EXP-ENV-GS-211	18-Aug-2024	14:02	70%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	No visible fauna	IO, PP, MP	
110	MV24EXP-ENV-GS-211	18-Aug-2024	14:17	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	No visible fauna	IO, PP, MP	Redox: 1cm (8.22pH, 12.7˚C, 313mV), 10cm (7.71pH, 12.4C, -124mV)
111	MV24EXP-ENV-GS-212	18-Aug-2024	16:25	80%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles, gravels and shell fragments Munsel: 5YR 2.5/2	Echinodermata (Ophiuroidea)	IO, PP, MP	
112	MV24EXP-ENV-GS-212	18-Aug-2024	16:36	75%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles, gravels and shell fragments Munsel: 5YR 2.5/2	Annelida (Polychaeta), Arthropoda (Malacostraca), Mollusca (Bivalvia, Gastropoda)	IO, PP, MP	
113	MV24EXP-ENV-GS-212	18-Aug-2024	16:46	70%	PSA	2 x Ziplock Bags	Soft clay sand with pebbles, gravels and shell fragments Munsel: 5YR 2.5/2	No visible fauna	IO, PP, MP	Redox: 1cm (7.57pH, 12.7˚C, 70mV), 10cm (7.64pH, 12.4˚C, 24mV)
114	MV24EXP-ENV-GS-213	18-Aug-2024	18:35	80%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Annelida (Polychaeta), Arthropoda (Malacostraca, Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	IO. PP	
115	MV24EXP-ENV-GS-213	18-Aug-2024	18:42	90%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Annelida (Polychaeta), Mollusca (Bivalvia)	IO. PP	
116	MV24EXP-ENV-GS-213	18-Aug-2024	18:50	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	No visible fauna	IO. PP	
117	MV24EXP-ENV-GS-213	18-Aug-2024	19:02	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	No visible fauna	IO. PP	Redox: 1cm (7.71pH, 12.4˚C, -113mV), 10cm (7.67pH, 12.5˚C, -169mV)
118	MV24EXP-ENV-GS-214	18-Aug-2024	21:12	30%	NS	NA	NA	NA	IO. PP	Stone in jaws
119	MV24EXP-ENV-GS-214	18-Aug-2024	21:21	NS	NS	NA	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	NA	IO. PP	Grab did not trigger
120	MV24EXP-ENV-GS-214	18-Aug-2024	21:27	30%	NS	NA	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	NA	IO. PP	Low retention
121	MV24EXP-ENV-GS-214	18-Aug-2024	21:43	80%	MFA / eDNA	3 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)	IO. PP	
122	MV24EXP-ENV-GS-214	18-Aug-2024	21:51	50%	MFB / eDNA (spare)	3 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Mollusca (Bivalvia)	IO. PP	
123	MV24EXP-ENV-GS-214	18-Aug-2024	21:59	50%	PSA	2 x Ziplock Bags	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	No visible fauna	IO. PP	Redox: 1cm (7.76pH, 13.1˚C, 53mV), 10cm (7.78pH, 12.5˚C, -42mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
124	MV24EXP-ENV-GS-215	18-Aug-2024	23:38	90%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, AA	
125	MV24EXP-ENV-GS-215	18-Aug-2024	23:45	90%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta)	AS, AA	
126	MV24EXP-ENV-GS-215	18-Aug-2024	23:51	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	
127	MV24EXP-ENV-GS-215	18-Aug-2024	23:59	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.74pH,12.4˚C,-137mV), 10cm (7.79pH, 12.1C, -189mV)
128	MV24EXP-ENV-GS-197	19-Aug-2024	03:23	20%	NS	NA	NA	NA	AS, AA	Low retention
129	MV24EXP-ENV-GS-197	19-Aug-2024	03:28	NA	NS	NA	NA	NA	AS, AA	Grab did not trigger
130	MV24EXP-ENV-GS-197	19-Aug-2024	03:31	NA	NS	NA	NA	NA	AS, AA	Stone in jaws
131	MV24EXP-ENV-GS-197	19-Aug-2024	03:35	NA	NS	NA	NA	NA	AS, AA	Empty grab
132	MV24EXP-ENV-GS-197	19-Aug-2024	03:40	NA	NS	NA	NA	NA	AS, AA	Stone in jaws Vessel moved @5m
133	MV24EXP-ENV-GS-197	19-Aug-2024	03:44	NA	NS	NA	NA	NA	AS, AA	Grab did not trigger
134	MV24EXP-ENV-GS-197	19-Aug-2024	03:47	30%	NS	NA	Gravelly coarse sand with cobbles and shell fragments	NA	AS, AA	Shells in jaws Low retention
135	MV24EXP-ENV-GS-221	19-Aug-2024	05:07	50%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Silty compact fine to medium sand. Gravel under the surface. Munsel: 5YR 2.5/1	Annelida (Polychaeta)	AS, MP, AA	
136	MV24EXP-ENV-GS-221	19-Aug-2024	05:13	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty compact fine to medium sand. Gravel under the surface. Munsel: 5YR 2.5/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, MP, AA	
137	MV24EXP-ENV-GS-221	19-Aug-2024	05:19	40%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty compact fine to medium sand. Gravel under the surface. Munsel: 5YR 2.5/1	No visible fauna	AS, MP, AA	
138	MV24EXP-ENV-GS-221	19-Aug-2024	05:28	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty compact fine to medium sand. Gravel under the surface. Dark underlayer. Munsel: 5YR 2.5/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.75pH,12.9˚C,-79mV), 10cm (7.86pH, 12.8C, -145mV)
139	MV24EXP-ENV-GS-198	19-Aug-2024	06:58	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
140	MV24EXP-ENV-GS-198	19-Aug-2024	07:02	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
141	MV24EXP-ENV-GS-198	19-Aug-2024	07:08	NA	NS	NA	NA	NA	AS, MP, AA	Stone in jaws
142	MV24EXP-ENV-GS-198	19-Aug-2024	07:15	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
143	MV24EXP-ENV-GS-198	19-Aug-2024	07:17	NA	NS	NA	NA	NA	AS, MP, AA	Stone in jaws
144	MV24EXP-ENV-GS-222	19-Aug-2024	08:48	NA	NS	NA	NA	NA	AS, MP, AA	Grab overfilled due to very soft sediment. The weights were removed.
145	MV24EXP-ENV-GS-222	19-Aug-2024	08:55	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	Annelida (Polychaeta)	AS, MP, AA	
146	MV24EXP-ENV-GS-222	19-Aug-2024	09:01	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	
147	MV24EXP-ENV-GS-222	19-Aug-2024	09:07	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	No visible fauna	AS, MP, AA	
148	MV24EXP-ENV-GS-222	19-Aug-2024	09:20	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.89pH,13.3˚C,-157mV), 10cm (7.83pH, 12.0C, -180mV)
149	MV24EXP-ENV-GS-216	19-Aug-2024	10:54	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with shell fragments and pebbles under the surface Munsel: 10 YR 3/2	Annelida (Polychaeta), Mollusca (Gastropoda, Pharidae)	IO, PP, MP	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
150	MV24EXP-ENV-GS-216	19-Aug-2024	11:04	90%	NS	NA	Soft silty sandy clay with shell fragments, gravels and pebbles under the surface Munsel: 10 YR 3/2	Chordata (Myxinidae)	IO, PP, MP	Hagfish in the grab
151	MV24EXP-ENV-GS-216	19-Aug-2024	11:18	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with shell fragments, gravels and pebbles under the surface Munsel: 10 YR 3/2	Annelida (Polychaeta), Echinodermata (Echinoidea)	IO, PP, MP	
152	MV24EXP-ENV-GS-216	19-Aug-2024	11:27	85%	PSA	2 x Ziplock Bags	Soft silty sandy clay with shell fragments, gravels and pebbles under the surface Munsel: 10 YR 3/2	No visible fauna	IO, PP, MP	Redox: 1cm (7.70pH,12.8˚C,-131mV), 10cm (7.73pH, 12.8˚C, -163mV)
153	MV24EXP-ENV-GS-220	19-Aug-2024	13:37	40%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	Annelida (Polychaeta)	IO, PP, MP	
154	MV24EXP-ENV-GS-220	19-Aug-2024	13:47	45%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	Annelida (Polychaeta)	IO, PP, MP	Missing MFB sieve photo
155	MV24EXP-ENV-GS-220	19-Aug-2024	13:58	60%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	No visible fauna	IO, PP, MP	
156	MV24EXP-ENV-GS-220	19-Aug-2024	14:11	40%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	No visible fauna	IO, PP, MP	Redox: 1cm (7.77pH,13.4˚C,147mV), 10cm (7.77pH, 12.7˚C, -105mV)
157	MV24EXP-ENV-GS-183	19-Aug-2024	16:23	10%	NS	NA	NA	NA	IO, PP, MP	Low retention
158	MV24EXP-ENV-GS-183	19-Aug-2024	16:31	10%	NS	NA	NA	NA	IO, PP, MP	Low retention. Added weights to day grab.
159	MV24EXP-ENV-GS-183	19-Aug-2024	16:36	10%	NS	NA	NA	NA	IO, PP, MP	Low retention
160	MV24EXP-ENV-GS-206	19-Aug-2024	18:16	100%	NS	NA	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	NA	IO, PP	Grab overfilled due to very soft sediment
161	MV24EXP-ENV-GS-206	19-Aug-2024	18:25	95%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	Annelida (Polychaeta)	IO, PP	
162	MV24EXP-ENV-GS-206	19-Aug-2024	18:36	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	Annelida (Polychaeta)	IO, PP	
163	MV24EXP-ENV-GS-206	19-Aug-2024	18:44	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	No visible fauna	IO, PP	
164	MV24EXP-ENV-GS-206	19-Aug-2024	18:57	85%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	No visible fauna	IO, PP	Redox: 1cm (7.70pH,12.7˚C,-152mV), 10cm (7.74pH, 13.1C, -105mV)
165	MV24EXP-ENV-GS-207	19-Aug-2024	20:45	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under tha surface Munsel: 10 YR 2/2	Annelida (Polychaeta)	IO, PP	
166	MV24EXP-ENV-GS-207	19-Aug-2024	20:53	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under tha surface Munsel: 10 YR 2/2	Annelida (Polychaeta), Arthropoda (Brachyura)	IO, PP	
167	MV24EXP-ENV-GS-207	19-Aug-2024	21:02	90%	PSA	2 x Ziplock Bags	Soft silty sandy clay with pebbles under tha surface Munsel: 10 YR 2/2	No visible fauna	IO, PP	Redox: 1cm (7.75pH,12.3˚C,-185mV), 10cm (7.75pH, 12.3C, -165mV)
168	MV24EXP-ENV-GS-217	19-Aug-2024	23:07	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda)	AS, AA	
169	MV24EXP-ENV-GS-217	19-Aug-2024	23:18	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	AS, AA	
170	MV24EXP-ENV-GS-217	19-Aug-2024	23:25	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40				Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
171	MV24EXP-ENV-GS-217	19-Aug-2024	23:33	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	Redox: 1cm (7.67pH,12.5˚C,-178mV), 10cm (7.79pH, 12.3˚C, -153mV)
172	MV24EXP-ENV-GS-208	20-Aug-2024	01:39	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda)	AS, AA	
173	MV24EXP-ENV-GS-208	20-Aug-2024	01:46	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	AS, AA	
174	MV24EXP-ENV-GS-208	20-Aug-2024	01:54	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	
175	MV24EXP-ENV-GS-208	20-Aug-2024	02:02	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	Missing Redox reading
176	MV24EXP-ENV-GS-209	20-Aug-2024	03:54	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine to medium sand Munsel: 5YR 4/1	Annelida (Polychaeta)	AS, AA	
177	MV24EXP-ENV-GS-209	20-Aug-2024	03:59	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine to medium sand Munsel: 5YR 4/1	Annelida (Polychaeta)	AS, AA	
178	MV24EXP-ENV-GS-209	20-Aug-2024	04:06	70%	PSA	2 x Ziplock Bags	Silty clayey fine to medium sand Munsel: 5YR 4/1	No visible fauna	AS, AA	Redox: 1cm (7.80pH,12.4˚C,114mV), 10cm (7.82pH, 12.1C, -157mV)

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	VRP						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
17-Sep-2024	13:44:44	1	BP24MVEXP-ENV-GS-201	40%	MFA	DG	22	610398	6075210	610399	6075205	-2	4	5	340	BH	
17-Sep-2024	14:04:56	2	BP24MVEXP-ENV-GS-201	50%	MFB	DG	22	610397	6075211	610399	6075205	-3	6	6	334	BH	
17-Sep-2024	14:24:55	3	BP24MVEXP-ENV-GS-201	40%	CHEM1	DG	22	610396	6075206	610399	6075205	-3	1	3	284	BH	
17-Sep-2024	14:46:20	4	BP24MVEXP-ENV-GS-201	40%	CHEM2	DG	22	610394	6075205	610399	6075205	-6	-1	6	263	BH	
17-Sep-2024	15:13:57	5	BP24MVEXP-ENV-GS-200	90%	MFA	DG	26	611572	6076287	611574	6076289	-3	-2	3	237	BH	
17-Sep-2024	15:27:22	6	BP24MVEXP-ENV-GS-200	70%	MFB	DG	26	611573	6076290	611574	6076289	-1	1	1	320	BH	
17-Sep-2024	15:48:37	7	BP24MVEXP-ENV-GS-200	70%	CHEM1	DG	26	611555	6076285	611574	6076289	-19	-4	20	259	BH	
17-Sep-2024	16:05:39	8	BP24MVEXP-ENV-GS-200	70%	CHEM2	DG	25	611568	6076291	611574	6076289	-6	2	6	285	BH	
18-Sep-2024	06:45:38	9	BP24MVEXP-ENV-GS-203	40%	MFA	DG	20	609718	6077661	609719	6077661	-1	1	2	290	BH	
18-Sep-2024	06:57:01	10	BP24MVEXP-ENV-GS-203	40%	MFB	DG	20	609718	6077661	609719	6077661	-1	0	1	285	BH	
18-Sep-2024	07:05:42	11	BP24MVEXP-ENV-GS-203	50%	CHEM1	DG	20	609719	6077661	609719	6077661	0	0	0	311	BH	
18-Sep-2024	07:20:25	12	BP24MVEXP-ENV-GS-203	0%	NS	DG	19	609719	6077661	609719	6077661	-1	1	1	317	BH	Wash out
18-Sep-2024	07:25:56	13	BP24MVEXP-ENV-GS-203	30%	NS	DG	19	609719	6077662	609719	6077661	0	1	1	338	BH	Low retention
18-Sep-2024	07:32:51	14	BP24MVEXP-ENV-GS-203	50%	CHEM2	DG	19	609719	6077662	609719	6077661	0	1	2	345	BH	
18-Sep-2024	07:57:47	15	BP24MVEXP-ENV-GS-204	40%	MFA	DG	16	609174	6079716	609176	6079717	-2	-2	3	236	BH	
18-Sep-2024	08:06:48	16	BP24MVEXP-ENV-GS-204	40%	MFB	DG	16	609175	6079717	609176	6079717	-1	-1	1	237	BH	
18-Sep-2024	08:15:22	17	BP24MVEXP-ENV-GS-204	40%	CHEM1	DG	16	609177	6079718	609176	6079717	0	1	1	14	BH	
18-Sep-2024	08:28:00	18	BP24MVEXP-ENV-GS-204	40%	CHEM2	DG	16	609173	6079718	609176	6079717	-3	1	3	285	BH	
18-Sep-2024	08:49:31	19	BP24MVEXP-ENV-GS-218	40%	MFA	DG	21	611027	6080438	611024	6080438	3	0	3	99	BH	
18-Sep-2024	08:58:55	20	BP24MVEXP-ENV-GS-218	70%	MFB	DG	21	611021	6080441	611024	6080438	-4	2	4	303	BH	
18-Sep-2024	09:07:57	21	BP24MVEXP-ENV-GS-218	20%	NS	DG	21	611027	6080439	611024	6080438	3	1	3	74	BH	Stone in jaws
18-Sep-2024	09:16:27	22	BP24MVEXP-ENV-GS-218	50%	CHEM1	DG	21	611024	6080439	611024	6080438	0	0	1	329	BH	
18-Sep-2024	09:29:49	23	BP24MVEXP-ENV-GS-218	50%	CHEM2	DG	21	611023	6080438	611024	6080438	-1	0	1	273	BH	
18-Sep-2024	09:52:57	24	BP24MVEXP-ENV-GS-205	50%	MFA	DG	15	608034	6081176	608039	6081180	-5	-4	6	235	BH	
18-Sep-2024	10:00:03	25	BP24MVEXP-ENV-GS-205	40%	MFB	DG	15	608039	6081179	608039	6081180	1	-1	1	145	BH	
18-Sep-2024	10:08:46	26	BP24MVEXP-ENV-GS-205	0%	NS	DG	15	608035	6081180	608039	6081180	-4	0	4	268	BH	Did not trigger
18-Sep-2024	10:12:58	27	BP24MVEXP-ENV-GS-205	90%	CHEM1	DG	15	608032	6081181	608039	6081180	-6	1	6	277	BH	
18-Sep-2024	10:26:40	28	BP24MVEXP-ENV-GS-205	30%	NS	DG	15	608038	6081181	608039	6081180	0	1	1	344	BH	Low retention
18-Sep-2024	10:32:17	29	BP24MVEXP-ENV-GS-205	0%	NS	DG	15	608039	6081181	608039	6081180	0	1	1	12	BH	Did not trigger
18-Sep-2024	10:36:29	30	BP24MVEXP-ENV-GS-205	50%	CHEM2	DG	15	608037	6081181	608039	6081180	-2	1	2	307	BH	
18-Sep-2024	10:54:22	31	BP24MVEXP-ENV-GS-236	40%	MFA	DG	11	607241	6080757	607242	6080758	-1	0	1	248	BH	
18-Sep-2024	11:01:22	32	BP24MVEXP-ENV-GS-236	40%	MFB	DG	11	607243	6080758	607242	6080758	0	0	0	112	BH	
18-Sep-2024	11:08:45	33	BP24MVEXP-ENV-GS-236	40%	CHEM1	DG	11	607243	6080755	607242	6080758	1	-3	3	166	BH	
18-Sep-2024	11:23:28	34	BP24MVEXP-ENV-GS-236	40%	CHEM2	DG	11	607244	6080757	607242	6080758	1	0	1	110	BH	
18-Sep-2024	12:04:54	35	BP24MVEXP-ENV-GS-237	30%	NS	DG	13	609541	6075347	609540	6075350	1	-3	3	161	BH	Low retention
18-Sep-2024	12:12:16	36	BP24MVEXP-ENV-GS-237	40%	MFA	DG	14	609544	6075348	609540	6075350	4	-2	5	112	BH	
18-Sep-2024	12:19:52	37	BP24MVEXP-ENV-GS-237	20%	NS	DG	14	609545	6075349	609540	6075350	5	-1	6	104	BH	Wash out

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)											FOR-ENV-0539
Job No:	59294			Area:	UKCS Quad 40			Sieve Size:		0.5mm	
Project:	Morven Grid Connection 1 Route Environmental Survey							Equipment:		Day Grab	
Client:	Morven Offshore Wind Limited							Vessel:		*MV Titan Endeavour*	
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description		Operator(s)	Comments
1	MV24EXP-ENV-GS-201	17-Sep-2024	13:44	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)		RH	1cm: 8.54 pH, 14.1°C, ORP 49mV 10cm: 8.43 pH, 14.0°C, ORP 132mV
2	MV24EXP-ENV-GS-201	17-Sep-2024	14:04	50%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
3	MV24EXP-ENV-GS-201	17-Sep-2024	14:24	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
4	MV24EXP-ENV-GS-201	17-Sep-2024	14:46	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
5	MV24EXP-ENV-GS-200	17-Sep-2024	15:13	90%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
6	MV24EXP-ENV-GS-200	17-Sep-2024	15:27	70%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
7	MV24EXP-ENV-GS-200	17-Sep-2024	15:48	70%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.36 pH, 14.3°C, ORP -165mV 10cm: 8.31 pH, 14.0°C, ORP -194mV
8	MV24EXP-ENV-GS-200	17-Sep-2024	16:05	70%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
9	MV24EXP-ENV-GS-203	18-Sep-2024	06:45	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)		RH	
10	MV24EXP-ENV-GS-203	18-Sep-2024	06:57	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
11	MV24EXP-ENV-GS-203	18-Sep-2024	07:05	50%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.34 pH, 13.7°C, ORP -108mV 10cm: 8.37 pH, 13.7°C, ORP -189mV
12	MV24EXP-ENV-GS-203	18-Sep-2024	07:20	0%	NS	NA	NA	NA		RH	Wash out
13	MV24EXP-ENV-GS-203	18-Sep-2024	07:25	30%	NS	NA	NA	NA		RH	Low retention
14	MV24EXP-ENV-GS-203	18-Sep-2024	07:32	50%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
15	MV24EXP-ENV-GS-204	18-Sep-2024	07:57	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
16	MV24EXP-ENV-GS-204	18-Sep-2024	08:06	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
17	MV24EXP-ENV-GS-204	18-Sep-2024	08:15	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.88 pH, 13.8°C, ORP 252mV 10cm: 8.85 pH, 13.8°C, ORP 225mV
18	MV24EXP-ENV-GS-204	18-Sep-2024	08:28	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
19	MV24EXP-ENV-GS-218	18-Sep-2024	08:49	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)		RH	
20	MV24EXP-ENV-GS-218	18-Sep-2024	08:58	70%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
21	MV24EXP-ENV-GS-218	18-Sep-2024	09:07	20%	NS	NA	NA	NA		RH	Rock in jaws
22	MV24EXP-ENV-GS-218	18-Sep-2024	09:16	50%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.50 pH, 13.8°C, ORP -154mV 10cm: 8.50 pH, 13.7°C, ORP -158mV
23	MV24EXP-ENV-GS-218	18-Sep-2024	09:29	50%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294		Area:	UKCS Quad 40			Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	*MV Titan Endeavour*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
24	MV24EXP-ENV-GS-205	18-Sep-2024	09:52	50%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH	
25	MV24EXP-ENV-GS-205	18-Sep-2024	10:00	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
26	MV24EXP-ENV-GS-205	18-Sep-2024	10:08	0%	NS	NA	NA	NA	RH	Did not trigger
27	MV24EXP-ENV-GS-205	18-Sep-2024	10:12	90%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	1cm: 8.47 pH, 14.1°C, ORP -135mV 10cm: 8.44 pH, 14.1°C, ORP -160mV
28	MV24EXP-ENV-GS-205	18-Sep-2024	10:26	30%	NS	NA	NA	NA	RH	Low retention
29	MV24EXP-ENV-GS-205	18-Sep-2024	10:32	0%	NS	NA	NA	NA	RH	Did not trigger
30	MV24EXP-ENV-GS-205	18-Sep-2024	10:36	50%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	
31	MV24EXP-ENV-GS-236	18-Sep-2024	10:54	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
32	MV24EXP-ENV-GS-236	18-Sep-2024	11:01	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
33	MV24EXP-ENV-GS-236	18-Sep-2024	11:08	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	1cm: 8.60 pH, 14.6°C, ORP 211mV 10cm: 8.59 pH, 14.4°C, ORP 193mV
34	MV24EXP-ENV-GS-236	18-Sep-2024	11:23	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	
35	MV24EXP-ENV-GS-237	18-Sep-2024	12:04	30%	NS	NA	NA	NA	RH	Low retention
36	MV24EXP-ENV-GS-237	18-Sep-2024	12:12	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Bivalvia)	RH	
37	MV24EXP-ENV-GS-237	18-Sep-2024	12:19	20%	NS	NA	NA	NA	RH	Wash out
38	MV24EXP-ENV-GS-237	18-Sep-2024	12:26	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
39	MV24EXP-ENV-GS-237	18-Sep-2024	12:33	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	1cm: 8.82 pH, 14.3°C, ORP 243mV 10cm: 8.72 pH, 14.2°C, ORP 215mV
40	MV24EXP-ENV-GS-237	18-Sep-2024	12:45	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294						Vessel	MV *Ocean Reliance*									
Client	Morven Offshore Wind Limited						Vessel Reference Point (VRP)	COG									
Project Name	Morven Grid Connection 1 Route Environmental Survey						Deployment Location	Starboard A-Frame Mid		x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)						Actual Coordinates derived from	Deployment Location									
Geodetic Reference System	Datum	WGS 84 (18) to ED50			Ellipsoid	International 1924		Projection	UTM Zone 30N (3°W)				Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11/08/2024	07:39	1	MV24EXP-ENV-WS-173		5L	Water	71	627675	6271898	627676	6271898	-2	0	2	255	AP	
11/08/2024	14:42	2	MV24EXP-ENV-WS-175		5L	Water	73	627420	6263902	627417	6263902	2	0	2	95	RA	
13/08/2024	02:08	3	MV24EXP-ENV-WS-177		5L	Water	73	626402	6255911	626401	6255909	1	2	2	30	AP	
13/08/2024	07:37	4	MV24EXP-ENV-WS-179		5L	Water	71	625154	6248068	625151	6248070	3	-2	3	128	AP	
14/08/2024	17:31	5	MV24EXP-ENV-WS-233		5L	Water	71	631619	6189613	631618	6189611	1	2	2	35	RA	
14/08/2024	23:38	6	MV24EXP-ENV-WS-231		5L	Water	77	633293	6184925	633292	6184926	1	-1	1	123	AP	
15-Aug-2024	03:41	7	MV24EXP-ENV-WS-229		5L	Water	82	634327	6182010	634328	6182007	-1	3	3	332	AP	
15-Aug-2024	23:43	8	MV24EXP-ENV-WS-227		5L	Water	89	634270	6178105	634270	6178112	0	-6	6	178	AP	
16-Aug-2024	04:03	9	MV24EXP-ENV-WS-171		5L	Water	86	632329	6174794	632329	6174794	0	0	0	6	AP	
16-Aug-2024	08:22	10	MV24EXP-ENV-WS-172		5L	Water	88	631319	6170857	631319	6170858	0	-1	1	184	AP	
17-Aug-2024	23:20	11	MV24EXP-ENV-WS-185		5L	Water	83	621012	6099056	621009	6099061	4	-5	6	146	AP	Plastic attachment broken on bottom bottle
17-Aug-2024	23:37	12	MV24EXP-ENV-WS-185		5L	Water	84	621011	6099056	621009	6099061	3	-5	6	152	AP	Re-deployment for bottom sample
18-Aug-2024	04:42	13	MV24EXP-ENV-WS-186		5L	Water	65	619902	6095218	619899	6095218	3	0	3	96	AP	
18-Aug-2024	08:32	14	MV24EXP-ENV-WS-187		5L	Water	57	618790	6091376	618791	6091374	-1	2	2	334	AP	
18-Aug-2024	13:32	15	MV24EXP-ENV-WS-211		5L	Water	54	617856	6087479	617854	6087485	2	-6	6	159	RA	
18-Aug-2024	18:22	16	MV24EXP-ENV-WS-213		5L	Water	48	616787	6083650	616788	6083649	-1	1	2	289	RA	
18-Aug-2024	23:32	17	MV24EXP-ENV-WS-215		5L	Water	44	615718	6079827	615717	6079828	1	-1	1	126	AP	
19-Aug-2024	03:16	18	MV24EXP-ENV-WS-197		5L	Water	34	614310	6076046	614311	6076047	-1	-1	2	220	AP	
19-Aug-2024	05:01	19	MV24EXP-ENV-WS-221		5L	Water	32	613487	6076176	613485	6076175	2	1	2	69	AP	
19-Aug-2024	08:41	20	MV24EXP-ENV-WS-222		5L	Water	35	614285	6078332	614286	6078326	-1	6	6	349	AP	
19-Aug-2024	13:28	21	MV24EXP-ENV-WS-220		5L	Water	37	612860	6081333	612857	6081334	3	-2	3	124	FT	
19-Aug-2024	18:05	22	MV24EXP-ENV-WS-206		5L	Water	42	612929	6084403	612927	6084402	2	1	2	55	RA	
19-Aug-2024	22:57	23	MV24EXP-ENV-WS-217		5L	Water	48	615721	6086214	615718	6086211	2	2	3	45	RA	
20-Aug-2024	01:30	24	MV24EXP-ENV-WS-208		5L	Water	51	615012	6087868	615011	6087874	2	-6	6	165	AP	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)										FOR-ENV-0540
Job No:	59294		Area:	UKCS Quads: 27, 34, 35, and 40			Volume:	5L		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Niskin Bottle		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (metres)	Sample Depth (metres)	Sample Receptacle	Sample Analysis	Operator(s)	Comments
1	MV24EXP-ENV-WS-173	11-Aug-2024	07:39	5L	71	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02459	AS, MP, AA	
1	MV24EXP-ENV-WS-173	11-Aug-2024	07:39	5L	71	66	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02455	AS, MP, AA	
2	MV24EXP-ENV-WS-175	11-Aug-2024	14:42	5L	73	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02264	IO, MP, PP	
2	MV24EXP-ENV-WS-175	11-Aug-2024	14:42	5L	73	68	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02283	IO, MP, PP	
3	MV24EXP-ENV-WS-177	13-Aug-2024	02:08	5L	73	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02272	AS, AA	
3	MV24EXP-ENV-WS-177	13-Aug-2024	02:08	5L	73	68	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02201	AS, AA	
4	MV24EXP-ENV-WS-179	13-Aug-2024	07:37	5L	71	5	0.8µm filter	1800ml filtered, 5m below sea surface Sample Ref: PSI-01-02186	AS, MP, AA	
4	MV24EXP-ENV-WS-179	13-Aug-2024	07:37	5L	71	66	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02256	AS, MP, AA	
5	MV24EXP-ENV-WS-233	14-Aug-2024	17:31	5L	71	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02267	IO, PP	
5	MV24EXP-ENV-WS-233	14-Aug-2024	17:31	5L	71	66	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02259	IO, PP	
6	MV24EXP-ENV-WS-231	14-Aug-2024	23:38	5L	77	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02245	AS, AA	
6	MV24EXP-ENV-WS-231	14-Aug-2024	23:38	5L	77	72	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02295	AS, AA	
7	MV24EXP-ENV-WS-229	15-Aug-2024	03:41	5L	82	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02196	AS, AA	
7	MV24EXP-ENV-WS-229	15-Aug-2024	03:41	5L	82	77	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02266	AS, AA	
8	MV24EXP-ENV-WS-227	15-Aug-2024	23:43	5L	89	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02395	IO, PP	
8	MV24EXP-ENV-WS-227	15-Aug-2024	23:43	5L	89	84	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02260	IO, PP	
9	MV24EXP-ENV-WS-171	16-Aug-2024	04:03	5L	86	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02225	AS, AA	
9	MV24EXP-ENV-WS-171	16-Aug-2024	04:03	5L	86	81	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02460	AS, AA	
10	MV24EXP-ENV-WS-172	16-Aug-2024	08:22	5L	88	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02248	AS, MP, AA	
10	MV24EXP-ENV-WS-172	16-Aug-2024	08:22	5L	88	83	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02457	AS, MP, AA	
11	MV24EXP-ENV-WS-185	17-Aug-2024	23:20	5L	83	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02270	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)										FOR-ENV-0540
Job No:	59294			Area:	UKCS Quads: 27, 34, 35, and 40			Volume:	5L	
Project:	Morven Grid Connection 1 Route Environmental Survey							Equipment:	Niskin Bottle	
Client:	Morven Offshore Wind Limited							Vessel:	MV *Ocean Reliance*	
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (metres)	Sample Depth (metres)	Sample Receptacle	Sample Analysis	Operator(s)	Comments
11	MV24EXP-ENV-WS-185	17-Aug-2024	23:20	NS	83	78	NA	NA	AS, AA	Plastic attachment broken on bottom bottle
12	MV24EXP-ENV-WS-185	17-Aug-2024	23:37	5L	84	79	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02453	AS, AA	Re-deployment for bottom sample
13	MV24EXP-ENV-WS-186	18-Aug-2024	04:42	5L	65	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02244	AS, AA	
13	MV24EXP-ENV-WS-186	18-Aug-2024	04:42	5L	65	60	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02287	AS, AA	
14	MV24EXP-ENV-WS-187	18-Aug-2024	08:32	5L	57	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02328	AS, MP, AA	
14	MV24EXP-ENV-WS-187	18-Aug-2024	08:32	5L	57	52	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02237	AS, MP, AA	
15	MV24EXP-ENV-WS-211	18-Aug-2024	13:32	5L	54	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02246	IO, MP, PP	
15	MV24EXP-ENV-WS-211	18-Aug-2024	13:32	5L	54	49	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02192	IO, MP, PP	
16	MV24EXP-ENV-WS-213	18-Aug-2024	18:22	5L	48	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02189	IO, PP	
16	MV24EXP-ENV-WS-213	18-Aug-2024	18:22	5L	48	43	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01953	IO, PP	
17	MV24EXP-ENV-WS-215	18-Aug-2024	23:32	5L	44	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02202	AS, AA	
17	MV24EXP-ENV-WS-215	18-Aug-2024	23:32	5L	44	39	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02333	AS, AA	
18	MV24EXP-ENV-WS-197	19-Aug-2024	03:16	5L	34	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02204	AS, AA	
18	MV24EXP-ENV-WS-197	19-Aug-2024	03:16	5L	34	29	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02176	AS, AA	
19	MV24EXP-ENV-WS-221	19-Aug-2024	05:01	5L	32	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-01952	AS, AA	
19	MV24EXP-ENV-WS-221	19-Aug-2024	05:01	5L	32	27	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02190	AS, AA	
20	MV24EXP-ENV-WS-222	19-Aug-2024	08:41	5L	35	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02338	AS, MP, AA	
20	MV24EXP-ENV-WS-222	19-Aug-2024	08:41	5L	35	30	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01948	AS, MP, AA	
21	MV24EXP-ENV-WS-220	19-Aug-2024	13:28	5L	37	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-01949	IO, MP, PP	
21	MV24EXP-ENV-WS-220	19-Aug-2024	13:28	5L	37	32	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01956	IO, MP, PP	
22	MV24EXP-ENV-WS-206	19-Aug-2024	18:05	5L	42	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02184	IO, PP	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)										FOR-ENV-0540
Job No:	59294		Area:	UKCS Quads: 27, 34, 35, and 40			Volume:	5L		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Niskin Bottle		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (metres)	Sample Depth (metres)	Sample Receptacle	Sample Analysis	Operator(s)	Comments
22	MV24EXP-ENV-WS-206	19-Aug-2024	18:05	5L	42	37	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01957	IO, PP	
23	MV24EXP-ENV-WS-217	19-Aug-2024	22:57	5L	48	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02215	IO, PP	
23	MV24EXP-ENV-WS-217	19-Aug-2024	22:57	5L	48	43	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02174	IO, PP	
24	MV24EXP-ENV-WS-208	20-Aug-2024	01:30	5L	51	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-01955	AS, AA	
24	MV24EXP-ENV-WS-208	20-Aug-2024	01:30	5L	51	46	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01954	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*					
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG					
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM Zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Sep-2024	10:04:26	3432	BP24MVEXP-ENV-WS-ENV201		0L	Water	16	610397	6075221	610399	6075205	-2	16	16	352	BL	Failed to trigger
08-Sep-2024	10:13:58	3453	BP24MVEXP-ENV-WS-ENV201		2L	Water	16	610381	6075214	610399	6075205	-18	9	20	296	BL	
08-Sep-2024	10:54:32	3473	BP24MVEXP-ENV-WS-ENV199		2L	Water	23	612365	6075647	612354	6075629	11	18	21	33	BL	
08-Sep-2024	11:20:39	3516	BP24MVEXP-ENV-WS-ENV200		2L	Water	23	611576	6076290	611574	6076289	2	1	2	55	BL	
08-Sep-2024	11:50:53	3534	BP24MVEXP-ENV-WS-ENV219		2L	Water	23	611492	6078577	611495	6078574	-3	3	4	317	BL	
08-Sep-2024	12:16:16	3558	BP24MVEXP-ENV-WS-ENV218		2L	Water	22	611046	6080433	611024	6080438	22	-5	23	104	BL	
08-Sep-2024	12:47:44	3581	BP24MVEXP-ENV-WS-ENV182		2L	Water	21	609801	6082103	609795	6082108	6	-5	8	131	BL	
08-Sep-2024	13:35:33	3610	BP24MVEXP-ENV-WS-ENV205		2L	Water	17	608045	6081166	608038	6081179	7	-13	15	151	BL	
08-Sep-2024	14:08:51	3645	BP24MVEXP-ENV-WS-ENV236		2L	Water	13	607258	6080756	607242	6080757	16	-1	16	95	BL	
08-Sep-2024	14:40:33	3655	BP24MVEXP-ENV-WS-ENV204		2L	Water	18	609197	6079708	609176	6079717	21	-9	23	112	BL	
08-Sep-2024	15:08:29	3666	BP24MVEXP-ENV-WS-ENV203		2L	Water	21	609739	6077625	609719	6077660	20	-35	40	150	BL	
08-Sep-2024	15:40:32	3678	BP24MVEXP-ENV-WS-ENV237		2L	Water	16	609548	6075327	609539	6075350	9	-23	25	159	BL	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)									FOR-ENV-0540
Job No:	59294			Area:	UKCS Quad 40		Volume:	2L	
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Niskin Bottle	
Client:	Morven Offshore Wind Limited						Vessel:	MV *Titan Endeavour*	
Sample Number	Station Number	Date	Time	Load	Overall Station Depth	Sample Depth	Sample Analysis	Operator(s)	Comments
1	MV24EXP-ENV-WS-201	08-Sep-2024	10:04	0L	16	4	Water eDNA	RH	Failed to trigger
1	MV24EXP-ENV-WS-201	08-Sep-2024	10:04	0L	16	16	Water eDNA	RH	Failed to trigger
2	MV24EXP-ENV-WS-201	08-Sep-2024	10:13	2L	16	4	Water eDNA	RH	Surface: BPI-01-00084
2	MV24EXP-ENV-WS-201	08-Sep-2024	10:13	2L	16	12	Water eDNA	RH	Bottom: BPI-01-00042
3	MV24EXP-ENV-WS-199	08-Sep-2024	10:54	2L	23	4	Water eDNA	RH	Surface: PSI-01-02284
3	MV24EXP-ENV-WS-199	08-Sep-2024	10:54	2L	23	19	Water eDNA	RH	Bottom: PSI-01-01896
4	MV24EXP-ENV-WS-200	08-Sep-2024	11:20	2L	23	4	Water eDNA	RH	Surface: PSI-01-01889
4	MV24EXP-ENV-WS-200	08-Sep-2024	11:20	2L	23	19	Water eDNA	RH	Bottom: PSI-01-01874
5	MV24EXP-ENV-WS-219	08-Sep-2024	11:50	2L	23	4	Water eDNA	RH	Surface: PSI-01-01902
5	MV24EXP-ENV-WS-219	08-Sep-2024	11:50	2L	23	19	Water eDNA	RH	Bottom: PSI-01-02414
6	MV24EXP-ENV-WS-218	08-Sep-2024	12:16	2L	22	4	Water eDNA	RH	Surface: PSI-01-01906
6	MV24EXP-ENV-WS-218	08-Sep-2024	12:16	2L	22	18	Water eDNA	RH	Bottom: BPI-01-00081
7	MV24EXP-ENV-WS-182	08-Sep-2024	12:47	2L	21	4	Water eDNA	RH	Surface: BPI-01-00075
7	MV24EXP-ENV-WS-182	08-Sep-2024	12:47	2L	21	17	Water eDNA	RH	Bottom: BPI-01-00066
8	MV24EXP-ENV-WS-205	08-Sep-2024	13:35	2L	17	4	Water eDNA	RH	Surface: BPI-01-00074
8	MV24EXP-ENV-WS-205	08-Sep-2024	13:35	2L	17	13	Water eDNA	RH	Bottom: BPI-01-00080
9	MV24EXP-ENV-WS-236	08-Sep-2024	14:08	2L	13	4	Water eDNA	RH	Surface: PSI-01-01941
9	MV24EXP-ENV-WS-236	08-Sep-2024	14:08	2L	13	9	Water eDNA	RH	Bottom: PSI-01-02314
10	MV24EXP-ENV-WS-204	08-Sep-2024	14:40	2L	18	4	Water eDNA	RH	Surface: PSI-01-02340
10	MV24EXP-ENV-WS-204	08-Sep-2024	14:40	2L	18	14	Water eDNA	RH	Bottom: BP1-01-00070
11	MV24EXP-ENV-WS-203	08-Sep-2024	15:08	2L	21	4	Water eDNA	RH	Surface: BPI-01-00045
11	MV24EXP-ENV-WS-203	08-Sep-2024	15:08	2L	21	17	Water eDNA	RH	Bottom: BPI-01-00069
12	MV24EXP-ENV-WS-237	08-Sep-2024	15:40	2L	16	4	Water eDNA	RH	Surface: BPI-01-00049
12	MV24EXP-ENV-WS-237	08-Sep-2024	15:40	2L	16	12	Water eDNA	RH	Bottom: BPI-01-00083

APPENDIX B METHODS

APPENDIX B METHODS

B.1 Seabed Imagery Acquisition

Environmental seabed images were taken by means of a digital stills shallow water camera system with a dedicated strobe and video lamp, mounted within a stainless-steel frame. Video footage was also acquired throughout transects and target investigations using a HD video camera. A USBL positioning beacon was attached to the camera frame.

Footage was viewed in real time via an umbilical, assisting in the control of the digital stills camera. This allowed for shot selection to capture sediment changes or features at the seafloor.

During acquisition, a minimum of 35 seabed photographs and 14 minutes of footage were collected at each station or transect at appropriate. The images were captured remotely using the surface control unit.

A total of 2699 photos were taken using the stills camera system across 56 stations and 3 transects. A selection of seabed photographs is presented in Appendix C, whilst environmental deck and positioning logs are contained in Appendix A.

B.2 Seabed Sampling

Benthic samples were recovered using a stainless-steel, 0.1m^2 Day grab which had been modified in-house. Low-slung pad feet when in contact with the seabed trigger the instrument. On recovery (once triggered) the weight of the instrument is transferred along the warp wires, closing the jaws of the grab. The grab carried extra weights to aid penetration on recovery and an extended bucket lip to reduce sediment washout. Storm feet and elastic straps were used to reduce the likelihood of the instrument pre-triggering in the water column during deployment.

The vessel offset of grab deployment was used to represent the position of the sampler.

Grab sampling operational procedures were as follows:

The Day grab was thoroughly washed using pentane prior to deployment at every station to prevent hydrocarbon cross contamination. Additionally, bleach was used prior to the acquisition of eDNA samples to prevent the cross-contamination of environmental DNA. A length of 10mm, dry-core, galvanised-steel cable was used to lower the Day grab to the seabed. Positional fixes were taken for each grab sample immediately following the grab reaching the sea floor. The precise time that the grab reached the seabed was determined by observations of the tension on the winch cable.

On recovery of a sample, the grab would first be examined for acceptability following strict quality assurance criteria. In the following cases, a grab sample would be rejected and the instrument returned to the pre-deployment position:

1. Jammed sample closure due to entrapment of a large stone, shell or other objects allowing surface sediment washout.
2. Accidental premature opening of sampler on recovery, causing possible surface washout.
3. Half sample obtained where the grab had not struck a flat area of bottom, or not hit true, causing a side or half bite of sediment.
4. Disruption of the sample by obvious shaking or contamination (these can occur when a sample is badly handled or if the grab strikes the side of the vessel during operations).

APPENDIX B METHODS

5. The sample represents less than 40% of the grab's total capacity (*i.e.* less than 6 litres) or totally fills the grab.
6. Sample was acquired more than 20m from the target, as determined by the onboard surveyor.
7. The presence of exopolymeric substances, mucus coagulants and/or fauna that generate them *i.e.* Myxinidae.

Three or four grab deployments were undertaken at each station depending upon requirements for sample collection (see tables below for sampling requirements). Sediment samples deemed acceptable were photographed and described.

Surficial (<2cm depth) sediments were taken directly from the Day grab for physico-chemical analysis. All containers were thoroughly washed with appropriate solvents and labelled externally prior to use to remove any organic contaminants. Hydrocarbon samples were placed in 120ml or 1l amber glass jars with solvent cleaned aluminium foil placed between the cap and glass jar, whilst the remaining samples (metals and particle size) were placed in double-lined zip-lock bags. All physico-chemical samples were stored at less than -18°C prior to analysis. Further, two surficial (<2cm depth) sub samples were acquired from each physico chemical grab as composites of five sub-samples within a single grab for fish eDNA analysis (one primary and one spare).

Sediment for bacteria and invertebrate eDNA analysis was also required at all stations. Two sub-samples were acquired from each fauna grab, for subsequent analysis (one primary and one spare). All eDNA samples were stored at less than -18°C prior to analysis.

For each faunal sample, following eDNA sub sample removal, the remaining contents of a single grab were washed into a clean plastic tray using seawater and then transferred to a 0.5mm mesh sieve. Macrofaunal samples were then placed in 1-litre polypropylene, screw-top, squat jars or 5 litre buckets and an additional internal waterproof label was added. Sieved samples were immediately fixed with a known concentration of formaldehyde solution (formalin, less than 20%). The formalin in the sample pots was subsequently diluted to a concentration of approximately 4% and stored at ambient temperature.

Table B.1 Non-Chemistry Stations in Scotland and England

Grab Number	Samples	Consumables
1	Fauna	Fauna buckets
	eDNA	1 ziplock bag
2	Spare Fauna	Fauna buckets
	Spare eDNA	1 ziplock bag
3	PSA	1 ziplock bag
	Spare PSA	1 ziplock bag

APPENDIX B METHODS

Table B.2 Chemistry Stations in England

Grab Number	Samples	Consumables
1	Fauna	Fauna buckets
	eDNA	1 ziplock bag
2	Spare Fauna	Fauna buckets
	Spare eDNA	1 ziplock bag
3	PSA	1 ziplock bag
	Chemistry (MMO)	1 x 1L jar for Hydrocarbons & Organotins, PCBs, metals, TOC
	Fish eDNA	1 ziplock bag
4	Spare PSA	1 ziplock bag
	Spare Chemistry (MMO)	1 x 1L jar spare
	Spare Fish eDNA	1 ziplock bag

Table B.3 Chemistry Stations in Scotland

Grab Number	Samples	Consumables
1	Fauna	Fauna buckets
	eDNA	1 ziplock bag
2	Spare Fauna	Fauna buckets
	Spare eDNA	1 ziplock bag
3	PSA	1 ziplock bag
	Spare PSA	1 ziplock bag
	Chemistry (MMO)	1 x 1L jar for Hydrocarbons & Organotins, PCBs, metals, TOC
	Spare Chemistry (MMO)	1 x 1L jar spare
	Fish eDNA	1 ziplock bag
4	Chemistry (standard)	1 x 120mL jar for Hydrocarbons & Organotins (top 2cm) 1 x 120mL jar for PCBs (top 2cm) 1 ziplock bag for metals, TOC (top 4 cm)
	Spare Chemistry (standard)	1 x 120mL jar as spare 1 ziplock bag as spare if possible
	Spare Fish eDNA	1 ziplock bag

B.3 Redox Procedures

The redox probe combined with oxidation reduction potential, pH and temperature was employed for data collection. The probe was pushed in the sediments to a depth of 1cm and 10cm and the results recorded in the deck field log along with details of sediment colour or odour.

B.4 Water Sampling

Niskin bottles were bleached prior to each deployment to reduce levels of DNA contamination. Niskin bottles were mounted directly to the 10mm, dry-core, galvanised-steel cable with a purse weight to maintain vertical transit and a messenger weight was affixed to allow acquisition of sample. A depth enabled USBL beacon was attached below the Niskin bottle and used to determine depth and location of the Niskin bottle prior to release of the messenger. A fix was taken immediately after release of the messenger and prior to recovery.

APPENDIX B METHODS

On recovery of a sample, the Niskin bottle would first be examined for acceptability following strict quality assurance criteria. In the following cases, a sample would be rejected and the instrument prepared for the next deployment:

1. One or both ends have not released, and the sampler has failed to trigger.
2. One or both ends have failed to seal the sample and water has leaked out
3. Disruption of the sample by obvious shaking or contamination.
4. Sample was taken from an unacceptable distance or depth as determined by the onboard surveyor.

The Niskin bottle contents were then sub sampled directly from the bottle. Two litres of water each for the primary and spare samples were filtered through a 0.8µm pore size cellulose nitrate filter using a peristatic pump (Vampire pump) to assist with the process. Samples were preserved within these filters using the supplied preservative solution and then wrapped in a plastic Ziploc bag. Samples were stored at less than -18°C prior to analysis.

B.5 Imagery Processing

Seabed photos were assessed using the Gardline developed imagery analysis program (CountEM). Both the stills and video camera were aligned, so it was possible to cross-check video against stills for protected species/habitats that may have been missed. Video frames were captured whenever the distance between fixes was more than twice the station average and if previously unseen sensitive/protected taxa were visible. This resulted in an additional nine video frames, which were analysed in CountEM. Further, where potential stony reef habitat was identified during seabed imagery analysis, video segmentation was conducted to enable an assessment of the overall stony reef resemblance and coverage.

Following quality control, data were exported into an excel file used to summarise seabed imagery observations and allow for further analysis as applicable. A reference collection of taxa ID is presented in the habitat assessment report (Gardline, 2024b).

B.6 Sample Analysis

Sediment and faunal samples were analysed by the following laboratories:

- Sediment hydrocarbon, metals, TOC, PCB, OCP and organotin analyses were carried out by SOCOTEC, Burton-on Trent, Staffordshire, UK.
- PSA, benthic macrofaunal identification and biomass determination was undertaken by Thomson Environmental Consultants Limited, Guildford, UK;
- Sediment metabarcoding was carried out by Nature Metrics Ltd, Egham, UK.

The laboratories detailed above meet quality control requirements exacted by Gardline's internal procedures (BS/EN/ISO 9001:2015; BSI, 2008).

B.7 Particle Size Analysis

Particle size analysis was carried out by Thomson Environmental Consultants Limited in accordance with NMBAQC methods for diamictons (Mason, 2016).

No dispersants were used and the sediment was not treated to remove carbonates or organic matter prior to analysis.

APPENDIX B METHODS

The results, given in Appendix E and summarised in Section 2.4.1, present particle size distributions in terms of mean phi, fraction percentages (*i.e*. gravel, sand and fines), sorting (mixture of sediment sizes) and skewness (weighting of sediment fractions above and below the mean sediment size) and kurtosis (degree of peakedness) (Folk & Ward, 1957). The sediment samples were additionally classified using the modified Folk triangle classification and the EUNIS classification. These classifications use the sand:mud ratio and the percentage of gravel (Folk, 1954; Parry, 2019).

B.8 Total Organic Carbon

An aliquot of air dried and ground sample was mixed with sulphurous acid and allowed to effervesce to remove any inorganic carbon. The digested sample was then heated until any remaining acid had evaporated and the sample had dried. The dried residue was then analysed for carbon content using an Eltra induction furnace fitted with a NDIR cell. The total quantity of carbon liberated is calculated and reported as a percentage of the original mass of sample.

B.9 Hydrocarbons

B.9.1 Extraction Procedures

MMO Methodology
Anhydrous sodium sulphate, sodium chloride and DCM was added to a portion of the as received sample and was vigorously agitated. The sample is placed in an ultrasonic bath and then centrifuged.

Total Hydrocarbon Methodology
A sub-sample of the sample was treated with methanol and DCM and mixed on a magnetic stirring plate (wet vortex extraction). The solvent extract was then chemically dried, water partitioned and then reduced. The clean-up stage utilised activated silica gel along with DCM and pentane, which removes polar organics. The samples were then subjected to a further copper clean-up stage to remove any sulphur.

A separate sub-sample was taken for analysis of moisture content by drying for 8 hours. The moisture content was later used to convert the hydrocarbon concentrations from wet weight to dry weight.

B.9.2 Analysis

MMO Methodology
The extract was then analysed by UV fluorescence screening and quantified by comparing the results against a Forties Oil calibration curve.

Total Hydrocarbon Methodology
An aliquot of the extract was then taken and analysed for THC and individual n-alkanes by large volume injection GC-FID and one taken to be analysed for PAH, dibenzothiophene and alkylated isomer concentrations by GC-MS selected ion monitoring as specified in DTI (1992).

Appropriate column and GC conditions were used to provide sufficient chromatographic separation of all analytes and required sensitivity. GC chromatograms are presented in Appendix G.

APPENDIX B METHODS

Concentrations of THC from the extract analysed by GC-FID were quantified. The concentration in the sample was then calculated against the squalene surrogate. The chromatographically resolved individual n-alkane peaks nC_{10}-nC_{37} were quantified using the florida mix standard.

Concentrations of PAH from the extract analysed by GC-MS were determined by referencing individual quantified mass peak areas for each target compound to the appropriate internal standard quantified mass peak area and the relative response factor calculated from the applicable CCC standard.

The analysis detection limits were 1ng g^{-1} for PAHs, 1ng g^{-1} for individual n-alkanes and 100ng g^{-1} for THC.

B.9.3 PCBs

An air-dried and sieved sample was spiked with 13C labelled internal standards, ultrasonically solvent extracted and concentrated under nitrogen. A clean-up stage was employed to remove contaminants that may have interfered with the analysis. The sample extract was analysed by gas chromatography coupled to a triple quadrupole mass spectrometer (GC-MS-MS). Quantification was performed by comparison with a solution containing each of the targeted compounds, normalised to the 13C labelled internal standards.

B.9.4 Organotins

A portion of as received sample was digested with hydrochloric acid and methanol before extraction into toluene. The extract was then derivatised using sodium tetraethylborate (STEB) before concentration and a copper/silica clean-up stage. The extract was analysed by GC-MS and quantified by comparing the results against calibration curve for each of the target analytes.

B.10 Metals

B.10.1 Extractions for ICP-OES and ICP-MS Determination

Aqua Regia
Approximately 1g of air-dried and ground (particle size <118µm) sediment was digested for1 hour with aqua regia. Once cooled the sample was then analysed by inductively coupled plasma- optical emission spectrometry (ICP-OES) or inductively coupled plasma-mass spectrometry (ICP-MS).

Hydrofluoric Acid
A sample of air-dried and ground (particle size <212µm) sediment was digested by treatment with hydrofluoric, nitric and hydrochloric acid by microwave. The digest was cooled within the microwave and any excess hydrofluoric acid left after the digest was complexed with boric acid then reheated in the microwave. The sample was then diluted with 2% nitric acid prior to analysis by ICP-MS.

As, Cd, Cr, Cu, Hg, Ni, Pb, V and Zn were determined by ICP-MS with Ba was determined using ICP-OES. Detection limits and the spectral line emission wavelengths of the various elements analysed are presented in Table B.4.

APPENDIX B METHODS

Table B.4 ICP Detection Limits, Elemental Emission Wavelengths and Atomic Masses

Analysis	ICP-MS	ICP-OES	HF Extraction LOD (µg g^{-1})	Aqua Regia Extraction LOD (µg g^{-1})
Element	Atomic Mass Units	Elemental Wavelengths (nm)		
As	75	-	0.14	0.5
Ba	-	455.403	7.2	-
Cd	111	-	0.03	0.04
Cr	52	-	1	0.5
Cu	65	-	0.7	0.5
Hg	202	-	0.01	0.01
Ni	60	-	0.4	0.5
Pb	208	-	0.6	0.5
V	51	-	1	-
Zn	66	-	3.5	2

B.11 Quality Control

Quality control consists of running full method blanks together with one in-house reference material or certified reference material (CRM) where required and one duplicate sample per batch of twenty samples. Instrument performance is monitored by the use of instrument blanks, continuing calibration checks and independent calibration checks.

Instrument and process blank solutions are also run at regular intervals (with each batch) to monitor potential sources of contamination.

B.12 Metabarcoding

B.12.1 DNA Extraction and Sequencing

Sediment

In the laboratory, DNA was extracted from each sample for bacterial and infaunal analysis using a commercial DNA extraction kit. An extraction blank was also processed for each extraction batch. Additionally, a sample was extracted for fish DNA analysis.

DNA were amplified with PCRs using primers that target a specific region of a barcode gene. The PCR reaction was repeated several times on each sample in order to maximise the detection of a target species. A PCR blank was performed alongside each PCR reaction. PCR replicates for each sample were pooled and purified, with sequencing adaptors added to uniquely identify each DNA sequence. All purified index PCRs were pooled in equal concentrations into final libraries.

B.12.2 Bioinformatics

Sequence data were processed for quality filtering, operational taxonomic unit (OTU) clustering and taxonomic assignment. Taxonomic assignments were made for each OTU using sequence similarity searched against four reference databases appropriate for the data set. Results for all searches were combined and assignments made to the lowest possible taxonomic level where there was consistency. Unidentified or common contaminant DNA sequences (including human and livestock) were removed.

APPENDIX B METHODS

B.13 Macrofaunal Analysis

B.13.1 Sorting and Identification

In the laboratory, samples were gently washed across a 0.5mm mesh sieve to remove any sediment fines and preservative. The retained material was sorted by hand to extract all macrofauna. The organisms were identified and counted to produce a species list for each grab sample. Sample residues were checked by a second individual to provide a degree of quality control.

B.13.2 Data Set Rationalisation

The faunal data set was rationalised according to the standard Gardline (2023b) procedure, which is largely based on British Standard ISO16665:2013 (BSI, 2014) and OSPAR (2017a) guidelines. A summary of these methods follows.

Juveniles

The inclusion of juvenile organisms in data sets is a contentious issue, as is the definition of a juvenile. Only when the following conditions were satisfied was an organism recorded as a juvenile:

- Organisms that were too small or immature to be identified to species were identified to the lowest possible taxonomic level and recorded as juveniles.
- The organism was in a pre-adult life stage *e.g.* megalopa, praniza, *etc.*
- For large-bodied (>4cm) species of echinoderm and bivalve, the organism was less than 10% of the maximum body size reported in the literature.

In accordance with BSI guidelines, juveniles are recorded separately in the faunal list in Appendix J. Juveniles were included in the analysed data set at the lowest achievable taxonomic level. In the first instance, a RELATE analysis was carried out to compare the data sets with and without juveniles to determine if discussion of both sets separately is required. If the two data sets are found to be at least 95% similar, then the juveniles are included in the data set for all further multivariate analyses and discussion. Alternatively, the multivariate analyses were additionally performed following exclusion of all juvenile records to illustrate their influence. Furthermore, in accordance with OSPAR (2017a), if one or more of juvenile taxa were among the ten most dominant, statistical analysis of the faunal community should be conducted both with and without juveniles to illustrate their influence on the faunal community.

Damaged Specimens

Destructive sampling techniques and sieving may damage delicate benthic organisms. It is, therefore, commonplace for fragmented organisms to be found in faunal samples. The following conditions were applied to the recording of damaged specimens and fragments:

- Fragments that constituted a major component of an individual, that unequivocally represented the presence of an entire organism and that could be identified to species level, were recorded and included with other counts of that species.
- Fragments that constituted a significant component of an individual, that unequivocally represented the presence of an entire organism, but that could not be identified to species by virtue of their incompleteness, were recorded to the lowest possible taxonomic level.
- Fragments that did not unequivocally represent the presence of an entire organism were ignored when calculating species abundances. Recorded fragments, therefore, represent discrete observations of individuals that were present at the time of sampling and were included in the analysed data set.

APPENDIX B METHODS

Treatment of Specific Groups of Organisms

Gardline defines macrofauna as organisms that are normally larger that the mesh size of the sieve used to separate them from the sediment (Gardline, 2023b). Meiofaunal organisms, such as Ostracoda and Copepoda, which would not be consistently sampled, were not recorded.

Planktonic organisms, such as Chaetognatha and Mysidacea were not recorded. The presence of nektonic species, such as fish and Cephalopoda, was recorded, but they were not enumerated.

With the exception of discrete sea pen (Pennatuloidea) colonies, only solitary tunicates and cnidarians were enumerated and included in statistical analyses. Colonial tunicates and cnidarians were identified but not enumerated.

The testate amoeba *Astrorhiza* sp. was the only foram routinely enumerated.

Where Gnathiidae were recorded, those individuals not identified to species level were grouped as a single indeterminate Gnathiidae entry.

In accordance with our in-house guidelines the following organisms were not identified to species, but were enumerated and included in the data set for analyses at a higher taxonomic level:

- Nemertea – identified to phylum
- Platyhelminthes – identified to phylum
- Phoronida – identified to genus
- Hemichordata – identified to phylum.

B.14 Biomass

Following identification of the samples, each individual taxa (where required) were biomassed by wet weight. Biomasses were weighted in grams recorded up to 4dp.

B.15 Statistical Analyses

B.15.1 Univariate Macrofauna Indices

Univariate community analyses were undertaken using the PRIMER (version 7) software package. Univariate indices seek, by means of a single number, to summarise information about some aspect of community structure. The two aspects of community structure contributing to the concept of diversity are species richness (a measure related to the total number of species present) and evenness (a measure relating to the pattern of distribution of individuals among the species present).

Diversity indices, as typified by the Shannon-Wiener index, are considered to be a relatively insensitive measure of anthropogenic disturbance. However, benthic ecologists have been able to demonstrate a clear inverse relationship between diversity and total oil concentrations in sediments (Davies *et al.*, 1984). They are therefore of some practical use for making comparisons between stations and sites.

The following indices were calculated and are presented in the report:

APPENDIX B METHODS

Margalef's Richness Index

Species richness is sometimes given simply as the number of species in a sample but this is of course very dependent upon sample size. Alternatively, Margalef's index (*d*) may be used as this takes account of the number of species present for a given number of individuals.

Shannon-Wiener Diversity Index

This is a widely used measure of diversity providing an integrated index of species richness and relative abundance (Clarke & Warwick, 2006). It is basically a measure of the difficulty of predicting the identity of an individual based on overall community composition.

H' integrates the number of species and individual abundance to provide a summary value reflecting the diversity of fauna at a station. This index of diversity is influenced by both species richness (*i.e.* the number of species) and evenness (or equitability) of distribution of individuals between species.

Simpson's Dominance Index

Simpson's is a dominance index derived from the probability of picking two individuals from a community at random that are from the same species. Therefore, Simpson's dominance index values will be higher when a community is dominated by one or a few species but lower when the community is diverse.

Simpson's dominance index ranges from 0 to 1 with high values indicating high dominance and low evenness.

Pielou's Evenness

Evenness (or equitability) is a representation of how uniformly individuals are spread between species in a sample. It is a component of and calculated using, a theoretical diversity measure (in this instance Shannon-Wiener). Values range from 0 to 1 with high values indicating low dominance and high evenness.

Species Accumulation Curves

Species accumulation curves show the increasing total number of different taxa observed as samples are successively pooled. Two versions are plotted in this report; the first (plotted in blue) simply takes the samples in their label order, this is often referred to as the "species observed" (Sobs) curve. The second curve (plotted in red) is smooth as it is an averaged output based on the samples being added in random order 999 times. This is referred to as the UGE (Ugland, Gray, Ellingsen) curve after Ugland *et al.* (2003).

Species Ranking

A measure of the overall dominance pattern in the sampling area may be achieved by ranking the top species per station according to abundance, giving a rank score of ten to the most dominant species, decreasing to one for the tenth most abundant species and summing these scores for all stations to provide an overall dominance score for each species (Eleftheriou & Basford, 1989). For those species ranked in the top ten, the fidelity of the species ranking can be assessed by comparing the actual rank score with the maximum possible score (thus ten multiplied by number of stations for the top rank *etc.*) for that rank as a proportion; perfect fidelity is equal to one; values lower than 0.8 or higher than 1.2 represent erratic ranking, as in a species with a patchy distribution.

Beta Diversity

The Jaccard index of similarity (1908) calculates the change in diversity on a normalised scale from 0 to 1; with 1 indicating a high level of similarity.

Rarefaction

Rarefaction calculates the species richness for a given number of individual samples based on the construction of rarefaction curves.

APPENDIX B METHODS

B.15.2 Multivariate Analyses

In addition to univariate analyses, the data were subjected to multivariate analysis using a number of different methods available within the PRIMER package (Clarke & Warwick, 2006). By considering the full data matrix as a whole and comparing each station with every other, multivariate analyses are able to highlight subtle trends in data sets that are commonly not identified when using univariate techniques. Multivariate techniques are not restricted to use with faunal data sets and if treated appropriately may also be used to compare complex physico-chemical data sets. Multivariate analyses were computed from resemblance or similarity matrices. In the case of faunal abundance data these were constructed using the Bray-Curtis measure of similarity following transformation of the data to down-weight the influence of highly abundant or dominant species. For the purposes of this survey, a square-root transformation was utilised on the abundance data, whilst a fourth-root. Transformation was required for the biomass data. According to Clarke and Warwick (2006), square root transformation allows the intermediately abundant species to contribute to the similarity, while a fourth root takes account of the rarer species, or in this case the smaller species. Note that there is rarely any practical difference between fourth root and log transformation for cluster and ordination results of faunal data, although the former is more reliable (use presence/absence rather than log). Chemical data resemblance matrices are computed using Euclidean Distance following transformation (where necessary) and normalisation to standardise measurement scales. Additionally, DNA resemblance matrices were computed using Bray-Curtis Similarity following standardisation.

Cluster Analysis and SIMPROF

Cluster analysis groups samples according to their similarity *i.e.* samples within a group are more similar to each other than they are to samples in other groups. Clustering was by a hierarchical agglomerative method using group average sorting and the results are presented as a dendrogram. Using PRIMER v7 it is possible to perform a SIMPROF (similarity profile) test at the same time as the cluster analysis to determine whether groups of samples are statistically indistinguishable or whether they contain identifiable structure. SIMPROF is an *a priori* test designed to identify groups of samples from unstructured data sets. The test employs a permutation-based analysis to determine whether groups of samples below each successive node of a dendrogram possess identifiable internal structure. If the result of a test at a particular node is not significant there is no identifiable structure within the samples below the node and they might therefore be considered to be a uniform group. A significant result indicates that samples within a group (below a particular node in the dendrogram) contain some structure and therefore may not be considered uniform. The analysis therefore identifies groups of samples that are each highly self-similar and also that are distinguishable from each other.

Ordination Analyses using non-Metric Multidimensional Scaling

Non-metric multidimensional scaling (nMDS or MDS) is a type of ordination method which creates a 2- or 3-dimensional ‘map’ of the samples (or stations) from the similarity matrix. The configuration of the samples on the ‘map’ is a reflection of their similarity, with distances between samples being representative of their dissimilarity.

It is normal for there to be some distortion (stress) between actual similarity values (in the resemblance matrix) and distance between samples on the ordination plot; perfect solutions are very rarely achieved when dealing with complex data sets. In order to achieve the lowest possible stress PRIMER adopts an iterative approach to ordination, constructing the plot by successively refining the positions of samples until the lowest stress is achieved. In reality the lowest possible stress is not always achieved since data points may become trapped in local minima. It is therefore necessary to re-run the analyses multiple times to ensure that the lowest achievable stress is found. The ordination analysis results reported were the product of 999 restarts.

APPENDIX B METHODS

The scale and orientation of MDS ordinations are arbitrary so no axes are drawn on the plots. Stress values increase with sample size and usually also with increasingly severe transformation of the initial data set (due to the increasing influence of rarer species on the outcome of analyses). The stress value may be used as an indication of the usefulness of plots, with a general guide being as follows (Clarke & Warwick, 2006):

<0.05	Almost perfect representation of rank similarities
0.05 to <0.1	Good representation
0.1 to <0.2	Still useful
0.2 to <0.3	Should be treated with caution
>0.3	Little better than random points

BEST (BIOENV)

Where differences in macrofaunal community structure are found it is acceptable to attempt to link these to abiotic variations in the environment. This may be achieved using multivariate routines in the PRIMER called BVSTEP and BIOENV. In this instance BIOENV analysis has been used due to the size of the data sets.

BIOENV searches amongst a specified data matrix (normally transformed and/or untransformed data matrix) to find sub sets of variables (or species) that best 'fit' the multivariate pattern of a separately specified resemblance matrix. In other words, it identified a sub set (or sub sets) of variables within one data set that produces the most similar (highest correlation) pattern to the overall multivariate pattern of another data set. From a random starting point the analysis adds and removes variables from the initial data sets and assesses whether these improve or worsen the match to the second data set overall. Once the best match is achieved analysis is terminated. The results depend somewhat upon the starting point of the analysis and the test is therefore always run with multiple restarts to ensure that the best fit is found.

SIMPER

Where differences between groups of samples are found, SIMPER may be used to interpret which species, or environmental variables, are principally responsible for the differences between the groups and which are most responsible for the similarities within groups. The SIMPER analysis decomposes differences between all pairs of sample, one from each identified group, into their contributions from each species or variable and ranks them in decreasing order of their contribution to overall dissimilarity.

RELATE

The RELATE test of PRIMER calculates the rank similarity of two specified data matrices, so, for instance, may be used to provide an indication of the effect of the removal of a sub set of taxa (*e.g*. juveniles) on the structure of the data set overall.

B.15.3 Spearman's Rank Correlation

Spearman's Rank Correlation co-efficient is a non-parametric correlation analysis that may be used to test for relationships between environmental variables. Significant relationships indicate that environmental variables vary similarly. Large numbers of significant correlations might suggest the presence of an environmental gradient, that in the absence of obvious natural changes in the environment (such a depth gradient), may be attributable to point source pollution or some other form of anthropogenic interference. A matrix of Spearman's rank correlation coefficients, comparing many of the environmental variables is presented in Appendix F.

B.15.4 Dixon's and Grubb's tests for Outliers

Within the data set of environmental variables, one or more values may differ considerably from the majority of the rest. To identify such values for investigation as to whether they are deviant results or indicative of a notable

APPENDIX B METHODS

trend at seabed, Dixon's Q-test for outliers may be used for data sets of 5 to 25 samples, while Grubb's test may be used for data sets containing >25 samples. Both tests assume a normal distribution.

The Dixon's Q-test is performed by taking the difference of the highest (or lowest) value and the value nearest to it and dividing this by the range of the data for that variable. The Grubb's test (also called the extreme studentised deviate) compares each value with the mean and the standard deviation for that variable.

The results of the Dixon's/Grubb's test for both high and low outliers is presented in Appendix F.

B.16 EUNIS Habitat Classification

Habitat classification is used to identify different habitats and biotopes based on the biotic and abiotic features of the seabed. Habitat and biotope classifications were conducted on the available survey data, adhering to protocols within EUNIS. The system was developed between 1996 and 2001 by the EEA in collaboration with European experts. The table below gives examples of the five EUNIS levels used to describe the marine environments.

Table B.5 Example EUNIS Habitat Classification Levels

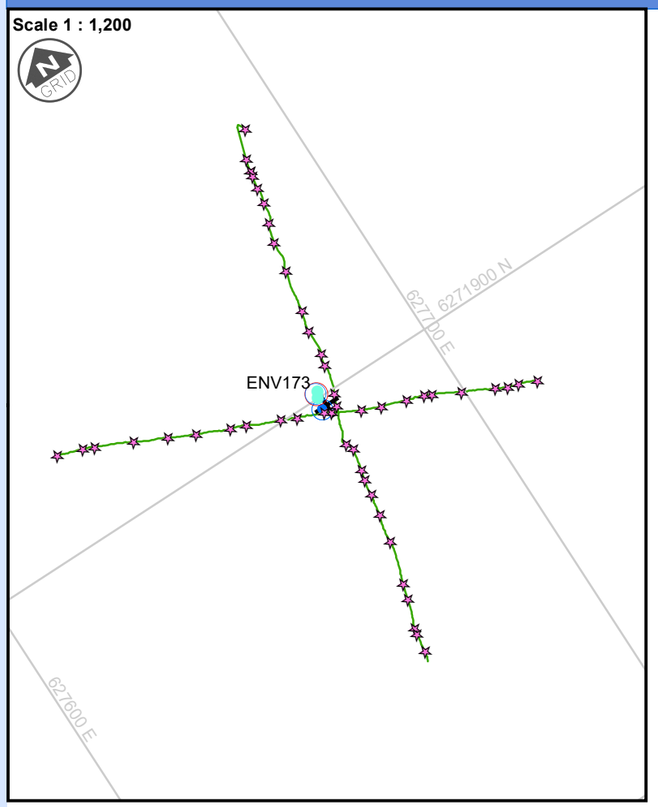
	Detail Covered (EUNIS code)
1. Environment	Marine benthic habitats (M)
2. Broad habitats	Circalittoral biogenic habitat (MC2)
3. Main habitats	Atlantic circalittoral biogenic habitat (MC22)
4. Biotope complexes	Worm reefs in the Atlantic circalittoral zone (MC221)
5. Biotopes	*Sabellaria spinulosa* on stable Atlantic circalittoral mixed sediment (MC2211)

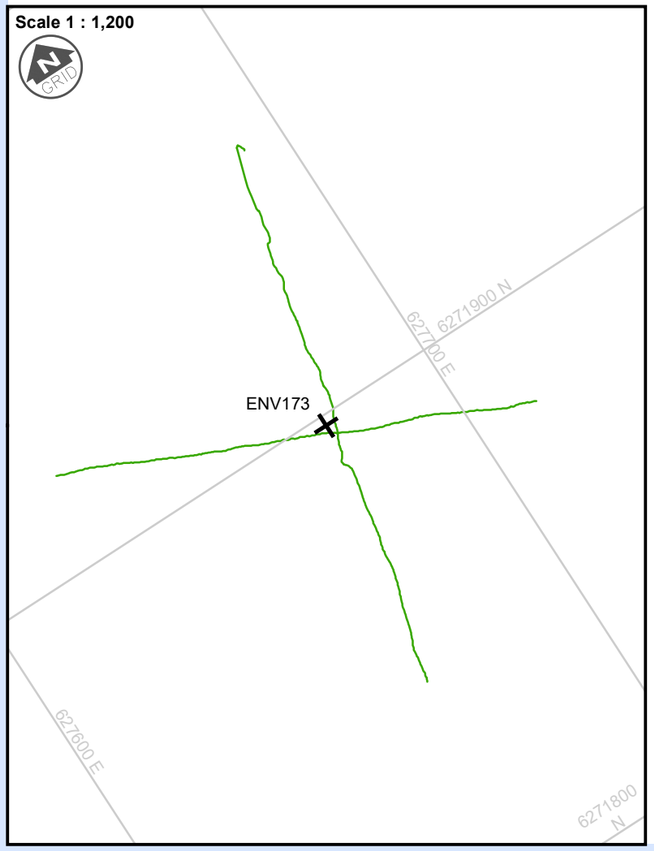
Development of the EUNIS classification comes from both a top-down and a bottom-up approach. The first division is based on differentiating between major biological zones related to depth (littoral down to abyssal) and differentiation of substrate type *(e.g.* rock, sand, gravel). These high-level divisions can be further subdivided based on the main biogeographical regions of Europe's seas (*e.g.* Arctic, Baltic, Atlantic) with these regional splits being based on a combination of salinity and temperature. Such broad-scale differences in habitat character are readily understood by non-specialists and provide classification types that are easily mapped. However, they also have ecological relevance as they reflect major changes in habitat character upon which species distribution depends (Connor *et al.*, 2004).

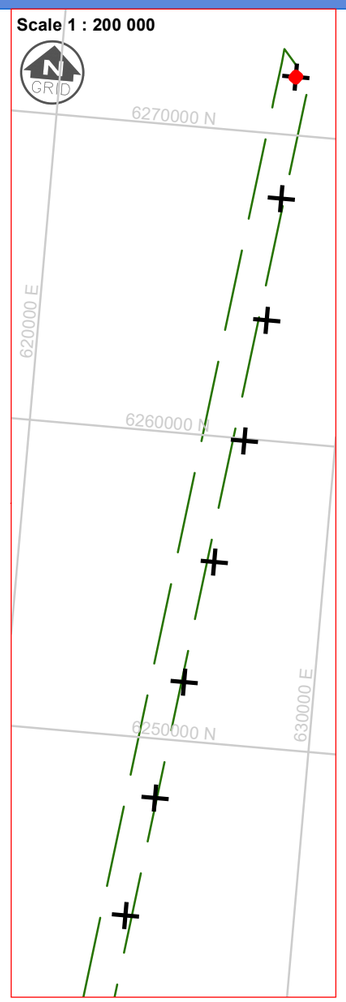
Bottom-up classification differentiates between places with different species communities. Relative species composition, diversity and abundance vary from place to place and are dependent both on environmental characteristics and upon interactions between species. Surveyed sites with similar environmental characteristics, such as sediment type and depth, show certain levels of similarity in their species communities.

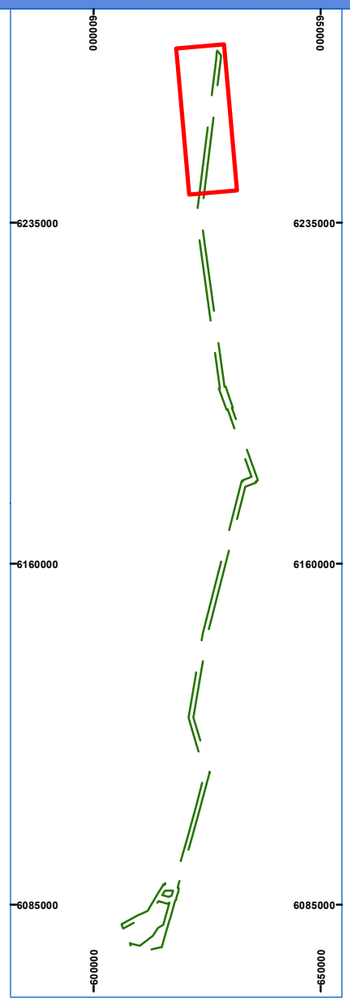
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

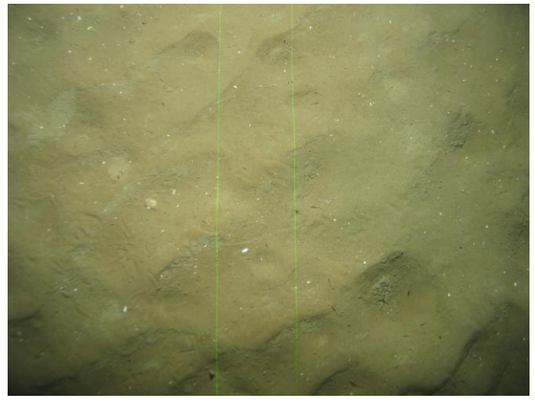
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV173

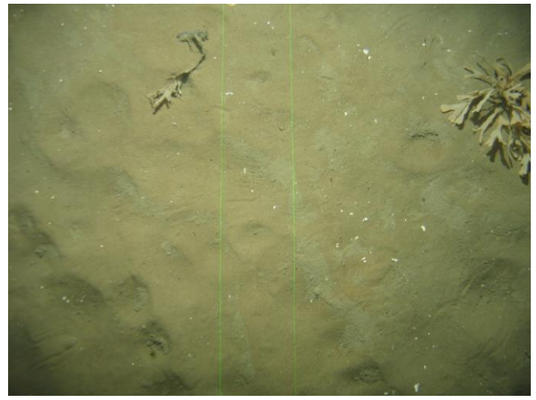
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV173
Fix: 11 **E:** 627 676 **N:** 6 271 896 **Depth (m):** 70

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV173
Fix: 46 **E:** 627 669 **N:** 6 271 858 **Depth (m):** 70

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV173
Fix: 2 **E:** 627 675 **N:** 6 271 901 **Depth (m):** 71
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
No visible fauna

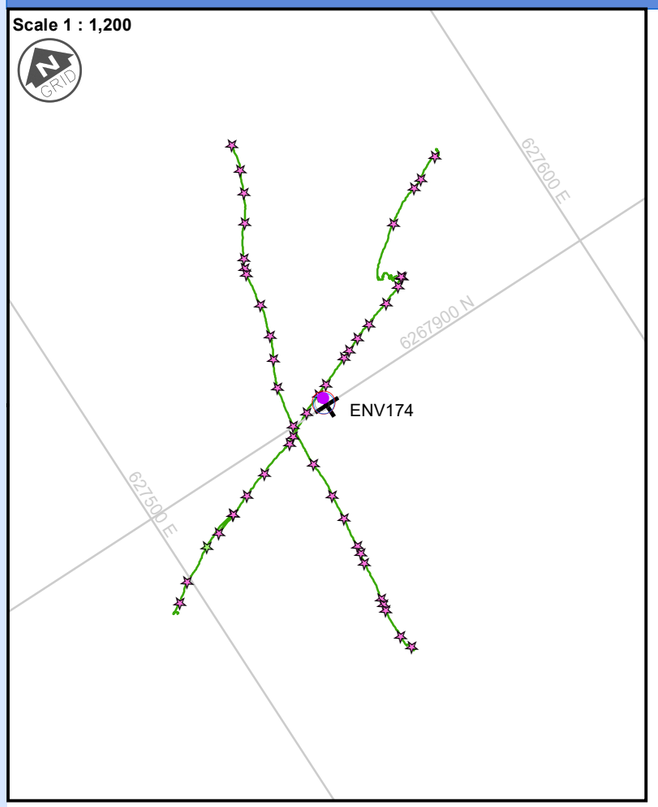


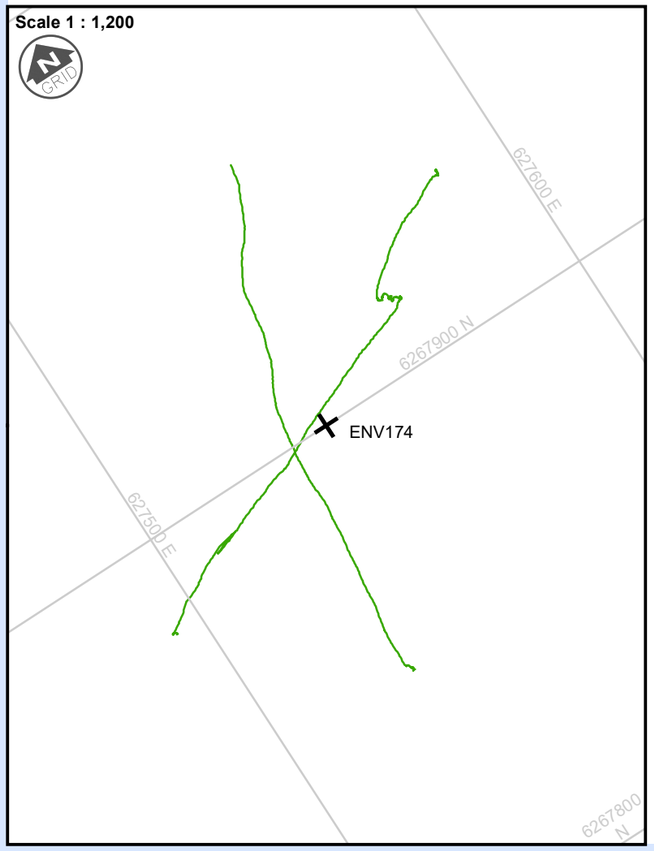
Station: ENV173
Fix: 2 **E:** 627 675 **N:** 6 271 901 **Depth (m):** 71
Retention: MFB

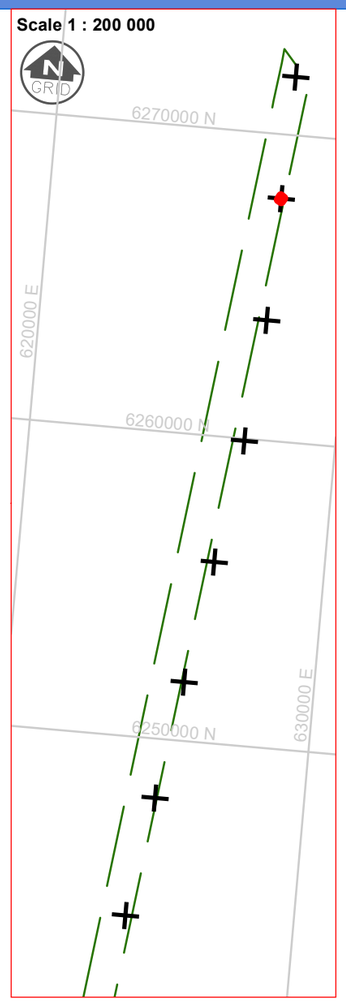
Sediment Description:
Fine to medium sand with shell fragments

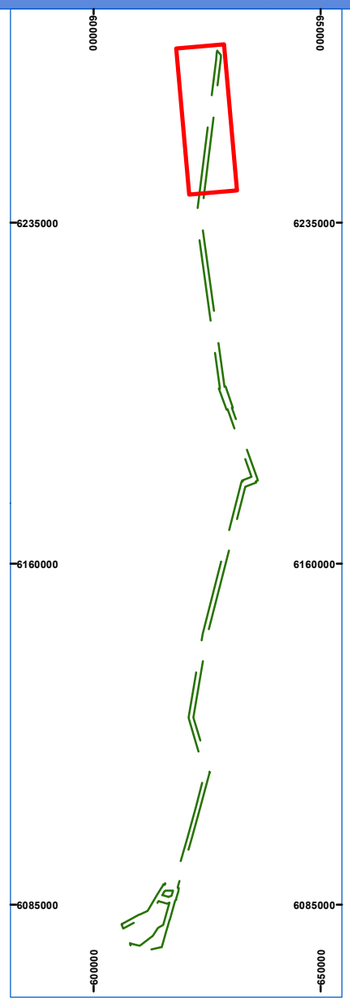
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV174

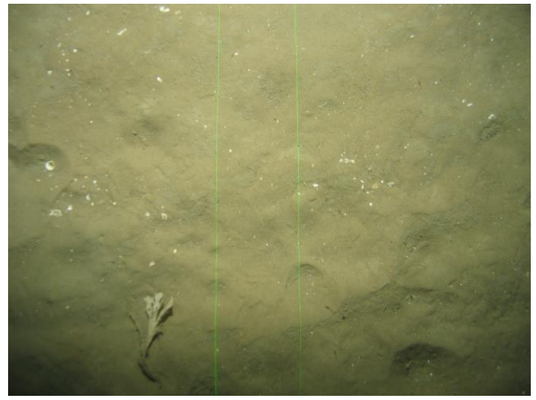
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV174
Fix: 102 **E:** 627 528 **N:** 6 267 854 **Depth (m):** 72

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV174
Fix: 88 **E:** 627 541 **N:** 6 267 924 **Depth (m):** 72

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV174
Fix: 5 **E:** 627 541 **N:** 6 267 901 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)

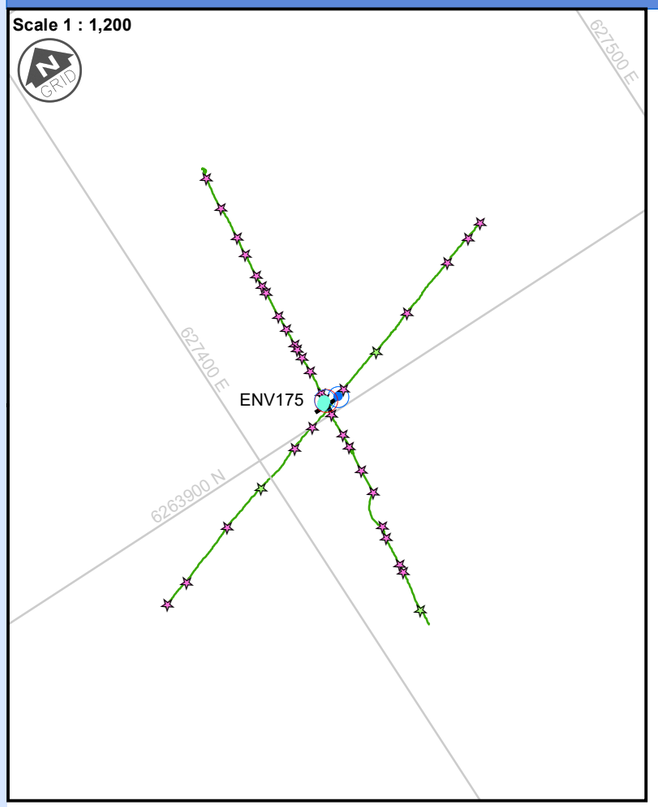


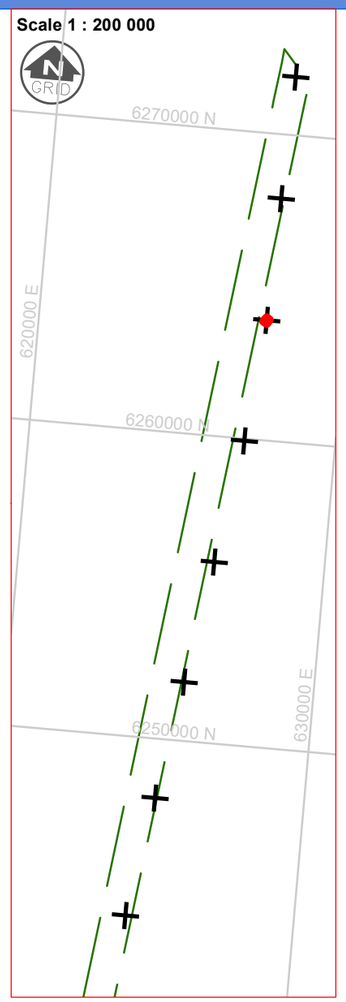
Station: ENV174
Fix: 5 **E:** 627 541 **N:** 6 267 901 **Depth (m):** 71
Retention: MFA

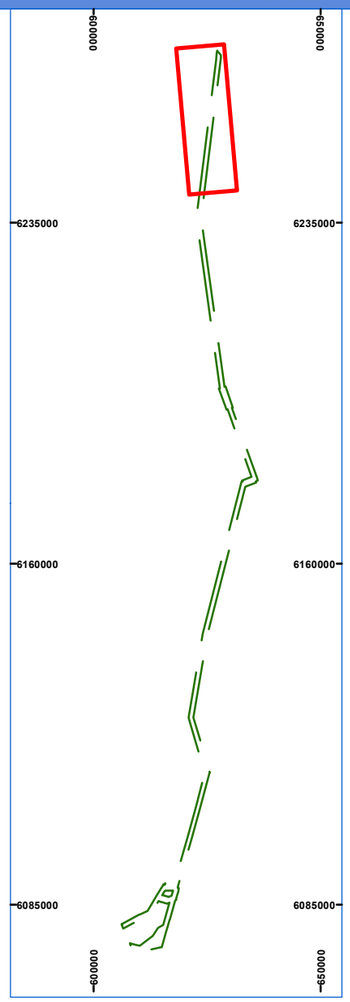
Sediment Description:
Fine to medium sand with shell fragments

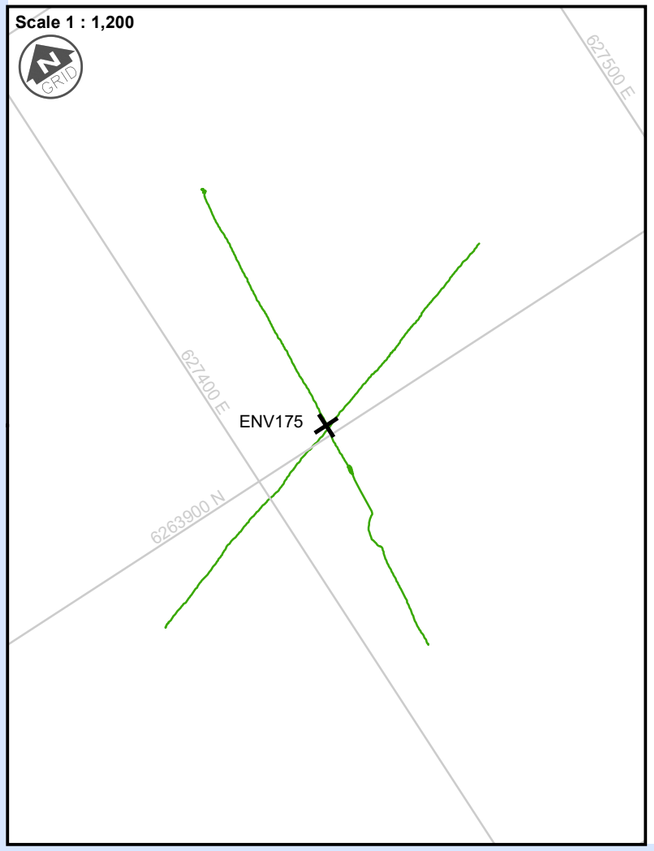
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

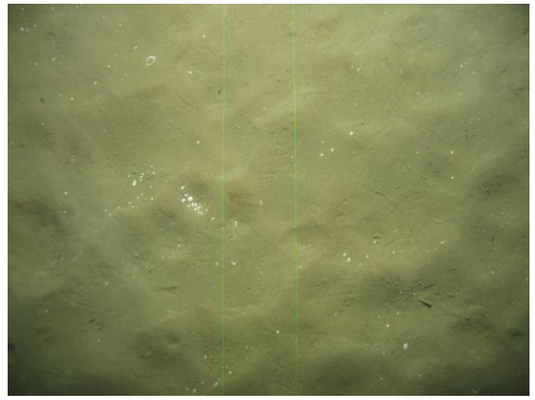
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV175

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV175
Fix: 126 **E:** 627 412 **N:** 6 263 868 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV175
Fix: 138 **E:** 627 388 **N:** 6 263 893 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Glyptocephalus cynoglossus*), Cnidaria (*Alcyonium digitatum*)



Station: ENV175
Fix: 9 **E:** 627 417 **N:** 6 263 903 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)

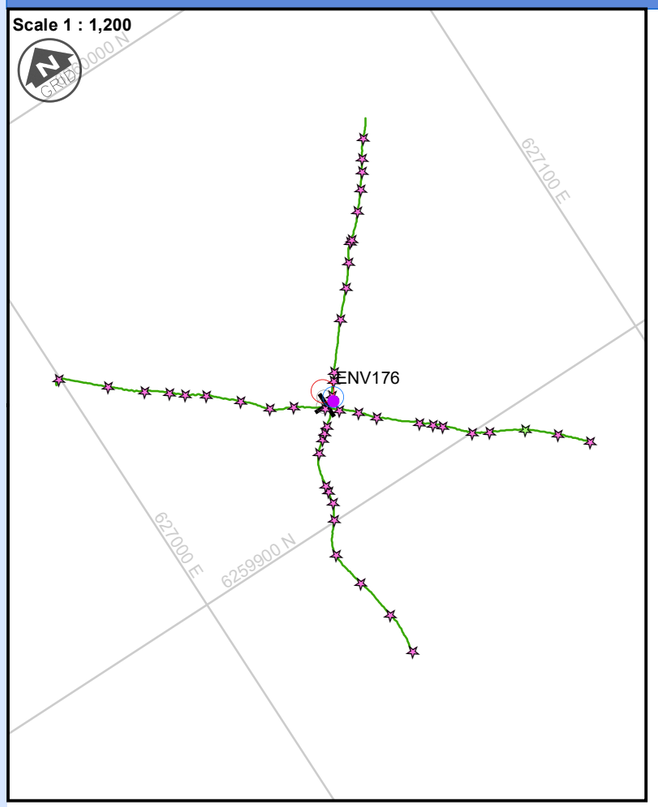


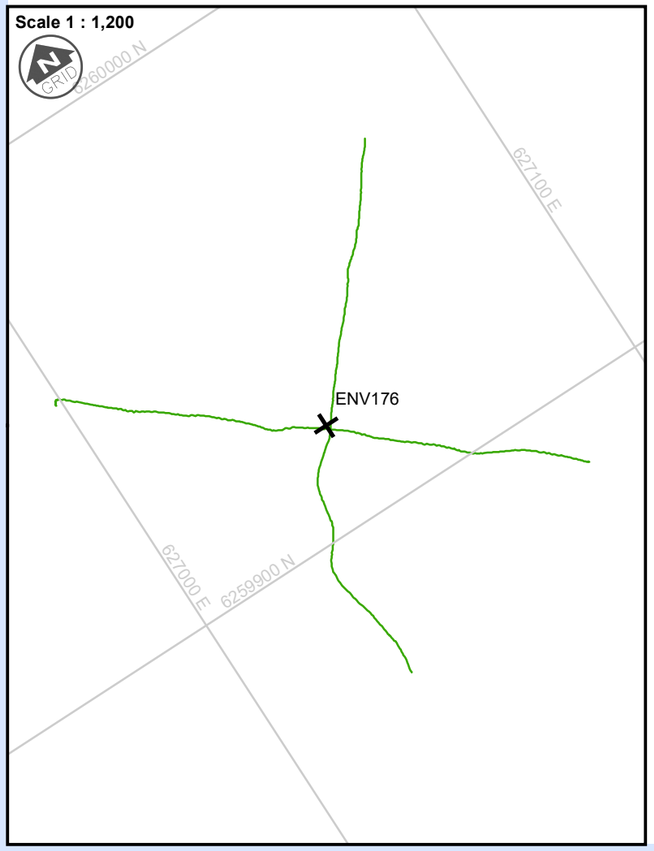
Station: ENV175
Fix: 9 **E:** 627 417 **N:** 6 263 903 **Depth (m):** 73
Retention: MFA

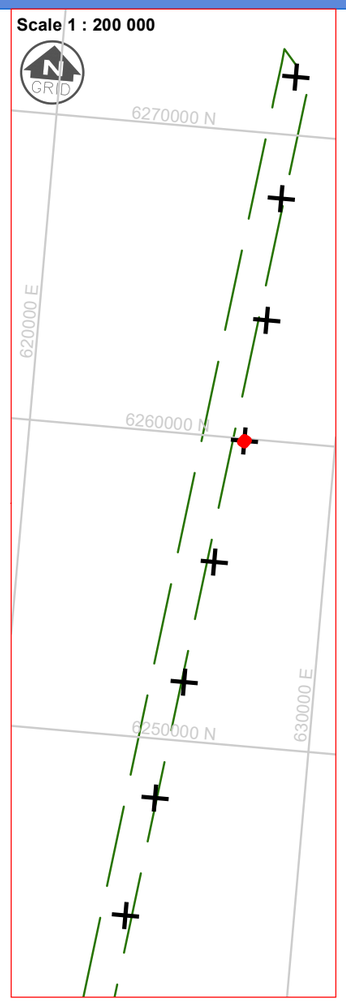
Sediment Description:
Fine to medium sand with shell fragments

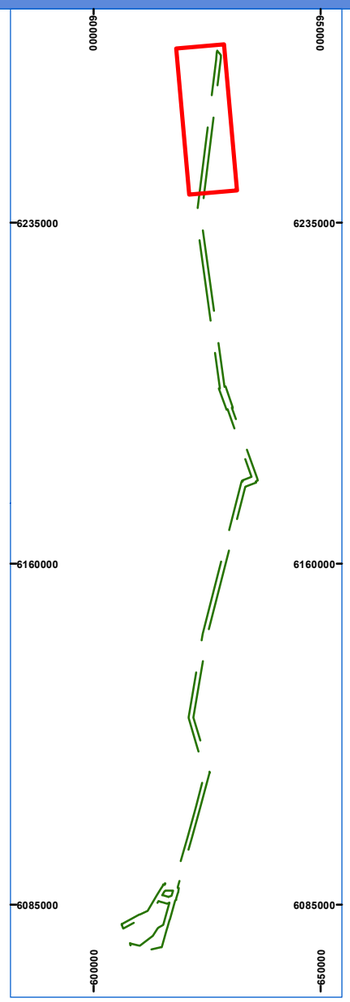
Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

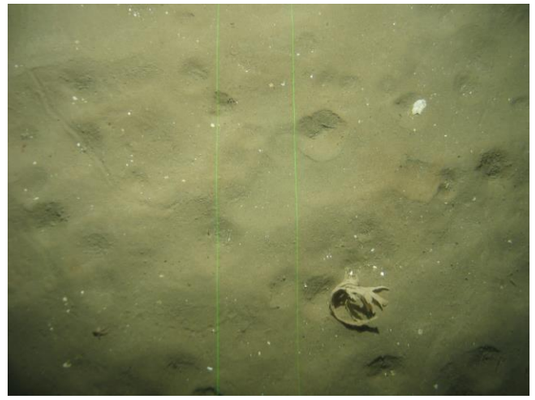
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV176

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV176
Fix: 170 **E:** 627 032 **N:** 6 259 903 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV176
Fix: 172 **E:** 627 032 **N:** 6 259 907 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
Echinodermata (*Astropecten irregularis*)



Station: ENV176
Fix: 16 **E:** 627 043 **N:** 6 259 921 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
No visible fauna

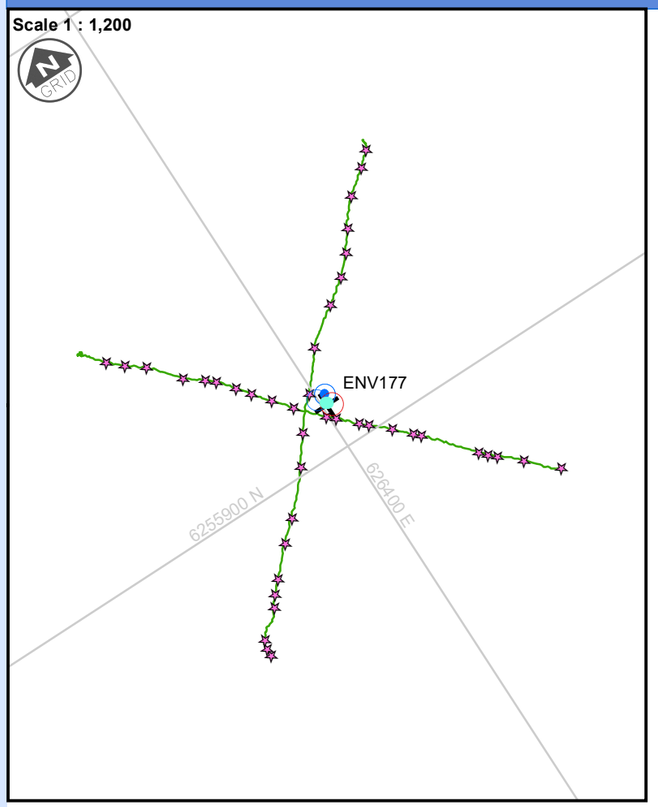


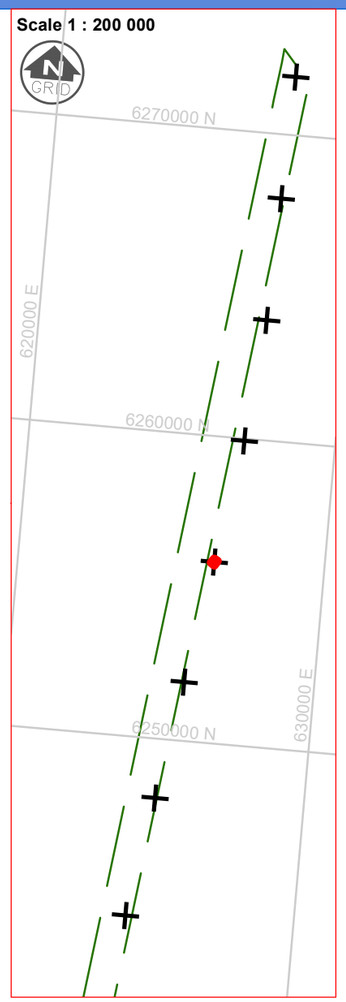
Station: ENV176
Fix: 16 **E:** 627 043 **N:** 6 259 921 **Depth (m):** 74
Retention: MFB

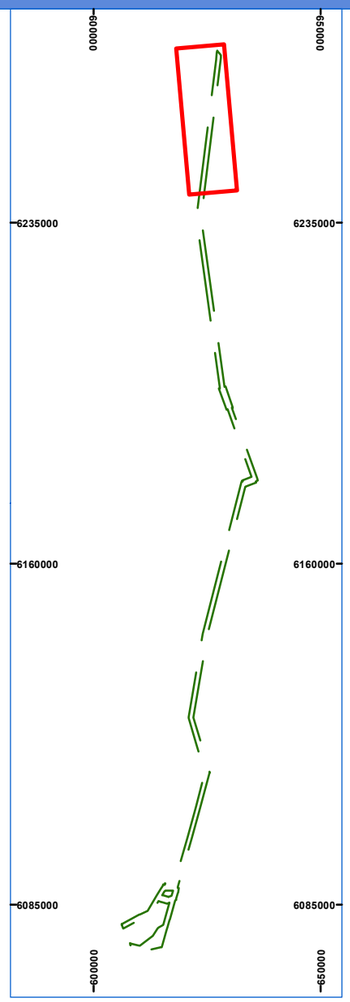
Sediment Description:
Fine to medium sand with shell fragments

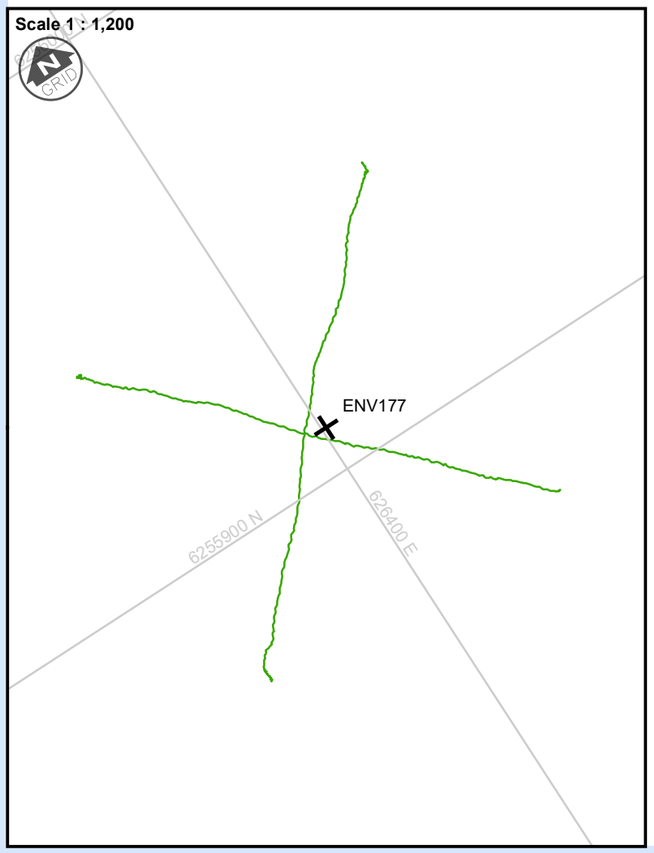
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

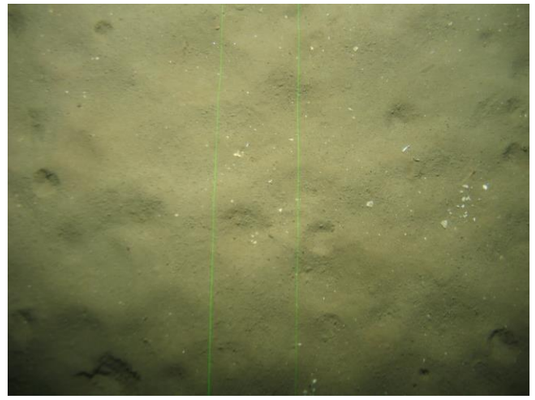
BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV177 — **Overview Scale 1 : 350,000 ED50/UTM Zone 30N (3°W)**



Station: ENV177
Fix: 202 **E:** 626 404 **N:** 6 255 903 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV177
Fix: 210 **E:** 626 427 **N:** 6 255 879 **Depth (m):** 72

Sediment Description:
Sand with shell hash

Faunal Description:
Cnidaria (*Alcyonium digitatum*, *Urticina eques*), Echinodermata (Ophiuroidea *stet.*)



Station: ENV177
Fix: 19 **E:** 626 400 **N:** 6 255 911 **Depth (m):** 73
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

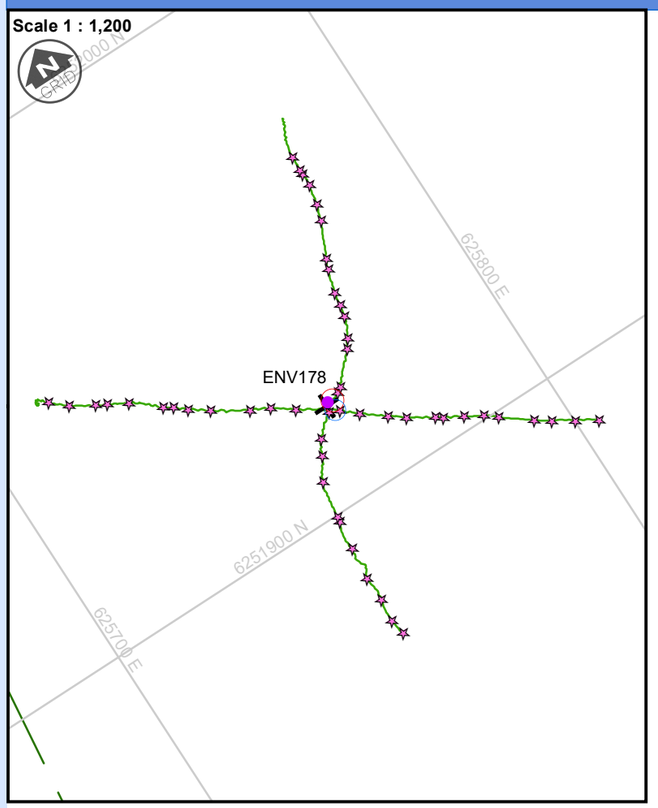


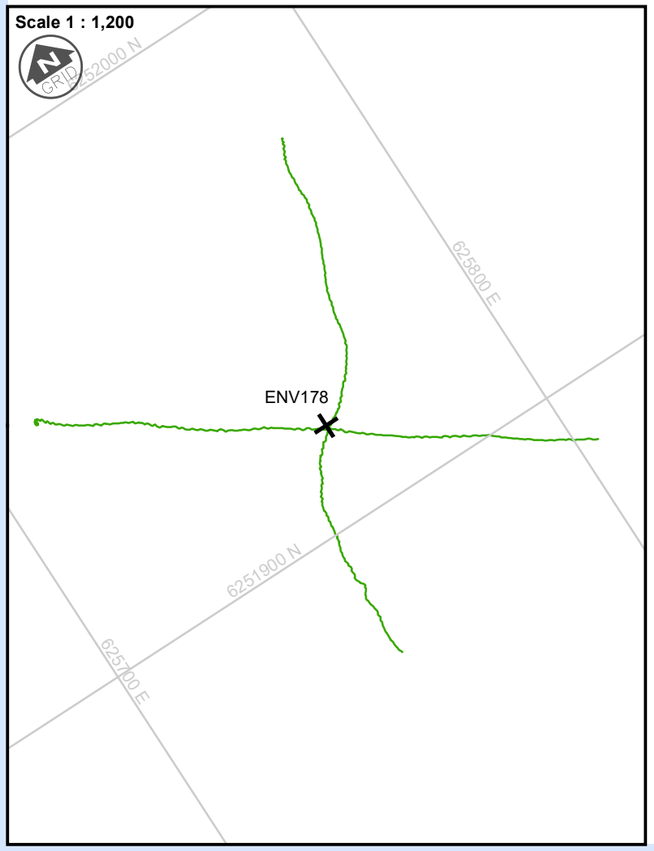
Station: ENV177
Fix: 19 **E:** 626 400 **N:** 6 255 911 **Depth (m):** 73
Retention: MFB

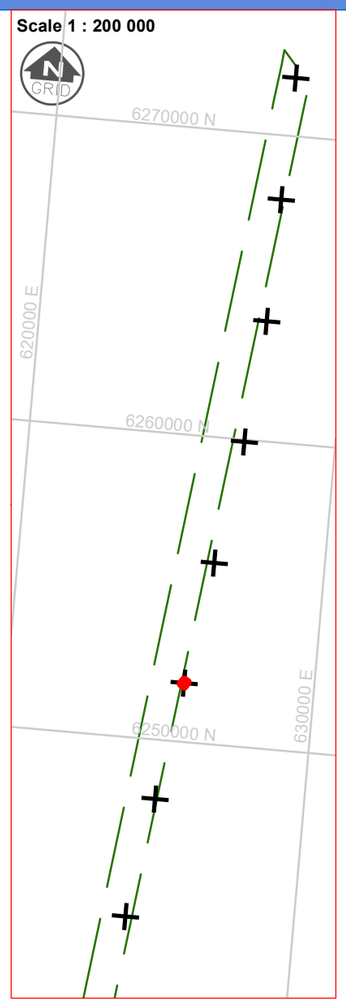
Sediment Description:
Fine to medium sand with shell fragments

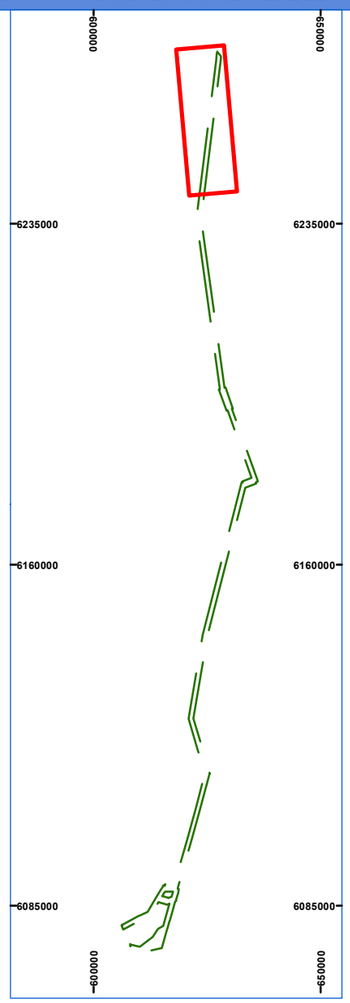
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

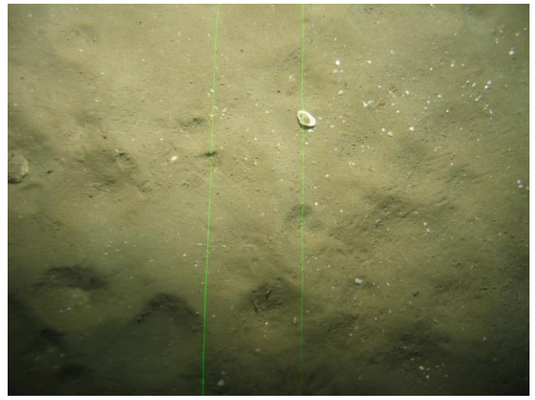
BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV178 — **Overview Scale 1 : 350,000 ED50/UTM Zone 30N (3°W)**



Station: ENV178
Fix: 266 **E:** 625 749 **N:** 6 251 882 **Depth (m):** 70

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV178
Fix: 278 **E:** 625 772 **N:** 6 251 928 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
Echinodermata (*Asterias rubens*)



Station: ENV178
Fix: 22 **E:** 625 762 **N:** 6 251 919 **Depth (m):** 70
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

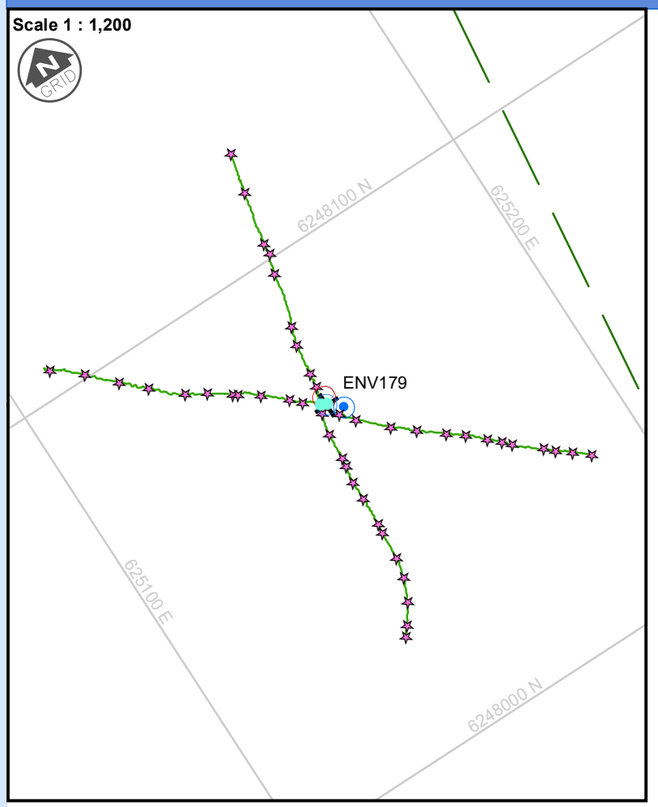


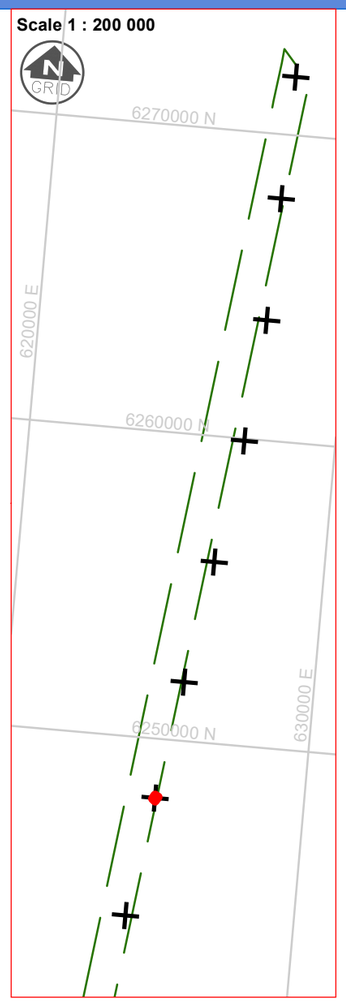
Station: ENV178
Fix: 22 **E:** 625 762 **N:** 6 251 919 **Depth (m):** 70
Retention: MFA

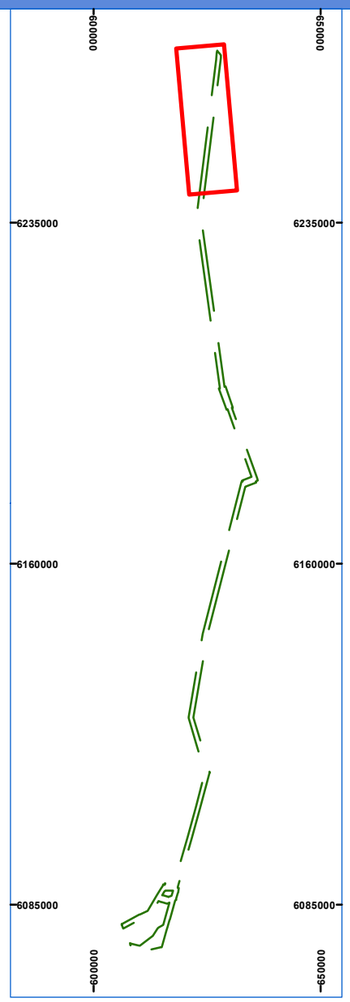
Sediment Description:
Fine to medium sand with shell fragments

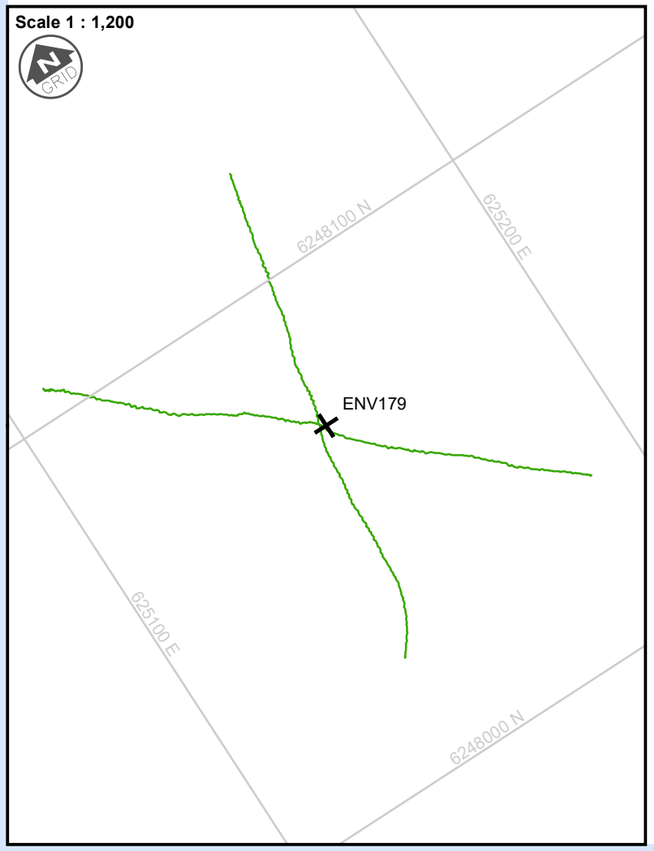
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

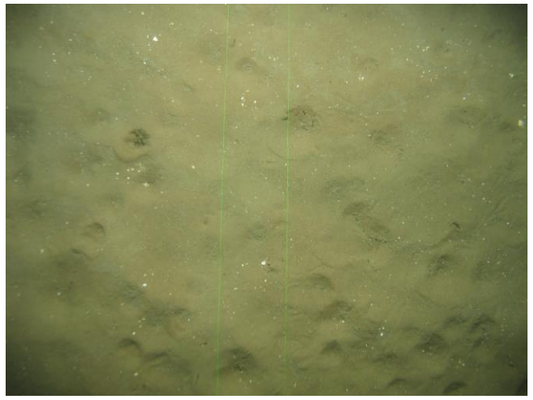
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV179

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV179
Fix: 296 **E:** 625 137 **N:** 6 248 082 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV179
Fix: 332 **E:** 625 153 **N:** 6 248 087 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV179
Fix: 26 **E:** 625 151 **N:** 6 248 071 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

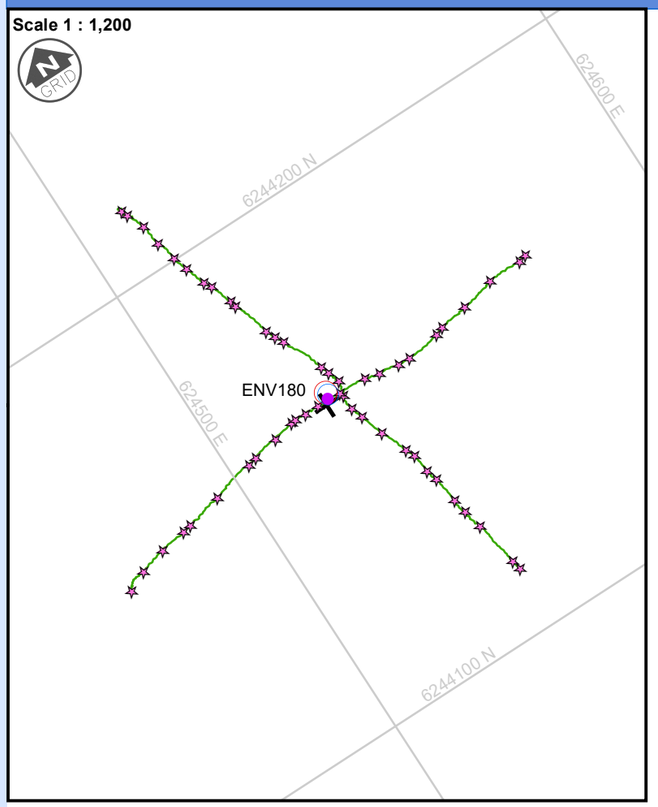


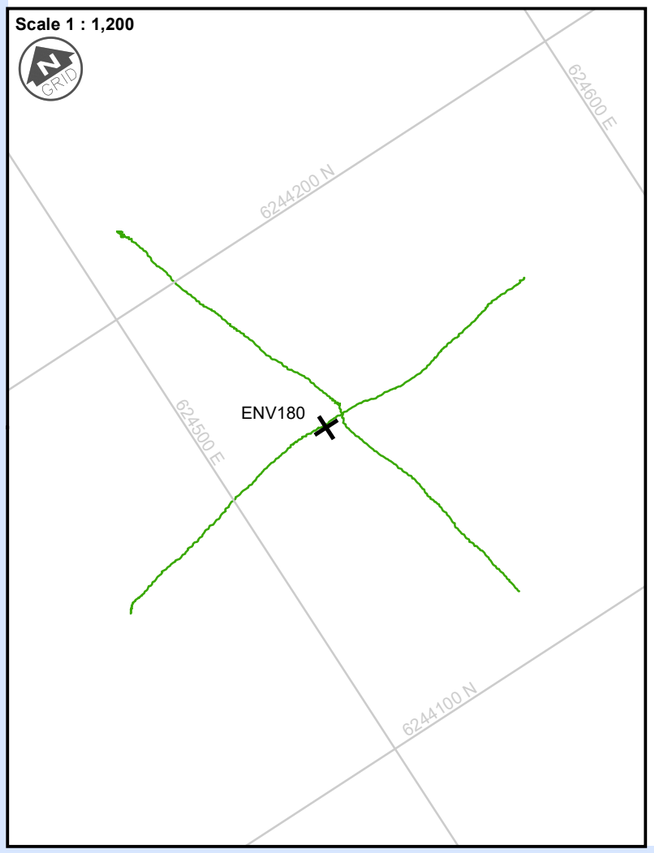
Station: ENV179
Fix: 26 **E:** 625 151 **N:** 6 248 071 **Depth (m):** 71
Retention: MFA

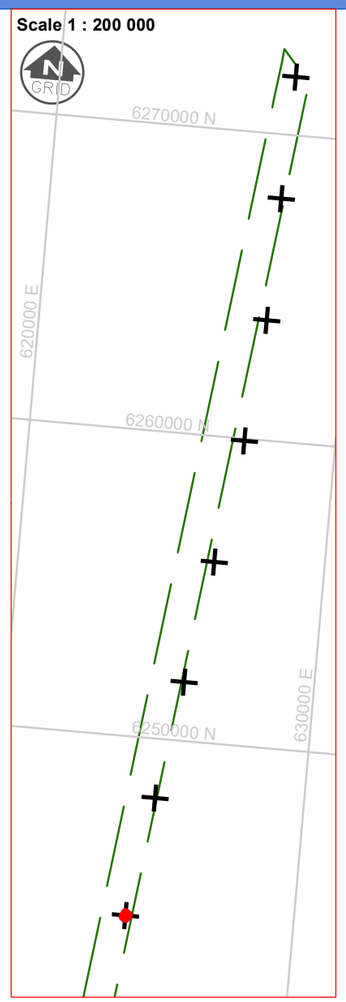
Sediment Description:
Fine to medium sand with shell fragments

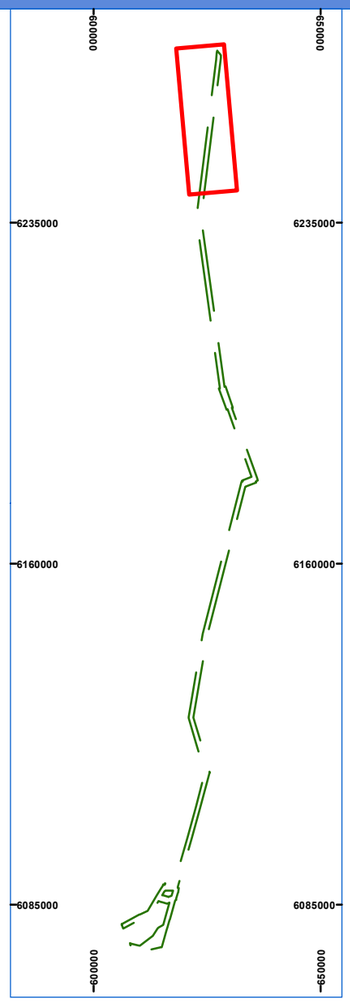
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

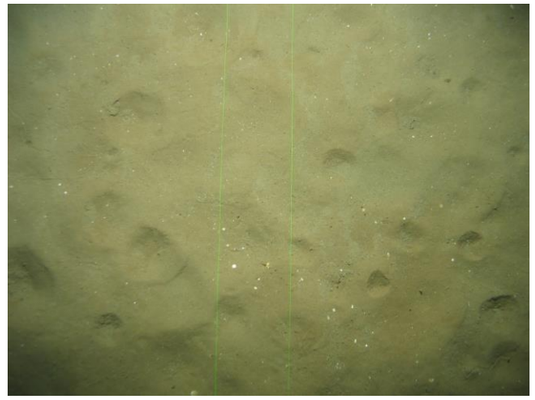
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV180

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV180
Fix: 360 **E:** 624 532 **N:** 6 244 139 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV180
Fix: 392 **E:** 624 571 **N:** 6 244 163 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV180
Fix: 30 **E:** 624 524 **N:** 6 244 162 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

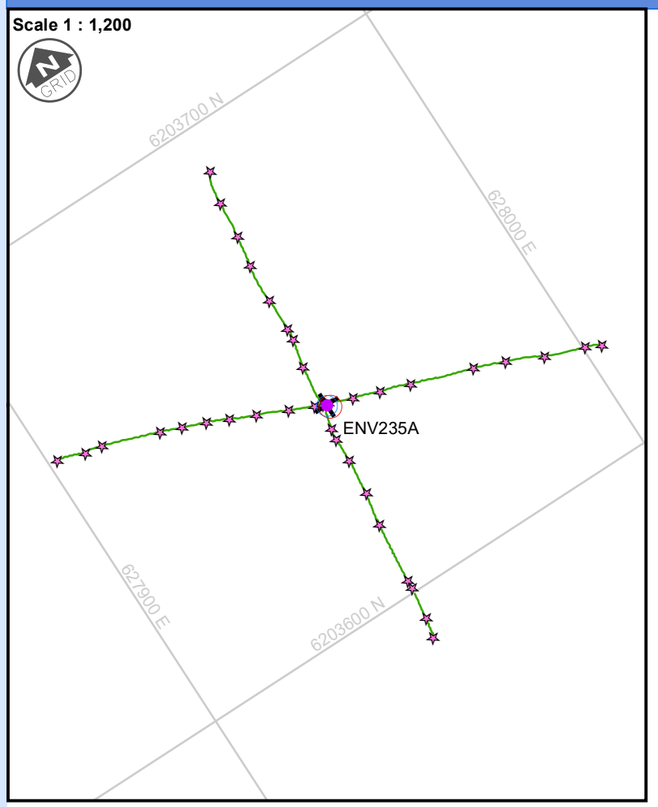


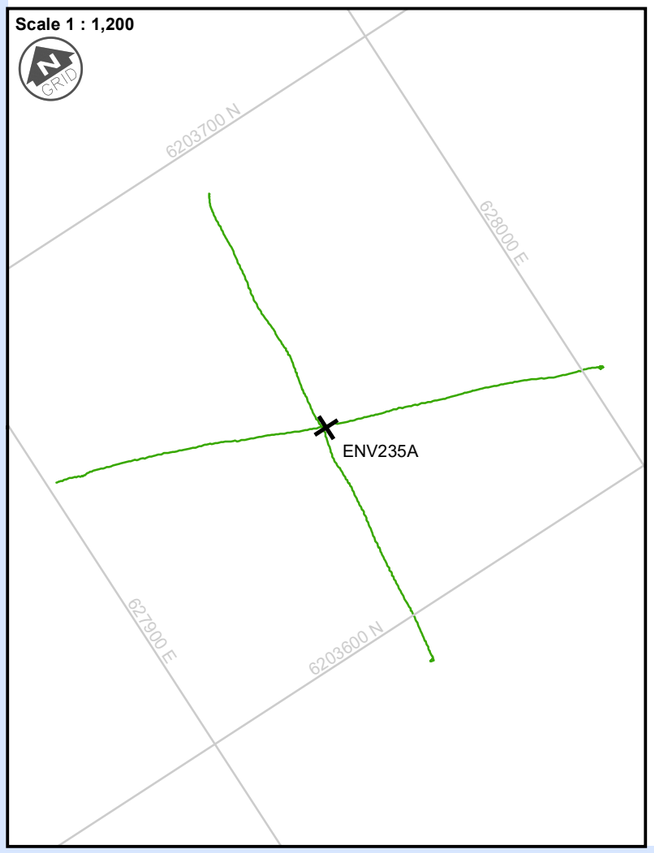
Station: ENV180
Fix: 30 **E:** 624 524 **N:** 6 244 162 **Depth (m):** 69
Retention: MFA

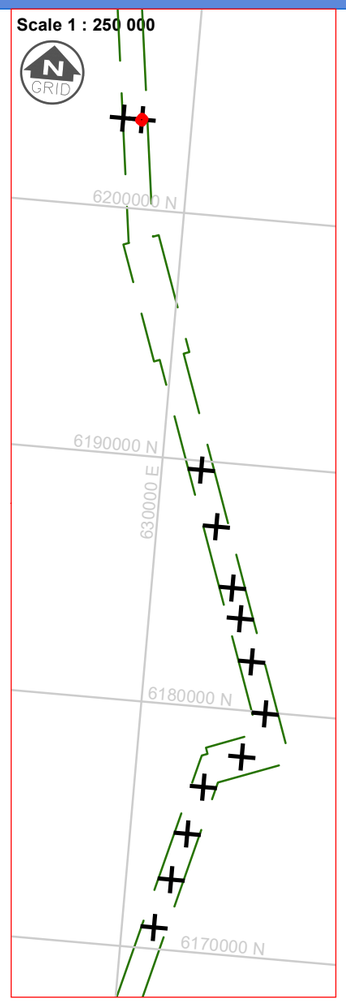
Sediment Description:
Fine to medium sand with shell fragments

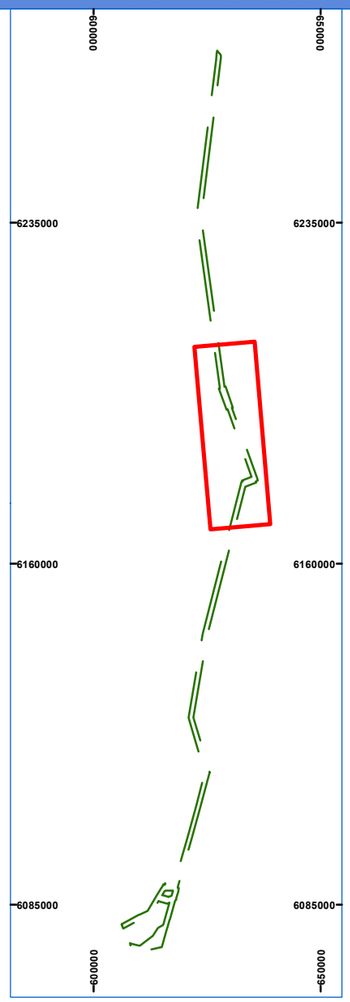
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

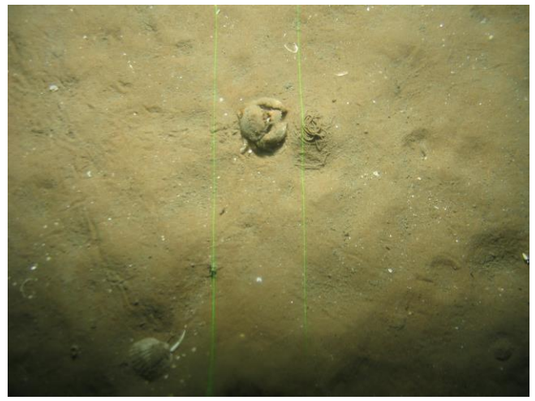
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV235A

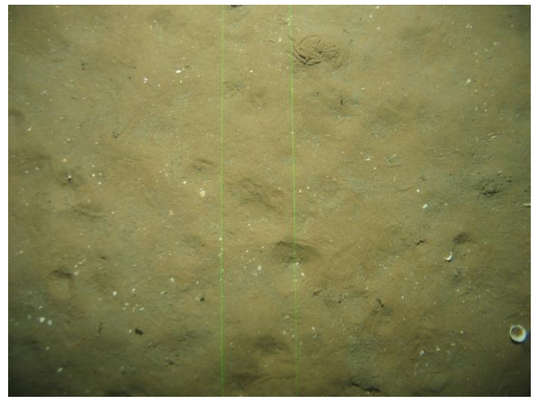
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV235A
Fix: 522 **E:** 627 954 **N:** 6 203 671 **Depth (m):** 66

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (Brachyura *stet.*)



Station: ENV235A
Fix: 532 **E:** 627 948 **N:** 6 203 615 **Depth (m):** 66

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV235A
Fix: 39 **E:** 627 952 **N:** 6 203 639 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Arthropoda (Corystusidae), Annelida (Polychaeta)

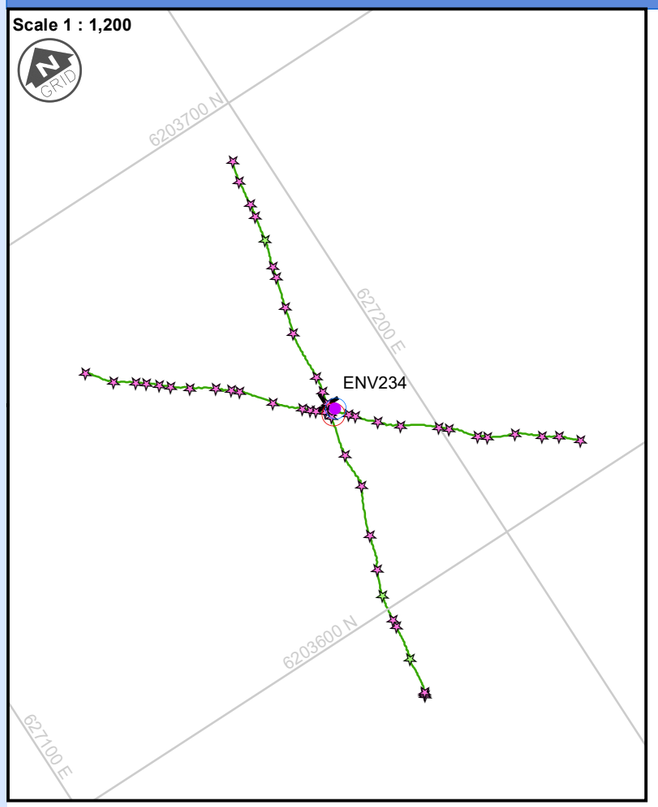


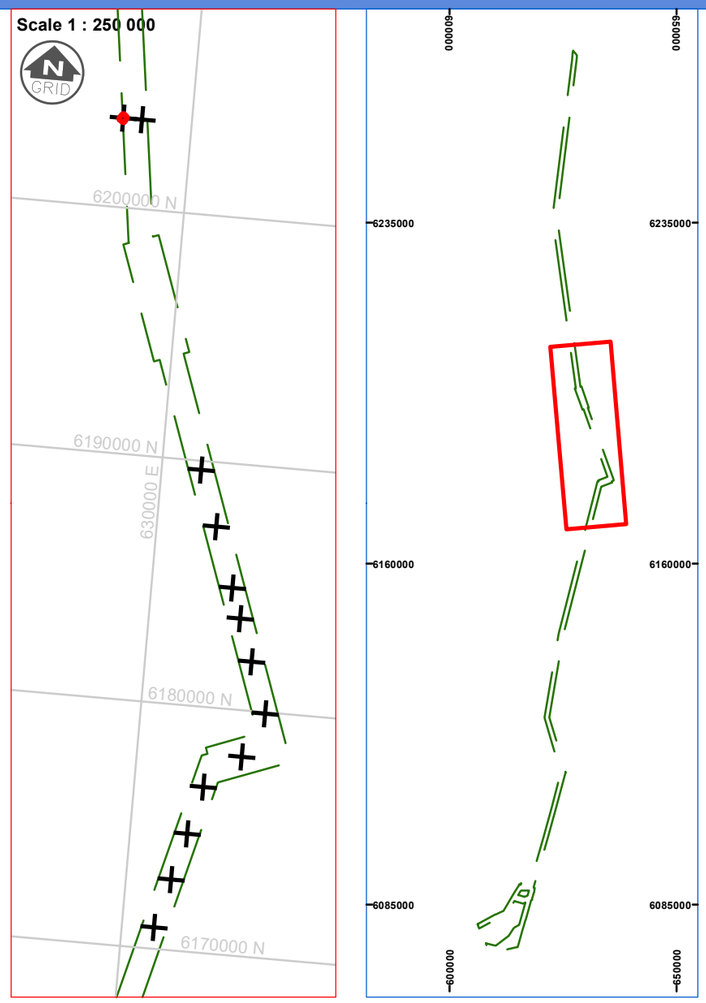
Station: ENV235A
Fix: 39 **E:** 627 952 **N:** 6 203 639 **Depth (m):** 66
Retention: MFA

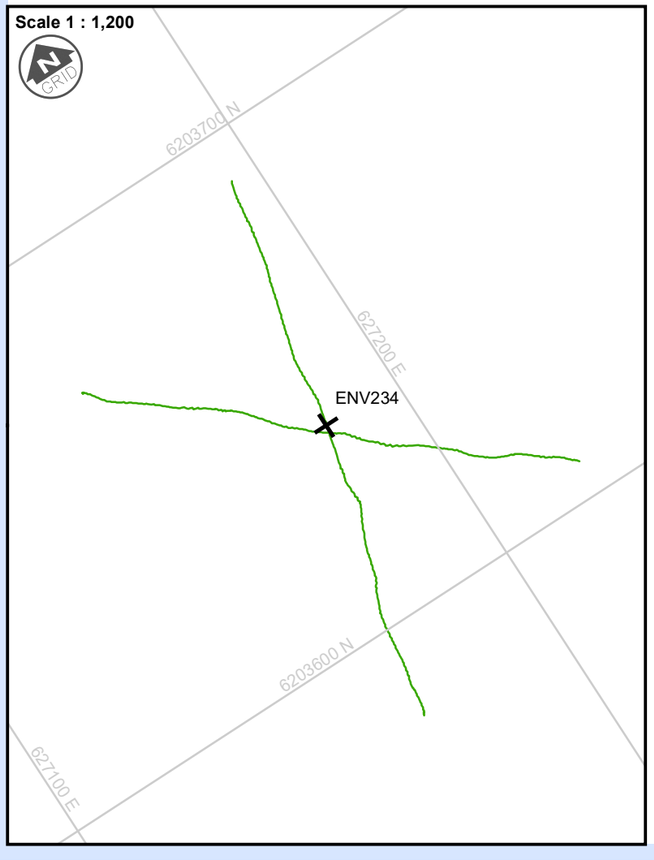
Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Arthropoda (Corystusidae), Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

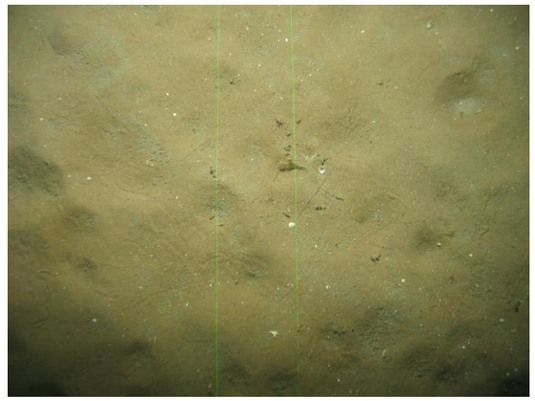
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV234

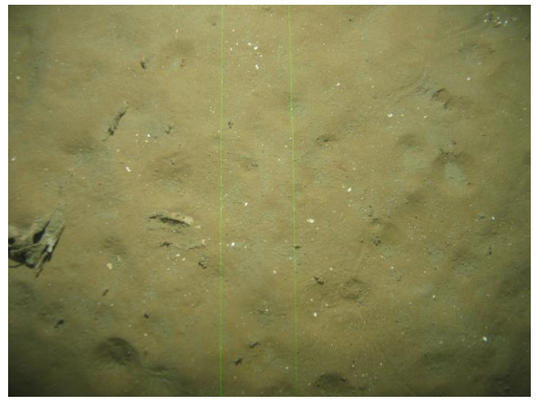
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV234
Fix: 409 **E:** 627 187 **N:** 6 203 636 **Depth (m):** 67

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV234
Fix: 449 **E:** 627 193 **N:** 6 203 686 **Depth (m):** 67

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV234
Fix: 33 **E:** 627 184 **N:** 6 203 638 **Depth (m):** 68
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Echinodermata (Echinoidea), Mollusca (Scaphopoda)

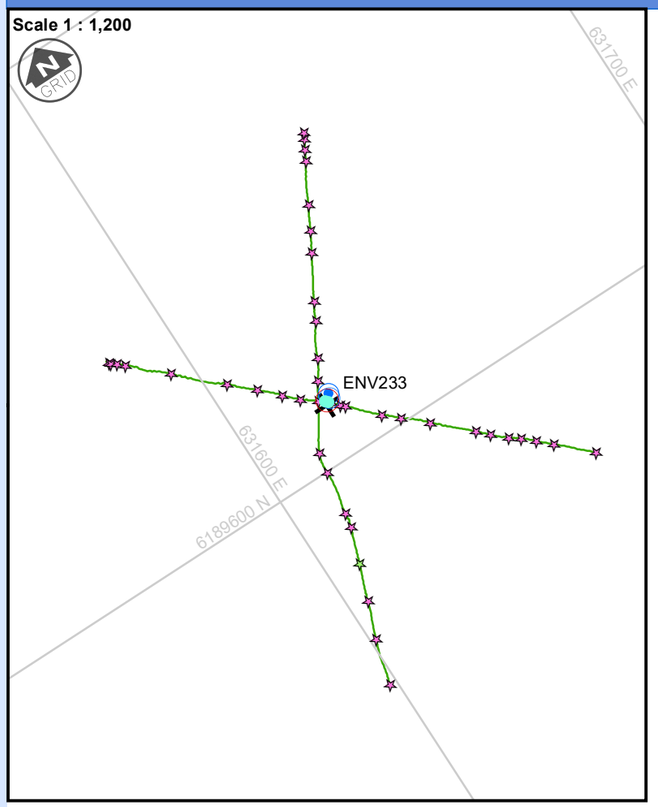


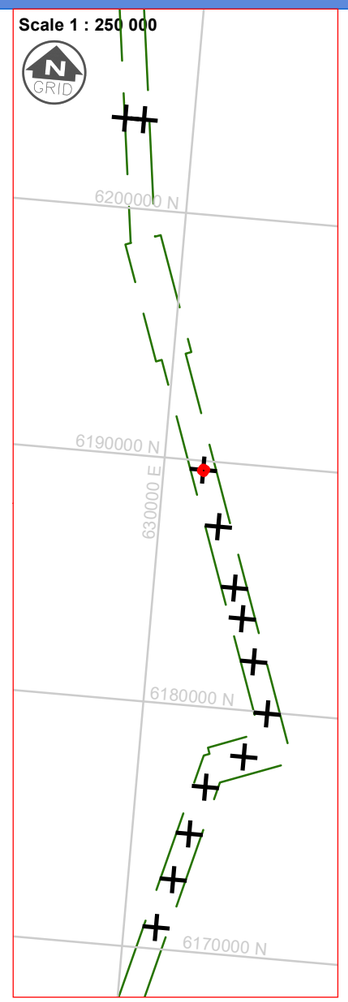
Station: ENV234
Fix: 33 **E:** 627 184 **N:** 6 203 638 **Depth (m):** 68
Retention: MFA

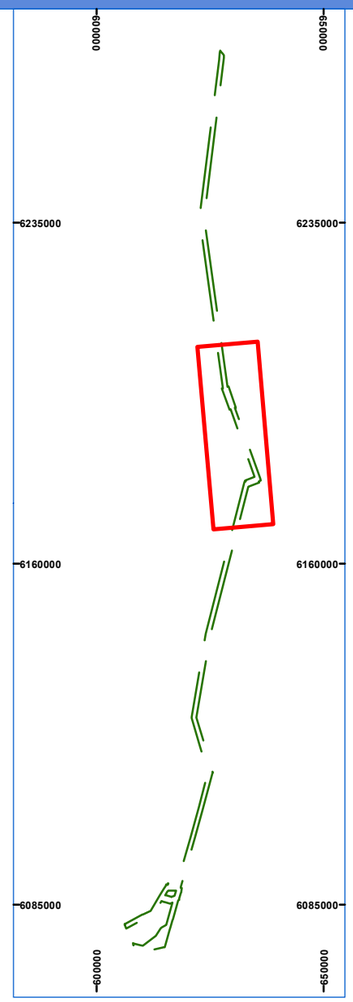
Sediment Description:
Fine to medium sand with shell fragments

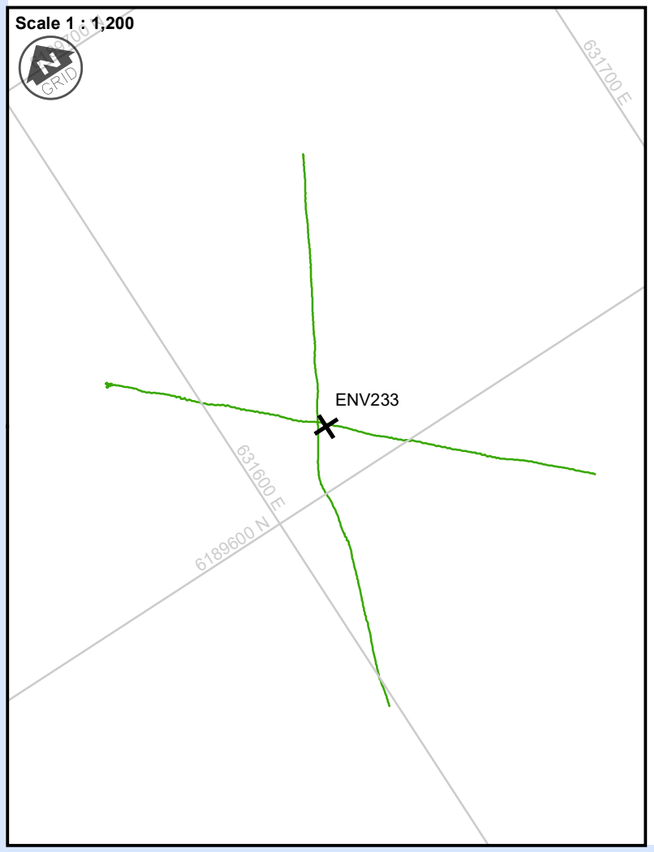
Faunal Description:
Echinodermata (Echinoidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV233

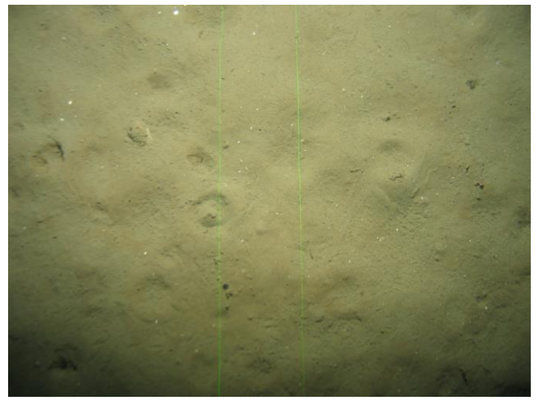
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV233
Fix: 548 **E:** 631 621 **N:** 6 189 609 **Depth (m):** 71

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV233
Fix: 574 **E:** 631 640 **N:** 6 189 653 **Depth (m):** 71

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV233
Fix: 43 **E:** 631 619 **N:** 6 189 612 **Depth (m):** 71
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Pharidae)

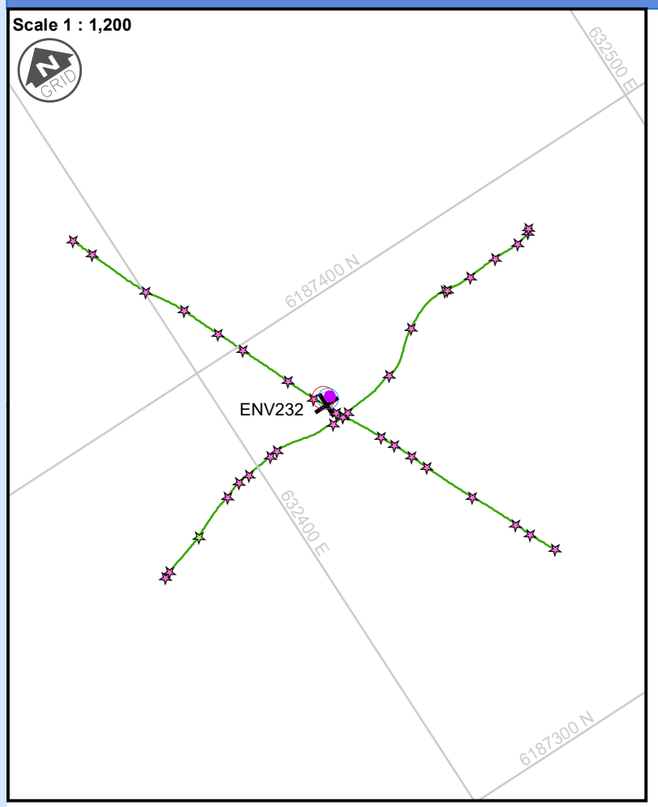


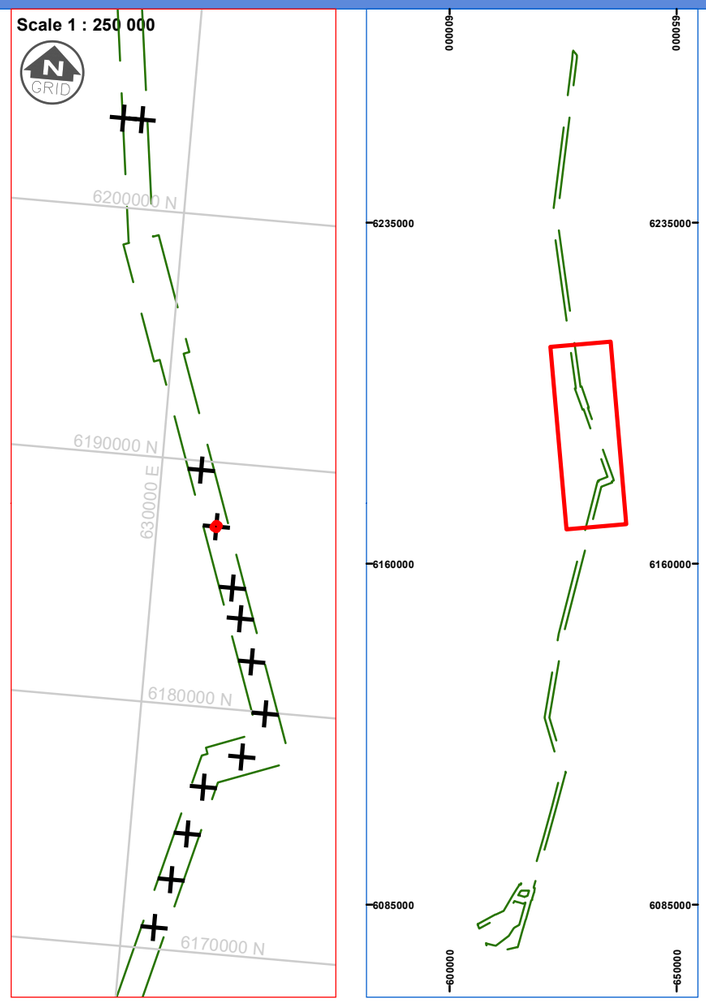
Station: ENV233
Fix: 43 **E:** 631 619 **N:** 6 189 612 **Depth (m):** 71
Retention: MFB

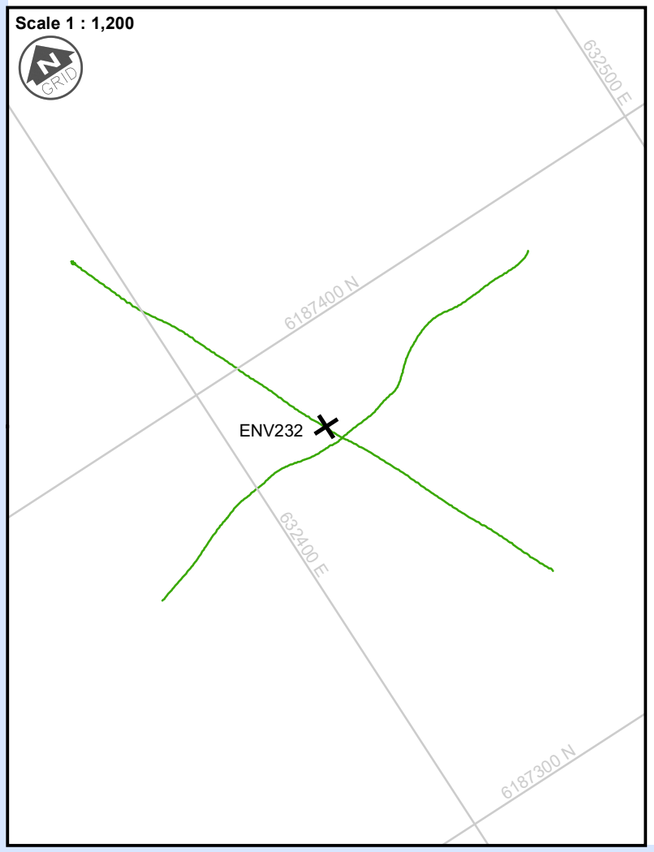
Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Pharidae)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

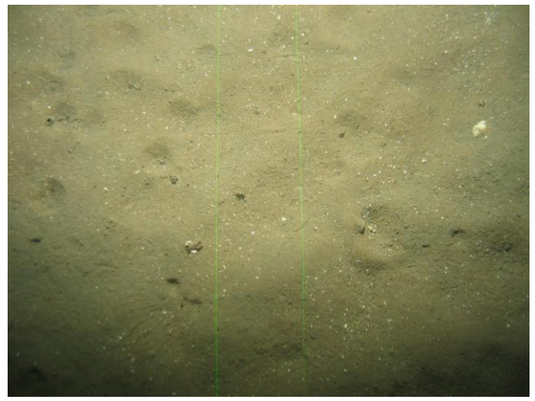
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV232

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV232
Fix: 590 **E:** 632 426 **N:** 6 187 364 **Depth (m):** 68

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV232
Fix: 609 **E:** 632 421 **N:** 6 187 378 **Depth (m):** 68

Sediment Description:
Soft sediment with shell hash

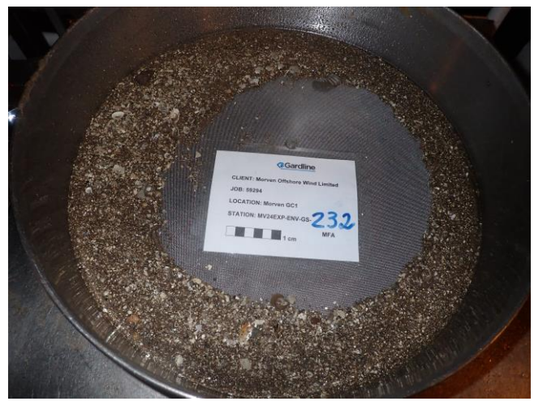
Faunal Description:
Echinodermata (*Henricia inc*)



Station: ENV232
Fix: 46 **E:** 632 418 **N:** 6 187 383 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

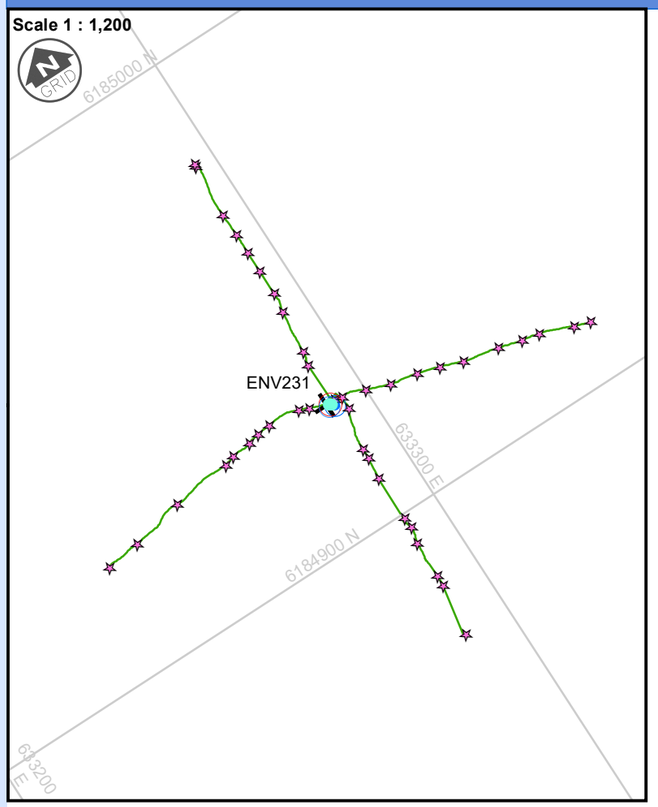


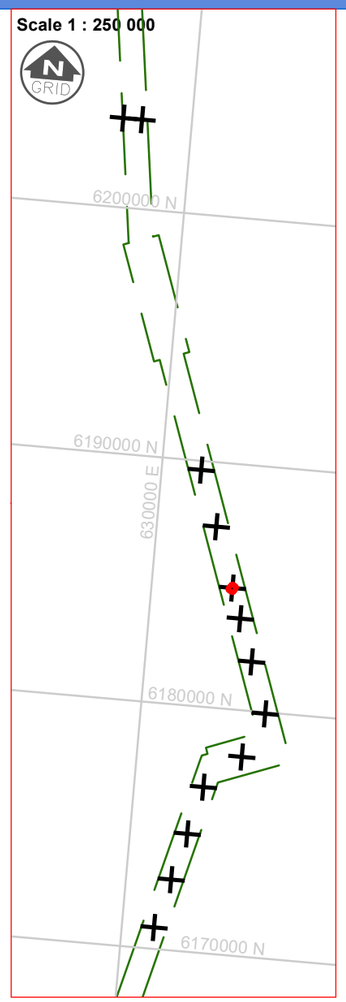
Station: ENV232
Fix: 46 **E:** 632 418 **N:** 6 187 383 **Depth (m):** 69
Retention: MFA

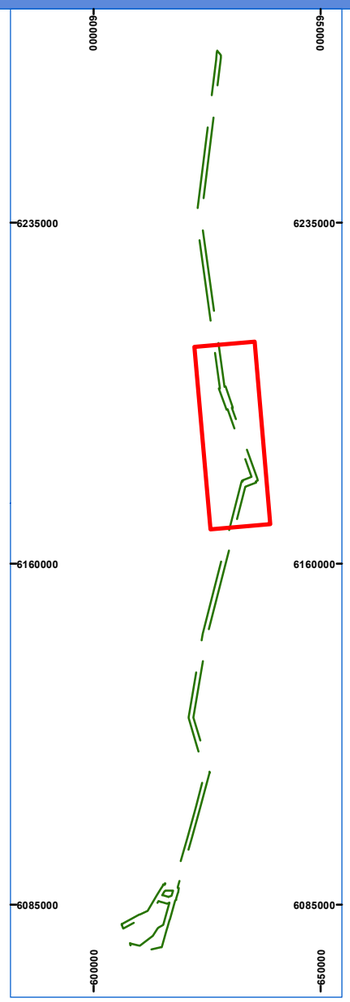
Sediment Description:
Fine to medium sand with shell fragments

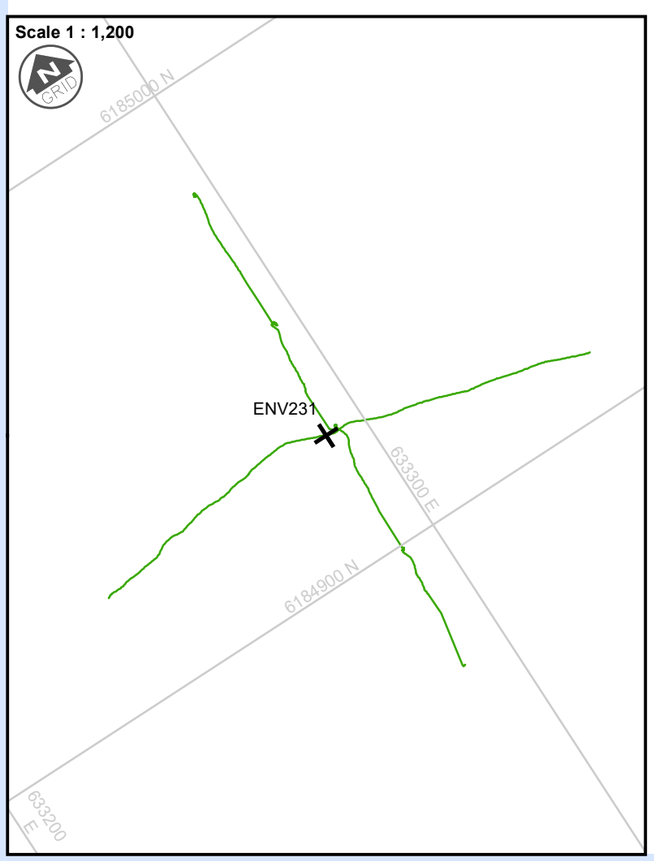
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV231

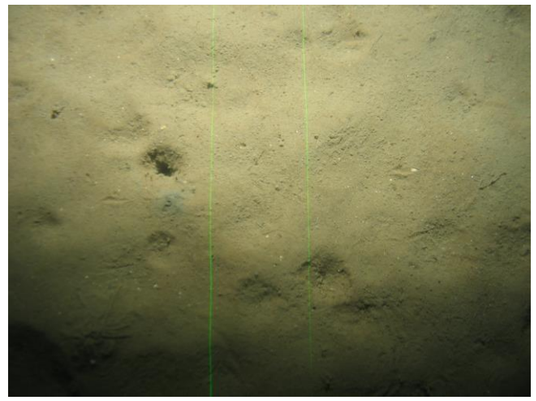
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV231
Fix: 629 **E:** 633 295 **N:** 6 184 923 **Depth (m):** 76

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Chordata (Pleuronectiformes *stet.*), Cnidaria (*Pennatula phosphorea*), Faunal Turf



Station: ENV231
Fix: 653 **E:** 633 305 **N:** 6 184 923 **Depth (m):** 76

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV231
Fix: 51 **E:** 633 292 **N:** 6 184 925 **Depth (m):** 77
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea)

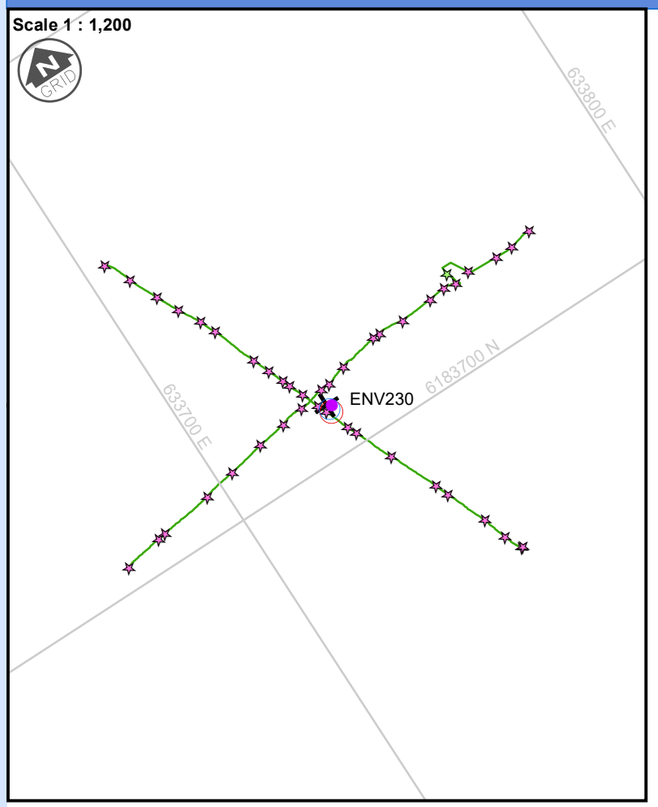


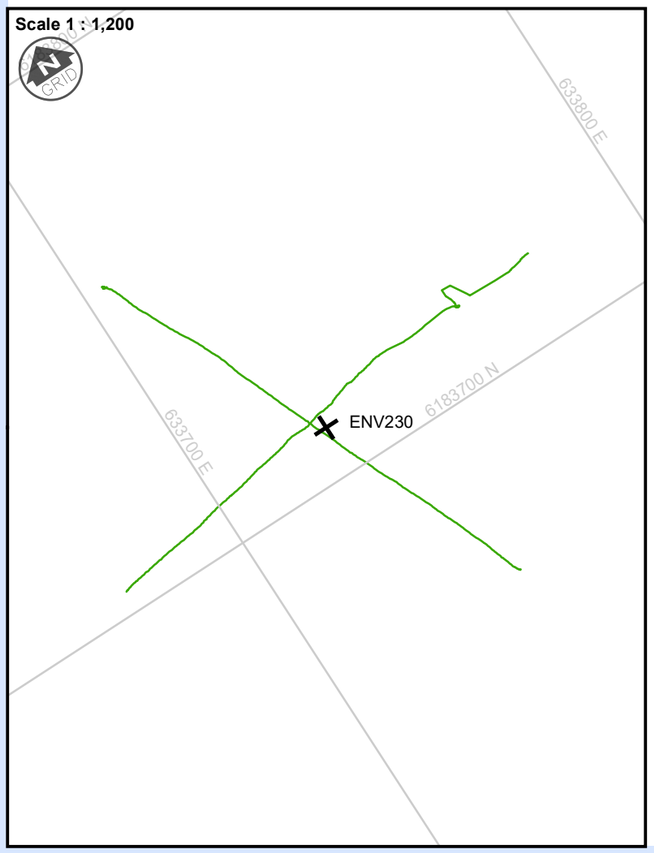
Station: ENV231
Fix: 50 **E:** 633 293 **N:** 6 184 926 **Depth (m):** 77
Retention: MFA

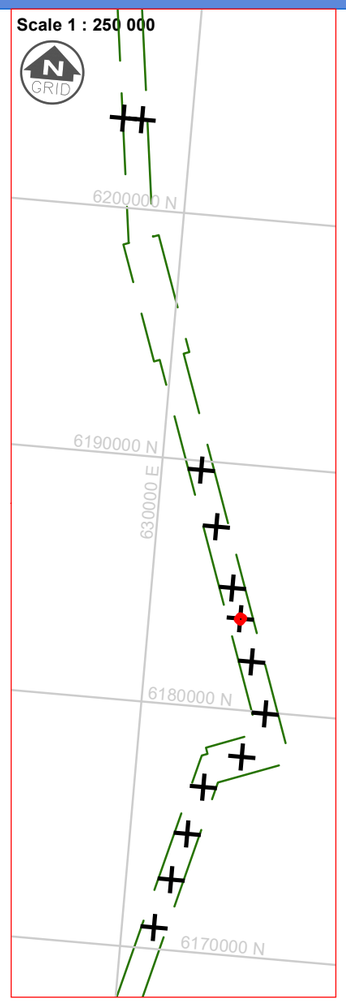
Sediment Description:
Fine to medium sand with shell fragments

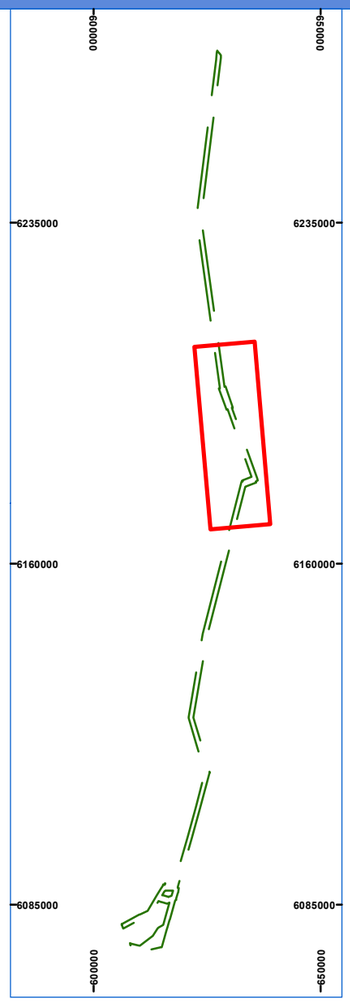
Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV230

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV230
Fix: 669 **E:** 633 720 **N:** 6 183 722 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Annelida (Terebellidae), Cnidaria (*Pennatula phosphorea*)



Station: ENV230
Fix: 708 **E:** 633 684 **N:** 6 183 706 **Depth (m):** 83

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Hydractinia echinata*)



Station: ENV230
Fix: 54 **E:** 633 726 **N:** 6 183 708 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

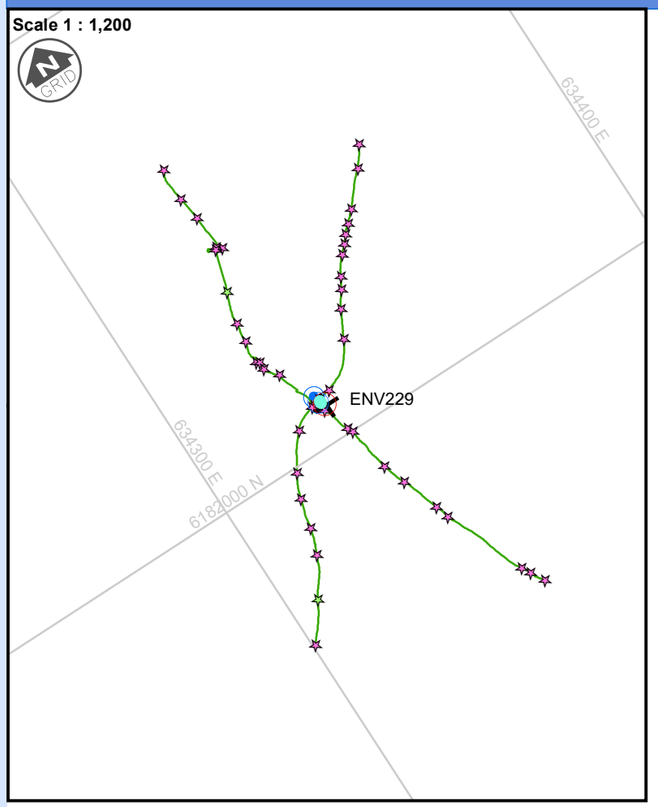


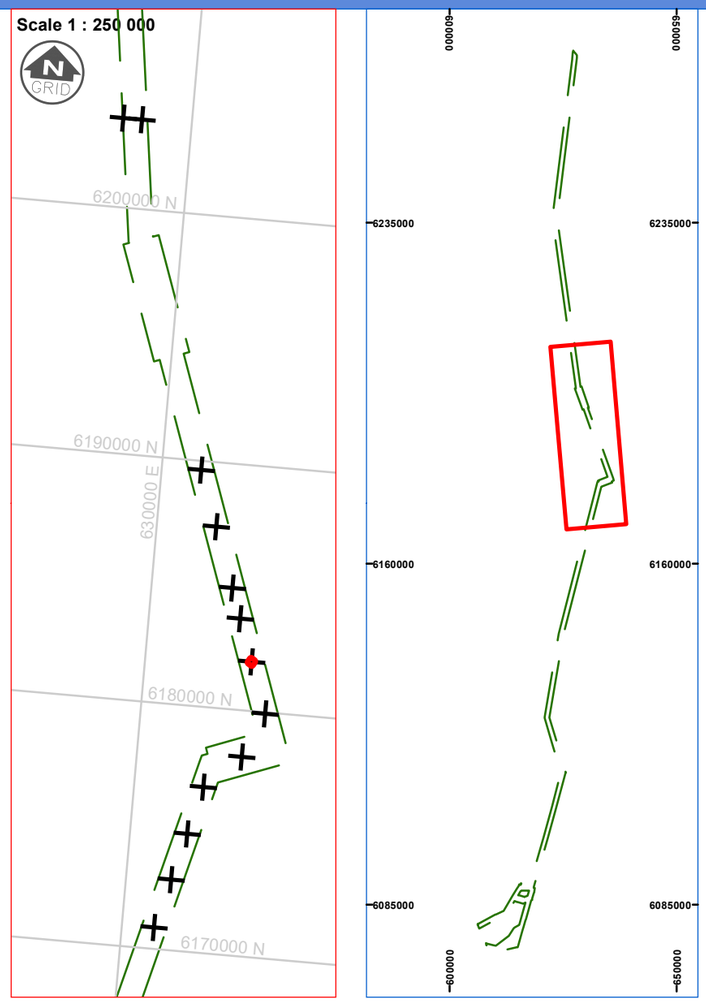
Station: ENV230
Fix: 54 **E:** 633 726 **N:** 6 183 708 **Depth (m):** 83
Retention: MFA

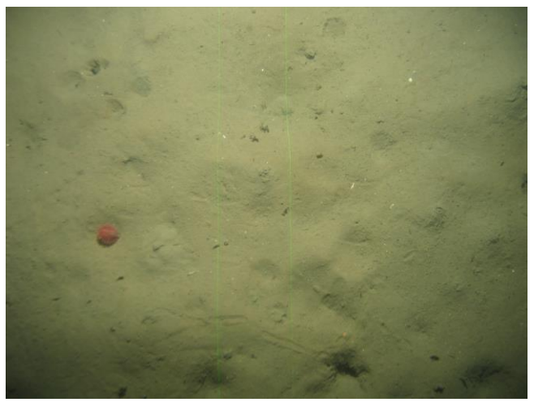
Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







Station: ENV229
Fix: 742 **E:** 634 330 **N:** 6 182 009 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

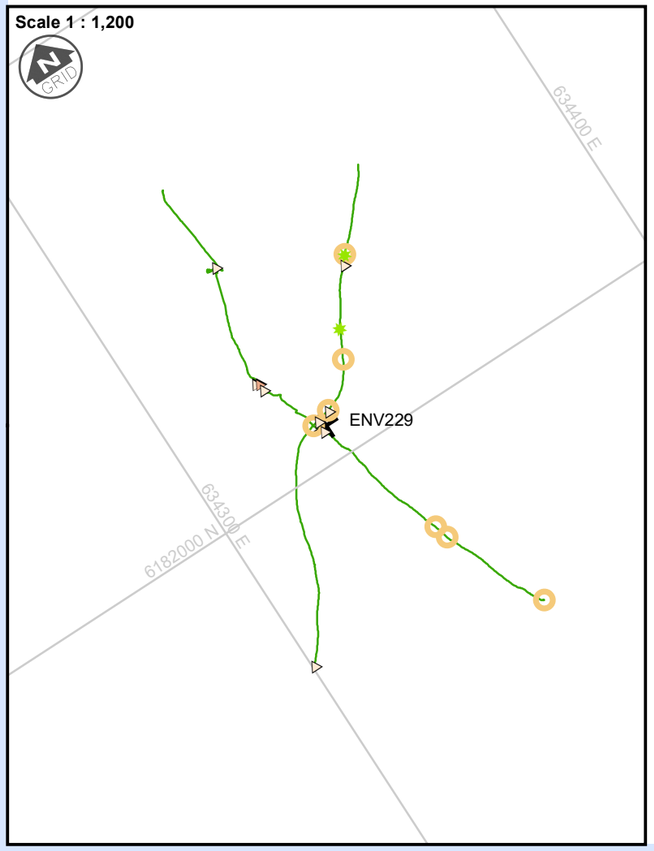
Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV229
Fix: 749 **E:** 634 349 **N:** 6 182 033 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Annelida (Terebellidae), Chordata (*Glyptocephalus cynoglossus*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV229

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV229
Fix: 57 **E:** 634 328 **N:** 6 182 007 **Depth (m):** 82
Retention: MFA

Sediment Description:
Silty fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

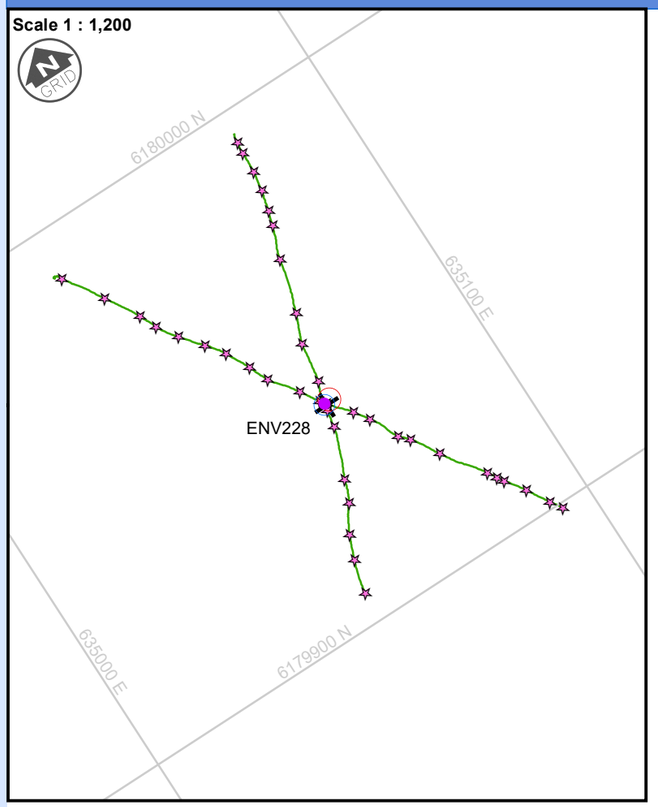


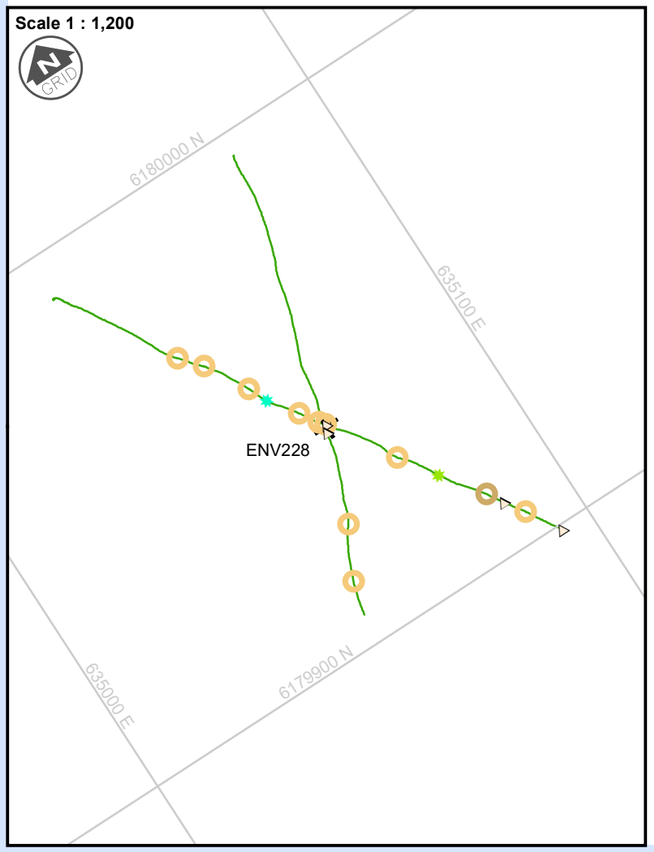
Station: ENV229
Fix: 57 **E:** 634 328 **N:** 6 182 007 **Depth (m):** 82
Retention: MFA

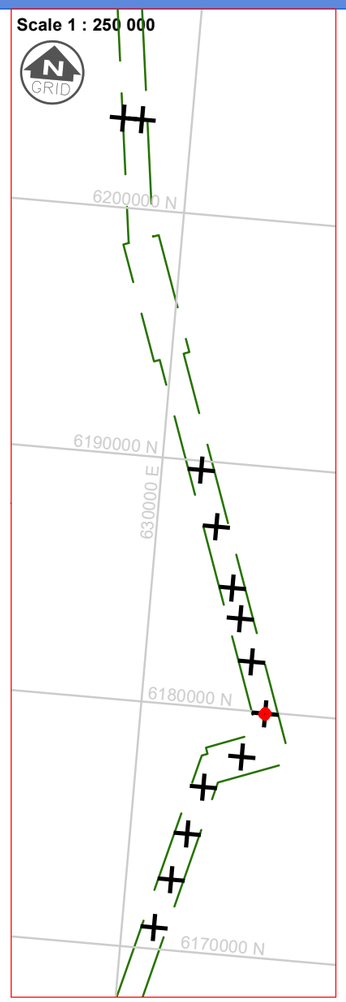
Sediment Description:
Silty fine sand

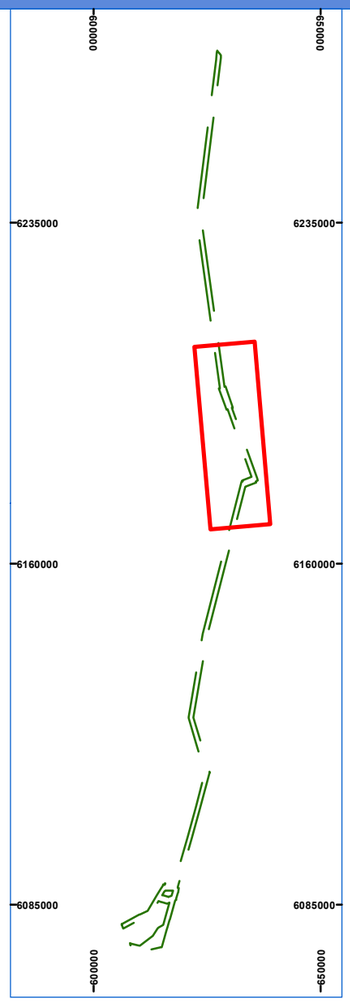
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

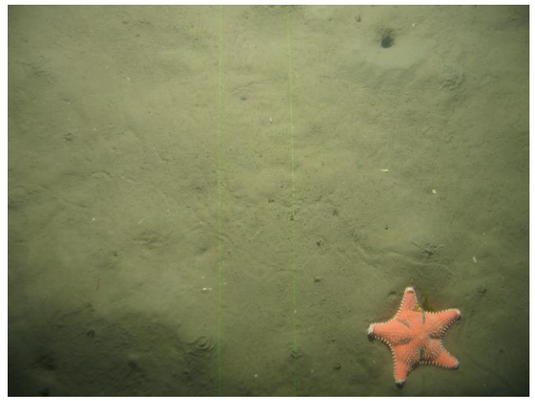
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV228

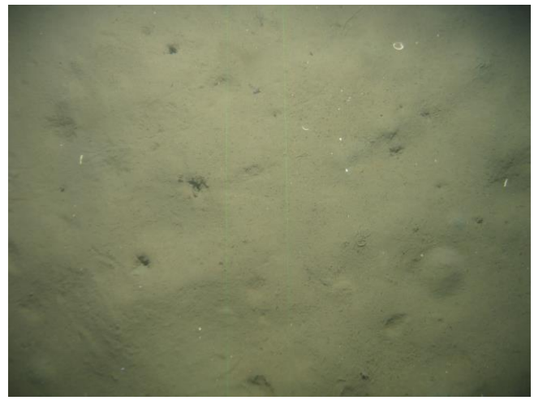
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV228
Fix: 768 **E:** 635 074 **N:** 6 179 928 **Depth (m):** 90

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Echinodermata (*Hippasteria phrygiana*)



Station: ENV228
Fix: 792 **E:** 635 078 **N:** 6 179 983 **Depth (m):** 90

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV228
Fix: 61 **E:** 635 067 **N:** 6 179 942 **Depth (m):** 90
Retention: MFA

Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)

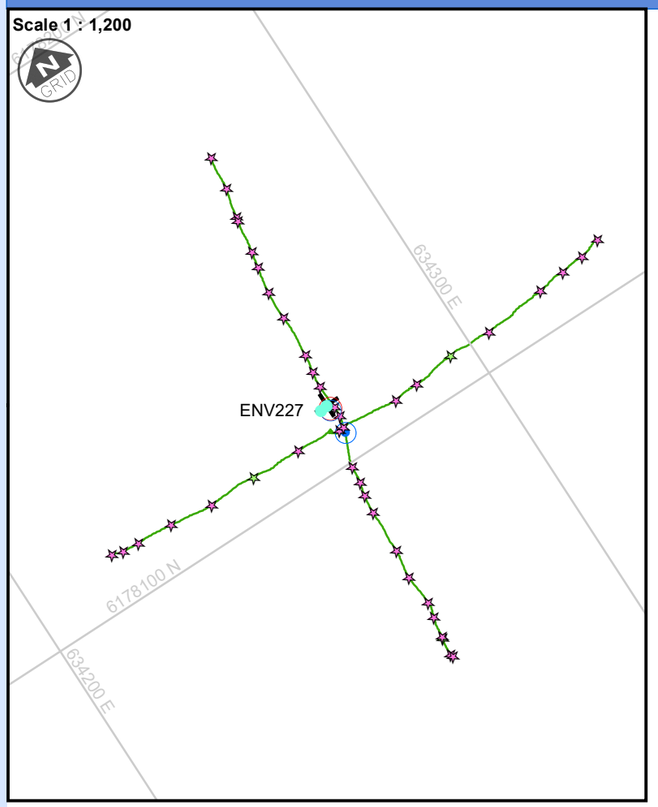


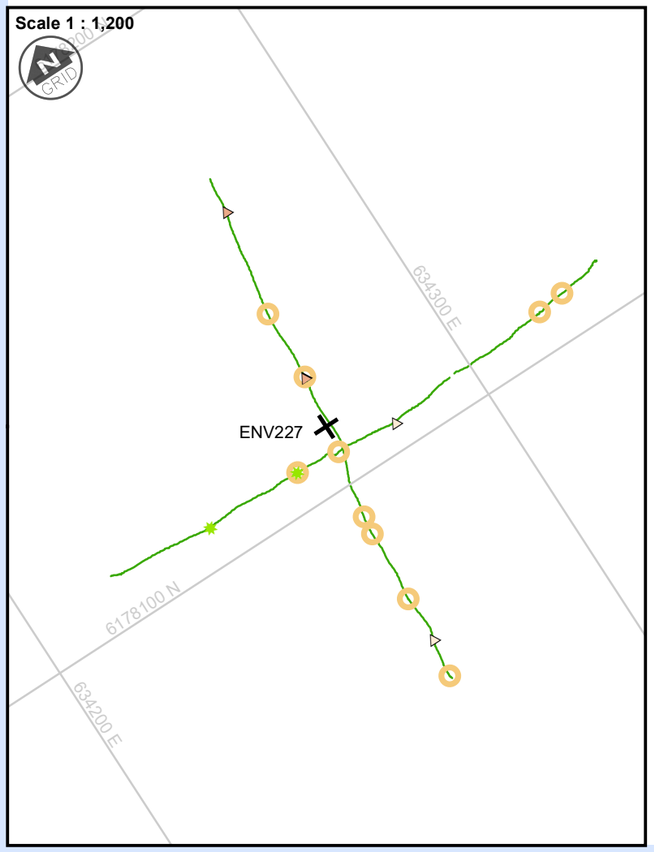
Station: ENV228
Fix: 61 **E:** 635 067 **N:** 6 179 942 **Depth (m):** 90
Retention: MFA

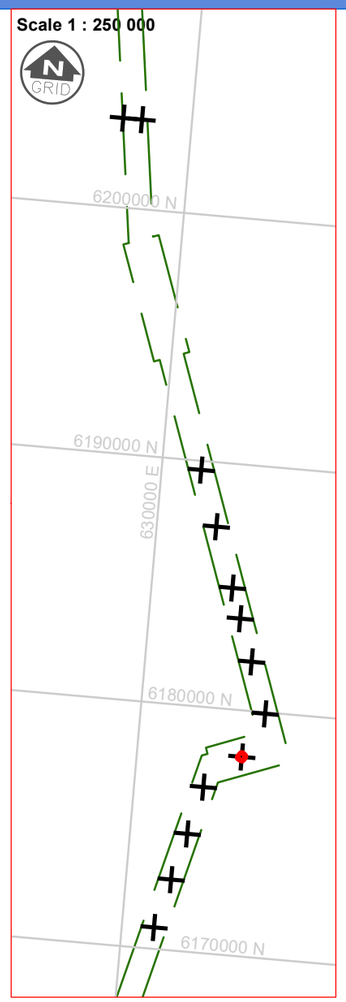
Sediment Description:
Silty clayey fine sand

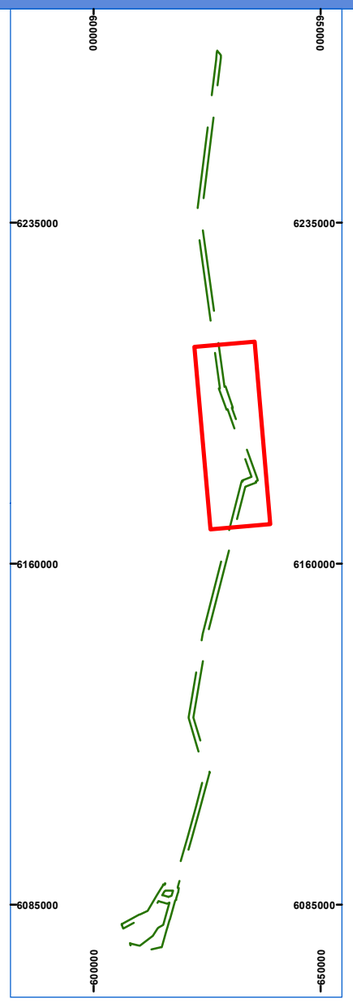
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

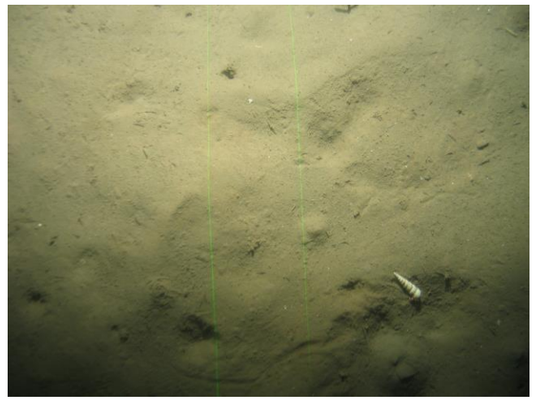
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV227

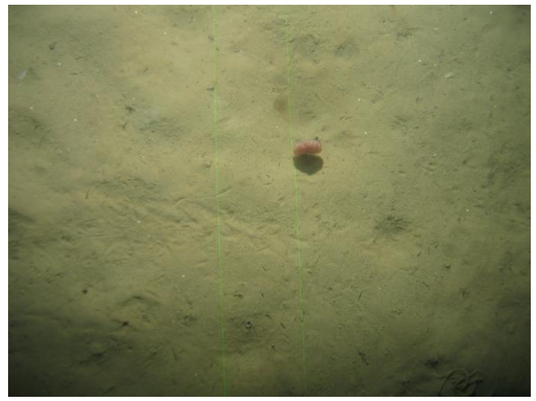
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV227
Fix: 802 **E:** 634 287 **N:** 6 178 106 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*)



Station: ENV227
Fix: 835 **E:** 634 265 **N:** 6 178 066 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV227
Fix: 64 **E:** 634 270 **N:** 6 178 111 **Depth (m):** 89
Retention: MFA

Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

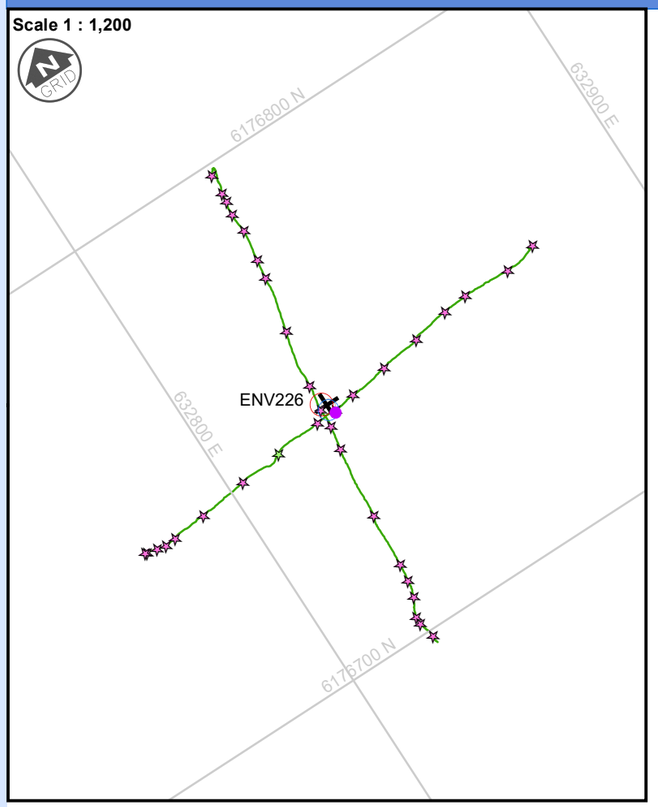


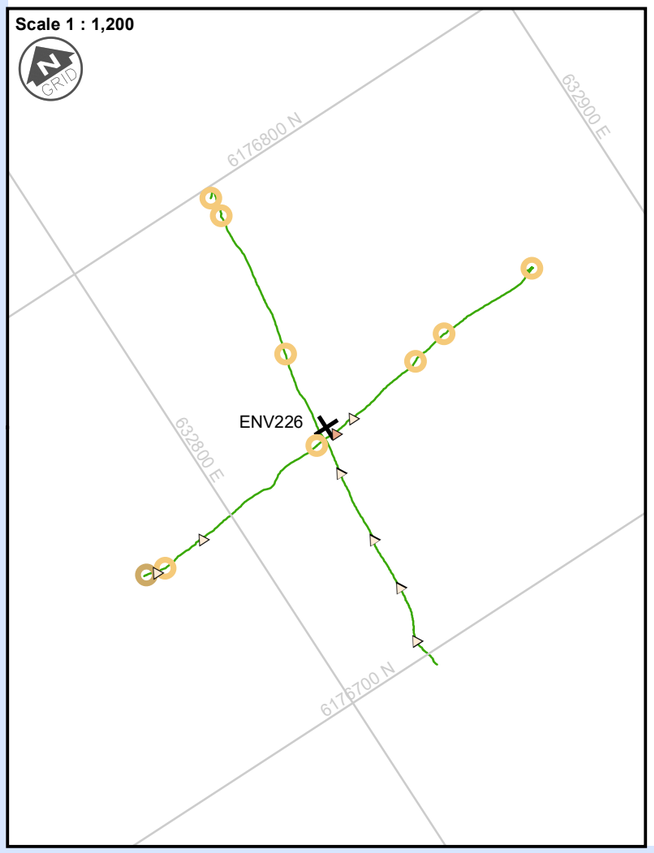
Station: ENV227
Fix: 64 **E:** 634 270 **N:** 6 178 111 **Depth (m):** 89
Retention: MFA

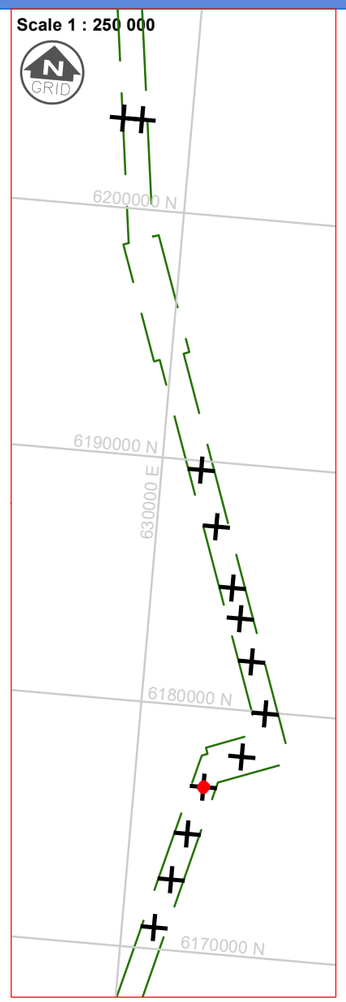
Sediment Description:
Silty clayey fine sand

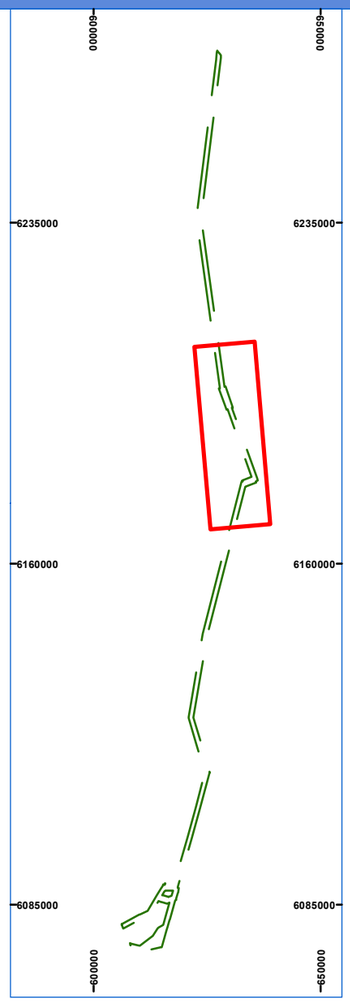
Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

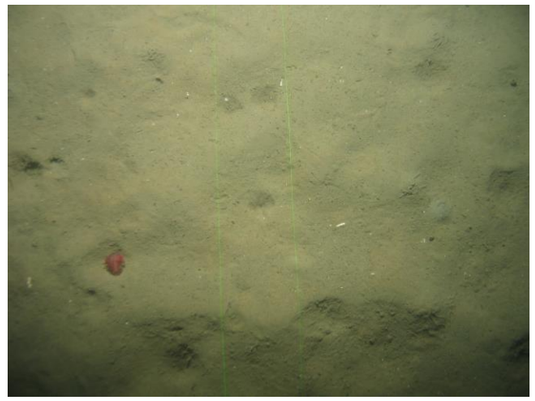
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV226

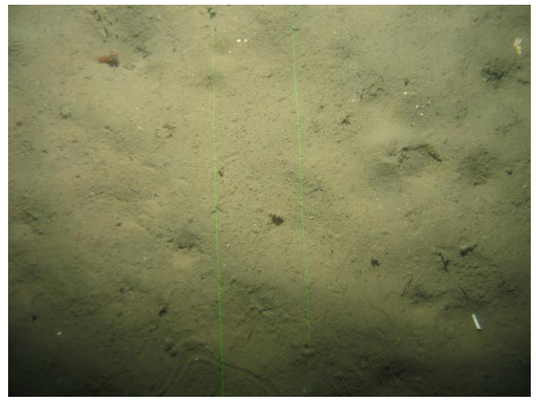
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV226
Fix: 849 **E:** 632 793 **N:** 6 176 743 **Depth (m):** 87

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV226
Fix: 868 **E:** 632 820 **N:** 6 176 714 **Depth (m):** 87

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV226
Fix: 70 **E:** 632 825 **N:** 6 176 747 **Depth (m):** 88
Retention: MFB

Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

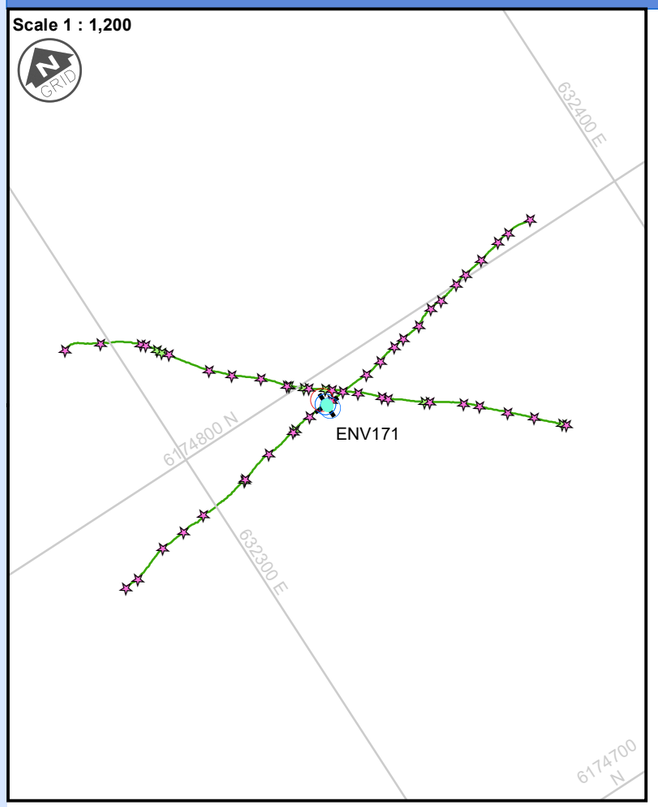


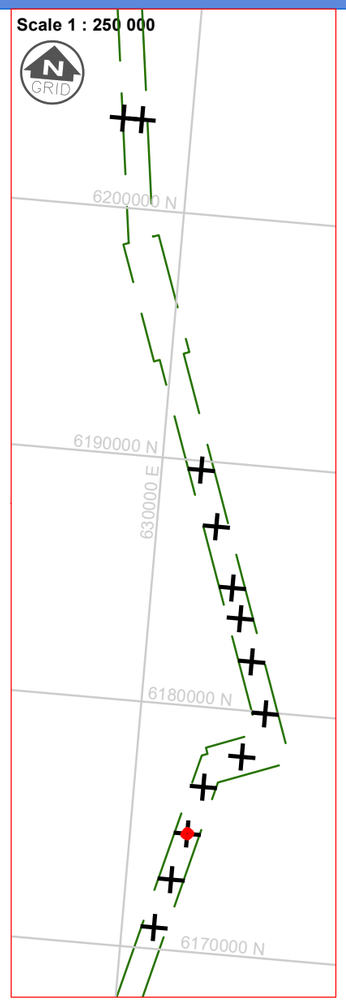
Station: ENV226
Fix: 70 **E:** 632 825 **N:** 6 176 747 **Depth (m):** 88
Retention: MFB

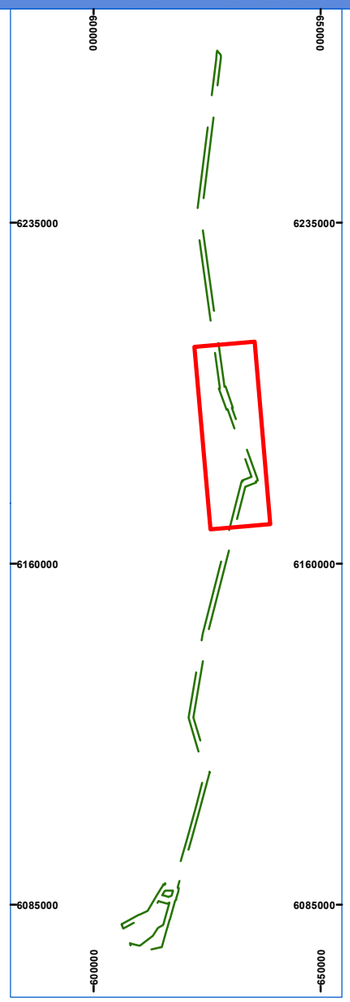
Sediment Description:
Silty clayey fine sand

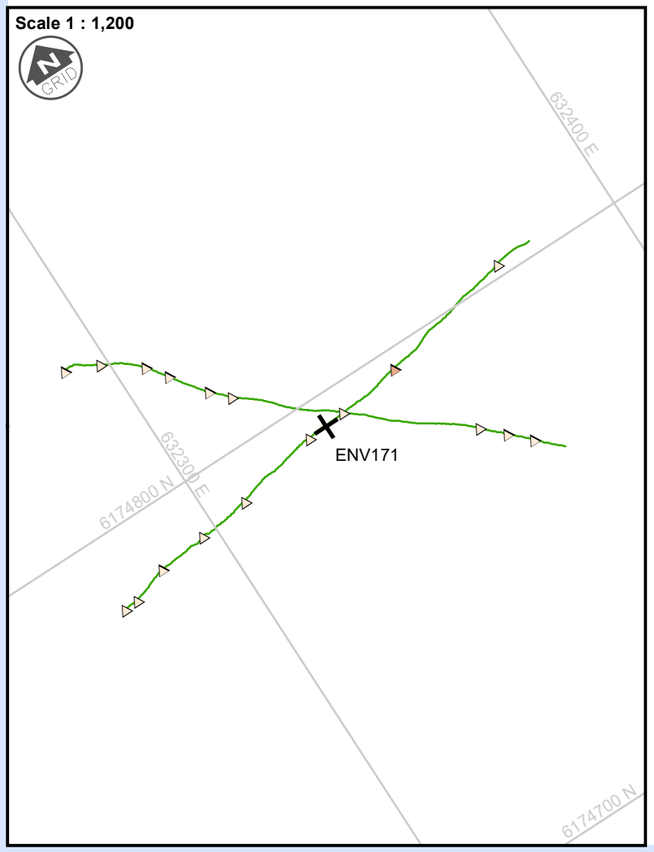
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV171

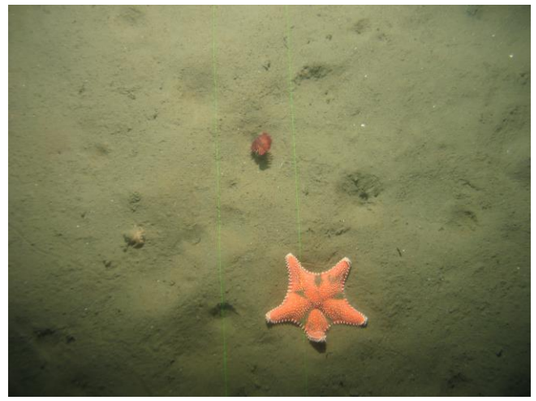
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV171
Fix: 889 **E:** 632 320 **N:** 6 174 793 **Depth (m):** 86

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV171
Fix: 916 **E:** 632 354 **N:** 6 174 778 **Depth (m):** 86

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Hydractinia echinata*, *Pennatula phosphorea*), Echinodermata (*Hippasteria phrygiana*)



Station: ENV171
Fix: 72 **E:** 632 329 **N:** 6 174 795 **Depth (m):** 86
Retention: MFA

Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta)

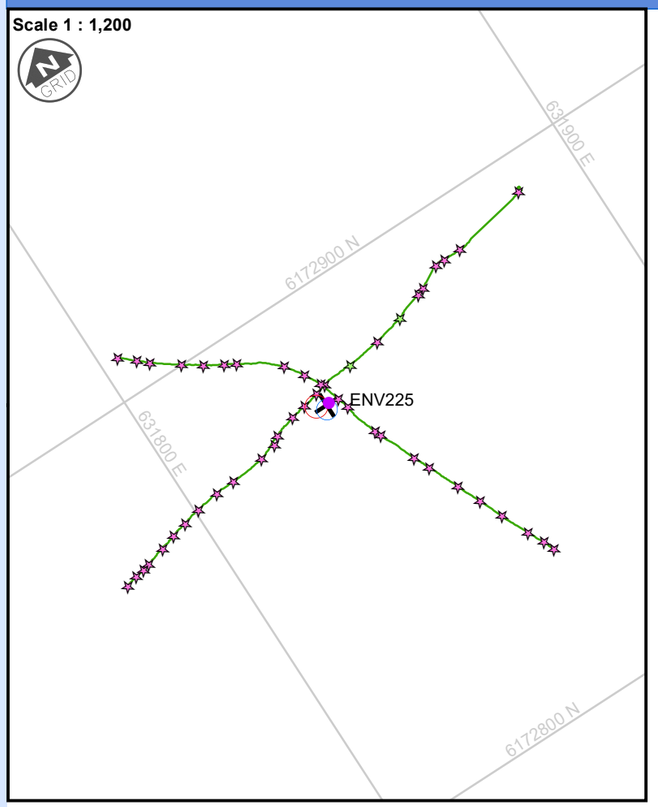


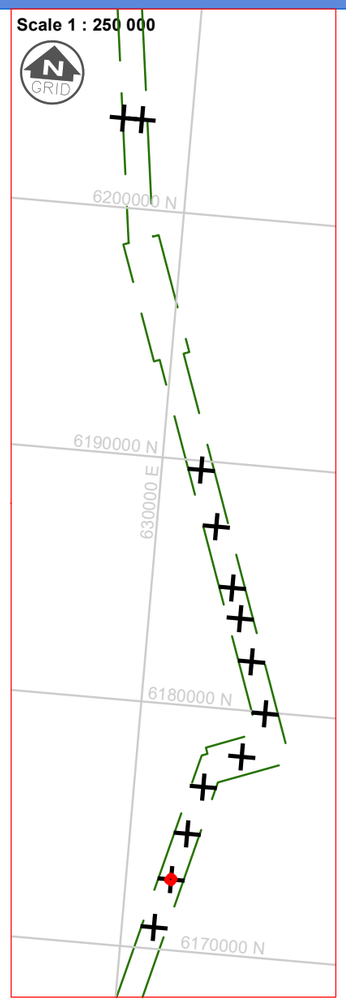
Station: ENV171
Fix: 72 **E:** 632 329 **N:** 6 174 795 **Depth (m):** 86
Retention: MFA

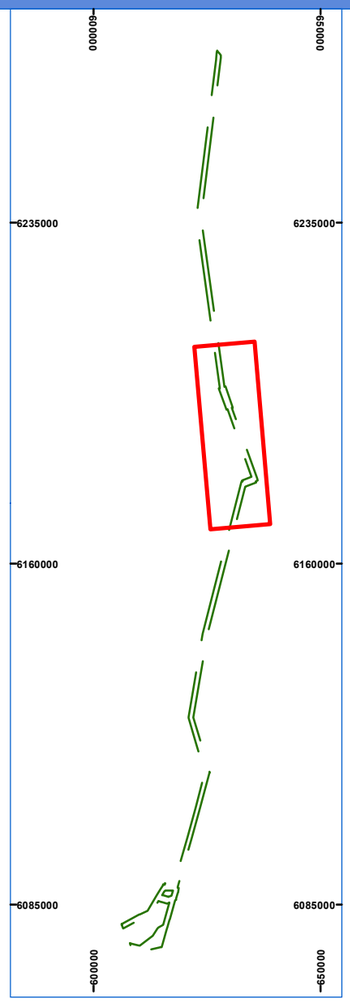
Sediment Description:
Silty clayey fine sand

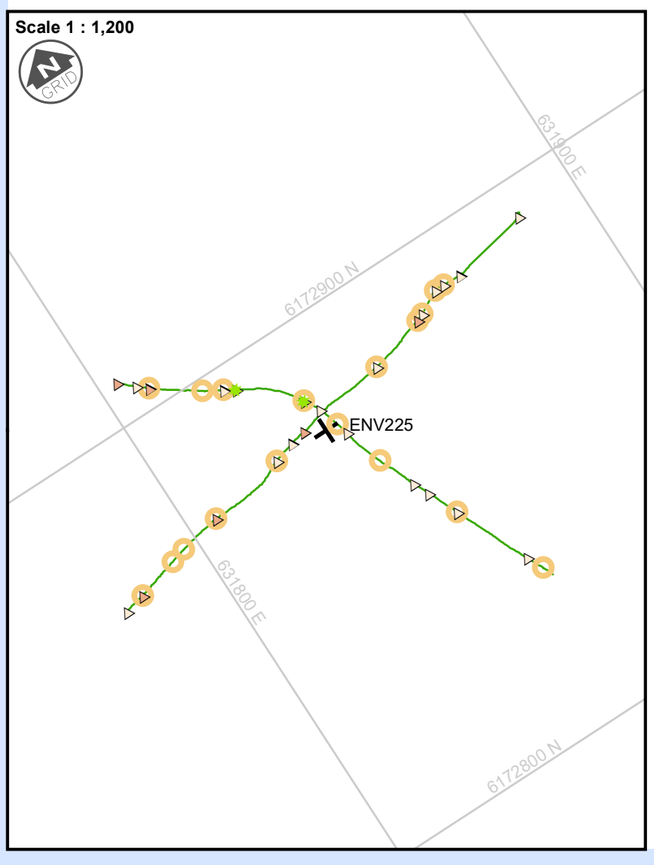
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

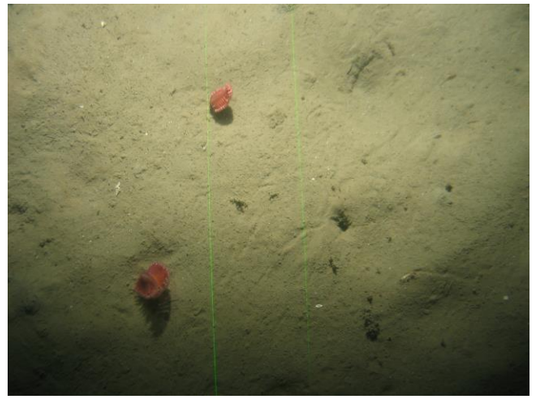
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV225

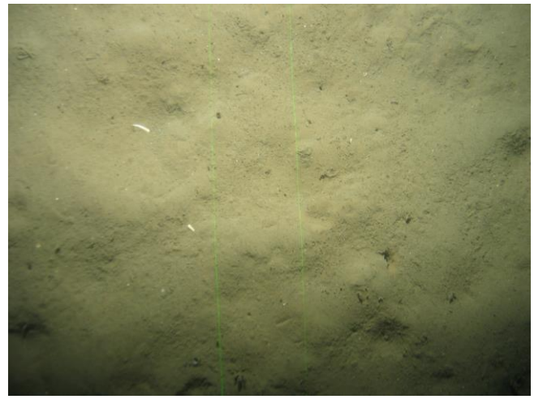
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV225
Fix: 934 **E:** 631 805 **N:** 6 172 875 **Depth (m):** 93

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV225
Fix: 963 **E:** 631 850 **N:** 6 172 841 **Depth (m):** 93

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV225
Fix: 77 **E:** 631 833 **N:** 6 172 877 **Depth (m):** 93
Retention: MFB

Sediment Description:
Silty clayey sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)

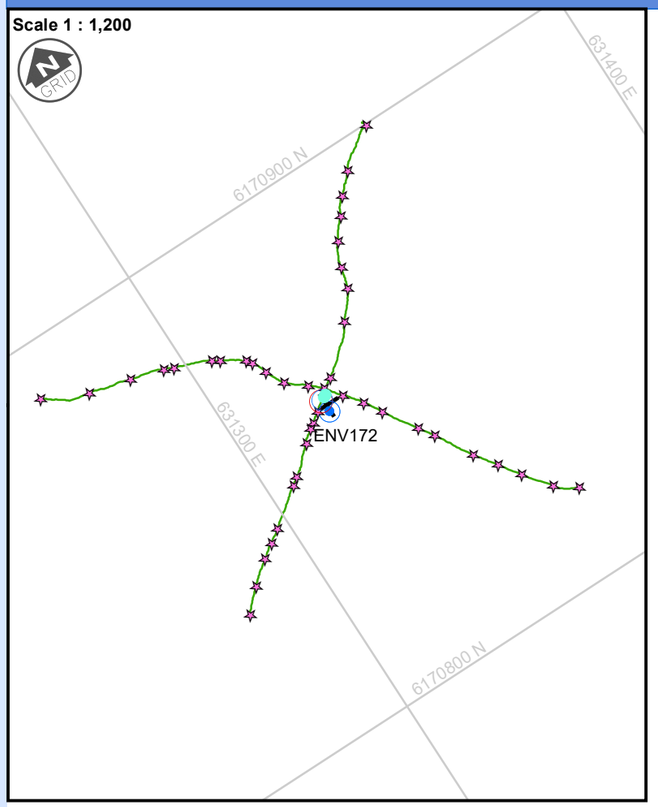


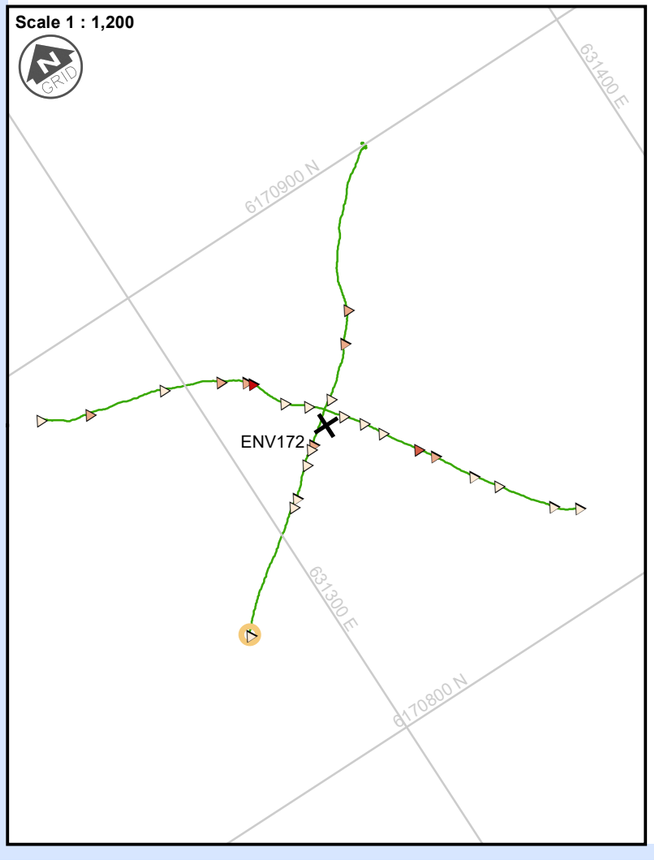
Station: ENV225
Fix: 77 **E:** 631 833 **N:** 6 172 877 **Depth (m):** 93
Retention: MFB

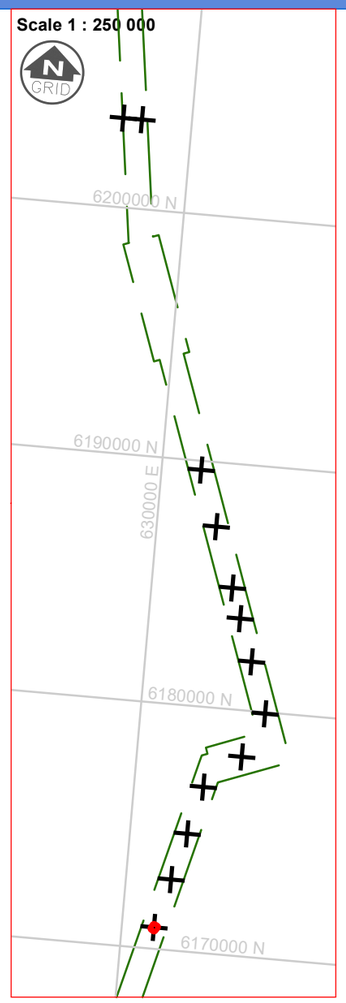
Sediment Description:
Silty clayey sand

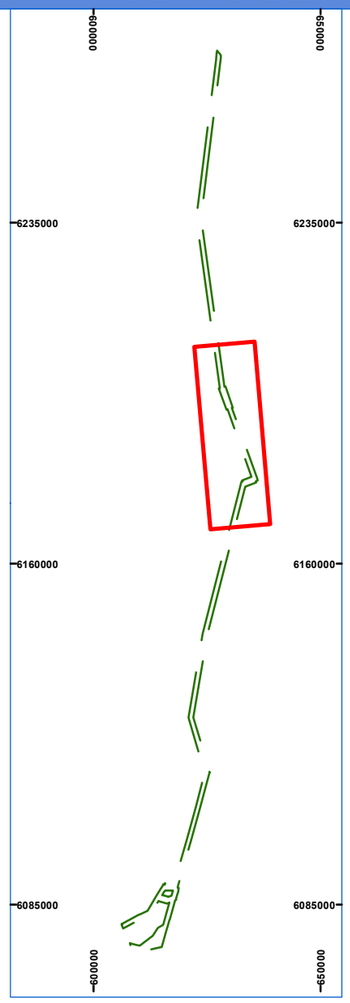
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV172

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV172
Fix: 1009 **E:** 631 352 **N:** 6 170 818 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Pennatula phosphorea*)



Station: ENV172
Fix: 977 **E:** 631 315 **N:** 6 170 856 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV172
Fix: 79 **E:** 631 318 **N:** 6 170 859 **Depth (m):** 88
Retention: MFA

Sediment Description:
Silty clayey sand

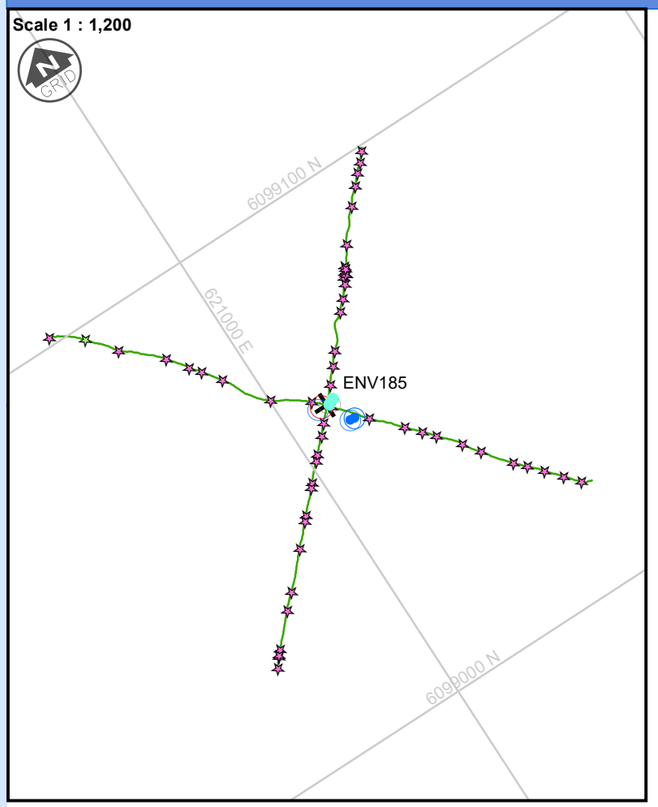
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

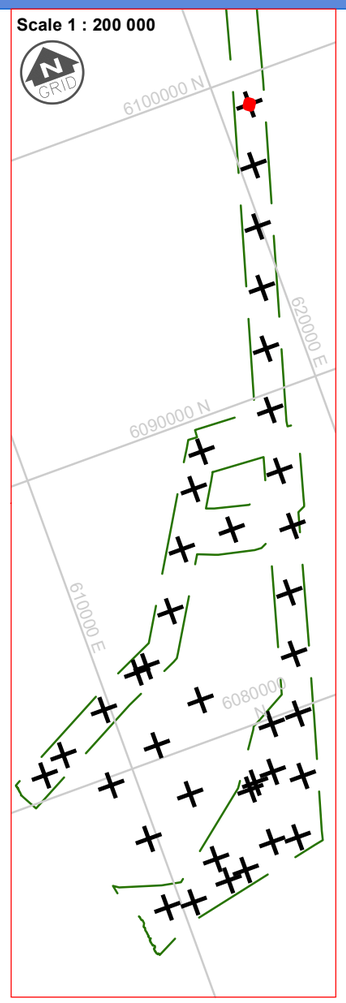


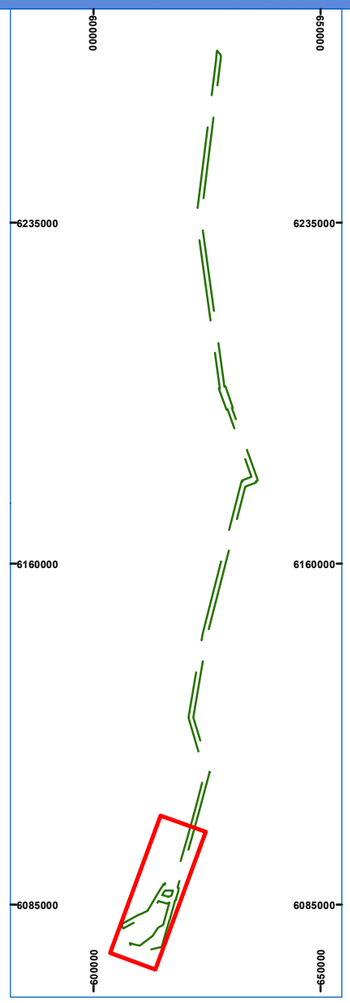
Station: ENV172
Fix: 79 **E:** 631 318 **N:** 6 170 859 **Depth (m):** 88
Retention: MFA

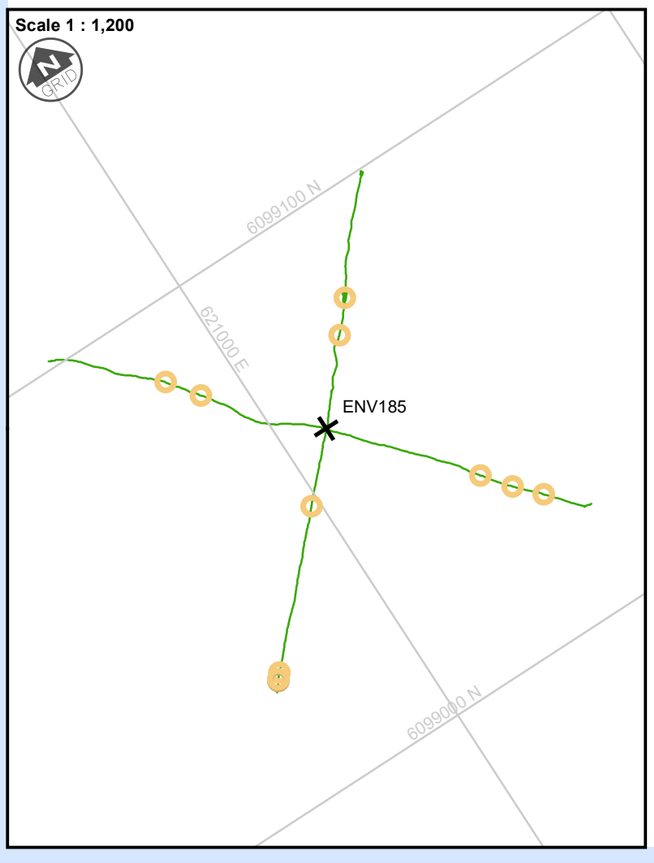
Sediment Description:
Silty clayey sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV185

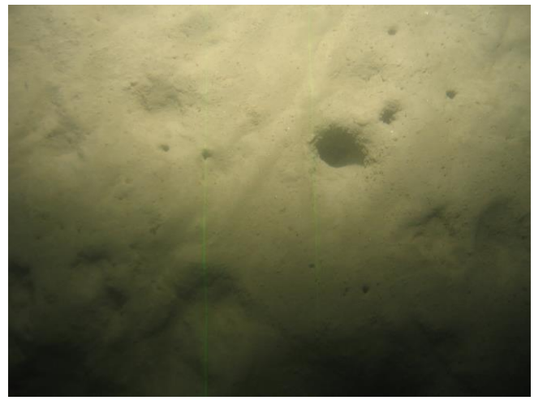
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV185
Fix: 1037 **E:** 620 983 **N:** 6 099 034 **Depth (m):** 83

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (*Nephrops norvegicus*)



Station: ENV185
Fix: 1061 **E:** 621 038 **N:** 6 099 027 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Annelida (Terebellidae)



Station: ENV185
Fix: 85 **E:** 621 008 **N:** 6 099 061 **Depth (m):** 84
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

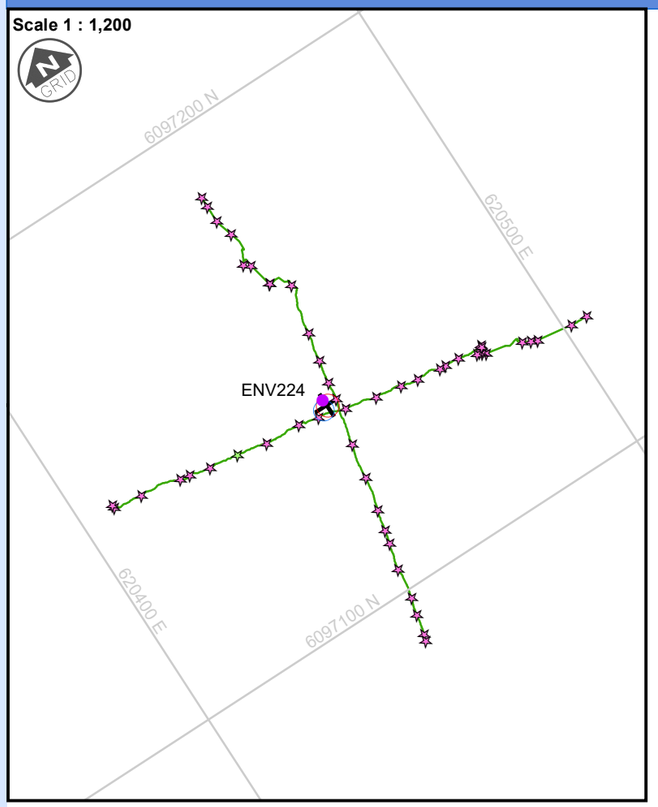


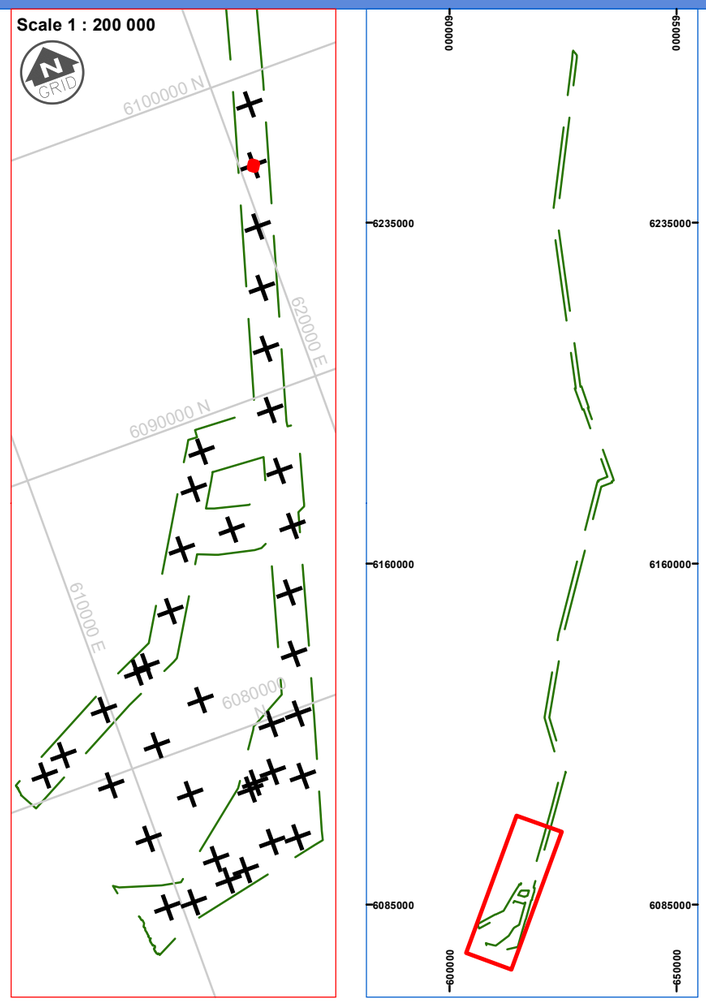
Station: ENV185
Fix: 85 **E:** 621 008 **N:** 6 099 061 **Depth (m):** 84
Retention: MFA

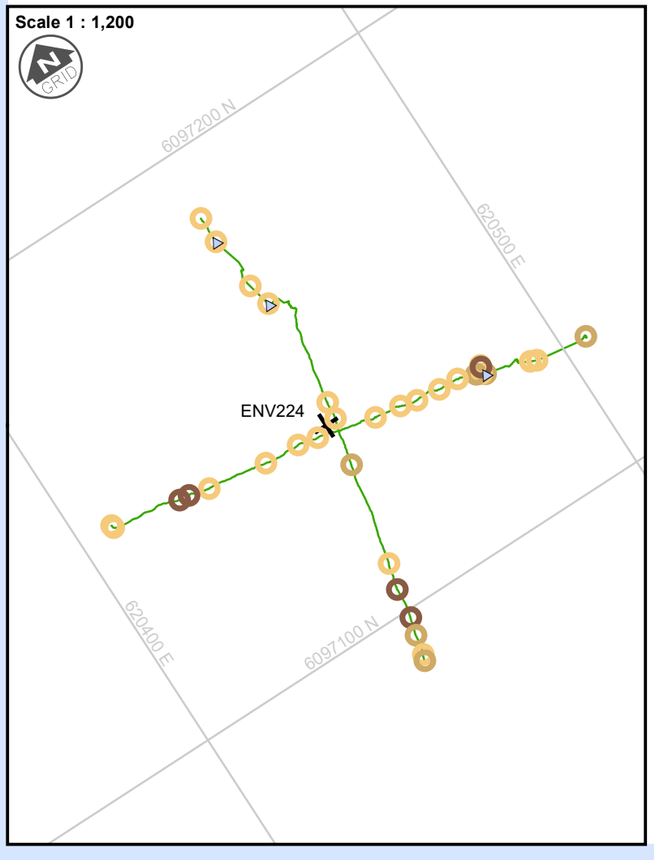
Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV224

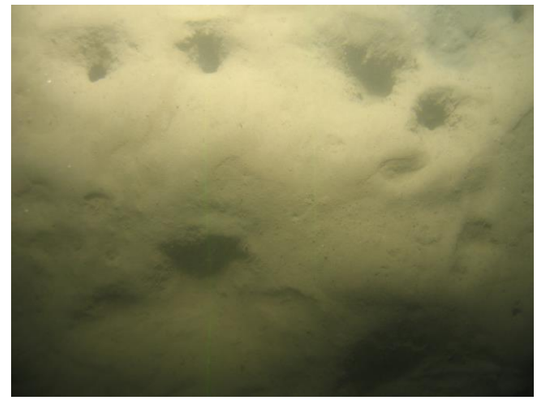
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV224
Fix: 1105 **E:** 620 456 **N:** 6 097 147 **Depth (m):** 77

Sediment Description:
Sand with shell hash

Faunal Description:
Annelida (*Sabella pavonina inc*), Cnidaria (*Alcyonium digitatum*)



Station: ENV224
Fix: 1113 **E:** 620 447 **N:** 6 097 105 **Depth (m):** 77

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV224
Fix: 89 **E:** 620 453 **N:** 6 097 139 **Depth (m):** 79
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta)

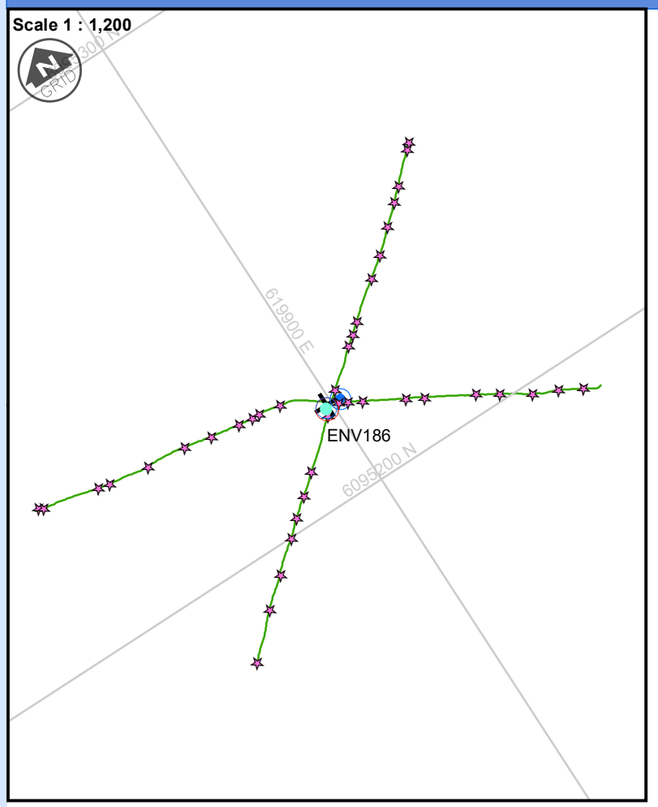


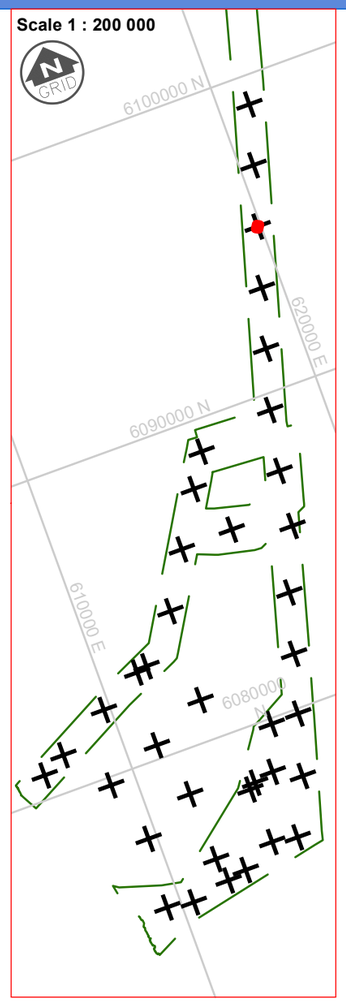
Station: ENV224
Fix: 89 **E:** 620 453 **N:** 6 097 139 **Depth (m):** 79
Retention: MFA

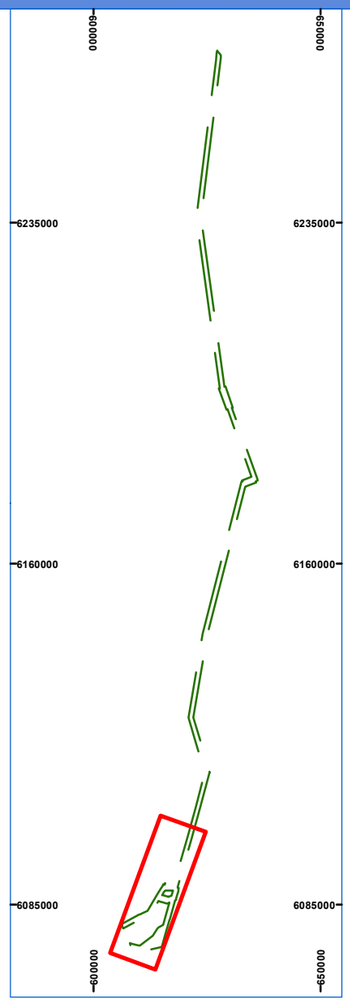
Sediment Description:
Soft silty sandy clay/mud

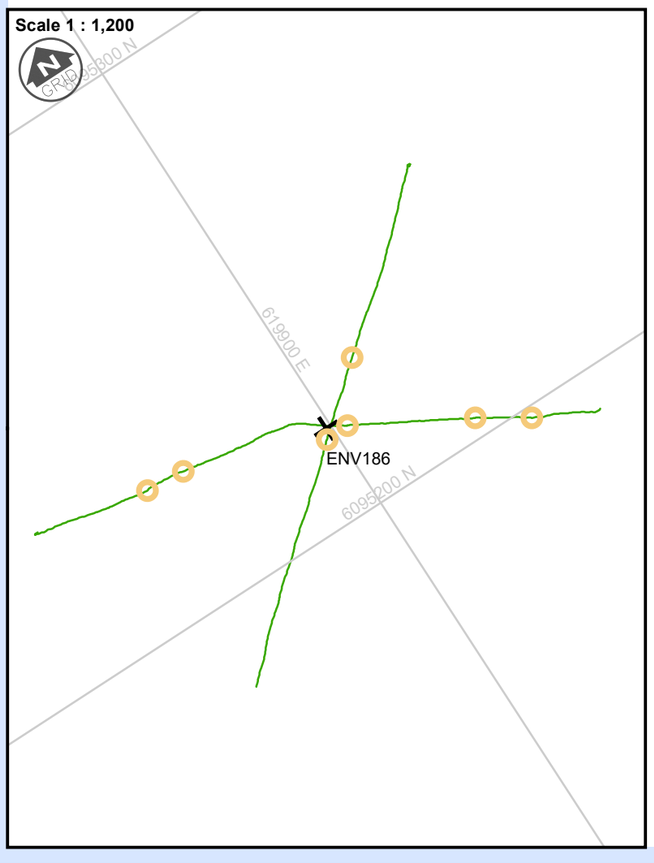
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

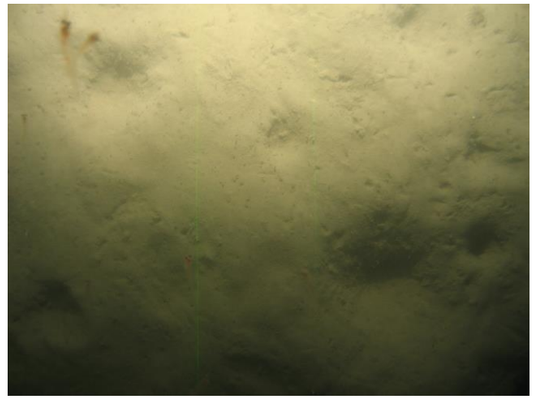
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV186

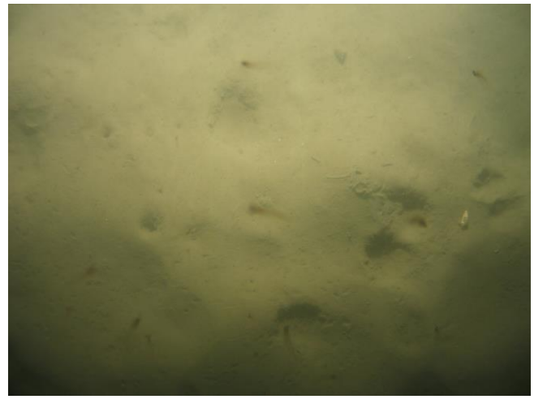
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV186
Fix: 1129 **E:** 619 898 **N:** 6 095 216 **Depth (m):** 65

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV186
Fix: 1151 **E:** 619 913 **N:** 6 095 211 **Depth (m):** 65

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*)



Station: ENV186
Fix: 92 **E:** 619 899 **N:** 6 095 217 **Depth (m):** 65
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

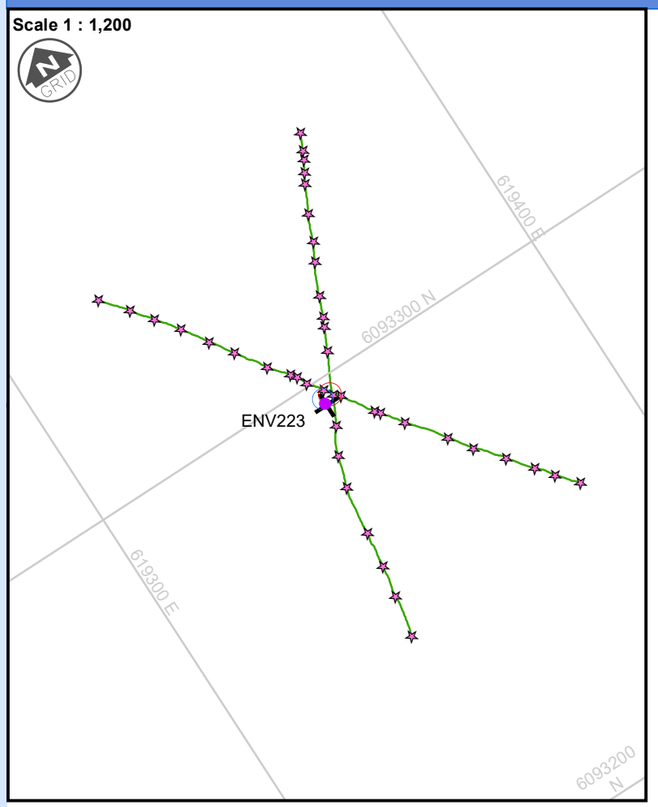
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

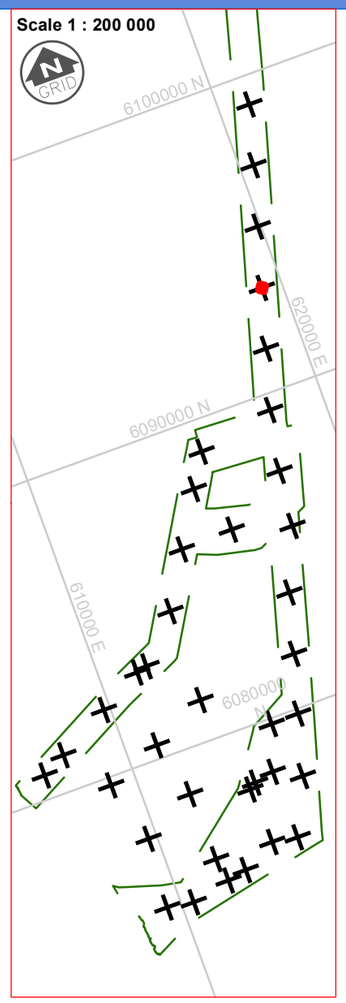


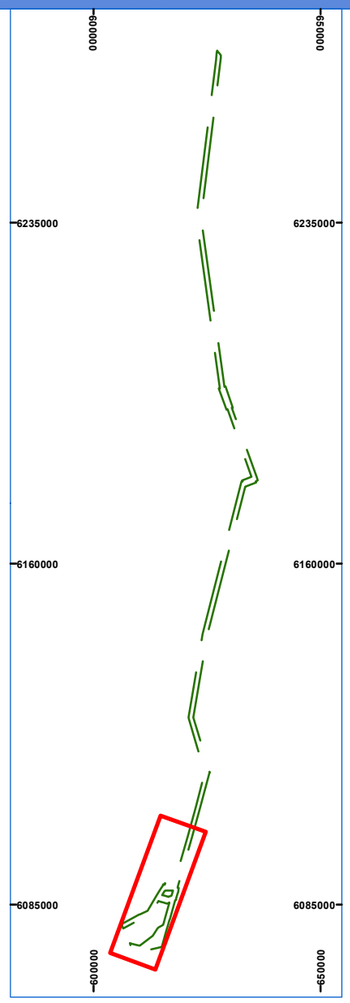
Station: ENV186
Fix: 92 **E:** 619 899 **N:** 6 095 217 **Depth (m):** 65
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

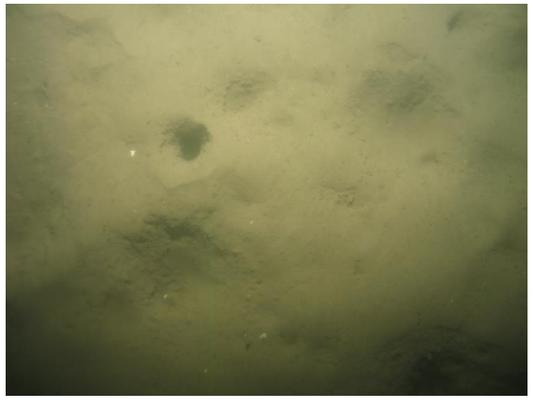
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV223

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV223
Fix: 1176 **E:** 619 376 **N:** 6 093 263 **Depth (m):** 60

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV223
Fix: 1193 **E:** 619 366 **N:** 6 093 328 **Depth (m):** 60

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01), Mollusca (Bivalvia siphons)



Station: ENV223
Fix: 96 **E:** 619 351 **N:** 6 093 296 **Depth (m):** 60
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Cnidaria (Alcyoniidae), Mollusca (Gastropoda)

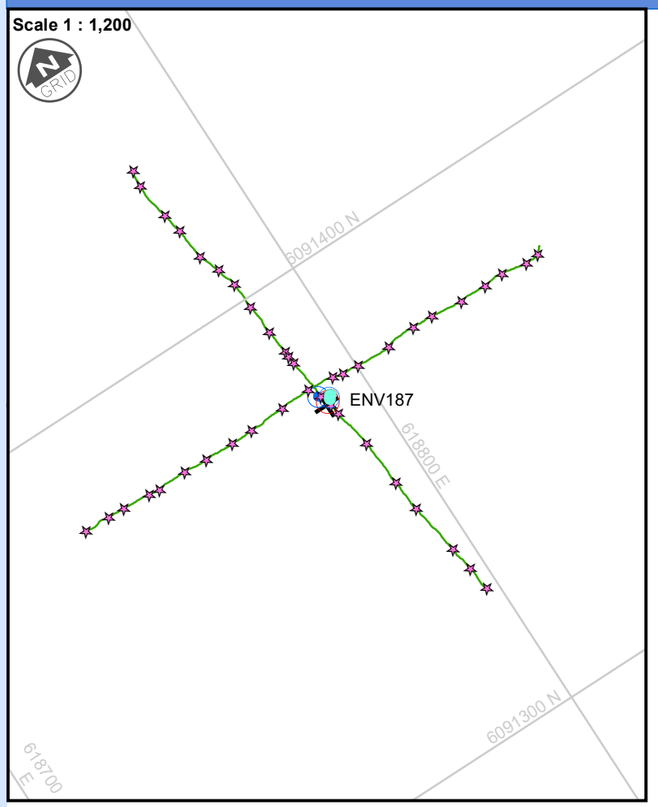


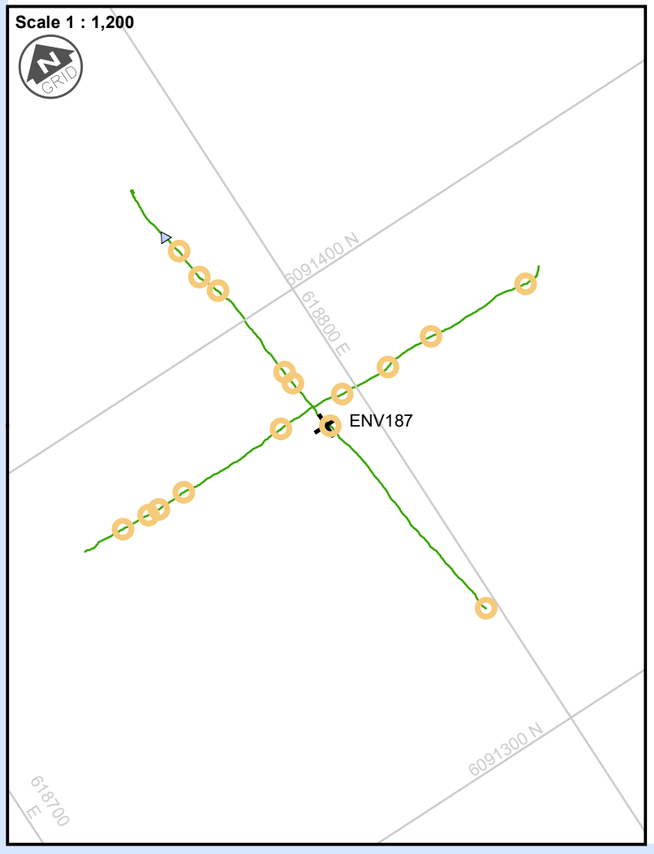
Station: ENV223
Fix: 96 **E:** 619 351 **N:** 6 093 296 **Depth (m):** 60
Retention: MFA

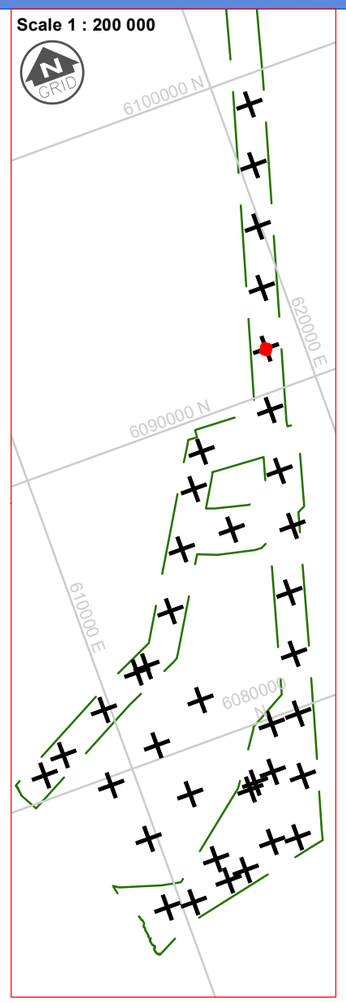
Sediment Description:
Soft silty sandy clay/mud

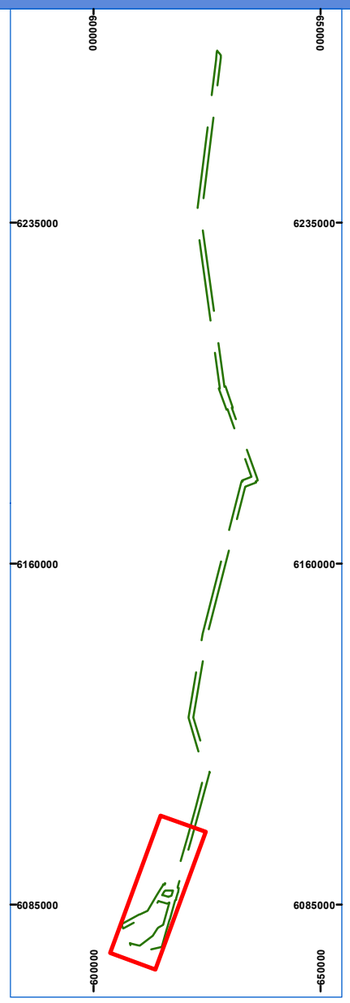
Faunal Description:
Annelida (Polychaeta), Cnidaria (Alcyoniidae), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

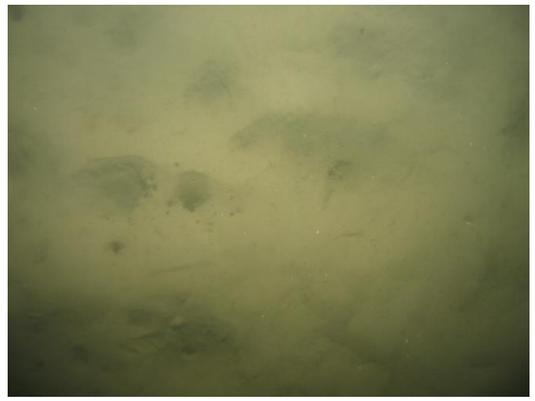
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV187

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV187
Fix: 1218 **E:** 618 797 **N:** 6 091 332 **Depth (m):** 59

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV187
Fix: 1242 **E:** 618 839 **N:** 6 091 376 **Depth (m):** 59

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01), Cnidaria (*Alcyonium digitatum*)



Station: ENV187
Fix: 100 **E:** 618 792 **N:** 6 091 375 **Depth (m):** 57
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

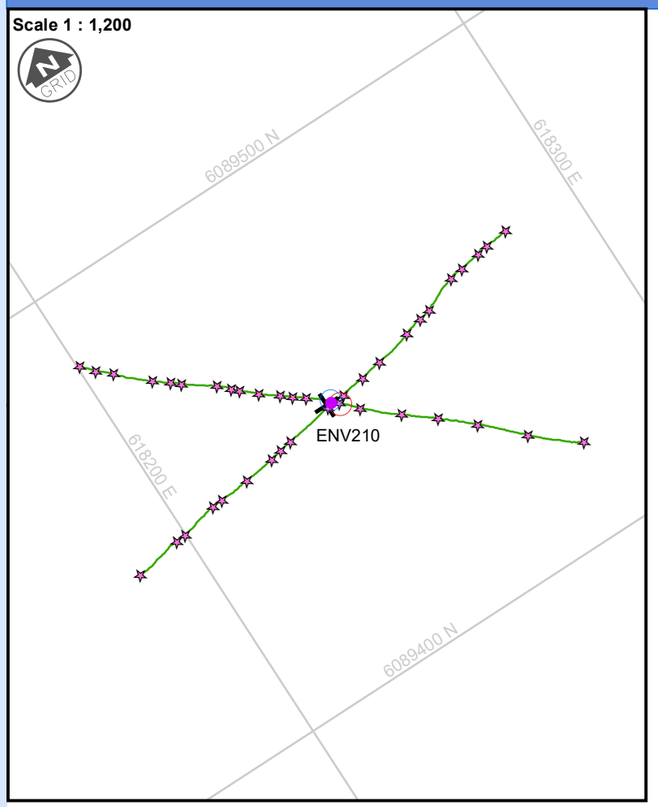


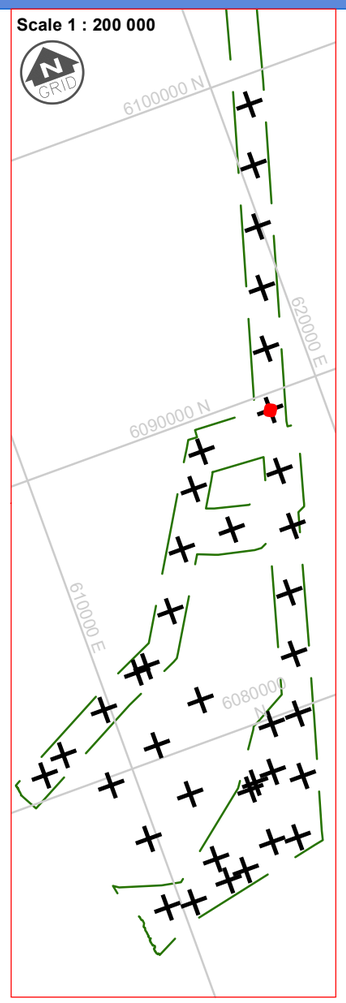
Station: ENV187
Fix: 100 **E:** 618 792 **N:** 6 091 375 **Depth (m):** 57
Retention: MFB

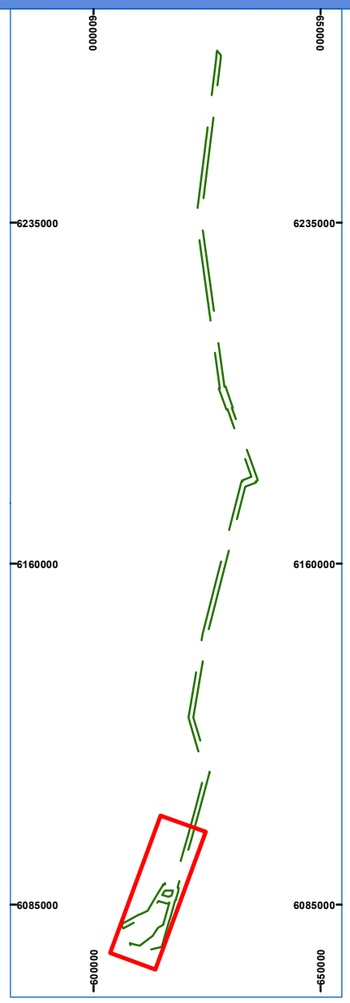
Sediment Description:
Soft silty sandy clay/mud

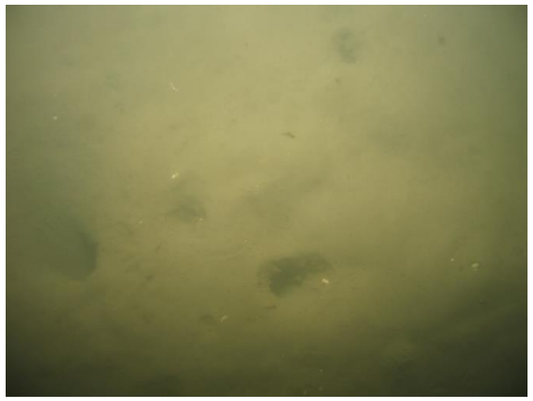
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





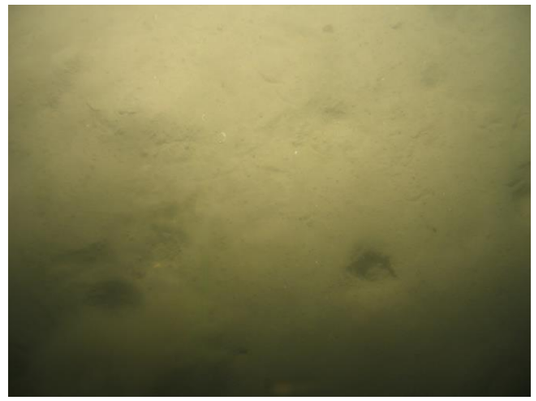




Station: ENV210
Fix: 1250 **E:** 618 261 **N:** 6 089 456 **Depth (m):** 55

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV210
Fix: 1279 **E:** 618 242 **N:** 6 089 448 **Depth (m):** 55

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV210
Fix: 105 **E:** 618 238 **N:** 6 089 452 **Depth (m):** 55
Retention: MFB

Sediment Description:
Soft clay sand with pebbles

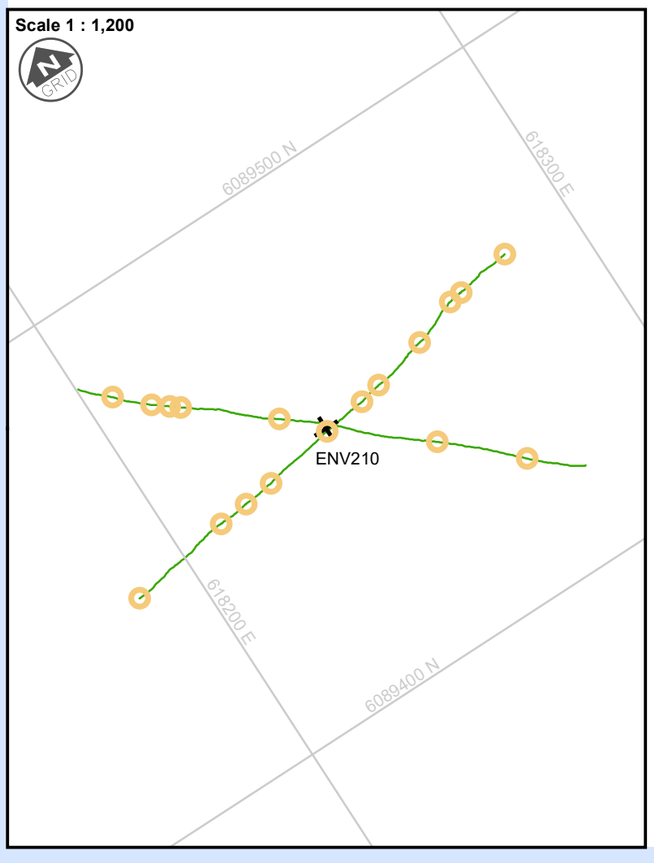
Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia, Pharidae)



Station: ENV210
Fix: 105 **E:** 618 238 **N:** 6 089 452 **Depth (m):** 55
Retention: MFB

Sediment Description:
Soft clay sand with pebbles

Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia, Pharidae)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

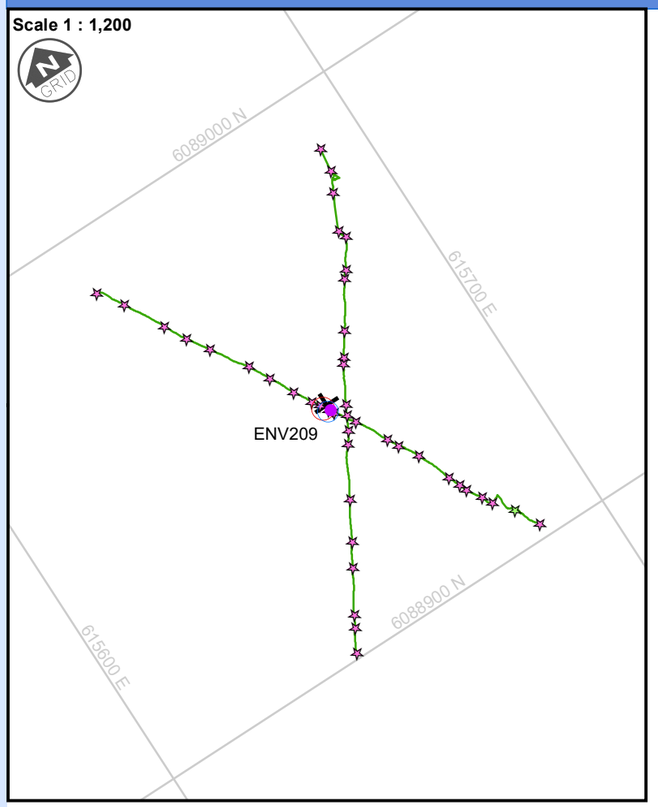
- 1-2
- 3-4
- 5-6

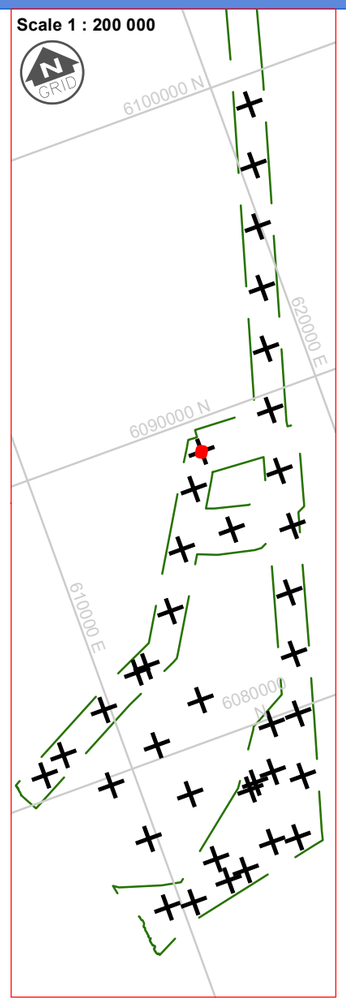
PROTECTED TAXA

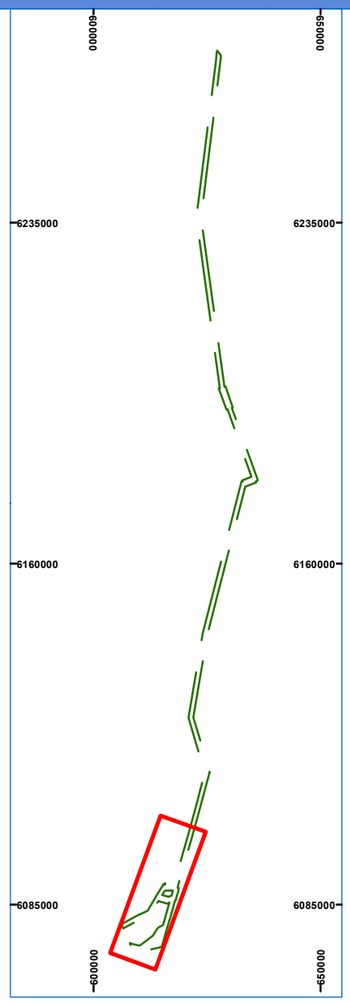
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

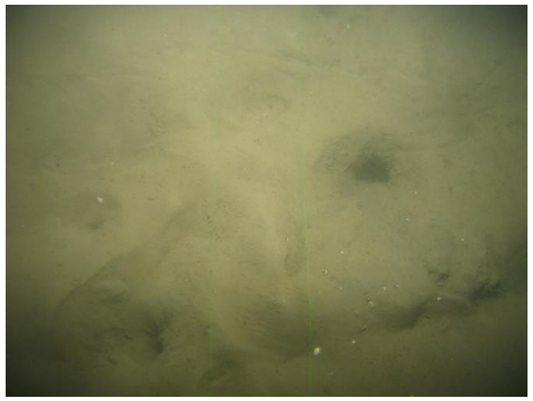
OVERVIEW OF STATION: ENV210

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)









Station: ENV209
Fix: 2096 **E:** 615 672 **N:** 6 088 931 **Depth (m):** 52

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV209
Fix: 2123 **E:** 615 676 **N:** 6 088 955 **Depth (m):** 52

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (*Cancer pagurus*, Paguroidea *stet.*)



Station: ENV209
Fix: 176 **E:** 615 664 **N:** 6 088 945 **Depth (m):** 54
Retention: MFA

Sediment Description:
Silty clayey fine to medium sand

Faunal Description:
Annelida (Polychaeta)



Station: ENV209
Fix: 176 **E:** 615 664 **N:** 6 088 945 **Depth (m):** 54
Retention: MFA

Sediment Description:
Silty clayey fine to medium sand

Faunal Description:
Annelida (Polychaeta)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

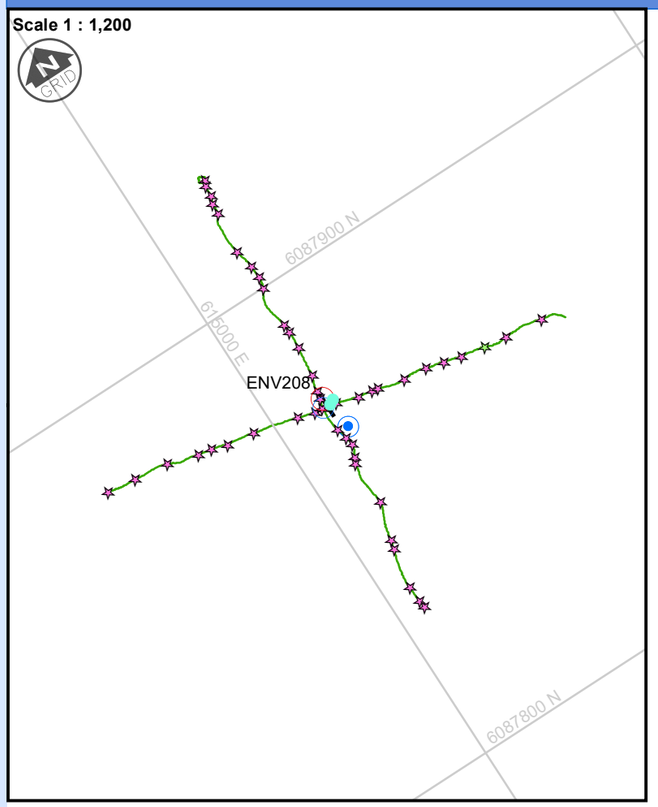
PROTECTED TAXA

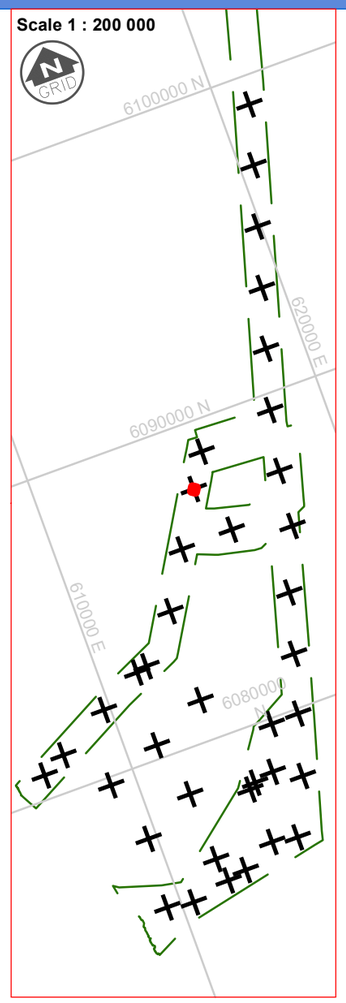
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

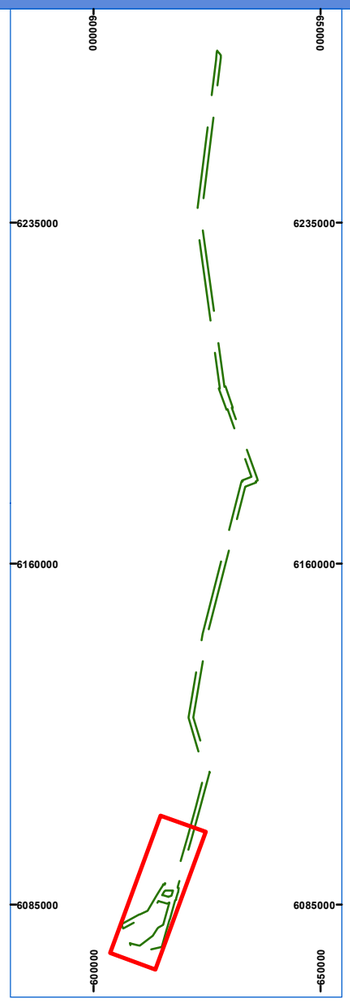
OVERVIEW OF STATION: ENV209

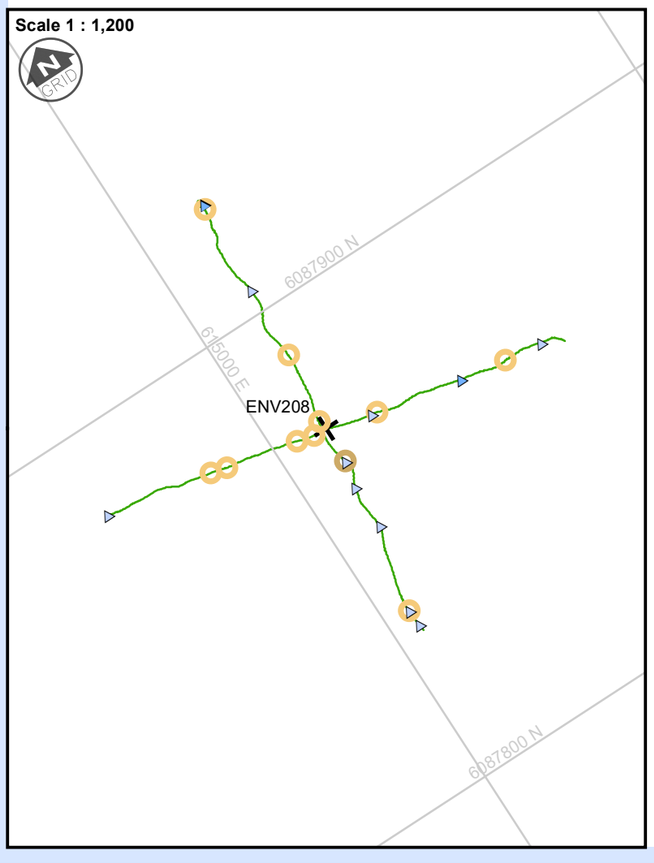
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV208

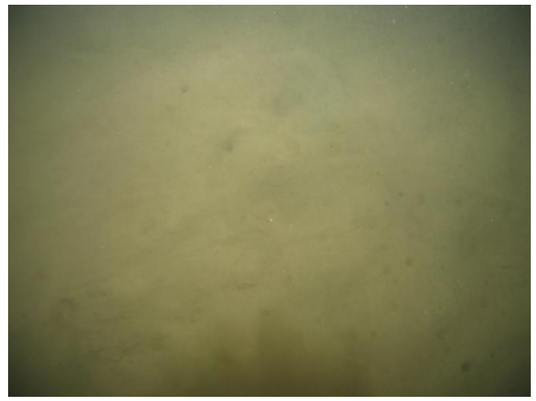
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV208
Fix: 2039 **E:** 615 013 **N:** 6 087 890 **Depth (m):** 50

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV208
Fix: 2075 **E:** 614 996 **N:** 6 087 877 **Depth (m):** 50

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV208
Fix: 173 **E:** 615 010 **N:** 6 087 874 **Depth (m):** 52
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

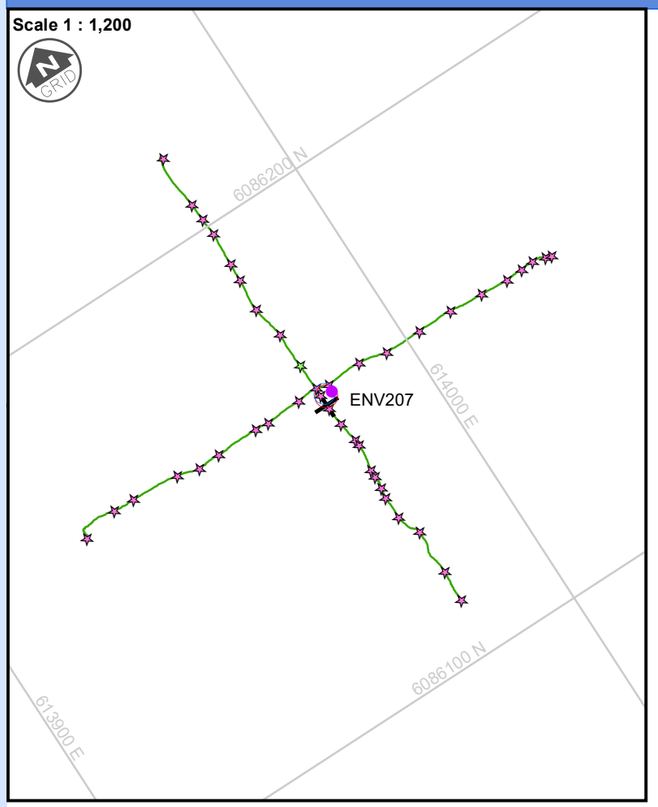
Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

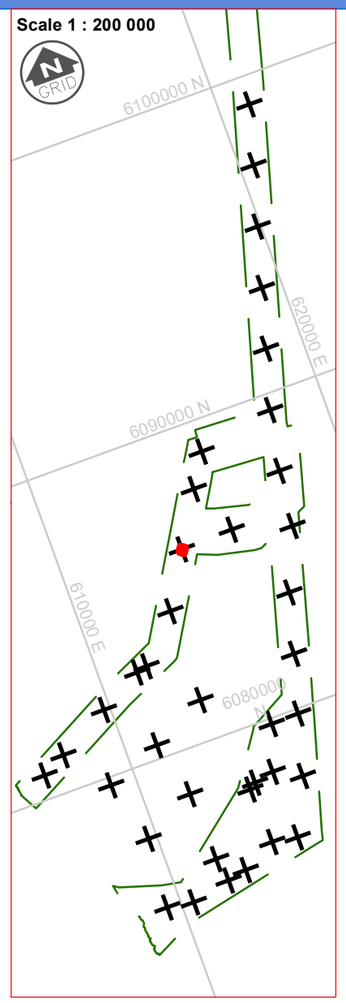


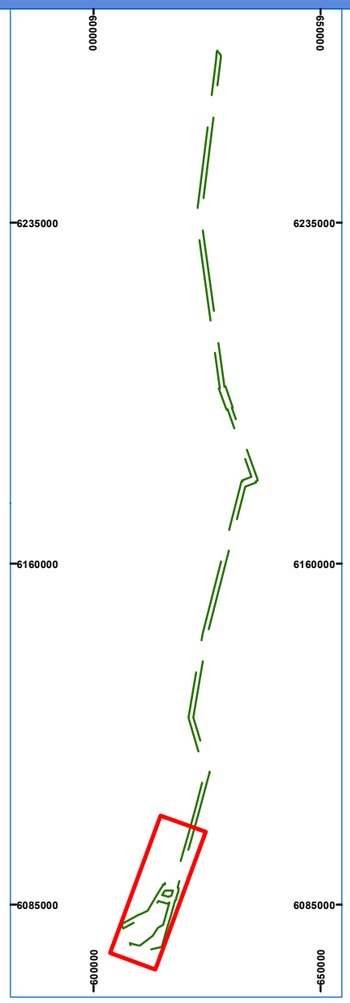
Station: ENV208
Fix: 173 **E:** 615 010 **N:** 6 087 874 **Depth (m):** 52
Retention: MFB

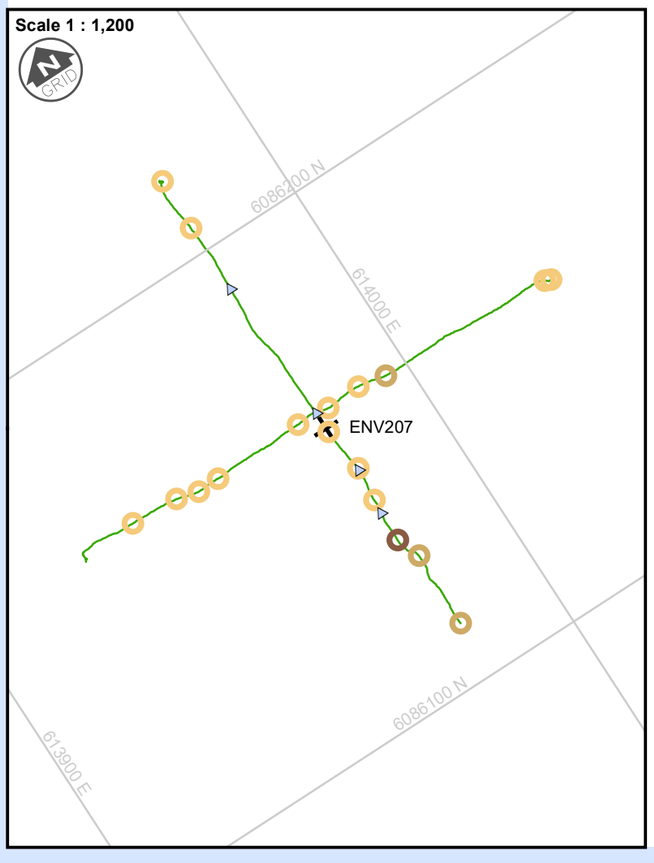
Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV207

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV207
Fix: 1954 **E:** 613 980 **N:** 6 086 157 **Depth (m):** 47

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV207
Fix: 1973 **E:** 613 968 **N:** 6 086 161 **Depth (m):** 47

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Myxine glutinosa*)



Station: ENV207
Fix: 165 **E:** 613 981 **N:** 6 086 159 **Depth (m):** 45
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under tha surface

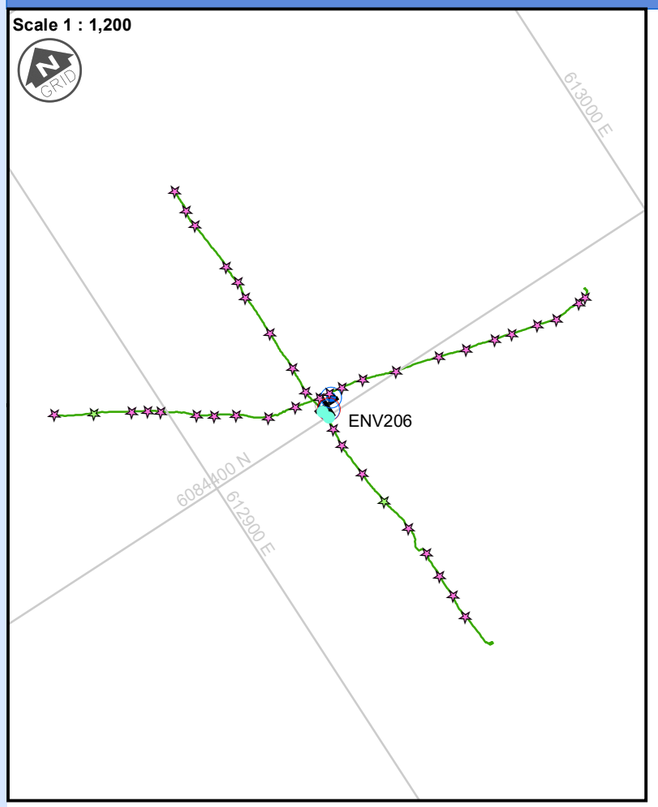
Faunal Description:
Annelida (Polychaeta)

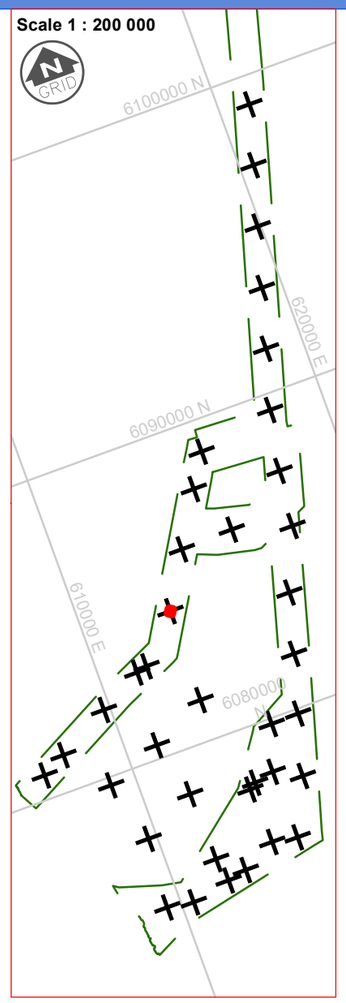


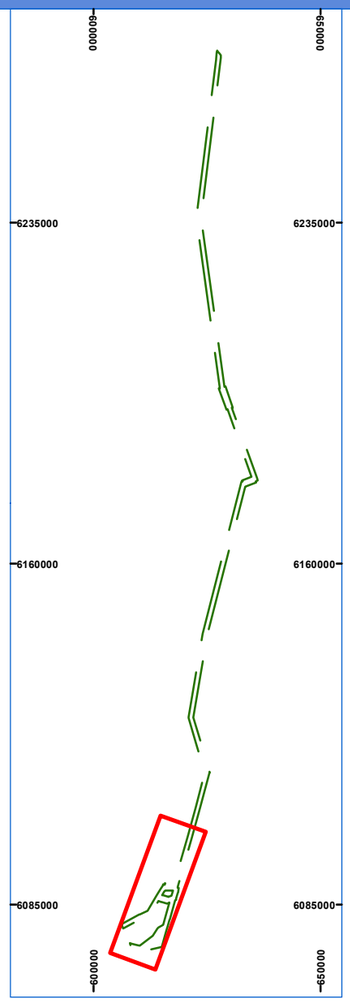
Station: ENV207
Fix: 165 **E:** 613 981 **N:** 6 086 159 **Depth (m):** 45
Retention: MFA

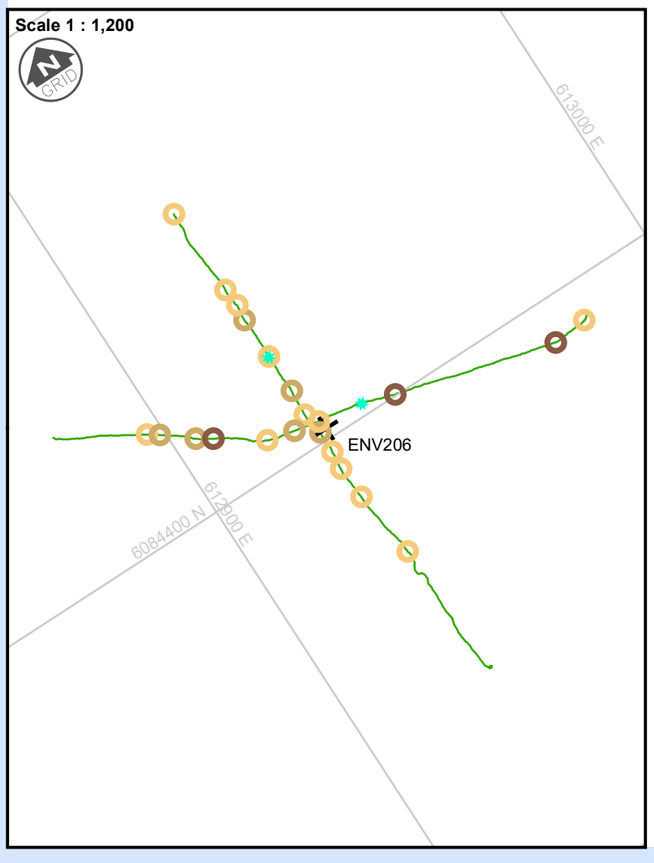
Sediment Description:
Soft silty sandy clay with pebbles under tha surface

Faunal Description:
Annelida (Polychaeta)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV206

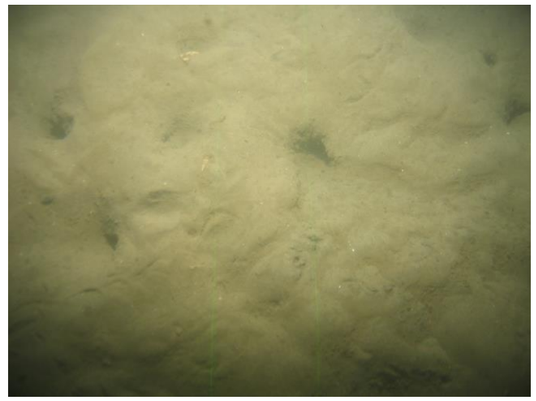
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV206
Fix: 1923 **E:** 612 881 **N:** 6 084 430 **Depth (m):** 42

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Scyliorhinus canicula*)



Station: ENV206
Fix: 1936 **E:** 612 942 **N:** 6 084 400 **Depth (m):** 42

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV206
Fix: 161 **E:** 612 927 **N:** 6 084 401 **Depth (m):** 42
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under the surface

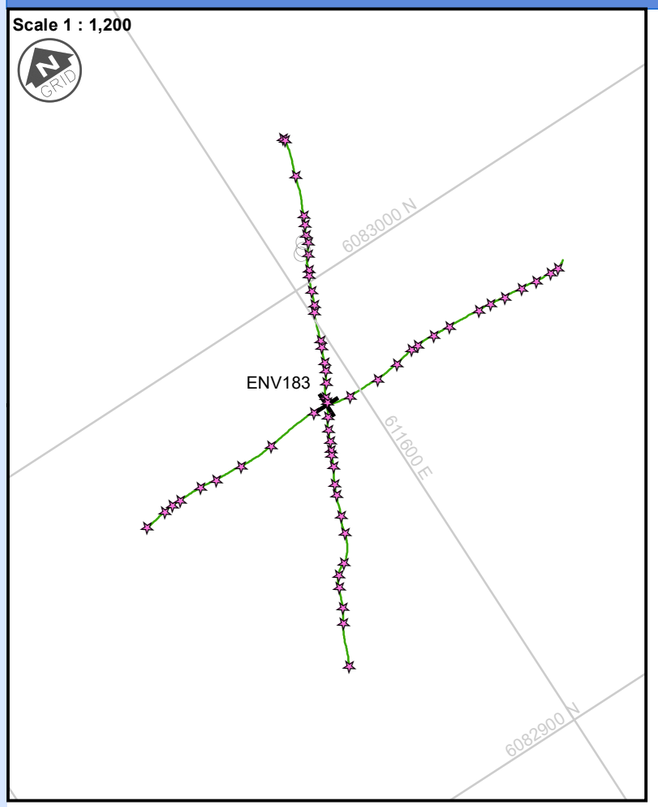
Faunal Description:
Annelida (Polychaeta)

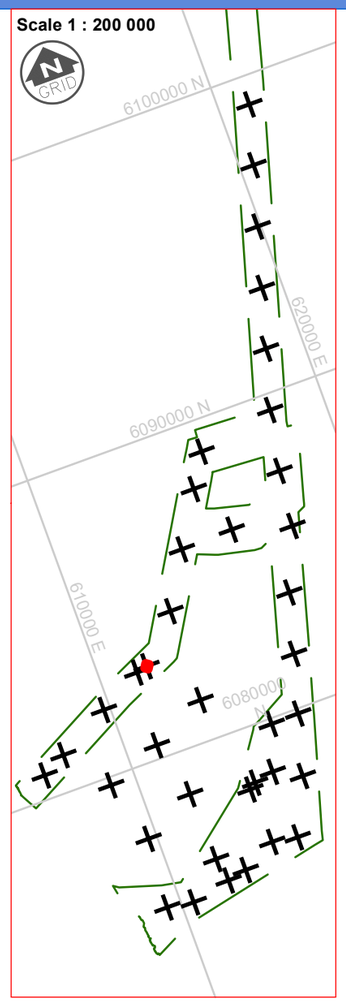


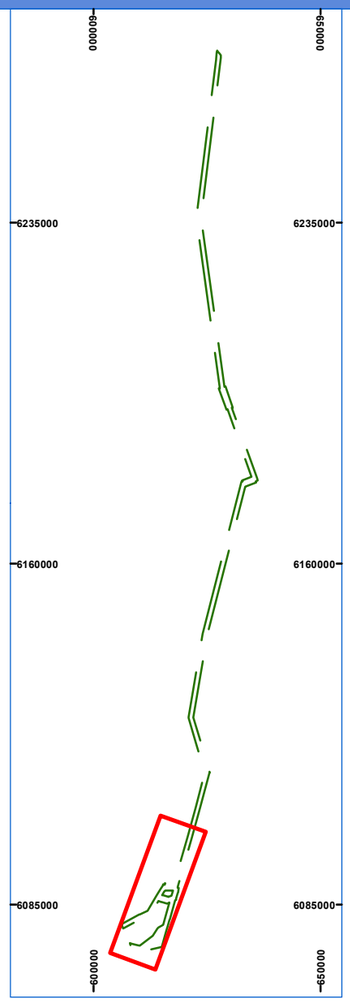
Station: ENV206
Fix: 161 **E:** 612 927 **N:** 6 084 401 **Depth (m):** 42
Retention: MFA

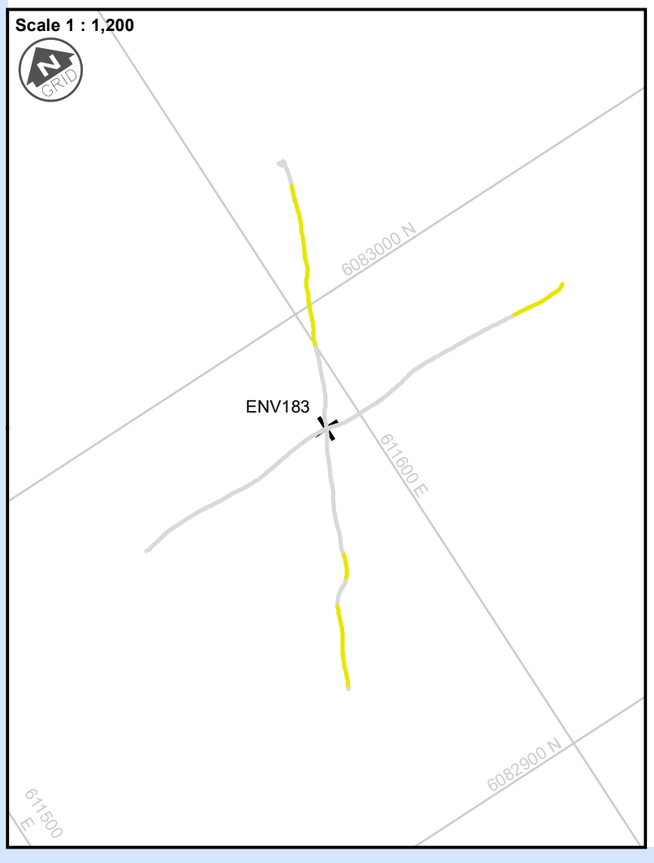
Sediment Description:
Soft silty sandy clay with pebbles under the surface

Faunal Description:
Annelida (Polychaeta)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV183

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV183
Fix: 1847 **E:** 611 614 **N:** 6 083 026 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV183
Fix: 1878 **E:** 611 576 **N:** 6 082 947 **Depth (m):** 32

Sediment Description:
Cobbles with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV183
Fix: 1885 **E:** 611 559 **N:** 6 082 978 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)

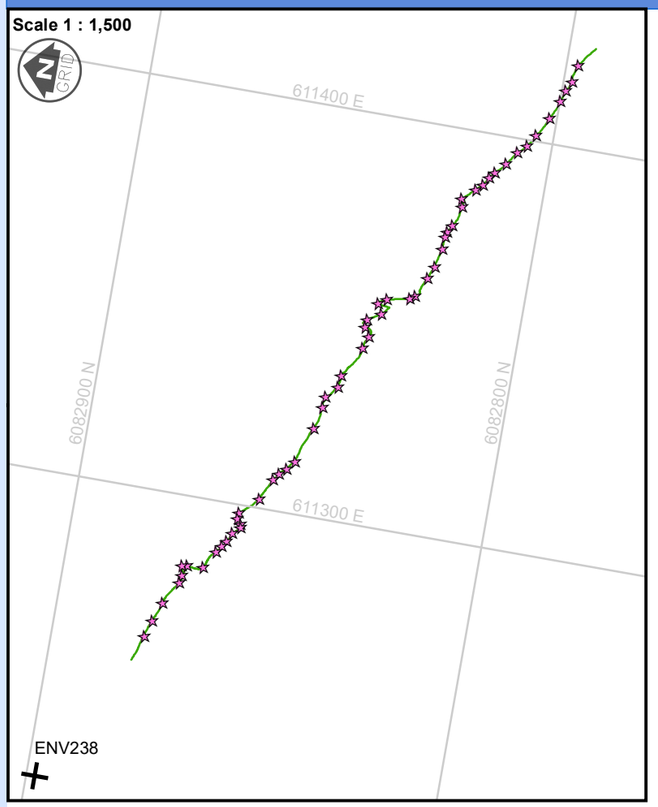


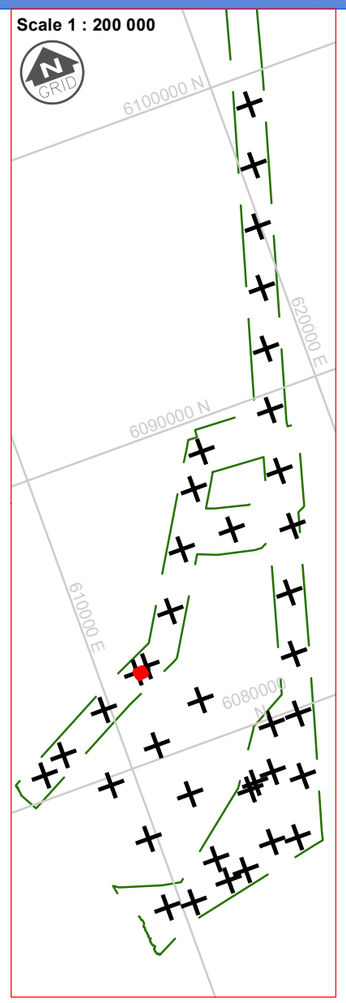
Station: ENV183
Fix: 1893 **E:** 611 609 **N:** 6 082 977 **Depth (m):** 32

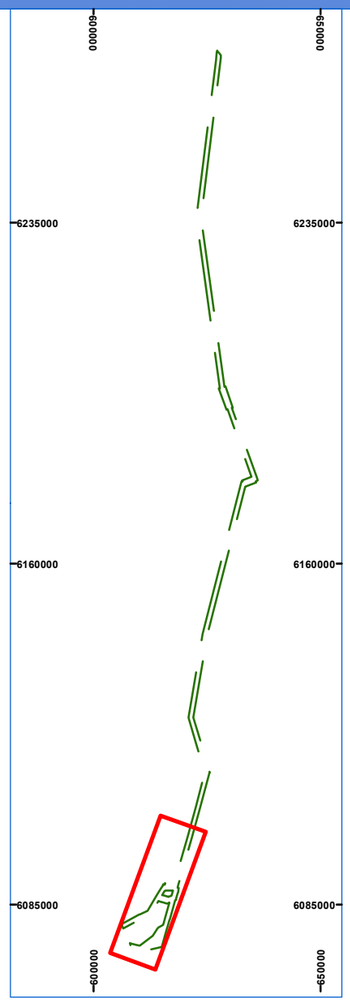
Sediment Description:
Sand with gravel and shell hash

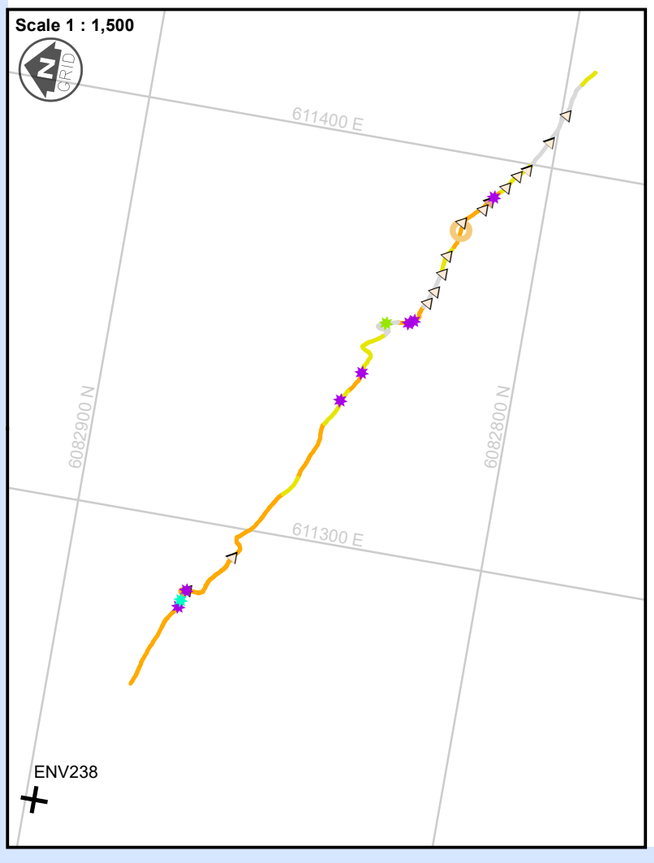
Faunal Description:
Arthropoda (*Cancer pagurus*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

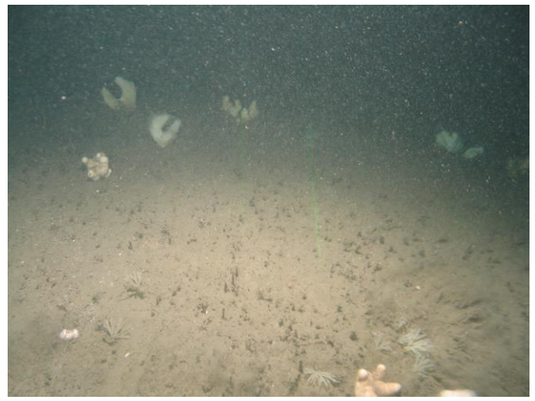
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF TRANSECT: ENV238

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV238
Fix: 562 **E:** 611 401 **N:** 6 082 804 **Depth (m):** 25

Sediment Description:
Sand with shell hash

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*)



Station: ENV238
Fix: 575 **E:** 611 370 **N:** 6 082 822 **Depth (m):** 25

Sediment Description:
Gravel with coarse sediment

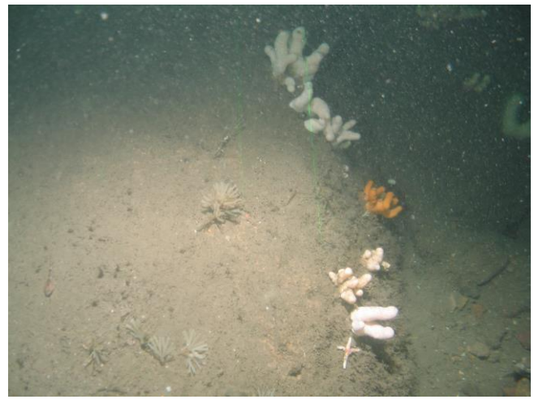
Faunal Description:
Faunal turf



Station: ENV238
Fix: 586 **E:** 611 343 **N:** 6 082 837 **Depth (m):** 24

Sediment Description:
Gravel with coarse sediment

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (*Asterias rubens*, *Echinus esculentus inc*), Faunal turf

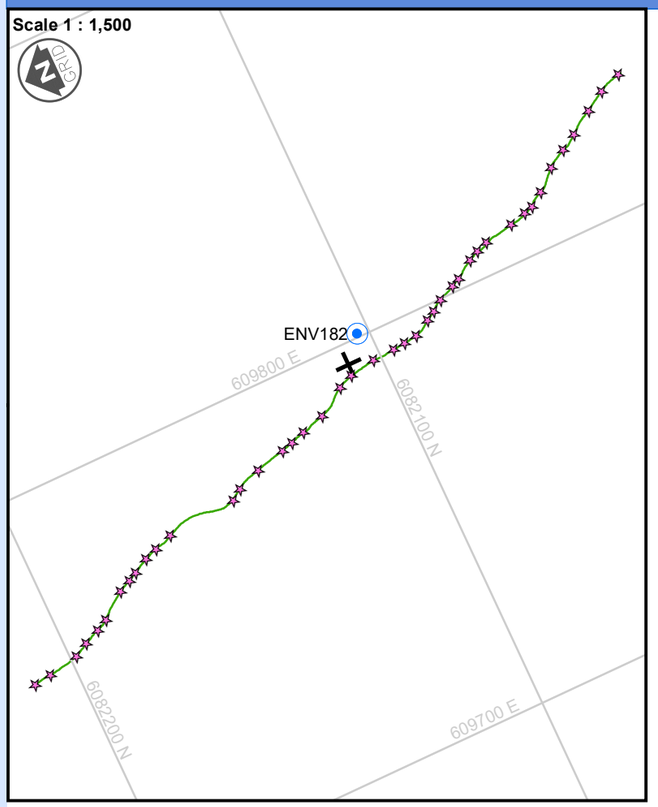


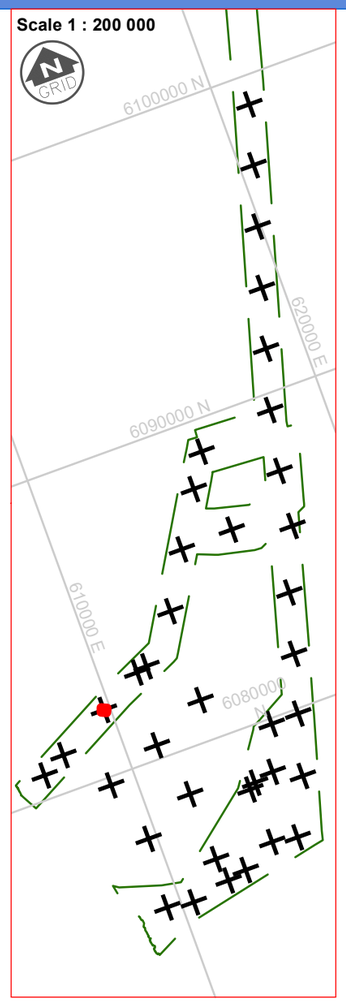
Station: ENV238
Fix: 608 **E:** 611 280 **N:** 6 082 871 **Depth (m):** 24

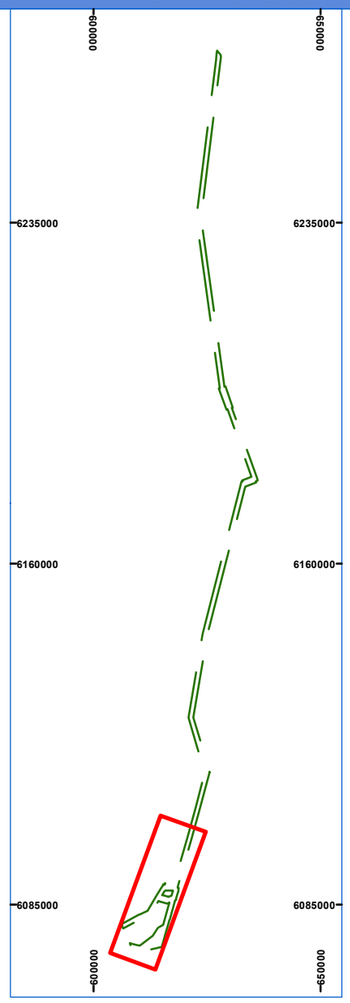
Sediment Description:
Sand with gravel and shell hash

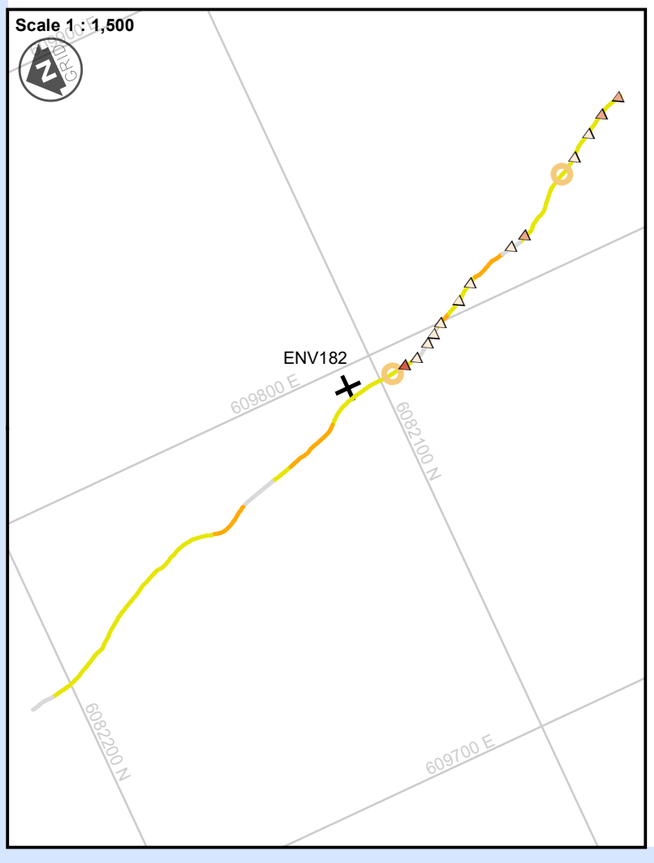
Faunal Description:
Bryozoa (Flustridae *stet.*), Chordata (*Callionymus lyra*), Cnidaria (*Alcyonium digitatum*, *Nemertesia ramosa inc*), Echinodermata (*Asterias rubens*), Faunal turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV182

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV182
Fix: 515 **E:** 609 757 **N:** 6 082 206 **Depth (m):** 16

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV182
Fix: 537 **E:** 609 794 **N:** 6 082 094 **Depth (m):** 17

Sediment Description:
Occasional cobbles and gravel

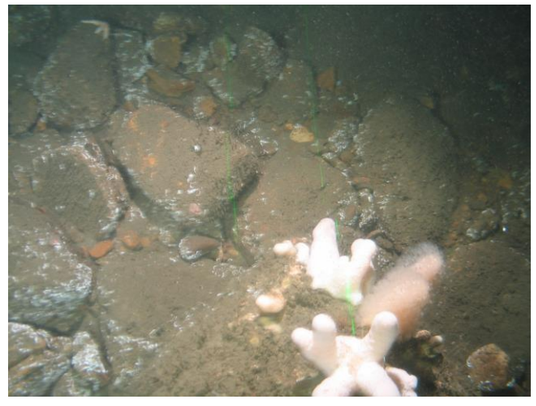
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf, Porifera



Station: ENV182
Fix: 538 **E:** 609 794 **N:** 6 082 090 **Depth (m):** 17

Sediment Description:
Gravel.

Faunal Description:
Bryozoa (Flustridae *stet.*), Chordata (Ascidiacea *stet.*), Faunal turf

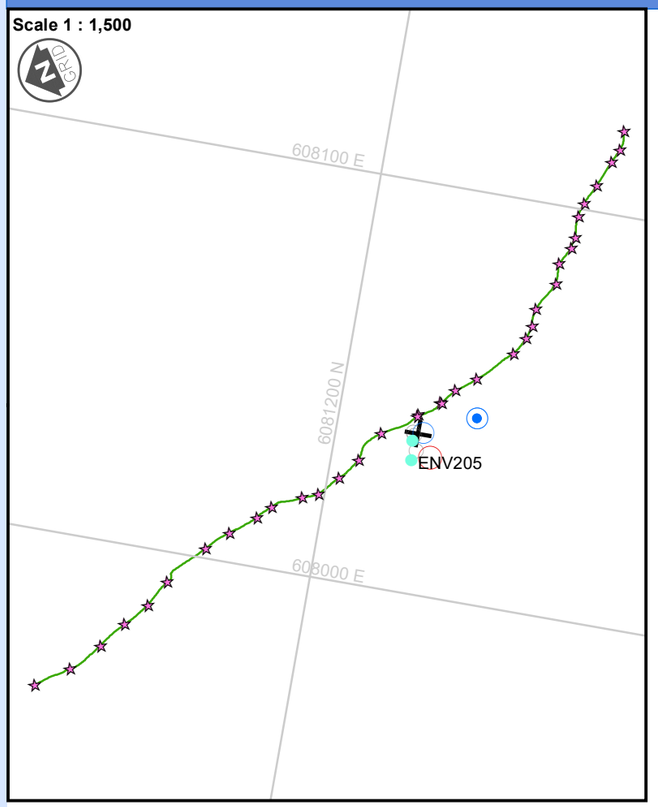


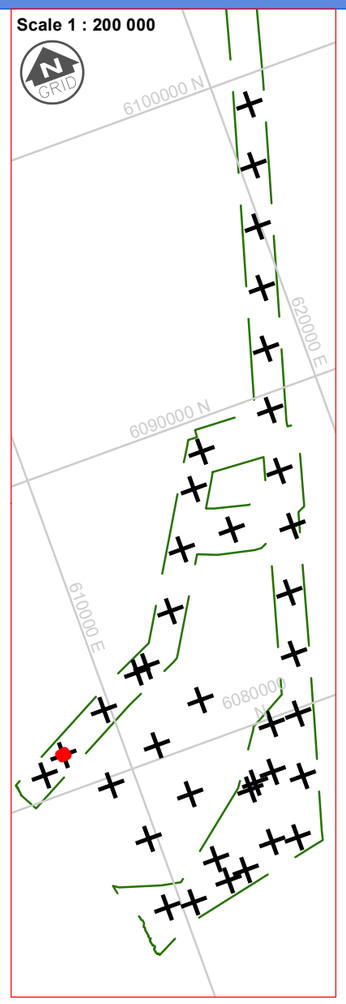
Station: ENV182
Fix: 546 **E:** 609 808 **N:** 6 082 065 **Depth (m):** 17

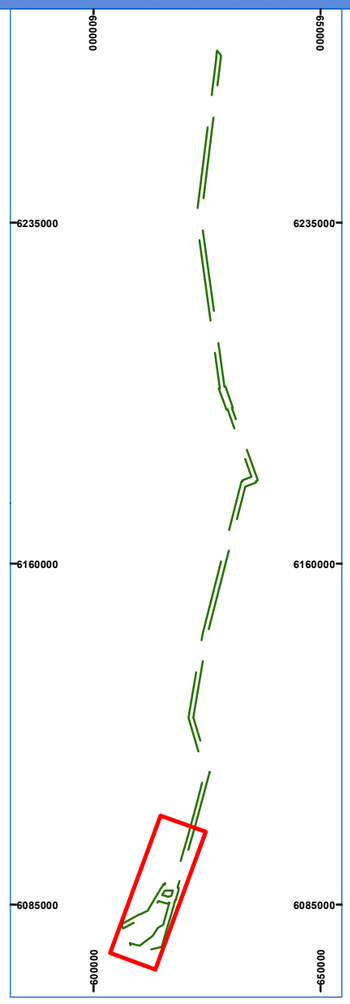
Sediment Description:
Gravel and occasional cobbles

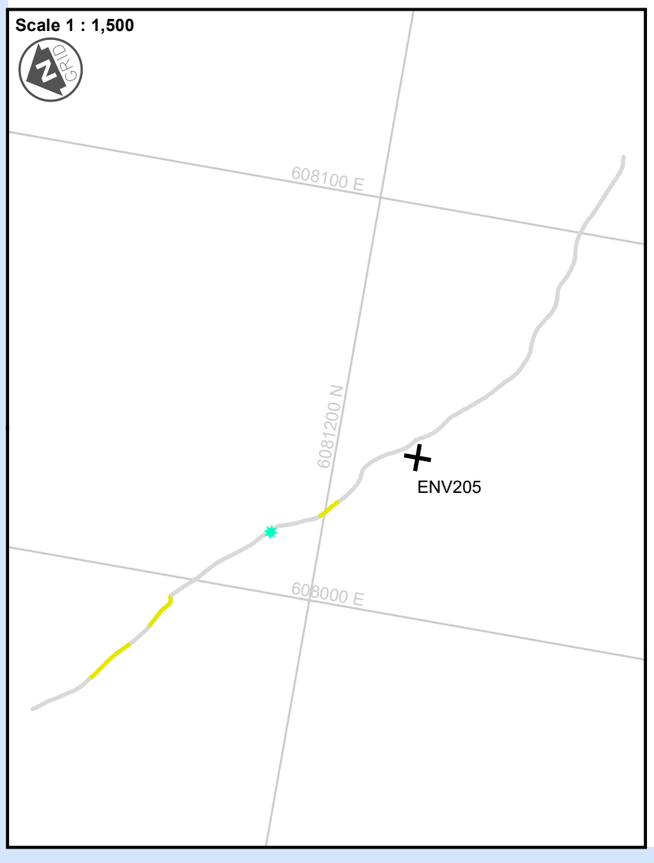
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea *stet.*), Porifera

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV205

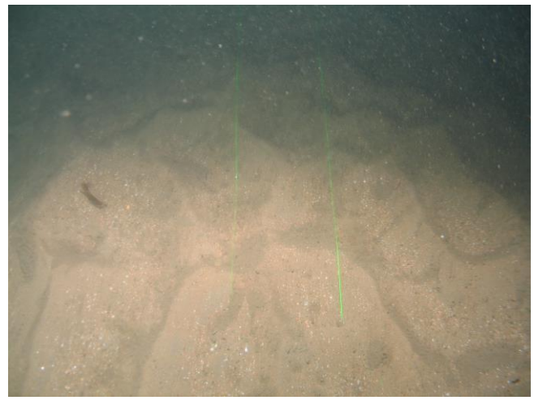
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV205
Fix: 290 **E:** 607 992 **N:** 6 081 234 **Depth (m):** 14

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
No visible fauna



Station: ENV205
Fix: 315 **E:** 608 054 **N:** 6 081 168 **Depth (m):** 15

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV205
Fix: 24 **E:** 608 034 **N:** 6 081 176 **Depth (m):** 15
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

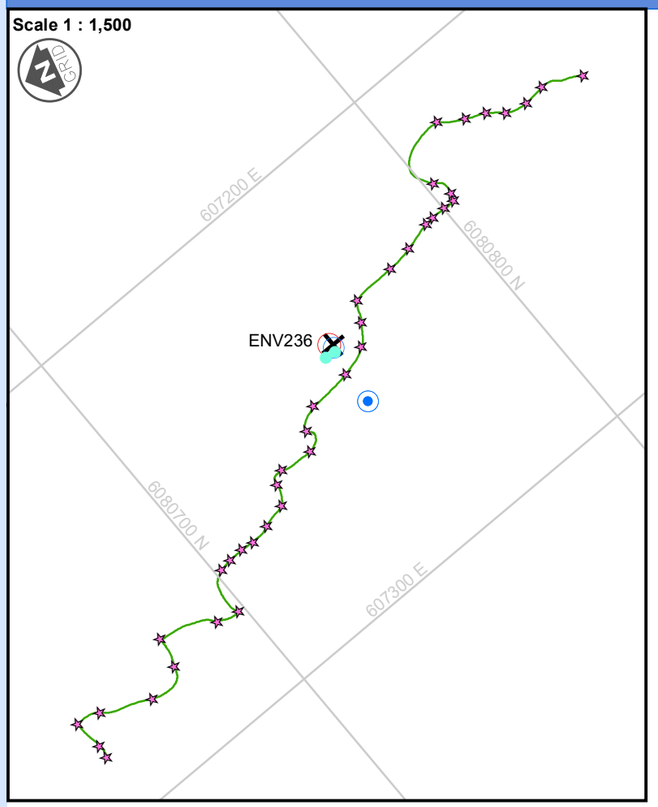


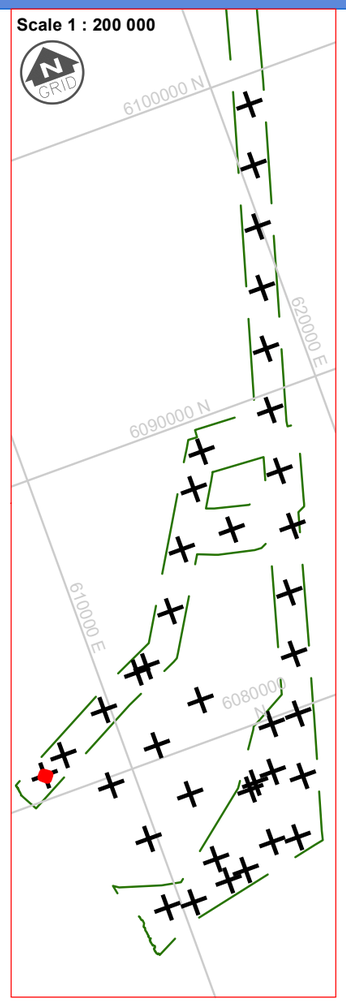
Station: ENV205
Fix: 24 **E:** 608 034 **N:** 6 081 176 **Depth (m):** 15
Retention: MFA

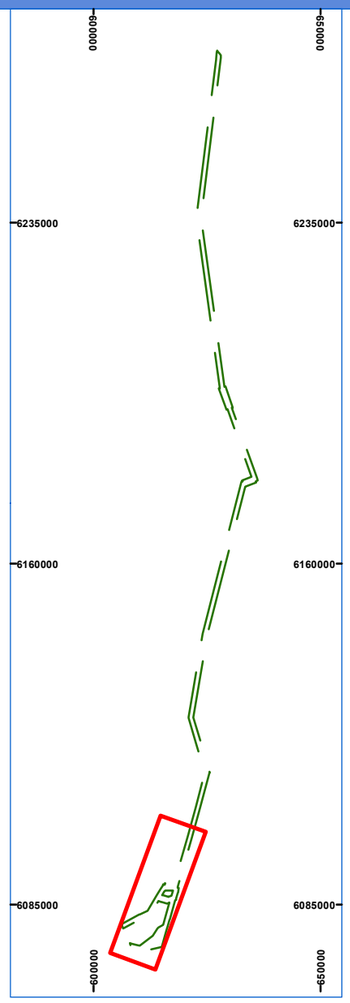
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

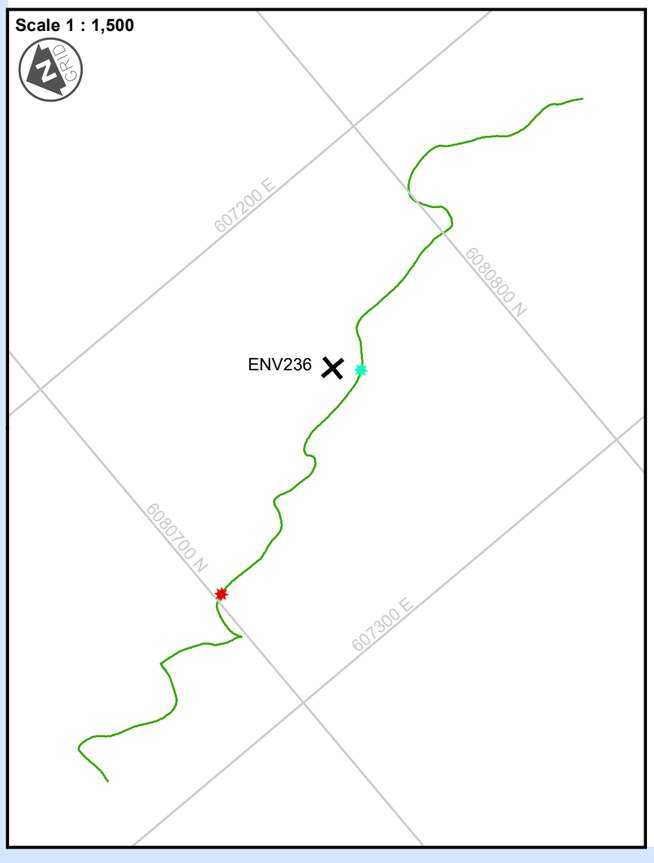
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

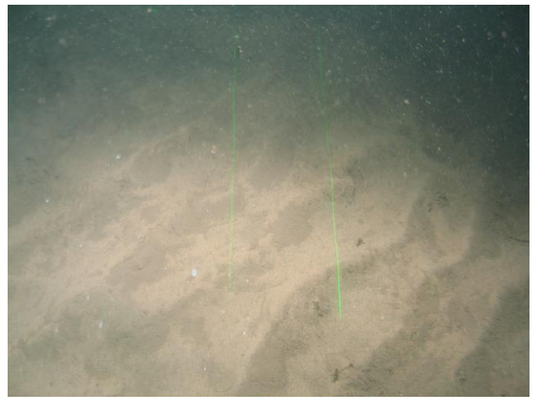
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV236

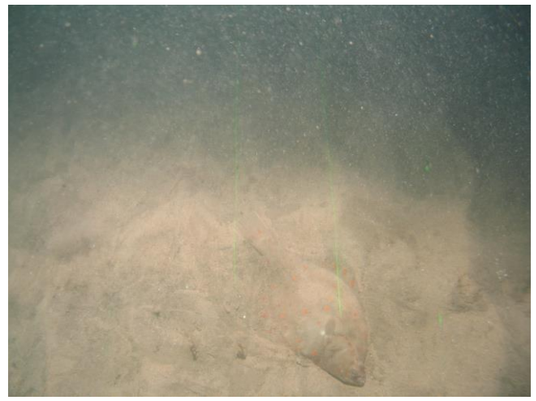
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV236
Fix: 247 **E:** 607 280 **N:** 6 080 651 **Depth (m):** 10

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV236
Fix: 267 **E:** 607 247 **N:** 6 080 763 **Depth (m):** 10

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Pleuronectes platessa*)



Station: ENV236
Fix: 31 **E:** 607 241 **N:** 6 080 757 **Depth (m):** 11
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta)

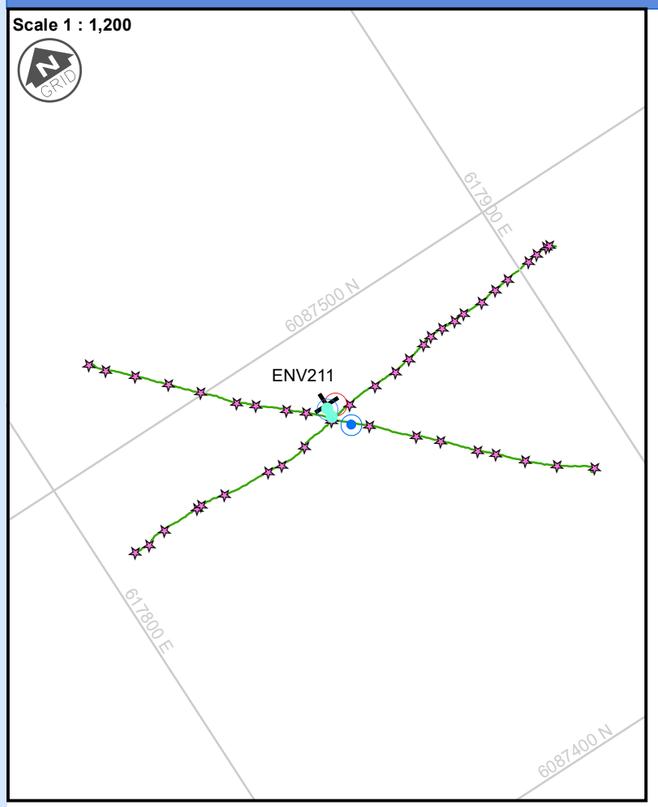


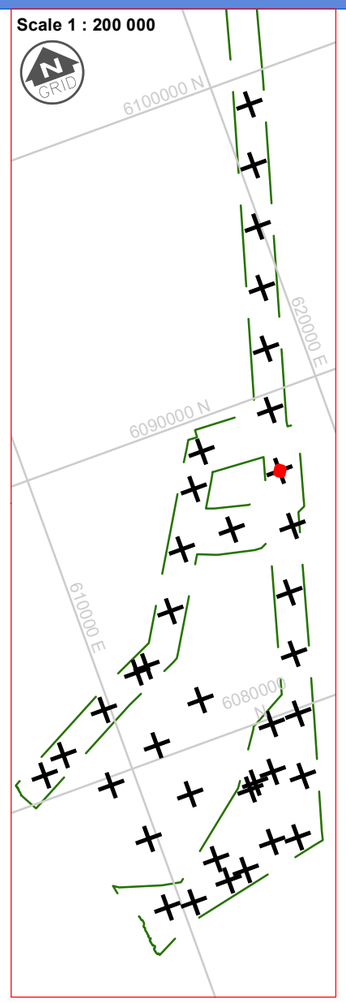
Station: ENV236
Fix: 31 **E:** 607 241 **N:** 6 080 757 **Depth (m):** 11
Retention: MFA

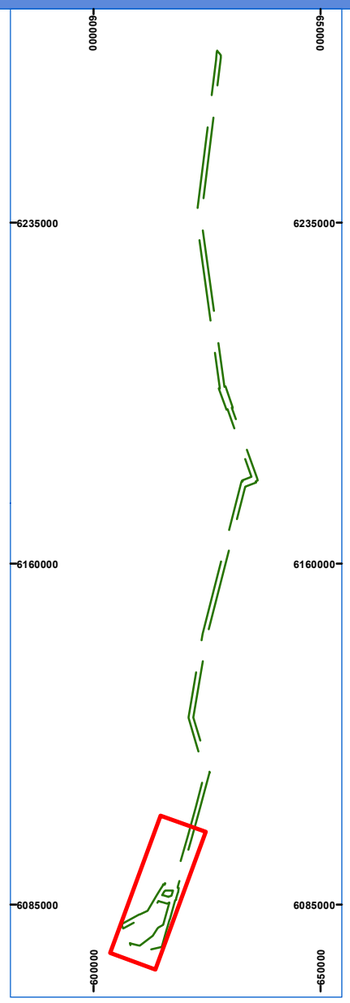
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

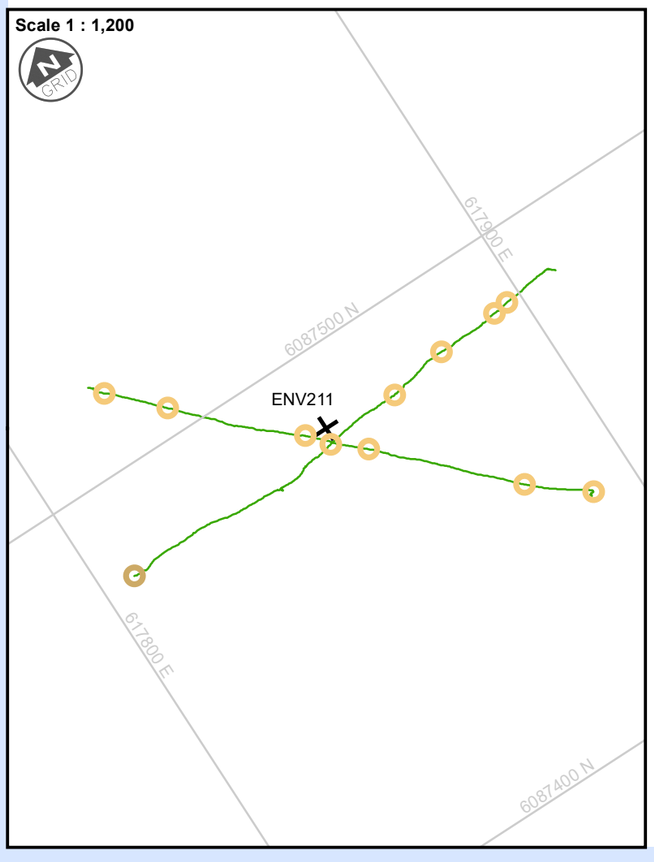
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

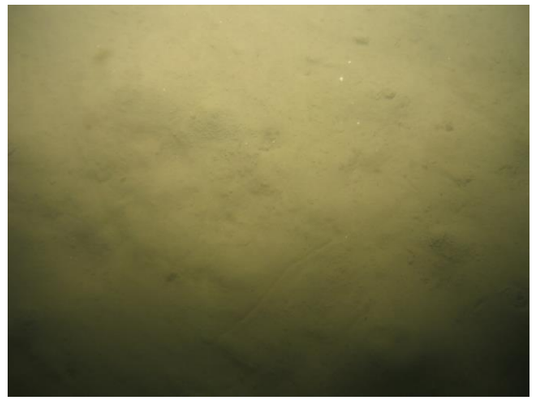
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV211

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV211
Fix: 1296 **E:** 617 842 **N:** 6 087 493 **Depth (m):** 52

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV211
Fix: 1330 **E:** 617 907 **N:** 6 087 487 **Depth (m):** 52

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV211
Fix: 107 **E:** 617 855 **N:** 6 087 484 **Depth (m):** 54
Retention: MFA

Sediment Description:
Soft clay sand with pebbles and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

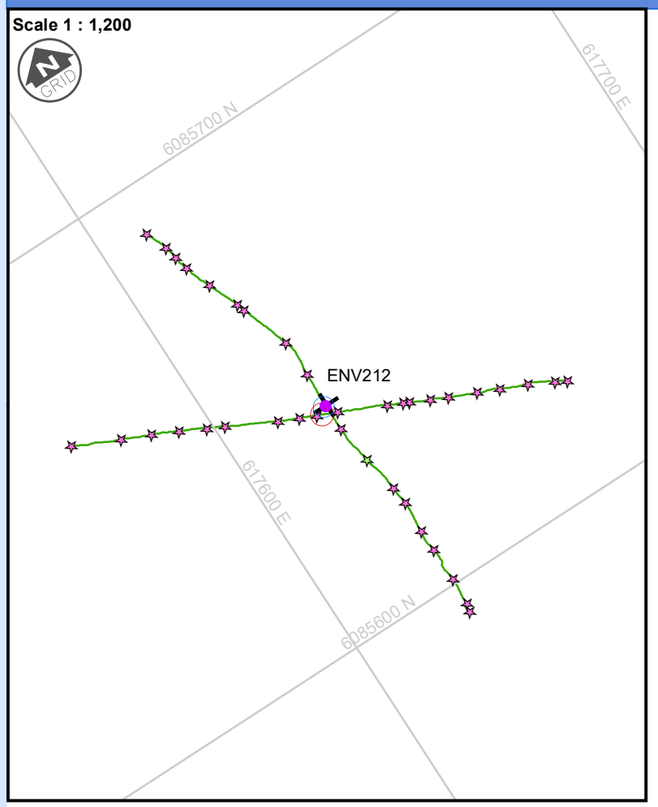


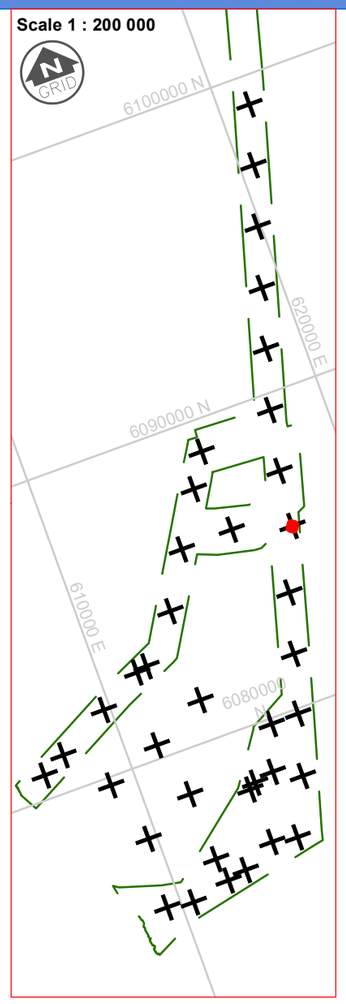
Station: ENV211
Fix: 107 **E:** 617 855 **N:** 6 087 484 **Depth (m):** 54
Retention: MFA

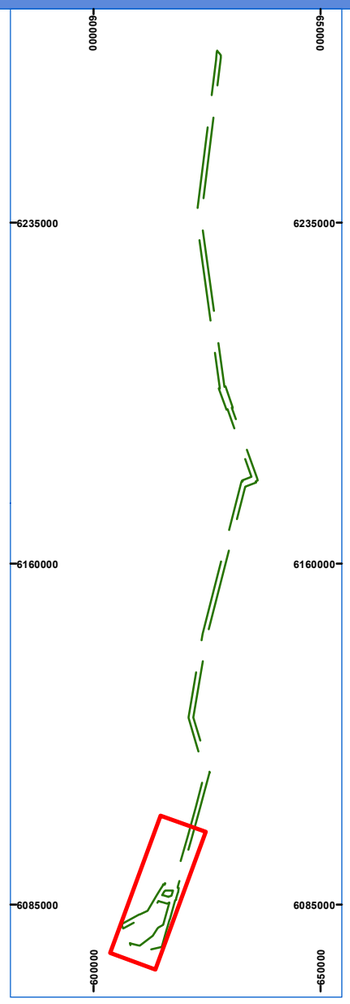
Sediment Description:
Soft clay sand with pebbles and shell fragments

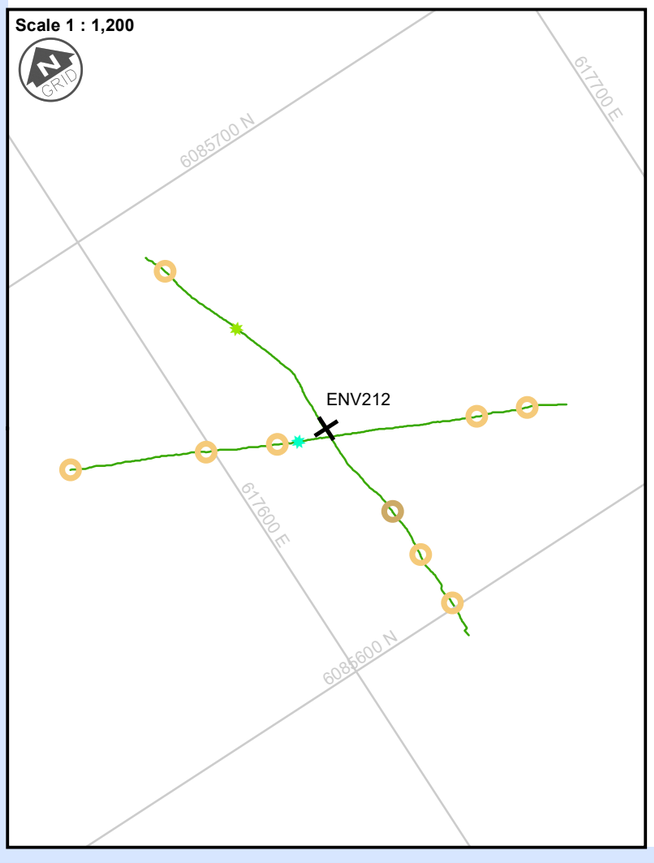
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

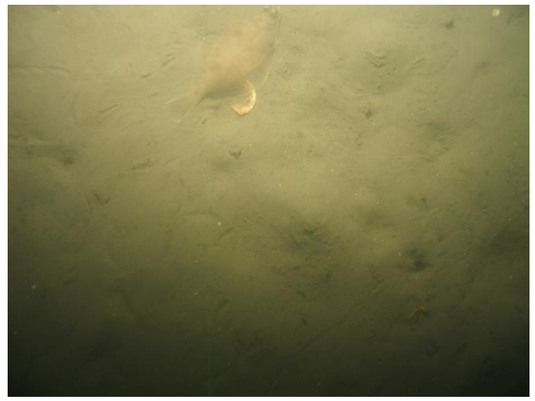
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV212

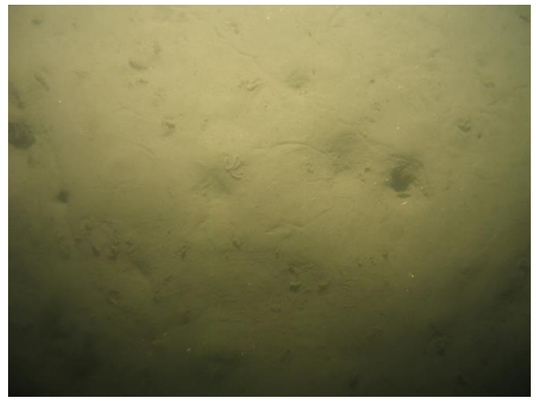
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV212
Fix: 1357 **E:** 617 617 **N:** 6 085 669 **Depth (m):** 49

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Glyptocephalus cynoglossus*)



Station: ENV212
Fix: 1364 **E:** 617 623 **N:** 6 085 612 **Depth (m):** 49

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV212
Fix: 111 **E:** 617 619 **N:** 6 085 642 **Depth (m):** 51
Retention: MFA

Sediment Description:
Soft clay sand with pebbles, gravels and shell fragments

Faunal Description:
Echinodermata (Ophiuroidea)

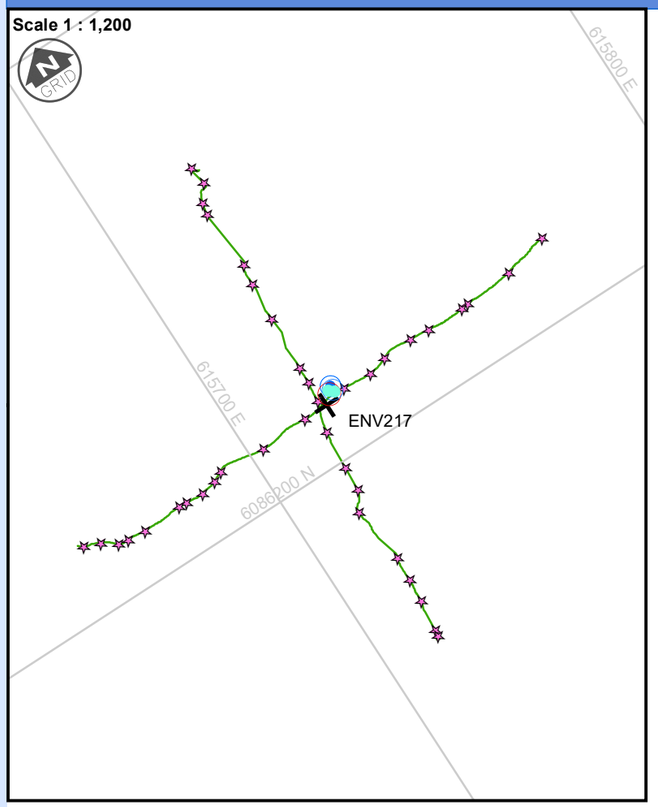


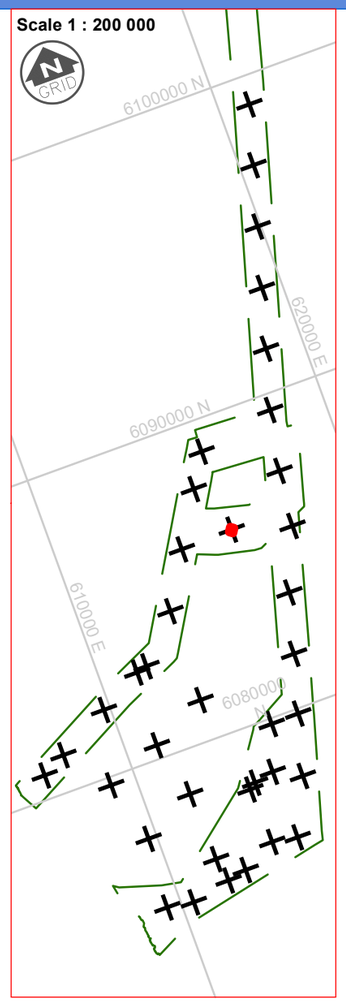
Station: ENV212
Fix: 111 **E:** 617 619 **N:** 6 085 642 **Depth (m):** 51
Retention: MFA

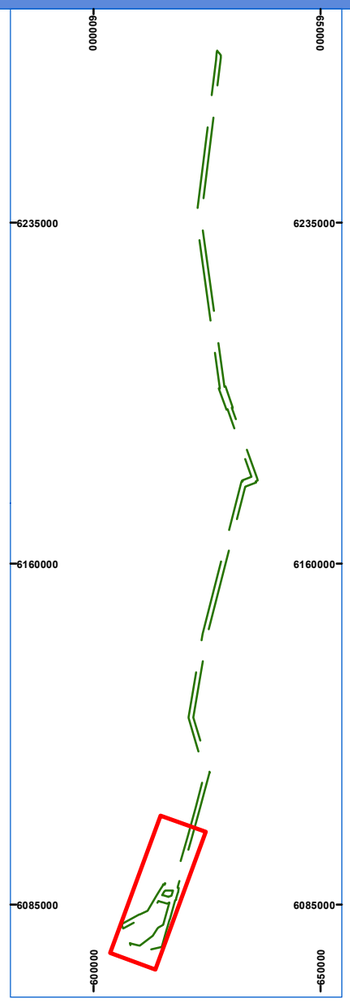
Sediment Description:
Soft clay sand with pebbles, gravels and shell fragments

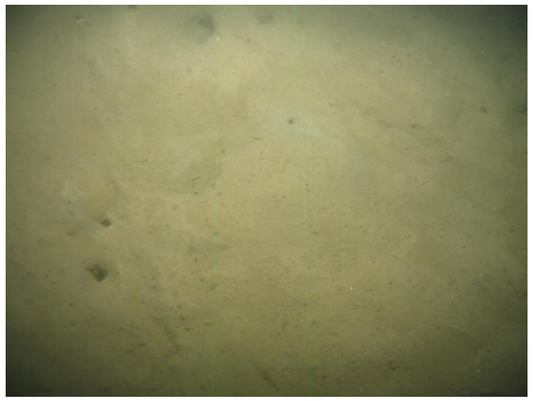
Faunal Description:
Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









Station: ENV217
Fix: 1997 **E:** 615 715 **N:** 6 086 207 **Depth (m):** 49

Sediment Description:
Soft sediment with shell hash

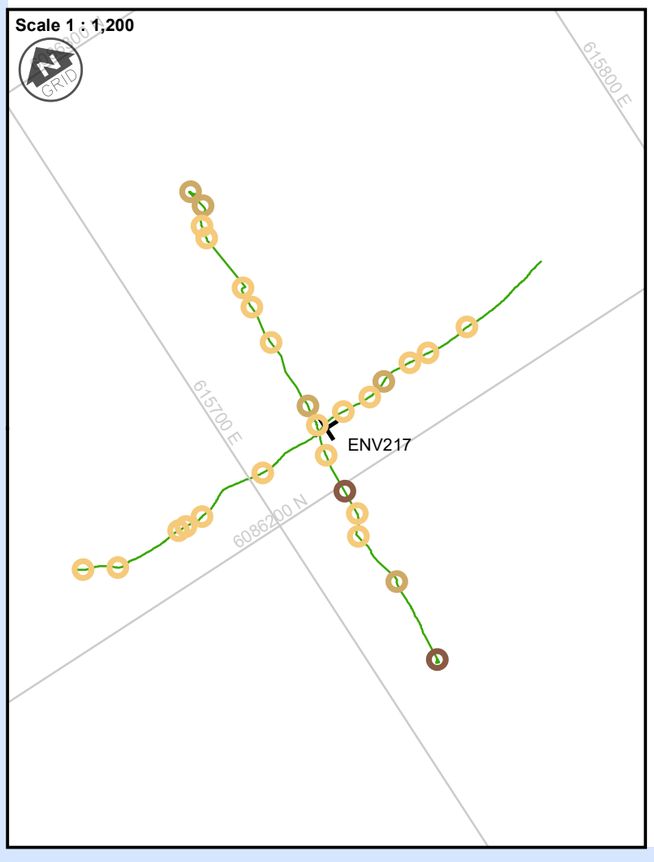
Faunal Description:
No visible fauna



Station: ENV217
Fix: 2015 **E:** 615 728 **N:** 6 086 212 **Depth (m):** 49

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Alcyonium digitatum*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION
- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE
- LOW
- MEDIUM
- NONE

Virgularia stet.
- 1
- 2

Pennatula phosphorea
- 1
- 2
- 3
- 4

BURROWS
- 1-2
- 3-4
- 5-6

PROTECTED TAXA
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV217

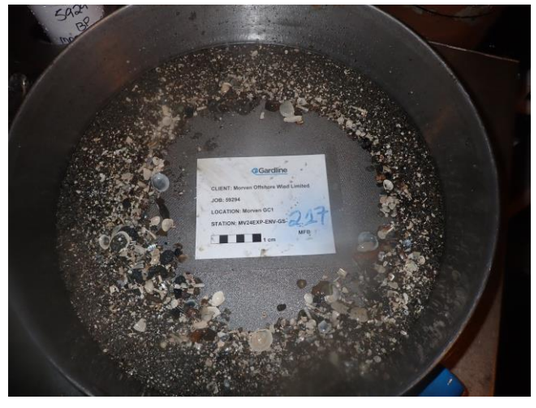
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV217
Fix: 169 **E:** 615 721 **N:** 6 086 213 **Depth (m):** 48
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

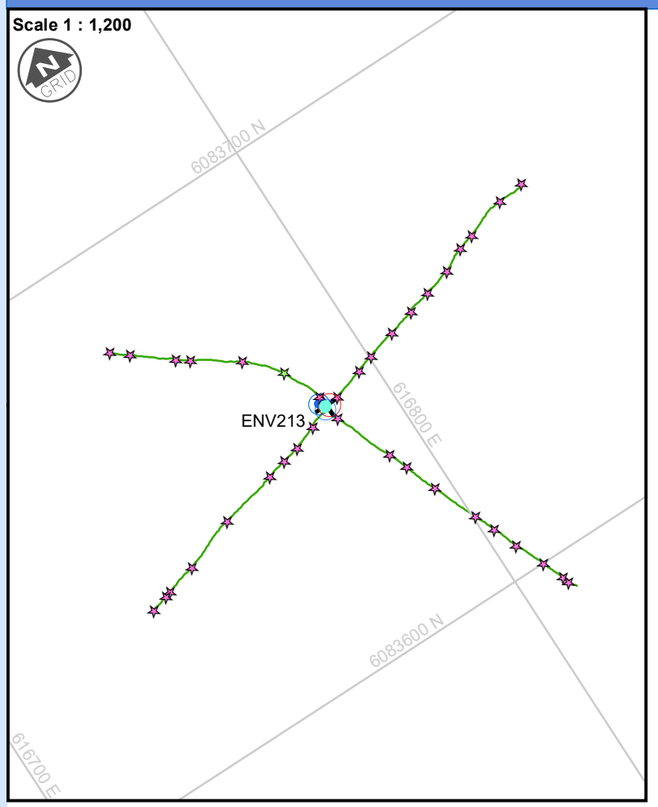


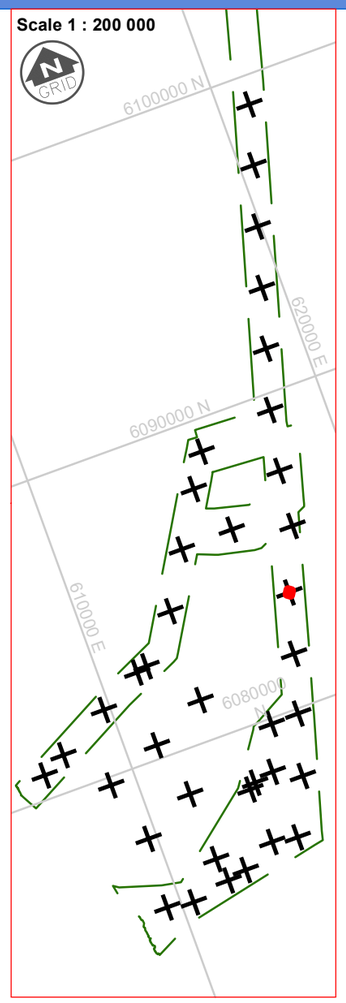
Station: ENV217
Fix: 169 **E:** 615 721 **N:** 6 086 213 **Depth (m):** 48
Retention: MFB

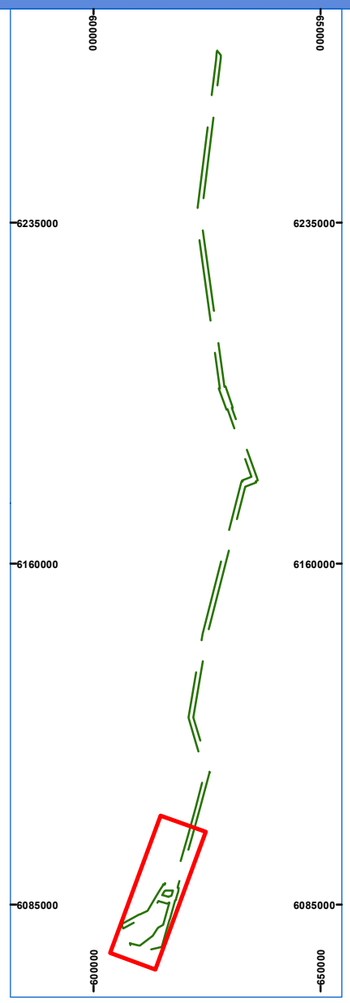
Sediment Description:
Soft silty sandy clay/mud

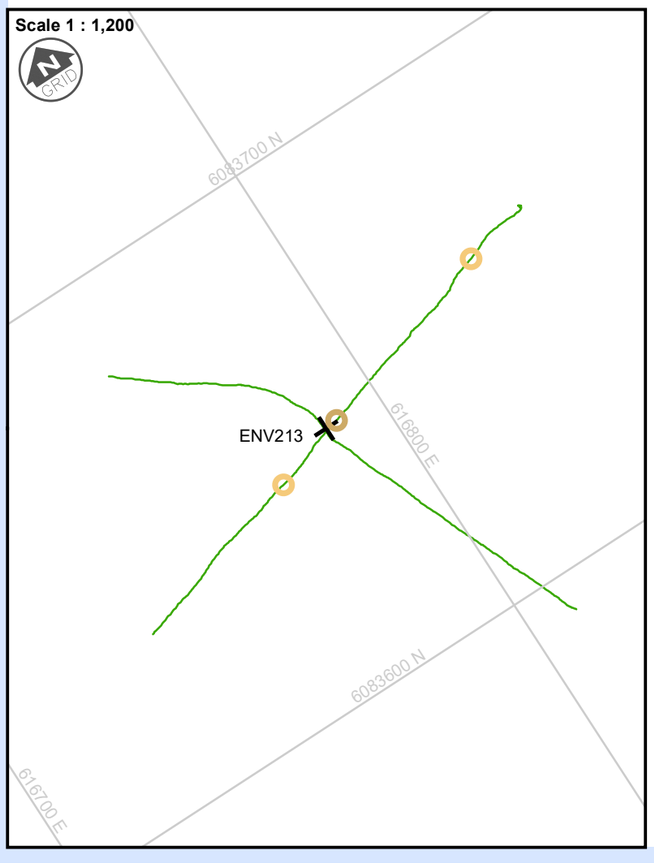
Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

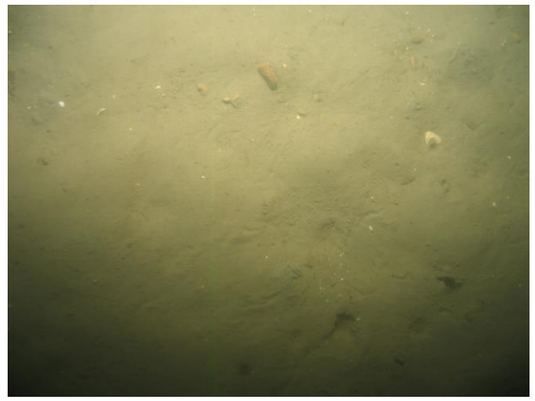
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV213

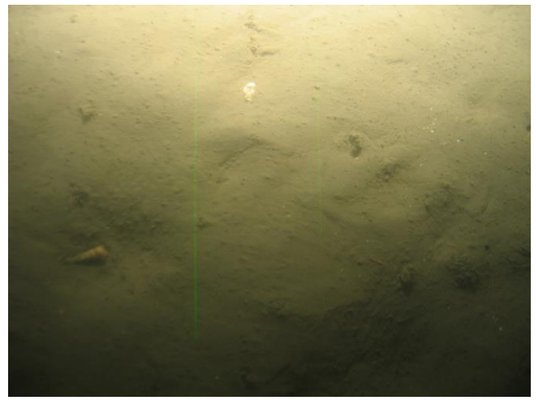
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV213
Fix: 1371 **E:** 616 830 **N:** 6 083 661 **Depth (m):** 48

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV213
Fix: 1401 **E:** 616 802 **N:** 6 083 611 **Depth (m):** 48

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV213
Fix: 114 **E:** 616 788 **N:** 6 083 649 **Depth (m):** 47
Retention: MFA

Sediment Description:
Soft clay sand with pebbles and shell fragments

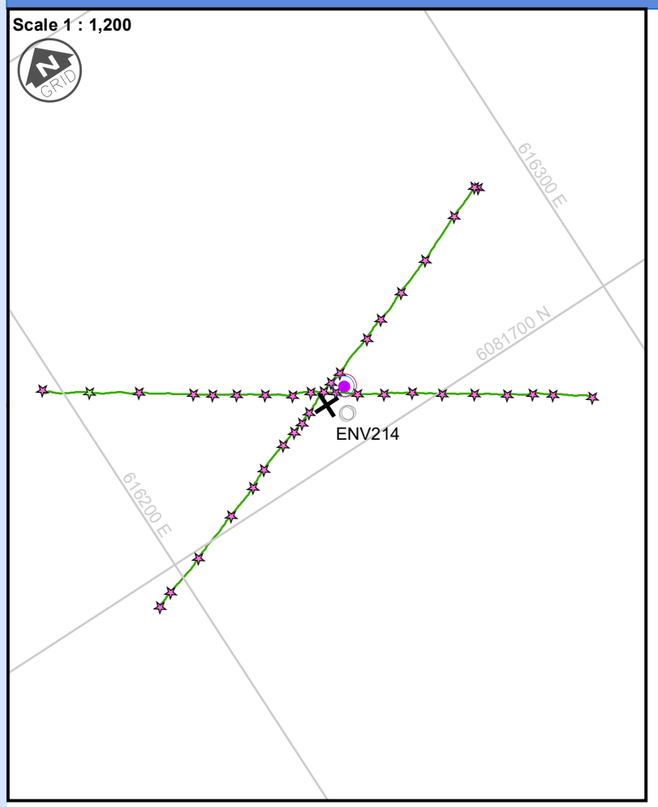
Faunal Description:
Annelida (Polychaeta), Arthropoda (Malacostraca, Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

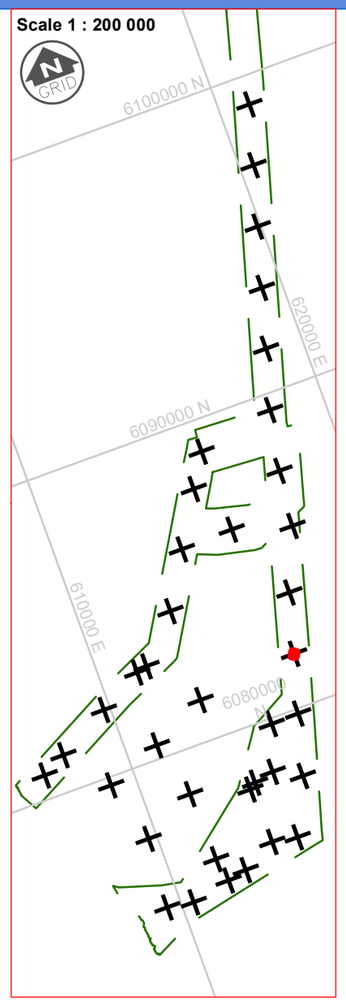


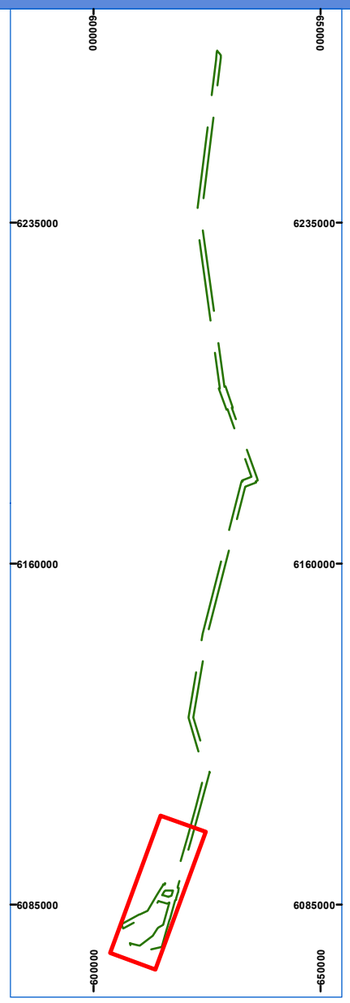
Station: ENV213
Fix: 114 **E:** 616 788 **N:** 6 083 649 **Depth (m):** 47
Retention: MFA

Sediment Description:
Soft clay sand with pebbles and shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Malacostraca, Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

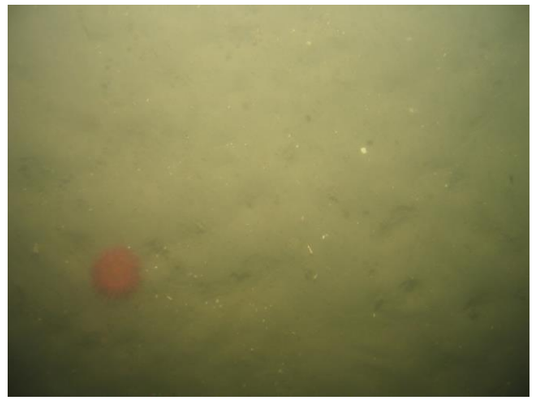
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV214

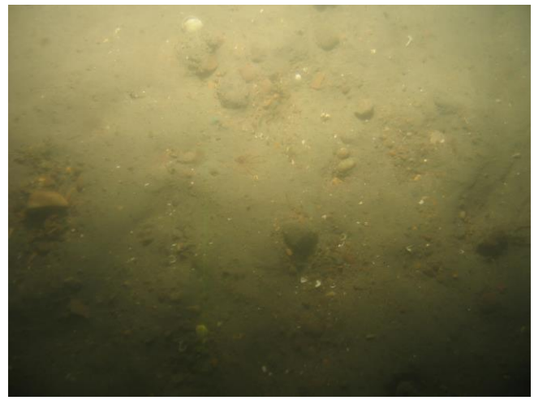
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV214
Fix: 1414 **E:** 616 245 **N:** 6 081 713 **Depth (m):** 45

Sediment Description:
Sand with shell hash

Faunal Description:
Cnidaria (Actiniaria *stet.*)



Station: ENV214
Fix: 1433 **E:** 616 233 **N:** 6 081 718 **Depth (m):** 45

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
Cnidaria (Edwardsiidae *stet.*)



Station: ENV214
Fix: 122 **E:** 616 247 **N:** 6 081 711 **Depth (m):** 44
Retention: MFB

Sediment Description:
Soft clay sand with pebbles and shell fragments

Faunal Description:
Mollusca (Bivalvia)

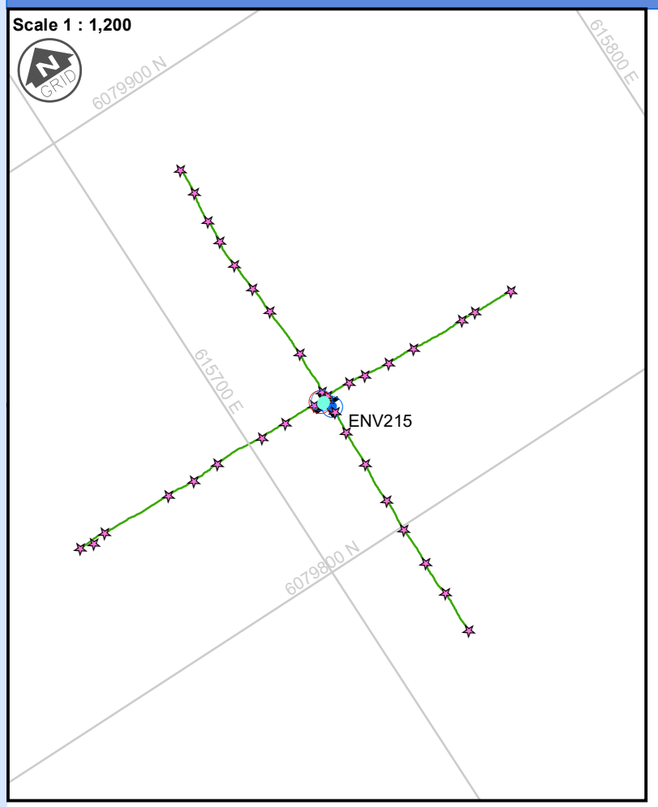


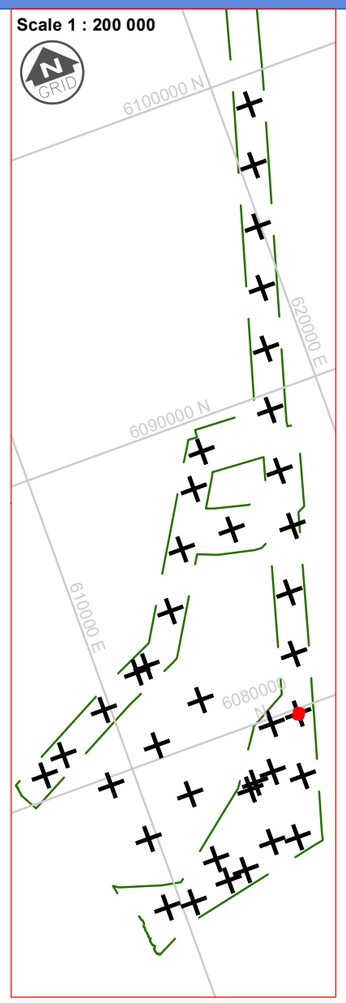
Station: ENV214
Fix: 122 **E:** 616 247 **N:** 6 081 711 **Depth (m):** 44
Retention: MFB

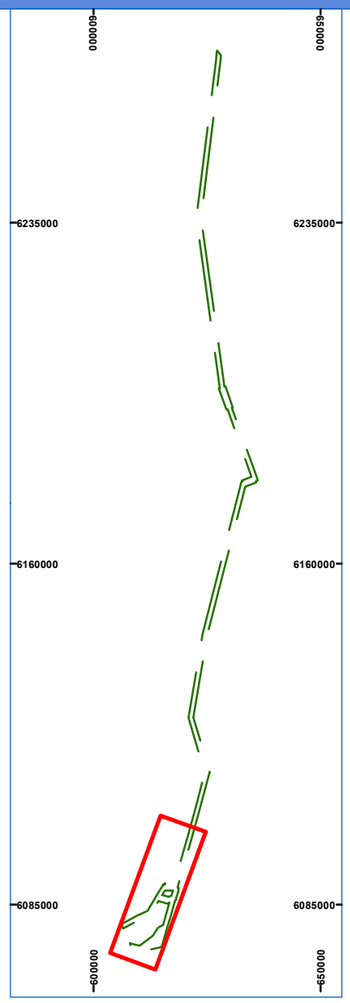
Sediment Description:
Soft clay sand with pebbles and shell fragments

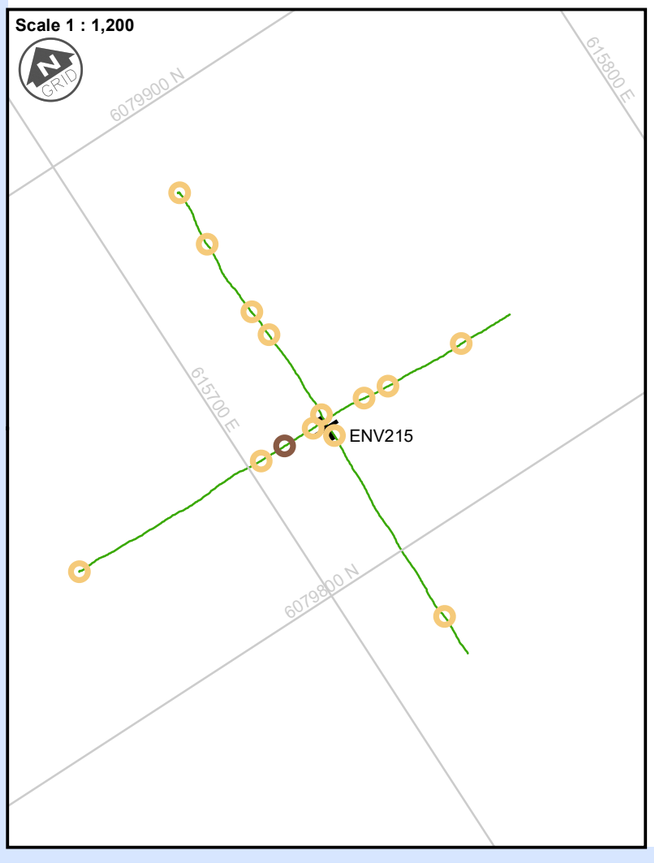
Faunal Description:
Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

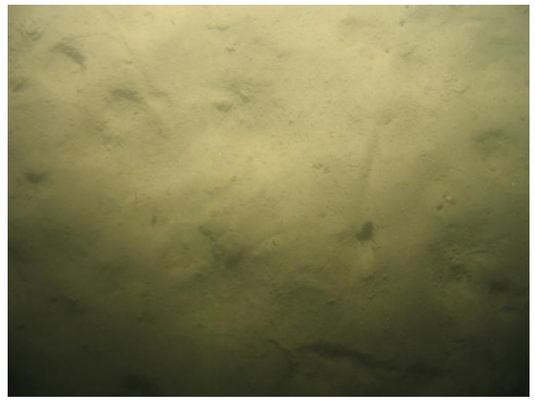
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV215

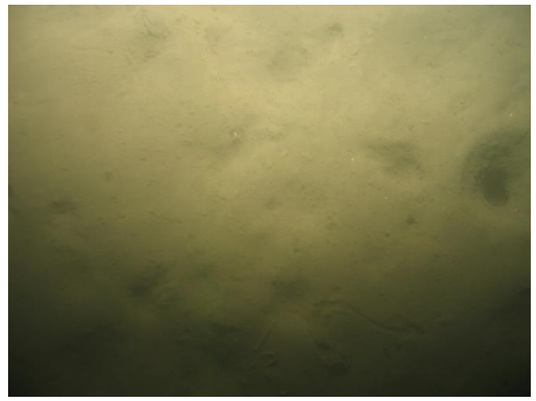
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV215
Fix: 1458 **E:** 615 718 **N:** 6 079 826 **Depth (m):** 44

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV215
Fix: 1478 **E:** 615 732 **N:** 6 079 828 **Depth (m):** 44

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV215
Fix: 124 **E:** 615 716 **N:** 6 079 829 **Depth (m):** 44
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

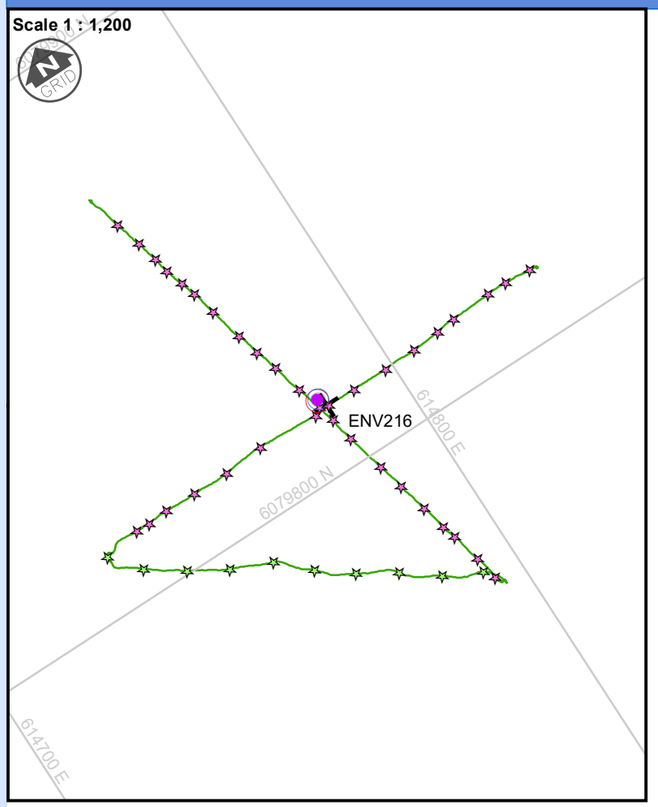


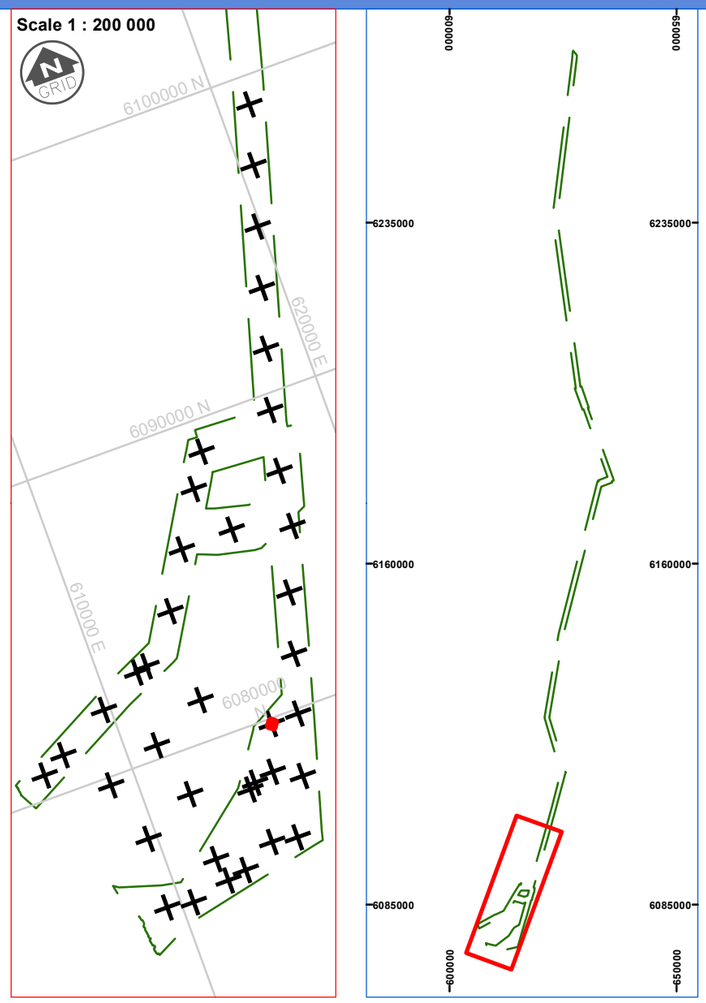
Station: ENV215
Fix: 124 **E:** 615 716 **N:** 6 079 829 **Depth (m):** 44
Retention: MFA

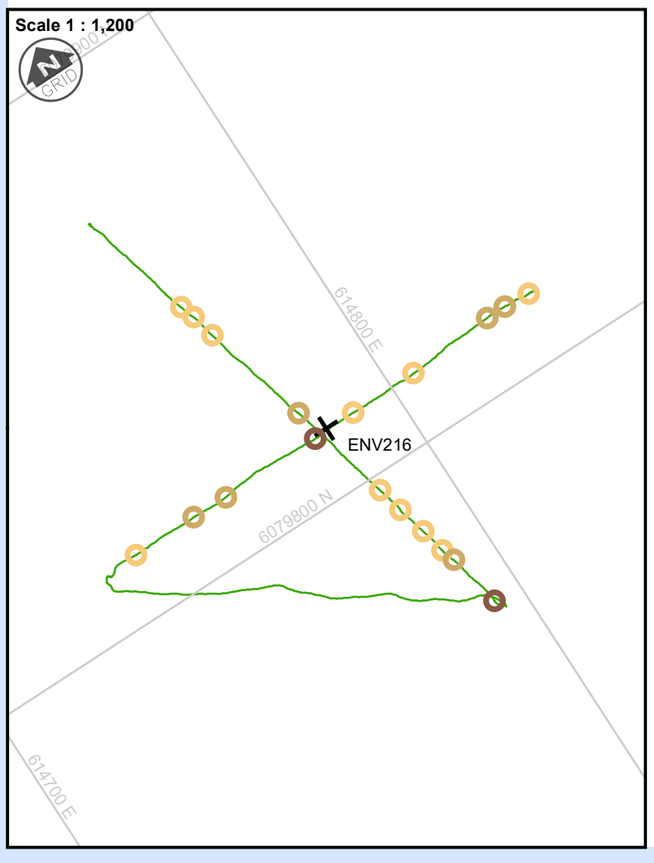
Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV216

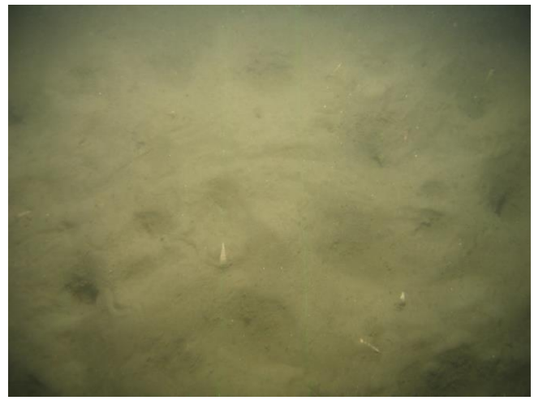
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV216
Fix: 1792 **E:** 614 792 **N:** 6 079 778 **Depth (m):** 42

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV216
Fix: 1805 **E:** 614 805 **N:** 6 079 813 **Depth (m):** 42

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV216
Fix: 151 **E:** 614 784 **N:** 6 079 815 **Depth (m):** 41
Retention: MFB

Sediment Description:
Soft silty sandy clay with shell fragments, gravels and pebbles under the surface

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

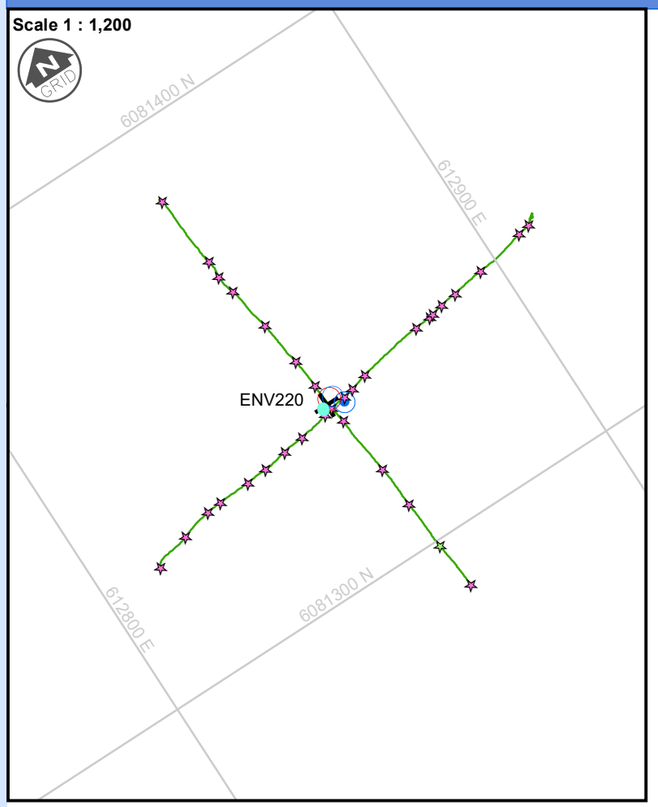


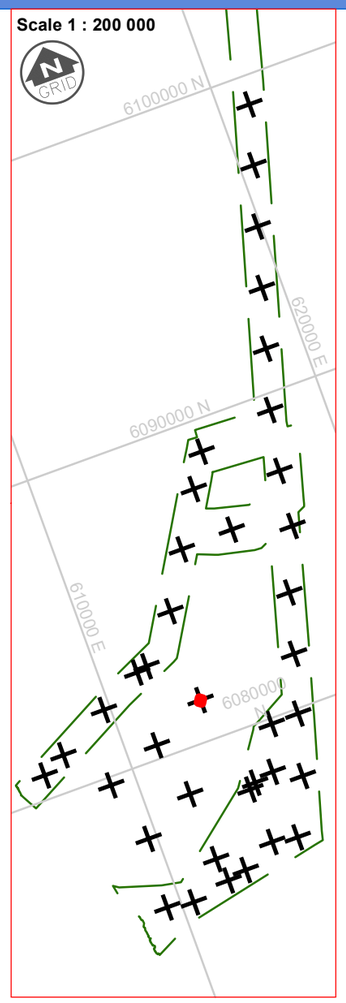
Station: ENV216
Fix: 151 **E:** 614 784 **N:** 6 079 815 **Depth (m):** 41
Retention: MFB

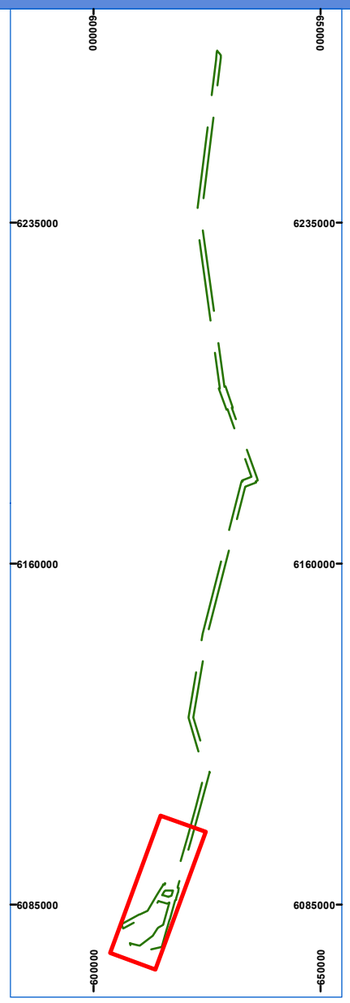
Sediment Description:
Soft silty sandy clay with shell fragments, gravels and pebbles under the surface

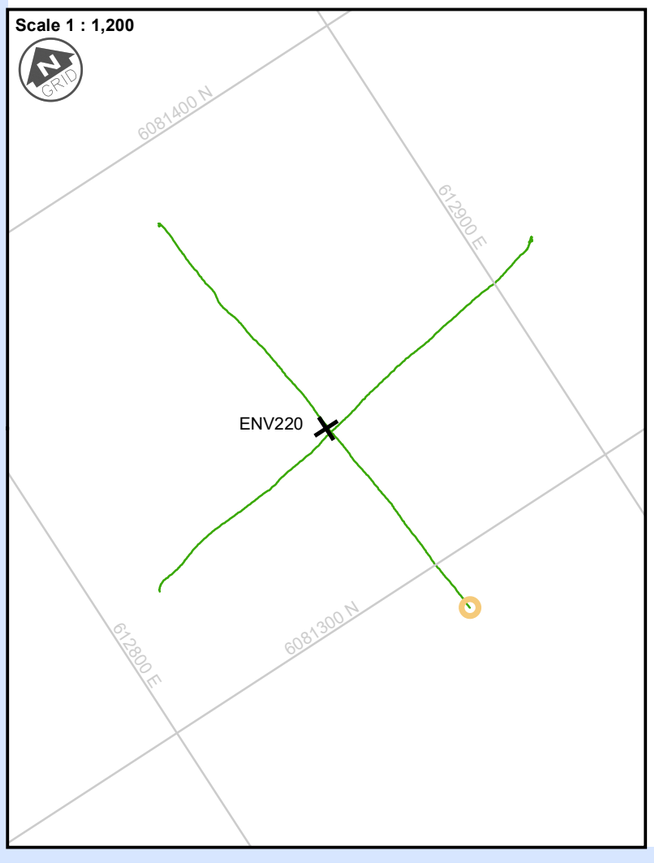
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

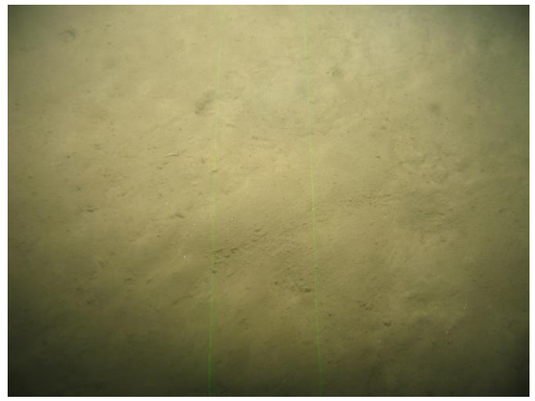
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV220

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV220
Fix: 1818 **E:** 612 857 **N:** 6 081 333 **Depth (m):** 35

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV220
Fix: 1839 **E:** 612 883 **N:** 6 081 337 **Depth (m):** 35

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*)



Station: ENV220
Fix: 153 **E:** 612 858 **N:** 6 081 335 **Depth (m):** 37
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under the surface

Faunal Description:
Annelida (Polychaeta)

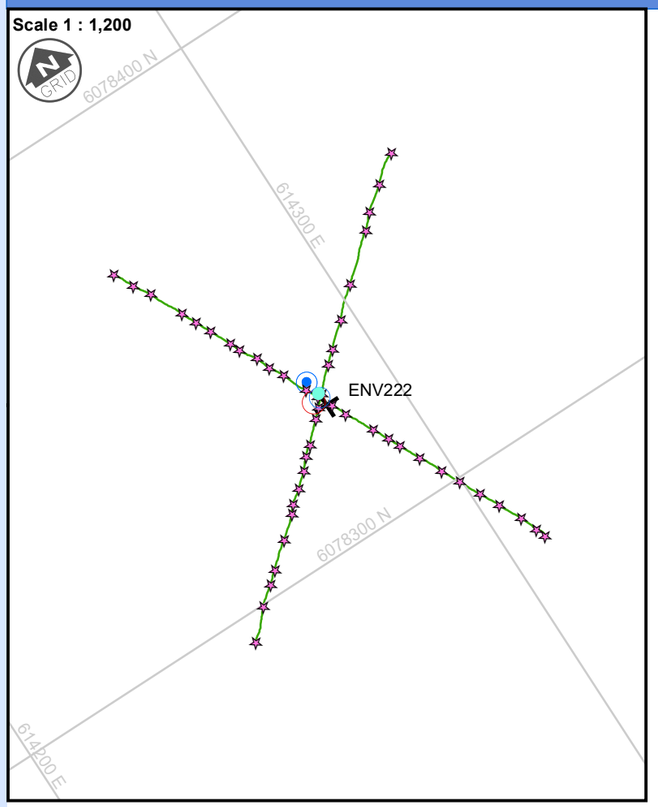


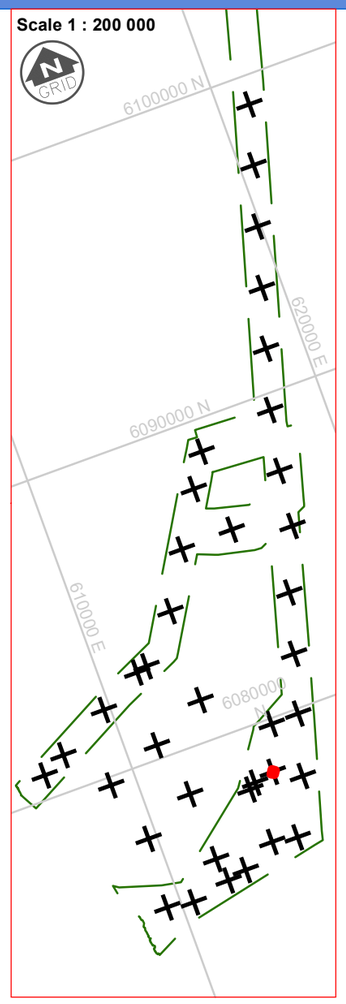
Station: ENV220
Fix: 153 **E:** 612 858 **N:** 6 081 335 **Depth (m):** 37
Retention: MFA

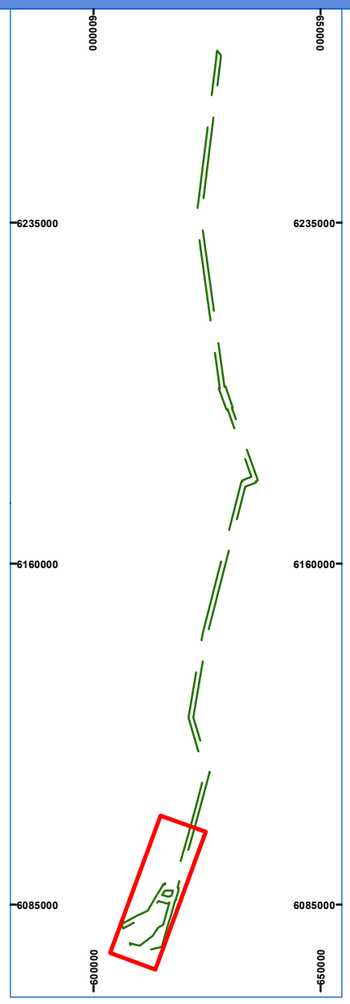
Sediment Description:
Soft silty sandy clay with pebbles under the surface

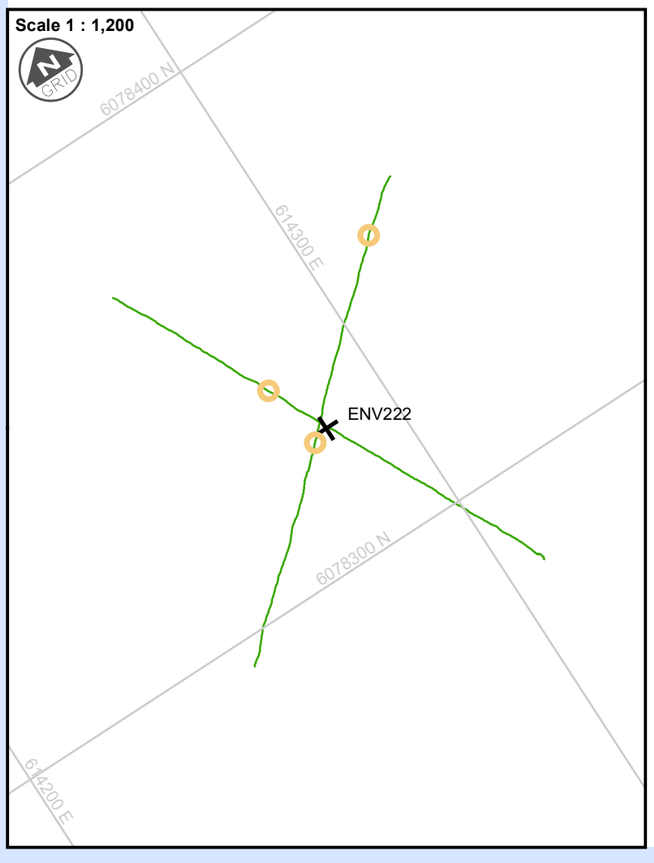
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

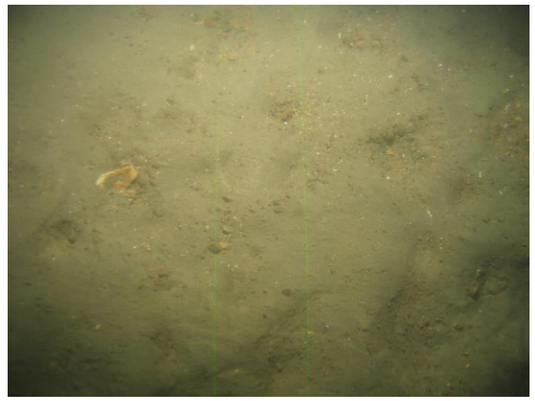
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV222

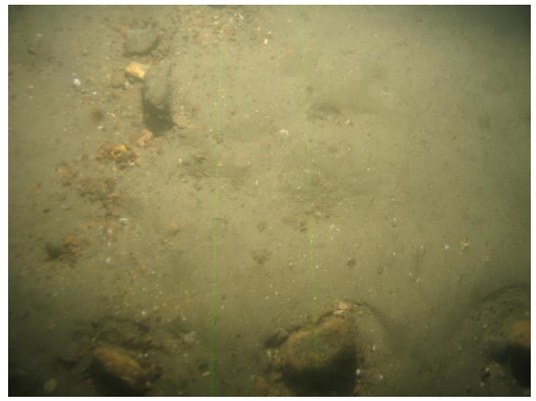
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV222
Fix: 1732 **E:** 614 277 **N:** 6 078 344 **Depth (m):** 37

Sediment Description:
Soft sediment with gravel and shell hash

Faunal Description:
No visible fauna



Station: ENV222
Fix: 1759 **E:** 614 272 **N:** 6 078 315 **Depth (m):** 37

Sediment Description:
Soft sediment with gravel and shell hash

Faunal Description:
No visible fauna



Station: ENV222
Fix: 145 **E:** 614 284 **N:** 6 078 328 **Depth (m):** 35
Retention: MFA

Sediment Description:
Silty clayey fine sand with gravels under the surface

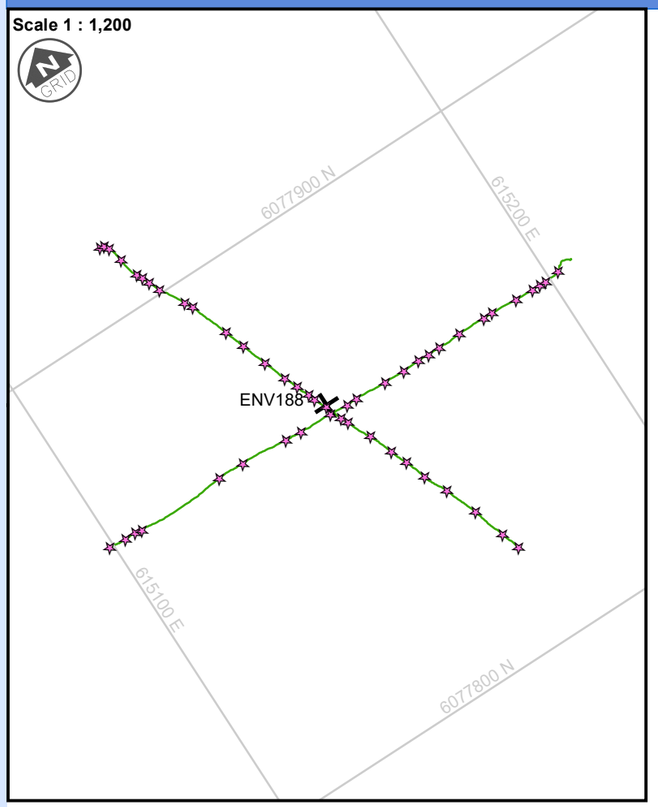
Faunal Description:
Annelida (Polychaeta)

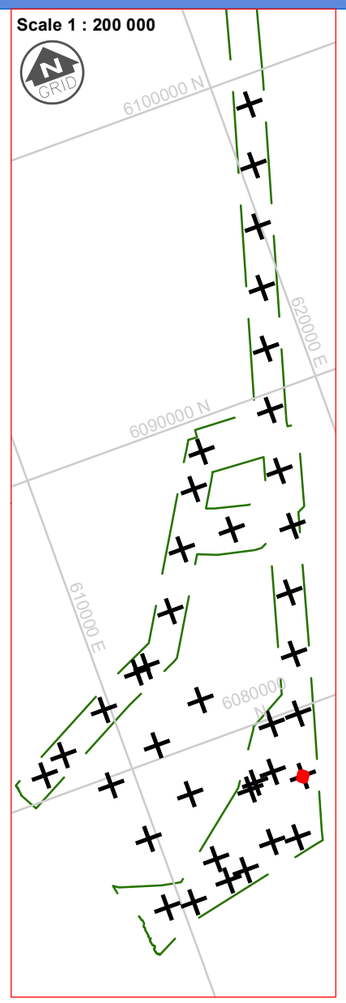


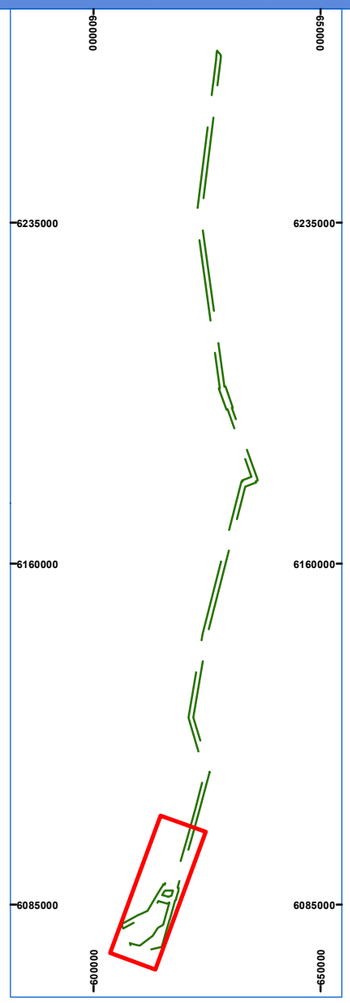
Station: ENV222
Fix: 145 **E:** 614 284 **N:** 6 078 328 **Depth (m):** 35
Retention: MFA

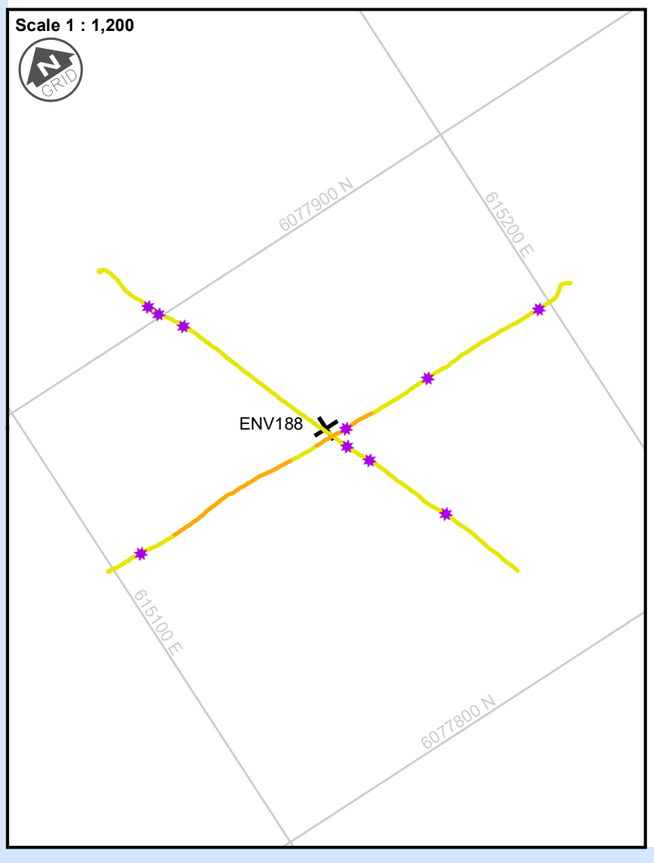
Sediment Description:
Silty clayey fine sand with gravels under the surface

Faunal Description:
Annelida (Polychaeta)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV188

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV188
Fix: 1490 **E:** 615 135 **N:** 6 077 901 **Depth (m):** 34

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (*Echinus esculentus inc*, Ophiuroidea *stet.*)



Station: ENV188
Fix: 1523 **E:** 615 124 **N:** 6 077 863 **Depth (m):** 34

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*, *Urticina stet*), Echinodermata (Asteroidea *stet.*, Ophiuroidea *stet.*), Faunal Turf



Station: ENV188
Fix: 1535 **E:** 615 179 **N:** 6 077 862 **Depth (m):** 34

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Arthropoda (Decapoda *stet.*), Echinodermata (*Ophiocomina nigra*, Ophiuroidea *stet.*), Faunal Turf

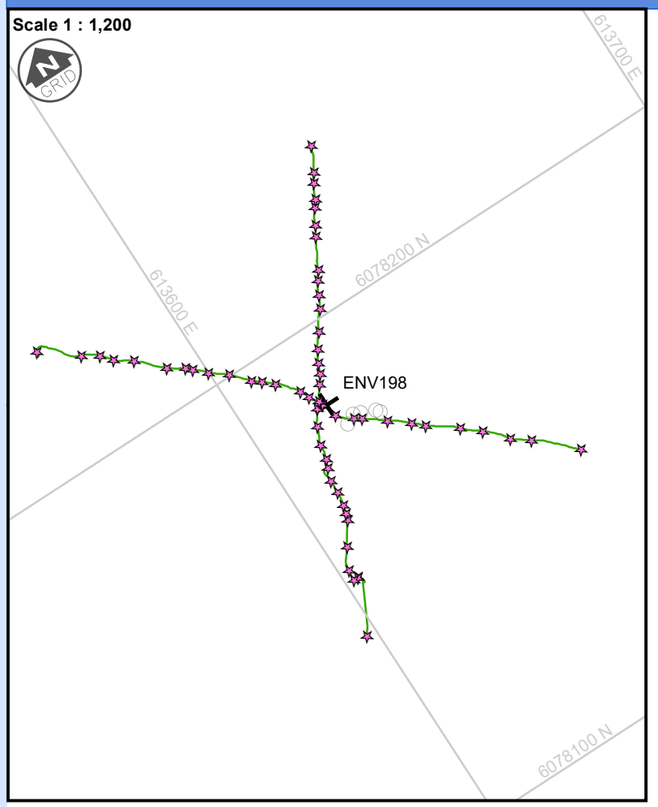


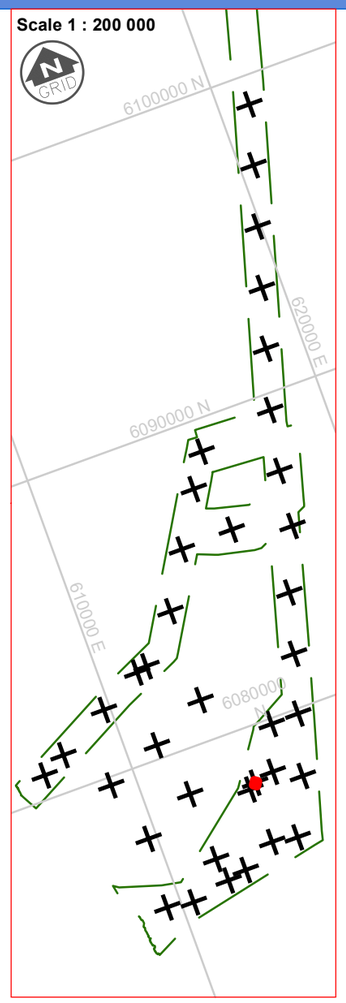
Station: ENV188
Fix: 1539 **E:** 615 196 **N:** 6 077 861 **Depth (m):** 34

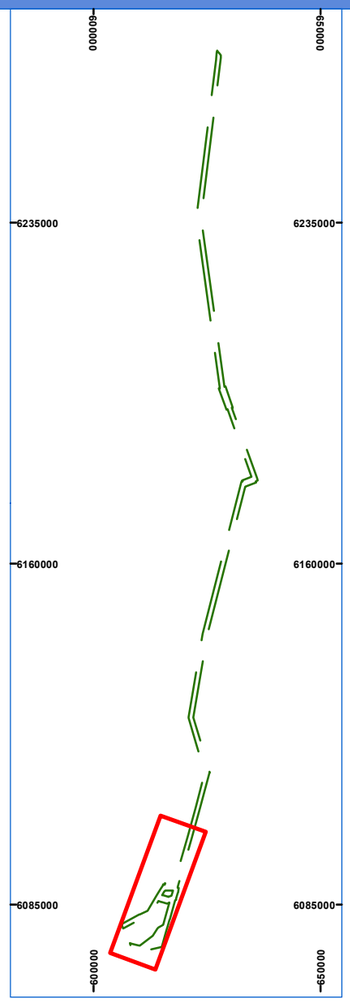
Sediment Description:
Cobbles and gravel with coarse sediment

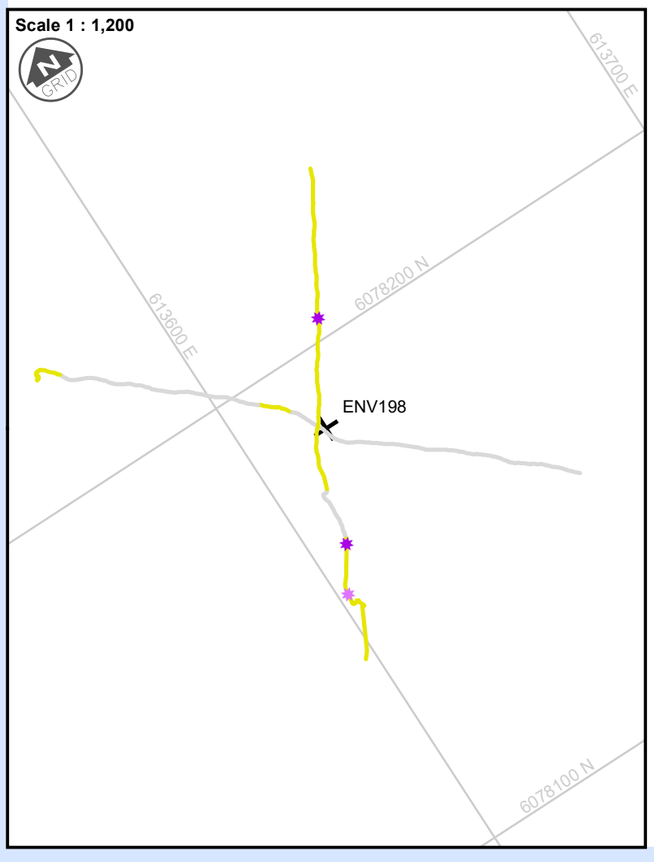
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea *stet.*), Faunal Turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV198

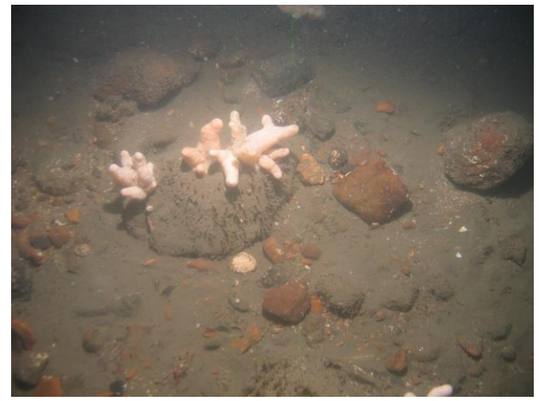
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV198
Fix: 1674 **E:** 613 603 **N:** 6 078 200 **Depth (m):** 32

Sediment Description:
Sand with gravel and shell hash

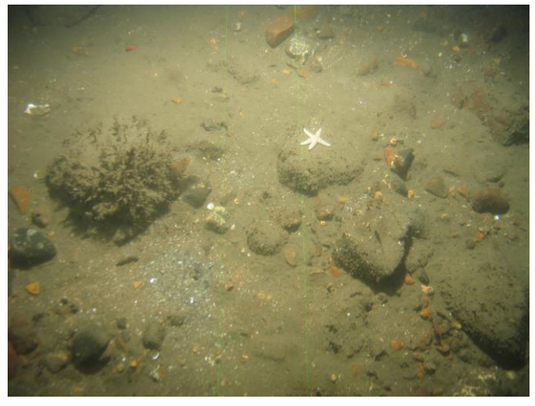
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal Turf



Station: ENV198
Fix: 1676 **E:** 613 608 **N:** 6 078 196 **Depth (m):** 32

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal Turf



Station: ENV198
Fix: 1709 **E:** 613 617 **N:** 6 078 189 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Chordata (Ascidiacea *stet.*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal Turf

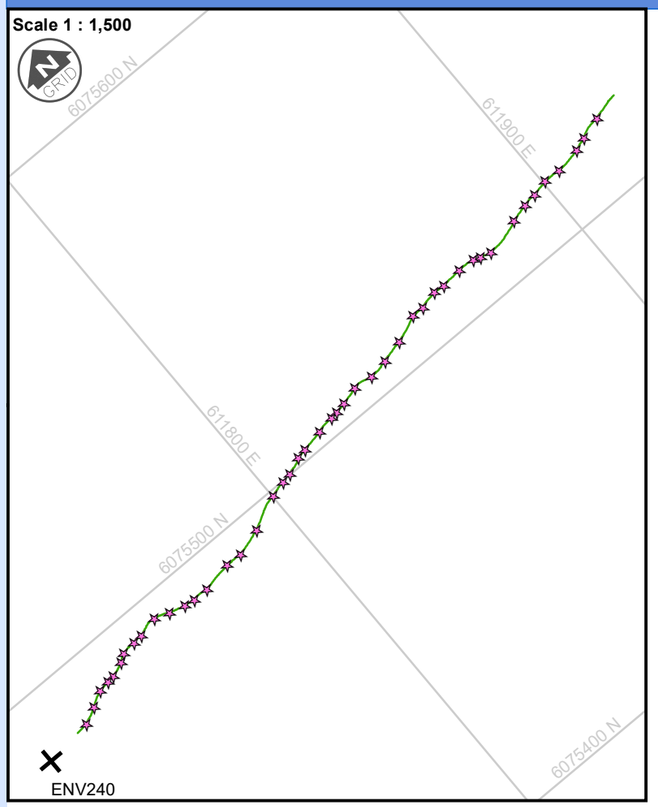


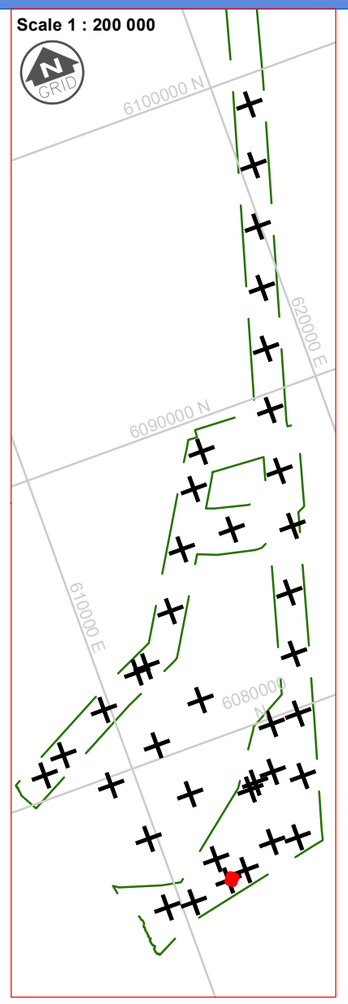
Station: ENV198
Fix: 1722 **E:** 613 637 **N:** 6 078 223 **Depth (m):** 32

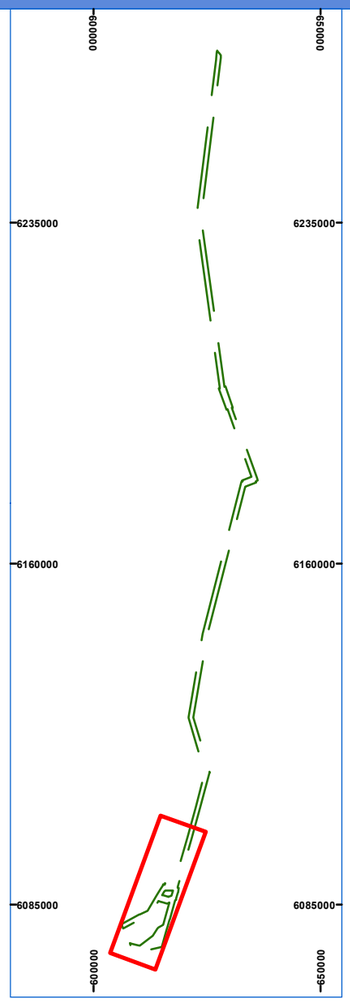
Sediment Description:
Cobbles and gravel with coarse sediment

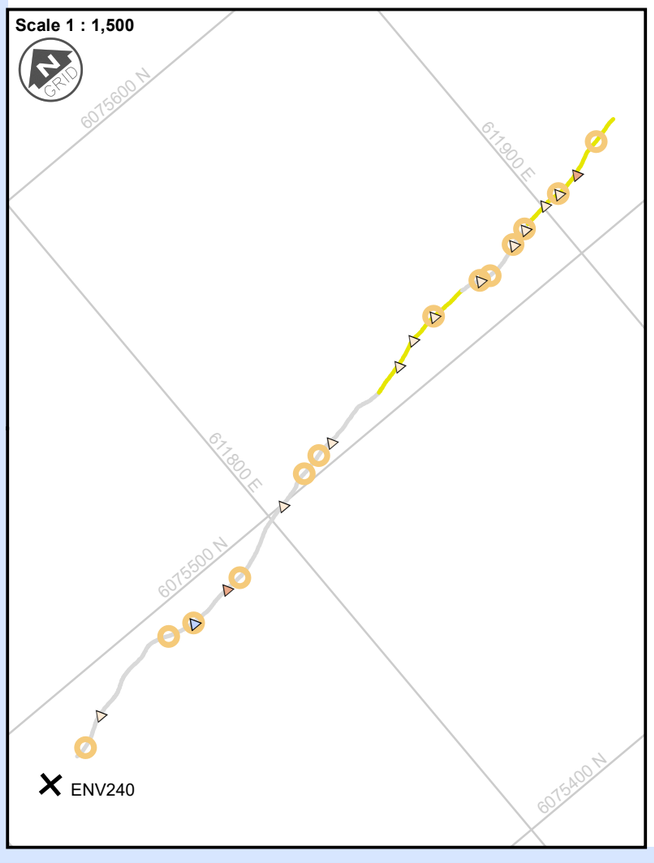
Faunal Description:
Arthropoda (Caridea *stet.*, *Munida stet*), Cnidaria (*Alcyonium digitatum*, Hydrozoa *stet.*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal Turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF TRANSECT: ENV240

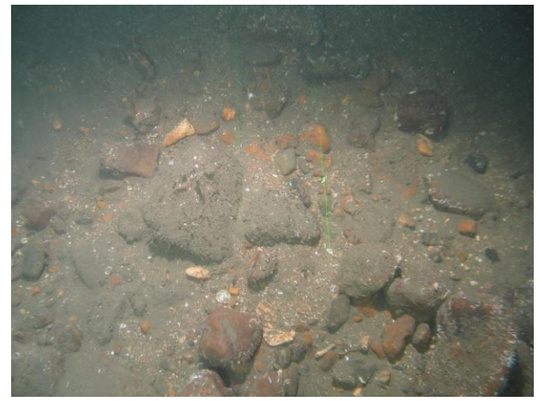
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV240
Fix: 617 **E:** 613 597 **N:** 6 078 027 **Depth (m):** 28

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV240
Fix: 625 **E:** 613 563 **N:** 6 078 027 **Depth (m):** 27

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Faunal turf



Station: ENV240
Fix: 637 **E:** 613 519 **N:** 6 078 030 **Depth (m):** 26

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Cnidaria (*Alcyonium digitatum*)

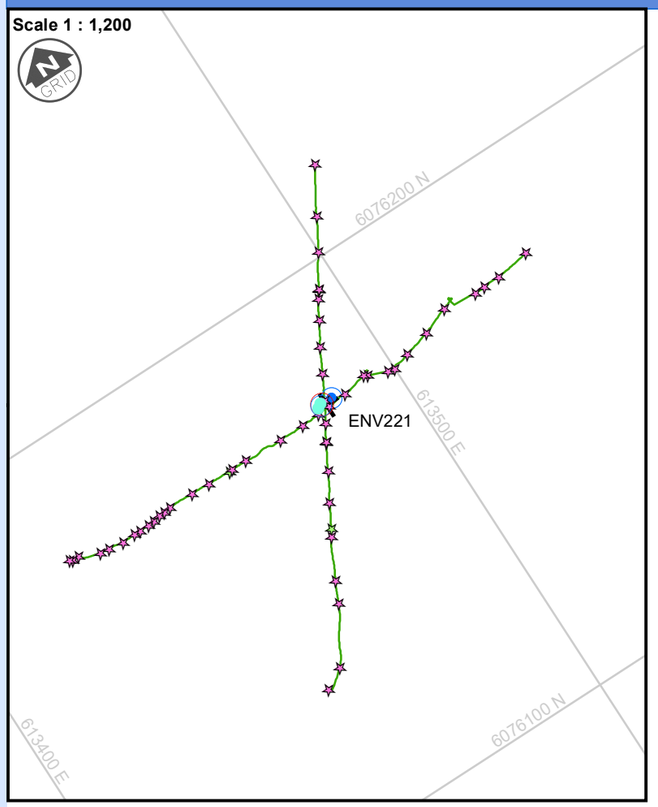


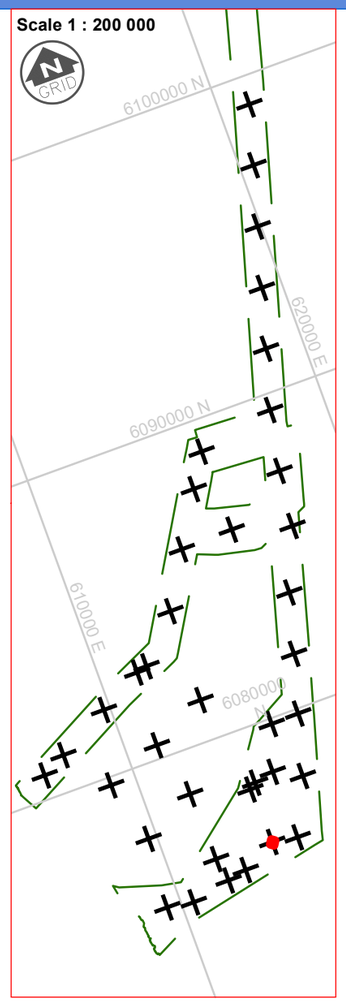
Station: ENV240
Fix: 651 **E:** 613 471 **N:** 6 078 032 **Depth (m):** 24

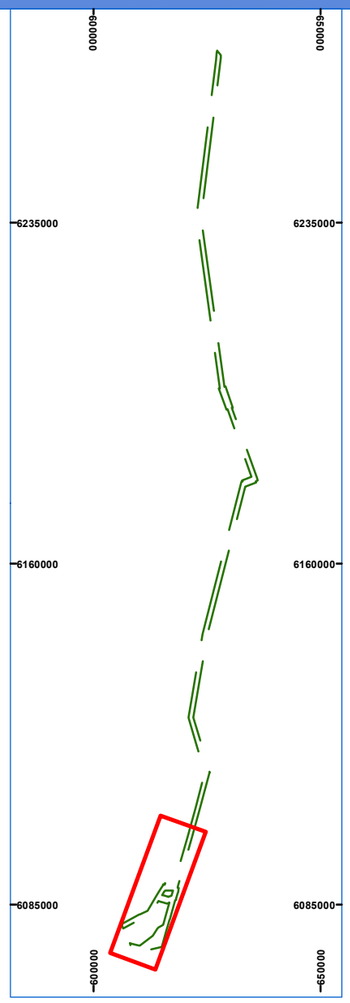
Sediment Description:
Sand with cobbles and shell hash

Faunal Description:
Bryozoa (*Alcyonidium diaphanum*), Cnidaria (*Alcyonium digitatum*, *Nemertesia antennina inc*), Echinodermata (*Asterias rubens*, *Echinus esculentus inc*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

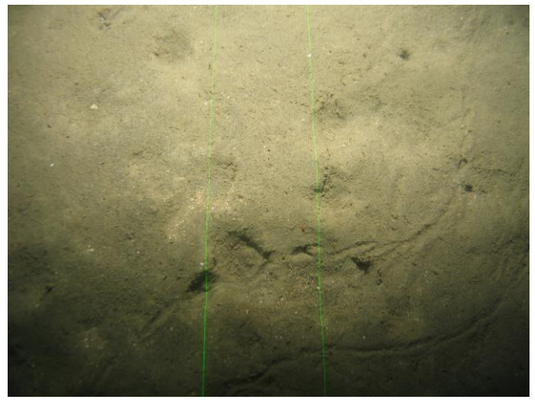
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV221

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV221
Fix: 1612 **E:** 613 495 **N:** 6 076 175 **Depth (m):** 31

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV221
Fix: 1626 **E:** 613 444 **N:** 6 076 174 **Depth (m):** 31

Sediment Description:
Soft sediment with gravel and shell hash

Faunal Description:
Faunal Turf



Station: ENV221
Fix: 135 **E:** 613 484 **N:** 6 076 176 **Depth (m):** 32
Retention: MFA

Sediment Description:
Silty compact fine to medium sand.

Faunal Description:
Annelida (Polychaeta)

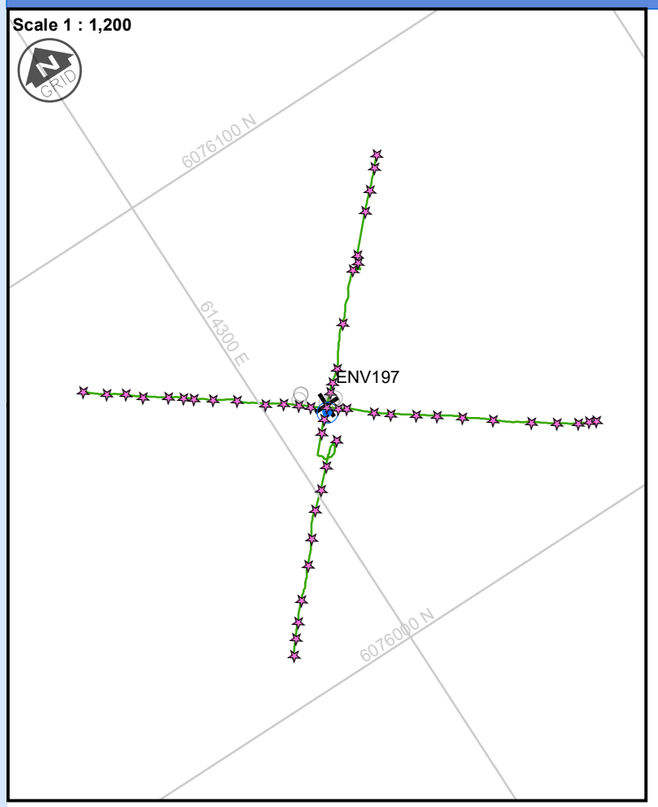


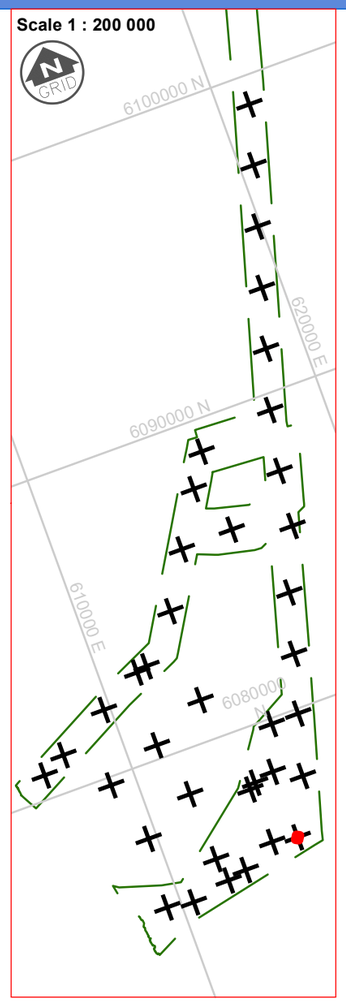
Station: ENV221
Fix: 135 **E:** 613 484 **N:** 6 076 176 **Depth (m):** 32
Retention: MFA

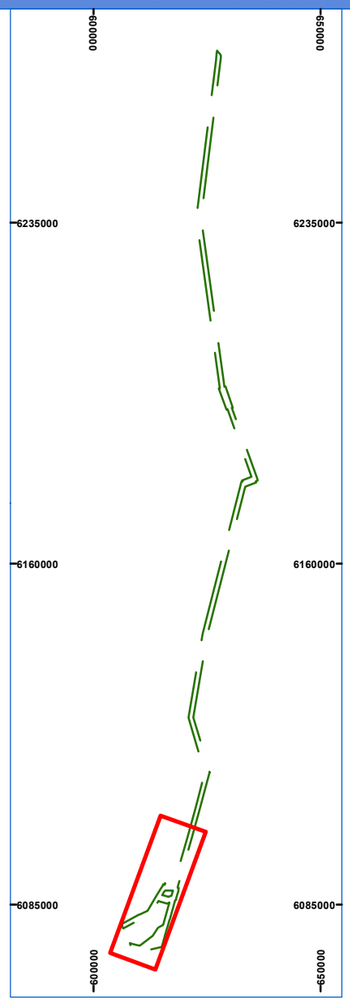
Sediment Description:
Silty compact fine to medium sand.

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

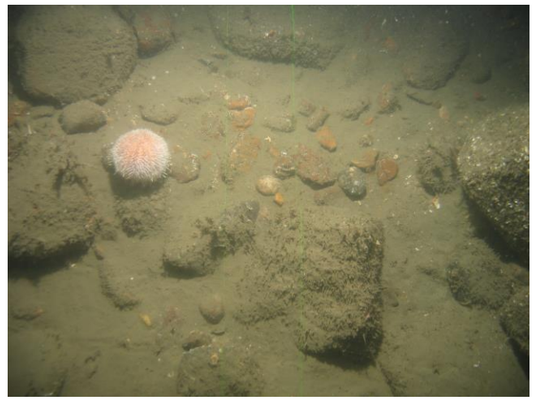
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV197

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV197
Fix: 1550 **E:** 614 328 **N:** 6 076 034 **Depth (m):** 32

Sediment Description:
Cobbles and gravel with coarse sediment

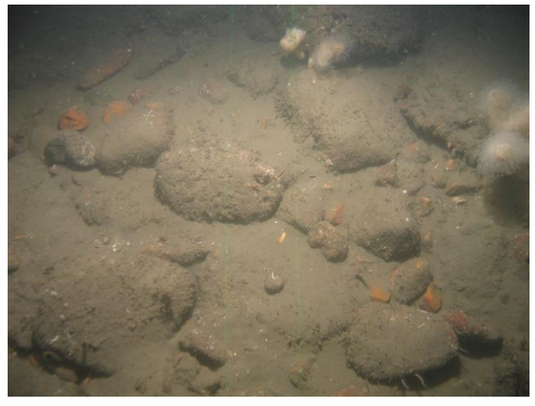
Faunal Description:
Echinodermata (*Echinus esculentus inc*, Ophiuroidea *stet.*), Faunal Turf



Station: ENV197
Fix: 1562 **E:** 614 290 **N:** 6 076 062 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

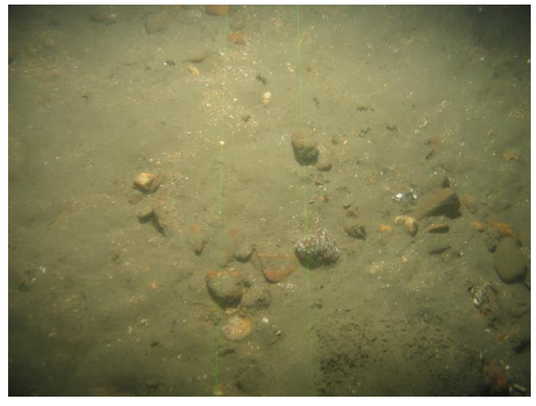
Faunal Description:
Faunal Turf



Station: ENV197
Fix: 1582 **E:** 614 338 **N:** 6 076 075 **Depth (m):** 32

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea *stet.*)

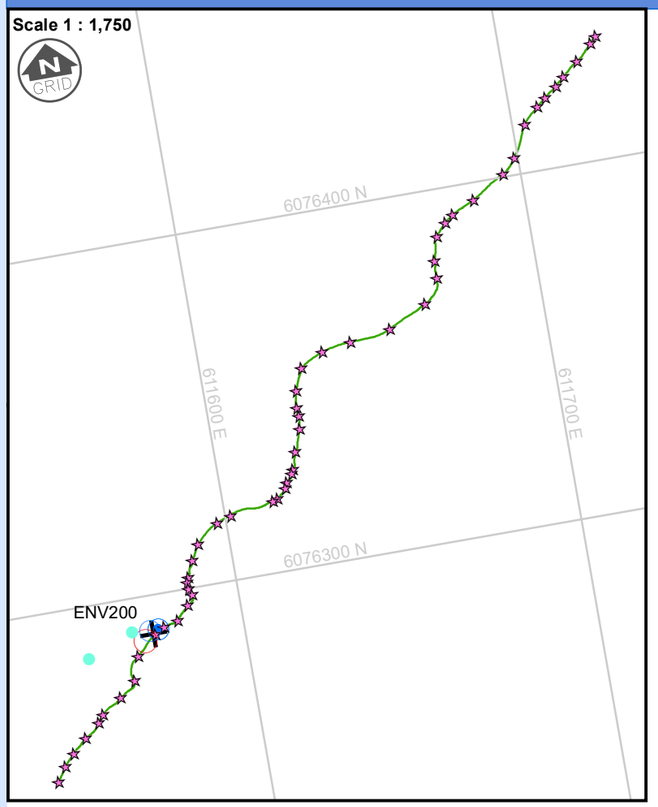


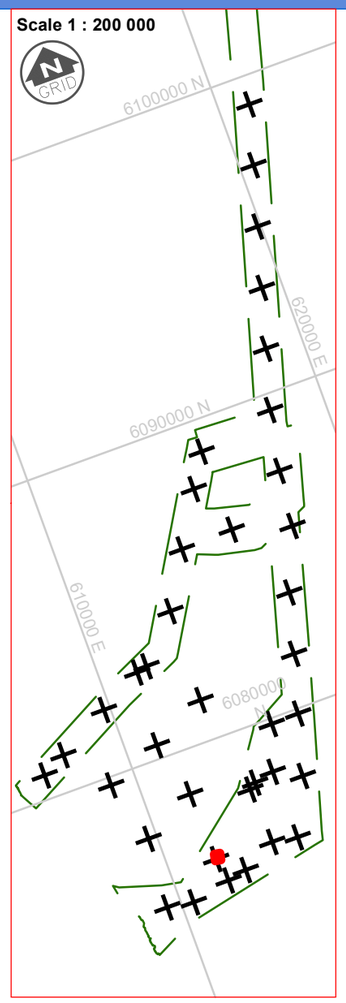
Station: ENV197
Fix: 1599 **E:** 614 286 **N:** 6 076 018 **Depth (m):** 32

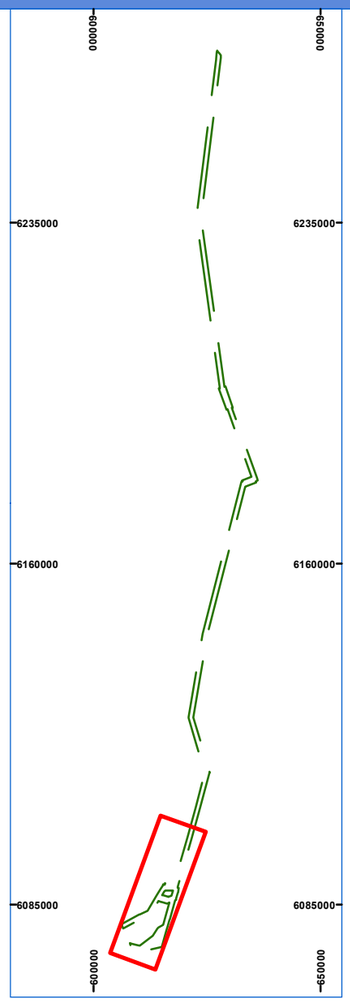
Sediment Description:
Sand with gravel and shell hash

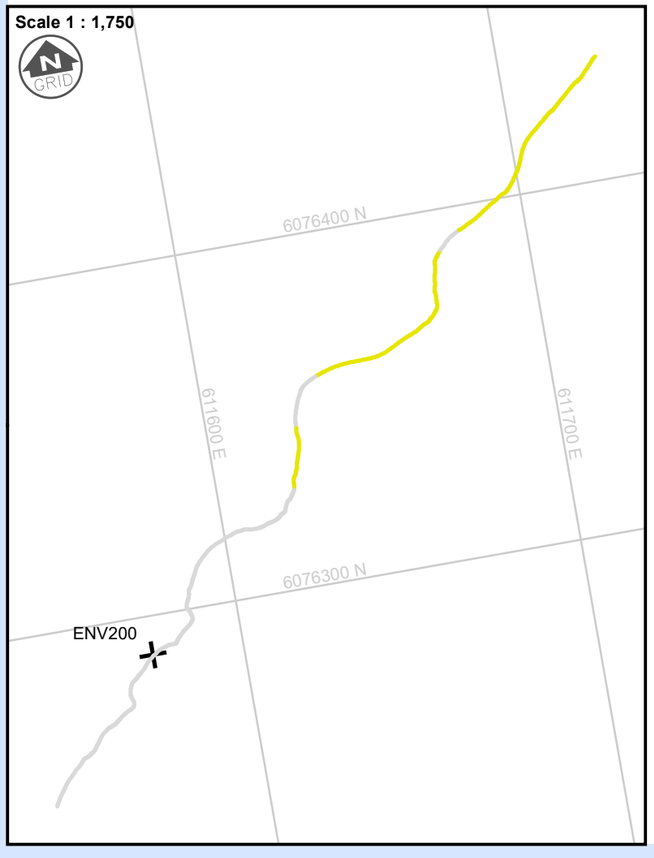
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV200

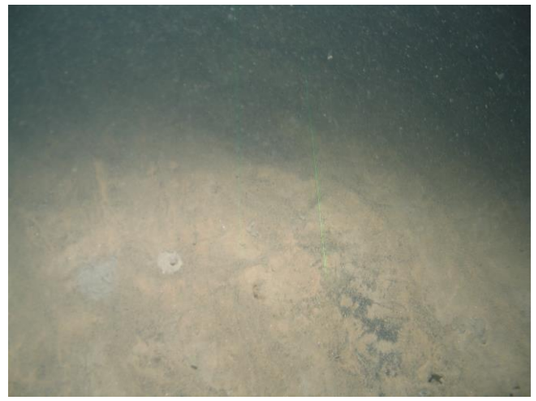
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV200
Fix: 386 **E:** 611 673 **N:** 6 076 387 **Depth (m):** 18

Sediment Description:
Gravel with coarse sediment

Faunal Description:
No visible fauna



Station: ENV200
Fix: 412 **E:** 611 587 **N:** 6 076 298 **Depth (m):** 18

Sediment Description:
Coarse sediment

Faunal Description:
No visible fauna



Station: ENV200
Fix: 6 **E:** 611 573 **N:** 6 076 290 **Depth (m):** 26
Retention: MFB

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta)

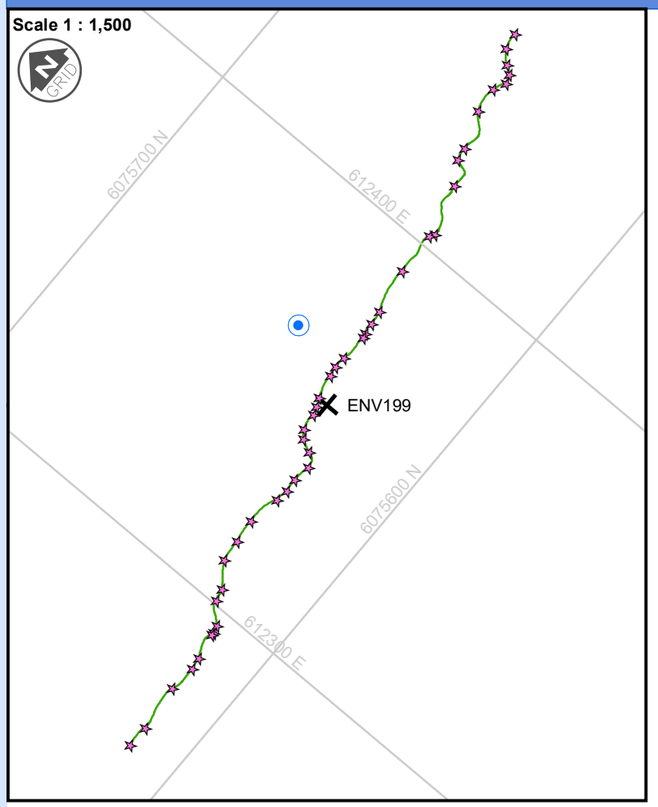


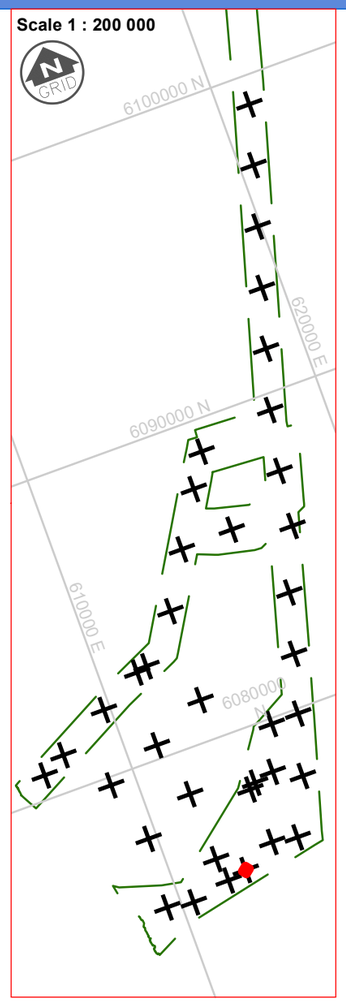
Station: ENV200
Fix: 6 **E:** 611 573 **N:** 6 076 290 **Depth (m):** 26
Retention: MFB

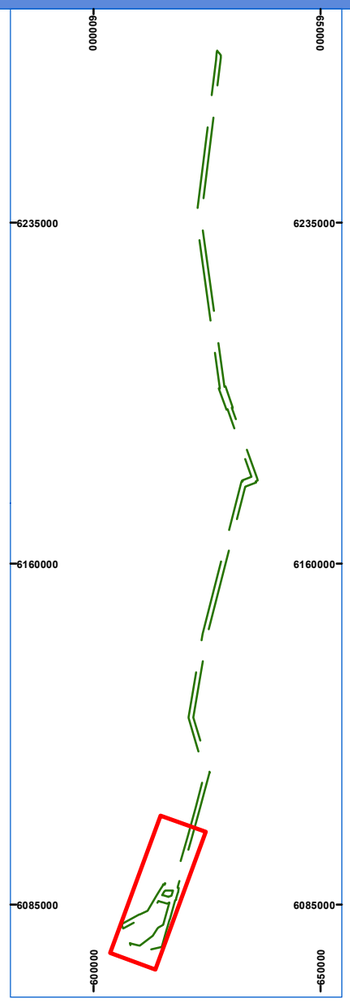
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

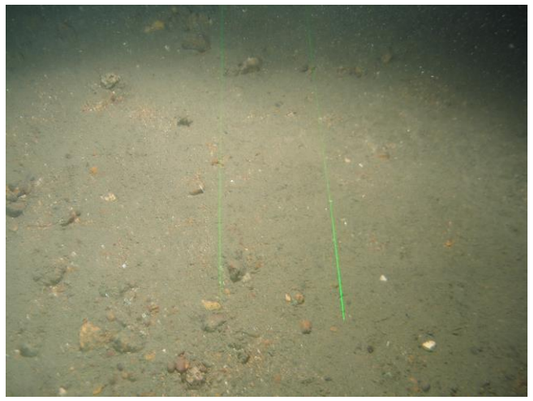
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









Station: ENV199
Fix: 333 **E:** 612 445 **N:** 6 075 647 **Depth (m):** 19

Sediment Description:
Soft sediment with gravel

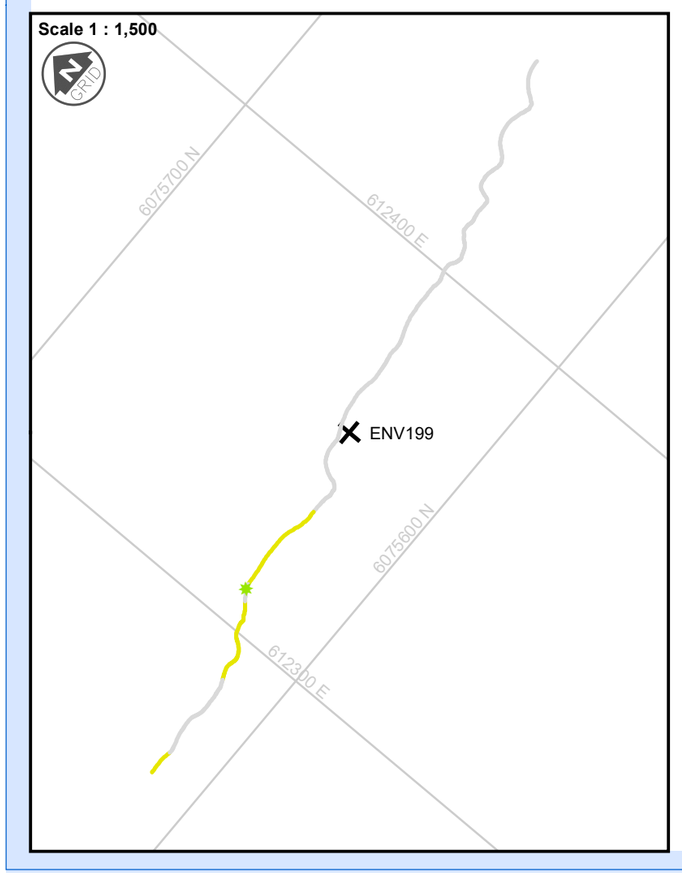
Faunal Description:
No visible fauna



Station: ENV199
Fix: 340 **E:** 612 404 **N:** 6 075 636 **Depth (m):** 18

Sediment Description:
Soft sediment with gravel

Faunal Description:
Echinodermata (Asteroidea *stet.*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

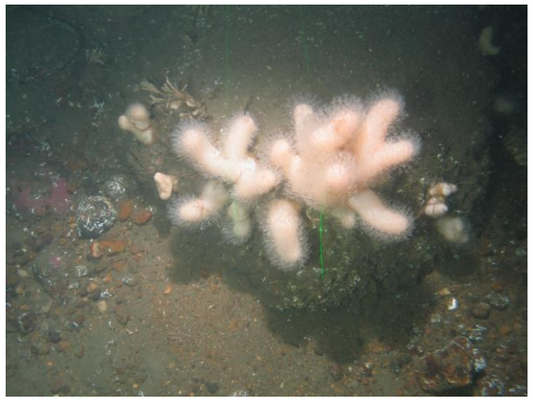
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV199

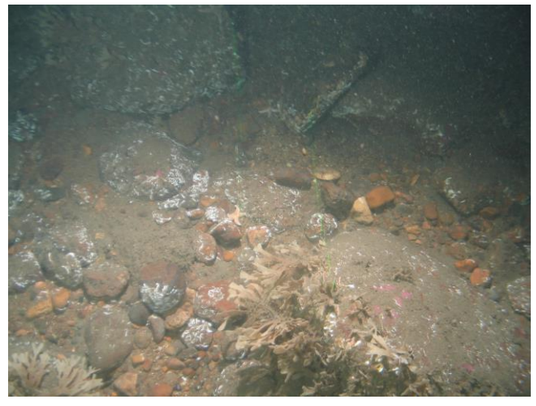
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV199
Fix: 366 **E:** 612 294 **N:** 6 075 614 **Depth (m):** 17

Sediment Description:
Soft sediment with gravel and cobble.

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal turf

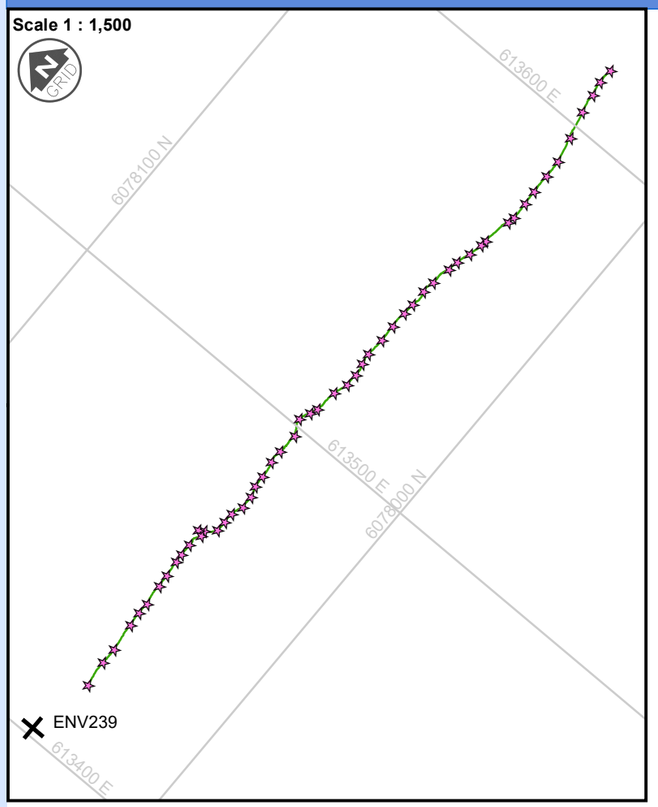


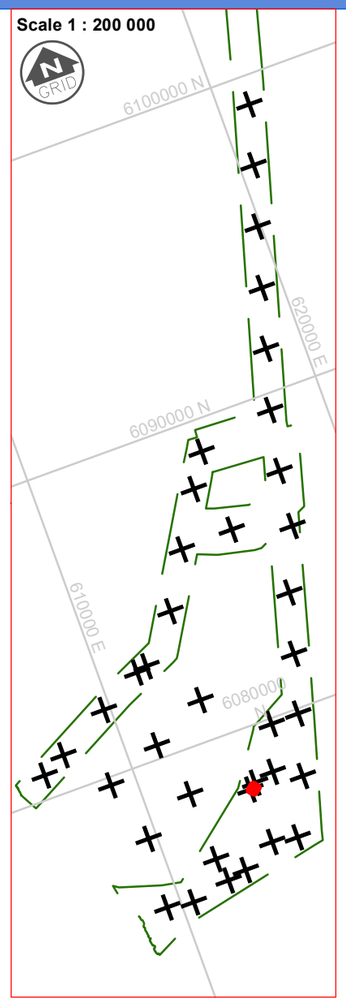
Station: ENV199
Fix: 372 **E:** 612 260 **N:** 6 075 612 **Depth (m):** 17

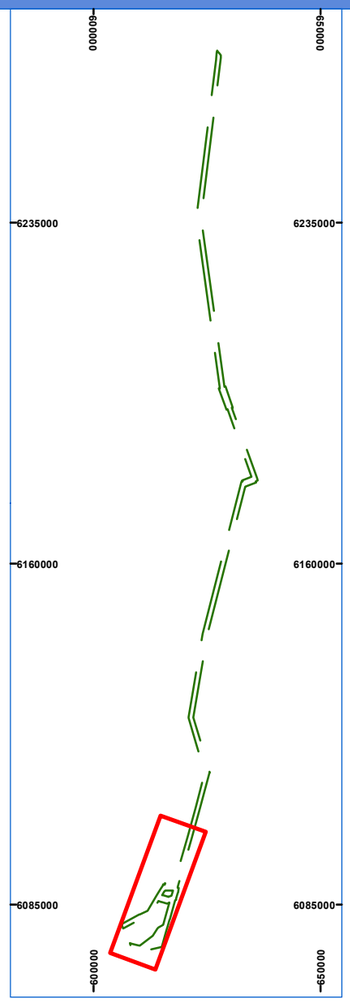
Sediment Description:
Cobbles and gravel

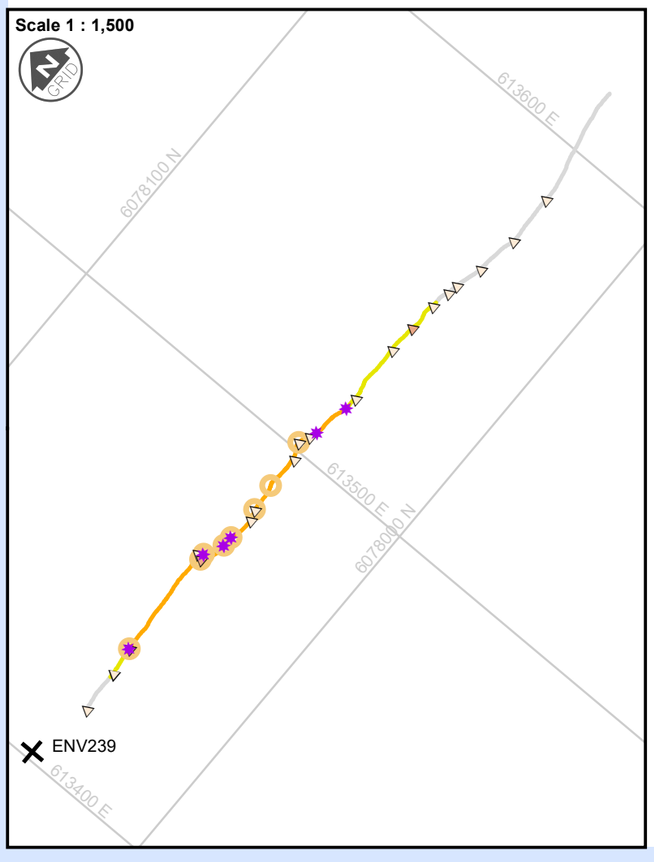
Faunal Description:
Bryozoa (Flustridae *stet.*), Echinodermata (*Asterias rubens*), Faunal turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

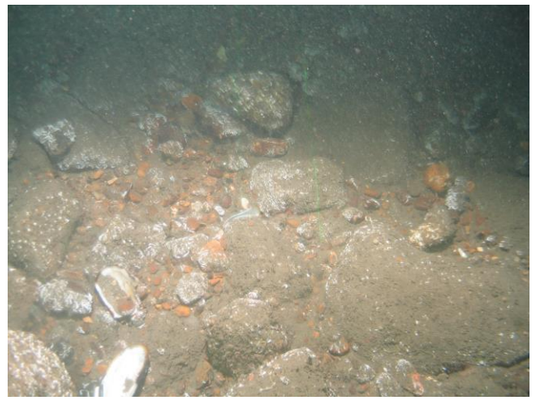
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF TRANSECT: ENV239

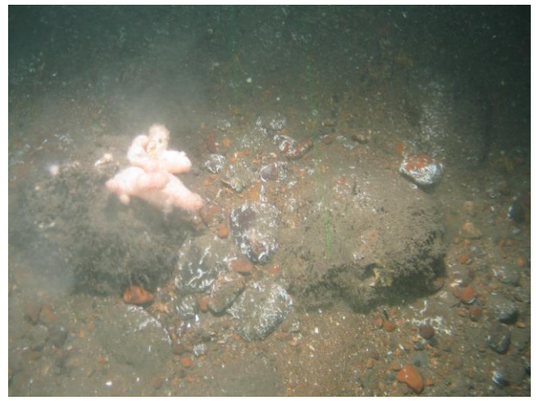
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV239
Fix: 670 **E:** 611 905 **N:** 6 075 515 **Depth (m):** 20

Sediment Description:
Gravel with coarse sediment

Faunal Description:
No visible fauna



Station: ENV239
Fix: 677 **E:** 611 875 **N:** 6 075 512 **Depth (m):** 20

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV239
Fix: 681 **E:** 611 858 **N:** 6 075 511 **Depth (m):** 20

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
No visible fauna

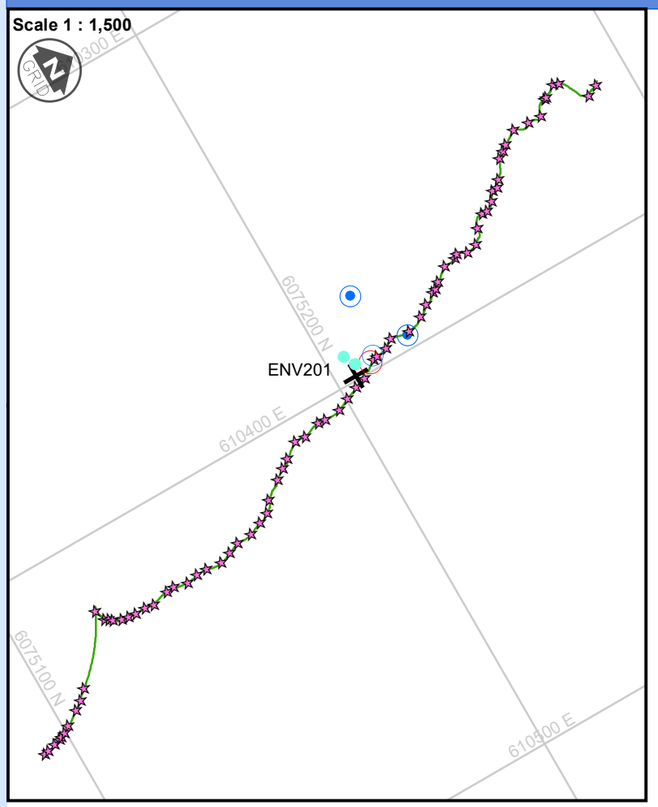


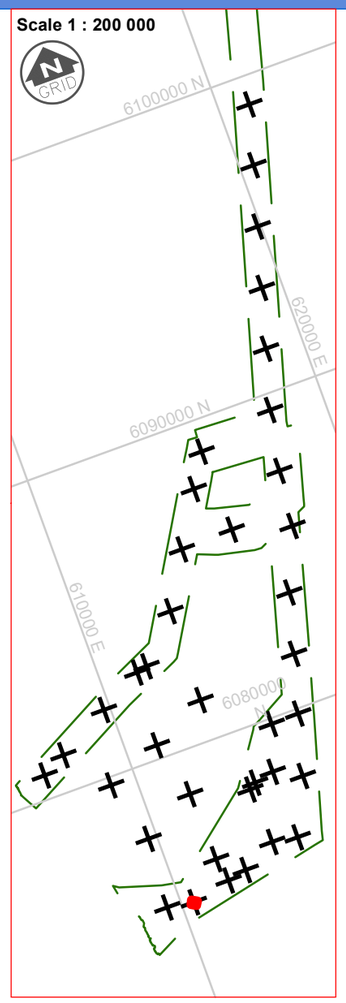
Station: ENV239
Fix: 703 **E:** 611 759 **N:** 6 075 494 **Depth (m):** 20

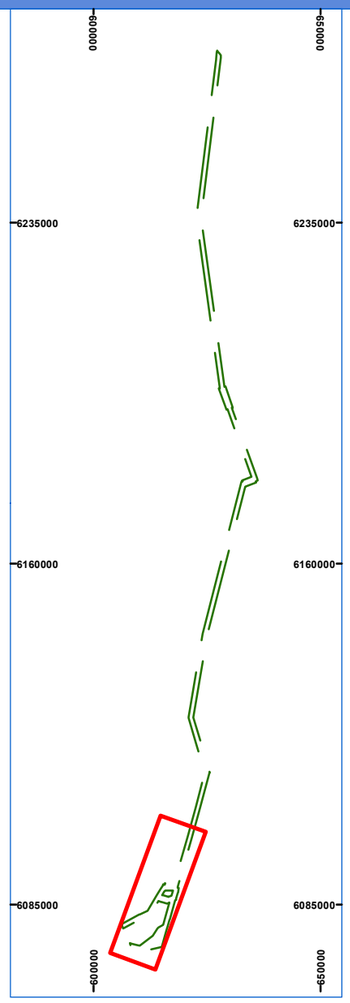
Sediment Description:
Soft sediment with sand ripples.

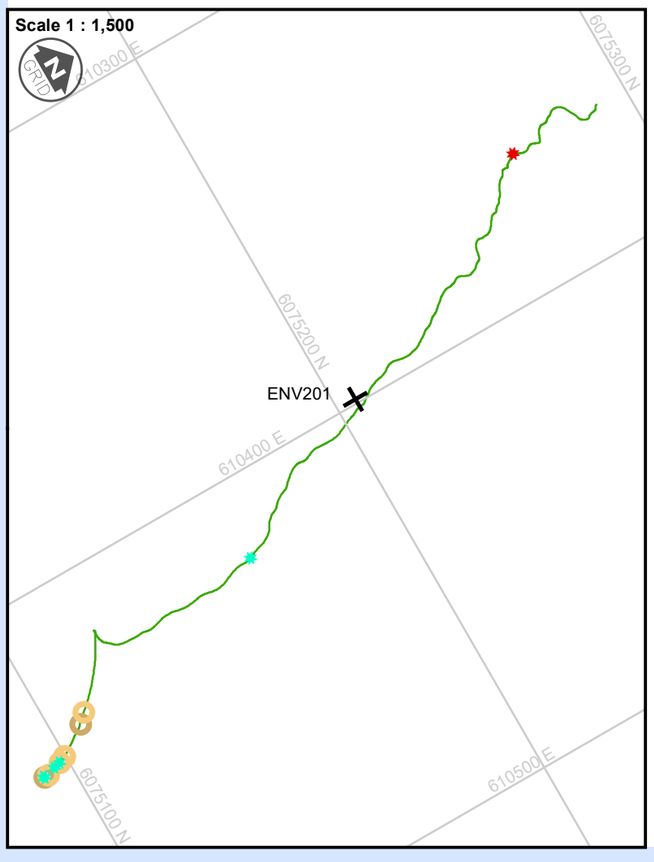
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

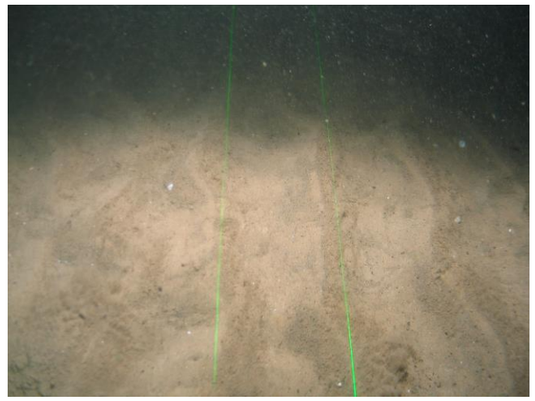
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV201

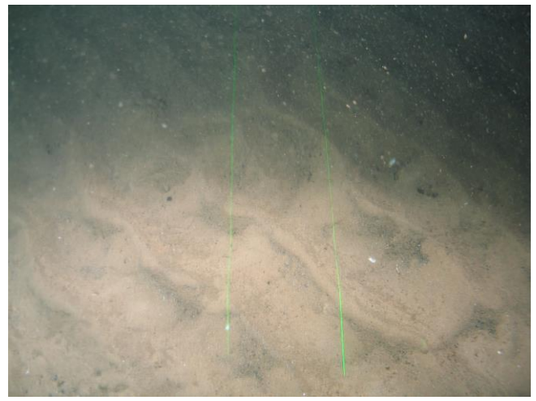
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV201
Fix: 11 **E:** 610 417 **N:** 6 075 121 **Depth (m):** 17

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV201
Fix: 48 **E:** 610 394 **N:** 6 075 226 **Depth (m):** 17

Sediment Description:
Soft sediment with shell hash and sand ripples.

Faunal Description:
No visible fauna



Station: ENV201
Fix: 1 **E:** 610 398 **N:** 6 075 210 **Depth (m):** 22
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

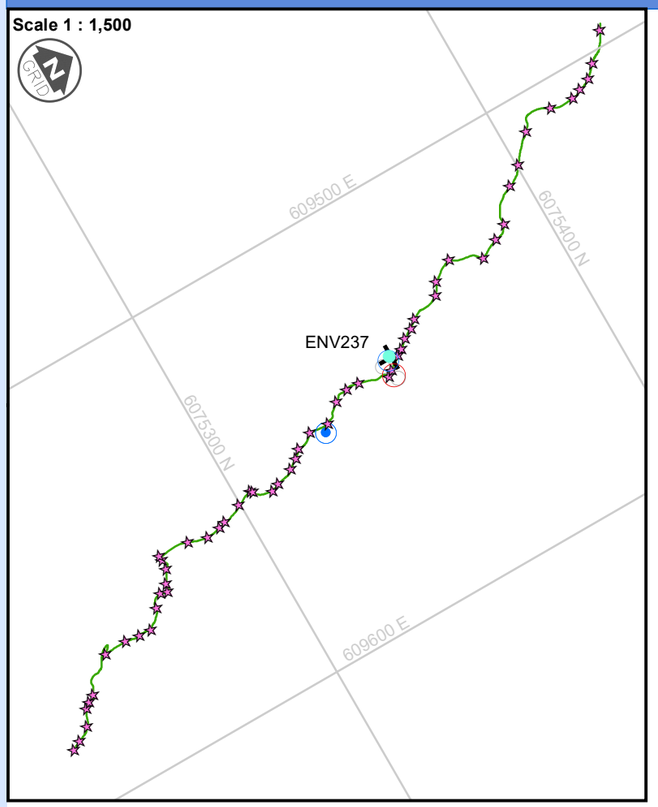


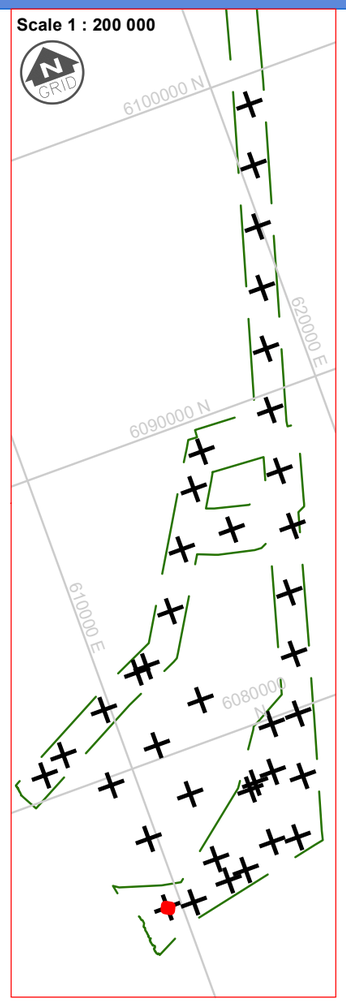
Station: ENV201
Fix: 1 **E:** 610 398 **N:** 6 075 210 **Depth (m):** 22
Retention: MFA

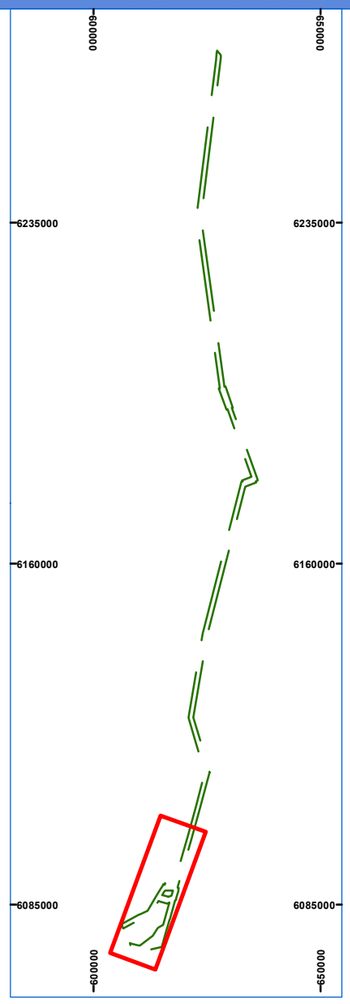
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

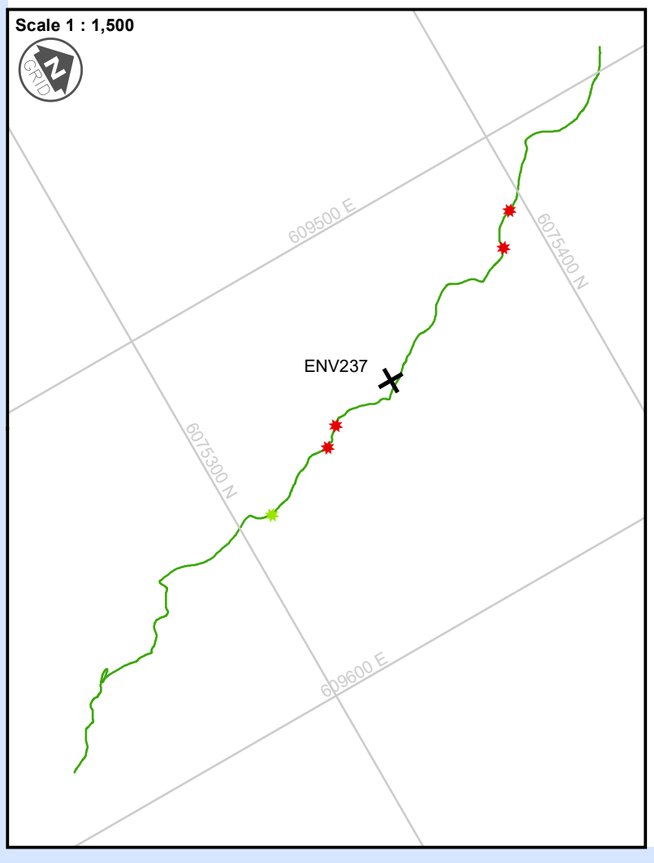
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

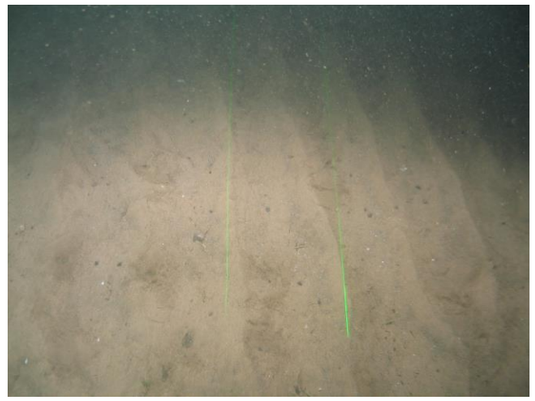
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV237

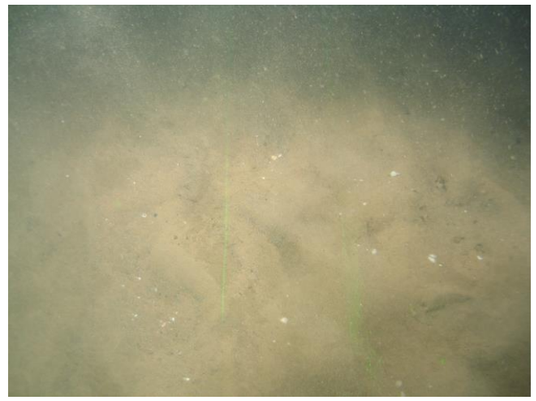
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV237
Fix: 126 **E:** 609 509 **N:** 6 075 406 **Depth (m):** 11

Sediment Description:
Soft sediment with shell hash and sand ripples.

Faunal Description:
No visible fauna



Station: ENV237
Fix: 92 **E:** 609 555 **N:** 6 075 277 **Depth (m):** 12

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV237
Fix: 36 **E:** 609 544 **N:** 6 075 348 **Depth (m):** 14
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Bivalvia)

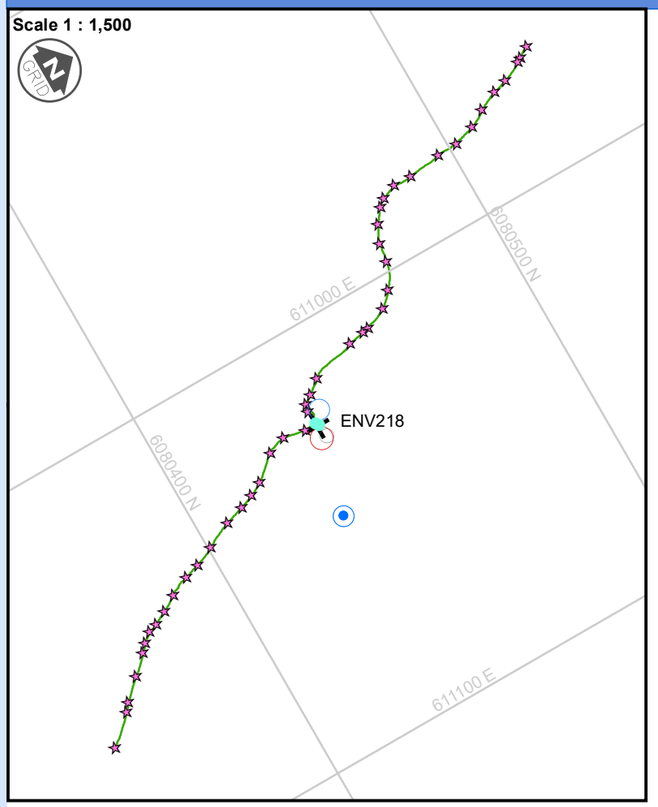


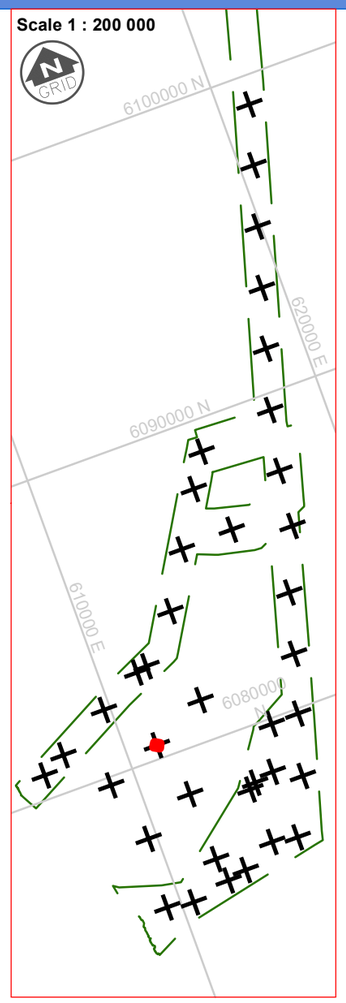
Station: ENV237
Fix: 36 **E:** 609 544 **N:** 6 075 348 **Depth (m):** 14
Retention: MFA

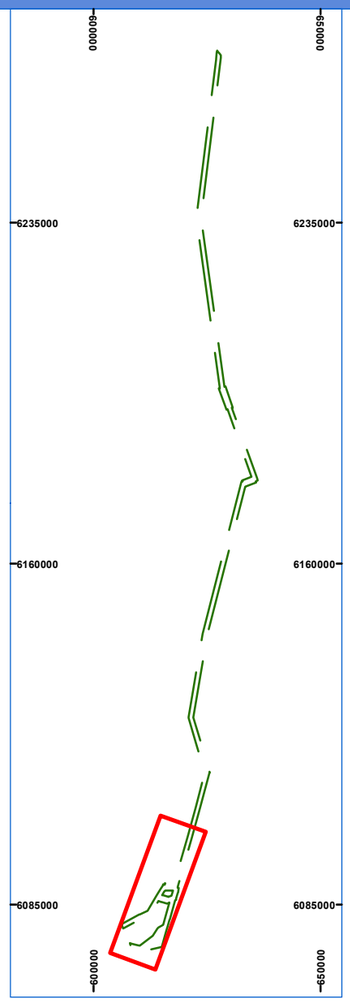
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

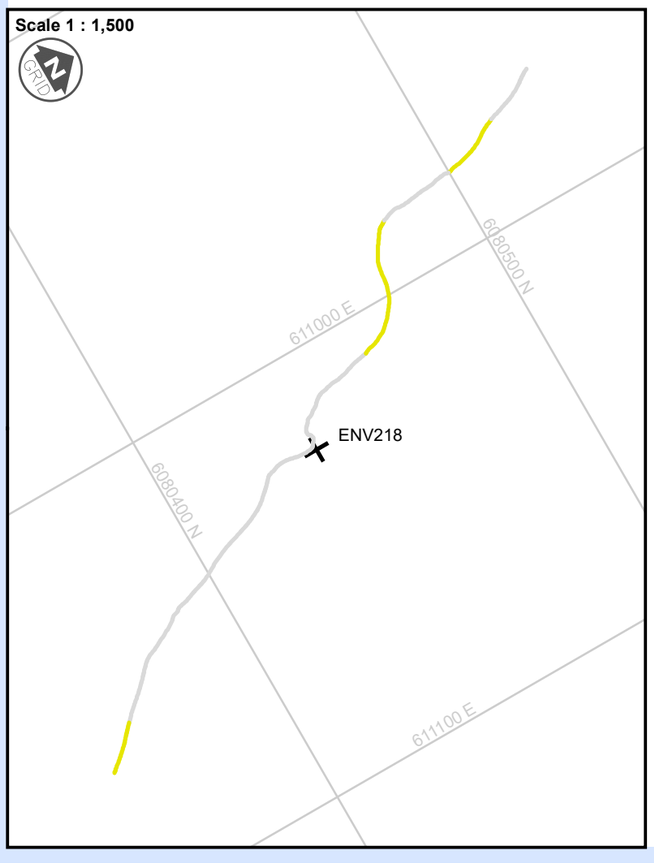
Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

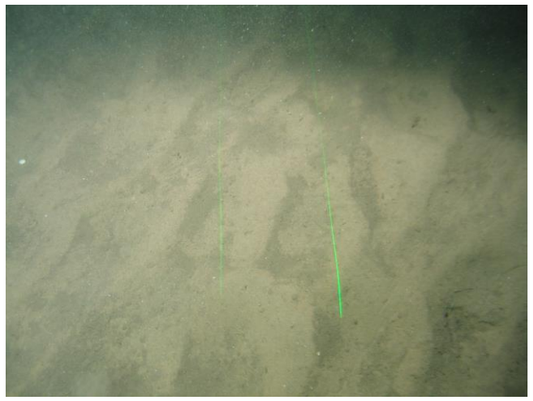
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV218

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV218
Fix: 493 **E:** 611 020 **N:** 6 080 438 **Depth (m):** 19

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV218
Fix: 512 **E:** 611 061 **N:** 6 080 363 **Depth (m):** 19

Sediment Description:
Gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV218
Fix: 19 **E:** 611 027 **N:** 6 080 438 **Depth (m):** 21
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

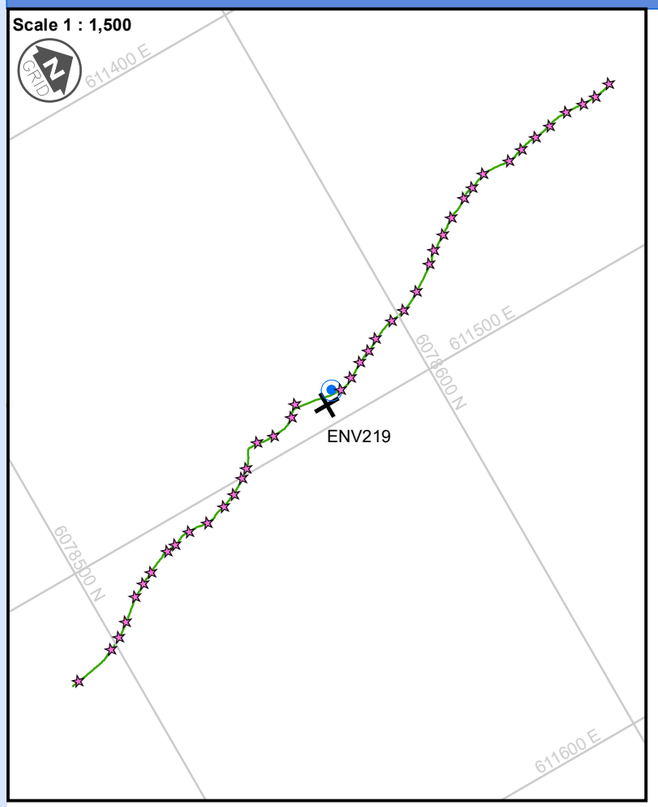


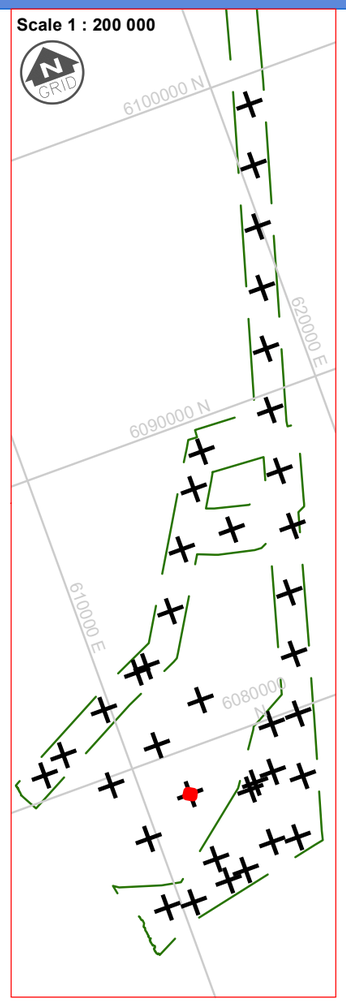
Station: ENV218
Fix: 19 **E:** 611 027 **N:** 6 080 438 **Depth (m):** 21
Retention: MFA

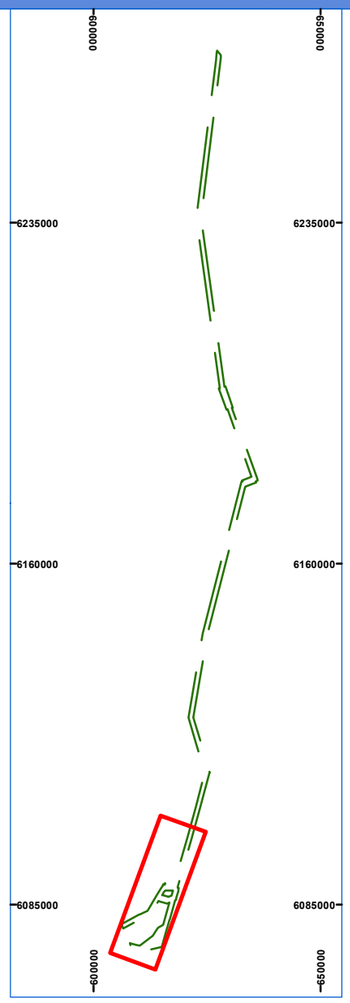
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV219

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV219
Fix: 429 **E:** 611 462 **N:** 6 078 661 **Depth (m):** 19

Sediment Description:
Gravel with coarse sediment

Faunal Description:
No visible fauna



Station: ENV219
Fix: 436 **E:** 611 468 **N:** 6 078 628 **Depth (m):** 19

Sediment Description:
Soft sediment with gravel and cobbles

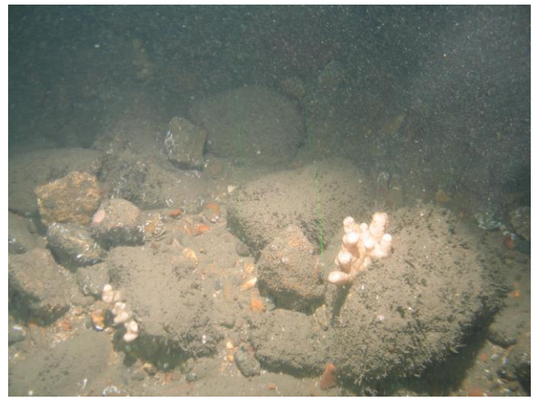
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV219
Fix: 447 **E:** 611 492 **N:** 6 078 583 **Depth (m):** 19

Sediment Description:
Gravel with soft sediment.

Faunal Description:
No visible fauna

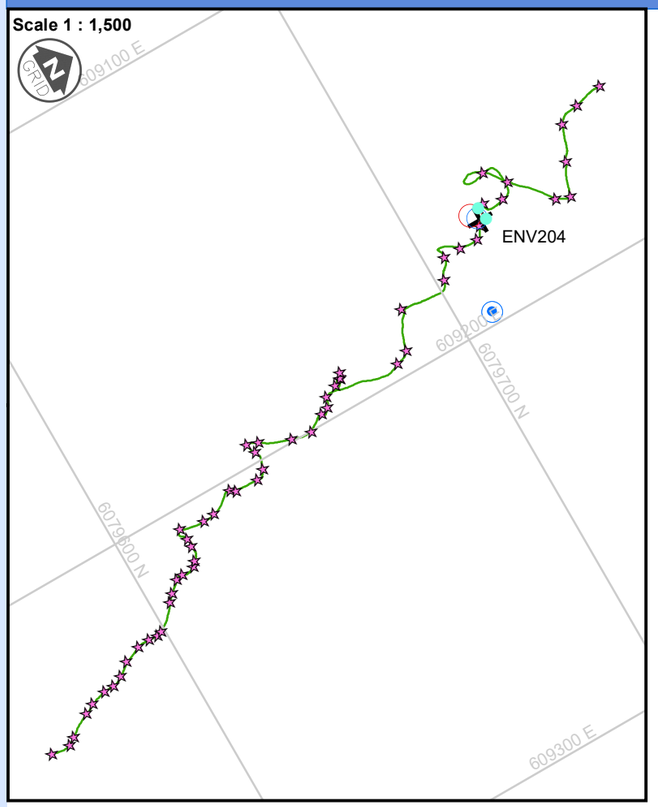


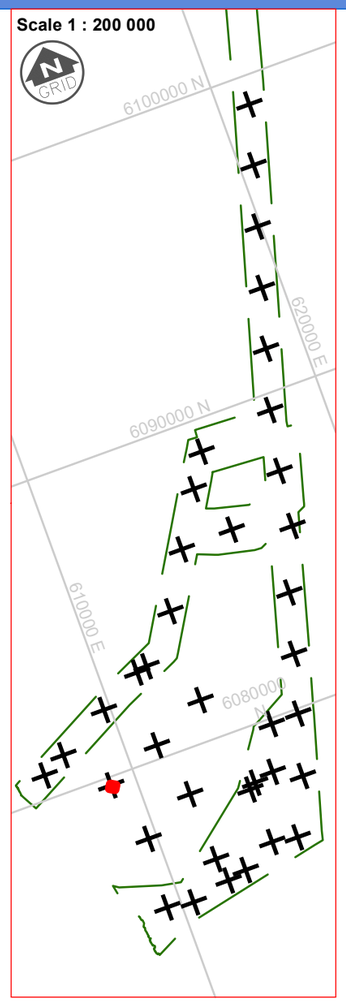
Station: ENV219
Fix: 463 **E:** 611 510 **N:** 6 078 513 **Depth (m):** 19

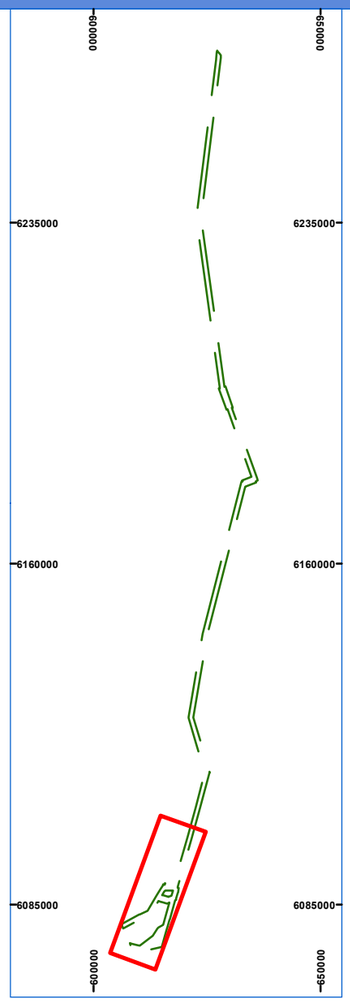
Sediment Description:
Cobbles and gravel with coarse sediment

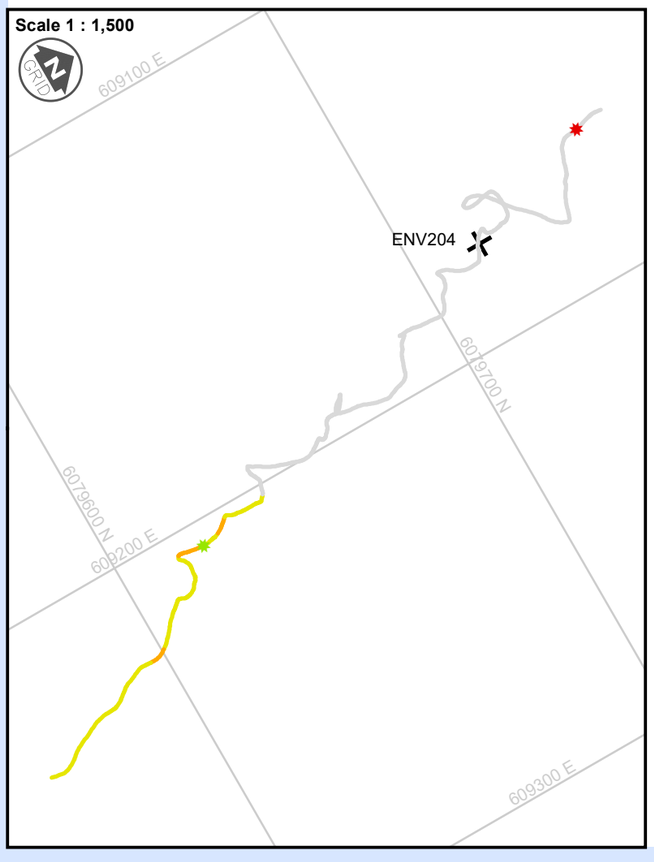
Faunal Description:
Cnidaria (*Alcyonium digitatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

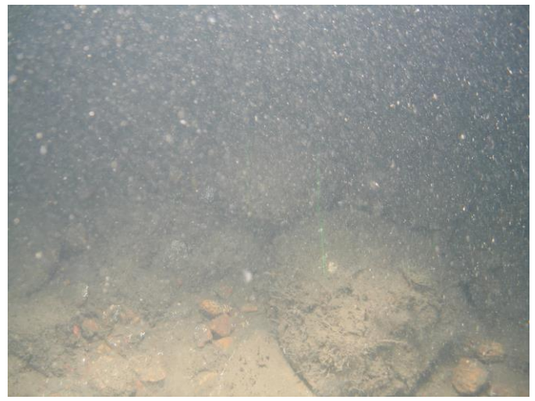
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV204

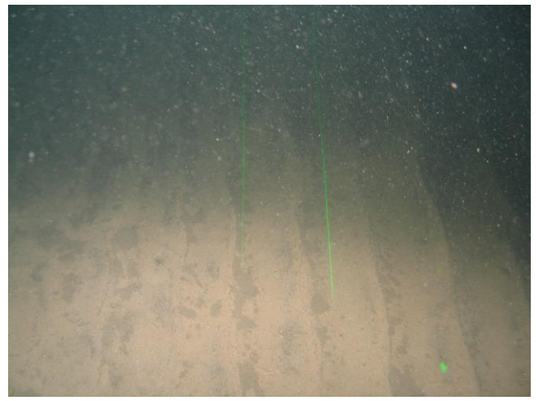
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV204
Fix: 204 **E:** 609 214 **N:** 6 079 614 **Depth (m):** 16

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Faunal turf



Station: ENV204
Fix: 221 **E:** 609 197 **N:** 6 079 662 **Depth (m):** 16

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV204
Fix: 15 **E:** 609 174 **N:** 6 079 716 **Depth (m):** 16
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta)

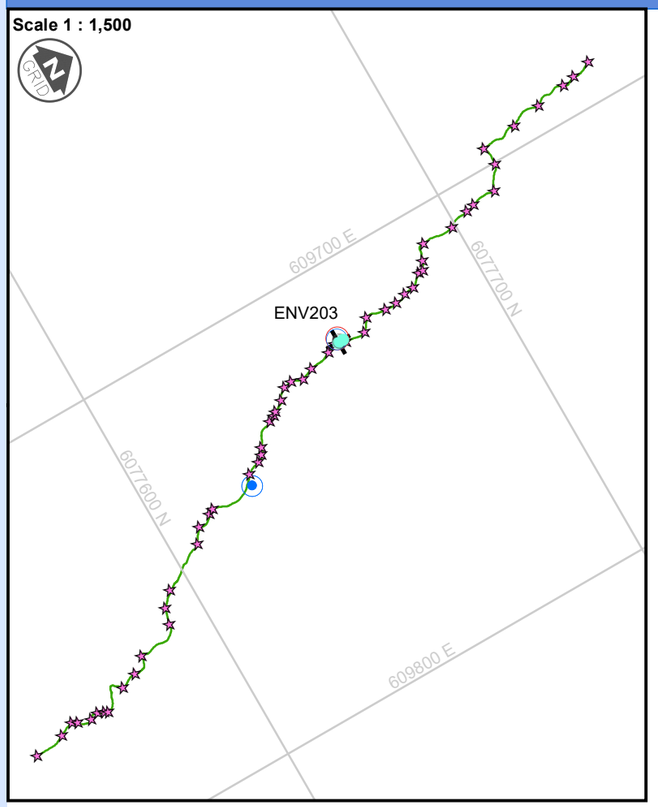


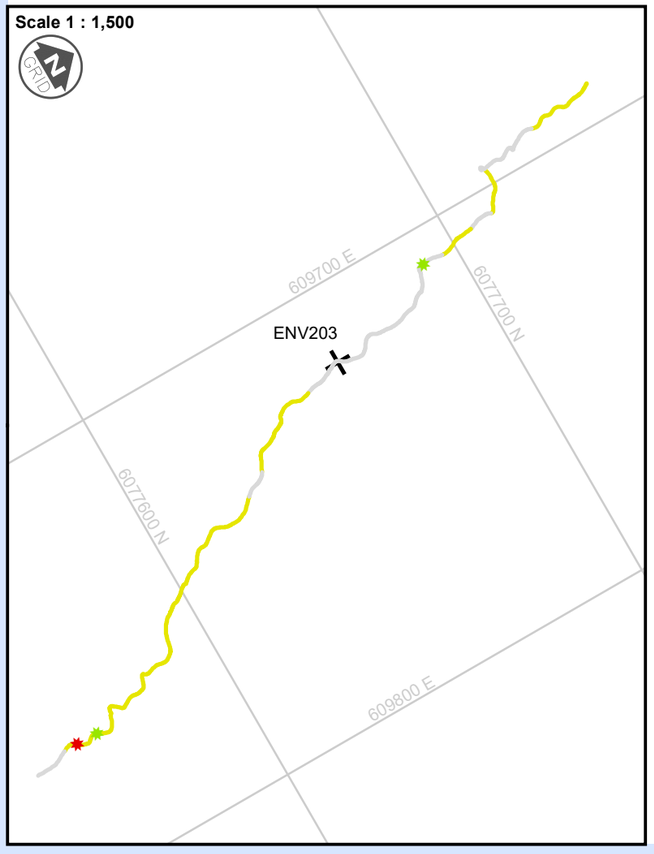
Station: ENV204
Fix: 15 **E:** 609 174 **N:** 6 079 716 **Depth (m):** 16
Retention: MFA

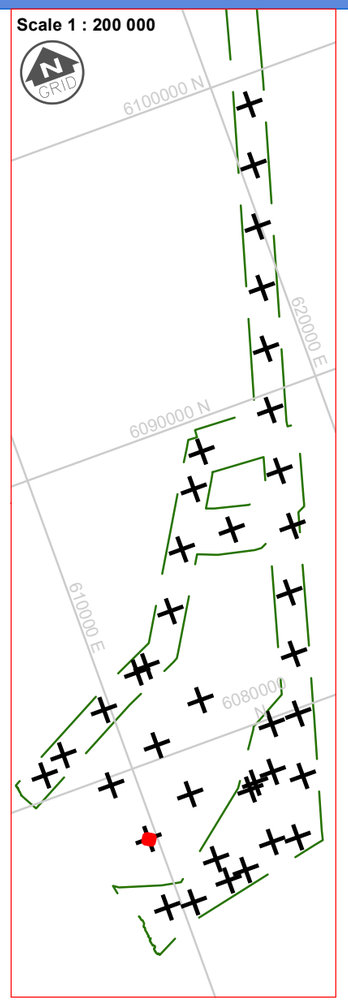
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

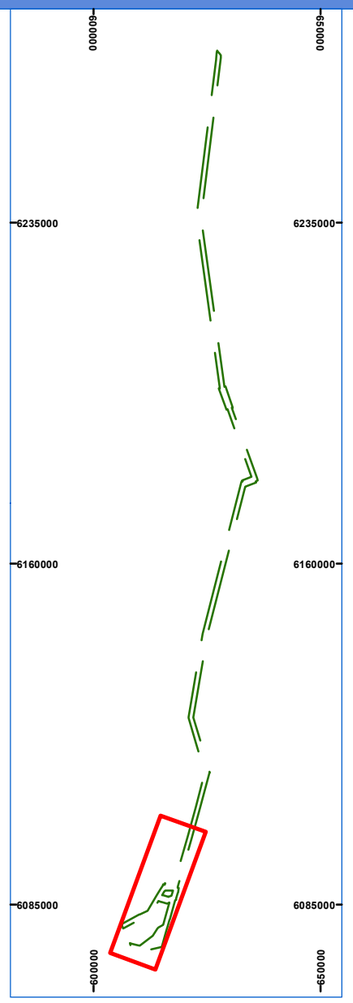
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

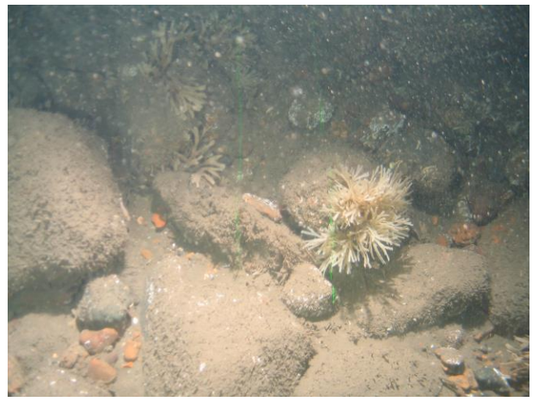
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV203

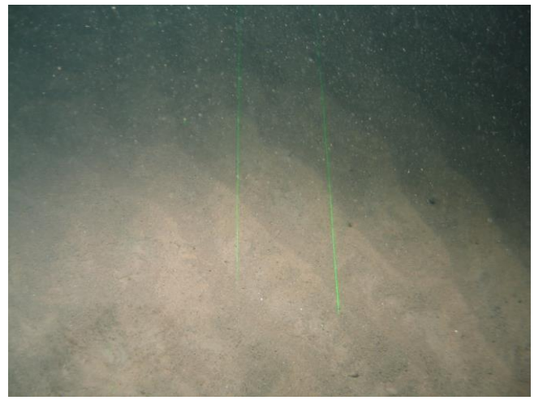
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV203
Fix: 138 **E:** 609 768 **N:** 6 077 565 **Depth (m):** 18

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Bryozoa (Flustridae *stet.*), Faunal turf



Station: ENV203
Fix: 160 **E:** 609 722 **N:** 6 077 646 **Depth (m):** 19

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV203
Fix: 9 **E:** 609 718 **N:** 6 077 661 **Depth (m):** 20
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)



Station: ENV203
Fix: 9 **E:** 609 718 **N:** 6 077 661 **Depth (m):** 20
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX D BACKGROUND INFORMATION

APPENDIX D BACKGROUND INFORMATION

D.1 Sediment Characteristics

Particle size distributions of sediments in the marine environment are largely determined by hydrodynamic energy at the sediment water interface. Strong currents tend to scour the seabed thereby resuspending fine particles and any material associated with them, whilst the finest sediments predominate in areas with the least hydrodynamic energy.

The role of sediment in the transport and retention of chemical pollutants is tied to both particle size and to the amount of particulate organic carbon associated with the sediment. The chemically active fraction of sediment is usually cited as the organic component and the finest size fractions (smaller than 63µm, silt, clay). The sediment, in particular the organic carbon and finer fractions, acts as a sink for many of the persistent compounds, including metals, hydrocarbons and chlorinated compounds. Many of these persistent substances are also inherently bioaccumulative and toxic. The concentrations of many parameters are typically positively correlated with the proportion of fines found in the sediment as a result of fine particles possessing a relatively large surface area. Fine sediment particles are relatively easily resuspended by waves and currents and may be transported, along with the materials sorbed to them, over large distances, finally being deposited in areas of lower hydrodynamic energy.

Generally speaking, sands and coarser grained materials are often organically deficient. Strong currents have a tendency to resuspend fine materials and their associated organic matter. Therefore, in an environment that is not nutrient enriched due to anthropogenic discharges, both total organic matter and total organic carbon will normally be lowest at sites with coarse-grained sediment, where currents are often strongest.

Sediment particle size and organic content are also critical measurements for the categorisation of habitat type since to a large extent they control which organisms are capable of living within sediments. Most benthic infaunal organisms exhibit preferences for sediment with particular grain size characteristics. Many organisms live in tubes or burrows constructed from sediment particles; each organism's ability to do this may be limited by the range of different sized particles available. The distribution and abundance of free-living mobile organisms, *i.e.* those that do not construct tubes or burrows, are also affected by particle sizes, which influence their ability to move within the sediment. Sand grains of inappropriate sizes may be too big to move or, conversely, too small to be stable.

Feeding guilds are groupings of organisms based upon the feeding strategies they employ (United States Environmental Protection Agency or US EPA, 2008) and, as such, sediment particle size and organic content can greatly affect which species guilds may dominate in any given area. Many deposit feeding organisms, which process sediment through the alimentary tract to obtain nutrition (Gage & Tyler, 1992), are highly selective of the grain sizes that they will ingest, often preferring finer sediments that possess relatively high organic content. Conversely, resuspension of fine particulate matter may clog delicate filtering apparatus used by suspension feeders to obtain their suspended food particles from seawater (Gibson *et al.*, 2005), resulting in their exclusion from muddy sediments. Additionally, the mixtures of particle sizes determine the ease with which water and oxygen move through the sediment. An abundance of fine particles in a stable environment may lead to the formation of substrata with small interstitial spaces through which oxygen diffusion can be restricted. This may lead to anoxic conditions within the sediment, which further affects the range of species that may be present. Determination of sediment particle sizes and organic content is therefore of critical importance to the interpretation of benthic environmental survey data.

APPENDIX D BACKGROUND INFORMATION

D.2 Sediment Hydrocarbons

The principal sources of hydrocarbons in the marine environment are anthropogenic (McDougall, 2000). However, contamination of the marine environment with crude oils is not a recent phenomenon, nor solely attributable to anthropogenic activities (Douglas *et al.*, 1981). Three general processes can add hydrocarbons to marine environments: biosynthetic, geochemical and anthropogenic (McDougall, 2000).

Oil is a complex mixture of hydrocarbons and other organic compounds. Hydrocarbons are the principal component of oil, usually contributing >75% of the constituents (Laflamme & Hites, 1978). Petroleum hydrocarbons can be divided into the following broad classes according to their structure: saturates (alkanes, isoalkanes and cycloalkanes), olefins (alkenes), aromatics (benzene, toluene, ethylbenzene and xylenes, or BTEX and polycyclic aromatic hydrocarbons), asphaltenes, polar compounds and resins (Leahy & Colwell, 1990; Wang & Fingas, 2005).

Due to the complex and variable composition of oil in marine sediments, quantification of total hydrocarbons, groups of hydrocarbons and individual hydrocarbons is required to allow identification of the source of oil within the sediments, be it anthropogenic, biogenic or geochemical. The DECC guidelines (DTI, 1992) call for the following analyses to be conducted for environmental surveys (including baseline surveys): THC concentration, UCM concentration, individual and total n-alkane concentrations, pristane and phytane concentrations; individual and total 2-6 ring PAH concentrations and those of their respective alkyl derivatives.

Total Hydrocarbon Concentration

THC concentration gives an indication of the total hydrocarbon present within a sediment sample; it does not give an indication of the source of contamination. The definition of THC is wholly dependent on the analytical process utilised to quantify it. In this case, THC is equivalent to total n-alkane (nC_{10} to nC_{37}), pristane, phytane, UCM and total PAH (all PAHs including alkylated derivatives) concentrations.

Unresolved Complex Mixture

The UCM consists of a large variety of branched alicyclic hydrocarbons, which are not resolved by conventional capillary GC columns and appear as a 'hump' in GC chromatograms (Bouloubassi *et al.*, 2001). These compounds remain after substantial weathering and biodegradation of petrogenic inputs has taken place, with the 'hump' becoming a more predominant feature as resolvable n-alkanes are selectively transformed by weathering. Abundant UCM is ascribed to either degraded or weathered oil residues and therefore its occurrence in environmental samples is an indicator of oil pollution (Bouloubassi *et al.*, 2001). Notably, a UCM between nC_{20} and nC_{34}, centred on nC_{29} is typical of North Sea sediments and is generally considered as 'North Sea Background'.

N-alkanes

Alkanes are the simplest aliphatic compounds, containing only carbon and hydrogen held together by single bonds and not containing a ring; they have the general formula C_nH_{2n+2} (Lyons & Plisga, 2005). The n-alkanes are continuous, straight chain alkanes, while branched-chain alkanes are known as isoalkanes or isoprenoids (Lyons & Plisga, 2005). The only isoprenoids quantified in this survey are pristane and phytane, which are isomers of nC_{18} and nC_{19}. These compounds are substantially less susceptible to weathering than their straight chain equivalents and are therefore of use when investigating the degree of weathering of a sample (Tran *et al.*, 1995).

Although generally less harmful to many living organisms than aromatic hydrocarbons, analysis of the aliphatic component (n-alkanes, pristane and phytane) can still provide valuable information to aid in the determination

APPENDIX D BACKGROUND INFORMATION

of hydrocarbon sources (Tran *et al.*, 1995). N-alkanes can be derived from a variety of origins, both anthropogenic and natural; it is therefore necessary to distinguish which of these are present, or indeed predominate, in a given environment (Tran *et al.*, 1995). There is a wide range of methods available for this purpose, but those undertaken in this report include: quantification of individual n-alkane concentrations, interpretation of GC chromatograms, the CPI (Farrington & Tripp, 1977) and the pristane:phytane ratio (Berthou & Friocourt, 1981).

Polycyclic Aromatic Hydrocarbons

PAHs and their alkyl derivatives are almost ubiquitous in marine environments (Laflamme & Hites, 1978). Natural sources of PAHs include forest fires (Youngblood & Blumer, 1975), synthesis by plants (Neff, 1979) and oil seeps (Page *et al.*, 1998). However, the largest sources of PAHs are associated with anthropogenic activities, particularly fossil fuel combustion (Neff, 2004; Laflamme & Hites, 1978). Pyrogenic PAHs may be transported long distances through the atmosphere before finally being deposited. Even after deposition, PAHs may undergo further transport, *e.g.* in urban runoff and rivers, before ultimately being deposited in marine sediments, where they sorb to organic matter and sediment particles.

Concentrations of PAHs in marine sediments vary by many orders of magnitude, ranging from less than 1ng g^{-1} in deep-water oceanic sediments up to a few mg g^{-1} in highly contaminated harbours and coastal sediments (Neff, 2004). In enclosed waters subjected to oil exploration and production activity, PAH concentrations tend to be somewhat higher than in the open ocean. Generally, the greatest PAH concentrations are found in coastal sediments. Barring the presence of point sources of hydrocarbon contamination, total PAH concentrations in marine sediments normally decrease with distance from major human population centres (Larsen *et al.*, 1986).

The occurrence and concentration of PAHs in the environment is of concern since many possess mutagenic, carcinogenic and toxic properties (McDougall, 2000; Neff, 2004). Many PAHs are readily bioaccumulated through the food web and in particular higher weight aromatics are persistent. The rate at which PAHs degrade is affected by many factors; in the marine environment photooxidation and biodegradation are considered to be the two most important processes of degradation (Neff, 2004). Therefore, PAHs are likely to be most persistent in cold, high latitude deep-waters where sediments receive little or no light. ESGOSS (1994) estimate the half-lives of 2-ring aromatics to be generally less than 100 days whilst heavier weight 5- and 6-ring aromatics may possess half lives in excess of 10,000 days.

Although found in most marine sediments, petrogenic aromatics are normally less abundant than the pyrogenic, HMW aromatics (Bence *et al.*, 1996). Elevated concentrations of LMW, more volatile, 2 and 3 ring PAHs may often be related to the presence of point sources of hydrocarbon input, including oil spills, natural seeps, drilling activity and produced water outfalls (Neff, 2004). A major source of NPD PAHs is the use of oil-based muds during drilling operations and the subsequent discharge of these cuttings on the seabed (Breuer *et al.*, 2004). Pyrogenic PAHs tend to be more widespread, but generally in relatively low concentrations.

The concentrations at which individual PAHs produce toxic effects vary widely (Long *et al.*, 1995) and are dependent on their type and bioavailability. Values for the toxicity of individual aromatics may be misleading since individual PAHs are rarely found in isolation. The best estimates of the potential toxicity of PAHs in marine sediments are ERL and ERM concentrations for total LMW, total HMW and total PAHs (Neff, 2004). Long *et al.* (1995) gives ERL concentrations for LMW and HMW PAHs of 0.55 and 1.70µg g^{-1}, respectively. ERM concentrations are 3.16 and 9.60µg g^{-1} for LMW and HMW PAHs, respectively. The ERL and ERM concentrations for total PAH concentration in sediments are 4.022 and 44.792µg g^{-1}, respectively. These concentrations are not actual thresholds of toxicity but delineate concentration ranges with associated probabilities of toxicity. The ERL is the tenth percentile in the PAH effects data provided by Long *et al.* (1995),

APPENDIX D BACKGROUND INFORMATION

while the ERM is the median, or 50th percentile. Concentrations below the ERL concentration therefore represent a range in which effects would rarely be observed; concentrations equal to or above the ERL concentration, but below the ERM concentration, represent a range in which effects would occasionally occur and concentrations equalling or exceeding the ERM concentration represent a range within which effects could frequently be expected.

The US EPA identified 16 priority low and higher molecular weight PAHs. Nine of these were selected by OSPAR as the focus for their studies and are the 4 to 6 ring compounds of particular importance due to their toxic nature even at very low concentrations. OSPAR CEMP EAC benchmark concentrations (OSPAR, 2009c) have been developed for the nine OSPAR priority PAHs plus naphthalene and dibenzothiophene.

Information on the source of PAHs in sediments may be obtained from a study of the alkyl homologues (*e.g.* methyl, ethyl *etc.* substitution) and parent compound distributions and concentrations. Sediments contaminated with petrogenic material normally contain a predominance of alkylated PAHs, particularly within the LMW range, whereas pyrogenic PAHs comprise mostly HMW unalkylated parent compounds.

D.3 Sediment Metal Concentrations

Metals are generally persistent and at elevated concentrations most are toxic to varying degrees. Many metals such as Cr, Cu and Zn are readily bioaccumulated meaning that they are absorbed and stored in organisms over time leading to potential high concentrations capable of causing lethal and sub-lethal toxic effects in benthic organisms even when found in apparently low concentrations in sediment. Metal concentrations in uncontaminated marine sediments generally exceed those found in overlying seawater by three to five orders of magnitude (Bryan & Langston, 1992), since the buffering effects of saline water cause many metals to be rapidly precipitated. Furthermore, dissolved metals are readily scavenged from the water column by organic coatings and iron and manganese coatings found on the surface of fine sediment particles. Consequently, fresh waters that are metal enriched by terrestrial runoff tend to deposit much of their metal load in estuarine or near coastal sediments. Ecological impacts attributable to anthropogenic metal contamination in non-coastal marine environments are often somewhat limited in geographical range close to the point of their origin (Rygg, 1985).

Several metals are found in high concentrations in drilling muds and produced water. Some of these metals are added intentionally to drilling muds as metal salts or organo-metallic compounds whilst others are present as trace impurities in major mud ingredients, particularly barite and clay. Those metals most characteristic of contamination of the sediment with drilling muds or cuttings are Ba, Cr, Pb and Zn (Neff, 2005) but this may vary depending upon the specific constituents of the muds. By far the most abundant metal in most drilling muds is Ba, found in the form of barite ($BaSO_4$). In exceptional cases, fine-grained marine sediments may naturally contain in excess of 1000µg g^{-1} Ba, but this figure may be greatly enhanced by contamination of sediments with drilling muds containing up to 450mg g^{-1} barium (Neff, 2005). Due to its low solubility and the fact that it is not toxic in its sulphate form (Gerrard *et al.*, 1999), elevated barium concentrations are rarely of toxicological concern. However, monitoring sediment barium concentrations can provide information regarding the extent to which drill cuttings have been transported from their point of origin.

When considering the results of the sediment metal determinations it should be borne in mind that speciation (the particular forms, or species, of any given metal that exist in a sample), sediment granulometry and partitioning of metals between water and sediment phases all affect bioavailability and therefore toxicity. Even if a metal is present at above normal concentrations, it does not necessarily follow that the metal will produce ecologically deleterious effects, particularly if it is present in an insoluble or relatively low toxicity form. Historically, a wide range of different extraction techniques have been employed that were intended to provide an estimate

APPENDIX D BACKGROUND INFORMATION

of the concentrations of metals in marine sediments that may be available to the biota. One of the common methods of modelling metal bioavailability is extraction of oxic (surficial) sediments with weak acids (*e.g.* 1M nitric acid) since most anthropogenic metal contaminants show a much higher affinity to fine particulate matter than the coarse fraction by the presence of organic matter and clay minerals. These techniques have been shown to produce results that correlate closely with metal burdens in the tissues of benthic organisms (Luoma & Davis, 1983; Bryan & Langston, 1992). However, the extent to which a particular method of extracting metals from sediments reflects their bioavailability is still not well understood and the debate regarding which methods may be most appropriate is ongoing.

Total sediment metal concentrations have historically been the preferred measurement for offshore surveys. Whilst these provide little information regarding concentrations of metals that may be bioavailable, since they involve total dissolution of the sediment, they are however, useful for comparisons between surveys and will give an indication of whether or not sediments are contaminated. There is a growing body of data that provides broad figures for the total concentrations of many metals likely to be found in uncontaminated marine sediments (see OSPAR, 2005). Baseline figures may therefore be compared to these data to assess whether sediments in an area may have been anthropogenically contaminated prior to any works being carried out. Where elevated concentrations of metals are found, results may be compared to existing sediment metal toxicity data in order to assess whether particular metals may be exerting a toxicological effect on benthic communities (see Buchman, 2008).

D.4 Macrofaunal Analyses

The macrofaunal investigation in this survey is designed to provide a description of the benthic infauna and how it varies across the survey area. Marine benthic invertebrate communities have been shown to be sensitive to environmental change, particularly environmental degradation as a result of anthropogenic contamination (Davies *et al.*, 1984; Warwick & Clarke, 1991). Analysis of faunal data sets may therefore provide insight into any changes resulting from point source pollutants and disturbance.

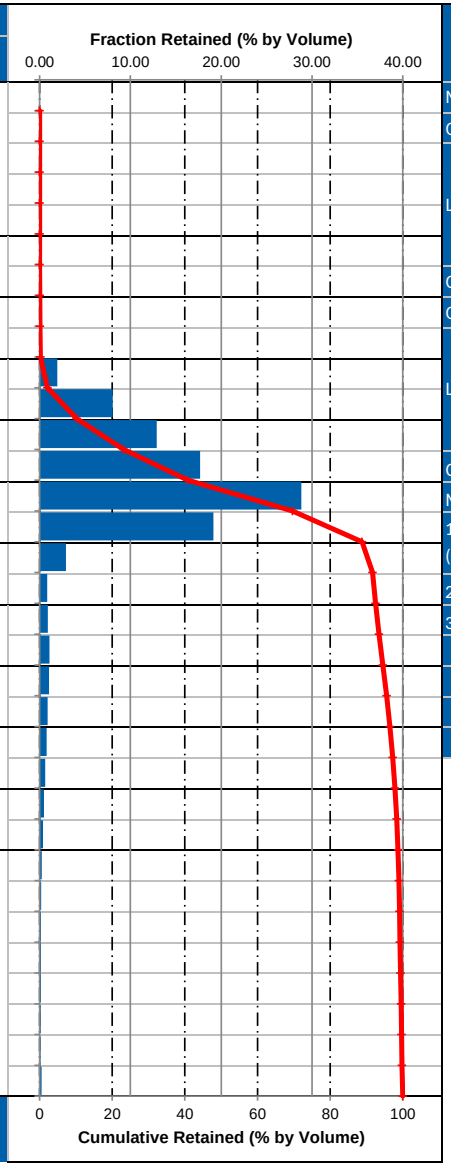
D.5 Sediment Metabarcoding

In addition to traditional methods used for sediment metabarcoding in this survey sediment metabarcoding acts to increase assessments of important components of biodiversity that may be neglected due to the difficulty of taxonomic identification using conventional morphological approaches. DNA biodiversity monitoring provides additional information about the sediment biodiversity of the bacteria and fauna within the survey area. Bacteria are a useful indicator of water quality due to species diversity and ability to respond to changing environmental conditions (Lemke *et al.*, 1997).

APPENDIX E PARTICLE SIZE ANALYSIS

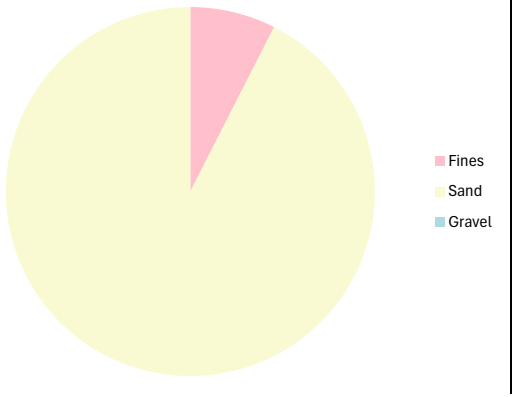
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-173				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.03	0.05	
1414.21	-0.50	0.04	0.09	Very coarse sand
1000.00	0.00	0.12	0.21	
707.11	0.50	1.94	2.15	Coarse sand
500.00	1.00	8.07	10.22	
353.55	1.50	12.90	23.12	Medium sand
250.00	2.00	17.68	40.80	
176.78	2.50	28.83	69.63	Fine sand
125.00	3.00	19.15	88.77	
88.39	3.50	2.91	91.68	Very fine sand
62.50	4.00	0.84	92.52	
44.19	4.50	0.91	93.43	Coarse silt
31.25	5.00	1.08	94.51	
22.10	5.50	1.04	95.55	Medium silt
15.63	6.00	0.89	96.44	
11.05	6.50	0.78	97.22	Fine silt
7.81	7.00	0.62	97.85	
5.52	7.50	0.49	98.33	Very fine silt
3.91	8.00	0.36	98.70	
2.76	8.50	0.24	98.93	Clay
1.95	9.00	0.16	99.10	
1.38	9.50	0.16	99.25	
0.98	10.00	0.16	99.41	
0.69	10.50	0.15	99.56	
0.49	11.00	0.12	99.69	
0.35	11.50	0.10	99.79	
<0.35	>11.5	0.21	100.00	



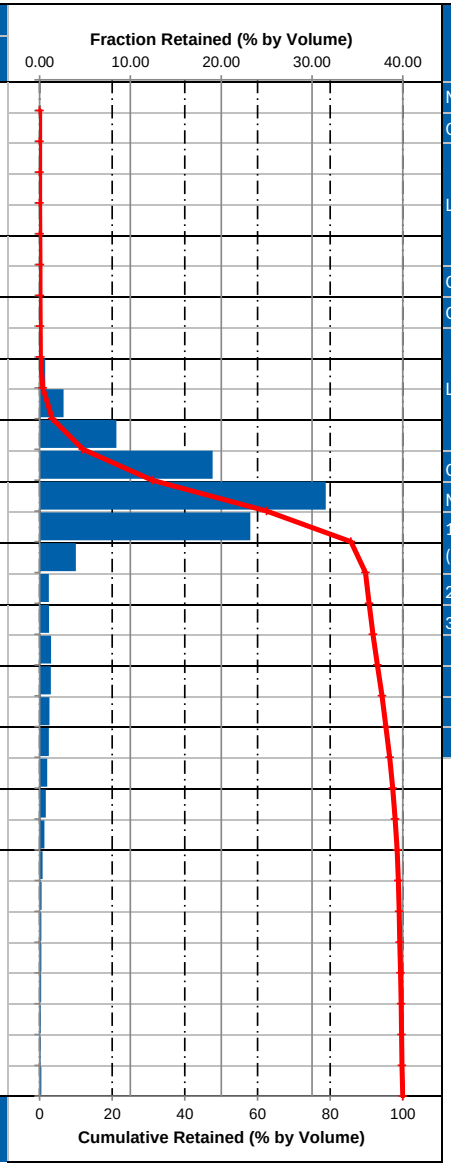
Method of Moments			
Geometric	Mean (µm)	200.78	Wentworth:
Logarithmic	Mean (Phi)	2.32	Fine sand
	Sorting	1.46	Poor
	Skewness	2.84	Very fine
	Kurtosis	15.14	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	235.47	Wentworth:
Logarithmic	Mean (Phi)	2.09	Fine sand
	Sorting	1.10	Poor
	Skewness	0.11	Fine
	Kurtosis	1.72	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.16	223.82	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.50%
EUNIS Folk	Sand and muddy sand	Sand	92.50%
Distribution	Bimodal	Gravel	0.00%



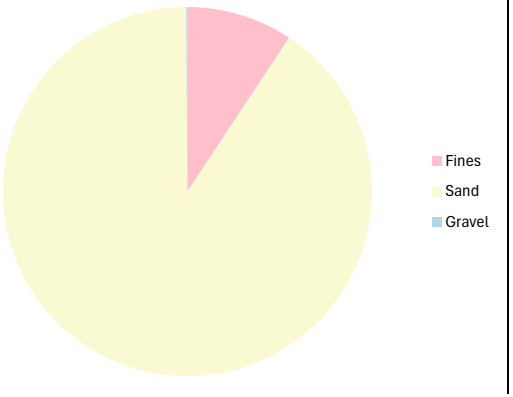
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-174				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.03	0.07	Granule
2000.00	-1.00	0.04	0.12	
1414.21	-0.50	0.06	0.17	Very coarse sand
1000.00	0.00	0.06	0.23	
707.11	0.50	0.62	0.85	Coarse sand
500.00	1.00	2.64	3.49	
353.55	1.50	8.45	11.94	Medium sand
250.00	2.00	19.05	30.99	
176.78	2.50	31.53	62.52	Fine sand
125.00	3.00	23.22	85.73	
88.39	3.50	4.00	89.74	Very fine sand
62.50	4.00	1.01	90.74	
44.19	4.50	1.04	91.78	Coarse silt
31.25	5.00	1.25	93.03	
22.10	5.50	1.25	94.28	Medium silt
15.63	6.00	1.08	95.36	
11.05	6.50	1.02	96.38	Fine silt
7.81	7.00	0.84	97.22	
5.52	7.50	0.69	97.91	Very fine silt
3.91	8.00	0.53	98.44	
2.76	8.50	0.33	98.77	Clay
1.95	9.00	0.22	98.99	
1.38	9.50	0.20	99.19	
0.98	10.00	0.20	99.39	
0.69	10.50	0.17	99.56	
0.49	11.00	0.13	99.70	
0.35	11.50	0.10	99.80	
<0.35	>11.5	0.20	100.00	



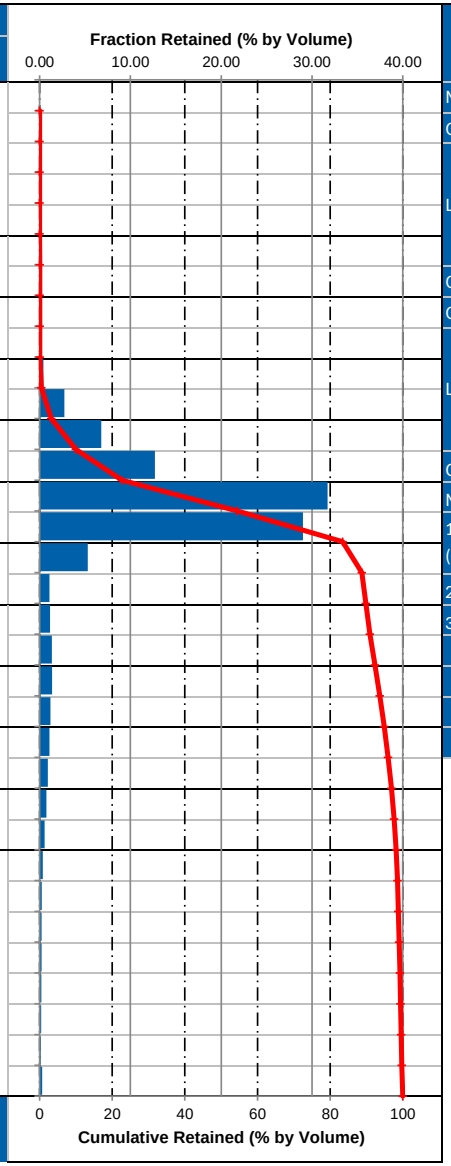
Method of Moments			
Geometric	Mean (µm)	168.51	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	1.49	Poor
	Skewness	2.81	Very fine
	Kurtosis	13.82	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	204.44	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.06	Poor
	Skewness	0.23	Fine
	Kurtosis	2.10	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.30	202.85	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.30%
EUNIS Folk	Sand and muddy sand	Sand	90.60%
Distribution	Bimodal	Gravel	0.10%



APPENDIX E PARTICLE SIZE ANALYSIS

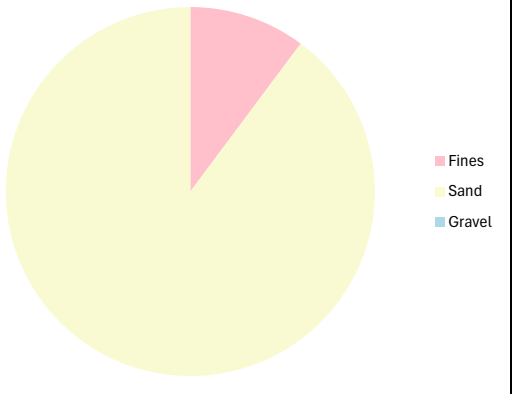
MV24EXP-ENV-GS-175				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.42	0.49	Coarse sand
500.00	1.00	2.72	3.21	
353.55	1.50	6.80	10.01	Medium sand
250.00	2.00	12.70	22.71	
176.78	2.50	31.71	54.42	Fine sand
125.00	3.00	29.01	83.44	
88.39	3.50	5.31	88.75	Very fine sand
62.50	4.00	1.08	89.82	
44.19	4.50	1.15	90.97	Coarse silt
31.25	5.00	1.36	92.33	
22.10	5.50	1.36	93.70	Medium silt
15.63	6.00	1.19	94.89	
11.05	6.50	1.08	95.97	Fine silt
7.81	7.00	0.91	96.88	
5.52	7.50	0.74	97.62	Very fine silt
3.91	8.00	0.56	98.18	
2.76	8.50	0.36	98.54	Clay
1.95	9.00	0.24	98.78	
1.38	9.50	0.21	98.99	
0.98	10.00	0.22	99.21	
0.69	10.50	0.20	99.41	
0.49	11.00	0.17	99.57	
0.35	11.50	0.13	99.71	
<0.35	>11.5	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	152.54	Wentworth:
Logarithmic	Mean (Phi)	2.71	Fine sand
	Sorting	1.53	Poor
	Skewness	2.85	Very fine
	Kurtosis	13.81	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	188.63	Wentworth:
Logarithmic	Mean (Phi)	2.41	Fine sand
	Sorting	1.07	Poor
	Skewness	0.21	Fine
	Kurtosis	2.46	Very leptokurtic

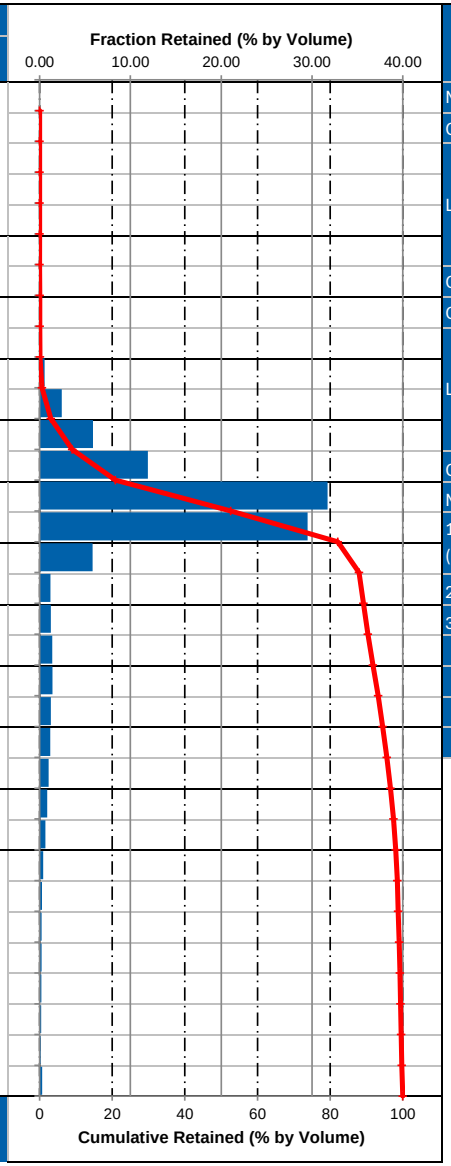
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.53	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.20%
EUNIS Folk	Sand and muddy sand	Sand	89.80%
Distribution	Bimodal	Gravel	0.00%



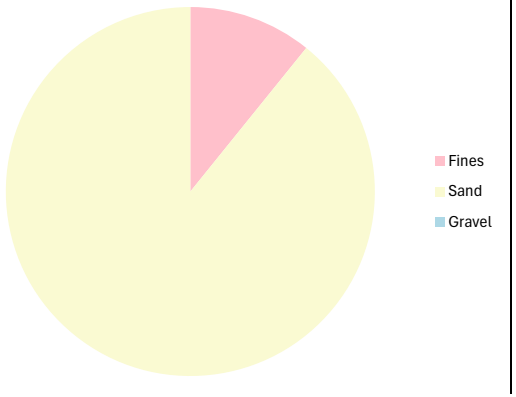
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-176				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.03	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.04	0.08	
707.11	0.50	0.55	0.63	Coarse sand
500.00	1.00	2.45	3.08	
353.55	1.50	5.88	8.96	Medium sand
250.00	2.00	11.93	20.89	
176.78	2.50	31.72	52.61	Fine sand
125.00	3.00	29.52	82.13	
88.39	3.50	5.84	87.97	Very fine sand
62.50	4.00	1.18	89.15	
44.19	4.50	1.24	90.40	Coarse silt
31.25	5.00	1.41	91.80	
22.10	5.50	1.41	93.22	Medium silt
15.63	6.00	1.24	94.45	
11.05	6.50	1.17	95.62	Fine silt
7.81	7.00	1.00	96.62	
5.52	7.50	0.83	97.46	Very fine silt
3.91	8.00	0.63	98.09	
2.76	8.50	0.40	98.49	
1.95	9.00	0.26	98.75	
1.38	9.50	0.23	98.98	
0.98	10.00	0.23	99.21	Clay
0.69	10.50	0.20	99.41	
0.49	11.00	0.17	99.58	
0.35	11.50	0.13	99.71	
<0.35	>11.5	0.29	100.00	



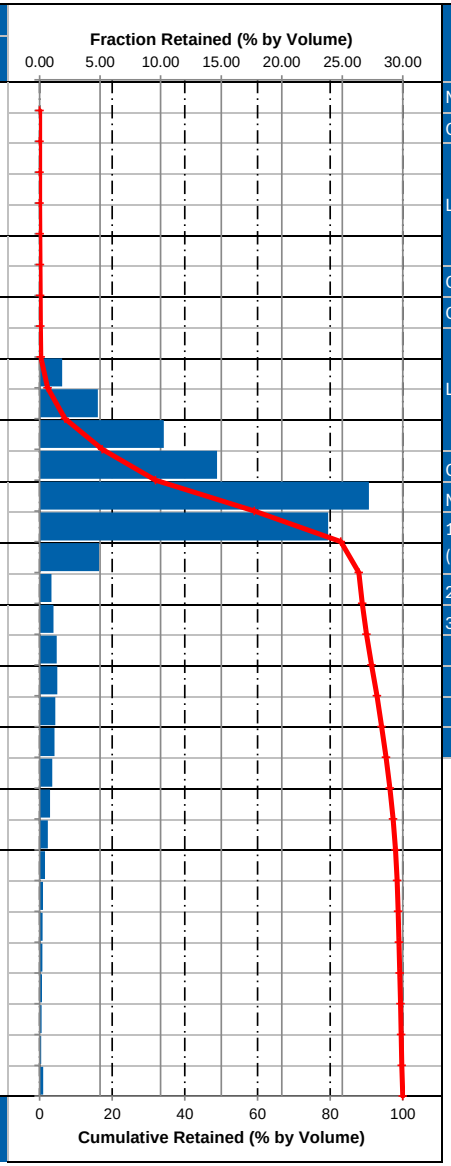
Method of Moments			
Geometric	Mean (µm)	147.12	Wentworth:
Logarithmic	Mean (Phi)	2.76	Fine sand
	Sorting	1.56	Poor
	Skewness	2.76	Very fine
	Kurtosis	12.95	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	180.31	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	1.11	Poor
	Skewness	0.26	Fine
	Kurtosis	2.55	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.46	181.89	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.80%
EUNIS Folk	Sand and muddy sand	Sand	89.10%
Distribution	Bimodal	Gravel	0.00%



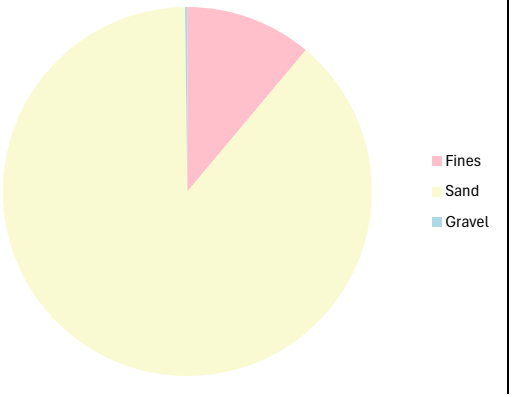
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-177				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.09	0.12	Granule
2000.00	-1.00	0.05	0.18	
1414.21	-0.50	0.06	0.23	Very coarse sand
1000.00	0.00	0.10	0.33	
707.11	0.50	1.87	2.20	Coarse sand
500.00	1.00	4.81	7.01	
353.55	1.50	10.27	17.28	Medium sand
250.00	2.00	14.66	31.94	
176.78	2.50	27.20	59.13	Fine sand
125.00	3.00	23.84	82.97	
88.39	3.50	4.91	87.88	Very fine sand
62.50	4.00	0.98	88.86	
44.19	4.50	1.14	90.00	Coarse silt
31.25	5.00	1.42	91.42	
22.10	5.50	1.46	92.88	Medium silt
15.63	6.00	1.29	94.17	
11.05	6.50	1.23	95.41	Fine silt
7.81	7.00	1.04	96.45	
5.52	7.50	0.87	97.32	Very fine silt
3.91	8.00	0.68	98.00	
2.76	8.50	0.44	98.44	
1.95	9.00	0.28	98.72	
1.38	9.50	0.24	98.97	
0.98	10.00	0.23	99.20	Clay
0.69	10.50	0.20	99.40	
0.49	11.00	0.17	99.57	
0.35	11.50	0.13	99.70	
<0.35	>11.5	0.30	100.00	



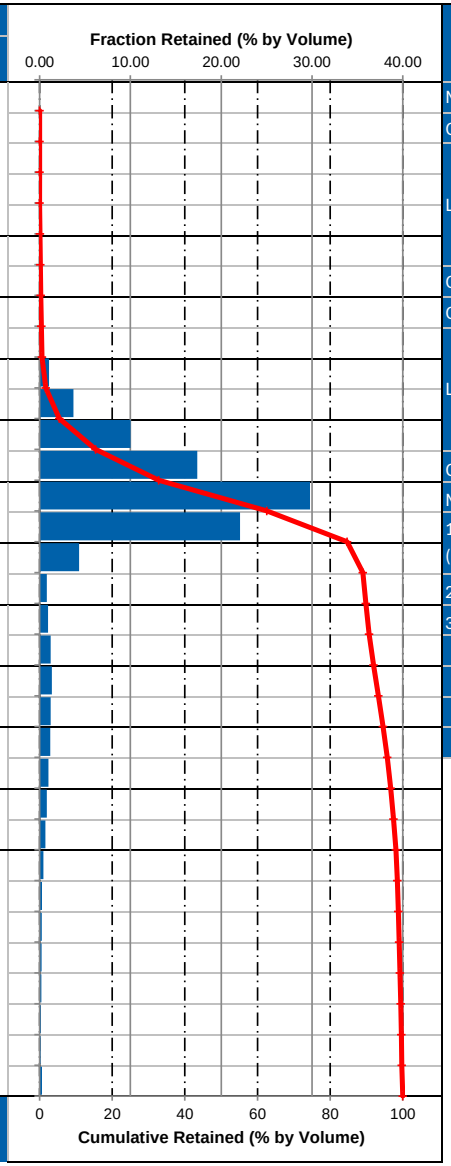
Method of Moments			
Geometric	Mean (µm)	163.49	Wentworth:
Logarithmic	Mean (Phi)	2.61	Fine sand
	Sorting	1.68	Poor
	Skewness	2.41	Very fine
	Kurtosis	11.03	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	204.26	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.26	Poor
	Skewness	0.19	Fine
	Kurtosis	2.12	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.33	198.59	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.10%
EUNIS Folk	Sand and muddy sand	Sand	88.70%
Distribution	Bimodal	Gravel	0.20%



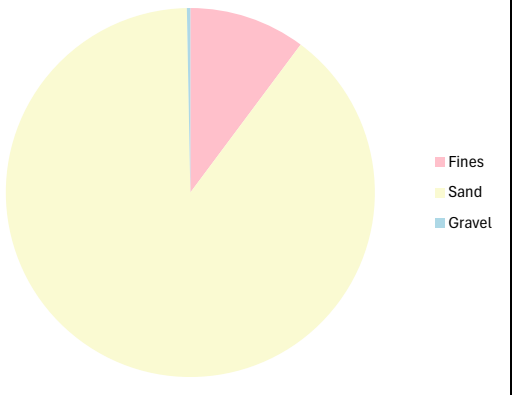
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-178				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.01	0.01	
4000.00	-2.00	0.07	0.08	
2828.43	-1.50	0.14	0.22	Granule
2000.00	-1.00	0.13	0.35	
1414.21	-0.50	0.15	0.50	Very coarse sand
1000.00	0.00	0.16	0.67	
707.11	0.50	1.03	1.70	Coarse sand
500.00	1.00	3.73	5.42	
353.55	1.50	10.02	15.44	Medium sand
250.00	2.00	17.36	32.81	
176.78	2.50	29.79	62.60	Fine sand
125.00	3.00	22.08	84.68	
88.39	3.50	4.34	89.02	Very fine sand
62.50	4.00	0.81	89.82	
44.19	4.50	0.92	90.74	Coarse silt
31.25	5.00	1.22	91.96	
22.10	5.50	1.35	93.31	Medium silt
15.63	6.00	1.23	94.54	
11.05	6.50	1.16	95.71	Fine silt
7.81	7.00	0.96	96.67	
5.52	7.50	0.80	97.47	Very fine silt
3.91	8.00	0.63	98.11	
2.76	8.50	0.41	98.52	Clay
1.95	9.00	0.27	98.79	
1.38	9.50	0.23	99.02	
0.98	10.00	0.23	99.25	
0.69	10.50	0.20	99.45	
0.49	11.00	0.16	99.60	
0.35	11.50	0.12	99.73	
<0.35	>11.5	0.27	100.00	



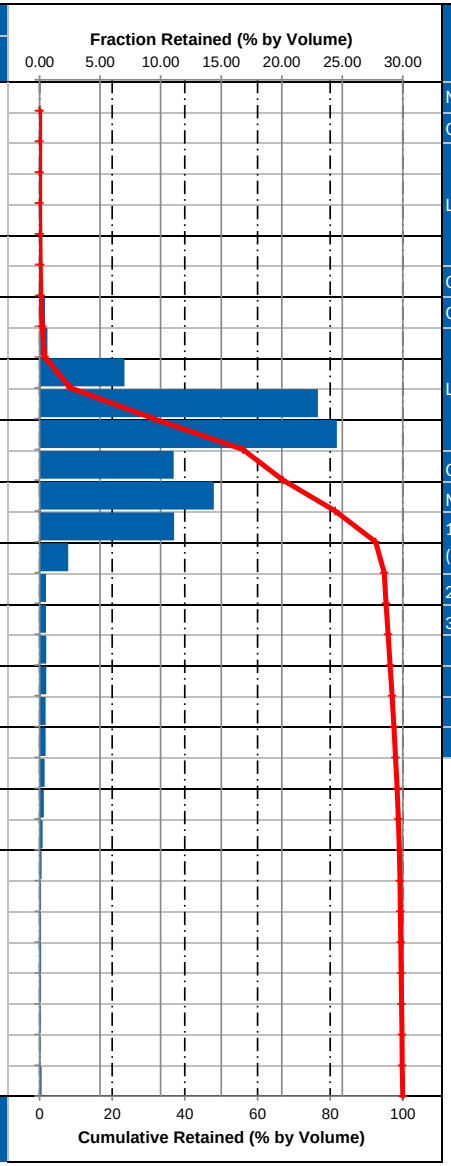
Method of Moments			
Geometric	Mean (µm)	168.33	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	1.63	Poor
	Skewness	2.52	Very fine
	Kurtosis	11.99	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	208.33	Wentworth:
Logarithmic	Mean (Phi)	2.26	Fine sand
	Sorting	1.16	Poor
	Skewness	0.22	Fine
	Kurtosis	2.14	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.29	204.68	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.20%
EUNIS Folk	Sand and muddy sand	Sand	89.50%
Distribution	Bimodal	Gravel	0.30%



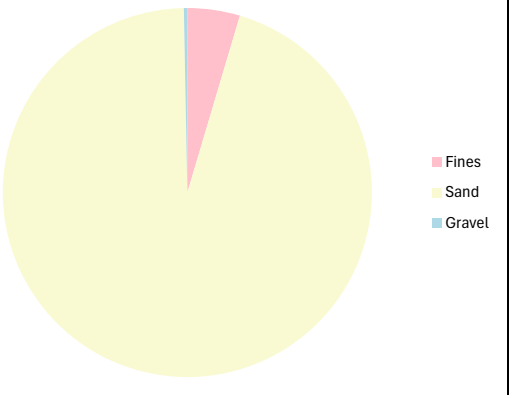
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-179				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.02	0.02	
4000.00	-2.00	0.04	0.05	
2828.43	-1.50	0.11	0.16	Granule
2000.00	-1.00	0.16	0.32	
1414.21	-0.50	0.45	0.76	Very coarse sand
1000.00	0.00	0.64	1.40	
707.11	0.50	7.00	8.40	Coarse sand
500.00	1.00	22.99	31.39	
353.55	1.50	24.56	55.95	Medium sand
250.00	2.00	11.08	67.03	
176.78	2.50	14.39	81.42	Fine sand
125.00	3.00	11.11	92.53	
88.39	3.50	2.36	94.89	Very fine sand
62.50	4.00	0.52	95.42	
44.19	4.50	0.53	95.95	Coarse silt
31.25	5.00	0.55	96.50	
22.10	5.50	0.55	97.05	Medium silt
15.63	6.00	0.49	97.54	
11.05	6.50	0.49	98.04	Fine silt
7.81	7.00	0.42	98.46	
5.52	7.50	0.34	98.80	Very fine silt
3.91	8.00	0.25	99.05	
2.76	8.50	0.16	99.21	Clay
1.95	9.00	0.11	99.32	
1.38	9.50	0.11	99.44	
0.98	10.00	0.12	99.56	
0.69	10.50	0.11	99.67	
0.49	11.00	0.09	99.77	
0.35	11.50	0.07	99.84	
<0.35	>11.5	0.16	100.00	



Method of Moments			
Geometric	Mean (µm)	305.39	Wentworth:
Logarithmic	Mean (Phi)	1.71	Medium sand
	Sorting	1.43	Poor
	Skewness	2.88	Very fine
	Kurtosis	16.43	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	340.70	Wentworth:
Logarithmic	Mean (Phi)	1.55	Medium sand
	Sorting	0.99	Moderate
	Skewness	0.30	Fine
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.38	384.52	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

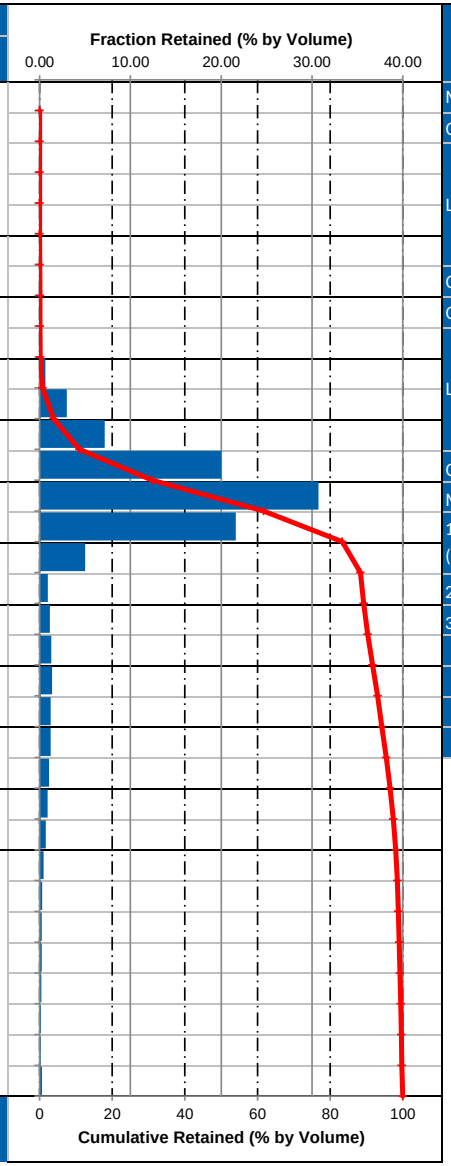
Classification		Composition	
Modified Folk	Sand	Fines	4.60%
EUNIS Folk	Sand and muddy sand	Sand	95.10%
Distribution	Unimodal	Gravel	0.30%



APPENDIX E PARTICLE SIZE ANALYSIS

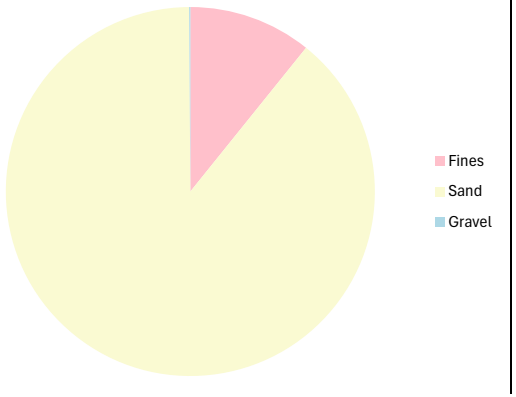
MV24EXP-ENV-GS-180

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.05	0.08	
1414.21	-0.50	0.05	0.12	Very coarse sand
1000.00	0.00	0.05	0.18	
707.11	0.50	0.63	0.81	Coarse sand
500.00	1.00	3.00	3.81	
353.55	1.50	7.17	10.98	Medium sand
250.00	2.00	20.02	31.00	
176.78	2.50	30.71	61.71	Fine sand
125.00	3.00	21.62	83.32	
88.39	3.50	5.02	88.34	Very fine sand
62.50	4.00	0.91	89.25	
44.19	4.50	1.12	90.37	Coarse silt
31.25	5.00	1.29	91.66	
22.10	5.50	1.38	93.04	Medium silt
15.63	6.00	1.21	94.26	
11.05	6.50	1.21	95.46	Fine silt
7.81	7.00	1.04	96.50	
5.52	7.50	0.88	97.37	Very fine silt
3.91	8.00	0.68	98.06	
2.76	8.50	0.44	98.50	Clay
1.95	9.00	0.28	98.77	
1.38	9.50	0.24	99.01	
0.98	10.00	0.23	99.24	
0.69	10.50	0.20	99.44	
0.49	11.00	0.16	99.60	
0.35	11.50	0.12	99.73	
<0.35	>11.5	0.27	100.00	



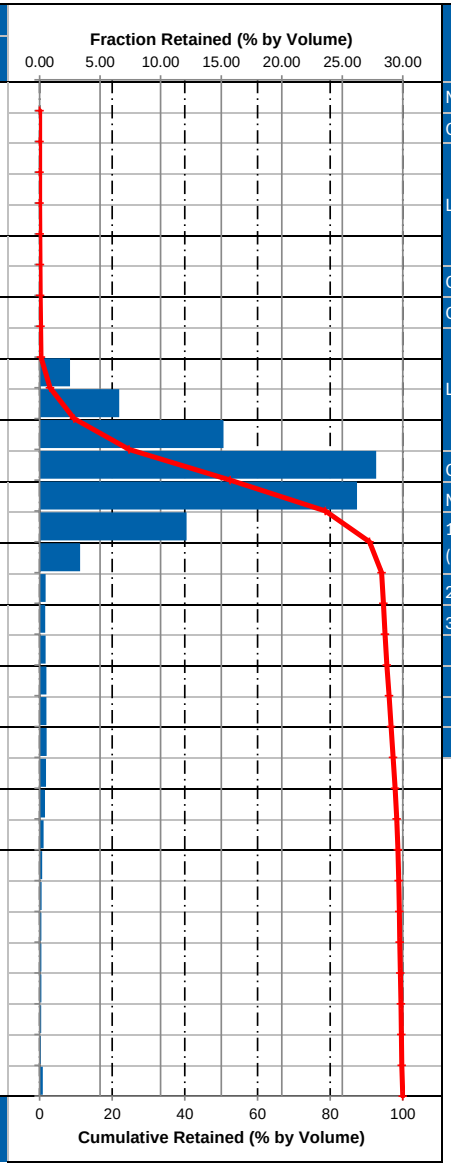
Method of Moments			
Geometric	Mean (µm)	159.49	Wentworth:
Logarithmic	Mean (Phi)	2.65	Fine sand
	Sorting	1.60	Poor
	Skewness	2.68	Very fine
	Kurtosis	12.21	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	198.33	Wentworth:
Logarithmic	Mean (Phi)	2.33	Fine sand
	Sorting	1.15	Poor
	Skewness	0.29	Fine
	Kurtosis	2.24	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.31	201.75	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.80%
EUNIS Folk	Sand and muddy sand	Sand	89.20%
Distribution	Bimodal	Gravel	0.10%



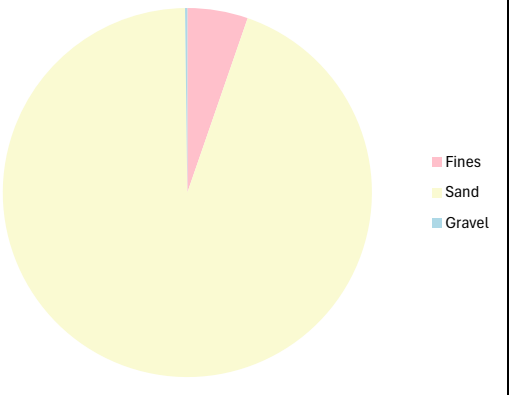
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-235A				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.07	0.10	Granule
2000.00	-1.00	0.07	0.17	
1414.21	-0.50	0.08	0.25	Very coarse sand
1000.00	0.00	0.14	0.39	
707.11	0.50	2.51	2.90	Coarse sand
500.00	1.00	6.58	9.48	
353.55	1.50	15.19	24.67	Medium sand
250.00	2.00	27.80	52.47	
176.78	2.50	26.23	78.70	Fine sand
125.00	3.00	12.14	90.84	
88.39	3.50	3.35	94.18	Very fine sand
62.50	4.00	0.50	94.68	
44.19	4.50	0.46	95.14	Coarse silt
31.25	5.00	0.50	95.64	
22.10	5.50	0.56	96.21	Medium silt
15.63	6.00	0.56	96.76	
11.05	6.50	0.59	97.35	Fine silt
7.81	7.00	0.54	97.89	
5.52	7.50	0.45	98.34	Very fine silt
3.91	8.00	0.34	98.67	
2.76	8.50	0.22	98.89	
1.95	9.00	0.16	99.05	
1.38	9.50	0.15	99.19	
0.98	10.00	0.15	99.34	Clay
0.69	10.50	0.15	99.49	
0.49	11.00	0.13	99.62	
0.35	11.50	0.11	99.73	
<0.35	>11.5	0.27	100.00	



Method of Moments			
Geometric	Mean (µm)	225.20	Wentworth:
Logarithmic	Mean (Phi)	2.15	Fine sand
	Sorting	1.42	Poor
	Skewness	3.35	Very fine
	Kurtosis	19.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	256.52	Wentworth:
Logarithmic	Mean (Phi)	1.96	Medium sand
	Sorting	0.93	Moderate
	Skewness	0.16	Fine
	Kurtosis	1.64	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.96	257.82	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

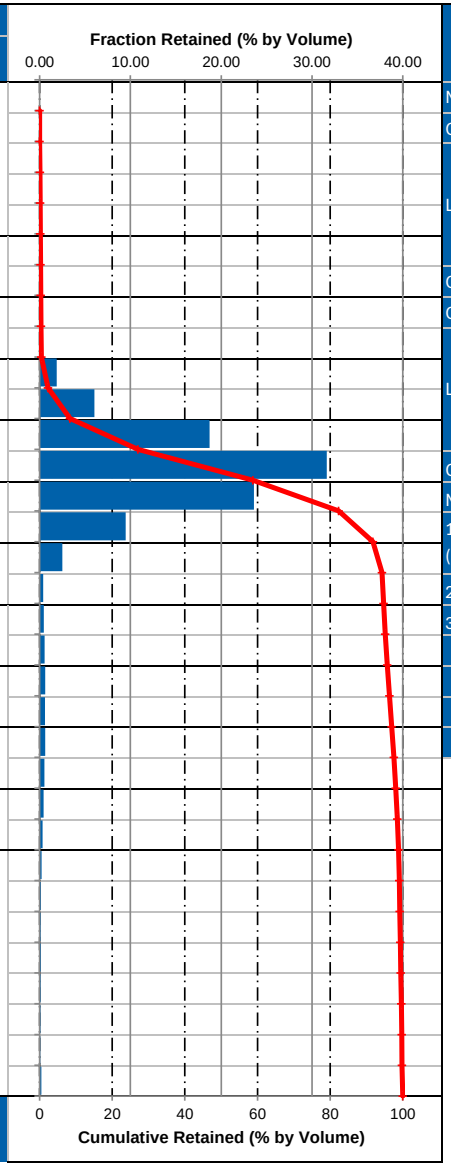
Classification		Composition	
Modified Folk	Sand	Fines	5.30%
EUNIS Folk	Sand and muddy sand	Sand	94.50%
Distribution	Unimodal	Gravel	0.20%



APPENDIX E PARTICLE SIZE ANALYSIS

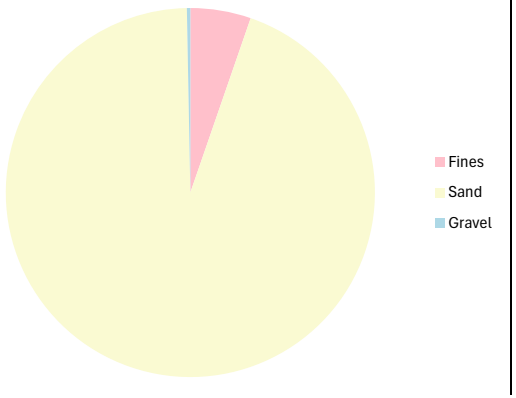
MV24EXP-ENV-GS-234

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.12	0.12	Pebble
5656.85	-2.50	0.03	0.15	
4000.00	-2.00	0.05	0.20	
2828.43	-1.50	0.08	0.28	Granule
2000.00	-1.00	0.04	0.32	
1414.21	-0.50	0.05	0.38	Very coarse sand
1000.00	0.00	0.08	0.46	
707.11	0.50	1.88	2.34	Coarse sand
500.00	1.00	6.04	8.39	
353.55	1.50	18.72	27.11	Medium sand
250.00	2.00	31.62	58.73	
176.78	2.50	23.61	82.34	Fine sand
125.00	3.00	9.47	91.81	
88.39	3.50	2.50	94.31	Very fine sand
62.50	4.00	0.40	94.71	
44.19	4.50	0.46	95.16	Coarse silt
31.25	5.00	0.56	95.72	
22.10	5.50	0.62	96.34	Medium silt
15.63	6.00	0.59	96.93	
11.05	6.50	0.61	97.54	Fine silt
7.81	7.00	0.53	98.07	
5.52	7.50	0.44	98.51	Very fine silt
3.91	8.00	0.33	98.84	
2.76	8.50	0.21	99.05	Clay
1.95	9.00	0.14	99.20	
1.38	9.50	0.13	99.33	
0.98	10.00	0.14	99.47	
0.69	10.50	0.13	99.60	
0.49	11.00	0.11	99.71	
0.35	11.50	0.09	99.80	
<0.35	>11.5	0.20	100.00	



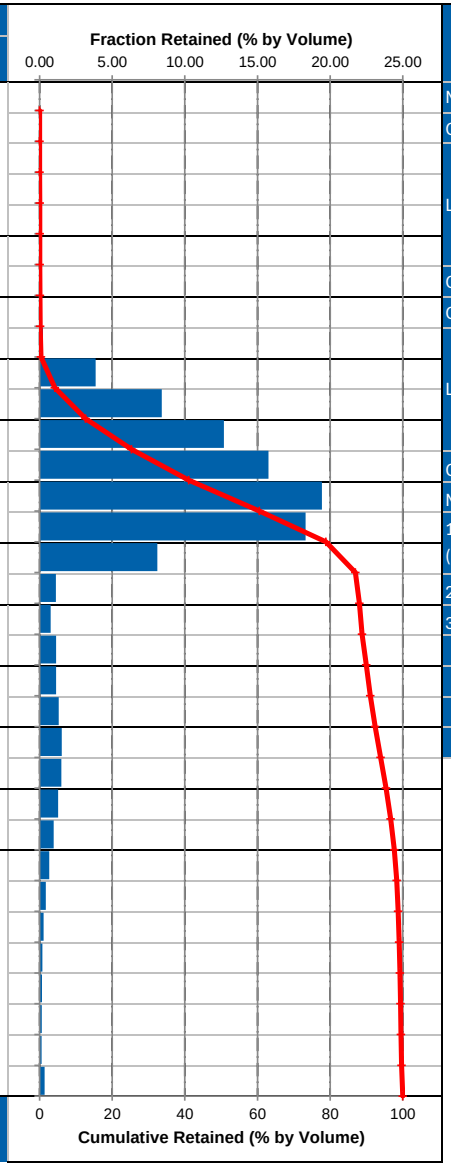
Method of Moments			
Geometric	Mean (µm)	237.08	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	1.38	Poor
	Skewness	3.26	Very fine
	Kurtosis	19.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	270.87	Wentworth:
Logarithmic	Mean (Phi)	1.88	Medium sand
	Sorting	0.89	Moderate
	Skewness	0.21	Fine
	Kurtosis	1.64	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.86	275.09	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.30%
EUNIS Folk	Sand and muddy sand	Sand	94.40%
Distribution	Unimodal	Gravel	0.30%



APPENDIX E PARTICLE SIZE ANALYSIS

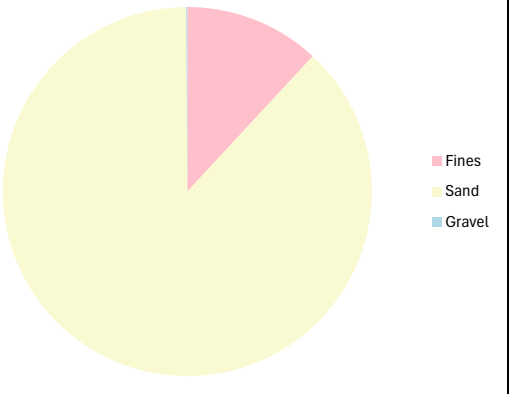
MV24EXP-ENV-GS-233				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.02	0.02	
4000.00	-2.00	0.01	0.03	
2828.43	-1.50	0.03	0.06	Granule
2000.00	-1.00	0.03	0.09	
1414.21	-0.50	0.05	0.14	Very coarse sand
1000.00	0.00	0.23	0.37	
707.11	0.50	3.86	4.23	Coarse sand
500.00	1.00	8.41	12.64	
353.55	1.50	12.69	25.33	Medium sand
250.00	2.00	15.76	41.09	
176.78	2.50	19.43	60.52	Fine sand
125.00	3.00	18.31	78.83	
88.39	3.50	8.10	86.94	Very fine sand
62.50	4.00	1.11	88.05	
44.19	4.50	0.75	88.81	Coarse silt
31.25	5.00	1.13	89.94	
22.10	5.50	1.13	91.07	Medium silt
15.63	6.00	1.32	92.39	
11.05	6.50	1.53	93.92	Fine silt
7.81	7.00	1.49	95.41	
5.52	7.50	1.27	96.68	Very fine silt
3.91	8.00	0.97	97.66	
2.76	8.50	0.67	98.33	
1.95	9.00	0.42	98.75	
1.38	9.50	0.27	99.02	
0.98	10.00	0.20	99.21	Clay
0.69	10.50	0.16	99.38	
0.49	11.00	0.15	99.52	
0.35	11.50	0.13	99.66	
<0.35	>11.5	0.34	100.00	



Method of Moments			
Geometric	Mean (µm)	169.35	Wentworth:
Logarithmic	Mean (Phi)	2.56	Fine sand
	Sorting	1.86	Poor
	Skewness	2.08	Very fine
	Kurtosis	8.56	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	213.63	Wentworth:
Logarithmic	Mean (Phi)	2.23	Fine sand
	Sorting	1.50	Poor
	Skewness	0.23	Fine
	Kurtosis	1.84	Very leptokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.23	213.27	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	5.00	31.25	Coarse silt

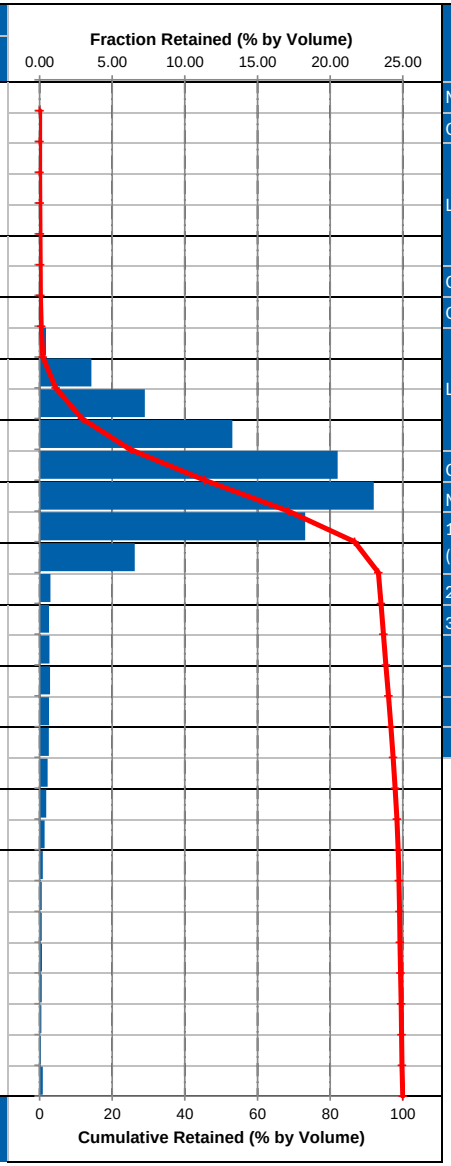
Classification		Composition	
Modified Folk	Muddy sand	Fines	11.90%
EUNIS Folk	Sand and muddy sand	Sand	88.00%
Distribution	Multimodal	Gravel	0.10%



APPENDIX E PARTICLE SIZE ANALYSIS

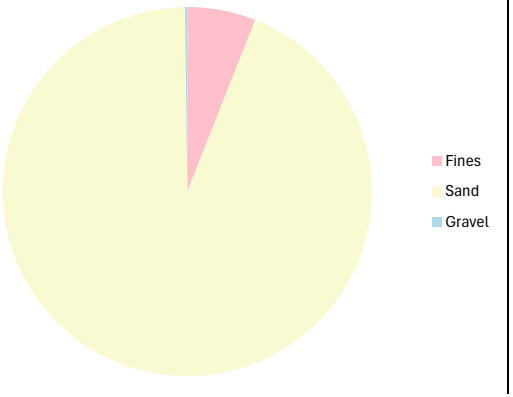
MV24EXP-ENV-GS-232

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.06	0.06	
4000.00	-2.00	0.03	0.09	
2828.43	-1.50	0.06	0.15	Granule
2000.00	-1.00	0.07	0.21	
1414.21	-0.50	0.21	0.42	Very coarse sand
1000.00	0.00	0.45	0.87	
707.11	0.50	3.56	4.43	Coarse sand
500.00	1.00	7.24	11.66	
353.55	1.50	13.26	24.93	Medium sand
250.00	2.00	20.52	45.45	
176.78	2.50	23.00	68.44	Fine sand
125.00	3.00	18.28	86.72	
88.39	3.50	6.55	93.27	Very fine sand
62.50	4.00	0.75	94.02	
44.19	4.50	0.65	94.67	Coarse silt
31.25	5.00	0.68	95.35	
22.10	5.50	0.72	96.08	Medium silt
15.63	6.00	0.66	96.73	
11.05	6.50	0.63	97.37	Fine silt
7.81	7.00	0.55	97.92	
5.52	7.50	0.46	98.37	Very fine silt
3.91	8.00	0.35	98.72	
2.76	8.50	0.23	98.94	
1.95	9.00	0.16	99.10	
1.38	9.50	0.15	99.25	
0.98	10.00	0.16	99.41	Clay
0.69	10.50	0.15	99.55	
0.49	11.00	0.12	99.68	
0.35	11.50	0.10	99.78	
<0.35	>11.5	0.22	100.00	



Method of Moments			
Geometric	Mean (µm)	211.22	Wentworth:
Logarithmic	Mean (Phi)	2.24	Fine sand
	Sorting	1.47	Poor
	Skewness	2.70	Very fine
	Kurtosis	15.46	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	239.37	Wentworth:
Logarithmic	Mean (Phi)	2.06	Fine sand
	Sorting	1.08	Poor
	Skewness	0.10	Symmetrical
	Kurtosis	1.46	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.10	233.42	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

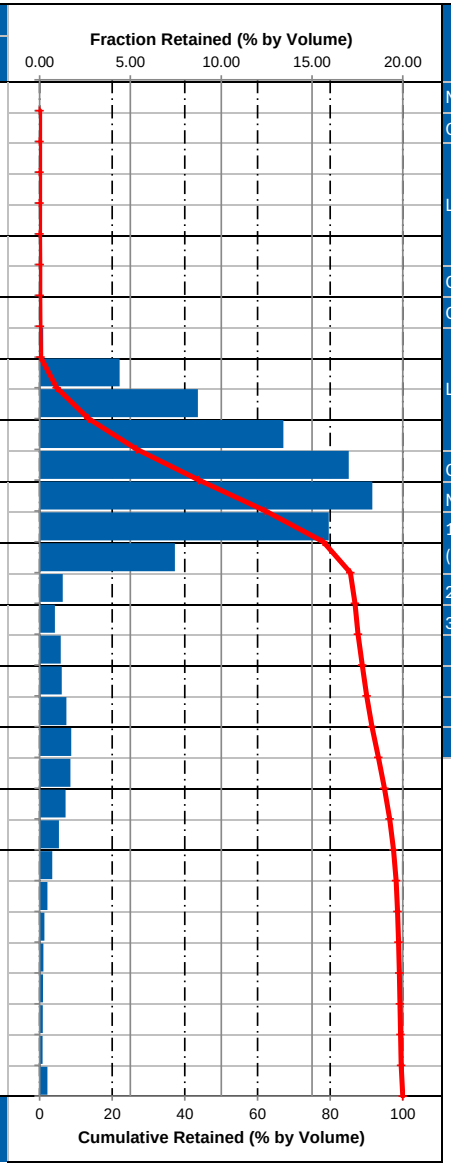
Classification		Composition	
Modified Folk	Sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	93.80%
Distribution	Unimodal	Gravel	0.20%



APPENDIX E PARTICLE SIZE ANALYSIS

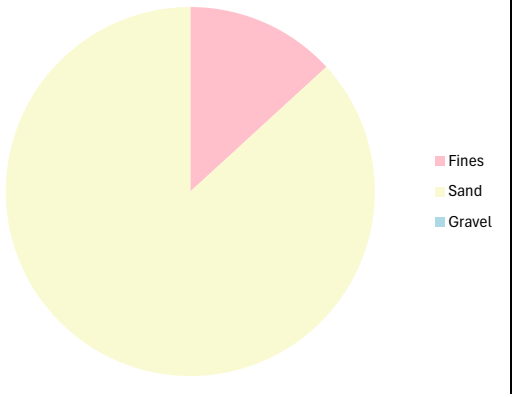
MV24EXP-ENV-GS-231

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.04	0.08	Very coarse sand
1000.00	0.00	0.20	0.28	
707.11	0.50	4.41	4.68	Coarse sand
500.00	1.00	8.72	13.40	
353.55	1.50	13.42	26.83	Medium sand
250.00	2.00	17.02	43.85	
176.78	2.50	18.33	62.17	Fine sand
125.00	3.00	15.93	78.10	
88.39	3.50	7.45	85.55	Very fine sand
62.50	4.00	1.28	86.83	
44.19	4.50	0.84	87.67	Coarse silt
31.25	5.00	1.16	88.84	
22.10	5.50	1.22	90.06	Medium silt
15.63	6.00	1.47	91.53	
11.05	6.50	1.74	93.27	Fine silt
7.81	7.00	1.69	94.97	
5.52	7.50	1.43	96.39	Very fine silt
3.91	8.00	1.06	97.46	
2.76	8.50	0.70	98.16	
1.95	9.00	0.43	98.58	
1.38	9.50	0.27	98.85	
0.98	10.00	0.20	99.06	Clay
0.69	10.50	0.18	99.24	
0.49	11.00	0.17	99.41	
0.35	11.50	0.16	99.57	
<0.35	>11.5	0.43	100.00	



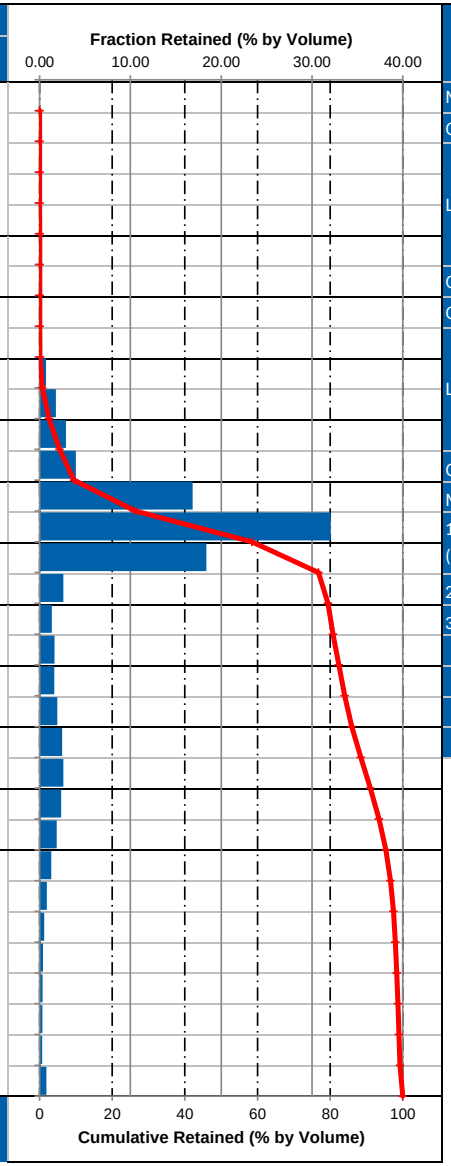
Method of Moments			
Geometric	Mean (µm)	167.45	Wentworth:
Logarithmic	Mean (Phi)	2.58	Fine sand
	Sorting	1.95	Poor
	Skewness	2.04	Very fine
	Kurtosis	8.06	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	214.62	Wentworth:
Logarithmic	Mean (Phi)	2.22	Fine sand
	Sorting	1.56	Poor
	Skewness	0.28	Fine
	Kurtosis	1.81	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.17	222.54	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	13.20%
EUNIS Folk	Sand and muddy sand	Sand	86.80%
Distribution	Bimodal	Gravel	0.00%



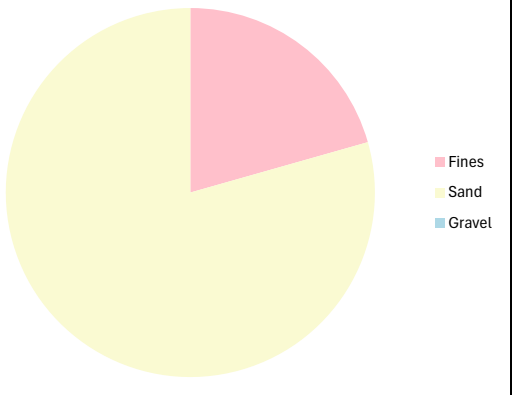
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-230				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.00	0.03	Granule
2000.00	-1.00	0.02	0.05	
1414.21	-0.50	0.02	0.07	Very coarse sand
1000.00	0.00	0.02	0.08	
707.11	0.50	0.71	0.79	Coarse sand
500.00	1.00	1.79	2.58	
353.55	1.50	2.91	5.50	Medium sand
250.00	2.00	4.00	9.50	
176.78	2.50	16.86	26.36	Fine sand
125.00	3.00	32.08	58.44	
88.39	3.50	18.36	76.80	Very fine sand
62.50	4.00	2.62	79.43	
44.19	4.50	1.36	80.78	Coarse silt
31.25	5.00	1.63	82.42	
22.10	5.50	1.62	84.04	Medium silt
15.63	6.00	1.95	85.98	
11.05	6.50	2.48	88.46	Fine silt
7.81	7.00	2.63	91.09	
5.52	7.50	2.38	93.47	Very fine silt
3.91	8.00	1.89	95.35	
2.76	8.50	1.29	96.65	Clay
1.95	9.00	0.80	97.45	
1.38	9.50	0.51	97.95	
0.98	10.00	0.38	98.33	
0.69	10.50	0.33	98.66	
0.49	11.00	0.31	98.97	
0.35	11.50	0.28	99.25	
<0.35	>11.5	0.75	100.00	



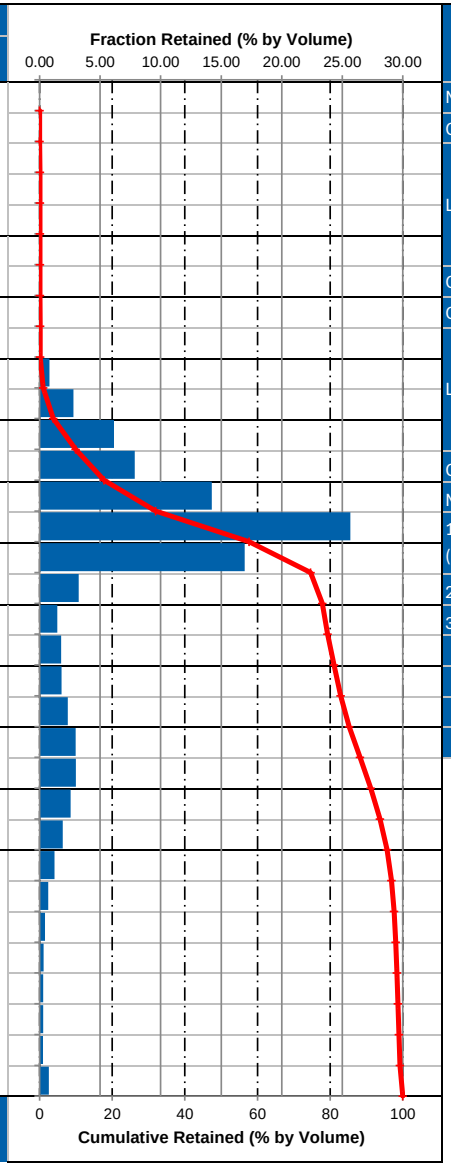
Method of Moments			
Geometric	Mean (µm)	87.64	Wentworth:
Logarithmic	Mean (Phi)	3.51	Very fine sand
	Sorting	2.04	Very poor
	Skewness	1.85	Very fine
	Kurtosis	6.66	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	87.37	Wentworth:
Logarithmic	Mean (Phi)	3.52	Very fine sand
	Sorting	1.81	Poor
	Skewness	0.57	Very fine
	Kurtosis	2.68	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.87	136.94	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	20.60%
EUNIS Folk	Mud and sandy mud	Sand	79.40%
Distribution	Bimodal	Gravel	0.00%



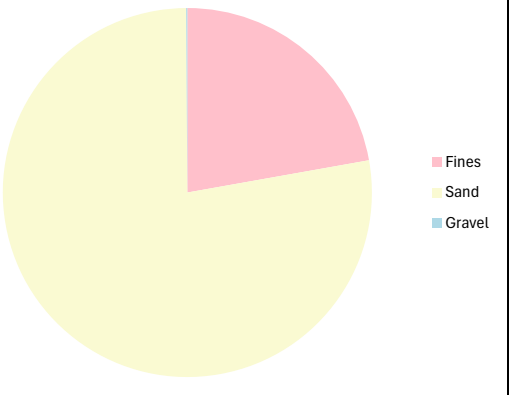
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-229				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.11	0.11	Pebble
5656.85	-2.50	0.00	0.11	
4000.00	-2.00	0.00	0.11	
2828.43	-1.50	0.01	0.12	Granule
2000.00	-1.00	0.01	0.12	
1414.21	-0.50	0.01	0.13	Very coarse sand
1000.00	0.00	0.03	0.16	
707.11	0.50	0.82	0.98	Coarse sand
500.00	1.00	2.79	3.77	
353.55	1.50	6.15	9.92	Medium sand
250.00	2.00	7.85	17.77	
176.78	2.50	14.23	32.00	Fine sand
125.00	3.00	25.67	57.67	
88.39	3.50	16.94	74.61	Very fine sand
62.50	4.00	3.23	77.84	
44.19	4.50	1.46	79.30	Coarse silt
31.25	5.00	1.78	81.08	
22.10	5.50	1.82	82.90	Medium silt
15.63	6.00	2.34	85.24	
11.05	6.50	2.97	88.21	Fine silt
7.81	7.00	2.99	91.20	
5.52	7.50	2.55	93.76	Very fine silt
3.91	8.00	1.90	95.66	
2.76	8.50	1.23	96.89	Clay
1.95	9.00	0.72	97.61	
1.38	9.50	0.44	98.05	
0.98	10.00	0.33	98.38	
0.69	10.50	0.30	98.68	
0.49	11.00	0.29	98.97	
0.35	11.50	0.27	99.24	
<0.35	>11.5	0.76	100.00	



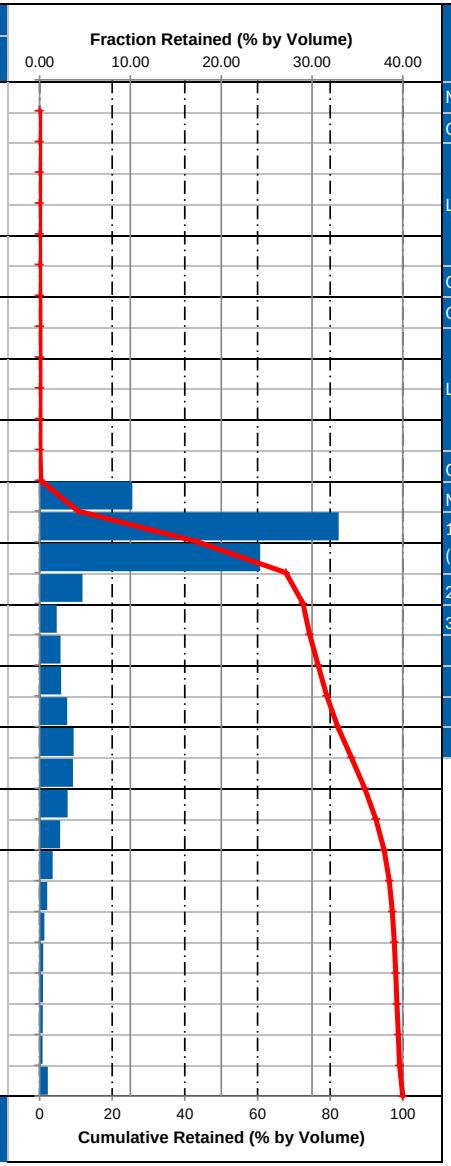
Method of Moments			
Geometric	Mean (µm)	91.38	Wentworth:
Logarithmic	Mean (Phi)	3.45	Very fine sand
	Sorting	2.13	Very poor
	Skewness	1.60	Very fine
	Kurtosis	5.90	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	88.95	Wentworth:
Logarithmic	Mean (Phi)	3.49	Very fine sand
	Sorting	1.98	Poor
	Skewness	0.49	Very fine
	Kurtosis	2.11	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.85	138.64	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	22.20%
EUNIS Folk	Mud and sandy mud	Sand	77.70%
Distribution	Bimodal	Gravel	0.10%



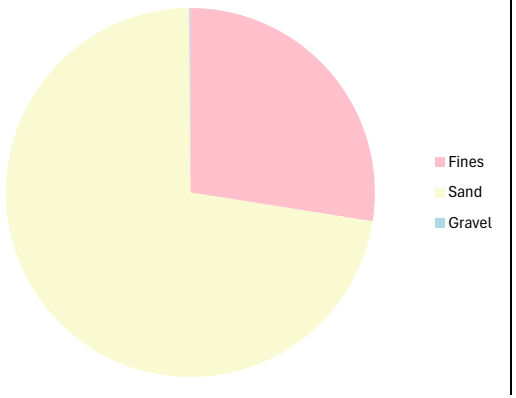
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-228				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.07	0.07	
1414.21	-0.50	0.01	0.07	Very coarse sand
1000.00	0.00	0.01	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.00	0.08	
353.55	1.50	0.00	0.08	Medium sand
250.00	2.00	0.24	0.33	
176.78	2.50	10.22	10.55	Fine sand
125.00	3.00	32.93	43.48	
88.39	3.50	24.29	67.77	Very fine sand
62.50	4.00	4.72	72.49	
44.19	4.50	1.87	74.37	Coarse silt
31.25	5.00	2.31	76.68	
22.10	5.50	2.37	79.04	Medium silt
15.63	6.00	3.04	82.08	
11.05	6.50	3.75	85.83	Fine silt
7.81	7.00	3.67	89.50	
5.52	7.50	3.08	92.58	Very fine silt
3.91	8.00	2.27	94.85	
2.76	8.50	1.45	96.30	Clay
1.95	9.00	0.85	97.14	
1.38	9.50	0.52	97.66	
0.98	10.00	0.40	98.06	
0.69	10.50	0.36	98.42	
0.49	11.00	0.35	98.77	
0.35	11.50	0.33	99.10	
<0.35	>11.5	0.90	100.00	



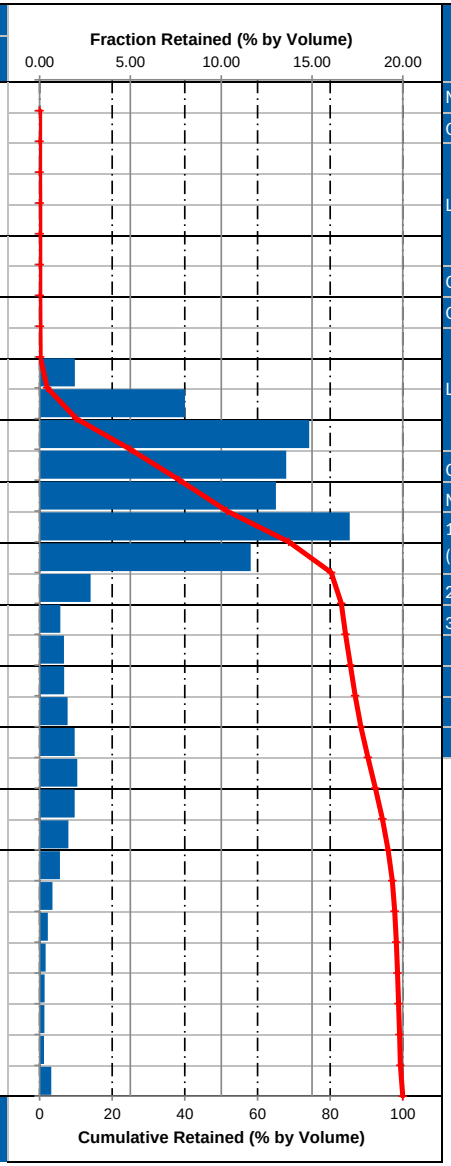
Method of Moments			
Geometric	Mean (µm)	63.44	Wentworth:
Logarithmic	Mean (Phi)	3.98	Very fine sand
	Sorting	2.02	Very poor
	Skewness	1.77	Very fine
	Kurtosis	5.98	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	62.90	Wentworth:
Logarithmic	Mean (Phi)	3.99	Very fine sand
	Sorting	1.80	Poor
	Skewness	0.69	Very fine
	Kurtosis	1.24	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.13	113.89	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	27.50%
EUNIS Folk	Mud and sandy mud	Sand	72.40%
Distribution	Bimodal	Gravel	0.10%



APPENDIX E PARTICLE SIZE ANALYSIS

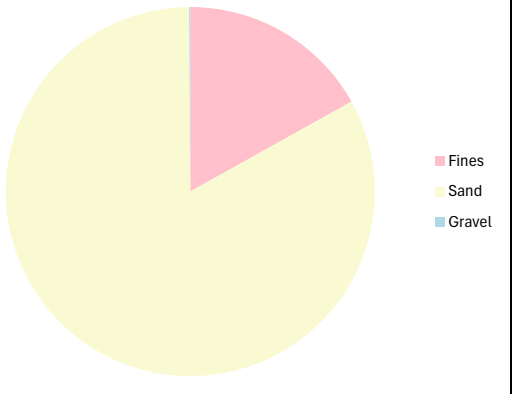
MV24EXP-ENV-GS-227				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.03	0.03	
4000.00	-2.00	0.00	0.03	
2828.43	-1.50	0.02	0.05	Granule
2000.00	-1.00	0.02	0.07	
1414.21	-0.50	0.04	0.11	Very coarse sand
1000.00	0.00	0.06	0.16	
707.11	0.50	1.94	2.10	Coarse sand
500.00	1.00	8.00	10.11	
353.55	1.50	14.85	24.96	Medium sand
250.00	2.00	13.58	38.54	
176.78	2.50	13.02	51.56	Fine sand
125.00	3.00	17.08	68.64	
88.39	3.50	11.63	80.27	Very fine sand
62.50	4.00	2.80	83.07	
44.19	4.50	1.14	84.22	Coarse silt
31.25	5.00	1.34	85.55	
22.10	5.50	1.35	86.90	Medium silt
15.63	6.00	1.54	88.44	
11.05	6.50	1.93	90.38	Fine silt
7.81	7.00	2.08	92.45	
5.52	7.50	1.93	94.39	Very fine silt
3.91	8.00	1.58	95.97	
2.76	8.50	1.12	97.09	
1.95	9.00	0.71	97.80	
1.38	9.50	0.45	98.25	
0.98	10.00	0.33	98.58	Clay
0.69	10.50	0.28	98.86	
0.49	11.00	0.26	99.12	
0.35	11.50	0.24	99.36	
<0.35	>11.5	0.64	100.00	



Method of Moments			
Geometric	Mean (µm)	132.25	Wentworth:
Logarithmic	Mean (Phi)	2.92	Fine sand
	Sorting	2.17	Very poor
	Skewness	1.78	Very fine
	Kurtosis	6.45	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	155.87	Wentworth:
Logarithmic	Mean (Phi)	2.68	Fine sand
	Sorting	1.86	Poor
	Skewness	0.36	Very fine
	Kurtosis	1.62	Very leptokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.44	184.26	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

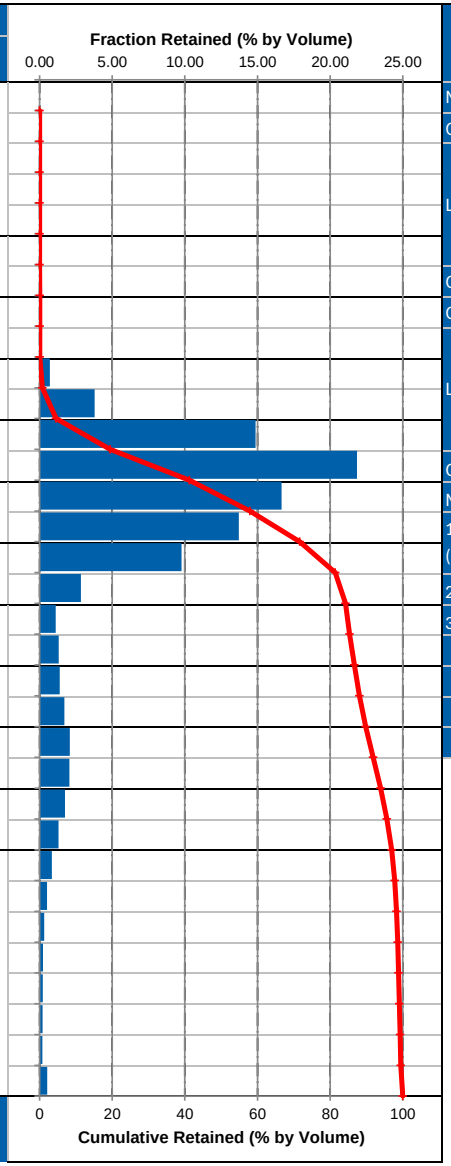
Classification		Composition	
Modified Folk	Muddy sand	Fines	16.90%
EUNIS Folk	Sand and muddy sand	Sand	83.00%
Distribution	Multimodal	Gravel	0.10%



APPENDIX E PARTICLE SIZE ANALYSIS

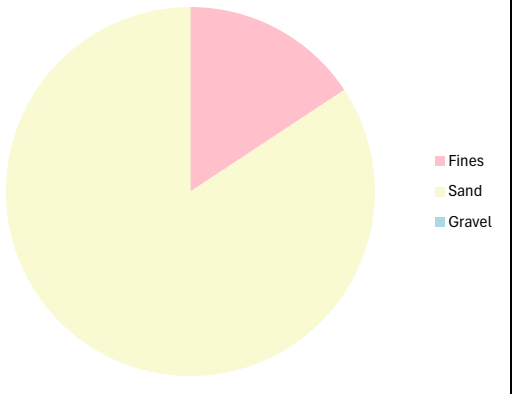
MV24EXP-ENV-GS-226

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.04	0.07	
707.11	0.50	0.70	0.77	Coarse sand
500.00	1.00	3.79	4.56	
353.55	1.50	14.86	19.42	Medium sand
250.00	2.00	21.85	41.27	
176.78	2.50	16.66	57.93	Fine sand
125.00	3.00	13.71	71.64	
88.39	3.50	9.78	81.42	Very fine sand
62.50	4.00	2.84	84.26	
44.19	4.50	1.11	85.37	Coarse silt
31.25	5.00	1.32	86.69	
22.10	5.50	1.38	88.07	Medium silt
15.63	6.00	1.70	89.77	
11.05	6.50	2.08	91.85	Fine silt
7.81	7.00	2.06	93.90	
5.52	7.50	1.74	95.64	Very fine silt
3.91	8.00	1.30	96.94	
2.76	8.50	0.85	97.79	Clay
1.95	9.00	0.51	98.30	
1.38	9.50	0.32	98.62	
0.98	10.00	0.24	98.86	
0.69	10.50	0.22	99.07	
0.49	11.00	0.21	99.28	
0.35	11.50	0.19	99.47	
<0.35	>11.5	0.53	100.00	



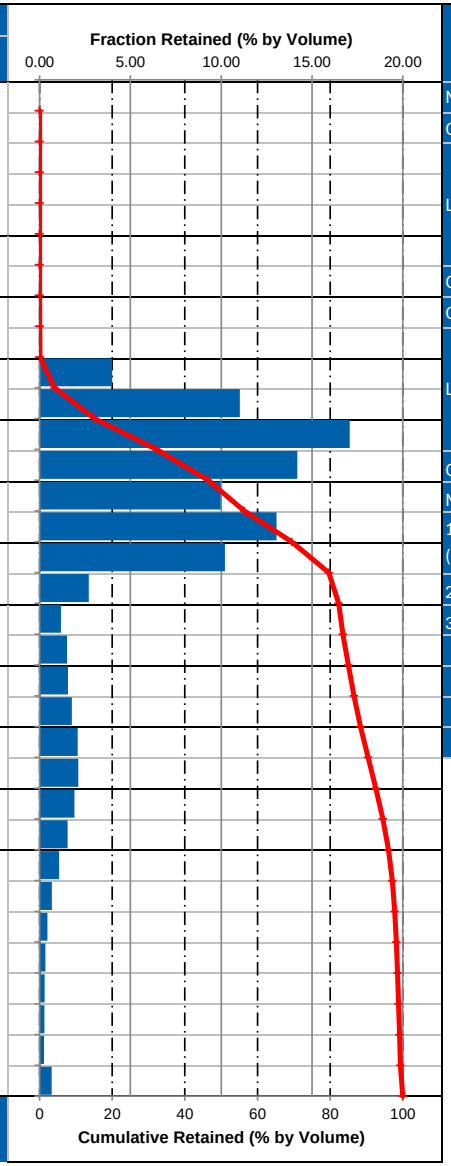
Method of Moments			
Geometric	Mean (µm)	138.86	Wentworth:
Logarithmic	Mean (Phi)	2.85	Fine sand
	Sorting	2.00	Poor
	Skewness	2.01	Very fine
	Kurtosis	7.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	172.68	Wentworth:
Logarithmic	Mean (Phi)	2.53	Fine sand
	Sorting	1.60	Poor
	Skewness	0.46	Very fine
	Kurtosis	1.67	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.26	208.48	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	15.70%
EUNIS Folk	Sand and muddy sand	Sand	84.20%
Distribution	Bimodal	Gravel	0.00%



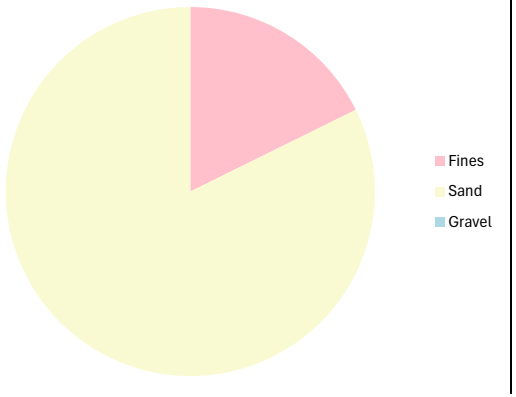
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-171				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.03	0.03	Very coarse sand
1000.00	0.00	0.08	0.11	
707.11	0.50	4.00	4.11	Coarse sand
500.00	1.00	11.02	15.13	
353.55	1.50	17.09	32.22	Medium sand
250.00	2.00	14.20	46.41	
176.78	2.50	9.97	56.38	Fine sand
125.00	3.00	13.05	69.43	
88.39	3.50	10.20	79.64	Very fine sand
62.50	4.00	2.71	82.35	
44.19	4.50	1.17	83.52	Coarse silt
31.25	5.00	1.50	85.02	
22.10	5.50	1.56	86.58	Medium silt
15.63	6.00	1.77	88.35	
11.05	6.50	2.09	90.44	Fine silt
7.81	7.00	2.13	92.57	
5.52	7.50	1.92	94.50	Very fine silt
3.91	8.00	1.54	96.04	
2.76	8.50	1.08	97.12	
1.95	9.00	0.68	97.79	
1.38	9.50	0.43	98.23	
0.98	10.00	0.32	98.55	Clay
0.69	10.50	0.28	98.83	
0.49	11.00	0.26	99.09	
0.35	11.50	0.24	99.33	
<0.35	>11.5	0.67	100.00	



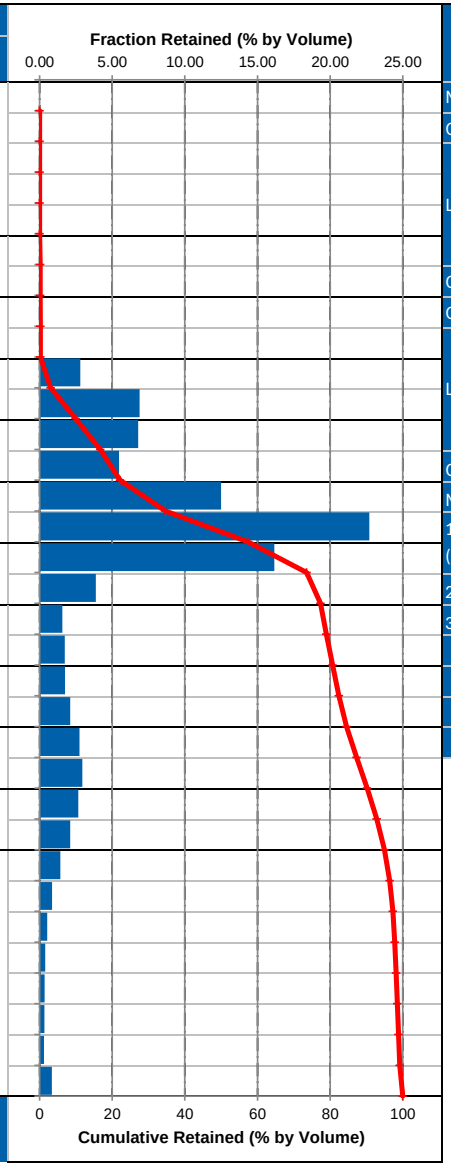
Method of Moments			
Geometric	Mean (µm)	144.05	Wentworth:
Logarithmic	Mean (Phi)	2.80	Fine sand
	Sorting	2.25	Very poor
	Skewness	1.72	Very fine
	Kurtosis	6.05	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	162.43	Wentworth:
Logarithmic	Mean (Phi)	2.62	Fine sand
	Sorting	1.99	Poor
	Skewness	0.45	Very fine
	Kurtosis	1.47	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.18	220.69	Fine sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	17.70%
EUNIS Folk	Sand and muddy sand	Sand	82.30%
Distribution	Bimodal	Gravel	0.00%



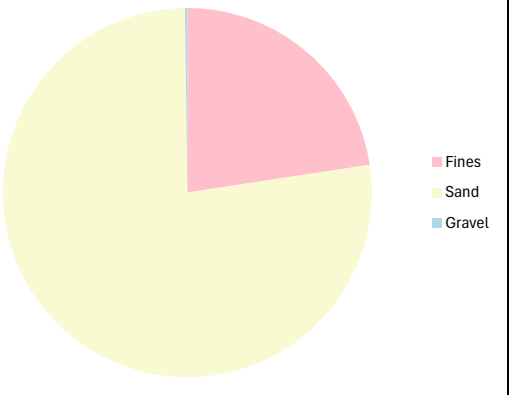
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-225				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.14	0.14	Granule
2000.00	-1.00	0.03	0.17	
1414.21	-0.50	0.03	0.20	Very coarse sand
1000.00	0.00	0.03	0.23	
707.11	0.50	2.80	3.02	Coarse sand
500.00	1.00	6.89	9.91	
353.55	1.50	6.79	16.70	Medium sand
250.00	2.00	5.46	22.16	
176.78	2.50	12.49	34.65	Fine sand
125.00	3.00	22.70	57.35	
88.39	3.50	16.16	73.51	Very fine sand
62.50	4.00	3.87	77.37	
44.19	4.50	1.57	78.94	Coarse silt
31.25	5.00	1.73	80.67	
22.10	5.50	1.74	82.41	Medium silt
15.63	6.00	2.11	84.52	
11.05	6.50	2.75	87.27	Fine silt
7.81	7.00	2.94	90.20	
5.52	7.50	2.67	92.87	Very fine silt
3.91	8.00	2.11	94.98	
2.76	8.50	1.43	96.41	Clay
1.95	9.00	0.86	97.27	
1.38	9.50	0.53	97.80	
0.98	10.00	0.39	98.18	
0.69	10.50	0.34	98.52	
0.49	11.00	0.33	98.85	
0.35	11.50	0.31	99.15	
<0.35	>11.5	0.85	100.00	



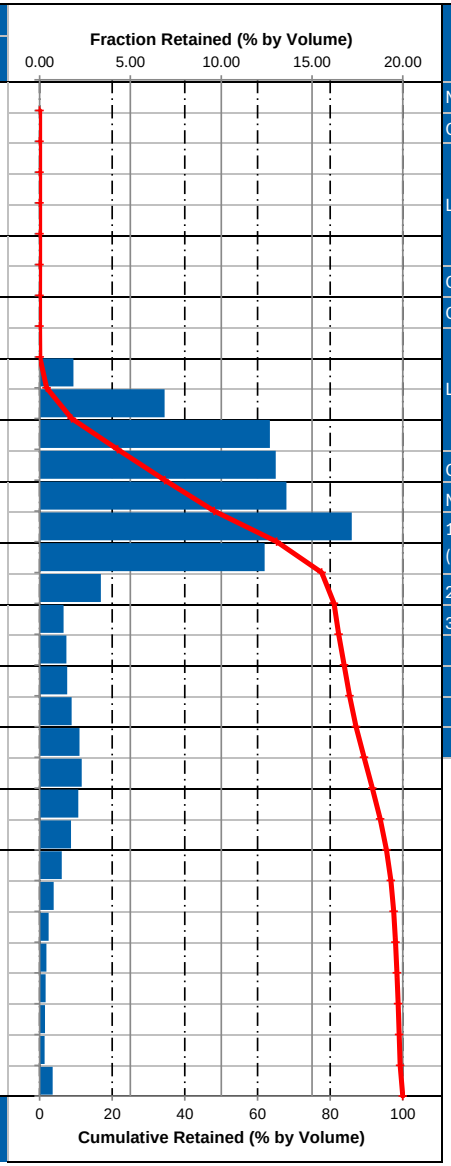
Method of Moments			
Geometric	Mean (µm)	95.52	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.29	Very poor
	Skewness	1.43	Very fine
	Kurtosis	5.20	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	95.54	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.22	Very poor
	Skewness	0.39	Very fine
	Kurtosis	1.91	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.84	139.85	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.00	500.00	Coarse sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	22.60%
EUNIS Folk	Mud and sandy mud	Sand	77.20%
Distribution	Multimodal	Gravel	0.20%



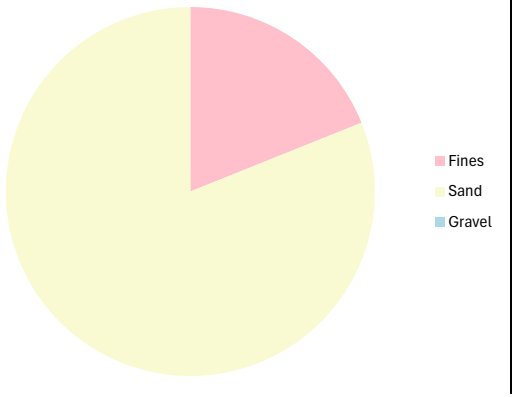
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-172				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.04	0.06	
707.11	0.50	1.87	1.92	Coarse sand
500.00	1.00	6.89	8.81	
353.55	1.50	12.69	21.50	Medium sand
250.00	2.00	13.00	34.50	
176.78	2.50	13.59	48.09	Fine sand
125.00	3.00	17.19	65.28	
88.39	3.50	12.39	77.67	Very fine sand
62.50	4.00	3.38	81.05	
44.19	4.50	1.32	82.37	Coarse silt
31.25	5.00	1.48	83.85	
22.10	5.50	1.52	85.36	Medium silt
15.63	6.00	1.76	87.12	
11.05	6.50	2.20	89.32	Fine silt
7.81	7.00	2.32	91.65	
5.52	7.50	2.13	93.78	Very fine silt
3.91	8.00	1.73	95.51	
2.76	8.50	1.22	96.73	
1.95	9.00	0.78	97.50	
1.38	9.50	0.50	98.00	
0.98	10.00	0.38	98.38	Clay
0.69	10.50	0.33	98.71	
0.49	11.00	0.30	99.01	
0.35	11.50	0.27	99.28	
<0.35	>11.5	0.72	100.00	



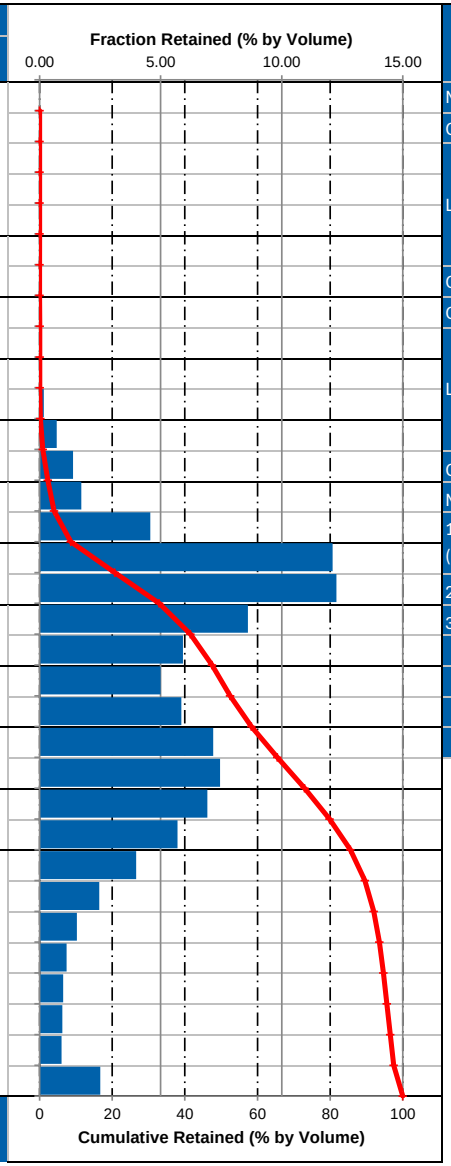
Method of Moments			
Geometric	Mean (µm)	118.47	Wentworth:
Logarithmic	Mean (Phi)	3.08	Very fine sand
	Sorting	2.22	Very poor
	Skewness	1.69	Very fine
	Kurtosis	5.97	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	128.22	Wentworth:
Logarithmic	Mean (Phi)	2.96	Fine sand
	Sorting	2.02	Very poor
	Skewness	0.41	Very fine
	Kurtosis	1.66	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.56	170.10	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	18.90%
EUNIS Folk	Sand and muddy sand	Sand	81.00%
Distribution	Bimodal	Gravel	0.00%



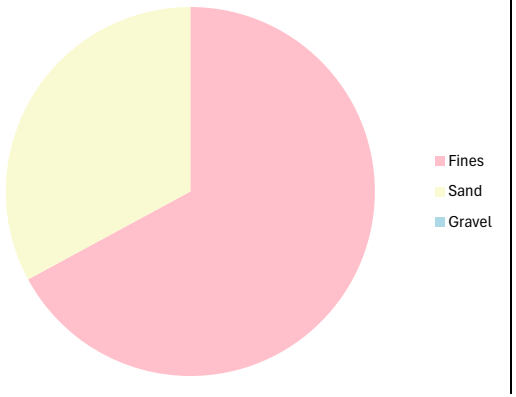
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-185				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.00	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.18	0.20	
353.55	1.50	0.70	0.90	Medium sand
250.00	2.00	1.38	2.28	
176.78	2.50	1.72	4.00	Fine sand
125.00	3.00	4.58	8.58	
88.39	3.50	12.10	20.68	Very fine sand
62.50	4.00	12.26	32.94	
44.19	4.50	8.61	41.55	Coarse silt
31.25	5.00	5.92	47.47	
22.10	5.50	5.00	52.46	Medium silt
15.63	6.00	5.86	58.32	
11.05	6.50	7.17	65.49	Fine silt
7.81	7.00	7.45	72.94	
5.52	7.50	6.93	79.87	Very fine silt
3.91	8.00	5.70	85.57	
2.76	8.50	3.99	89.56	
1.95	9.00	2.47	92.02	
1.38	9.50	1.54	93.56	
0.98	10.00	1.11	94.67	Clay
0.69	10.50	0.97	95.65	
0.49	11.00	0.94	96.59	
0.35	11.50	0.91	97.50	
<0.35	>11.5	2.50	100.00	



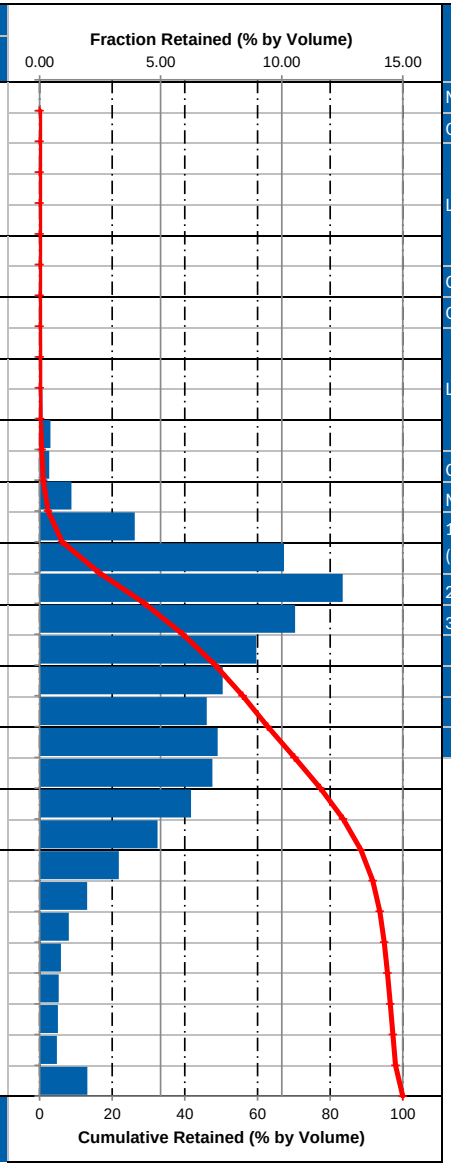
Method of Moments			
Geometric	Mean (µm)	20.60	Wentworth:
Logarithmic	Mean (Phi)	5.60	Medium silt
	Sorting	2.38	Very poor
	Skewness	0.74	Fine
	Kurtosis	3.29	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	22.50	Wentworth:
Logarithmic	Mean (Phi)	5.47	Medium silt
	Sorting	2.28	Very poor
	Skewness	0.22	Fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.25	26.21	Medium silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	67.10%
EUNIS Folk	Mud and sandy mud	Sand	32.90%
Distribution	Bimodal	Gravel	0.00%



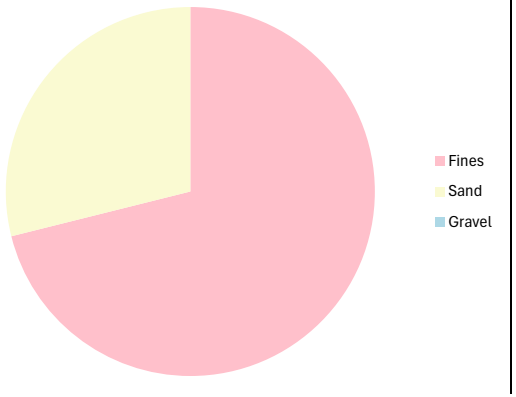
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-224				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.03	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.12	0.14	
353.55	1.50	0.45	0.59	Medium sand
250.00	2.00	0.40	0.99	
176.78	2.50	1.32	2.31	Fine sand
125.00	3.00	3.93	6.24	
88.39	3.50	10.10	16.33	Very fine sand
62.50	4.00	12.52	28.86	
44.19	4.50	10.55	39.41	Coarse silt
31.25	5.00	8.96	48.36	
22.10	5.50	7.56	55.92	Medium silt
15.63	6.00	6.90	62.83	
11.05	6.50	7.35	70.18	Fine silt
7.81	7.00	7.14	77.32	
5.52	7.50	6.25	83.57	Very fine silt
3.91	8.00	4.88	88.45	
2.76	8.50	3.27	91.72	
1.95	9.00	1.96	93.68	
1.38	9.50	1.21	94.88	
0.98	10.00	0.89	95.77	Clay
0.69	10.50	0.79	96.56	
0.49	11.00	0.76	97.31	
0.35	11.50	0.72	98.03	
<0.35	>11.5	1.97	100.00	



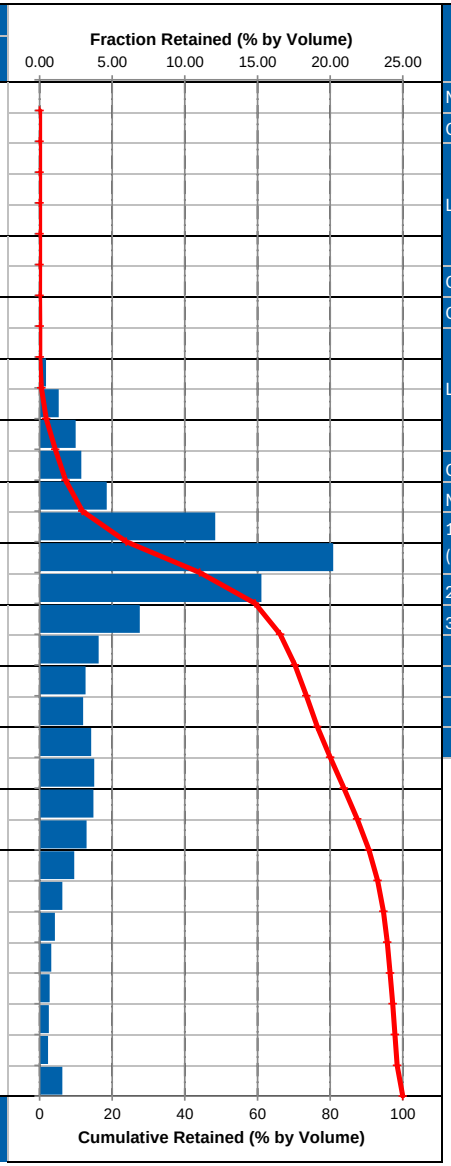
Method of Moments			
Geometric	Mean (µm)	21.87	Wentworth:
Logarithmic	Mean (Phi)	5.52	Medium silt
	Sorting	2.16	Very poor
	Skewness	0.93	Fine
	Kurtosis	3.92	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	24.04	Wentworth:
Logarithmic	Mean (Phi)	5.38	Medium silt
	Sorting	2.03	Very poor
	Skewness	0.26	Fine
	Kurtosis	0.92	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.11	28.99	Medium silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	71.10%
EUNIS Folk	Mud and sandy mud	Sand	28.90%
Distribution	Unimodal	Gravel	0.00%



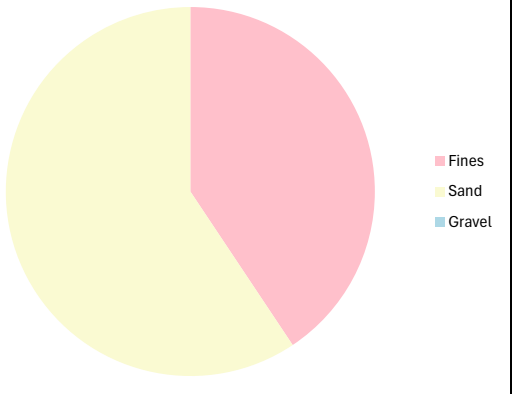
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-186				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.03	0.06	
707.11	0.50	0.44	0.50	Coarse sand
500.00	1.00	1.32	1.82	
353.55	1.50	2.48	4.30	Medium sand
250.00	2.00	2.87	7.16	
176.78	2.50	4.62	11.79	Fine sand
125.00	3.00	12.10	23.88	
88.39	3.50	20.21	44.09	Very fine sand
62.50	4.00	15.26	59.35	
44.19	4.50	6.90	66.26	Coarse silt
31.25	5.00	4.06	70.31	
22.10	5.50	3.16	73.47	Medium silt
15.63	6.00	2.99	76.46	
11.05	6.50	3.55	80.01	Fine silt
7.81	7.00	3.76	83.77	
5.52	7.50	3.70	87.47	Very fine silt
3.91	8.00	3.23	90.70	
2.76	8.50	2.38	93.09	Clay
1.95	9.00	1.56	94.65	
1.38	9.50	1.06	95.71	
0.98	10.00	0.81	96.51	
0.69	10.50	0.69	97.21	
0.49	11.00	0.64	97.85	
0.35	11.50	0.59	98.43	
<0.35	>11.5	1.57	100.00	



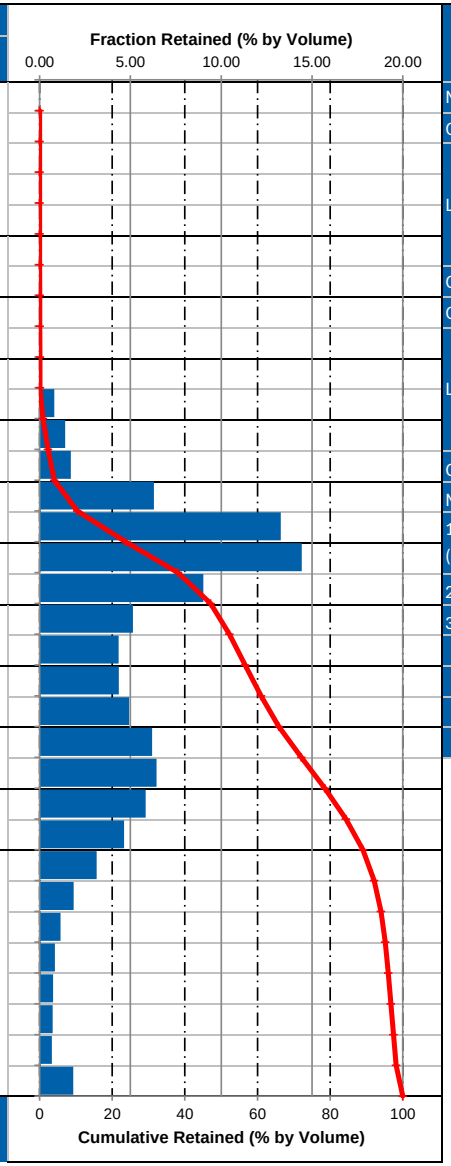
Method of Moments			
Geometric	Mean (µm)	44.65	Wentworth:
Logarithmic	Mean (Phi)	4.49	Coarse silt
	Sorting	2.36	Very poor
	Skewness	1.21	Fine
	Kurtosis	4.30	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	45.24	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.23	Very poor
	Skewness	0.49	Very fine
	Kurtosis	1.13	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.69	77.29	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	40.60%
EUNIS Folk	Mud and sandy mud	Sand	59.30%
Distribution	Bimodal	Gravel	0.00%



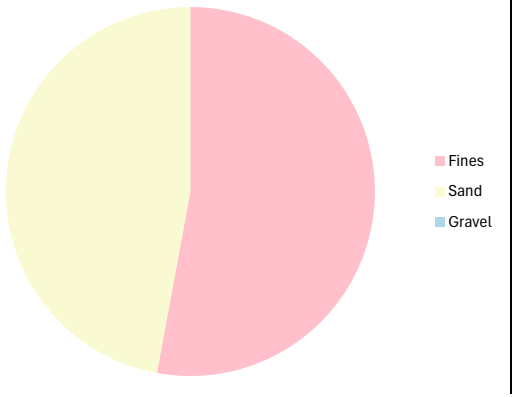
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-223				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.04	0.07	Very coarse sand
1000.00	0.00	0.04	0.10	
707.11	0.50	0.02	0.12	Coarse sand
500.00	1.00	0.81	0.94	
353.55	1.50	1.40	2.34	Medium sand
250.00	2.00	1.72	4.06	
176.78	2.50	6.30	10.35	Fine sand
125.00	3.00	13.28	23.64	
88.39	3.50	14.43	38.07	Very fine sand
62.50	4.00	9.02	47.09	
44.19	4.50	5.14	52.23	Coarse silt
31.25	5.00	4.35	56.58	
22.10	5.50	4.37	60.95	Medium silt
15.63	6.00	4.93	65.87	
11.05	6.50	6.20	72.07	Fine silt
7.81	7.00	6.43	78.50	
5.52	7.50	5.84	84.35	Very fine silt
3.91	8.00	4.65	89.00	
2.76	8.50	3.14	92.14	Clay
1.95	9.00	1.88	94.02	
1.38	9.50	1.15	95.17	
0.98	10.00	0.84	96.01	
0.69	10.50	0.74	96.76	
0.49	11.00	0.72	97.47	
0.35	11.50	0.68	98.15	
<0.35	>11.5	1.85	100.00	



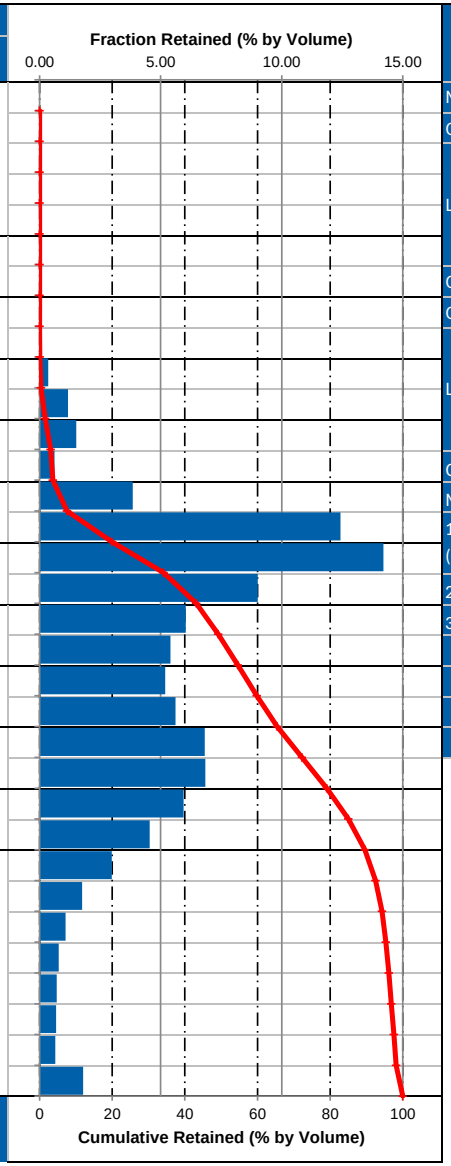
Method of Moments			
Geometric	Mean (µm)	31.66	Wentworth:
Logarithmic	Mean (Phi)	4.98	Coarse silt
	Sorting	2.45	Very poor
	Skewness	0.81	Fine
	Kurtosis	3.29	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	35.36	Wentworth:
Logarithmic	Mean (Phi)	4.82	Coarse silt
	Sorting	2.30	Very poor
	Skewness	0.37	Very fine
	Kurtosis	0.82	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.28	51.37	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	52.90%
EUNIS Folk	Mud and sandy mud	Sand	47.10%
Distribution	Bimodal	Gravel	0.00%



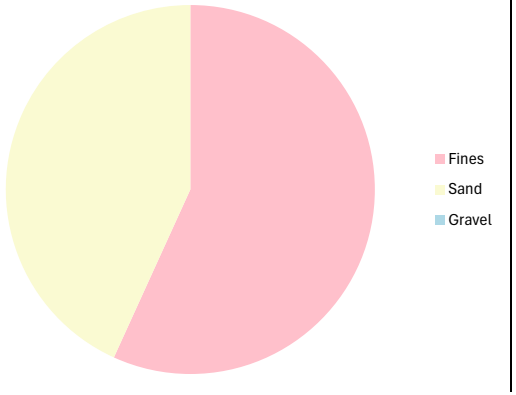
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-187				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.35	0.37	Coarse sand
500.00	1.00	1.17	1.54	
353.55	1.50	1.51	3.06	Medium sand
250.00	2.00	0.61	3.67	
176.78	2.50	3.84	7.51	Fine sand
125.00	3.00	12.42	19.94	
88.39	3.50	14.20	34.14	Very fine sand
62.50	4.00	9.01	43.15	
44.19	4.50	6.03	49.19	Coarse silt
31.25	5.00	5.40	54.59	
22.10	5.50	5.19	59.78	Medium silt
15.63	6.00	5.62	65.40	
11.05	6.50	6.82	72.22	Fine silt
7.81	7.00	6.84	79.06	
5.52	7.50	5.95	85.01	Very fine silt
3.91	8.00	4.54	89.55	
2.76	8.50	2.98	92.53	Clay
1.95	9.00	1.76	94.29	
1.38	9.50	1.07	95.36	
0.98	10.00	0.79	96.16	
0.69	10.50	0.71	96.87	
0.49	11.00	0.69	97.55	
0.35	11.50	0.65	98.20	
<0.35	>11.5	1.80	100.00	



Method of Moments			
Geometric	Mean (µm)	29.86	Wentworth:
Logarithmic	Mean (Phi)	5.07	Medium silt
	Sorting	2.39	Very poor
	Skewness	0.77	Fine
	Kurtosis	3.42	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	32.49	Wentworth:
Logarithmic	Mean (Phi)	4.94	Coarse silt
	Sorting	2.23	Very poor
	Skewness	0.29	Fine
	Kurtosis	0.83	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.58	41.94	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

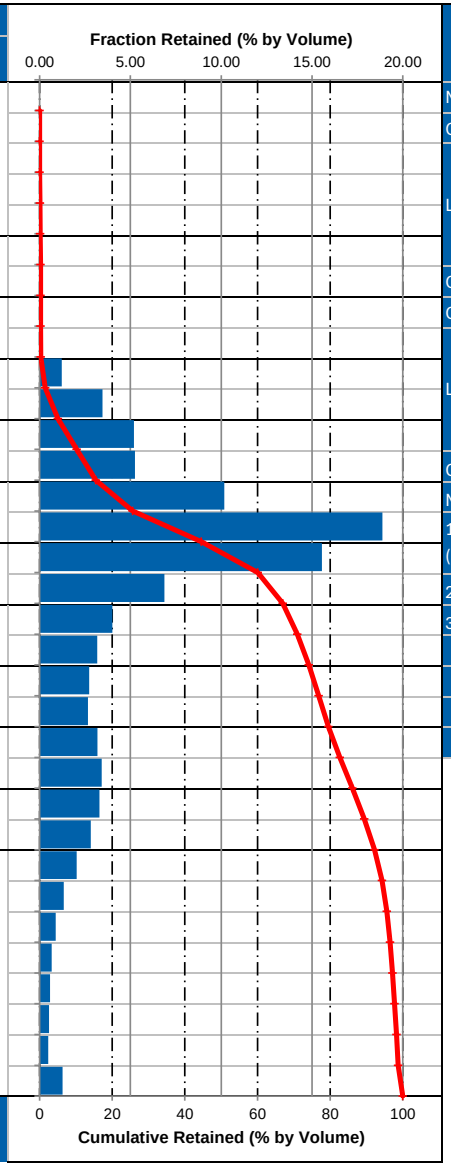
Classification		Composition	
Modified Folk	Sandy mud	Fines	56.80%
EUNIS Folk	Mud and sandy mud	Sand	43.20%
Distribution	Multimodal	Gravel	0.00%



APPENDIX E PARTICLE SIZE ANALYSIS

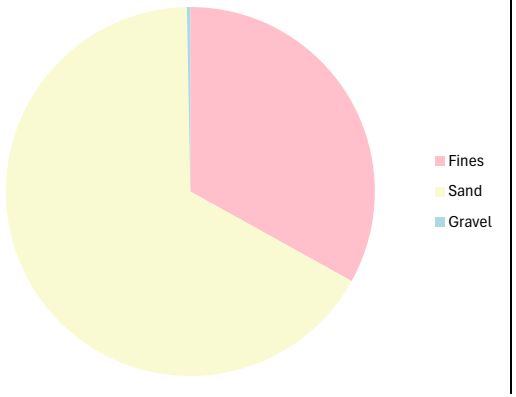
MV24EXP-ENV-GS-210

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.10	0.10	
4000.00	-2.00	0.05	0.15	
2828.43	-1.50	0.10	0.25	Granule
2000.00	-1.00	0.02	0.27	
1414.21	-0.50	0.02	0.29	Very coarse sand
1000.00	0.00	0.06	0.34	
707.11	0.50	1.22	1.56	Coarse sand
500.00	1.00	3.46	5.03	
353.55	1.50	5.19	10.22	Medium sand
250.00	2.00	5.25	15.47	
176.78	2.50	10.17	25.64	Fine sand
125.00	3.00	18.88	44.52	
88.39	3.50	15.55	60.07	Very fine sand
62.50	4.00	6.87	66.94	
44.19	4.50	4.01	70.95	Coarse silt
31.25	5.00	3.17	74.12	
22.10	5.50	2.72	76.85	Medium silt
15.63	6.00	2.66	79.51	
11.05	6.50	3.18	82.69	Fine silt
7.81	7.00	3.42	86.11	
5.52	7.50	3.30	89.41	Very fine silt
3.91	8.00	2.81	92.23	
2.76	8.50	2.05	94.27	Clay
1.95	9.00	1.33	95.61	
1.38	9.50	0.89	96.50	
0.98	10.00	0.67	97.16	
0.69	10.50	0.57	97.74	
0.49	11.00	0.52	98.26	
0.35	11.50	0.48	98.74	
<0.35	>11.5	1.26	100.00	



Method of Moments			
Geometric	Mean (µm)	64.57	Wentworth:
Logarithmic	Mean (Phi)	3.95	Very fine sand
	Sorting	2.46	Very poor
	Skewness	1.17	Fine
	Kurtosis	4.26	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	64.06	Wentworth:
Logarithmic	Mean (Phi)	3.96	Very fine sand
	Sorting	2.34	Very poor
	Skewness	0.47	Very fine
	Kurtosis	1.18	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.18	110.63	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

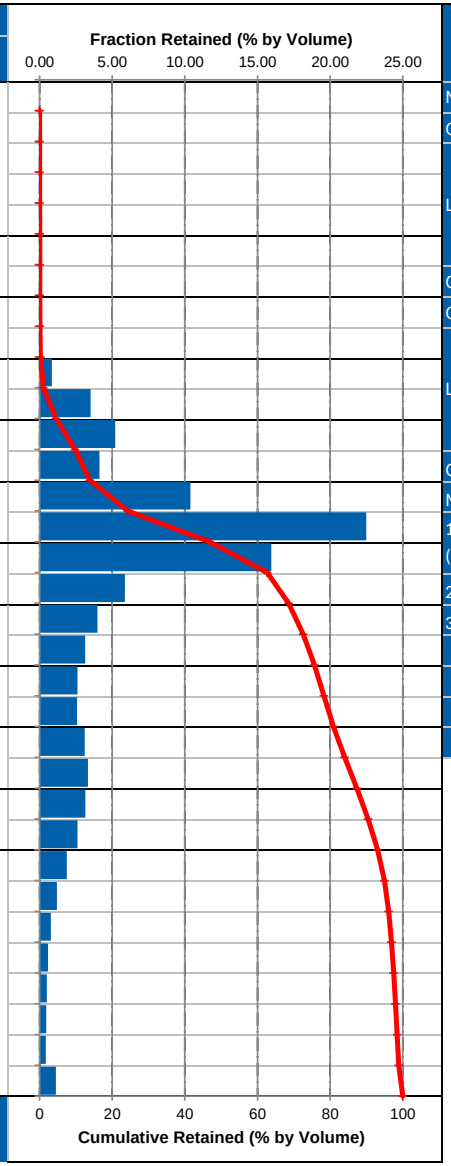
Classification		Composition	
Modified Folk	Muddy sand	Fines	33.10%
EUNIS Folk	Mud and sandy mud	Sand	66.70%
Distribution	Bimodal	Gravel	0.30%



APPENDIX E PARTICLE SIZE ANALYSIS

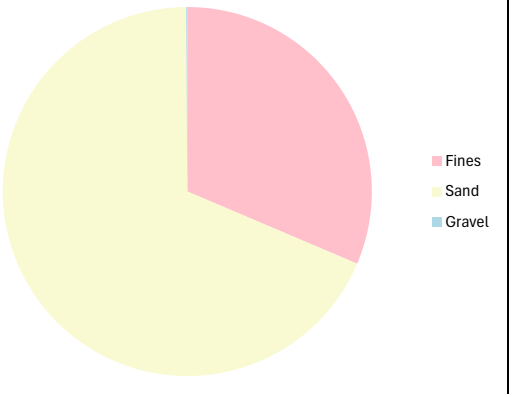
MV24EXP-ENV-GS-209

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.02	0.04	Granule
2000.00	-1.00	0.02	0.07	
1414.21	-0.50	0.05	0.12	Very coarse sand
1000.00	0.00	0.09	0.21	
707.11	0.50	0.84	1.05	Coarse sand
500.00	1.00	3.50	4.55	
353.55	1.50	5.20	9.75	Medium sand
250.00	2.00	4.12	13.88	
176.78	2.50	10.39	24.27	Fine sand
125.00	3.00	22.49	46.76	
88.39	3.50	15.95	62.71	Very fine sand
62.50	4.00	5.87	68.58	
44.19	4.50	3.98	72.56	Coarse silt
31.25	5.00	3.14	75.70	
22.10	5.50	2.61	78.31	Medium silt
15.63	6.00	2.58	80.89	
11.05	6.50	3.11	84.00	Fine silt
7.81	7.00	3.33	87.33	
5.52	7.50	3.14	90.47	Very fine silt
3.91	8.00	2.61	93.08	
2.76	8.50	1.87	94.95	
1.95	9.00	1.20	96.14	
1.38	9.50	0.78	96.92	
0.98	10.00	0.58	97.50	Clay
0.69	10.50	0.50	98.00	
0.49	11.00	0.46	98.46	
0.35	11.50	0.42	98.88	
<0.35	>11.5	1.12	100.00	



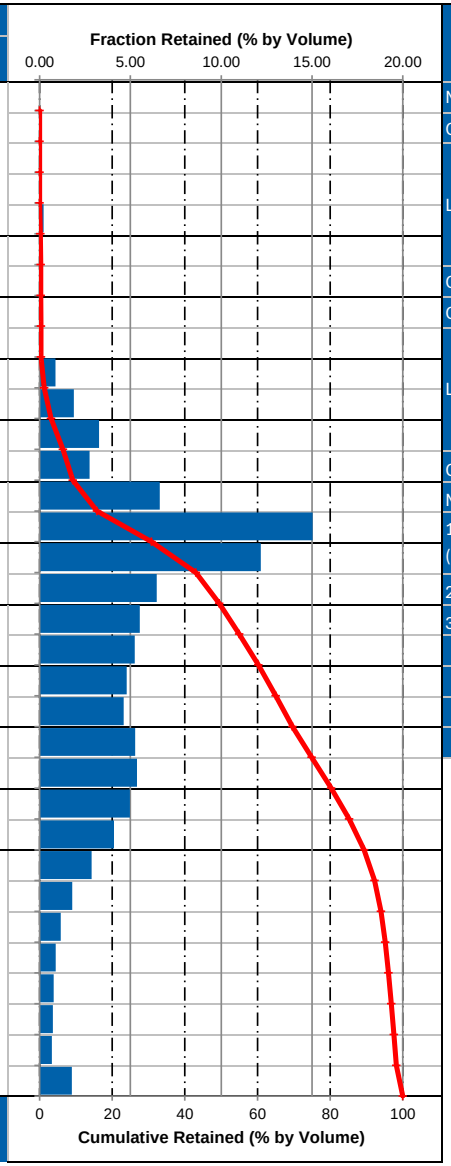
Method of Moments			
Geometric	Mean (µm)	67.87	Wentworth:
Logarithmic	Mean (Phi)	3.88	Very fine sand
	Sorting	2.36	Very poor
	Skewness	1.30	Fine
	Kurtosis	4.58	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	66.93	Wentworth:
Logarithmic	Mean (Phi)	3.90	Very fine sand
	Sorting	2.23	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.29	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.10	116.50	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	31.40%
EUNIS Folk	Mud and sandy mud	Sand	68.50%
Distribution	Multimodal	Gravel	0.10%



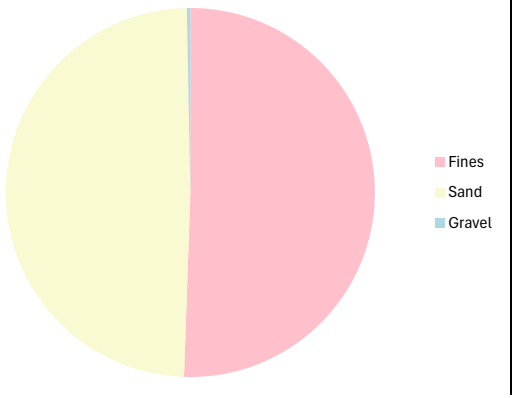
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-208				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.22	0.22	
2828.43	-1.50	0.11	0.33	Granule
2000.00	-1.00	0.00	0.33	
1414.21	-0.50	0.03	0.36	Very coarse sand
1000.00	0.00	0.03	0.40	
707.11	0.50	0.87	1.27	Coarse sand
500.00	1.00	1.89	3.15	
353.55	1.50	3.27	6.43	Medium sand
250.00	2.00	2.75	9.18	
176.78	2.50	6.62	15.80	Fine sand
125.00	3.00	15.04	30.83	
88.39	3.50	12.18	43.01	Very fine sand
62.50	4.00	6.46	49.47	
44.19	4.50	5.52	54.98	Coarse silt
31.25	5.00	5.24	60.22	
22.10	5.50	4.79	65.01	Medium silt
15.63	6.00	4.63	69.65	
11.05	6.50	5.26	74.91	Fine silt
7.81	7.00	5.36	80.27	
5.52	7.50	4.98	85.25	Very fine silt
3.91	8.00	4.10	89.34	
2.76	8.50	2.86	92.21	Clay
1.95	9.00	1.79	94.00	
1.38	9.50	1.16	95.16	
0.98	10.00	0.88	96.05	
0.69	10.50	0.77	96.82	
0.49	11.00	0.73	97.55	
0.35	11.50	0.67	98.22	
<0.35	>11.5	1.78	100.00	



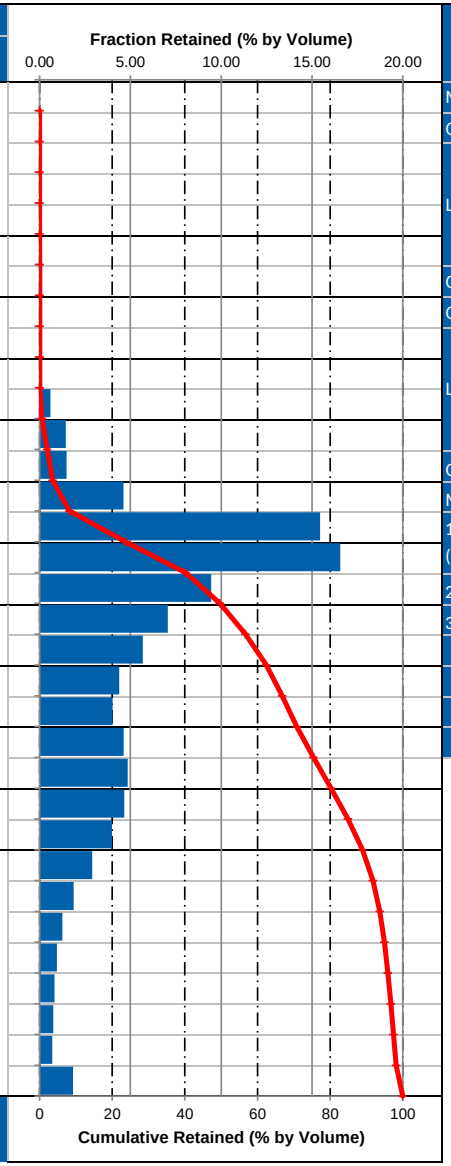
Method of Moments			
Geometric	Mean (µm)	38.23	Wentworth:
Logarithmic	Mean (Phi)	4.71	Coarse silt
	Sorting	2.58	Very poor
	Skewness	0.73	Fine
	Kurtosis	3.33	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	40.02	Wentworth:
Logarithmic	Mean (Phi)	4.64	Coarse silt
	Sorting	2.45	Very poor
	Skewness	0.34	Very fine
	Kurtosis	0.90	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.05	60.44	Coarse silt
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	50.50%
EUNIS Folk	Mud and sandy mud	Sand	49.10%
Distribution	Multimodal	Gravel	0.30%



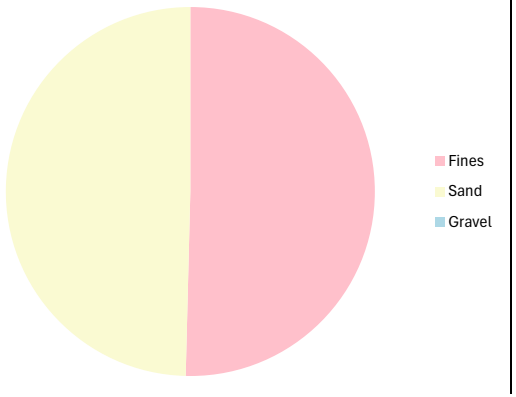
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-207				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.02	0.04	
1414.21	-0.50	0.00	0.04	Very coarse sand
1000.00	0.00	0.00	0.05	
707.11	0.50	0.01	0.06	Coarse sand
500.00	1.00	0.60	0.66	
353.55	1.50	1.44	2.09	Medium sand
250.00	2.00	1.48	3.58	
176.78	2.50	4.62	8.20	Fine sand
125.00	3.00	15.44	23.64	
88.39	3.50	16.56	40.20	Very fine sand
62.50	4.00	9.45	49.65	
44.19	4.50	7.06	56.71	Coarse silt
31.25	5.00	5.68	62.39	
22.10	5.50	4.39	66.77	Medium silt
15.63	6.00	4.02	70.79	
11.05	6.50	4.62	75.42	Fine silt
7.81	7.00	4.85	80.26	
5.52	7.50	4.66	84.93	Very fine silt
3.91	8.00	3.99	88.91	
2.76	8.50	2.89	91.81	Clay
1.95	9.00	1.88	93.69	
1.38	9.50	1.25	94.94	
0.98	10.00	0.95	95.89	
0.69	10.50	0.82	96.71	
0.49	11.00	0.76	97.47	
0.35	11.50	0.70	98.16	
<0.35	>11.5	1.84	100.00	



Method of Moments			
Geometric	Mean (µm)	34.76	Wentworth:
Logarithmic	Mean (Phi)	4.85	Coarse silt
	Sorting	2.42	Very poor
	Skewness	1.03	Fine
	Kurtosis	3.67	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	37.78	Wentworth:
Logarithmic	Mean (Phi)	4.73	Coarse silt
	Sorting	2.28	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.03	61.42	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

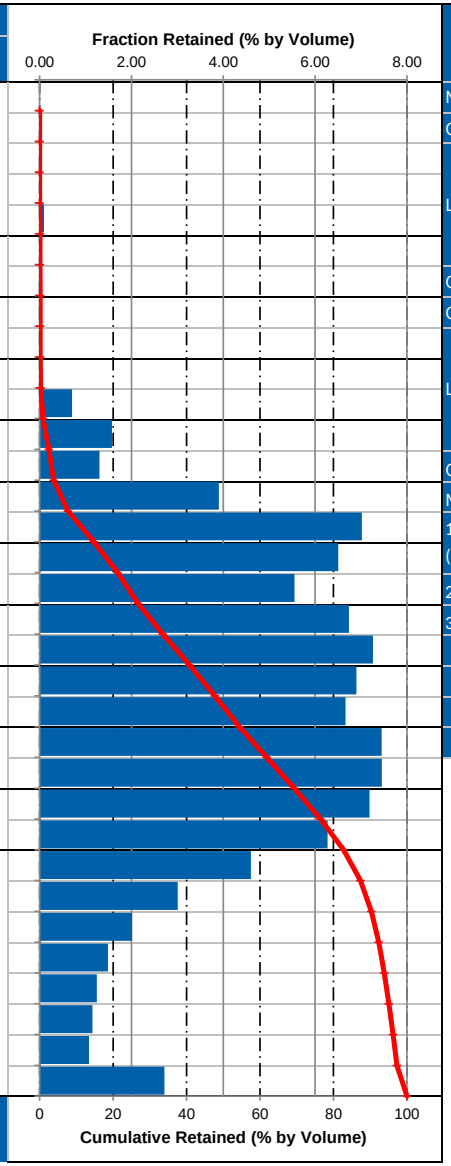
Classification		Composition	
Modified Folk	Sandy mud	Fines	50.40%
EUNIS Folk	Mud and sandy mud	Sand	49.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX E PARTICLE SIZE ANALYSIS

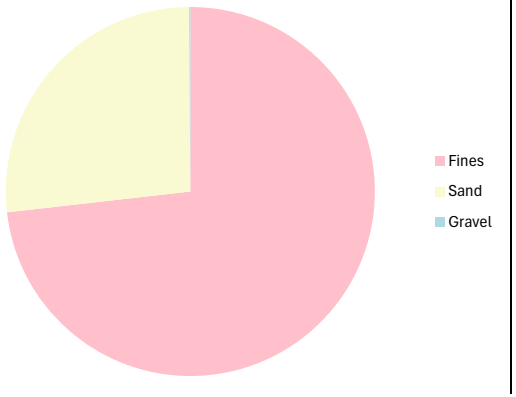
MV24EXP-ENV-GS-206

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.10	0.10	
2828.43	-1.50	0.02	0.12	Granule
2000.00	-1.00	0.01	0.13	
1414.21	-0.50	0.01	0.15	Very coarse sand
1000.00	0.00	0.03	0.18	
707.11	0.50	0.06	0.24	Coarse sand
500.00	1.00	0.71	0.95	
353.55	1.50	1.58	2.52	Medium sand
250.00	2.00	1.30	3.83	
176.78	2.50	3.90	7.73	Fine sand
125.00	3.00	7.02	14.75	
88.39	3.50	6.50	21.25	Very fine sand
62.50	4.00	5.55	26.80	
44.19	4.50	6.73	33.54	Coarse silt
31.25	5.00	7.26	40.80	
22.10	5.50	6.90	47.70	Medium silt
15.63	6.00	6.66	54.36	
11.05	6.50	7.45	61.80	Fine silt
7.81	7.00	7.45	69.26	
5.52	7.50	7.18	76.44	Very fine silt
3.91	8.00	6.27	82.71	
2.76	8.50	4.60	87.31	Clay
1.95	9.00	3.01	90.32	
1.38	9.50	2.01	92.33	
0.98	10.00	1.49	93.81	
0.69	10.50	1.25	95.06	
0.49	11.00	1.15	96.21	
0.35	11.50	1.07	97.28	
<0.35	>11.5	2.72	100.00	



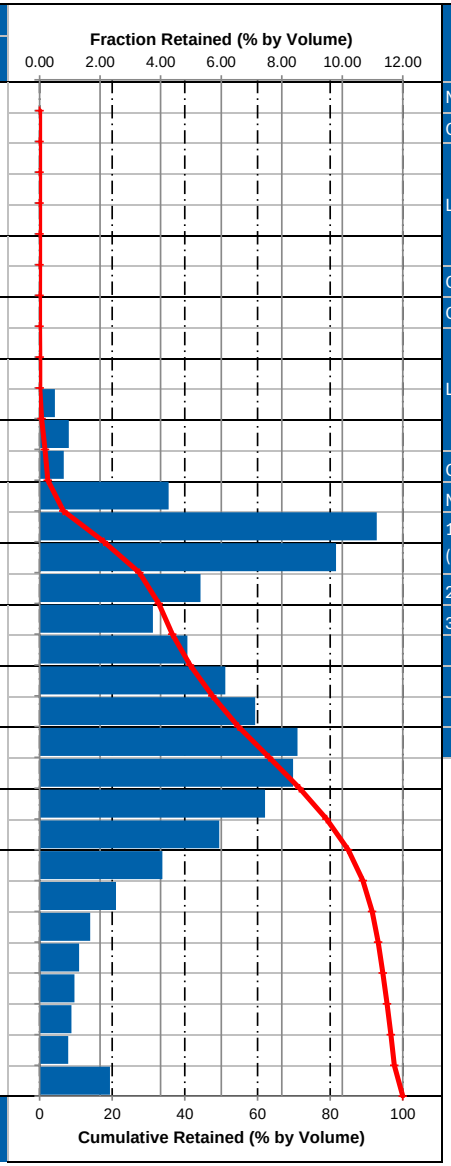
Method of Moments			
Geometric	Mean (µm)	18.22	Wentworth:
Logarithmic	Mean (Phi)	5.78	Medium silt
	Sorting	2.53	Very poor
	Skewness	0.41	Symmetrical
	Kurtosis	3.01	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	20.10	Wentworth:
Logarithmic	Mean (Phi)	5.64	Medium silt
	Sorting	2.52	Very poor
	Skewness	0.07	Symmetrical
	Kurtosis	0.96	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.67	19.60	Medium silt
1st Local Maxima (Mode)	7.00	7.81	Fine silt
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	3.00	125.00	Fine sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	73.20%
EUNIS Folk	Mud and sandy mud	Sand	26.70%
Distribution	Multimodal	Gravel	0.10%



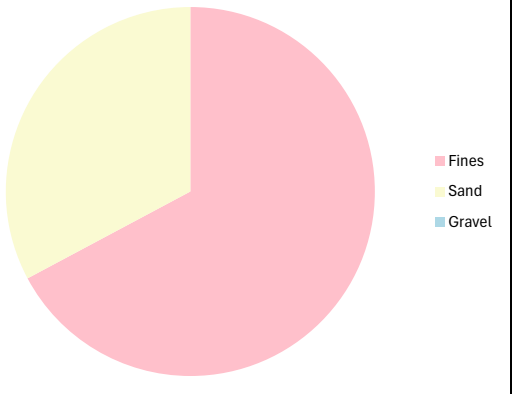
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-205				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.01	0.02	Coarse sand
500.00	1.00	0.50	0.53	
353.55	1.50	0.97	1.49	Medium sand
250.00	2.00	0.80	2.29	
176.78	2.50	4.27	6.56	Fine sand
125.00	3.00	11.14	17.70	
88.39	3.50	9.80	27.49	Very fine sand
62.50	4.00	5.31	32.81	
44.19	4.50	3.74	36.55	Coarse silt
31.25	5.00	4.88	41.43	
22.10	5.50	6.14	47.57	Medium silt
15.63	6.00	7.12	54.69	
11.05	6.50	8.52	63.21	Fine silt
7.81	7.00	8.38	71.59	
5.52	7.50	7.45	79.04	Very fine silt
3.91	8.00	5.93	84.97	
2.76	8.50	4.05	89.03	Clay
1.95	9.00	2.52	91.55	
1.38	9.50	1.67	93.22	
0.98	10.00	1.31	94.53	
0.69	10.50	1.15	95.68	
0.49	11.00	1.05	96.73	
0.35	11.50	0.94	97.68	
<0.35	>11.5	2.32	100.00	



Method of Moments			
Geometric	Mean (µm)	20.16	Wentworth:
Logarithmic	Mean (Phi)	5.63	Medium silt
	Sorting	2.48	Very poor
	Skewness	0.50	Fine
	Kurtosis	2.91	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	22.03	Wentworth:
Logarithmic	Mean (Phi)	5.50	Medium silt
	Sorting	2.44	Very poor
	Skewness	0.02	Symmetrical
	Kurtosis	0.84	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.67	19.63	Medium silt
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

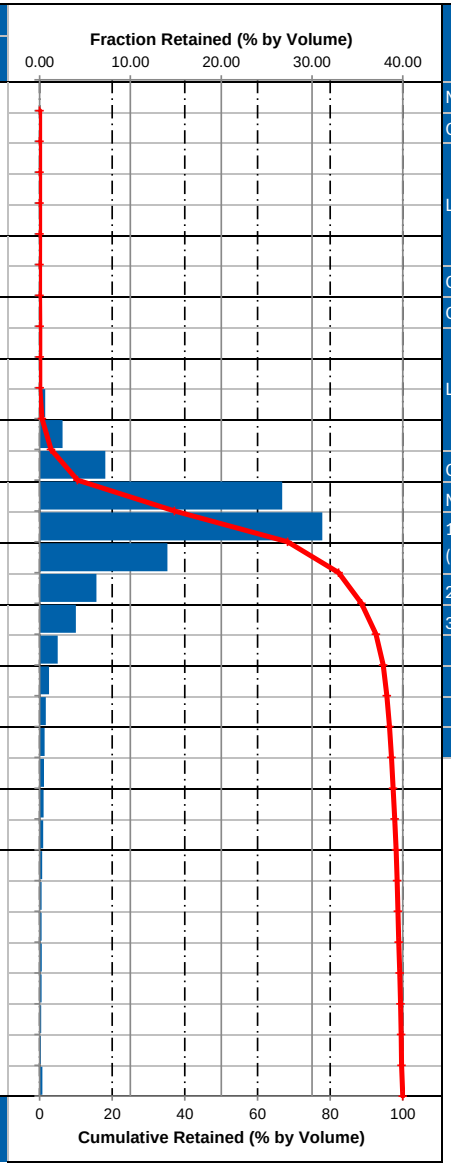
Classification		Composition	
Modified Folk	Sandy mud	Fines	67.20%
EUNIS Folk	Mud and sandy mud	Sand	32.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX E PARTICLE SIZE ANALYSIS

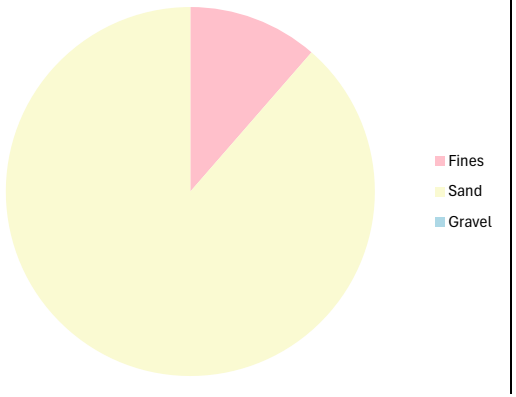
MV24EXP-ENV-GS-236

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.62	0.66	
353.55	1.50	2.52	3.18	Medium sand
250.00	2.00	7.23	10.41	
176.78	2.50	26.72	37.14	Fine sand
125.00	3.00	31.15	68.28	
88.39	3.50	14.08	82.36	Very fine sand
62.50	4.00	6.27	88.63	
44.19	4.50	3.99	92.62	Coarse silt
31.25	5.00	1.99	94.61	
22.10	5.50	1.04	95.65	Medium silt
15.63	6.00	0.67	96.32	
11.05	6.50	0.56	96.88	Fine silt
7.81	7.00	0.48	97.36	
5.52	7.50	0.45	97.81	Very fine silt
3.91	8.00	0.39	98.20	
2.76	8.50	0.27	98.47	Clay
1.95	9.00	0.21	98.69	
1.38	9.50	0.22	98.91	
0.98	10.00	0.24	99.15	
0.69	10.50	0.22	99.37	
0.49	11.00	0.18	99.56	
0.35	11.50	0.14	99.70	
<0.35	>11.5	0.30	100.00	



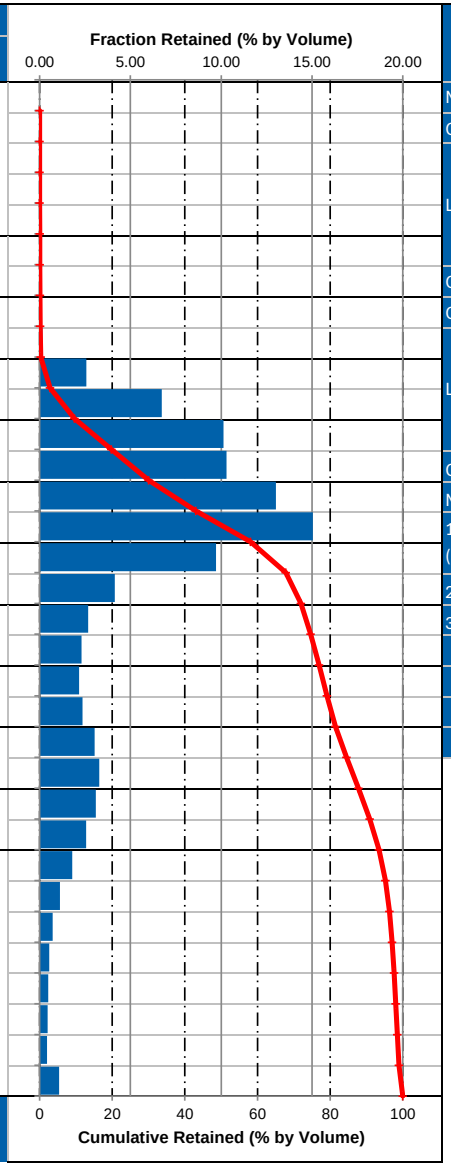
Method of Moments			
Geometric	Mean (µm)	126.62	Wentworth:
Logarithmic	Mean (Phi)	2.98	Fine sand
	Sorting	1.38	Poor
	Skewness	3.21	Very fine
	Kurtosis	17.58	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	142.21	Wentworth:
Logarithmic	Mean (Phi)	2.81	Fine sand
	Sorting	0.92	Moderate
	Skewness	0.30	Very fine
	Kurtosis	1.51	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.71	153.20	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.40%
EUNIS Folk	Sand and muddy sand	Sand	88.60%
Distribution	Unimodal	Gravel	0.00%



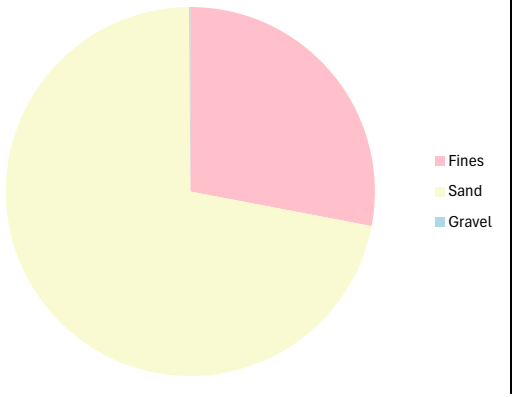
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-211				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.02	0.07	Granule
2000.00	-1.00	0.03	0.10	
1414.21	-0.50	0.06	0.16	Very coarse sand
1000.00	0.00	0.16	0.32	
707.11	0.50	2.58	2.89	Coarse sand
500.00	1.00	6.73	9.62	
353.55	1.50	10.13	19.75	Medium sand
250.00	2.00	10.29	30.04	
176.78	2.50	13.01	43.05	Fine sand
125.00	3.00	15.05	58.10	
88.39	3.50	9.72	67.82	Very fine sand
62.50	4.00	4.15	71.96	
44.19	4.50	2.67	74.63	Coarse silt
31.25	5.00	2.30	76.94	
22.10	5.50	2.18	79.12	Medium silt
15.63	6.00	2.36	81.48	
11.05	6.50	3.02	84.51	Fine silt
7.81	7.00	3.28	87.79	
5.52	7.50	3.10	90.89	Very fine silt
3.91	8.00	2.56	93.45	
2.76	8.50	1.80	95.24	
1.95	9.00	1.12	96.36	
1.38	9.50	0.71	97.08	
0.98	10.00	0.54	97.61	Clay
0.69	10.50	0.47	98.08	
0.49	11.00	0.44	98.52	
0.35	11.50	0.41	98.93	
<0.35	>11.5	1.07	100.00	



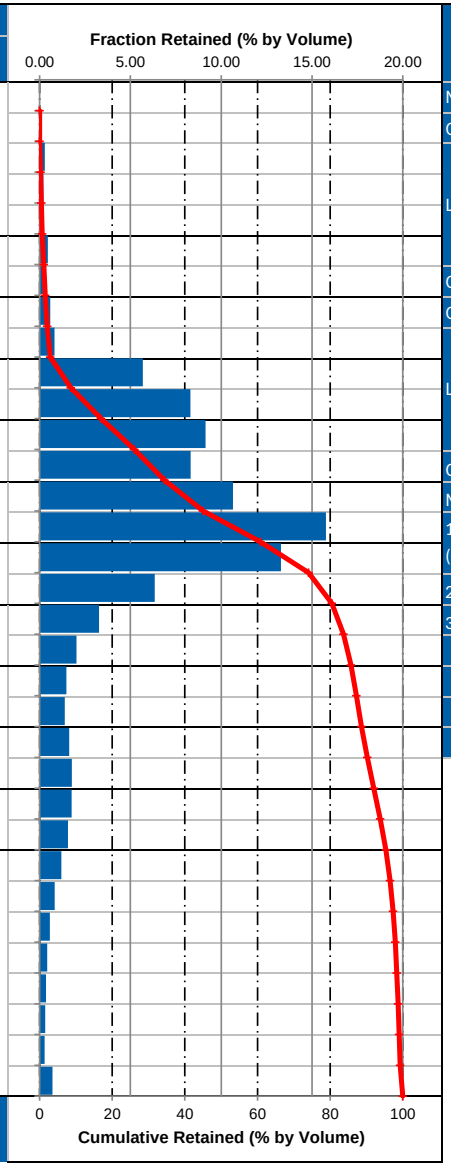
Method of Moments			
Geometric	Mean (µm)	89.38	Wentworth:
Logarithmic	Mean (Phi)	3.48	Very fine sand
	Sorting	2.52	Very poor
	Skewness	1.26	Fine
	Kurtosis	4.24	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	89.16	Wentworth:
Logarithmic	Mean (Phi)	3.49	Very fine sand
	Sorting	2.45	Very poor
	Skewness	0.46	Very fine
	Kurtosis	1.13	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.73	150.63	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	28.00%
EUNIS Folk	Mud and sandy mud	Sand	71.90%
Distribution	Bimodal	Gravel	0.10%



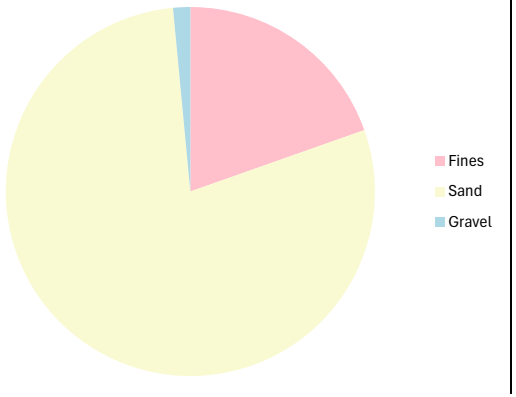
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-212				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.29	0.29	Pebble
5656.85	-2.50	0.21	0.50	
4000.00	-2.00	0.22	0.72	
2828.43	-1.50	0.45	1.17	Granule
2000.00	-1.00	0.36	1.53	
1414.21	-0.50	0.59	2.12	Very coarse sand
1000.00	0.00	0.82	2.94	
707.11	0.50	5.68	8.62	Coarse sand
500.00	1.00	8.31	16.93	
353.55	1.50	9.14	26.07	Medium sand
250.00	2.00	8.31	34.38	
176.78	2.50	10.65	45.03	Fine sand
125.00	3.00	15.77	60.80	
88.39	3.50	13.29	74.09	Very fine sand
62.50	4.00	6.34	80.43	
44.19	4.50	3.27	83.71	Coarse silt
31.25	5.00	2.03	85.73	
22.10	5.50	1.48	87.21	Medium silt
15.63	6.00	1.39	88.60	
11.05	6.50	1.63	90.22	Fine silt
7.81	7.00	1.78	92.00	
5.52	7.50	1.77	93.77	Very fine silt
3.91	8.00	1.56	95.33	
2.76	8.50	1.20	96.53	Clay
1.95	9.00	0.83	97.36	
1.38	9.50	0.57	97.93	
0.98	10.00	0.42	98.36	
0.69	10.50	0.35	98.71	
0.49	11.00	0.31	99.02	
0.35	11.50	0.27	99.29	
<0.35	>11.5	0.71	100.00	



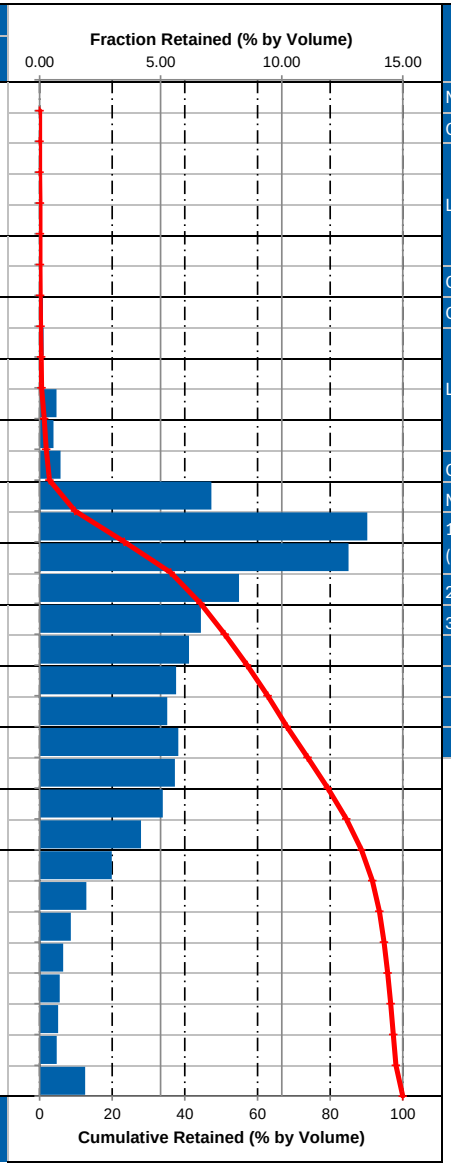
Method of Moments			
Geometric	Mean (µm)	128.74	Wentworth:
Logarithmic	Mean (Phi)	2.96	Fine sand
	Sorting	2.35	Very poor
	Skewness	1.27	Fine
	Kurtosis	5.51	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	151.29	Wentworth:
Logarithmic	Mean (Phi)	2.72	Fine sand
	Sorting	2.08	Very poor
	Skewness	0.21	Fine
	Kurtosis	1.48	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.66	158.50	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	19.60%
EUNIS Folk	Sand and muddy sand	Sand	78.90%
Distribution	Multimodal	Gravel	1.50%



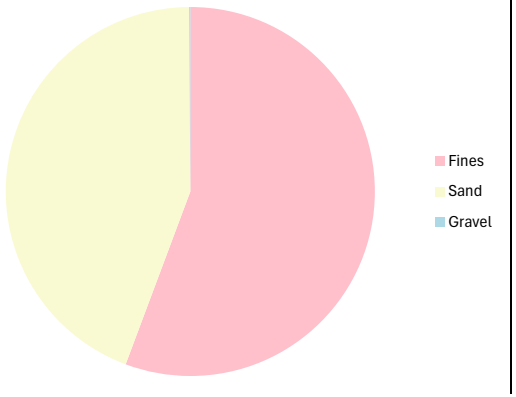
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-217				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.09	0.09	
4000.00	-2.00	0.00	0.09	
2828.43	-1.50	0.00	0.09	Granule
2000.00	-1.00	0.05	0.14	
1414.21	-0.50	0.14	0.28	Very coarse sand
1000.00	0.00	0.16	0.44	
707.11	0.50	0.13	0.57	Coarse sand
500.00	1.00	0.69	1.26	
353.55	1.50	0.57	1.83	Medium sand
250.00	2.00	0.86	2.69	
176.78	2.50	7.09	9.79	Fine sand
125.00	3.00	13.53	23.32	
88.39	3.50	12.76	36.08	Very fine sand
62.50	4.00	8.23	44.31	
44.19	4.50	6.67	50.98	Coarse silt
31.25	5.00	6.17	57.15	
22.10	5.50	5.64	62.78	Medium silt
15.63	6.00	5.28	68.06	
11.05	6.50	5.73	73.79	Fine silt
7.81	7.00	5.59	79.37	
5.52	7.50	5.08	84.46	Very fine silt
3.91	8.00	4.19	88.65	
2.76	8.50	2.98	91.63	
1.95	9.00	1.93	93.56	
1.38	9.50	1.29	94.85	
0.98	10.00	0.97	95.82	Clay
0.69	10.50	0.83	96.65	
0.49	11.00	0.76	97.41	
0.35	11.50	0.71	98.12	
<0.35	>11.5	1.88	100.00	



Method of Moments			
Geometric	Mean (µm)	31.45	Wentworth:
Logarithmic	Mean (Phi)	4.99	Coarse silt
	Sorting	2.44	Very poor
	Skewness	0.82	Fine
	Kurtosis	3.51	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	34.19	Wentworth:
Logarithmic	Mean (Phi)	4.87	Coarse silt
	Sorting	2.31	Very poor
	Skewness	0.34	Very fine
	Kurtosis	0.86	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.43	46.50	Coarse silt
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

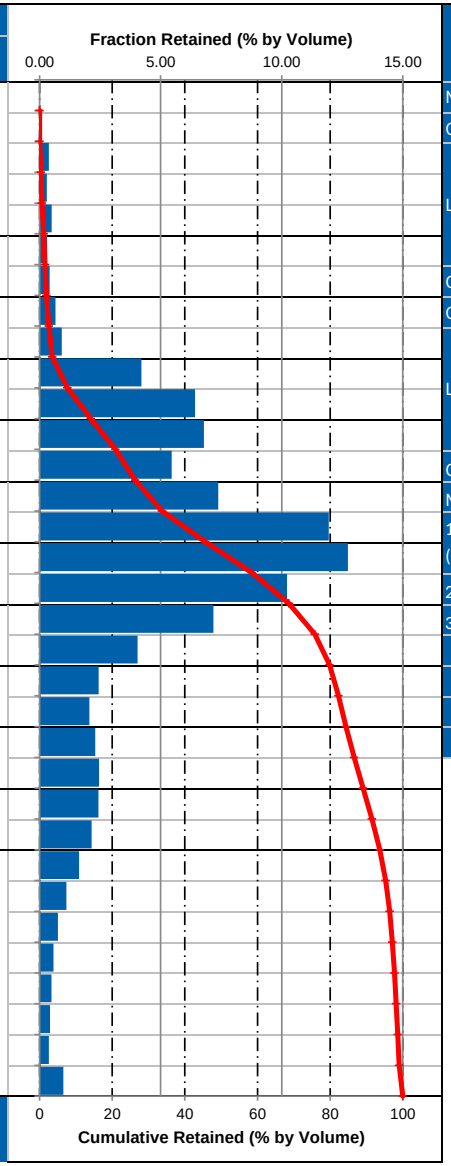
Classification		Composition	
Modified Folk	Sandy mud	Fines	55.70%
EUNIS Folk	Mud and sandy mud	Sand	44.20%
Distribution	Bimodal	Gravel	0.10%



APPENDIX E PARTICLE SIZE ANALYSIS

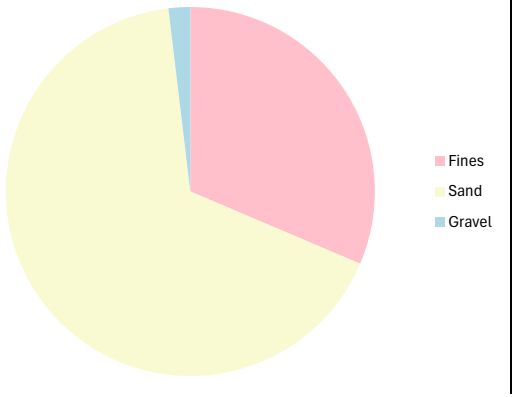
MV24EXP-ENV-GS-213

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.38	0.38	Pebble
5656.85	-2.50	0.30	0.68	
4000.00	-2.00	0.50	1.18	
2828.43	-1.50	0.31	1.49	Granule
2000.00	-1.00	0.41	1.90	
1414.21	-0.50	0.65	2.55	Very coarse sand
1000.00	0.00	0.91	3.46	
707.11	0.50	4.20	7.67	Coarse sand
500.00	1.00	6.42	14.08	
353.55	1.50	6.79	20.87	Medium sand
250.00	2.00	5.46	26.33	
176.78	2.50	7.38	33.71	Fine sand
125.00	3.00	11.94	45.65	
88.39	3.50	12.74	58.39	Very fine sand
62.50	4.00	10.22	68.61	
44.19	4.50	7.18	75.79	Coarse silt
31.25	5.00	4.05	79.83	
22.10	5.50	2.44	82.28	Medium silt
15.63	6.00	2.05	84.33	
11.05	6.50	2.30	86.63	Fine silt
7.81	7.00	2.45	89.08	
5.52	7.50	2.43	91.51	Very fine silt
3.91	8.00	2.15	93.65	
2.76	8.50	1.63	95.28	Clay
1.95	9.00	1.10	96.38	
1.38	9.50	0.76	97.14	
0.98	10.00	0.57	97.71	
0.69	10.50	0.49	98.20	
0.49	11.00	0.43	98.63	
0.35	11.50	0.39	99.02	
<0.35	>11.5	0.98	100.00	



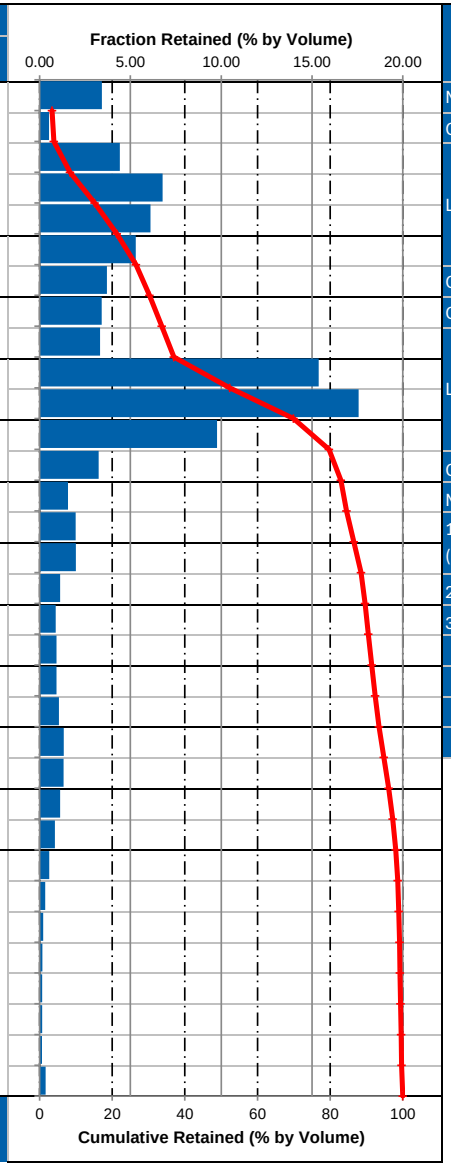
Method of Moments			
Geometric	Mean (µm)	88.75	Wentworth:
Logarithmic	Mean (Phi)	3.49	Very fine sand
	Sorting	2.56	Very poor
	Skewness	0.84	Fine
	Kurtosis	4.32	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	94.04	Wentworth:
Logarithmic	Mean (Phi)	3.41	Very fine sand
	Sorting	2.44	Very poor
	Skewness	0.21	Fine
	Kurtosis	1.31	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.17	111.05	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	31.40%
EUNIS Folk	Mud and sandy mud	Sand	66.70%
Distribution	Multimodal	Gravel	1.90%



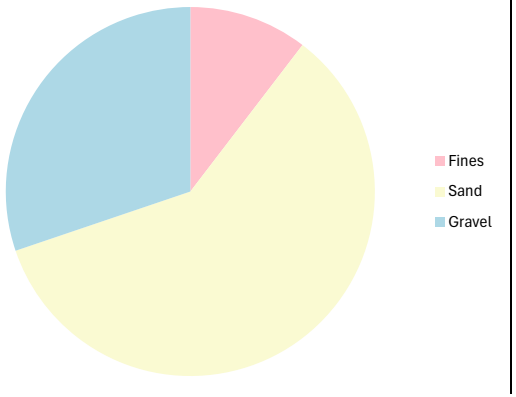
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-214				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	3.43	3.43	
11313.71	-3.50	0.51	3.94	
8000.00	-3.00	4.41	8.35	Pebble
5656.85	-2.50	6.77	15.13	
4000.00	-2.00	6.11	21.24	
2828.43	-1.50	5.29	26.53	Granule
2000.00	-1.00	3.71	30.24	
1414.21	-0.50	3.42	33.66	Very coarse sand
1000.00	0.00	3.33	36.99	
707.11	0.50	15.37	52.37	Coarse sand
500.00	1.00	17.56	69.93	
353.55	1.50	9.77	79.71	Medium sand
250.00	2.00	3.25	82.96	
176.78	2.50	1.57	84.53	Fine sand
125.00	3.00	1.98	86.51	
88.39	3.50	1.99	88.50	Very fine sand
62.50	4.00	1.13	89.63	
44.19	4.50	0.89	90.52	Coarse silt
31.25	5.00	0.93	91.45	
22.10	5.50	0.93	92.38	Medium silt
15.63	6.00	1.07	93.45	
11.05	6.50	1.33	94.77	Fine silt
7.81	7.00	1.32	96.10	
5.52	7.50	1.13	97.23	Very fine silt
3.91	8.00	0.84	98.07	
2.76	8.50	0.53	98.60	
1.95	9.00	0.31	98.91	
1.38	9.50	0.19	99.10	
0.98	10.00	0.15	99.26	Clay
0.69	10.50	0.14	99.40	
0.49	11.00	0.14	99.54	
0.35	11.50	0.13	99.67	
<0.35	>11.5	0.33	100.00	



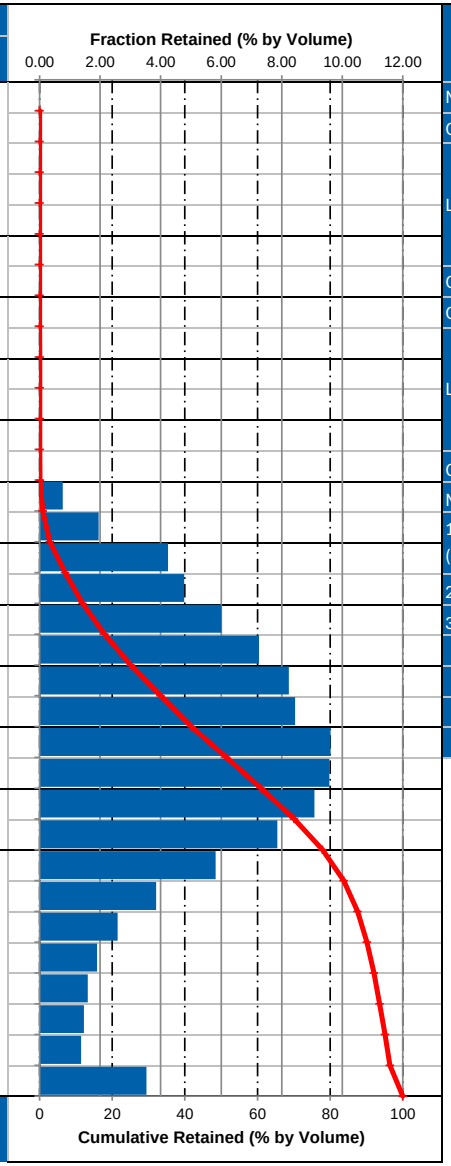
Method of Moments			
Geometric	Mean (µm)	736.27	Wentworth:
Logarithmic	Mean (Phi)	0.44	Coarse sand
	Sorting	2.84	Very poor
	Skewness	1.08	Fine
	Kurtosis	4.86	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	927.43	Wentworth:
Logarithmic	Mean (Phi)	0.11	Coarse sand
	Sorting	2.70	Very poor
	Skewness	0.02	Symmetrical
	Kurtosis	1.41	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.42	745.90	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	-2.50	5656.85	Pebble
3rd Local Maxima	-4.00	16000.00	Pebble

Classification		Composition	
Modified Folk	Muddy sandy gravel	Fines	10.40%
EUNIS Folk	Mixed sediments	Sand	59.40%
Distribution	Multimodal	Gravel	30.20%



APPENDIX E PARTICLE SIZE ANALYSIS

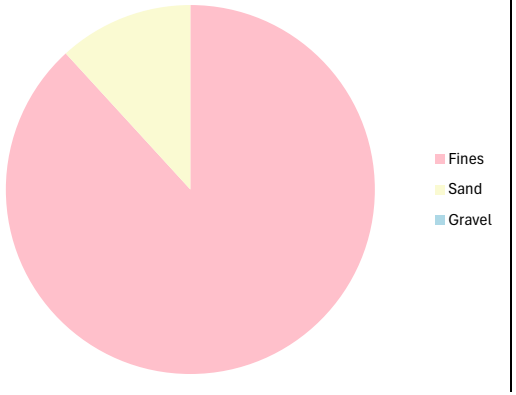
MV24EXP-ENV-GS-215				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.07	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	0.00	0.07	
353.55	1.50	0.00	0.07	Medium sand
250.00	2.00	0.04	0.10	
176.78	2.50	0.76	0.87	Fine sand
125.00	3.00	1.95	2.82	
88.39	3.50	4.25	7.06	Very fine sand
62.50	4.00	4.77	11.84	
44.19	4.50	6.01	17.85	Coarse silt
31.25	5.00	7.25	25.10	
22.10	5.50	8.24	33.33	Medium silt
15.63	6.00	8.44	41.78	
11.05	6.50	9.61	51.39	Fine silt
7.81	7.00	9.58	60.97	
5.52	7.50	9.08	70.05	Very fine silt
3.91	8.00	7.86	77.91	
2.76	8.50	5.82	83.72	Clay
1.95	9.00	3.85	87.57	
1.38	9.50	2.57	90.15	
0.98	10.00	1.90	92.04	
0.69	10.50	1.59	93.63	
0.49	11.00	1.47	95.10	
0.35	11.50	1.37	96.47	
<0.35	>11.5	3.53	100.00	



Method of Moments			
Geometric	Mean (µm)	10.51	Wentworth:
Logarithmic	Mean (Phi)	6.57	Fine silt
	Sorting	2.22	Very poor
	Skewness	0.57	Fine
	Kurtosis	3.29	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	11.54	Wentworth:
Logarithmic	Mean (Phi)	6.44	Fine silt
	Sorting	2.22	Very poor
	Skewness	0.09	Symmetrical
	Kurtosis	1.12	Leptokurtic

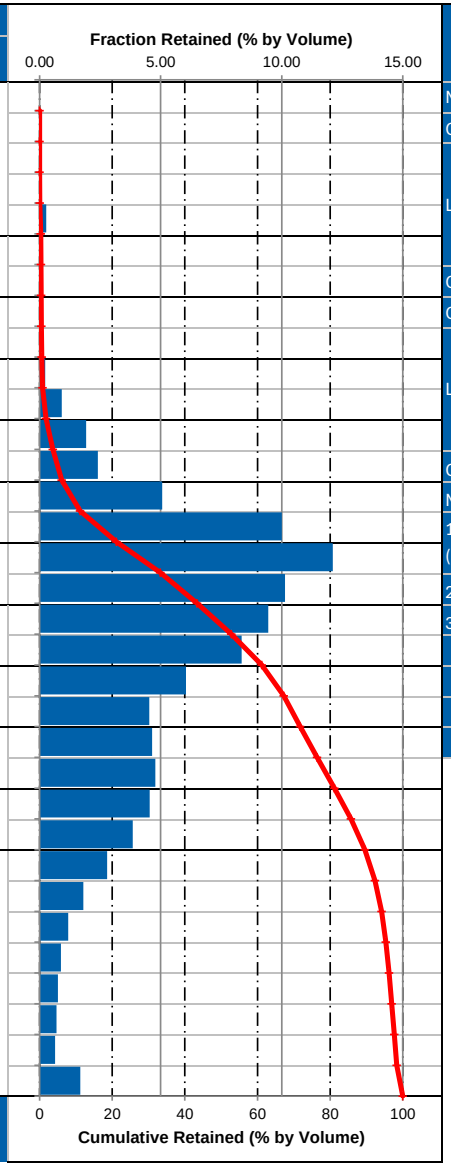
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	6.43	11.62	Fine silt
1st Local Maxima (Mode)	6.50	11.05	Fine silt
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	88.20%
EUNIS Folk	Mud and sandy mud	Sand	11.80%
Distribution	Unimodal	Gravel	0.00%



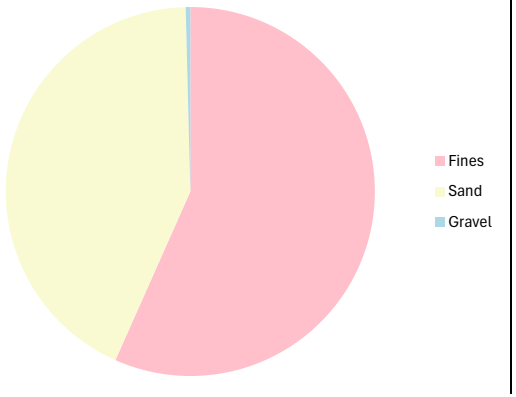
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-216				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.27	0.32	
2828.43	-1.50	0.05	0.37	Granule
2000.00	-1.00	0.07	0.44	
1414.21	-0.50	0.06	0.50	Very coarse sand
1000.00	0.00	0.11	0.61	
707.11	0.50	0.23	0.84	Coarse sand
500.00	1.00	0.91	1.75	
353.55	1.50	1.92	3.67	Medium sand
250.00	2.00	2.41	6.07	
176.78	2.50	5.06	11.13	Fine sand
125.00	3.00	10.00	21.13	
88.39	3.50	12.11	33.25	Very fine sand
62.50	4.00	10.13	43.38	
44.19	4.50	9.45	52.83	Coarse silt
31.25	5.00	8.34	61.17	
22.10	5.50	6.04	67.22	Medium silt
15.63	6.00	4.53	71.75	
11.05	6.50	4.65	76.40	Fine silt
7.81	7.00	4.78	81.18	
5.52	7.50	4.54	85.72	Very fine silt
3.91	8.00	3.85	89.57	
2.76	8.50	2.79	92.36	
1.95	9.00	1.80	94.16	
1.38	9.50	1.18	95.34	
0.98	10.00	0.88	96.22	Clay
0.69	10.50	0.76	96.98	
0.49	11.00	0.70	97.68	
0.35	11.50	0.64	98.32	
<0.35	>11.5	1.68	100.00	



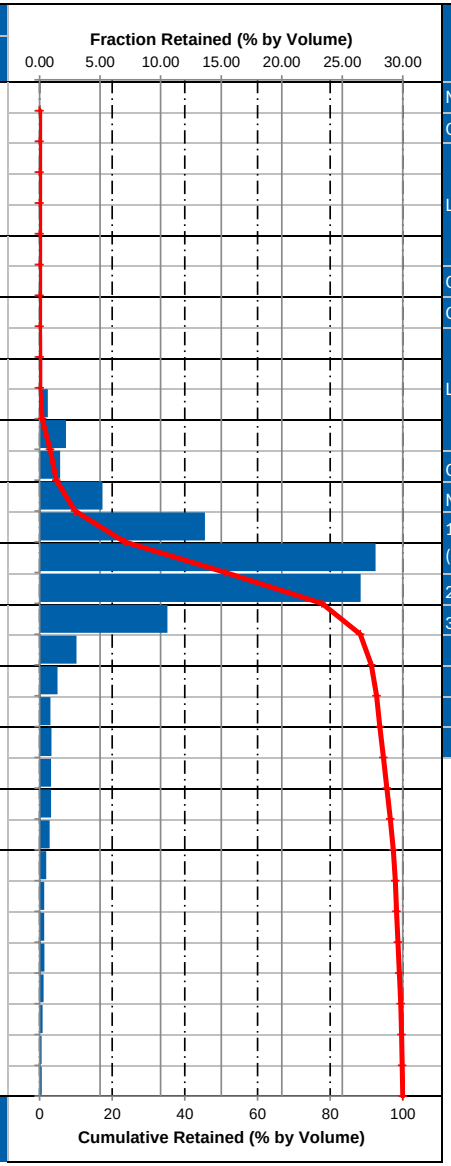
Method of Moments			
Geometric	Mean (µm)	34.47	Wentworth:
Logarithmic	Mean (Phi)	4.86	Coarse silt
	Sorting	2.41	Very poor
	Skewness	0.79	Fine
	Kurtosis	3.84	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	35.86	Wentworth:
Logarithmic	Mean (Phi)	4.80	Coarse silt
	Sorting	2.29	Very poor
	Skewness	0.31	Very fine
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.35	49.03	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	56.60%
EUNIS Folk	Mud and sandy mud	Sand	42.90%
Distribution	Bimodal	Gravel	0.40%



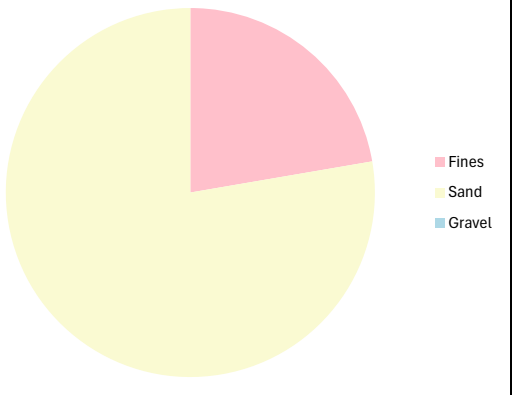
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-220				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.68	0.70	
353.55	1.50	2.19	2.88	Medium sand
250.00	2.00	1.70	4.59	
176.78	2.50	5.20	9.79	Fine sand
125.00	3.00	13.65	23.44	
88.39	3.50	27.75	51.19	Very fine sand
62.50	4.00	26.53	77.72	
44.19	4.50	10.57	88.28	Coarse silt
31.25	5.00	3.04	91.32	
22.10	5.50	1.47	92.79	Medium silt
15.63	6.00	0.90	93.69	
11.05	6.50	0.99	94.68	Fine silt
7.81	7.00	0.95	95.63	
5.52	7.50	0.94	96.57	Very fine silt
3.91	8.00	0.82	97.39	
2.76	8.50	0.54	97.93	Clay
1.95	9.00	0.37	98.30	
1.38	9.50	0.39	98.69	
0.98	10.00	0.40	99.09	
0.69	10.50	0.34	99.43	
0.49	11.00	0.24	99.67	
0.35	11.50	0.16	99.82	
<0.35	>11.5	0.18	100.00	



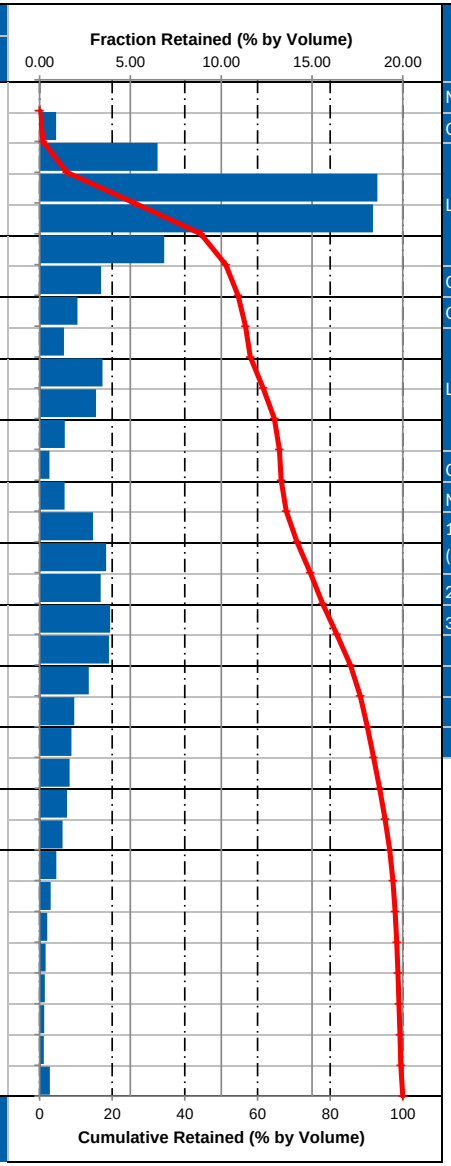
Method of Moments			
Geometric	Mean (µm)	77.89	Wentworth:
Logarithmic	Mean (Phi)	3.68	Very fine sand
	Sorting	1.43	Poor
	Skewness	2.34	Very fine
	Kurtosis	11.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	88.32	Wentworth:
Logarithmic	Mean (Phi)	3.50	Very fine sand
	Sorting	1.09	Poor
	Skewness	0.21	Fine
	Kurtosis	2.06	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.48	89.72	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	22.30%
EUNIS Folk	Mud and sandy mud	Sand	77.70%
Distribution	Bimodal	Gravel	0.00%



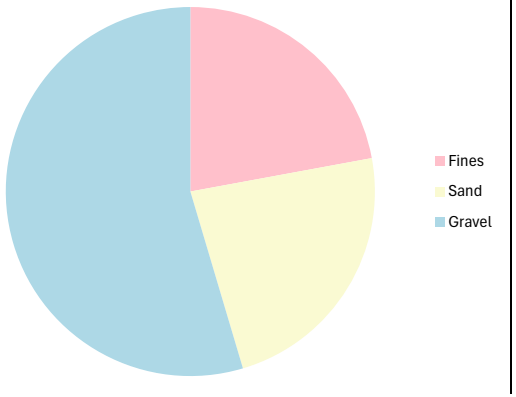
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-222				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.91	0.91	
8000.00	-3.00	6.50	7.41	Pebble
5656.85	-2.50	18.60	26.01	
4000.00	-2.00	18.36	44.37	
2828.43	-1.50	6.86	51.23	Granule
2000.00	-1.00	3.39	54.62	
1414.21	-0.50	2.09	56.70	Very coarse sand
1000.00	0.00	1.34	58.04	
707.11	0.50	3.47	61.51	Coarse sand
500.00	1.00	3.11	64.62	
353.55	1.50	1.38	66.00	Medium sand
250.00	2.00	0.55	66.54	
176.78	2.50	1.38	67.92	Fine sand
125.00	3.00	2.95	70.87	
88.39	3.50	3.66	74.52	Very fine sand
62.50	4.00	3.37	77.89	
44.19	4.50	3.89	81.78	Coarse silt
31.25	5.00	3.81	85.59	
22.10	5.50	2.71	88.30	Medium silt
15.63	6.00	1.91	90.21	
11.05	6.50	1.75	91.96	Fine silt
7.81	7.00	1.65	93.61	
5.52	7.50	1.51	95.12	Very fine silt
3.91	8.00	1.26	96.39	
2.76	8.50	0.92	97.31	
1.95	9.00	0.61	97.91	
1.38	9.50	0.42	98.34	
0.98	10.00	0.33	98.67	Clay
0.69	10.50	0.29	98.95	
0.49	11.00	0.26	99.21	
0.35	11.50	0.23	99.43	
<0.35	>11.5	0.57	100.00	



Method of Moments			
Geometric	Mean (µm)	735.18	Wentworth:
Logarithmic	Mean (Phi)	0.44	Coarse sand
	Sorting	3.73	Very poor
	Skewness	0.92	Fine
	Kurtosis	2.77	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	904.94	Wentworth:
Logarithmic	Mean (Phi)	0.14	Coarse sand
	Sorting	3.50	Very poor
	Skewness	0.69	Very fine
	Kurtosis	0.72	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	-1.59	3009.54	Granule
1st Local Maxima (Mode)	-2.50	5656.85	Pebble
2nd Local Maxima	4.50	44.19	Coarse silt
3rd Local Maxima	3.50	88.39	Very fine sand

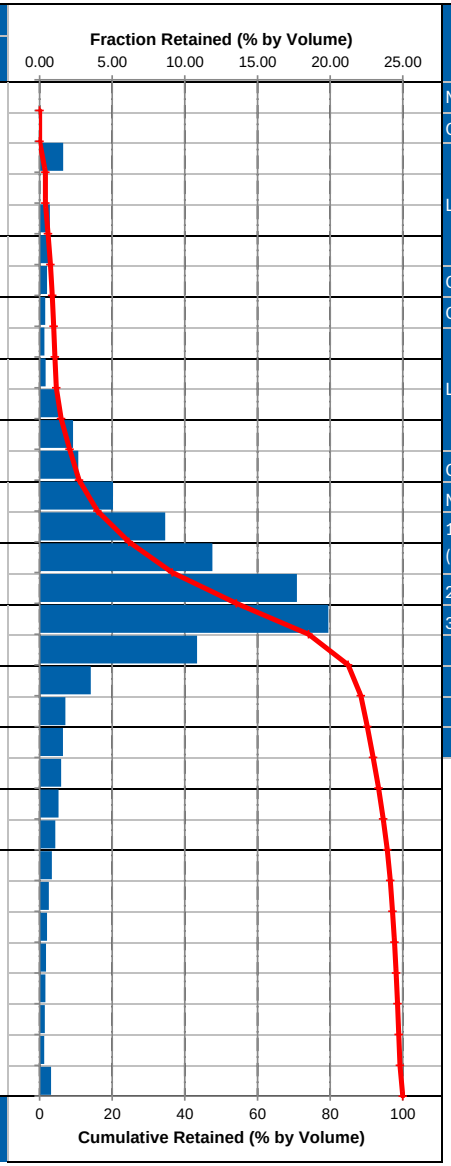
Classification		Composition	
Modified Folk	Muddy sandy gravel	Fines	22.10%
EUNIS Folk	Mixed sediments	Sand	23.30%
Distribution	Multimodal	Gravel	54.60%



APPENDIX E PARTICLE SIZE ANALYSIS

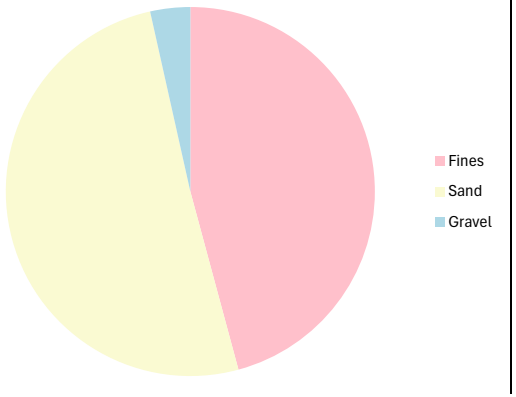
MV24EXP-ENV-GS-221

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	1.62	1.62	Pebble
5656.85	-2.50	0.00	1.62	
4000.00	-2.00	0.70	2.32	
2828.43	-1.50	0.65	2.97	Granule
2000.00	-1.00	0.51	3.47	
1414.21	-0.50	0.39	3.86	Very coarse sand
1000.00	0.00	0.34	4.20	
707.11	0.50	0.42	4.62	Coarse sand
500.00	1.00	1.32	5.94	
353.55	1.50	2.30	8.24	Medium sand
250.00	2.00	2.66	10.90	
176.78	2.50	5.06	15.95	Fine sand
125.00	3.00	8.65	24.60	
88.39	3.50	11.90	36.50	Very fine sand
62.50	4.00	17.71	54.22	
44.19	4.50	19.88	74.09	Coarse silt
31.25	5.00	10.84	84.93	
22.10	5.50	3.53	88.46	Medium silt
15.63	6.00	1.77	90.23	
11.05	6.50	1.61	91.85	Fine silt
7.81	7.00	1.49	93.33	
5.52	7.50	1.30	94.64	Very fine silt
3.91	8.00	1.08	95.72	
2.76	8.50	0.84	96.56	Clay
1.95	9.00	0.64	97.20	
1.38	9.50	0.51	97.71	
0.98	10.00	0.44	98.15	
0.69	10.50	0.39	98.54	
0.49	11.00	0.35	98.90	
0.35	11.50	0.31	99.21	
<0.35	>11.5	0.79	100.00	



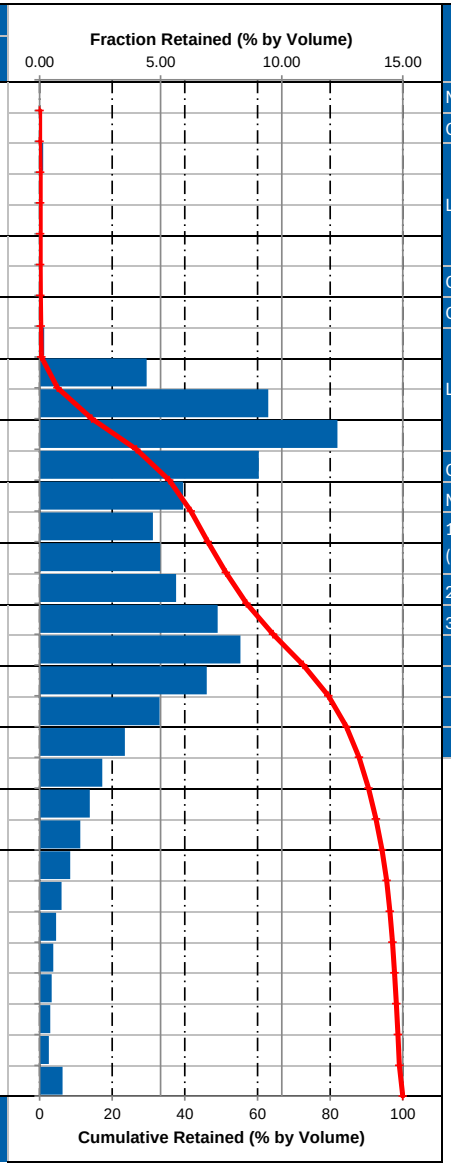
Method of Moments			
Geometric	Mean (µm)	69.24	Wentworth:
Logarithmic	Mean (Phi)	3.85	Very fine sand
	Sorting	2.18	Very poor
	Skewness	0.21	Symmetrical
	Kurtosis	6.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	72.78	Wentworth:
Logarithmic	Mean (Phi)	3.78	Very fine sand
	Sorting	1.68	Poor
	Skewness	-0.02	Symmetrical
	Kurtosis	1.89	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.88	67.87	Very fine sand
1st Local Maxima (Mode)	4.50	44.19	Coarse silt
2nd Local Maxima	-3.00	8000.00	Pebble
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	45.80%
EUNIS Folk	Mud and sandy mud	Sand	50.70%
Distribution	Bimodal	Gravel	3.50%



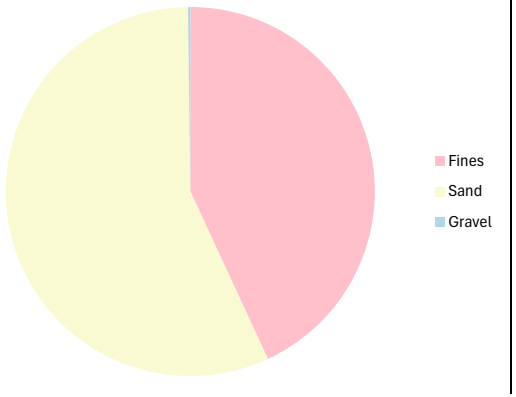
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-200				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.14	0.14	Pebble
5656.85	-2.50	0.00	0.14	
4000.00	-2.00	0.00	0.14	
2828.43	-1.50	0.02	0.16	Granule
2000.00	-1.00	0.05	0.21	
1414.21	-0.50	0.09	0.30	Very coarse sand
1000.00	0.00	0.19	0.48	
707.11	0.50	4.42	4.91	Coarse sand
500.00	1.00	9.45	14.36	
353.55	1.50	12.30	26.66	Medium sand
250.00	2.00	9.05	35.71	
176.78	2.50	5.93	41.64	Fine sand
125.00	3.00	4.68	46.32	
88.39	3.50	4.98	51.30	Very fine sand
62.50	4.00	5.64	56.94	
44.19	4.50	7.36	64.30	Coarse silt
31.25	5.00	8.29	72.59	
22.10	5.50	6.90	79.49	Medium silt
15.63	6.00	4.95	84.45	
11.05	6.50	3.52	87.97	Fine silt
7.81	7.00	2.59	90.56	
5.52	7.50	2.08	92.64	Very fine silt
3.91	8.00	1.68	94.32	
2.76	8.50	1.26	95.58	Clay
1.95	9.00	0.90	96.48	
1.38	9.50	0.68	97.16	
0.98	10.00	0.57	97.73	
0.69	10.50	0.50	98.23	
0.49	11.00	0.44	98.67	
0.35	11.50	0.38	99.06	
<0.35	>11.5	0.94	100.00	



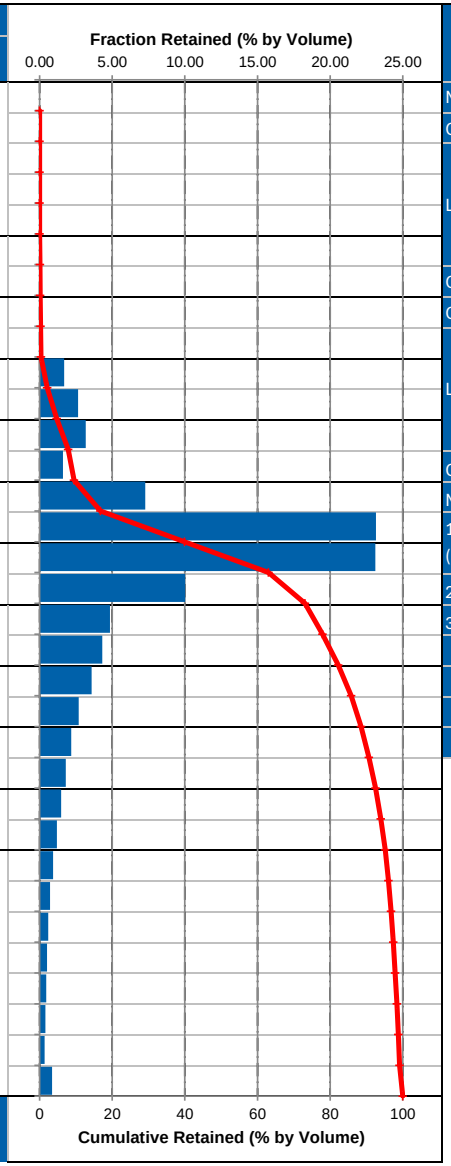
Method of Moments			
Geometric	Mean (µm)	81.75	Wentworth:
Logarithmic	Mean (Phi)	3.61	Very fine sand
	Sorting	2.55	Very poor
	Skewness	0.83	Fine
	Kurtosis	3.65	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	90.65	Wentworth:
Logarithmic	Mean (Phi)	3.46	Very fine sand
	Sorting	2.40	Very poor
	Skewness	0.16	Fine
	Kurtosis	0.85	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.37	96.76	Very fine sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	43.10%
EUNIS Folk	Mud and sandy mud	Sand	56.70%
Distribution	Bimodal	Gravel	0.20%



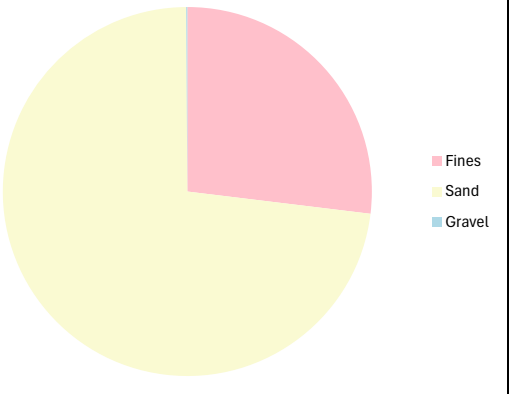
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-201				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.09	0.09	Granule
2000.00	-1.00	0.05	0.14	
1414.21	-0.50	0.11	0.24	Very coarse sand
1000.00	0.00	0.14	0.38	
707.11	0.50	1.69	2.07	Coarse sand
500.00	1.00	2.65	4.73	
353.55	1.50	3.17	7.90	Medium sand
250.00	2.00	1.60	9.50	
176.78	2.50	7.27	16.77	Fine sand
125.00	3.00	23.16	39.93	
88.39	3.50	23.12	63.05	Very fine sand
62.50	4.00	10.03	73.08	
44.19	4.50	4.84	77.92	Coarse silt
31.25	5.00	4.32	82.23	
22.10	5.50	3.58	85.82	Medium silt
15.63	6.00	2.69	88.51	
11.05	6.50	2.18	90.69	Fine silt
7.81	7.00	1.81	92.49	
5.52	7.50	1.48	93.98	Very fine silt
3.91	8.00	1.19	95.17	
2.76	8.50	0.92	96.09	Clay
1.95	9.00	0.72	96.81	
1.38	9.50	0.59	97.41	
0.98	10.00	0.52	97.92	
0.69	10.50	0.46	98.38	
0.49	11.00	0.41	98.79	
0.35	11.50	0.35	99.14	
<0.35	>11.5	0.86	100.00	



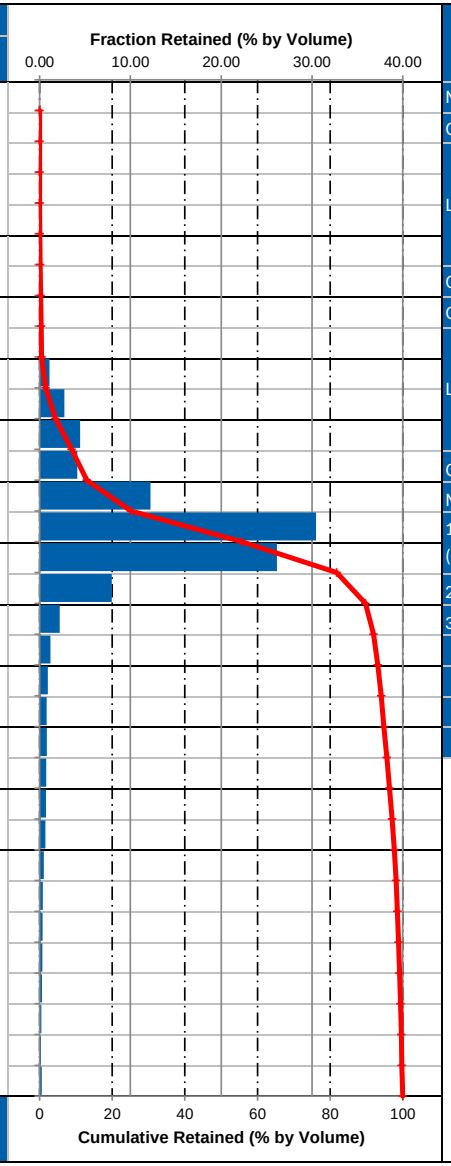
Method of Moments			
Geometric	Mean (µm)	76.46	Wentworth:
Logarithmic	Mean (Phi)	3.71	Very fine sand
	Sorting	2.03	Very poor
	Skewness	1.64	Very fine
	Kurtosis	6.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	80.38	Wentworth:
Logarithmic	Mean (Phi)	3.64	Very fine sand
	Sorting	1.74	Poor
	Skewness	0.41	Very fine
	Kurtosis	1.86	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.22	107.48	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	26.90%
EUNIS Folk	Mud and sandy mud	Sand	72.90%
Distribution	Bimodal	Gravel	0.10%



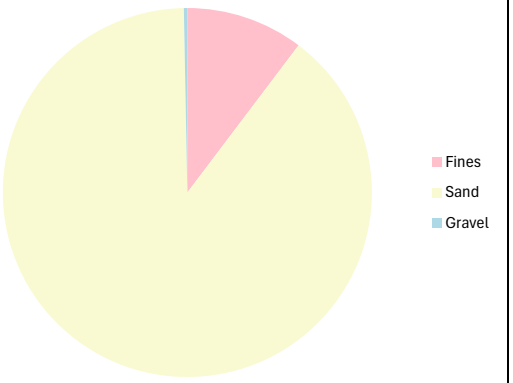
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-237				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.03	0.03	
2828.43	-1.50	0.12	0.15	Granule
2000.00	-1.00	0.12	0.27	
1414.21	-0.50	0.17	0.44	Very coarse sand
1000.00	0.00	0.12	0.56	
707.11	0.50	1.08	1.64	Coarse sand
500.00	1.00	2.73	4.37	
353.55	1.50	4.46	8.82	Medium sand
250.00	2.00	4.14	12.97	
176.78	2.50	12.22	25.19	Fine sand
125.00	3.00	30.45	55.64	
88.39	3.50	26.13	81.77	Very fine sand
62.50	4.00	7.95	89.72	
44.19	4.50	2.23	91.95	Coarse silt
31.25	5.00	1.18	93.13	
22.10	5.50	0.91	94.04	Medium silt
15.63	6.00	0.77	94.81	
11.05	6.50	0.79	95.60	Fine silt
7.81	7.00	0.73	96.33	
5.52	7.50	0.72	97.04	Very fine silt
3.91	8.00	0.65	97.69	
2.76	8.50	0.47	98.16	
1.95	9.00	0.34	98.50	
1.38	9.50	0.32	98.82	
0.98	10.00	0.31	99.13	Clay
0.69	10.50	0.27	99.40	
0.49	11.00	0.20	99.60	
0.35	11.50	0.15	99.75	
<0.35	>11.5	0.25	100.00	



Method of Moments			
Geometric	Mean (µm)	118.77	Wentworth:
Logarithmic	Mean (Phi)	3.07	Very fine sand
	Sorting	1.54	Poor
	Skewness	2.27	Very fine
	Kurtosis	12.16	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	134.85	Wentworth:
Logarithmic	Mean (Phi)	2.89	Fine sand
	Sorting	1.14	Poor
	Skewness	0.12	Fine
	Kurtosis	2.36	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.91	133.28	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

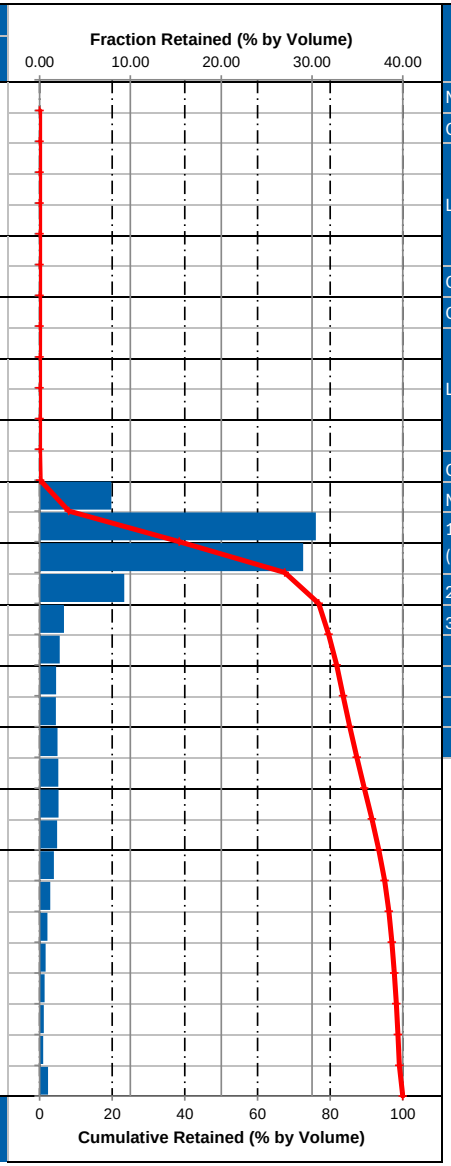
Classification		Composition	
Modified Folk	Muddy sand	Fines	10.30%
EUNIS Folk	Sand and muddy sand	Sand	89.40%
Distribution	Bimodal	Gravel	0.30%



APPENDIX E PARTICLE SIZE ANALYSIS

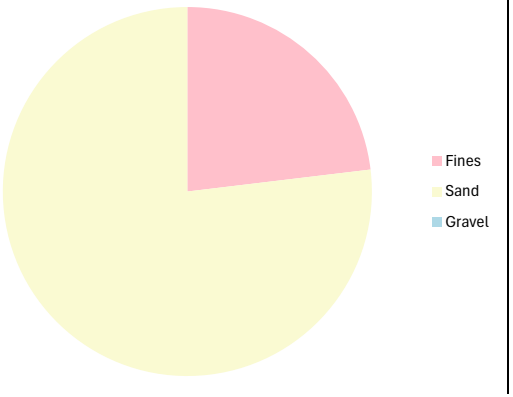
MV24EXP-ENV-GS-218

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.15	0.16	
176.78	2.50	7.90	8.06	Fine sand
125.00	3.00	30.44	38.49	
88.39	3.50	29.04	67.53	Very fine sand
62.50	4.00	9.33	76.86	
44.19	4.50	2.68	79.54	Coarse silt
31.25	5.00	2.22	81.77	
22.10	5.50	1.82	83.58	Medium silt
15.63	6.00	1.80	85.38	
11.05	6.50	1.97	87.35	Fine silt
7.81	7.00	2.07	89.41	
5.52	7.50	2.09	91.50	Very fine silt
3.91	8.00	1.93	93.43	
2.76	8.50	1.57	94.99	
1.95	9.00	1.16	96.16	
1.38	9.50	0.85	97.01	
0.98	10.00	0.66	97.67	Clay
0.69	10.50	0.54	98.22	
0.49	11.00	0.46	98.68	
0.35	11.50	0.39	99.07	
<0.35	>11.5	0.93	100.00	



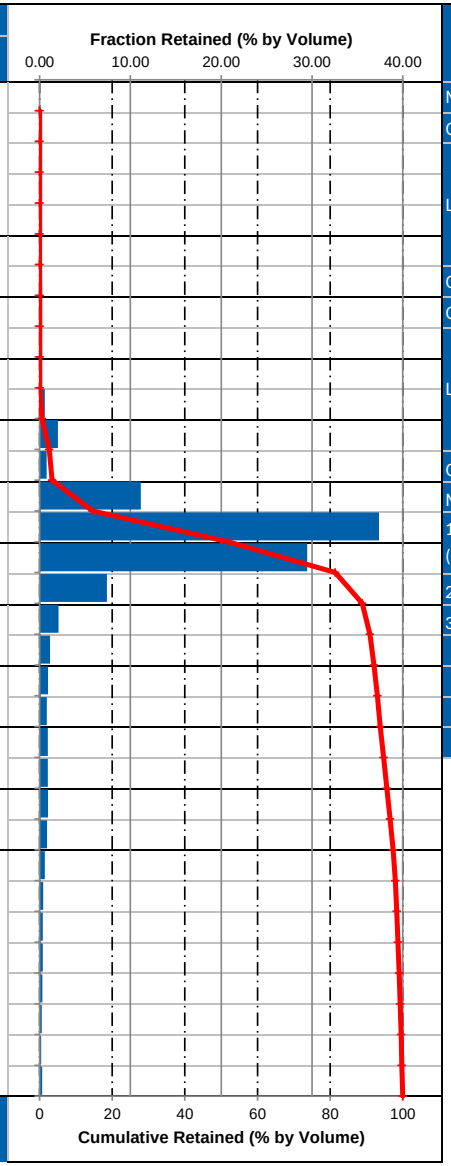
Method of Moments			
Geometric	Mean (µm)	65.55	Wentworth:
Logarithmic	Mean (Phi)	3.93	Very fine sand
	Sorting	2.00	Very poor
	Skewness	2.10	Very fine
	Kurtosis	7.10	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	71.06	Wentworth:
Logarithmic	Mean (Phi)	3.81	Very fine sand
	Sorting	1.69	Poor
	Skewness	0.67	Very fine
	Kurtosis	2.26	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.20	108.96	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.50	5.52	Very fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	23.10%
EUNIS Folk	Mud and sandy mud	Sand	76.90%
Distribution	Bimodal	Gravel	0.00%



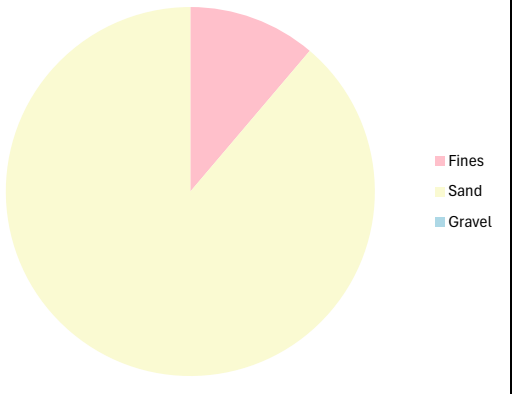
APPENDIX E PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-204				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.04	0.05	
1414.21	-0.50	0.01	0.05	Very coarse sand
1000.00	0.00	0.01	0.06	
707.11	0.50	0.00	0.06	Coarse sand
500.00	1.00	0.58	0.64	
353.55	1.50	2.02	2.66	Medium sand
250.00	2.00	0.77	3.43	
176.78	2.50	11.14	14.57	Fine sand
125.00	3.00	37.38	51.96	
88.39	3.50	29.47	81.43	Very fine sand
62.50	4.00	7.41	88.84	
44.19	4.50	2.09	90.93	Coarse silt
31.25	5.00	1.15	92.09	
22.10	5.50	0.92	93.00	Medium silt
15.63	6.00	0.80	93.81	
11.05	6.50	0.90	94.71	Fine silt
7.81	7.00	0.90	95.61	
5.52	7.50	0.92	96.54	Very fine silt
3.91	8.00	0.82	97.36	
2.76	8.50	0.57	97.93	Clay
1.95	9.00	0.39	98.31	
1.38	9.50	0.35	98.66	
0.98	10.00	0.35	99.01	
0.69	10.50	0.30	99.31	
0.49	11.00	0.23	99.54	
0.35	11.50	0.17	99.71	
<0.35	>11.5	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	101.52	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	1.47	Poor
	Skewness	3.00	Very fine
	Kurtosis	14.24	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	120.28	Wentworth:
Logarithmic	Mean (Phi)	3.06	Very fine sand
	Sorting	0.98	Moderate
	Skewness	0.41	Very fine
	Kurtosis	2.50	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.97	127.29	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

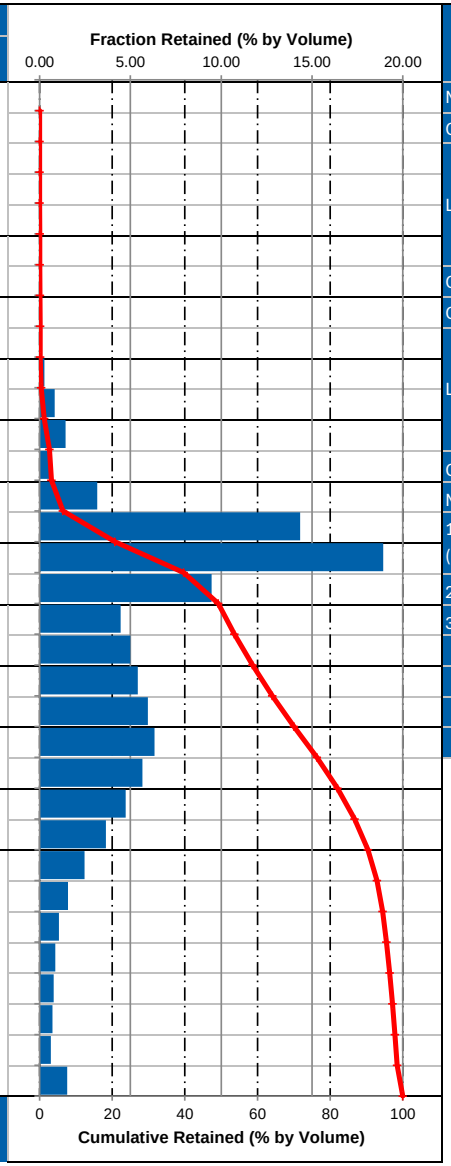
Classification		Composition	
Modified Folk	Muddy sand	Fines	11.20%
EUNIS Folk	Sand and muddy sand	Sand	88.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX E PARTICLE SIZE ANALYSIS

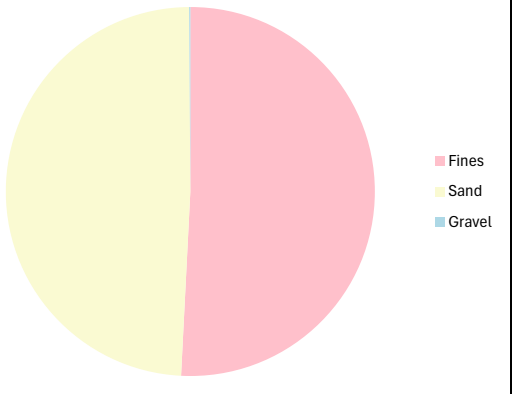
MV24EXP-ENV-GS-203

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.04	0.06	Granule
2000.00	-1.00	0.04	0.09	
1414.21	-0.50	0.06	0.15	Very coarse sand
1000.00	0.00	0.02	0.17	
707.11	0.50	0.26	0.44	Coarse sand
500.00	1.00	0.83	1.27	
353.55	1.50	1.43	2.70	Medium sand
250.00	2.00	0.55	3.25	
176.78	2.50	3.18	6.43	Fine sand
125.00	3.00	14.35	20.78	
88.39	3.50	18.93	39.71	Very fine sand
62.50	4.00	9.48	49.18	
44.19	4.50	4.47	53.65	Coarse silt
31.25	5.00	5.00	58.65	
22.10	5.50	5.40	64.05	Medium silt
15.63	6.00	5.97	70.02	
11.05	6.50	6.33	76.34	Fine silt
7.81	7.00	5.67	82.01	
5.52	7.50	4.74	86.75	Very fine silt
3.91	8.00	3.66	90.41	
2.76	8.50	2.48	92.88	Clay
1.95	9.00	1.56	94.44	
1.38	9.50	1.07	95.51	
0.98	10.00	0.87	96.38	
0.69	10.50	0.77	97.15	
0.49	11.00	0.70	97.85	
0.35	11.50	0.62	98.48	
<0.35	>11.5	1.52	100.00	



Method of Moments			
Geometric	Mean (µm)	34.31	Wentworth:
Logarithmic	Mean (Phi)	4.87	Coarse silt
	Sorting	2.34	Very poor
	Skewness	0.92	Fine
	Kurtosis	3.72	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	38.16	Wentworth:
Logarithmic	Mean (Phi)	4.71	Coarse silt
	Sorting	2.15	Very poor
	Skewness	0.45	Very fine
	Kurtosis	0.87	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.09	58.66	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	50.80%
EUNIS Folk	Mud and sandy mud	Sand	49.10%
Distribution	Multimodal	Gravel	0.10%



APPENDIX F SPEARMAN'S RANK CORRELATION

APPENDIX F SPEARMAN'S RANK CORRELATION

Table F.1 PSA Data at 49 Stations

Grubbs' Test for Low Outliers (n>25)	1.96	0.78	1.13	2.53	0.22
Grubbs' Test for High Outliers (n>25)	1.52	4.35	2.72	1.16	5.98
Station	Depth (m)	Mean Diameter	Fines %	Sand %	Gravel %
ENV173	71	235	7.5	92.5	0.05
ENV174	71	204	9.3	90.6	0.12
ENV175	73	189	10.2	89.8	0.04
ENV176	74	180	10.8	89.1	0.03
ENV177	73	204	11.1	88.7	0.18
ENV178	70	208	10.2	89.5	0.35
ENV179	71	341	4.6	95.1	0.32
ENV180	69	198	10.8	89.2	0.08
ENV235A	66	257	5.3	94.5	0.17
ENV234	68	271	5.3	94.4	0.32
ENV233	71	214	11.9	88.0	0.09
ENV232	69	239	6.0	93.8	0.21
ENV231	77	215	13.2	86.8	0.04
ENV230	83	87	20.6	79.4	0.05
ENV229	82	89	22.2	77.7	0.12
ENV228	90	63	27.5	72.4	0.07
ENV227	89	156	16.9	83.0	0.07
ENV226	88	173	15.7	84.2	0.02
ENV171	86	162	17.7	82.3	0.00
ENV225	93	96	22.6	77.2	0.17
ENV172	88	128	18.9	81.0	0.01
ENV185	84	22	67.1	32.9	0.01
ENV224	79	24	71.1	28.9	0.00
ENV186	65	45	40.6	59.3	0.01
ENV223	59	35	52.9	47.1	0.03
ENV187	57	32	56.8	43.2	0.00
ENV210	55	64	33.1	66.7	0.27
ENV209	54	67	31.4	68.5	0.07
ENV208	51	40	50.5	49.1	0.33
ENV207	45	38	50.4	49.6	0.04
ENV206	42	20	73.2	26.7	0.13
ENV205	15	22	67.2	32.8	0.01
ENV236	11	142	11.4	88.6	0.01
ENV211	54	89	28.0	71.9	0.10
ENV212	51	151	19.6	78.9	1.53
ENV217	48	34	55.7	44.2	0.14
ENV213	47	94	31.4	66.7	1.90
ENV214	44	927	10.4	59.4	30.24
ENV215	44	12	88.2	11.8	0.00
ENV216	41	36	56.6	42.9	0.44
ENV220	37	88	22.3	77.7	0.00
ENV222	35	905	22.1	23.3	54.62
ENV221	32	73	45.8	50.7	3.47
ENV200	26	91	43.1	56.7	0.21
ENV201	22	80	26.9	72.9	0.14
ENV237	14	135	10.3	89.4	0.27
ENV218	21	71	23.1	76.9	0.00
ENV204	16	120	11.2	88.8	0.05
ENV203	20	38	50.8	49.1	0.09
Depth (m)		0.26	-0.27	0.33	-0.21
Mean Diameter			-0.93	0.79	0.38
Fines %				-0.94	-0.25
Sand %					0.11

Critical Values Outliers Test
p < 0.01 if value >= 3.24
p < 0.05 if value >= 2.866

Critical Values Spearmans Test
p < 0.01 if value >= 0.38
p < 0.05 if value >= 0.294

APPENDIX F SPEARMAN'S RANK CORRELATION

Table F.2 Physico-Chemical Analytes at 30 Stations

Grubbs' Test for Low Outliers (n>25)	1.55	0.76	1.21	2.25	0.21	0.74	0.71	0.69	1.23	1.30	1.11	1.33	1.16	1.31
Grubbs' Test for High Outliers (n>25)	1.48	4.66	2.47	1.21	5.28	3.52	3.12	3.01	2.36	2.22	2.30	1.98	1.99	1.65
Station	Depth (m)	Mean Diameter	Fines %	Sand %	Gravel %	Total Organic Carbon	PAH	NPD	Arsenic (As)	Chromium (Cr)	Copper (Cu)	Nickel (Ni)	Lead (Pb)	Zinc (Zn)
ENV173	71	235.5	7.5	92.5	0.05	0.13	0.005	0.002	3.1	9.1	1.3	2.8	3.6	12.6
ENV175	73	188.6	10.2	89.8	0.04	0.17	0.006	0.002	2.4	8.8	1.3	2.9	3.4	12.5
ENV177	73	204.3	11.1	88.7	0.18	0.16	0.006	0.002	3.1	9.5	1.6	3.0	3.9	12.9
ENV179	71	340.7	4.6	95.1	0.32	0.13	0.003	0.000	4.6	7.5	1.2	2.8	4.2	11.6
ENV233	71	213.6	11.9	88.0	0.09	0.15	0.024	0.005	4.5	11.3	1.8	4.4	5.7	18.7
ENV231	77	214.6	13.2	86.8	0.04	0.19	0.030	0.008	4.6	12.6	1.9	4.6	6.4	17.3
ENV229	82	88.9	22.2	77.7	0.12	0.28	0.120	0.041	4.5	12.0	2.4	5.3	8.0	17.5
ENV227	89	155.9	16.9	83.0	0.07	0.23	0.082	0.022	3.6	10.5	2.3	5.4	7.4	18.7
ENV171	86	162.4	17.7	82.3	0.00	0.23	0.084	0.027	4.8	12.8	3.0	6.6	7.8	23.2
ENV172	88	128.2	18.9	81.0	0.01	0.23	0.030	0.010	5.2	15.3	3.6	7.8	9.4	24.5
ENV185	84	22.5	67.1	32.9	0.01	1.69	1.791	0.847	9.2	31.3	10.5	20.8	31.0	64.8
ENV186	65	45.2	40.6	59.3	0.01	0.79	1.331	0.680	6.1	20.4	6.6	13.3	20.8	44.3
ENV187	57	32.5	56.8	43.2	0.00	1.19	2.573	1.311	7.2	21.9	8.3	14.9	26.1	54.4
ENV208	51	40.0	50.5	49.1	0.33	2.60	4.883	2.824	12.2	27.0	17.2	19.3	53.3	95.8
ENV206	42	20.1	73.2	26.7	0.13	4.26	9.168	6.064	18.1	30.8	25.8	24.1	81.6	132
ENV205	15	22.0	67.2	32.8	0.01	1.59	2.460	1.696	15.4	19.7	14.3	14.5	55.0	98.3
ENV236	11	142.2	11.4	88.6	0.01	0.52	1.382	0.928	12.8	14.2	11.3	11.8	46.0	95.5
ENV211	54	89.2	28.0	71.9	0.10	0.61	1.042	0.620	6.2	15.2	6.2	9.8	19.2	42.3
ENV217	48	34.2	55.7	44.2	0.14	4.14	7.459	4.115	15.8	30.2	18.8	22.1	59.5	96.7
ENV213	47	94.0	31.4	66.7	1.90	1.25	3.750	1.862	12.1	19.7	9.2	13.4	34.2	72.1
ENV215	44	11.5	88.2	11.8	0.00	5.13	13.530	8.642	22.4	36.8	27.6	28.5	90.8	123
ENV220	37	88.3	22.3	77.7	0.00	2.94	6.798	5.295	19.4	16.3	20.8	15.6	52.6	96.7
ENV222	35	904.9	22.1	23.3	54.62	4.65	13.205	8.862	25.3	29.3	24.5	24.0	71.1	111
ENV221	32	72.8	45.8	50.7	3.47	9.23	25.420	18.114	20.8	17.7	21.1	16.2	51.3	88.4
ENV200	26	90.6	43.1	56.7	0.21	12.4	28.080	19.010	30.1	28.4	34.9	26.5	94.7	132
ENV201	22	80.4	26.9	72.9	0.14	4.69	14.468	11.573	17.6	14.7	17.8	14.2	50.1	91.5
ENV237	14	134.9	10.3	89.4	0.27	3.12	5.973	4.622	20.6	11.7	22.1	13.8	49.6	106
ENV218	21	71.1	23.1	76.9	0.00	0.69	1.589	1.120	12.3	12.8	9.9	11.1	44.0	89.1
ENV204	16	120.3	11.2	88.8	0.05	0.69	2.053	1.453	12.0	12.7	9.6	10.3	41.8	85.5
ENV203	20	38.2	50.8	49.1	0.09	3.59	9.662	6.301	20.7	30.1	27.6	23.8	96.5	138
Depth (m)		0.31	-0.22	0.23	-0.16	-0.60	-0.66	-0.70	-0.76	-0.30	-0.70	-0.52	-0.71	-0.75
Mean Diameter			-0.90	0.75	0.26	-0.64	-0.59	-0.56	-0.49	-0.75	-0.59	-0.70	-0.63	-0.59
Fines %				-0.94	-0.12	0.71	0.67	0.63	0.57	0.90	0.65	0.81	0.70	0.63
Sand %					0.01	-0.75	-0.71	-0.67	-0.63	-0.93	-0.69	-0.85	-0.73	-0.67
Gravel %						0.24	0.25	0.26	0.19	-0.03	0.16	0.10	0.15	0.10
Total Organic Carbon							0.98	0.97	0.93	0.79	0.95	0.94	0.92	0.88
PAH								0.99	0.94	0.75	0.95	0.92	0.92	0.89
NPD									0.95	0.72	0.96	0.90	0.93	0.90
Arsenic (As)										0.71	0.97	0.89	0.95	0.94
Chromium (Cr)											0.78	0.92	0.81	0.76
Copper (Cu)												0.94	0.97	0.97
Nickel (Ni)													0.94	0.91
Lead (Pb)														0.98
Zinc (Zn)														

Critical Values Outliers Test
p < 0.01 if value >= 3.103
p < 0.05 if value >= 2.745

Critical Values Spearmans Test
p < 0.01 if value >= 0.467
p < 0.05 if value >= 0.364

APPENDIX F SPEARMAN'S RANK CORRELATION

Table F.3 Physico-Chemical Analytes at 20 Southern Area Stations

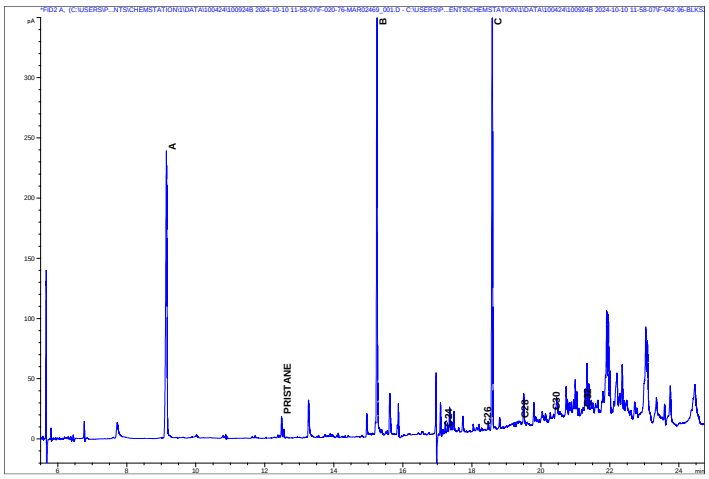
Dixon's test for high outliers (n=14 to 25)	0.39	0.87	0.27	0.01	0.97	0.62	0.23	0.51	0.41	0.54	0.42	0.53	0.34	0.20	0.25	0.27	0.29	0.25	0.08	0.07
Dixon's test for low outliers (n=14 to 25)	0.09	0.09	0.02	0.19	0.00	0.04	0.02	0.03	0.02	0.13	0.14	0.02	0.07	0.20	0.06	0.10	0.12	0.09	0.10	0.13
Station	Depth (m)	Mean Diameter	Fines %	Sand %	Gravel %	Total Organic Carbon	THC	PAH	NPD	Total PCBs	Total ICES-7 PCBs	Total OCPs	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Copper (Cu)	Mercury (Hg)	Nickel (Ni)	Lead (Pb)	Zinc (Zn)
ENV185	84	22.5	67.1	32.9	0.01	1.7	21	1.791	0.847	1.58	0.83	1.2	9.2	0.10	31.3	10.5	0.08	20.8	31.0	65
ENV186	65	45.2	40.6	59.3	0.01	0.8	16	1.331	0.680	0.21	0.21	0.8	6.1	0.09	20.4	6.6	0.04	13.3	20.8	44
ENV187	57	32.5	56.8	43.2	0.00	1.2	32	2.573	1.311	1.36	0.71	1.2	7.2	0.09	21.9	8.3	0.06	14.9	26.1	54
ENV208	51	40.0	50.5	49.1	0.33	2.6	178	4.883	2.824	3.98	1.83	2.2	12.2	0.19	27.0	17.2	0.18	19.3	53.3	96
ENV206	42	20.1	73.2	26.7	0.13	4.3	93	9.168	6.064	5.71	2.38	3.4	18.1	0.21	30.8	25.8	0.19	24.1	81.6	132
ENV205	15	22.0	67.2	32.8	0.01	1.6	91	2.460	1.696	1.21	0.62	3.8	15.4	0.18	19.7	14.3	0.10	14.5	55.0	98
ENV236	11	142.2	11.4	88.6	0.01	0.5	38	1.382	0.928	NC	NC	0.3	12.8	0.22	14.2	11.3	0.05	11.8	46.0	96
ENV211	54	89.2	28.0	71.9	0.10	0.6	24	1.042	0.620	0.26	0.16	0.3	6.2	0.06	15.2	6.2	0.06	9.8	19.2	42
ENV217	48	34.2	55.7	44.2	0.14	4.1	147	7.459	4.115	6.02	2.53	2.7	15.8	0.16	30.2	18.8	0.21	22.1	59.5	97
ENV213	47	94.0	31.4	66.7	1.90	1.3	130	3.750	1.862	1.4	0.71	0.8	12.1	0.08	19.7	9.2	0.06	13.4	34.2	72
ENV215	44	11.5	88.2	11.8	0.00	5.1	94	13.530	8.642	7.72	3.35	5.2	22.4	0.19	36.8	27.6	0.25	28.5	90.8	123
ENV220	37	88.3	22.3	77.7	0.00	2.9	158	6.798	5.295	3.33	1.53	1.8	19.4	0.16	16.3	20.8	0.12	15.6	52.6	97
ENV222	35	904.9	22.1	23.3	54.62	4.7	447	13.205	8.862	5.47	2.34	2.9	25.3	0.18	29.3	24.5	0.21	24.0	71.1	111
ENV221	32	72.8	45.8	50.7	3.47	9.2	572	25.420	18.114	3.88	1.57	10.8	20.8	0.14	17.7	21.1	0.16	16.2	51.3	88
ENV200	26	90.6	43.1	56.7	0.21	12.4	471	28.080	19.010	8.44	3.53	3.7	30.1	0.24	28.4	34.9	0.27	26.5	94.7	132
ENV201	22	80.4	26.9	72.9	0.14	4.7	339	14.468	11.573	2.43	1.12	1.2	17.6	0.16	14.7	17.8	0.14	14.2	50.1	92
ENV237	14	134.9	10.3	89.4	0.27	3.1	97	5.973	4.622	2.23	1.13	0.7	20.6	0.20	11.7	22.1	0.09	13.8	49.6	106
ENV218	21	71.1	23.1	76.9	0.00	0.7	27	1.589	1.120	NC	NC	0.5	12.3	0.11	12.8	9.9	0.06	11.1	44.0	89
ENV204	16	120.3	11.2	88.8	0.05	0.7	45	2.053	1.453	NC	NC	0.2	12.0	0.13	12.7	9.6	0.08	10.3	41.8	86
ENV203	20	38.2	50.8	49.1	0.09	3.6	183	9.662	6.301	15.37	5.33	5.6	20.7	0.21	30.1	27.6	0.18	23.8	96.5	138
Depth (m)		-0.41	0.46	-0.42	-0.07	-0.04	-0.29	-0.18	-0.30	-0.52	-0.52	0.03	-0.46	-0.56	0.54	-0.36	-0.07	0.18	-0.34	-0.47
Mean Diameter			-0.92	0.67	0.47	-0.18	0.23	-0.06	0.04	0.15	0.15	-0.51	0.10	0.02	-0.64	-0.09	-0.23	-0.44	-0.22	-0.11
Fines %				-0.82	-0.23	0.32	-0.06	0.21	0.09	-0.17	-0.18	0.66	0.02	0.06	0.80	0.19	0.36	0.60	0.32	0.18
Sand %					0.01	-0.44	-0.10	-0.33	-0.24	0.11	0.11	-0.72	-0.23	-0.13	-0.88	-0.33	-0.53	-0.74	-0.45	-0.32
Gravel %						0.42	0.64	0.44	0.46	0.00	0.00	0.16	0.33	0.18	0.01	0.28	0.35	0.17	0.22	0.17
Total Organic Carbon							0.79	0.96	0.93	0.16	0.16	0.78	0.83	0.48	0.48	0.85	0.88	0.82	0.75	0.64
THC								0.88	0.91	0.28	0.27	0.61	0.79	0.48	0.13	0.72	0.74	0.54	0.69	0.58
PAH									0.98	0.28	0.28	0.74	0.86	0.52	0.36	0.85	0.85	0.75	0.77	0.66
NPD										0.32	0.31	0.70	0.90	0.56	0.25	0.86	0.83	0.68	0.78	0.70
Total PCBs											1.00	0.08	0.45	0.56	0.01	0.47	0.38	0.23	0.52	0.51
Total ICES-7 PCBs												0.08	0.46	0.58	0.01	0.48	0.37	0.23	0.52	0.52
Total OCPs													0.67	0.44	0.66	0.72	0.76	0.84	0.78	0.63
Arsenic (As)														0.72	0.23	0.94	0.80	0.68	0.85	0.84
Cadmium (Cd)															0.20	0.81	0.60	0.55	0.80	0.88
Chromium (Cr)																0.41	0.58	0.84	0.49	0.37
Copper (Cu)																	0.87	0.81	0.92	0.92
Mercury (Hg)																		0.87	0.89	0.78
Nickel (Ni)																			0.80	0.71
Lead (Pb)																				0.95
Zinc (Zn)																				

Critical Values Outliers Test
p < 0.01 if value >= 0.535
p < 0.05 if value >= 0.45

Critical Values Spearmans Test
p < 0.01 if value >= 0.57
p < 0.05 if value >= 0.45

APPENDIX G HYDROCARBON ANALYSIS

APPENDIX G HYDROCARBON ANALYSIS

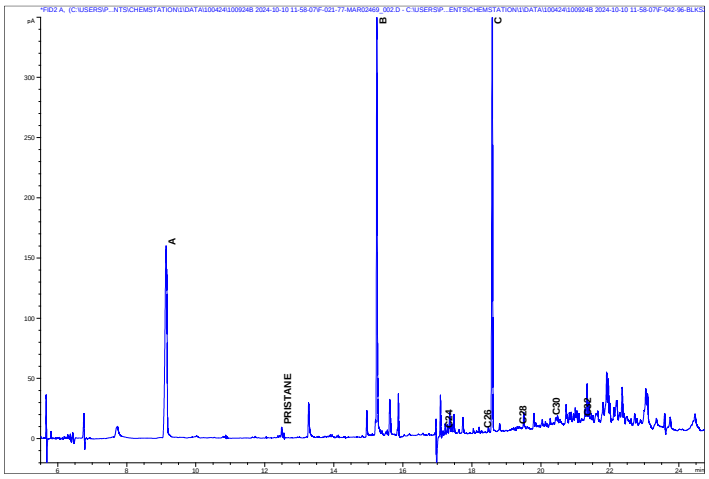


ENV173

THC: 4.5µg g^{-1}

UCM: 2.9µg g^{-1}

n-Alkanes: 0.078µg g^{-1}

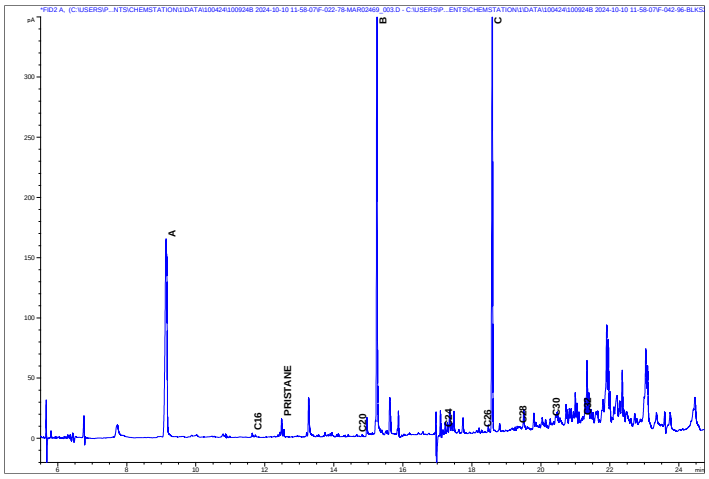


ENV175

THC: 3.6µg g^{-1}

UCM: 2.8µg g^{-1}

n-Alkanes: 0.076µg g^{-1}



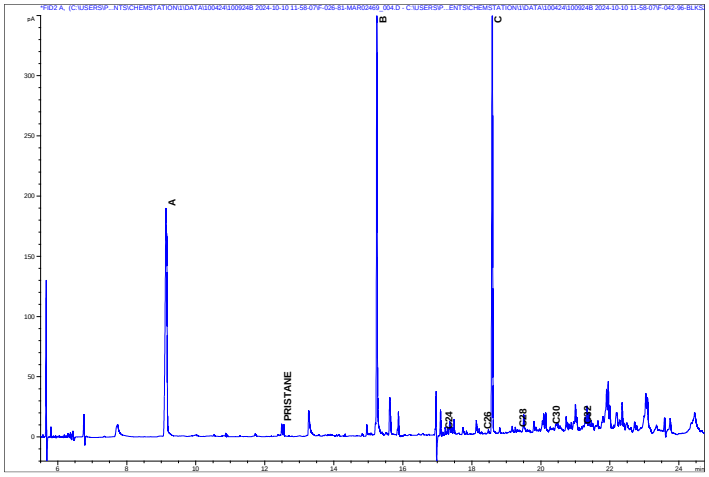
ENV177

THC: 3.9µg g^{-1}

UCM: 2.5µg g^{-1}

n-Alkanes: 0.080µg g^{-1}

APPENDIX G HYDROCARBON ANALYSIS

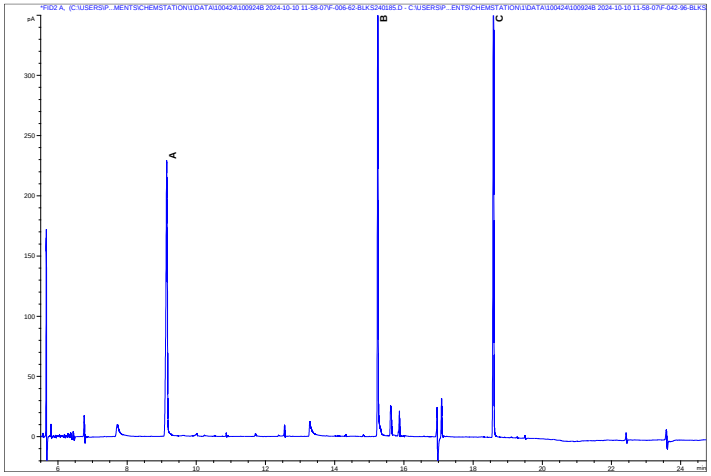


ENV179

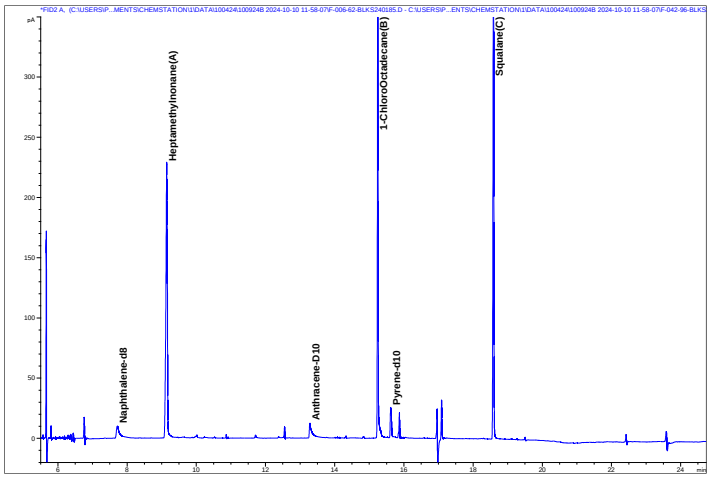
THC: 2.2µg g^{-1}

UCM: 1.2µg g^{-1}

n-Alkanes: 0.049µg g^{-1}

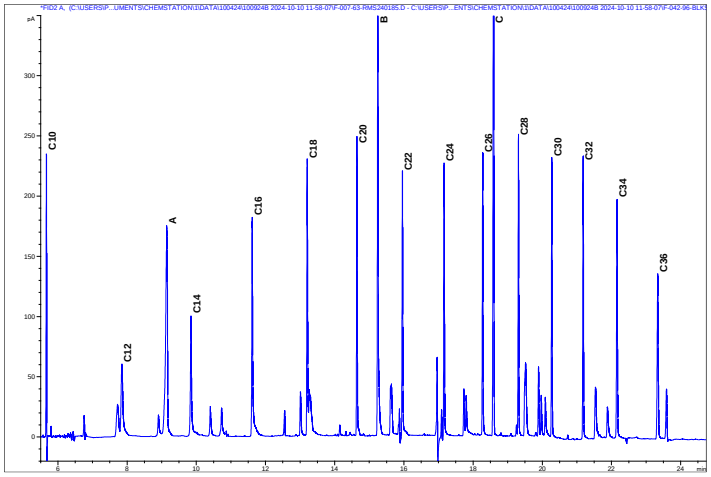


BLKS240185



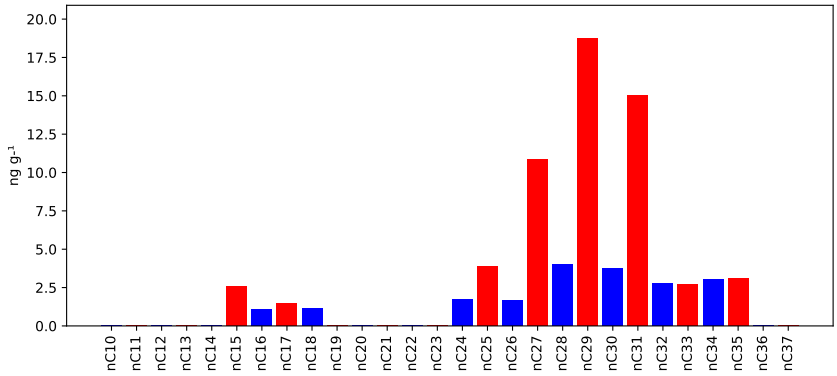
BLKS240185_Labelled

APPENDIX G HYDROCARBON ANALYSIS

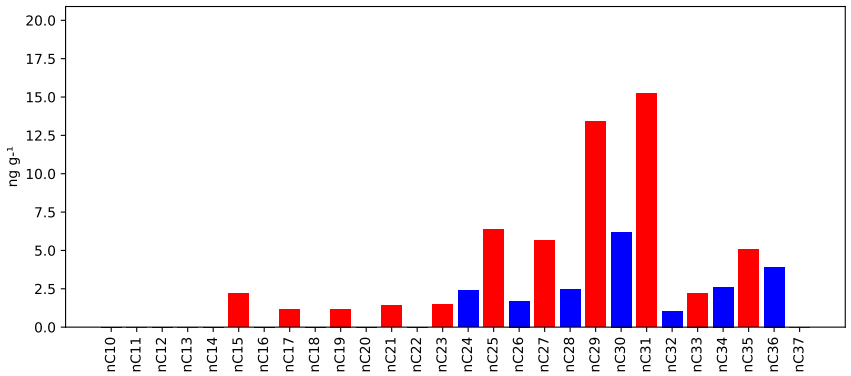


RMS240185

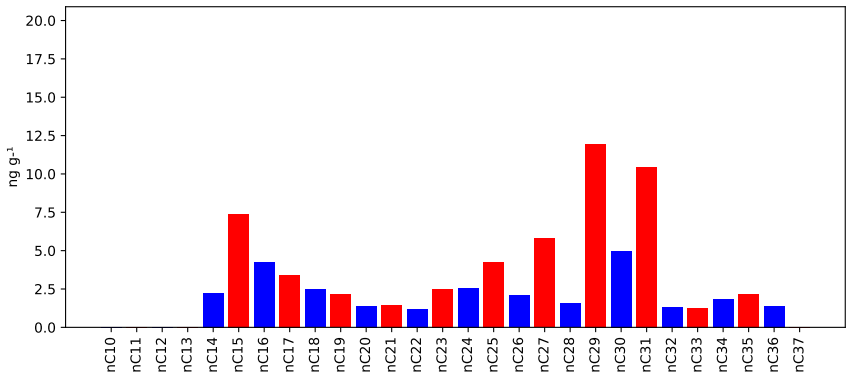
APPENDIX G HYDROCARBON ANALYSIS



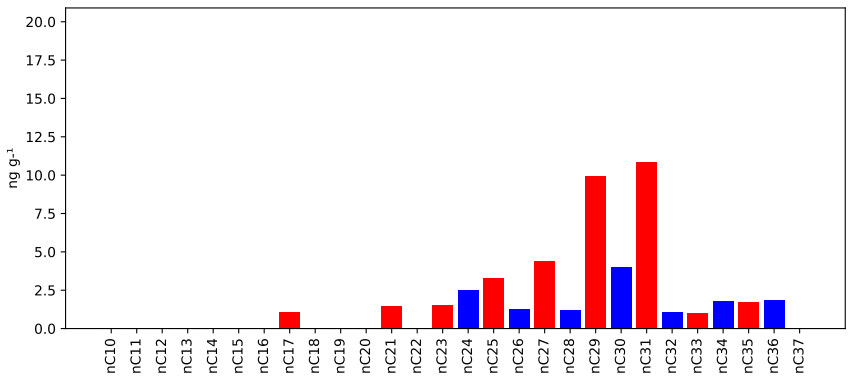
MV24GC1-ENV173
nC10-nC20: 6ng g-1
nC21-nC37: 71ng g-1
nC10-nC37: 78ng g-1
Odd n-Alkanes: 58ng g-1
Even n-Alkanes: 19ng g-1
CPI: 4.4



MV24GC1-ENV175
nC10-nC20: 5ng g-1
nC21-nC37: 71ng g-1
nC10-nC37: 76ng g-1
Odd n-Alkanes: 55ng g-1
Even n-Alkanes: 20ng g-1
CPI: 3.0

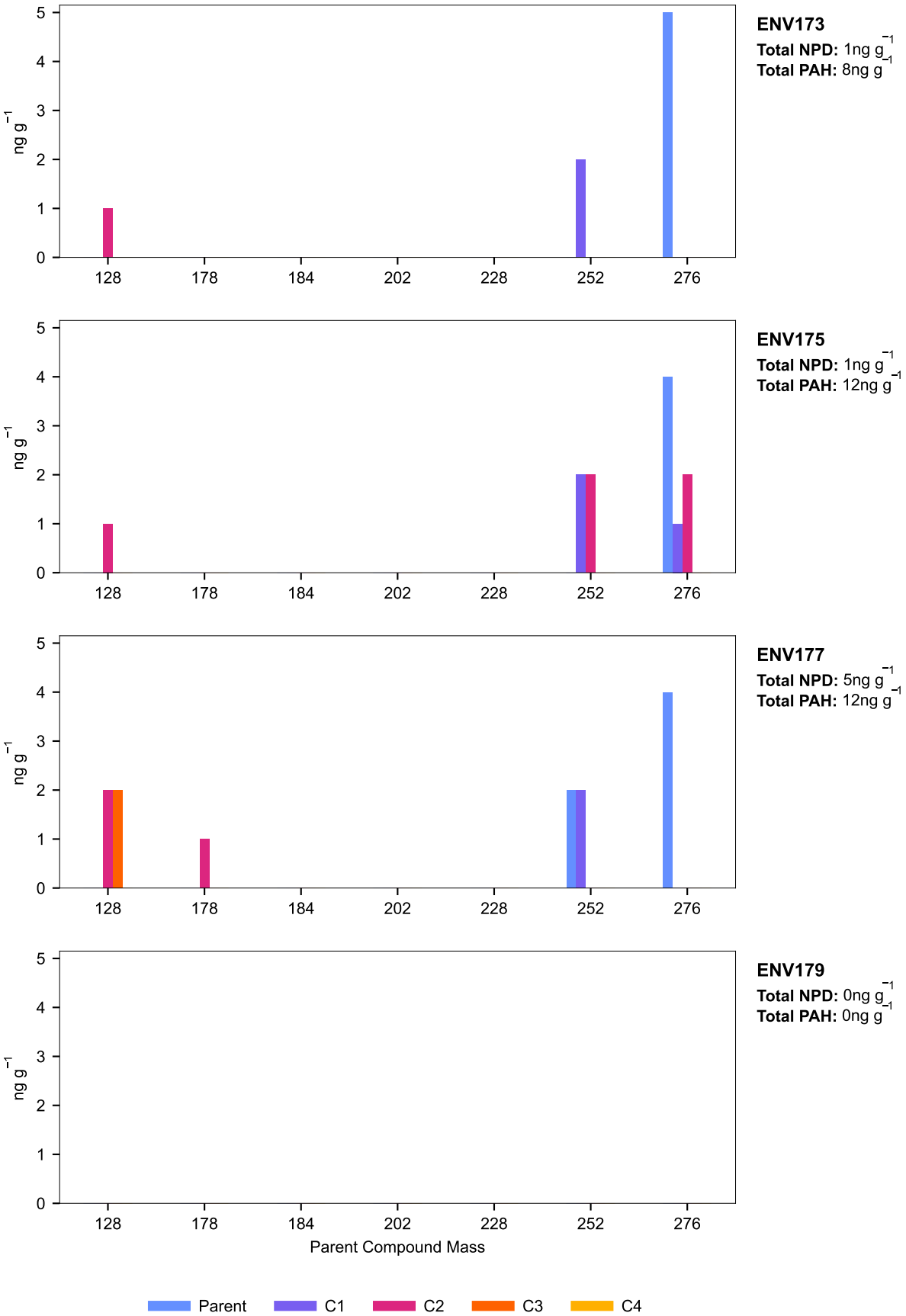


MV24GC1-ENV177
nC10-nC20: 23ng g-1
nC21-nC37: 57ng g-1
nC10-nC37: 80ng g-1
Odd n-Alkanes: 53ng g-1
Even n-Alkanes: 27ng g-1
CPI: 3.5



MV24GC1-ENV179
nC10-nC20: 1ng g-1
nC21-nC37: 48ng g-1
nC10-nC37: 49ng g-1
Odd n-Alkanes: 35ng g-1
Even n-Alkanes: 14ng g-1
CPI: 3.7

APPENDIX G HYDROCARBON ANALYSIS



APPENDIX G HYDROCARBON ANALYSIS

Table G.1 US EPA 16 PAHs Normalised to 2.5% TOC

Area	Station	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo[a]anthracene	Chrysene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[a]pyrene	Indeno[123,cd]pyrene	Dibenzo[a,h]anthracene	Benzo[ghi]perylene
MMO Specification																	
Northern	ENV173	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	34	NC	NC
	ENV175	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	28	NC	NC
	ENV177	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	35	NC	NC
	ENV179	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	30	NC	NC
Central	ENV233	NC	NC	NC	NC	NC	NC	27	NC	NC	NC	62	44	NC	79	NC	36
	ENV231	NC	NC	NC	NC	NC	NC	24	18	NC	NC	51	38	NC	70	NC	30
	ENV229	27	NC	NC	NC	49	NC	62	49	30	45	91	69	40	130	18	63
	ENV227	20	NC	NC	NC	32	NC	50	37	24	35	97	73	38	122	NC	57
	ENV171	20	NC	NC	NC	36	NC	50	36	25	35	95	72	33	116	16	56
	ENV172	NC	NC	NC	NC	16	NC	19	NC	NC	NC	39	27	15	48	NC	21
Southern	ENV185	87	11	18	29	151	29	164	149	89	107	151	132	103	134	26	107
	ENV186	136	17	29	47	273	49	251	238	139	170	211	175	159	175	36	160
	ENV187	164	22	51	72	382	81	359	334	202	227	239	205	216	182	43	190
	ENV208	192	16	47	69	344	75	290	280	159	174	158	134	159	100	31	135
	ENV206	284	19	48	77	367	82	280	273	145	168	134	115	134	78	23	117
	ENV205	226	14	31	50	283	53	200	193	94	115	89	62	87	44	22	81
	ENV236	390	23	65	97	447	90	323	328	171	207	162	138	166	97	29	140
	ENV211	171	15	36	57	291	47	227	222	125	152	167	118	132	111	30	134
	ENV217	168	23	47	64	354	80	330	304	162	185	148	133	156	97	25	126
	ENV213	254	42	69	98	538	167	484	418	364	382	326	286	344	202	60	252
	ENV215	341	20	58	95	457	87	343	333	191	220	191	148	191	133	36	159
	ENV220	401	19	46	84	402	61	190	206	101	128	70	69	86	41	14	86
	ENV222	401	24	66	101	510	98	368	343	197	222	166	146	182	95	31	152
	ENV221	450	28	51	90	490	87	328	301	175	190	126	119	155	74	23	118
	ENV200	337	22	52	83	429	69	306	274	157	172	123	113	145	72	22	109
	ENV201	421	22	66	147	624	74	208	221	118	157	92	76	103	47	17	101
	ENV237	302	14	37	71	336	40	175	180	95	115	61	57	71	30	12	69
	ENV218	357	21	47	78	424	71	292	292	130	165	106	96	112	62	27	108
	ENV204	449	32	54	102	547	81	377	366	173	220	140	118	147	73	50	138
	ENV203	373	34	53	99	426	82	315	307	189	214	186	158	197	130	36	161
Average (of any values >LOD)		260	22	49	80	342	75	233	238	142	165	134	112	132	89	29	112
Scottish Stations																	
Northern	ENV173	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	46	NC	42
	ENV175	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	31	NC	29
	ENV177	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	23	NC	NC	31	NC	31
	ENV179	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Average (of any values >LOD)		NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	23	NC	NC	36	NC	34
OSPAR (2005)	BC	5	NA	NA	NA	17	3	20	13	9	11	NA	NA	15	50	NA	45
	BAC	8	NA	NA	NA	32	5	39	24	16	20	NA	NA	30	103	NA	80
	BRC_{max}	NA	4	6	17	NA	NA	NA	NA	NA	NA		458	NA	NA	30	NA
OSPAR (2009)	EAC	43	NA	NA	NA	1250	78	250	350	NA	NA	NA	NA	625	NA	NA	NA

Concentrations are expressed as ng g^{-1} dry weight

NA Not available

NC Not calculated due to concentrations below LOD

Blue cells correspond to concentrations above BC when normalised to 2.5% TOC (OSPAR, 2005)

Dark blue cells correspond to average concentrations above BAC when normalised to 2.5% TOC (OSPAR, 2005)

Green cells correspond to concentrations above the BRC maximum for SNS when normalised to 2.5% TOC (OSPAR, 2005)

Red cells correspond to concentrations above the EAC when normalised to 2.5% TOC (OSPAR, 2009a)

APPENDIX G HYDROCARBON ANALYSIS

Table G.2 Polychlorinated Biphenyls

Area	Station	PCB 18	PCB 28[1]	PCB 31	PCB 44	PCB 47	PCB 49	PCB 52[1]	PCB 66	PCB 101[1]	PCB 105	PCB 110	PCB 118[1]	PCB 128	PCB 138[1]	PCB 141	PCB 149	PCB 151	PCB 153[1]	PCB 156	PCB 158	PCB 170	PCB 180[1]	PCB 183	PCB 187	PCB 194	Total PCBs	Total ICES-7 PCBs
Northern	ENV173	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV175	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV177	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV179	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
Central	ENV233	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV231	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV229	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV227	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV171	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV172	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
Southern	ENV185	<0.08	0.13	0.10	<0.08	<0.08	<0.08	<0.08	0.14	0.15	<0.08	0.14	0.23	<0.08	0.23	<0.08	0.14	<0.08	0.22	<0.08	<0.08	<0.08	0.10	<0.08	<0.08	<0.08	**1.58**	**0.23**
	ENV186	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.09	<0.08	<0.08	<0.08	0.12	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**0.21**	**0.09**
	ENV187	<0.08	0.11	0.09	<0.08	<0.08	<0.08	0.08	0.11	0.13	<0.08	0.12	0.22	<0.08	0.13	<0.08	0.11	<0.08	0.15	<0.08	<0.08	<0.08	0.11	<0.08	<0.08	<0.08	**1.36**	**0.13**
	ENV208	0.08	0.22	0.17	0.13	<0.08	0.13	0.20	0.21	0.32	0.12	0.34	0.46	0.09	0.39	<0.08	0.24	0.10	0.40	<0.08	<0.08	<0.08	0.21	<0.08	0.17	<0.08	**3.98**	**0.99**
	ENV206	0.14	0.29	0.27	0.16	<0.08	0.18	0.27	0.26	0.46	0.16	0.50	0.53	0.19	0.35	0.13	0.39	0.11	0.57	<0.08	0.09	0.13	0.25	0.08	0.20	<0.08	**5.71**	**1.14**
	ENV205	<0.08	0.09	<0.08	<0.08	<0.08	<0.08	<0.08	0.08	0.14	<0.08	0.19	0.18	<0.08	0.16	<0.08	0.14	<0.08	0.23	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**1.21**	**0.16**
	ENV236	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV211	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	0.10	<0.08	0.09	<0.08	<0.08	<0.08	0.07	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**0.26**	**0.09**
	ENV217	0.19	0.31	0.30	0.26	0.09	0.29	0.43	0.35	0.43	0.19	0.51	0.62	0.16	0.40	<0.08	0.33	<0.08	0.52	<0.08	0.11	0.10	0.28	<0.08	0.15	<0.08	**6.02**	**1.31**
	ENV213	<0.08	0.10	0.09	0.10	<0.08	<LOD	0.10	0.09	0.17	<LOD	0.15	0.14	<0.08	0.16	<0.08	0.12	<0.08	0.18	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	**1.4**	**0.16**
	ENV215	0.19	0.39	0.32	0.29	<0.08	0.23	0.38	0.38	0.53	0.22	0.6	0.63	0.15	0.75	0.13	0.52	0.15	0.77	<0.08	<0.08	0.15	0.38	0.12	0.3	0.14	**7.72**	**1.84**
	ENV220	0.12	0.17	0.16	0.16	<0.08	0.13	0.22	0.15	0.31	0.09	0.37	0.33	<0.08	0.33	<0.08	0.29	<0.08	0.29	<0.08	<0.08	<0.08	0.21	<0.08	<0.08	<0.08	**3.33**	**0.67**
	ENV222	0.16	0.34	0.28	0.21	<0.08	0.19	0.29	0.29	0.43	0.16	0.38	0.53	0.1	0.45	0.09	0.41	0.12	0.47	<0.08	<0.08	0.10	0.26	<0.08	0.21	<0.08	**5.47**	**1.29**
	ENV221	0.15	0.25	0.23	0.17	<0.08	0.15	0.23	0.18	0.27	0.11	0.33	0.36	<0.08	0.28	<0.08	0.29	<0.08	0.33	<0.08	<0.08	0.12	0.21	<0.08	0.14	0.08	**3.88**	**0.83**
	ENV200	0.24	0.44	0.40	0.35	0.11	0.30	0.49	0.36	0.60	0.24	0.6	0.67	0.16	0.66	0.11	0.67	0.18	0.77	<0.08	<0.08	0.22	0.41	0.08	0.26	0.12	**8.44**	**1.99**
	ENV201	0.11	0.14	0.13	0.10	<0.08	0.10	0.14	0.10	0.20	<0.08	0.23	0.22	<0.08	0.28	<0.08	0.23	<0.08	0.23	<0.08	0.09	<0.08	0.13	<0.08	<0.08	<0.08	**2.43**	**0.49**
	ENV237	0.09	0.11	0.11	0.08	<0.08	<0.08	0.15	0.10	0.22	<0.08	0.24	0.23	<0.08	0.25	<0.08	0.25	<0.08	0.26	<0.08	<0.08	<0.08	0.14	<0.08	<0.08	<0.08	**2.23**	**0.34**
	ENV218	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV204	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	NC	NC
	ENV203	0.22	0.42	0.40	0.42	0.27	0.38	0.48	0.56	0.91	0.50	1.14	1.23	0.62	0.99	0.43	0.93	0.51	1.11	0.51	0.52	0.59	0.8	0.38	0.59	0.46	**15.37**	**3.46**

Concentrations are expressed as ng g^{-1} dry weight

1 Denotes ICES-7 listed compounds

APPENDIX G HYDROCARBON ANALYSIS

Table G. 3 Normalised Polychlorinated Biphenyls to 2.5% TOC

Area	Station	PCB18	PCB52	PCB101	PCB118	PCB138	PCB153	PCB180	Total ICES-7 PCBs
Northern	ENV173	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	NC
	ENV175	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	<14.7	NC
	ENV177	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	<15.6	NC
	ENV179	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	NC
Central	ENV233	<16.7	<16.7	<16.7	<16.7	<16.7	<16.7	<16.7	NC
	ENV231	<13.2	<13.2	<13.2	<13.2	<13.2	<13.2	<13.2	NC
	ENV229	<8.9	<8.9	<8.9	<8.9	<8.9	<8.9	<8.9	NC
	ENV227	<10.9	<10.9	<10.9	<10.9	<10.9	<10.9	<10.9	NC
	ENV171	<10.9	<10.9	<10.9	<10.9	<10.9	<10.9	<10.9	NC
	ENV172	<10.9	<10.9	<10.9	<10.9	<10.9	<10.9	<10.9	NC
Southern	ENV185	<1.5	<1.5	0.2	0.3	0.3	0.3	0.1	**0.3**
	ENV186	<3.2	<3.2	<3.2	<3.2	0.3	0.4	<3.2	**0.3**
	ENV187	<2.1	0.2	0.3	0.5	0.3	0.3	0.2	**0.3**
	ENV208	0.1	0.2	0.3	0.4	0.4	0.4	0.2	**1.0**
	ENV206	0.1	0.2	0.3	0.3	0.2	0.3	0.1	**0.7**
	ENV205	<1.6	<1.6	0.2	0.3	0.3	0.4	<1.6	**0.3**
	ENV236	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	NC
	ENV211	<4.1	<4.1	<4.1	0.4	0.4	0.3	<4.1	**0.4**
	ENV217	0.1	0.3	0.3	0.4	0.2	0.3	0.2	**0.8**
	ENV213	<2	0.2	0.3	0.3	0.3	0.4	<2	**0.3**
	ENV215	0.1	0.2	0.3	0.3	0.4	0.4	0.2	**0.9**
	ENV220	0.1	0.2	0.3	0.3	0.3	0.2	0.2	**0.6**
	ENV222	0.1	0.2	0.2	0.3	0.2	0.3	0.1	**0.7**
	ENV221	0.0	0.1	0.1	0.1	0.1	0.1	0.1	**0.2**
	ENV200	0.0	0.1	0.1	0.1	0.1	0.2	0.1	**0.4**
	ENV201	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**0.3**
	ENV237	0.1	0.1	0.2	0.2	0.2	0.2	0.1	**0.3**
	ENV218	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	NC
	ENV204	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	<3.6	NC
	ENV203	0.2	0.3	0.6	0.9	0.7	0.8	0.6	**2.4**
OSPAR (2009c)	EAC	1.7	2.7	3.0	0.6	7.9	40.0	12.0	**100**

Concentrations are expressed as ng g^{-1} dry weight

Blue cells correspond to concentrations above EAC when normalised to 2.5% TOC (OSPAR, 2009c)

APPENDIX H METALS ANALYSIS

APPENDIX H METALS ANALYSIS

Table H.1 Normalised Metals to 1% TOC - MMO Specification

Area	Station	As	Cd	Cr	Cu	Hg	Ni	Pb	Zn
Northern	ENV173	23.8	<1.54	70.0	10.0	<0.08	21.5	27.7	96.9
	ENV175	14.1	<1.18	51.8	7.6	0.18	17.1	20.0	73.5
	ENV177	19.4	<1.25	59.4	10.0	<0.06	18.8	24.4	80.6
	ENV179	35.4	<1.54	57.7	9.2	<0.08	21.5	32.3	89.2
Central	ENV233	30.0	<1.33	75.3	12.0	<0.07	29.3	38.0	124.7
	ENV231	24.2	<1.05	66.3	10.0	<0.05	24.2	33.7	91.1
	ENV229	16.1	<0.71	42.9	8.6	<0.04	18.9	28.6	62.5
	ENV227	15.7	<0.87	45.7	10.0	<0.04	23.5	32.2	81.3
	ENV171	20.9	<0.87	55.7	13.0	<0.04	28.7	33.9	100.9
	ENV172	22.6	<0.87	66.5	15.7	<0.04	33.9	40.9	106.5
Southern	ENV185	5.4	0.06	18.5	6.2	0.05	12.3	18.3	38.3
	ENV186	7.7	0.11	25.8	8.4	0.05	16.8	26.3	56.1
	ENV187	6.1	0.08	18.4	7.0	0.05	12.5	21.9	45.7
	ENV208	4.7	0.07	10.4	6.6	0.07	7.4	20.5	36.8
	ENV206	4.2	0.05	7.2	6.1	0.04	5.7	19.2	31.0
	ENV205	9.7	0.11	12.4	9.0	0.06	9.1	34.6	61.8
	ENV236	24.6	0.42	27.3	21.7	0.10	22.7	88.5	183.7
	ENV211	10.2	0.10	24.9	10.2	0.10	16.1	31.5	69.3
	ENV217	3.8	0.04	7.3	4.5	0.05	5.3	14.4	23.4
	ENV213	9.7	0.06	15.8	7.4	0.05	10.7	27.4	57.7
	ENV215	4.4	0.04	7.2	5.4	0.05	5.6	17.7	24.0
	ENV220	6.6	0.05	5.5	7.1	0.04	5.3	17.9	32.9
	ENV222	5.4	0.04	6.3	5.3	0.05	5.2	15.3	23.9
	ENV221	2.3	0.02	1.9	2.3	0.02	1.8	5.6	9.6
	ENV200	2.4	0.02	2.3	2.8	0.02	2.1	7.6	10.6
	ENV201	3.8	0.03	3.1	3.8	0.03	3.0	10.7	19.5
	ENV237	6.6	0.06	3.8	7.1	0.03	4.4	15.9	34.0
	ENV218	17.8	0.16	18.6	14.3	0.09	16.1	63.8	129.1
	ENV204	17.4	0.19	18.4	13.9	0.12	14.9	60.6	123.9
	ENV203	5.8	0.06	8.4	7.7	0.05	6.6	26.9	38.4
OSPAR 2009	EAC	NA	0.06	NA	NA	0.22	NA	2.2	NA

NA Not available

Grey text indicates concentrations below LOD

Blue cells correspond to concentrations above EAC when normalised to 1% TOC (OSPAR, 2009c)

Table H.2 Normalised Metals to 1% TOC – Scottish Stations

Station		As	Ba	Cd	Cr	Cu	Hg	Ni	Pb	V	Zn
ENV173		54.8	1992.3	<1.54	116.2	20.0	<0.08	36.2	68.5	166.2	113.1
ENV175		47.2	1488.2	<1.18	99.4	20.0	<0.06	31.2	52.4	133.5	86.5
ENV177		46.8	1681.3	<1.25	99.4	18.8	<0.06	29.4	52.5	135.0	87.5
ENV179		64.5	1923.1	<1.54	106.2	23.8	<0.08	35.4	65.4	188.5	113.8
OSPAR (2009)	EAC	NA	NA	0.06	NA	NA	0.22	NA	2.2	NA	NA

NA Not Available

Grey text indicates concentrations below LOD

Blue cells correspond to concentrations above EAC when normalised to 1% TOC (OSPAR, 2009c)

APPENDIX I EDNA ANALYSIS

Please see the separately attached excel file (59294.E4 Morven Grid Connection 1 EBS – Appendix I – eDNA Appendix.xlsx) containing the eDNA bacteria, infauna, fish and marine mammal analysis tables.

Click here to open and close the attachment pane.

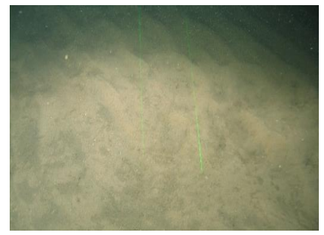
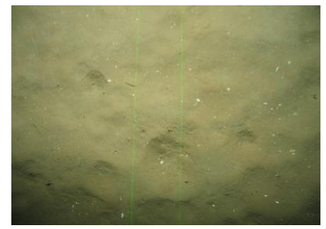
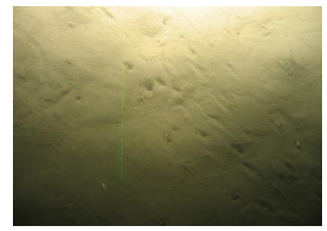
APPENDIX J MACROFAUNA ANALYSIS

Please see the separately attached excel file (59294.E4 Morven Grid Connection 1 EBS – Appendix J – Faunal Abundance and Biomass Appendix.xlsx) containing the Macrofauna abundance and biomass analysis tables.

Click here to open and close the attachment pane.

APPENDIX K EUNIS CLASSIFICATION

APPENDIX K EUNIS CLASSIFICATION

Adult Station Multivariate Cluster	Station	Water Depth (m)	Zone	Broad Substrate	Detailed Substrate Description	EUNIS Level 3	EUNIS Habitat Classification		EUNIS Habitat Type	Top Ten Fauna Abundance			Remarks	Representative Image
							Level	Code		Rank	Taxa	Abundance		
Broad Group A	ENV200, ENV201, ENV203, ENV204, ENV205, ENV218, ENV220, ENV221, ENV236 and ENV237	11 to 37	Circalittoral	Sand	Muddy sand to slightly gravelly muddy sand	MB5	Level 5	MB5238	*Spisula subtruncata* and N*ephtys hombergi* i in Atlantic infralittoral muddy sand	1	*Spisula*	2053	*Nephtys* and *Nephtys hombergii* present with characterising species *Ampelisca and Phaxas pellucidus.* Some sediment mis-match present with greater proportion of fines recorded.	
										2	***Spiophanes bombyx***	483		
										3	**NEMERTEA**	141		
										4	*Diastylis bradyi*	232		
										5	**Abra**	351		
										6	**Amphiuridae**	108		
										7	*Chamelea striatula*	187		
										8	*Obtusella intersecta*	107		
										9	*Chaetozone christiei*	96		
										9	*Mactra stultorum*	94		
										10	*Ophelina acuminata*	50		
Broad Group B	ENV171, ENV172, ENV173, ENV174, ENV175, ENV176, ENV177, ENV178, ENV179, ENV180, ENV227, ENV229, ENV231, ENV 233, ENV234 and ENV235A	66 to 93	Offshore Circalittoral	Sand	Muddy sand	MD6	Level 5	MD6218	*Paramphinome jeffreysii* , Thyasira spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud	1	**Amphiuridae**	1680	*P. jeffreysii* , *Amphiura filiformis* and Amphiuridae present with characterising species *Goniada maculata* and *Spiophanes kroyeri* .	
										2	***Paramphinome jeffreysii***	4084		
										3	***Galathowenia***	528		
										3	***Ophiocten affinis***	762		
										4	**Edwardsiidae**	390		
										5	*Scoloplos armiger*	374		
										6	**Abra**	400		
										7	*Paradoneis lyra*	522		
										8	**NEMERTEA**	320		
										9	*Bathyporeia*	286		
										10	Phoronis	306		
Broad Group C	ENV185, ENV186, ENV187, ENV206, ENV207, ENV208, ENV209, ENV210, ENV211, ENV212, ENV213, ENV214, ENV215, ENV216, ENV217, ENV222, ENV223 and ENV224	35 to 84	Offshore Circalittoral	Mud	Sandy mud with slightly gravelly muddy sand	MD6	Level 5	MD6217	*Levinsenia gracilis* and *Heteromastus filifirmis* in Atlantic offshore circalittoral mud and sandy mud	1	***Chaetozone pseudosetosa***	360	*L. gracilis* and *Heteromastus filifirmis* present with characterising species *P. jeffreysii* and *S. kroyeri.*	
										2	***Ennucula tenuis***	373		
										3	***Abra***	339		
										4	*Lumbrineris aniara*	181		
										5	*Ophelina acuminata*	162		
										6	*Harpinia antennaria*	201		
										7	*Tharyx killariensis*	180		
										8	*Lagis koreni*	126		
										9	*Abra nitida*	202		
										10	***Paramphinome jeffreysii***	160		

Taxa in **bold** are included in the top ten ranked taxa (adult abundance data)

Appendix F Gardline Ltd. (2025) Habitat Assessment Report

Survey Report for:
Morven Offshore Wind Limited

Project:
Morven Grid Connection 1 Route Environmental Survey

Description:
Habitat Assessment Report

Survey Date:
August and September 2024

Project Number:
59294

Client Reference:
CW204658

Report Status:
Rev0

REPORT AUTHORISATION AND DISTRIBUTION

Compilation	Environmental	K Sanders
Authorisation	Checked	L Hearnden
	Approved	G Allen/S Lines

Revision	Date	Title	Description
0	07-Feb-2025	Draft	pdf

Distribution

Morven Offshore Wind Ltd
Chertsey Road
Sunbury on Thames
TW16 7BP

For attention of:

Simon Dykes
simon.dykes@se1.bp.com

EXECUTIVE SUMMARY

During August and September 2024, Gardline conducted an UXO clearance and environmental survey on behalf of Morven Offshore Wind Limited along the proposed Morven Grid Connection 1 (GC1) route (hereafter; the route) from the proposed Morven offshore wind farm to landfall near Sunderland. The offshore survey was conducted onboard the motor vessel (MV) *Ocean Reliance* between 06-Aug-2024 and 21-Aug-2024, with the nearshore survey conducted onboard the MV *Titan Endeavour* between 30-Aug-2024 and 18-Sep-2024.

The aims of the environmental survey were to determine the characteristics of the seabed, benthic and pelagic communities and to identify any environmentally significant habitats.

A total of 54 stations were pre-selected along the route. This comprised 8 stations located within the northern block, mostly in Scottish waters, 13 stations in the central block and 33 stations in the southern block, located in English waters. A further 2 stations and 3 video transects were added to the nearshore survey during data acquisition. At all 59 locations, drop-down camera data were successfully acquired. Sediment sampling was conducted at 52 stations along the route, of these the required full suite, as per the benthic scoping document (Gardline, 2024), was obtained at 49 stations. All successful samples were acquired using a 0.1m^2 Day grab. Grab samples were acquired every 2 to 4km. Further, water sampling was successfully conducted at all 34 planned stations. Observed water depth varied between 11 and 93m along the route.

The visible fauna community observed along the Morven route was typically sparse with 38% of usable stills containing visible fauna.. Across the survey area, the most frequently observed taxa and/or features were burrows (present at 29 stations from the central and southern areas and in 13% of usable images), faunal turf (present at 25 stations and 10% of usable images, mainly from the southern area), *A. digitatum* (present at 33 stations from the northern and southern areas and in 8% of usable still images) and *P. phosphorea* (present at 11 stations from the central area and in 6% of usable stills).

A total of eight pairs of *Arctica islandica* siphons were observed across Stations ENV174, ENV175 and ENV178. This species is on the OSPAR (2008) list of threatened and/or declining species and habitats and is a low or limited mobility species priority marine feature (PMF) in Scottish offshore waters (NatureScot, 2020). However, this species is commonly found within this area of the North Sea. Fifteen individuals of *Glyptocephalus cynoglossus* were identified across twelve stations. This species is recorded as vulnerable on the IUCN Red List (2025). Two individuals of *Lophius piscatorius* were observed across two stations in English waters; angler fish is listed on the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012) as a priority species. Sixteen individuals of *Pleuronectes platessa* were observed across nine stations; plaice is classified as a priority species under the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012) and is on the Scottish Biodiversity List (NatureScot, 2020). A total of thirty-five individuals of the urchin *Echinus esculentus* were identified across seven stations. This species is recorded as near threatened on the IUCN Red List (2025).

Samples for particle size analysis (PSA) were collected at 49 stations along the route. Sediments were recorded as heterogeneous, with stations classified as very poorly to moderately sorted under Folk and Ward (1957). Under modified Folk (1954) most stations were classified as either muddy sand (n=26; 53%) or sandy mud (n=12; 24%), with a mean particle diameter ranging between 12 and 927µm. Across the survey area, all stations had a negligible (<5%) gravel (≥2mm) content, except for Stations ENV214 and ENV222 which had 30% and 55% gravel content, respectively. These stations were classified as muddy sandy gravel under the modified Folk (1954). All stations in the northern and central areas were dominated by sand (≥63µm and <2mm; >72%), whereas fifteen stations in the southern area were dominated (>50%) by sand and twelve were dominated (>50%) by fines (<63µm;silt and clay).

Stations along the route coincide with a potential herring nursery ground (Ellis *et al.*, 2012). Based on the results of the PSA (where acquired) only Stations ENV214 and ENV222 recorded a sufficiently high percentage of gravel (30 and 55%, respectively) to be considered sub-prime in terms of habitat sediment classification for herring spawning potential.

Stations along the route also coincided with low intensity spawning and nursery grounds for sand eel (Ellis *et al.*, 2012). Based on the results of the PSA (where acquired), Stations ENV173, ENV174, ENV179, ENV232, ENV234 and ENV235A were suitable in terms of habitat sediment preference criteria, in that they recorded <10% fines and >50% sand. These stations also met the preferred habitat sediment classification of sand under the modified Folk (1954).

A total of 576 burrows were observed across 29 stations ranging from 0.5 to 12.8cm in diameter. In addition, two species of sea pen (*Pennatula phosphorea* and *Virgularia*) were identified at 15 stations, ranging between 0.5 and 17.0cm and 0.8 and 14.3cm in height, respectively. The JNCC (2014b) clarification report states that to be considered a sea pen and burrowing megafauna communities habitat, densities of burrows and/or mounds, together with sea pens if present, should be classified as frequent or above on the SACFOR scale. Of the 29 stations where burrows were observed 23 were in a range to be considered to show some similarity to a sea pen and burrowing megafauna communities habitat (OSPAR, 2010). Of these 23 stations, 5 (Stations ENV187, ENV210 to ENV212 and ENV230) could be considered as showing the greatest similarity to a sea pen and burrowing megafauna communities habitat in that burrows encompassed the SACFOR ranges frequent to common.

Areas of cobbles and boulders were noted during analysis, as such stations were reviewed for their resemblance to a stony reef habitat based on the criteria adopted by Irving (2009). Of seventeen stations analysed for resemblance to stony reef, nine showed low resemblance to a stony reef while six showed medium resemblance.

With consideration of the PSA and imagery, the heterogenous survey was classified to Level 4 EUNIS habitat codes, with further classification where possible. Twelve stations required two classifications due to the heterogeneity of the sediments. Further all other stations were classified as follows:

- 24 stations classified as MD52: Atlantic offshore circalittoral sand, with 15 stations classified as MD521: Faunal communities in Atlantic offshore circalittoral sand
- 9 stations classified as MC521: Faunal communities Atlantic circalittoral sand
- 23 stations classified as MC621: Faunal communities in Atlantic circalittoral mud, with 21 refined to MC6216: Sea pens and burrowing megafauna in Atlantic circalittoral fine mud
- 9 stations classified as MC421: Faunal communities of Atlantic circalittoral mixed sediment
- 6 stations classified as MC121: Faunal turf communities on Atlantic circalittoral rock

Report volumes are as follows:

Report	Report Number
Morven – Grid Connection 1 Route Environmental Survey Operations Report	59294
Morven GC1 Route Benthic Scoping Document	59294.E0
Morven GC1 Environmental Survey Offshore Field Report	59294.E1
Morven GC1 Environmental Survey Nearshore Field Report	59294.E2
Morven GC1 Route Environmental Survey Habitat Assessment Report	59294.E3
Morven GC1 Route Environmental Survey Environmental Baseline Survey	59294.E4

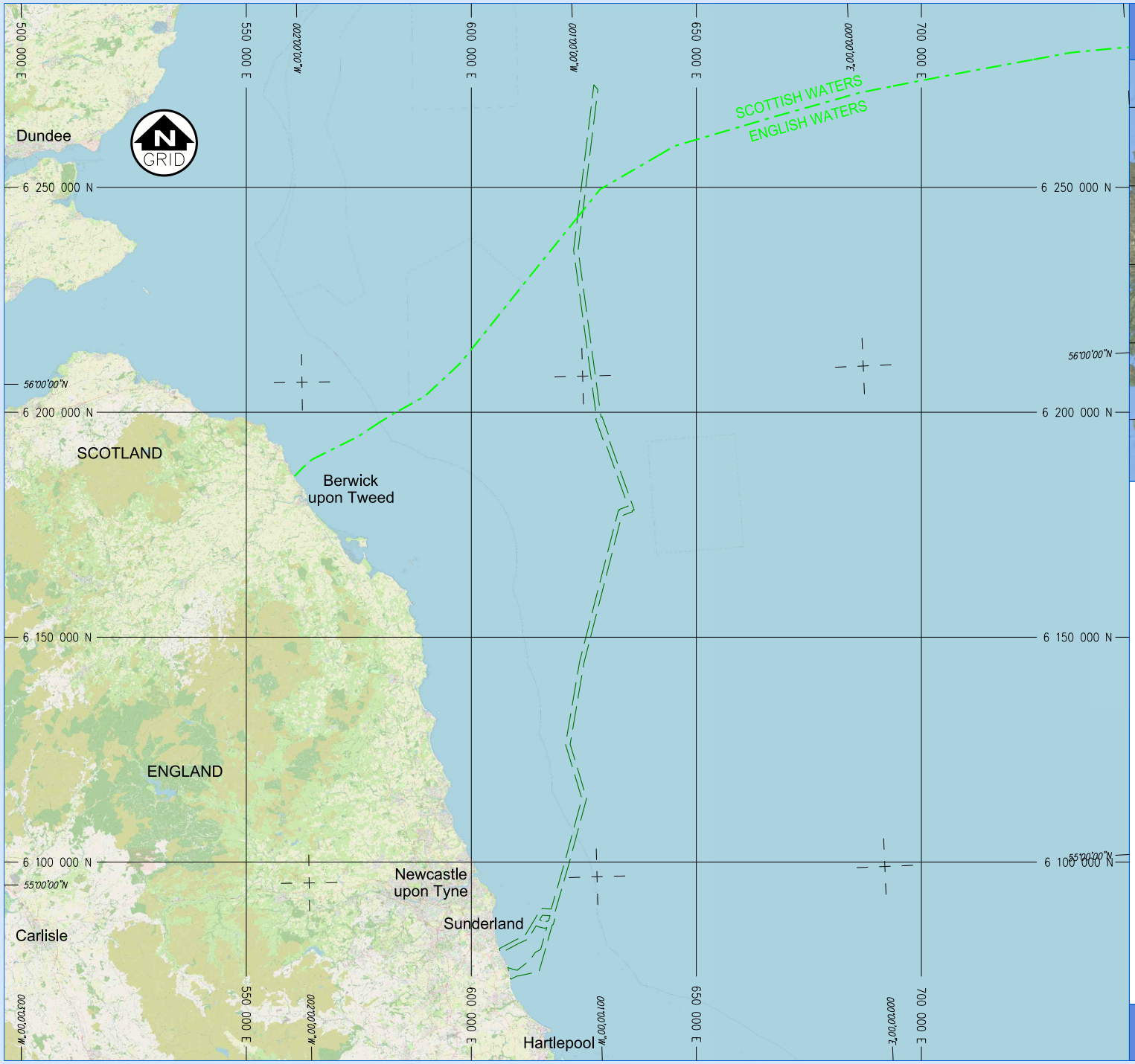
USE OF THIS REPORT

This report has been prepared with due care and diligence and with the skill reasonably expected of a reputable contractor experienced in the types of work carried out under the contract and as such the findings in this report are based on an interpretation of data which is a matter of opinion on which professionals may differ and unless clearly stated is not a recommendation of any course of action.

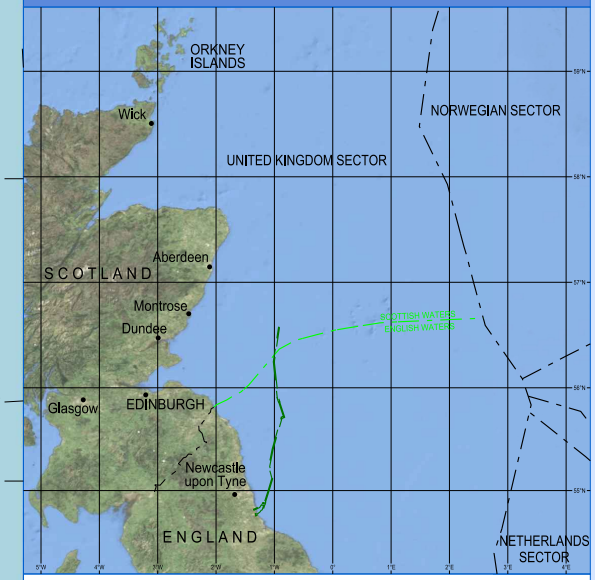
Gardline Limited has prepared this report for the client identified on the front cover in fulfilment of its contractual obligations under the referenced contract and the only liabilities Gardline Limited accept are those contained therein.

Please be aware that further distribution of this report, in whole or part, or the use of the data for a purpose not expressly stated within the contractual work scope is at the client's sole risk and Gardline Limited recommends that this disclaimer be included in any such distribution.

GARDLINE LIMITED
Endeavour House, Admiralty Road, Great Yarmouth, Norfolk, NR30 3NG, England
Telephone +44 (0) 1493 845600 Fax +44 (0) 1493852106
www.gardline.com



LOCATION MAP
Morven Grid Connection 1 Route



LEGEND

CABLE ROUTE CORRIDOR
(POSITION SUPPLIED BY CLIENT)

MARITIME BOUNDARY (POSITION FROM
ADMIRALTY MARITIME DATA SOLUTIONS)

Scale 1 : 1 250 000
ED50/UTM Zone 30N (3°W)

Job No. 59294.E3

TABLE OF CONTENTS

REPORT AUTHORISATION AND DISTRIBUTION II
EXECUTIVE SUMMARY III
USE OF THIS REPORT V
LOCATION MAP VI
TABLE OF CONTENTS VII
LIST OF FIGURES VIII
LIST OF TABLES VIII
GLOSSARY OF TERMS AND ABBREVIATIONS VIII
1 PROJECT SUMMARY 9
1.1 Scope of Work 9
1.2 Environmental Survey Strategy 11
1.3 Background Habitat Information 15
2 RESULTS AND DISCUSSION 17
2.1 Geophysical Survey Overview 17
2.2 Seabed Imagery Observations 17
2.3 Species of Conservation Interest 18
2.4 Sediment Sampling Observations 19
2.5 Particle Size Analysis 19
2.6 Herring Spawning Ground Potential 21
2.7 Sand Eel Spawning 23
2.8 Sea Pen and Burrowing Megafauna Communities 25
2.9 Stony Reefs 28
2.10 EUNIS Habitat Classification 30
3 BIBLIOGRAPHY 34

APPENDICES
APPENDIX A FIELD SAMPLING LOGS
APPENDIX B DATA ACQUISITION AND PROCESSING
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS
APPENDIX D FAUNAL OBSERVATION SUMMARY
APPENDIX E FAUNAL CATALOGUE
APPENDIX F PARTICLE SIZE ANALYSIS
APPENDIX G STONY REEF SEGMENTATION ASSESSMENT

LIST OF FIGURES

Figure 1.1 Habitat Map 10
Figure 1.2 Station Overview 14
Figure 2.1 Examples of Anthropogenic Debris 18
Figure 2.2 EUNIS Overview 33

LIST OF TABLES

Table 1.1 Summary of Environmental Sampling Positions and Sample Acquired 12
Table 2.1 Sediment Characteristics 20
Table 2.2 Summary of Herring Spawning Potential 22
Table 2.3 Summary of Sand Eel Spawning Potential 24
Table 2.4 Total Sea Pens and Faunal Burrows Qualification 26
Table 2.5 Application of SACFOR abundance ranges to OSPAR (2010) sea pen and burrowing megafauna communities habitat 27
Table 2.6 Stony Reef Assessment Summary 29
Table 2.7 EUNIS Habitat Classification 31

GLOSSARY OF TERMS AND ABBREVIATIONS

Benthic	Relating to the seabed
Biogenic	Produced by living organisms
BSI	British Standards Institute
Cefas	Centre for Environment, Fisheries and Aquaculture Science
Clay	Sediment grains <3.9µm in diameter
CM	Central Meridian
Defra	Department for Environment, Food and Rural Affairs
eDNA	Environmental DNA
EEA	European Environment Agency
EUNIS	European Union Nature Identification System
Fines	Sediment grains <63µm in diameter (same as Mud)
FOCI	Features of Conservation Importance
GC1	Grid Connection 1
Gravel	Sediment grains ≥2mm in diameter
HD	High Definition
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature and Conservation Committee
LAT	Lowest Astronomical Tide
Macrofauna	Organisms that are normally larger than the mesh size of the sieve used. In this case 0.5mm.
MBES	Multi-beam Echo Sounder
MCZ	Marine Conservation Zone
MNCR	Marine Nature Conservation Review
Mud	Sediment grains <63µm (includes Silt and Clay)
MV	Motor Vessel
NCMPA	Nature Conservation Marine Protected Area
NERC	Natural Environment Research Council
NMBAQC	National Marine Biological Association Quality Control
NSTA	North Sea Transitory Authority
OSPAR	Oslo and Paris convention
PMF	Priority Marine Features
PSA	Particle Size Analysis
SAC	Special Area of Conservation
SACFOR	JNCC (2013) density scale classification: superabundant, abundant, common, frequent, occasional and rare
Sand	Sediment grains ≥63µm and <2mm in diameter
SD	Standard Deviation
Silt	Sediment grains ≥3.9µm and <63µm in diameter
SOW	Scope of Work
SSS	Side Scan Sonar
USBL	Ultra Short Base Line
UTM	Universal Transverse Mercator
UXO	Unexploded Ordinance

1 PROJECT SUMMARY

1.1 Scope of Work

Between August and September 2024, Gardline conducted an UXO clearance and environmental survey along the proposed Morven Grid Connection 1 (GC1) route (hereafter; the route) from the proposed Morven offshore wind farm to landfall near Sunderland, on behalf of Morven Offshore Wind Limited in the central North Sea. The offshore survey was conducted onboard the motor vessel (MV) *Ocean Reliance* between 06-Aug-2024 and 21-Aug-2024 while the nearshore survey was conducted on the MV *Titan Endeavour* between 30-Aug-2024 and 18-Sep-2024.

As detailed in the scopes of work (SOW; bp, 2023; 2024), the objectives of the survey were to complete a site investigation to inform environmental impact assessment of the route (approximately 265km in length). To do this a multi-disciplinary survey was required. The objectives of the survey included:

- an initial geophysical clearance phase of the route options to complete environmental operations.
- an environmental survey to provide sediment type, benthic characterisation of habitats and species assemblages (including EUNIS biotope determination and physico-chemical analysis).
- seawater sampling using a Niskin water sampler for eDNA metabarcoding analysis to provide information on species present within the area.

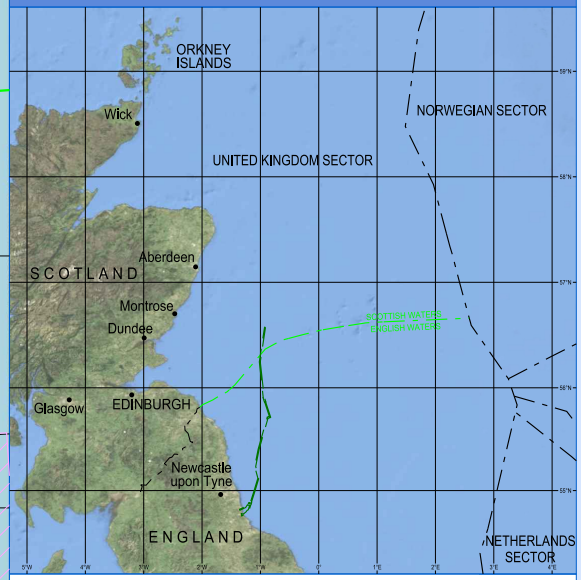
To meet the aims of the habitat assessment, the presence of the following species and habitats were assessed:

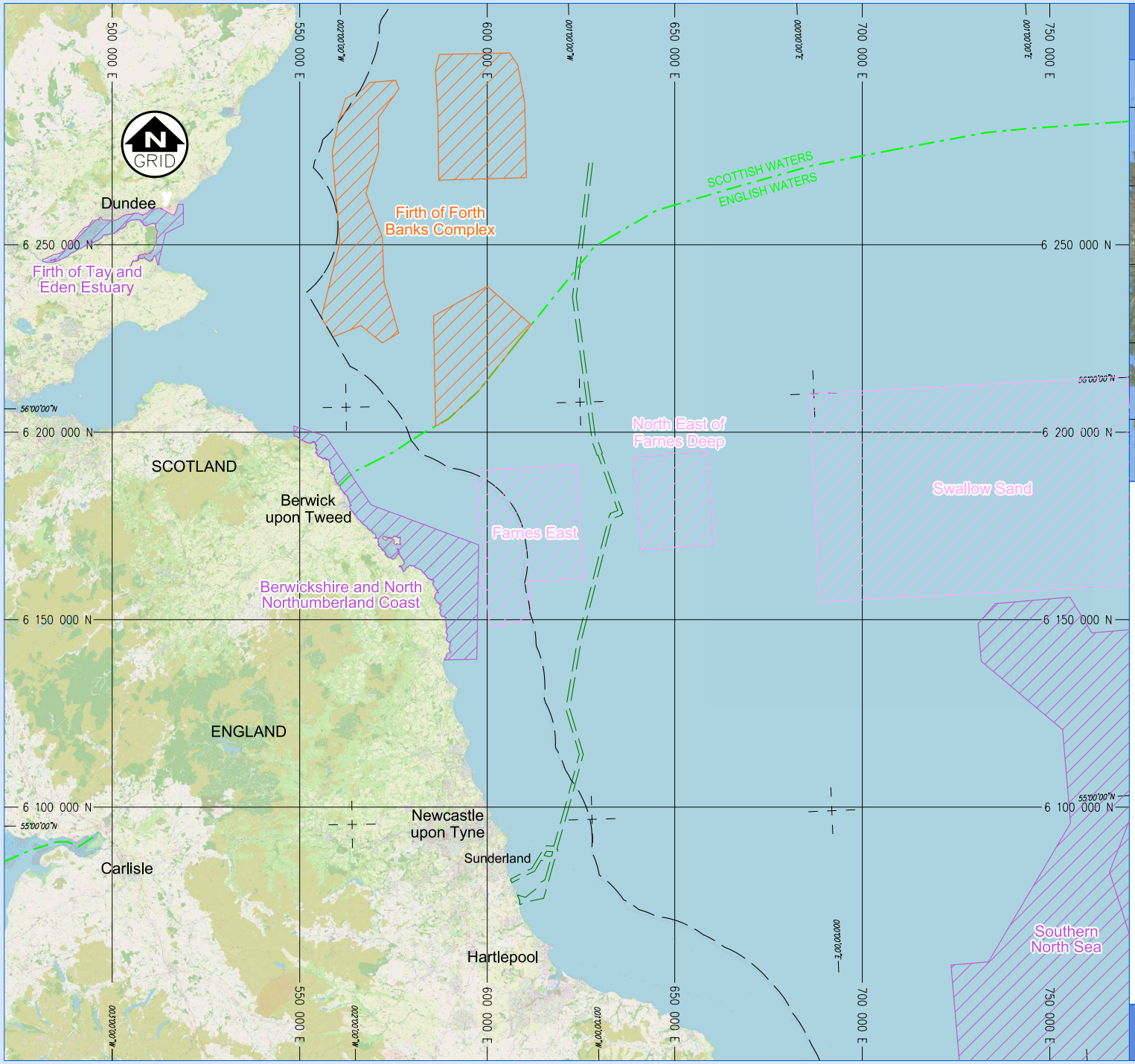
- habitats, such as biogenic or rocky reefs listed under Annex I of the Habitats Directive (1992).
- habitats or species features of conservation importance (FOCI) and broadscale habitats, defined in relation to the Marine Conservation Zones (MCZ) network (Natural England and JNCC, 2010) as required under the Marine Environment Regulations (2018).
- priority habitats or species in England, listed under Section 41 of the NERC Act (2006) that were deemed to require action in the UK Biodiversity Action Plan and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012).
- species or habitats selected as priority marine features (PMFs) in Scottish offshore waters (NatureScot, 2020)
- species listed on the Scottish Biodiversity List (2020)
- species or habitats on the OSPAR (2008) list of threatened and/or declining species and habitats.
- species on the IUCN (2025) Global Red List of threatened species.

This report presents the results of the habitat assessment. The results of the environmental baseline survey (Gardline, issue pending) are presented separately.

The proposed route is plotted in Figure 1.1 alongside MCZs, nature conservation marine protected areas (NCMPAs) and special areas of conservation (SACs). All positional information in this report is referenced to International 1924 Ellipsoid, European Datum 1950. All grid coordinates are projected using UTM Projection, Grid Zone 30N, CM 3°W.

HABITAT MAP
Morven Grid Connection 1 Route





LEGEND

- CABLE ROUTE CORRIDOR (POSITION SUPPLIED BY CLIENT)
- MARITIME BOUNDARY (POSITION FROM ADMIRALTY MARITIME DATA SOLUTIONS)
- TERRITORIAL SEA LIMIT (UKHO, 2022)

OFFSHORE MPA (JNCC,2024)

- MARINE CONSERVATION ZONE (MCZ)
- SPECIAL AREAS OF CONSERVATION (SAC)
- NATURE CONSERVATION MARINE PROTECTED AREA (NCMPA)

Scale 1 : 1 500 000
ED50/UTM Zone 30N (3°W)

Figure 1.1

Job No. 59294.E3

1.2 Environmental Survey Strategy

To enable clear and concise reporting, the naming convention of the stations have been shortened by the removal of the BP24MVEXP-ENV-DC/GS/WS- or MVGC1-ENV-DC/GS/WS- station identifiers. These shortened names have been used throughout this report, though the original full name has been retained in image file names and on the video overlays. The full and abbreviated names are presented in Table 1.1 along with details of station targets and reasons for their selection. An overview of the stations is presented spatially in Figure 1.2. The actual positions of the grab samples and seabed imagery, which may be offset from the intended target, are presented in the positional logs in Appendix A and plotted spatially in Appendix C.

To meet the objectives of the SOW, a total of 54 stations were pre-selected along the route. This included 8 stations spaced at approximately 4km intervals along the proposed route within the northern block, mainly in Scottish waters, 13 stations in the central block and 33 stations in the southern block, which were spaced at approximately 2km intervals along the proposed route in English waters. To ensure the proposed route was clear of archaeological artefacts and UXO for the grab sampling operations, MBES, magnetometer and SSS reconnaissance lines were run over each station target. Stations were adjusted in the field to avoid seabed hazards and other obstructions.

Stations ENV236 and ENV237 were added during the nearshore survey following gaining sampling approval from Historic England. Three additional camera-only transects were added (Stations ENV238, ENV239 and ENV240) during the nearshore survey to investigate areas of potential stony reef habitat.

Following acquisition of Station ENV235, it was determined the position of the station was outside the route boundary; therefore, sampling was reacquired as Station ENV235A, with no further analysis of the data from Station ENV235.

At all 59 stations, drop-down camera data were successfully acquired. As per the SOW (bp, 2023; 2024), all camera tracks were no more than 305m in length.

A minimum of three grab samples were proposed every 2 to 4km using a 0.1m^2 Day grab for analysis of particle size, environmental DNA (eDNA) and macrofaunal community. An additional sample was acquired at 30 stations for chemical analysis and fish eDNA. Following several unsuccessful grab sampling attempts likely attributed to coarse sediments, three stations (Stations ENV183, ENV197 and ENV198) were abandoned. Similarly, sampling was not attempted at four stations (Stations ENV182, ENV188, ENV199 and ENV219) after review of the seabed imagery due to the presence of cobbles and boulders.

Water samples for eDNA analysis was successfully acquired at all 34 planned stations.

Table 1.1 Summary of Environmental Sampling Positions and Sample Acquired

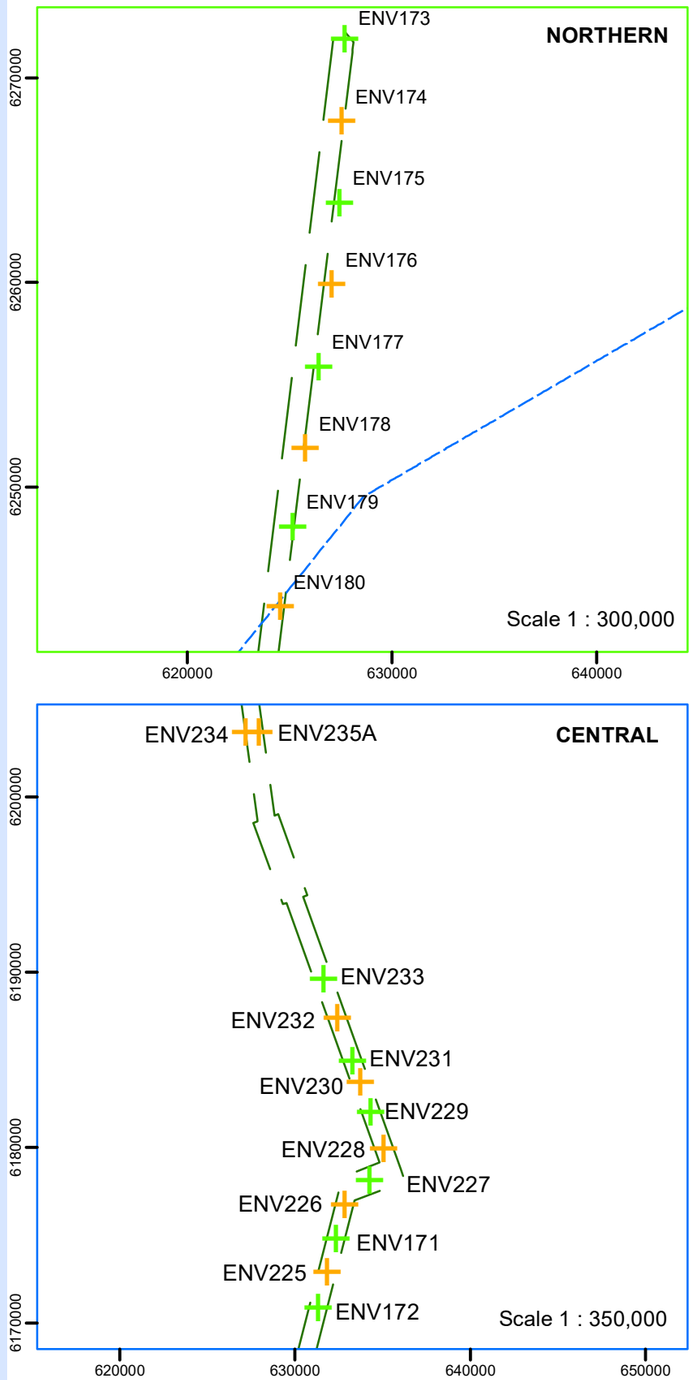
Area	Client ID	Name in this Report	Camera Acquisition Type	Target Easting[1]	Target Northing[1]	Station Selection	Data Acquired							Sampling Attempts	Failed Sediment
							Camera	Macrofauna	PSA	Chemistry	Sediment eDNA	Fish eDNA	Water eDNA		
Northern	MV24EXP-ENV-DC/WS/GS-173	ENV173	Station	627 676	6 271 898	Generally flat seabed; homogenous low SSS reflectivity rippled seabed, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-174	ENV174	Station	627 541	6 267 900	Generally flat seabed; homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	1	
	MV24EXP-ENV-DC/WS/GS-175	ENV175	Station	627 417	6 263 902	Generally flat seabed; homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-176	ENV176	Station	627 041	6 259 920	Generally flat seabed; homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	2	
	MV24EXP-ENV-DC/WS/GS-177	ENV177	Station	626 401	6 255 909	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-178	ENV178	Station	625 761	6 251 919	Generally flat seabed, homogenous low SSS reflectivity with scattered boulders, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-179	ENV179	Station	625 151	6 248 070	Rippled seabed, low to high reflectivity seabed, rippled sandy sediments.	Y	Y	Y	Y	Y	Y	Y	1	
	MV24EXP-ENV-DC/GS-180	ENV180	Station	624 523	6 244 160	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
Central	MV24EXP-ENV-DC/GS-235	ENV235	Station	628 496	6 203 641	Station outside the route boundary. Replaced by ENV235A	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/GS-235A	ENV235A	Station	627 952	6 203 640	Generally flat seabed, low to high SSS reflectivity with rare boulders, sandy sediment.	Y	Y	Y	N	N	N	N	0	
	MV24EXP-ENV-DC/GS-234	ENV234	Station	627 184	6 203 640	Generally flat seabed, low to high SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-233	ENV233	Station	631 618	6 189 611	Generally flat seabed, low to high SSS reflectivity with rare boulders, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-232	ENV232	Station	632 418	6 187 381	Generally flat seabed, mottled low to high SSS reflectivity, sandy sediment with occasional coarser sediments	Y	Y	Y	N	Y	N	N	1	
	MV24EXP-ENV-DC/WS/GS-231	ENV231	Station	633 292	6 184 926	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-230	ENV230	Station	633 726	6 183 710	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-229	ENV229	Station	634 328	6 182 007	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-228	ENV228	Station	635 066	6 179 941	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-227	ENV227	Station	634 270	6 178 112	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-226	ENV226	Station	632 825	6 176 748	Generally flat seabed, homogenous low SSS reflectivity with occasional boulders, sandy sediment.	Y	Y	Y	N	Y	N	N	1	
	MV24EXP-ENV-DC/WS/GS-171	ENV171	Station	632 329	6 174 794	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-225	ENV225	Station	631 833	6 172 878	Generally flat seabed, homogenous low SSS reflectivity with rare boulders, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-172	ENV172	Station	631 319	6 170 858	Generally flat seabed, with shoaling observed to the south; homogenous low SSS reflectivity with scattered boulders, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
Southern	MV24EXP-ENV-DC/WS/GS-185	ENV185	Station	621 009	6 099 061	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	2	
	MV24EXP-ENV-DC/GS-224	ENV224	Station	620 453	6 097 139	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-186	ENV186	Station	619 899	6 095 218	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-223	ENV223	Station	619 349	6 093 295	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-187	ENV187	Station	618 791	6 091 374	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	1	
	MV24EXP-ENV-DC/GS-210	ENV210	Station	618 237	6 089 452	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/GS-209	ENV209	Station	615 665	6 088 945	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-208	ENV208	Station	615 011	6 087 874	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0	
	MV24EXP-ENV-DC/GS-207	ENV207	Station	613 980	6 086 158	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0	
	MV24EXP-ENV-DC/WS/GS-206	ENV206	Station	612 927	6 084 402	Generally flat seabed, generally low SSS reflectivity and localised areas of high SSS reflectivity, sandy sediments, with localised accumulations of coarser sediment	Y	Y	Y	Y	Y	Y	Y	1	
	MV24EXP-ENV-DC/GS-183	ENV183	Station	611 593	6 082 978	Variable seabed showing exposed bedrock, low SSS reflectivity, exposed bedrock; also medium SSS reflectivity, coarse sandy sediment.	Y	N	N	N	N	N	N	3	
	MV24EXP-ENV-DC-238*	ENV238	Transect	611 226	6 082 898	Variable seabed showing exposed bedrock, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	N	N	N	N	N	N	NA	

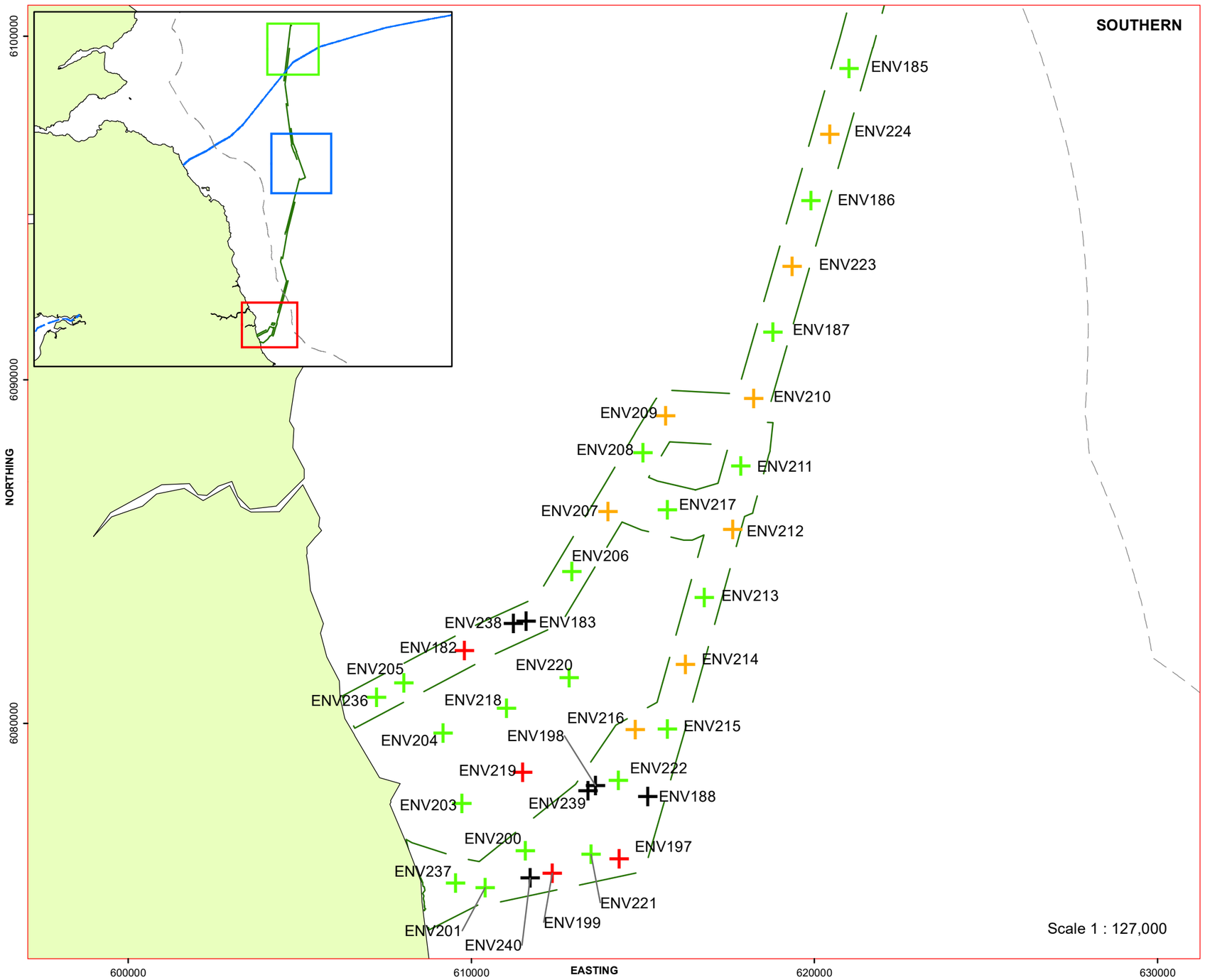
Area	Client ID	Name in this Report	Camera Acquisition Type	Target Easting[1]	Target Northing[1]	Station Selection	Data Acquired							Failed Sediment Sampling Attempts
							Camera	Macrofauna	PSA	Chemistry	Sediment eDNA	Fish eDNA	Water eDNA	
Southern	MV24EXP-ENV-DC/WS-182*	ENV182	Station	609 795	6 082 108	Variable seabed showing exposed bedrock, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	N	N	N	N	N	Y	NA
	MV24EXP-ENV-DC/WS/GS-205*	ENV205	Station	608 039	6 081 180	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	Y	Y	Y	Y	Y	Y	3
	MV24EXP-ENV-DC/WS/GS-236*	ENV236	Station	607 242	6 080 758	Generally flat seabed, homogenous low SSS reflectivity, fine sandy sediment	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS/GS-211	ENV211	Station	617 854	6 087 485	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/GS-212	ENV212	Station	617 621	6 085 643	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	0
	MV24EXP-ENV-DC/WS/GS-217	ENV217	Station	615 718	6 086 211	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS/GS-213	ENV213	Station	616 788	6 083 649	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/GS-214	ENV214	Station	616 242	6 081 710	Generally flat seabed, high SSS reflectivity and a small area of lower SSS reflectivity, rippled coarse sediments and sandy sediments.	Y	Y	Y	N	Y	N	N	3
	MV24EXP-ENV-DC/WS/GS-215	ENV215	Station	615 717	6 079 828	Generally flat seabed, high SSS reflectivity, rippled coarse sandy sediments, south of location. North of location low SSS reflectivity, sandy sediments	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/GS-216	ENV216	Station	614 785	6 079 813	Generally flat seabed, homogenous low SSS reflectivity, sandy sediment.	Y	Y	Y	N	Y	N	N	1
	MV24EXP-ENV-DC/WS/GS-220	ENV220	Station	612 857	6 081 334	Generally flat seabed, homogenous low SSS reflectivity with rare boulders, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS/GS-222	ENV222	Station	614 286	6 078 326	Rippled seabed, high SSS reflectivity, coarse rippled sandy sediments, west of location. East of location low SSS reflectivity, with rare boulders, sandy sediment.	Y	Y	Y	Y	Y	Y	Y	1
	MV24EXP-ENV-DC/GS-188	ENV188	Station	615 150	6 077 864	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	N	N	N	N	N	N	NA
	MV24EXP-ENV-DC/GS-198	ENV198	Station	613 616	6 078 185	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	N	N	N	N	N	N	5
	MV24EXP-ENV-DC-240*	ENV240	Transect	611 717	6 075 484	Variable seabed showing exposed bedrock, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	N	N	N	N	N	N	NA
	MV24EXP-ENV-DC/WS/GS-221	ENV221	Station	613 485	6 076 175	Generally flat seabed, generally homogenous low SSS reflectivity with occasional boulders, sandy sediment. Northwest of location very high SSS reflectivity with frequent boulders, coarse sandy sediment.	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS/GS-197	ENV197	Station	614 311	6 076 047	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	N	N	N	N	N	Y	7
	MV24EXP-ENV-DC/WS/GS-200*	ENV200	Station	611 574	6 076 289	Generally flat seabed, generally low SSS reflectivity adjacent to areas of high SSS reflectivity, gravelly sediments. Station was relocated to ensure coverage of the transition zone between the two habitat types.	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS-199*	ENV199	Station	612 355	6 075 629	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	N	N	N	N	N	Y	NA
	MV24EXP-ENV-DC-239*	ENV239	Transect	613 402	6 078 035	Variable seabed, high SSS reflectivity with boulders, cobbles, and gravelly sand	Y	N	N	N	N	N	N	NA
	MV24EXP-ENV-DC/WS/GS-201*	ENV201	Station	610 399	6 075 205	Generally flat seabed, homogenous low SSS reflectivity, fine sandy sediment	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS/GS-237*	ENV237	Station	609 540	6 075 350	Generally flat seabed, homogenous low SSS reflectivity, fine sandy sediment	Y	Y	Y	Y	Y	Y	Y	2
	MV24EXP-ENV-DC/WS/GS-218*	ENV218	Station	611 024	6 080 438	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	Y	Y	Y	Y	Y	Y	1
	MV24EXP-ENV-DC/WS-219*	ENV219	Station	611 495	6 078 574	Mottled seabed; SSS showing medium SSS reflectivity, with frequent boulders, sandy sediment	Y	N	N	N	N	N	Y	NA
	MV24EXP-ENV-DC/WS/GS-204*	ENV204	Station	609 176	6 079 717	Generally flat seabed, generally low SSS reflectivity adjacent to areas of high SSS reflectivity, gravelly sediments	Y	Y	Y	Y	Y	Y	Y	0
	MV24EXP-ENV-DC/WS/GS-203*	ENV203	Station	609 719	6 077 661	Generally flat seabed, generally low SSS reflectivity adjacent to areas of high SSS reflectivity, gravelly sediments. Station was relocated to ensure coverage of the transition zone between the two habitat types.	Y	Y	Y	Y	Y	Y	Y	2
						Total number of station investigated (excluding Station ENV235)	59	49	49	30	49	30	34	52

1 Environmental target and transect locations; actual camera track and sampling positions for each individual grab sample are detailed in Appendix A

* Station acquired during the nearshore phase of the survey

STATION OVERVIEW





LEGEND

- CABLE ROUTE CORRIDOR
- NATIONAL LIMIT (UKHO, 2022)
- TERRITORIAL SEA LIMIT (UKHO, 2022)

ENVIRONMENTAL STATION TYPE

- CAMERA ONLY
- MACROFAUNA, PSA AND SEDIMENT eDNA
- MACROFAUNA, PSA, SEDIMENT eDNA, WATER eDNA AND CHEMISTRY
- WATER eDNA

Overview Scale 1 : 2,700,000
ED50/UTM Zone 30N (3°W)

Figure 1.2

Job No. 59294.E3

1.3 Background Habitat Information

1.3.1 Overview

This section presents an overview of the habitats and faunal communities expected to occur (or were highlighted in the field report as potentially present) within UK and Scottish waters in the vicinity of the route.

1.3.2 Herring Spawning

The Atlantic herring (*Clupea harengus*) is a schooling, coastal pelagic species that inhabits both sides of the Atlantic Ocean (Reid *et al.*, 1999). Herring is one of the most important UK commercial marine species. It is also highly vulnerable to both fishing pressures and activities associated with the renewable industry (Gill *et al.*, 2012; Kikuchi, 2010).

Herring are reported to deposit their sticky demersal eggs on a variety of substrates ranging from boulders, rocks, small stones, coarse sand, shell fragments, macrophytes and man-made structures such as lobster pots. However, gravel is widely considered to be the preferred spawning substrate (Rogers & Stocks, 2001; Ellis *et al.*, 2012). The eggs adhere to the seabed, forming extensive egg beds. According to Reid *et al.* (1999), spawning occurs in areas of well-mixed water with reasonably strong tidal currents (1.5 to 3 knots), often on shoals and banks in relatively shallow water (approximately 15-40m deep). These high-energy environments provide aeration and reduce siltation and accumulation of metabolites (Stevenson & Scott, 2005). The negative impacts of the oil and gas industry on herring spawning grounds are primarily due to the risk of smothering from drill cuttings and disturbed sediment during installation/drilling. The negative impacts from the renewable industry on herring spawning grounds are primarily due to the risk of smothering from dredged material and disturbed sediment during installation.

1.3.3 Sand Eel Spawning

Sand eels (Ammodytidae) are small eel-like fish which swim in large shoals and are an important component of marine food webs providing food for many species of marine predators including seabirds, mammals and commercially important species such as; *Gadus morhua*, and *Melanogrammus aeglefinus* (Holland *et al.*, 2005; Jensen *et al.*, 2010). Of the five species of sand eels inhabiting the North Sea, *Ammodytes marinus* is the most abundant and comprises 90% of sand eel fishery catches (ICES, 1997).

As with other sand eel species *A. marinus* has a close association with sandy substrates into which they burrow. It is common for sand eels to prefer sandy sediments to those comprised predominately of gravel or silt (Pinto *et al.*, 1984) and they preferentially inhabit the sloping sides of sand banks (Wright *et al.*, 1998). Depth also has an influence; with sand eels being found at depths of 15 to 120m and with greater frequency at 30 to 70m (Wright *et al.*, 2000).

Spawning is suggested to occur between November and February (Coull *et al.*, 1998; Ellis *et al.*, 2010; 2012) where sand eels will spawn on the seabed and the eggs attach themselves to grains of sand (Hassel *et al.*, 2002). Sand eels hibernate in the sand during winter and bury themselves at night, so are most likely to be seen during the day between April and July. Physical disturbance to sand eel habitats may occur during operations including drilling and/or cable laying activities due to the resulting temporary sediment resuspension and increased turbidity (Bat *et al.*, 2013). These activities can therefore result in increased mortality, although it is expected that the population would recover following construction periods (Jensen *et al.*, 2010). The construction of an offshore wind farm can have a short-term positive effect on sand eel densities due to the reduction in silt and clay (van Deurs *et al.*, 2012). However, a long-term negative effect was observed in density reduction of sand eel juveniles.

1.3.4 Sea Pen and Burrowing Megafauna Communities

A sea pen and burrowing megafauna communities habitat is classified as a threatened and/or declining habitat (OSPAR, 2008). It is defined by OSPAR (2010) as plains of fine mud, extending over an area of at least 25m^2 and at water depths ranging from 15 to 200m or more. These areas are defined as being heavily bioturbated by burrowing megafauna including *Nephrops norvegicus*, *Calocaris macandreae* or *Callianassa subterranea*, with burrows and mounds typically forming a prominent feature of the sediment surface, and which may include conspicuous populations of sea pens (Pennatuloidea); typically, *Virgularia mirabilis* and *Pennatula phosphorea*. Despite its classification as a threatened and/or declining habitat (OSPAR, 2008); this habitat is widespread throughout the central North Sea, around the south and west coasts of Norway and around the north of the British Isles (OSPAR, 2010).

1.3.5 Stony Reefs

Reefs are one of the habitats of conservation significance listed under Annex I of the Habitats Directive (1992) for protection within Special Areas of Conservation. Although there is no definition of reefs in the Habitats Directive itself, European interpretation of the habitat has been discussed and agreed upon as including bedrock, stony and biogenic reefs. Stony reefs (bedrock and stony) can be extremely variable, both in structure and in the communities they support. A wide range of topographical reef forms meet the European definition of this habitat type, including; vertical rock walls, horizontal ledges, sloping or flat bed rock, broken rock, boulder fields and aggregations of cobbles (McLeod *et al.*, 2009).

Stony reefs can comprise areas of boulders or cobbles that stand proud from the seafloor and can provide a suitable substratum for the attachment of benthic communities of algae and marine fauna. Cobbles and boulders are generally considered to be greater than 64mm in diameter and a feature of a stony reef must be that it is topographically distinct from the surrounding seafloor (Irving, 2009).

Bedrock reefs occur where bedrock arises from the surrounding seabed creating a habitat that is colonised by a distinct faunal community (JNCC, 2014a).

2 RESULTS AND DISCUSSION

2.1 Geophysical Survey Overview

The survey along the route was divided into three areas: a northern, central and southern area. To provide clearance from potential UXO and other obstructions, MBES, SSS and magnetometer data were acquired over pre-selected environmental sampling locations. These data were for UXO pre-clearance only, therefore no further interpretation or analysis of the data was conducted onshore.

2.2 Seabed Imagery Observations

A selection of seabed photographs, together with descriptions and positions are presented in Appendix C, whilst a summary of all taxa identified from each station is presented in Appendix D and example images of each taxa are presented in Appendix E. Seabed imagery along the route confirmed the sediment ranged from muddy sand to coarse sand with gravel, cobbles and boulders in some areas.

Visible fauna identified to the lowest taxonomic level with confidence included:

- Annelida (*Aphrodita aculeata, Hyalinoecia tubicola, Myxicola, Oxydromus flexuosus,* Polychaeta*, Sabella pavonina,* Terebellidae)
- Arthropoda (Brachyura*, Cancer pagurus,* Caridea*,* Decapoda*, Ebalia, Goneplax rhomboides,* Inachidae*, Munida, Necora puber, Nephrops norvegicus,* Paguroidea*, Pagurus prideaux, Polybius depurator*)
- Bryozoa (*Alcyonidium diaphanum,* Flustridae)
- Chordata (Actinopterygii, *Agonus cataphractus,* Ascidiacea*, Buglossidium luteum, Callionymus lyra, Chelidonichthys cuculus, Eutrigla gurnhardus, Glyptocephalus cynoglossus, Leucoraja naevus, Limanda limanda, Lophius piscatorius, Melanogrammus aeglefinus, Myxine glutinosa, Pleuronectes platessa,* Pleuronectiformes*, Scyliorhinus canicula*)
- Cnidaria (Actiniaria*, Alcyonium digitatum, Calliactis palliata, Caryophyllia,* Ceriantharia*,* Edwardsiidae*,* Hexacorallia*, Hydractinia echinata,* Hydrozoa*, Nemertesia antennina, Nemertesia ramosa, Pennatula phosphorea, Urticina eques, Urticina, Virgularia*)
- Echinodermata (*Asterias rubens,* Asteroidea*, Astropecten irregularis, Echinus esculentus, Henricia, Hippasteria phrygiana, Luidia ciliaris, Ophiocomina nigra, Ophiothrix fragilis,* Ophiuroidea*, Stichastrella rosea*)
- Mollusca (*Aporrhais pespelecani*, *Arctica islandica* siphons, Bivalvia siphons, *Calliostoma zizyphinum, Coryphella,* Gastropoda, Nudibranchia, Pectinidae*,* Scaphopoda, Sepiida*,* Turritellidae)
- Porifera (Hard substrate sponge)

Additionally faunal turf and bioturbation in the form of tracks and burrows were observed. Two observations of anthropogenic debris, in the form of plastic, were recorded at Stations ENV220 and ENV222 and are shown in Figure 2.1.

Overall, fauna was typically sparse throughout the survey area with only 38% of usable stills containing visible fauna. This sparsity of visible fauna was most notable in the northern area where only 26% of usable stills contained visible fauna, whereas almost half (45%) of usable stills from the central area contained visible fauna. Across the survey area the most frequently observed taxa and/or features were as follows:

- Burrows, present at 29 stations from the central and southern areas and in 13% of usable images.
- Faunal turf, present at 25 stations and 10% of usable images, mainly from the southern area.
- *A. digitatum,* present at 33 stations from the northern and southern areas and in 8% of usable still images.
- *P. phosphorea,* present at 11 stations from the central area and in 6% of usable stills.

Figure 2.1 Examples of Anthropogenic Debris



Station: ENV200 Fix: 1840



Station: ENV222 Fix: 1743

2.3 Species of Conservation Interest

A total of eight pairs of siphons, thought to be the bivalve *A. islandica,* were observed in imagery across three stations (Stations ENV174, ENV175 and ENV178). This species is on the OSPAR (2008) list of threatened and/or declining species and habitats. In addition, it is listed as a low or limited mobility species PMF in Scottish offshore waters (NatureScot, 2020); however, this species is commonly found within this area of the North Sea.

A total of fifteen individuals of the witch flounder; *G. cynoglossus* were observed across twelve stations. This species is classified as vulnerable on the global IUCN Red List (2025).

Two individuals of angler fish (*L. piscatorius*) were observed in imagery across two stations within English waters (Stations ENV198 and ENV225). This slow growing species which is vulnerable to fishing is listed on the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012) as a priority species.

Sixteen individuals of plaice (*Pleuronectes platessa*) were observed in imagery across nine stations (Stations ENV173, ENV179, ENV206, ENV212, ENV221, ENV223, ENV228, ENV232 and ENV236). This species is classified as a priority species under the UK Post-2010 Biodiversity Framework (JNCC and Defra, 2012) and is on the Scottish Biodiversity List (NatureScot, 2020).

A total of thirty-five individuals of the urchin *E. esculentus* were identified across seven stations (Stations ENV188, ENV197, ENV198, ENV234, ENV219, ENV238 and ENV240). This species is classified as near threatened on the IUCN (2025) Global Red List.

Other than those species mentioned above and habitats discussed in Sections 2.6 to 2.9, there was no further evidence from seabed imagery of habitats listed under Annex I of the Habitats Directive (1992), habitats or species of FOCI (2018), priority habitats or species (JNCC and Defra, 2012), species or habitats selected as PMFs (NatureScot, 2020). Nor any species listed on the Scottish Biodiversity List (2020), species or habitats listed on the OSPAR (2008) list of threatened and/or declining species and habitats or species on the IUCN (2025) Global Red List.

2.4 Sediment Sampling Observations

Sediment sampling was conducted at 52 stations across the survey area, with the required suite of samples collected at 49 stations as per the SOW (bp, 2023; 2024). All successful samples were acquired using a 0.1m^2 Day grab. Environmental deck and positioning logs are presented in Appendix A, with example images presented in Appendix C.

Excluding sampling at the superseded Station ENV235, a total of 177 grab samples were acquired from 215 attempts (82% success rate). Of these retained samples, 99% were acquired within 10m from the target location, with the remaining sample (from nearshore Station ENV200) acquired 20m from the target. On average, samples were obtained within 1.6m of the target locations (±1.8SD). The 38 unsuccessful sampling attempts occurred across 18 stations, most of which were from the southern area. Samples were largely rejected due to low sample retention, stones in the grab jaws and misfiring of the grab associated with coarse sediments at seabed, other than at Station ENV226, where the presence of Myxinidae resulted in sample rejection.

Seabed sampling supported the initial interpretation of the seabed imagery findings at these stations, confirming that the seabed comprised sandy sediment with varying amounts of fines, shell fragments and occasional areas of muddy sediment with cobbles; the latter being restricted to stations in the southern area.

Visible fauna observed with the retrieved grab were limited and included:

- Annelida (Polychaeta)
- Arthropoda (Brachyura, Crustacea, Corystidae, Paguroidea)
- Cnidaria (Alcyoniidae, Pennatuloidea)
- Echinodermata (Echinoidea, Ophiuroidea, Spatangoidea)
- Mollusca (Bivalvia, Gastropoda, Pharidae, Scaphopoda)

2.5 Particle Size Analysis

The results of the PSA, determined using wet and dry sieving, are summarised in Table 2.1. Full results, including histograms illustrating the particle distribution at each of the 49 sampled stations, are presented in Appendix F. The results of the PSA were consistent with observations from seabed imagery and the recovered sediment samples.

Along the route, sediments were recorded as heterogenous, ranging from very poor to moderately sorted sediment under Folk & Ward (1957). Mean particle diameter ranged between 12µm at Station ENV215 and 927µm at neighbouring Station ENV214 which is described under Wentworth (1922) classification as fine silt to coarse sand. Most stations recorded poorly to very poorly sorted sediment (n=44, 90%) with fine skewed distributions (fine or very fine skewness; n=43, 88%). When classified under modified Folk (1954), sediments were predominantly muddy sand (n=26; 53%) or sandy mud (n=12; 24%) and these stations recorded modal phi values between 1.5 and 7.0 (Appendix F).

Of the 49 stations where PSA was collected, all stations recorded negligible (<5%) gravel (≥2mm) content, except for southern Stations ENV214 and ENV222 which recorded 30.2% and 54.6% gravel content, respectively. All stations in the northern and central areas were dominated by sand (≥63µm and <2mm; >72%), whereas fifteen stations in the southern area were dominated (>50%) by sand and twelve were dominated (>50%) by fines (<63µm;silt and clay).

Table 2.1 Sediment Characteristics

Area	Station	Mean Diameter (um)	Mean Diameter (phi)	Fines %	Sand %	Gravel %	Wentworth Classification of Mean Grain Size	Sorting[1]	Modified Folk Classification
Northern	ENV173	235	2.1	7.5	92.5	0.05	Fine sand	Poor	Sand
	ENV174	204	2.3	9.3	90.6	0.12	Fine sand	Poor	Sand
	ENV175	189	2.4	10.2	89.8	0.04	Fine sand	Poor	Muddy sand
	ENV176	180	2.5	10.8	89.1	0.03	Fine sand	Poor	Muddy sand
	ENV177	204	2.3	11.1	88.7	0.18	Fine sand	Poor	Muddy sand
	ENV178	208	2.3	10.2	89.5	0.35	Fine sand	Poor	Muddy sand
	ENV179	341	1.6	4.6	95.1	0.32	Medium sand	Moderate	Sand
	ENV180	198	2.3	10.8	89.2	0.08	Fine sand	Poor	Muddy sand
Central	ENV235A	257	2.0	5.3	94.5	0.17	Medium sand	Moderate	Sand
	ENV234	271	1.9	5.3	94.4	0.32	Medium sand	Moderate	Sand
	ENV233	214	2.2	11.9	88.0	0.09	Fine sand	Poor	Muddy sand
	ENV232	239	2.1	6.0	93.8	0.21	Fine sand	Poor	Sand
	ENV231	215	2.2	13.2	86.8	0.04	Fine sand	Poor	Muddy sand
	ENV230	87	3.5	20.6	79.4	0.05	Very fine sand	Poor	Muddy sand
	ENV229	89	3.5	22.2	77.7	0.12	Very fine sand	Poor	Muddy sand
	ENV228	63	4.0	27.5	72.4	0.07	Very fine sand	Poor	Muddy sand
	ENV227	156	2.7	16.9	83.0	0.07	Fine sand	Poor	Muddy sand
	ENV226	173	2.5	15.7	84.2	0.02	Fine sand	Poor	Muddy sand
	ENV171	162	2.6	17.7	82.3	0.00	Fine sand	Poor	Muddy sand
	ENV225	96	3.4	22.6	77.2	0.17	Very fine sand	Very poor	Muddy sand
	ENV172	128	3.0	18.9	81.0	0.01	Fine sand	Very poor	Muddy sand
Southern	ENV185	22	5.5	67.1	32.9	0.01	Medium silt	Very poor	Sandy mud
	ENV224	24	5.4	71.1	28.9	0.00	Medium silt	Very poor	Sandy mud
	ENV186	45	4.5	40.6	59.3	0.01	Coarse silt	Very poor	Muddy sand
	ENV223	35	4.8	52.9	47.1	0.03	Coarse silt	Very poor	Sandy mud
	ENV187	32	4.9	56.8	43.2	0.00	Coarse silt	Very poor	Sandy mud
	ENV210	64	4.0	33.1	66.7	0.27	Very fine sand	Very poor	Muddy sand
	ENV209	67	3.9	31.4	68.5	0.07	Very fine sand	Very poor	Muddy sand
	ENV208	40	4.6	50.5	49.1	0.33	Coarse silt	Very poor	Sandy mud
	ENV207	38	4.7	50.4	49.6	0.04	Coarse silt	Very poor	Sandy mud
	ENV206	20	5.6	73.2	26.7	0.13	Medium silt	Very poor	Sandy mud
	ENV205	22	5.5	67.2	32.8	0.01	Medium silt	Very poor	Sandy mud
	ENV236	142	2.8	11.4	88.6	0.01	Fine sand	Moderate	Muddy sand
	ENV211	89	3.5	28.0	71.9	0.10	Very fine sand	Very poor	Muddy sand
	ENV212	151	2.7	19.6	78.9	1.53	Fine sand	Very poor	Slightly gravelly muddy sand
	ENV217	34	4.9	55.7	44.2	0.14	Coarse silt	Very poor	Sandy mud
	ENV213	94	3.4	31.4	66.7	1.90	Very fine sand	Very poor	Slightly gravelly muddy sand
	ENV214	927	0.1	10.4	59.4	30.24	Coarse sand	Very poor	Muddy sandy gravel
	ENV215	12	6.4	88.2	11.8	0.00	Fine silt	Very poor	Sandy mud
	ENV216	36	4.8	56.6	42.9	0.44	Coarse silt	Very poor	Sandy mud
	ENV220	88	3.5	22.3	77.7	0.00	Very fine sand	Poor	Muddy sand
	ENV222	905	0.1	22.1	23.3	54.62	Coarse sand	Very poor	Muddy sandy gravel
	ENV221	73	3.8	45.8	50.7	3.47	Very fine sand	Poor	Slightly gravelly muddy sand
	ENV200	91	3.5	43.1	56.7	0.21	Very fine sand	Very poor	Muddy sand
	ENV201	80	3.6	26.9	72.9	0.14	Very fine sand	Poor	Muddy sand
	ENV237	135	2.9	10.3	89.4	0.27	Fine sand	Poor	Muddy sand
	ENV218	71	3.8	23.1	76.9	0.00	Very fine sand	Poor	Muddy sand
	ENV204	120	3.1	11.2	88.8	0.05	Very fine sand	Moderate	Muddy sand
	ENV203	38	4.7	50.8	49.1	0.09	Coarse silt	Very poor	Sandy mud
This Study	Minimum	12	0.1	4.6	11.8	0.00	Fine silt to coarse sand	Very poor to moderate	Sandy mud to muddy sandy gravel
	Maximum	927	6.4	88.2	95.1	54.62			
	Mean	151	3.4	29.2	68.9	1.97			
	±SD	178	1.4	21.7	22.6	8.81			

Sediments were not treated to remove carbonates prior to particle size analyses.
1 Statistics according to Folk and Ward (1957).

2.6 Herring Spawning Ground Potential

The stations along the route coincided with a potential herring nursery ground (Ellis *et al.*, 2012), therefore, all 49 stations where PSA samples were acquired have been assessed for their spawning potential. Observed water depths along the route ranged from 11m to 93m, which lies within a suitable depth range for herring spawning (ICES, 2024). Based on criteria by Reach *et al.* (2013), and with consideration of Cefas (2001), as outlined in Appendix B.7.1, the spawning potential of each relevant aspect of the PSA data are reported in Table 2.2. Full PSA results are presented in Appendix F.

Based on the results of the PSA, only Stations ENV214 and ENV222 met the suitability criteria in that these stations recorded >10% gravel and a Wentworth (1922) classification of coarse sand. However, none of the stations where PSA was collected recorded sufficiently low percentage fines (<5%) in combination with high enough (>10%) gravel content to be considered prime in terms of habitat sediment preference for herring spawning.

In terms of habitat sediment classification, Stations ENV214 and ENV222 offered the greatest potential for herring spawning, being regarded as sub-prime as they recorded a modified Folk (1954) classification of muddy sandy gravel.

There were no stations within the survey area that presented a well sorted substrate, therefore the sediments are likely to be less oxygenated and offer less favourable conditions for herring spawning.

As acknowledged by Reach *et al*. (2013) and as previously defined by Cefas (2001), use of the modified Folk classification alone may over-estimate the suitability of an area in terms of its herring spawning potential as further consideration should be given to other environmental (physical, chemical and abiotic) parameters such as oxygenation, siltation, micro-scale morphological features (*e.g.* ripples and ridges). Furthermore, the area must be exposed to the main flow of water and the sediments wells sorted to ensure maximum oxygenation of the sediment and hence the lower layers of herring eggs; the area should be elevated with respect to the surrounding seabed.

Table 2.2 Summary of Herring Spawning Potential

Area	Station	Dominant Grain Size			Habitat Sediment Preference[1]			Habitat Sediment Classification[2]	
		Sorting Description and Coefficient	Wentworth Classification (Mode)	Coarse Sand to Gravel (%)	Fines (%)	Gravel (%)	Suitability	Modified Folk Classification	Suitability
Northern	ENV173	Poor, 1.10	Fine sand	2.1	7.5	0.05	Unsuitable	Sand	Unsuitable
	ENV174	Poor, 1.06	Fine sand	0.9	9.3	0.12	Unsuitable	Sand	Unsuitable
	ENV175	Poor, 1.07	Fine sand	0.5	10.2	0.04	Unsuitable	Muddy sand	Unsuitable
	ENV176	Poor, 1.11	Fine sand	0.6	10.8	0.03	Unsuitable	Muddy sand	Unsuitable
	ENV177	Poor, 1.26	Fine sand	2.2	11.1	0.18	Unsuitable	Muddy sand	Unsuitable
	ENV178	Poor, 1.16	Fine sand	1.7	10.2	0.35	Unsuitable	Muddy sand	Unsuitable
	ENV179	Moderate, 0.99	Medium sand	8.4	4.6	0.32	Unsuitable	Sand	Unsuitable
	ENV180	Poor, 1.15	Fine sand	0.8	10.8	0.08	Unsuitable	Muddy sand	Unsuitable
Central	ENV235A	Moderate, 0.93	Medium sand	2.9	5.3	0.17	Unsuitable	Sand	Unsuitable
	ENV234	Moderate, 0.89	Medium sand	2.3	5.3	0.32	Unsuitable	Sand	Unsuitable
	ENV233	Poor, 1.50	Fine sand	4.2	11.9	0.09	Unsuitable	Muddy sand	Unsuitable
	ENV232	Poor, 1.08	Fine sand	4.4	6.0	0.21	Unsuitable	Sand	Unsuitable
	ENV231	Poor, 1.56	Fine sand	4.7	13.2	0.04	Unsuitable	Muddy sand	Unsuitable
	ENV230	Poor, 1.81	Very fine sand	0.8	20.6	0.05	Unsuitable	Muddy sand	Unsuitable
	ENV229	Poor, 1.98	Very fine sand	1.0	22.2	0.12	Unsuitable	Muddy sand	Unsuitable
	ENV228	Poor, 1.80	Very fine sand	0.1	27.5	0.07	Unsuitable	Muddy sand	Unsuitable
	ENV227	Poor, 1.86	Fine sand	2.1	16.9	0.07	Unsuitable	Muddy sand	Unsuitable
	ENV226	Poor, 1.60	Fine sand	0.8	15.7	0.02	Unsuitable	Muddy sand	Unsuitable
	ENV171	Poor, 1.99	Fine sand	4.1	17.7	0.00	Unsuitable	Muddy sand	Unsuitable
	ENV225	Very poor, 2.22	Very fine sand	3.0	22.6	0.17	Unsuitable	Muddy sand	Unsuitable
	ENV172	Very poor, 2.02	Fine sand	1.9	18.9	0.01	Unsuitable	Muddy sand	Unsuitable
Southern	ENV185	Very poor, 2.28	Medium silt	0.0	67.1	0.01	Unsuitable	Sandy mud	Unsuitable
	ENV224	Very poor, 2.03	Medium silt	0.0	71.1	0.00	Unsuitable	Sandy mud	Unsuitable
	ENV186	Very poor, 2.23	Coarse silt	0.5	40.6	0.01	Unsuitable	Muddy sand	Unsuitable
	ENV223	Very poor, 2.30	Coarse silt	0.1	52.9	0.03	Unsuitable	Sandy mud	Unsuitable
	ENV187	Very poor, 2.23	Coarse silt	0.4	56.8	0.00	Unsuitable	Sandy mud	Unsuitable
	ENV210	Very poor, 2.34	Very fine sand	1.6	33.1	0.27	Unsuitable	Muddy sand	Unsuitable
	ENV209	Very poor, 2.23	Very fine sand	1.1	31.4	0.07	Unsuitable	Muddy sand	Unsuitable
	ENV208	Very poor, 2.45	Coarse silt	1.3	50.5	0.33	Unsuitable	Sandy mud	Unsuitable
	ENV207	Very poor, 2.28	Coarse silt	0.1	50.4	0.04	Unsuitable	Sandy mud	Unsuitable
	ENV206	Very poor, 2.52	Medium silt	0.2	73.2	0.13	Unsuitable	Sandy mud	Unsuitable
	ENV205	Very poor, 2.44	Medium silt	0.0	67.2	0.01	Unsuitable	Sandy mud	Unsuitable
	ENV236	Moderate, 0.92	Fine sand	0.0	11.4	0.01	Unsuitable	Muddy sand	Unsuitable
	ENV211	Very poor, 2.45	Very fine sand	2.9	28.0	0.10	Unsuitable	Muddy sand	Unsuitable
	ENV212	Very poor, 2.08	Fine sand	8.6	19.6	1.53	Unsuitable	Slightly gravelly muddy sand	Unsuitable
	ENV217	Very poor, 2.31	Coarse silt	0.6	55.7	0.14	Unsuitable	Sandy mud	Unsuitable
	ENV213	Very poor, 2.44	Very fine sand	7.7	31.4	1.90	Unsuitable	Slightly gravelly muddy sand	Unsuitable
	ENV214	Very poor, 2.70	Coarse sand	52.4	10.4	30.24	Unsuitable	Muddy sandy gravel	Sub-Prime
	ENV215	Very poor, 2.22	Fine silt	0.1	88.2	0.00	Unsuitable	Sandy mud	Unsuitable
	ENV216	Very poor, 2.29	Coarse silt	0.8	56.6	0.44	Unsuitable	Sandy mud	Unsuitable
	ENV220	Poor, 1.09	Very fine sand	0.0	22.3	0.00	Unsuitable	Muddy sand	Unsuitable
	ENV222	Very poor, 3.50	Coarse sand	61.5	22.1	54.62	Unsuitable	Muddy sandy gravel	Sub-Prime
	ENV221	Poor, 1.68	Very fine sand	4.6	45.8	3.47	Unsuitable	Slightly gravelly muddy sand	Unsuitable
	ENV200	Very poor, 2.40	Very fine sand	4.9	43.1	0.21	Unsuitable	Muddy sand	Unsuitable
	ENV201	Poor, 1.74	Very fine sand	2.1	26.9	0.14	Unsuitable	Muddy sand	Unsuitable
	ENV237	Poor, 1.14	Fine sand	1.6	10.3	0.27	Unsuitable	Muddy sand	Unsuitable
	ENV218	Poor, 1.69	Very fine sand	0.0	23.1	0.00	Unsuitable	Muddy sand	Unsuitable
	ENV204	Moderate, 0.98	Very fine sand	0.1	11.2	0.05	Unsuitable	Muddy sand	Unsuitable
	ENV203	Very poor, 2.15	Coarse silt	0.4	50.8	0.09	Unsuitable	Sandy mud	Unsuitable

Classification criteria are detailed in Appendix B.7.1.

1 Habitat Sediment Preference - Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria were met (Reach *et al.*, 2013).

2 Habitat Sediment Classification - Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria were met (Reach *et al.*, 2013).

2.7 Sand Eel Spawning

The stations along the route coincided with low intensity spawning and nursery grounds for sand eel (Ellis *et al.*, 2012), therefore, all 49 stations where PSA samples were acquired have been assessed for their spawning potential. Observed water depths along the route ranged between 11m and 93m, which is within the sand eel preferred depth range. Based on criteria defined by Latto *et al.* (2013) as outlined in Appendix B.7.2, the spawning potential of each relevant aspect of the PSA data are presented in Table 2.3. Full PSA results are presented in Appendix F.

Based on the results of PSA, six stations (Stations ENV173, ENV174, ENV179, ENV232, ENV234 and ENV235A) met at least one of the suitability criteria in that they recorded <10% fines and >50% sand along with a suitably low (<15%) percentage gravel. Of these stations, all six met the preferred habitat sediment classification of sand.

Of the remaining stations, 30 were dominated by sand (>50%), however, with >10% these stations were unsuitable for sand eel spawning.

Sand eels were found by Holland *et al.* (2005) to prefer sediments finer than 0.25mm, which cover muds and a portion of the sand fraction and therefore includes a portion of less suitable sediment. Latto *et al.* (2013) bases its categorisation of the sediment on the modified Folk (1954) classification for comparison to the pre-existing BGS charts to allow a broadscale assessment of potential sand eel spawning suitability and this method is likely to overstate the suitability of sediment to support populations of sand eels.

Table 2.3 Summary of Sand Eel Spawning Potential

Area	Station	Habitat Sediment Preference[1]				Habitat Sediment Classification[2]	
		Fines (%)	Sand (%)	Gravel (%)	Suitability	Modified Folk Classification	Suitability
Northern	ENV173	7.5	92.5	0.05	Suitable	Sand	Preferred
	ENV174	9.3	90.6	0.12	Suitable	Sand	Preferred
	ENV175	10.2	89.8	0.04	Unsuitable	Muddy sand	Unsuitable
	ENV176	10.8	89.1	0.03	Unsuitable	Muddy sand	Unsuitable
	ENV177	11.1	88.7	0.18	Unsuitable	Muddy sand	Unsuitable
	ENV178	10.2	89.5	0.35	Unsuitable	Muddy sand	Unsuitable
	ENV179	4.6	95.1	0.32	Suitable	Sand	Preferred
	ENV180	10.8	89.2	0.08	Unsuitable	Muddy sand	Unsuitable
Central	ENV235A	5.3	94.5	0.17	Suitable	Sand	Preferred
	ENV234	5.3	94.4	0.32	Suitable	Sand	Preferred
	ENV233	11.9	88.0	0.09	Unsuitable	Muddy sand	Unsuitable
	ENV232	6.0	93.8	0.21	Suitable	Sand	Preferred
	ENV231	13.2	86.8	0.04	Unsuitable	Muddy sand	Unsuitable
	ENV230	20.6	79.4	0.05	Unsuitable	Muddy sand	Unsuitable
	ENV229	22.2	77.7	0.12	Unsuitable	Muddy sand	Unsuitable
	ENV228	27.5	72.4	0.07	Unsuitable	Muddy sand	Unsuitable
	ENV227	16.9	83.0	0.07	Unsuitable	Muddy sand	Unsuitable
	ENV226	15.7	84.2	0.02	Unsuitable	Muddy sand	Unsuitable
	ENV171	17.7	82.3	0.00	Unsuitable	Muddy sand	Unsuitable
	ENV225	22.6	77.2	0.17	Unsuitable	Muddy sand	Unsuitable
	ENV172	18.9	81.0	0.01	Unsuitable	Muddy sand	Unsuitable
Southern	ENV185	67.1	32.9	0.01	Unsuitable	Sandy mud	Unsuitable
	ENV224	71.1	28.9	0.00	Unsuitable	Sandy mud	Unsuitable
	ENV186	40.6	59.3	0.01	Unsuitable	Muddy sand	Unsuitable
	ENV223	52.9	47.1	0.03	Unsuitable	Sandy mud	Unsuitable
	ENV187	56.8	43.2	0.00	Unsuitable	Sandy mud	Unsuitable
	ENV210	33.1	66.7	0.27	Unsuitable	Muddy sand	Unsuitable
	ENV209	31.4	68.5	0.07	Unsuitable	Muddy sand	Unsuitable
	ENV208	50.5	49.1	0.33	Unsuitable	Sandy mud	Unsuitable
	ENV207	50.4	49.6	0.04	Unsuitable	Sandy mud	Unsuitable
	ENV206	73.2	26.7	0.13	Unsuitable	Sandy mud	Unsuitable
	ENV205	67.2	32.8	0.01	Unsuitable	Sandy mud	Unsuitable
	ENV236	11.4	88.6	0.01	Unsuitable	Muddy sand	Unsuitable
	ENV211	28.0	71.9	0.10	Unsuitable	Muddy sand	Unsuitable
	ENV212	19.6	78.9	1.53	Unsuitable	Slightly gravelly muddy sand	Unsuitable
	ENV217	55.7	44.2	0.14	Unsuitable	Sandy mud	Unsuitable
	ENV213	31.4	66.7	1.90	Unsuitable	Slightly gravelly muddy sand	Unsuitable
	ENV214	10.4	59.4	30.24	Unsuitable	Muddy sandy gravel	Unsuitable
	ENV215	88.2	11.8	0.00	Unsuitable	Sandy mud	Unsuitable
	ENV216	56.6	42.9	0.44	Unsuitable	Sandy mud	Unsuitable
	ENV220	22.3	77.7	0.00	Unsuitable	Muddy sand	Unsuitable
	ENV222	22.1	23.3	54.62	Unsuitable	Muddy sandy gravel	Unsuitable
	ENV221	45.8	50.7	3.47	Unsuitable	Slightly gravelly muddy sand	Unsuitable
	ENV200	43.1	56.7	0.21	Unsuitable	Muddy sand	Unsuitable
	ENV201	26.9	72.9	0.14	Unsuitable	Muddy sand	Unsuitable
	ENV237	10.3	89.4	0.27	Unsuitable	Muddy sand	Unsuitable
	ENV218	23.1	76.9	0.00	Unsuitable	Muddy sand	Unsuitable
	ENV204	11.2	88.8	0.05	Unsuitable	Muddy sand	Unsuitable
	ENV203	50.8	49.1	0.09	Unsuitable	Sandy mud	Unsuitable

Classification criteria are detailed in Appendix B.

1 Habitat Sediment Preference - Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria were met (Latto *et al.*, 2013).

2 Habitat Sediment Classification - Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria were met (Latto *et al.*, 2013) based on either the sand and fines criteria or the generalised criteria.

2.8 Sea Pen and Burrowing Megafauna Communities

Seabed imagery revealed that burrows were present at 29 stations and two species of sea pen (*P. phosphorea* and *Virgularia*) were present at 15 stations. Therefore, a detailed assessment of the sea pen and burrowing megafauna community habitat as identified by OSPAR (2010) was conducted, referring to the MNCR SACFOR abundance scale (JNCC, 2013). Sea pen and burrow densities were calculated for each station using the total area covered by the seabed imagery (average image area x number of images). The results of the assessment are summarised in Table 2.4 with the abundances of burrows and sea pens presented spatially in Appendix C.

A total of 576 burrows were recorded across 29 stations, with densities ranging from 0.05 burrows m^{-2} at Station ENV172 to 8.15 burrows m^{-2} at Station ENV224. Burrows across the surveyed area ranged between 0.5cm and 12.8cm in diameter. In accordance with the SACFOR scale, burrows were classified in a range that encompassed frequent at 23 stations; all of which were in English waters. Although burrows were present, burrowing fauna were rarely sighted with only seven individuals of *N. norvegicus* observed across the survey area to confirm the burrow inhabitants, therefore; many burrows could not confidently be attributed to any of the classified megafauna species within the sea pen and burrowing megafauna community habitat classification.

A total of 188 individuals of *P. phosphorea* were observed across 11 stations along the route. Where observed, densities of *P. phosphorea* ranged from 0.18 individuals m^{-2} at Station ENV232 to 1.95 individuals m^{-2} at Station ENV172, with individuals measuring between 0.5 and 17.0cm. In accordance with SACFOR, where observed *P. phosphorea* were classified in a range that encompassed frequent at 10 stations.

Further, a total of 22 individuals of *Virgularia* were observed across 5 stations. The density of *Virgularia* varied from 0.08 individuals m^{-2} at Stations ENV187 and ENV230 to 1.16 individuals m^{-2} at Station ENV208, with individuals measuring between 0.8 and 14.3cm. In accordance with SACFOR, *Virgularia* were classified in a range that encompassed frequent at Stations ENV207, ENV208 and ENV224.

The JNCC (2014b) clarification report states that to be considered a sea pen and burrowing megafauna communities habitat, densities of burrows and/or mounds, together with sea pens if present, should be classified as frequent or above on the SACFOR scale. Of the 29 stations where burrows were observed, 23 were in a range to be considered to show some similarity to a sea pen and burrowing megafauna communities habitat (OSPAR, 2010). Of these 23 stations, 5 (Stations ENV187, ENV210 to ENV212 and ENV230) could be considered as showing the greatest similarity to a sea pen and burrowing megafauna communities habitat in that burrows encompassed the SACFOR ranges frequent to common.

Whilst this habitat is on the list of threatened and/or declining species and habitats, it is widespread throughout the central North Sea, around the south and west coasts of Norway and around the north of the British Isles (OSPAR, 2010; Hill *et al.*, 2022). This habitat is also listed as a component biotope of the burrowed mud habitat which is a PMF (NatureScot, 2020); however, no burrows were observed at any station in Scottish waters.

Table 2.4 Total Sea Pens and Faunal Burrows Qualification

Area	Station	Total Number of Images Assessed	Mean Image Area (m^2)[1]	Estimated Area Investigated (m^2)[1]	Burrows				*Pennatula phosphorea*				*Virgularia stet.*			
					Number of Individuals	Density (individuals m^{-2})	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (individuals m^{-2})	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (individuals m^{-2})	Size Range (cm)	SACFOR Range[2]
Northern	ENV173	50	0.35	17.42	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV174	48	0.48	23.11	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV175	37	0.38	14.13	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV176	46	0.29	13.24	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV177	41	0.43	17.48	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV178	51	0.40	20.53	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV179	46	0.44	20.17	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV180	53	0.45	24.09	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
Central	ENV235	37	0.45	16.66	1	0.06	1.0	R	0	NC	NC	NC	0	NC	NC	NC
	ENV234	52	0.47	24.41	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV233	42	0.43	18.03	2	0.11	0.5 to 0.8	R	31	1.72	0.7 to 4.9	O to C	0	NC	NC	NC
	ENV232	38	0.29	11.08	0	NC	NC	NC	2	0.18	3.4 to 3.6	F to F	0	NC	NC	NC
	ENV231	42	0.29	12.25	8	0.65	0.7 to 5.8	R to F	18	1.47	0.9 to 3.6	O to C	0	NC	NC	NC
	ENV230	44	0.30	13.09	16	1.22	1.1 to 4.1	F to C	19	1.45	1.0 to 4.1	F to C	1	0.08	1.1	R
	ENV229	45	0.31	14.16	9	0.64	1.1 to 4.6	O to F	11	0.78	0.5 to 3.6	R to F	0	NC	NC	NC
	ENV228	40	0.39	15.66	16	1.02	0.9 to 8.6	O to C	4	0.26	0.8 to 2.5	R to O	0	NC	NC	NC
	ENV227	42	0.32	13.45	11	0.82	0.7 to 3.8	R to F	6	0.45	1.7 to 3.2	O to F	0	NC	NC	NC
	ENV226	36	0.22	7.97	12	1.51	0.9 to 7.8	O to C	9	1.13	0.8 to 2.8	O to F	0	NC	NC	NC
	ENV171	44	0.35	15.54	0	NC	NC	NC	19	1.22	1.4 to 3.6	F to C	0	NC	NC	NC
	ENV225	47	0.48	22.40	23	1.03	0.6 to 9.5	O to C	31	1.38	0.5 to 17.0	O to A	0	NC	NC	NC
	ENV172	42	0.46	19.44	1	0.05	2.3	R	38	1.95	1.2 to 7.3	F to C	0	NC	NC	NC
Southern	ENV185	47	0.18	8.50	17	2.00	1 to 7.8	F to C	0	NC	NC	NC	0	NC	NC	NC
	ENV224	51	0.19	9.94	81	8.15	0.5 to 7.8	O to C	0	NC	NC	NC	3	0.30	5.8 to 6.4	F
	ENV186	40	0.21	8.23	8	0.97	2.1 to 7	O to F	0	NC	NC	NC	0	NC	NC	NC
	ENV223	42	0.22	9.03	31	3.43	0.6 to 8.9	O to C	0	NC	NC	NC	0	NC	NC	NC
	ENV187	42	0.30	12.63	19	1.50	1.4 to 8	F to C	0	NC	NC	NC	1	0.08	0.8	R
	ENV210	40	0.18	7.17	25	3.49	1 to 5.5	F to C	0	NC	NC	NC	0	NC	NC	NC
	ENV209	43	0.25	10.82	21	1.94	0.8 to 6.4	O to C	0	NC	NC	NC	0	NC	NC	NC
	ENV208	45	0.25	11.25	15	1.33	0.5 to 3.9	O to C	0	NC	NC	NC	13	1.16	2.5 to 14.3	F to C
	ENV207	42	0.25	10.61	34	3.20	0.8 to 12.8	O to C	0	NC	NC	NC	4	0.38	3.7 to 6.8	F
	ENV206	42	0.26	10.74	55	5.12	0.5 to 5.3	O to C	0	NC	NC	NC	0	NC	NC	NC
	ENV183	59	0.39	22.75	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV238	55	0.47	25.82	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV182	43	0.36	15.43	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV205	34	0.33	11.10	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV236	37	0.29	10.80	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV211	44	0.18	8.08	18	2.23	1 to 5.3	F to C	0	NC	NC	NC	0	NC	NC	NC
	ENV212	38	0.20	7.77	12	1.54	1.3 to 8.7	F to C	0	NC	NC	NC	0	NC	NC	NC
	ENV217	40	0.34	13.75	55	4.00	0.6 to 8.4	O to C	0	NC	NC	NC	0	NC	NC	NC
	ENV213	37	0.19	7.10	5	0.70	1.6 to 5.4	O to F	0	NC	NC	NC	0	NC	NC	NC
	ENV214	40	0.17	6.68	1	0.15	2.0	O	0	NC	NC	NC	0	NC	NC	NC

Area	Station	Total Number of Images Assessed	Mean Image Area (m^2)[1]	Estimated Area Investigated (m^2)[1]	Burrows				*Pennatula phosphorea*				*Virgularia stet.*			
					Number of Individuals	Density (individuals m^{-2})	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (individuals m^{-2})	Size Range (cm)	SACFOR Range[2]	Number of Individuals	Density (individuals m^{-2})	Size Range (cm)	SACFOR Range[2]
Southern	ENV215	34	0.16	5.45	21	3.85	0.9 to 6.2	O to C	0	NC	NC	NC	0	NC	NC	NC
	ENV216	46	0.35	16.26	55	3.38	0.5 to 7.3	O to C	0	NC	NC	NC	0	NC	NC	NC
	ENV220	33	0.26	8.44	1	0.12	1.8	O	0	NC	NC	NC	0	NC	NC	NC
	ENV222	48	0.28	13.24	3	0.23	1.2 to 2.0	O	0	NC	NC	NC	0	NC	NC	NC
	ENV188	52	0.32	16.56	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV198	60	0.44	26.21	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV240	54	0.34	18.19	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV221	55	0.31	16.79	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV197	50	0.37	18.57	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV200	53	0.37	19.80	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV199	43	0.31	13.46	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV239	46	0.31	14.19	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV201	76	0.34	25.46	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV237	56	0.30	16.71	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV218	45	0.35	15.53	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV219	43	0.44	19.05	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV204	59	0.31	18.44	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
	ENV203	51	0.34	17.21	0	NC	NC	NC	0	NC	NC	NC	0	NC	NC	NC
Total		**2688**	**0.32**	**882.07**	**576**	**0.65**	**0.5 to 12.8**	**R**	**188**	**0.21**	**0.5 to 17.0**	**R to C**	**22**	**0.02**	**0.8 to 14.3**	**R to O**

1 Area of assessed seabed calculated using laser line scaling
2 SACFOR classification scale S=Superabundant, A=Abundant, C=Common, F=Frequent, O=Occasional and R=Rare Classification based on minimum and maximum estimated size of sea pen and burrows and the respective mean density at each station and transect

Table 2.5 Application of SACFOR abundance ranges to OSPAR (2010) sea pen and burrowing megafauna communities habitat

Ranges			
< Frequent No similarity	≤Frequent Some similarity	< and > Frequent Some Similarity	≥Frequent Greatest Similarity

2.9 Stony Reefs

Analysis for stony reef was conducted to determine the resemblance, if any, to the protected habitat based on the criteria adopted by Irving (2009) as set out in Appendix B. Seabed imagery and sediment composition showed evidence of potential rocky reef at 17 of the 59 stations along the route, in the form of cobbles and/or boulders or isolated patches of cobbles or scattered cobbles. The HD video at the seventeen stations was segmented and reviewed for resemblance criteria as described by Irving (2009). Results of the stations assessed are presented in Table 2.6 with further details of station segmentation provided in Appendix G.

Following review of the video, Station ENV234 revealed no resemblance to rocky reef due to a singular, isolated boulder observed with the rest of the station found to comprise flat soft sediment. Station ENV221 revealed isolated patches of cobbles and/boulders interspersed with areas of flat soft sediment, therefore this station did not meet any criteria to be classed as stony reef.

Of the remaining stations assessed for stony reef, twelve stations were observed to be matrix supported, however; Stations ENV182, ENV188 and ENV240 were predominantly clast supported.

Following video segmentation, nine stations (Stations ENV183, ENV197 to ENV200, ENV203, ENV205, ENV218 and ENV239) showed low resemblance to a stony reef, with between 13% at Station ENV205 and 62% at Station ENV203 of the station comprising potential stony reef habitat.

A further six stations (Stations ENV182, ENV188, ENV204, ENV219, ENV238 and ENV240) showed medium resemblance to a stony reef, with between 32% at Station ENV204 and 100% at Station ENV188 of the analysed area comprising low to medium resemblance to a stony reef.

Additionally, at all stations analysed for stony reef, epifaunal coverage showed a limited increase in areas of cobbles and boulders compared to the surrounding substrate. Further, some species known to be strong indicators of reef habitat were observed including *A. diaphanum*, *E. esculentus inc*., *O. nigra* and *S. rosea*. However, these species were not limited to the areas of cobbles and/or boulders but were rather seen across all coarse sediment types observed along the route.

Table 2.6 Stony Reef Assessment Summary

Area	Station	Transect Length (m)	Mean Swathe Width (m)	Estimated Area Investigated (m^2)	Low Resemblance (10-40%)			Medium Resemblance (40-95%)			Proportion of station with reef coverage (%)	Resemblance to 'Stony Reef'[2]	Comments
					Total Distance (m)	Estimated Area (m^2)	Estimated average height of reef (cm)[1]	Total Distance (m)	Estimated Area (m^2)	Estimated average height of reef (cm)[1]			
Central	ENV234	218	0.85	185.13	NC	NC	NC	NC	NC	NC	NC	None	Singular boulder observed within a station of flat soft sediment.
Southern	ENV183	205	0.73	149.16	66.30	48.24	8.85	NC	NC	NC	32	Low	
	ENV238	208	0.69	144.01	50.77	35.15	10.30	114.42	79.22	12.75	79	Medium	
	ENV182	213	0.73	156.38	144.16	105.84	12.42	38.38	28.18	10.89	86	Medium	
	ENV205	208	0.69	143.52	27.69	19.11	NC	NC	NC	NC	13	Low	
	ENV188	210	0.71	149.14	170.57	121.14	8.07	40.04	28.43	7.23	100	Medium	
	ENV198	213	0.78	166.72	103.86	81.29	12.44	NC	NC	NC	49	Low	
	ENV240	203	0.70	141.56	41.07	28.64	9.66	85.60	59.69	11.00	62	Medium	
	ENV221	220	0.66	144.28	NC	NC	NC	NC	NC	NC	NC	None	Discrete patches of cobbles and boulders with large gaps of flat soft sediment
	ENV197	217	0.72	156.02	118.87	85.47	11.89	NC	NC	NC	55	Low	
	ENV200	288	0.75	217.22	139.55	105.25	8.00	NC	NC	NC	48	Low	
	ENV199	212	0.67	141.43	51.84	34.58	17.77	NC	NC	NC	24	Low	
	ENV239	208	0.63	131.63	65.94	41.73	8.05	NC	NC	NC	32	Low	
	ENV218	213	0.70	149.39	64.78	45.43	7.42	NC	NC	NC	30	Low	
	ENV219	205	0.78	159.76	175.49	136.76	8.90	8.87	6.91	7.15	90	Medium	
	ENV204	305	0.72	218.26	82.28	58.88	8.21	16.20	11.59	8.69	32	Medium	
	ENV203	250	0.72	179.80	155.75	112.02	8.75	NC	NC	NC	62	Low	

1 Reef height calculated based on average imagery measurements within the segment.
2 Resemblance to Stony Reef – Colours indicate where Medium, Low or Not stony reef criteria were met (Irving, 2009)
NC Not calculated.

2.10 EUNIS Habitat Classification

Each seabed photograph and captured seabed image was assigned a EUNIS Habitat classification based on observed depth, sediment type and visible fauna. These results were then reviewed alongside available PSA results to assign one or more EUNIS habitat codes to each station, the results of which are summarised in Table 2.7 and plotted in Figure 2.2.

All observed habitats related to the EUNIS level 1 environmental marine habitats (EUNIS habitats type code M). Two level 2 broad habitats were identified based on water depth:

- EUNIS broad habitat code MC, marine benthic circalittoral habitats corresponding to sediment habitats in less than 50m water depth. Circalittoral sediments can range from rock, cobbles and boulders to sand, mud and mixed sediments (EEA, 2019).
- EUNIS broad habitat code MD, marine benthic offshore circalittoral habitats corresponding to sediment habitats in deeper water, further from the coastline. Offshore circalittoral sediments can range from cobbles and boulders to sand, fine sand, mud and mixed sediments (EEA, 2019).

Of the offshore stations, where predominantly sandy sediment was observed, fifteen stations were classified as EUNIS biotope complex MD521: faunal communities in Atlantic offshore circalittoral sand. This habitat is described by EEA (2019) as offshore circalittoral habitats with fine sands or non-cohesive muddy sands.

Where the PSA analysis indicated sediments were dominated by sand on the southern area of the route, seven stations were solely classified as EUNIS biotope complex MC521: faunal communities in Atlantic circalittoral sand. This habitat is described by EEA (2019) as circalittoral non-cohesive muddy sands with the silt content of the substratum typically ranging from 5 to 20%.

In the southern area of the route, thirteen stations were classified as EUNIS biotope complex MC621: faunal communities in Atlantic circalittoral mud. This habitat is described by EEA (2019) as sublittoral muds, occurring below moderate depths of 15-20 m. Of these stations, twelve were refined to the EUNIS biotope MC6216: sea pens and burrowing megafauna in Atlantic circalittoral fine mud.

Nine stations were classified as EUNIS biotope complex MC421: faunal communities of Atlantic circalittoral mixed sediment due to PSA indicating mixed sediment, and where no PSA data were acquired, seabed imagery indicated mixed sediments. This habitat is described by EEA (2019) as mixed sediment habitats generally below 15 to 20 m including well mixed muddy gravelly sands or very poorly sorted mosaics of shell, cobbles and pebbles embedded in or lying upon mud, sand or gravel.

Three stations (Stations ENV182, ENV188 and ENV219) were classified to EUNIS biotope complex MC121: faunal turf communities on Atlantic circalittoral rock, indicated by the increase in boulders observed at these stations.

Twelve stations were classified to multiple EUNIS classifications due to a mixture of sediments observed within the imagery.

- Nine stations were classified to MD52: Atlantic offshore circalittoral sand and MC6216: sea pens and burrowing megafauna in Atlantic circalittoral fine mud
- Two stations were classified to MC521: faunal communities in Atlantic circalittoral sand and MC121: faunal turf communities on Atlantic circalittoral rock
  Station ENV203 was classified to MC621: faunal communities in Atlantic circalittoral mud and MC121: faunal turf communities on Atlantic circalittoral rock

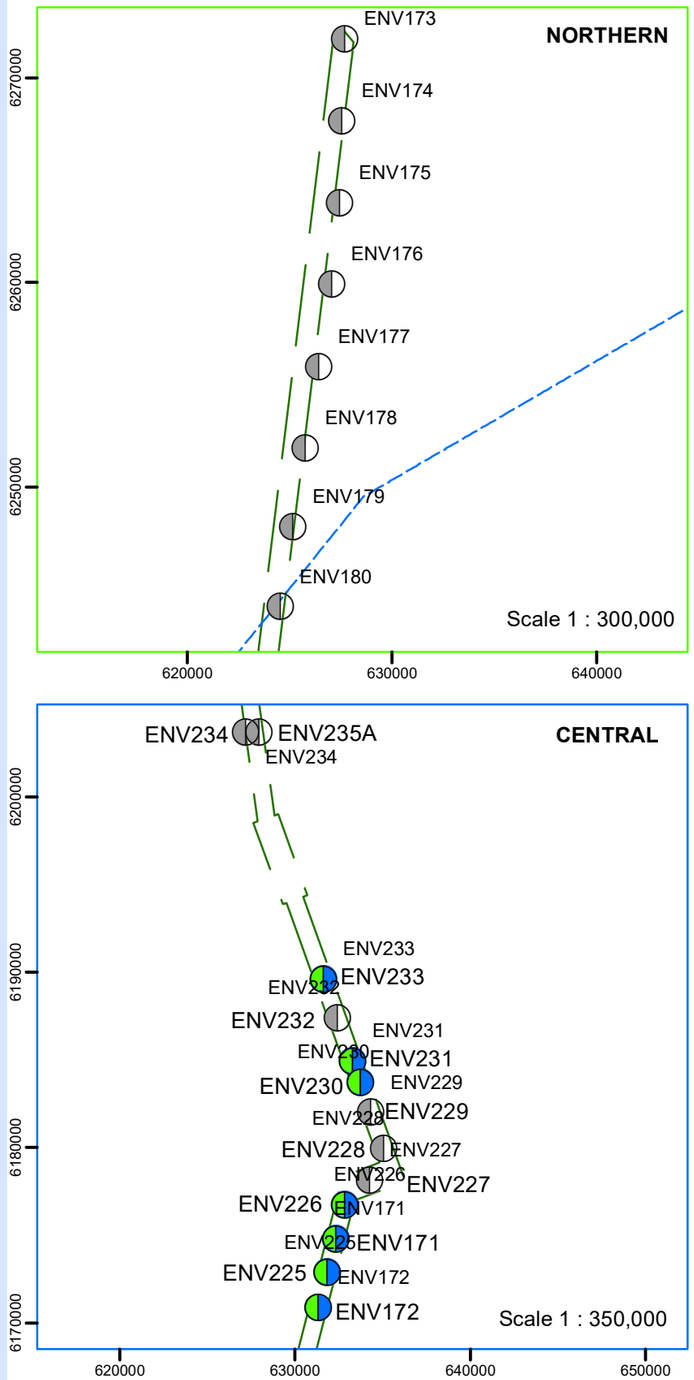
Table 2.7 EUNIS Habitat Classification

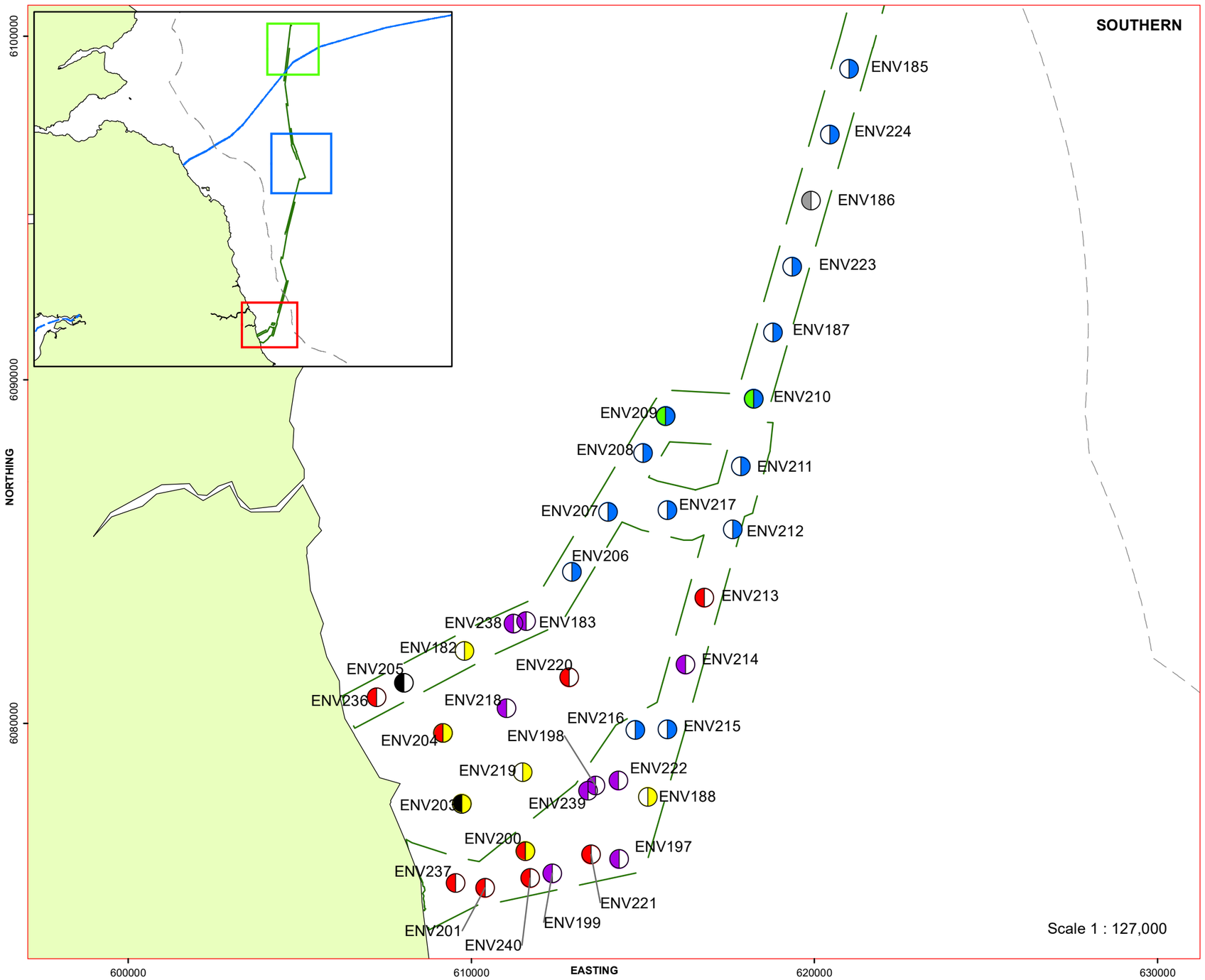
Area	Station	Water Depth[1]	EUNIS Folk Classification[2]	EUNIS Habitat Classification	
				Type	Code
Northern	ENV173	71	Sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV174	71	Sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV175	73	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV176	74	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV177	72	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV178	71	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV179	71	Sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV180	69	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
Central	ENV235A	67	Sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV234	68	Sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV233	71	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV232	68	Sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV231	77	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV230	78	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV229	79	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV228	90	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV227	89	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV226	88	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV171	87	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV225	92	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV172	88	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
Southern	ENV185	80	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV224	79	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV186	66	Muddy sand	Faunal communities in Atlantic offshore circalittoral sand	MD521
	ENV223	60	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV187	57	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV210	54	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV209	56	Muddy sand	Atlantic offshore circalittoral sand	MD52
				Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV208	53	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV207	45	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV206	43	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV183	35	NA	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV238	24	NA	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV182	17	NA	Faunal turf communities on Atlantic circalittoral rock	MC121

Area	Station	Water Depth[1]	EUNIS Folk Classification[2]	EUNIS Habitat Classification	
				Type	Code
Southern	ENV205	15	Sandy mud	Faunal communities in Atlantic circalittoral mud	MC621
	ENV236	10	Muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
	ENV211	54	Muddy sand	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV212	51	Slightly gravelly muddy sand	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV217	47	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV213	48	Slightly gravelly muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
	ENV214	50	Muddy sandy gravel	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV215	44	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV216	40	Sandy mud	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud	MC6216
	ENV220	36	Muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
	ENV222	35	Muddy sandy gravel	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV188	39	NA	Faunal turf communities on Atlantic circalittoral rock	MC121
	ENV198	31	NA	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV240	26	NA	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV221	32	Slightly gravelly muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
	ENV197	35	NA	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV200	18	Muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
				Faunal turf communities on Atlantic circalittoral rock	MC121
	ENV199	18	NA	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV239	20	NA	Faunal communities in Atlantic circalittoral sand	MC521
	ENV201	17	Muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
	ENV237	12	Muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
	ENV218	19	Muddy sand	Faunal communities of Atlantic circalittoral mixed sediment	MC421
	ENV219	19	NA	Faunal turf communities on Atlantic circalittoral rock	MC121
	ENV204	16	Muddy sand	Faunal communities in Atlantic circalittoral sand	MC521
				Faunal turf communities on Atlantic circalittoral rock	MC121
	ENV203	18	Sandy mud	Faunal communities in Atlantic circalittoral mud	MC621
				Faunal turf communities on Atlantic circalittoral rock	MC121

1 Depths corrected to LAT relate to the average depth along the camera track
2 Aggregation of modified Folk classification for defining EUNIS Level 3 sediment types according to Parry (2019)
NA Not available as PSA was not collected

EUNIS OVERVIEW





LEGEND

- CABLE ROUTE CORRIDOR
- NATIONAL LIMIT (UKHO, 2022)
- TERRITORIAL SEA LIMIT (UKHO, 2022)

EUNIS CATEGORY

- MD521 - FAUNAL COMMUNITIES IN ATLANTIC OFFSHORE CIRCALITTORAL SAND
- MC6216 - SEA PENS AND BURROWING MEGAFAUNA IN ATLANTIC CIRCALITTORAL FINE MUD
- MC621 - FAUNAL COMMUNITIES IN ATLANTIC CIRCALITTORAL MUD
- MC521 - FAUNAL COMMUNITIES IN ATLANTIC CIRCALITTORAL SAND
- MC421 - FAUNAL COMMUNITIES OF ATLANTIC CIRCALITTORAL MIXED SEDIMENT
- MD52 - ATLANTIC OFFSHORE CIRCALITTORAL
- MC121 - FAUNAL TURF COMMUNITIES ON ATLANTIC CIRCALITTORAL ROCK

Overview Scale 1 : 2,700,000
ED50/UTM Zone 30N (3°W)

Figure 2.2

Job No. 59294.E3

3 BIBLIOGRAPHY

Bat, L., Sezgin, M. & Şahin, F., 2013. Impacts of OWF installations on fisheries: A Literature Review. *Journal of Coastal Life Medicine*, 1(3), pp.241-52.

bp, 2023. *Morven - Grid Connection 1 Route - UXO Clearance and Environmental Survey*. Scope of Work Rev 04. Issued: 09-Aug-2024. Rochdale, UK: bp Solutions.

bp, 2024. *Morven - Grid Connection 1 Route Nearshore Area*. Scope of Work Rev 00. Issued 12-Aug-2024. Rochdale UK: bp Solutions.

Cefas, 2001. *Specifications for herring spawning ground surveys*. Lowestoft: February 2001.

Connor, D.W., Allen, J.H., Golding, N., Howell, K.L., Lieberknecht, L.M., Northern, K.O. & Reker, J.B., 2004. *The Marine Habitat Classification for Britain and Ireland Version 04.05. JNCC, Peterborough ISBN 1 861 07561 8 (internet version)*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1027/04_05_introduction.pdf [Accessed 05 Nov 2021].

Coull, K.A., Johnston, R. & Rogers, S.I., 1998. *Fisheries Sensitivity Maps in British Waters.* Published and distributed by UKOOA Ltd. 58pp.

Directive 92/43/EEC, 1992. *Council Directive 92/43/EEC of 21-May-1992, on the conservation of natural habitats and of wild fauna and flora*. [pdf] (Official Journal of the European Communities No. L 206/7. p44) Available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1992:206:0007:0050:EN:PDF [Accessed 05 Nov 2021].

EEA, 2019. *EUNIS habitat type hierarchical view 2021/2022*. [Online] Available at: https://eunis.eea.europa.eu/habitats.jsp [Accessed 6th Feb 2023].

Ellis, J.R., Milligan, S., Readdy, L., South, A., Taylor, N. & Brown, M., 2010. *Mapping spawning and nursery areas of species to be considered in Marine Protected Areas (Marine Conservation Zones)*. Cefas.

Ellis, J.R., Milligan, S.P., Readdy, L., Taylor, N. & Brown, M.J., 2012. *Spawning and Nursery Grounds of Selected Fish Species in UK Waters*. [Online] Lowestoft Available at: http://data.cefas.co.uk/#/View/153 [Accessed 05 Nov 2021].

Folk, R.L., 1954. The distinction between grain size and mineral composition in sedimentary rock nomenclature. *Journal of Geology*, 62, pp.344-59.

Folk, R.L. & Ward, W.C., 1957. Brazos river bar: a study of the significance of grain size parameters. *Journal of Sedimentary Petrology*, 27, pp.3-26.

Gardline, 2024. *Benthic Scoping Document - Morven GC1 Route*. Benthic Scoping Document Ref: 59294.E0 Rev0 Dated 29-May-2024. Great Yarmouth, UK: Gardline Limited.

Gardline, issue pending. *Morven Grid Connection 1 Route Environmental Survey*. Environmental Baseline Survey Ref: 59294.E3 Draft. Great Yarmouth, UK: Gardline Limited.

Gill, A.B., Bartlett, M. & Thomsen, F., 2012. Potential interactions between diadromous fishes of U.K. conservation importance and the electromagnetic fields and subsea noise from marine renewable energy developments. *Journal of Fish Biology*, 81, pp.664-95.

Hassel, A., Knutsen, T., Dalen, J., Lokkeborg, S., Skaar, K., Ostensen, O., Haugland, E.K., Fonn, M., Hoines, A. & Misund, O.A., 2002. *Reaction of sandeel to seismic shooting: A field experiment and fishery statistics study*. Institute of Marine Research, Bergen, Norway.

Hill, J.M., Tyler-Walters, H. & Garrard, S.L., 2022. *Seapens and burrowing megafauna in circalittoral fine mud. In Tyler-Walters H. Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. [Online] Available at: https://www.marlin.ac.uk/habitats/detail/131 [Accessed 21 May 2024].

Holland, G.J., Greenstreet, S.P., Gibb, I.M., Fraser, H.M. & Robertson, M.R., 2005. Identifying sandeel Ammodytes marinus sediment habitat preferences in the marine environment. *Marine Ecology Progress Series*, 303, pp.269-82.

Horton, T., Marsh, L., Bett, B.J., Gates, A.R., Jones, D.O.B., Benoist, N.M.A., Pfeifer, S., Simon-Lledo, E., Durden, J.M., Vandepitte, L. & Appeltans, W., 2021. Recommendations for the Standardisation of Open Taxonomic Nomenclature for Image-Based Identifications. *Frontiers in Marine Science*, 8.

Howell, K.L., Davies, J.S., Allcock, A.L., Braga-Henriques, A., Buhl-Mortensen, P. & Carreiro-Silva, M., 2019. A framework for the development of a global standardised marine taxon reference image database (SMarTaR-ID) to support image-based analyses. *PLoS ONE 14(12): e0218904*, 14(12), p.25. Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0218904 [Accessed 08 January 2020].

ICES, 1997. *ICES working group on the assessment of demersal stocks in the North Sea and Skagerrak*.

ICES, 2011. *Protocols for Assessing the Status of Sea-pen and Burrowing Megafauna Communities.* [pdf] Available at: http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2011/Special%20Requests/OSPAR%20Protocols%20for%20assessing%20the%20status.pdf [Accessed 05 Nov 2021].

ICES, 2024. *ICES-FishMap. Herring*. [Online] Available at: https://www.ices.dk/about-ICES/projects/EU-RFP/EU%20Repository/ICES%20FIshMap/ICES%20FishMap%20species%20factsheet-herring.pdf#:~:text=The%20fish%20congregate%20on%20traditional%20spawning%20grounds%2C%20many,200%20m%29%20off%20the%20western%20coast%20of% [Accessed 15 Jun 2024].

Irving, R., 2009. *The identification of the main characteristics of stony reef habitats under the Habitats Directive*. Summary report of an inter-agency workshop 26-27 March 2008. JNCC Report No. 432. Peterborough: JNCC JNCC.

IUCN, 2025. *The IUCN Red List of Threatened Species*. [Online] (2024-2) Available at: https://www.iucnredlist.org/ [Accessed 20 January 2025].

Jensen, H., Rindorf, A., Wright, P.J. & Mosegaard, H., 2010. Inferring the location and scale of mixing between habitat areas of lesser sandeel through information from the fishery.. *ICES Journal of Marine Science*, 68(1), pp.43-51.

JNCC and Defra, 2012. *UK Post-2010 Biodiversity Framework*. [pdf] Produced on behalf of the Four Countries' Biodiversity Group Available at: https://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf [Accessed 05 Nov 2021].

JNCC, 2013. *SACFOR abundance scale used for both littoral and sublittoral taxa from 1990 onwards*. [pdf] Available at: https://mhc.jncc.gov.uk/media/1009/sacfor.pdf [Accessed 27 July 2021].

JNCC, 2014a. *Annex I Reefs*. [Online] Available at: http://jncc.defra.gov.uk/PAGE-1448 [Accessed 05 Nov 2021].

JNCC, 2014b. *JNCC clarifications on the habitat definitions of two habitat FOCI.* Peterborough, UK.

Kikuchi, R., 2010. Risk formulation for the sonic effects of offshore wind farms on fish in the EU region. *Marine Pollution Bulletin*, 60, pp.172-77.

Latto, P.L., Reach, I.S., Alexander, D., Backstrom, J., Beagley, E., Murphy, K., Piper, R. & Seiderer, L.J., 2013. *Screening Spatial Interactions between Marine Aggregate Application Areas and Sandeel Habitat.* A Method Statement produced for the BMAPA.

MarineSpace Ltd, ABPmer Ltd, ERM Ltd, Fugro EMU Ltd & Marine Ecological Surveys Ltd, 2013. *Environmental Effect Pathways between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Habitat: Regional Cumulative Impact Assessments. Version 1.0.* A report for the British Marine Aggregates Producers Association.

Mason, C., 2022. *NMBAQC's Best Practice Guidance Particle Size Analysis (PSA) for Supporting Biological Analysis*. [pdf] Lowestoft, UK: Cefas (Version 4, Dated 3-Mar-2022) Available at: https://www.nmbaqcs.org/media/ibzlxdej/psa-guidance_update2022.pdf [Accessed 14 Aug 2023].

McLeod, C.R., Yeo, M., Brown, A.J., Hopkins, J.J. & Way, S.F., 2009. *The Habitats Directive: selection of Special Areas of Conservation in the UK. Version 4*. [pdf] Joint Nature Conservation Committee, Peterborough

Available at: https://data.jncc.gov.uk/data/5d20b480-9cc1-490f-9599-da6003928434/sac-selection-background-t37-v4.pdf [Accessed 05 Nov 2021].

Natural England and JNCC, 2010. *Marine Conservatoin Zone Project: Ecological Network Guidance*. [pdf] Natural England and Joint Nature Conservation Council (Sheffield and Peterborough, UK.) Available at: https://data.jncc.gov.uk/data/94f961af-0bfc-4787-92d7-0c3bcf0fd083/MCZ-Ecological-Network-Guidance-2010.pdf [Accessed 11 Nov 2021].

Natural Environment and Rural Communities Act, 2006. *Natural Environment and Rural Communities Act 2006*. [Online] Available at: http://www.legislation.gov.uk/ukpga/2006/16/introduction [Accessed 08 Nov 2021].

NatureScot, 2020. *Priority Marine Features in Scotland's Seas - Habitats*. [Online] Available at: https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats [Accessed 17 Aug 2023].

OSPAR, 2008. *OSPAR List of Threatened and/or Declining Species and Habitats (OSPAR Reference Number: 2008-6)*. [Online] Available at: https://www.ospar.org/site/assets/files/1505/08-06e_ospar_list_species_and_habitats.doc [Accessed 27 July 2021].

OSPAR, 2010. *Background Document for Seapen and Burrowing megafauna Communities*. [pdf] Available at: https://www.ospar.org/documents?v=7261 [Accessed 27 July 2021].

Parry, M.E.V., 2019. *Guidance on Assigning Benthic Biotopes using EUNIS or the Marine Habitat Classification of Britain and Ireland (Revised 2019)*. JNCC Report No. 546. ISSN 0963-8091. Peterborough, UK: JNCC.

Pinto, J.M., Pearson, W.H. & Anderson, J.W., 1984. Sediment preferences and oil contamination in the Pacific sand lance *Ammodytes hexapterus*. *Marine Biology*, 83, pp.193-204.

Reach, I.S., Latto, P., Alexander, D., Alexander, S., Backstrom, J., Beagley, E., Murphy, K., Piper, R. & Seiderer, L.J., 2013. *Screening Spatial Interactions between Marine Aggregate Application Areas and Atlantic Herring Potential Spawning Areas.* A Method Statement produced for BMAPA.

Reid, R.N., Cargnelli, L.M., Griesbach, S.J., Packer, D.B., Johnson, D.L., Zetlin, C.A., Morse, W.W. & Berrien, P.L., 1999. *Atlantic Herring, Clupea harengus, Life History and Habitat Characteristics. Essential Fish Habitat Source Document.* National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NMFS-NE-126. 48 p.

Rogers, S. & Stocks, S., 2001. *North Sea Fish and Fisheries*. Technical report for Strategic Environmental Assessment (SEA). 72pp.

Scottish Biodiversity List, 2020. *Scottish Biodiversity List*. [Online] (Version 1.4 (2012)) Available at: https://www.nature.scot/scottish-biodiversity-list [Accessed 27 July 2021].

Stevenson, D.K. & Scott, M.L., 2005. *Atlantic Herring, Clupea harengus, Life History and Habitat Characteristics. Second Edition*. Essential Fish Habitat Source Document. National Oceanic and Atmospheric Administration (NOAA) Technical Memorandum NMFS-NE-192.

The Marine Environment (Amendment) (EU Exit) Regulations 2018, 2018. *legislation.gov.uk*. [pdf] Available at: https://www.legislation.gov.uk/uksi/2018/1399/pdfs/uksi_20181399_en.pdf [Accessed March 2023].

van Deurs, M., Grome, T.M., Kaspersen, M., Jensen, H., Stenberg, C., Sørensen, T.K., Støttrup, J., Warnar, T. & Mosegaard, H., 2012. *Short- and long-term effects of an offshore wind farm on three species of sandeel and their sand habitat*. Report. Marine Ecology Progress Series.

Wakefield, W.W. & Genin, A., 1987. The use of a Canadian (perspective) grid in deep-sea photography. *Depp-Sea Research*, 34(3), pp.469-78.

Wentworth, C.K., 1922. A scale of grade and class terms for clastic sediments. *Journal of Geology*, (30), pp.377-92.

Wright, P., Jensen, H. & Tuck, I., 2000. The influence of sediment type on the distribution of the lesser sandeel, *Ammodytes marinus*. *Journal of Sea Research*, [PDF].10 Jul, 44(3-4), pp.243-56. Available at: https://www.sciencedirect.com/science/article/abs/pii/S1385110100000502 [Accessed 31st Jan 2023].

Wright, P., Verspoor, E., Anderson, C., Donald, L., Kennedy, F., Mitchell, A., Munk, P., Pedersen, S.A., Jensen, H., Gislason, H. & Lewy, P., 1998. *Population structure in the lesser sandeel (Ammodytes marinus) and its implications for fishery-predator interactions.* DG XIV 94/C 144/ 04 Study Proposal No. 94/071. European Commission.

APPENDICES

APPENDIX A FIELD SAMPLING LOGS

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	06:33:41	1	MV24EXP-ENV-DC-173			Camera	70	627713	6271880	627676	6271898	37	-19	41	-63		(Corr'd Nav, Kongsberg 14208, img#1) (B)
11-Aug-2024	06:34:04	2	MV24EXP-ENV-DC-173			Camera	70	627710	6271881	627676	6271898	33	-17	37	-63		(Corr'd Nav, Kongsberg 14208, img#2) (B)
11-Aug-2024	06:34:19	3	MV24EXP-ENV-DC-173			Camera	70	627707	6271882	627676	6271898	31	-17	35	-62		(Corr'd Nav, Kongsberg 14208, img#3) (B)
11-Aug-2024	06:34:36	4	MV24EXP-ENV-DC-173			Camera	70	627705	6271883	627676	6271898	29	-15	33	-62		(Corr'd Nav, Kongsberg 14208, img#4) (B)
11-Aug-2024	06:35:23	5	MV24EXP-ENV-DC-173			Camera	70	627699	6271886	627676	6271898	23	-12	26	-62		(Corr'd Nav, Kongsberg 14208, img#5) (B)
11-Aug-2024	06:36:01	6	MV24EXP-ENV-DC-173			Camera	70	627694	6271889	627676	6271898	18	-10	20	-62		(Corr'd Nav, Kongsberg 14208, img#6) (B)
11-Aug-2024	06:36:12	7	MV24EXP-ENV-DC-173			Camera	70	627693	6271889	627676	6271898	17	-9	19	-62		(Corr'd Nav, Kongsberg 14208, img#7) (B)
11-Aug-2024	06:36:37	8	MV24EXP-ENV-DC-173			Camera	70	627689	6271890	627676	6271898	13	-8	15	-59		(Corr'd Nav, Kongsberg 14208, img#8) (B)
11-Aug-2024	06:37:04	9	MV24EXP-ENV-DC-173			Camera	70	627685	6271892	627676	6271898	8	-6	10	-53		(Corr'd Nav, Kongsberg 14208, img#9) (B)
11-Aug-2024	06:37:29	10	MV24EXP-ENV-DC-173			Camera	70	627681	6271894	627676	6271898	5	-5	7	-45		(Corr'd Nav, Kongsberg 14208, img#10) (B)
11-Aug-2024	06:38:06	11	MV24EXP-ENV-DC-173			Camera	70	627676	6271896	627676	6271898	0	-2	2	13		(Corr'd Nav, Kongsberg 14208, img#11) (B)
11-Aug-2024	06:38:17	12	MV24EXP-ENV-DC-173			Camera	70	627675	6271897	627676	6271898	-2	-1	2	56		(Corr'd Nav, Kongsberg 14208, img#12) (B)
11-Aug-2024	06:38:58	13	MV24EXP-ENV-DC-173			Camera	70	627670	6271899	627676	6271898	-7	1	7	98		(Corr'd Nav, Kongsberg 14208, img#13) (B)
11-Aug-2024	06:39:16	14	MV24EXP-ENV-DC-173			Camera	70	627667	6271900	627676	6271898	-10	2	10	103		(Corr'd Nav, Kongsberg 14208, img#14) (B)
11-Aug-2024	06:39:58	15	MV24EXP-ENV-DC-173			Camera	70	627661	6271903	627676	6271898	-16	5	17	108		(Corr'd Nav, Kongsberg 14208, img#15) (B)
11-Aug-2024	06:40:20	16	MV24EXP-ENV-DC-173			Camera	70	627658	6271904	627676	6271898	-19	6	20	108		(Corr'd Nav, Kongsberg 14208, img#16) (B)
11-Aug-2024	06:41:07	17	MV24EXP-ENV-DC-173			Camera	70	627651	6271907	627676	6271898	-25	9	27	110		(Corr'd Nav, Kongsberg 14208, img#17) (B)
11-Aug-2024	06:41:42	18	MV24EXP-ENV-DC-173			Camera	70	627646	6271910	627676	6271898	-30	11	32	111		(Corr'd Nav, Kongsberg 14208, img#18) (B)
11-Aug-2024	06:42:24	19	MV24EXP-ENV-DC-173			Camera	70	627640	6271913	627676	6271898	-36	14	39	112		(Corr'd Nav, Kongsberg 14208, img#19) (B)
11-Aug-2024	06:43:14	20	MV24EXP-ENV-DC-173			Camera	70	627633	6271916	627676	6271898	-43	18	47	112		(Corr'd Nav, Kongsberg 14208, img#20) (B)
11-Aug-2024	06:43:31	21	MV24EXP-ENV-DC-173			Camera	70	627631	6271917	627676	6271898	-45	19	49	112		(Corr'd Nav, Kongsberg 14208, img#21) (B)
11-Aug-2024	06:44:02	22	MV24EXP-ENV-DC-173			Camera	70	627626	6271919	627676	6271898	-50	20	54	112		(Corr'd Nav, Kongsberg 14208, img#22) (B)
11-Aug-2024	06:55:18	23	MV24EXP-ENV-DC-173			Camera	70	627692	6271952	627676	6271898	16	54	56	-164		(Corr'd Nav, Kongsberg 14208, img#23) (B)
11-Aug-2024	06:56:48	24	MV24EXP-ENV-DC-173			Camera	70	627689	6271947	627676	6271898	13	49	50	-166		(Corr'd Nav, Kongsberg 14208, img#24) (B)
11-Aug-2024	06:57:08	25	MV24EXP-ENV-DC-173			Camera	70	627688	6271945	627676	6271898	12	46	48	-166		(Corr'd Nav, Kongsberg 14208, img#25) (B)
11-Aug-2024	06:57:16	26	MV24EXP-ENV-DC-173			Camera	70	627688	6271943	627676	6271898	12	45	47	-166		(Corr'd Nav, Kongsberg 14208, img#26) (B)
11-Aug-2024	06:57:33	27	MV24EXP-ENV-DC-173			Camera	70	627688	6271941	627676	6271898	11	43	44	-165		(Corr'd Nav, Kongsberg 14208, img#27) (B)
11-Aug-2024	06:57:55	28	MV24EXP-ENV-DC-173			Camera	70	627687	6271938	627676	6271898	11	40	41	-165		(Corr'd Nav, Kongsberg 14208, img#28) (B)
11-Aug-2024	06:58:23	29	MV24EXP-ENV-DC-173			Camera	70	627686	6271934	627676	6271898	9	36	37	-165		(Corr'd Nav, Kongsberg 14208, img#29) (B)
11-Aug-2024	06:58:44	30	MV24EXP-ENV-DC-173			Camera	70	627684	6271930	627676	6271898	8	32	33	-166		(Corr'd Nav, Kongsberg 14208, img#30) (B)
11-Aug-2024	06:59:18	31	MV24EXP-ENV-DC-173			Camera	70	627683	6271924	627676	6271898	7	26	27	-165		(Corr'd Nav, Kongsberg 14208, img#31) (B)
11-Aug-2024	07:00:05	32	MV24EXP-ENV-DC-173			Camera	70	627682	6271916	627676	6271898	5	18	19	-163		(Corr'd Nav, Kongsberg 14208, img#32) (B)
11-Aug-2024	07:00:38	33	MV24EXP-ENV-DC-173			Camera	70	627681	6271912	627676	6271898	4	14	15	-162		(Corr'd Nav, Kongsberg 14208, img#33) (B)
11-Aug-2024	07:01:11	34	MV24EXP-ENV-DC-173			Camera	70	627680	6271907	627676	6271898	4	9	10	-155		(Corr'd Nav, Kongsberg 14208, img#34) (B)
11-Aug-2024	07:01:24	35	MV24EXP-ENV-DC-173			Camera	70	627680	6271905	627676	6271898	3	7	7	-152		(Corr'd Nav, Kongsberg 14208, img#35) (B)
11-Aug-2024	07:02:03	36	MV24EXP-ENV-DC-173			Camera	70	627678	6271899	627676	6271898	2	1	2	-116		(Corr'd Nav, Kongsberg 14208, img#36) (B)
11-Aug-2024	07:02:17	37	MV24EXP-ENV-DC-173			Camera	70	627677	6271897	627676	6271898	1	-1	2	-40		(Corr'd Nav, Kongsberg 14208, img#37) (B)
11-Aug-2024	07:03:16	38	MV24EXP-ENV-DC-173			Camera	70	627675	6271890	627676	6271898	-1	-9	9	10		(Corr'd Nav, Kongsberg 14208, img#38) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	07:03:27	39	MV24EXP-ENV-DC-173			Camera	70	627676	6271888	627676	6271898	-1	-10	10	5		(Corr'd Nav, Kongsberg 14208, img#39) (B)
11-Aug-2024	07:03:50	40	MV24EXP-ENV-DC-173			Camera	70	627675	6271884	627676	6271898	-2	-15	15	7		(Corr'd Nav, Kongsberg 14208, img#40) (B)
11-Aug-2024	07:04:02	41	MV24EXP-ENV-DC-173			Camera	70	627674	6271882	627676	6271898	-2	-17	17	8		(Corr'd Nav, Kongsberg 14208, img#41) (B)
11-Aug-2024	07:04:20	42	MV24EXP-ENV-DC-173			Camera	70	627674	6271879	627676	6271898	-3	-20	20	8		(Corr'd Nav, Kongsberg 14208, img#42) (B)
11-Aug-2024	07:04:47	43	MV24EXP-ENV-DC-173			Camera	70	627673	6271874	627676	6271898	-3	-24	24	8		(Corr'd Nav, Kongsberg 14208, img#43) (B)
11-Aug-2024	07:05:21	44	MV24EXP-ENV-DC-173			Camera	70	627672	6271869	627676	6271898	-5	-29	30	9		(Corr'd Nav, Kongsberg 14208, img#44) (B)
11-Aug-2024	07:06:14	45	MV24EXP-ENV-DC-173			Camera	70	627669	6271861	627676	6271898	-7	-38	38	10		(Corr'd Nav, Kongsberg 14208, img#45) (B)
11-Aug-2024	07:06:32	46	MV24EXP-ENV-DC-173			Camera	70	627669	6271858	627676	6271898	-8	-41	41	11		(Corr'd Nav, Kongsberg 14208, img#46) (B)
11-Aug-2024	07:07:10	47	MV24EXP-ENV-DC-173			Camera	70	627666	6271852	627676	6271898	-10	-46	47	12		(Corr'd Nav, Kongsberg 14208, img#47) (B)
11-Aug-2024	07:07:19	48	MV24EXP-ENV-DC-173			Camera	70	627666	6271851	627676	6271898	-10	-47	48	12		(Corr'd Nav, Kongsberg 14208, img#48) (B)
11-Aug-2024	07:07:42	49	MV24EXP-ENV-DC-173			Camera	70	627666	6271847	627676	6271898	-11	-51	52	12		(Corr'd Nav, Kongsberg 14208, img#49) (B)
11-Aug-2024	10:00:29	50	MV24EXP-ENV-DC-174			Camera	71	627585	6267929	627541	6267900	45	29	53	-123		(Corr'd Nav, Kongsberg 14208, img#1) (B)
11-Aug-2024	10:01:12	51	MV24EXP-ENV-DC-174			Camera	72	627580	6267927	627541	6267900	40	27	48	-124		(Corr'd Nav, Kongsberg 14208, img#2) (B)
11-Aug-2024	10:01:27	52	MV24EXP-ENV-DC-174			Camera	72	627578	6267926	627541	6267900	38	26	46	-125		(Corr'd Nav, Kongsberg 14208, img#3) (B)
11-Aug-2024	10:02:21	53	MV24EXP-ENV-DC-174			Camera	72	627571	6267923	627541	6267900	31	22	38	-126		(Corr'd Nav, Kongsberg 14208, img#4) (B)
11-Aug-2024	10:14:01	54	MV24EXP-ENV-DC-174			Camera	71	627567	6267913	627541	6267900	26	13	29	-116		(Corr'd Nav, Kongsberg 14208, img#5) (B)
11-Aug-2024	10:14:38	55	MV24EXP-ENV-DC-174			Camera	71	627567	6267913	627541	6267900	26	13	29	-116		(Corr'd Nav, Kongsberg 14208, img#6) (B)
11-Aug-2024	10:15:39	56	MV24EXP-ENV-DC-174			Camera	71	627565	6267912	627541	6267900	25	12	27	-116		(Corr'd Nav, Kongsberg 14208, img#7) (B)
11-Aug-2024	10:16:17	57	MV24EXP-ENV-DC-174			Camera	72	627561	6267911	627541	6267900	21	10	23	-116		(Corr'd Nav, Kongsberg 14208, img#8) (B)
11-Aug-2024	10:16:49	58	MV24EXP-ENV-DC-174			Camera	72	627556	6267909	627541	6267900	16	9	18	-119		(Corr'd Nav, Kongsberg 14208, img#9) (B)
11-Aug-2024	10:17:10	59	MV24EXP-ENV-DC-174			Camera	72	627553	6267908	627541	6267900	12	7	15	-121		(Corr'd Nav, Kongsberg 14208, img#10) (B)
11-Aug-2024	10:17:26	60	MV24EXP-ENV-DC-174			Camera	72	627550	6267907	627541	6267900	10	6	12	-123		(Corr'd Nav, Kongsberg 14208, img#11) (B)
11-Aug-2024	10:17:37	61	MV24EXP-ENV-DC-174			Camera	72	627549	6267906	627541	6267900	8	6	10	-125		(Corr'd Nav, Kongsberg 14208, img#12) (B)
11-Aug-2024	10:18:17	62	MV24EXP-ENV-DC-174			Camera	72	627543	6267904	627541	6267900	2	3	4	-146		(Corr'd Nav, Kongsberg 14208, img#13) (B)
11-Aug-2024	10:18:33	63	MV24EXP-ENV-DC-174			Camera	72	627541	6267903	627541	6267900	0	2	2	179		(Corr'd Nav, Kongsberg 14208, img#14) (B)
11-Aug-2024	10:19:02	64	MV24EXP-ENV-DC-174			Camera	72	627537	6267901	627541	6267900	-4	1	4	100		(Corr'd Nav, Kongsberg 14208, img#15) (B)
11-Aug-2024	10:19:34	65	MV24EXP-ENV-DC-174			Camera	72	627532	6267899	627541	6267900	-9	-2	9	78		(Corr'd Nav, Kongsberg 14208, img#16) (B)
11-Aug-2024	10:19:44	66	MV24EXP-ENV-DC-174			Camera	72	627531	6267898	627541	6267900	-10	-3	10	76		(Corr'd Nav, Kongsberg 14208, img#17) (B)
11-Aug-2024	10:20:35	67	MV24EXP-ENV-DC-174			Camera	72	627523	6267895	627541	6267900	-17	-5	18	75		(Corr'd Nav, Kongsberg 14208, img#18) (B)
11-Aug-2024	10:21:09	68	MV24EXP-ENV-DC-174			Camera	72	627518	6267894	627541	6267900	-23	-7	23	74		(Corr'd Nav, Kongsberg 14208, img#19) (B)
11-Aug-2024	10:21:40	69	MV24EXP-ENV-DC-174			Camera	72	627514	6267892	627541	6267900	-27	-8	28	73		(Corr'd Nav, Kongsberg 14208, img#20) (B)
11-Aug-2024	10:22:14	70	MV24EXP-ENV-DC-174			Camera	72	627510	6267891	627541	6267900	-31	-10	33	73		(Corr'd Nav, Kongsberg 14208, img#21) (B)
11-Aug-2024	10:22:54	71	MV24EXP-ENV-DC-174			Camera	72	627514	6267892	627541	6267900	-27	-8	28	73		(Corr'd Nav, Kongsberg 14208, img#22) (B)
11-Aug-2024	10:25:16	72	MV24EXP-ENV-DC-174			Camera	72	627499	6267886	627541	6267900	-42	-14	44	71		(Corr'd Nav, Kongsberg 14208, img#23) (B)
11-Aug-2024	10:25:43	73	MV24EXP-ENV-DC-174			Camera	72	627496	6267883	627541	6267900	-45	-17	48	69		(Corr'd Nav, Kongsberg 14208, img#24) (B)
11-Aug-2024	10:34:09	74	MV24EXP-ENV-DC-174			Camera	71	627524	6267917	627541	6267900	-17	17	24	135		(Corr'd Nav, Kongsberg 14208, img#25) (B)
11-Aug-2024	10:35:46	75	MV24EXP-ENV-DC-174			Camera	71	627533	6267928	627541	6267900	-8	28	29	165		(Corr'd Nav, Kongsberg 14208, img#26) (B)
11-Aug-2024	10:35:56	76	MV24EXP-ENV-DC-174			Camera	71	627534	6267930	627541	6267900	-6	30	30	168		(Corr'd Nav, Kongsberg 14208, img#27) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	10:36:15	77	MV24EXP-ENV-DC-174			Camera	72	627536	6267932	627541	6267900	-4	32	32	172		(Corr'd Nav, Kongsberg 14208, img#28) (B)
11-Aug-2024	10:37:28	78	MV24EXP-ENV-DC-174			Camera	71	627543	6267941	627541	6267900	3	41	41	-176		(Corr'd Nav, Kongsberg 14208, img#29) (B)
11-Aug-2024	10:37:40	79	MV24EXP-ENV-DC-174			Camera	71	627544	6267942	627541	6267900	4	42	42	-175		(Corr'd Nav, Kongsberg 14208, img#30) (B)
11-Aug-2024	10:38:36	80	MV24EXP-ENV-DC-174			Camera	71	627550	6267949	627541	6267900	9	49	50	-170		(Corr'd Nav, Kongsberg 14208, img#31) (B)
11-Aug-2024	10:42:55	81	MV24EXP-ENV-DC-174			Camera	71	627553	6267953	627541	6267900	12	53	54	-167		(Corr'd Nav, Kongsberg 14208, img#32) (B)
11-Aug-2024	10:43:33	82	MV24EXP-ENV-DC-174			Camera	71	627552	6267948	627541	6267900	11	48	49	-167		(Corr'd Nav, Kongsberg 14208, img#33) (B)
11-Aug-2024	10:44:04	83	MV24EXP-ENV-DC-174			Camera	71	627550	6267944	627541	6267900	9	43	44	-168		(Corr'd Nav, Kongsberg 14208, img#34) (B)
11-Aug-2024	10:44:43	84	MV24EXP-ENV-DC-174			Camera	71	627547	6267939	627541	6267900	6	38	39	-171		(Corr'd Nav, Kongsberg 14208, img#35) (B)
11-Aug-2024	10:45:27	85	MV24EXP-ENV-DC-174			Camera	71	627543	6267933	627541	6267900	2	33	33	-176		(Corr'd Nav, Kongsberg 14208, img#36) (B)
11-Aug-2024	10:45:39	86	MV24EXP-ENV-DC-174			Camera	71	627542	6267931	627541	6267900	1	31	31	-178		(Corr'd Nav, Kongsberg 14208, img#37) (B)
11-Aug-2024	10:45:46	87	MV24EXP-ENV-DC-174			Camera	71	627542	6267930	627541	6267900	1	30	30	-178		(Corr'd Nav, Kongsberg 14208, img#38) (B)
11-Aug-2024	10:46:27	88	MV24EXP-ENV-DC-174			Camera	72	627541	6267924	627541	6267900	0	23	23	180		(Corr'd Nav, Kongsberg 14208, img#39) (B)
11-Aug-2024	10:47:12	89	MV24EXP-ENV-DC-174			Camera	72	627539	6267917	627541	6267900	-2	17	17	175		(Corr'd Nav, Kongsberg 14208, img#40) (B)
11-Aug-2024	10:47:43	90	MV24EXP-ENV-DC-174			Camera	72	627537	6267913	627541	6267900	-4	13	14	165		(Corr'd Nav, Kongsberg 14208, img#41) (B)
11-Aug-2024	10:48:29	91	MV24EXP-ENV-DC-174			Camera	72	627535	6267908	627541	6267900	-6	8	10	143		(Corr'd Nav, Kongsberg 14208, img#42) (B)
11-Aug-2024	10:49:30	92	MV24EXP-ENV-DC-174			Camera	72	627533	6267900	627541	6267900	-7	0	7	90		(Corr'd Nav, Kongsberg 14208, img#43) (B)
11-Aug-2024	10:50:32	93	MV24EXP-ENV-DC-174			Camera	72	627532	6267892	627541	6267900	-8	-8	12	45		(Corr'd Nav, Kongsberg 14208, img#44) (B)
11-Aug-2024	10:51:17	94	MV24EXP-ENV-DC-174			Camera	72	627532	6267885	627541	6267900	-8	-16	18	29		(Corr'd Nav, Kongsberg 14208, img#45) (B)
11-Aug-2024	10:51:49	95	MV24EXP-ENV-DC-174			Camera	72	627532	6267880	627541	6267900	-9	-21	23	24		(Corr'd Nav, Kongsberg 14208, img#46) (B)
11-Aug-2024	10:52:28	96	MV24EXP-ENV-DC-174			Camera	72	627531	6267874	627541	6267900	-10	-27	28	20		(Corr'd Nav, Kongsberg 14208, img#47) (B)
11-Aug-2024	10:52:38	97	MV24EXP-ENV-DC-174			Camera	72	627531	6267872	627541	6267900	-10	-28	30	20		(Corr'd Nav, Kongsberg 14208, img#48) (B)
11-Aug-2024	10:52:50	98	MV24EXP-ENV-DC-174			Camera	72	627530	6267870	627541	6267900	-10	-30	32	19		(Corr'd Nav, Kongsberg 14208, img#49) (B)
11-Aug-2024	10:53:40	99	MV24EXP-ENV-DC-174			Camera	72	627529	6267862	627541	6267900	-11	-38	39	17		(Corr'd Nav, Kongsberg 14208, img#50) (B)
11-Aug-2024	10:53:50	100	MV24EXP-ENV-DC-174			Camera	72	627529	6267861	627541	6267900	-12	-39	41	17		(Corr'd Nav, Kongsberg 14208, img#51) (B)
11-Aug-2024	10:53:59	101	MV24EXP-ENV-DC-174			Camera	72	627529	6267860	627541	6267900	-12	-40	42	17		(Corr'd Nav, Kongsberg 14208, img#52) (B)
11-Aug-2024	10:54:40	102	MV24EXP-ENV-DC-174			Camera	72	627528	6267854	627541	6267900	-12	-46	48	15		(Corr'd Nav, Kongsberg 14208, img#53) (B)
11-Aug-2024	10:55:38	103	MV24EXP-ENV-DC-174			Camera	72	627529	6267851	627541	6267900	-12	-49	50	13		(Corr'd Nav, Kongsberg 14208, img#54) (B)
11-Aug-2024	13:32:58	104	MV24EXP-ENV-DC-175			Camera	73	627421	6263952	627417	6263902	4	50	50	-176		(Corr'd Nav, Kongsberg 14208, img#1) (B)
11-Aug-2024	13:33:40	105	MV24EXP-ENV-DC-175			Camera	73	627420	6263946	627417	6263902	3	43	43	-176		(Corr'd Nav, Kongsberg 14208, img#2) (B)
11-Aug-2024	13:34:22	106	MV24EXP-ENV-DC-175			Camera	73	627420	6263939	627417	6263902	3	37	37	-176		(Corr'd Nav, Kongsberg 14208, img#3) (B)
11-Aug-2024	13:34:46	107	MV24EXP-ENV-DC-175			Camera	73	627420	6263935	627417	6263902	2	33	33	-176		(Corr'd Nav, Kongsberg 14208, img#4) (B)
11-Aug-2024	13:35:17	108	MV24EXP-ENV-DC-175			Camera	73	627419	6263931	627417	6263902	2	29	29	-177		(Corr'd Nav, Kongsberg 14208, img#5) (B)
11-Aug-2024	13:35:33	109	MV24EXP-ENV-DC-175			Camera	73	627419	6263929	627417	6263902	2	26	26	-177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
11-Aug-2024	13:35:45	110	MV24EXP-ENV-DC-175			Camera	73	627419	6263927	627417	6263902	2	25	25	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B)
11-Aug-2024	13:36:16	111	MV24EXP-ENV-DC-175			Camera	73	627418	6263922	627417	6263902	1	20	20	-177		(Corr'd Nav, Kongsberg 14208, img#8) (B)
11-Aug-2024	13:36:35	112	MV24EXP-ENV-DC-175			Camera	73	627418	6263919	627417	6263902	1	17	17	-177		(Corr'd Nav, Kongsberg 14208, img#9) (B)
11-Aug-2024	13:36:58	113	MV24EXP-ENV-DC-175			Camera	73	627418	6263915	627417	6263902	1	13	13	-177		(Corr'd Nav, Kongsberg 14208, img#10) (B)
11-Aug-2024	13:37:05	114	MV24EXP-ENV-DC-175			Camera	73	627418	6263914	627417	6263902	1	12	12	-178		(Corr'd Nav, Kongsberg 14208, img#11) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	13:37:15	115	MV24EXP-ENV-DC-175			Camera	73	627418	6263912	627417	6263902	0	10	10	-177		(Corr'd Nav, Kongsberg 14208, img#12) (B)
11-Aug-2024	13:37:35	116	MV24EXP-ENV-DC-175			Camera	73	627418	6263909	627417	6263902	0	7	7	-177		(Corr'd Nav, Kongsberg 14208, img#13) (B)
11-Aug-2024	13:38:06	117	MV24EXP-ENV-DC-175			Camera	73	627417	6263905	627417	6263902	0	2	2	177		(Corr'd Nav, Kongsberg 14208, img#14) (B)
11-Aug-2024	13:38:16	118	MV24EXP-ENV-DC-175			Camera	73	627417	6263903	627417	6263902	0	1	1	168		(Corr'd Nav, Kongsberg 14208, img#15) (B)
11-Aug-2024	13:38:34	119	MV24EXP-ENV-DC-175			Camera	73	627417	6263900	627417	6263902	-1	-2	2	18		(Corr'd Nav, Kongsberg 14208, img#16) (B)
11-Aug-2024	13:39:07	120	MV24EXP-ENV-DC-175			Camera	73	627416	6263895	627417	6263902	-1	-7	7	9		(Corr'd Nav, Kongsberg 14208, img#17) (B)
11-Aug-2024	13:40:00	121	MV24EXP-ENV-DC-175			Camera	73	627416	6263893	627417	6263902	-1	-9	10	8		(Corr'd Nav, Kongsberg 14208, img#18) (B)
11-Aug-2024	13:40:50	122	MV24EXP-ENV-DC-175			Camera	73	627416	6263888	627417	6263902	-2	-15	15	7		(Corr'd Nav, Kongsberg 14208, img#19) (B)
11-Aug-2024	13:41:12	123	MV24EXP-ENV-DC-175			Camera	73	627415	6263883	627417	6263902	-2	-20	20	7		(Corr'd Nav, Kongsberg 14208, img#20) (B)
11-Aug-2024	13:41:57	124	MV24EXP-ENV-DC-175			Camera	73	627413	6263876	627417	6263902	-4	-26	26	9		(Corr'd Nav, Kongsberg 14208, img#21) (B)
11-Aug-2024	13:42:22	125	MV24EXP-ENV-DC-175			Camera	73	627412	6263874	627417	6263902	-5	-28	29	10		(Corr'd Nav, Kongsberg 14208, img#22) (B)
11-Aug-2024	13:42:58	126	MV24EXP-ENV-DC-175			Camera	73	627412	6263868	627417	6263902	-6	-34	35	9		(Corr'd Nav, Kongsberg 14208, img#23) (B)
11-Aug-2024	13:43:07	127	MV24EXP-ENV-DC-175			Camera	73	627412	6263867	627417	6263902	-6	-36	36	9		(Corr'd Nav, Kongsberg 14208, img#24) (B)
11-Aug-2024	13:46:54	128	MV24EXP-ENV-DC-175			Camera	73	627416	6263864	627417	6263902	-1	-39	39	2		(Corr'd Nav, Kongsberg 14208, img#25) (B)
11-Aug-2024	13:48:45	129	MV24EXP-ENV-DC-175			Camera	73	627429	6263876	627417	6263902	11	-26	28	-24		(Corr'd Nav, Kongsberg 14208, img#26) (B)
11-Aug-2024	13:50:00	130	MV24EXP-ENV-DC-175			Camera	73	627437	6263885	627417	6263902	20	-18	26	-48		(Corr'd Nav, Kongsberg 14208, img#27) (B)
11-Aug-2024	13:57:01	131	MV24EXP-ENV-DC-175			Camera	73	627461	6263916	627417	6263902	44	13	46	-107		(Corr'd Nav, Kongsberg 14208, img#28) (B)
11-Aug-2024	13:57:26	132	MV24EXP-ENV-DC-175			Camera	73	627458	6263914	627417	6263902	40	12	42	-107		(Corr'd Nav, Kongsberg 14208, img#29) (B)
11-Aug-2024	13:58:01	133	MV24EXP-ENV-DC-175			Camera	73	627452	6263913	627417	6263902	34	10	36	-107		(Corr'd Nav, Kongsberg 14208, img#30) (B)
11-Aug-2024	13:59:55	134	MV24EXP-ENV-DC-175			Camera	73	627440	6263909	627417	6263902	22	6	23	-106		(Corr'd Nav, Kongsberg 14208, img#31) (B)
11-Aug-2024	14:02:44	135	MV24EXP-ENV-DC-175			Camera	73	627421	6263903	627417	6263902	4	1	4	-98		(Corr'd Nav, Kongsberg 14208, img#32) (B)
11-Aug-2024	14:03:45	136	MV24EXP-ENV-DC-175			Camera	73	627412	6263900	627417	6263902	-5	-2	6	65		(Corr'd Nav, Kongsberg 14208, img#33) (B)
11-Aug-2024	14:04:19	137	MV24EXP-ENV-DC-175			Camera	73	627407	6263898	627417	6263902	-10	-4	11	69		(Corr'd Nav, Kongsberg 14208, img#34) (B)
11-Aug-2024	14:06:30	138	MV24EXP-ENV-DC-175			Camera	73	627388	6263893	627417	6263902	-30	-10	31	72		(Corr'd Nav, Kongsberg 14208, img#35) (B)
11-Aug-2024	14:07:55	139	MV24EXP-ENV-DC-175			Camera	73	627375	6263888	627417	6263902	-42	-14	45	71		(Corr'd Nav, Kongsberg 14208, img#36) (B)
11-Aug-2024	14:08:43	140	MV24EXP-ENV-DC-175			Camera	73	627370	6263886	627417	6263902	-48	-16	51	72		(Corr'd Nav, Kongsberg 14208, img#37) (B)
12-Aug-2024	04:35:11	141	MV24EXP-ENV-DC-176			Camera	73	627000	6259953	627041	6259920	-42	33	53	128		(Corr'd Nav, Kongsberg 14208, img#1) (B)
12-Aug-2024	04:36:12	142	MV24EXP-ENV-DC-176			Camera	73	627007	6259946	627041	6259920	-34	26	43	127		(Corr'd Nav, Kongsberg 14208, img#2) (B)
12-Aug-2024	04:37:01	143	MV24EXP-ENV-DC-176			Camera	73	627012	6259942	627041	6259920	-29	22	36	127		(Corr'd Nav, Kongsberg 14208, img#3) (B)
12-Aug-2024	04:37:33	144	MV24EXP-ENV-DC-176			Camera	73	627016	6259939	627041	6259920	-25	19	31	127		(Corr'd Nav, Kongsberg 14208, img#4) (B)
12-Aug-2024	04:37:52	145	MV24EXP-ENV-DC-176			Camera	73	627019	6259937	627041	6259920	-22	17	28	127		(Corr'd Nav, Kongsberg 14208, img#5) (B)
12-Aug-2024	04:38:19	146	MV24EXP-ENV-DC-176			Camera	73	627022	6259934	627041	6259920	-19	14	24	127		(Corr'd Nav, Kongsberg 14208, img#6) (B)
12-Aug-2024	04:39:02	147	MV24EXP-ENV-DC-176			Camera	73	627027	6259930	627041	6259920	-14	10	17	125		(Corr'd Nav, Kongsberg 14208, img#7) (B)
12-Aug-2024	04:39:44	148	MV24EXP-ENV-DC-176			Camera	73	627031	6259925	627041	6259920	-10	5	11	118		(Corr'd Nav, Kongsberg 14208, img#8) (B)
12-Aug-2024	04:40:19	149	MV24EXP-ENV-DC-176			Camera	73	627035	6259923	627041	6259920	-6	3	7	118		(Corr'd Nav, Kongsberg 14208, img#9) (B)
12-Aug-2024	04:40:54	150	MV24EXP-ENV-DC-176			Camera	73	627040	6259920	627041	6259920	-1	0	1	60		(Corr'd Nav, Kongsberg 14208, img#10) (B)
12-Aug-2024	04:41:09	151	MV24EXP-ENV-DC-176			Camera	73	627042	6259918	627041	6259920	1	-2	3	-31		(Corr'd Nav, Kongsberg 14208, img#11) (B)
12-Aug-2024	04:41:33	152	MV24EXP-ENV-DC-176			Camera	73	627045	6259915	627041	6259920	4	-5	6	-42		(Corr'd Nav, Kongsberg 14208, img#12) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
12-Aug-2024	04:41:59	153	MV24EXP-ENV-DC-176			Camera	73	627048	6259913	627041	6259920	7	-7	10	-42		(Corr'd Nav, Kongsberg 14208, img#13) (B)
12-Aug-2024	04:42:51	154	MV24EXP-ENV-DC-176			Camera	73	627054	6259907	627041	6259920	13	-13	18	-45		(Corr'd Nav, Kongsberg 14208, img#14) (B)
12-Aug-2024	04:43:07	155	MV24EXP-ENV-DC-176			Camera	73	627056	6259906	627041	6259920	15	-15	21	-46		(Corr'd Nav, Kongsberg 14208, img#15) (B)
12-Aug-2024	04:43:20	156	MV24EXP-ENV-DC-176			Camera	73	627058	6259904	627041	6259920	17	-16	23	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B)
12-Aug-2024	04:44:07	157	MV24EXP-ENV-DC-176			Camera	73	627062	6259900	627041	6259920	21	-20	29	-46		(Corr'd Nav, Kongsberg 14208, img#17) (B)
12-Aug-2024	04:44:29	158	MV24EXP-ENV-DC-176			Camera	73	627065	6259898	627041	6259920	24	-22	32	-47		(Corr'd Nav, Kongsberg 14208, img#18) (B)
12-Aug-2024	04:45:49	159	MV24EXP-ENV-DC-176			Camera	73	627076	6259891	627041	6259920	35	-30	46	-49		(Corr'd Nav, Kongsberg 14208, img#19) (B)
12-Aug-2024	04:46:45	160	MV24EXP-ENV-DC-176			Camera	73	627080	6259886	627041	6259920	39	-34	52	-49		(Corr'd Nav, Kongsberg 14208, img#20) (B)
12-Aug-2024	04:51:10	161	MV24EXP-ENV-DC-176			Camera	73	627057	6259878	627041	6259920	16	-43	46	-21		(Corr'd Nav, Kongsberg 14208, img#21) (B)
12-Aug-2024	04:51:47	162	MV24EXP-ENV-DC-176			Camera	73	627053	6259875	627041	6259920	12	-45	47	-15		(Corr'd Nav, Kongsberg 14208, img#22) (B)
12-Aug-2024	04:52:23	163	MV24EXP-ENV-DC-176			Camera	73	627048	6259873	627041	6259920	7	-47	47	-9		(Corr'd Nav, Kongsberg 14208, img#23) (B)
12-Aug-2024	04:52:49	164	MV24EXP-ENV-DC-176			Camera	73	627044	6259872	627041	6259920	3	-48	48	-3		(Corr'd Nav, Kongsberg 14208, img#24) (B)
12-Aug-2024	04:56:12	165	MV24EXP-ENV-DC-176			Camera	73	627029	6259870	627041	6259920	-12	-50	51	14		(Corr'd Nav, Kongsberg 14208, img#25) (B)
12-Aug-2024	04:57:06	166	MV24EXP-ENV-DC-176			Camera	73	627029	6259879	627041	6259920	-12	-41	43	16		(Corr'd Nav, Kongsberg 14208, img#26) (B)
12-Aug-2024	04:57:49	167	MV24EXP-ENV-DC-176			Camera	73	627027	6259887	627041	6259920	-14	-33	36	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
12-Aug-2024	04:58:29	168	MV24EXP-ENV-DC-176			Camera	73	627027	6259895	627041	6259920	-15	-26	29	30		(Corr'd Nav, Kongsberg 14208, img#28) (B)
12-Aug-2024	04:59:12	169	MV24EXP-ENV-DC-176			Camera	73	627030	6259900	627041	6259920	-11	-20	23	30		(Corr'd Nav, Kongsberg 14208, img#29) (B)
12-Aug-2024	04:59:37	170	MV24EXP-ENV-DC-176			Camera	73	627032	6259903	627041	6259920	-10	-17	19	30		(Corr'd Nav, Kongsberg 14208, img#30) (B)
12-Aug-2024	04:59:52	171	MV24EXP-ENV-DC-176			Camera	73	627032	6259906	627041	6259920	-9	-15	17	32		(Corr'd Nav, Kongsberg 14208, img#31) (B)
12-Aug-2024	05:00:01	172	MV24EXP-ENV-DC-176			Camera	73	627032	6259907	627041	6259920	-9	-13	16	34		(Corr'd Nav, Kongsberg 14208, img#32) (B)
12-Aug-2024	05:00:45	173	MV24EXP-ENV-DC-176			Camera	73	627035	6259913	627041	6259920	-7	-7	10	43		(Corr'd Nav, Kongsberg 14208, img#33) (B)
12-Aug-2024	05:01:01	174	MV24EXP-ENV-DC-176			Camera	73	627037	6259915	627041	6259920	-5	-5	7	41		(Corr'd Nav, Kongsberg 14208, img#34) (B)
12-Aug-2024	05:01:10	175	MV24EXP-ENV-DC-176			Camera	73	627038	6259916	627041	6259920	-4	-4	6	38		(Corr'd Nav, Kongsberg 14208, img#35) (B)
12-Aug-2024	05:01:18	176	MV24EXP-ENV-DC-176			Camera	73	627039	6259917	627041	6259920	-2	-4	4	35		(Corr'd Nav, Kongsberg 14208, img#36) (B)
12-Aug-2024	05:01:59	177	MV24EXP-ENV-DC-176			Camera	73	627043	6259921	627041	6259920	2	1	2	-116		(Corr'd Nav, Kongsberg 14208, img#37) (B)
12-Aug-2024	05:02:20	178	MV24EXP-ENV-DC-176			Camera	73	627045	6259923	627041	6259920	3	3	5	-132		(Corr'd Nav, Kongsberg 14208, img#38) (B)
12-Aug-2024	05:02:32	179	MV24EXP-ENV-DC-176			Camera	73	627046	6259925	627041	6259920	5	5	6	-135		(Corr'd Nav, Kongsberg 14208, img#39) (B)
12-Aug-2024	05:03:36	180	MV24EXP-ENV-DC-176			Camera	73	627052	6259933	627041	6259920	11	13	17	-138		(Corr'd Nav, Kongsberg 14208, img#40) (B)
12-Aug-2024	05:04:13	181	MV24EXP-ENV-DC-176			Camera	73	627057	6259937	627041	6259920	16	17	23	-138		(Corr'd Nav, Kongsberg 14208, img#41) (B)
12-Aug-2024	05:04:42	182	MV24EXP-ENV-DC-176			Camera	73	627060	6259941	627041	6259920	19	21	28	-138		(Corr'd Nav, Kongsberg 14208, img#42) (B)
12-Aug-2024	05:05:13	183	MV24EXP-ENV-DC-176			Camera	73	627062	6259944	627041	6259920	21	24	32	-139		(Corr'd Nav, Kongsberg 14208, img#43) (B)
12-Aug-2024	05:05:21	184	MV24EXP-ENV-DC-176			Camera	73	627063	6259945	627041	6259920	22	24	33	-139		(Corr'd Nav, Kongsberg 14208, img#44) (B)
12-Aug-2024	05:06:01	185	MV24EXP-ENV-DC-176			Camera	73	627067	6259949	627041	6259920	25	28	38	-138		(Corr'd Nav, Kongsberg 14208, img#45) (B)
12-Aug-2024	05:06:35	186	MV24EXP-ENV-DC-176			Camera	73	627069	6259952	627041	6259920	28	32	42	-138		(Corr'd Nav, Kongsberg 14208, img#46) (B)
12-Aug-2024	05:06:59	187	MV24EXP-ENV-DC-176			Camera	73	627071	6259955	627041	6259920	30	34	46	-139		(Corr'd Nav, Kongsberg 14208, img#47) (B)
12-Aug-2024	05:07:17	188	MV24EXP-ENV-DC-176			Camera	73	627073	6259957	627041	6259920	32	37	48	-139		(Corr'd Nav, Kongsberg 14208, img#48) (B)
12-Aug-2024	05:07:42	189	MV24EXP-ENV-DC-176			Camera	73	627075	6259960	627041	6259920	34	40	52	-139		(Corr'd Nav, Kongsberg 14208, img#49) (B)
13-Aug-2024	01:09:54	190	MV24EXP-ENV-DC-177			Camera	73	626369	6255940	626401	6255909	-32	30	44	134		(Corr'd Nav, Kongsberg 14208, img#1) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	01:10:14	191	MV24EXP-ENV-DC-177			Camera	72	626372	6255937	626401	6255909	-29	28	40	314		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	01:10:36	192	MV24EXP-ENV-DC-177			Camera	72	626375	6255934	626401	6255909	-26	25	36	315		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	01:11:11	193	MV24EXP-ENV-DC-177			Camera	72	626380	6255929	626401	6255909	-21	19	28	313		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	01:11:34	194	MV24EXP-ENV-DC-177			Camera	73	626384	6255926	626401	6255909	-17	17	24	134		(Corr'd Nav, Kongsberg 14208, img#5) (B)
13-Aug-2024	01:11:48	195	MV24EXP-ENV-DC-177			Camera	73	626385	6255925	626401	6255909	-16	15	22	134		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	01:12:10	196	MV24EXP-ENV-DC-177			Camera	73	626388	6255922	626401	6255909	-13	12	18	133		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	01:12:29	197	MV24EXP-ENV-DC-177			Camera	73	626390	6255919	626401	6255909	-11	10	15	131		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	01:12:50	198	MV24EXP-ENV-DC-177			Camera	73	626392	6255916	626401	6255909	-8	6	11	127		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	01:13:09	199	MV24EXP-ENV-DC-177			Camera	73	626395	6255912	626401	6255909	-6	3	6	117		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	01:13:36	200	MV24EXP-ENV-DC-177			Camera	73	626400	6255907	626401	6255909	-1	-2	2	32		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	01:13:46	201	MV24EXP-ENV-DC-177			Camera	73	626401	6255906	626401	6255909	0	-3	3	-3		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	01:14:09	202	MV24EXP-ENV-DC-177			Camera	73	626404	6255903	626401	6255909	3	-7	7	-27		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	01:14:19	203	MV24EXP-ENV-DC-177			Camera	73	626406	6255901	626401	6255909	5	-8	9	-31		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	01:14:41	204	MV24EXP-ENV-DC-177			Camera	73	626409	6255898	626401	6255909	8	-11	14	-36		(Corr'd Nav, Kongsberg 14208, img#15) (B)
13-Aug-2024	01:15:02	205	MV24EXP-ENV-DC-177			Camera	73	626412	6255895	626401	6255909	11	-14	18	-38		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	01:15:11	206	MV24EXP-ENV-DC-177			Camera	73	626413	6255894	626401	6255909	12	-15	20	-39		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	01:16:11	207	MV24EXP-ENV-DC-177			Camera	73	626421	6255885	626401	6255909	20	-24	31	-40		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	01:16:22	208	MV24EXP-ENV-DC-177			Camera	73	626422	6255884	626401	6255909	21	-26	33	-39		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	01:16:32	209	MV24EXP-ENV-DC-177			Camera	73	626423	6255882	626401	6255909	23	-27	35	-40		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	01:17:01	210	MV24EXP-ENV-DC-177			Camera	72	626427	6255879	626401	6255909	27	-30	40	-41		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	01:17:53	211	MV24EXP-ENV-DC-177			Camera	72	626433	6255874	626401	6255909	32	-36	48	-42		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	01:24:34	212	MV24EXP-ENV-DC-177			Camera	72	626400	6255871	626401	6255909	-1	-38	38	1		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	01:26:26	213	MV24EXP-ENV-DC-177			Camera	72	626392	6255871	626401	6255909	-9	-39	40	13		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	01:27:12	214	MV24EXP-ENV-DC-177			Camera	72	626386	6255872	626401	6255909	-15	-38	40	22		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	01:28:48	215	MV24EXP-ENV-DC-177			Camera	72	626377	6255871	626401	6255909	-24	-38	45	32		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	01:29:57	216	MV24EXP-ENV-DC-177			Camera	72	626371	6255870	626401	6255909	-30	-39	49	37		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	01:31:57	217	MV24EXP-ENV-DC-177			Camera	72	626365	6255874	626401	6255909	-36	-35	50	45		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	01:32:57	218	MV24EXP-ENV-DC-177			Camera	72	626365	6255875	626401	6255909	-36	-34	49	46		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	01:33:25	219	MV24EXP-ENV-DC-177			Camera	72	626366	6255877	626401	6255909	-35	-32	48	47		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	01:34:10	220	MV24EXP-ENV-DC-177			Camera	72	626371	6255881	626401	6255909	-30	-28	41	47		(Corr'd Nav, Kongsberg 14208, img#31) (B)
13-Aug-2024	01:34:23	221	MV24EXP-ENV-DC-177			Camera	72	626372	6255884	626401	6255909	-29	-26	39	48		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	01:34:40	222	MV24EXP-ENV-DC-177			Camera	73	626374	6255886	626401	6255909	-27	-24	35	48		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	01:35:11	223	MV24EXP-ENV-DC-177			Camera	73	626379	6255891	626401	6255909	-22	-19	28	49		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	01:35:31	224	MV24EXP-ENV-DC-177			Camera	73	626383	6255894	626401	6255909	-18	-15	23	49		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	01:36:12	225	MV24EXP-ENV-DC-177			Camera	73	626390	6255902	626401	6255909	-11	-8	13	55		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	01:36:39	226	MV24EXP-ENV-DC-177			Camera	73	626394	6255907	626401	6255909	-7	-2	7	71		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	01:37:11	227	MV24EXP-ENV-DC-177			Camera	73	626399	6255913	626401	6255909	-2	3	4	154		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	01:37:56	228	MV24EXP-ENV-DC-177			Camera	73	626405	6255920	626401	6255909	4	11	11	-159		(Corr'd Nav, Kongsberg 14208, img#39) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	01:38:50	229	MV24EXP-ENV-DC-177			Camera	73	626412	6255925	626401	6255909	11	16	19	-144		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	01:39:19	230	MV24EXP-ENV-DC-177			Camera	73	626417	6255929	626401	6255909	16	19	25	-140		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	01:39:41	231	MV24EXP-ENV-DC-177			Camera	73	626420	6255932	626401	6255909	20	23	30	-139		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	01:40:01	232	MV24EXP-ENV-DC-177			Camera	73	626423	6255936	626401	6255909	22	27	35	-140		(Corr'd Nav, Kongsberg 14208, img#43) (B)
13-Aug-2024	01:40:32	233	MV24EXP-ENV-DC-177			Camera	73	626427	6255941	626401	6255909	26	31	41	-140		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	01:41:06	234	MV24EXP-ENV-DC-177			Camera	73	626432	6255944	626401	6255909	31	35	47	-138		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	01:41:39	235	MV24EXP-ENV-DC-177			Camera	73	626435	6255947	626401	6255909	34	38	50	-138		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	04:22:47	236	MV24EXP-ENV-DC-178			Camera	69	625716	6251949	625761	6251919	-45	30	54	124		(Corr'd Nav, Kongsberg 14208, img#1) (B)
13-Aug-2024	04:23:11	237	MV24EXP-ENV-DC-178			Camera	69	625719	6251947	625761	6251919	-42	28	50	123		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	04:23:38	238	MV24EXP-ENV-DC-178			Camera	69	625723	6251944	625761	6251919	-38	25	45	123		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	04:23:48	239	MV24EXP-ENV-DC-178			Camera	69	625725	6251943	625761	6251919	-36	24	43	124		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	04:24:13	240	MV24EXP-ENV-DC-178			Camera	69	625729	6251941	625761	6251919	-32	22	38	124		(Corr'd Nav, Kongsberg 14208, img#5) (B)
13-Aug-2024	04:24:57	241	MV24EXP-ENV-DC-178			Camera	69	625734	6251936	625761	6251919	-27	17	32	123		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	04:25:07	242	MV24EXP-ENV-DC-178			Camera	69	625736	6251935	625761	6251919	-25	16	30	123		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	04:25:21	243	MV24EXP-ENV-DC-178			Camera	69	625738	6251933	625761	6251919	-23	14	27	122		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	04:25:44	244	MV24EXP-ENV-DC-178			Camera	69	625741	6251931	625761	6251919	-19	12	22	121		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	04:26:20	245	MV24EXP-ENV-DC-178			Camera	69	625748	6251926	625761	6251919	-13	7	15	120		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	04:26:40	246	MV24EXP-ENV-DC-178			Camera	69	625751	6251925	625761	6251919	-9	5	11	121		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	04:27:01	247	MV24EXP-ENV-DC-178			Camera	69	625755	6251922	625761	6251919	-5	3	6	116		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	04:27:39	248	MV24EXP-ENV-DC-178			Camera	69	625763	6251917	625761	6251919	2	-2	3	-41		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	04:27:57	249	MV24EXP-ENV-DC-178			Camera	69	625765	6251914	625761	6251919	5	-5	7	-45		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	04:28:26	250	MV24EXP-ENV-DC-178			Camera	69	625770	6251911	625761	6251919	9	-8	12	-48		(Corr'd Nav, Kongsberg 14208, img#15) (B)
13-Aug-2024	04:28:45	251	MV24EXP-ENV-DC-178			Camera	69	625773	6251909	625761	6251919	12	-10	16	-49		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	04:29:16	252	MV24EXP-ENV-DC-178			Camera	69	625778	6251906	625761	6251919	17	-14	22	-51		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	04:29:24	253	MV24EXP-ENV-DC-178			Camera	69	625779	6251905	625761	6251919	18	-14	23	-51		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	04:29:44	254	MV24EXP-ENV-DC-178			Camera	69	625782	6251903	625761	6251919	22	-16	27	-53		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	04:30:04	255	MV24EXP-ENV-DC-178			Camera	69	625786	6251901	625761	6251919	25	-18	31	-54		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	04:30:20	256	MV24EXP-ENV-DC-178			Camera	69	625788	6251899	625761	6251919	27	-20	34	-54		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	04:30:50	257	MV24EXP-ENV-DC-178			Camera	69	625793	6251895	625761	6251919	33	-25	41	-53		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	04:31:04	258	MV24EXP-ENV-DC-178			Camera	69	625796	6251893	625761	6251919	36	-26	44	-53		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	04:31:24	259	MV24EXP-ENV-DC-178			Camera	69	625800	6251890	625761	6251919	39	-29	49	-54		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	04:31:46	260	MV24EXP-ENV-DC-178			Camera	69	625804	6251888	625761	6251919	44	-31	54	-54		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	04:33:30	261	MV24EXP-ENV-DC-178			Camera	69	625806	6251887	625761	6251919	45	-32	55	-55		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	04:38:51	262	MV24EXP-ENV-DC-178			Camera	70	625762	6251871	625761	6251919	2	-48	48	-2		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	04:40:49	263	MV24EXP-ENV-DC-178			Camera	70	625753	6251864	625761	6251919	-7	-55	56	7		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	04:43:13	264	MV24EXP-ENV-DC-178			Camera	70	625749	6251874	625761	6251919	-11	-45	47	14		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	04:43:32	265	MV24EXP-ENV-DC-178			Camera	70	625749	6251877	625761	6251919	-12	-42	44	16		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	04:43:57	266	MV24EXP-ENV-DC-178			Camera	70	625749	6251882	625761	6251919	-11	-38	39	17		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	04:44:28	267	MV24EXP-ENV-DC-178			Camera	70	625749	6251887	625761	6251919	-12	-33	35	19		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	04:45:09	268	MV24EXP-ENV-DC-178			Camera	70	625750	6251893	625761	6251919	-11	-26	28	22		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	04:45:46	269	MV24EXP-ENV-DC-178			Camera	69	625751	6251899	625761	6251919	-10	-21	23	26		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	04:45:54	270	MV24EXP-ENV-DC-178			Camera	70	625751	6251900	625761	6251919	-10	-19	22	27		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	04:46:47	271	MV24EXP-ENV-DC-178			Camera	69	625752	6251907	625761	6251919	-8	-12	15	35		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	04:47:28	272	MV24EXP-ENV-DC-178			Camera	69	625755	6251911	625761	6251919	-6	-8	10	37		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	04:47:56	273	MV24EXP-ENV-DC-178			Camera	69	625757	6251914	625761	6251919	-4	-5	6	40		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	04:48:34	274	MV24EXP-ENV-DC-178			Camera	69	625761	6251918	625761	6251919	0	-1	1	3		(Corr'd Nav, Kongsberg 14208, img#39) (B)
13-Aug-2024	04:48:58	275	MV24EXP-ENV-DC-178			Camera	69	625764	6251920	625761	6251919	3	1	4	-105		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	04:49:07	276	MV24EXP-ENV-DC-178			Camera	69	625765	6251921	625761	6251919	4	2	5	-110		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	04:50:00	277	MV24EXP-ENV-DC-178			Camera	69	625770	6251926	625761	6251919	10	7	12	-126		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	04:50:15	278	MV24EXP-ENV-DC-178			Camera	69	625772	6251928	625761	6251919	11	9	14	-129		(Corr'd Nav, Kongsberg 14208, img#43) (B)
13-Aug-2024	04:50:42	279	MV24EXP-ENV-DC-178			Camera	69	625773	6251932	625761	6251919	13	13	18	-135		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	04:50:58	280	MV24EXP-ENV-DC-178			Camera	70	625774	6251934	625761	6251919	13	15	20	-139		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	04:51:15	281	MV24EXP-ENV-DC-178			Camera	70	625774	6251937	625761	6251919	14	18	22	-142		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	04:51:47	282	MV24EXP-ENV-DC-178			Camera	70	625776	6251941	625761	6251919	15	22	27	-146		(Corr'd Nav, Kongsberg 14208, img#47) (B)
13-Aug-2024	04:52:01	283	MV24EXP-ENV-DC-178			Camera	69	625777	6251943	625761	6251919	16	24	29	-147		(Corr'd Nav, Kongsberg 14208, img#48) (B)
13-Aug-2024	04:52:46	284	MV24EXP-ENV-DC-178			Camera	69	625780	6251950	625761	6251919	19	31	36	-148		(Corr'd Nav, Kongsberg 14208, img#49) (B)
13-Aug-2024	04:53:06	285	MV24EXP-ENV-DC-178			Camera	69	625781	6251953	625761	6251919	20	34	39	-149		(Corr'd Nav, Kongsberg 14208, img#50) (B)
13-Aug-2024	04:53:31	286	MV24EXP-ENV-DC-178			Camera	70	625782	6251957	625761	6251919	21	38	43	-151		(Corr'd Nav, Kongsberg 14208, img#51) (B)
13-Aug-2024	04:53:49	287	MV24EXP-ENV-DC-178			Camera	69	625782	6251960	625761	6251919	21	41	46	-153		(Corr'd Nav, Kongsberg 14208, img#52) (B)
13-Aug-2024	04:53:56	288	MV24EXP-ENV-DC-178			Camera	69	625782	6251961	625761	6251919	21	41	46	-153		(Corr'd Nav, Kongsberg 14208, img#53) (B)
13-Aug-2024	04:54:14	289	MV24EXP-ENV-DC-178			Camera	69	625782	6251964	625761	6251919	21	44	49	-155		(Corr'd Nav, Kongsberg 14208, img#54) (B)
13-Aug-2024	06:37:57	290	MV24EXP-ENV-DC-179			Camera	69	625109	6248105	625151	6248070	-42	35	55	130		(Corr'd Nav, Kongsberg 14208, img#1) (B)
13-Aug-2024	06:39:03	291	MV24EXP-ENV-DC-179			Camera	69	625114	6248101	625151	6248070	-36	31	48	130		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	06:39:50	292	MV24EXP-ENV-DC-179			Camera	69	625119	6248096	625151	6248070	-32	26	41	129		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	06:40:27	293	MV24EXP-ENV-DC-179			Camera	69	625123	6248092	625151	6248070	-27	22	35	129		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	06:41:09	294	MV24EXP-ENV-DC-179			Camera	69	625129	6248087	625151	6248070	-22	17	28	128		(Corr'd Nav, Kongsberg 14208, img#5) (B)
13-Aug-2024	06:41:37	295	MV24EXP-ENV-DC-179			Camera	69	625133	6248085	625151	6248070	-18	15	23	129		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	06:42:09	296	MV24EXP-ENV-DC-179			Camera	69	625137	6248082	625151	6248070	-14	12	18	130		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	06:42:17	297	MV24EXP-ENV-DC-179			Camera	69	625137	6248081	625151	6248070	-13	11	17	130		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	06:42:54	298	MV24EXP-ENV-DC-179			Camera	69	625141	6248079	625151	6248070	-10	9	13	132		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	06:43:29	299	MV24EXP-ENV-DC-179			Camera	70	625145	6248075	625151	6248070	-5	5	7	132		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	06:43:47	300	MV24EXP-ENV-DC-179			Camera	70	625147	6248073	625151	6248070	-4	3	5	130		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	06:44:44	301	MV24EXP-ENV-DC-179			Camera	69	625152	6248067	625151	6248070	1	-3	3	-23		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	06:45:02	302	MV24EXP-ENV-DC-179			Camera	69	625154	6248065	625151	6248070	3	-5	6	-32		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	06:45:38	303	MV24EXP-ENV-DC-179			Camera	69	625159	6248060	625151	6248070	8	-10	13	-38		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	06:46:14	304	MV24EXP-ENV-DC-179			Camera	70	625163	6248056	625151	6248070	12	-14	18	-42		(Corr'd Nav, Kongsberg 14208, img#15) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	06:46:49	305	MV24EXP-ENV-DC-179			Camera	70	625167	6248053	625151	6248070	17	-17	24	-44		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	06:47:09	306	MV24EXP-ENV-DC-179			Camera	70	625170	6248050	625151	6248070	20	-20	28	-45		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	06:47:34	307	MV24EXP-ENV-DC-179			Camera	70	625174	6248047	625151	6248070	23	-23	32	-45		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	06:47:53	308	MV24EXP-ENV-DC-179			Camera	70	625176	6248045	625151	6248070	25	-25	35	-45		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	06:48:09	309	MV24EXP-ENV-DC-179			Camera	70	625177	6248044	625151	6248070	26	-26	37	-45		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	06:48:45	310	MV24EXP-ENV-DC-179			Camera	70	625182	6248040	625151	6248070	31	-30	43	-46		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	06:49:03	311	MV24EXP-ENV-DC-179			Camera	70	625184	6248038	625151	6248070	33	-32	46	-46		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	06:49:27	312	MV24EXP-ENV-DC-179			Camera	70	625186	6248036	625151	6248070	35	-34	49	-46		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	06:49:58	313	MV24EXP-ENV-DC-179			Camera	70	625189	6248034	625151	6248070	38	-36	53	-47		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	06:53:37	314	MV24EXP-ENV-DC-179			Camera	70	625174	6248030	625151	6248070	23	-40	46	-31		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	06:57:05	315	MV24EXP-ENV-DC-179			Camera	70	625147	6248015	625151	6248070	-4	-55	55	4		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	06:59:59	316	MV24EXP-ENV-DC-179			Camera	70	625139	6248024	625151	6248070	-12	-46	48	14		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	07:00:15	317	MV24EXP-ENV-DC-179			Camera	70	625141	6248025	625151	6248070	-10	-45	46	13		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	07:00:41	318	MV24EXP-ENV-DC-179			Camera	70	625143	6248029	625151	6248070	-8	-41	41	10		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	07:01:10	319	MV24EXP-ENV-DC-179			Camera	70	625145	6248034	625151	6248070	-6	-36	37	9		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	07:01:32	320	MV24EXP-ENV-DC-179			Camera	70	625146	6248038	625151	6248070	-5	-32	33	8		(Corr'd Nav, Kongsberg 14208, img#31) (B)
13-Aug-2024	07:02:03	321	MV24EXP-ENV-DC-179			Camera	70	625146	6248043	625151	6248070	-4	-27	27	9		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	07:02:14	322	MV24EXP-ENV-DC-179			Camera	70	625147	6248045	625151	6248070	-4	-25	25	9		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	07:02:47	323	MV24EXP-ENV-DC-179			Camera	70	625147	6248051	625151	6248070	-4	-19	20	12		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	07:03:10	324	MV24EXP-ENV-DC-179			Camera	70	625147	6248055	625151	6248070	-4	-15	16	14		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	07:03:32	325	MV24EXP-ENV-DC-179			Camera	70	625148	6248058	625151	6248070	-3	-12	13	15		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	07:03:43	326	MV24EXP-ENV-DC-179			Camera	70	625148	6248060	625151	6248070	-3	-10	11	16		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	07:04:12	327	MV24EXP-ENV-DC-179			Camera	70	625148	6248065	625151	6248070	-3	-5	6	28		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	07:04:41	328	MV24EXP-ENV-DC-179			Camera	70	625149	6248069	625151	6248070	-2	-1	2	63		(Corr'd Nav, Kongsberg 14208, img#39) (B)
13-Aug-2024	07:05:15	329	MV24EXP-ENV-DC-179			Camera	70	625151	6248074	625151	6248070	0	4	4	-177		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	07:05:35	330	MV24EXP-ENV-DC-179			Camera	69	625152	6248077	625151	6248070	1	7	7	-174		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	07:06:14	331	MV24EXP-ENV-DC-179			Camera	69	625152	6248083	625151	6248070	2	13	13	-173		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	07:06:40	332	MV24EXP-ENV-DC-179			Camera	69	625153	6248087	625151	6248070	3	17	17	-171		(Corr'd Nav, Kongsberg 14208, img#43) (B)
13-Aug-2024	07:07:45	333	MV24EXP-ENV-DC-179			Camera	69	625156	6248097	625151	6248070	5	27	28	-169		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	07:08:17	334	MV24EXP-ENV-DC-179			Camera	69	625158	6248101	625151	6248070	7	31	32	-168		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	07:08:31	335	MV24EXP-ENV-DC-179			Camera	69	625158	6248103	625151	6248070	7	33	34	-168		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	07:09:36	336	MV24EXP-ENV-DC-179			Camera	69	625160	6248114	625151	6248070	9	44	45	-168		(Corr'd Nav, Kongsberg 14208, img#47) (B)
13-Aug-2024	07:10:32	337	MV24EXP-ENV-DC-179			Camera	69	625162	6248121	625151	6248070	11	52	53	-168		(Corr'd Nav, Kongsberg 14208, img#48) (B)
13-Aug-2024	09:34:05	338	MV24EXP-ENV-DC-180			Camera	69	624510	6244214	624523	6244160	-14	53	55	346		(Corr'd Nav, Kongsberg 14208, img#1) (B)
13-Aug-2024	09:34:31	339	MV24EXP-ENV-DC-180			Camera	68	624510	6244213	624523	6244160	-13	52	54	166		(Corr'd Nav, Kongsberg 14208, img#2) (B)
13-Aug-2024	09:35:03	340	MV24EXP-ENV-DC-180			Camera	69	624512	6244209	624523	6244160	-12	49	50	167		(Corr'd Nav, Kongsberg 14208, img#3) (B)
13-Aug-2024	09:35:25	341	MV24EXP-ENV-DC-180			Camera	69	624512	6244205	624523	6244160	-11	44	45	166		(Corr'd Nav, Kongsberg 14208, img#4) (B)
13-Aug-2024	09:35:52	342	MV24EXP-ENV-DC-180			Camera	69	624513	6244200	624523	6244160	-10	40	41	166		(Corr'd Nav, Kongsberg 14208, img#5) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	09:36:11	343	MV24EXP-ENV-DC-180			Camera	69	624514	6244197	624523	6244160	-9	37	38	166		(Corr'd Nav, Kongsberg 14208, img#6) (B)
13-Aug-2024	09:36:37	344	MV24EXP-ENV-DC-180			Camera	69	624516	6244193	624523	6244160	-8	33	34	167		(Corr'd Nav, Kongsberg 14208, img#7) (B)
13-Aug-2024	09:36:49	345	MV24EXP-ENV-DC-180			Camera	69	624517	6244192	624523	6244160	-7	31	32	167		(Corr'd Nav, Kongsberg 14208, img#8) (B)
13-Aug-2024	09:37:22	346	MV24EXP-ENV-DC-180			Camera	69	624518	6244187	624523	6244160	-5	27	27	169		(Corr'd Nav, Kongsberg 14208, img#9) (B)
13-Aug-2024	09:37:35	347	MV24EXP-ENV-DC-180			Camera	69	624518	6244186	624523	6244160	-5	26	26	169		(Corr'd Nav, Kongsberg 14208, img#10) (B)
13-Aug-2024	09:38:23	348	MV24EXP-ENV-DC-180			Camera	69	624521	6244179	624523	6244160	-3	18	18	172		(Corr'd Nav, Kongsberg 14208, img#11) (B)
13-Aug-2024	09:38:34	349	MV24EXP-ENV-DC-180			Camera	69	624522	6244177	624523	6244160	-2	16	16	174		(Corr'd Nav, Kongsberg 14208, img#12) (B)
13-Aug-2024	09:38:47	350	MV24EXP-ENV-DC-180			Camera	69	624522	6244175	624523	6244160	-1	15	15	176		(Corr'd Nav, Kongsberg 14208, img#13) (B)
13-Aug-2024	09:39:43	351	MV24EXP-ENV-DC-180			Camera	69	624526	6244167	624523	6244160	3	6	7	-159		(Corr'd Nav, Kongsberg 14208, img#14) (B)
13-Aug-2024	09:39:56	352	MV24EXP-ENV-DC-180			Camera	69	624527	6244165	624523	6244160	3	5	6	-147		(Corr'd Nav, Kongsberg 14208, img#15) (B)
13-Aug-2024	09:40:25	353	MV24EXP-ENV-DC-180			Camera	69	624527	6244163	624523	6244160	4	2	5	-119		(Corr'd Nav, Kongsberg 14208, img#16) (B)
13-Aug-2024	09:41:00	354	MV24EXP-ENV-DC-180			Camera	69	624527	6244160	624523	6244160	3	-1	3	-79		(Corr'd Nav, Kongsberg 14208, img#17) (B)
13-Aug-2024	09:41:19	355	MV24EXP-ENV-DC-180			Camera	69	624527	6244157	624523	6244160	3	-4	5	-41		(Corr'd Nav, Kongsberg 14208, img#18) (B)
13-Aug-2024	09:41:34	356	MV24EXP-ENV-DC-180			Camera	69	624527	6244154	624523	6244160	4	-6	7	-33		(Corr'd Nav, Kongsberg 14208, img#19) (B)
13-Aug-2024	09:41:59	357	MV24EXP-ENV-DC-180			Camera	69	624529	6244150	624523	6244160	5	-11	12	-27		(Corr'd Nav, Kongsberg 14208, img#20) (B)
13-Aug-2024	09:42:29	358	MV24EXP-ENV-DC-180			Camera	69	624531	6244144	624523	6244160	8	-16	18	-25		(Corr'd Nav, Kongsberg 14208, img#21) (B)
13-Aug-2024	09:42:42	359	MV24EXP-ENV-DC-180			Camera	69	624532	6244142	624523	6244160	8	-18	20	-25		(Corr'd Nav, Kongsberg 14208, img#22) (B)
13-Aug-2024	09:43:06	360	MV24EXP-ENV-DC-180			Camera	69	624532	6244139	624523	6244160	9	-22	24	-22		(Corr'd Nav, Kongsberg 14208, img#23) (B)
13-Aug-2024	09:43:26	361	MV24EXP-ENV-DC-180			Camera	69	624533	6244136	624523	6244160	9	-24	26	-21		(Corr'd Nav, Kongsberg 14208, img#24) (B)
13-Aug-2024	09:44:02	362	MV24EXP-ENV-DC-180			Camera	69	624534	6244131	624523	6244160	10	-30	31	-19		(Corr'd Nav, Kongsberg 14208, img#25) (B)
13-Aug-2024	09:44:20	363	MV24EXP-ENV-DC-180			Camera	69	624534	6244128	624523	6244160	11	-33	34	-18		(Corr'd Nav, Kongsberg 14208, img#26) (B)
13-Aug-2024	09:44:46	364	MV24EXP-ENV-DC-180			Camera	69	624535	6244124	624523	6244160	12	-37	38	-18		(Corr'd Nav, Kongsberg 14208, img#27) (B)
13-Aug-2024	09:45:46	365	MV24EXP-ENV-DC-180			Camera	69	624537	6244115	624523	6244160	13	-46	48	-16		(Corr'd Nav, Kongsberg 14208, img#28) (B)
13-Aug-2024	09:46:03	366	MV24EXP-ENV-DC-180			Camera	69	624537	6244113	624523	6244160	14	-48	50	-16		(Corr'd Nav, Kongsberg 14208, img#29) (B)
13-Aug-2024	09:48:34	367	MV24EXP-ENV-DC-180			Camera	69	624536	6244110	624523	6244160	13	-50	52	-14		(Corr'd Nav, Kongsberg 14208, img#30) (B)
13-Aug-2024	09:49:15	368	MV24EXP-ENV-DC-180			Camera	69	624534	6244114	624523	6244160	11	-47	48	-13		(Corr'd Nav, Kongsberg 14208, img#31) (B)
13-Aug-2024	09:58:45	369	MV24EXP-ENV-DC-180			Camera	69	624471	6244150	624523	6244160	-52	-10	53	79		(Corr'd Nav, Kongsberg 14208, img#32) (B)
13-Aug-2024	09:59:44	370	MV24EXP-ENV-DC-180			Camera	69	624475	6244152	624523	6244160	-49	-8	49	80		(Corr'd Nav, Kongsberg 14208, img#33) (B)
13-Aug-2024	10:00:24	371	MV24EXP-ENV-DC-180			Camera	69	624480	6244154	624523	6244160	-43	-7	44	81		(Corr'd Nav, Kongsberg 14208, img#34) (B)
13-Aug-2024	10:00:57	372	MV24EXP-ENV-DC-180			Camera	69	624486	6244154	624523	6244160	-38	-6	38	81		(Corr'd Nav, Kongsberg 14208, img#35) (B)
13-Aug-2024	10:01:10	373	MV24EXP-ENV-DC-180			Camera	69	624488	6244155	624523	6244160	-36	-6	36	81		(Corr'd Nav, Kongsberg 14208, img#36) (B)
13-Aug-2024	10:01:57	374	MV24EXP-ENV-DC-180			Camera	69	624495	6244157	624523	6244160	-28	-4	29	82		(Corr'd Nav, Kongsberg 14208, img#37) (B)
13-Aug-2024	10:02:53	375	MV24EXP-ENV-DC-180			Camera	69	624504	6244159	624523	6244160	-20	-2	20	84		(Corr'd Nav, Kongsberg 14208, img#38) (B)
13-Aug-2024	10:03:05	376	MV24EXP-ENV-DC-180			Camera	69	624506	6244159	624523	6244160	-18	-2	18	85		(Corr'd Nav, Kongsberg 14208, img#39) (B)
13-Aug-2024	10:03:38	377	MV24EXP-ENV-DC-180			Camera	69	624511	6244160	624523	6244160	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#40) (B)
13-Aug-2024	10:04:11	378	MV24EXP-ENV-DC-180			Camera	69	624515	6244161	624523	6244160	-8	0	8	93		(Corr'd Nav, Kongsberg 14208, img#41) (B)
13-Aug-2024	10:04:20	379	MV24EXP-ENV-DC-180			Camera	69	624516	6244161	624523	6244160	-7	0	7	93		(Corr'd Nav, Kongsberg 14208, img#42) (B)
13-Aug-2024	10:04:43	380	MV24EXP-ENV-DC-180			Camera	69	624518	6244161	624523	6244160	-5	0	5	95		(Corr'd Nav, Kongsberg 14208, img#43) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
13-Aug-2024	10:05:05	381	MV24EXP-ENV-DC-180			Camera	69	624521	6244161	624523	6244160	-2	0	2	98		(Corr'd Nav, Kongsberg 14208, img#44) (B)
13-Aug-2024	10:05:40	382	MV24EXP-ENV-DC-180			Camera	69	624526	6244161	624523	6244160	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#45) (B)
13-Aug-2024	10:06:12	383	MV24EXP-ENV-DC-180			Camera	69	624532	6244160	624523	6244160	8	0	8	-89		(Corr'd Nav, Kongsberg 14208, img#46) (B)
13-Aug-2024	10:06:32	384	MV24EXP-ENV-DC-180			Camera	69	624535	6244160	624523	6244160	11	-1	11	-86		(Corr'd Nav, Kongsberg 14208, img#47) (B)
13-Aug-2024	10:06:56	385	MV24EXP-ENV-DC-180			Camera	69	624539	6244159	624523	6244160	16	-1	16	-85		(Corr'd Nav, Kongsberg 14208, img#48) (B)
13-Aug-2024	10:07:09	386	MV24EXP-ENV-DC-180			Camera	69	624541	6244159	624523	6244160	18	-2	18	-85		(Corr'd Nav, Kongsberg 14208, img#49) (B)
13-Aug-2024	10:07:48	387	MV24EXP-ENV-DC-180			Camera	69	624548	6244160	624523	6244160	25	-1	25	-89		(Corr'd Nav, Kongsberg 14208, img#50) (B)
13-Aug-2024	10:08:01	388	MV24EXP-ENV-DC-180			Camera	69	624550	6244160	624523	6244160	27	0	27	-90		(Corr'd Nav, Kongsberg 14208, img#51) (B)
13-Aug-2024	10:08:44	389	MV24EXP-ENV-DC-180			Camera	69	624556	6244161	624523	6244160	32	1	32	88		(Corr'd Nav, Kongsberg 14208, img#52) (B)
13-Aug-2024	10:09:34	390	MV24EXP-ENV-DC-180			Camera	70	624563	6244163	624523	6244160	39	3	39	86		(Corr'd Nav, Kongsberg 14208, img#53) (B)
13-Aug-2024	10:10:18	391	MV24EXP-ENV-DC-180			Camera	69	624570	6244163	624523	6244160	46	3	46	87		(Corr'd Nav, Kongsberg 14208, img#54) (B)
13-Aug-2024	10:10:29	392	MV24EXP-ENV-DC-180			Camera	69	624571	6244163	624523	6244160	48	3	48	86		(Corr'd Nav, Kongsberg 14208, img#55) (B)
14-Aug-2024	06:37:09	393	MV24GC1-ENV-DC-234			Camera	68	627148	6203671	627184	6203640	-36	31	48	311		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	06:37:48	394	MV24GC1-ENV-DC-234			Camera	67	627151	6203667	627184	6203640	-32	27	42	130		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	06:38:15	395	MV24GC1-ENV-DC-234			Camera	67	627155	6203664	627184	6203640	-29	24	38	130		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	06:38:25	396	MV24GC1-ENV-DC-234			Camera	67	627157	6203663	627184	6203640	-27	23	36	130		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	06:38:39	397	MV24GC1-ENV-DC-234			Camera	67	627159	6203661	627184	6203640	-25	22	33	131		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	06:38:51	398	MV24GC1-ENV-DC-234			Camera	67	627160	6203660	627184	6203640	-24	20	31	130		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	06:39:11	399	MV24GC1-ENV-DC-234			Camera	67	627163	6203657	627184	6203640	-21	18	27	131		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	06:39:40	400	MV24GC1-ENV-DC-234			Camera	67	627167	6203655	627184	6203640	-16	15	22	132		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	06:40:05	401	MV24GC1-ENV-DC-234			Camera	67	627170	6203653	627184	6203640	-14	13	19	133		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	06:40:18	402	MV24GC1-ENV-DC-234			Camera	67	627171	6203652	627184	6203640	-13	12	17	133		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	06:41:02	403	MV24GC1-ENV-DC-234			Camera	67	627175	6203646	627184	6203640	-8	7	11	128		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	06:41:41	404	MV24GC1-ENV-DC-234			Camera	67	627179	6203642	627184	6203640	-4	2	5	120		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	06:41:53	405	MV24GC1-ENV-DC-234			Camera	67	627181	6203641	627184	6203640	-3	1	3	112		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	06:42:01	406	MV24GC1-ENV-DC-234			Camera	67	627181	6203640	627184	6203640	-2	1	2	104		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	06:42:15	407	MV24GC1-ENV-DC-234			Camera	67	627183	6203639	627184	6203640	-1	-1	1	58		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	06:42:22	408	MV24GC1-ENV-DC-234			Camera	67	627184	6203638	627184	6203640	0	-1	1	5		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	06:42:49	409	MV24GC1-ENV-DC-234			Camera	67	627187	6203636	627184	6203640	3	-3	4	-39		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	06:42:57	410	MV24GC1-ENV-DC-234			Camera	67	627187	6203635	627184	6203640	4	-4	6	-39		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	06:43:26	411	MV24GC1-ENV-DC-234			Camera	67	627191	6203632	627184	6203640	7	-8	10	-41		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	06:43:54	412	MV24GC1-ENV-DC-234			Camera	67	627194	6203629	627184	6203640	10	-11	15	-43		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	06:44:37	413	MV24GC1-ENV-DC-234			Camera	67	627200	6203624	627184	6203640	16	-15	22	-47		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	06:44:52	414	MV24GC1-ENV-DC-234			Camera	67	627201	6203623	627184	6203640	18	-17	24	-47		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	06:45:27	415	MV24GC1-ENV-DC-234			Camera	67	627205	6203619	627184	6203640	22	-21	30	-46		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	06:45:39	416	MV24GC1-ENV-DC-234			Camera	67	627207	6203618	627184	6203640	23	-22	32	-46		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	06:46:12	417	MV24GC1-ENV-DC-234			Camera	67	627212	6203615	627184	6203640	28	-24	37	-49		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	06:46:47	418	MV24GC1-ENV-DC-234			Camera	67	627216	6203612	627184	6203640	32	-28	42	-49		(Corr'd Nav, Kongsberg 14208, img#26) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	06:47:08	419	MV24GC1-ENV-DC-234			Camera	67	627219	6203610	627184	6203640	35	-30	46	-50		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	06:47:39	420	MV24GC1-ENV-DC-234			Camera	67	627222	6203607	627184	6203640	38	-33	50	-49		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	06:51:41	421	MV24GC1-ENV-DC-234			Camera	67	627217	6203599	627184	6203640	33	-41	53	-39		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	06:53:02	422	MV24GC1-ENV-DC-234			Camera	67	627204	6203591	627184	6203640	20	-49	53	-23		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	06:53:32	423	MV24GC1-ENV-DC-234			Camera	67	627200	6203588	627184	6203640	16	-52	54	-17		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	06:54:22	424	MV24GC1-ENV-DC-234			Camera	67	627192	6203585	627184	6203640	9	-55	56	-9		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	06:55:39	425	MV24GC1-ENV-DC-234			Camera	67	627184	6203584	627184	6203640	0	-56	56	0		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	06:55:48	426	MV24GC1-ENV-DC-234			Camera	67	627183	6203584	627184	6203640	-1	-56	56	1		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	06:56:02	427	MV24GC1-ENV-DC-234			Camera	67	627181	6203584	627184	6203640	-3	-55	56	3		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	06:57:27	428	MV24GC1-ENV-DC-234			Camera	67	627171	6203582	627184	6203640	-13	-57	59	13		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	06:57:45	429	MV24GC1-ENV-DC-234			Camera	67	627170	6203582	627184	6203640	-14	-58	59	13		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	06:58:29	430	MV24GC1-ENV-DC-234			Camera	67	627169	6203582	627184	6203640	-15	-58	59	14		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	06:58:36	431	MV24GC1-ENV-DC-234			Camera	67	627169	6203582	627184	6203640	-15	-57	59	14		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	06:58:43	432	MV24GC1-ENV-DC-234			Camera	67	627169	6203583	627184	6203640	-14	-57	59	14		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	07:00:34	433	MV24GC1-ENV-DC-234			Camera	67	627172	6203596	627184	6203640	-12	-43	45	16		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	07:00:45	434	MV24GC1-ENV-DC-234			Camera	67	627172	6203598	627184	6203640	-12	-42	43	16		(Corr'd Nav, Kongsberg 14208, img#42) (B)
14-Aug-2024	07:01:51	435	MV24GC1-ENV-DC-234			Camera	67	627175	6203608	627184	6203640	-9	-32	33	16		(Corr'd Nav, Kongsberg 14208, img#43) (B)
14-Aug-2024	07:02:32	436	MV24GC1-ENV-DC-234			Camera	67	627177	6203614	627184	6203640	-7	-26	26	15		(Corr'd Nav, Kongsberg 14208, img#44) (B)
14-Aug-2024	07:03:26	437	MV24GC1-ENV-DC-234			Camera	67	627181	6203623	627184	6203640	-3	-17	17	9		(Corr'd Nav, Kongsberg 14208, img#45) (B)
14-Aug-2024	07:04:15	438	MV24GC1-ENV-DC-234			Camera	67	627182	6203630	627184	6203640	-2	-10	10	13		(Corr'd Nav, Kongsberg 14208, img#46) (B)
14-Aug-2024	07:05:03	439	MV24GC1-ENV-DC-234			Camera	67	627183	6203638	627184	6203640	0	-2	2	10		(Corr'd Nav, Kongsberg 14208, img#47) (B)
14-Aug-2024	07:05:20	440	MV24GC1-ENV-DC-234			Camera	67	627184	6203640	627184	6203640	0	1	1	-149		(Corr'd Nav, Kongsberg 14208, img#48) (B)
14-Aug-2024	07:05:37	441	MV24GC1-ENV-DC-234			Camera	67	627185	6203643	627184	6203640	1	3	3	-164		(Corr'd Nav, Kongsberg 14208, img#49) (B)
14-Aug-2024	07:05:56	442	MV24GC1-ENV-DC-234			Camera	67	627185	6203646	627184	6203640	1	6	6	-166		(Corr'd Nav, Kongsberg 14208, img#50) (B)
14-Aug-2024	07:06:58	443	MV24GC1-ENV-DC-234			Camera	67	627186	6203655	627184	6203640	2	16	16	-172		(Corr'd Nav, Kongsberg 14208, img#51) (B)
14-Aug-2024	07:07:33	444	MV24GC1-ENV-DC-234			Camera	67	627187	6203661	627184	6203640	4	21	21	-170		(Corr'd Nav, Kongsberg 14208, img#52) (B)
14-Aug-2024	07:08:10	445	MV24GC1-ENV-DC-234			Camera	67	627189	6203666	627184	6203640	5	27	27	-169		(Corr'd Nav, Kongsberg 14208, img#53) (B)
14-Aug-2024	07:08:25	446	MV24GC1-ENV-DC-234			Camera	67	627190	6203669	627184	6203640	6	29	30	-168		(Corr'd Nav, Kongsberg 14208, img#54) (B)
14-Aug-2024	07:09:36	447	MV24GC1-ENV-DC-234			Camera	67	627192	6203679	627184	6203640	8	39	40	-168		(Corr'd Nav, Kongsberg 14208, img#55) (B)
14-Aug-2024	07:09:51	448	MV24GC1-ENV-DC-234			Camera	67	627193	6203681	627184	6203640	9	42	43	-168		(Corr'd Nav, Kongsberg 14208, img#56) (B)
14-Aug-2024	07:10:23	449	MV24GC1-ENV-DC-234			Camera	67	627193	6203686	627184	6203640	10	46	47	-168		(Corr'd Nav, Kongsberg 14208, img#57) (B)
14-Aug-2024	07:10:50	450	MV24GC1-ENV-DC-234			Camera	67	627194	6203690	627184	6203640	11	51	52	-168		(Corr'd Nav, Kongsberg 14208, img#58) (B)
14-Aug-2024	08:44:08	451	MV24GC1-ENV-DC-235			Camera	67	628511	6203588	628496	6203641	15	-53	55	-16		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	08:45:38	452	MV24GC1-ENV-DC-235			Camera	67	628508	6203594	628496	6203641	13	-47	48	-15		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	08:45:51	453	MV24GC1-ENV-DC-235			Camera	67	628508	6203597	628496	6203641	12	-45	46	-15		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	08:46:03	454	MV24GC1-ENV-DC-235			Camera	67	628507	6203598	628496	6203641	11	-43	44	-14		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	08:46:26	455	MV24GC1-ENV-DC-235			Camera	67	628506	6203602	628496	6203641	10	-39	40	-14		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	08:46:51	456	MV24GC1-ENV-DC-235			Camera	67	628504	6203606	628496	6203641	8	-36	37	-13		(Corr'd Nav, Kongsberg 14208, img#6) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	08:47:18	457	MV24GC1-ENV-DC-235			Camera	67	628503	6203609	628496	6203641	7	-32	33	-13		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	08:47:24	458	MV24GC1-ENV-DC-235			Camera	67	628503	6203610	628496	6203641	7	-31	32	-12		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	08:47:51	459	MV24GC1-ENV-DC-235			Camera	67	628501	6203614	628496	6203641	5	-27	28	-11		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	08:48:06	460	MV24GC1-ENV-DC-235			Camera	67	628501	6203615	628496	6203641	5	-26	26	-10		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	08:49:00	461	MV24GC1-ENV-DC-235			Camera	67	628499	6203624	628496	6203641	3	-17	17	-10		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	08:50:02	462	MV24GC1-ENV-DC-235			Camera	67	628497	6203633	628496	6203641	1	-9	9	-4		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	08:50:25	463	MV24GC1-ENV-DC-235			Camera	67	628496	6203636	628496	6203641	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	08:51:07	464	MV24GC1-ENV-DC-235			Camera	67	628495	6203641	628496	6203641	-1	0	1	105		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	08:52:06	465	MV24GC1-ENV-DC-235			Camera	67	628492	6203650	628496	6203641	-4	9	9	156		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	08:52:46	466	MV24GC1-ENV-DC-235			Camera	67	628490	6203656	628496	6203641	-6	15	16	159		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	08:52:53	467	MV24GC1-ENV-DC-235			Camera	67	628490	6203657	628496	6203641	-6	16	17	160		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	08:53:58	468	MV24GC1-ENV-DC-235			Camera	67	628488	6203667	628496	6203641	-8	26	27	163		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	08:54:35	469	MV24GC1-ENV-DC-235			Camera	67	628487	6203672	628496	6203641	-9	31	33	164		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	08:55:13	470	MV24GC1-ENV-DC-235			Camera	67	628485	6203678	628496	6203641	-11	37	39	164		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	08:55:43	471	MV24GC1-ENV-DC-235			Camera	67	628485	6203683	628496	6203641	-11	42	43	165		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	08:56:26	472	MV24GC1-ENV-DC-235			Camera	67	628483	6203689	628496	6203641	-13	48	50	165		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	09:02:41	473	MV24GC1-ENV-DC-235			Camera	67	628513	6203692	628496	6203641	17	51	53	-161		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	09:08:49	474	MV24GC1-ENV-DC-235			Camera	67	628529	6203675	628496	6203641	33	34	47	-135		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	09:09:16	475	MV24GC1-ENV-DC-235			Camera	67	628525	6203671	628496	6203641	30	30	42	-135		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	09:09:43	476	MV24GC1-ENV-DC-235			Camera	67	628522	6203667	628496	6203641	27	26	37	-135		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	09:10:10	477	MV24GC1-ENV-DC-235			Camera	67	628520	6203664	628496	6203641	24	23	33	-133		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	09:10:53	478	MV24GC1-ENV-DC-235			Camera	67	628515	6203658	628496	6203641	20	17	26	-132		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	09:11:24	479	MV24GC1-ENV-DC-235			Camera	67	628512	6203654	628496	6203641	16	13	20	-130		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	09:11:33	480	MV24GC1-ENV-DC-235			Camera	67	628510	6203653	628496	6203641	14	12	19	-129		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	09:12:22	481	MV24GC1-ENV-DC-235			Camera	67	628505	6203647	628496	6203641	9	6	11	-124		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	09:13:11	482	MV24GC1-ENV-DC-235			Camera	67	628500	6203642	628496	6203641	4	1	4	-101		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	09:13:41	483	MV24GC1-ENV-DC-235			Camera	67	628497	6203639	628496	6203641	1	-2	3	-21		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	09:14:17	484	MV24GC1-ENV-DC-235			Camera	67	628493	6203634	628496	6203641	-3	-7	7	24		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	09:14:52	485	MV24GC1-ENV-DC-235			Camera	67	628489	6203630	628496	6203641	-6	-11	13	31		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	09:15:23	486	MV24GC1-ENV-DC-235			Camera	67	628486	6203626	628496	6203641	-10	-15	17	33		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	09:15:43	487	MV24GC1-ENV-DC-235			Camera	67	628485	6203624	628496	6203641	-11	-17	20	34		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	09:16:00	488	MV24GC1-ENV-DC-235			Camera	67	628484	6203623	628496	6203641	-12	-18	22	34		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	09:16:32	489	MV24GC1-ENV-DC-235			Camera	67	628481	6203619	628496	6203641	-15	-22	27	35		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	09:16:50	490	MV24GC1-ENV-DC-235			Camera	67	628479	6203617	628496	6203641	-17	-24	30	36		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	09:17:15	491	MV24GC1-ENV-DC-235			Camera	67	628476	6203614	628496	6203641	-20	-27	33	37		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	09:17:48	492	MV24GC1-ENV-DC-235			Camera	67	628473	6203611	628496	6203641	-23	-30	38	38		(Corr'd Nav, Kongsberg 14208, img#42) (B)
14-Aug-2024	09:18:08	493	MV24GC1-ENV-DC-235			Camera	67	628470	6203608	628496	6203641	-26	-33	42	38		(Corr'd Nav, Kongsberg 14208, img#43) (B)
14-Aug-2024	09:18:48	494	MV24GC1-ENV-DC-235			Camera	67	628466	6203603	628496	6203641	-30	-38	48	39		(Corr'd Nav, Kongsberg 14208, img#44) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	09:19:10	495	MV24GC1-ENV-DC-235			Camera	67	628463	6203601	628496	6203641	-33	-40	52	39		(Corr'd Nav, Kongsberg 14208, img#45) (B)
14-Aug-2024	11:39:02	496	MV24GC1-ENV-DC-235A			Camera	66	628003	6203621	627952	6203640	51	-20	55	-69		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	11:40:16	497	MV24GC1-ENV-DC-235A			Camera	66	628000	6203622	627952	6203640	48	-18	51	-69		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	11:40:57	498	MV24GC1-ENV-DC-235A			Camera	67	627993	6203625	627952	6203640	40	-16	43	111		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	11:41:29	499	MV24GC1-ENV-DC-235A			Camera	67	627986	6203628	627952	6203640	34	-12	36	110		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	11:41:59	500	MV24GC1-ENV-DC-235A			Camera	66	627980	6203630	627952	6203640	28	-10	29	-70		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	11:43:03	501	MV24GC1-ENV-DC-235A			Camera	66	627968	6203635	627952	6203640	16	-6	17	-70		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	11:43:36	502	MV24GC1-ENV-DC-235A			Camera	66	627962	6203637	627952	6203640	10	-4	10	-69		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	11:44:04	503	MV24GC1-ENV-DC-235A			Camera	66	627957	6203638	627952	6203640	5	-2	5	-67		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	11:44:26	504	MV24GC1-ENV-DC-235A			Camera	66	627952	6203640	627952	6203640	0	0	0	14		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	11:44:38	505	MV24GC1-ENV-DC-235A			Camera	66	627950	6203641	627952	6203640	-3	1	3	106		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	11:45:02	506	MV24GC1-ENV-DC-235A			Camera	66	627945	6203643	627952	6203640	-7	3	8	111		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	11:45:33	507	MV24GC1-ENV-DC-235A			Camera	66	627939	6203646	627952	6203640	-13	5	14	113		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	11:46:00	508	MV24GC1-ENV-DC-235A			Camera	66	627934	6203648	627952	6203640	-18	8	20	113		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	11:46:25	509	MV24GC1-ENV-DC-235A			Camera	66	627930	6203650	627952	6203640	-22	10	24	114		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	11:46:48	510	MV24GC1-ENV-DC-235A			Camera	66	627926	6203652	627952	6203640	-27	11	29	113		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	11:47:08	511	MV24GC1-ENV-DC-235A			Camera	66	627922	6203653	627952	6203640	-31	13	33	113		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	11:48:06	512	MV24GC1-ENV-DC-235A			Camera	66	627911	6203657	627952	6203640	-42	17	45	112		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	11:48:33	513	MV24GC1-ENV-DC-235A			Camera	66	627907	6203658	627952	6203640	-45	18	49	111		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	11:49:26	514	MV24GC1-ENV-DC-235A			Camera	66	627902	6203660	627952	6203640	-51	19	54	111		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	11:52:48	515	MV24GC1-ENV-DC-235A			Camera	66	627907	6203660	627952	6203640	-45	19	49	113		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	11:55:12	516	MV24GC1-ENV-DC-235A			Camera	66	627925	6203672	627952	6203640	-27	31	41	139		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	11:57:26	517	MV24GC1-ENV-DC-235A			Camera	66	627943	6203682	627952	6203640	-9	42	43	168		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	11:58:34	518	MV24GC1-ENV-DC-235A			Camera	66	627953	6203688	627952	6203640	0	47	47	-179		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	12:00:58	519	MV24GC1-ENV-DC-235A			Camera	66	627958	6203691	627952	6203640	5	50	51	-174		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	12:01:54	520	MV24GC1-ENV-DC-235A			Camera	66	627956	6203684	627952	6203640	4	44	44	-175		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	12:02:31	521	MV24GC1-ENV-DC-235A			Camera	66	627955	6203677	627952	6203640	3	37	37	-176		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	12:03:00	522	MV24GC1-ENV-DC-235A			Camera	66	627954	6203671	627952	6203640	2	31	31	-177		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	12:03:42	523	MV24GC1-ENV-DC-235A			Camera	66	627954	6203663	627952	6203640	1	23	23	-177		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	12:04:26	524	MV24GC1-ENV-DC-235A			Camera	66	627954	6203657	627952	6203640	1	16	16	-176		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	12:04:44	525	MV24GC1-ENV-DC-235A			Camera	66	627953	6203654	627952	6203640	1	14	14	-176		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	12:05:23	526	MV24GC1-ENV-DC-235A			Camera	66	627952	6203649	627952	6203640	0	8	8	178		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	12:06:19	527	MV24GC1-ENV-DC-235A			Camera	66	627951	6203641	627952	6203640	-1	0	1	97		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	12:06:49	528	MV24GC1-ENV-DC-235A			Camera	66	627950	6203636	627952	6203640	-2	-5	5	25		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	12:07:05	529	MV24GC1-ENV-DC-235A			Camera	66	627950	6203633	627952	6203640	-3	-7	8	21		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	12:07:38	530	MV24GC1-ENV-DC-235A			Camera	66	627950	6203629	627952	6203640	-3	-12	12	13		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	12:08:26	531	MV24GC1-ENV-DC-235A			Camera	66	627949	6203621	627952	6203640	-3	-19	19	10		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	12:09:07	532	MV24GC1-ENV-DC-235A			Camera	66	627948	6203615	627952	6203640	-5	-26	26	10		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	12:10:24	533	MV24GC1-ENV-DC-235A			Camera	66	627946	6203603	627952	6203640	-6	-38	38	9		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	12:10:38	534	MV24GC1-ENV-DC-235A			Camera	66	627946	6203601	627952	6203640	-6	-40	40	9		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	12:11:18	535	MV24GC1-ENV-DC-235A			Camera	66	627945	6203594	627952	6203640	-7	-46	46	9		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	12:12:10	536	MV24GC1-ENV-DC-235A			Camera	66	627945	6203591	627952	6203640	-8	-50	50	9		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	15:52:11	537	MV24GC1-ENV-DC-233			Camera	71	631587	6189641	631618	6189611	-32	30	44	133		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	15:53:06	538	MV24GC1-ENV-DC-233			Camera	71	631587	6189641	631618	6189611	-32	30	43	133		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	15:53:27	539	MV24GC1-ENV-DC-233			Camera	71	631588	6189640	631618	6189611	-31	29	42	134		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	15:53:39	540	MV24GC1-ENV-DC-233			Camera	71	631589	6189639	631618	6189611	-29	28	40	134		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	15:54:41	541	MV24GC1-ENV-DC-233			Camera	71	631596	6189633	631618	6189611	-23	22	31	134		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	15:55:52	542	MV24GC1-ENV-DC-233			Camera	71	631604	6189625	631618	6189611	-15	14	20	134		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	15:56:30	543	MV24GC1-ENV-DC-233			Camera	71	631608	6189621	631618	6189611	-10	10	14	134		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	15:57:03	544	MV24GC1-ENV-DC-233			Camera	71	631612	6189617	631618	6189611	-7	6	9	133		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	15:57:26	545	MV24GC1-ENV-DC-233			Camera	71	631614	6189615	631618	6189611	-4	4	6	131		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	15:58:06	546	MV24GC1-ENV-DC-233			Camera	71	631619	6189611	631618	6189611	0	0	1	-60		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	15:58:17	547	MV24GC1-ENV-DC-233			Camera	71	631620	6189610	631618	6189611	2	-2	2	-50		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	15:58:24	548	MV24GC1-ENV-DC-233			Camera	71	631621	6189609	631618	6189611	3	-2	3	-49		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	15:59:10	549	MV24GC1-ENV-DC-233			Camera	71	631626	6189604	631618	6189611	8	-8	11	-45		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	15:59:37	550	MV24GC1-ENV-DC-233			Camera	71	631629	6189601	631618	6189611	10	-10	14	-46		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	16:00:15	551	MV24GC1-ENV-DC-233			Camera	71	631633	6189597	631618	6189611	15	-14	20	-46		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	16:01:11	552	MV24GC1-ENV-DC-233			Camera	71	631640	6189591	631618	6189611	21	-20	29	-46		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	16:01:31	553	MV24GC1-ENV-DC-233			Camera	71	631642	6189589	631618	6189611	23	-22	32	-46		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	16:01:54	554	MV24GC1-ENV-DC-233			Camera	71	631644	6189586	631618	6189611	26	-25	36	-46		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	16:02:11	555	MV24GC1-ENV-DC-233			Camera	71	631646	6189585	631618	6189611	28	-26	38	-47		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	16:02:31	556	MV24GC1-ENV-DC-233			Camera	71	631648	6189583	631618	6189611	30	-28	41	-47		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	16:02:54	557	MV24GC1-ENV-DC-233			Camera	71	631651	6189580	631618	6189611	33	-31	45	-47		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	16:03:48	558	MV24GC1-ENV-DC-233			Camera	71	631657	6189575	631618	6189611	39	-37	53	-47		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	16:12:42	559	MV24GC1-ENV-DC-233			Camera	70	631599	6189558	631618	6189611	-20	-53	56	21		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	16:13:42	560	MV24GC1-ENV-DC-233			Camera	70	631601	6189567	631618	6189611	-17	-44	47	22		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	16:14:21	561	MV24GC1-ENV-DC-233			Camera	71	631604	6189575	631618	6189611	-14	-37	39	22		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	16:15:51	562	MV24GC1-ENV-DC-233			Camera	71	631609	6189588	631618	6189611	-9	-23	25	23		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	16:16:13	563	MV24GC1-ENV-DC-233			Camera	71	631609	6189591	631618	6189611	-9	-20	22	24		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	16:17:09	564	MV24GC1-ENV-DC-233			Camera	71	631611	6189600	631618	6189611	-8	-11	14	34		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	16:17:36	565	MV24GC1-ENV-DC-233			Camera	71	631612	6189604	631618	6189611	-7	-7	10	43		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	16:18:44	566	MV24GC1-ENV-DC-233			Camera	71	631617	6189612	631618	6189611	-1	1	2	134		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	16:19:08	567	MV24GC1-ENV-DC-233			Camera	71	631619	6189616	631618	6189611	1	5	5	-172		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	16:19:37	568	MV24GC1-ENV-DC-233			Camera	71	631621	6189620	631618	6189611	3	9	9	-160		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	16:20:26	569	MV24GC1-ENV-DC-233			Camera	71	631625	6189626	631618	6189611	7	15	16	-156		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	16:20:51	570	MV24GC1-ENV-DC-233			Camera	71	631627	6189629	631618	6189611	9	18	20	-155		(Corr'd Nav, Kongsberg 14208, img#34) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	16:21:53	571	MV24GC1-ENV-DC-233			Camera	71	631632	6189638	631618	6189611	13	27	30	-153		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	16:22:21	572	MV24GC1-ENV-DC-233			Camera	71	631634	6189641	631618	6189611	16	30	34	-153		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	16:22:54	573	MV24GC1-ENV-DC-233			Camera	71	631636	6189646	631618	6189611	18	35	39	-153		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	16:23:49	574	MV24GC1-ENV-DC-233			Camera	71	631640	6189653	631618	6189611	22	42	48	-152		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	16:24:03	575	MV24GC1-ENV-DC-233			Camera	71	631642	6189655	631618	6189611	23	44	50	-152		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	16:24:18	576	MV24GC1-ENV-DC-233			Camera	71	631643	6189657	631618	6189611	24	46	52	-152		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	16:24:30	577	MV24GC1-ENV-DC-233			Camera	71	631643	6189658	631618	6189611	25	47	53	-152		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	19:33:36	578	MV24GC1-ENV-DC-232			Camera	69	632394	6187435	632418	6187381	-24	54	59	156		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	19:34:11	579	MV24GC1-ENV-DC-232			Camera	68	632395	6187431	632418	6187381	-22	50	55	156		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	19:35:08	580	MV24GC1-ENV-DC-232			Camera	68	632400	6187419	632418	6187381	-18	38	42	155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	19:35:47	581	MV24GC1-ENV-DC-232			Camera	68	632405	6187412	632418	6187381	-13	31	34	157		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	19:36:27	582	MV24GC1-ENV-DC-232			Camera	68	632408	6187404	632418	6187381	-10	24	26	157		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	19:36:58	583	MV24GC1-ENV-DC-232			Camera	68	632410	6187399	632418	6187381	-8	18	20	156		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	19:37:49	584	MV24GC1-ENV-DC-232			Camera	68	632414	6187389	632418	6187381	-4	8	9	155		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	19:38:17	585	MV24GC1-ENV-DC-232			Camera	68	632416	6187384	632418	6187381	-1	3	3	153		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	19:38:44	586	MV24GC1-ENV-DC-232			Camera	68	632419	6187379	632418	6187381	1	-2	2	-24		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	19:38:52	587	MV24GC1-ENV-DC-232			Camera	68	632419	6187378	632418	6187381	2	-3	4	-25		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	19:39:34	588	MV24GC1-ENV-DC-232			Camera	68	632423	6187370	632418	6187381	6	-11	12	-27		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	19:39:48	589	MV24GC1-ENV-DC-232			Camera	68	632425	6187367	632418	6187381	7	-14	15	-27		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	19:40:08	590	MV24GC1-ENV-DC-232			Camera	68	632426	6187364	632418	6187381	8	-17	19	-26		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	19:40:26	591	MV24GC1-ENV-DC-232			Camera	68	632428	6187360	632418	6187381	10	-21	23	-25		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	19:41:16	592	MV24GC1-ENV-DC-232			Camera	68	632432	6187351	632418	6187381	14	-30	33	-25		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	19:42:07	593	MV24GC1-ENV-DC-232			Camera	68	632436	6187341	632418	6187381	18	-39	43	-25		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	19:42:23	594	MV24GC1-ENV-DC-232			Camera	68	632437	6187338	632418	6187381	20	-43	47	-25		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	19:42:53	595	MV24GC1-ENV-DC-232			Camera	68	632440	6187333	632418	6187381	22	-48	53	-25		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	19:45:33	596	MV24GC1-ENV-DC-232			Camera	68	632439	6187334	632418	6187381	21	-47	52	-24		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	19:51:29	597	MV24GC1-ENV-DC-232			Camera	68	632392	6187360	632418	6187381	-26	-20	33	52		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	19:51:40	598	MV24GC1-ENV-DC-232			Camera	68	632390	6187361	632418	6187381	-27	-20	34	54		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	19:53:40	599	MV24GC1-ENV-DC-232			Camera	68	632372	6187366	632418	6187381	-46	-15	48	72		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	19:57:10	600	MV24GC1-ENV-DC-232			Camera	68	632373	6187370	632418	6187381	-45	-11	46	76		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	19:57:18	601	MV24GC1-ENV-DC-232			Camera	68	632374	6187370	632418	6187381	-44	-10	45	77		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	19:59:08	602	MV24GC1-ENV-DC-232			Camera	68	632392	6187377	632418	6187381	-26	-4	26	81		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	19:59:32	603	MV24GC1-ENV-DC-232			Camera	68	632395	6187378	632418	6187381	-23	-3	23	82		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	19:59:47	604	MV24GC1-ENV-DC-232			Camera	68	632398	6187378	632418	6187381	-20	-3	20	82		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	20:00:25	605	MV24GC1-ENV-DC-232			Camera	68	632403	6187379	632418	6187381	-15	-2	15	82		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	20:00:37	606	MV24GC1-ENV-DC-232			Camera	68	632405	6187379	632418	6187381	-13	-2	13	81		(Corr'd Nav, Kongsberg 14208, img#29) (B)
14-Aug-2024	20:01:58	607	MV24GC1-ENV-DC-232			Camera	68	632417	6187377	632418	6187381	-1	-4	4	15		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	20:02:15	608	MV24GC1-ENV-DC-232			Camera	68	632419	6187377	632418	6187381	1	-3	4	-23		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	20:02:24	609	MV24GC1-ENV-DC-232			Camera	68	632421	6187378	632418	6187381	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	20:03:39	610	MV24GC1-ENV-DC-232			Camera	68	632431	6187379	632418	6187381	14	-2	14	-84		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	20:04:52	611	MV24GC1-ENV-DC-232			Camera	68	632440	6187385	632418	6187381	22	4	22	-100		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	20:06:00	612	MV24GC1-ENV-DC-232			Camera	68	632450	6187387	632418	6187381	32	6	33	-101		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	20:06:32	613	MV24GC1-ENV-DC-232			Camera	68	632455	6187387	632418	6187381	37	6	38	-99		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	20:07:11	614	MV24GC1-ENV-DC-232			Camera	68	632461	6187387	632418	6187381	43	6	44	-98		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	20:07:42	615	MV24GC1-ENV-DC-232			Camera	68	632466	6187387	632418	6187381	49	6	49	-97		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	20:08:07	616	MV24GC1-ENV-DC-232			Camera	68	632469	6187388	632418	6187381	51	7	52	-98		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	20:08:19	617	MV24GC1-ENV-DC-232			Camera	68	632470	6187389	632418	6187381	52	8	53	-98		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	22:23:04	618	MV24GC1-ENV-DC-231			Camera	76	633296	6184979	633292	6184926	4	53	54	-176		(Corr'd Nav, Kongsberg 14208, img#1) (B)
14-Aug-2024	22:23:47	619	MV24GC1-ENV-DC-231			Camera	76	633296	6184980	633292	6184926	4	54	54	-176		(Corr'd Nav, Kongsberg 14208, img#2) (B)
14-Aug-2024	22:25:12	620	MV24GC1-ENV-DC-231			Camera	76	633295	6184968	633292	6184926	3	43	43	-176		(Corr'd Nav, Kongsberg 14208, img#3) (B)
14-Aug-2024	22:25:38	621	MV24GC1-ENV-DC-231			Camera	76	633295	6184964	633292	6184926	3	38	38	-175		(Corr'd Nav, Kongsberg 14208, img#4) (B)
14-Aug-2024	22:26:04	622	MV24GC1-ENV-DC-231			Camera	76	633295	6184959	633292	6184926	3	34	34	-175		(Corr'd Nav, Kongsberg 14208, img#5) (B)
14-Aug-2024	22:26:30	623	MV24GC1-ENV-DC-231			Camera	76	633295	6184955	633292	6184926	3	29	30	-174		(Corr'd Nav, Kongsberg 14208, img#6) (B)
14-Aug-2024	22:28:29	624	MV24GC1-ENV-DC-231			Camera	76	633295	6184950	633292	6184926	3	24	25	-173		(Corr'd Nav, Kongsberg 14208, img#7) (B)
14-Aug-2024	22:29:58	625	MV24GC1-ENV-DC-231			Camera	76	633295	6184946	633292	6184926	2	20	20	-173		(Corr'd Nav, Kongsberg 14208, img#8) (B)
14-Aug-2024	22:30:52	626	MV24GC1-ENV-DC-231			Camera	76	633294	6184937	633292	6184926	2	12	12	-172		(Corr'd Nav, Kongsberg 14208, img#9) (B)
14-Aug-2024	22:31:22	627	MV24GC1-ENV-DC-231			Camera	76	633293	6184935	633292	6184926	1	9	9	-174		(Corr'd Nav, Kongsberg 14208, img#10) (B)
14-Aug-2024	22:32:41	628	MV24GC1-ENV-DC-231			Camera	76	633294	6184926	633292	6184926	2	0	2	-101		(Corr'd Nav, Kongsberg 14208, img#11) (B)
14-Aug-2024	22:35:08	629	MV24GC1-ENV-DC-231			Camera	76	633295	6184923	633292	6184926	3	-3	4	-50		(Corr'd Nav, Kongsberg 14208, img#12) (B)
14-Aug-2024	22:35:58	630	MV24GC1-ENV-DC-231			Camera	76	633293	6184915	633292	6184926	1	-11	11	-6		(Corr'd Nav, Kongsberg 14208, img#13) (B)
14-Aug-2024	22:36:18	631	MV24GC1-ENV-DC-231			Camera	76	633293	6184913	633292	6184926	1	-13	13	-5		(Corr'd Nav, Kongsberg 14208, img#14) (B)
14-Aug-2024	22:36:44	632	MV24GC1-ENV-DC-231			Camera	76	633293	6184909	633292	6184926	1	-17	17	-2		(Corr'd Nav, Kongsberg 14208, img#15) (B)
14-Aug-2024	22:37:56	633	MV24GC1-ENV-DC-231			Camera	76	633293	6184899	633292	6184926	0	-27	27	-1		(Corr'd Nav, Kongsberg 14208, img#16) (B)
14-Aug-2024	22:39:18	634	MV24GC1-ENV-DC-231			Camera	76	633293	6184897	633292	6184926	1	-29	29	-1		(Corr'd Nav, Kongsberg 14208, img#17) (B)
14-Aug-2024	22:39:37	635	MV24GC1-ENV-DC-231			Camera	76	633292	6184894	633292	6184926	0	-32	32	0		(Corr'd Nav, Kongsberg 14208, img#18) (B)
14-Aug-2024	22:40:29	636	MV24GC1-ENV-DC-231			Camera	76	633292	6184886	633292	6184926	0	-40	40	0		(Corr'd Nav, Kongsberg 14208, img#19) (B)
14-Aug-2024	22:40:42	637	MV24GC1-ENV-DC-231			Camera	76	633292	6184884	633292	6184926	0	-42	42	0		(Corr'd Nav, Kongsberg 14208, img#20) (B)
14-Aug-2024	22:41:56	638	MV24GC1-ENV-DC-231			Camera	76	633290	6184874	633292	6184926	-2	-52	52	2		(Corr'd Nav, Kongsberg 14208, img#21) (B)
14-Aug-2024	22:50:16	639	MV24GC1-ENV-DC-231			Camera	76	633255	6184912	633292	6184926	-37	-13	40	70		(Corr'd Nav, Kongsberg 14208, img#22) (B)
14-Aug-2024	22:52:09	640	MV24GC1-ENV-DC-231			Camera	77	633239	6184920	633292	6184926	-53	-6	53	84		(Corr'd Nav, Kongsberg 14208, img#23) (B)
14-Aug-2024	22:54:57	641	MV24GC1-ENV-DC-231			Camera	77	633239	6184922	633292	6184926	-53	-3	53	87		(Corr'd Nav, Kongsberg 14208, img#24) (B)
14-Aug-2024	22:56:00	642	MV24GC1-ENV-DC-231			Camera	76	633246	6184923	633292	6184926	-46	-2	46	87		(Corr'd Nav, Kongsberg 14208, img#25) (B)
14-Aug-2024	22:57:03	643	MV24GC1-ENV-DC-231			Camera	76	633257	6184926	633292	6184926	-35	0	35	90		(Corr'd Nav, Kongsberg 14208, img#26) (B)
14-Aug-2024	22:58:16	644	MV24GC1-ENV-DC-231			Camera	76	633269	6184927	633292	6184926	-23	1	23	93		(Corr'd Nav, Kongsberg 14208, img#27) (B)
14-Aug-2024	22:58:29	645	MV24GC1-ENV-DC-231			Camera	76	633271	6184927	633292	6184926	-21	2	21	95		(Corr'd Nav, Kongsberg 14208, img#28) (B)
14-Aug-2024	22:58:55	646	MV24GC1-ENV-DC-231			Camera	76	633275	6184928	633292	6184926	-17	2	17	97		(Corr'd Nav, Kongsberg 14208, img#29) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
14-Aug-2024	22:59:11	647	MV24GC1-ENV-DC-231			Camera	76	633278	6184929	633292	6184926	-15	3	15	101		(Corr'd Nav, Kongsberg 14208, img#30) (B)
14-Aug-2024	22:59:29	648	MV24GC1-ENV-DC-231			Camera	76	633280	6184929	633292	6184926	-12	3	12	105		(Corr'd Nav, Kongsberg 14208, img#31) (B)
14-Aug-2024	23:00:09	649	MV24GC1-ENV-DC-231			Camera	76	633287	6184928	633292	6184926	-5	2	6	115		(Corr'd Nav, Kongsberg 14208, img#32) (B)
14-Aug-2024	23:00:20	650	MV24GC1-ENV-DC-231			Camera	76	633289	6184927	633292	6184926	-3	2	4	116		(Corr'd Nav, Kongsberg 14208, img#33) (B)
14-Aug-2024	23:01:08	651	MV24GC1-ENV-DC-231			Camera	76	633295	6184926	633292	6184926	3	0	3	-89		(Corr'd Nav, Kongsberg 14208, img#34) (B)
14-Aug-2024	23:01:39	652	MV24GC1-ENV-DC-231			Camera	76	633300	6184924	633292	6184926	8	-1	8	-81		(Corr'd Nav, Kongsberg 14208, img#35) (B)
14-Aug-2024	23:02:09	653	MV24GC1-ENV-DC-231			Camera	76	633305	6184923	633292	6184926	13	-3	13	-76		(Corr'd Nav, Kongsberg 14208, img#36) (B)
14-Aug-2024	23:02:44	654	MV24GC1-ENV-DC-231			Camera	76	633310	6184922	633292	6184926	18	-4	19	-77		(Corr'd Nav, Kongsberg 14208, img#37) (B)
14-Aug-2024	23:03:12	655	MV24GC1-ENV-DC-231			Camera	76	633315	6184920	633292	6184926	23	-6	23	-76		(Corr'd Nav, Kongsberg 14208, img#38) (B)
14-Aug-2024	23:03:44	656	MV24GC1-ENV-DC-231			Camera	76	633319	6184919	633292	6184926	27	-7	28	-75		(Corr'd Nav, Kongsberg 14208, img#39) (B)
14-Aug-2024	23:04:33	657	MV24GC1-ENV-DC-231			Camera	76	633326	6184917	633292	6184926	34	-9	35	-76		(Corr'd Nav, Kongsberg 14208, img#40) (B)
14-Aug-2024	23:05:03	658	MV24GC1-ENV-DC-231			Camera	76	633331	6184916	633292	6184926	39	-10	40	-76		(Corr'd Nav, Kongsberg 14208, img#41) (B)
14-Aug-2024	23:05:28	659	MV24GC1-ENV-DC-231			Camera	76	633334	6184915	633292	6184926	42	-11	44	-76		(Corr'd Nav, Kongsberg 14208, img#42) (B)
14-Aug-2024	23:06:12	660	MV24GC1-ENV-DC-231			Camera	76	633341	6184913	633292	6184926	49	-13	50	-75		(Corr'd Nav, Kongsberg 14208, img#43) (B)
14-Aug-2024	23:06:38	661	MV24GC1-ENV-DC-231			Camera	76	633344	6184912	633292	6184926	52	-14	54	-75		(Corr'd Nav, Kongsberg 14208, img#44) (B)
15-Aug-2024	00:57:05	662	MV24GC1-ENV-DC-230			Camera	83	633704	6183757	633726	6183710	-22	47	52	155		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	00:58:29	663	MV24GC1-ENV-DC-230			Camera	83	633707	6183752	633726	6183710	-19	42	46	155		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	00:59:00	664	MV24GC1-ENV-DC-230			Camera	83	633709	6183746	633726	6183710	-17	36	40	155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
15-Aug-2024	00:59:22	665	MV24GC1-ENV-DC-230			Camera	83	633712	6183741	633726	6183710	-15	32	35	155		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	00:59:42	666	MV24GC1-ENV-DC-230			Camera	83	633714	6183737	633726	6183710	-12	27	30	156		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	00:59:59	667	MV24GC1-ENV-DC-230			Camera	83	633715	6183734	633726	6183710	-11	24	27	156		(Corr'd Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	01:00:43	668	MV24GC1-ENV-DC-230			Camera	83	633719	6183725	633726	6183710	-8	15	17	154		(Corr'd Nav, Kongsberg 14208, img#7) (B)
15-Aug-2024	01:01:01	669	MV24GC1-ENV-DC-230			Camera	83	633720	6183722	633726	6183710	-6	12	14	152		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	01:01:19	670	MV24GC1-ENV-DC-230			Camera	83	633721	6183719	633726	6183710	-5	9	10	150		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	01:01:28	671	MV24GC1-ENV-DC-230			Camera	83	633722	6183717	633726	6183710	-5	7	9	148		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	01:01:43	672	MV24GC1-ENV-DC-230			Camera	83	633723	6183714	633726	6183710	-3	5	6	143		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	01:02:03	673	MV24GC1-ENV-DC-230			Camera	83	633724	6183711	633726	6183710	-2	1	2	116		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	01:02:12	674	MV24GC1-ENV-DC-230			Camera	83	633725	6183709	633726	6183710	-1	-1	1	59		(Corr'd Nav, Kongsberg 14208, img#13) (B)
15-Aug-2024	01:02:39	675	MV24GC1-ENV-DC-230			Camera	83	633727	6183704	633726	6183710	1	-6	6	-6		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	01:02:48	676	MV24GC1-ENV-DC-230			Camera	83	633728	6183702	633726	6183710	1	-7	8	-11		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	01:03:28	677	MV24GC1-ENV-DC-230			Camera	83	633731	6183695	633726	6183710	5	-15	16	-17		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	01:04:19	678	MV24GC1-ENV-DC-230			Camera	83	633735	6183685	633726	6183710	9	-25	26	-20		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	01:04:33	679	MV24GC1-ENV-DC-230			Camera	83	633736	6183682	633726	6183710	10	-27	29	-20		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	01:05:18	680	MV24GC1-ENV-DC-230			Camera	83	633740	6183674	633726	6183710	13	-35	38	-20		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	01:05:46	681	MV24GC1-ENV-DC-230			Camera	83	633741	6183670	633726	6183710	15	-40	43	-20		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	01:06:38	682	MV24GC1-ENV-DC-230			Camera	83	633743	6183666	633726	6183710	16	-44	47	-21		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	01:06:54	683	MV24GC1-ENV-DC-230			Camera	83	633743	6183666	633726	6183710	17	-44	47	-21		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	01:09:04	684	MV24GC1-ENV-DC-230			Camera	83	633747	6183672	633726	6183710	20	-37	43	-29		(Corr'd Nav, Kongsberg 14208, img#23) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	01:10:57	685	MV24GC1-ENV-DC-230			Camera	83	633759	6183685	633726	6183710	33	-25	41	-53		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	01:12:25	686	MV24GC1-ENV-DC-230			Camera	83	633772	6183700	633726	6183710	46	-10	47	-78		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	01:13:50	687	MV24GC1-ENV-DC-230			Camera	83	633780	6183715	633726	6183710	54	6	54	-96		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	01:14:00	688	MV24GC1-ENV-DC-230			Camera	83	633781	6183716	633726	6183710	54	6	55	-97		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	01:15:20	689	MV24GC1-ENV-DC-230			Camera	83	633778	6183717	633726	6183710	51	7	52	-98		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	01:15:55	690	MV24GC1-ENV-DC-230			Camera	83	633773	6183716	633726	6183710	47	6	47	-98		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	01:16:21	691	MV24GC1-ENV-DC-230			Camera	83	633769	6183716	633726	6183710	43	6	44	-98		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	01:17:16	692	MV24GC1-ENV-DC-230			Camera	83	633763	6183717	633726	6183710	37	7	38	-101		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	01:21:03	693	MV24GC1-ENV-DC-230			Camera	83	633760	6183716	633726	6183710	34	6	34	-101		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	01:21:21	694	MV24GC1-ENV-DC-230			Camera	83	633758	6183717	633726	6183710	31	7	32	-103		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	01:21:41	695	MV24GC1-ENV-DC-230			Camera	83	633754	6183716	633726	6183710	28	7	29	-103		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	01:22:22	696	MV24GC1-ENV-DC-230			Camera	83	633747	6183716	633726	6183710	21	6	22	-106		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	01:23:07	697	MV24GC1-ENV-DC-230			Camera	83	633742	6183716	633726	6183710	16	6	17	-112		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	01:23:22	698	MV24GC1-ENV-DC-230			Camera	83	633741	6183716	633726	6183710	14	6	16	-114		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	01:24:31	699	MV24GC1-ENV-DC-230			Camera	83	633733	6183715	633726	6183710	6	5	8	-127		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	01:25:13	700	MV24GC1-ENV-DC-230			Camera	83	633729	6183713	633726	6183710	2	4	4	-148		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	01:25:33	701	MV24GC1-ENV-DC-230			Camera	83	633727	6183713	633726	6183710	0	3	3	-176		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	01:26:31	702	MV24GC1-ENV-DC-230			Camera	83	633721	6183712	633726	6183710	-5	2	6	116		(Corr'd Nav, Kongsberg 14208, img#41) (B)
15-Aug-2024	01:27:07	703	MV24GC1-ENV-DC-230			Camera	83	633717	6183711	633726	6183710	-10	2	10	100		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	01:27:48	704	MV24GC1-ENV-DC-230			Camera	83	633711	6183711	633726	6183710	-16	1	16	93		(Corr'd Nav, Kongsberg 14208, img#43) (B)
15-Aug-2024	01:28:39	705	MV24GC1-ENV-DC-230			Camera	83	633703	6183709	633726	6183710	-23	-1	23	88		(Corr'd Nav, Kongsberg 14208, img#44) (B)
15-Aug-2024	01:29:21	706	MV24GC1-ENV-DC-230			Camera	83	633696	6183708	633726	6183710	-30	-2	30	86		(Corr'd Nav, Kongsberg 14208, img#45) (B)
15-Aug-2024	01:30:30	707	MV24GC1-ENV-DC-230			Camera	83	633686	6183706	633726	6183710	-41	-4	41	85		(Corr'd Nav, Kongsberg 14208, img#46) (B)
15-Aug-2024	01:30:41	708	MV24GC1-ENV-DC-230			Camera	83	633684	6183706	633726	6183710	-42	-4	43	85		(Corr'd Nav, Kongsberg 14208, img#47) (B)
15-Aug-2024	01:31:40	709	MV24GC1-ENV-DC-230			Camera	83	633676	6183705	633726	6183710	-50	-5	51	84		(Corr'd Nav, Kongsberg 14208, img#48) (B)
15-Aug-2024	02:44:52	710	MV24GC1-ENV-DC-229			Camera	84	634326	6182063	634328	6182007	-2	56	56	178		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	02:45:51	711	MV24GC1-ENV-DC-229			Camera	84	634326	6182056	634328	6182007	-2	49	49	177		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	02:46:20	712	MV24GC1-ENV-DC-229			Camera	83	634326	6182052	634328	6182007	-2	44	44	178		(Corr'd Nav, Kongsberg 14208, img#3) (B)
15-Aug-2024	02:47:06	713	MV24GC1-ENV-DC-229			Camera	83	634327	6182044	634328	6182007	-1	37	37	179		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	02:47:28	714	MV24GC1-ENV-DC-229			Camera	83	634327	6182045	634328	6182007	-2	38	38	178		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	02:50:28	715	MV24GC1-ENV-DC-229			Camera	83	634326	6182044	634328	6182007	-2	37	37	177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	02:52:05	716	MV24GC1-ENV-DC-229			Camera	83	634322	6182030	634328	6182007	-6	23	24	165		(Corr'd Nav, Kongsberg 14208, img#7) (B)
15-Aug-2024	02:52:35	717	MV24GC1-ENV-DC-229			Camera	83	634321	6182026	634328	6182007	-7	19	20	161		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	02:53:22	718	MV24GC1-ENV-DC-229			Camera	83	634321	6182022	634328	6182007	-7	14	16	153		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	02:53:38	719	MV24GC1-ENV-DC-229			Camera	83	634321	6182021	634328	6182007	-7	14	16	154		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	02:54:41	720	MV24GC1-ENV-DC-229			Camera	83	634321	6182020	634328	6182007	-7	13	14	152		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	02:55:21	721	MV24GC1-ENV-DC-229			Camera	83	634323	6182017	634328	6182007	-5	10	11	155		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	02:56:21	722	MV24GC1-ENV-DC-229			Camera	83	634326	6182008	634328	6182007	-2	1	3	297		(Corr'd Nav, Kongsberg 14208, img#13) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	02:56:38	723	MV24GC1-ENV-DC-229			Camera	83	634327	6182006	634328	6182007	-1	-1	1	238		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	02:57:12	724	MV24GC1-ENV-DC-229			Camera	82	634329	6182001	634328	6182007	1	-6	6	173		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	02:57:19	725	MV24GC1-ENV-DC-229			Camera	82	634329	6182000	634328	6182007	1	-7	7	170		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	02:58:20	726	MV24GC1-ENV-DC-229			Camera	82	634331	6181991	634328	6182007	3	-16	16	170		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	02:58:51	727	MV24GC1-ENV-DC-229			Camera	82	634332	6181986	634328	6182007	4	-21	21	168		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	02:59:46	728	MV24GC1-ENV-DC-229			Camera	82	634335	6181979	634328	6182007	7	-28	29	166		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	03:00:04	729	MV24GC1-ENV-DC-229			Camera	82	634336	6181976	634328	6182007	8	-31	32	166		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	03:02:06	730	MV24GC1-ENV-DC-229			Camera	82	634343	6181960	634328	6182007	14	-47	50	163		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	03:02:20	731	MV24GC1-ENV-DC-229			Camera	82	634343	6181958	634328	6182007	15	-49	52	163		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	03:03:19	732	MV24GC1-ENV-DC-229			Camera	82	634345	6181955	634328	6182007	17	-52	55	162		(Corr'd Nav, Kongsberg 14208, img#23) (B)
15-Aug-2024	03:09:41	733	MV24GC1-ENV-DC-229			Camera	82	634296	6181958	634328	6182007	-32	-49	59	33		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	03:11:36	734	MV24GC1-ENV-DC-229			Camera	82	634301	6181969	634328	6182007	-28	-38	47	36		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	03:13:23	735	MV24GC1-ENV-DC-229			Camera	83	634310	6181984	634328	6182007	-18	-24	30	37		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	03:14:02	736	MV24GC1-ENV-DC-229			Camera	83	634312	6181989	634328	6182007	-16	-19	24	41		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	03:14:44	737	MV24GC1-ENV-DC-229			Camera	83	634314	6181995	634328	6182007	-14	-13	19	49		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	03:15:11	738	MV24GC1-ENV-DC-229			Camera	83	634316	6181999	634328	6182007	-12	-8	15	57		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	03:15:56	739	MV24GC1-ENV-DC-229			Camera	83	634321	6182006	634328	6182007	-7	-1	8	80		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	03:16:30	740	MV24GC1-ENV-DC-229			Camera	83	634325	6182008	634328	6182007	-3	1	3	111		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	03:16:41	741	MV24GC1-ENV-DC-229			Camera	83	634327	6182009	634328	6182007	-1	2	2	148		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	03:16:59	742	MV24GC1-ENV-DC-229			Camera	83	634330	6182009	634328	6182007	2	2	3	-141		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	03:17:57	743	MV24GC1-ENV-DC-229			Camera	83	634338	6182016	634328	6182007	10	9	13	-133		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	03:18:37	744	MV24GC1-ENV-DC-229			Camera	83	634341	6182021	634328	6182007	12	14	19	-139		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	03:19:05	745	MV24GC1-ENV-DC-229			Camera	83	634343	6182024	634328	6182007	15	17	23	-140		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	03:19:22	746	MV24GC1-ENV-DC-229			Camera	83	634344	6182027	634328	6182007	16	20	25	-141		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	03:19:50	747	MV24GC1-ENV-DC-229			Camera	83	634347	6182030	634328	6182007	18	23	29	-141		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	03:20:04	748	MV24GC1-ENV-DC-229			Camera	83	634348	6182032	634328	6182007	20	24	31	-141		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	03:20:18	749	MV24GC1-ENV-DC-229			Camera	83	634349	6182033	634328	6182007	21	26	33	-141		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	03:20:32	750	MV24GC1-ENV-DC-229			Camera	83	634351	6182035	634328	6182007	23	27	36	-140		(Corr'd Nav, Kongsberg 14208, img#41) (B)
15-Aug-2024	03:20:51	751	MV24GC1-ENV-DC-229			Camera	83	634353	6182036	634328	6182007	25	29	38	-140		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	03:21:43	752	MV24GC1-ENV-DC-229			Camera	83	634358	6182043	634328	6182007	30	36	47	-140		(Corr'd Nav, Kongsberg 14208, img#43) (B)
15-Aug-2024	03:22:14	753	MV24GC1-ENV-DC-229			Camera	83	634361	6182046	634328	6182007	33	39	51	-140		(Corr'd Nav, Kongsberg 14208, img#44) (B)
15-Aug-2024	04:50:43	754	MV24GC1-ENV-DC-228			Camera	90	635036	6179990	635066	6179941	-30	49	57	148		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	04:52:07	755	MV24GC1-ENV-DC-228			Camera	90	635041	6179982	635066	6179941	-26	41	48	148		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	04:52:56	756	MV24GC1-ENV-DC-228			Camera	90	635045	6179976	635066	6179941	-22	34	40	148		(Corr'd Nav, Kongsberg 14208, img#3) (B)
15-Aug-2024	04:53:19	757	MV24GC1-ENV-DC-228			Camera	90	635046	6179972	635066	6179941	-20	31	37	147		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	04:53:51	758	MV24GC1-ENV-DC-228			Camera	90	635049	6179968	635066	6179941	-18	27	32	147		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	04:54:24	759	MV24GC1-ENV-DC-228			Camera	90	635052	6179964	635066	6179941	-14	23	27	148		(Corr'd Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	04:54:55	760	MV24GC1-ENV-DC-228			Camera	90	635055	6179960	635066	6179941	-11	19	22	149		(Corr'd Nav, Kongsberg 14208, img#7) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	04:55:28	761	MV24GC1-ENV-DC-228			Camera	90	635057	6179955	635066	6179941	-9	14	17	147		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	04:55:56	762	MV24GC1-ENV-DC-228			Camera	90	635059	6179952	635066	6179941	-7	10	13	144		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	04:56:40	763	MV24GC1-ENV-DC-228			Camera	90	635063	6179946	635066	6179941	-3	5	6	144		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	04:57:05	764	MV24GC1-ENV-DC-228			Camera	90	635065	6179943	635066	6179941	-1	1	2	134		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	04:57:15	765	MV24GC1-ENV-DC-228			Camera	90	635066	6179941	635066	6179941	0	0	0	90		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	04:57:51	766	MV24GC1-ENV-DC-228			Camera	90	635069	6179937	635066	6179941	3	-4	5	-36		(Corr'd Nav, Kongsberg 14208, img#13) (B)
15-Aug-2024	04:58:15	767	MV24GC1-ENV-DC-228			Camera	90	635071	6179934	635066	6179941	5	-7	9	-35		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	04:58:59	768	MV24GC1-ENV-DC-228			Camera	90	635074	6179928	635066	6179941	8	-13	15	-32		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	04:59:15	769	MV24GC1-ENV-DC-228			Camera	90	635076	6179926	635066	6179941	10	-15	18	-33		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	04:59:52	770	MV24GC1-ENV-DC-228			Camera	90	635079	6179921	635066	6179941	13	-20	24	-32		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	05:00:56	771	MV24GC1-ENV-DC-228			Camera	90	635085	6179913	635066	6179941	19	-29	34	-33		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	05:01:09	772	MV24GC1-ENV-DC-228			Camera	90	635086	6179911	635066	6179941	20	-30	36	-33		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	05:01:19	773	MV24GC1-ENV-DC-228			Camera	90	635087	6179910	635066	6179941	21	-32	38	-33		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	05:01:49	774	MV24GC1-ENV-DC-228			Camera	90	635090	6179906	635066	6179941	23	-36	42	-33		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	05:02:22	775	MV24GC1-ENV-DC-228			Camera	90	635092	6179901	635066	6179941	26	-40	48	-33		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	05:02:41	776	MV24GC1-ENV-DC-228			Camera	90	635094	6179899	635066	6179941	27	-42	50	-33		(Corr'd Nav, Kongsberg 14208, img#23) (B)
15-Aug-2024	05:09:01	777	MV24GC1-ENV-DC-228			Camera	89	635048	6179891	635066	6179941	-19	-50	53	21		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	05:09:13	778	MV24GC1-ENV-DC-228			Camera	89	635046	6179891	635066	6179941	-20	-50	54	22		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	05:11:34	779	MV24GC1-ENV-DC-228			Camera	90	635052	6179906	635066	6179941	-14	-35	38	22		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	05:12:09	780	MV24GC1-ENV-DC-228			Camera	90	635054	6179913	635066	6179941	-12	-29	31	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	05:12:40	781	MV24GC1-ENV-DC-228			Camera	90	635056	6179917	635066	6179941	-10	-24	26	23		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	05:13:36	782	MV24GC1-ENV-DC-228			Camera	90	635059	6179923	635066	6179941	-7	-19	20	21		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	05:14:08	783	MV24GC1-ENV-DC-228			Camera	90	635061	6179927	635066	6179941	-5	-14	15	20		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	05:15:15	784	MV24GC1-ENV-DC-228			Camera	90	635065	6179937	635066	6179941	-2	-5	5	18		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	05:15:35	785	MV24GC1-ENV-DC-228			Camera	90	635065	6179940	635066	6179941	-1	-1	2	33		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	05:16:09	786	MV24GC1-ENV-DC-228			Camera	90	635067	6179946	635066	6179941	1	4	5	-171		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	05:16:59	787	MV24GC1-ENV-DC-228			Camera	90	635068	6179954	635066	6179941	2	12	13	-171		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	05:17:42	788	MV24GC1-ENV-DC-228			Camera	90	635071	6179959	635066	6179941	4	18	19	-166		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	05:18:50	789	MV24GC1-ENV-DC-228			Camera	90	635074	6179970	635066	6179941	7	29	29	-165		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	05:19:36	790	MV24GC1-ENV-DC-228			Camera	90	635076	6179976	635066	6179941	10	35	36	-164		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	05:19:53	791	MV24GC1-ENV-DC-228			Camera	90	635077	6179979	635066	6179941	11	38	39	-164		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	05:20:19	792	MV24GC1-ENV-DC-228			Camera	90	635078	6179983	635066	6179941	12	42	43	-164		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	05:20:46	793	MV24GC1-ENV-DC-228			Camera	90	635079	6179987	635066	6179941	13	46	47	-165		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	05:21:14	794	MV24GC1-ENV-DC-228			Camera	91	635079	6179991	635066	6179941	13	50	51	-166		(Corr'd Nav, Kongsberg 14208, img#41) (B)
15-Aug-2024	05:21:29	795	MV24GC1-ENV-DC-228			Camera	91	635079	6179994	635066	6179941	13	52	54	-166		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	22:28:29	796	MV24GC1-ENV-DC-227			Camera	88	634332	6178110	634270	6178112	62	-1	62	-89		(Corr'd Nav, Kongsberg 14208, img#1) (B)
15-Aug-2024	22:29:26	797	MV24GC1-ENV-DC-227			Camera	88	634328	6178109	634270	6178112	58	-2	58	-88		(Corr'd Nav, Kongsberg 14208, img#2) (B)
15-Aug-2024	22:29:56	798	MV24GC1-ENV-DC-227			Camera	88	634323	6178109	634270	6178112	53	-3	53	-87		(Corr'd Nav, Kongsberg 14208, img#3) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	22:30:30	799	MV24GC1-ENV-DC-227			Camera	88	634317	6178108	634270	6178112	47	-4	47	-86		(Corr'd Nav, Kongsberg 14208, img#4) (B)
15-Aug-2024	22:31:58	800	MV24GC1-ENV-DC-227			Camera	88	634304	6178107	634270	6178112	34	-5	35	-82		(Corr'd Nav, Kongsberg 14208, img#5) (B)
15-Aug-2024	22:32:48	801	MV24GC1-ENV-DC-227			Camera	89	634297	6178107	634270	6178112	27	-5	27	-80		(Raw Nav, Kongsberg 14208, img#6) (B)
15-Aug-2024	22:33:55	802	MV24GC1-ENV-DC-227			Camera	88	634287	6178106	634270	6178112	17	-6	18	-71		(Corr'd Nav, Kongsberg 14208, img#7) (B)
15-Aug-2024	22:34:34	803	MV24GC1-ENV-DC-227			Camera	88	634282	6178105	634270	6178112	12	-6	13	-62		(Corr'd Nav, Kongsberg 14208, img#8) (B)
15-Aug-2024	22:36:01	804	MV24GC1-ENV-DC-227			Camera	88	634269	6178107	634270	6178112	-1	-5	5	7		(Corr'd Nav, Kongsberg 14208, img#9) (B)
15-Aug-2024	22:38:27	805	MV24GC1-ENV-DC-227			Camera	87	634260	6178108	634270	6178112	-10	-4	10	67		(Corr'd Nav, Kongsberg 14208, img#10) (B)
15-Aug-2024	22:40:40	806	MV24GC1-ENV-DC-227			Camera	87	634240	6178108	634270	6178112	-30	-4	30	83		(Corr'd Nav, Kongsberg 14208, img#11) (B)
15-Aug-2024	22:41:34	807	MV24GC1-ENV-DC-227			Camera	87	634232	6178109	634270	6178112	-38	-3	38	86		(Corr'd Nav, Kongsberg 14208, img#12) (B)
15-Aug-2024	22:42:19	808	MV24GC1-ENV-DC-227			Camera	87	634224	6178109	634270	6178112	-46	-2	46	87		(Corr'd Nav, Kongsberg 14208, img#13) (B)
15-Aug-2024	22:42:39	809	MV24GC1-ENV-DC-227			Camera	87	634221	6178110	634270	6178112	-49	-2	49	88		(Corr'd Nav, Kongsberg 14208, img#14) (B)
15-Aug-2024	22:43:20	810	MV24GC1-ENV-DC-227			Camera	87	634219	6178110	634270	6178112	-51	-1	51	89		(Corr'd Nav, Kongsberg 14208, img#15) (B)
15-Aug-2024	22:45:12	811	MV24GC1-ENV-DC-227			Camera	87	634221	6178110	634270	6178112	-49	-1	49	89		(Corr'd Nav, Kongsberg 14208, img#16) (B)
15-Aug-2024	22:48:20	812	MV24GC1-ENV-DC-227			Camera	87	634242	6178127	634270	6178112	-28	16	32	119		(Corr'd Nav, Kongsberg 14208, img#17) (B)
15-Aug-2024	22:53:41	813	MV24GC1-ENV-DC-227			Camera	88	634275	6178164	634270	6178112	6	52	52	-174		(Corr'd Nav, Kongsberg 14208, img#18) (B)
15-Aug-2024	22:56:31	814	MV24GC1-ENV-DC-227			Camera	88	634277	6178165	634270	6178112	7	53	54	-172		(Corr'd Nav, Kongsberg 14208, img#19) (B)
15-Aug-2024	22:57:22	815	MV24GC1-ENV-DC-227			Camera	88	634276	6178158	634270	6178112	7	47	47	-172		(Corr'd Nav, Kongsberg 14208, img#20) (B)
15-Aug-2024	22:58:04	816	MV24GC1-ENV-DC-227			Camera	88	634275	6178152	634270	6178112	5	41	41	-173		(Corr'd Nav, Kongsberg 14208, img#21) (B)
15-Aug-2024	22:58:10	817	MV24GC1-ENV-DC-227			Camera	88	634275	6178152	634270	6178112	5	40	40	-173		(Corr'd Nav, Kongsberg 14208, img#22) (B)
15-Aug-2024	22:58:57	818	MV24GC1-ENV-DC-227			Camera	88	634274	6178145	634270	6178112	4	34	34	-173		(Corr'd Nav, Kongsberg 14208, img#23) (B)
15-Aug-2024	22:59:19	819	MV24GC1-ENV-DC-227			Camera	88	634273	6178142	634270	6178112	3	30	31	-174		(Corr'd Nav, Kongsberg 14208, img#24) (B)
15-Aug-2024	22:59:52	820	MV24GC1-ENV-DC-227			Camera	88	634272	6178137	634270	6178112	2	25	25	-174		(Corr'd Nav, Kongsberg 14208, img#25) (B)
15-Aug-2024	23:00:23	821	MV24GC1-ENV-DC-227			Camera	88	634272	6178131	634270	6178112	2	19	19	-174		(Corr'd Nav, Kongsberg 14208, img#26) (B)
15-Aug-2024	23:01:15	822	MV24GC1-ENV-DC-227			Camera	88	634272	6178122	634270	6178112	2	11	11	-171		(Corr'd Nav, Kongsberg 14208, img#27) (B)
15-Aug-2024	23:01:39	823	MV24GC1-ENV-DC-227			Camera	88	634271	6178119	634270	6178112	1	7	8	-171		(Corr'd Nav, Kongsberg 14208, img#28) (B)
15-Aug-2024	23:02:01	824	MV24GC1-ENV-DC-227			Camera	88	634271	6178116	634270	6178112	1	4	4	-169		(Corr'd Nav, Kongsberg 14208, img#29) (B)
15-Aug-2024	23:02:26	825	MV24GC1-ENV-DC-227			Camera	88	634271	6178111	634270	6178112	1	-1	1	-56		(Corr'd Nav, Kongsberg 14208, img#30) (B)
15-Aug-2024	23:02:37	826	MV24GC1-ENV-DC-227			Camera	88	634271	6178109	634270	6178112	1	-3	3	-20		(Corr'd Nav, Kongsberg 14208, img#31) (B)
15-Aug-2024	23:02:55	827	MV24GC1-ENV-DC-227			Camera	88	634270	6178107	634270	6178112	0	-5	5	-5		(Corr'd Nav, Kongsberg 14208, img#32) (B)
15-Aug-2024	23:03:55	828	MV24GC1-ENV-DC-227			Camera	88	634267	6178099	634270	6178112	-2	-12	13	11		(Corr'd Nav, Kongsberg 14208, img#33) (B)
15-Aug-2024	23:04:17	829	MV24GC1-ENV-DC-227			Camera	88	634267	6178096	634270	6178112	-3	-16	16	10		(Corr'd Nav, Kongsberg 14208, img#34) (B)
15-Aug-2024	23:04:36	830	MV24GC1-ENV-DC-227			Camera	88	634266	6178093	634270	6178112	-3	-18	19	11		(Corr'd Nav, Kongsberg 14208, img#35) (B)
15-Aug-2024	23:04:55	831	MV24GC1-ENV-DC-227			Camera	88	634266	6178089	634270	6178112	-4	-22	22	10		(Corr'd Nav, Kongsberg 14208, img#36) (B)
15-Aug-2024	23:05:41	832	MV24GC1-ENV-DC-227			Camera	88	634266	6178081	634270	6178112	-4	-31	31	8		(Corr'd Nav, Kongsberg 14208, img#37) (B)
15-Aug-2024	23:06:15	833	MV24GC1-ENV-DC-227			Camera	88	634265	6178075	634270	6178112	-5	-37	37	8		(Corr'd Nav, Kongsberg 14208, img#38) (B)
15-Aug-2024	23:06:48	834	MV24GC1-ENV-DC-227			Camera	88	634266	6178069	634270	6178112	-4	-43	43	6		(Corr'd Nav, Kongsberg 14208, img#39) (B)
15-Aug-2024	23:07:13	835	MV24GC1-ENV-DC-227			Camera	88	634265	6178066	634270	6178112	-5	-46	46	6		(Corr'd Nav, Kongsberg 14208, img#40) (B)
15-Aug-2024	23:07:42	836	MV24GC1-ENV-DC-227			Camera	88	634264	6178062	634270	6178112	-6	-50	50	7		(Corr'd Nav, Kongsberg 14208, img#41) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Aug-2024	23:08:18	837	MV24GC1-ENV-DC-227			Camera	88	634264	6178058	634270	6178112	-6	-54	54	7		(Corr'd Nav, Kongsberg 14208, img#42) (B)
15-Aug-2024	23:08:28	838	MV24GC1-ENV-DC-227			Camera	88	634264	6178057	634270	6178112	-6	-54	55	6		(Corr'd Nav, Kongsberg 14208, img#43) (B)
16-Aug-2024	01:15:59	839	MV24GC1-ENV-DC-226			Camera	88	632876	6176752	632825	6176748	51	5	51	-95		(Corr'd Nav, Kongsberg 14208, img#1) (B)
16-Aug-2024	01:17:08	840	MV24GC1-ENV-DC-226			Camera	88	632869	6176751	632825	6176748	44	3	44	-94		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	01:17:57	841	MV24GC1-ENV-DC-226			Camera	88	632859	6176751	632825	6176748	34	3	34	-96		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	01:18:26	842	MV24GC1-ENV-DC-226			Camera	88	632854	6176751	632825	6176748	29	3	29	-96		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	01:19:04	843	MV24GC1-ENV-DC-226			Camera	88	632847	6176749	632825	6176748	22	2	22	-94		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	01:19:45	844	MV24GC1-ENV-DC-226			Camera	88	632838	6176748	632825	6176748	13	0	13	-92		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	01:20:23	845	MV24GC1-ENV-DC-226			Camera	88	632830	6176747	632825	6176748	5	-1	5	-82		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	01:20:45	846	MV24GC1-ENV-DC-226			Camera	87	632826	6176746	632825	6176748	1	-1	2	-34		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	01:21:11	847	MV24GC1-ENV-DC-226			Camera	87	632821	6176746	632825	6176748	-3	-2	4	64		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	01:22:44	848	MV24GC1-ENV-DC-226			Camera	87	632803	6176744	632825	6176748	-22	-3	22	81		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	01:23:35	849	MV24GC1-ENV-DC-226			Camera	87	632793	6176743	632825	6176748	-32	-5	32	82		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	01:24:07	850	MV24GC1-ENV-DC-226			Camera	87	632786	6176742	632825	6176748	-39	-5	39	82		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	01:24:19	851	MV24GC1-ENV-DC-226			Camera	87	632783	6176742	632825	6176748	-41	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	01:24:26	852	MV24GC1-ENV-DC-226			Camera	87	632782	6176743	632825	6176748	-43	-5	44	83		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	01:24:41	853	MV24GC1-ENV-DC-226			Camera	87	632780	6176743	632825	6176748	-45	-5	45	84		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	01:24:51	854	MV24GC1-ENV-DC-226			Camera	87	632779	6176743	632825	6176748	-46	-5	46	84		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	01:32:48	855	MV24GC1-ENV-DC-226			Camera	89	632830	6176798	632825	6176748	6	50	51	-174		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	01:34:11	856	MV24GC1-ENV-DC-226			Camera	89	632830	6176794	632825	6176748	5	46	47	-173		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	01:34:27	857	MV24GC1-ENV-DC-226			Camera	89	632830	6176792	632825	6176748	5	44	45	-173		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	01:34:44	858	MV24GC1-ENV-DC-226			Camera	89	632830	6176789	632825	6176748	5	42	42	-173		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	01:35:09	859	MV24GC1-ENV-DC-226			Camera	88	632830	6176785	632825	6176748	5	38	38	-173		(Corr'd Nav, Kongsberg 14208, img#21) (B)
16-Aug-2024	01:35:34	860	MV24GC1-ENV-DC-226			Camera	88	632829	6176779	632825	6176748	4	32	32	-173		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	01:35:50	861	MV24GC1-ENV-DC-226			Camera	88	632828	6176775	632825	6176748	3	28	28	-173		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	01:36:41	862	MV24GC1-ENV-DC-226			Camera	88	632826	6176764	632825	6176748	1	17	17	-176		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	01:37:34	863	MV24GC1-ENV-DC-226			Camera	88	632824	6176753	632825	6176748	-1	5	5	173		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	01:37:57	864	MV24GC1-ENV-DC-226			Camera	87	632823	6176748	632825	6176748	-2	0	2	95		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	01:38:14	865	MV24GC1-ENV-DC-226			Camera	87	632823	6176744	632825	6176748	-2	-4	4	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	01:38:39	866	MV24GC1-ENV-DC-226			Camera	87	632822	6176739	632825	6176748	-3	-8	9	17		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	01:39:53	867	MV24GC1-ENV-DC-226			Camera	87	632821	6176725	632825	6176748	-4	-23	23	10		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	01:41:03	868	MV24GC1-ENV-DC-226			Camera	87	632820	6176714	632825	6176748	-5	-34	34	8		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	01:41:30	869	MV24GC1-ENV-DC-226			Camera	86	632820	6176711	632825	6176748	-5	-37	37	8		(Corr'd Nav, Kongsberg 14208, img#31) (B)
16-Aug-2024	01:42:02	870	MV24GC1-ENV-DC-226			Camera	86	632819	6176707	632825	6176748	-6	-40	41	9		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	01:42:44	871	MV24GC1-ENV-DC-226			Camera	86	632817	6176704	632825	6176748	-8	-44	45	10		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	01:42:57	872	MV24GC1-ENV-DC-226			Camera	86	632817	6176702	632825	6176748	-8	-45	46	10		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	01:43:35	873	MV24GC1-ENV-DC-226			Camera	86	632818	6176699	632825	6176748	-7	-49	49	8		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	03:12:19	874	MV24GC1-ENV-DC-171			Camera	86	632382	6174803	632329	6174794	53	9	54	-99		(Corr'd Nav, Kongsberg 14208, img#1) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	03:12:53	875	MV24GC1-ENV-DC-171			Camera	86	632377	6174803	632329	6174794	48	9	49	-100		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	03:13:16	876	MV24GC1-ENV-DC-171			Camera	86	632374	6174802	632329	6174794	46	8	46	-100		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	03:13:55	877	MV24GC1-ENV-DC-171			Camera	86	632370	6174801	632329	6174794	41	7	42	-100		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	03:14:18	878	MV24GC1-ENV-DC-171			Camera	86	632366	6174801	632329	6174794	37	7	37	-100		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	03:14:35	879	MV24GC1-ENV-DC-171			Camera	86	632363	6174800	632329	6174794	34	6	35	-100		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	03:15:01	880	MV24GC1-ENV-DC-171			Camera	86	632359	6174799	632329	6174794	30	5	30	-99		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	03:15:17	881	MV24GC1-ENV-DC-171			Camera	86	632356	6174799	632329	6174794	27	5	28	-100		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	03:15:46	882	MV24GC1-ENV-DC-171			Camera	86	632352	6174797	632329	6174794	24	3	24	-98		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	03:16:12	883	MV24GC1-ENV-DC-171			Camera	86	632349	6174797	632329	6174794	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	03:16:30	884	MV24GC1-ENV-DC-171			Camera	86	632346	6174796	632329	6174794	17	2	18	-97		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	03:16:58	885	MV24GC1-ENV-DC-171			Camera	86	632342	6174796	632329	6174794	14	1	14	-96		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	03:17:23	886	MV24GC1-ENV-DC-171			Camera	86	632339	6174795	632329	6174794	10	1	10	-94		(Corr'd Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	03:18:13	887	MV24GC1-ENV-DC-171			Camera	86	632330	6174794	632329	6174794	1	0	1	-100		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	03:18:46	888	MV24GC1-ENV-DC-171			Camera	87	632325	6174794	632329	6174794	-4	0	4	89		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	03:19:15	889	MV24GC1-ENV-DC-171			Camera	86	632320	6174793	632329	6174794	-8	-1	8	84		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	03:19:54	890	MV24GC1-ENV-DC-171			Camera	87	632314	6174792	632329	6174794	-15	-2	15	83		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	03:20:41	891	MV24GC1-ENV-DC-171			Camera	87	632308	6174791	632329	6174794	-21	-4	21	81		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	03:21:51	892	MV24GC1-ENV-DC-171			Camera	87	632297	6174789	632329	6174794	-32	-5	32	81		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	03:22:21	893	MV24GC1-ENV-DC-171			Camera	87	632292	6174788	632329	6174794	-37	-6	37	81		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	03:22:50	894	MV24GC1-ENV-DC-171			Camera	87	632287	6174788	632329	6174794	-42	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#21) (B)
16-Aug-2024	03:23:36	895	MV24GC1-ENV-DC-171			Camera	87	632279	6174786	632329	6174794	-49	-8	50	80		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	03:23:55	896	MV24GC1-ENV-DC-171			Camera	87	632276	6174785	632329	6174794	-52	-9	53	81		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	03:26:13	897	MV24GC1-ENV-DC-171			Camera	87	632277	6174797	632329	6174794	-52	3	52	94		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	03:29:30	898	MV24GC1-ENV-DC-171			Camera	87	632281	6174829	632329	6174794	-48	35	59	126		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	03:31:10	899	MV24GC1-ENV-DC-171			Camera	87	632292	6174831	632329	6174794	-37	37	52	135		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	03:32:27	900	MV24GC1-ENV-DC-171			Camera	87	632298	6174828	632329	6174794	-31	34	46	138		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	03:33:21	901	MV24GC1-ENV-DC-171			Camera	87	632305	6174824	632329	6174794	-24	30	38	141		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	03:33:28	902	MV24GC1-ENV-DC-171			Camera	87	632305	6174823	632329	6174794	-23	29	37	141		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	03:34:00	903	MV24GC1-ENV-DC-171			Camera	87	632308	6174819	632329	6174794	-20	25	32	141		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	03:34:51	904	MV24GC1-ENV-DC-171			Camera	87	632313	6174812	632329	6174794	-16	18	24	140		(Corr'd Nav, Kongsberg 14208, img#31) (B)
16-Aug-2024	03:35:16	905	MV24GC1-ENV-DC-171			Camera	87	632316	6174809	632329	6174794	-12	15	19	141		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	03:35:49	906	MV24GC1-ENV-DC-171			Camera	86	632321	6174805	632329	6174794	-8	11	14	145		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	03:36:20	907	MV24GC1-ENV-DC-171			Camera	86	632324	6174802	632329	6174794	-4	8	9	150		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	03:36:47	908	MV24GC1-ENV-DC-171			Camera	86	632328	6174799	632329	6174794	-1	5	5	167		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	03:37:18	909	MV24GC1-ENV-DC-171			Camera	86	632331	6174796	632329	6174794	3	2	3	-127		(Corr'd Nav, Kongsberg 14208, img#36) (B)
16-Aug-2024	03:37:34	910	MV24GC1-ENV-DC-171			Camera	86	632333	6174795	632329	6174794	4	1	4	-98		(Corr'd Nav, Kongsberg 14208, img#37) (B)
16-Aug-2024	03:37:57	911	MV24GC1-ENV-DC-171			Camera	86	632335	6174793	632329	6174794	7	-1	7	-79		(Corr'd Nav, Kongsberg 14208, img#38) (B)
16-Aug-2024	03:38:34	912	MV24GC1-ENV-DC-171			Camera	86	632339	6174790	632329	6174794	10	-5	11	-66		(Corr'd Nav, Kongsberg 14208, img#39) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	03:38:44	913	MV24GC1-ENV-DC-171			Camera	86	632340	6174789	632329	6174794	11	-6	12	-63		(Corr'd Nav, Kongsberg 14208, img#40) (B)
16-Aug-2024	03:39:35	914	MV24GC1-ENV-DC-171			Camera	86	632346	6174784	632329	6174794	17	-11	20	-59		(Corr'd Nav, Kongsberg 14208, img#41) (B)
16-Aug-2024	03:40:14	915	MV24GC1-ENV-DC-171			Camera	86	632352	6174780	632329	6174794	23	-14	27	-58		(Corr'd Nav, Kongsberg 14208, img#42) (B)
16-Aug-2024	03:40:34	916	MV24GC1-ENV-DC-171			Camera	86	632354	6174778	632329	6174794	25	-17	30	-57		(Corr'd Nav, Kongsberg 14208, img#43) (B)
16-Aug-2024	03:41:15	917	MV24GC1-ENV-DC-171			Camera	86	632358	6174774	632329	6174794	29	-21	36	-55		(Corr'd Nav, Kongsberg 14208, img#44) (B)
16-Aug-2024	03:41:47	918	MV24GC1-ENV-DC-171			Camera	86	632362	6174770	632329	6174794	33	-24	41	-54		(Corr'd Nav, Kongsberg 14208, img#45) (B)
16-Aug-2024	03:42:24	919	MV24GC1-ENV-DC-171			Camera	86	632366	6174765	632329	6174794	37	-29	47	-52		(Corr'd Nav, Kongsberg 14208, img#46) (B)
16-Aug-2024	05:24:56	920	MV24GC1-ENV-DC-225			Camera	94	631887	6172893	631833	6172878	54	15	56	-105		(Corr'd Nav, Kongsberg 14208, img#1) (B)
16-Aug-2024	05:26:43	921	MV24GC1-ENV-DC-225			Camera	94	631871	6172889	631833	6172878	39	12	40	-107		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	05:27:05	922	MV24GC1-ENV-DC-225			Camera	93	631868	6172889	631833	6172878	35	12	37	-109		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	05:27:19	923	MV24GC1-ENV-DC-225			Camera	93	631866	6172889	631833	6172878	33	12	35	-109		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	05:27:52	924	MV24GC1-ENV-DC-225			Camera	93	631861	6172887	631833	6172878	28	9	30	-108		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	05:28:03	925	MV24GC1-ENV-DC-225			Camera	93	631860	6172886	631833	6172878	27	9	28	-108		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	05:29:23	926	MV24GC1-ENV-DC-225			Camera	93	631848	6172883	631833	6172878	15	5	16	-109		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	05:30:41	927	MV24GC1-ENV-DC-225			Camera	93	631835	6172882	631833	6172878	2	4	4	-153		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	05:30:56	928	MV24GC1-ENV-DC-225			Camera	93	631832	6172881	631833	6172878	0	3	3	171		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	05:31:17	929	MV24GC1-ENV-DC-225			Camera	93	631829	6172880	631833	6172878	-4	2	4	123		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	05:31:39	930	MV24GC1-ENV-DC-225			Camera	93	631826	6172880	631833	6172878	-7	2	7	105		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	05:32:10	931	MV24GC1-ENV-DC-225			Camera	93	631822	6172878	631833	6172878	-11	1	11	93		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	05:32:26	932	MV24GC1-ENV-DC-225			Camera	93	631820	6172877	631833	6172878	-13	-1	13	87		(Raw Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	05:32:49	932	MV24GC1-ENV-DC-225			Camera	93	631816	6172876	631833	6172878	-16	-2	17	84		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	05:33:35	933	MV24GC1-ENV-DC-225			Camera	93	631809	6172875	631833	6172878	-23	-2	24	84		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	05:33:57	934	MV24GC1-ENV-DC-225			Camera	93	631805	6172875	631833	6172878	-27	-2	28	85		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	05:34:24	935	MV24GC1-ENV-DC-225			Camera	93	631801	6172875	631833	6172878	-32	-3	32	84		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	05:34:46	936	MV24GC1-ENV-DC-225			Camera	93	631797	6172874	631833	6172878	-36	-4	36	84		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	05:35:06	937	MV24GC1-ENV-DC-225			Camera	93	631794	6172873	631833	6172878	-39	-5	39	83		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	05:35:26	938	MV24GC1-ENV-DC-225			Camera	93	631791	6172872	631833	6172878	-42	-6	42	82		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	05:35:56	939	MV24GC1-ENV-DC-225			Camera	93	631787	6172871	631833	6172878	-46	-7	47	82		(Corr'd Nav, Kongsberg 14208, img#21) (B)
16-Aug-2024	05:36:06	940	MV24GC1-ENV-DC-225			Camera	93	631785	6172871	631833	6172878	-48	-7	48	81		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	05:36:19	941	MV24GC1-ENV-DC-225			Camera	93	631783	6172870	631833	6172878	-49	-8	50	81		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	05:36:37	942	MV24GC1-ENV-DC-225			Camera	93	631781	6172869	631833	6172878	-52	-8	53	81		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	05:41:39	943	MV24GC1-ENV-DC-225			Camera	93	631784	6172901	631833	6172878	-49	23	54	116		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	05:42:36	944	MV24GC1-ENV-DC-225			Camera	93	631786	6172909	631833	6172878	-47	32	57	124		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	05:47:31	945	MV24GC1-ENV-DC-225			Camera	93	631804	6172908	631833	6172878	-29	30	42	136		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	05:47:55	946	MV24GC1-ENV-DC-225			Camera	93	631806	6172906	631833	6172878	-26	28	38	137		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	05:48:12	947	MV24GC1-ENV-DC-225			Camera	93	631808	6172904	631833	6172878	-25	26	36	137		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	05:48:50	948	MV24GC1-ENV-DC-225			Camera	93	631813	6172900	631833	6172878	-20	22	30	139		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	05:49:19	949	MV24GC1-ENV-DC-225			Camera	93	631817	6172898	631833	6172878	-16	20	26	141		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	05:49:46	950	MV24GC1-ENV-DC-225			Camera	93	631820	6172896	631833	6172878	-13	18	22	145		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	05:50:02	951	MV24GC1-ENV-DC-225			Camera	93	631822	6172894	631833	6172878	-10	17	20	148		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	05:51:01	952	MV24GC1-ENV-DC-225			Camera	93	631830	6172889	631833	6172878	-3	11	11	166		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	05:51:27	953	MV24GC1-ENV-DC-225			Camera	93	631832	6172885	631833	6172878	0	8	8	177		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	05:51:49	954	MV24GC1-ENV-DC-225			Camera	93	631834	6172882	631833	6172878	1	4	5	-163		(Corr'd Nav, Kongsberg 14208, img#36) (B)
16-Aug-2024	05:52:18	955	MV24GC1-ENV-DC-225			Camera	93	631835	6172878	631833	6172878	3	0	3	-94		(Corr'd Nav, Kongsberg 14208, img#37) (B)
16-Aug-2024	05:52:34	956	MV24GC1-ENV-DC-225			Camera	93	631836	6172876	631833	6172878	3	-2	4	-56		(Corr'd Nav, Kongsberg 14208, img#38) (B)
16-Aug-2024	05:53:21	957	MV24GC1-ENV-DC-225			Camera	93	631838	6172869	631833	6172878	5	-9	11	-30		(Corr'd Nav, Kongsberg 14208, img#39) (B)
16-Aug-2024	05:53:29	958	MV24GC1-ENV-DC-225			Camera	93	631839	6172867	631833	6172878	6	-10	12	-29		(Corr'd Nav, Kongsberg 14208, img#40) (B)
16-Aug-2024	05:54:20	959	MV24GC1-ENV-DC-225			Camera	93	631842	6172860	631833	6172878	9	-18	20	-26		(Corr'd Nav, Kongsberg 14208, img#41) (B)
16-Aug-2024	05:54:43	960	MV24GC1-ENV-DC-225			Camera	93	631843	6172857	631833	6172878	10	-21	23	-26		(Corr'd Nav, Kongsberg 14208, img#42) (B)
16-Aug-2024	05:55:26	961	MV24GC1-ENV-DC-225			Camera	93	631846	6172851	631833	6172878	13	-27	30	-26		(Corr'd Nav, Kongsberg 14208, img#43) (B)
16-Aug-2024	05:55:58	962	MV24GC1-ENV-DC-225			Camera	93	631848	6172846	631833	6172878	15	-32	35	-25		(Corr'd Nav, Kongsberg 14208, img#44) (B)
16-Aug-2024	05:56:29	963	MV24GC1-ENV-DC-225			Camera	93	631850	6172841	631833	6172878	17	-37	40	-25		(Corr'd Nav, Kongsberg 14208, img#45) (B)
16-Aug-2024	05:57:07	964	MV24GC1-ENV-DC-225			Camera	93	631852	6172836	631833	6172878	20	-42	46	-25		(Corr'd Nav, Kongsberg 14208, img#46) (B)
16-Aug-2024	05:57:31	965	MV24GC1-ENV-DC-225			Camera	93	631854	6172832	631833	6172878	21	-45	50	-25		(Corr'd Nav, Kongsberg 14208, img#47) (B)
16-Aug-2024	05:57:48	966	MV24GC1-ENV-DC-225			Camera	93	631855	6172830	631833	6172878	22	-48	52	-25		(Corr'd Nav, Kongsberg 14208, img#48) (B)
16-Aug-2024	07:20:55	967	MV24GC1-ENV-DC-172			Camera	88	631355	6170900	631319	6170858	36	42	55	-139		(Corr'd Nav, Kongsberg 14208, img#1) (B)
16-Aug-2024	07:22:57	968	MV24GC1-ENV-DC-172			Camera	87	631347	6170894	631319	6170858	29	36	46	-142		(Corr'd Nav, Kongsberg 14208, img#2) (B)
16-Aug-2024	07:23:29	969	MV24GC1-ENV-DC-172			Camera	87	631344	6170891	631319	6170858	25	33	41	-143		(Corr'd Nav, Kongsberg 14208, img#3) (B)
16-Aug-2024	07:23:52	970	MV24GC1-ENV-DC-172			Camera	87	631341	6170888	631319	6170858	23	30	37	-143		(Corr'd Nav, Kongsberg 14208, img#4) (B)
16-Aug-2024	07:24:26	971	MV24GC1-ENV-DC-172			Camera	87	631338	6170884	631319	6170858	19	26	32	-143		(Corr'd Nav, Kongsberg 14208, img#5) (B)
16-Aug-2024	07:25:07	972	MV24GC1-ENV-DC-172			Camera	88	631336	6170879	631319	6170858	17	21	27	-141		(Corr'd Nav, Kongsberg 14208, img#6) (B)
16-Aug-2024	07:25:46	973	MV24GC1-ENV-DC-172			Camera	88	631335	6170875	631319	6170858	16	17	23	-137		(Corr'd Nav, Kongsberg 14208, img#7) (B)
16-Aug-2024	07:26:37	974	MV24GC1-ENV-DC-172			Camera	88	631331	6170870	631319	6170858	12	12	17	-135		(Corr'd Nav, Kongsberg 14208, img#8) (B)
16-Aug-2024	07:27:59	975	MV24GC1-ENV-DC-172			Camera	88	631322	6170862	631319	6170858	4	4	6	-140		(Corr'd Nav, Kongsberg 14208, img#9) (B)
16-Aug-2024	07:28:49	976	MV24GC1-ENV-DC-172			Camera	88	631317	6170858	631319	6170858	-2	0	2	89		(Corr'd Nav, Kongsberg 14208, img#10) (B)
16-Aug-2024	07:29:03	977	MV24GC1-ENV-DC-172			Camera	88	631315	6170856	631319	6170858	-4	-1	4	71		(Corr'd Nav, Kongsberg 14208, img#11) (B)
16-Aug-2024	07:29:10	978	MV24GC1-ENV-DC-172			Camera	88	631314	6170856	631319	6170858	-5	-2	5	68		(Corr'd Nav, Kongsberg 14208, img#12) (B)
16-Aug-2024	07:29:30	979	MV24GC1-ENV-DC-172			Camera	88	631311	6170854	631319	6170858	-7	-4	8	62		(Corr'd Nav, Kongsberg 14208, img#13) (B)
16-Aug-2024	07:30:19	980	MV24GC1-ENV-DC-172			Camera	88	631306	6170849	631319	6170858	-13	-8	15	56		(Corr'd Nav, Kongsberg 14208, img#14) (B)
16-Aug-2024	07:30:31	981	MV24GC1-ENV-DC-172			Camera	88	631305	6170848	631319	6170858	-14	-10	17	56		(Corr'd Nav, Kongsberg 14208, img#15) (B)
16-Aug-2024	07:31:32	982	MV24GC1-ENV-DC-172			Camera	88	631298	6170843	631319	6170858	-21	-15	26	55		(Corr'd Nav, Kongsberg 14208, img#16) (B)
16-Aug-2024	07:31:53	983	MV24GC1-ENV-DC-172			Camera	88	631295	6170841	631319	6170858	-24	-17	29	55		(Corr'd Nav, Kongsberg 14208, img#17) (B)
16-Aug-2024	07:32:14	984	MV24GC1-ENV-DC-172			Camera	88	631292	6170839	631319	6170858	-27	-19	32	55		(Corr'd Nav, Kongsberg 14208, img#18) (B)
16-Aug-2024	07:32:50	985	MV24GC1-ENV-DC-172			Camera	88	631288	6170836	631319	6170858	-31	-22	38	54		(Corr'd Nav, Kongsberg 14208, img#19) (B)
16-Aug-2024	07:33:28	986	MV24GC1-ENV-DC-172			Camera	88	631284	6170832	631319	6170858	-35	-26	43	53		(Corr'd Nav, Kongsberg 14208, img#20) (B)
16-Aug-2024	07:44:57	987	MV24GC1-ENV-DC-172			Camera	87	631273	6170890	631319	6170858	-46	32	56	124		(Corr'd Nav, Kongsberg 14208, img#21) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	07:46:24	988	MV24GC1-ENV-DC-172			Camera	87	631281	6170885	631319	6170858	-38	27	47	126		(Corr'd Nav, Kongsberg 14208, img#22) (B)
16-Aug-2024	07:47:15	989	MV24GC1-ENV-DC-172			Camera	88	631289	6170883	631319	6170858	-30	25	39	131		(Corr'd Nav, Kongsberg 14208, img#23) (B)
16-Aug-2024	07:47:55	990	MV24GC1-ENV-DC-172			Camera	88	631296	6170881	631319	6170858	-23	23	33	136		(Corr'd Nav, Kongsberg 14208, img#24) (B)
16-Aug-2024	07:48:09	991	MV24GC1-ENV-DC-172			Camera	88	631298	6170880	631319	6170858	-21	23	31	137		(Corr'd Nav, Kongsberg 14208, img#25) (B)
16-Aug-2024	07:48:56	992	MV24GC1-ENV-DC-172			Camera	88	631305	6170878	631319	6170858	-14	20	24	145		(Corr'd Nav, Kongsberg 14208, img#26) (B)
16-Aug-2024	07:49:07	993	MV24GC1-ENV-DC-172			Camera	88	631306	6170877	631319	6170858	-13	19	23	146		(Corr'd Nav, Kongsberg 14208, img#27) (B)
16-Aug-2024	07:49:43	994	MV24GC1-ENV-DC-172			Camera	88	631310	6170874	631319	6170858	-8	16	18	152		(Corr'd Nav, Kongsberg 14208, img#28) (B)
16-Aug-2024	07:49:52	995	MV24GC1-ENV-DC-172			Camera	88	631311	6170873	631319	6170858	-8	15	17	153		(Corr'd Nav, Kongsberg 14208, img#29) (B)
16-Aug-2024	07:50:13	996	MV24GC1-ENV-DC-172			Camera	88	631312	6170870	631319	6170858	-6	12	14	152		(Corr'd Nav, Kongsberg 14208, img#30) (B)
16-Aug-2024	07:50:44	997	MV24GC1-ENV-DC-172			Camera	88	631314	6170866	631319	6170858	-4	8	10	152		(Corr'd Nav, Kongsberg 14208, img#31) (B)
16-Aug-2024	07:51:19	998	MV24GC1-ENV-DC-172			Camera	88	631318	6170863	631319	6170858	-1	5	5	171		(Corr'd Nav, Kongsberg 14208, img#32) (B)
16-Aug-2024	07:51:44	999	MV24GC1-ENV-DC-172			Camera	88	631320	6170861	631319	6170858	1	3	3	-156		(Corr'd Nav, Kongsberg 14208, img#33) (B)
16-Aug-2024	07:52:11	1000	MV24GC1-ENV-DC-172			Camera	88	631323	6170858	631319	6170858	4	0	4	-91		(Corr'd Nav, Kongsberg 14208, img#34) (B)
16-Aug-2024	07:52:40	1001	MV24GC1-ENV-DC-172			Camera	88	631325	6170855	631319	6170858	6	-3	7	-62		(Corr'd Nav, Kongsberg 14208, img#35) (B)
16-Aug-2024	07:53:09	1002	MV24GC1-ENV-DC-172			Camera	88	631327	6170851	631319	6170858	8	-7	11	-51		(Corr'd Nav, Kongsberg 14208, img#36) (B)
16-Aug-2024	07:54:00	1003	MV24GC1-ENV-DC-172			Camera	88	631331	6170844	631319	6170858	13	-13	18	-43		(Corr'd Nav, Kongsberg 14208, img#37) (B)
16-Aug-2024	07:54:23	1004	MV24GC1-ENV-DC-172			Camera	88	631333	6170842	631319	6170858	15	-16	22	-42		(Corr'd Nav, Kongsberg 14208, img#38) (B)
16-Aug-2024	07:55:16	1005	MV24GC1-ENV-DC-172			Camera	88	631338	6170834	631319	6170858	19	-24	30	-38		(Corr'd Nav, Kongsberg 14208, img#39) (B)
16-Aug-2024	07:55:48	1006	MV24GC1-ENV-DC-172			Camera	88	631341	6170830	631319	6170858	22	-28	35	-38		(Corr'd Nav, Kongsberg 14208, img#40) (B)
16-Aug-2024	07:56:17	1007	MV24GC1-ENV-DC-172			Camera	88	631343	6170826	631319	6170858	25	-32	40	-38		(Corr'd Nav, Kongsberg 14208, img#41) (B)
16-Aug-2024	07:56:57	1008	MV24GC1-ENV-DC-172			Camera	88	631347	6170821	631319	6170858	29	-37	47	-38		(Corr'd Nav, Kongsberg 14208, img#42) (B)
16-Aug-2024	07:57:42	1009	MV24GC1-ENV-DC-172			Camera	88	631352	6170818	631319	6170858	33	-40	52	-39		(Corr'd Nav, Kongsberg 14208, img#43) (B)
17-Aug-2024	22:14:42	1010	MV24GC1-ENV-DC-185			Camera	82	621042	6099099	621009	6099061	33	38	50	-139		(Corr'd Nav, Kongsberg 14208, img#1) (B)
17-Aug-2024	22:15:35	1011	MV24GC1-ENV-DC-185			Camera	82	621040	6099097	621009	6099061	32	36	48	-139		(Corr'd Nav, Kongsberg 14208, img#2) (B)
17-Aug-2024	22:15:45	1012	MV24GC1-ENV-DC-185			Camera	82	621039	6099096	621009	6099061	30	35	46	-139		(Corr'd Nav, Kongsberg 14208, img#3) (B)
17-Aug-2024	22:15:59	1013	MV24GC1-ENV-DC-185			Camera	82	621037	6099094	621009	6099061	28	33	43	-139		(Corr'd Nav, Kongsberg 14208, img#4) (B)
17-Aug-2024	22:16:24	1014	MV24GC1-ENV-DC-185			Camera	82	621034	6099091	621009	6099061	26	30	40	-139		(Corr'd Nav, Kongsberg 14208, img#5) (B)
17-Aug-2024	22:17:13	1015	MV24GC1-ENV-DC-185			Camera	83	621029	6099085	621009	6099061	21	24	32	-140		(Corr'd Nav, Kongsberg 14208, img#6) (B)
17-Aug-2024	22:17:54	1016	MV24GC1-ENV-DC-185			Camera	83	621026	6099081	621009	6099061	17	20	26	-139		(Corr'd Nav, Kongsberg 14208, img#7) (B)
17-Aug-2024	22:18:04	1017	MV24GC1-ENV-DC-185			Camera	83	621025	6099080	621009	6099061	17	19	25	-139		(Corr'd Nav, Kongsberg 14208, img#8) (B)
17-Aug-2024	22:18:29	1018	MV24GC1-ENV-DC-185			Camera	83	621026	6099080	621009	6099061	18	19	26	-138		(Corr'd Nav, Kongsberg 14208, img#9) (B)
17-Aug-2024	22:19:05	1019	MV24GC1-ENV-DC-185			Camera	83	621026	6099080	621009	6099061	17	19	26	-138		(Corr'd Nav, Kongsberg 14208, img#10) (B)
17-Aug-2024	22:20:40	1020	MV24GC1-ENV-DC-185			Camera	83	621027	6099082	621009	6099061	18	21	28	-139		(Corr'd Nav, Kongsberg 14208, img#11) (B)
17-Aug-2024	22:21:53	1021	MV24GC1-ENV-DC-185			Camera	83	621026	6099081	621009	6099061	18	20	27	-139		(Corr'd Nav, Kongsberg 14208, img#12) (B)
17-Aug-2024	22:24:40	1022	MV24GC1-ENV-DC-185			Camera	83	621025	6099079	621009	6099061	16	18	24	-138		(Corr'd Nav, Kongsberg 14208, img#13) (B)
17-Aug-2024	22:24:52	1023	MV24GC1-ENV-DC-185			Camera	83	621023	6099077	621009	6099061	14	16	21	-138		(Corr'd Nav, Kongsberg 14208, img#14) (B)
17-Aug-2024	22:25:02	1024	MV24GC1-ENV-DC-185			Camera	83	621021	6099075	621009	6099061	13	14	19	-138		(Corr'd Nav, Kongsberg 14208, img#15) (B)
17-Aug-2024	22:25:56	1025	MV24GC1-ENV-DC-185			Camera	83	621016	6099069	621009	6099061	7	8	11	-138		(Corr'd Nav, Kongsberg 14208, img#16) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
17-Aug-2024	22:26:21	1026	MV24GC1-ENV-DC-185			Camera	83	621014	6099067	621009	6099061	5	6	8	-136		(Corr'd Nav, Kongsberg 14208, img#17) (B)
17-Aug-2024	22:26:49	1027	MV24GC1-ENV-DC-185			Camera	83	621012	6099064	621009	6099061	3	3	4	-134		(Corr'd Nav, Kongsberg 14208, img#18) (B)
17-Aug-2024	22:27:33	1028	MV24GC1-ENV-DC-185			Camera	83	621007	6099058	621009	6099061	-2	-3	3	39		(Corr'd Nav, Kongsberg 14208, img#19) (B)
17-Aug-2024	22:27:50	1029	MV24GC1-ENV-DC-185			Camera	83	621005	6099056	621009	6099061	-4	-5	6	41		(Corr'd Nav, Kongsberg 14208, img#20) (B)
17-Aug-2024	22:28:14	1030	MV24GC1-ENV-DC-185			Camera	83	621002	6099054	621009	6099061	-7	-7	10	42		(Corr'd Nav, Kongsberg 14208, img#21) (B)
17-Aug-2024	22:28:22	1031	MV24GC1-ENV-DC-185			Camera	83	621001	6099053	621009	6099061	-7	-8	11	42		(Corr'd Nav, Kongsberg 14208, img#22) (B)
17-Aug-2024	22:28:50	1032	MV24GC1-ENV-DC-185			Camera	83	620998	6099050	621009	6099061	-10	-11	15	43		(Corr'd Nav, Kongsberg 14208, img#23) (B)
17-Aug-2024	22:28:57	1033	MV24GC1-ENV-DC-185			Camera	83	620998	6099049	621009	6099061	-11	-12	16	43		(Corr'd Nav, Kongsberg 14208, img#24) (B)
17-Aug-2024	22:29:34	1034	MV24GC1-ENV-DC-185			Camera	83	620994	6099045	621009	6099061	-15	-16	22	43		(Corr'd Nav, Kongsberg 14208, img#25) (B)
17-Aug-2024	22:29:43	1035	MV24GC1-ENV-DC-185			Camera	83	620993	6099044	621009	6099061	-16	-17	23	43		(Corr'd Nav, Kongsberg 14208, img#26) (B)
17-Aug-2024	22:30:20	1036	MV24GC1-ENV-DC-185			Camera	83	620989	6099040	621009	6099061	-19	-21	28	43		(Corr'd Nav, Kongsberg 14208, img#27) (B)
17-Aug-2024	22:31:11	1037	MV24GC1-ENV-DC-185			Camera	83	620983	6099034	621009	6099061	-25	-27	37	43		(Corr'd Nav, Kongsberg 14208, img#28) (B)
17-Aug-2024	22:31:40	1038	MV24GC1-ENV-DC-185			Camera	83	620980	6099031	621009	6099061	-28	-30	41	44		(Corr'd Nav, Kongsberg 14208, img#29) (B)
17-Aug-2024	22:32:25	1039	MV24GC1-ENV-DC-185			Camera	83	620975	6099026	621009	6099061	-33	-35	48	44		(Corr'd Nav, Kongsberg 14208, img#30) (B)
17-Aug-2024	22:32:36	1040	MV24GC1-ENV-DC-185			Camera	83	620974	6099025	621009	6099061	-34	-36	50	43		(Corr'd Nav, Kongsberg 14208, img#31) (B)
17-Aug-2024	22:33:01	1041	MV24GC1-ENV-DC-185			Camera	83	620973	6099023	621009	6099061	-36	-38	52	43		(Corr'd Nav, Kongsberg 14208, img#32) (B)
17-Aug-2024	22:34:35	1042	MV24GC1-ENV-DC-185			Camera	83	620974	6099025	621009	6099061	-34	-36	50	44		(Corr'd Nav, Kongsberg 14208, img#33) (B)
17-Aug-2024	22:43:21	1043	MV24GC1-ENV-DC-185			Camera	83	620971	6099102	621009	6099061	-37	41	55	137		(Corr'd Nav, Kongsberg 14208, img#34) (B)
17-Aug-2024	22:44:31	1044	MV24GC1-ENV-DC-185			Camera	83	620971	6099102	621009	6099061	-38	41	56	137		(Corr'd Nav, Kongsberg 14208, img#35) (B)
17-Aug-2024	22:46:18	1045	MV24GC1-ENV-DC-185			Camera	83	620980	6099092	621009	6099061	-28	31	42	138		(Corr'd Nav, Kongsberg 14208, img#36) (B)
17-Aug-2024	22:47:23	1046	MV24GC1-ENV-DC-185			Camera	83	620987	6099086	621009	6099061	-21	25	32	140		(Corr'd Nav, Kongsberg 14208, img#37) (B)
17-Aug-2024	22:48:01	1047	MV24GC1-ENV-DC-185			Camera	83	620990	6099082	621009	6099061	-18	21	28	139		(Corr'd Nav, Kongsberg 14208, img#38) (B)
17-Aug-2024	22:48:20	1048	MV24GC1-ENV-DC-185			Camera	83	620992	6099080	621009	6099061	-17	19	25	138		(Corr'd Nav, Kongsberg 14208, img#39) (B)
17-Aug-2024	22:48:52	1049	MV24GC1-ENV-DC-185			Camera	83	620994	6099076	621009	6099061	-14	15	21	137		(Corr'd Nav, Kongsberg 14208, img#40) (B)
17-Aug-2024	22:50:04	1050	MV24GC1-ENV-DC-185			Camera	83	621000	6099068	621009	6099061	-8	7	11	129		(Corr'd Nav, Kongsberg 14208, img#41) (B)
17-Aug-2024	22:51:03	1051	MV24GC1-ENV-DC-185			Camera	83	621007	6099063	621009	6099061	-2	2	3	139		(Corr'd Nav, Kongsberg 14208, img#42) (B)
17-Aug-2024	22:51:30	1052	MV24GC1-ENV-DC-185			Camera	83	621009	6099060	621009	6099061	1	-1	1	-48		(Corr'd Nav, Kongsberg 14208, img#43) (B)
17-Aug-2024	22:52:17	1053	MV24GC1-ENV-DC-185			Camera	83	621014	6099054	621009	6099061	6	-7	9	-41		(Corr'd Nav, Kongsberg 14208, img#44) (B)
17-Aug-2024	22:53:03	1054	MV24GC1-ENV-DC-185			Camera	83	621019	6099049	621009	6099061	11	-12	16	-42		(Corr'd Nav, Kongsberg 14208, img#45) (B)
17-Aug-2024	22:53:26	1055	MV24GC1-ENV-DC-185			Camera	83	621022	6099046	621009	6099061	13	-15	20	-42		(Corr'd Nav, Kongsberg 14208, img#46) (B)
17-Aug-2024	22:53:45	1056	MV24GC1-ENV-DC-185			Camera	83	621024	6099044	621009	6099061	15	-17	23	-42		(Corr'd Nav, Kongsberg 14208, img#47) (B)
17-Aug-2024	22:54:18	1057	MV24GC1-ENV-DC-185			Camera	83	621027	6099040	621009	6099061	19	-21	28	-42		(Corr'd Nav, Kongsberg 14208, img#48) (B)
17-Aug-2024	22:54:42	1058	MV24GC1-ENV-DC-185			Camera	83	621029	6099037	621009	6099061	21	-24	32	-41		(Corr'd Nav, Kongsberg 14208, img#49) (B)
17-Aug-2024	22:55:26	1059	MV24GC1-ENV-DC-185			Camera	83	621033	6099032	621009	6099061	25	-29	38	-40		(Corr'd Nav, Kongsberg 14208, img#50) (B)
17-Aug-2024	22:55:43	1060	MV24GC1-ENV-DC-185			Camera	83	621035	6099030	621009	6099061	27	-31	41	-40		(Corr'd Nav, Kongsberg 14208, img#51) (B)
17-Aug-2024	22:56:07	1061	MV24GC1-ENV-DC-185			Camera	83	621038	6099027	621009	6099061	29	-34	45	-41		(Corr'd Nav, Kongsberg 14208, img#52) (B)
17-Aug-2024	22:56:32	1062	MV24GC1-ENV-DC-185			Camera	83	621040	6099024	621009	6099061	32	-37	49	-41		(Corr'd Nav, Kongsberg 14208, img#53) (B)
17-Aug-2024	22:56:57	1063	MV24GC1-ENV-DC-185			Camera	83	621043	6099021	621009	6099061	34	-40	52	-41		(Corr'd Nav, Kongsberg 14208, img#54) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	01:34:36	1064	MV24GC1-ENV-DC-224			Camera	77	620505	6097126	620453	6097139	52	-14	54	-75		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	01:35:40	1065	MV24GC1-ENV-DC-224			Camera	77	620502	6097126	620453	6097139	49	-13	50	-75		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	01:36:39	1066	MV24GC1-ENV-DC-224			Camera	77	620494	6097127	620453	6097139	41	-12	43	-73		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	01:37:03	1067	MV24GC1-ENV-DC-224			Camera	77	620493	6097128	620453	6097139	40	-12	42	-74		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	01:37:36	1068	MV24GC1-ENV-DC-224			Camera	77	620492	6097129	620453	6097139	39	-11	40	-74		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	01:40:41	1069	MV24GC1-ENV-DC-224			Camera	77	620485	6097130	620453	6097139	32	-9	33	-74		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	01:41:35	1070	MV24GC1-ENV-DC-224			Camera	77	620484	6097131	620453	6097139	31	-9	32	-74		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	01:41:54	1071	MV24GC1-ENV-DC-224			Camera	77	620484	6097131	620453	6097139	30	-8	31	-75		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	01:42:43	1072	MV24GC1-ENV-DC-224			Camera	77	620483	6097131	620453	6097139	30	-8	31	-75		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	01:45:14	1073	MV24GC1-ENV-DC-224			Camera	77	620485	6097132	620453	6097139	31	-7	32	-77		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	01:46:17	1074	MV24GC1-ENV-DC-224			Camera	77	620484	6097132	620453	6097139	31	-7	32	-77		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	01:47:43	1075	MV24GC1-ENV-DC-224			Camera	77	620479	6097133	620453	6097139	26	-7	27	-75		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	01:48:13	1076	MV24GC1-ENV-DC-224			Camera	77	620477	6097133	620453	6097139	23	-7	24	-74		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	01:48:25	1077	MV24GC1-ENV-DC-224			Camera	77	620475	6097133	620453	6097139	22	-7	23	-74		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	01:49:13	1078	MV24GC1-ENV-DC-224			Camera	77	620471	6097133	620453	6097139	17	-6	18	-71		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	01:49:45	1079	MV24GC1-ENV-DC-224			Camera	77	620467	6097134	620453	6097139	14	-5	15	-70		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	01:50:38	1080	MV24GC1-ENV-DC-224			Camera	77	620462	6097135	620453	6097139	9	-4	10	-63		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	01:51:44	1081	MV24GC1-ENV-DC-224			Camera	77	620456	6097137	620453	6097139	3	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	01:52:39	1082	MV24GC1-ENV-DC-224			Camera	77	620450	6097138	620453	6097139	-3	-2	3	62		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	01:53:20	1083	MV24GC1-ENV-DC-224			Camera	77	620446	6097139	620453	6097139	-7	-1	7	85		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	01:54:30	1084	MV24GC1-ENV-DC-224			Camera	77	620439	6097139	620453	6097139	-14	0	14	89		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	01:56:26	1085	MV24GC1-ENV-DC-224			Camera	77	620427	6097141	620453	6097139	-26	2	26	94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	01:57:08	1086	MV24GC1-ENV-DC-224			Camera	77	620423	6097142	620453	6097139	-30	3	30	95		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	01:57:28	1087	MV24GC1-ENV-DC-224			Camera	77	620421	6097142	620453	6097139	-32	3	32	95		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	01:58:47	1088	MV24GC1-ENV-DC-224			Camera	77	620413	6097144	620453	6097139	-40	5	41	96		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	01:59:53	1089	MV24GC1-ENV-DC-224			Camera	76	620407	6097145	620453	6097139	-46	5	46	97		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	02:00:02	1090	MV24GC1-ENV-DC-224			Camera	76	620407	6097145	620453	6097139	-46	6	46	97		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	02:03:55	1091	MV24GC1-ENV-DC-224			Camera	77	620413	6097153	620453	6097139	-40	13	42	108		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	02:05:47	1092	MV24GC1-ENV-DC-224			Camera	77	620424	6097161	620453	6097139	-30	22	37	126		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	02:08:13	1093	MV24GC1-ENV-DC-224			Camera	77	620440	6097177	620453	6097139	-13	38	40	161		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	02:09:47	1094	MV24GC1-ENV-DC-224			Camera	77	620450	6097187	620453	6097139	-3	48	48	176		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	02:12:09	1095	MV24GC1-ENV-DC-224			Camera	77	620454	6097186	620453	6097139	1	47	47	-178		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	02:12:25	1096	MV24GC1-ENV-DC-224			Camera	77	620454	6097184	620453	6097139	1	45	45	-178		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	02:12:54	1097	MV24GC1-ENV-DC-224			Camera	77	620454	6097181	620453	6097139	1	41	41	-178		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	02:13:36	1098	MV24GC1-ENV-DC-224			Camera	77	620455	6097177	620453	6097139	2	38	38	-177		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	02:16:02	1099	MV24GC1-ENV-DC-224			Camera	77	620454	6097171	620453	6097139	1	32	31	-178		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	02:17:28	1100	MV24GC1-ENV-DC-224			Camera	77	620455	6097170	620453	6097139	2	31	31	-176		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	02:18:37	1101	MV24GC1-ENV-DC-224			Camera	77	620456	6097165	620453	6097139	3	26	26	-173		(Corr'd Nav, Kongsberg 14208, img#38) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	02:18:46	1102	MV24GC1-ENV-DC-224			Camera	77	620456	6097165	620453	6097139	3	26	26	-173		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	02:26:05	1103	MV24GC1-ENV-DC-224			Camera	77	620460	6097162	620453	6097139	7	23	24	-164		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	02:28:16	1104	MV24GC1-ENV-DC-224			Camera	77	620458	6097153	620453	6097139	4	13	14	-161		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	02:29:08	1105	MV24GC1-ENV-DC-224			Camera	77	620456	6097147	620453	6097139	3	8	8	-157		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	02:29:56	1106	MV24GC1-ENV-DC-224			Camera	77	620456	6097143	620453	6097139	2	3	4	-143		(Corr'd Nav, Kongsberg 14208, img#43) (B)
18-Aug-2024	02:30:27	1107	MV24GC1-ENV-DC-224			Camera	77	620455	6097139	620453	6097139	2	0	2	-81		(Corr'd Nav, Kongsberg 14208, img#44) (B)
18-Aug-2024	02:31:52	1108	MV24GC1-ENV-DC-224			Camera	77	620453	6097130	620453	6097139	0	-10	10	1		(Corr'd Nav, Kongsberg 14208, img#45) (B)
18-Aug-2024	02:33:00	1109	MV24GC1-ENV-DC-224			Camera	77	620452	6097123	620453	6097139	-2	-17	17	5		(Corr'd Nav, Kongsberg 14208, img#46) (B)
18-Aug-2024	02:34:04	1110	MV24GC1-ENV-DC-224			Camera	77	620450	6097116	620453	6097139	-3	-23	23	7		(Corr'd Nav, Kongsberg 14208, img#47) (B)
18-Aug-2024	02:34:43	1111	MV24GC1-ENV-DC-224			Camera	77	620449	6097112	620453	6097139	-4	-27	27	8		(Corr'd Nav, Kongsberg 14208, img#48) (B)
18-Aug-2024	02:35:11	1112	MV24GC1-ENV-DC-224			Camera	77	620449	6097110	620453	6097139	-5	-30	30	9		(Corr'd Nav, Kongsberg 14208, img#49) (B)
18-Aug-2024	02:36:07	1113	MV24GC1-ENV-DC-224			Camera	77	620447	6097105	620453	6097139	-6	-35	35	10		(Corr'd Nav, Kongsberg 14208, img#50) (B)
18-Aug-2024	02:37:05	1114	MV24GC1-ENV-DC-224			Camera	77	620446	6097098	620453	6097139	-7	-41	42	10		(Corr'd Nav, Kongsberg 14208, img#51) (B)
18-Aug-2024	02:37:40	1115	MV24GC1-ENV-DC-224			Camera	77	620445	6097095	620453	6097139	-8	-44	45	10		(Corr'd Nav, Kongsberg 14208, img#52) (B)
18-Aug-2024	02:38:20	1116	MV24GC1-ENV-DC-224			Camera	77	620444	6097091	620453	6097139	-9	-48	49	10		(Corr'd Nav, Kongsberg 14208, img#53) (B)
18-Aug-2024	02:38:32	1117	MV24GC1-ENV-DC-224			Camera	77	620444	6097090	620453	6097139	-9	-50	50	10		(Corr'd Nav, Kongsberg 14208, img#54) (B)
18-Aug-2024	03:53:14	1118	MV24GC1-ENV-DC-186			Camera	65	619940	6095252	619899	6095218	41	35	54	-130		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	03:53:48	1119	MV24GC1-ENV-DC-186			Camera	65	619939	6095251	619899	6095218	40	34	52	-130		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	03:54:34	1120	MV24GC1-ENV-DC-186			Camera	65	619934	6095246	619899	6095218	35	28	45	-129		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	03:54:53	1121	MV24GC1-ENV-DC-186			Camera	65	619932	6095244	619899	6095218	33	26	42	-129		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	03:55:22	1122	MV24GC1-ENV-DC-186			Camera	65	619928	6095241	619899	6095218	29	23	37	-128		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	03:55:58	1123	MV24GC1-ENV-DC-186			Camera	65	619924	6095237	619899	6095218	25	19	31	-128		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	03:56:32	1124	MV24GC1-ENV-DC-186			Camera	65	619920	6095234	619899	6095218	21	16	26	-128		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	03:57:30	1125	MV24GC1-ENV-DC-186			Camera	65	619913	6095228	619899	6095218	14	11	17	-128		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	03:57:46	1126	MV24GC1-ENV-DC-186			Camera	65	619911	6095227	619899	6095218	12	9	15	-128		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	03:58:04	1127	MV24GC1-ENV-DC-186			Camera	65	619909	6095225	619899	6095218	10	7	12	-127		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	03:59:01	1128	MV24GC1-ENV-DC-186			Camera	65	619902	6095220	619899	6095218	3	2	3	-121		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	03:59:37	1129	MV24GC1-ENV-DC-186			Camera	65	619898	6095216	619899	6095218	-1	-2	2	34		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	04:00:48	1130	MV24GC1-ENV-DC-186			Camera	65	619889	6095209	619899	6095218	-10	-9	13	47		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	04:01:22	1131	MV24GC1-ENV-DC-186			Camera	65	619885	6095205	619899	6095218	-14	-12	18	48		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	04:01:53	1132	MV24GC1-ENV-DC-186			Camera	65	619882	6095203	619899	6095218	-17	-15	23	48		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	04:02:20	1133	MV24GC1-ENV-DC-186			Camera	65	619879	6095200	619899	6095218	-20	-18	27	48		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	04:03:10	1134	MV24GC1-ENV-DC-186			Camera	65	619873	6095195	619899	6095218	-26	-23	34	49		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	04:03:57	1135	MV24GC1-ENV-DC-186			Camera	65	619868	6095191	619899	6095218	-31	-27	42	49		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	04:04:59	1136	MV24GC1-ENV-DC-186			Camera	65	619860	6095183	619899	6095218	-39	-35	52	48		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	04:11:44	1137	MV24GC1-ENV-DC-186			Camera	65	619841	6095232	619899	6095218	-59	14	60	103		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	04:12:31	1138	MV24GC1-ENV-DC-186			Camera	65	619841	6095231	619899	6095218	-58	13	59	103		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	04:13:38	1139	MV24GC1-ENV-DC-186			Camera	65	619853	6095229	619899	6095218	-47	11	48	103		(Corr'd Nav, Kongsberg 14208, img#22) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	04:13:49	1140	MV24GC1-ENV-DC-186			Camera	65	619855	6095228	619899	6095218	-44	10	45	103		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	04:14:30	1141	MV24GC1-ENV-DC-186			Camera	65	619863	6095227	619899	6095218	-36	9	37	104		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	04:15:23	1142	MV24GC1-ENV-DC-186			Camera	65	619871	6095226	619899	6095218	-28	8	29	107		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	04:16:03	1143	MV24GC1-ENV-DC-186			Camera	65	619877	6095225	619899	6095218	-22	7	24	108		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	04:16:44	1144	MV24GC1-ENV-DC-186			Camera	65	619882	6095224	619899	6095218	-17	6	18	111		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	04:17:02	1145	MV24GC1-ENV-DC-186			Camera	65	619885	6095224	619899	6095218	-14	6	15	113		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	04:17:11	1146	MV24GC1-ENV-DC-186			Camera	65	619887	6095224	619899	6095218	-12	6	14	116		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	04:17:41	1147	MV24GC1-ENV-DC-186			Camera	65	619891	6095223	619899	6095218	-8	5	9	123		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	04:18:55	1148	MV24GC1-ENV-DC-186			Camera	65	619901	6095217	619899	6095218	2	-1	2	-71		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	04:19:07	1149	MV24GC1-ENV-DC-186			Camera	65	619903	6095216	619899	6095218	4	-2	4	-66		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	04:19:26	1150	MV24GC1-ENV-DC-186			Camera	65	619905	6095215	619899	6095218	6	-3	7	-65		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	04:20:22	1151	MV24GC1-ENV-DC-186			Camera	65	619913	6095211	619899	6095218	14	-7	15	-62		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	04:20:46	1152	MV24GC1-ENV-DC-186			Camera	65	619916	6095209	619899	6095218	17	-9	19	-62		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	04:21:53	1153	MV24GC1-ENV-DC-186			Camera	65	619925	6095204	619899	6095218	26	-14	29	-61		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	04:22:23	1154	MV24GC1-ENV-DC-186			Camera	65	619928	6095201	619899	6095218	30	-16	34	-61		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	04:23:03	1155	MV24GC1-ENV-DC-186			Camera	65	619934	6095198	619899	6095218	35	-20	40	-60		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	04:23:36	1156	MV24GC1-ENV-DC-186			Camera	65	619938	6095196	619899	6095218	40	-22	45	-61		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	04:24:09	1157	MV24GC1-ENV-DC-186			Camera	65	619943	6095193	619899	6095218	44	-25	50	-61		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	05:56:33	1158	MV24GC1-ENV-DC-223			Camera	60	619323	6093337	619349	6093295	-27	41	49	147		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	05:57:13	1159	MV24GC1-ENV-DC-223			Camera	60	619327	6093332	619349	6093295	-22	36	43	148		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	05:57:45	1160	MV24GC1-ENV-DC-223			Camera	60	619330	6093328	619349	6093295	-19	32	38	149		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	05:58:19	1161	MV24GC1-ENV-DC-223			Camera	60	619333	6093323	619349	6093295	-16	28	32	150		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	05:58:58	1162	MV24GC1-ENV-DC-223			Camera	60	619336	6093318	619349	6093295	-13	23	26	150		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	05:59:34	1163	MV24GC1-ENV-DC-223			Camera	60	619339	6093314	619349	6093295	-10	18	21	152		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	06:00:21	1164	MV24GC1-ENV-DC-223			Camera	60	619343	6093308	619349	6093295	-6	12	14	154		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	06:00:53	1165	MV24GC1-ENV-DC-223			Camera	60	619346	6093304	619349	6093295	-3	9	9	161		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	06:01:00	1166	MV24GC1-ENV-DC-223			Camera	60	619347	6093303	619349	6093295	-2	7	8	164		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	06:01:15	1167	MV24GC1-ENV-DC-223			Camera	60	619348	6093301	619349	6093295	-1	5	6	167		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	06:01:38	1168	MV24GC1-ENV-DC-223			Camera	60	619350	6093298	619349	6093295	1	3	3	-161		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	06:01:59	1169	MV24GC1-ENV-DC-223			Camera	60	619352	6093295	619349	6093295	3	0	3	-84		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	06:02:45	1170	MV24GC1-ENV-DC-223			Camera	60	619356	6093289	619349	6093295	7	-6	10	-48		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	06:02:53	1171	MV24GC1-ENV-DC-223			Camera	60	619357	6093288	619349	6093295	8	-7	11	-47		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	06:03:26	1172	MV24GC1-ENV-DC-223			Camera	60	619360	6093284	619349	6093295	11	-11	16	-43		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	06:04:25	1173	MV24GC1-ENV-DC-223			Camera	60	619365	6093277	619349	6093295	16	-19	25	-41		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	06:05:03	1174	MV24GC1-ENV-DC-223			Camera	60	619368	6093272	619349	6093295	19	-23	30	-40		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	06:05:48	1175	MV24GC1-ENV-DC-223			Camera	60	619373	6093267	619349	6093295	24	-28	37	-40		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	06:06:29	1176	MV24GC1-ENV-DC-223			Camera	60	619376	6093263	619349	6093295	27	-33	43	-40		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	06:06:56	1177	MV24GC1-ENV-DC-223			Camera	60	619379	6093259	619349	6093295	30	-36	47	-40		(Corr'd Nav, Kongsberg 14208, img#20) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	06:07:31	1178	MV24GC1-ENV-DC-223			Camera	60	619382	6093255	619349	6093295	33	-40	52	-40		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	06:15:36	1179	MV24GC1-ENV-DC-223			Camera	60	619338	6093248	619349	6093295	-11	-47	48	13		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	06:16:22	1180	MV24GC1-ENV-DC-223			Camera	60	619340	6093256	619349	6093295	-9	-39	40	13		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	06:17:01	1181	MV24GC1-ENV-DC-223			Camera	60	619341	6093263	619349	6093295	-8	-33	34	14		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	06:17:49	1182	MV24GC1-ENV-DC-223			Camera	60	619342	6093270	619349	6093295	-7	-26	27	16		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	06:18:48	1183	MV24GC1-ENV-DC-223			Camera	60	619343	6093279	619349	6093295	-6	-16	17	20		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	06:19:23	1184	MV24GC1-ENV-DC-223			Camera	60	619345	6093285	619349	6093295	-4	-10	11	21		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	06:20:02	1185	MV24GC1-ENV-DC-223			Camera	60	619348	6093291	619349	6093295	-1	-5	5	11		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	06:20:41	1186	MV24GC1-ENV-DC-223			Camera	60	619351	6093296	619349	6093295	2	1	2	-111		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	06:21:36	1187	MV24GC1-ENV-DC-223			Camera	60	619355	6093304	619349	6093295	6	8	10	-146		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	06:22:08	1188	MV24GC1-ENV-DC-223			Camera	60	619357	6093308	619349	6093295	8	13	15	-149		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	06:22:21	1189	MV24GC1-ENV-DC-223			Camera	60	619358	6093310	619349	6093295	9	15	17	-150		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	06:22:50	1190	MV24GC1-ENV-DC-223			Camera	60	619359	6093314	619349	6093295	10	18	21	-151		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	06:23:35	1191	MV24GC1-ENV-DC-223			Camera	60	619362	6093320	619349	6093295	13	24	28	-152		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	06:24:01	1192	MV24GC1-ENV-DC-223			Camera	60	619364	6093323	619349	6093295	15	28	32	-152		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	06:24:35	1193	MV24GC1-ENV-DC-223			Camera	60	619366	6093328	619349	6093295	17	33	37	-153		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	06:25:10	1194	MV24GC1-ENV-DC-223			Camera	60	619369	6093334	619349	6093295	20	38	43	-153		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	06:25:25	1195	MV24GC1-ENV-DC-223			Camera	60	619370	6093336	619349	6093295	21	40	45	-153		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	06:25:42	1196	MV24GC1-ENV-DC-223			Camera	60	619371	6093338	619349	6093295	22	42	48	-152		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	06:25:54	1197	MV24GC1-ENV-DC-223			Camera	61	619372	6093339	619349	6093295	23	44	50	-152		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	06:26:18	1198	MV24GC1-ENV-DC-223			Camera	60	619374	6093342	619349	6093295	25	47	53	-153		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	07:32:21	1199	MV24GC1-ENV-DC-187			Camera	59	618784	6091433	618791	6091374	-7	59	59	173		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	07:33:33	1200	MV24GC1-ENV-DC-187			Camera	59	618784	6091430	618791	6091374	-8	55	56	172		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	07:34:27	1201	MV24GC1-ENV-DC-187			Camera	59	618785	6091422	618791	6091374	-7	48	48	172		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	07:34:58	1202	MV24GC1-ENV-DC-187			Camera	59	618785	6091418	618791	6091374	-6	44	44	172		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	07:35:39	1203	MV24GC1-ENV-DC-187			Camera	59	618786	6091412	618791	6091374	-5	37	38	172		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	07:36:07	1204	MV24GC1-ENV-DC-187			Camera	59	618788	6091408	618791	6091374	-4	33	33	173		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	07:36:44	1205	MV24GC1-ENV-DC-187			Camera	59	618789	6091404	618791	6091374	-3	29	29	175		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	07:37:25	1206	MV24GC1-ENV-DC-187			Camera	59	618789	6091398	618791	6091374	-3	24	24	174		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	07:38:08	1207	MV24GC1-ENV-DC-187			Camera	59	618789	6091392	618791	6091374	-2	18	18	173		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	07:38:42	1208	MV24GC1-ENV-DC-187			Camera	59	618790	6091387	618791	6091374	-2	13	13	173		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	07:38:50	1209	MV24GC1-ENV-DC-187			Camera	59	618790	6091386	618791	6091374	-2	12	12	173		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	07:39:02	1210	MV24GC1-ENV-DC-187			Camera	59	618790	6091384	618791	6091374	-1	10	10	172		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	07:39:55	1211	MV24GC1-ENV-DC-187			Camera	59	618791	6091376	618791	6091374	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	07:40:12	1212	MV24GC1-ENV-DC-187			Camera	59	618792	6091374	618791	6091374	0	-1	1	-16		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	07:40:25	1213	MV24GC1-ENV-DC-187			Camera	59	618792	6091371	618791	6091374	1	-3	3	-11		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	07:41:14	1214	MV24GC1-ENV-DC-187			Camera	59	618793	6091364	618791	6091374	2	-11	11	-11		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	07:42:18	1215	MV24GC1-ENV-DC-187			Camera	59	618794	6091354	618791	6091374	3	-20	21	-8		(Corr'd Nav, Kongsberg 14208, img#17) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	07:43:00	1216	MV24GC1-ENV-DC-187			Camera	59	618795	6091348	618791	6091374	3	-27	27	-7		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	07:44:11	1217	MV24GC1-ENV-DC-187			Camera	59	618796	6091337	618791	6091374	5	-37	38	-8		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	07:44:46	1218	MV24GC1-ENV-DC-187			Camera	59	618797	6091332	618791	6091374	6	-42	43	-8		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	07:45:17	1219	MV24GC1-ENV-DC-187			Camera	59	618798	6091327	618791	6091374	6	-47	48	-8		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	07:48:12	1220	MV24GC1-ENV-DC-187			Camera	59	618794	6091330	618791	6091374	3	-44	44	-4		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	07:53:58	1221	MV24GC1-ENV-DC-187			Camera	59	618753	6091366	618791	6091374	-38	-8	39	78		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	07:57:41	1222	MV24GC1-ENV-DC-187			Camera	59	618738	6091379	618791	6091374	-53	5	54	95		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	07:58:31	1223	MV24GC1-ENV-DC-187			Camera	59	618743	6091379	618791	6091374	-48	4	48	95		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	07:58:57	1224	MV24GC1-ENV-DC-187			Camera	59	618746	6091379	618791	6091374	-45	4	45	95		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	07:59:37	1225	MV24GC1-ENV-DC-187			Camera	59	618752	6091378	618791	6091374	-39	4	39	96		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	07:59:53	1226	MV24GC1-ENV-DC-187			Camera	59	618754	6091378	618791	6091374	-37	4	37	96		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	08:00:30	1227	MV24GC1-ENV-DC-187			Camera	59	618760	6091378	618791	6091374	-31	4	31	97		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	08:01:05	1228	MV24GC1-ENV-DC-187			Camera	59	618765	6091378	618791	6091374	-26	4	26	98		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	08:01:43	1229	MV24GC1-ENV-DC-187			Camera	59	618771	6091378	618791	6091374	-20	3	20	99		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	08:02:09	1230	MV24GC1-ENV-DC-187			Camera	59	618776	6091378	618791	6091374	-16	3	16	103		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	08:02:59	1231	MV24GC1-ENV-DC-187			Camera	59	618783	6091378	618791	6091374	-8	4	9	115		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	08:03:40	1232	MV24GC1-ENV-DC-187			Camera	59	618789	6091378	618791	6091374	-2	4	4	155		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	08:04:18	1233	MV24GC1-ENV-DC-187			Camera	59	618795	6091378	618791	6091374	3	4	5	-136		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	08:04:33	1234	MV24GC1-ENV-DC-187			Camera	59	618797	6091377	618791	6091374	6	3	6	-119		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	08:04:52	1235	MV24GC1-ENV-DC-187			Camera	59	618800	6091377	618791	6091374	9	3	9	-107		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	08:05:35	1236	MV24GC1-ENV-DC-187			Camera	59	618807	6091377	618791	6091374	16	3	16	-99		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	08:06:19	1237	MV24GC1-ENV-DC-187			Camera	59	618813	6091378	618791	6091374	22	3	22	-98		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	08:06:49	1238	MV24GC1-ENV-DC-187			Camera	59	618818	6091377	618791	6091374	26	3	26	-97		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	08:07:30	1239	MV24GC1-ENV-DC-187			Camera	59	618824	6091377	618791	6091374	33	2	33	-94		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	08:08:04	1240	MV24GC1-ENV-DC-187			Camera	59	618830	6091377	618791	6091374	38	2	38	-93		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	08:08:31	1241	MV24GC1-ENV-DC-187			Camera	59	618834	6091377	618791	6091374	42	3	42	-93		(Corr'd Nav, Kongsberg 14208, img#43) (B)
18-Aug-2024	08:09:07	1242	MV24GC1-ENV-DC-187			Camera	59	618839	6091376	618791	6091374	48	2	47	-92		(Corr'd Nav, Kongsberg 14208, img#44) (B)
18-Aug-2024	08:09:45	1243	MV24GC1-ENV-DC-187			Camera	59	618842	6091376	618791	6091374	50	2	50	-92		(Corr'd Nav, Kongsberg 14208, img#45) (B)
18-Aug-2024	10:08:15	1244	MV24GC1-ENV-DC-210			Camera	55	618285	6089462	618237	6089452	47	9	48	-101		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	10:08:43	1245	MV24GC1-ENV-DC-210			Camera	55	618280	6089461	618237	6089452	43	9	44	-101		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	10:08:58	1246	MV24GC1-ENV-DC-210			Camera	55	618278	6089461	618237	6089452	40	8	41	-102		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	10:09:28	1247	MV24GC1-ENV-DC-210			Camera	55	618274	6089460	618237	6089452	36	8	37	-102		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	10:09:52	1248	MV24GC1-ENV-DC-210			Camera	55	618271	6089460	618237	6089452	33	7	34	-102		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	10:10:39	1249	MV24GC1-ENV-DC-210			Camera	55	618264	6089457	618237	6089452	26	4	27	-99		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	10:10:58	1250	MV24GC1-ENV-DC-210			Camera	55	618261	6089456	618237	6089452	24	4	24	-99		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	10:11:28	1251	MV24GC1-ENV-DC-210			Camera	55	618258	6089455	618237	6089452	20	3	20	-98		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	10:12:22	1252	MV24GC1-ENV-DC-210			Camera	55	618250	6089454	618237	6089452	13	1	13	-95		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	10:12:53	1253	MV24GC1-ENV-DC-210			Camera	55	618246	6089453	618237	6089452	8	0	8	-91		(Corr'd Nav, Kongsberg 14208, img#10) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	10:13:25	1254	MV24GC1-ENV-DC-210			Camera	55	618241	6089452	618237	6089452	3	-1	3	-81		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	10:13:51	1255	MV24GC1-ENV-DC-210			Camera	55	618237	6089451	618237	6089452	-1	-1	1	36		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	10:14:57	1256	MV24GC1-ENV-DC-210			Camera	55	618227	6089450	618237	6089452	-11	-3	11	77		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	10:15:14	1257	MV24GC1-ENV-DC-210			Camera	55	618224	6089449	618237	6089452	-13	-3	13	77		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	10:15:30	1258	MV24GC1-ENV-DC-210			Camera	55	618222	6089449	618237	6089452	-16	-4	16	77		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	10:16:11	1259	MV24GC1-ENV-DC-210			Camera	55	618216	6089448	618237	6089452	-22	-4	22	79		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	10:16:51	1260	MV24GC1-ENV-DC-210			Camera	55	618210	6089448	618237	6089452	-28	-5	28	80		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	10:17:06	1261	MV24GC1-ENV-DC-210			Camera	55	618207	6089447	618237	6089452	-30	-5	31	81		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	10:17:59	1262	MV24GC1-ENV-DC-210			Camera	55	618200	6089446	618237	6089452	-38	-7	38	80		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	10:18:12	1263	MV24GC1-ENV-DC-210			Camera	55	618198	6089446	618237	6089452	-40	-7	40	80		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	10:19:11	1264	MV24GC1-ENV-DC-210			Camera	54	618188	6089444	618237	6089452	-49	-8	50	80		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	10:27:37	1265	MV24GC1-ENV-DC-210			Camera	55	618200	6089485	618237	6089452	-37	32	49	131		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	10:27:59	1266	MV24GC1-ENV-DC-210			Camera	55	618203	6089482	618237	6089452	-35	30	46	131		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	10:28:19	1267	MV24GC1-ENV-DC-210			Camera	55	618205	6089480	618237	6089452	-32	28	42	130		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	10:29:00	1268	MV24GC1-ENV-DC-210			Camera	55	618211	6089475	618237	6089452	-27	22	35	130		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	10:29:21	1269	MV24GC1-ENV-DC-210			Camera	55	618214	6089472	618237	6089452	-24	20	31	130		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	10:29:34	1270	MV24GC1-ENV-DC-210			Camera	55	618215	6089471	618237	6089452	-22	19	29	130		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	10:30:17	1271	MV24GC1-ENV-DC-210			Camera	55	618221	6089467	618237	6089452	-17	15	22	131		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	10:30:36	1272	MV24GC1-ENV-DC-210			Camera	55	618223	6089465	618237	6089452	-15	13	19	131		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	10:30:47	1273	MV24GC1-ENV-DC-210			Camera	55	618224	6089464	618237	6089452	-13	11	18	130		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	10:31:13	1274	MV24GC1-ENV-DC-210			Camera	55	618227	6089461	618237	6089452	-11	9	14	130		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	10:31:42	1275	MV24GC1-ENV-DC-210			Camera	55	618230	6089459	618237	6089452	-7	6	10	130		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	10:31:59	1276	MV24GC1-ENV-DC-210			Camera	55	618232	6089457	618237	6089452	-5	5	7	131		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	10:32:17	1277	MV24GC1-ENV-DC-210			Camera	55	618234	6089455	618237	6089452	-3	3	4	132		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	10:32:58	1278	MV24GC1-ENV-DC-210			Camera	55	618239	6089451	618237	6089452	2	-1	2	-52		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	10:33:25	1279	MV24GC1-ENV-DC-210			Camera	55	618242	6089448	618237	6089452	5	-4	6	-46		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	10:34:16	1280	MV24GC1-ENV-DC-210			Camera	55	618248	6089443	618237	6089452	11	-10	15	-47		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	10:35:03	1281	MV24GC1-ENV-DC-210			Camera	55	618254	6089438	618237	6089452	16	-14	22	-48		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	10:35:56	1282	MV24GC1-ENV-DC-210			Camera	55	618260	6089433	618237	6089452	22	-20	30	-48		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	10:37:02	1283	MV24GC1-ENV-DC-210			Camera	55	618267	6089426	618237	6089452	29	-27	40	-48		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	10:38:19	1284	MV24GC1-ENV-DC-210			Camera	55	618275	6089419	618237	6089452	38	-34	51	-48		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	12:32:38	1285	MV24GC1-ENV-DC-211			Camera	52	617891	6087446	617854	6087485	37	-39	54	-44		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	12:33:35	1286	MV24GC1-ENV-DC-211			Camera	52	617885	6087451	617854	6087485	32	-34	47	-43		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	12:34:20	1287	MV24GC1-ENV-DC-211			Camera	52	617881	6087455	617854	6087485	27	-30	40	-42		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	12:35:00	1288	MV24GC1-ENV-DC-211			Camera	52	617876	6087459	617854	6087485	23	-26	35	-41		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	12:35:25	1289	MV24GC1-ENV-DC-211			Camera	52	617874	6087461	617854	6087485	20	-24	31	-40		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	12:36:15	1290	MV24GC1-ENV-DC-211			Camera	52	617869	6087467	617854	6087485	15	-18	23	-40		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	12:36:48	1291	MV24GC1-ENV-DC-211			Camera	52	617865	6087470	617854	6087485	12	-15	19	-39		(Corr'd Nav, Kongsberg 14208, img#7) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	12:37:44	1292	MV24GC1-ENV-DC-211			Camera	52	617859	6087477	617854	6087485	5	-8	9	-33		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	12:38:32	1293	MV24GC1-ENV-DC-211			Camera	52	617853	6087482	617854	6087485	0	-3	3	8		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	12:39:07	1294	MV24GC1-ENV-DC-211			Camera	52	617850	6087486	617854	6087485	-4	1	4	105		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	12:39:31	1295	MV24GC1-ENV-DC-211			Camera	52	617847	6087489	617854	6087485	-7	4	8	118		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	12:40:11	1296	MV24GC1-ENV-DC-211			Camera	52	617842	6087493	617854	6087485	-12	8	14	123		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	12:40:36	1297	MV24GC1-ENV-DC-211			Camera	52	617839	6087495	617854	6087485	-14	10	18	125		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	12:41:24	1298	MV24GC1-ENV-DC-211			Camera	52	617835	6087501	617854	6087485	-19	16	25	129		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	12:42:04	1299	MV24GC1-ENV-DC-211			Camera	52	617830	6087505	617854	6087485	-24	20	31	131		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	12:42:49	1300	MV24GC1-ENV-DC-211			Camera	52	617826	6087510	617854	6087485	-28	25	38	132		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	12:43:29	1301	MV24GC1-ENV-DC-211			Camera	52	617821	6087514	617854	6087485	-32	29	44	132		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	12:44:27	1302	MV24GC1-ENV-DC-211			Camera	52	617819	6087517	617854	6087485	-35	32	47	133		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	12:47:16	1303	MV24GC1-ENV-DC-211			Camera	52	617817	6087518	617854	6087485	-37	33	49	132		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	12:49:09	1304	MV24GC1-ENV-DC-211			Camera	52	617813	6087510	617854	6087485	-41	25	48	122		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	12:53:33	1305	MV24GC1-ENV-DC-211			Camera	52	617807	6087481	617854	6087485	-47	-4	47	86		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	12:53:58	1306	MV24GC1-ENV-DC-211			Camera	52	617810	6087481	617854	6087485	-44	-4	44	85		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	12:54:32	1307	MV24GC1-ENV-DC-211			Camera	52	617814	6087482	617854	6087485	-40	-3	40	86		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	12:55:24	1308	MV24GC1-ENV-DC-211			Camera	52	617822	6087482	617854	6087485	-32	-3	32	85		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	12:55:31	1309	MV24GC1-ENV-DC-211			Camera	52	617823	6087482	617854	6087485	-31	-3	31	84		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	12:56:05	1310	MV24GC1-ENV-DC-211			Camera	52	617828	6087481	617854	6087485	-26	-4	26	82		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	12:57:02	1311	MV24GC1-ENV-DC-211			Camera	52	617837	6087480	617854	6087485	-17	-5	17	74		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	12:57:59	1312	MV24GC1-ENV-DC-211			Camera	52	617840	6087480	617854	6087485	-14	-5	15	70		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	12:58:55	1313	MV24GC1-ENV-DC-211			Camera	52	617846	6087481	617854	6087485	-8	-4	9	61		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	13:00:09	1314	MV24GC1-ENV-DC-211			Camera	52	617853	6087482	617854	6087485	-1	-3	3	13		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	13:00:54	1315	MV24GC1-ENV-DC-211			Camera	52	617858	6087483	617854	6087485	4	-2	5	-60		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	13:01:52	1316	MV24GC1-ENV-DC-211			Camera	52	617864	6087483	617854	6087485	10	-2	10	-79		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	13:02:40	1317	MV24GC1-ENV-DC-211			Camera	52	617869	6087483	617854	6087485	15	-2	15	-83		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	13:03:17	1318	MV24GC1-ENV-DC-211			Camera	52	617872	6087484	617854	6087485	19	-1	19	-87		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	13:03:55	1319	MV24GC1-ENV-DC-211			Camera	52	617876	6087485	617854	6087485	23	0	23	-89		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	13:04:16	1320	MV24GC1-ENV-DC-211			Camera	52	617878	6087485	617854	6087485	25	0	25	-91		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	13:04:41	1321	MV24GC1-ENV-DC-211			Camera	52	617881	6087485	617854	6087485	27	0	27	-91		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	13:05:11	1322	MV24GC1-ENV-DC-211			Camera	52	617884	6087485	617854	6087485	30	0	30	-90		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	13:05:35	1323	MV24GC1-ENV-DC-211			Camera	52	617886	6087485	617854	6087485	32	0	32	-91		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	13:06:12	1324	MV24GC1-ENV-DC-211			Camera	52	617890	6087485	617854	6087485	37	0	37	-91		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	13:06:49	1325	MV24GC1-ENV-DC-211			Camera	52	617894	6087486	617854	6087485	40	1	40	-91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	13:07:19	1326	MV24GC1-ENV-DC-211			Camera	52	617897	6087486	617854	6087485	43	1	43	-92		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	13:08:05	1327	MV24GC1-ENV-DC-211			Camera	52	617902	6087487	617854	6087485	49	2	49	-93		(Corr'd Nav, Kongsberg 14208, img#43) (B)
18-Aug-2024	13:08:22	1328	MV24GC1-ENV-DC-211			Camera	52	617904	6087487	617854	6087485	51	2	51	-93		(Corr'd Nav, Kongsberg 14208, img#44) (B)
18-Aug-2024	13:08:46	1329	MV24GC1-ENV-DC-211			Camera	52	617907	6087488	617854	6087485	53	3	53	-93		(Corr'd Nav, Kongsberg 14208, img#45) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	13:08:56	1330	MV24GC1-ENV-DC-211			Camera	52	617907	6087487	617854	6087485	54	3	54	-93		(Corr'd Nav, Kongsberg 14208, img#46) (B)
18-Aug-2024	15:18:46	1331	MV24GC1-ENV-DC-212			Camera	50	617663	6085621	617621	6085643	42	-22	48	-63		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	15:19:02	1332	MV24GC1-ENV-DC-212			Camera	50	617661	6085623	617621	6085643	40	-21	45	-63		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	15:19:38	1333	MV24GC1-ENV-DC-212			Camera	49	617656	6085625	617621	6085643	36	-18	40	-63		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	15:20:11	1334	MV24GC1-ENV-DC-212			Camera	49	617651	6085627	617621	6085643	30	-16	34	-62		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	15:20:44	1335	MV24GC1-ENV-DC-212			Camera	49	617647	6085629	617621	6085643	26	-14	30	-62		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	15:21:19	1336	MV24GC1-ENV-DC-212			Camera	49	617642	6085631	617621	6085643	21	-12	24	-60		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	15:21:41	1337	MV24GC1-ENV-DC-212			Camera	50	617638	6085633	617621	6085643	18	-10	21	-60		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	15:22:07	1338	MV24GC1-ENV-DC-212			Camera	50	617635	6085635	617621	6085643	14	-9	17	-59		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	15:22:15	1339	MV24GC1-ENV-DC-212			Camera	49	617634	6085635	617621	6085643	13	-8	15	-58		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	15:22:37	1340	MV24GC1-ENV-DC-212			Camera	49	617631	6085637	617621	6085643	10	-7	12	-57		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	15:23:39	1341	MV24GC1-ENV-DC-212			Camera	49	617622	6085641	617621	6085643	1	-3	3	-28		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	15:24:09	1342	MV24GC1-ENV-DC-212			Camera	49	617618	6085642	617621	6085643	-2	-1	3	70		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	15:24:30	1343	MV24GC1-ENV-DC-212			Camera	49	617615	6085644	617621	6085643	-6	1	6	96		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	15:24:59	1344	MV24GC1-ENV-DC-212			Camera	49	617611	6085646	617621	6085643	-9	2	10	104		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	15:26:06	1345	MV24GC1-ENV-DC-212			Camera	49	617602	6085650	617621	6085643	-19	7	20	111		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	15:26:27	1346	MV24GC1-ENV-DC-212			Camera	49	617599	6085652	617621	6085643	-22	9	24	112		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	15:26:58	1347	MV24GC1-ENV-DC-212			Camera	49	617594	6085655	617621	6085643	-27	11	29	113		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	15:27:33	1348	MV24GC1-ENV-DC-212			Camera	49	617589	6085657	617621	6085643	-32	14	34	113		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	15:28:11	1349	MV24GC1-ENV-DC-212			Camera	49	617584	6085659	617621	6085643	-37	16	40	113		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	15:29:13	1350	MV24GC1-ENV-DC-212			Camera	49	617575	6085664	617621	6085643	-46	20	50	114		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	15:33:00	1351	MV24GC1-ENV-DC-212			Camera	49	617586	6085683	617621	6085643	-34	40	53	139		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	15:37:52	1352	MV24GC1-ENV-DC-212			Camera	50	617610	6085690	617621	6085643	-11	47	48	167		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	15:38:20	1353	MV24GC1-ENV-DC-212			Camera	50	617611	6085686	617621	6085643	-9	43	44	168		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	15:38:37	1354	MV24GC1-ENV-DC-212			Camera	49	617612	6085683	617621	6085643	-9	40	41	168		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	15:38:57	1355	MV24GC1-ENV-DC-212			Camera	49	617612	6085680	617621	6085643	-8	37	38	168		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	15:39:31	1356	MV24GC1-ENV-DC-212			Camera	49	617614	6085675	617621	6085643	-6	32	33	169		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	15:40:14	1357	MV24GC1-ENV-DC-212			Camera	49	617617	6085669	617621	6085643	-4	26	26	172		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	15:40:23	1358	MV24GC1-ENV-DC-212			Camera	49	617617	6085667	617621	6085643	-3	24	24	173		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	15:41:26	1359	MV24GC1-ENV-DC-212			Camera	50	617621	6085658	617621	6085643	0	14	14	-179		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	15:42:16	1360	MV24GC1-ENV-DC-212			Camera	49	617621	6085650	617621	6085643	0	7	7	-178		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	15:43:32	1361	MV24GC1-ENV-DC-212			Camera	49	617621	6085638	617621	6085643	0	-6	6	-1		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	15:44:56	1362	MV24GC1-ENV-DC-212			Camera	49	617623	6085622	617621	6085643	2	-21	21	-6		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	15:45:23	1363	MV24GC1-ENV-DC-212			Camera	49	617623	6085619	617621	6085643	3	-25	25	-6		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	15:46:08	1364	MV24GC1-ENV-DC-212			Camera	49	617623	6085612	617621	6085643	2	-31	31	-4		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	15:46:33	1365	MV24GC1-ENV-DC-212			Camera	49	617623	6085608	617621	6085643	2	-35	35	-4		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	15:47:11	1366	MV24GC1-ENV-DC-212			Camera	49	617623	6085601	617621	6085643	2	-42	42	-3		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	15:47:43	1367	MV24GC1-ENV-DC-212			Camera	49	617623	6085596	617621	6085643	2	-48	48	-3		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	15:48:08	1368	MV24GC1-ENV-DC-212			Camera	49	617622	6085594	617621	6085643	2	-49	49	-2		(Corr'd Nav, Kongsberg 14208, img#38) (B)
18-Aug-2024	17:30:19	1369	MV24GC1-ENV-DC-213			Camera	48	616843	6083665	616788	6083649	55	15	57	-105		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	17:31:08	1370	MV24GC1-ENV-DC-213			Camera	48	616838	6083664	616788	6083649	50	15	52	-106		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	17:32:01	1371	MV24GC1-ENV-DC-213			Camera	48	616830	6083661	616788	6083649	41	12	43	-106		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	17:32:20	1372	MV24GC1-ENV-DC-213			Camera	48	616826	6083660	616788	6083649	38	11	40	-106		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	17:33:01	1373	MV24GC1-ENV-DC-213			Camera	48	616822	6083658	616788	6083649	34	9	35	-104		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	17:33:37	1374	MV24GC1-ENV-DC-213			Camera	48	616816	6083657	616788	6083649	28	7	29	-104		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	17:34:11	1375	MV24GC1-ENV-DC-213			Camera	48	616812	6083655	616788	6083649	23	6	24	-104		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	17:34:46	1376	MV24GC1-ENV-DC-213			Camera	48	616806	6083654	616788	6083649	18	5	19	-104		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	17:35:26	1377	MV24GC1-ENV-DC-213			Camera	48	616800	6083652	616788	6083649	12	3	12	-103		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	17:35:52	1378	MV24GC1-ENV-DC-213			Camera	48	616797	6083651	616788	6083649	9	2	9	-102		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	17:36:35	1379	MV24GC1-ENV-DC-213			Camera	48	616790	6083649	616788	6083649	2	0	2	-83		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	17:37:24	1380	MV24GC1-ENV-DC-213			Camera	48	616783	6083647	616788	6083649	-5	-3	6	63		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	17:38:02	1381	MV24GC1-ENV-DC-213			Camera	48	616778	6083645	616788	6083649	-10	-4	11	66		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	17:38:25	1382	MV24GC1-ENV-DC-213			Camera	48	616775	6083644	616788	6083649	-13	-5	14	69		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	17:38:49	1383	MV24GC1-ENV-DC-213			Camera	48	616771	6083643	616788	6083649	-17	-6	18	71		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	17:40:05	1384	MV24GC1-ENV-DC-213			Camera	48	616759	6083641	616788	6083649	-29	-9	30	73		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	17:41:20	1385	MV24GC1-ENV-DC-213			Camera	48	616748	6083637	616788	6083649	-40	-13	42	72		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	17:42:01	1386	MV24GC1-ENV-DC-213			Camera	48	616742	6083635	616788	6083649	-46	-14	48	73		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	17:42:10	1387	MV24GC1-ENV-DC-213			Camera	48	616741	6083635	616788	6083649	-47	-15	49	73		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	17:42:34	1388	MV24GC1-ENV-DC-213			Camera	48	616738	6083634	616788	6083649	-51	-16	53	73		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	17:46:56	1389	MV24GC1-ENV-DC-213			Camera	48	616740	6083666	616788	6083649	-48	17	51	109		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	17:51:48	1390	MV24GC1-ENV-DC-213			Camera	48	616758	6083681	616788	6083649	-30	31	44	136		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	17:52:13	1391	MV24GC1-ENV-DC-213			Camera	48	616761	6083678	616788	6083649	-27	29	40	136		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	17:53:08	1392	MV24GC1-ENV-DC-213			Camera	48	616768	6083673	616788	6083649	-20	23	31	139		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	17:53:30	1393	MV24GC1-ENV-DC-213			Camera	48	616770	6083671	616788	6083649	-18	21	28	140		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	17:54:32	1394	MV24GC1-ENV-DC-213			Camera	48	616779	6083665	616788	6083649	-10	16	18	148		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	17:56:25	1395	MV24GC1-ENV-DC-213			Camera	48	616788	6083651	616788	6083649	-1	2	2	155		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	17:57:05	1396	MV24GC1-ENV-DC-213			Camera	48	616788	6083646	616788	6083649	0	-4	4	0		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	17:58:29	1397	MV24GC1-ENV-DC-213			Camera	48	616793	6083634	616788	6083649	5	-15	16	-17		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	17:58:55	1398	MV24GC1-ENV-DC-213			Camera	48	616794	6083630	616788	6083649	6	-19	20	-18		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	17:59:38	1399	MV24GC1-ENV-DC-213			Camera	48	616797	6083624	616788	6083649	9	-26	27	-18		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	18:00:35	1400	MV24GC1-ENV-DC-213			Camera	48	616800	6083615	616788	6083649	12	-35	37	-19		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	18:01:04	1401	MV24GC1-ENV-DC-213			Camera	48	616802	6083611	616788	6083649	14	-39	41	-20		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	18:01:40	1402	MV24GC1-ENV-DC-213			Camera	48	616804	6083606	616788	6083649	16	-44	46	-20		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	18:02:24	1403	MV24GC1-ENV-DC-213			Camera	48	616807	6083600	616788	6083649	18	-50	53	-20		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	18:02:54	1404	MV24GC1-ENV-DC-213			Camera	48	616808	6083596	616788	6083649	20	-54	58	-20		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	18:03:03	1405	MV24GC1-ENV-DC-213			Camera	48	616809	6083594	616788	6083649	21	-55	59	-20		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	19:52:57	1406	MV24GC1-ENV-DC-214			Camera	45	616290	6081730	616242	6081710	48	19	51	-112		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	19:53:37	1407	MV24GC1-ENV-DC-214			Camera	45	616289	6081730	616242	6081710	47	20	51	-113		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	19:54:27	1408	MV24GC1-ENV-DC-214			Camera	45	616283	6081727	616242	6081710	41	17	44	-113		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	19:55:28	1409	MV24GC1-ENV-DC-214			Camera	45	616273	6081723	616242	6081710	31	13	34	-112		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	19:56:18	1410	MV24GC1-ENV-DC-214			Camera	45	616266	6081721	616242	6081710	24	10	26	-113		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	19:57:01	1411	MV24GC1-ENV-DC-214			Camera	45	616260	6081718	616242	6081710	18	8	19	-114		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	19:57:32	1412	MV24GC1-ENV-DC-214			Camera	45	616256	6081717	616242	6081710	13	6	15	-115		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	19:58:29	1413	MV24GC1-ENV-DC-214			Camera	45	616248	6081714	616242	6081710	5	4	6	-124		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	19:58:47	1414	MV24GC1-ENV-DC-214			Camera	45	616245	6081713	616242	6081710	3	3	4	-136		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	19:59:33	1415	MV24GC1-ENV-DC-214			Camera	45	616238	6081711	616242	6081710	-4	0	4	94		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	19:59:48	1416	MV24GC1-ENV-DC-214			Camera	45	616236	6081710	616242	6081710	-6	-1	6	85		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	20:00:02	1417	MV24GC1-ENV-DC-214			Camera	45	616234	6081709	616242	6081710	-9	-1	9	82		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	20:00:25	1418	MV24GC1-ENV-DC-214			Camera	45	616231	6081708	616242	6081710	-12	-2	12	79		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	20:01:04	1419	MV24GC1-ENV-DC-214			Camera	45	616225	6081706	616242	6081710	-17	-4	18	77		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	20:01:31	1420	MV24GC1-ENV-DC-214			Camera	45	616221	6081704	616242	6081710	-21	-6	22	74		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	20:02:16	1421	MV24GC1-ENV-DC-214			Camera	45	616215	6081702	616242	6081710	-28	-8	29	73		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	20:03:25	1422	MV24GC1-ENV-DC-214			Camera	45	616205	6081699	616242	6081710	-38	-12	39	73		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	20:04:19	1423	MV24GC1-ENV-DC-214			Camera	45	616196	6081696	616242	6081710	-46	-14	48	73		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	20:04:42	1424	MV24GC1-ENV-DC-214			Camera	45	616193	6081695	616242	6081710	-49	-16	51	72		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	20:10:50	1425	MV24GC1-ENV-DC-214			Camera	45	616200	6081739	616242	6081710	-43	29	51	124		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	20:11:34	1426	MV24GC1-ENV-DC-214			Camera	45	616201	6081745	616242	6081710	-41	35	54	130		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	20:13:41	1427	MV24GC1-ENV-DC-214			Camera	45	616207	6081742	616242	6081710	-36	32	48	132		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	20:29:32	1428	MV24GC1-ENV-DC-214			Camera	45	616197	6081743	616242	6081710	-45	33	56	126		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	20:32:48	1429	MV24GC1-ENV-DC-214			Camera	45	616212	6081732	616242	6081710	-30	22	37	126		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	20:33:54	1430	MV24GC1-ENV-DC-214			Camera	45	616221	6081726	616242	6081710	-21	16	26	127		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	20:34:17	1431	MV24GC1-ENV-DC-214			Camera	45	616224	6081724	616242	6081710	-18	14	22	127		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	20:34:47	1432	MV24GC1-ENV-DC-214			Camera	45	616228	6081721	616242	6081710	-14	11	18	128		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	20:35:21	1433	MV24GC1-ENV-DC-214			Camera	45	616233	6081718	616242	6081710	-9	8	12	130		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	20:35:54	1434	MV24GC1-ENV-DC-214			Camera	45	616237	6081715	616242	6081710	-5	5	7	136		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	20:36:18	1435	MV24GC1-ENV-DC-214			Camera	45	616241	6081714	616242	6081710	-2	4	4	157		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	20:36:36	1436	MV24GC1-ENV-DC-214			Camera	45	616243	6081713	616242	6081710	1	2	2	-165		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	20:36:50	1437	MV24GC1-ENV-DC-214			Camera	45	616245	6081711	616242	6081710	2	1	3	-108		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	20:37:18	1438	MV24GC1-ENV-DC-214			Camera	45	616248	6081709	616242	6081710	6	-2	6	-73		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	20:37:52	1439	MV24GC1-ENV-DC-214			Camera	45	616252	6081706	616242	6081710	10	-5	11	-66		(Corr'd Nav, Kongsberg 14208, img#34) (B)
18-Aug-2024	20:38:31	1440	MV24GC1-ENV-DC-214			Camera	45	616257	6081703	616242	6081710	15	-7	17	-64		(Corr'd Nav, Kongsberg 14208, img#35) (B)
18-Aug-2024	20:39:10	1441	MV24GC1-ENV-DC-214			Camera	45	616262	6081700	616242	6081710	20	-11	23	-61		(Corr'd Nav, Kongsberg 14208, img#36) (B)
18-Aug-2024	20:39:51	1442	MV24GC1-ENV-DC-214			Camera	45	616267	6081696	616242	6081710	25	-14	29	-60		(Corr'd Nav, Kongsberg 14208, img#37) (B)
18-Aug-2024	20:40:31	1443	MV24GC1-ENV-DC-214			Camera	45	616273	6081693	616242	6081710	30	-18	35	-60		(Corr'd Nav, Kongsberg 14208, img#38) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	20:41:03	1444	MV24GC1-ENV-DC-214			Camera	45	616277	6081690	616242	6081710	35	-20	40	-60		(Corr'd Nav, Kongsberg 14208, img#39) (B)
18-Aug-2024	20:41:29	1445	MV24GC1-ENV-DC-214			Camera	45	616280	6081688	616242	6081710	38	-23	44	-59		(Corr'd Nav, Kongsberg 14208, img#40) (B)
18-Aug-2024	20:42:08	1446	MV24GC1-ENV-DC-214			Camera	45	616285	6081684	616242	6081710	43	-26	50	-59		(Corr'd Nav, Kongsberg 14208, img#41) (B)
18-Aug-2024	20:42:30	1447	MV24GC1-ENV-DC-214			Camera	45	616286	6081683	616242	6081710	44	-27	52	-58		(Corr'd Nav, Kongsberg 14208, img#42) (B)
18-Aug-2024	22:39:35	1448	MV24GC1-ENV-DC-215			Camera	44	615718	6079882	615717	6079828	1	54	54	-179		(Corr'd Nav, Kongsberg 14208, img#1) (B)
18-Aug-2024	22:40:16	1449	MV24GC1-ENV-DC-215			Camera	44	615718	6079877	615717	6079828	1	49	49	-179		(Corr'd Nav, Kongsberg 14208, img#2) (B)
18-Aug-2024	22:40:54	1450	MV24GC1-ENV-DC-215			Camera	44	615717	6079871	615717	6079828	0	43	43	-179		(Corr'd Nav, Kongsberg 14208, img#3) (B)
18-Aug-2024	22:41:23	1451	MV24GC1-ENV-DC-215			Camera	44	615717	6079866	615717	6079828	0	38	38	-180		(Corr'd Nav, Kongsberg 14208, img#4) (B)
18-Aug-2024	22:42:02	1452	MV24GC1-ENV-DC-215			Camera	44	615717	6079861	615717	6079828	0	33	33	-180		(Corr'd Nav, Kongsberg 14208, img#5) (B)
18-Aug-2024	22:42:40	1453	MV24GC1-ENV-DC-215			Camera	44	615717	6079855	615717	6079828	1	27	27	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B)
18-Aug-2024	22:43:21	1454	MV24GC1-ENV-DC-215			Camera	44	615718	6079850	615717	6079828	1	22	22	-177		(Corr'd Nav, Kongsberg 14208, img#7) (B)
18-Aug-2024	22:44:29	1455	MV24GC1-ENV-DC-215			Camera	44	615718	6079839	615717	6079828	1	11	11	-173		(Corr'd Nav, Kongsberg 14208, img#8) (B)
18-Aug-2024	22:45:22	1456	MV24GC1-ENV-DC-215			Camera	44	615718	6079831	615717	6079828	1	3	3	-161		(Corr'd Nav, Kongsberg 14208, img#9) (B)
18-Aug-2024	22:45:37	1457	MV24GC1-ENV-DC-215			Camera	44	615717	6079829	615717	6079828	1	1	1	-130		(Corr'd Nav, Kongsberg 14208, img#10) (B)
18-Aug-2024	22:45:57	1458	MV24GC1-ENV-DC-215			Camera	44	615718	6079826	615717	6079828	1	-2	2	-27		(Corr'd Nav, Kongsberg 14208, img#11) (B)
18-Aug-2024	22:46:28	1459	MV24GC1-ENV-DC-215			Camera	44	615717	6079822	615717	6079828	1	-6	6	-6		(Corr'd Nav, Kongsberg 14208, img#12) (B)
18-Aug-2024	22:47:10	1460	MV24GC1-ENV-DC-215			Camera	44	615717	6079814	615717	6079828	0	-14	14	-2		(Corr'd Nav, Kongsberg 14208, img#13) (B)
18-Aug-2024	22:48:07	1461	MV24GC1-ENV-DC-215			Camera	44	615717	6079806	615717	6079828	0	-22	22	0		(Corr'd Nav, Kongsberg 14208, img#14) (B)
18-Aug-2024	22:48:49	1462	MV24GC1-ENV-DC-215			Camera	44	615716	6079799	615717	6079828	0	-29	28	1		(Corr'd Nav, Kongsberg 14208, img#15) (B)
18-Aug-2024	22:49:36	1463	MV24GC1-ENV-DC-215			Camera	44	615716	6079792	615717	6079828	0	-36	36	0		(Corr'd Nav, Kongsberg 14208, img#16) (B)
18-Aug-2024	22:50:24	1464	MV24GC1-ENV-DC-215			Camera	44	615716	6079785	615717	6079828	0	-43	43	0		(Corr'd Nav, Kongsberg 14208, img#17) (B)
18-Aug-2024	22:51:19	1465	MV24GC1-ENV-DC-215			Camera	44	615716	6079776	615717	6079828	0	-52	52	0		(Corr'd Nav, Kongsberg 14208, img#18) (B)
18-Aug-2024	23:00:58	1466	MV24GC1-ENV-DC-215			Camera	44	615664	6079830	615717	6079828	-53	2	53	93		(Corr'd Nav, Kongsberg 14208, img#19) (B)
18-Aug-2024	23:02:27	1467	MV24GC1-ENV-DC-215			Camera	44	615661	6079831	615717	6079828	-55	3	55	93		(Corr'd Nav, Kongsberg 14208, img#20) (B)
18-Aug-2024	23:03:19	1468	MV24GC1-ENV-DC-215			Camera	44	615667	6079831	615717	6079828	-50	3	50	93		(Corr'd Nav, Kongsberg 14208, img#21) (B)
18-Aug-2024	23:04:39	1469	MV24GC1-ENV-DC-215			Camera	44	615681	6079830	615717	6079828	-35	2	35	94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
18-Aug-2024	23:05:12	1470	MV24GC1-ENV-DC-215			Camera	44	615687	6079830	615717	6079828	-30	2	30	94		(Corr'd Nav, Kongsberg 14208, img#23) (B)
18-Aug-2024	23:05:49	1471	MV24GC1-ENV-DC-215			Camera	44	615693	6079830	615717	6079828	-24	2	24	95		(Corr'd Nav, Kongsberg 14208, img#24) (B)
18-Aug-2024	23:06:54	1472	MV24GC1-ENV-DC-215			Camera	44	615703	6079830	615717	6079828	-14	2	14	97		(Corr'd Nav, Kongsberg 14208, img#25) (B)
18-Aug-2024	23:07:30	1473	MV24GC1-ENV-DC-215			Camera	44	615708	6079830	615717	6079828	-8	2	9	101		(Corr'd Nav, Kongsberg 14208, img#26) (B)
18-Aug-2024	23:08:13	1474	MV24GC1-ENV-DC-215			Camera	44	615715	6079829	615717	6079828	-2	2	2	130		(Corr'd Nav, Kongsberg 14208, img#27) (B)
18-Aug-2024	23:08:34	1475	MV24GC1-ENV-DC-215			Camera	44	615718	6079829	615717	6079828	1	2	2	-137		(Corr'd Nav, Kongsberg 14208, img#28) (B)
18-Aug-2024	23:09:05	1476	MV24GC1-ENV-DC-215			Camera	44	615723	6079829	615717	6079828	6	1	7	-103		(Corr'd Nav, Kongsberg 14208, img#29) (B)
18-Aug-2024	23:09:27	1477	MV24GC1-ENV-DC-215			Camera	44	615726	6079829	615717	6079828	10	1	10	-96		(Corr'd Nav, Kongsberg 14208, img#30) (B)
18-Aug-2024	23:10:01	1478	MV24GC1-ENV-DC-215			Camera	44	615732	6079828	615717	6079828	15	0	15	-92		(Corr'd Nav, Kongsberg 14208, img#31) (B)
18-Aug-2024	23:10:39	1479	MV24GC1-ENV-DC-215			Camera	44	615737	6079828	615717	6079828	21	0	21	-90		(Corr'd Nav, Kongsberg 14208, img#32) (B)
18-Aug-2024	23:11:49	1480	MV24GC1-ENV-DC-215			Camera	44	615748	6079828	615717	6079828	32	0	32	-89		(Corr'd Nav, Kongsberg 14208, img#33) (B)
18-Aug-2024	23:12:11	1481	MV24GC1-ENV-DC-215			Camera	44	615751	6079827	615717	6079828	35	0	35	-89		(Corr'd Nav, Kongsberg 14208, img#34) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
18-Aug-2024	23:13:03	1482	MV24GC1-ENV-DC-215			Camera	44	615759	6079827	615717	6079828	43	-1	43	-89		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	00:47:50	1483	MV24GC1-ENV-DC-188			Camera	34	615129	6077914	615150	6077864	-21	50	54	157		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	00:48:49	1484	MV24GC1-ENV-DC-188			Camera	34	615130	6077914	615150	6077864	-20	50	54	158		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	00:48:59	1485	MV24GC1-ENV-DC-188			Camera	34	615131	6077913	615150	6077864	-19	49	53	158		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	00:49:16	1486	MV24GC1-ENV-DC-188			Camera	34	615132	6077910	615150	6077864	-19	46	49	158		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	00:49:37	1487	MV24GC1-ENV-DC-188			Camera	34	615133	6077906	615150	6077864	-18	42	45	157		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	00:49:47	1488	MV24GC1-ENV-DC-188			Camera	34	615133	6077905	615150	6077864	-17	41	44	157		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	00:49:57	1489	MV24GC1-ENV-DC-188			Camera	34	615134	6077903	615150	6077864	-16	39	42	157		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	00:50:14	1490	MV24GC1-ENV-DC-188			Camera	34	615135	6077901	615150	6077864	-16	37	40	157		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	00:50:56	1491	MV24GC1-ENV-DC-188			Camera	35	615137	6077896	615150	6077864	-13	32	35	158		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	00:51:08	1492	MV24GC1-ENV-DC-188			Camera	35	615138	6077894	615150	6077864	-12	30	33	158		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	00:52:04	1493	MV24GC1-ENV-DC-188			Camera	35	615141	6077887	615150	6077864	-9	23	25	158		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	00:52:32	1494	MV24GC1-ENV-DC-188			Camera	34	615142	6077883	615150	6077864	-8	19	20	157		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	00:53:07	1495	MV24GC1-ENV-DC-188			Camera	34	615144	6077877	615150	6077864	-6	14	15	156		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	00:53:38	1496	MV24GC1-ENV-DC-188			Camera	34	615146	6077873	615150	6077864	-4	9	10	154		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	00:53:57	1497	MV24GC1-ENV-DC-188			Camera	34	615147	6077870	615150	6077864	-3	6	7	152		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	00:54:14	1498	MV24GC1-ENV-DC-188			Camera	34	615148	6077868	615150	6077864	-2	4	4	149		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	00:54:23	1499	MV24GC1-ENV-DC-188			Camera	34	615148	6077866	615150	6077864	-2	2	3	143		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	00:54:39	1500	MV24GC1-ENV-DC-188			Camera	34	615150	6077864	615150	6077864	-1	0	1	76		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	00:55:02	1501	MV24GC1-ENV-DC-188			Camera	34	615151	6077860	615150	6077864	1	-4	4	-9		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	00:55:13	1502	MV24GC1-ENV-DC-188			Camera	34	615152	6077859	615150	6077864	1	-5	5	-14		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	00:55:50	1503	MV24GC1-ENV-DC-188			Camera	34	615154	6077854	615150	6077864	3	-10	10	-20		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	00:56:21	1504	MV24GC1-ENV-DC-188			Camera	34	615155	6077850	615150	6077864	5	-14	15	-20		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	00:56:44	1505	MV24GC1-ENV-DC-188			Camera	34	615157	6077846	615150	6077864	7	-18	19	-20		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	00:57:13	1506	MV24GC1-ENV-DC-188			Camera	34	615158	6077842	615150	6077864	8	-22	24	-20		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	00:57:47	1507	MV24GC1-ENV-DC-188			Camera	34	615161	6077837	615150	6077864	10	-27	29	-21		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	00:58:32	1508	MV24GC1-ENV-DC-188			Camera	33	615163	6077831	615150	6077864	13	-33	36	-21		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	00:59:17	1509	MV24GC1-ENV-DC-188			Camera	34	615165	6077824	615150	6077864	15	-40	42	-20		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	00:59:45	1510	MV24GC1-ENV-DC-188			Camera	34	615166	6077820	615150	6077864	16	-44	46	-20		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	01:07:37	1511	MV24GC1-ENV-DC-188			Camera	34	615135	6077843	615150	6077864	-16	-21	26	37		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	01:08:42	1512	MV24GC1-ENV-DC-188			Camera	34	615129	6077847	615150	6077864	-21	-17	27	51		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	01:09:29	1513	MV24GC1-ENV-DC-188			Camera	34	615124	6077849	615150	6077864	-26	-15	30	60		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	01:10:52	1514	MV24GC1-ENV-DC-188			Camera	34	615117	6077853	615150	6077864	-33	-11	35	71		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	01:12:26	1515	MV24GC1-ENV-DC-188			Camera	34	615106	6077859	615150	6077864	-44	-5	44	83		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	01:13:19	1516	MV24GC1-ENV-DC-188			Camera	34	615103	6077860	615150	6077864	-48	-4	48	85		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	01:13:46	1517	MV24GC1-ENV-DC-188			Camera	34	615102	6077861	615150	6077864	-49	-3	49	87		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	01:14:02	1518	MV24GC1-ENV-DC-188			Camera	34	615101	6077862	615150	6077864	-49	-2	49	87		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	01:15:35	1519	MV24GC1-ENV-DC-188			Camera	34	615099	6077864	615150	6077864	-51	0	51	90		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	01:16:42	1520	MV24GC1-ENV-DC-188			Camera	34	615102	6077863	615150	6077864	-48	0	48	90		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	01:17:02	1521	MV24GC1-ENV-DC-188			Camera	34	615105	6077863	615150	6077864	-45	0	45	89		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	01:17:13	1522	MV24GC1-ENV-DC-188			Camera	34	615106	6077863	615150	6077864	-44	-1	44	89		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	01:18:46	1523	MV24GC1-ENV-DC-188			Camera	34	615124	6077863	615150	6077864	-26	-1	26	89		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	01:19:12	1524	MV24GC1-ENV-DC-188			Camera	34	615130	6077863	615150	6077864	-20	-1	20	89		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	01:19:57	1525	MV24GC1-ENV-DC-188			Camera	34	615139	6077863	615150	6077864	-11	-1	11	83		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	01:20:12	1526	MV24GC1-ENV-DC-188			Camera	34	615143	6077862	615150	6077864	-8	-2	8	78		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	01:20:43	1527	MV24GC1-ENV-DC-188			Camera	34	615149	6077862	615150	6077864	-1	-2	2	23		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	01:21:01	1528	MV24GC1-ENV-DC-188			Camera	34	615153	6077862	615150	6077864	3	-2	4	-55		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	01:21:11	1529	MV24GC1-ENV-DC-188			Camera	34	615155	6077862	615150	6077864	5	-2	6	-69		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	01:21:42	1530	MV24GC1-ENV-DC-188			Camera	34	615162	6077861	615150	6077864	12	-2	12	-78		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	01:22:02	1531	MV24GC1-ENV-DC-188			Camera	34	615166	6077861	615150	6077864	16	-3	16	-81		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	01:22:19	1532	MV24GC1-ENV-DC-188			Camera	34	615170	6077861	615150	6077864	19	-2	20	-83		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	01:22:30	1533	MV24GC1-ENV-DC-188			Camera	34	615172	6077861	615150	6077864	22	-2	22	-84		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	01:22:42	1534	MV24GC1-ENV-DC-188			Camera	34	615174	6077861	615150	6077864	24	-2	24	-84		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	01:23:05	1535	MV24GC1-ENV-DC-188			Camera	34	615179	6077862	615150	6077864	29	-2	29	-85		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	01:23:30	1536	MV24GC1-ENV-DC-188			Camera	34	615185	6077862	615150	6077864	35	-2	35	-86		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	01:23:40	1537	MV24GC1-ENV-DC-188			Camera	34	615187	6077861	615150	6077864	37	-2	37	-86		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	01:24:05	1538	MV24GC1-ENV-DC-188			Camera	34	615192	6077861	615150	6077864	42	-3	42	-86		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	01:24:25	1539	MV24GC1-ENV-DC-188			Camera	34	615196	6077861	615150	6077864	46	-3	46	-86		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	01:24:34	1540	MV24GC1-ENV-DC-188			Camera	34	615198	6077861	615150	6077864	47	-3	47	-86		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	01:24:41	1541	MV24GC1-ENV-DC-188			Camera	34	615199	6077861	615150	6077864	49	-3	49	-87		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	01:25:10	1542	MV24GC1-ENV-DC-188			Camera	34	615202	6077861	615150	6077864	52	-3	52	-87		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	02:24:31	1543	MV24GC1-ENV-DC-197			Camera	33	614353	6076016	614311	6076047	42	-31	52	-53		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	02:24:57	1544	MV24GC1-ENV-DC-197			Camera	33	614352	6076016	614311	6076047	41	-31	51	-53		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	02:25:15	1545	MV24GC1-ENV-DC-197			Camera	33	614350	6076017	614311	6076047	39	-30	49	-52		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	02:25:39	1546	MV24GC1-ENV-DC-197			Camera	33	614347	6076020	614311	6076047	35	-27	45	-52		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	02:26:03	1547	MV24GC1-ENV-DC-197			Camera	32	614343	6076022	614311	6076047	31	-25	40	-52		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	02:26:39	1548	MV24GC1-ENV-DC-197			Camera	32	614337	6076027	614311	6076047	25	-20	32	-51		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	02:27:10	1549	MV24GC1-ENV-DC-197			Camera	32	614332	6076031	614311	6076047	20	-16	26	-51		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	02:27:34	1550	MV24GC1-ENV-DC-197			Camera	32	614328	6076034	614311	6076047	16	-14	21	-51		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	02:27:54	1551	MV24GC1-ENV-DC-197			Camera	32	614325	6076036	614311	6076047	13	-11	17	-49		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	02:28:18	1552	MV24GC1-ENV-DC-197			Camera	32	614320	6076039	614311	6076047	9	-8	12	-48		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	02:28:33	1553	MV24GC1-ENV-DC-197			Camera	32	614318	6076041	614311	6076047	6	-6	9	-46		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	02:29:01	1554	MV24GC1-ENV-DC-197			Camera	32	614314	6076044	614311	6076047	2	-3	4	-40		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	02:29:09	1555	MV24GC1-ENV-DC-197			Camera	32	614312	6076045	614311	6076047	1	-2	2	-29		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	02:29:36	1556	MV24GC1-ENV-DC-197			Camera	32	614308	6076048	614311	6076047	-3	1	4	113		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	02:29:46	1557	MV24GC1-ENV-DC-197			Camera	32	614306	6076050	614311	6076047	-5	3	6	119		(Corr'd Nav, Kongsberg 14208, img#15) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	02:29:59	1558	MV24GC1-ENV-DC-197			Camera	32	614304	6076052	614311	6076047	-7	5	9	123		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	02:30:16	1559	MV24GC1-ENV-DC-197			Camera	32	614301	6076054	614311	6076047	-11	7	13	123		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	02:30:42	1560	MV24GC1-ENV-DC-197			Camera	32	614297	6076057	614311	6076047	-15	10	18	125		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	02:31:09	1561	MV24GC1-ENV-DC-197			Camera	32	614293	6076060	614311	6076047	-19	13	23	125		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	02:31:25	1562	MV24GC1-ENV-DC-197			Camera	32	614290	6076062	614311	6076047	-22	15	27	125		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	02:31:34	1563	MV24GC1-ENV-DC-197			Camera	32	614288	6076063	614311	6076047	-23	16	29	125		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	02:31:48	1564	MV24GC1-ENV-DC-197			Camera	32	614286	6076065	614311	6076047	-26	18	31	125		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	02:32:13	1565	MV24GC1-ENV-DC-197			Camera	32	614282	6076068	614311	6076047	-30	21	36	125		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	02:32:29	1566	MV24GC1-ENV-DC-197			Camera	32	614279	6076070	614311	6076047	-33	23	40	126		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	02:32:48	1567	MV24GC1-ENV-DC-197			Camera	32	614276	6076072	614311	6076047	-36	25	44	125		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	02:33:11	1568	MV24GC1-ENV-DC-197			Camera	32	614272	6076075	614311	6076047	-39	28	48	126		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	02:34:44	1569	MV24GC1-ENV-DC-197			Camera	32	614273	6076078	614311	6076047	-39	31	49	128		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	02:35:18	1570	MV24GC1-ENV-DC-197			Camera	32	614278	6076077	614311	6076047	-33	30	45	132		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	02:36:07	1571	MV24GC1-ENV-DC-197			Camera	32	614290	6076078	614311	6076047	-22	31	38	144		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	02:36:39	1572	MV24GC1-ENV-DC-197			Camera	32	614296	6076078	614311	6076047	-15	31	35	154		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	02:37:32	1573	MV24GC1-ENV-DC-197			Camera	32	614307	6076080	614311	6076047	-5	33	33	172		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	02:37:46	1574	MV24GC1-ENV-DC-197			Camera	32	614310	6076080	614311	6076047	-2	33	33	177		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	02:38:11	1575	MV24GC1-ENV-DC-197			Camera	32	614315	6076081	614311	6076047	3	34	34	-174		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	02:39:21	1576	MV24GC1-ENV-DC-197			Camera	32	614329	6076082	614311	6076047	18	35	39	-153		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	02:40:12	1577	MV24GC1-ENV-DC-197			Camera	33	614339	6076083	614311	6076047	28	36	45	-142		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	02:40:26	1578	MV24GC1-ENV-DC-197			Camera	33	614342	6076083	614311	6076047	31	36	47	-140		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	02:42:24	1579	MV24GC1-ENV-DC-197			Camera	33	614346	6076083	614311	6076047	34	36	50	-136		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	02:43:06	1580	MV24GC1-ENV-DC-197			Camera	33	614344	6076081	614311	6076047	33	34	47	-136		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	02:43:43	1581	MV24GC1-ENV-DC-197			Camera	33	614341	6076078	614311	6076047	29	31	43	-136		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	02:44:09	1582	MV24GC1-ENV-DC-197			Camera	32	614338	6076075	614311	6076047	26	28	38	-136		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	02:45:03	1583	MV24GC1-ENV-DC-197			Camera	32	614332	6076068	614311	6076047	20	21	30	-136		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	02:45:33	1584	MV24GC1-ENV-DC-197			Camera	32	614331	6076067	614311	6076047	20	20	28	-135		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	02:47:23	1585	MV24GC1-ENV-DC-197			Camera	32	614330	6076066	614311	6076047	18	19	27	-137		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	02:49:28	1586	MV24GC1-ENV-DC-197			Camera	32	614322	6076059	614311	6076047	11	12	16	-137		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	02:50:44	1587	MV24GC1-ENV-DC-197			Camera	32	614316	6076052	614311	6076047	5	5	7	-134		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	02:51:03	1588	MV24GC1-ENV-DC-197			Camera	32	614314	6076050	614311	6076047	3	3	4	-138		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	02:51:18	1589	MV24GC1-ENV-DC-197			Camera	32	614313	6076049	614311	6076047	1	2	2	-141		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	02:51:36	1590	MV24GC1-ENV-DC-197			Camera	32	614311	6076047	614311	6076047	-1	0	1	69		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	02:51:53	1591	MV24GC1-ENV-DC-197			Camera	32	614309	6076045	614311	6076047	-3	-2	3	52		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	02:52:16	1592	MV24GC1-ENV-DC-197			Camera	32	614307	6076043	614311	6076047	-4	-4	6	47		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	02:55:09	1593	MV24GC1-ENV-DC-197			Camera	32	614309	6076040	614311	6076047	-3	-7	7	22		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	02:56:25	1594	MV24GC1-ENV-DC-197			Camera	32	614304	6076037	614311	6076047	-7	-10	12	36		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	02:57:07	1595	MV24GC1-ENV-DC-197			Camera	32	614301	6076034	614311	6076047	-11	-13	17	39		(Corr'd Nav, Kongsberg 14208, img#53) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	02:57:45	1596	MV24GC1-ENV-DC-197			Camera	32	614298	6076031	614311	6076047	-14	-16	21	41		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	02:58:33	1597	MV24GC1-ENV-DC-197			Camera	32	614294	6076027	614311	6076047	-17	-20	27	40		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	02:59:23	1598	MV24GC1-ENV-DC-197			Camera	32	614291	6076023	614311	6076047	-21	-24	32	41		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	03:00:29	1599	MV24GC1-ENV-DC-197			Camera	32	614286	6076018	614311	6076047	-26	-29	39	41		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	03:01:11	1600	MV24GC1-ENV-DC-197			Camera	32	614283	6076015	614311	6076047	-28	-33	43	41		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	03:01:44	1601	MV24GC1-ENV-DC-197			Camera	32	614281	6076012	614311	6076047	-30	-35	46	41		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	03:02:18	1602	MV24GC1-ENV-DC-197			Camera	32	614279	6076009	614311	6076047	-33	-38	50	41		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	04:10:24	1603	MV24GC1-ENV-DC-221			Camera	31	613534	6076179	613485	6076175	49	4	49	-94		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	04:11:00	1604	MV24GC1-ENV-DC-221			Camera	31	613527	6076178	613485	6076175	42	3	42	-94		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	04:11:21	1605	MV24GC1-ENV-DC-221			Camera	31	613523	6076178	613485	6076175	39	3	39	-94		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	04:11:40	1606	MV24GC1-ENV-DC-221			Camera	31	613521	6076178	613485	6076175	37	3	37	-94		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	04:14:26	1607	MV24GC1-ENV-DC-221			Camera	31	613514	6076178	613485	6076175	30	3	30	-96		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	04:14:57	1608	MV24GC1-ENV-DC-221			Camera	31	613509	6076176	613485	6076175	24	1	24	-93		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	04:15:31	1609	MV24GC1-ENV-DC-221			Camera	31	613503	6076175	613485	6076175	19	0	19	-89		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	04:16:00	1610	MV24GC1-ENV-DC-221			Camera	31	613500	6076174	613485	6076175	15	-1	15	-85		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	04:16:20	1611	MV24GC1-ENV-DC-221			Camera	31	613499	6076174	613485	6076175	14	-1	14	-86		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	04:17:34	1612	MV24GC1-ENV-DC-221			Camera	31	613495	6076175	613485	6076175	10	0	10	-93		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	04:18:16	1613	MV24GC1-ENV-DC-221			Camera	31	613494	6076176	613485	6076175	10	1	10	-96		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	04:18:47	1614	MV24GC1-ENV-DC-221			Camera	31	613489	6076175	613485	6076175	5	0	5	-89		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	04:19:12	1615	MV24GC1-ENV-DC-221			Camera	31	613485	6076175	613485	6076175	1	0	1	-59		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	04:19:28	1616	MV24GC1-ENV-DC-221			Camera	31	613483	6076174	613485	6076175	-2	-1	2	74		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	04:19:49	1617	MV24GC1-ENV-DC-221			Camera	31	613479	6076174	613485	6076175	-6	-1	6	82		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	04:20:21	1618	MV24GC1-ENV-DC-221			Camera	31	613474	6076174	613485	6076175	-11	-1	11	86		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	04:21:13	1619	MV24GC1-ENV-DC-221			Camera	31	613466	6076175	613485	6076175	-19	0	19	89		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	04:21:36	1620	MV24GC1-ENV-DC-221			Camera	31	613462	6076175	613485	6076175	-22	0	22	89		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	04:22:10	1621	MV24GC1-ENV-DC-221			Camera	31	613457	6076175	613485	6076175	-27	0	27	89		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	04:22:38	1622	MV24GC1-ENV-DC-221			Camera	31	613453	6076175	613485	6076175	-31	0	31	90		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	04:23:11	1623	MV24GC1-ENV-DC-221			Camera	31	613448	6076175	613485	6076175	-36	0	36	90		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	04:23:20	1624	MV24GC1-ENV-DC-221			Camera	31	613447	6076175	613485	6076175	-38	0	38	90		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	04:23:27	1625	MV24GC1-ENV-DC-221			Camera	31	613446	6076175	613485	6076175	-39	0	39	90		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	04:23:36	1626	MV24GC1-ENV-DC-221			Camera	31	613444	6076174	613485	6076175	-40	0	40	89		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	04:23:44	1627	MV24GC1-ENV-DC-221			Camera	31	613443	6076174	613485	6076175	-42	-1	42	89		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	04:23:55	1628	MV24GC1-ENV-DC-221			Camera	31	613441	6076174	613485	6076175	-44	-1	44	89		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	04:24:03	1629	MV24GC1-ENV-DC-221			Camera	31	613440	6076174	613485	6076175	-45	-1	45	89		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	04:24:18	1630	MV24GC1-ENV-DC-221			Camera	31	613437	6076174	613485	6076175	-48	-1	48	89		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	04:24:33	1631	MV24GC1-ENV-DC-221			Camera	31	613434	6076175	613485	6076175	-51	0	51	90		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	04:24:44	1632	MV24GC1-ENV-DC-221			Camera	31	613432	6076175	613485	6076175	-53	0	52	90		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	04:25:24	1633	MV24GC1-ENV-DC-221			Camera	31	613428	6076177	613485	6076175	-57	2	57	92		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	04:25:47	1634	MV24GC1-ENV-DC-221			Camera	31	613427	6076177	613485	6076175	-58	2	58	92		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	04:26:08	1635	MV24GC1-ENV-DC-221			Camera	31	613426	6076177	613485	6076175	-58	2	58	92		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	04:26:42	1636	MV24GC1-ENV-DC-221			Camera	31	613428	6076176	613485	6076175	-56	1	56	91		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	04:27:23	1637	MV24GC1-ENV-DC-221			Camera	31	613431	6076171	613485	6076175	-53	-4	53	86		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	04:30:40	1643	MV24GC1-ENV-DC-221			Camera	31	613447	6076143	613485	6076175	-38	-32	50	49		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	04:31:21	1644	MV24GC1-ENV-DC-221			Camera	31	613450	6076138	613485	6076175	-35	-37	51	44		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	04:32:08	1645	MV24GC1-ENV-DC-221			Camera	31	613452	6076133	613485	6076175	-32	-42	53	37		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	04:32:40	1646	MV24GC1-ENV-DC-221			Camera	31	613454	6076129	613485	6076175	-30	-46	55	33		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	04:32:49	1647	MV24GC1-ENV-DC-221			Camera	31	613455	6076128	613485	6076175	-30	-47	55	32		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	04:33:30	1648	MV24GC1-ENV-DC-221			Camera	31	613459	6076131	613485	6076175	-26	-44	51	30		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	04:34:44	1649	MV24GC1-ENV-DC-221			Camera	31	613466	6076141	613485	6076175	-19	-34	39	29		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	04:35:13	1650	MV24GC1-ENV-DC-221			Camera	31	613468	6076145	613485	6076175	-17	-30	34	30		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	04:36:09	1651	MV24GC1-ENV-DC-221			Camera	31	613472	6076153	613485	6076175	-13	-22	26	30		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	04:36:54	1652	MV24GC1-ENV-DC-221			Camera	31	613475	6076159	613485	6076175	-10	-16	19	31		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	04:37:35	1653	MV24GC1-ENV-DC-221			Camera	31	613478	6076164	613485	6076175	-6	-11	13	31		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	04:38:12	1654	MV24GC1-ENV-DC-221			Camera	31	613481	6076169	613485	6076175	-4	-6	7	32		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	04:38:35	1655	MV24GC1-ENV-DC-221			Camera	31	613483	6076172	613485	6076175	-2	-3	3	32		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	04:39:05	1656	MV24GC1-ENV-DC-221			Camera	31	613485	6076176	613485	6076175	1	1	1	-153		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	04:39:37	1657	MV24GC1-ENV-DC-221			Camera	31	613488	6076181	613485	6076175	3	6	6	-152		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	04:40:13	1658	MV24GC1-ENV-DC-221			Camera	31	613490	6076185	613485	6076175	5	10	12	-152		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	04:40:45	1659	MV24GC1-ENV-DC-221			Camera	31	613493	6076190	613485	6076175	8	15	17	-151		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	04:41:15	1660	MV24GC1-ENV-DC-221			Camera	31	613495	6076193	613485	6076175	10	18	21	-151		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	04:41:27	1661	MV24GC1-ENV-DC-221			Camera	31	613496	6076195	613485	6076175	11	20	23	-150		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	04:42:15	1662	MV24GC1-ENV-DC-221			Camera	31	613500	6076201	613485	6076175	15	26	30	-150		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	04:42:58	1663	MV24GC1-ENV-DC-221			Camera	31	613503	6076207	613485	6076175	19	32	37	-150		(Corr'd Nav, Kongsberg 14208, img#61) (B)
19-Aug-2024	04:44:04	1664	MV24GC1-ENV-DC-221			Camera	31	613509	6076216	613485	6076175	24	41	47	-150		(Corr'd Nav, Kongsberg 14208, img#62) (B)
19-Aug-2024	06:05:34	1665	MV24GC1-ENV-DC-198			Camera	31	613574	6078225	613616	6078185	-42	40	58	134		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	06:06:55	1666	MV24GC1-ENV-DC-198			Camera	31	613581	6078219	613616	6078185	-35	34	49	134		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	06:07:17	1667	MV24GC1-ENV-DC-198			Camera	31	613584	6078217	613616	6078185	-32	32	45	135		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	06:07:33	1668	MV24GC1-ENV-DC-198			Camera	31	613586	6078215	613616	6078185	-30	30	43	135		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	06:08:01	1669	MV24GC1-ENV-DC-198			Camera	31	613589	6078213	613616	6078185	-27	28	39	136		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	06:08:45	1670	MV24GC1-ENV-DC-198			Camera	31	613594	6078208	613616	6078185	-22	23	32	136		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	06:09:09	1671	MV24GC1-ENV-DC-198			Camera	32	613597	6078206	613616	6078185	-19	21	29	138		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	06:09:19	1672	MV24GC1-ENV-DC-198			Camera	32	613598	6078205	613616	6078185	-18	20	27	138		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	06:09:40	1673	MV24GC1-ENV-DC-198			Camera	32	613600	6078203	613616	6078185	-16	18	24	139		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	06:10:07	1674	MV24GC1-ENV-DC-198			Camera	32	613603	6078200	613616	6078185	-13	16	20	141		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	06:10:35	1675	MV24GC1-ENV-DC-198			Camera	32	613606	6078197	613616	6078185	-10	12	15	141		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	06:10:48	1676	MV24GC1-ENV-DC-198			Camera	32	613608	6078196	613616	6078185	-8	11	14	143		(Corr'd Nav, Kongsberg 14208, img#12) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	06:11:09	1677	MV24GC1-ENV-DC-198			Camera	32	613610	6078194	613616	6078185	-6	9	11	146		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	06:11:49	1678	MV24GC1-ENV-DC-198			Camera	32	613613	6078190	613616	6078185	-3	5	6	152		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	06:12:04	1679	MV24GC1-ENV-DC-198			Camera	32	613614	6078188	613616	6078185	-2	3	4	150		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	06:12:23	1680	MV24GC1-ENV-DC-198			Camera	32	613615	6078186	613616	6078185	-1	1	1	131		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	06:12:44	1681	MV24GC1-ENV-DC-198			Camera	32	613616	6078182	613616	6078185	0	-3	3	-10		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	06:13:13	1682	MV24GC1-ENV-DC-198			Camera	32	613619	6078180	613616	6078185	3	-5	6	-31		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	06:13:26	1683	MV24GC1-ENV-DC-198			Camera	32	613620	6078179	613616	6078185	4	-6	7	-37		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	06:14:03	1684	MV24GC1-ENV-DC-198			Camera	32	613624	6078176	613616	6078185	8	-9	12	-43		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	06:14:33	1685	MV24GC1-ENV-DC-198			Camera	32	613628	6078173	613616	6078185	12	-12	17	-45		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	06:14:52	1686	MV24GC1-ENV-DC-198			Camera	32	613630	6078171	613616	6078185	14	-14	20	-45		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	06:15:36	1687	MV24GC1-ENV-DC-198			Camera	32	613635	6078167	613616	6078185	20	-18	27	-47		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	06:16:06	1688	MV24GC1-ENV-DC-198			Camera	32	613639	6078164	613616	6078185	23	-21	31	-48		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	06:16:40	1689	MV24GC1-ENV-DC-198			Camera	32	613642	6078160	613616	6078185	27	-25	36	-47		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	06:17:09	1690	MV24GC1-ENV-DC-198			Camera	32	613646	6078157	613616	6078185	30	-28	41	-47		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	06:18:10	1691	MV24GC1-ENV-DC-198			Camera	32	613653	6078151	613616	6078185	37	-34	50	-47		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	06:27:59	1692	MV24GC1-ENV-DC-198			Camera	32	613598	6078143	613616	6078185	-18	-42	46	23		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	06:29:39	1693	MV24GC1-ENV-DC-198			Camera	32	613603	6078154	613616	6078185	-13	-31	34	23		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	06:30:00	1694	MV24GC1-ENV-DC-198			Camera	32	613603	6078153	613616	6078185	-13	-32	34	23		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	06:30:27	1695	MV24GC1-ENV-DC-198			Camera	32	613602	6078153	613616	6078185	-14	-32	35	24		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	06:30:53	1696	MV24GC1-ENV-DC-198			Camera	32	613602	6078156	613616	6078185	-14	-30	33	25		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	06:31:30	1697	MV24GC1-ENV-DC-198			Camera	32	613604	6078160	613616	6078185	-12	-25	28	25		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	06:32:18	1698	MV24GC1-ENV-DC-198			Camera	32	613607	6078164	613616	6078185	-9	-21	23	23		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	06:32:42	1699	MV24GC1-ENV-DC-198			Camera	32	613608	6078165	613616	6078185	-8	-20	21	23		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	06:33:13	1700	MV24GC1-ENV-DC-198			Camera	32	613608	6078167	613616	6078185	-8	-18	20	23		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	06:33:28	1701	MV24GC1-ENV-DC-198			Camera	31	613608	6078170	613616	6078185	-7	-15	17	26		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	06:33:44	1702	MV24GC1-ENV-DC-198			Camera	31	613609	6078172	613616	6078185	-7	-13	15	30		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	06:34:06	1703	MV24GC1-ENV-DC-198			Camera	31	613609	6078175	613616	6078185	-6	-10	12	32		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	06:34:17	1704	MV24GC1-ENV-DC-198			Camera	31	613610	6078176	613616	6078185	-6	-9	10	33		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	06:34:33	1705	MV24GC1-ENV-DC-198			Camera	32	613611	6078179	613616	6078185	-5	-6	8	42		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	06:34:54	1706	MV24GC1-ENV-DC-198			Camera	32	613612	6078183	613616	6078185	-4	-2	4	57		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	06:35:14	1707	MV24GC1-ENV-DC-198			Camera	32	613614	6078185	613616	6078185	-2	0	2	102		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	06:35:25	1708	MV24GC1-ENV-DC-198			Camera	32	613615	6078186	613616	6078185	-1	1	2	152		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	06:35:44	1709	MV24GC1-ENV-DC-198			Camera	32	613617	6078189	613616	6078185	1	4	4	-165		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	06:35:57	1710	MV24GC1-ENV-DC-198			Camera	32	613618	6078191	613616	6078185	2	6	6	-158		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	06:36:07	1711	MV24GC1-ENV-DC-198			Camera	32	613619	6078193	613616	6078185	3	8	8	-158		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	06:36:22	1712	MV24GC1-ENV-DC-198			Camera	32	613620	6078195	613616	6078185	5	10	11	-156		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	06:36:44	1713	MV24GC1-ENV-DC-198			Camera	32	613622	6078198	613616	6078185	7	13	15	-153		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	06:37:12	1714	MV24GC1-ENV-DC-198			Camera	32	613625	6078202	613616	6078185	9	17	19	-151		(Corr'd Nav, Kongsberg 14208, img#50) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	06:37:30	1715	MV24GC1-ENV-DC-198			Camera	32	613626	6078204	613616	6078185	11	19	22	-151		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	06:37:49	1716	MV24GC1-ENV-DC-198			Camera	32	613628	6078206	613616	6078185	12	21	25	-151		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	06:38:03	1717	MV24GC1-ENV-DC-198			Camera	32	613629	6078208	613616	6078185	13	23	27	-150		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	06:38:43	1718	MV24GC1-ENV-DC-198			Camera	32	613632	6078214	613616	6078185	16	29	33	-151		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	06:38:56	1719	MV24GC1-ENV-DC-198			Camera	32	613633	6078216	613616	6078185	17	31	35	-151		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	06:39:20	1720	MV24GC1-ENV-DC-198			Camera	32	613635	6078219	613616	6078185	19	34	39	-150		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	06:39:31	1721	MV24GC1-ENV-DC-198			Camera	32	613636	6078220	613616	6078185	20	35	40	-150		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	06:39:51	1722	MV24GC1-ENV-DC-198			Camera	32	613637	6078223	613616	6078185	22	38	44	-150		(Corr'd Nav, Kongsberg 14208, img#58) (B)
19-Aug-2024	06:40:06	1723	MV24GC1-ENV-DC-198			Camera	32	613639	6078225	613616	6078185	23	40	46	-150		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	06:40:41	1724	MV24GC1-ENV-DC-198			Camera	32	613641	6078229	613616	6078185	25	44	51	-150		(Corr'd Nav, Kongsberg 14208, img#60) (B)
19-Aug-2024	07:54:49	1725	MV24GC1-ENV-DC-222			Camera	37	614265	6078370	614286	6078326	-21	44	49	154		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	07:55:21	1726	MV24GC1-ENV-DC-222			Camera	37	614267	6078366	614286	6078326	-19	40	45	154		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	07:55:47	1727	MV24GC1-ENV-DC-222			Camera	37	614269	6078363	614286	6078326	-18	37	41	155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	07:56:32	1728	MV24GC1-ENV-DC-222			Camera	37	614272	6078356	614286	6078326	-14	30	34	155		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	07:56:51	1729	MV24GC1-ENV-DC-222			Camera	37	614273	6078353	614286	6078326	-13	27	30	154		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	07:57:11	1730	MV24GC1-ENV-DC-222			Camera	37	614275	6078350	614286	6078326	-12	24	27	154		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	07:57:37	1731	MV24GC1-ENV-DC-222			Camera	37	614277	6078346	614286	6078326	-10	20	23	154		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	07:57:51	1732	MV24GC1-ENV-DC-222			Camera	37	614277	6078344	614286	6078326	-9	18	20	154		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	07:58:19	1733	MV24GC1-ENV-DC-222			Camera	37	614279	6078341	614286	6078326	-7	15	17	155		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	07:58:36	1734	MV24GC1-ENV-DC-222			Camera	37	614280	6078338	614286	6078326	-6	12	14	155		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	07:58:57	1735	MV24GC1-ENV-DC-222			Camera	37	614282	6078336	614286	6078326	-4	9	10	156		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	07:59:31	1736	MV24GC1-ENV-DC-222			Camera	37	614284	6078331	614286	6078326	-2	5	5	154		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	07:59:49	1737	MV24GC1-ENV-DC-222			Camera	37	614285	6078328	614286	6078326	-1	2	2	156		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	08:00:14	1738	MV24GC1-ENV-DC-222			Camera	37	614287	6078325	614286	6078326	0	-1	1	-33		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	08:00:33	1739	MV24GC1-ENV-DC-222			Camera	37	614288	6078323	614286	6078326	2	-4	4	-27		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	08:01:14	1740	MV24GC1-ENV-DC-222			Camera	37	614291	6078317	614286	6078326	5	-9	10	-27		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	08:01:35	1741	MV24GC1-ENV-DC-222			Camera	36	614292	6078314	614286	6078326	6	-12	14	-27		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	08:01:51	1742	MV24GC1-ENV-DC-222			Camera	37	614294	6078312	614286	6078326	7	-15	16	-27		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	08:02:21	1743	MV24GC1-ENV-DC-222			Camera	37	614296	6078308	614286	6078326	9	-19	21	-27		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	08:02:52	1744	MV24GC1-ENV-DC-222			Camera	37	614298	6078303	614286	6078326	12	-23	26	-26		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	08:03:18	1745	MV24GC1-ENV-DC-222			Camera	37	614300	6078299	614286	6078326	13	-27	30	-26		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	08:03:48	1746	MV24GC1-ENV-DC-222			Camera	37	614302	6078295	614286	6078326	15	-31	35	-26		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	08:04:17	1747	MV24GC1-ENV-DC-222			Camera	37	614304	6078291	614286	6078326	17	-35	39	-26		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	08:04:51	1748	MV24GC1-ENV-DC-222			Camera	37	614306	6078287	614286	6078326	20	-39	44	-26		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	08:05:17	1749	MV24GC1-ENV-DC-222			Camera	37	614307	6078283	614286	6078326	21	-43	48	-26		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	08:06:08	1750	MV24GC1-ENV-DC-222			Camera	37	614308	6078281	614286	6078326	22	-45	50	-26		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	08:10:42	1751	MV24GC1-ENV-DC-222			Camera	37	614272	6078291	614286	6078326	-15	-35	38	23		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	08:14:42	1752	MV24GC1-ENV-DC-222			Camera	37	614249	6078295	614286	6078326	-37	-31	49	50		(Corr'd Nav, Kongsberg 14208, img#28) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	08:15:39	1753	MV24GC1-ENV-DC-222			Camera	37	614254	6078300	614286	6078326	-32	-26	42	51		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	08:16:03	1754	MV24GC1-ENV-DC-222			Camera	36	614258	6078303	614286	6078326	-29	-24	37	51		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	08:16:20	1755	MV24GC1-ENV-DC-222			Camera	37	614260	6078304	614286	6078326	-27	-22	34	51		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	08:16:54	1756	MV24GC1-ENV-DC-222			Camera	37	614265	6078308	614286	6078326	-22	-18	28	51		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	08:17:26	1757	MV24GC1-ENV-DC-222			Camera	37	614269	6078312	614286	6078326	-18	-14	23	51		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	08:17:38	1758	MV24GC1-ENV-DC-222			Camera	37	614270	6078313	614286	6078326	-17	-13	21	52		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	08:17:59	1759	MV24GC1-ENV-DC-222			Camera	37	614272	6078315	614286	6078326	-14	-11	18	52		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	08:18:26	1760	MV24GC1-ENV-DC-222			Camera	37	614275	6078318	614286	6078326	-11	-8	14	53		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	08:18:43	1761	MV24GC1-ENV-DC-222			Camera	37	614277	6078320	614286	6078326	-9	-6	11	56		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	08:19:01	1762	MV24GC1-ENV-DC-222			Camera	37	614279	6078321	614286	6078326	-7	-5	9	57		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	08:19:33	1763	MV24GC1-ENV-DC-222			Camera	37	614283	6078325	614286	6078326	-4	-1	4	72		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	08:19:49	1764	MV24GC1-ENV-DC-222			Camera	37	614284	6078326	614286	6078326	-2	0	2	100		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	08:20:08	1765	MV24GC1-ENV-DC-222			Camera	37	614286	6078328	614286	6078326	0	2	2	-178		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	08:20:44	1766	MV24GC1-ENV-DC-222			Camera	37	614290	6078333	614286	6078326	4	6	8	-147		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	08:21:06	1767	MV24GC1-ENV-DC-222			Camera	37	614293	6078335	614286	6078326	7	9	11	-142		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	08:21:43	1768	MV24GC1-ENV-DC-222			Camera	36	614297	6078338	614286	6078326	11	12	17	-138		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	08:22:27	1769	MV24GC1-ENV-DC-222			Camera	37	614303	6078343	614286	6078326	16	17	24	-137		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	08:23:40	1770	MV24GC1-ENV-DC-222			Camera	37	614311	6078350	614286	6078326	25	24	35	-135		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	08:24:02	1771	MV24GC1-ENV-DC-222			Camera	37	614313	6078353	614286	6078326	27	27	38	-135		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	08:24:42	1772	MV24GC1-ENV-DC-222			Camera	37	614318	6078357	614286	6078326	32	31	44	-134		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	08:25:23	1773	MV24GC1-ENV-DC-222			Camera	37	614323	6078361	614286	6078326	37	35	51	-133		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	10:01:37	1774	MV24GC1-ENV-DC-216			Camera	42	614770	6079865	614785	6079813	-15	52	54	164		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	10:02:15	1775	MV24GC1-ENV-DC-216			Camera	42	614771	6079860	614785	6079813	-14	46	48	164		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	10:02:42	1776	MV24GC1-ENV-DC-216			Camera	42	614772	6079855	614785	6079813	-12	42	44	164		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	10:03:02	1777	MV24GC1-ENV-DC-216			Camera	42	614773	6079852	614785	6079813	-12	39	40	163		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	10:03:27	1778	MV24GC1-ENV-DC-216			Camera	42	614774	6079848	614785	6079813	-11	35	37	163		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	10:03:50	1779	MV24GC1-ENV-DC-216			Camera	42	614775	6079845	614785	6079813	-10	32	33	163		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	10:04:23	1780	MV24GC1-ENV-DC-216			Camera	42	614776	6079840	614785	6079813	-9	27	28	163		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	10:05:09	1781	MV24GC1-ENV-DC-216			Camera	42	614778	6079834	614785	6079813	-7	20	21	161		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	10:05:37	1782	MV24GC1-ENV-DC-216			Camera	42	614779	6079829	614785	6079813	-6	16	17	160		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	10:06:09	1783	MV24GC1-ENV-DC-216			Camera	42	614780	6079824	614785	6079813	-4	11	12	159		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	10:06:50	1784	MV24GC1-ENV-DC-216			Camera	42	614782	6079819	614785	6079813	-3	5	6	153		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	10:07:24	1785	MV24GC1-ENV-DC-216			Camera	42	614783	6079813	614785	6079813	-1	0	1	88		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	10:07:49	1786	MV24GC1-ENV-DC-216			Camera	42	614784	6079810	614785	6079813	0	-4	4	5		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	10:08:22	1787	MV24GC1-ENV-DC-216			Camera	42	614785	6079805	614785	6079813	1	-8	8	-4		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	10:09:15	1788	MV24GC1-ENV-DC-216			Camera	42	614787	6079797	614785	6079813	3	-16	16	-9		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	10:09:52	1789	MV24GC1-ENV-DC-216			Camera	42	614788	6079792	614785	6079813	4	-22	22	-10		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	10:10:34	1790	MV24GC1-ENV-DC-216			Camera	42	614790	6079786	614785	6079813	5	-28	28	-11		(Corr'd Nav, Kongsberg 14208, img#17) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	10:11:09	1791	MV24GC1-ENV-DC-216			Camera	42	614791	6079781	614785	6079813	6	-33	33	-11		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	10:11:30	1792	MV24GC1-ENV-DC-216			Camera	42	614792	6079778	614785	6079813	7	-36	36	-11		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	10:12:12	1793	MV24GC1-ENV-DC-216			Camera	42	614793	6079772	614785	6079813	9	-42	43	-12		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	10:12:50	1794	MV24GC1-ENV-DC-216			Camera	42	614794	6079767	614785	6079813	10	-47	48	-12		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	10:25:15	1795	MV24GC1-ENV-DC-216			Camera	42	614740	6079813	614785	6079813	-44	-1	44	89		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	10:25:39	1796	MV24GC1-ENV-DC-216			Camera	42	614743	6079813	614785	6079813	-42	-1	42	89		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	10:26:05	1797	MV24GC1-ENV-DC-216			Camera	42	614747	6079813	614785	6079813	-37	-1	37	89		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	10:26:46	1798	MV24GC1-ENV-DC-216			Camera	42	614754	6079813	614785	6079813	-31	-1	31	88		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	10:27:31	1799	MV24GC1-ENV-DC-216			Camera	42	614761	6079812	614785	6079813	-24	-1	24	88		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	10:28:29	1800	MV24GC1-ENV-DC-216			Camera	42	614770	6079813	614785	6079813	-15	0	15	89		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	10:29:54	1801	MV24GC1-ENV-DC-216			Camera	42	614782	6079812	614785	6079813	-3	-1	3	70		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	10:30:15	1802	MV24GC1-ENV-DC-216			Camera	42	614785	6079813	614785	6079813	1	-1	1	-37		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	10:30:54	1803	MV24GC1-ENV-DC-216			Camera	42	614791	6079813	614785	6079813	6	-1	6	-83		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	10:31:40	1804	MV24GC1-ENV-DC-216			Camera	42	614798	6079813	614785	6079813	14	-1	14	-86		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	10:32:23	1805	MV24GC1-ENV-DC-216			Camera	42	614805	6079813	614785	6079813	21	-1	20	-88		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	10:33:00	1806	MV24GC1-ENV-DC-216			Camera	42	614811	6079813	614785	6079813	26	0	26	-89		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	10:33:28	1807	MV24GC1-ENV-DC-216			Camera	42	614815	6079814	614785	6079813	30	0	30	-90		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	10:34:20	1808	MV24GC1-ENV-DC-216			Camera	42	614823	6079814	614785	6079813	38	1	38	-91		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	10:34:46	1809	MV24GC1-ENV-DC-216			Camera	42	614827	6079814	614785	6079813	43	1	43	-91		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	10:35:36	1810	MV24GC1-ENV-DC-216			Camera	42	614833	6079814	614785	6079813	48	0	48	-90		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	12:25:16	1811	MV24GC1-ENV-DC-220			Camera	35	612852	6081385	612857	6081334	-6	51	51	173		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	12:26:44	1812	MV24GC1-ENV-DC-220			Camera	35	612853	6081370	612857	6081334	-5	36	36	173		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	12:27:09	1813	MV24GC1-ENV-DC-220			Camera	35	612853	6081367	612857	6081334	-5	32	32	172		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	12:27:37	1814	MV24GC1-ENV-DC-220			Camera	35	612854	6081363	612857	6081334	-4	28	28	172		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	12:28:34	1815	MV24GC1-ENV-DC-220			Camera	35	612855	6081354	612857	6081334	-2	19	19	174		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	12:29:37	1816	MV24GC1-ENV-DC-220			Camera	35	612856	6081345	612857	6081334	-1	10	10	174		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	12:30:13	1817	MV24GC1-ENV-DC-220			Camera	35	612857	6081338	612857	6081334	0	4	4	174		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	12:30:50	1818	MV24GC1-ENV-DC-220			Camera	35	612857	6081333	612857	6081334	0	-1	1	2		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	12:31:11	1819	MV24GC1-ENV-DC-220			Camera	35	612858	6081330	612857	6081334	0	-5	5	-6		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	12:32:30	1820	MV24GC1-ENV-DC-220			Camera	35	612859	6081318	612857	6081334	2	-17	17	-6		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	12:33:28	1821	MV24GC1-ENV-DC-220			Camera	35	612860	6081309	612857	6081334	2	-26	26	-5		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	12:35:34	1822	MV24GC1-ENV-DC-220			Camera	36	612861	6081289	612857	6081334	4	-45	45	-5		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	12:36:19	1823	MV24GC1-ENV-DC-220			Camera	36	612862	6081284	612857	6081334	5	-51	51	-5		(Raw Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	12:43:27	1823	MV24GC1-ENV-DC-220			Camera	35	612836	6081302	612857	6081334	-21	-32	39	33		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	12:44:56	1824	MV24GC1-ENV-DC-220			Camera	35	612829	6081307	612857	6081334	-29	-27	40	47		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	12:47:05	1825	MV24GC1-ENV-DC-220			Camera	35	612817	6081314	612857	6081334	-40	-21	45	63		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	12:51:17	1826	MV24GC1-ENV-DC-220			Camera	35	612812	6081325	612857	6081334	-45	-9	46	78		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	12:52:41	1827	MV24GC1-ENV-DC-220			Camera	35	612820	6081327	612857	6081334	-38	-7	38	79		(Corr'd Nav, Kongsberg 14208, img#18) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	12:53:23	1828	MV24GC1-ENV-DC-220			Camera	35	612826	6081329	612857	6081334	-32	-5	32	80		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	12:53:43	1829	MV24GC1-ENV-DC-220			Camera	35	612829	6081329	612857	6081334	-28	-5	29	80		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	12:54:24	1830	MV24GC1-ENV-DC-220			Camera	35	612836	6081330	612857	6081334	-22	-5	22	78		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	12:54:49	1831	MV24GC1-ENV-DC-220			Camera	35	612840	6081330	612857	6081334	-18	-4	18	76		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	12:55:18	1832	MV24GC1-ENV-DC-220			Camera	35	612845	6081331	612857	6081334	-13	-4	13	74		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	12:55:45	1833	MV24GC1-ENV-DC-220			Camera	35	612849	6081331	612857	6081334	-8	-3	9	69		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	12:56:23	1834	MV24GC1-ENV-DC-220			Camera	35	612856	6081333	612857	6081334	-2	-2	3	43		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	12:56:56	1835	MV24GC1-ENV-DC-220			Camera	35	612861	6081334	612857	6081334	3	-1	3	-74		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	12:57:09	1836	MV24GC1-ENV-DC-220			Camera	35	612863	6081334	612857	6081334	5	-1	5	-84		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	12:57:32	1837	MV24GC1-ENV-DC-220			Camera	35	612866	6081335	612857	6081334	9	0	9	-92		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	12:59:04	1838	MV24GC1-ENV-DC-220			Camera	35	612880	6081337	612857	6081334	22	3	23	-97		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	12:59:27	1839	MV24GC1-ENV-DC-220			Camera	35	612883	6081337	612857	6081334	26	3	26	-97		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	12:59:32	1840	MV24GC1-ENV-DC-220			Camera	35	612884	6081338	612857	6081334	27	3	27	-97		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	12:59:48	1841	MV24GC1-ENV-DC-220			Camera	35	612886	6081338	612857	6081334	29	4	29	-97		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	13:00:08	1842	MV24GC1-ENV-DC-220			Camera	35	612890	6081339	612857	6081334	32	4	33	-97		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	13:00:44	1843	MV24GC1-ENV-DC-220			Camera	35	612896	6081340	612857	6081334	39	5	39	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	13:01:47	1844	MV24GC1-ENV-DC-220			Camera	35	612907	6081342	612857	6081334	49	7	50	-98		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	13:02:08	1845	MV24GC1-ENV-DC-220			Camera	35	612909	6081342	612857	6081334	52	8	52	-98		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	15:29:29	1846	MV24GC1-ENV-DC-183			Camera	32	611614	6083026	611593	6082978	22	49	53	-156		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	15:29:54	1847	MV24GC1-ENV-DC-183			Camera	32	611614	6083026	611593	6082978	22	48	53	-156		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	15:30:37	1848	MV24GC1-ENV-DC-183			Camera	32	611612	6083019	611593	6082978	20	41	46	-155		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	15:31:21	1849	MV24GC1-ENV-DC-183			Camera	32	611609	6083012	611593	6082978	17	34	38	-154		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	15:31:32	1850	MV24GC1-ENV-DC-183			Camera	32	611609	6083010	611593	6082978	16	32	36	-154		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	15:31:46	1851	MV24GC1-ENV-DC-183			Camera	32	611608	6083008	611593	6082978	15	31	34	-154		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	15:31:57	1852	MV24GC1-ENV-DC-183			Camera	32	611607	6083007	611593	6082978	15	29	33	-153		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	15:32:12	1853	MV24GC1-ENV-DC-183			Camera	32	611606	6083005	611593	6082978	13	27	30	-154		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	15:32:37	1854	MV24GC1-ENV-DC-183			Camera	32	611604	6083002	611593	6082978	12	24	27	-154		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	15:32:47	1855	MV24GC1-ENV-DC-183			Camera	32	611604	6083001	611593	6082978	11	24	26	-154		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	15:33:14	1856	MV24GC1-ENV-DC-183			Camera	32	611603	6082998	611593	6082978	10	21	23	-154		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	15:33:30	1857	MV24GC1-ENV-DC-183			Camera	32	611602	6082996	611593	6082978	9	18	20	-154		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	15:33:41	1858	MV24GC1-ENV-DC-183			Camera	32	611601	6082995	611593	6082978	8	17	19	-154		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	15:34:15	1859	MV24GC1-ENV-DC-183			Camera	32	611599	6082989	611593	6082978	6	12	13	-152		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	15:34:23	1860	MV24GC1-ENV-DC-183			Camera	32	611598	6082988	611593	6082978	6	11	12	-152		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	15:34:42	1861	MV24GC1-ENV-DC-183			Camera	32	611597	6082985	611593	6082978	5	8	9	-149		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	15:34:52	1862	MV24GC1-ENV-DC-183			Camera	32	611596	6082984	611593	6082978	4	6	7	-148		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	15:35:11	1863	MV24GC1-ENV-DC-183			Camera	32	611595	6082982	611593	6082978	3	4	5	-148		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	15:35:35	1864	MV24GC1-ENV-DC-183			Camera	32	611594	6082979	611593	6082978	1	2	2	-150		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	15:35:42	1865	MV24GC1-ENV-DC-183			Camera	32	611593	6082978	611593	6082978	1	1	1	-141		(Corr'd Nav, Kongsberg 14208, img#20) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	15:35:59	1866	MV24GC1-ENV-DC-183			Camera	32	611592	6082976	611593	6082978	-1	-2	2	24		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	15:36:15	1867	MV24GC1-ENV-DC-183			Camera	32	611591	6082974	611593	6082978	-2	-4	4	28		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	15:36:29	1868	MV24GC1-ENV-DC-183			Camera	32	611590	6082972	611593	6082978	-3	-6	7	27		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	15:36:41	1869	MV24GC1-ENV-DC-183			Camera	32	611589	6082970	611593	6082978	-4	-7	8	27		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	15:36:50	1870	MV24GC1-ENV-DC-183			Camera	32	611588	6082969	611593	6082978	-4	-8	9	27		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	15:37:07	1871	MV24GC1-ENV-DC-183			Camera	32	611587	6082967	611593	6082978	-5	-10	12	26		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	15:37:28	1872	MV24GC1-ENV-DC-183			Camera	32	611586	6082964	611593	6082978	-7	-13	15	27		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	15:37:40	1873	MV24GC1-ENV-DC-183			Camera	32	611585	6082962	611593	6082978	-8	-15	17	26		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	15:38:06	1874	MV24GC1-ENV-DC-183			Camera	32	611583	6082958	611593	6082978	-9	-19	21	25		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	15:38:30	1875	MV24GC1-ENV-DC-183			Camera	32	611582	6082955	611593	6082978	-10	-22	25	25		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	15:39:15	1876	MV24GC1-ENV-DC-183			Camera	32	611579	6082950	611593	6082978	-14	-27	30	26		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	15:39:44	1877	MV24GC1-ENV-DC-183			Camera	32	611577	6082949	611593	6082978	-16	-29	33	29		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	15:40:03	1878	MV24GC1-ENV-DC-183			Camera	32	611576	6082947	611593	6082978	-17	-31	35	29		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	15:40:25	1879	MV24GC1-ENV-DC-183			Camera	32	611574	6082943	611593	6082978	-19	-35	39	28		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	15:40:41	1880	MV24GC1-ENV-DC-183			Camera	32	611572	6082941	611593	6082978	-20	-37	42	29		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	15:41:37	1881	MV24GC1-ENV-DC-183			Camera	32	611569	6082933	611593	6082978	-24	-45	51	28		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	15:53:36	1882	MV24GC1-ENV-DC-183			Camera	32	611550	6082977	611593	6082978	-42	-1	42	89		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	15:54:08	1883	MV24GC1-ENV-DC-183			Camera	32	611555	6082978	611593	6082978	-38	0	38	90		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	15:54:22	1884	MV24GC1-ENV-DC-183			Camera	32	611557	6082978	611593	6082978	-36	0	36	91		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	15:54:34	1885	MV24GC1-ENV-DC-183			Camera	32	611559	6082978	611593	6082978	-34	0	34	91		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	15:55:05	1886	MV24GC1-ENV-DC-183			Camera	32	611563	6082978	611593	6082978	-29	0	29	91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	15:55:28	1887	MV24GC1-ENV-DC-183			Camera	32	611567	6082978	611593	6082978	-26	0	26	90		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	15:56:04	1888	MV24GC1-ENV-DC-183			Camera	32	611572	6082977	611593	6082978	-20	0	20	89		(Corr'd Nav, Kongsberg 14208, img#43) (B)
19-Aug-2024	15:56:53	1889	MV24GC1-ENV-DC-183			Camera	32	611579	6082977	611593	6082978	-13	0	13	88		(Corr'd Nav, Kongsberg 14208, img#44) (B)
19-Aug-2024	15:57:59	1890	MV24GC1-ENV-DC-183			Camera	32	611590	6082978	611593	6082978	-3	1	3	103		(Corr'd Nav, Kongsberg 14208, img#45) (B)
19-Aug-2024	15:58:49	1891	MV24GC1-ENV-DC-183			Camera	32	611598	6082977	611593	6082978	5	-1	5	-83		(Corr'd Nav, Kongsberg 14208, img#46) (B)
19-Aug-2024	15:59:31	1892	MV24GC1-ENV-DC-183			Camera	32	611604	6082977	611593	6082978	12	-1	12	-86		(Corr'd Nav, Kongsberg 14208, img#47) (B)
19-Aug-2024	16:00:02	1893	MV24GC1-ENV-DC-183			Camera	32	611609	6082977	611593	6082978	16	0	16	-89		(Corr'd Nav, Kongsberg 14208, img#48) (B)
19-Aug-2024	16:00:29	1894	MV24GC1-ENV-DC-183			Camera	32	611613	6082978	611593	6082978	20	0	20	-91		(Corr'd Nav, Kongsberg 14208, img#49) (B)
19-Aug-2024	16:00:39	1895	MV24GC1-ENV-DC-183			Camera	32	611614	6082978	611593	6082978	22	1	22	-91		(Corr'd Nav, Kongsberg 14208, img#50) (B)
19-Aug-2024	16:01:04	1896	MV24GC1-ENV-DC-183			Camera	32	611618	6082978	611593	6082978	25	0	25	-91		(Corr'd Nav, Kongsberg 14208, img#51) (B)
19-Aug-2024	16:01:24	1897	MV24GC1-ENV-DC-183			Camera	32	611621	6082978	611593	6082978	29	0	29	-90		(Corr'd Nav, Kongsberg 14208, img#52) (B)
19-Aug-2024	16:02:06	1898	MV24GC1-ENV-DC-183			Camera	32	611628	6082977	611593	6082978	35	0	35	-90		(Corr'd Nav, Kongsberg 14208, img#53) (B)
19-Aug-2024	16:02:23	1899	MV24GC1-ENV-DC-183			Camera	32	611631	6082977	611593	6082978	38	0	38	-89		(Corr'd Nav, Kongsberg 14208, img#54) (B)
19-Aug-2024	16:02:43	1900	MV24GC1-ENV-DC-183			Camera	32	611634	6082977	611593	6082978	41	-1	41	-89		(Corr'd Nav, Kongsberg 14208, img#55) (B)
19-Aug-2024	16:03:07	1901	MV24GC1-ENV-DC-183			Camera	32	611637	6082976	611593	6082978	45	-1	45	-88		(Corr'd Nav, Kongsberg 14208, img#56) (B)
19-Aug-2024	16:03:28	1902	MV24GC1-ENV-DC-183			Camera	32	611640	6082976	611593	6082978	48	-2	48	-88		(Corr'd Nav, Kongsberg 14208, img#57) (B)
19-Aug-2024	16:03:48	1903	MV24GC1-ENV-DC-183			Camera	32	611644	6082976	611593	6082978	51	-2	51	-88		(Corr'd Nav, Kongsberg 14208, img#58) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)		Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	16:04:01	1904	MV24GC1-ENV-DC-183			Camera	32	611645	6082976	611593	6082978	53	-2	53	-88		(Corr'd Nav, Kongsberg 14208, img#59) (B)
19-Aug-2024	17:17:38	1905	MV24GC1-ENV-DC-206			Camera	42	612927	6084353	612927	6084402	0	-49	49	0		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	17:18:13	1906	MV24GC1-ENV-DC-206			Camera	42	612927	6084358	612927	6084402	0	-44	44	-1		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	17:18:41	1907	MV24GC1-ENV-DC-206			Camera	42	612927	6084362	612927	6084402	0	-40	40	0		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	17:19:10	1908	MV24GC1-ENV-DC-206			Camera	42	612928	6084367	612927	6084402	1	-35	34	-1		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	17:19:58	1909	MV24GC1-ENV-DC-206			Camera	42	612927	6084373	612927	6084402	0	-29	28	-1		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	17:21:20	1910	MV24GC1-ENV-DC-206			Camera	42	612925	6084387	612927	6084402	-1	-15	15	6		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	17:21:57	1911	MV24GC1-ENV-DC-206			Camera	42	612925	6084394	612927	6084402	-2	-8	8	13		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	17:22:25	1912	MV24GC1-ENV-DC-206			Camera	42	612925	6084398	612927	6084402	-1	-4	4	19		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	17:22:54	1913	MV24GC1-ENV-DC-206			Camera	42	612925	6084402	612927	6084402	-1	0	1	103		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	17:23:24	1914	MV24GC1-ENV-DC-206			Camera	42	612925	6084407	612927	6084402	-2	5	5	157		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	17:23:57	1915	MV24GC1-ENV-DC-206			Camera	42	612925	6084412	612927	6084402	-2	10	10	171		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	17:24:52	1916	MV24GC1-ENV-DC-206			Camera	42	612925	6084420	612927	6084402	-2	18	18	175		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	17:25:48	1917	MV24GC1-ENV-DC-206			Camera	42	612925	6084428	612927	6084402	-2	27	27	176		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	17:26:11	1918	MV24GC1-ENV-DC-206			Camera	42	612925	6084432	612927	6084402	-1	30	30	177		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	17:26:35	1919	MV24GC1-ENV-DC-206			Camera	42	612925	6084435	612927	6084402	-2	34	34	177		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	17:27:33	1920	MV24GC1-ENV-DC-206			Camera	42	612924	6084446	612927	6084402	-3	44	44	177		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	17:27:54	1921	MV24GC1-ENV-DC-206			Camera	42	612925	6084449	612927	6084402	-2	47	47	177		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	17:28:27	1922	MV24GC1-ENV-DC-206			Camera	42	612925	6084453	612927	6084402	-2	52	52	178		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	17:36:08	1923	MV24GC1-ENV-DC-206			Camera	42	612881	6084430	612927	6084402	-46	28	54	121		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	17:37:25	1924	MV24GC1-ENV-DC-206			Camera	42	612894	6084422	612927	6084402	-33	20	38	122		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	17:37:42	1925	MV24GC1-ENV-DC-206			Camera	42	612897	6084420	612927	6084402	-30	19	35	122		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	17:37:58	1926	MV24GC1-ENV-DC-206			Camera	42	612899	6084419	612927	6084402	-28	17	33	121		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	17:38:49	1927	MV24GC1-ENV-DC-206			Camera	42	612904	6084414	612927	6084402	-23	13	26	119		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	17:39:14	1928	MV24GC1-ENV-DC-206			Camera	42	612907	6084412	612927	6084402	-20	11	22	119		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	17:39:44	1929	MV24GC1-ENV-DC-206			Camera	42	612911	6084410	612927	6084402	-16	9	18	118		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	17:40:33	1930	MV24GC1-ENV-DC-206			Camera	42	612916	6084406	612927	6084402	-11	5	12	113		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	17:41:22	1931	MV24GC1-ENV-DC-206			Camera	42	612921	6084405	612927	6084402	-5	3	6	122		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	17:41:52	1932	MV24GC1-ENV-DC-206			Camera	42	612926	6084404	612927	6084402	0	2	2	168		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	17:42:04	1933	MV24GC1-ENV-DC-206			Camera	42	612929	6084404	612927	6084402	2	2	3	-142		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	17:42:21	1934	MV24GC1-ENV-DC-206			Camera	42	612931	6084403	612927	6084402	4	2	5	-110		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	17:42:47	1935	MV24GC1-ENV-DC-206			Camera	42	612935	6084402	612927	6084402	9	1	9	-95		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	17:43:35	1936	MV24GC1-ENV-DC-206			Camera	42	612942	6084400	612927	6084402	15	-1	15	-85		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	17:44:30	1937	MV24GC1-ENV-DC-206			Camera	42	612950	6084398	612927	6084402	23	-4	24	-81		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	17:45:04	1938	MV24GC1-ENV-DC-206			Camera	42	612956	6084396	612927	6084402	29	-5	29	-80		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	17:45:43	1939	MV24GC1-ENV-DC-206			Camera	42	612961	6084395	612927	6084402	35	-7	35	-79		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	17:46:09	1940	MV24GC1-ENV-DC-206			Camera	42	612965	6084394	612927	6084402	38	-8	39	-79		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	17:46:43	1941	MV24GC1-ENV-DC-206			Camera	42	612970	6084393	612927	6084402	43	-9	44	-78		(Corr'd Nav, Kongsberg 14208, img#37) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	17:47:07	1942	MV24GC1-ENV-DC-206			Camera	42	612974	6084392	612927	6084402	47	-10	48	-78		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	17:47:41	1943	MV24GC1-ENV-DC-206			Camera	42	612979	6084392	612927	6084402	52	-10	53	-80		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	17:47:55	1944	MV24GC1-ENV-DC-206			Camera	42	612981	6084392	612927	6084402	54	-9	55	-80		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	19:51:44	1945	MV24GC1-ENV-DC-207			Camera	47	613979	6086216	613980	6086158	-1	58	58	179		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	19:53:18	1946	MV24GC1-ENV-DC-207			Camera	47	613979	6086205	613980	6086158	-1	47	47	178		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	19:53:37	1947	MV24GC1-ENV-DC-207			Camera	47	613979	6086202	613980	6086158	-1	43	43	179		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	19:53:55	1948	MV24GC1-ENV-DC-207			Camera	47	613980	6086198	613980	6086158	-1	40	40	179		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	19:54:29	1949	MV24GC1-ENV-DC-207			Camera	47	613979	6086191	613980	6086158	-1	33	33	178		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	19:54:46	1950	MV24GC1-ENV-DC-207			Camera	47	613979	6086188	613980	6086158	-1	29	29	177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	19:55:17	1951	MV24GC1-ENV-DC-207			Camera	47	613978	6086181	613980	6086158	-2	23	23	175		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	19:55:52	1952	MV24GC1-ENV-DC-207			Camera	47	613980	6086175	613980	6086158	-1	16	16	178		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	19:56:59	1953	MV24GC1-ENV-DC-207			Camera	47	613980	6086160	613980	6086158	0	2	2	165		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	19:57:15	1954	MV24GC1-ENV-DC-207			Camera	47	613980	6086157	613980	6086158	0	-1	1	19		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	19:57:34	1955	MV24GC1-ENV-DC-207			Camera	47	613980	6086153	613980	6086158	0	-5	5	2		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	19:57:58	1956	MV24GC1-ENV-DC-207			Camera	47	613981	6086149	613980	6086158	0	-9	9	-3		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	19:58:06	1957	MV24GC1-ENV-DC-207			Camera	47	613981	6086148	613980	6086158	1	-10	10	-3		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	19:58:41	1958	MV24GC1-ENV-DC-207			Camera	47	613980	6086143	613980	6086158	0	-16	16	1		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	19:58:53	1959	MV24GC1-ENV-DC-207			Camera	47	613980	6086141	613980	6086158	0	-17	17	1		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	19:59:17	1960	MV24GC1-ENV-DC-207			Camera	47	613980	6086139	613980	6086158	0	-20	20	1		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	19:59:30	1961	MV24GC1-ENV-DC-207			Camera	47	613980	6086137	613980	6086158	-1	-22	22	2		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	19:59:55	1962	MV24GC1-ENV-DC-207			Camera	47	613980	6086132	613980	6086158	-1	-26	26	1		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	20:00:31	1963	MV24GC1-ENV-DC-207			Camera	47	613982	6086127	613980	6086158	1	-31	31	-2		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	20:01:27	1964	MV24GC1-ENV-DC-207			Camera	47	613981	6086118	613980	6086158	1	-40	40	-2		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	20:02:11	1965	MV24GC1-ENV-DC-207			Camera	47	613981	6086112	613980	6086158	1	-47	47	-1		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	20:12:51	1966	MV24GC1-ENV-DC-207			Camera	47	613926	6086162	613980	6086158	-54	3	54	94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	20:14:57	1967	MV24GC1-ENV-DC-207			Camera	47	613934	6086163	613980	6086158	-47	5	47	96		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	20:15:23	1968	MV24GC1-ENV-DC-207			Camera	47	613938	6086163	613980	6086158	-42	5	43	96		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	20:16:18	1969	MV24GC1-ENV-DC-207			Camera	47	613948	6086162	613980	6086158	-33	4	33	97		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	20:16:48	1970	MV24GC1-ENV-DC-207			Camera	47	613952	6086161	613980	6086158	-28	3	28	96		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	20:17:29	1971	MV24GC1-ENV-DC-207			Camera	47	613957	6086161	613980	6086158	-24	3	24	97		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	20:18:23	1972	MV24GC1-ENV-DC-207			Camera	47	613966	6086162	613980	6086158	-15	3	15	102		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	20:18:40	1973	MV24GC1-ENV-DC-207			Camera	47	613968	6086161	613980	6086158	-12	3	12	104		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	20:19:25	1974	MV24GC1-ENV-DC-207			Camera	47	613976	6086162	613980	6086158	-5	3	6	125		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	20:19:53	1975	MV24GC1-ENV-DC-207			Camera	47	613980	6086162	613980	6086158	0	3	4	173		(Corr'd Nav, Kongsberg 14208, img#31) (B)
19-Aug-2024	20:20:13	1976	MV24GC1-ENV-DC-207			Camera	47	613982	6086161	613980	6086158	2	3	3	-143		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	20:21:00	1977	MV24GC1-ENV-DC-207			Camera	47	613990	6086161	613980	6086158	9	3	10	-109		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	20:21:34	1978	MV24GC1-ENV-DC-207			Camera	47	613995	6086160	613980	6086158	15	2	15	-97		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	20:22:17	1979	MV24GC1-ENV-DC-207			Camera	47	614003	6086160	613980	6086158	23	2	23	-95		(Corr'd Nav, Kongsberg 14208, img#35) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	20:23:04	1980	MV24GC1-ENV-DC-207			Camera	47	614010	6086160	613980	6086158	30	2	30	-94		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	20:23:47	1981	MV24GC1-ENV-DC-207			Camera	47	614017	6086160	613980	6086158	37	1	37	-92		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	20:24:26	1982	MV24GC1-ENV-DC-207			Camera	47	614023	6086159	613980	6086158	42	1	42	-91		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	20:24:51	1983	MV24GC1-ENV-DC-207			Camera	47	614026	6086160	613980	6086158	46	1	46	-91		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	20:25:08	1984	MV24GC1-ENV-DC-207			Camera	47	614029	6086160	613980	6086158	49	1	49	-91		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	20:25:34	1985	MV24GC1-ENV-DC-207			Camera	47	614031	6086159	613980	6086158	51	1	51	-91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	20:25:48	1986	MV24GC1-ENV-DC-207			Camera	47	614033	6086158	613980	6086158	52	0	52	-90		(Corr'd Nav, Kongsberg 14208, img#42) (B)
19-Aug-2024	21:56:51	1987	MV24GC1-ENV-DC-217			Camera	49	615721	6086264	615718	6086211	3	53	53	-177		(Corr'd Nav, Kongsberg 14208, img#1) (B)
19-Aug-2024	21:57:30	1988	MV24GC1-ENV-DC-217			Camera	49	615721	6086261	615718	6086211	3	49	49	-176		(Corr'd Nav, Kongsberg 14208, img#2) (B)
19-Aug-2024	21:58:04	1989	MV24GC1-ENV-DC-217			Camera	49	615719	6086257	615718	6086211	1	46	46	-179		(Corr'd Nav, Kongsberg 14208, img#3) (B)
19-Aug-2024	21:58:25	1990	MV24GC1-ENV-DC-217			Camera	49	615719	6086255	615718	6086211	0	44	44	-180		(Corr'd Nav, Kongsberg 14208, img#4) (B)
19-Aug-2024	21:59:40	1991	MV24GC1-ENV-DC-217			Camera	49	615719	6086243	615718	6086211	1	32	32	-178		(Corr'd Nav, Kongsberg 14208, img#5) (B)
19-Aug-2024	22:00:07	1992	MV24GC1-ENV-DC-217			Camera	49	615719	6086239	615718	6086211	0	27	27	-179		(Corr'd Nav, Kongsberg 14208, img#6) (B)
19-Aug-2024	22:00:57	1993	MV24GC1-ENV-DC-217			Camera	49	615718	6086231	615718	6086211	0	20	20	179		(Corr'd Nav, Kongsberg 14208, img#7) (B)
19-Aug-2024	22:02:01	1994	MV24GC1-ENV-DC-217			Camera	49	615717	6086220	615718	6086211	-1	8	9	174		(Corr'd Nav, Kongsberg 14208, img#8) (B)
19-Aug-2024	22:02:25	1995	MV24GC1-ENV-DC-217			Camera	49	615717	6086217	615718	6086211	-1	5	5	170		(Corr'd Nav, Kongsberg 14208, img#9) (B)
19-Aug-2024	22:02:56	1996	MV24GC1-ENV-DC-217			Camera	49	615717	6086213	615718	6086211	-1	1	2	126		(Corr'd Nav, Kongsberg 14208, img#10) (B)
19-Aug-2024	22:03:33	1997	MV24GC1-ENV-DC-217			Camera	49	615715	6086207	615718	6086211	-3	-5	6	34		(Corr'd Nav, Kongsberg 14208, img#11) (B)
19-Aug-2024	22:04:25	1998	MV24GC1-ENV-DC-217			Camera	49	615714	6086199	615718	6086211	-4	-13	13	18		(Corr'd Nav, Kongsberg 14208, img#12) (B)
19-Aug-2024	22:04:57	1999	MV24GC1-ENV-DC-217			Camera	49	615714	6086194	615718	6086211	-4	-18	18	14		(Corr'd Nav, Kongsberg 14208, img#13) (B)
19-Aug-2024	22:05:27	2000	MV24GC1-ENV-DC-217			Camera	49	615712	6086190	615718	6086211	-7	-22	23	17		(Corr'd Nav, Kongsberg 14208, img#14) (B)
19-Aug-2024	22:06:31	2001	MV24GC1-ENV-DC-217			Camera	49	615713	6086178	615718	6086211	-5	-33	33	9		(Corr'd Nav, Kongsberg 14208, img#15) (B)
19-Aug-2024	22:07:00	2002	MV24GC1-ENV-DC-217			Camera	49	615713	6086173	615718	6086211	-5	-38	38	8		(Corr'd Nav, Kongsberg 14208, img#16) (B)
19-Aug-2024	22:07:46	2003	MV24GC1-ENV-DC-217			Camera	49	615712	6086169	615718	6086211	-6	-43	43	8		(Corr'd Nav, Kongsberg 14208, img#17) (B)
19-Aug-2024	22:08:42	2004	MV24GC1-ENV-DC-217			Camera	49	615712	6086163	615718	6086211	-7	-49	49	8		(Corr'd Nav, Kongsberg 14208, img#18) (B)
19-Aug-2024	22:10:04	2005	MV24GC1-ENV-DC-217			Camera	49	615711	6086161	615718	6086211	-7	-50	51	8		(Corr'd Nav, Kongsberg 14208, img#19) (B)
19-Aug-2024	22:18:32	2006	MV24GC1-ENV-DC-217			Camera	49	615753	6086204	615718	6086211	35	-8	36	-78		(Corr'd Nav, Kongsberg 14208, img#20) (B)
19-Aug-2024	22:19:01	2007	MV24GC1-ENV-DC-217			Camera	49	615756	6086208	615718	6086211	38	-4	38	-84		(Corr'd Nav, Kongsberg 14208, img#21) (B)
19-Aug-2024	22:22:21	2008	MV24GC1-ENV-DC-217			Camera	49	615771	6086215	615718	6086211	53	4	53	-94		(Corr'd Nav, Kongsberg 14208, img#22) (B)
19-Aug-2024	22:23:54	2009	MV24GC1-ENV-DC-217			Camera	49	615762	6086213	615718	6086211	44	2	44	-93		(Corr'd Nav, Kongsberg 14208, img#23) (B)
19-Aug-2024	22:25:02	2010	MV24GC1-ENV-DC-217			Camera	49	615752	6086213	615718	6086211	34	1	34	-92		(Corr'd Nav, Kongsberg 14208, img#24) (B)
19-Aug-2024	22:25:13	2011	MV24GC1-ENV-DC-217			Camera	49	615750	6086212	615718	6086211	32	1	32	-92		(Corr'd Nav, Kongsberg 14208, img#25) (B)
19-Aug-2024	22:26:03	2012	MV24GC1-ENV-DC-217			Camera	49	615743	6086213	615718	6086211	24	1	24	-93		(Corr'd Nav, Kongsberg 14208, img#26) (B)
19-Aug-2024	22:26:23	2013	MV24GC1-ENV-DC-217			Camera	49	615739	6086213	615718	6086211	20	1	20	-94		(Corr'd Nav, Kongsberg 14208, img#27) (B)
19-Aug-2024	22:27:02	2014	MV24GC1-ENV-DC-217			Camera	49	615732	6086213	615718	6086211	14	1	14	-95		(Corr'd Nav, Kongsberg 14208, img#28) (B)
19-Aug-2024	22:27:31	2015	MV24GC1-ENV-DC-217			Camera	49	615728	6086212	615718	6086211	10	0	10	-91		(Corr'd Nav, Kongsberg 14208, img#29) (B)
19-Aug-2024	22:28:00	2016	MV24GC1-ENV-DC-217			Camera	49	615722	6086212	615718	6086211	4	1	4	-97		(Corr'd Nav, Kongsberg 14208, img#30) (B)
19-Aug-2024	22:29:07	2017	MV24GC1-ENV-DC-217			Camera	49	615713	6086211	615718	6086211	-5	0	6	85		(Corr'd Nav, Kongsberg 14208, img#31) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	22:30:16	2018	MV24GC1-ENV-DC-217			Camera	49	615703	6086211	615718	6086211	-16	-1	16	87		(Corr'd Nav, Kongsberg 14208, img#32) (B)
19-Aug-2024	22:31:11	2019	MV24GC1-ENV-DC-217			Camera	49	615693	6086211	615718	6086211	-25	0	25	90		(Corr'd Nav, Kongsberg 14208, img#33) (B)
19-Aug-2024	22:31:26	2020	MV24GC1-ENV-DC-217			Camera	49	615691	6086210	615718	6086211	-27	-1	27	88		(Corr'd Nav, Kongsberg 14208, img#34) (B)
19-Aug-2024	22:31:46	2021	MV24GC1-ENV-DC-217			Camera	49	615688	6086210	615718	6086211	-30	-2	30	87		(Corr'd Nav, Kongsberg 14208, img#35) (B)
19-Aug-2024	22:32:12	2022	MV24GC1-ENV-DC-217			Camera	49	615684	6086210	615718	6086211	-34	-2	34	87		(Corr'd Nav, Kongsberg 14208, img#36) (B)
19-Aug-2024	22:32:24	2023	MV24GC1-ENV-DC-217			Camera	49	615683	6086210	615718	6086211	-36	-1	36	88		(Corr'd Nav, Kongsberg 14208, img#37) (B)
19-Aug-2024	22:33:18	2024	MV24GC1-ENV-DC-217			Camera	49	615675	6086210	615718	6086211	-44	-2	44	88		(Corr'd Nav, Kongsberg 14208, img#38) (B)
19-Aug-2024	22:33:50	2025	MV24GC1-ENV-DC-217			Camera	49	615671	6086210	615718	6086211	-47	-1	47	88		(Corr'd Nav, Kongsberg 14208, img#39) (B)
19-Aug-2024	22:34:11	2026	MV24GC1-ENV-DC-217			Camera	49	615669	6086210	615718	6086211	-49	-1	49	89		(Corr'd Nav, Kongsberg 14208, img#40) (B)
19-Aug-2024	22:34:28	2027	MV24GC1-ENV-DC-217			Camera	49	615666	6086213	615718	6086211	-52	1	52	91		(Corr'd Nav, Kongsberg 14208, img#41) (B)
19-Aug-2024	22:34:43	2028	MV24GC1-ENV-DC-217			Camera	49	615663	6086214	615718	6086211	-55	2	55	92		(Corr'd Nav, Kongsberg 14208, img#42) (B)
20-Aug-2024	00:37:28	2029	MV24GC1-ENV-DC-208			Camera	50	615015	6087924	615011	6087874	4	49	50	-175		(Corr'd Nav, Kongsberg 14208, img#1) (B)
20-Aug-2024	00:37:43	2030	MV24GC1-ENV-DC-208			Camera	50	615014	6087923	615011	6087874	4	48	49	-175		(Corr'd Nav, Kongsberg 14208, img#2) (B)
20-Aug-2024	00:38:02	2031	MV24GC1-ENV-DC-208			Camera	50	615014	6087921	615011	6087874	4	46	46	-176		(Corr'd Nav, Kongsberg 14208, img#3) (B)
20-Aug-2024	00:38:18	2032	MV24GC1-ENV-DC-208			Camera	50	615014	6087919	615011	6087874	3	45	45	-176		(Corr'd Nav, Kongsberg 14208, img#4) (B)
20-Aug-2024	00:38:36	2033	MV24GC1-ENV-DC-208			Camera	50	615013	6087917	615011	6087874	3	43	43	-176		(Corr'd Nav, Kongsberg 14208, img#5) (B)
20-Aug-2024	00:39:28	2034	MV24GC1-ENV-DC-208			Camera	50	615012	6087909	615011	6087874	2	34	34	-177		(Corr'd Nav, Kongsberg 14208, img#6) (B)
20-Aug-2024	00:39:48	2035	MV24GC1-ENV-DC-208			Camera	50	615013	6087905	615011	6087874	3	30	30	-175		(Corr'd Nav, Kongsberg 14208, img#7) (B)
20-Aug-2024	00:40:02	2036	MV24GC1-ENV-DC-208			Camera	50	615013	6087902	615011	6087874	3	28	28	-174		(Corr'd Nav, Kongsberg 14208, img#8) (B)
20-Aug-2024	00:40:17	2037	MV24GC1-ENV-DC-208			Camera	50	615013	6087900	615011	6087874	2	26	26	-175		(Corr'd Nav, Kongsberg 14208, img#9) (B)
20-Aug-2024	00:41:08	2038	MV24GC1-ENV-DC-208			Camera	50	615012	6087892	615011	6087874	2	17	17	-174		(Corr'd Nav, Kongsberg 14208, img#10) (B)
20-Aug-2024	00:41:18	2039	MV24GC1-ENV-DC-208			Camera	50	615013	6087890	615011	6087874	2	16	16	-173		(Corr'd Nav, Kongsberg 14208, img#11) (B)
20-Aug-2024	00:41:41	2040	MV24GC1-ENV-DC-208			Camera	50	615012	6087886	615011	6087874	2	12	12	-171		(Corr'd Nav, Kongsberg 14208, img#12) (B)
20-Aug-2024	00:42:17	2041	MV24GC1-ENV-DC-208			Camera	50	615012	6087880	615011	6087874	1	6	6	-170		(Corr'd Nav, Kongsberg 14208, img#13) (B)
20-Aug-2024	00:42:38	2042	MV24GC1-ENV-DC-208			Camera	50	615011	6087877	615011	6087874	0	3	3	-176		(Corr'd Nav, Kongsberg 14208, img#14) (B)
20-Aug-2024	00:42:48	2043	MV24GC1-ENV-DC-208			Camera	50	615011	6087876	615011	6087874	0	1	1	178		(Corr'd Nav, Kongsberg 14208, img#15) (B)
20-Aug-2024	00:43:31	2044	MV24GC1-ENV-DC-208			Camera	50	615010	6087869	615011	6087874	0	-6	6	5		(Corr'd Nav, Kongsberg 14208, img#16) (B)
20-Aug-2024	00:43:42	2045	MV24GC1-ENV-DC-208			Camera	50	615011	6087867	615011	6087874	0	-8	8	0		(Corr'd Nav, Kongsberg 14208, img#17) (B)
20-Aug-2024	00:43:54	2046	MV24GC1-ENV-DC-208			Camera	50	615011	6087865	615011	6087874	0	-10	10	-2		(Corr'd Nav, Kongsberg 14208, img#18) (B)
20-Aug-2024	00:44:11	2047	MV24GC1-ENV-DC-208			Camera	50	615010	6087862	615011	6087874	-1	-12	12	3		(Corr'd Nav, Kongsberg 14208, img#19) (B)
20-Aug-2024	00:44:20	2048	MV24GC1-ENV-DC-208			Camera	50	615009	6087861	615011	6087874	-1	-13	13	5		(Corr'd Nav, Kongsberg 14208, img#20) (B)
20-Aug-2024	00:45:22	2049	MV24GC1-ENV-DC-208			Camera	50	615009	6087852	615011	6087874	-1	-22	22	3		(Corr'd Nav, Kongsberg 14208, img#21) (B)
20-Aug-2024	00:46:13	2050	MV24GC1-ENV-DC-208			Camera	50	615007	6087845	615011	6087874	-4	-29	30	7		(Corr'd Nav, Kongsberg 14208, img#22) (B)
20-Aug-2024	00:46:23	2051	MV24GC1-ENV-DC-208			Camera	50	615007	6087843	615011	6087874	-4	-31	31	7		(Corr'd Nav, Kongsberg 14208, img#23) (B)
20-Aug-2024	00:47:17	2052	MV24GC1-ENV-DC-208			Camera	50	615005	6087835	615011	6087874	-5	-39	40	8		(Corr'd Nav, Kongsberg 14208, img#24) (B)
20-Aug-2024	00:47:37	2053	MV24GC1-ENV-DC-208			Camera	50	615005	6087832	615011	6087874	-5	-42	43	7		(Corr'd Nav, Kongsberg 14208, img#25) (B)
20-Aug-2024	00:47:47	2054	MV24GC1-ENV-DC-208			Camera	50	615005	6087831	615011	6087874	-5	-44	44	7		(Corr'd Nav, Kongsberg 14208, img#26) (B)
20-Aug-2024	00:49:13	2055	MV24GC1-ENV-DC-208			Camera	50	615005	6087822	615011	6087874	-6	-52	52	6		(Corr'd Nav, Kongsberg 14208, img#27) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Ocean Reliance*										
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG										
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Starboard A-Frame Mid			x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)					Actual Coordinates derived from	Beacon										
Geodetic Reference System	Datum	WGS 84 (18) to ED50		Ellipsoid	International 1924		Projection	UTM zone 30N (3°W)					Vertical / Tidal Datum	MSL			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Aug-2024	00:49:47	2056	MV24GC1-ENV-DC-208			Camera	50	615007	6087823	615011	6087874	-4	-52	52	4		(Corr'd Nav, Kongsberg 14208, img#28) (B)
20-Aug-2024	00:50:52	2057	MV24GC1-ENV-DC-208			Camera	50	615003	6087827	615011	6087874	-7	-48	48	9		(Corr'd Nav, Kongsberg 14208, img#29) (B)
20-Aug-2024	00:51:14	2058	MV24GC1-ENV-DC-208			Camera	50	615002	6087829	615011	6087874	-8	-45	46	10		(Corr'd Nav, Kongsberg 14208, img#30) (B)
20-Aug-2024	00:51:36	2059	MV24GC1-ENV-DC-208			Camera	50	615000	6087831	615011	6087874	-11	-43	45	14		(Corr'd Nav, Kongsberg 14208, img#31) (B)
20-Aug-2024	00:52:22	2060	MV24GC1-ENV-DC-208			Camera	50	614995	6087838	615011	6087874	-16	-36	40	24		(Corr'd Nav, Kongsberg 14208, img#32) (B)
20-Aug-2024	00:52:32	2061	MV24GC1-ENV-DC-208			Camera	50	614993	6087839	615011	6087874	-17	-35	39	26		(Corr'd Nav, Kongsberg 14208, img#33) (B)
20-Aug-2024	00:53:24	2062	MV24GC1-ENV-DC-208			Camera	50	614987	6087847	615011	6087874	-24	-27	36	41		(Corr'd Nav, Kongsberg 14208, img#34) (B)
20-Aug-2024	00:54:04	2063	MV24GC1-ENV-DC-208			Camera	50	614983	6087852	615011	6087874	-28	-23	36	51		(Corr'd Nav, Kongsberg 14208, img#35) (B)
20-Aug-2024	00:55:25	2064	MV24GC1-ENV-DC-208			Camera	50	614977	6087859	615011	6087874	-33	-16	37	65		(Corr'd Nav, Kongsberg 14208, img#36) (B)
20-Aug-2024	00:56:04	2065	MV24GC1-ENV-DC-208			Camera	50	614976	6087862	615011	6087874	-35	-13	37	70		(Corr'd Nav, Kongsberg 14208, img#37) (B)
20-Aug-2024	00:56:49	2066	MV24GC1-ENV-DC-208			Camera	50	614974	6087865	615011	6087874	-36	-10	38	75		(Corr'd Nav, Kongsberg 14208, img#38) (B)
20-Aug-2024	00:57:39	2067	MV24GC1-ENV-DC-208			Camera	50	614971	6087868	615011	6087874	-39	-7	40	80		(Corr'd Nav, Kongsberg 14208, img#39) (B)
20-Aug-2024	00:58:09	2068	MV24GC1-ENV-DC-208			Camera	50	614969	6087871	615011	6087874	-42	-4	42	85		(Corr'd Nav, Kongsberg 14208, img#40) (B)
20-Aug-2024	01:01:42	2069	MV24GC1-ENV-DC-208			Camera	50	614966	6087883	615011	6087874	-45	9	46	101		(Corr'd Nav, Kongsberg 14208, img#41) (B)
20-Aug-2024	01:02:33	2070	MV24GC1-ENV-DC-208			Camera	50	614972	6087882	615011	6087874	-39	8	40	101		(Corr'd Nav, Kongsberg 14208, img#42) (B)
20-Aug-2024	01:03:16	2071	MV24GC1-ENV-DC-208			Camera	50	614978	6087881	615011	6087874	-32	7	33	102		(Corr'd Nav, Kongsberg 14208, img#43) (B)
20-Aug-2024	01:03:55	2072	MV24GC1-ENV-DC-208			Camera	50	614985	6087880	615011	6087874	-26	5	27	101		(Corr'd Nav, Kongsberg 14208, img#44) (B)
20-Aug-2024	01:04:11	2073	MV24GC1-ENV-DC-208			Camera	50	614987	6087879	615011	6087874	-23	5	24	101		(Corr'd Nav, Kongsberg 14208, img#45) (B)
20-Aug-2024	01:04:33	2074	MV24GC1-ENV-DC-208			Camera	50	614990	6087878	615011	6087874	-20	4	21	100		(Corr'd Nav, Kongsberg 14208, img#46) (B)
20-Aug-2024	01:05:06	2075	MV24GC1-ENV-DC-208			Camera	50	614996	6087877	615011	6087874	-15	3	15	101		(Corr'd Nav, Kongsberg 14208, img#47) (B)
20-Aug-2024	01:06:06	2076	MV24GC1-ENV-DC-208			Camera	50	615005	6087875	615011	6087874	-6	1	6	96		(Corr'd Nav, Kongsberg 14208, img#48) (B)
20-Aug-2024	01:06:27	2077	MV24GC1-ENV-DC-208			Camera	50	615008	6087874	615011	6087874	-2	0	2	82		(Corr'd Nav, Kongsberg 14208, img#49) (B)
20-Aug-2024	01:06:38	2078	MV24GC1-ENV-DC-208			Camera	50	615010	6087874	615011	6087874	-1	0	1	62		(Corr'd Nav, Kongsberg 14208, img#50) (B)
20-Aug-2024	01:06:57	2079	MV24GC1-ENV-DC-208			Camera	50	615013	6087873	615011	6087874	2	-1	2	-61		(Corr'd Nav, Kongsberg 14208, img#51) (B)
20-Aug-2024	01:07:29	2080	MV24GC1-ENV-DC-208			Camera	50	615017	6087872	615011	6087874	6	-3	7	-69		(Corr'd Nav, Kongsberg 14208, img#52) (B)
20-Aug-2024	01:07:47	2081	MV24GC1-ENV-DC-208			Camera	50	615020	6087872	615011	6087874	9	-3	10	-73		(Corr'd Nav, Kongsberg 14208, img#53) (B)
20-Aug-2024	01:07:56	2082	MV24GC1-ENV-DC-208			Camera	50	615021	6087871	615011	6087874	10	-3	11	-73		(Corr'd Nav, Kongsberg 14208, img#54) (B)
20-Aug-2024	01:08:31	2083	MV24GC1-ENV-DC-208			Camera	50	615026	6087870	615011	6087874	16	-4	16	-74		(Corr'd Nav, Kongsberg 14208, img#55) (B)
20-Aug-2024	01:09:05	2084	MV24GC1-ENV-DC-208			Camera	50	615031	6087870	615011	6087874	21	-5	21	-76		(Corr'd Nav, Kongsberg 14208, img#56) (B)
20-Aug-2024	01:09:27	2085	MV24GC1-ENV-DC-208			Camera	50	615035	6087869	615011	6087874	24	-6	25	-76		(Corr'd Nav, Kongsberg 14208, img#57) (B)
20-Aug-2024	01:09:50	2086	MV24GC1-ENV-DC-208			Camera	50	615038	6087868	615011	6087874	28	-7	28	-76		(Corr'd Nav, Kongsberg 14208, img#58) (B)
20-Aug-2024	01:10:55	2087	MV24GC1-ENV-DC-208			Camera	50	615048	6087866	615011	6087874	37	-8	38	-77		(Corr'd Nav, Kongsberg 14208, img#59) (B)
20-Aug-2024	01:11:46	2088	MV24GC1-ENV-DC-208			Camera	50	615055	6087865	615011	6087874	45	-9	46	-78		(Corr'd Nav, Kongsberg 14208, img#60) (B)
20-Aug-2024	03:02:18	2089	MV24GC1-ENV-DC-209			Camera	52	615687	6088903	615665	6088945	22	-42	48	-28		(Corr'd Nav, Kongsberg 14208, img#1) (B)
20-Aug-2024	03:04:23	2090	MV24GC1-ENV-DC-209			Camera	52	615682	6088911	615665	6088945	17	-34	37	-27		(Corr'd Nav, Kongsberg 14208, img#2) (B)
20-Aug-2024	03:04:39	2091	MV24GC1-ENV-DC-209			Camera	52	615681	6088913	615665	6088945	16	-31	35	-27		(Corr'd Nav, Kongsberg 14208, img#3) (B)
20-Aug-2024	03:05:03	2092	MV24GC1-ENV-DC-209			Camera	52	615679	6088916	615665	6088945	14	-29	32	-26		(Corr'd Nav, Kongsberg 14208, img#4) (B)
20-Aug-2024	03:05:13	2093	MV24GC1-ENV-DC-209			Camera	52	615678	6088918	615665	6088945	13	-27	30	-26		(Corr'd Nav, Kongsberg 14208, img#5) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Aug-2024	03:05:30	2094	MV24GC1-ENV-DC-209			Camera	52	615677	6088920	615665	6088945	12	-25	28	-26		(Corr'd Nav, Kongsberg 14208, img#6) (B)
20-Aug-2024	03:06:20	2095	MV24GC1-ENV-DC-209			Camera	52	615675	6088927	615665	6088945	10	-18	20	-28		(Corr'd Nav, Kongsberg 14208, img#7) (B)
20-Aug-2024	03:06:51	2096	MV24GC1-ENV-DC-209			Camera	52	615672	6088931	615665	6088945	8	-14	16	-28		(Corr'd Nav, Kongsberg 14208, img#8) (B)
20-Aug-2024	03:07:06	2097	MV24GC1-ENV-DC-209			Camera	52	615671	6088933	615665	6088945	6	-12	14	-28		(Corr'd Nav, Kongsberg 14208, img#9) (B)
20-Aug-2024	03:07:52	2098	MV24GC1-ENV-DC-209			Camera	52	615668	6088939	615665	6088945	3	-6	6	-28		(Corr'd Nav, Kongsberg 14208, img#10) (B)
20-Aug-2024	03:08:23	2099	MV24GC1-ENV-DC-209			Camera	52	615665	6088943	615665	6088945	0	-2	2	-15		(Corr'd Nav, Kongsberg 14208, img#11) (B)
20-Aug-2024	03:08:31	2100	MV24GC1-ENV-DC-209			Camera	52	615665	6088944	615665	6088945	0	-1	1	17		(Corr'd Nav, Kongsberg 14208, img#12) (B)
20-Aug-2024	03:08:41	2101	MV24GC1-ENV-DC-209			Camera	52	615664	6088946	615665	6088945	-1	1	1	123		(Corr'd Nav, Kongsberg 14208, img#13) (B)
20-Aug-2024	03:08:54	2102	MV24GC1-ENV-DC-209			Camera	52	615663	6088947	615665	6088945	-2	2	3	138		(Corr'd Nav, Kongsberg 14208, img#14) (B)
20-Aug-2024	03:09:18	2103	MV24GC1-ENV-DC-209			Camera	52	615661	6088951	615665	6088945	-4	6	7	145		(Corr'd Nav, Kongsberg 14208, img#15) (B)
20-Aug-2024	03:09:56	2104	MV24GC1-ENV-DC-209			Camera	52	615658	6088956	615665	6088945	-7	11	12	149		(Corr'd Nav, Kongsberg 14208, img#16) (B)
20-Aug-2024	03:10:25	2105	MV24GC1-ENV-DC-209			Camera	52	615656	6088960	615665	6088945	-9	15	17	150		(Corr'd Nav, Kongsberg 14208, img#17) (B)
20-Aug-2024	03:11:16	2106	MV24GC1-ENV-DC-209			Camera	52	615652	6088967	615665	6088945	-13	22	25	149		(Corr'd Nav, Kongsberg 14208, img#18) (B)
20-Aug-2024	03:11:47	2107	MV24GC1-ENV-DC-209			Camera	52	615649	6088971	615665	6088945	-16	26	30	148		(Corr'd Nav, Kongsberg 14208, img#19) (B)
20-Aug-2024	03:12:18	2108	MV24GC1-ENV-DC-209			Camera	52	615647	6088975	615665	6088945	-18	30	35	149		(Corr'd Nav, Kongsberg 14208, img#20) (B)
20-Aug-2024	03:13:22	2109	MV24GC1-ENV-DC-209			Camera	52	615642	6088983	615665	6088945	-22	38	44	150		(Corr'd Nav, Kongsberg 14208, img#21) (B)
20-Aug-2024	03:13:57	2110	MV24GC1-ENV-DC-209			Camera	52	615639	6088988	615665	6088945	-26	43	50	149		(Corr'd Nav, Kongsberg 14208, img#22) (B)
20-Aug-2024	03:19:59	2111	MV24GC1-ENV-DC-209			Camera	52	615670	6088998	615665	6088945	5	53	54	-174		(Corr'd Nav, Kongsberg 14208, img#23) (B)
20-Aug-2024	03:20:18	2112	MV24GC1-ENV-DC-209			Camera	52	615673	6088998	615665	6088945	8	53	54	-171		(Corr'd Nav, Kongsberg 14208, img#24) (B)
20-Aug-2024	03:21:39	2113	MV24GC1-ENV-DC-209			Camera	52	615685	6088996	615665	6088945	20	52	55	-159		(Corr'd Nav, Kongsberg 14208, img#25) (B)
20-Aug-2024	03:22:20	2114	MV24GC1-ENV-DC-209			Camera	52	615691	6088996	615665	6088945	26	51	57	-153		(Corr'd Nav, Kongsberg 14208, img#26) (B)
20-Aug-2024	03:22:46	2115	MV24GC1-ENV-DC-209			Camera	52	615692	6088994	615665	6088945	27	49	56	-151		(Corr'd Nav, Kongsberg 14208, img#27) (B)
20-Aug-2024	03:23:45	2116	MV24GC1-ENV-DC-209			Camera	52	615691	6088988	615665	6088945	26	43	50	-149		(Corr'd Nav, Kongsberg 14208, img#28) (B)
20-Aug-2024	03:24:30	2117	MV24GC1-ENV-DC-209			Camera	52	615691	6088983	615665	6088945	26	38	46	-146		(Corr'd Nav, Kongsberg 14208, img#29) (B)
20-Aug-2024	03:26:33	2118	MV24GC1-ENV-DC-209			Camera	52	615689	6088979	615665	6088945	24	34	42	-145		(Corr'd Nav, Kongsberg 14208, img#30) (B)
20-Aug-2024	03:27:25	2119	MV24GC1-ENV-DC-209			Camera	52	615685	6088972	615665	6088945	21	27	34	-143		(Corr'd Nav, Kongsberg 14208, img#31) (B)
20-Aug-2024	03:28:22	2120	MV24GC1-ENV-DC-209			Camera	52	615686	6088971	615665	6088945	21	26	33	-141		(Corr'd Nav, Kongsberg 14208, img#32) (B)
20-Aug-2024	03:29:34	2121	MV24GC1-ENV-DC-209			Camera	52	615682	6088965	615665	6088945	18	20	27	-139		(Corr'd Nav, Kongsberg 14208, img#33) (B)
20-Aug-2024	03:29:49	2122	MV24GC1-ENV-DC-209			Camera	52	615681	6088964	615665	6088945	16	19	25	-139		(Corr'd Nav, Kongsberg 14208, img#34) (B)
20-Aug-2024	03:30:57	2123	MV24GC1-ENV-DC-209			Camera	52	615676	6088955	615665	6088945	11	11	15	-134		(Corr'd Nav, Kongsberg 14208, img#35) (B)
20-Aug-2024	03:31:31	2124	MV24GC1-ENV-DC-209			Camera	52	615673	6088951	615665	6088945	8	6	10	-128		(Corr'd Nav, Kongsberg 14208, img#36) (B)
20-Aug-2024	03:31:41	2125	MV24GC1-ENV-DC-209			Camera	52	615672	6088950	615665	6088945	7	5	9	-125		(Corr'd Nav, Kongsberg 14208, img#37) (B)
20-Aug-2024	03:32:32	2126	MV24GC1-ENV-DC-209			Camera	52	615668	6088943	615665	6088945	3	-2	4	-63		(Corr'd Nav, Kongsberg 14208, img#38) (B)
20-Aug-2024	03:32:47	2127	MV24GC1-ENV-DC-209			Camera	52	615667	6088941	615665	6088945	2	-4	4	-33		(Corr'd Nav, Kongsberg 14208, img#39) (B)
20-Aug-2024	03:33:04	2128	MV24GC1-ENV-DC-209			Camera	52	615666	6088939	615665	6088945	1	-6	6	-9		(Corr'd Nav, Kongsberg 14208, img#40) (B)
20-Aug-2024	03:33:22	2129	MV24GC1-ENV-DC-209			Camera	52	615664	6088936	615665	6088945	-1	-9	9	4		(Corr'd Nav, Kongsberg 14208, img#41) (B)
20-Aug-2024	03:34:31	2130	MV24GC1-ENV-DC-209			Camera	52	615659	6088927	615665	6088945	-6	-18	19	19		(Corr'd Nav, Kongsberg 14208, img#42) (B)
20-Aug-2024	03:35:22	2131	MV24GC1-ENV-DC-209			Camera	52	615654	6088920	615665	6088945	-10	-25	27	23		(Corr'd Nav, Kongsberg 14208, img#43) (B)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*							
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97	
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Beacon							
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	MSL		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
20-Aug-2024	03:35:54	2132	MV24GC1-ENV-DC-209			Camera	52	615652	6088916	615665	6088945	-13	-29	32	24		(Corr'd Nav, Kongsberg 14208, img#44) (B)
20-Aug-2024	03:36:54	2133	MV24GC1-ENV-DC-209			Camera	52	615647	6088908	615665	6088945	-18	-37	41	26		(Corr'd Nav, Kongsberg 14208, img#45) (B)
20-Aug-2024	03:37:10	2134	MV24GC1-ENV-DC-209			Camera	52	615646	6088906	615665	6088945	-19	-39	44	26		(Corr'd Nav, Kongsberg 14208, img#46) (B)
20-Aug-2024	03:37:45	2135	MV24GC1-ENV-DC-209			Camera	52	615643	6088901	615665	6088945	-21	-44	49	26		(Corr'd Nav, Kongsberg 14208, img#47) (B)

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	59294	Area: UKCS Quads: 27, 34, 35, and 40	Scale: 100mm Line Laser
Project:	Morven Grid Connection 1 Route Environmental Survey		Equipment: Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk4 / Mk6
Client:	Morven Offshore Wind Limited		Vessel: MV *Ocean Reliance*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
MV24EXP-ENV-DC-173	11-Aug-2024	06:32:16	07:07:47	4 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Echinodermata (Asteroidea)	AS, MP, AA	49	1	49	
MV24EXP-ENV-DC-174	11-Aug-2024	09:59:35	10:01:45	5 x HD Video MTS-files 4 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea), Mollusca (Bivalvia)	AS, MP, AA	54	50	103	Kongsberg video disappeared after first 2 minutes The transect was paused and resumed after 10 minutes Possible Arctica islandica (siphons)
		10:13:40	10:55:46								
MV24EXP-ENV-DC-175	11-Aug-2024	13:31:51	14:09:34	4 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments and faunal burrows	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea), Mollusca (Bilvalvia)	IO, MP, PP	37	104	140	Possible *Arctica islandica* (siphons)
MV24EXP-ENV-DC-176	12-Aug-2024	04:34:52	05:07:59	1 x HD Video MTS-file 2 x SD Video MP4-files	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	AS, MP, AA	49	141	189	Possible *A. islandica* (siphons)
MV24EXP-ENV-DC-177	13-Aug-2024	01:08:37	01:41:54	2 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Ophiuroidea)	AS, AA	46	190	235	EELS lost fix 191, 192, 193 Fixes restored from manual fix file
MV24EXP-ENV-DC-178	13-Aug-2024	03:55:32	03:56:56	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes, Rajidae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea), Mollusca (Bivalvia)	AS, AA	54	236	289	HD Camera lost comms. Transect was interrupted and resumed. Possible *Arctica islandica* (siphon).
		04:21:54	04:55:05								
MV24EXP-ENV-DC-179	13-Aug-2024	06:37:04	07:10:46	2 x HD Video MTS-files 2 x SD Video MP4-files	Rippled sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea)	AS, AA, MP	48	290	337	
MV24EXP-ENV-DC-180	13-Aug-2024	09:32:27	10:11:25	1 x HD Video MTS-file 2 x SD Video MP4-files	Rippled sand with shell fragments	Bryozoa (Flustridae), Chordata (Pleuronectiformes), Echinodermata (Asteroidea, Ophiuroidea), Mollusca (Bivalvia)	AS, AA, MP	55	338	392	EELS lost fix 338 and 389-392 Fixes restored from manual fix file
MV24EXP-ENV-DC-234	14-Aug-2024	06:36:44	07:11:02	1 x HD Video MTS-file 2 x SD Video MP4-files	Rippled sand with shell fragments. Occasional boulders	Annelida (Aphroditidae), Arthropoda (Munididae, Paguroidea), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	AS, AA, MP	58	393	450	EELS lost fix 393. Fixes restored from manual fix file.
MV24EXP-ENV-DC-235	14-Aug-2024	08:43:19	09:19:46	1 x HD Video MTS-file 2 x SD Video MP4-files	Sand with shell fragments. Less frequent shell fragments in the centre, changing to very shelly with some gravel at the end of the transect	Arthropoda (Brachyura, Paguroidea), Bryozoa (Flustridae), Cnidaria (Pennatuloidea)	AS, AA, MP	45	451	495	
MV24EXP-ENV-DC-235A	14-Aug-2024	11:38:49	12:12:45	1 x HD Video MTS-file 2 x SD Video MP4-files	Sand with shell fragments	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (Hydrozoa), Echinodermata (Asteroidea, Ophiuroidea)	IO, MP, PP	41	496	536	EELS lost fix 498 and 499 Fixes restored from manual fix file
MV24EXP-ENV-DC-233	14-Aug-2024	15:16:35	15:18:09	7 x HD Video MTS-file 6 x SD Video MP4-files	Rippled sand with shell fragments and faunal burrows	Cnidaria (Pennatuloidea)	IO, MP, PP	41	537	577	Issues connecting EELS to Voyager to receive control. DVR crashed and restarted. 1CAM wasn't recording. Primary Topside and DVR were changed to Secondary system.
		15:21:39	15:24:09								
		15:51:57	16:24:52								
MV24EXP-ENV-DC-232	14-Aug-2024	19:32:51	20:08:36	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled sand with shell fragments and faunal burrows	Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea)	IO, PP	40	578	617	
MV24EXP-ENV-DC-231	14-Aug-2024	22:22:47	23:06:58	1 x HD Video MTS-file 4 x SD Video MP4-files	Sand with shell fragments and faunal burrows	Arthropoda (Malacostraca, Paguroidea), Bryozoa (Flustridae), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Ceriantharia, Pennatuloidea), Echinodermata (Asteroidea, Ophiuroidea)	IO, PP	44	618	661	Transect was stopped 3 times because the beacon lost its signal. DVR crashed and restarted
MV24EXP-ENV-DC-230	15-Aug-2024	00:56:40	01:31:48	1 x HD Video MTS-file 4 x SD Video MP4-files	Sand with shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Cnidaria (Ceriantharia, Pennatuloidea), Mollusca (Bivalvia)	AS, AA	48	662	709	
MV24EXP-ENV-DC-229	15-Aug-2024	02:44:32	02:58:51	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Decapoda, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Ceriantharia, Pennatuloidea), Echinodermata (Asteroidea)	AS, AA	44	710	753	EELS lost fixes 722-731. Fixes restored from manual fix file. DVR crashed and restarted.
		03:09:07	03:22:24								
MV24EXP-ENV-DC-228	15-Aug-2024	04:50:25	05:21:35	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes, *Pleuronectes platessa*), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	AS, AA, MP	42	754	795	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	59294	Area: UKCS Quads: 27, 34, 35, and 40	Scale: 100mm Line Laser
Project:	Morven Grid Connection 1 Route Environmental Survey		Equipment: Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk4 / Mk6
Client:	Morven Offshore Wind Limited		Vessel: MV *Ocean Reliance*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
MV24EXP-ENV-DC-227	15-Aug-2024	22:27:18 22:28:34	22:27:37 23:08:49	1 x HD Video MTS-file 6 x SD Video MP4-files	Sand with shell fragments and fauna burrows	Annelida (Polychaeta), Arthropoda (Brachyura, Malacostraca, Paguroidea), Chordata (Actinopterygii, Gadidae, Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	IO, PP	42	796	838	DVR crashed and restarted. Photo 801 no fix.
MV24EXP-ENV-DC-226	16-Aug-2024	01:15:37 01:29:16	01:27:28 01:43:51	2 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Chordata (Actinopterygii), Cnidaria (Pennatuloidea)	AS, AA	35	839	873	Issues with 1Cam comms and recording HD and SD. Video was stopped and resumed two times.
MV24EXP-ENV-DC-171	16-Aug-2024	03:11:56	03:43:12	3 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Annelida (Polychaeta), Chordata (Gadidae), Cnidaria (Ceriantharia, Pennatuloidea), Echinodermata (Asteroidea)	AS, AA	46	874	919	1Cam and HD camera in-sea adaptor were changed to spare ones
MV24EXP-ENV-DC-225	16-Aug-2024	05:24:38	05:58:01	4 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Decapoda), Chordata (Batoidea, Gadidae, *Lophius* , Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	AS, AA, MP	47	920	966	Photo 1822A no fix.
MV24EXP-ENV-DC-172	16-Aug-2024	07:20:31	07:57:55	4 x HD Video MTS-files 4 x SD Video MP4-files	Silty sand with infrequent shell fragments and fauna burrows	Arthropoda (Brachyura), Chordata (Pleuronectiformes), Cnidaria (Pennatuloidea), Echinodermata (Asteroidea)	AS, AA, MP	43	967	1009	Poor visibility due to strong current and fine sediment. Flash was restarted.
MV24EXP-ENV-DC-185	17-Aug-2024	22:14:27	22:57:12	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Annelida (Polychaeta, Sabellidae), Arthropoda (Nephropidae), Chordata (Actinopterygii), Cnidaria (Pennatuloidea)	IO, PP	54	1010	1063	Poor visibility due to strong current and fine sediment. Flash was restarted.
MV24EXP-ENV-DC-224	18-Aug-2024	01:34:21	02:38:45	1 x HD Video MTS-file 6 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Annelida (Sabellidae), Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (*Alcyonium digitatum*, Pennatuloidea), Mollusca (Gastropoda)	AS, AA	54	1064	1117	Poor visibility due to strong current and fine sediment.
MV24EXP-ENV-DC-186	18-Aug-2024	03:52:55	04:24:24	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Annelida (Sabellidae), Arthropoda (Nephropidae), Cnidaria (*Alcyonium digitatum*)	AS, AA	40	1118	1157	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-223	18-Aug-2024	05:54:51	06:26:33	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows	Arthropoda (Paguroidea), Chordata (Gadidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*)	AS, AA, MP	41	1158	1198	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-187	18-Aug-2024	07:31:52	08:09:53	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with faunal burrows and occasional shell fragments	Arthropoda (Brachyura, Decapoda, Paguroidea), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*)	AS, AA, MP	45	1199	1243	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-210	18-Aug-2024	10:05:43	10:38:27	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty clayey sediment/mud with occasional shell fragments and faunal burrows	Annelida, Arthropoda (Paguroidea), Chordata (Gadidae), Cnidaria (*Alcyonium digitatum*)	AS, AA, MP	40	1244	1284	Fix 1256 no photo Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-211	18-Aug-2024	12:31:53	13:09:13	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine sediment with faunal burrows	Arthropoda (Decapoda, Paguroidea), Chordata (Gadidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum* , Pennatuloidea)	IO, PP, MP	46	1285	1330	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-212	18-Aug-2024	15:17:13	15:49:50	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine sediment with faunal burrows	Arthropoda (Brachyura, Paguroidea), Chordata (Actinopterygii, Pleuronectiformes), Echinodermata (Asteroidea)	IO, PP, MP	38	1331	1368	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-213	18-Aug-2024	17:30:09	18:03:15	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine sediment with faunal burrows	Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	IO, PP	37	1369	1405	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-214	18-Aug-2024	19:52:40	20:42:44	1 x HD Video MTS-file 4 x SD Video MP4-files	Sandy sediment, seabed covered with cobbles, shell fragments and faunal burrows	Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (Actinaria, *Alcyonium digitatum* , Ceriantharia), Echinodermata (Asteroidea)	IO, PP	42	1406	1447	Poor visibility due to strong current and fine sediment. The vessel needed to reposition and the second transect was restarted (the video kept recording). Station was repositioned due to cobbles at the center point.
MV24EXP-ENV-DC-215	18-Aug-2024	22:39:21	23:14:11	1 x HD Video MTS-file 4 x SD Video MP4-files	Fine silty/clayey sediment with faunal burrows	Arthropoda (Paguroidea), Chordata (Actinopterygii, Pleuronectiformes, Triglidae), Echinodermata (Asteroidea), Mollusca (Gastropoda)	IO, PP	35	1448	1482	
MV24EXP-ENV-DC-188	19-Aug-2024	00:47:41	01:25:18	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy seabed covered with boulders, cobbles and gravel	Arthropoda (Brachyura, Malacostraca, Munididae), Chordata (Actinopterygii), Cnidaria (Actinaria, *Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	AS, AA	60	1483	1542	
MV24EXP-ENV-DC-197	19-Aug-2024	02:24:09	03:02:27	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy seabed covered by boulders, cobbles and gravel	Arthropoda (Munididae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea), Porifera	AS, AA	60	1543	1602	Some clear patches with gravel and shells in centre. Camera angle changed.
MV24EXP-ENV-DC-221	19-Aug-2024 19-Aug-2024	04:09:16 04:31:01	04:29:47 04:44:32	3 x HD Video MTS-files 4 x SD Video MP4-files	Silty sandy sediment with faunal burrows and occasional shell fragments	Arthropoda (Brachyura), Chordata (Actinopterygii, Pleuronectiformes, Triglidae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	AS, AA	57	1603	1664	Boulders and cobbles in western part of the area. Fixes 1638-1642 were without photos. After fix 1642 the Kongsberg camera stopped taking photos. Both videos were stopped, and the camera was reset. Videos were resumed while repositioning. Photos with fixes resumed from fix 1643.
MV24EXP-ENV-DC-198	19-Aug-2024	06:05:03	06:41:11	1 x HD Video MTS-file 4 x SD Video MP4-files	Soft sediment covered with boulders, cobbles and gravel	Arthropoda (Munididae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea, Ophiuroidea)	AS, MP, AA	60	1665	1724	Some clear patches with gravel
MV24EXP-ENV-DC-222	19-Aug-2024	07:53:09	08:25:40	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment, partially gravelly with occasional cobbles and faunal burrows	Arthropoda (Paguroidea), Echinodermata (Asteroidea)	AS, MP, AA	49	1725	1773	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck) **FOR-ENV-0538**

Job No:	59294	Area: UKCS Quads: 27, 34, 35, and 40	Scale: 100mm Line Laser
Project:	Morven Grid Connection 1 Route Environmental Survey		Equipment: Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk4 / Mk6
Client:	Morven Offshore Wind Limited		Vessel: MV *Ocean Reliance*

Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments
MV24EXP-ENV-DC-216	19-Aug-2024	10:00:01	10:36:33	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment with shell fragments and faunal burrows	Arthropoda (Brachyura, Paguroidea), Cnidaria	AS, MP, AA	37	1774	1810	Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-220	19-Aug-2024	12:24:45	13:02:26	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment with faunal burrows	Arthropoda (Paguroidea), Bryozoa (Flustridae), Chordata (Pleuronectiformes), Echinodermata (Asteroidea)	IO, MP, PP	35	1811	1845	Photo 1822A no fix. Poor visibility due to strong current and fine sediment
MV24EXP-ENV-DC-183	19-Aug-2024	15:29:16	16:04:13	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft sediment with shell fragments, cobbles and boulders	Arthropoda (Brachyura, Decapoda), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	IO, MP, PP	59	1846	1904	
MV24EXP-ENV-DC-206	19-Aug-2024	17:16:53	17:47:58	1 x HD Video MTS-file 4 x SD Video MP4-files	Soft silty sediment with faunal burrows	Arthropoda (Brachyura, Decapoda, Paguroidea), Chordata (Pleuronectiformes, Scyliorhinidae), Echinodermata (Asteroidea)	IO, PP	40	1905	1944	
MV24EXP-ENV-DC-207	19-Aug-2024	19:51:37	20:25:51	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft silty sediment with faunal burrows	Annelida (Sabellidae), Arthropoda (Decapoda, Paguroidea), Chordata (Actinopterygii, Myxinidae, Pleuronectiformes), Cnidaria (*Alcyonium digitatum*, Pennatuloidea)	IO, PP	42	1945	1986	
MV24EXP-ENV-DC-217	19-Aug-2024	21:56:42	22:34:55	1 x HD Video MTS-file 4 x SD Video MP4-files	Rippled soft silty sediment with faunal burrows	Arthropoda (Brachyura, Nephropidae, Paguroidea), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*)	IO, PP	42	1987	2028	
MV24EXP-ENV-DC-208	20-Aug-2024	00:36:55	01:12:24	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy sediment with faunal burrows	Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*, Pennatuloidea)	AS, AA	60	2029	2088	Poor visibility due to strong current and swell. The flash didn't work iin the first few images.
MV24EXP-ENV-DC-209	20-Aug-2024	02:59:33	03:38:26	1 x HD Video MTS-file 4 x SD Video MP4-files	Silty sandy sediment with faunal burrows	Annelida (Sabellidae), Arthropoda (Paguroidea), Chordata (Pleuronectiformes), Cnidaria (*Alcyonium digitatum*)	AS, AA	47	2089	2135	Poor visibility due to strong current and swell

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	11:08:58	1	BP24MVEXP-ENV-DC-201			Camera	17	610441	6075093	610399	6075205	42	-112	120	160	BH	
15-Sep-2024	11:09:07	2	BP24MVEXP-ENV-DC-201			Camera	17	610441	6075094	610399	6075205	42	-111	119	160	BH	
15-Sep-2024	11:09:22	3	BP24MVEXP-ENV-DC-201			Camera	17	610440	6075096	610399	6075205	41	-109	116	160	BH	
15-Sep-2024	11:09:37	4	BP24MVEXP-ENV-DC-201			Camera	17	610440	6075098	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:09:44	5	BP24MVEXP-ENV-DC-201			Camera	17	610440	6075099	610399	6075205	40	-107	114	159	BH	
15-Sep-2024	11:09:53	6	BP24MVEXP-ENV-DC-201			Camera	17	610439	6075100	610399	6075205	40	-106	113	159	BH	
15-Sep-2024	11:10:02	7	BP24MVEXP-ENV-DC-201			Camera	17	610438	6075101	610399	6075205	39	-104	111	160	BH	
15-Sep-2024	11:10:23	8	BP24MVEXP-ENV-DC-201			Camera	17	610436	6075105	610399	6075205	36	-101	107	160	BH	
15-Sep-2024	11:10:44	9	BP24MVEXP-ENV-DC-201			Camera	17	610434	6075107	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:10:58	10	BP24MVEXP-ENV-DC-201			Camera	17	610432	6075109	610399	6075205	33	-96	101	161	BH	
15-Sep-2024	11:11:48	11	BP24MVEXP-ENV-DC-201			Camera	17	610417	6075121	610399	6075205	18	-84	86	168	BH	
15-Sep-2024	11:12:43	12	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075122	610399	6075205	21	-83	86	166	BH	
15-Sep-2024	11:13:00	13	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075123	610399	6075205	21	-82	85	166	BH	
15-Sep-2024	11:13:09	14	BP24MVEXP-ENV-DC-201			Camera	17	610421	6075124	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:13:26	15	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075126	610399	6075205	23	-80	83	164	BH	
15-Sep-2024	11:13:36	16	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075127	610399	6075205	23	-78	81	164	BH	
15-Sep-2024	11:13:50	17	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075129	610399	6075205	23	-76	79	163	BH	
15-Sep-2024	11:14:08	18	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075132	610399	6075205	23	-73	77	163	BH	
15-Sep-2024	11:14:27	19	BP24MVEXP-ENV-DC-201			Camera	17	610423	6075134	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:14:51	20	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075139	610399	6075205	22	-67	70	162	BH	
15-Sep-2024	11:15:10	21	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075141	610399	6075205	22	-65	68	161	BH	
15-Sep-2024	11:15:32	22	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075144	610399	6075205	23	-61	65	159	BH	
15-Sep-2024	11:15:49	23	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075147	610399	6075205	22	-58	62	159	BH	
15-Sep-2024	11:16:05	24	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075150	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:16:31	25	BP24MVEXP-ENV-DC-201			Camera	17	610422	6075154	610399	6075205	23	-52	56	156	BH	
15-Sep-2024	11:16:47	26	BP24MVEXP-ENV-DC-201			Camera	17	610421	6075157	610399	6075205	22	-49	53	156	BH	
15-Sep-2024	11:17:01	27	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075160	610399	6075205	21	-46	50	156	BH	
15-Sep-2024	11:17:21	28	BP24MVEXP-ENV-DC-201			Camera	17	610420	6075164	610399	6075205	20	-42	47	154	BH	
15-Sep-2024	11:17:40	29	BP24MVEXP-ENV-DC-201			Camera	17	610418	6075167	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:17:58	30	BP24MVEXP-ENV-DC-201			Camera	17	610417	6075170	610399	6075205	18	-36	40	154	BH	
15-Sep-2024	11:18:16	31	BP24MVEXP-ENV-DC-201			Camera	17	610415	6075172	610399	6075205	15	-34	37	156	BH	
15-Sep-2024	11:18:53	32	BP24MVEXP-ENV-DC-201			Camera	17	610412	6075176	610399	6075205	12	-30	32	158	BH	
15-Sep-2024	11:19:11	33	BP24MVEXP-ENV-DC-201			Camera	17	610410	6075178	610399	6075205	10	-27	29	159	BH	
15-Sep-2024	11:19:28	34	BP24MVEXP-ENV-DC-201			Camera	17	610408	6075181	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:19:49	35	BP24MVEXP-ENV-DC-201			Camera	17	610406	6075184	610399	6075205	6	-21	22	164	BH	
15-Sep-2024	11:20:14	36	BP24MVEXP-ENV-DC-201			Camera	17	610406	6075187	610399	6075205	6	-19	20	161	BH	
15-Sep-2024	11:20:50	37	BP24MVEXP-ENV-DC-201			Camera	17	610404	6075191	610399	6075205	5	-14	15	161	BH	
15-Sep-2024	11:21:06	38	BP24MVEXP-ENV-DC-201			Camera	17	610405	6075193	610399	6075205	5	-12	13	157	BH	
15-Sep-2024	11:21:30	39	BP24MVEXP-ENV-DC-201			Camera	17	610404	6075197	610399	6075205	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	11:21:49	40	BP24MVEXP-ENV-DC-201			Camera	17	610403	6075201	610399	6075205	3	-5	6	144	BH	
15-Sep-2024	11:22:12	41	BP24MVEXP-ENV-DC-201			Camera	17	610402	6075204	610399	6075205	2	-2	3	129	BH	
15-Sep-2024	11:22:37	42	BP24MVEXP-ENV-DC-201			Camera	17	610401	6075207	610399	6075205	1	1	2	47	BH	
15-Sep-2024	11:23:17	43	BP24MVEXP-ENV-DC-201			Camera	17	610398	6075211	610399	6075205	-2	5	6	344	BH	
15-Sep-2024	11:23:26	44	BP24MVEXP-ENV-DC-201			Camera	17	610397	6075212	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:23:52	45	BP24MVEXP-ENV-DC-201			Camera	17	610397	6075215	610399	6075205	-3	10	10	344	BH	
15-Sep-2024	11:24:12	46	BP24MVEXP-ENV-DC-201			Camera	17	610395	6075217	610399	6075205	-4	12	12	341	BH	
15-Sep-2024	11:24:42	47	BP24MVEXP-ENV-DC-201			Camera	17	610396	6075222	610399	6075205	-3	16	17	349	BH	
15-Sep-2024	11:25:13	48	BP24MVEXP-ENV-DC-201			Camera	17	610394	6075226	610399	6075205	-5	21	21	346	BH	
15-Sep-2024	11:25:36	49	BP24MVEXP-ENV-DC-201			Camera	17	610393	6075229	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:26:10	50	BP24MVEXP-ENV-DC-201			Camera	17	610391	6075232	610399	6075205	-9	26	28	342	BH	
15-Sep-2024	11:26:24	51	BP24MVEXP-ENV-DC-201			Camera	17	610390	6075233	610399	6075205	-9	27	29	342	BH	
15-Sep-2024	11:26:48	52	BP24MVEXP-ENV-DC-201			Camera	17	610389	6075234	610399	6075205	-10	29	30	340	BH	
15-Sep-2024	11:27:24	53	BP24MVEXP-ENV-DC-201			Camera	17	610387	6075237	610399	6075205	-13	32	34	338	BH	
15-Sep-2024	11:27:53	54	BP24MVEXP-ENV-DC-201			Camera	17	610386	6075240	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:28:02	55	BP24MVEXP-ENV-DC-201			Camera	17	610386	6075241	610399	6075205	-14	36	39	339	BH	
15-Sep-2024	11:28:23	56	BP24MVEXP-ENV-DC-201			Camera	17	610387	6075244	610399	6075205	-13	38	40	341	BH	
15-Sep-2024	11:28:46	57	BP24MVEXP-ENV-DC-201			Camera	17	610386	6075247	610399	6075205	-14	41	44	342	BH	
15-Sep-2024	11:29:26	58	BP24MVEXP-ENV-DC-201			Camera	17	610383	6075249	610399	6075205	-17	44	47	339	BH	
15-Sep-2024	11:30:00	59	BP24MVEXP-ENV-DC-201			Camera	17	610380	6075252	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:30:14	60	BP24MVEXP-ENV-DC-201			Camera	17	610380	6075253	610399	6075205	-19	48	51	338	BH	
15-Sep-2024	11:30:34	61	BP24MVEXP-ENV-DC-201			Camera	17	610379	6075255	610399	6075205	-21	50	54	337	BH	
15-Sep-2024	11:30:53	62	BP24MVEXP-ENV-DC-201			Camera	17	610377	6075257	610399	6075205	-23	51	56	336	BH	
15-Sep-2024	11:31:07	63	BP24MVEXP-ENV-DC-201			Camera	17	610377	6075258	610399	6075205	-23	53	57	337	BH	
15-Sep-2024	11:31:29	64	BP24MVEXP-ENV-DC-201			Camera	17	610375	6075259	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:32:10	65	BP24MVEXP-ENV-DC-201			Camera	17	610371	6075262	610399	6075205	-29	57	64	333	BH	
15-Sep-2024	11:32:29	66	BP24MVEXP-ENV-DC-201			Camera	17	610370	6075264	610399	6075205	-30	58	66	333	BH	
15-Sep-2024	11:32:56	67	BP24MVEXP-ENV-DC-201			Camera	17	610368	6075265	610399	6075205	-31	60	67	332	BH	
15-Sep-2024	11:33:45	68	BP24MVEXP-ENV-DC-201			Camera	17	610366	6075269	610399	6075205	-33	63	71	332	BH	
15-Sep-2024	11:34:26	69	BP24MVEXP-ENV-DC-201			Camera	17	610367	6075273	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:35:06	70	BP24MVEXP-ENV-DC-201			Camera	17	610367	6075276	610399	6075205	-33	71	78	335	BH	
15-Sep-2024	11:35:49	71	BP24MVEXP-ENV-DC-201			Camera	17	610364	6075279	610399	6075205	-36	73	82	334	BH	
15-Sep-2024	11:36:01	72	BP24MVEXP-ENV-DC-201			Camera	17	610363	6075279	610399	6075205	-36	74	82	334	BH	
15-Sep-2024	11:36:47	73	BP24MVEXP-ENV-DC-201			Camera	17	610362	6075282	610399	6075205	-38	77	86	334	BH	
15-Sep-2024	11:37:00	74	BP24MVEXP-ENV-DC-201			Camera	17	610362	6075284	610399	6075205	-2	-2	2	228	BH	
15-Sep-2024	11:38:03	75	BP24MVEXP-ENV-DC-201			Camera	17	610368	6075289	610399	6075205	-31	83	89	339	BH	
15-Sep-2024	11:38:41	76	BP24MVEXP-ENV-DC-201			Camera	17	610367	6075292	610399	6075205	-32	86	92	339	BH	
15-Sep-2024	12:05:18	77	BP24MVEXP-ENV-DC-237			Camera	12	609584	6075235	609540	6075350	45	-115	124	159	BH	
15-Sep-2024	12:05:34	78	BP24MVEXP-ENV-DC-237			Camera	12	609583	6075237	609540	6075350	43	-113	121	159	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV					Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50		Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	12:06:00	79	BP24MVEXP-ENV-DC-237			Camera	12	609581	6075241	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:06:23	80	BP24MVEXP-ENV-DC-237			Camera	12	609577	6075243	609540	6075350	37	-108	114	161	BH	
15-Sep-2024	12:06:40	81	BP24MVEXP-ENV-DC-237			Camera	12	609576	6075244	609540	6075350	36	-106	112	161	BH	
15-Sep-2024	12:07:08	82	BP24MVEXP-ENV-DC-237			Camera	12	609575	6075246	609540	6075350	35	-104	110	161	BH	
15-Sep-2024	12:09:30	83	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075253	609540	6075350	28	-97	101	164	BH	
15-Sep-2024	12:09:52	84	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075259	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:10:21	85	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075263	609540	6075350	28	-87	92	162	BH	
15-Sep-2024	12:10:43	86	BP24MVEXP-ENV-DC-237			Camera	12	609568	6075266	609540	6075350	29	-84	89	161	BH	
15-Sep-2024	12:11:27	87	BP24MVEXP-ENV-DC-237			Camera	12	609565	6075270	609540	6075350	25	-80	84	163	BH	
15-Sep-2024	12:11:50	88	BP24MVEXP-ENV-DC-237			Camera	12	609562	6075272	609540	6075350	22	-78	81	164	BH	
15-Sep-2024	12:12:03	89	BP24MVEXP-ENV-DC-237			Camera	12	609562	6075274	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:12:21	90	BP24MVEXP-ENV-DC-237			Camera	12	609560	6075275	609540	6075350	21	-75	78	165	BH	
15-Sep-2024	12:12:41	91	BP24MVEXP-ENV-DC-237			Camera	12	609557	6075277	609540	6075350	18	-74	76	167	BH	
15-Sep-2024	12:13:04	92	BP24MVEXP-ENV-DC-237			Camera	12	609555	6075277	609540	6075350	15	-74	75	168	BH	
15-Sep-2024	12:13:16	93	BP24MVEXP-ENV-DC-237			Camera	12	609554	6075277	609540	6075350	14	-74	75	169	BH	
15-Sep-2024	12:13:47	94	BP24MVEXP-ENV-DC-237			Camera	12	609554	6075284	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:14:11	95	BP24MVEXP-ENV-DC-237			Camera	12	609556	6075289	609540	6075350	16	-61	63	165	BH	
15-Sep-2024	12:14:29	96	BP24MVEXP-ENV-DC-237			Camera	12	609555	6075293	609540	6075350	15	-57	59	165	BH	
15-Sep-2024	12:14:39	97	BP24MVEXP-ENV-DC-237			Camera	12	609555	6075295	609540	6075350	15	-56	57	165	BH	
15-Sep-2024	12:15:02	98	BP24MVEXP-ENV-DC-237			Camera	12	609553	6075300	609540	6075350	13	-50	52	166	BH	
15-Sep-2024	12:15:18	99	BP24MVEXP-ENV-DC-237			Camera	12	609551	6075304	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:15:26	100	BP24MVEXP-ENV-DC-237			Camera	12	609552	6075304	609540	6075350	12	-46	47	166	BH	
15-Sep-2024	12:15:58	101	BP24MVEXP-ENV-DC-237			Camera	12	609554	6075309	609540	6075350	14	-42	44	161	BH	
15-Sep-2024	12:16:09	102	BP24MVEXP-ENV-DC-237			Camera	12	609553	6075311	609540	6075350	13	-40	42	161	BH	
15-Sep-2024	12:16:41	103	BP24MVEXP-ENV-DC-237			Camera	12	609552	6075315	609540	6075350	12	-35	37	162	BH	
15-Sep-2024	12:17:05	104	BP24MVEXP-ENV-DC-237			Camera	12	609550	6075318	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:17:28	105	BP24MVEXP-ENV-DC-237			Camera	12	609548	6075319	609540	6075350	8	-31	32	165	BH	
15-Sep-2024	12:18:01	106	BP24MVEXP-ENV-DC-237			Camera	12	609546	6075324	609540	6075350	6	-27	27	167	BH	
15-Sep-2024	12:18:43	107	BP24MVEXP-ENV-DC-237			Camera	12	609546	6075329	609540	6075350	7	-22	23	163	BH	
15-Sep-2024	12:19:23	108	BP24MVEXP-ENV-DC-237			Camera	12	609543	6075333	609540	6075350	3	-17	17	170	BH	
15-Sep-2024	12:19:56	109	BP24MVEXP-ENV-DC-237			Camera	12	609542	6075337	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:20:16	110	BP24MVEXP-ENV-DC-237			Camera	12	609542	6075340	609540	6075350	2	-10	10	170	BH	
15-Sep-2024	12:20:56	111	BP24MVEXP-ENV-DC-237			Camera	12	609544	6075347	609540	6075350	4	-3	5	126	BH	
15-Sep-2024	12:21:12	112	BP24MVEXP-ENV-DC-237			Camera	12	609543	6075349	609540	6075350	3	-2	3	117	BH	
15-Sep-2024	12:21:34	113	BP24MVEXP-ENV-DC-237			Camera	12	609541	6075352	609540	6075350	1	2	2	30	BH	
15-Sep-2024	12:21:48	114	BP24MVEXP-ENV-DC-237			Camera	12	609540	6075353	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:22:06	115	BP24MVEXP-ENV-DC-237			Camera	12	609538	6075355	609540	6075350	-2	5	5	339	BH	
15-Sep-2024	12:22:35	116	BP24MVEXP-ENV-DC-237			Camera	12	609536	6075358	609540	6075350	-3	8	8	336	BH	
15-Sep-2024	12:22:52	117	BP24MVEXP-ENV-DC-237			Camera	12	609535	6075360	609540	6075350	-5	9	11	332	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	12:23:41	118	BP24MVEXP-ENV-DC-237			Camera	12	609532	6075367	609540	6075350	-7	17	18	336	BH	
15-Sep-2024	12:23:58	119	BP24MVEXP-ENV-DC-237			Camera	12	609530	6075369	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:24:35	120	BP24MVEXP-ENV-DC-237			Camera	12	609527	6075374	609540	6075350	-13	24	28	331	BH	
15-Sep-2024	12:25:15	121	BP24MVEXP-ENV-DC-237			Camera	12	609530	6075382	609540	6075350	-9	31	33	343	BH	
15-Sep-2024	12:25:52	122	BP24MVEXP-ENV-DC-237			Camera	12	609528	6075387	609540	6075350	-12	36	38	342	BH	
15-Sep-2024	12:26:30	123	BP24MVEXP-ENV-DC-237			Camera	12	609526	6075390	609540	6075350	-14	40	43	341	BH	
15-Sep-2024	12:27:32	124	BP24MVEXP-ENV-DC-237			Camera	12	609518	6075396	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:28:07	125	BP24MVEXP-ENV-DC-237			Camera	12	609515	6075401	609540	6075350	-25	50	56	334	BH	
15-Sep-2024	12:29:03	126	BP24MVEXP-ENV-DC-237			Camera	11	609509	6075406	609540	6075350	-31	56	64	331	BH	
15-Sep-2024	12:30:13	127	BP24MVEXP-ENV-DC-237			Camera	12	609507	6075414	609540	6075350	-33	64	72	333	BH	
15-Sep-2024	12:30:46	128	BP24MVEXP-ENV-DC-237			Camera	12	609507	6075420	609540	6075350	-32	70	77	335	BH	
15-Sep-2024	12:31:05	129	BP24MVEXP-ENV-DC-237			Camera	12	609506	6075423	609540	6075350	-2	-2	2	228	BH	
15-Sep-2024	12:31:36	130	BP24MVEXP-ENV-DC-237			Camera	12	609505	6075426	609540	6075350	-35	76	83	335	BH	
15-Sep-2024	12:32:04	131	BP24MVEXP-ENV-DC-237			Camera	12	609502	6075429	609540	6075350	-37	78	87	335	BH	
15-Sep-2024	12:33:28	132	BP24MVEXP-ENV-DC-237			Camera	11	609496	6075434	609540	6075350	-43	84	95	333	BH	
15-Sep-2024	13:00:45	133	BP24MVEXP-ENV-DC-203			Camera	17	609770	6077547	609719	6077661	50	-114	125	156	BH	
15-Sep-2024	13:01:11	134	BP24MVEXP-ENV-DC-203			Camera	18	609768	6077555	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:01:27	135	BP24MVEXP-ENV-DC-203			Camera	18	609767	6077558	609719	6077661	47	-103	113	155	BH	
15-Sep-2024	13:01:36	136	BP24MVEXP-ENV-DC-203			Camera	18	609768	6077559	609719	6077661	48	-101	112	155	BH	
15-Sep-2024	13:02:05	137	BP24MVEXP-ENV-DC-203			Camera	18	609769	6077563	609719	6077661	49	-98	110	153	BH	
15-Sep-2024	13:02:26	138	BP24MVEXP-ENV-DC-203			Camera	18	609768	6077565	609719	6077661	49	-96	108	153	BH	
15-Sep-2024	13:02:40	139	BP24MVEXP-ENV-DC-203			Camera	18	609769	6077566	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:02:47	140	BP24MVEXP-ENV-DC-203			Camera	18	609769	6077567	609719	6077661	50	-94	106	152	BH	
15-Sep-2024	13:04:03	141	BP24MVEXP-ENV-DC-203			Camera	18	609766	6077573	609719	6077661	46	-88	99	152	BH	
15-Sep-2024	13:04:30	142	BP24MVEXP-ENV-DC-203			Camera	18	609764	6077577	609719	6077661	45	-83	95	152	BH	
15-Sep-2024	13:05:05	143	BP24MVEXP-ENV-DC-203			Camera	18	609761	6077581	609719	6077661	42	-80	90	152	BH	
15-Sep-2024	13:06:37	144	BP24MVEXP-ENV-DC-203			Camera	18	609758	6077591	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:06:58	145	BP24MVEXP-ENV-DC-203			Camera	18	609754	6077592	609719	6077661	35	-69	77	153	BH	
15-Sep-2024	13:07:34	146	BP24MVEXP-ENV-DC-203			Camera	19	609751	6077595	609719	6077661	32	-66	73	154	BH	
15-Sep-2024	13:09:13	147	BP24MVEXP-ENV-DC-203			Camera	18	609745	6077607	609719	6077661	25	-54	60	155	BH	
15-Sep-2024	13:09:32	148	BP24MVEXP-ENV-DC-203			Camera	18	609741	6077609	609719	6077661	22	-52	56	157	BH	
15-Sep-2024	13:09:57	149	BP24MVEXP-ENV-DC-203			Camera	18	609740	6077613	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:10:05	150	BP24MVEXP-ENV-DC-203			Camera	19	609739	6077614	609719	6077661	20	-47	51	157	BH	
15-Sep-2024	13:11:09	151	BP24MVEXP-ENV-DC-203			Camera	18	609736	6077626	609719	6077661	17	-35	38	154	BH	
15-Sep-2024	13:11:28	152	BP24MVEXP-ENV-DC-203			Camera	19	609735	6077630	609719	6077661	15	-31	35	154	BH	
15-Sep-2024	13:11:43	153	BP24MVEXP-ENV-DC-203			Camera	19	609734	6077631	609719	6077661	14	-30	33	155	BH	
15-Sep-2024	13:11:55	154	BP24MVEXP-ENV-DC-203			Camera	18	609732	6077632	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:12:37	155	BP24MVEXP-ENV-DC-203			Camera	18	609728	6077637	609719	6077661	8	-24	25	161	BH	
15-Sep-2024	13:12:50	156	BP24MVEXP-ENV-DC-203			Camera	19	609727	6077638	609719	6077661	7	-22	23	162	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	13:13:10	157	BP24MVEXP-ENV-DC-203			Camera	19	609726	6077639	609719	6077661	7	-21	22	163	BH	
15-Sep-2024	13:13:39	158	BP24MVEXP-ENV-DC-203			Camera	18	609724	6077642	609719	6077661	5	-19	19	165	BH	
15-Sep-2024	13:14:14	159	BP24MVEXP-ENV-DC-203			Camera	18	609722	6077644	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:14:28	160	BP24MVEXP-ENV-DC-203			Camera	19	609722	6077646	609719	6077661	2	-14	14	172	BH	
15-Sep-2024	13:14:45	161	BP24MVEXP-ENV-DC-203			Camera	19	609723	6077649	609719	6077661	3	-12	12	165	BH	
15-Sep-2024	13:15:02	162	BP24MVEXP-ENV-DC-203			Camera	19	609721	6077652	609719	6077661	2	-9	9	168	BH	
15-Sep-2024	13:15:43	163	BP24MVEXP-ENV-DC-203			Camera	18	609720	6077658	609719	6077661	0	-3	3	171	BH	
15-Sep-2024	13:16:09	164	BP24MVEXP-ENV-DC-203			Camera	18	609719	6077660	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:16:27	165	BP24MVEXP-ENV-DC-203			Camera	18	609720	6077663	609719	6077661	0	2	2	11	BH	
15-Sep-2024	13:16:52	166	BP24MVEXP-ENV-DC-203			Camera	18	609720	6077668	609719	6077661	1	7	7	6	BH	
15-Sep-2024	13:17:08	167	BP24MVEXP-ENV-DC-203			Camera	18	609717	6077670	609719	6077661	-2	9	10	347	BH	
15-Sep-2024	13:17:41	168	BP24MVEXP-ENV-DC-203			Camera	18	609718	6077675	609719	6077661	-2	14	15	353	BH	
15-Sep-2024	13:17:57	169	BP24MVEXP-ENV-DC-203			Camera	18	609718	6077678	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:18:12	170	BP24MVEXP-ENV-DC-203			Camera	18	609717	6077681	609719	6077661	-2	20	21	353	BH	
15-Sep-2024	13:18:27	171	BP24MVEXP-ENV-DC-203			Camera	18	609717	6077684	609719	6077661	-3	23	23	353	BH	
15-Sep-2024	13:18:48	172	BP24MVEXP-ENV-DC-203			Camera	18	609714	6077687	609719	6077661	-5	26	26	349	BH	
15-Sep-2024	13:19:00	173	BP24MVEXP-ENV-DC-203			Camera	18	609714	6077688	609719	6077661	-5	27	28	349	BH	
15-Sep-2024	13:19:19	174	BP24MVEXP-ENV-DC-203			Camera	19	609712	6077689	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:19:58	175	BP24MVEXP-ENV-DC-203			Camera	18	609709	6077691	609719	6077661	-11	30	32	340	BH	
15-Sep-2024	13:20:29	176	BP24MVEXP-ENV-DC-203			Camera	18	609709	6077699	609719	6077661	-11	38	40	344	BH	
15-Sep-2024	13:21:01	177	BP24MVEXP-ENV-DC-203			Camera	18	609707	6077704	609719	6077661	-13	44	45	344	BH	
15-Sep-2024	13:21:15	178	BP24MVEXP-ENV-DC-203			Camera	18	609707	6077706	609719	6077661	-13	46	48	344	BH	
15-Sep-2024	13:22:04	179	BP24MVEXP-ENV-DC-203			Camera	18	609706	6077713	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:22:43	180	BP24MVEXP-ENV-DC-203			Camera	18	609700	6077716	609719	6077661	-19	55	59	341	BH	
15-Sep-2024	13:23:04	181	BP24MVEXP-ENV-DC-203			Camera	18	609696	6077716	609719	6077661	-24	55	60	337	BH	
15-Sep-2024	13:24:38	182	BP24MVEXP-ENV-DC-203			Camera	18	609695	6077725	609719	6077661	-25	64	69	339	BH	
15-Sep-2024	13:25:22	183	BP24MVEXP-ENV-DC-203			Camera	18	609693	6077732	609719	6077661	-26	72	76	340	BH	
15-Sep-2024	13:26:06	184	BP24MVEXP-ENV-DC-203			Camera	18	609692	6077740	609719	6077661	-2	-2	2	228	BH	
15-Sep-2024	13:26:33	185	BP24MVEXP-ENV-DC-203			Camera	18	609692	6077743	609719	6077661	-28	83	87	341	BH	
15-Sep-2024	13:27:15	186	BP24MVEXP-ENV-DC-203			Camera	18	609690	6077748	609719	6077661	-29	88	92	342	BH	
15-Sep-2024	13:52:43	187	BP24MVEXP-ENV-DC-204			Camera	15	609237	6079561	609176	6079717	60	-156	167	159	BH	
15-Sep-2024	13:53:00	188	BP24MVEXP-ENV-DC-204			Camera	15	609237	6079566	609176	6079717	61	-151	163	158	BH	
15-Sep-2024	13:53:08	189	BP24MVEXP-ENV-DC-204			Camera	15	609236	6079568	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:53:34	190	BP24MVEXP-ENV-DC-204			Camera	15	609232	6079573	609176	6079717	56	-144	154	159	BH	
15-Sep-2024	13:53:46	191	BP24MVEXP-ENV-DC-204			Camera	15	609231	6079576	609176	6079717	55	-141	152	159	BH	
15-Sep-2024	13:54:04	192	BP24MVEXP-ENV-DC-204			Camera	15	609230	6079580	609176	6079717	54	-137	147	159	BH	
15-Sep-2024	13:54:19	193	BP24MVEXP-ENV-DC-204			Camera	15	609230	6079582	609176	6079717	54	-135	145	158	BH	
15-Sep-2024	13:54:40	194	BP24MVEXP-ENV-DC-204			Camera	15	609229	6079585	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:54:59	195	BP24MVEXP-ENV-DC-204			Camera	15	609226	6079588	609176	6079717	50	-129	138	159	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	13:55:23	196	BP24MVEXP-ENV-DC-204			Camera	16	609225	6079593	609176	6079717	48	-125	134	159	BH	
15-Sep-2024	13:55:39	197	BP24MVEXP-ENV-DC-204			Camera	16	609224	6079596	609176	6079717	48	-122	131	158	BH	
15-Sep-2024	13:55:52	198	BP24MVEXP-ENV-DC-204			Camera	15	609224	6079598	609176	6079717	48	-119	129	158	BH	
15-Sep-2024	13:55:58	199	BP24MVEXP-ENV-DC-204			Camera	15	609224	6079599	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:56:35	200	BP24MVEXP-ENV-DC-204			Camera	16	609219	6079605	609176	6079717	43	-113	120	159	BH	
15-Sep-2024	13:56:45	201	BP24MVEXP-ENV-DC-204			Camera	16	609217	6079606	609176	6079717	41	-111	118	160	BH	
15-Sep-2024	13:57:06	202	BP24MVEXP-ENV-DC-204			Camera	16	609215	6079609	609176	6079717	39	-108	115	160	BH	
15-Sep-2024	13:57:28	203	BP24MVEXP-ENV-DC-204			Camera	16	609215	6079611	609176	6079717	38	-106	113	160	BH	
15-Sep-2024	13:57:57	204	BP24MVEXP-ENV-DC-204			Camera	16	609214	6079614	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	13:58:06	205	BP24MVEXP-ENV-DC-204			Camera	16	609213	6079615	609176	6079717	37	-102	109	160	BH	
15-Sep-2024	13:58:38	206	BP24MVEXP-ENV-DC-204			Camera	16	609210	6079616	609176	6079717	34	-101	107	162	BH	
15-Sep-2024	13:58:53	207	BP24MVEXP-ENV-DC-204			Camera	16	609208	6079616	609176	6079717	31	-101	106	163	BH	
15-Sep-2024	13:59:20	208	BP24MVEXP-ENV-DC-204			Camera	16	609205	6079616	609176	6079717	29	-101	105	164	BH	
15-Sep-2024	13:59:56	209	BP24MVEXP-ENV-DC-204			Camera	16	609206	6079622	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:00:11	210	BP24MVEXP-ENV-DC-204			Camera	16	609206	6079625	609176	6079717	29	-93	97	162	BH	
15-Sep-2024	14:01:05	211	BP24MVEXP-ENV-DC-204			Camera	16	609203	6079631	609176	6079717	26	-86	90	163	BH	
15-Sep-2024	14:01:15	212	BP24MVEXP-ENV-DC-204			Camera	16	609204	6079632	609176	6079717	27	-85	89	162	BH	
15-Sep-2024	14:01:53	213	BP24MVEXP-ENV-DC-204			Camera	16	609204	6079638	609176	6079717	27	-79	84	161	BH	
15-Sep-2024	14:02:29	214	BP24MVEXP-ENV-DC-204			Camera	16	609202	6079641	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:03:04	215	BP24MVEXP-ENV-DC-204			Camera	16	609198	6079641	609176	6079717	22	-76	79	164	BH	
15-Sep-2024	14:03:27	216	BP24MVEXP-ENV-DC-204			Camera	16	609195	6079640	609176	6079717	19	-77	79	166	BH	
15-Sep-2024	14:03:50	217	BP24MVEXP-ENV-DC-204			Camera	16	609196	6079643	609176	6079717	20	-74	77	165	BH	
15-Sep-2024	14:04:22	218	BP24MVEXP-ENV-DC-204			Camera	16	609199	6079650	609176	6079717	23	-67	71	161	BH	
15-Sep-2024	14:04:58	219	BP24MVEXP-ENV-DC-204			Camera	16	609200	6079655	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:05:51	220	BP24MVEXP-ENV-DC-204			Camera	16	609198	6079660	609176	6079717	22	-57	61	159	BH	
15-Sep-2024	14:06:16	221	BP24MVEXP-ENV-DC-204			Camera	16	609197	6079662	609176	6079717	21	-55	59	159	BH	
15-Sep-2024	14:06:37	222	BP24MVEXP-ENV-DC-204			Camera	16	609195	6079663	609176	6079717	18	-54	57	161	BH	
15-Sep-2024	14:07:42	223	BP24MVEXP-ENV-DC-204			Camera	16	609193	6079668	609176	6079717	16	-49	52	162	BH	
15-Sep-2024	14:07:56	224	BP24MVEXP-ENV-DC-204			Camera	16	609192	6079668	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:08:16	225	BP24MVEXP-ENV-DC-204			Camera	16	609191	6079669	609176	6079717	15	-48	51	163	BH	
15-Sep-2024	14:08:43	226	BP24MVEXP-ENV-DC-204			Camera	16	609193	6079666	609176	6079717	17	-51	54	161	BH	
15-Sep-2024	14:09:51	227	BP24MVEXP-ENV-DC-204			Camera	16	609196	6079682	609176	6079717	20	-35	41	150	BH	
15-Sep-2024	14:10:12	228	BP24MVEXP-ENV-DC-204			Camera	16	609195	6079685	609176	6079717	18	-32	37	150	BH	
15-Sep-2024	14:11:36	229	BP24MVEXP-ENV-DC-204			Camera	16	609185	6079689	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:12:44	230	BP24MVEXP-ENV-DC-204			Camera	16	609184	6079702	609176	6079717	8	-15	17	152	BH	
15-Sep-2024	14:13:38	231	BP24MVEXP-ENV-DC-204			Camera	16	609180	6079705	609176	6079717	3	-12	13	165	BH	
15-Sep-2024	14:14:32	232	BP24MVEXP-ENV-DC-204			Camera	16	609179	6079709	609176	6079717	3	-8	8	158	BH	
15-Sep-2024	14:14:55	233	BP24MVEXP-ENV-DC-204			Camera	16	609180	6079714	609176	6079717	4	-3	5	131	BH	
15-Sep-2024	14:15:27	234	BP24MVEXP-ENV-DC-204			Camera	16	609177	6079716	609176	6079717	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV					Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50		Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	14:15:59	235	BP24MVEXP-ENV-DC-204			Camera	16	609174	6079718	609176	6079717	-3	1	3	292	BH	
15-Sep-2024	14:16:15	236	BP24MVEXP-ENV-DC-204			Camera	16	609173	6079720	609176	6079717	-3	3	4	308	BH	
15-Sep-2024	14:17:13	237	BP24MVEXP-ENV-DC-204			Camera	16	609174	6079724	609176	6079717	-2	7	7	345	BH	
15-Sep-2024	14:18:19	238	BP24MVEXP-ENV-DC-204			Camera	16	609166	6079723	609176	6079717	-10	6	12	302	BH	
15-Sep-2024	14:19:26	239	BP24MVEXP-ENV-DC-204			Camera	16	609171	6079728	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:20:01	240	BP24MVEXP-ENV-DC-204			Camera	16	609181	6079736	609176	6079717	5	19	19	14	BH	
15-Sep-2024	14:20:19	241	BP24MVEXP-ENV-DC-204			Camera	16	609182	6079739	609176	6079717	6	22	23	15	BH	
15-Sep-2024	14:20:58	242	BP24MVEXP-ENV-DC-204			Camera	16	609174	6079742	609176	6079717	-2	25	25	355	BH	
15-Sep-2024	14:22:11	243	BP24MVEXP-ENV-DC-204			Camera	16	609166	6079746	609176	6079717	-11	29	31	340	BH	
15-Sep-2024	14:22:49	244	BP24MVEXP-ENV-DC-204			Camera	16	609164	6079752	609176	6079717	-2	-2	2	228	BH	
15-Sep-2024	14:23:31	245	BP24MVEXP-ENV-DC-204			Camera	16	609162	6079759	609176	6079717	-14	42	44	342	BH	
15-Sep-2024	14:53:03	246	BP24MVEXP-ENV-DC-236			Camera	10	607284	6080651	607242	6080758	41	-107	115	159	BH	
15-Sep-2024	14:53:17	247	BP24MVEXP-ENV-DC-236			Camera	10	607280	6080651	607242	6080758	38	-106	113	160	BH	
15-Sep-2024	14:53:48	248	BP24MVEXP-ENV-DC-236			Camera	10	607273	6080651	607242	6080758	30	-107	111	164	BH	
15-Sep-2024	14:54:16	249	BP24MVEXP-ENV-DC-236			Camera	10	607274	6080657	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	14:55:00	250	BP24MVEXP-ENV-DC-236			Camera	10	607280	6080669	607242	6080758	37	-89	97	157	BH	
15-Sep-2024	14:55:59	251	BP24MVEXP-ENV-DC-236			Camera	10	607277	6080678	607242	6080758	35	-80	87	156	BH	
15-Sep-2024	14:56:47	252	BP24MVEXP-ENV-DC-236			Camera	10	607270	6080680	607242	6080758	27	-78	83	161	BH	
15-Sep-2024	14:57:49	253	BP24MVEXP-ENV-DC-236			Camera	10	607276	6080693	607242	6080758	33	-65	73	153	BH	
15-Sep-2024	14:58:32	254	BP24MVEXP-ENV-DC-236			Camera	10	607277	6080699	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	14:59:31	255	BP24MVEXP-ENV-DC-236			Camera	10	607267	6080702	607242	6080758	24	-56	61	157	BH	
15-Sep-2024	14:59:46	256	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080705	607242	6080758	24	-53	58	156	BH	
15-Sep-2024	15:00:00	257	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080709	607242	6080758	24	-49	54	154	BH	
15-Sep-2024	15:00:12	258	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080712	607242	6080758	24	-46	51	152	BH	
15-Sep-2024	15:00:30	259	BP24MVEXP-ENV-DC-236			Camera	10	607266	6080717	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:00:55	260	BP24MVEXP-ENV-DC-236			Camera	10	607264	6080723	607242	6080758	22	-35	41	148	BH	
15-Sep-2024	15:01:20	261	BP24MVEXP-ENV-DC-236			Camera	10	607259	6080726	607242	6080758	17	-32	36	152	BH	
15-Sep-2024	15:01:56	262	BP24MVEXP-ENV-DC-236			Camera	10	607257	6080729	607242	6080758	15	-29	33	153	BH	
15-Sep-2024	15:02:24	263	BP24MVEXP-ENV-DC-236			Camera	10	607258	6080737	607242	6080758	16	-21	26	142	BH	
15-Sep-2024	15:03:13	264	BP24MVEXP-ENV-DC-236			Camera	10	607254	6080740	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:03:45	265	BP24MVEXP-ENV-DC-236			Camera	10	607251	6080745	607242	6080758	8	-13	15	148	BH	
15-Sep-2024	15:04:16	266	BP24MVEXP-ENV-DC-236			Camera	10	607250	6080756	607242	6080758	7	-2	7	105	BH	
15-Sep-2024	15:04:42	267	BP24MVEXP-ENV-DC-236			Camera	10	607247	6080763	607242	6080758	4	5	7	40	BH	
15-Sep-2024	15:05:07	268	BP24MVEXP-ENV-DC-236			Camera	10	607242	6080767	607242	6080758	0	9	9	359	BH	
15-Sep-2024	15:05:30	269	BP24MVEXP-ENV-DC-236			Camera	10	607238	6080770	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:06:02	270	BP24MVEXP-ENV-DC-236			Camera	10	607237	6080781	607242	6080758	-6	23	24	346	BH	
15-Sep-2024	15:06:18	271	BP24MVEXP-ENV-DC-236			Camera	10	607236	6080787	607242	6080758	-7	30	30	347	BH	
15-Sep-2024	15:06:44	272	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080795	607242	6080758	-8	37	38	347	BH	
15-Sep-2024	15:06:53	273	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080797	607242	6080758	-9	39	40	348	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	15:07:12	274	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080800	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:07:28	275	BP24MVEXP-ENV-DC-236			Camera	10	607234	6080803	607242	6080758	-9	46	46	349	BH	
15-Sep-2024	15:07:42	276	BP24MVEXP-ENV-DC-236			Camera	11	607232	6080804	607242	6080758	-10	46	47	347	BH	
15-Sep-2024	15:08:11	277	BP24MVEXP-ENV-DC-236			Camera	10	607228	6080802	607242	6080758	-15	45	47	342	BH	
15-Sep-2024	15:09:14	278	BP24MVEXP-ENV-DC-236			Camera	10	607217	6080813	607242	6080758	-26	55	61	335	BH	
15-Sep-2024	15:09:36	279	BP24MVEXP-ENV-DC-236			Camera	10	607221	6080818	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:09:50	280	BP24MVEXP-ENV-DC-236			Camera	10	607223	6080823	607242	6080758	-20	66	68	343	BH	
15-Sep-2024	15:10:05	281	BP24MVEXP-ENV-DC-236			Camera	10	607226	6080827	607242	6080758	-17	69	71	346	BH	
15-Sep-2024	15:10:23	282	BP24MVEXP-ENV-DC-236			Camera	10	607227	6080832	607242	6080758	-15	75	76	348	BH	
15-Sep-2024	15:10:40	283	BP24MVEXP-ENV-DC-236			Camera	11	607227	6080838	607242	6080758	-16	80	82	349	BH	
15-Sep-2024	15:11:17	284	BP24MVEXP-ENV-DC-236			Camera	11	607231	6080847	607242	6080758	-2	-2	2	228	BH	
15-Sep-2024	15:29:14	285	BP24MVEXP-ENV-DC-205			Camera	14	607962	6081262	608039	6081180	-77	82	112	317	BH	
15-Sep-2024	15:29:41	286	BP24MVEXP-ENV-DC-205			Camera	14	607968	6081254	608039	6081180	-71	74	103	316	BH	
15-Sep-2024	15:30:11	287	BP24MVEXP-ENV-DC-205			Camera	14	607974	6081248	608039	6081180	-65	68	94	316	BH	
15-Sep-2024	15:30:34	288	BP24MVEXP-ENV-DC-205			Camera	14	607980	6081243	608039	6081180	-58	63	86	317	BH	
15-Sep-2024	15:30:59	289	BP24MVEXP-ENV-DC-205			Camera	14	607986	6081238	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:31:27	290	BP24MVEXP-ENV-DC-205			Camera	14	607992	6081234	608039	6081180	-46	55	72	320	BH	
15-Sep-2024	15:32:15	291	BP24MVEXP-ENV-DC-205			Camera	14	608002	6081226	608039	6081180	-37	47	59	322	BH	
15-Sep-2024	15:32:32	292	BP24MVEXP-ENV-DC-205			Camera	14	608007	6081221	608039	6081180	-32	42	52	323	BH	
15-Sep-2024	15:32:58	293	BP24MVEXP-ENV-DC-205			Camera	15	608012	6081215	608039	6081180	-27	36	45	323	BH	
15-Sep-2024	15:33:14	294	BP24MVEXP-ENV-DC-205			Camera	14	608015	6081212	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:33:44	295	BP24MVEXP-ENV-DC-205			Camera	14	608019	6081205	608039	6081180	-20	26	33	322	BH	
15-Sep-2024	15:33:57	296	BP24MVEXP-ENV-DC-205			Camera	15	608020	6081202	608039	6081180	-19	22	29	319	BH	
15-Sep-2024	15:34:22	297	BP24MVEXP-ENV-DC-205			Camera	15	608025	6081197	608039	6081180	-14	18	22	322	BH	
15-Sep-2024	15:34:42	298	BP24MVEXP-ENV-DC-205			Camera	15	608030	6081193	608039	6081180	-9	14	16	327	BH	
15-Sep-2024	15:35:12	299	BP24MVEXP-ENV-DC-205			Camera	15	608037	6081189	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:35:46	300	BP24MVEXP-ENV-DC-205			Camera	15	608043	6081181	608039	6081180	5	1	5	77	BH	
15-Sep-2024	15:36:02	301	BP24MVEXP-ENV-DC-205			Camera	15	608048	6081180	608039	6081180	9	1	9	86	BH	
15-Sep-2024	15:37:56	302	BP24MVEXP-ENV-DC-205			Camera	15	608052	6081132	608039	6081180	14	-48	49	164	BH	
15-Sep-2024	15:39:14	303	BP24MVEXP-ENV-DC-205			Camera	15	608060	6081160	608039	6081180	21	-20	29	134	BH	
15-Sep-2024	15:39:38	304	BP24MVEXP-ENV-DC-205			Camera	15	608056	6081166	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:39:52	305	BP24MVEXP-ENV-DC-205			Camera	15	608053	6081165	608039	6081180	14	-14	20	136	BH	
15-Sep-2024	15:40:16	306	BP24MVEXP-ENV-DC-205			Camera	15	608046	6081168	608039	6081180	7	-12	14	150	BH	
15-Sep-2024	15:40:46	307	BP24MVEXP-ENV-DC-205			Camera	15	608047	6081176	608039	6081180	9	-4	9	113	BH	
15-Sep-2024	15:41:29	308	BP24MVEXP-ENV-DC-205			Camera	14	608048	6081185	608039	6081180	9	5	10	62	BH	
15-Sep-2024	15:41:44	309	BP24MVEXP-ENV-DC-205			Camera	14	608050	6081187	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:41:52	310	BP24MVEXP-ENV-DC-205			Camera	14	608051	6081188	608039	6081180	12	9	15	55	BH	
15-Sep-2024	15:42:01	311	BP24MVEXP-ENV-DC-205			Camera	14	608053	6081189	608039	6081180	14	9	16	56	BH	
15-Sep-2024	15:43:11	312	BP24MVEXP-ENV-DC-205			Camera	14	608043	6081181	608039	6081180	4	1	4	73	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
15-Sep-2024	15:43:30	313	BP24MVEXP-ENV-DC-205			Camera	15	608047	6081176	608039	6081180	8	-4	9	116	BH	
15-Sep-2024	15:43:43	314	BP24MVEXP-ENV-DC-205			Camera	15	608051	6081173	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:43:55	315	BP24MVEXP-ENV-DC-205			Camera	15	608054	6081168	608039	6081180	16	-11	19	126	BH	
15-Sep-2024	15:44:28	316	BP24MVEXP-ENV-DC-205			Camera	15	608062	6081161	608039	6081180	23	-19	30	129	BH	
15-Sep-2024	15:44:45	317	BP24MVEXP-ENV-DC-205			Camera	15	608066	6081158	608039	6081180	28	-22	35	128	BH	
15-Sep-2024	15:44:56	318	BP24MVEXP-ENV-DC-205			Camera	15	608070	6081157	608039	6081180	31	-23	38	126	BH	
15-Sep-2024	15:45:09	319	BP24MVEXP-ENV-DC-205			Camera	15	608074	6081157	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:45:32	320	BP24MVEXP-ENV-DC-205			Camera	15	608081	6081153	608039	6081180	42	-27	50	122	BH	
15-Sep-2024	15:45:49	321	BP24MVEXP-ENV-DC-205			Camera	15	608086	6081153	608039	6081180	47	-26	54	119	BH	
15-Sep-2024	15:46:08	322	BP24MVEXP-ENV-DC-205			Camera	15	608090	6081151	608039	6081180	51	-29	59	119	BH	
15-Sep-2024	15:46:17	323	BP24MVEXP-ENV-DC-205			Camera	15	608093	6081151	608039	6081180	54	-29	61	118	BH	
15-Sep-2024	15:46:39	324	BP24MVEXP-ENV-DC-205			Camera	15	608098	6081151	608039	6081180	-2	-2	2	228	BH	
15-Sep-2024	15:46:50	325	BP24MVEXP-ENV-DC-205			Camera	15	608101	6081150	608039	6081180	62	-30	69	116	BH	
15-Sep-2024	15:47:04	326	BP24MVEXP-ENV-DC-205			Camera	15	608106	6081148	608039	6081180	67	-32	75	116	BH	
15-Sep-2024	15:47:22	327	BP24MVEXP-ENV-DC-205			Camera	15	608112	6081145	608039	6081180	74	-35	81	115	BH	
15-Sep-2024	15:47:31	328	BP24MVEXP-ENV-DC-205			Camera	15	608116	6081144	608039	6081180	77	-36	85	115	BH	
15-Sep-2024	15:47:48	329	BP24MVEXP-ENV-DC-205			Camera	15	608120	6081143	608039	6081180	-2	-2	2	228	BH	
16-Sep-2024	07:00:28	330	BP24MVEXP-ENV-DC-199			Camera	19	612454	6075652	612355	6075629	99	23	102	77	BH	
16-Sep-2024	07:00:47	331	BP24MVEXP-ENV-DC-199			Camera	19	612450	6075651	612355	6075629	95	22	97	77	BH	
16-Sep-2024	07:01:07	332	BP24MVEXP-ENV-DC-199			Camera	19	612447	6075649	612355	6075629	92	19	94	78	BH	
16-Sep-2024	07:01:22	333	BP24MVEXP-ENV-DC-199			Camera	19	612445	6075647	612355	6075629	90	17	92	79	BH	
16-Sep-2024	07:01:41	334	BP24MVEXP-ENV-DC-199			Camera	19	612443	6075646	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:02:05	335	BP24MVEXP-ENV-DC-199			Camera	19	612440	6075647	612355	6075629	85	18	87	78	BH	
16-Sep-2024	07:02:35	336	BP24MVEXP-ENV-DC-199			Camera	19	612434	6075647	612355	6075629	79	18	81	77	BH	
16-Sep-2024	07:03:43	337	BP24MVEXP-ENV-DC-199			Camera	19	612425	6075644	612355	6075629	70	14	71	78	BH	
16-Sep-2024	07:04:05	338	BP24MVEXP-ENV-DC-199			Camera	19	612421	6075643	612355	6075629	66	14	68	78	BH	
16-Sep-2024	07:05:00	339	BP24MVEXP-ENV-DC-199			Camera	18	612416	6075640	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:07:04	340	BP24MVEXP-ENV-DC-199			Camera	18	612404	6075636	612355	6075629	49	6	49	83	BH	
16-Sep-2024	07:07:22	341	BP24MVEXP-ENV-DC-199			Camera	19	612403	6075636	612355	6075629	48	7	48	82	BH	
16-Sep-2024	07:08:28	342	BP24MVEXP-ENV-DC-199			Camera	18	612392	6075636	612355	6075629	37	7	38	80	BH	
16-Sep-2024	07:09:23	343	BP24MVEXP-ENV-DC-199			Camera	18	612381	6075634	612355	6075629	26	5	26	80	BH	
16-Sep-2024	07:09:43	344	BP24MVEXP-ENV-DC-199			Camera	18	612377	6075633	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:09:57	345	BP24MVEXP-ENV-DC-199			Camera	18	612374	6075633	612355	6075629	19	4	20	79	BH	
16-Sep-2024	07:10:10	346	BP24MVEXP-ENV-DC-199			Camera	18	612373	6075633	612355	6075629	18	3	19	79	BH	
16-Sep-2024	07:10:34	347	BP24MVEXP-ENV-DC-199			Camera	18	612366	6075633	612355	6075629	11	4	12	71	BH	
16-Sep-2024	07:10:45	348	BP24MVEXP-ENV-DC-199			Camera	18	612363	6075633	612355	6075629	8	4	9	64	BH	
16-Sep-2024	07:10:53	349	BP24MVEXP-ENV-DC-199			Camera	18	612361	6075633	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:11:14	350	BP24MVEXP-ENV-DC-199			Camera	18	612355	6075632	612355	6075629	0	2	2	2	BH	
16-Sep-2024	07:11:24	351	BP24MVEXP-ENV-DC-199			Camera	18	612353	6075631	612355	6075629	-2	1	2	307	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	07:11:46	352	BP24MVEXP-ENV-DC-199			Camera	18	612351	6075630	612355	6075629	-4	1	4	280	BH	
16-Sep-2024	07:12:10	353	BP24MVEXP-ENV-DC-199			Camera	17	612347	6075630	612355	6075629	-8	0	8	272	BH	
16-Sep-2024	07:12:21	354	BP24MVEXP-ENV-DC-199			Camera	18	612345	6075628	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:12:39	355	BP24MVEXP-ENV-DC-199			Camera	18	612343	6075625	612355	6075629	-12	-4	12	250	BH	
16-Sep-2024	07:13:16	356	BP24MVEXP-ENV-DC-199			Camera	18	612340	6075623	612355	6075629	-15	-7	16	246	BH	
16-Sep-2024	07:13:53	357	BP24MVEXP-ENV-DC-199			Camera	17	612336	6075623	612355	6075629	-19	-6	20	253	BH	
16-Sep-2024	07:14:09	358	BP24MVEXP-ENV-DC-199			Camera	17	612333	6075623	612355	6075629	-22	-6	23	254	BH	
16-Sep-2024	07:14:27	359	BP24MVEXP-ENV-DC-199			Camera	17	612329	6075623	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:14:55	360	BP24MVEXP-ENV-DC-199			Camera	17	612321	6075625	612355	6075629	-34	-4	34	263	BH	
16-Sep-2024	07:15:19	361	BP24MVEXP-ENV-DC-199			Camera	17	612315	6075625	612355	6075629	-40	-5	40	263	BH	
16-Sep-2024	07:15:42	362	BP24MVEXP-ENV-DC-199			Camera	17	612310	6075624	612355	6075629	-45	-5	46	263	BH	
16-Sep-2024	07:16:13	363	BP24MVEXP-ENV-DC-199			Camera	17	612304	6075620	612355	6075629	-51	-10	52	259	BH	
16-Sep-2024	07:16:34	364	BP24MVEXP-ENV-DC-199			Camera	17	612301	6075619	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:17:23	365	BP24MVEXP-ENV-DC-199			Camera	17	612296	6075615	612355	6075629	-59	-14	60	256	BH	
16-Sep-2024	07:17:40	366	BP24MVEXP-ENV-DC-199			Camera	17	612294	6075614	612355	6075629	-61	-15	62	256	BH	
16-Sep-2024	07:17:48	367	BP24MVEXP-ENV-DC-199			Camera	17	612294	6075615	612355	6075629	-61	-15	63	257	BH	
16-Sep-2024	07:18:34	368	BP24MVEXP-ENV-DC-199			Camera	17	612287	6075613	612355	6075629	-68	-16	69	257	BH	
16-Sep-2024	07:18:59	369	BP24MVEXP-ENV-DC-199			Camera	17	612284	6075613	612355	6075629	-2	-2	2	228	BH	
16-Sep-2024	07:19:44	370	BP24MVEXP-ENV-DC-199			Camera	17	612277	6075614	612355	6075629	-77	-16	79	258	BH	
16-Sep-2024	07:20:44	371	BP24MVEXP-ENV-DC-199			Camera	17	612266	6075612	612355	6075629	-89	-17	91	259	BH	
16-Sep-2024	07:21:08	372	BP24MVEXP-ENV-DC-199			Camera	17	612260	6075612	612355	6075629	-95	-17	96	260	BH	
16-Sep-2024	07:43:58	373	BP24MVEXP-ENV-DC-200			Camera	17	611728	6076435	611574	6076289	154	146	212	46	BH	
16-Sep-2024	07:44:09	374	BP24MVEXP-ENV-DC-200			Camera	17	611726	6076433	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:44:42	375	BP24MVEXP-ENV-DC-200			Camera	17	611721	6076429	611574	6076289	147	140	203	46	BH	
16-Sep-2024	07:45:08	376	BP24MVEXP-ENV-DC-200			Camera	17	611717	6076425	611574	6076289	143	136	197	46	BH	
16-Sep-2024	07:45:22	377	BP24MVEXP-ENV-DC-200			Camera	17	611714	6076423	611574	6076289	140	134	194	46	BH	
16-Sep-2024	07:45:47	378	BP24MVEXP-ENV-DC-200			Camera	17	611711	6076420	611574	6076289	137	131	189	46	BH	
16-Sep-2024	07:46:03	379	BP24MVEXP-ENV-DC-200			Camera	17	611708	6076418	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:46:29	380	BP24MVEXP-ENV-DC-200			Camera	18	611704	6076414	611574	6076289	130	125	180	46	BH	
16-Sep-2024	07:47:13	381	BP24MVEXP-ENV-DC-200			Camera	18	611699	6076405	611574	6076289	125	116	170	47	BH	
16-Sep-2024	07:47:46	382	BP24MVEXP-ENV-DC-200			Camera	18	611695	6076401	611574	6076289	121	112	165	47	BH	
16-Sep-2024	07:48:30	383	BP24MVEXP-ENV-DC-200			Camera	17	611685	6076395	611574	6076289	111	106	154	46	BH	
16-Sep-2024	07:48:56	384	BP24MVEXP-ENV-DC-200			Camera	18	611679	6076392	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:49:05	385	BP24MVEXP-ENV-DC-200			Camera	18	611676	6076390	611574	6076289	102	101	144	45	BH	
16-Sep-2024	07:49:23	386	BP24MVEXP-ENV-DC-200			Camera	18	611673	6076387	611574	6076289	99	98	139	45	BH	
16-Sep-2024	07:49:51	387	BP24MVEXP-ENV-DC-200			Camera	18	611672	6076380	611574	6076289	97	91	133	47	BH	
16-Sep-2024	07:50:26	388	BP24MVEXP-ENV-DC-200			Camera	18	611671	6076375	611574	6076289	97	86	130	49	BH	
16-Sep-2024	07:51:18	389	BP24MVEXP-ENV-DC-200			Camera	18	611667	6076368	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:52:15	390	BP24MVEXP-ENV-DC-200			Camera	18	611656	6076363	611574	6076289	81	74	110	48	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	07:52:57	391	BP24MVEXP-ENV-DC-200			Camera	18	611644	6076361	611574	6076289	70	72	100	44	BH	
16-Sep-2024	07:53:22	392	BP24MVEXP-ENV-DC-200			Camera	18	611635	6076360	611574	6076289	61	71	94	41	BH	
16-Sep-2024	07:53:48	393	BP24MVEXP-ENV-DC-200			Camera	18	611629	6076356	611574	6076289	55	67	87	39	BH	
16-Sep-2024	07:54:14	394	BP24MVEXP-ENV-DC-200			Camera	18	611626	6076350	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:54:34	395	BP24MVEXP-ENV-DC-200			Camera	18	611625	6076345	611574	6076289	51	56	76	42	BH	
16-Sep-2024	07:54:45	396	BP24MVEXP-ENV-DC-200			Camera	18	611626	6076343	611574	6076289	52	54	75	44	BH	
16-Sep-2024	07:54:58	397	BP24MVEXP-ENV-DC-200			Camera	18	611625	6076339	611574	6076289	51	50	72	46	BH	
16-Sep-2024	07:55:34	398	BP24MVEXP-ENV-DC-200			Camera	18	611623	6076333	611574	6076289	49	44	66	48	BH	
16-Sep-2024	07:56:11	399	BP24MVEXP-ENV-DC-200			Camera	18	611622	6076328	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:56:26	400	BP24MVEXP-ENV-DC-200			Camera	18	611621	6076327	611574	6076289	47	38	60	51	BH	
16-Sep-2024	07:56:51	401	BP24MVEXP-ENV-DC-200			Camera	18	611619	6076325	611574	6076289	45	36	58	51	BH	
16-Sep-2024	07:57:07	402	BP24MVEXP-ENV-DC-200			Camera	18	611618	6076324	611574	6076289	44	35	56	52	BH	
16-Sep-2024	07:58:09	403	BP24MVEXP-ENV-DC-200			Camera	18	611616	6076321	611574	6076289	41	32	52	52	BH	
16-Sep-2024	07:58:29	404	BP24MVEXP-ENV-DC-200			Camera	18	611614	6076320	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	07:59:51	405	BP24MVEXP-ENV-DC-200			Camera	17	611602	6076319	611574	6076289	28	30	40	43	BH	
16-Sep-2024	08:00:08	406	BP24MVEXP-ENV-DC-200			Camera	18	611597	6076317	611574	6076289	23	28	37	40	BH	
16-Sep-2024	08:00:35	407	BP24MVEXP-ENV-DC-200			Camera	18	611591	6076312	611574	6076289	17	23	29	36	BH	
16-Sep-2024	08:00:59	408	BP24MVEXP-ENV-DC-200			Camera	18	611589	6076308	611574	6076289	15	19	24	38	BH	
16-Sep-2024	08:01:36	409	BP24MVEXP-ENV-DC-200			Camera	18	611587	6076303	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:01:48	410	BP24MVEXP-ENV-DC-200			Camera	18	611586	6076302	611574	6076289	12	13	18	43	BH	
16-Sep-2024	08:02:06	411	BP24MVEXP-ENV-DC-200			Camera	17	611586	6076300	611574	6076289	12	11	16	48	BH	
16-Sep-2024	08:02:21	412	BP24MVEXP-ENV-DC-200			Camera	18	611587	6076298	611574	6076289	13	9	16	54	BH	
16-Sep-2024	08:02:47	413	BP24MVEXP-ENV-DC-200			Camera	18	611585	6076295	611574	6076289	11	6	13	59	BH	
16-Sep-2024	08:03:22	414	BP24MVEXP-ENV-DC-200			Camera	18	611582	6076292	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:04:07	415	BP24MVEXP-ENV-DC-200			Camera	17	611577	6076290	611574	6076289	3	1	4	67	BH	
16-Sep-2024	08:04:21	416	BP24MVEXP-ENV-DC-200			Camera	18	611575	6076289	611574	6076289	0	0	0	95	BH	
16-Sep-2024	08:05:02	417	BP24MVEXP-ENV-DC-200			Camera	18	611569	6076284	611574	6076289	-5	-5	8	224	BH	
16-Sep-2024	08:06:06	418	BP24MVEXP-ENV-DC-200			Camera	18	611567	6076277	611574	6076289	-8	-12	14	212	BH	
16-Sep-2024	08:06:51	419	BP24MVEXP-ENV-DC-200			Camera	18	611562	6076273	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:07:39	420	BP24MVEXP-ENV-DC-200			Camera	17	611556	6076269	611574	6076289	-18	-20	27	222	BH	
16-Sep-2024	08:07:52	421	BP24MVEXP-ENV-DC-200			Camera	18	611554	6076267	611574	6076289	-20	-22	30	222	BH	
16-Sep-2024	08:08:34	422	BP24MVEXP-ENV-DC-200			Camera	18	611550	6076263	611574	6076289	-24	-26	35	223	BH	
16-Sep-2024	08:09:10	423	BP24MVEXP-ENV-DC-200			Camera	18	611546	6076259	611574	6076289	-28	-30	41	224	BH	
16-Sep-2024	08:09:27	424	BP24MVEXP-ENV-DC-200			Camera	18	611543	6076256	611574	6076289	-2	-2	2	228	BH	
16-Sep-2024	08:09:49	425	BP24MVEXP-ENV-DC-200			Camera	18	611540	6076252	611574	6076289	-34	-37	50	223	BH	
16-Sep-2024	08:38:22	426	BP24MVEXP-ENV-DC-219			Camera	19	611462	6078673	611495	6078574	-34	99	105	341	BH	
16-Sep-2024	08:38:41	427	BP24MVEXP-ENV-DC-219			Camera	19	611463	6078669	611495	6078574	-33	95	100	341	BH	
16-Sep-2024	08:38:55	428	BP24MVEXP-ENV-DC-219			Camera	19	611463	6078665	611495	6078574	-33	91	97	340	BH	
16-Sep-2024	08:39:17	429	BP24MVEXP-ENV-DC-219			Camera	19	611462	6078661	611495	6078574	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	08:39:37	430	BP24MVEXP-ENV-DC-219			Camera	19	611463	6078655	611495	6078574	-32	81	87	339	BH	
16-Sep-2024	08:39:57	431	BP24MVEXP-ENV-DC-219			Camera	19	611464	6078651	611495	6078574	-31	77	83	338	BH	
16-Sep-2024	08:40:16	432	BP24MVEXP-ENV-DC-219			Camera	19	611465	6078647	611495	6078574	-30	73	79	337	BH	
16-Sep-2024	08:40:32	433	BP24MVEXP-ENV-DC-219			Camera	19	611466	6078643	611495	6078574	-30	69	75	337	BH	
16-Sep-2024	08:40:59	434	BP24MVEXP-ENV-DC-219			Camera	19	611465	6078635	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:41:12	435	BP24MVEXP-ENV-DC-219			Camera	19	611467	6078631	611495	6078574	-29	57	64	334	BH	
16-Sep-2024	08:41:31	436	BP24MVEXP-ENV-DC-219			Camera	19	611468	6078628	611495	6078574	-27	54	61	333	BH	
16-Sep-2024	08:41:56	437	BP24MVEXP-ENV-DC-219			Camera	19	611471	6078623	611495	6078574	-25	49	55	334	BH	
16-Sep-2024	08:42:10	438	BP24MVEXP-ENV-DC-219			Camera	19	611473	6078620	611495	6078574	-22	46	51	334	BH	
16-Sep-2024	08:42:25	439	BP24MVEXP-ENV-DC-219			Camera	19	611475	6078616	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:42:42	440	BP24MVEXP-ENV-DC-219			Camera	19	611478	6078613	611495	6078574	-18	39	43	336	BH	
16-Sep-2024	08:43:07	441	BP24MVEXP-ENV-DC-219			Camera	19	611482	6078607	611495	6078574	-13	33	36	338	BH	
16-Sep-2024	08:43:27	442	BP24MVEXP-ENV-DC-219			Camera	19	611485	6078602	611495	6078574	-11	28	30	339	BH	
16-Sep-2024	08:43:40	443	BP24MVEXP-ENV-DC-219			Camera	19	611485	6078598	611495	6078574	-10	24	26	337	BH	
16-Sep-2024	08:44:02	444	BP24MVEXP-ENV-DC-219			Camera	19	611487	6078593	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:44:16	445	BP24MVEXP-ENV-DC-219			Camera	19	611489	6078589	611495	6078574	-7	15	17	337	BH	
16-Sep-2024	08:44:30	446	BP24MVEXP-ENV-DC-219			Camera	19	611490	6078586	611495	6078574	-5	12	13	337	BH	
16-Sep-2024	08:44:48	447	BP24MVEXP-ENV-DC-219			Camera	19	611492	6078583	611495	6078574	-3	9	9	340	BH	
16-Sep-2024	08:45:03	448	BP24MVEXP-ENV-DC-219			Camera	19	611494	6078579	611495	6078574	-2	5	5	341	BH	
16-Sep-2024	08:45:58	450	BP24MVEXP-ENV-DC-219			Camera	19	611491	6078567	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:46:20	451	BP24MVEXP-ENV-DC-219			Camera	19	611493	6078565	611495	6078574	-2	-9	9	193	BH	
16-Sep-2024	08:46:50	452	BP24MVEXP-ENV-DC-219			Camera	19	611495	6078559	611495	6078574	0	-15	15	180	BH	
16-Sep-2024	08:47:08	453	BP24MVEXP-ENV-DC-219			Camera	19	611495	6078555	611495	6078574	-1	-19	19	182	BH	
16-Sep-2024	08:47:46	454	BP24MVEXP-ENV-DC-219			Camera	19	611499	6078549	611495	6078574	3	-25	25	172	BH	
16-Sep-2024	08:47:56	455	BP24MVEXP-ENV-DC-219			Camera	19	611500	6078547	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:48:12	456	BP24MVEXP-ENV-DC-219			Camera	19	611502	6078544	611495	6078574	7	-31	31	167	BH	
16-Sep-2024	08:48:27	457	BP24MVEXP-ENV-DC-219			Camera	20	611504	6078540	611495	6078574	9	-34	35	166	BH	
16-Sep-2024	08:48:51	458	BP24MVEXP-ENV-DC-219			Camera	20	611505	6078534	611495	6078574	10	-40	41	166	BH	
16-Sep-2024	08:49:12	459	BP24MVEXP-ENV-DC-219			Camera	19	611505	6078529	611495	6078574	10	-45	46	168	BH	
16-Sep-2024	08:49:34	460	BP24MVEXP-ENV-DC-219			Camera	19	611506	6078525	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:49:49	461	BP24MVEXP-ENV-DC-219			Camera	19	611507	6078522	611495	6078574	11	-52	53	168	BH	
16-Sep-2024	08:50:10	462	BP24MVEXP-ENV-DC-219			Camera	19	611509	6078516	611495	6078574	14	-58	59	167	BH	
16-Sep-2024	08:50:23	463	BP24MVEXP-ENV-DC-219			Camera	19	611510	6078513	611495	6078574	15	-61	62	166	BH	
16-Sep-2024	08:50:38	464	BP24MVEXP-ENV-DC-219			Camera	19	611512	6078510	611495	6078574	17	-64	66	165	BH	
16-Sep-2024	08:50:59	465	BP24MVEXP-ENV-DC-219			Camera	19	611516	6078505	611495	6078574	-2	-2	2	228	BH	
16-Sep-2024	08:51:13	466	BP24MVEXP-ENV-DC-219			Camera	19	611519	6078502	611495	6078574	23	-72	76	162	BH	
16-Sep-2024	08:51:26	467	BP24MVEXP-ENV-DC-219			Camera	19	611520	6078499	611495	6078574	25	-75	80	162	BH	
16-Sep-2024	08:52:06	468	BP24MVEXP-ENV-DC-219			Camera	19	611523	6078488	611495	6078574	28	-86	91	162	BH	
16-Sep-2024	09:19:43	469	BP24MVEXP-ENV-DC-218			Camera	18	610969	6080529	611024	6080438	-55	91	106	329	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	09:20:00	470	BP24MVEXP-ENV-DC-218			Camera	19	610971	6080526	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:20:08	471	BP24MVEXP-ENV-DC-218			Camera	19	610971	6080525	611024	6080438	-53	87	102	329	BH	
16-Sep-2024	09:20:29	472	BP24MVEXP-ENV-DC-218			Camera	19	610974	6080520	611024	6080438	-51	82	97	328	BH	
16-Sep-2024	09:20:48	473	BP24MVEXP-ENV-DC-218			Camera	19	610975	6080517	611024	6080438	-49	79	93	328	BH	
16-Sep-2024	09:21:16	474	BP24MVEXP-ENV-DC-218			Camera	19	610977	6080512	611024	6080438	-47	74	87	327	BH	
16-Sep-2024	09:21:33	475	BP24MVEXP-ENV-DC-218			Camera	19	610980	6080508	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:21:59	476	BP24MVEXP-ENV-DC-218			Camera	19	610981	6080502	611024	6080438	-43	64	77	326	BH	
16-Sep-2024	09:22:22	477	BP24MVEXP-ENV-DC-218			Camera	19	610981	6080497	611024	6080438	-43	59	73	324	BH	
16-Sep-2024	09:22:58	478	BP24MVEXP-ENV-DC-218			Camera	19	610983	6080489	611024	6080438	-42	51	66	320	BH	
16-Sep-2024	09:23:14	479	BP24MVEXP-ENV-DC-218			Camera	19	610982	6080484	611024	6080438	-42	46	62	318	BH	
16-Sep-2024	09:23:29	480	BP24MVEXP-ENV-DC-218			Camera	19	610984	6080480	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:23:54	481	BP24MVEXP-ENV-DC-218			Camera	19	610985	6080478	611024	6080438	-39	40	56	316	BH	
16-Sep-2024	09:24:14	482	BP24MVEXP-ENV-DC-218			Camera	19	610989	6080476	611024	6080438	-36	38	52	316	BH	
16-Sep-2024	09:24:35	483	BP24MVEXP-ENV-DC-218			Camera	18	610993	6080474	611024	6080438	-31	36	47	319	BH	
16-Sep-2024	09:24:53	484	BP24MVEXP-ENV-DC-218			Camera	19	610998	6080473	611024	6080438	-27	35	44	322	BH	
16-Sep-2024	09:25:20	485	BP24MVEXP-ENV-DC-218			Camera	19	611004	6080470	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:25:37	486	BP24MVEXP-ENV-DC-218			Camera	19	611007	6080466	611024	6080438	-17	28	33	329	BH	
16-Sep-2024	09:26:02	487	BP24MVEXP-ENV-DC-218			Camera	19	611010	6080461	611024	6080438	-15	23	27	327	BH	
16-Sep-2024	09:26:08	488	BP24MVEXP-ENV-DC-218			Camera	19	611010	6080459	611024	6080438	-15	21	26	325	BH	
16-Sep-2024	09:26:22	489	BP24MVEXP-ENV-DC-218			Camera	19	611011	6080455	611024	6080438	-14	17	22	321	BH	
16-Sep-2024	09:27:20	490	BP24MVEXP-ENV-DC-218			Camera	19	611014	6080444	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:27:44	491	BP24MVEXP-ENV-DC-218			Camera	19	611016	6080441	611024	6080438	-8	3	8	288	BH	
16-Sep-2024	09:27:58	492	BP24MVEXP-ENV-DC-218			Camera	19	611018	6080438	611024	6080438	-6	0	6	274	BH	
16-Sep-2024	09:28:12	493	BP24MVEXP-ENV-DC-218			Camera	19	611020	6080438	611024	6080438	-5	0	5	268	BH	
16-Sep-2024	09:28:57	494	BP24MVEXP-ENV-DC-218			Camera	19	611023	6080435	611024	6080438	-1	-3	3	198	BH	
16-Sep-2024	09:29:18	495	BP24MVEXP-ENV-DC-218			Camera	19	611022	6080430	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:29:47	496	BP24MVEXP-ENV-DC-218			Camera	19	611024	6080425	611024	6080438	0	-13	13	182	BH	
16-Sep-2024	09:30:22	497	BP24MVEXP-ENV-DC-218			Camera	19	611029	6080419	611024	6080438	5	-19	20	167	BH	
16-Sep-2024	09:30:37	498	BP24MVEXP-ENV-DC-218			Camera	18	611031	6080416	611024	6080438	6	-22	23	164	BH	
16-Sep-2024	09:30:49	499	BP24MVEXP-ENV-DC-218			Camera	19	611032	6080412	611024	6080438	8	-26	27	164	BH	
16-Sep-2024	09:31:11	500	BP24MVEXP-ENV-DC-218			Camera	18	611034	6080407	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:31:42	501	BP24MVEXP-ENV-DC-218			Camera	19	611037	6080401	611024	6080438	12	-37	39	162	BH	
16-Sep-2024	09:32:01	502	BP24MVEXP-ENV-DC-218			Camera	19	611039	6080396	611024	6080438	14	-42	44	161	BH	
16-Sep-2024	09:32:18	503	BP24MVEXP-ENV-DC-218			Camera	19	611040	6080392	611024	6080438	16	-46	49	161	BH	
16-Sep-2024	09:32:47	504	BP24MVEXP-ENV-DC-218			Camera	18	611042	6080387	611024	6080438	18	-51	54	161	BH	
16-Sep-2024	09:33:02	505	BP24MVEXP-ENV-DC-218			Camera	18	611044	6080383	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:33:18	506	BP24MVEXP-ENV-DC-218			Camera	18	611046	6080380	611024	6080438	22	-58	62	159	BH	
16-Sep-2024	09:33:31	507	BP24MVEXP-ENV-DC-218			Camera	19	611047	6080377	611024	6080438	23	-61	65	159	BH	
16-Sep-2024	09:33:47	508	BP24MVEXP-ENV-DC-218			Camera	18	611049	6080375	611024	6080438	25	-63	67	159	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	09:33:59	509	BP24MVEXP-ENV-DC-218			Camera	19	611051	6080374	611024	6080438	26	-65	70	158	BH	
16-Sep-2024	09:34:25	510	BP24MVEXP-ENV-DC-218			Camera	18	611055	6080369	611024	6080438	-2	-2	2	228	BH	
16-Sep-2024	09:34:49	511	BP24MVEXP-ENV-DC-218			Camera	19	611059	6080364	611024	6080438	35	-74	81	155	BH	
16-Sep-2024	09:35:03	512	BP24MVEXP-ENV-DC-218			Camera	19	611061	6080363	611024	6080438	37	-75	84	154	BH	
16-Sep-2024	09:35:41	513	BP24MVEXP-ENV-DC-218			Camera	19	611067	6080356	611024	6080438	43	-82	93	152	BH	
16-Sep-2024	10:04:48	514	BP24MVEXP-ENV-DC-182			Camera	16	609756	6082211	609795	6082108	-39	103	110	339	BH	
16-Sep-2024	10:05:11	515	BP24MVEXP-ENV-DC-182			Camera	16	609757	6082206	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:05:41	516	BP24MVEXP-ENV-DC-182			Camera	16	609758	6082199	609795	6082108	-37	91	98	338	BH	
16-Sep-2024	10:05:57	517	BP24MVEXP-ENV-DC-182			Camera	16	609760	6082195	609795	6082108	-35	87	94	338	BH	
16-Sep-2024	10:06:13	518	BP24MVEXP-ENV-DC-182			Camera	16	609762	6082191	609795	6082108	-33	83	90	338	BH	
16-Sep-2024	10:06:30	519	BP24MVEXP-ENV-DC-182			Camera	16	609763	6082188	609795	6082108	-32	80	86	339	BH	
16-Sep-2024	10:07:00	520	BP24MVEXP-ENV-DC-182			Camera	16	609768	6082182	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:07:16	521	BP24MVEXP-ENV-DC-182			Camera	16	609770	6082179	609795	6082108	-25	71	75	340	BH	
16-Sep-2024	10:07:25	522	BP24MVEXP-ENV-DC-182			Camera	16	609771	6082177	609795	6082108	-24	69	73	341	BH	
16-Sep-2024	10:07:39	523	BP24MVEXP-ENV-DC-182			Camera	16	609773	6082173	609795	6082108	-22	65	69	341	BH	
16-Sep-2024	10:07:55	524	BP24MVEXP-ENV-DC-182			Camera	16	609774	6082170	609795	6082108	-21	62	66	341	BH	
16-Sep-2024	10:08:13	525	BP24MVEXP-ENV-DC-182			Camera	16	609775	6082165	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:09:17	526	BP24MVEXP-ENV-DC-182			Camera	16	609777	6082148	609795	6082108	-18	40	44	335	BH	
16-Sep-2024	10:09:29	527	BP24MVEXP-ENV-DC-182			Camera	16	609778	6082145	609795	6082108	-17	37	41	336	BH	
16-Sep-2024	10:09:51	528	BP24MVEXP-ENV-DC-182			Camera	16	609781	6082139	609795	6082108	-14	31	34	335	BH	
16-Sep-2024	10:10:17	529	BP24MVEXP-ENV-DC-182			Camera	16	609783	6082132	609795	6082108	-12	24	27	332	BH	
16-Sep-2024	10:10:30	530	BP24MVEXP-ENV-DC-182			Camera	16	609783	6082129	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:10:45	531	BP24MVEXP-ENV-DC-182			Camera	16	609785	6082125	609795	6082108	-11	17	20	329	BH	
16-Sep-2024	10:11:10	532	BP24MVEXP-ENV-DC-182			Camera	16	609786	6082119	609795	6082108	-9	11	14	322	BH	
16-Sep-2024	10:11:40	533	BP24MVEXP-ENV-DC-182			Camera	17	609791	6082112	609795	6082108	-4	4	6	315	BH	
16-Sep-2024	10:11:53	534	BP24MVEXP-ENV-DC-182			Camera	17	609792	6082109	609795	6082108	-3	1	3	284	BH	
16-Sep-2024	10:12:16	535	BP24MVEXP-ENV-DC-182			Camera	17	609793	6082102	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:12:35	536	BP24MVEXP-ENV-DC-182			Camera	17	609793	6082097	609795	6082108	-2	-11	11	188	BH	
16-Sep-2024	10:12:47	537	BP24MVEXP-ENV-DC-182			Camera	17	609794	6082094	609795	6082108	-1	-14	14	185	BH	
16-Sep-2024	10:12:58	538	BP24MVEXP-ENV-DC-182			Camera	17	609794	6082090	609795	6082108	-1	-18	18	183	BH	
16-Sep-2024	10:13:18	539	BP24MVEXP-ENV-DC-182			Camera	17	609796	6082086	609795	6082108	1	-22	22	177	BH	
16-Sep-2024	10:13:31	540	BP24MVEXP-ENV-DC-182			Camera	17	609798	6082084	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:13:43	541	BP24MVEXP-ENV-DC-182			Camera	17	609800	6082081	609795	6082108	5	-27	27	170	BH	
16-Sep-2024	10:14:00	542	BP24MVEXP-ENV-DC-182			Camera	17	609801	6082077	609795	6082108	6	-31	32	168	BH	
16-Sep-2024	10:14:11	543	BP24MVEXP-ENV-DC-182			Camera	17	609803	6082075	609795	6082108	7	-33	34	167	BH	
16-Sep-2024	10:14:32	544	BP24MVEXP-ENV-DC-182			Camera	17	609805	6082071	609795	6082108	10	-37	39	165	BH	
16-Sep-2024	10:14:45	545	BP24MVEXP-ENV-DC-182			Camera	17	609807	6082068	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:15:02	546	BP24MVEXP-ENV-DC-182			Camera	17	609808	6082065	609795	6082108	13	-43	45	164	BH	
16-Sep-2024	10:15:39	547	BP24MVEXP-ENV-DC-182			Camera	17	609809	6082058	609795	6082108	14	-50	52	164	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	10:15:59	548	BP24MVEXP-ENV-DC-182			Camera	17	609810	6082054	609795	6082108	15	-54	57	164	BH	
16-Sep-2024	10:16:13	549	BP24MVEXP-ENV-DC-182			Camera	17	609811	6082051	609795	6082108	16	-57	59	164	BH	
16-Sep-2024	10:16:35	550	BP24MVEXP-ENV-DC-182			Camera	17	609813	6082048	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:16:54	551	BP24MVEXP-ENV-DC-182			Camera	17	609818	6082043	609795	6082108	23	-65	69	161	BH	
16-Sep-2024	10:17:20	552	BP24MVEXP-ENV-DC-182			Camera	17	609820	6082038	609795	6082108	25	-70	74	160	BH	
16-Sep-2024	10:17:39	553	BP24MVEXP-ENV-DC-182			Camera	17	609822	6082034	609795	6082108	27	-74	78	160	BH	
16-Sep-2024	10:18:04	554	BP24MVEXP-ENV-DC-182			Camera	17	609826	6082029	609795	6082108	31	-79	85	159	BH	
16-Sep-2024	10:18:22	555	BP24MVEXP-ENV-DC-182			Camera	17	609829	6082024	609795	6082108	-2	-2	2	228	BH	
16-Sep-2024	10:18:42	556	BP24MVEXP-ENV-DC-182			Camera	17	609831	6082018	609795	6082108	36	-90	97	158	BH	
16-Sep-2024	10:46:07	557	BP24MVEXP-ENV-DC-238			Camera	25	611420	6082797	611226	6082898	194	-101	219	117	BH	
16-Sep-2024	10:46:34	558	BP24MVEXP-ENV-DC-238			Camera	25	611416	6082798	611226	6082898	190	-100	215	118	BH	
16-Sep-2024	10:46:48	559	BP24MVEXP-ENV-DC-238			Camera	25	611413	6082799	611226	6082898	188	-99	212	118	BH	
16-Sep-2024	10:47:01	560	BP24MVEXP-ENV-DC-238			Camera	25	611411	6082800	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:47:24	561	BP24MVEXP-ENV-DC-238			Camera	25	611406	6082802	611226	6082898	180	-96	204	118	BH	
16-Sep-2024	10:47:48	562	BP24MVEXP-ENV-DC-238			Camera	25	611401	6082804	611226	6082898	176	-94	199	118	BH	
16-Sep-2024	10:48:10	563	BP24MVEXP-ENV-DC-238			Camera	24	611398	6082806	611226	6082898	173	-92	196	118	BH	
16-Sep-2024	10:48:26	564	BP24MVEXP-ENV-DC-238			Camera	24	611396	6082808	611226	6082898	171	-90	193	118	BH	
16-Sep-2024	10:48:44	565	BP24MVEXP-ENV-DC-238			Camera	24	611393	6082811	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:49:03	566	BP24MVEXP-ENV-DC-238			Camera	24	611391	6082813	611226	6082898	165	-85	186	117	BH	
16-Sep-2024	10:49:13	567	BP24MVEXP-ENV-DC-238			Camera	24	611389	6082814	611226	6082898	164	-84	184	117	BH	
16-Sep-2024	10:49:25	568	BP24MVEXP-ENV-DC-238			Camera	24	611387	6082815	611226	6082898	161	-83	182	117	BH	
16-Sep-2024	10:49:34	569	BP24MVEXP-ENV-DC-238			Camera	24	611386	6082817	611226	6082898	160	-82	180	117	BH	
16-Sep-2024	10:49:49	570	BP24MVEXP-ENV-DC-238			Camera	24	611383	6082820	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:50:11	571	BP24MVEXP-ENV-DC-238			Camera	24	611381	6082819	611226	6082898	155	-79	174	117	BH	
16-Sep-2024	10:50:33	572	BP24MVEXP-ENV-DC-238			Camera	24	611376	6082821	611226	6082898	150	-77	169	117	BH	
16-Sep-2024	10:50:43	573	BP24MVEXP-ENV-DC-238			Camera	25	611374	6082822	611226	6082898	149	-76	167	117	BH	
16-Sep-2024	10:50:56	574	BP24MVEXP-ENV-DC-238			Camera	25	611373	6082822	611226	6082898	147	-76	166	117	BH	
16-Sep-2024	10:51:12	575	BP24MVEXP-ENV-DC-238			Camera	25	611370	6082822	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:51:31	576	BP24MVEXP-ENV-DC-238			Camera	25	611365	6082823	611226	6082898	140	-75	158	118	BH	
16-Sep-2024	10:51:46	577	BP24MVEXP-ENV-DC-238			Camera	25	611362	6082825	611226	6082898	137	-74	155	118	BH	
16-Sep-2024	10:52:31	578	BP24MVEXP-ENV-DC-238			Camera	24	611357	6082827	611226	6082898	132	-71	150	118	BH	
16-Sep-2024	10:52:46	579	BP24MVEXP-ENV-DC-238			Camera	24	611357	6082828	611226	6082898	131	-70	149	118	BH	
16-Sep-2024	10:53:25	580	BP24MVEXP-ENV-DC-238			Camera	24	611356	6082833	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:53:55	581	BP24MVEXP-ENV-DC-238			Camera	24	611354	6082835	611226	6082898	128	-63	143	116	BH	
16-Sep-2024	10:54:36	582	BP24MVEXP-ENV-DC-238			Camera	24	611352	6082834	611226	6082898	126	-64	141	117	BH	
16-Sep-2024	10:54:58	583	BP24MVEXP-ENV-DC-238			Camera	24	611350	6082837	611226	6082898	124	-61	138	116	BH	
16-Sep-2024	10:55:30	584	BP24MVEXP-ENV-DC-238			Camera	24	611348	6082838	611226	6082898	122	-61	136	116	BH	
16-Sep-2024	10:56:03	585	BP24MVEXP-ENV-DC-238			Camera	24	611346	6082836	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:56:40	586	BP24MVEXP-ENV-DC-238			Camera	24	611343	6082837	611226	6082898	117	-61	132	117	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294					Vessel	MV *Titan Endeavour*								
Client	Morven Offshore Wind Limited					Vessel Reference Point (VRP)	COG								
Project Name	Morven Grid Connection 1 Route Environmental Survey					Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600		
Primary Positioning System	Applanix POSMV					Actual Coordinates derived from	USBL Beacon								
Geodetic Reference System	Datum	WGS84 to ED50		Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)				Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	10:57:38	587	BP24MVEXP-ENV-DC-238			Camera	24	611335	6082841	611226	6082898	110	-57	123	117	BH	
16-Sep-2024	10:57:55	588	BP24MVEXP-ENV-DC-238			Camera	23	611332	6082841	611226	6082898	107	-57	121	118	BH	
16-Sep-2024	10:58:12	589	BP24MVEXP-ENV-DC-238			Camera	23	611329	6082844	611226	6082898	104	-54	117	118	BH	
16-Sep-2024	10:58:35	590	BP24MVEXP-ENV-DC-238			Camera	23	611327	6082844	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	10:59:08	591	BP24MVEXP-ENV-DC-238			Camera	23	611321	6082846	611226	6082898	96	-53	109	119	BH	
16-Sep-2024	11:00:05	592	BP24MVEXP-ENV-DC-238			Camera	23	611313	6082849	611226	6082898	87	-50	100	120	BH	
16-Sep-2024	11:00:19	593	BP24MVEXP-ENV-DC-238			Camera	23	611310	6082850	611226	6082898	85	-48	97	119	BH	
16-Sep-2024	11:00:32	594	BP24MVEXP-ENV-DC-238			Camera	23	611309	6082852	611226	6082898	83	-46	95	119	BH	
16-Sep-2024	11:00:47	595	BP24MVEXP-ENV-DC-238			Camera	23	611307	6082853	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:01:27	596	BP24MVEXP-ENV-DC-238			Camera	23	611302	6082856	611226	6082898	76	-42	87	119	BH	
16-Sep-2024	11:02:01	597	BP24MVEXP-ENV-DC-238			Camera	23	611298	6082860	611226	6082898	72	-38	82	118	BH	
16-Sep-2024	11:02:28	598	BP24MVEXP-ENV-DC-238			Camera	23	611296	6082860	611226	6082898	71	-38	80	118	BH	
16-Sep-2024	11:02:41	599	BP24MVEXP-ENV-DC-238			Camera	23	611295	6082859	611226	6082898	70	-39	80	119	BH	
16-Sep-2024	11:02:48	600	BP24MVEXP-ENV-DC-238			Camera	23	611294	6082859	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:03:00	601	BP24MVEXP-ENV-DC-238			Camera	25	611293	6082861	611226	6082898	67	-37	77	119	BH	
16-Sep-2024	11:03:29	602	BP24MVEXP-ENV-DC-238			Camera	24	611290	6082862	611226	6082898	65	-36	74	119	BH	
16-Sep-2024	11:03:48	603	BP24MVEXP-ENV-DC-238			Camera	23	611289	6082863	611226	6082898	64	-35	73	119	BH	
16-Sep-2024	11:04:03	604	BP24MVEXP-ENV-DC-238			Camera	23	611288	6082864	611226	6082898	62	-34	71	119	BH	
16-Sep-2024	11:05:07	605	BP24MVEXP-ENV-DC-238			Camera	23	611283	6082866	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:05:58	606	BP24MVEXP-ENV-DC-238			Camera	24	611283	6082870	611226	6082898	57	-28	64	116	BH	
16-Sep-2024	11:06:16	607	BP24MVEXP-ENV-DC-238			Camera	24	611283	6082872	611226	6082898	57	-27	63	115	BH	
16-Sep-2024	11:07:00	608	BP24MVEXP-ENV-DC-238			Camera	24	611280	6082871	611226	6082898	55	-27	61	116	BH	
16-Sep-2024	11:07:27	609	BP24MVEXP-ENV-DC-238			Camera	23	611279	6082872	611226	6082898	53	-27	59	117	BH	
16-Sep-2024	11:08:22	610	BP24MVEXP-ENV-DC-238			Camera	24	611273	6082875	611226	6082898	-2	-2	2	228	BH	
16-Sep-2024	11:08:42	611	BP24MVEXP-ENV-DC-238			Camera	23	611268	6082876	611226	6082898	42	-22	48	117	BH	
16-Sep-2024	11:08:59	612	BP24MVEXP-ENV-DC-238			Camera	23	611264	6082878	611226	6082898	38	-21	44	118	BH	
16-Sep-2024	11:55:16	613	BP24MVEXP-ENV-DC-240			Camera	28	613616	6078030	613402	6078035	214	-5	214	91	BH	
16-Sep-2024	11:55:33	614	BP24MVEXP-ENV-DC-240			Camera	28	613612	6078030	613402	6078035	210	-5	210	91	BH	
16-Sep-2024	11:55:50	615	BP24MVEXP-ENV-DC-240			Camera	28	613609	6078030	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	11:56:09	616	BP24MVEXP-ENV-DC-240			Camera	28	613604	6078029	613402	6078035	202	-6	202	92	BH	
16-Sep-2024	11:56:37	617	BP24MVEXP-ENV-DC-240			Camera	28	613597	6078027	613402	6078035	195	-8	195	92	BH	
16-Sep-2024	11:56:58	618	BP24MVEXP-ENV-DC-240			Camera	27	613590	6078026	613402	6078035	189	-9	189	93	BH	
16-Sep-2024	11:57:10	619	BP24MVEXP-ENV-DC-240			Camera	27	613586	6078026	613402	6078035	184	-9	184	93	BH	
16-Sep-2024	11:57:29	620	BP24MVEXP-ENV-DC-240			Camera	27	613581	6078025	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	11:57:43	621	BP24MVEXP-ENV-DC-240			Camera	28	613577	6078025	613402	6078035	176	-10	176	93	BH	
16-Sep-2024	11:57:59	622	BP24MVEXP-ENV-DC-240			Camera	27	613573	6078025	613402	6078035	171	-10	171	93	BH	
16-Sep-2024	11:58:07	623	BP24MVEXP-ENV-DC-240			Camera	28	613571	6078026	613402	6078035	169	-9	170	93	BH	
16-Sep-2024	11:58:40	624	BP24MVEXP-ENV-DC-240			Camera	27	613564	6078027	613402	6078035	162	-8	163	93	BH	
16-Sep-2024	11:58:49	625	BP24MVEXP-ENV-DC-240			Camera	27	613563	6078027	613402	6078035	-2	-2	2	228	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	11:59:05	626	BP24MVEXP-ENV-DC-240			Camera	27	613559	6078028	613402	6078035	158	-7	158	93	BH	
16-Sep-2024	11:59:29	627	BP24MVEXP-ENV-DC-240			Camera	27	613556	6078029	613402	6078035	154	-6	154	92	BH	
16-Sep-2024	11:59:44	628	BP24MVEXP-ENV-DC-240			Camera	27	613553	6078029	613402	6078035	151	-6	151	92	BH	
16-Sep-2024	12:00:16	629	BP24MVEXP-ENV-DC-240			Camera	27	613548	6078030	613402	6078035	146	-5	146	92	BH	
16-Sep-2024	12:00:38	630	BP24MVEXP-ENV-DC-240			Camera	27	613545	6078031	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:01:02	631	BP24MVEXP-ENV-DC-240			Camera	27	613541	6078030	613402	6078035	139	-4	139	92	BH	
16-Sep-2024	12:01:17	632	BP24MVEXP-ENV-DC-240			Camera	27	613538	6078031	613402	6078035	136	-4	136	92	BH	
16-Sep-2024	12:01:36	633	BP24MVEXP-ENV-DC-240			Camera	27	613534	6078031	613402	6078035	132	-4	132	92	BH	
16-Sep-2024	12:01:56	634	BP24MVEXP-ENV-DC-240			Camera	27	613529	6078031	613402	6078035	127	-4	128	92	BH	
16-Sep-2024	12:02:19	635	BP24MVEXP-ENV-DC-240			Camera	27	613525	6078031	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:02:34	636	BP24MVEXP-ENV-DC-240			Camera	27	613522	6078031	613402	6078035	120	-4	120	92	BH	
16-Sep-2024	12:02:53	637	BP24MVEXP-ENV-DC-240			Camera	26	613519	6078030	613402	6078035	117	-5	117	92	BH	
16-Sep-2024	12:03:09	638	BP24MVEXP-ENV-DC-240			Camera	26	613516	6078030	613402	6078035	114	-5	114	92	BH	
16-Sep-2024	12:03:28	639	BP24MVEXP-ENV-DC-240			Camera	27	613512	6078031	613402	6078035	110	-4	110	92	BH	
16-Sep-2024	12:04:04	640	BP24MVEXP-ENV-DC-240			Camera	26	613506	6078032	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:04:13	641	BP24MVEXP-ENV-DC-240			Camera	26	613505	6078033	613402	6078035	103	-2	103	91	BH	
16-Sep-2024	12:04:28	642	BP24MVEXP-ENV-DC-240			Camera	26	613502	6078034	613402	6078035	100	-1	100	91	BH	
16-Sep-2024	12:04:57	643	BP24MVEXP-ENV-DC-240			Camera	26	613498	6078032	613402	6078035	96	-3	96	92	BH	
16-Sep-2024	12:05:37	644	BP24MVEXP-ENV-DC-240			Camera	25	613493	6078032	613402	6078035	91	-3	91	92	BH	
16-Sep-2024	12:05:58	645	BP24MVEXP-ENV-DC-240			Camera	26	613489	6078032	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:06:20	646	BP24MVEXP-ENV-DC-240			Camera	26	613485	6078032	613402	6078035	83	-3	83	92	BH	
16-Sep-2024	12:06:35	647	BP24MVEXP-ENV-DC-240			Camera	25	613482	6078031	613402	6078035	80	-4	80	93	BH	
16-Sep-2024	12:06:50	648	BP24MVEXP-ENV-DC-240			Camera	25	613480	6078031	613402	6078035	78	-4	78	93	BH	
16-Sep-2024	12:07:06	649	BP24MVEXP-ENV-DC-240			Camera	25	613476	6078030	613402	6078035	74	-5	74	93	BH	
16-Sep-2024	12:07:22	650	BP24MVEXP-ENV-DC-240			Camera	25	613473	6078031	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:07:44	651	BP24MVEXP-ENV-DC-240			Camera	24	613471	6078032	613402	6078035	69	-3	69	93	BH	
16-Sep-2024	12:07:59	652	BP24MVEXP-ENV-DC-240			Camera	24	613468	6078032	613402	6078035	66	-3	66	93	BH	
16-Sep-2024	12:08:24	653	BP24MVEXP-ENV-DC-240			Camera	25	613466	6078034	613402	6078035	64	-1	64	91	BH	
16-Sep-2024	12:08:42	654	BP24MVEXP-ENV-DC-240			Camera	25	613465	6078035	613402	6078035	63	0	63	90	BH	
16-Sep-2024	12:08:57	655	BP24MVEXP-ENV-DC-240			Camera	25	613464	6078034	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:09:33	656	BP24MVEXP-ENV-DC-240			Camera	25	613461	6078035	613402	6078035	59	0	59	90	BH	
16-Sep-2024	12:09:47	657	BP24MVEXP-ENV-DC-240			Camera	25	613458	6078034	613402	6078035	56	-1	56	91	BH	
16-Sep-2024	12:09:58	658	BP24MVEXP-ENV-DC-240			Camera	25	613456	6078034	613402	6078035	54	-1	54	91	BH	
16-Sep-2024	12:10:18	659	BP24MVEXP-ENV-DC-240			Camera	25	613451	6078034	613402	6078035	50	-1	50	91	BH	
16-Sep-2024	12:10:36	660	BP24MVEXP-ENV-DC-240			Camera	25	613448	6078034	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:10:58	661	BP24MVEXP-ENV-DC-240			Camera	24	613443	6078033	613402	6078035	41	-2	41	93	BH	
16-Sep-2024	12:11:11	662	BP24MVEXP-ENV-DC-240			Camera	25	613440	6078033	613402	6078035	38	-2	38	93	BH	
16-Sep-2024	12:11:28	663	BP24MVEXP-ENV-DC-240			Camera	25	613437	6078033	613402	6078035	35	-2	35	93	BH	
16-Sep-2024	12:11:56	664	BP24MVEXP-ENV-DC-240			Camera	25	613429	6078032	613402	6078035	27	-3	28	96	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	12:12:11	665	BP24MVEXP-ENV-DC-240			Camera	25	613425	6078032	613402	6078035	-2	-2	2	228	BH	
16-Sep-2024	12:12:39	666	BP24MVEXP-ENV-DC-240			Camera	25	613419	6078032	613402	6078035	17	-3	17	102	BH	
16-Sep-2024	12:41:42	667	BP24MVEXP-ENV-DC-239			Camera	19	611920	6075519	611717	6075484	204	35	207	80	BH	
16-Sep-2024	12:42:02	668	BP24MVEXP-ENV-DC-239			Camera	20	611915	6075517	611717	6075484	198	33	201	81	BH	
16-Sep-2024	12:42:15	669	BP24MVEXP-ENV-DC-239			Camera	20	611911	6075516	611717	6075484	195	32	197	81	BH	
16-Sep-2024	12:42:39	670	BP24MVEXP-ENV-DC-239			Camera	20	611905	6075515	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:42:57	671	BP24MVEXP-ENV-DC-239			Camera	20	611901	6075515	611717	6075484	184	31	187	80	BH	
16-Sep-2024	12:43:11	672	BP24MVEXP-ENV-DC-239			Camera	20	611897	6075514	611717	6075484	180	30	182	81	BH	
16-Sep-2024	12:43:24	673	BP24MVEXP-ENV-DC-239			Camera	20	611893	6075514	611717	6075484	177	30	179	81	BH	
16-Sep-2024	12:43:40	674	BP24MVEXP-ENV-DC-239			Camera	20	611888	6075512	611717	6075484	172	28	174	81	BH	
16-Sep-2024	12:44:16	675	BP24MVEXP-ENV-DC-239			Camera	20	611879	6075510	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:44:30	676	BP24MVEXP-ENV-DC-239			Camera	20	611877	6075511	611717	6075484	160	27	162	80	BH	
16-Sep-2024	12:44:39	677	BP24MVEXP-ENV-DC-239			Camera	20	611875	6075512	611717	6075484	158	27	161	80	BH	
16-Sep-2024	12:45:00	678	BP24MVEXP-ENV-DC-239			Camera	20	611871	6075512	611717	6075484	154	28	157	80	BH	
16-Sep-2024	12:45:26	679	BP24MVEXP-ENV-DC-239			Camera	20	611865	6075511	611717	6075484	149	27	151	80	BH	
16-Sep-2024	12:45:38	680	BP24MVEXP-ENV-DC-239			Camera	20	611862	6075512	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:45:59	681	BP24MVEXP-ENV-DC-239			Camera	20	611858	6075511	611717	6075484	141	26	144	79	BH	
16-Sep-2024	12:46:08	682	BP24MVEXP-ENV-DC-239			Camera	20	611855	6075510	611717	6075484	138	26	141	79	BH	
16-Sep-2024	12:46:35	683	BP24MVEXP-ENV-DC-239			Camera	20	611848	6075508	611717	6075484	131	24	134	80	BH	
16-Sep-2024	12:46:57	684	BP24MVEXP-ENV-DC-239			Camera	20	611842	6075506	611717	6075484	126	22	128	80	BH	
16-Sep-2024	12:47:16	685	BP24MVEXP-ENV-DC-239			Camera	20	611837	6075506	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:47:43	686	BP24MVEXP-ENV-DC-239			Camera	20	611832	6075506	611717	6075484	116	22	118	79	BH	
16-Sep-2024	12:48:05	687	BP24MVEXP-ENV-DC-239			Camera	21	611828	6075505	611717	6075484	112	21	114	79	BH	
16-Sep-2024	12:48:19	688	BP24MVEXP-ENV-DC-239			Camera	21	611825	6075504	611717	6075484	109	20	111	79	BH	
16-Sep-2024	12:48:29	689	BP24MVEXP-ENV-DC-239			Camera	20	611823	6075504	611717	6075484	107	20	109	79	BH	
16-Sep-2024	12:48:50	690	BP24MVEXP-ENV-DC-239			Camera	21	611819	6075503	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:49:17	691	BP24MVEXP-ENV-DC-239			Camera	20	611813	6075502	611717	6075484	97	18	99	79	BH	
16-Sep-2024	12:49:28	692	BP24MVEXP-ENV-DC-239			Camera	21	611811	6075502	611717	6075484	94	18	96	79	BH	
16-Sep-2024	12:49:48	693	BP24MVEXP-ENV-DC-239			Camera	21	611807	6075500	611717	6075484	90	16	92	80	BH	
16-Sep-2024	12:49:58	694	BP24MVEXP-ENV-DC-239			Camera	21	611804	6075500	611717	6075484	88	16	89	80	BH	
16-Sep-2024	12:50:13	695	BP24MVEXP-ENV-DC-239			Camera	20	611800	6075499	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:50:43	696	BP24MVEXP-ENV-DC-239			Camera	20	611792	6075495	611717	6075484	75	11	76	82	BH	
16-Sep-2024	12:51:04	697	BP24MVEXP-ENV-DC-239			Camera	20	611785	6075493	611717	6075484	68	9	69	83	BH	
16-Sep-2024	12:51:18	698	BP24MVEXP-ENV-DC-239			Camera	21	611781	6075493	611717	6075484	64	9	65	82	BH	
16-Sep-2024	12:51:49	699	BP24MVEXP-ENV-DC-239			Camera	20	611773	6075492	611717	6075484	56	8	57	82	BH	
16-Sep-2024	12:52:06	700	BP24MVEXP-ENV-DC-239			Camera	21	611769	6075492	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:52:22	701	BP24MVEXP-ENV-DC-239			Camera	20	611766	6075492	611717	6075484	50	8	50	81	BH	
16-Sep-2024	12:52:40	702	BP24MVEXP-ENV-DC-239			Camera	20	611762	6075493	611717	6075484	46	9	47	79	BH	
16-Sep-2024	12:52:58	703	BP24MVEXP-ENV-DC-239			Camera	20	611759	6075494	611717	6075484	42	10	43	76	BH	

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Titan Endeavour*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV			Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924	Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Sep-2024	12:53:25	704	BP24MVEXP-ENV-DC-239			Camera	20	611754	6075493	611717	6075484	37	9	38	76	BH	
16-Sep-2024	12:53:40	705	BP24MVEXP-ENV-DC-239			Camera	20	611751	6075493	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:54:02	706	BP24MVEXP-ENV-DC-239			Camera	20	611747	6075493	611717	6075484	31	9	32	74	BH	
16-Sep-2024	12:54:16	707	BP24MVEXP-ENV-DC-239			Camera	21	611746	6075491	611717	6075484	29	7	30	76	BH	
16-Sep-2024	12:54:38	708	BP24MVEXP-ENV-DC-239			Camera	20	611742	6075490	611717	6075484	25	6	26	76	BH	
16-Sep-2024	12:54:51	709	BP24MVEXP-ENV-DC-239			Camera	20	611740	6075490	611717	6075484	23	6	24	76	BH	
16-Sep-2024	12:55:09	710	BP24MVEXP-ENV-DC-239			Camera	20	611737	6075489	611717	6075484	-2	-2	2	228	BH	
16-Sep-2024	12:55:28	711	BP24MVEXP-ENV-DC-239			Camera	20	611733	6075487	611717	6075484	17	3	17	79	BH	
16-Sep-2024	12:55:46	712	BP24MVEXP-ENV-DC-239			Camera	20	611729	6075485	611717	6075484	13	1	13	84	BH	

APPENDIX A FIELD SAMPLING LOGS

SEABED IMAGERY LOG SHEET (Deck)												FOR-ENV-0538
Job No:	59294		Area:	UKCS Quad 40			Scale:	109mm				
Project:	Morven Grid Connection 1 Route Environment Survey						Equipment:	Dual Shallow Water Camera System: OE14-208, 1CAM Alpha Mk2				
Client:	Morven Offshore Wind Limited						Vessel:	MV *Titan Endeavour*				
Station Number	Date	Time on Overlay Start	Time on Overlay Finish	HDD File Name(s)	Sediment Description	Fauna Description	Operator(s)	No of Photos	First Fix No.	Last Fix No.	Comments	
BP24MVEXP-ENV-DC-201	15-Sep-2024	11:08:52	11:39:18	BP24MVEXP-ENV-DC-201.MTS BP24MVEXP-ENV-DC-201 (1). MTS	Muddy fine sand with shell fragments	Chordata (*Agonus cataphractus*)	RH	76	1	76		
BP24MVEXP-ENV-DC-237	15-Sep-2024	12:05:15	12:34:03	BP24MVEXP-ENV-DC-237.MTS	Muddy fine sand with shell fragments	Arthropoda (Paguroidea), Chordata (Actinopterygii)	RH	56	77	132		
BP24MVEXP-ENV-DC-203	15-Sep-2024	13:00:33	13:27:58	BP24MVEXP-ENV-DC-203.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Actinopterygii, *Pleuronectes platessa*), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea)	RH	54	133	186		
BP24MVEXP-ENV-DC-204	15-Sep-2024	13:52:46	14:24:04	BP24MVEXP-ENV-DC-204.MTS BP24MVEXP-ENV-DC-204 (1)	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*)	RH	59	187	245		
BP24MVEXP-ENV-DC-236	15-Sep-2024	14:53:04	15:11:52	BP24MVEXP-ENV-DC-236.MTS	Muddy fine sand with shell fragments	Arthropoda (Brachyura, Paguroidea), Chordata (Actinopterygii)	RH	39	246	284		
BP24MVEXP-ENV-DC-205	15-Sep-2024	15:29:24	15:48:21	BP24MVEXP-ENV-DC-205.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Chordata (Pleuronectidae), Cnidaria (*Alcyonium digitatum*)	RH	45	285	329		
BP24MVEXP-ENV-DC-199	16-Sep-2024	07:00:14	07:21:33	BP24MVEXP-ENV-DC-199.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea), Porifera	RH	43	330	372		
BP24MVEXP-ENV-DC-200	16-Sep-2024	07:44:09	08:10:19	BP24MVEXP-ENV-DC-200.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	53	373	425		
BP24MVEXP-ENV-DC-219	16-Sep-2024	08:37:40	08:52:41	BP24MVEXP-ENV-DC-219.MTS	Boulders, cobbles and gravel with muddy fine sand	Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	43	426	468		
BP24MVEXP-ENV-DC-218	16-Sep-2024	09:19:47	09:36:17	BP24MVEXP-ENV-DC-218.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*)	RH	45	469	513		
BP24MVEXP-ENV-DC-182	16-Sep-2024	10:04:51	10:19:08	BP24MVEXP-ENV-DC-182.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Bryozoa (Flustridae), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	43	514	556		
BP24MVEXP-ENV-DC-238	16-Sep-2024	10:46:15	11:10:07	BP24MVEXP-ENV-DC-238.MTS	Boulders, cobbles and gravel with muddy fine sand	Bryozoa (Flustridae), Chordata (Actinopterygii), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	56	557	612		
BP24MVEXP-ENV-DC-240	16-Sep-2024	11:55:24	12:13:25	BP24MVEXP-ENV-DC-240.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Cnidaria (*Alcyonium digitatum*), Echinodermata (Echinoidea, Ophiuroidea), Porifera	RH	54	613	666		
BP24MVEXP-ENV-DC-239	16-Sep-2024	12:41:54	12:56:21	BP24MVEXP-ENV-DC-239.MTS	Boulders, cobbles and gravel with muddy fine sand	Arthropoda (Brachyura), Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea, Echinoidea)	RH	46	667	712		

APPENDIX A FIELD SAMPLING LOGS

Gardline

Seafloor Sampling Positioning Summary

Job No	59294						Vessel	MV *Ocean Reliance*									
Client	Morven Offshore Wind Limited						Vessel Reference Point (VRP)	COG									
Project Name	Morven Grid Connection 1 Route Environmental Survey						Deployment Location	Starboard A-Frame Mid		x	9.31	y	-14.81	z	5.97		
Primary Positioning System	C-Nav 3050 (A)						Actual Coordinates derived from	Deployment Location									
Geodetic Reference System	Datum	WGS 84 (18) to ED50			Ellipsoid	International 1924		Projection	UTM Zone 30N (3°W)				Vertical / Tidal Datum	LAT			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11-Aug-2024	08:02	1	MV24EXP-ENV-GS-173	60%	MFA	DG	71	627675	6271901	627676	6271898	-1	3	3	340	AP	
11-Aug-2024	08:12	2	MV24EXP-ENV-GS-173	60%	MFB	DG	71	627675	6271901	627676	6271898	-1	3	3	341	AP	
11-Aug-2024	08:22	3	MV24EXP-ENV-GS-173	60%	CHEM1	DG	71	627675	6271900	627676	6271898	-1	2	2	330	AP	
11-Aug-2024	08:40	4	MV24EXP-ENV-GS-173	60%	CHEM2	DG	70	627676	6271901	627676	6271898	0	3	3	351	AP	
11-Aug-2024	11:22	5	MV24EXP-ENV-GS-174	70%	MFA	DG	71	627541	6267901	627541	6267900	0	0	0	359	RA	
11-Aug-2024	11:38	6	MV24EXP-ENV-GS-174	30%	NS	DG	71	627540	6267901	627541	6267900	0	1	1	322	RA	Low retention
11-Aug-2024	11:51	7	MV24EXP-ENV-GS-174	40%	MFB	DG	71	627541	6267901	627541	6267900	0	0	0	0	RA	
11-Aug-2024	12:05	8	MV24EXP-ENV-GS-174	75%	PSA	DG	71	627541	6267902	627541	6267900	0	1	1	17	RA	
11-Aug-2024	14:56	9	MV24EXP-ENV-GS-175	50%	MFA	DG	73	627417	6263903	627417	6263903	0	0	0	270	RA	
11-Aug-2024	15:08	10	MV24EXP-ENV-GS-175	40%	MFB	DG	73	627417	6263903	627417	6263903	0	0	0	317	RA	
11-Aug-2024	15:22	11	MV24EXP-ENV-GS-175	60%	CHEM1	DG	73	627417	6263903	627417	6263903	-1	0	1	290	RA	
11-Aug-2024	15:46	12	MV24EXP-ENV-GS-175	50%	CHEM2	DG	73	627416	6263902	627417	6263903	-1	0	1	254	RA	
12-Aug-2024	05:28	13	MV24EXP-ENV-GS-176	10%	NS	DG	74	627040	6259920	627041	6259920	-1	0	1	270	AP	Low retention, grab stuck on the lift wire
12-Aug-2024	05:35	14	MV24EXP-ENV-GS-176	0%	NS	DG	74	627041	6259922	627041	6259920	0	1	1	6	AP	Grab did not sample due to marginal weather conditions, e.g. either pretriggered in water or
12-Aug-2024	05:45	15	MV24EXP-ENV-GS-176	60%	MFA	DG	74	627042	6259923	627041	6259920	1	3	3	13	AP	
12-Aug-2024	05:52	16	MV24EXP-ENV-GS-176	50%	MFB	DG	74	627043	6259921	627041	6259920	2	1	2	73	AP	
12-Aug-2024	06:00	17	MV24EXP-ENV-GS-176	50%	PSA	DG	74	627042	6259920	627041	6259920	1	0	1	105	AP	
13-Aug-2024	02:21	18	MV24EXP-ENV-GS-177	50%	MFA	DG	73	626402	6255909	626401	6255909	1	-1	1	126	AP	
13-Aug-2024	02:32	19	MV24EXP-ENV-GS-177	60%	MFB	DG	73	626400	6255911	626401	6255909	-1	2	2	330	AP	
13-Aug-2024	02:41	20	MV24EXP-ENV-GS-177	50%	CHEM1	DG	73	626401	6255909	626401	6255909	1	0	1	95	AP	
13-Aug-2024	02:54	21	MV24EXP-ENV-GS-177	60%	CHEM2	DG	73	626401	6255909	626401	6255909	0	0	0	16	AP	
13-Aug-2024	05:15	22	MV24EXP-ENV-GS-178	60%	MFA	DG	70	625762	6251919	625761	6251919	2	0	2	85	AP	
13-Aug-2024	05:25	23	MV24EXP-ENV-GS-178	70%	MFB	DG	70	625762	6251917	625761	6251919	1	-2	2	143	AP	
13-Aug-2024	05:33	24	MV24EXP-ENV-GS-178	60%	PSA	DG	70	625762	6251920	625761	6251919	1	0	1	66	AP	
13-Aug-2024	07:50	25	MV24EXP-ENV-GS-179	20%	NS	DG	71	625152	6248072	625151	6248070	1	2	3	33	AP	Sample whashed out due to shell in the jaws
13-Aug-2024	07:58	26	MV24EXP-ENV-GS-179	70%	MFA	DG	71	625151	6248071	625151	6248070	0	2	2	15	AP	
13-Aug-2024	08:06	27	MV24EXP-ENV-GS-179	70%	MFB	DG	71	625151	6248070	625151	6248070	0	0	0	31	AP	
13-Aug-2024	08:15	28	MV24EXP-ENV-GS-179	70%	CHEM1	DG	71	625150	6248071	625151	6248070	-1	1	1	318	AP	
13-Aug-2024	08:27	29	MV24EXP-ENV-GS-179	60%	CHEM2	DG	71	625151	6248070	625151	6248070	0	0	0	50	AP	
13-Aug-2024	10:39	30	MV24EXP-ENV-GS-180	40%	MFA	DG	69	624524	6244162	624523	6244160	1	2	2	17	AP	
13-Aug-2024	10:49	31	MV24EXP-ENV-GS-180	45%	MFB	DG	69	624524	6244162	624523	6244160	1	1	1	33	AP	
13-Aug-2024	10:57	32	MV24EXP-ENV-GS-180	40%	PSA	DG	69	624524	6244161	624523	6244160	0	1	1	26	AP	
14-Aug-2024	07:32	33	MV24EXP-ENV-GS-234	70%	MFA	DG	68	627184	6203638	627184	6203640	0	-2	2	172	AP	
14-Aug-2024	07:42	34	MV24EXP-ENV-GS-234	50%	MFB	DG	68	627185	6203638	627184	6203640	1	-1	2	130	AP	
14-Aug-2024	07:51	35	MV24EXP-ENV-GS-234	60%	PSA	DG	68	627185	6203639	627184	6203640	1	-1	2	136	AP	
14-Aug-2024	09:45	36	MV24EXP-ENV-GS-235	60%	MFA	DG	68	628497	6203642	628496	6203641	1	1	2	57	AP	
14-Aug-2024	09:53	37	MV24EXP-ENV-GS-235	70%	MFB	DG	68	628497	6203642	628496	6203641	1	1	1	65	AP	
14-Aug-2024	10:02	38	MV24EXP-ENV-GS-235	60%	PSA	DG	68	628496	6203642	628496	6203641	1	1	1	34	AP	
14-Aug-2024	12:31	39	MV24EXP-ENV-GS-235A	70%	MFA	DG	66	627952	6203639	627952	6203640	0	-1	1	181	RA	
14-Aug-2024	12:43	40	MV24EXP-ENV-GS-235A	45%	MFB	DG	66	627952	6203640	627952	6203640	0	0	1	224	RA	
14-Aug-2024	12:55	41	MV24EXP-ENV-GS-235A	45%	PSA	DG	66	627952	6203640	627952	6203640	0	0	1	222	RA	
14-Aug-2024	17:57	42	MV24EXP-ENV-GS-233	40%	MFA	DG	71	631619	6189612	631618	6189611	0	1	1	14	RA	
14-Aug-2024	18:08	43	MV24EXP-ENV-GS-233	40%	MFB	DG	71	631619	6189612	631618	6189611	1	1	1	47	RA	
14-Aug-2024	18:19	44	MV24EXP-ENV-GS-233	50%	CHEM1	DG	71	631618	6189611	631618	6189611	0	0	0	22	RA	
14-Aug-2024	18:34	45	MV24EXP-ENV-GS-233	45%	CHEM2	DG	71	631618	6189612	631618	6189611	0	1	1	330	RA	
14-Aug-2024	20:32	46	MV24EXP-ENV-GS-232	60%	MFA	DG	69	632418	6187383	632418	6187381	0	2	2	9	RA	
14-Aug-2024	20:41	47	MV24EXP-ENV-GS-232	15%	NS	DG	69	632419	6187382	632418	6187381	1	1	1	32	RA	Low retention
14-Aug-2024	21:05	48	MV24EXP-ENV-GS-232	60%	MFB	DG	69	632419	6187382	632418	6187381	1	1	2	44	RA	
14-Aug-2024	21:14	49	MV24EXP-ENV-GS-232	65%	PSA	DG	69	632419	6187382	632418	6187381	2	1	2	50	RA	
14-Aug-2024	23:46	50	MV24EXP-ENV-GS-231	50%	MFA	DG	77	633293	6184926	633292	6184926	0	0	0	92	AP	
14-Aug-2024	23:55	51	MV24EXP-ENV-GS-231	50%	MFB	DG	77	633292	6184925	633292	6184926	0	0	0	156	AP	
15-Aug-2024	00:03	52	MV24EXP-ENV-GS-231	50%	CHEM1	DG	77	633293	6184926	633292	6184926	1	0	1	95	AP	
15-Aug-2024	00:12	53	MV24EXP-ENV-GS-231	50%	CHEM2	DG	77	633292	6184926	633292	6184926	0	0	0	44	AP	
15-Aug-2024	01:49	54	MV24EXP-ENV-GS-230	60%	MFA	DG	83	633726	6183708	633726	6183710	0	-1	1	197	AP	
15-Aug-2024	01:56	55	MV24EXP-ENV-GS-230	60%	MFB	DG	83	633726	6183709	633726	6183710	0	-1	1	205	AP	
15-Aug-2024	02:02	56	MV24EXP-ENV-GS-230	60%	PSA	DG	83	633727	6183709	633726	6183710	0	0	1	120	AP	
15-Aug-2024	03:49	57	MV24EXP-ENV-GS-229	60%	MFA	DG	82	634328	6182007	634328	6182007	-1	0	1	296	AP	
15-Aug-2024	03:57	58	MV24EXP-ENV-GS-229	60%	MFB	DG	83	634327	6182008	634328	6182007	-1	1	2	311	AP	
15-Aug-2024	04:03	59	MV24EXP-ENV-GS-229	60%	CHEM1	DG	82	634327	6182008	634328	6182007	-1	1	1	312	AP	
15-Aug-2024	04:12	60	MV24EXP-ENV-GS-229	60%	CHEM2	DG	82	634327	6182008	634328	6182007	-1	1	2	327	AP	
15-Aug-2024	05:38	61	MV24EXP-ENV-GS-228	80%	MFA	DG	90	635067	6179942	635066	6179941	1	0	1	67	AP	
15-Aug-2024	05:46	62	MV24EXP-ENV-GS-228	80%	MFB	DG	90	635066	6179941	635066	6179941	-1	0	1	263	AP	
15-Aug-2024	05:53	63	MV24EXP-ENV-GS-228	80%	PSA	DG	90	635066	6179941	635066	6179941	-1	0	1	277	AP	
15-Aug-2024	23:55	64	MV24EXP-ENV-GS-227	90%	MFA	DG	89	634270	6178111	634270	6178112	0	-1	1	163	AP	
16-Aug-2024	00:07	65	MV24EXP-ENV-GS-227	70%	MFB	DG	89	634270	6178111	634270	6178112	0	-1	1	173	AP	
16-Aug-2024	00:15	66	MV24EXP-ENV-GS-227	70%	CHEM1	DG	89	634268	6178112	634270	6178112	-2	0	2	273	AP	

APPENDIX A FIELD SAMPLING LOGS

Gardline

Seafloor Sampling Positioning Summary

Job No	59294						Vessel	MV *Ocean Reliance*									
Client	Morven Offshore Wind Limited						Vessel Reference Point (VRP)	COG									
Project Name	Morven Grid Connection 1 Route Environmental Survey						Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97			
Primary Positioning System	C-Nav 3050 (A)						Actual Coordinates derived from	Deployment Location									
Geodetic Reference System	Datum	WGS 84 (18) to ED50			Ellipsoid	International 1924		Projection	UTM Zone 30N (3°W)				Vertical / Tidal Datum	LAT			

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
16-Aug-2024	00:25	67	MV24EXP-ENV-GS-227	50%	CHEM2	DG	89	634270	6178112	634270	6178112	0	0	0	325	AP	
16-Aug-2024	02:02	68	MV24EXP-ENV-GS-226	NS	NS	DG	88	632825	6176748	632825	6176748	0	0	0	114	AP	Myxinidae (Hagfish) in the grab
16-Aug-2024	02:10	69	MV24EXP-ENV-GS-226	60%	MFA	DG	88	632824	6176749	632825	6176748	-1	1	1	320	AP	
16-Aug-2024	02:17	70	MV24EXP-ENV-GS-226	60%	MFB	DG	88	632825	6176747	632825	6176748	0	-1	1	189	AP	
16-Aug-2024	02:25	71	MV24EXP-ENV-GS-226	60%	PSA	DG	88	632826	6176746	632825	6176748	1	-2	2	159	AP	
16-Aug-2024	04:12	72	MV24EXP-ENV-GS-171	70%	MFA	DG	86	632329	6174795	632329	6174794	0	1	1	356	AP	
16-Aug-2024	04:21	73	MV24EXP-ENV-GS-171	70%	MFB	DG	86	632329	6174793	632329	6174794	0	-1	1	152	AP	
16-Aug-2024	04:28	74	MV24EXP-ENV-GS-171	70%	CHEM1	DG	86	632329	6174794	632329	6174794	0	0	0	69	AP	
16-Aug-2024	04:38	75	MV24EXP-ENV-GS-171	60%	CHEM2	DG	86	632329	6174794	632329	6174794	0	0	0	151	AP	
16-Aug-2024	06:20	76	MV24EXP-ENV-GS-225	80%	MFA	DG	93	631831	6172879	631833	6172878	-2	1	2	301	AP	
16-Aug-2024	06:30	77	MV24EXP-ENV-GS-225	80%	MFB	DG	93	631833	6172877	631833	6172878	0	0	1	218	AP	
16-Aug-2024	06:39	78	MV24EXP-ENV-GS-225	80%	PSA	DG	93	631834	6172878	631833	6172878	1	0	1	55	AP	
16-Aug-2024	08:31	79	MV24EXP-ENV-GS-172	70%	MFA	DG	88	631318	6170859	631319	6170858	-1	1	1	338	AP	
16-Aug-2024	08:41	80	MV24EXP-ENV-GS-172	80%	MFB	DG	88	631319	6170859	631319	6170858	0	1	1	357	AP	
16-Aug-2024	08:50	81	MV24EXP-ENV-GS-172	50%	CHEM1	DG	88	631319	6170860	631319	6170858	0	2	2	15	AP	
16-Aug-2024	09:03	82	MV24EXP-ENV-GS-172	80%	CHEM2	DG	88	631320	6170860	631319	6170858	1	2	2	26	AP	
17-Aug-2024	23:45	83	MV24EXP-ENV-GS-185	NS	NS	DG	84	621010	6099060	621009	6099061	2	-1	2	110	AP	No sample due to overfilled grab
17-Aug-2024	23:52	84	MV24EXP-ENV-GS-185	NS	NS	DG	84	621009	6099061	621009	6099061	0	0	0	114	AP	Removed half of weight - No sample due to overfilled grab
17-Aug-2024	23:59	85	MV24EXP-ENV-GS-185	90%	MFA	DG	84	621008	6099061	621009	6099061	-1	0	1	292	AP	All weight removed from grab
18-Aug-2024	00:09	86	MV24EXP-ENV-GS-185	90%	MFB	DG	84	621007	6099061	621009	6099061	-2	0	2	276	AP	
18-Aug-2024	00:25	87	MV24EXP-ENV-GS-185	90%	CHEM1	DG	84	621011	6099061	621009	6099061	2	0	2	79	AP	
18-Aug-2024	00:36	88	MV24EXP-ENV-GS-185	90%	CHEM2	DG	84	621009	6099061	621009	6099061	1	0	1	96	AP	
18-Aug-2024	02:56	89	MV24EXP-ENV-GS-224	90%	MFA	DG	79	620453	6097139	620453	6097139	0	-1	1	195	AP	
18-Aug-2024	03:03	90	MV24EXP-ENV-GS-224	90%	MFB	DG	79	620452	6097138	620453	6097139	-1	-1	2	231	AP	
18-Aug-2024	03:09	91	MV24EXP-ENV-GS-224	90%	PSA	DG	79	620453	6097140	620453	6097139	0	1	1	333	AP	
18-Aug-2024	04:51	92	MV24EXP-ENV-GS-186	90%	MFA	DG	65	619899	6095217	619899	6095218	0	-1	1	220	AP	
18-Aug-2024	05:00	93	MV24EXP-ENV-GS-186	90%	MFB	DG	65	619899	6095218	619899	6095218	0	0	0	237	AP	
18-Aug-2024	05:07	94	MV24EXP-ENV-GS-186	90%	CHEM1	DG	65	619898	6095217	619899	6095218	-1	0	1	232	AP	
18-Aug-2024	05:16	95	MV24EXP-ENV-GS-186	90%	CHEM2	DG	65	619898	6095217	619899	6095218	-1	0	1	236	AP	
18-Aug-2024	06:41	96	MV24EXP-ENV-GS-223	70%	MFA	DG	60	619351	6093296	619349	6093295	1	1	2	52	AP	
18-Aug-2024	06:49	97	MV24EXP-ENV-GS-223	80%	MFB	DG	59	619349	6093296	619349	6093295	0	1	1	349	AP	
18-Aug-2024	06:57	98	MV24EXP-ENV-GS-223	90%	PSA	DG	59	619349	6093295	619349	6093295	0	0	0	281	AP	
18-Aug-2024	08:53	99	MV24EXP-ENV-GS-187	80%	MFA	DG	57	618791	6091374	618791	6091374	0	0	0	122	AP	
18-Aug-2024	09:00	100	MV24EXP-ENV-GS-187	80%	MFB	DG	57	618792	6091375	618791	6091374	1	1	1	55	AP	
18-Aug-2024	09:07	101	MV24EXP-ENV-GS-187	90%	CHEM1	DG	57	618793	6091375	618791	6091374	1	1	2	56	AP	
18-Aug-2024	09:15	102	MV24EXP-ENV-GS-187	NS	NS	DG	57	618792	6091375	618791	6091374	1	1	1	62	AP	One bucket didn't trigger
18-Aug-2024	09:20	103	MV24EXP-ENV-GS-187	80%	CHEM2	DG	57	618792	6091375	618791	6091374	1	0	1	63	AP	
18-Aug-2024	11:15	104	MV24EXP-ENV-GS-210	70%	MFA	DG	55	618239	6089451	618237	6089452	2	-2	2	134	RA	
18-Aug-2024	11:24	105	MV24EXP-ENV-GS-210	80%	MFB	DG	55	618238	6089452	618237	6089452	1	0	1	88	RA	
18-Aug-2024	11:31	106	MV24EXP-ENV-GS-210	80%	PSA	DG	55	618238	6089452	618237	6089452	0	-1	1	147	RA	
18-Aug-2024	13:43	107	MV24EXP-ENV-GS-211	75%	MFA	DG	54	617855	6087484	617854	6087485	2	-1	2	116	RA	
18-Aug-2024	13:52	108	MV24EXP-ENV-GS-211	50%	MFB	DG	54	617854	6087484	617854	6087485	0	-1	1	183	RA	
18-Aug-2024	14:02	109	MV24EXP-ENV-GS-211	70%	CHEM1	DG	54	617854	6087483	617854	6087485	0	-2	2	183	RA	
18-Aug-2024	14:17	110	MV24EXP-ENV-GS-211	80%	CHEM2	DG	54	617854	6087484	617854	6087485	0	-1	1	185	RA	
18-Aug-2024	16:25	111	MV24EXP-ENV-GS-212	80%	MFA	DG	51	617619	6085642	617621	6085643	-1	-1	2	228	FT	
18-Aug-2024	16:36	112	MV24EXP-ENV-GS-212	75%	MFB	DG	51	617620	6085643	617621	6085643	0	0	0	238	FT	
18-Aug-2024	16:46	113	MV24EXP-ENV-GS-212	70%	PSA	DG	51	617621	6085643	617621	6085643	0	0	0	181	RA	
18-Aug-2024	18:35	114	MV24EXP-ENV-GS-213	80%	MFA	DG	47	616788	6083649	616788	6083649	0	-1	1	171	RA	
18-Aug-2024	18:42	115	MV24EXP-ENV-GS-213	90%	MFB	DG	47	616787	6083648	616788	6083649	-1	-1	1	223	RA	
18-Aug-2024	18:50	116	MV24EXP-ENV-GS-213	80%	CHEM1	DG	47	616788	6083649	616788	6083649	-1	0	1	233	RA	
18-Aug-2024	19:02	117	MV24EXP-ENV-GS-213	80%	CHEM2	DG	47	616787	6083649	616788	6083649	-1	-1	1	237	RA	
18-Aug-2024	21:12	118	MV24EXP-ENV-GS-214	30%	NS	DG	44	616245	6081706	616242	6081710	3	-4	5	148	RA	Low retention
18-Aug-2024	21:21	119	MV24EXP-ENV-GS-214	NS	NS	DG	44	616244	6081707	616242	6081710	2	-4	4	150	RA	Grab did not trigger
18-Aug-2024	21:27	120	MV24EXP-ENV-GS-214	30%	NS	DG	44	616244	6081706	616242	6081710	2	-4	4	154	RA	Low retention
18-Aug-2024	21:43	121	MV24EXP-ENV-GS-214	80%	MFA	DG	44	616247	6081711	616242	6081710	5	1	5	79	RA	
18-Aug-2024	21:51	122	MV24EXP-ENV-GS-214	50%	MFB	DG	44	616247	6081711	616242	6081710	5	1	5	78	RA	
18-Aug-2024	21:59	123	MV24EXP-ENV-GS-214	50%	PSA	DG	44	616247	6081711	616242	6081710	5	1	5	79	RA	
18-Aug-2024	23:38	124	MV24EXP-ENV-GS-215	90%	MFA	DG	44	615716	6079829	615717	6079828	0	1	1	346	AP	
18-Aug-2024	23:45	125	MV24EXP-ENV-GS-215	90%	MFB	DG	44	615717	6079829	615717	6079828	0	1	1	1	AP	
18-Aug-2024	23:51	126	MV24EXP-ENV-GS-215	90%	CHEM1	DG	44	615716	6079829	615717	6079828	0	1	1	352	AP	
18-Aug-2024	23:59	127	MV24EXP-ENV-GS-215	90%	CHEM2	DG	45	615717	6079829	615717	6079828	0	1	1	13	AP	
19-Aug-2024	03:23	128	MV24EXP-ENV-GS-197	20%	NS	DG	34	614312	6076047	614311	6076047	1	0	1	98	AP	Low retention
19-Aug-2024	03:28	129	MV24EXP-ENV-GS-197	NS	NS	DG	34	614312	6076047	614311	6076047	1	0	1	82	AP	Grab did not trigger
19-Aug-2024	03:31	130	MV24EXP-ENV-GS-197	NS	NS	DG	34	614313	6076047	614311	6076047	2	0	2	82	AP	Stones in jaw
19-Aug-2024	03:35	131	MV24EXP-ENV-GS-197	NS	NS	DG	34	614311	6076047	614311	6076047	0	0	1	307	AP	Empty grab
19-Aug-2024	03:40	132	MV24EXP-ENV-GS-197	NS	NS	DG	34	614307	6076051	614311	6076047	-4	4	6	311	AP	Moving 5m NW - Stone in jaw

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*					
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG					
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM Zone 30N (3°W)		Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
19-Aug-2024	03:44	133	MV24EXP-ENV-GS-197	NS	NS	DG	34	614308	6076052	614311	6076047	-4	5	6	322	AP	One bucket didn't trigger
19-Aug-2024	03:47	134	MV24EXP-ENV-GS-197	30%	NS	DG	34	614308	6076051	614311	6076047	-4	4	6	320	AP	Stones in jaw - abandoning station
19-Aug-2024	05:07	135	MV24EXP-ENV-GS-221	50%	MFA	DG	32	613484	6076176	613485	6076175	0	1	1	332	AP	
19-Aug-2024	05:13	136	MV24EXP-ENV-GS-221	40%	MFB	DG	32	613484	6076175	613485	6076175	-1	1	1	315	AP	
19-Aug-2024	05:19	137	MV24EXP-ENV-GS-221	40%	CHEM1	DG	32	613484	6076176	613485	6076175	-1	1	1	333	AP	
19-Aug-2024	05:28	138	MV24EXP-ENV-GS-221	80%	CHEM2	DG	32	613483	6076175	613485	6076175	-1	0	1	289	AP	
19-Aug-2024	06:58	139	MV24EXP-ENV-GS-198	NS	NS	DG	31	613624	6078178	613616	6078185	8	-7	11	129	AP	Moved away from target based on camera transects FIX1684 - One bucket did not trigger
19-Aug-2024	07:02	140	MV24EXP-ENV-GS-198	NS	NS	DG	31	613623	6078179	613616	6078185	8	-6	10	129	AP	One bucket didn't trigger
19-Aug-2024	07:08	141	MV24EXP-ENV-GS-198	NS	NS	DG	31	613621	6078180	613616	6078185	5	-5	7	134	AP	Moved away from target based on camera transects FIX1683 - Stone in jaw
19-Aug-2024	07:15	142	MV24EXP-ENV-GS-198	NS	NS	DG	31	613619	6078181	613616	6078185	3	-4	6	142	AP	Moved away from target based on camera transects FIX1682 - grab didn't trigger
19-Aug-2024	07:17	143	MV24EXP-ENV-GS-198	NS	NS	DG	31	613617	6078180	613616	6078185	2	-5	6	163	AP	Stone in jaw
19-Aug-2024	08:48	144	MV24EXP-ENV-GS-222	NS	NS	DG	35	614285	6078327	614286	6078326	-1	1	2	311	AP	No sample due to overfilled grab
19-Aug-2024	08:55	145	MV24EXP-ENV-GS-222	90%	MFA	DG	35	614284	6078328	614286	6078326	-2	2	3	307	AP	
19-Aug-2024	09:01	146	MV24EXP-ENV-GS-222	90%	MFB	DG	35	614286	6078328	614286	6078326	-1	2	2	340	AP	
19-Aug-2024	09:07	147	MV24EXP-ENV-GS-222	80%	CHEM1	DG	35	614286	6078329	614286	6078326	-1	3	3	348	AP	
19-Aug-2024	09:20	148	MV24EXP-ENV-GS-222	90%	CHEM2	DG	35	614286	6078329	614286	6078326	0	3	3	353	AP	
19-Aug-2024	10:54	149	MV24EXP-ENV-GS-216	60%	MFA	DG	41	614784	6079815	614785	6079813	-1	1	2	327	AP	
19-Aug-2024	11:04	150	MV24EXP-ENV-GS-216	90%	NS	DG	41	614784	6079815	614785	6079813	-1	1	1	339	RA	Hagfish in grab
19-Aug-2024	11:18	151	MV24EXP-ENV-GS-216	90%	MFB	DG	41	614784	6079815	614785	6079813	0	1	2	344	RA	
19-Aug-2024	11:27	152	MV24EXP-ENV-GS-216	85%	PSA	DG	42	614784	6079815	614785	6079813	-1	1	2	334	RA	
19-Aug-2024	13:37	153	MV24EXP-ENV-GS-220	40%	MFA	DG	37	612858	6081335	612857	6081334	1	0	1	67	RA	
19-Aug-2024	13:47	154	MV24EXP-ENV-GS-220	45%	MFB	DG	37	612859	6081335	612857	6081334	1	0	1	76	RA	
19-Aug-2024	13:58	155	MV24EXP-ENV-GS-220	60%	CHEM1	DG	37	612856	6081333	612857	6081334	-2	-1	2	238	RA	
19-Aug-2024	14:11	156	MV24EXP-ENV-GS-220	40%	CHEM2	DG	37	612856	6081334	612857	6081334	-1	-1	2	249	RA	
19-Aug-2024	16:23	157	MV24EXP-ENV-GS-183	10%	NS	DG	34	611605	6083006	611593	6082978	12	28	30	24	FT	Retention below 10%
19-Aug-2024	16:31	158	MV24EXP-ENV-GS-183	10%	NS	DG	34	611606	6083006	611593	6082978	13	28	31	25	FT	Low retention
19-Aug-2024	16:36	159	MV24EXP-ENV-GS-183	10%	NS	DG	34	611606	6083007	611593	6082978	14	30	33	25	FT	Low retention
19-Aug-2024	18:16	160	MV24EXP-ENV-GS-206	100%	NS	DG	42	612926	6084402	612927	6084402	-1	1	1	322	RA	Overfilled
19-Aug-2024	18:25	161	MV24EXP-ENV-GS-206	95%	MFA	DG	42	612927	6084401	612927	6084402	0	0	0	192	RA	
19-Aug-2024	18:36	162	MV24EXP-ENV-GS-206	90%	MFB	DG	42	612927	6084401	612927	6084402	0	-1	1	187	RA	
19-Aug-2024	18:44	163	MV24EXP-ENV-GS-206	80%	CHEM1	DG	42	612925	6084401	612927	6084402	-1	0	1	257	RA	
19-Aug-2024	18:57	164	MV24EXP-ENV-GS-206	85%	CHEM2	DG	41	612926	6084400	612927	6084402	-1	-2	2	208	RA	
19-Aug-2024	20:45	165	MV24EXP-ENV-GS-207	90%	MFA	DG	45	613981	6086159	613980	6086158	0	1	1	17	RA	
19-Aug-2024	20:53	166	MV24EXP-ENV-GS-207	90%	MFB	DG	45	613981	6086160	613980	6086158	0	2	2	13	RA	
19-Aug-2024	21:02	167	MV24EXP-ENV-GS-207	90%	PSA	DG	45	613982	6086160	613980	6086158	2	1	2	53	RA	
19-Aug-2024	23:07	168	MV24EXP-ENV-GS-217	80%	MFA	DG	48	615719	6086213	615718	6086211	1	1	2	46	AP	
19-Aug-2024	23:18	169	MV24EXP-ENV-GS-217	80%	MFB	DG	48	615721	6086213	615718	6086211	2	1	3	57	AP	
19-Aug-2024	23:25	170	MV24EXP-ENV-GS-217	80%	CHEM1	DG	48	615721	6086212	615718	6086211	2	1	2	68	AP	
19-Aug-2024	23:33	171	MV24EXP-ENV-GS-217	80%	CHEM2	DG	49	615720	6086213	615718	6086211	1	2	2	38	AP	
20-Aug-2024	01:39	172	MV24EXP-ENV-GS-208	80%	MFA	DG	51	615011	6087875	615011	6087874	0	1	1	17	AP	
20-Aug-2024	01:46	173	MV24EXP-ENV-GS-208	80%	MFB	DG	52	615010	6087874	615011	6087874	0	-1	1	218	AP	
20-Aug-2024	01:54	174	MV24EXP-ENV-GS-208	80%	CHEM1	DG	52	615012	6087874	615011	6087874	1	-1	1	127	AP	
20-Aug-2024	02:02	175	MV24EXP-ENV-GS-208	90%	CHEM2	DG	52	615012	6087874	615011	6087874	2	0	2	98	AP	
20-Aug-2024	03:54	176	MV24EXP-ENV-GS-209	70%	MFA	DG	54	615664	6088945	615665	6088945	-1	0	1	265	AP	
20-Aug-2024	03:59	177	MV24EXP-ENV-GS-209	70%	MFB	DG	54	615665	6088944	615665	6088945	0	-1	1	196	AP	
20-Aug-2024	04:06	178	MV24EXP-ENV-GS-209	70%	PSA	DG	54	615665	6088944	615665	6088945	0	-1	1	170	AP	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) FOR-ENV-0539

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
1	MV24EXP-ENV-GS-173	11-Aug-2024	08:02	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/2	Echinodermata (Spatangoidea)	AS, MP, AA	
2	MV24EXP-ENV-GS-173	11-Aug-2024	08:12	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	
3	MV24EXP-ENV-GS-173	11-Aug-2024	08:22	60%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	Redox: 1cm (8.19pH, 12.3˚C, 236mV), 10cm (7.90pH, 11.7˚C, 122mV)
4	MV24EXP-ENV-GS-173	11-Aug-2024	08:40	60%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	
5	MV24EXP-ENV-GS-174	11-Aug-2024	11:22	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)	IO, PP, MP	
6	MV24EXP-ENV-GS-174	11-Aug-2024	11:38	30%	NS	NA	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	NA	IO, PP, MP	Low retention
7	MV24EXP-ENV-GS-174	11-Aug-2024	11:51	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	IO, PP, MP	
8	MV24EXP-ENV-GS-174	11-Aug-2024	12:05	75%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	No visible fauna	IO, PP, MP	Redox: 1cm (8.01pH, 12.3˚C, 195mV), 10cm (7.99pH, 13.4˚C, 204mV)
9	MV24EXP-ENV-GS-175	11-Aug-2024	14:56	50%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)	IO, PP, MP	
10	MV24EXP-ENV-GS-175	11-Aug-2024	15:08	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	Annelida (Polychaeta), Mollusca (Bivalvia)	IO, PP, MP	
11	MV24EXP-ENV-GS-175	11-Aug-2024	15:22	60%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	No visible fauna	IO, PP, MP	Redox: 1cm (8.65pH, 13.0˚C, 378mV), 10cm (8.36pH, 12.5˚C, 205mV)
12	MV24EXP-ENV-GS-175	11-Aug-2024	15:46	50%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 2.5YR 3/3	No visible fauna	IO, PP, MP	
13	MV24EXP-ENV-GS-176	12-Aug-2024	05:28	10%	NS	NA	NA	NA	AS, MP, AA	Low retention, grab stuck on the lift wire Marginal weather conditions
14	MV24EXP-ENV-GS-176	12-Aug-2024	05:35	0%	NS	NA	NA	NA	AS, MP, AA	Grab did not sample due to marginal weather conditions, e.g. either pretriggered in water or did not scoop
15	MV24EXP-ENV-GS-176	12-Aug-2024	05:45	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	AS, MP, AA	
16	MV24EXP-ENV-GS-176	12-Aug-2024	05:52	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, MP, AA	
17	MV24EXP-ENV-GS-176	12-Aug-2024	06:00	50%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.14pH, 12.3˚C, 131mV), 10cm (7.84pH, 11.0˚C, -45mV)
18	MV24EXP-ENV-GS-177	13-Aug-2024	02:21	50%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, AA	
19	MV24EXP-ENV-GS-177	13-Aug-2024	02:32	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, AA	
20	MV24EXP-ENV-GS-177	13-Aug-2024	02:41	50%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (8.16pH, 12.0˚C, 3,07mV), 10cm (8.06pH, 11.2˚C, 114mV)
21	MV24EXP-ENV-GS-177	13-Aug-2024	02:54	60%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, AA	
22	MV24EXP-ENV-GS-178	13-Aug-2024	05:15	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Bivalvia)	AS, MP, AA	
23	MV24EXP-ENV-GS-178	13-Aug-2024	05:25	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	AS, MP, AA	
24	MV24EXP-ENV-GS-178	13-Aug-2024	05:33	60%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 4/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.12pH, 11.9˚C, 304mV), 10cm (8.01pH, 11.5˚C, 213mV)
25	MV24EXP-ENV-GS-179	13-Aug-2024	07:50	20%	NS	NA	Fine to medium sand with shell fragments Munsel: 5YR 4/1	NA	AS, MP, AA	Low retention due to shell in the jaws. Sample washed out.

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)											FOR-ENV-0539
Job No:	59294		Area:	UKCS Quads: 27, 34, 35, and 40				Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey							Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited							Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments	
26	MV24EXP-ENV-GS-179	13-Aug-2024	07:58	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, MP, AA		
27	MV24EXP-ENV-GS-179	13-Aug-2024	08:06	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/1	Annelida (Polychaeta)	AS, MP, AA		
28	MV24EXP-ENV-GS-179	13-Aug-2024	08:15	70%	CHEM1 / Fish eDNA	3 x Ziplock Bags 2 x 1L Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/1	No visible fauna	AS, MP, AA		
29	MV24EXP-ENV-GS-179	13-Aug-2024	08:27	60%	CHEM2 / Fish eDNA (spare)	3 x Ziplock Bags 3 x 120ml Jars	Fine to medium sand with shell fragments Munsel: 5YR 4/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.20pH, 12.7˚C, 284mV), 10cm (7.80pH, 11.6˚C, 202mV)	
30	MV24EXP-ENV-GS-180	13-Aug-2024	10:39	40%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, MP, AA		
31	MV24EXP-ENV-GS-180	13-Aug-2024	10:49	45%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 5/1	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)	AS, MP, AA, IO, PP		
32	MV24EXP-ENV-GS-180	13-Aug-2024	10:57	40%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 5/1	No visible fauna	AS, MP, AA, IO, PP	Redox: 1cm (8.08pH, 13.6˚C, 328mV), 10cm (7.70pH, 12.5˚C, 307mV)	
33	MV24EXP-ENV-GS-234	14-Aug-2024	07:32	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Echinodermata (Echinoidea), Mollusca (Scaphopoda)	AS, MP, AA		
34	MV24EXP-ENV-GS-234	14-Aug-2024	07:42	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Mollusca (Bivalvia, Scaphopoda)	AS, MP, AA		
35	MV24EXP-ENV-GS-234	14-Aug-2024	07:51	60%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 4/3	No visible fauna	AS, MP, AA	Redox: 1cm (8.06pH, 12.3˚C, 245mV), 10cm (7.80pH, 11.4˚C, 64mV)	
36	MV24EXP-ENV-GS-235	14-Aug-2024	09:45	60%	(MFA / eDNA)	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, MP, AA	Superseded by MV24EXP-ENV-GS-235A	
37	MV24EXP-ENV-GS-235	14-Aug-2024	09:53	70%	(MFB / eDNA (spare))	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 4/3	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, MP, AA	Superseded by MV24EXP-ENV-GS-235A	
38	MV24EXP-ENV-GS-235	14-Aug-2024	10:02	60%	(PSA)	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 4/3	No visible fauna	AS, MP, AA	Redox: 1cm (8.05pH, 12.1˚C, 255mV), 10cm (7.92pH, 11.5˚C, 35mV). Superseded by MV24EXP-ENV-GS-235A	
39	MV24EXP-ENV-GS-235A	14-Aug-2024	12:31	70%	MFA / eDNA	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 3/3	Annelida (Polychaeta), Arthropoda (Corystidae),	IO, PP, MP		
40	MV24EXP-ENV-GS-235A	14-Aug-2024	12:43	45%	MFB / eDNA (spare)	1 x 1L Pot	Fine to medium sand with shell fragments Munsel: 5YR 3/3	Annelida (Polychaeta), Arthropoda (Crustacea), Echinodermata (Echinoidea), Mollusca (Bivalvia)	IO, PP, MP		
41	MV24EXP-ENV-GS-235A	14-Aug-2024	12:55	45%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 3/3	No visible fauna	IO, PP, MP	Redox: 1cm (8.11pH, 13.4˚C, 278mV), 10cm (7.75pH, 12˚C, 90mV)	
42	MV24EXP-ENV-GS-233	14-Aug-2024	17:57	40%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta), Arthropoda (Crustacea), Cnidaria (Pennatuloidea)	IO, PP		
43	MV24EXP-ENV-GS-233	14-Aug-2024	18:08	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophuiroidea), Mollusca (Pharidae)	IO, PP		
44	MV24EXP-ENV-GS-233	14-Aug-2024	18:19	50%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/4	No visible fauna	IO, PP	Redox: 1cm (7.96pH, 12.2˚C, 259mV), 10cm (7.60pH, 12.1˚C, 260mV)	
45	MV24EXP-ENV-GS-233	14-Aug-2024	18:34	45%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/4	No visible fauna	IO, PP		
46	MV24EXP-ENV-GS-232	14-Aug-2024	20:32	60%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta)	IO, PP		
47	MV24EXP-ENV-GS-232	14-Aug-2024	20:41	15%	NS	NA	Fine to medium sand with shell fragments Munsel: 5YR 3/4	NA	IO, PP	Low retention	
48	MV24EXP-ENV-GS-232	14-Aug-2024	21:05	60%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/4	Annelida (Polychaeta)	IO, PP		
49	MV24EXP-ENV-GS-232	14-Aug-2024	21:14	65%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 3/4	No visible fauna	IO, PP	Redox: 1cm (7.90pH, 11.3˚C, 263mV), 10cm (7.70pH, 10.5˚C, 230mV)	
50	MV24EXP-ENV-GS-231	14-Aug-2024	23:46	50%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	AS, AA		

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
51	MV24EXP-ENV-GS-231	14-Aug-2024	23:55	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Cnidaria (Pennatuloidea)	AS, AA	
52	MV24EXP-ENV-GS-231	15-Aug-2024	00:03	50%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/1	No visible fauna	AS, AA	
53	MV24EXP-ENV-GS-231	15-Aug-2024	00:12	50%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Fine to medium sand with shell fragments Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (8.04pH, 11.1˚C, 254mV), 10cm (7.81pH, 11.1˚C, 32mV)
54	MV24EXP-ENV-GS-230	15-Aug-2024	01:49	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	AS, AA	
55	MV24EXP-ENV-GS-230	15-Aug-2024	01:56	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Fine to medium sand with shell fragments Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)	AS, AA	
56	MV24EXP-ENV-GS-230	15-Aug-2024	02:02	60%	PSA	2 x Ziplock Bags	Fine to medium sand with shell fragments Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.71pH, 10.9˚C, 287mV), 10cm (7.71pH, 11.1˚C, 15mV)
57	MV24EXP-ENV-GS-229	15-Aug-2024	03:49	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty fine sand Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, AA	
58	MV24EXP-ENV-GS-229	15-Aug-2024	03:57	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty fine sand Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, AA	
59	MV24EXP-ENV-GS-229	15-Aug-2024	04:03	60%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty fine sand Munsel: 5YR 3/1	No visible fauna	AS, AA	
60	MV24EXP-ENV-GS-229	15-Aug-2024	04:12	60%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.68pH, 11.0˚C, 300mV), 10cm (7.78pH, 10.3˚C, 121mV)
61	MV24EXP-ENV-GS-228	15-Aug-2024	05:38	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)	AS, MP, AA	
62	MV24EXP-ENV-GS-228	15-Aug-2024	05:46	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Echinoidea)	AS, MP, AA	
63	MV24EXP-ENV-GS-228	15-Aug-2024	05:53	80%	PSA	2 x Ziplock Bags	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, MP, AA	Redox: 1cm (8.00pH, 11.6˚C, 277mV), 10cm (7.86pH, 10.6˚C, 5mV)
64	MV24EXP-ENV-GS-227	15-Aug-2024	23:55	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, AA	
65	MV24EXP-ENV-GS-227	16-Aug-2024	00:07	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Arthropoda (Brachyura), Cnidaria (Pennatuloidea), Mollusca (Scaphopoda)	AS, AA	
66	MV24EXP-ENV-GS-227	16-Aug-2024	00:15	70%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	
67	MV24EXP-ENV-GS-227	16-Aug-2024	00:25	50%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (7.97pH, 10.9˚C, 283mV), 10cm (7.92pH, 11.0˚C, -43mV)
68	MV24EXP-ENV-GS-226	16-Aug-2024	02:02	NA	NS	NA	NA	Chordata (Myxinidae)	AS, AA	Hagfish in the grab
69	MV24EXP-ENV-GS-226	16-Aug-2024	02:10	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, AA	
70	MV24EXP-ENV-GS-226	16-Aug-2024	02:17	60%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)	AS, AA	
71	MV24EXP-ENV-GS-226	16-Aug-2024	02:25	60%	PSA	2 x Ziplock Bags	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (7.98pH, 10.7˚C, 307mV), 10cm (7.94pH, 11.1˚C, 29mV)
72	MV24EXP-ENV-GS-171	16-Aug-2024	04:12	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta)	AS, AA	
73	MV24EXP-ENV-GS-171	16-Aug-2024	04:21	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand Munsel: 5YR 5/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, AA	
74	MV24EXP-ENV-GS-171	16-Aug-2024	04:28	70%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	
75	MV24EXP-ENV-GS-171	16-Aug-2024	04:38	60%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand Munsel: 5YR 5/1	No visible fauna	AS, AA	Redox: 1cm (7.77pH, 10.7˚C, 295mV), 10cm (7.79pH, 10.4˚C, 246mV)
76	MV24EXP-ENV-GS-225	16-Aug-2024	06:20	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta)	AS, MP, AA	
77	MV24EXP-ENV-GS-225	16-Aug-2024	06:30	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)	AS, MP, AA	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
78	MV24EXP-ENV-GS-225	16-Aug-2024	06:39	80%	PSA	2 x Ziplock Bags	Silty clayey sand Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	Redox: 1cm (7.86pH, 10.7˚C, 307mV), 10cm (8.00pH, 10.3˚C, -26mV)
79	MV24EXP-ENV-GS-172	16-Aug-2024	08:31	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, MP, AA	
80	MV24EXP-ENV-GS-172	16-Aug-2024	08:41	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey sand Munsel: 5YR 4/2	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)	AS, MP, AA	
81	MV24EXP-ENV-GS-172	16-Aug-2024	08:50	50%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey sand Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	
82	MV24EXP-ENV-GS-172	16-Aug-2024	09:03	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey sand Munsel: 5YR 4/2	No visible fauna	AS, MP, AA	Redox: 1cm (7.73pH, 11.5˚C, 53mV), 10cm (7.86pH, 11.6˚C, 105mV)
83	MV24EXP-ENV-GS-185	17-Aug-2024	23:45	100%	NS	NA	Soft silty sandy clay/mud Munsel: 5YR 3/1	NA	AS, AA	Grab overfilled due to very soft sediment
84	MV24EXP-ENV-GS-185	17-Aug-2024	23:52	100%	NS	NA	Soft silty sandy clay/mud Munsel: 5YR 3/1	NA	AS, AA	Half of the weights were removed as the grab overfilled.
85	MV24EXP-ENV-GS-185	17-Aug-2024	23:59	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, AA	All weights were removed.
86	MV24EXP-ENV-GS-185	18-Aug-2024	00:09	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, AA	
87	MV24EXP-ENV-GS-185	18-Aug-2024	00:25	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	
88	MV24EXP-ENV-GS-185	18-Aug-2024	00:36	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.68pH, 10.0˚C, -86mV), 10cm (7.64pH, 10.5˚C, -75mV)
89	MV24EXP-ENV-GS-224	18-Aug-2024	02:56	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta)	AS, MP, AA	
90	MV24EXP-ENV-GS-224	18-Aug-2024	03:03	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, MP, AA	
91	MV24EXP-ENV-GS-224	18-Aug-2024	03:09	90%	PSA	2 x Ziplock Bags	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	Redox: 1cm (7.67pH, 11.1˚C, -89mV), 10cm (7.73pH, 11.2˚C, -130mV)
92	MV24EXP-ENV-GS-186	18-Aug-2024	04:51	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	
93	MV24EXP-ENV-GS-186	18-Aug-2024	05:00	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	
94	MV24EXP-ENV-GS-186	18-Aug-2024	05:07	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	
95	MV24EXP-ENV-GS-186	18-Aug-2024	05:16	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.68pH, 11.3˚C, -53mV), 10cm (7.79pH, 11.8C, -116mV)
96	MV24EXP-ENV-GS-223	18-Aug-2024	06:41	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Cnidaria (Alcyoniidae), Mollusca (Gastropoda)	AS, MP, AA	
97	MV24EXP-ENV-GS-223	18-Aug-2024	06:49	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, MP, AA	
98	MV24EXP-ENV-GS-223	18-Aug-2024	06:57	90%	PSA	2 x Ziplock Bags	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.66pH, 11.9˚C,292mV), 10cm (7.57pH, 11.2˚C, -93mV)
99	MV24EXP-ENV-GS-187	18-Aug-2024	08:53	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Mollusca (Gastropoda)	AS, MP, AA	
100	MV24EXP-ENV-GS-187	18-Aug-2024	09:00	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, MP, AA	
101	MV24EXP-ENV-GS-187	18-Aug-2024	09:07	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	
102	MV24EXP-ENV-GS-187	18-Aug-2024	09:15	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
103	MV24EXP-ENV-GS-187	18-Aug-2024	09:20	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.68pH, 11.6˚C, 277mV), 10cm (7.60pH, 11.4˚C, -47mV)
104	MV24EXP-ENV-GS-210	18-Aug-2024	11:15	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft clay sand with pebbles Munsel: 5YR 2.5/1	Annelida (Polychaeta). Mollusca (Bivalvia, Gastropoda)	IO, PP, MP	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40				Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
105	MV24EXP-ENV-GS-210	18-Aug-2024	11:24	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft clay sand with pebbles Munsel: 5YR 2.5/1	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia, Pharidae)	IO, PP, MP	
106	MV24EXP-ENV-GS-210	18-Aug-2024	11:31	80%	PSA	2 x Ziplock Bags	Soft clay sand with pebbles Munsel: 5YR 2.5/1	No visible fauna	IO, PP, MP	Redox: 1cm (7.65pH, 12˚C, 113mV), 10cm (7.65pH, 11.9˚C, -68mV)
107	MV24EXP-ENV-GS-211	18-Aug-2024	13:43	75%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	Annelida (Polychaeta), Mollusca (Bivalvia)	IO, PP, MP	
108	MV24EXP-ENV-GS-211	18-Aug-2024	13:52	50%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	Annelida, Arthropoda (Paguroidea)	IO, PP, MP	
109	MV24EXP-ENV-GS-211	18-Aug-2024	14:02	70%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	No visible fauna	IO, PP, MP	
110	MV24EXP-ENV-GS-211	18-Aug-2024	14:17	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 5YR 2.5/2	No visible fauna	IO, PP, MP	Redox: 1cm (8.22pH, 12.7˚C, 313mV), 10cm (7.71pH, 12.4C, -124mV)
111	MV24EXP-ENV-GS-212	18-Aug-2024	16:25	80%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles, gravels and shell fragments Munsel: 5YR 2.5/2	Echinodermata (Ophiuroidea)	IO, PP, MP	
112	MV24EXP-ENV-GS-212	18-Aug-2024	16:36	75%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles, gravels and shell fragments Munsel: 5YR 2.5/2	Annelida (Polychaeta), Arthropoda (Malacostraca), Mollusca (Bivalvia, Gastropoda)	IO, PP, MP	
113	MV24EXP-ENV-GS-212	18-Aug-2024	16:46	70%	PSA	2 x Ziplock Bags	Soft clay sand with pebbles, gravels and shell fragments Munsel: 5YR 2.5/2	No visible fauna	IO, PP, MP	Redox: 1cm (7.57pH, 12.7˚C, 70mV), 10cm (7.64pH, 12.4˚C, 24mV)
114	MV24EXP-ENV-GS-213	18-Aug-2024	18:35	80%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Annelida (Polychaeta), Arthropoda (Malacostraca, Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)	IO. PP	
115	MV24EXP-ENV-GS-213	18-Aug-2024	18:42	90%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Annelida (Polychaeta), Mollusca (Bivalvia)	IO. PP	
116	MV24EXP-ENV-GS-213	18-Aug-2024	18:50	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	No visible fauna	IO. PP	
117	MV24EXP-ENV-GS-213	18-Aug-2024	19:02	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	No visible fauna	IO. PP	Redox: 1cm (7.71pH, 12.4˚C, -113mV), 10cm (7.67pH, 12.5˚C, -169mV)
118	MV24EXP-ENV-GS-214	18-Aug-2024	21:12	30%	NS	NA	NA	NA	IO. PP	Stone in jaws
119	MV24EXP-ENV-GS-214	18-Aug-2024	21:21	NS	NS	NA	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	NA	IO. PP	Grab did not trigger
120	MV24EXP-ENV-GS-214	18-Aug-2024	21:27	30%	NS	NA	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	NA	IO. PP	Low retention
121	MV24EXP-ENV-GS-214	18-Aug-2024	21:43	80%	MFA / eDNA	3 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)	IO. PP	
122	MV24EXP-ENV-GS-214	18-Aug-2024	21:51	50%	MFB / eDNA (spare)	3 x 5L Bucket 1 x Ziplock Bag	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	Mollusca (Bivalvia)	IO. PP	
123	MV24EXP-ENV-GS-214	18-Aug-2024	21:59	50%	PSA	2 x Ziplock Bags	Soft clay sand with pebbles and shell fragments Munsel: 10YR 2/2	No visible fauna	IO. PP	Redox: 1cm (7.76pH, 13.1˚C, 53mV), 10cm (7.78pH, 12.5˚C, -42mV)

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
124	MV24EXP-ENV-GS-215	18-Aug-2024	23:38	90%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)	AS, AA	
125	MV24EXP-ENV-GS-215	18-Aug-2024	23:45	90%	MFB / eDNA (spare)	1 x 5L Bucket 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 3/1	Annelida (Polychaeta)	AS, AA	
126	MV24EXP-ENV-GS-215	18-Aug-2024	23:51	90%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	
127	MV24EXP-ENV-GS-215	18-Aug-2024	23:59	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 3/1	No visible fauna	AS, AA	Redox: 1cm (7.74pH,12.4˚C,-137mV), 10cm (7.79pH, 12.1C, -189mV)
128	MV24EXP-ENV-GS-197	19-Aug-2024	03:23	20%	NS	NA	NA	NA	AS, AA	Low retention
129	MV24EXP-ENV-GS-197	19-Aug-2024	03:28	NA	NS	NA	NA	NA	AS, AA	Grab did not trigger
130	MV24EXP-ENV-GS-197	19-Aug-2024	03:31	NA	NS	NA	NA	NA	AS, AA	Stone in jaws
131	MV24EXP-ENV-GS-197	19-Aug-2024	03:35	NA	NS	NA	NA	NA	AS, AA	Empty grab
132	MV24EXP-ENV-GS-197	19-Aug-2024	03:40	NA	NS	NA	NA	NA	AS, AA	Stone in jaws Vessel moved @5m
133	MV24EXP-ENV-GS-197	19-Aug-2024	03:44	NA	NS	NA	NA	NA	AS, AA	Grab did not trigger
134	MV24EXP-ENV-GS-197	19-Aug-2024	03:47	30%	NS	NA	Gravelly coarse sand with cobbles and shell fragments	NA	AS, AA	Shells in jaws Low retention
135	MV24EXP-ENV-GS-221	19-Aug-2024	05:07	50%	MFA / eDNA	1 x 5L Bucket 1 x Ziplock Bag	Silty compact fine to medium sand. Gravel under the surface. Munsel: 5YR 2.5/1	Annelida (Polychaeta)	AS, MP, AA	
136	MV24EXP-ENV-GS-221	19-Aug-2024	05:13	40%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty compact fine to medium sand. Gravel under the surface. Munsel: 5YR 2.5/1	Annelida (Polychaeta), Mollusca (Scaphopoda)	AS, MP, AA	
137	MV24EXP-ENV-GS-221	19-Aug-2024	05:19	40%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty compact fine to medium sand. Gravel under the surface. Munsel: 5YR 2.5/1	No visible fauna	AS, MP, AA	
138	MV24EXP-ENV-GS-221	19-Aug-2024	05:28	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty compact fine to medium sand. Gravel under the surface. Dark underlayer. Munsel: 5YR 2.5/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.75pH,12.9˚C,-79mV), 10cm (7.86pH, 12.8C, -145mV)
139	MV24EXP-ENV-GS-198	19-Aug-2024	06:58	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
140	MV24EXP-ENV-GS-198	19-Aug-2024	07:02	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
141	MV24EXP-ENV-GS-198	19-Aug-2024	07:08	NA	NS	NA	NA	NA	AS, MP, AA	Stone in jaws
142	MV24EXP-ENV-GS-198	19-Aug-2024	07:15	NA	NS	NA	NA	NA	AS, MP, AA	Grab did not trigger
143	MV24EXP-ENV-GS-198	19-Aug-2024	07:17	NA	NS	NA	NA	NA	AS, MP, AA	Stone in jaws
144	MV24EXP-ENV-GS-222	19-Aug-2024	08:48	NA	NS	NA	NA	NA	AS, MP, AA	Grab overfilled due to very soft sediment. The weights were removed.
145	MV24EXP-ENV-GS-222	19-Aug-2024	08:55	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	Annelida (Polychaeta)	AS, MP, AA	
146	MV24EXP-ENV-GS-222	19-Aug-2024	09:01	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	Annelida (Polychaeta), Echinodermata (Ophiuroidea)	AS, MP, AA	
147	MV24EXP-ENV-GS-222	19-Aug-2024	09:07	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	No visible fauna	AS, MP, AA	
148	MV24EXP-ENV-GS-222	19-Aug-2024	09:20	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Silty clayey fine sand with gravels under the surface Munsel: 5 YR 4/1	No visible fauna	AS, MP, AA	Redox: 1cm (7.89pH,13.3˚C,-157mV), 10cm (7.83pH, 12.0C, -180mV)
149	MV24EXP-ENV-GS-216	19-Aug-2024	10:54	60%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with shell fragments and pebbles under the surface Munsel: 10 YR 3/2	Annelida (Polychaeta), Mollusca (Gastropoda, Pharidae)	IO, PP, MP	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck) **FOR-ENV-0539**

Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40	Sieve Size:	0.5mm
Project:	Morven Grid Connection 1 Route Environmental Survey			Equipment:	Day Grab
Client:	Morven Offshore Wind Limited			Vessel:	MV *Ocean Reliance*

Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
150	MV24EXP-ENV-GS-216	19-Aug-2024	11:04	90%	NS	NA	Soft silty sandy clay with shell fragments, gravels and pebbles under the surface Munsel: 10 YR 3/2	Chordata (Myxinidae)	IO, PP, MP	Hagfish in the grab
151	MV24EXP-ENV-GS-216	19-Aug-2024	11:18	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with shell fragments, gravels and pebbles under the surface Munsel: 10 YR 3/2	Annelida (Polychaeta), Echinodermata (Echinoidea)	IO, PP, MP	
152	MV24EXP-ENV-GS-216	19-Aug-2024	11:27	85%	PSA	2 x Ziplock Bags	Soft silty sandy clay with shell fragments, gravels and pebbles under the surface Munsel: 10 YR 3/2	No visible fauna	IO, PP, MP	Redox: 1cm (7.70pH,12.8˚C,-131mV), 10cm (7.73pH, 12.8˚C, -163mV)
153	MV24EXP-ENV-GS-220	19-Aug-2024	13:37	40%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	Annelida (Polychaeta)	IO, PP, MP	
154	MV24EXP-ENV-GS-220	19-Aug-2024	13:47	45%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	Annelida (Polychaeta)	IO, PP, MP	Missing MFB sieve photo
155	MV24EXP-ENV-GS-220	19-Aug-2024	13:58	60%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	No visible fauna	IO, PP, MP	
156	MV24EXP-ENV-GS-220	19-Aug-2024	14:11	40%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 5 YR 2.5/1	No visible fauna	IO, PP, MP	Redox: 1cm (7.77pH,13.4˚C,147mV), 10cm (7.77pH, 12.7˚C, -105mV)
157	MV24EXP-ENV-GS-183	19-Aug-2024	16:23	10%	NS	NA	NA	NA	IO, PP, MP	Low retention
158	MV24EXP-ENV-GS-183	19-Aug-2024	16:31	10%	NS	NA	NA	NA	IO, PP, MP	Low retention. Added weights to day grab.
159	MV24EXP-ENV-GS-183	19-Aug-2024	16:36	10%	NS	NA	NA	NA	IO, PP, MP	Low retention
160	MV24EXP-ENV-GS-206	19-Aug-2024	18:16	100%	NS	NA	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	NA	IO, PP	Grab overfilled due to very soft sediment
161	MV24EXP-ENV-GS-206	19-Aug-2024	18:25	95%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	Annelida (Polychaeta)	IO, PP	
162	MV24EXP-ENV-GS-206	19-Aug-2024	18:36	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	Annelida (Polychaeta)	IO, PP	
163	MV24EXP-ENV-GS-206	19-Aug-2024	18:44	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	No visible fauna	IO, PP	
164	MV24EXP-ENV-GS-206	19-Aug-2024	18:57	85%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay with pebbles under the surface Munsel: 10 YR 2/1	No visible fauna	IO, PP	Redox: 1cm (7.70pH,12.7˚C,-152mV), 10cm (7.74pH, 13.1C, -105mV)
165	MV24EXP-ENV-GS-207	19-Aug-2024	20:45	90%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under tha surface Munsel: 10 YR 2/2	Annelida (Polychaeta)	IO, PP	
166	MV24EXP-ENV-GS-207	19-Aug-2024	20:53	90%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay with pebbles under tha surface Munsel: 10 YR 2/2	Annelida (Polychaeta), Arthropoda (Brachyura)	IO, PP	
167	MV24EXP-ENV-GS-207	19-Aug-2024	21:02	90%	PSA	2 x Ziplock Bags	Soft silty sandy clay with pebbles under tha surface Munsel: 10 YR 2/2	No visible fauna	IO, PP	Redox: 1cm (7.75pH,12.3˚C,-185mV), 10cm (7.75pH, 12.3C, -165mV)
168	MV24EXP-ENV-GS-217	19-Aug-2024	23:07	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda)	AS, AA	
169	MV24EXP-ENV-GS-217	19-Aug-2024	23:18	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	AS, AA	
170	MV24EXP-ENV-GS-217	19-Aug-2024	23:25	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294	Area:	UKCS Quads: 27, 34, 35, and 40				Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
171	MV24EXP-ENV-GS-217	19-Aug-2024	23:33	80%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	Redox: 1cm (7.67pH,12.5˚C,-178mV), 10cm (7.79pH, 12.3˚C, -153mV)
172	MV24EXP-ENV-GS-208	20-Aug-2024	01:39	80%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda)	AS, AA	
173	MV24EXP-ENV-GS-208	20-Aug-2024	01:46	80%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Soft silty sandy clay/mud Munsel: 5YR 4/1	Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)	AS, AA	
174	MV24EXP-ENV-GS-208	20-Aug-2024	01:54	80%	CHEM1 / Fish eDNA	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	
175	MV24EXP-ENV-GS-208	20-Aug-2024	02:02	90%	CHEM2 / Fish eDNA (spare)	2 x Ziplock Bags 1 x 1L Jar	Soft silty sandy clay/mud Munsel: 5YR 4/1	No visible fauna	AS, AA	Missing Redox reading
176	MV24EXP-ENV-GS-209	20-Aug-2024	03:54	70%	MFA / eDNA	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine to medium sand Munsel: 5YR 4/1	Annelida (Polychaeta)	AS, AA	
177	MV24EXP-ENV-GS-209	20-Aug-2024	03:59	70%	MFB / eDNA (spare)	1 x 1L Pot 1 x Ziplock Bag	Silty clayey fine to medium sand Munsel: 5YR 4/1	Annelida (Polychaeta)	AS, AA	
178	MV24EXP-ENV-GS-209	20-Aug-2024	04:06	70%	PSA	2 x Ziplock Bags	Silty clayey fine to medium sand Munsel: 5YR 4/1	No visible fauna	AS, AA	Redox: 1cm (7.80pH,12.4˚C,114mV), 10cm (7.82pH, 12.1C, -157mV)

APPENDIX A FIELD SAMPLING LOGS

Gardline — Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*							
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG							
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600	
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	VRP							
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM zone 30N (3°W)			Vertical / Tidal Datum	LAT		

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
17-Sep-2024	13:44:44	1	BP24MVEXP-ENV-GS-201	40%	MFA	DG	22	610398	6075210	610399	6075205	-2	4	5	340	BH	
17-Sep-2024	14:04:56	2	BP24MVEXP-ENV-GS-201	50%	MFB	DG	22	610397	6075211	610399	6075205	-3	6	6	334	BH	
17-Sep-2024	14:24:55	3	BP24MVEXP-ENV-GS-201	40%	CHEM1	DG	22	610396	6075206	610399	6075205	-3	1	3	284	BH	
17-Sep-2024	14:46:20	4	BP24MVEXP-ENV-GS-201	40%	CHEM2	DG	22	610394	6075205	610399	6075205	-6	-1	6	263	BH	
17-Sep-2024	15:13:57	5	BP24MVEXP-ENV-GS-200	90%	MFA	DG	26	611572	6076287	611574	6076289	-3	-2	3	237	BH	
17-Sep-2024	15:27:22	6	BP24MVEXP-ENV-GS-200	70%	MFB	DG	26	611573	6076290	611574	6076289	-1	1	1	320	BH	
17-Sep-2024	15:48:37	7	BP24MVEXP-ENV-GS-200	70%	CHEM1	DG	26	611555	6076285	611574	6076289	-19	-4	20	259	BH	
17-Sep-2024	16:05:39	8	BP24MVEXP-ENV-GS-200	70%	CHEM2	DG	25	611568	6076291	611574	6076289	-6	2	6	285	BH	
18-Sep-2024	06:45:38	9	BP24MVEXP-ENV-GS-203	40%	MFA	DG	20	609718	6077661	609719	6077661	-1	1	2	290	BH	
18-Sep-2024	06:57:01	10	BP24MVEXP-ENV-GS-203	40%	MFB	DG	20	609718	6077661	609719	6077661	-1	0	1	285	BH	
18-Sep-2024	07:05:42	11	BP24MVEXP-ENV-GS-203	50%	CHEM1	DG	20	609719	6077661	609719	6077661	0	0	0	311	BH	
18-Sep-2024	07:20:25	12	BP24MVEXP-ENV-GS-203	0%	NS	DG	19	609719	6077661	609719	6077661	-1	1	1	317	BH	Wash out
18-Sep-2024	07:25:56	13	BP24MVEXP-ENV-GS-203	30%	NS	DG	19	609719	6077662	609719	6077661	0	1	1	338	BH	Low retention
18-Sep-2024	07:32:51	14	BP24MVEXP-ENV-GS-203	50%	CHEM2	DG	19	609719	6077662	609719	6077661	0	1	2	345	BH	
18-Sep-2024	07:57:47	15	BP24MVEXP-ENV-GS-204	40%	MFA	DG	16	609174	6079716	609176	6079717	-2	-2	3	236	BH	
18-Sep-2024	08:06:48	16	BP24MVEXP-ENV-GS-204	40%	MFB	DG	16	609175	6079717	609176	6079717	-1	-1	1	237	BH	
18-Sep-2024	08:15:22	17	BP24MVEXP-ENV-GS-204	40%	CHEM1	DG	16	609177	6079718	609176	6079717	0	1	1	14	BH	
18-Sep-2024	08:28:00	18	BP24MVEXP-ENV-GS-204	40%	CHEM2	DG	16	609173	6079718	609176	6079717	-3	1	3	285	BH	
18-Sep-2024	08:49:31	19	BP24MVEXP-ENV-GS-218	40%	MFA	DG	21	611027	6080438	611024	6080438	3	0	3	99	BH	
18-Sep-2024	08:58:55	20	BP24MVEXP-ENV-GS-218	70%	MFB	DG	21	611021	6080441	611024	6080438	-4	2	4	303	BH	
18-Sep-2024	09:07:57	21	BP24MVEXP-ENV-GS-218	20%	NS	DG	21	611027	6080439	611024	6080438	3	1	3	74	BH	Stone in jaws
18-Sep-2024	09:16:27	22	BP24MVEXP-ENV-GS-218	50%	CHEM1	DG	21	611024	6080439	611024	6080438	0	0	1	329	BH	
18-Sep-2024	09:29:49	23	BP24MVEXP-ENV-GS-218	50%	CHEM2	DG	21	611023	6080438	611024	6080438	-1	0	1	273	BH	
18-Sep-2024	09:52:57	24	BP24MVEXP-ENV-GS-205	50%	MFA	DG	15	608034	6081176	608039	6081180	-5	-4	6	235	BH	
18-Sep-2024	10:00:03	25	BP24MVEXP-ENV-GS-205	40%	MFB	DG	15	608039	6081179	608039	6081180	1	-1	1	145	BH	
18-Sep-2024	10:08:46	26	BP24MVEXP-ENV-GS-205	0%	NS	DG	15	608035	6081180	608039	6081180	-4	0	4	268	BH	Did not trigger
18-Sep-2024	10:12:58	27	BP24MVEXP-ENV-GS-205	90%	CHEM1	DG	15	608032	6081181	608039	6081180	-6	1	6	277	BH	
18-Sep-2024	10:26:40	28	BP24MVEXP-ENV-GS-205	30%	NS	DG	15	608038	6081181	608039	6081180	0	1	1	344	BH	Low retention
18-Sep-2024	10:32:17	29	BP24MVEXP-ENV-GS-205	0%	NS	DG	15	608039	6081181	608039	6081180	0	1	1	12	BH	Did not trigger
18-Sep-2024	10:36:29	30	BP24MVEXP-ENV-GS-205	50%	CHEM2	DG	15	608037	6081181	608039	6081180	-2	1	2	307	BH	
18-Sep-2024	10:54:22	31	BP24MVEXP-ENV-GS-236	40%	MFA	DG	11	607241	6080757	607242	6080758	-1	0	1	248	BH	
18-Sep-2024	11:01:22	32	BP24MVEXP-ENV-GS-236	40%	MFB	DG	11	607243	6080758	607242	6080758	0	0	0	112	BH	
18-Sep-2024	11:08:45	33	BP24MVEXP-ENV-GS-236	40%	CHEM1	DG	11	607243	6080755	607242	6080758	1	-3	3	166	BH	
18-Sep-2024	11:23:28	34	BP24MVEXP-ENV-GS-236	40%	CHEM2	DG	11	607244	6080757	607242	6080758	1	0	1	110	BH	
18-Sep-2024	12:04:54	35	BP24MVEXP-ENV-GS-237	30%	NS	DG	13	609541	6075347	609540	6075350	1	-3	3	161	BH	Low retention
18-Sep-2024	12:12:16	36	BP24MVEXP-ENV-GS-237	40%	MFA	DG	14	609544	6075348	609540	6075350	4	-2	5	112	BH	
18-Sep-2024	12:19:52	37	BP24MVEXP-ENV-GS-237	20%	NS	DG	14	609545	6075349	609540	6075350	5	-1	6	104	BH	Wash out

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)											FOR-ENV-0539
Job No:	59294			Area:	UKCS Quad 40			Sieve Size:		0.5mm	
Project:	Morven Grid Connection 1 Route Environmental Survey							Equipment:		Day Grab	
Client:	Morven Offshore Wind Limited							Vessel:		*MV Titan Endeavour*	
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description		Operator(s)	Comments
1	MV24EXP-ENV-GS-201	17-Sep-2024	13:44	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)		RH	1cm: 8.54 pH, 14.1°C, ORP 49mV 10cm: 8.43 pH, 14.0°C, ORP 132mV
2	MV24EXP-ENV-GS-201	17-Sep-2024	14:04	50%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
3	MV24EXP-ENV-GS-201	17-Sep-2024	14:24	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
4	MV24EXP-ENV-GS-201	17-Sep-2024	14:46	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
5	MV24EXP-ENV-GS-200	17-Sep-2024	15:13	90%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
6	MV24EXP-ENV-GS-200	17-Sep-2024	15:27	70%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
7	MV24EXP-ENV-GS-200	17-Sep-2024	15:48	70%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.36 pH, 14.3°C, ORP -165mV 10cm: 8.31 pH, 14.0°C, ORP -194mV
8	MV24EXP-ENV-GS-200	17-Sep-2024	16:05	70%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
9	MV24EXP-ENV-GS-203	18-Sep-2024	06:45	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)		RH	
10	MV24EXP-ENV-GS-203	18-Sep-2024	06:57	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
11	MV24EXP-ENV-GS-203	18-Sep-2024	07:05	50%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.34 pH, 13.7°C, ORP -108mV 10cm: 8.37 pH, 13.7°C, ORP -189mV
12	MV24EXP-ENV-GS-203	18-Sep-2024	07:20	0%	NS	NA	NA	NA		RH	Wash out
13	MV24EXP-ENV-GS-203	18-Sep-2024	07:25	30%	NS	NA	NA	NA		RH	Low retention
14	MV24EXP-ENV-GS-203	18-Sep-2024	07:32	50%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
15	MV24EXP-ENV-GS-204	18-Sep-2024	07:57	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
16	MV24EXP-ENV-GS-204	18-Sep-2024	08:06	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
17	MV24EXP-ENV-GS-204	18-Sep-2024	08:15	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.88 pH, 13.8°C, ORP 252mV 10cm: 8.85 pH, 13.8°C, ORP 225mV
18	MV24EXP-ENV-GS-204	18-Sep-2024	08:28	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	
19	MV24EXP-ENV-GS-218	18-Sep-2024	08:49	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Echinodermata (Ophiuroidea)		RH	
20	MV24EXP-ENV-GS-218	18-Sep-2024	08:58	70%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)		RH	
21	MV24EXP-ENV-GS-218	18-Sep-2024	09:07	20%	NS	NA	NA	NA		RH	Rock in jaws
22	MV24EXP-ENV-GS-218	18-Sep-2024	09:16	50%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	1cm: 8.50 pH, 13.8°C, ORP -154mV 10cm: 8.50 pH, 13.7°C, ORP -158mV
23	MV24EXP-ENV-GS-218	18-Sep-2024	09:29	50%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna		RH	

APPENDIX A FIELD SAMPLING LOGS

SEABED SAMPLING LOG SHEET (Deck)										FOR-ENV-0539
Job No:	59294		Area:	UKCS Quad 40			Sieve Size:	0.5mm		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Day Grab		
Client:	Morven Offshore Wind Limited						Vessel:	*MV Titan Endeavour*		
Sample Number	Station Number	Date	Time	Penetration	Sample Retention	Sample Receptacle	Sediment Description	Fauna Description	Operator(s)	Comments
24	MV24EXP-ENV-GS-205	18-Sep-2024	09:52	50%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Mollusca (Bivalvia)	RH	
25	MV24EXP-ENV-GS-205	18-Sep-2024	10:00	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
26	MV24EXP-ENV-GS-205	18-Sep-2024	10:08	0%	NS	NA	NA	NA	RH	Did not trigger
27	MV24EXP-ENV-GS-205	18-Sep-2024	10:12	90%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	1cm: 8.47 pH, 14.1°C, ORP -135mV 10cm: 8.44 pH, 14.1°C, ORP -160mV
28	MV24EXP-ENV-GS-205	18-Sep-2024	10:26	30%	NS	NA	NA	NA	RH	Low retention
29	MV24EXP-ENV-GS-205	18-Sep-2024	10:32	0%	NS	NA	NA	NA	RH	Did not trigger
30	MV24EXP-ENV-GS-205	18-Sep-2024	10:36	50%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	
31	MV24EXP-ENV-GS-236	18-Sep-2024	10:54	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
32	MV24EXP-ENV-GS-236	18-Sep-2024	11:01	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
33	MV24EXP-ENV-GS-236	18-Sep-2024	11:08	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	1cm: 8.60 pH, 14.6°C, ORP 211mV 10cm: 8.59 pH, 14.4°C, ORP 193mV
34	MV24EXP-ENV-GS-236	18-Sep-2024	11:23	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	
35	MV24EXP-ENV-GS-237	18-Sep-2024	12:04	30%	NS	NA	NA	NA	RH	Low retention
36	MV24EXP-ENV-GS-237	18-Sep-2024	12:12	40%	MFA / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Bivalvia)	RH	
37	MV24EXP-ENV-GS-237	18-Sep-2024	12:19	20%	NS	NA	NA	NA	RH	Wash out
38	MV24EXP-ENV-GS-237	18-Sep-2024	12:26	40%	MFB / eDNA	1 x 5L Bucket 1 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	Annelida (Polychaeta)	RH	
39	MV24EXP-ENV-GS-237	18-Sep-2024	12:33	40%	CHEM1	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	1cm: 8.82 pH, 14.3°C, ORP 243mV 10cm: 8.72 pH, 14.2°C, ORP 215mV
40	MV24EXP-ENV-GS-237	18-Sep-2024	12:45	40%	CHEM2	1 x 1L Jar 2 x ziplock bag	Muddy fine sand Munsell: 5Y 4/3	No visible fauna	RH	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	59294			Vessel	MV *Ocean Reliance*						
Client	Morven Offshore Wind Limited			Vessel Reference Point (VRP)	COG						
Project Name	Morven Grid Connection 1 Route Environmental Survey			Deployment Location	Starboard A-Frame Mid	x	9.31	y	-14.81	z	5.97
Primary Positioning System	C-Nav 3050 (A)			Actual Coordinates derived from	Deployment Location						
Geodetic Reference System	Datum	WGS 84 (18) to ED50	Ellipsoid	International 1924	Projection	UTM Zone 30N (3°W)			Vertical / Tidal Datum	MSL	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
11/08/2024	07:39	1	MV24EXP-ENV-WS-173		5L	Water	71	627675	6271898	627676	6271898	-2	0	2	255	AP	
11/08/2024	14:42	2	MV24EXP-ENV-WS-175		5L	Water	73	627420	6263902	627417	6263902	2	0	2	95	RA	
13/08/2024	02:08	3	MV24EXP-ENV-WS-177		5L	Water	73	626402	6255911	626401	6255909	1	2	2	30	AP	
13/08/2024	07:37	4	MV24EXP-ENV-WS-179		5L	Water	71	625154	6248068	625151	6248070	3	-2	3	128	AP	
14/08/2024	17:31	5	MV24EXP-ENV-WS-233		5L	Water	71	631619	6189613	631618	6189611	1	2	2	35	RA	
14/08/2024	23:38	6	MV24EXP-ENV-WS-231		5L	Water	77	633293	6184925	633292	6184926	1	-1	1	123	AP	
15-Aug-2024	03:41	7	MV24EXP-ENV-WS-229		5L	Water	82	634327	6182010	634328	6182007	-1	3	3	332	AP	
15-Aug-2024	23:43	8	MV24EXP-ENV-WS-227		5L	Water	89	634270	6178105	634270	6178112	0	-6	6	178	AP	
16-Aug-2024	04:03	9	MV24EXP-ENV-WS-171		5L	Water	86	632329	6174794	632329	6174794	0	0	0	6	AP	
16-Aug-2024	08:22	10	MV24EXP-ENV-WS-172		5L	Water	88	631319	6170857	631319	6170858	0	-1	1	184	AP	
17-Aug-2024	23:20	11	MV24EXP-ENV-WS-185		5L	Water	83	621012	6099056	621009	6099061	4	-5	6	146	AP	Plastic attachment broken on bottom bottle
17-Aug-2024	23:37	12	MV24EXP-ENV-WS-185		5L	Water	84	621011	6099056	621009	6099061	3	-5	6	152	AP	Re-deployment for bottom sample
18-Aug-2024	04:42	13	MV24EXP-ENV-WS-186		5L	Water	65	619902	6095218	619899	6095218	3	0	3	96	AP	
18-Aug-2024	08:32	14	MV24EXP-ENV-WS-187		5L	Water	57	618790	6091376	618791	6091374	-1	2	2	334	AP	
18-Aug-2024	13:32	15	MV24EXP-ENV-WS-211		5L	Water	54	617856	6087479	617854	6087485	2	-6	6	159	RA	
18-Aug-2024	18:22	16	MV24EXP-ENV-WS-213		5L	Water	48	616787	6083650	616788	6083649	-1	1	2	289	RA	
18-Aug-2024	23:32	17	MV24EXP-ENV-WS-215		5L	Water	44	615718	6079827	615717	6079828	1	-1	1	126	AP	
19-Aug-2024	03:16	18	MV24EXP-ENV-WS-197		5L	Water	34	614310	6076046	614311	6076047	-1	-1	2	220	AP	
19-Aug-2024	05:01	19	MV24EXP-ENV-WS-221		5L	Water	32	613487	6076176	613485	6076175	2	1	2	69	AP	
19-Aug-2024	08:41	20	MV24EXP-ENV-WS-222		5L	Water	35	614285	6078332	614286	6078326	-1	6	6	349	AP	
19-Aug-2024	13:28	21	MV24EXP-ENV-WS-220		5L	Water	37	612860	6081333	612857	6081334	3	-2	3	124	FT	
19-Aug-2024	18:05	22	MV24EXP-ENV-WS-206		5L	Water	42	612929	6084403	612927	6084402	2	1	2	55	RA	
19-Aug-2024	22:57	23	MV24EXP-ENV-WS-217		5L	Water	48	615721	6086214	615718	6086211	2	2	3	45	RA	
20-Aug-2024	01:30	24	MV24EXP-ENV-WS-208		5L	Water	51	615012	6087868	615011	6087874	2	-6	6	165	AP	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)										FOR-ENV-0540
Job No:	59294		Area:	UKCS Quads: 27, 34, 35, and 40			Volume:	5L		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Niskin Bottle		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (metres)	Sample Depth (metres)	Sample Receptacle	Sample Analysis	Operator(s)	Comments
1	MV24EXP-ENV-WS-173	11-Aug-2024	07:39	5L	71	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02459	AS, MP, AA	
1	MV24EXP-ENV-WS-173	11-Aug-2024	07:39	5L	71	66	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02455	AS, MP, AA	
2	MV24EXP-ENV-WS-175	11-Aug-2024	14:42	5L	73	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02264	IO, MP, PP	
2	MV24EXP-ENV-WS-175	11-Aug-2024	14:42	5L	73	68	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02283	IO, MP, PP	
3	MV24EXP-ENV-WS-177	13-Aug-2024	02:08	5L	73	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02272	AS, AA	
3	MV24EXP-ENV-WS-177	13-Aug-2024	02:08	5L	73	68	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02201	AS, AA	
4	MV24EXP-ENV-WS-179	13-Aug-2024	07:37	5L	71	5	0.8µm filter	1800ml filtered, 5m below sea surface Sample Ref: PSI-01-02186	AS, MP, AA	
4	MV24EXP-ENV-WS-179	13-Aug-2024	07:37	5L	71	66	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02256	AS, MP, AA	
5	MV24EXP-ENV-WS-233	14-Aug-2024	17:31	5L	71	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02267	IO, PP	
5	MV24EXP-ENV-WS-233	14-Aug-2024	17:31	5L	71	66	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02259	IO, PP	
6	MV24EXP-ENV-WS-231	14-Aug-2024	23:38	5L	77	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02245	AS, AA	
6	MV24EXP-ENV-WS-231	14-Aug-2024	23:38	5L	77	72	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02295	AS, AA	
7	MV24EXP-ENV-WS-229	15-Aug-2024	03:41	5L	82	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02196	AS, AA	
7	MV24EXP-ENV-WS-229	15-Aug-2024	03:41	5L	82	77	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02266	AS, AA	
8	MV24EXP-ENV-WS-227	15-Aug-2024	23:43	5L	89	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02395	IO, PP	
8	MV24EXP-ENV-WS-227	15-Aug-2024	23:43	5L	89	84	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02260	IO, PP	
9	MV24EXP-ENV-WS-171	16-Aug-2024	04:03	5L	86	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02225	AS, AA	
9	MV24EXP-ENV-WS-171	16-Aug-2024	04:03	5L	86	81	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02460	AS, AA	
10	MV24EXP-ENV-WS-172	16-Aug-2024	08:22	5L	88	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02248	AS, MP, AA	
10	MV24EXP-ENV-WS-172	16-Aug-2024	08:22	5L	88	83	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02457	AS, MP, AA	
11	MV24EXP-ENV-WS-185	17-Aug-2024	23:20	5L	83	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02270	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)										FOR-ENV-0540
Job No:	59294			Area:	UKCS Quads: 27, 34, 35, and 40			Volume:	5L	
Project:	Morven Grid Connection 1 Route Environmental Survey							Equipment:	Niskin Bottle	
Client:	Morven Offshore Wind Limited							Vessel:	MV *Ocean Reliance*	
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (metres)	Sample Depth (metres)	Sample Receptacle	Sample Analysis	Operator(s)	Comments
11	MV24EXP-ENV-WS-185	17-Aug-2024	23:20	NS	83	78	NA	NA	AS, AA	Plastic attachment broken on bottom bottle
12	MV24EXP-ENV-WS-185	17-Aug-2024	23:37	5L	84	79	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02453	AS, AA	Re-deployment for bottom sample
13	MV24EXP-ENV-WS-186	18-Aug-2024	04:42	5L	65	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02244	AS, AA	
13	MV24EXP-ENV-WS-186	18-Aug-2024	04:42	5L	65	60	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02287	AS, AA	
14	MV24EXP-ENV-WS-187	18-Aug-2024	08:32	5L	57	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02328	AS, MP, AA	
14	MV24EXP-ENV-WS-187	18-Aug-2024	08:32	5L	57	52	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02237	AS, MP, AA	
15	MV24EXP-ENV-WS-211	18-Aug-2024	13:32	5L	54	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02246	IO, MP, PP	
15	MV24EXP-ENV-WS-211	18-Aug-2024	13:32	5L	54	49	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02192	IO, MP, PP	
16	MV24EXP-ENV-WS-213	18-Aug-2024	18:22	5L	48	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02189	IO, PP	
16	MV24EXP-ENV-WS-213	18-Aug-2024	18:22	5L	48	43	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01953	IO, PP	
17	MV24EXP-ENV-WS-215	18-Aug-2024	23:32	5L	44	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02202	AS, AA	
17	MV24EXP-ENV-WS-215	18-Aug-2024	23:32	5L	44	39	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02333	AS, AA	
18	MV24EXP-ENV-WS-197	19-Aug-2024	03:16	5L	34	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02204	AS, AA	
18	MV24EXP-ENV-WS-197	19-Aug-2024	03:16	5L	34	29	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02176	AS, AA	
19	MV24EXP-ENV-WS-221	19-Aug-2024	05:01	5L	32	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-01952	AS, AA	
19	MV24EXP-ENV-WS-221	19-Aug-2024	05:01	5L	32	27	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02190	AS, AA	
20	MV24EXP-ENV-WS-222	19-Aug-2024	08:41	5L	35	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02338	AS, MP, AA	
20	MV24EXP-ENV-WS-222	19-Aug-2024	08:41	5L	35	30	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01948	AS, MP, AA	
21	MV24EXP-ENV-WS-220	19-Aug-2024	13:28	5L	37	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-01949	IO, MP, PP	
21	MV24EXP-ENV-WS-220	19-Aug-2024	13:28	5L	37	32	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01956	IO, MP, PP	
22	MV24EXP-ENV-WS-206	19-Aug-2024	18:05	5L	42	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02184	IO, PP	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)										FOR-ENV-0540
Job No:	59294		Area:	UKCS Quads: 27, 34, 35, and 40			Volume:	5L		
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Niskin Bottle		
Client:	Morven Offshore Wind Limited						Vessel:	MV *Ocean Reliance*		
Sample Number	Station Number	Date	Time	Load	Overall Station Depth (metres)	Sample Depth (metres)	Sample Receptacle	Sample Analysis	Operator(s)	Comments
22	MV24EXP-ENV-WS-206	19-Aug-2024	18:05	5L	42	37	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01957	IO, PP	
23	MV24EXP-ENV-WS-217	19-Aug-2024	22:57	5L	48	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-02215	IO, PP	
23	MV24EXP-ENV-WS-217	19-Aug-2024	22:57	5L	48	43	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-02174	IO, PP	
24	MV24EXP-ENV-WS-208	20-Aug-2024	01:30	5L	51	5	0.8µm filter	2000ml filtered, 5m below sea surface Sample Ref: PSI-01-01955	AS, AA	
24	MV24EXP-ENV-WS-208	20-Aug-2024	01:30	5L	51	46	0.8µm filter	2000ml filtered, 5m above seabed Sample Ref: PSI-01-01954	AS, AA	

APPENDIX A FIELD SAMPLING LOGS

Seafloor Sampling Positioning Summary

Job No	59294				Vessel	MV *Titan Endeavour*					
Client	Morven Offshore Wind Limited				Vessel Reference Point (VRP)	COG					
Project Name	Morven Grid Connection 1 Route Environmental Survey				Deployment Location	Stern A-Frame	x	0.019	y	-5.758	z	1.600
Primary Positioning System	Applanix POSMV				Actual Coordinates derived from	USBL Beacon						
Geodetic Reference System	Datum	WGS84 to ED50	Ellipsoid	International (Hayford) 1924		Projection	UTM Zone 30N (3°W)			Vertical / Tidal Datum	LAT	

Date	Time (UTC)	Fix number	Stn No	Penetration %	Sample Retention	Retention	Observed Seafloor Depth (m)	Actual coordinates		Target coordinates		Offset from target				Surveyor	Remarks
								Easting	Northing	Easting	Northing	dE	dN	Range	Bearing		
08-Sep-2024	10:04:26	3432	BP24MVEXP-ENV-WS-ENV201		0L	Water	16	610397	6075221	610399	6075205	-2	16	16	352	BL	Failed to trigger
08-Sep-2024	10:13:58	3453	BP24MVEXP-ENV-WS-ENV201		2L	Water	16	610381	6075214	610399	6075205	-18	9	20	296	BL	
08-Sep-2024	10:54:32	3473	BP24MVEXP-ENV-WS-ENV199		2L	Water	23	612365	6075647	612354	6075629	11	18	21	33	BL	
08-Sep-2024	11:20:39	3516	BP24MVEXP-ENV-WS-ENV200		2L	Water	23	611576	6076290	611574	6076289	2	1	2	55	BL	
08-Sep-2024	11:50:53	3534	BP24MVEXP-ENV-WS-ENV219		2L	Water	23	611492	6078577	611495	6078574	-3	3	4	317	BL	
08-Sep-2024	12:16:16	3558	BP24MVEXP-ENV-WS-ENV218		2L	Water	22	611046	6080433	611024	6080438	22	-5	23	104	BL	
08-Sep-2024	12:47:44	3581	BP24MVEXP-ENV-WS-ENV182		2L	Water	21	609801	6082103	609795	6082108	6	-5	8	131	BL	
08-Sep-2024	13:35:33	3610	BP24MVEXP-ENV-WS-ENV205		2L	Water	17	608045	6081166	608038	6081179	7	-13	15	151	BL	
08-Sep-2024	14:08:51	3645	BP24MVEXP-ENV-WS-ENV236		2L	Water	13	607258	6080756	607242	6080757	16	-1	16	95	BL	
08-Sep-2024	14:40:33	3655	BP24MVEXP-ENV-WS-ENV204		2L	Water	18	609197	6079708	609176	6079717	21	-9	23	112	BL	
08-Sep-2024	15:08:29	3666	BP24MVEXP-ENV-WS-ENV203		2L	Water	21	609739	6077625	609719	6077660	20	-35	40	150	BL	
08-Sep-2024	15:40:32	3678	BP24MVEXP-ENV-WS-ENV237		2L	Water	16	609548	6075327	609539	6075350	9	-23	25	159	BL	

APPENDIX A FIELD SAMPLING LOGS

WATER SAMPLING LOG SHEET (Deck)									FOR-ENV-0540
Job No:	59294			Area:	UKCS Quad 40		Volume:	2L	
Project:	Morven Grid Connection 1 Route Environmental Survey						Equipment:	Niskin Bottle	
Client:	Morven Offshore Wind Limited						Vessel:	MV *Titan Endeavour*	
Sample Number	Station Number	Date	Time	Load	Overall Station Depth	Sample Depth	Sample Analysis	Operator(s)	Comments
1	MV24EXP-ENV-WS-201	08-Sep-2024	10:04	0L	16	4	Water eDNA	RH	Failed to trigger
1	MV24EXP-ENV-WS-201	08-Sep-2024	10:04	0L	16	16	Water eDNA	RH	Failed to trigger
2	MV24EXP-ENV-WS-201	08-Sep-2024	10:13	2L	16	4	Water eDNA	RH	Surface: BPI-01-00084
2	MV24EXP-ENV-WS-201	08-Sep-2024	10:13	2L	16	12	Water eDNA	RH	Bottom: BPI-01-00042
3	MV24EXP-ENV-WS-199	08-Sep-2024	10:54	2L	23	4	Water eDNA	RH	Surface: PSI-01-02284
3	MV24EXP-ENV-WS-199	08-Sep-2024	10:54	2L	23	19	Water eDNA	RH	Bottom: PSI-01-01896
4	MV24EXP-ENV-WS-200	08-Sep-2024	11:20	2L	23	4	Water eDNA	RH	Surface: PSI-01-01889
4	MV24EXP-ENV-WS-200	08-Sep-2024	11:20	2L	23	19	Water eDNA	RH	Bottom: PSI-01-01874
5	MV24EXP-ENV-WS-219	08-Sep-2024	11:50	2L	23	4	Water eDNA	RH	Surface: PSI-01-01902
5	MV24EXP-ENV-WS-219	08-Sep-2024	11:50	2L	23	19	Water eDNA	RH	Bottom: PSI-01-02414
6	MV24EXP-ENV-WS-218	08-Sep-2024	12:16	2L	22	4	Water eDNA	RH	Surface: PSI-01-01906
6	MV24EXP-ENV-WS-218	08-Sep-2024	12:16	2L	22	18	Water eDNA	RH	Bottom: BPI-01-00081
7	MV24EXP-ENV-WS-182	08-Sep-2024	12:47	2L	21	4	Water eDNA	RH	Surface: BPI-01-00075
7	MV24EXP-ENV-WS-182	08-Sep-2024	12:47	2L	21	17	Water eDNA	RH	Bottom: BPI-01-00066
8	MV24EXP-ENV-WS-205	08-Sep-2024	13:35	2L	17	4	Water eDNA	RH	Surface: BPI-01-00074
8	MV24EXP-ENV-WS-205	08-Sep-2024	13:35	2L	17	13	Water eDNA	RH	Bottom: BPI-01-00080
9	MV24EXP-ENV-WS-236	08-Sep-2024	14:08	2L	13	4	Water eDNA	RH	Surface: PSI-01-01941
9	MV24EXP-ENV-WS-236	08-Sep-2024	14:08	2L	13	9	Water eDNA	RH	Bottom: PSI-01-02314
10	MV24EXP-ENV-WS-204	08-Sep-2024	14:40	2L	18	4	Water eDNA	RH	Surface: PSI-01-02340
10	MV24EXP-ENV-WS-204	08-Sep-2024	14:40	2L	18	14	Water eDNA	RH	Bottom: BP1-01-00070
11	MV24EXP-ENV-WS-203	08-Sep-2024	15:08	2L	21	4	Water eDNA	RH	Surface: BPI-01-00045
11	MV24EXP-ENV-WS-203	08-Sep-2024	15:08	2L	21	17	Water eDNA	RH	Bottom: BPI-01-00069
12	MV24EXP-ENV-WS-237	08-Sep-2024	15:40	2L	16	4	Water eDNA	RH	Surface: BPI-01-00049
12	MV24EXP-ENV-WS-237	08-Sep-2024	15:40	2L	16	12	Water eDNA	RH	Bottom: BPI-01-00083

APPENDIX B DATA ACQUISITION AND PROCESSING

APPENDIX B DATA ACQUISITION AND PROCESSING

B.1 Seabed Imagery Acquisition

Environmental seabed images were taken by means of a digital stills shallow water camera system with a dedicated strobe and video lamps, mounted within a stainless-steel frame. Video footage was also acquired throughout transects and station investigations using a HD video. A USBL positioning beacon was attached to the camera frame.

Footage was viewed in real time via an umbilical, assisting in the control of the digital stills camera. This allowed for shot selection to capture sediment changes or features at the seafloor.

During acquisition, a minimum of 35 seabed photographs and 14 minutes of footage were collected at each station/transect at appropriate intervals. The images were captured remotely using the surface control unit.

A total of 2699 photos were taken using the stills camera system across 56 stations and 3 transects. Environmental deck and positioning logs are contained in Appendix A whilst a selection of seabed photographs is presented in Appendix C.

Main instrumental and acquisition details are as follows:

Table B.1 Camera Equipment Specifications

Equipment	HD Camera System	Stills Camera System
Manufacturer	SubC Control Ltd.	Kongsberg/Simrad.
Model	1Cam Alpha MkII/4/6	OE14-208
Lens	Wide angle (26.3mm), f 3.8 ~ 38.0 mm (5/32 ~ 1 1/2 in.), 10x optical zoom and automatic or manual focus control	f 7.2 – 28.8 (35mm format equivalent to 38 – 140mm) 4x optical zoom and automatic or manual focus control
Pixels	12.0 M (Picture mode) OR 8.3 M (Video mode)	5.0 M
Video Resolution	1920 x 1080p	PAL 625 Line / 50 Hz PAL
Image Resolution (pixels)	No stills in HD video mode	2592 x 1944
Field of View	47.8° horizontal (β) by 36.2° vertical (α)	48.4° horizontal (β) by 29.9° vertical (α)
Video Overlay	EdgeDVR Inspection System (Digital Edge Subsea Ltd)	
Trigger	Remote from deck	
Height Control	USBL Beacon and Video footage	
Lighting	1 fixed strobe, 2 fixed LED lamp	
Scale bar	Green line lasers with 100mm (offshore) or 109mm (nearshore) separation between lines.	
Housing	Standard Frame	

Table unit definitions: M = megapixels, p = progressive scan, PAL = phase alternating line, Hz = Hertz

B.2 Benthic Sampling

Benthic samples were recovered using an in-house constructed, modified, stainless-steel 0.1m^2 Day grab. The Day grab carried extra weights where appropriate to induce better penetration on impact and an extended bucket lip to reduce sediment washout. Storm feet and elastic straps were used to reduce the likelihood of the

APPENDIX B DATA ACQUISITION AND PROCESSING

instrument pre-triggering in the water column during deployment. The vessel offset of grab deployment was used to represent the position of the sampler.

Grab sampling operational procedures were as follows:

The Day grab was thoroughly washed using pentane prior to deployment at every station to prevent hydrocarbon cross-contamination. Additionally, bleach was used prior to the acquisition of eDNA samples to prevent the cross-contamination of environmental DNA. A length of 10mm, dry-core, galvanised-steel cable was used to lower the Day grab to the seabed. Positional fixes were taken for each grab sample immediately following the grab reaching the sea floor. The precise time that the grab reached the seabed was determined by observations of the tension on the winch cable.

On recovery of a sample, the grab would first be examined for acceptability following strict quality assurance criteria. In the following cases, a sample would be rejected and the instrument prepared for the next deployment:

1. Jammed sample closure due to entrapment of a large stone, shell or other objects allowing surface sediment washout.
2. Accidental premature opening of sampler on recovery, causing possible surface washout.
3. Half sample obtained where the grab has not struck a flat area of bottom, or not hit true, causing a side or half bite of sediment.
4. Disruption of the sample by obvious shaking or contamination (these can occur when a sample is badly handled or if the grab strikes the side of the vessel during operations).
5. The sample represents less than 40% of the grab's total capacity (*i.e.* less than 6 litres) or totally fills the grab.
6. Sample was acquired more than 20m from the target, as determined by the onboard surveyor.
7. The presence of exopolymeric substances, mucus coagulants and/or fauna that generate them *i.e.* Myxinidae.

Three or four grab deployments were undertaken at each station depending upon requirements for sample collection (see Table B.2, Table B.3 and Table B.4 for sampling requirements). Sediment samples deemed acceptable for analysis were photographed and described prior to sub-sampling.

Surficial (<2cm depth) sediments were taken directly from the Day grab for physico-chemical analysis. All containers were thoroughly washed with appropriate solvents and labelled externally prior to use to remove any organic contaminants. Hydrocarbon samples were placed in 120ml or 1l amber glass jars with solvent cleaned aluminium foil placed between the cap and glass jar, whilst the remaining samples (metals and particle size) were placed in double-lined zip-lock bags. All physico-chemical samples were stored at less than -18°C prior to analysis. Further, two surficial (<2cm depth) sub-samples were acquired from each physico-chemical grab as composites of five sub-samples within a single grab for fish eDNA analysis (one primary and one spare).

Sediment for bacteria and invertebrate eDNA analysis was also required at all stations. Two sub-samples were acquired from each fauna grab, for subsequent analysis (one primary and one spare). All eDNA samples were stored at less than -18°C prior to analysis.

For each faunal sample, following eDNA sub-sample removal, the remaining contents of a single grab were washed into a clean plastic tray using seawater and then transferred to a 0.5mm mesh sieve. Macrofaunal samples were then placed in 1-litre polypropylene, screw-top, squat jars or 5 litre buckets and an additional

APPENDIX B DATA ACQUISITION AND PROCESSING

internal waterproof label was added. Sieved samples were immediately fixed with a known concentration of formaldehyde solution (formalin, less than 20%). The formalin in the sample pots was subsequently diluted to a concentration of approximately 4% and stored at ambient temperature.

Table B.2 Non-Chemistry Stations in Scotland and England

Grab Number	Samples	Consumables
1	Fauna	Fauna buckets
	eDNA	1 ziplock bag
2	Spare Fauna	Fauna buckets
	Spare eDNA	1 ziplock bag
3	PSA	1 ziplock bag
	Spare PSA	1 ziplock bag

Table B.3 Chemistry Stations in England

Grab Number	Samples	Consumables
1	Fauna	Fauna buckets
	eDNA	1 ziplock bag
2	Spare Fauna	Fauna buckets
	Spare eDNA	1 ziplock bag
3	PSA	1 ziplock bag
	Chemistry (MMO)	1 x 1L jar for Hydrocarbons & Organotins, PCBs, metals, TOC
	Fish eDNA	1 ziplock bag
4	Spare PSA	1 ziplock bag
	Spare Chemistry (MMO)	1 x 1L jar spare
	Spare Fish eDNA	1 ziplock bag

Table B.4 Chemistry Stations in Scotland

Grab Number	Samples	Consumables
1	Fauna	Fauna buckets
	eDNA	1 ziplock bag
2	Spare Fauna	Fauna buckets
	Spare eDNA	1 ziplock bag
3	PSA	1 ziplock bag
	Spare PSA	1 ziplock bag
	Chemistry (MMO)	1 x 1L jar for Hydrocarbons & Organotins, PCBs, metals, TOC
	Spare Chemistry (MMO)	1 x 1L jar spare
	Fish eDNA	1 ziplock bag
4	Chemistry (standard)	1 x 120mL jar for Hydrocarbons & Organotins (top 2cm) 1 x 120mL jar for PCBs (top 2cm) 1 ziplock bag for metals, TOC, TOM (top 4 cm)
	Spare Chemistry (standard)	1 x 120mL jar as spare 1 ziplock bag as spare if possible
	Spare Fish eDNA	1 ziplock bag

APPENDIX B DATA ACQUISITION AND PROCESSING

B.3 Redox Procedures

The redox probe combined with oxidation reduction potential, pH and temperature was employed for data collection. The probe was pushed in the sediments to a depth of 1cm and 10cm and the results recorded in the deck field log along with details of sediment colour or odour.

B.4 Water Sampling

Niskin bottles were bleached prior to each deployment to reduce levels of DNA contamination. Niskin bottles were mounted directly to the 10mm, dry-core, galvanised-steel cable with a purse weight to maintain vertical transit and a messenger weight was affixed to allow acquisition of sample. A depth enabled USBL beacon was attached below the Niskin bottle and used to determine depth and location of the Niskin bottle prior to release of the messenger. A fix was taken immediately after release of the messenger and prior to recovery.

On recovery of a sample, the Niskin bottle would first be examined for acceptability following strict quality assurance criteria. In the following cases, a sample would be rejected and the instrument prepared for the next deployment:

1. One or both ends have not released, and the sampler has failed to trigger.
2. One or both ends have failed to seal the sample and water has leaked out
3. Disruption of the sample by obvious shaking or contamination.
4. Sample was taken from an unacceptable distance or depth as determined by the onboard surveyor.

The Niskin bottle contents were then sub-sampled directly from the bottle. Two litres of water each for the primary and spare samples were filtered through a lab-supplied filter using a peristatic pump (Vampire pump) to assist with the process. Samples were preserved within these filters using the supplied preservative solution and then wrapped in a plastic Ziploc bag. Samples were stored at less than -18°C prior to analysis.

B.5 Imagery Processing

Seabed photos were assessed using the Gardline developed imagery analysis program (CountEM). The program allows for individual fauna to be tagged and a sediment description to be assigned to each image. The software allows features to be selected within an image to provide an accurate figure of percentage coverage of each individual element (*e.g.* cobbles and boulders, sponge) based upon the proportion of pixels. CountEM can also measure the area of seabed and observed features primarily in pixels, though this can be converted to millimetres (mm) given a reference scale within the image, such as using two laser lines with a known separation. Further, laser scale lines were used to calculate an approximate area for each photo using methodologies developed from Wakefield and Genin (1987).

Gardline has developed an institution-level reference image catalogue of operational taxonomic units (OTUs) or morphospecies based on Howell *et al.* (2019). Where examples within the images were matched with a morphotype already included within the OTU database these have been given the suffix GLXXXX. To standardise image-based identification, nomenclature based on Horton *et al.* (2021) has been used within the project. *Incerta* (*inc*.) was used to denote where a taxon is identifiable to a certain taxonomic level but the identification is not certain, *indeterminabilis* (*indet*.) was used for a taxon that is unidentifiable below a certain taxonomic level due to image quality or lack of clarity in an image while *stetit* (*stet*.) was used for taxon that are identifiable to a certain taxonomic level with certainty but a decision has been made to not identify further or a lack of resources has led to no further identification.

APPENDIX B DATA ACQUISITION AND PROCESSING

Both the stills and video camera were aligned, so it was possible to cross-check video against stills for protected species/habitats that may have been missed. Video frames were captured whenever the distance between fixes was more than twice the station average and if previously unseen sensitive/protected taxa were visible. This resulted in an additional nine video frames, which were analysed in CountEM.

Further, where potential stony reef habitat was identified during seabed imagery analysis, video segmentation was conducted to enable an assessment of the overall stony reef resemblance and coverage. Video footage was reviewed and segmented based on changes in the sediment composition and habitat type observed. Therefore, one segment would end and another begin at a change in sediment composition. The time stamp of this point was recorded allowing the extraction of a camera position from the logs. To account for patchiness in the habitat, a segment required a minimum length of 5m of consistent habitat in order to be assessed. The area covered was estimated using the image swathe width of the digital stills camera, multiplied by the camera transect or video segment length. It should be noted that the HD video camera has a slightly different aspect ratio, therefore; the estimated resemblance area calculated by video segmentation should be used with caution.

Following quality control, data were exported into an excel file used to summarise seabed imagery observations and allow for further analysis as applicable. A reference collection of taxa ID is presented in Appendix E.

B.6 Particle Size Analysis

Particle size analysis was carried out by Thomson Environmental Consultants Limited in accordance with NMBAQC methods for diamictons (Mason, 2022).

No dispersants were used and the sediment was not treated to remove carbonates or organic matter prior to analysis.

The results, given in Appendix F, present particle size distributions in terms of mean phi, fraction percentages (*i.e.* gravel, sand and fines), sorting (mixture of sediment sizes) and skewness (weighting of sediment fractions above and below the mean sediment size; Folk & Ward, 1957). The sediment samples were additionally classified using the modified Folk triangle classification and the EUNIS classification. These classifications use the sand:mud ratio and the percentage of gravel (Folk, 1954; Parry, 2019).

B.7 Habitat Analysis

B.7.1 Herring Spawning

Determination of spawning potential for a specific area of seabed is been based on guidelines provided by Cefas (2001) and Reach *et al.* (Reach *et al.*, 2013 in; MarineSpace Ltd *et al.*, 2013), summarised in Table B.5, and a variety of measured and inferred sedimentological and hydrodynamic characteristics.

APPENDIX B DATA ACQUISITION AND PROCESSING

Table B.5 Herring Spawning Ground Potential Criteria

Criteria From	Habitat Sediment Preference[1]	Unsuitable	Suitable	Sub-Prime	Prime
Sediment Classes	% Particle Contribution Preference	>5% muds, <10% gravel	<5% muds, >10% gravel	<5% muds, >25% gravel	<5% muds, >50% gravel
	Modified Folk classification (based on sand, mud, gravel fractions above)	Everything excluding gravel, sandy gravel and part gravelly sand	Part gravelly sand	Part sandy gravel and part gravelly sand	Gravel and part sand gravel
Further sediment Description Parameters (including those from Cefas (2001))	% coarse sand to gravel	≤20%	20% to <40%	40% to <60%	≥60%
	Sorting coefficient and description (Folk & Ward, 1957)	≥1.00, poor to extremely poor	0.71 to <1.00, Moderate	0.5 to <0.71, Moderately well	≤0.5, Well
	Wentworth (1922) Classification of mode grain size	Silts and clays	Very fine to medium sand	Coarse to very coarse sand	Granule to pebble
	Exposure	Flat seabed			Elevated (such as raised gravel banks) relative to surrounding seabed
Criteria From	**Habitat Sediment Class[2]**	**Unsuitable**	**Marginal**	**Preferred**	
Sediment Classes	Generalised Folk Classification Preference	All others	Gravelly sand	Gravel and sandy gravel	

1 Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria are met
2 Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria are met

APPENDIX B DATA ACQUISITION AND PROCESSING

B.7.2 Sand Eel Spawning

Determination of spawning potential for a specific area of seabed has been based on guidelines laid out in Latto *et al.* (2013), as summarised in Table B.6.

Table B.6 Sand Eel Spawning Potential

Criteria From	Habitat Sediment Preference[1]	Unsuitable	Suitable	Sub-prime	Prime
Sediment Classes	% Particle contribution preference	>10% muds, <50% sand, >35gravel	<10% muds, >50% sand, <35% gravel	<4% muds, >70% sand, <35% gravel	<1% muds, >85% sand, <15% gravel (inferred)
	Folk classification based on % particle contribution preferences above	All others (including mS, (g)mS, part gmS, part msG and part sG)	Part S, part (g)S, part gS, part sG, part mS, part (g)mS, part gmS and part msG.	Part S, part (g)S, and part gS	Part S, part (g)S, and part gS
Criteria From	Habitat Sediment Class[2]	Unsuitable	Marginal	Preferred	
Sediment Classes	Folk classification generalised	All others	Sandy gravel	Sand, slightly gravelly sand and gravelly sand	

Adapted from Latto *et al.* (2013)

1 Colours indicate where Prime, Sub-Prime, Suitable or Unsuitable spawning potential criteria are met.

2 Colours indicate where Preferred, Marginal or Unsuitable spawning potential criteria are met.

B.7.3 Sea Pen and Burrowing Megafauna Communities

The density classifications as laid out by the MNCR SACFOR scale (JNCC, 2013) were used to quantify sea pens and burrows (see Table B.7). The JNCC (2014b) clarification report specifies that multiple sightings of burrows and/or mounds attributable to relevant species together with sea pens, if present, should be classified as at least frequent for their size on the SACFOR scale in order to be considered a sea pen and burrowing megafauna communities habitat. However, it acknowledges the inherent difficulties of identifying species from burrow type alone using ever evolving guides, such as those cited by the ICES (2011) guide. Subsequently, the overall density of burrows themselves were assessed instead, in order to consider whether their density was a 'prominent' feature of the sediment surface and potentially indicative of a sub-surface complex gallery burrow system.

Table B.7 SACFOR Abundance Scale

Density	Size of Individuals			
	<1cm	1-3cm	3-15cm	>15cm
≥10000 m^{-2}	S	S	S	S
≥1000 m^{-2} to <10000 m^{-2}	A	S	S	S
≥100 m^{-2} to <1000 m^{-2}	C	A	S	S
≥10 m^{-2} to <100 m^{-2}	F	C	A	S
≥1 m^{-2} to <10 m^{-2}	O	F	C	A
≥0.1 m^{-2} to <1 m^{-2}	R	O	F	C
≥0.01 m^{-2} to <0.1 m^{-2}	R	R	O	F
≥0.001 m^{-2} to <0.01 m^{-2}	R	R	R	O
<0.001 m^{-2}	R	R	R	R

S= Superabundant, A = Abundant, C = Common, F = Frequent, O = Occasional and R = Rare. Table amended from: JNCC (2013).
For sedentary species attached to the substratum, percentage cover should be used in preference to the density scale whenever possible.

APPENDIX B DATA ACQUISITION AND PROCESSING

B.8 Stony Reefs

A multi-criteria scoring system; see Table B.8, was used to assess the characteristics of the potential stony reef. Each characteristic was scored as low, medium or high; with spatial extent (m^2), substratum composition (% cover) and elevation (m) as the primary characteristics, as defined by Irving (2009).

Table B.8 Stony Reef Criteria

Characteristic	Resemblance to 'Stony Reef'			
	NOT a 'Stony Reef'	Low	Medium	High
Composition	<10% cobbles/boulders	10 - <40% cobbles/boulders	40 - <95% cobbles/boulders	≥95% cobbles/boulders
		Matrix supported: dominated by sediment	Clast supported: dominated by cobbles/boulders	Clast supported: dominated by cobbles/boulders
Elevation	Flat seabed	<0.064m	0.064 - <5m	≥5m
Extent	≤25m^2	>25m^2	>25m^2	>25m^2
Biota	Dominated by infaunal species			>80% of species present composed of epifaunal species

Stony reef assessment criteria adapted from Irving (2009)

B.9 EUNIS Habitat Classification

Habitat classification is used to identify different habitats and biotopes based on the biotic and abiotic features of the seabed. Habitat and biotope classifications were conducted on the available survey data, adhering to protocols within EUNIS. The system was developed between 1996 and 2001 by the European Environment Agency (EEA) in collaboration with European experts. Table B.9 gives examples of the five EUNIS levels used to describe the marine environments.

Table B.9 Example EUNIS Habitat Classification Levels

Level	Detail Covered (EUNIS code)
1. Environment	Marine benthic habitats (M)
2. Broad habitats	Circalittoral biogenic habitat (MC2)
3. Main habitats	Atlantic circalittoral biogenic habitat (MC22)
4. Biotope complexes	Worm reefs in the Atlantic circalittoral zone (MC221)
5. Biotopes	*Sabellaria spinulosa* on stable Atlantic circalittoral mixed sediment (MC2211)

Development of the EUNIS classification comes from both a top-down and a bottom-up approach. The first division is based on differentiating between major biological zones related to depth (littoral down to abyssal) and differentiation of substrate type *(e.g.* rock, sand, gravel). These high-level divisions can be further subdivided based on the main biogeographical regions of Europe's seas (*e.g.* Arctic, Baltic, Atlantic) with these regional splits being based on a combination of salinity and temperature. Such broad-scale differences in habitat character are readily understood by non-specialists and provide classification types that are easily mapped. However, they also have ecological relevance as they reflect major changes in habitat character upon which species distribution depends (Connor *et al.*, 2004).

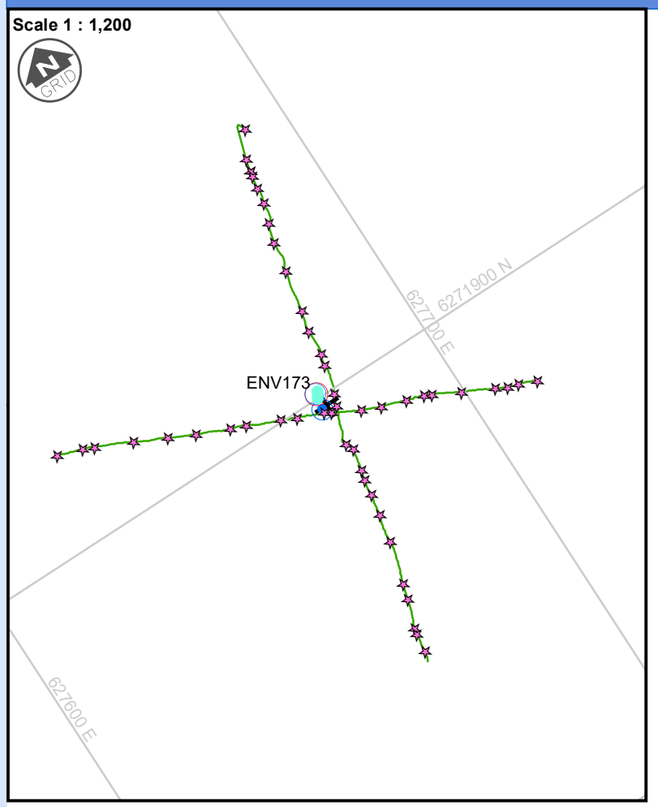
Bottom-up classification differentiates between places with different species communities. Relative species composition, diversity and abundance vary from place to place and are dependent both on environmental

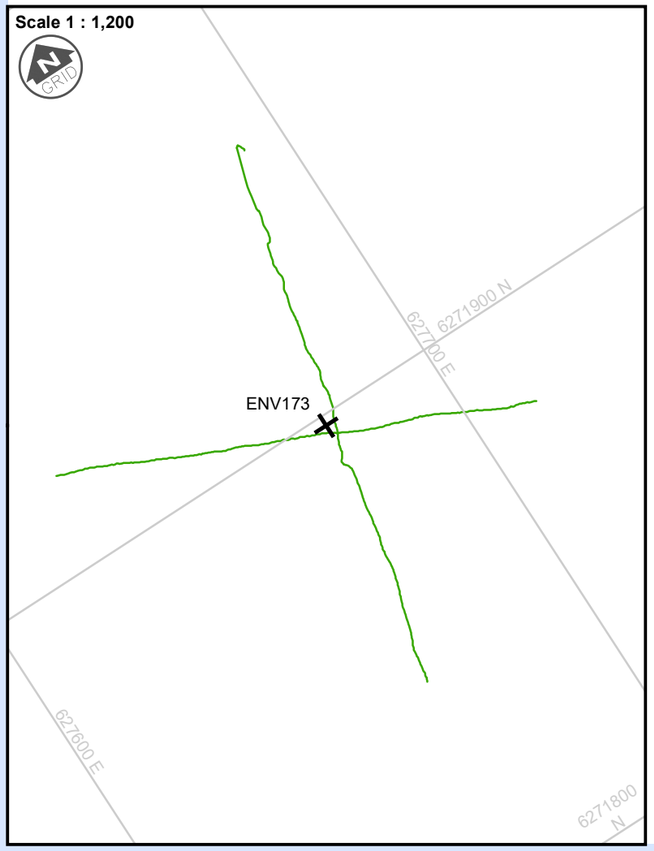
APPENDIX B DATA ACQUISITION AND PROCESSING

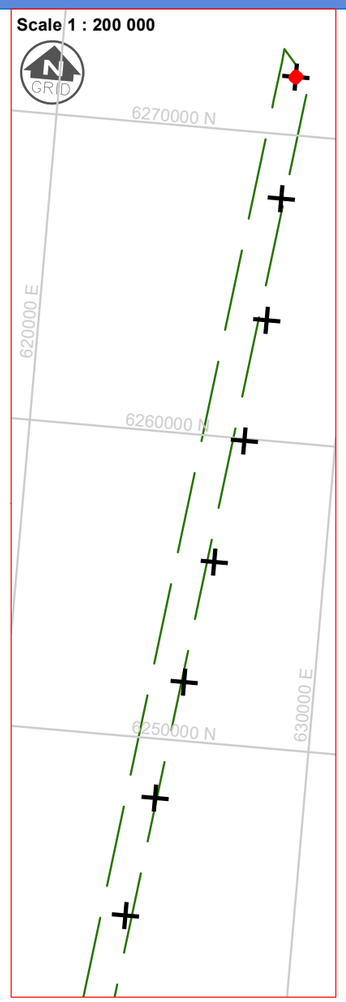
characteristics and upon interactions between species. Surveyed sites with similar environmental characteristics, such as sediment type and depth, show certain levels of similarity in their species communities.

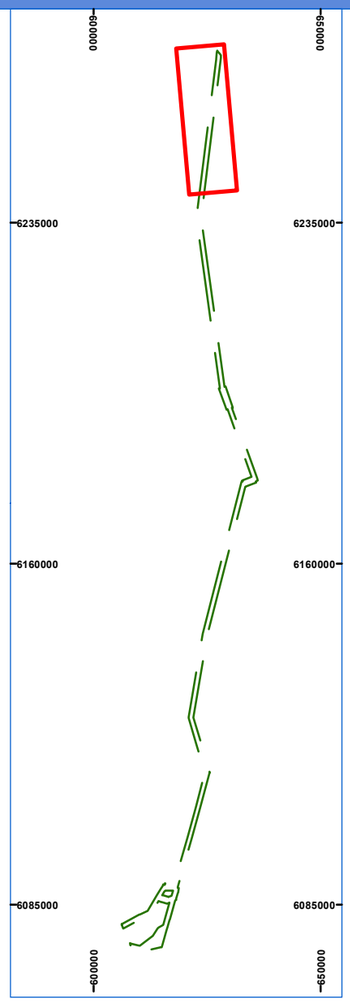
APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

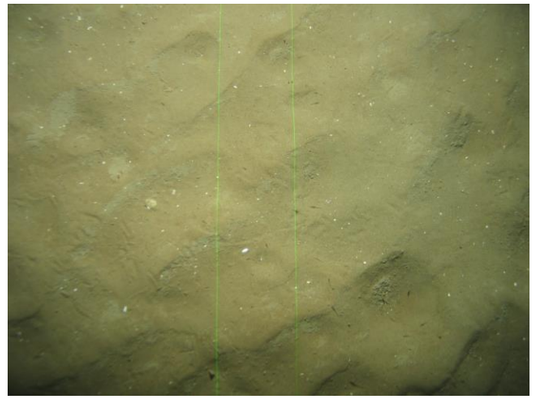
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV173

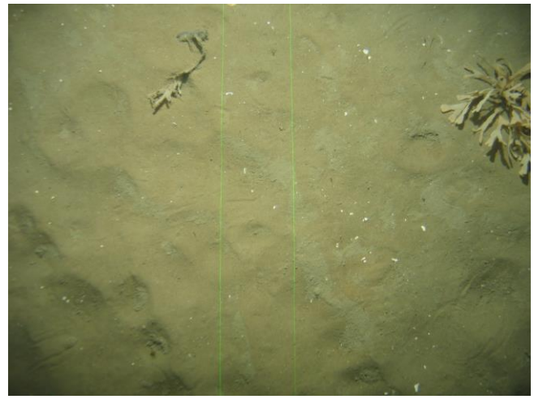
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV173
Fix: 11 **E:** 627 676 **N:** 6 271 896 **Depth (m):** 70

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV173
Fix: 46 **E:** 627 669 **N:** 6 271 858 **Depth (m):** 70

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV173
Fix: 2 **E:** 627 675 **N:** 6 271 901 **Depth (m):** 71
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
No visible fauna

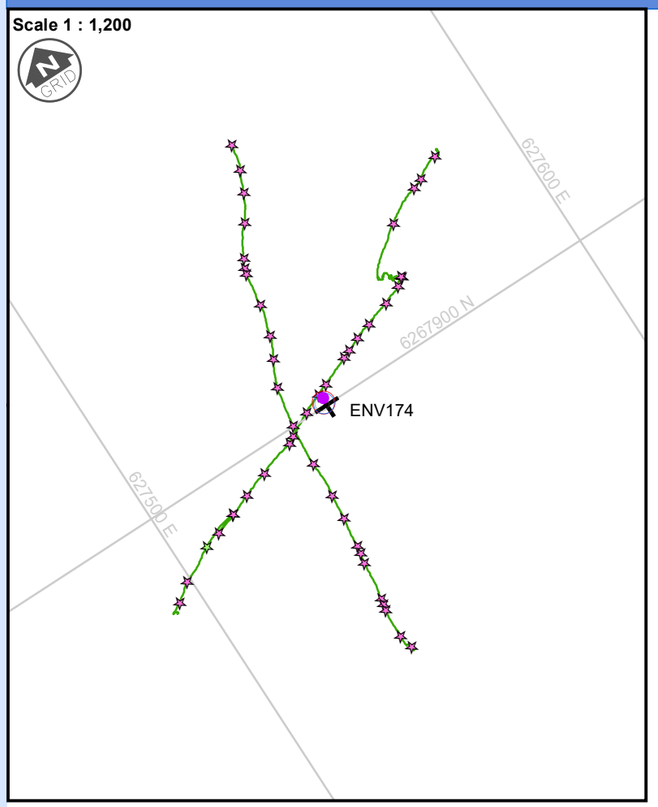


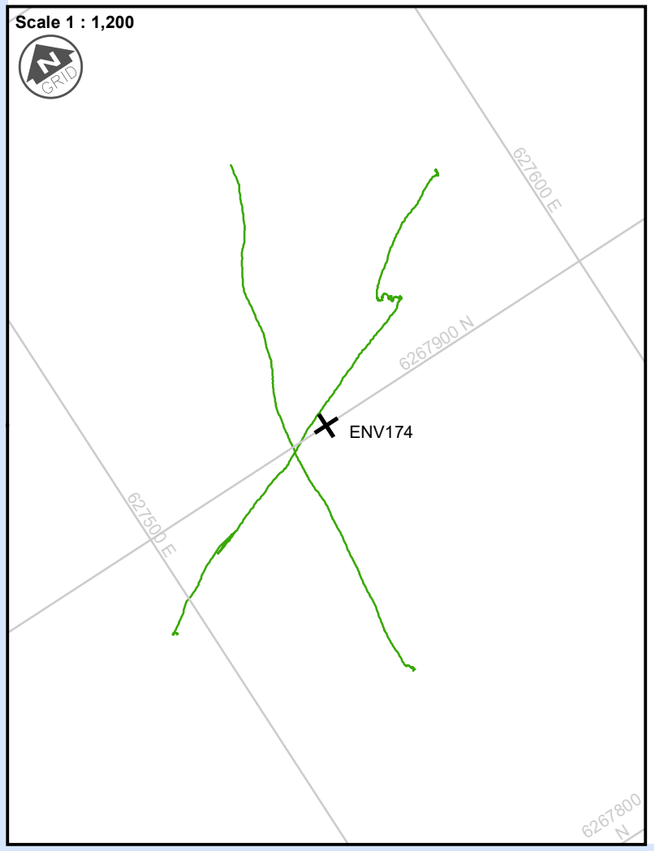
Station: ENV173
Fix: 2 **E:** 627 675 **N:** 6 271 901 **Depth (m):** 71
Retention: MFB

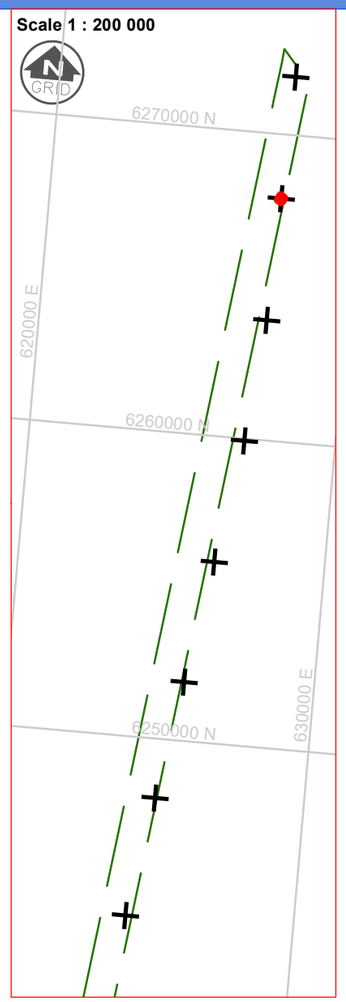
Sediment Description:
Fine to medium sand with shell fragments

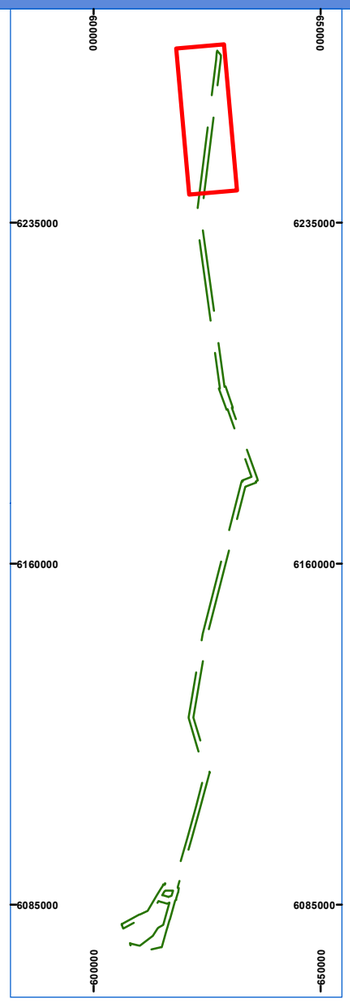
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV174

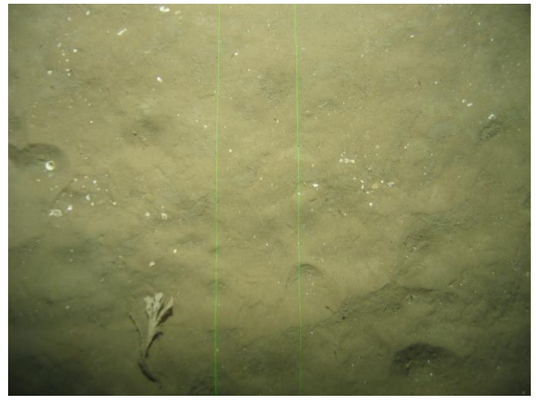
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV174
Fix: 102 **E:** 627 528 **N:** 6 267 854 **Depth (m):** 72

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV174
Fix: 88 **E:** 627 541 **N:** 6 267 924 **Depth (m):** 72

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV174
Fix: 5 **E:** 627 541 **N:** 6 267 901 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)

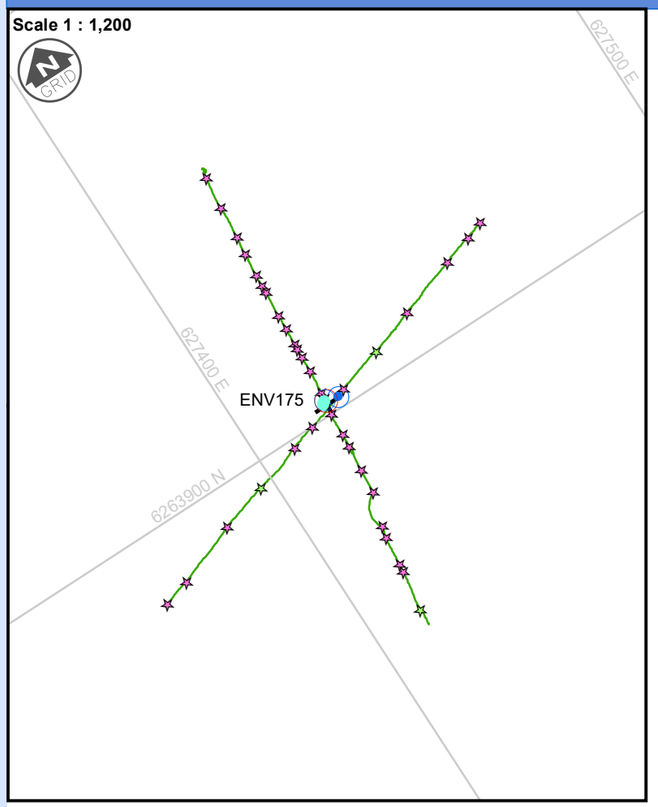


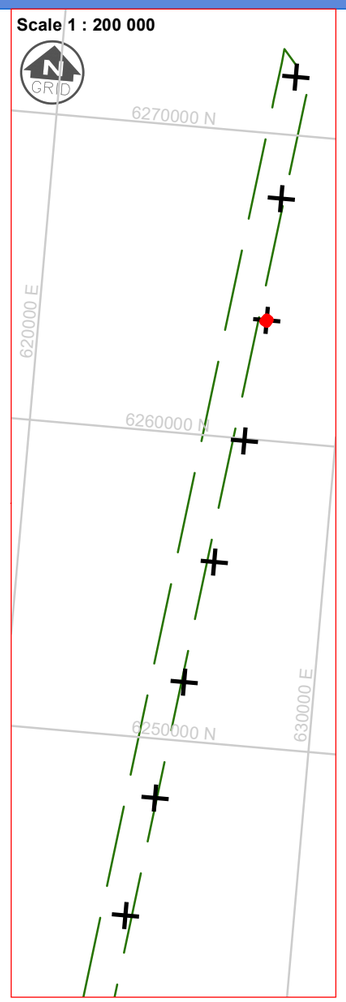
Station: ENV174
Fix: 5 **E:** 627 541 **N:** 6 267 901 **Depth (m):** 71
Retention: MFA

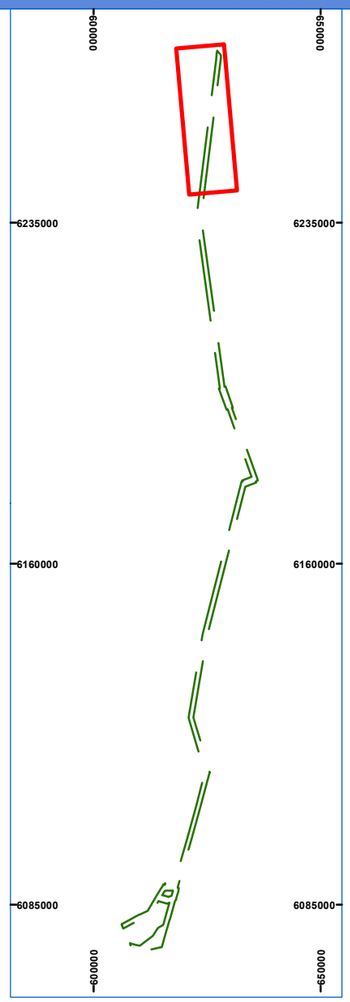
Sediment Description:
Fine to medium sand with shell fragments

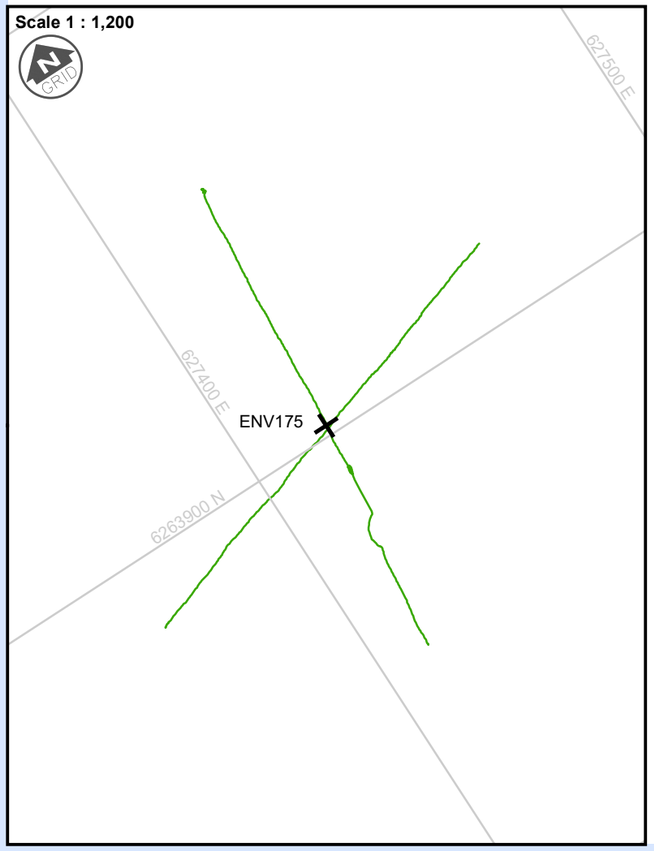
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

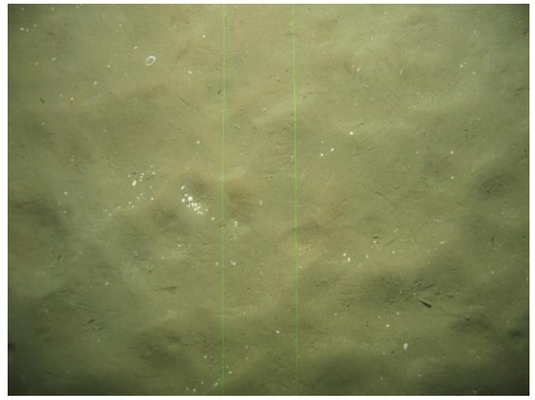
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV175

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV175
Fix: 126 **E:** 627 412 **N:** 6 263 868 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV175
Fix: 138 **E:** 627 388 **N:** 6 263 893 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Glyptocephalus cynoglossus*), Cnidaria (*Alcyonium digitatum*)



Station: ENV175
Fix: 9 **E:** 627 417 **N:** 6 263 903 **Depth (m):** 73
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)

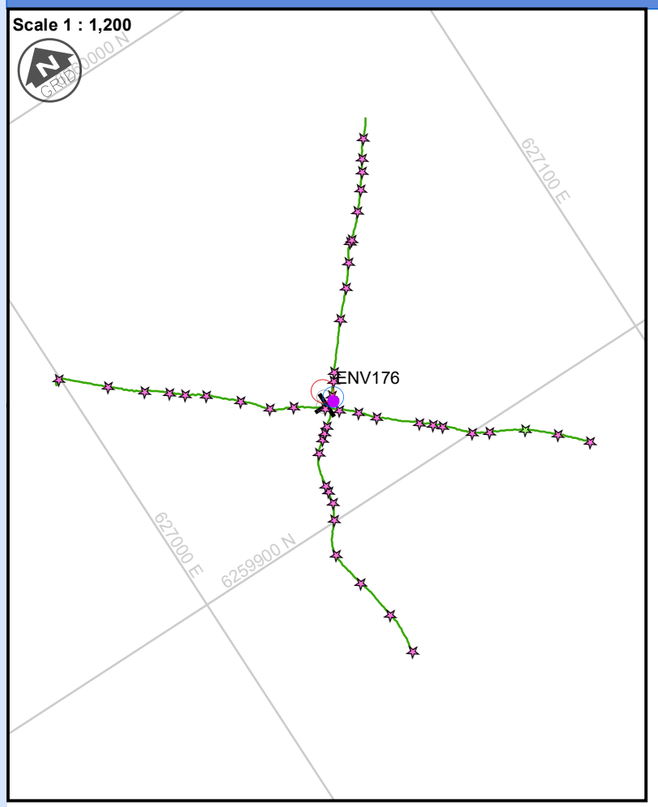


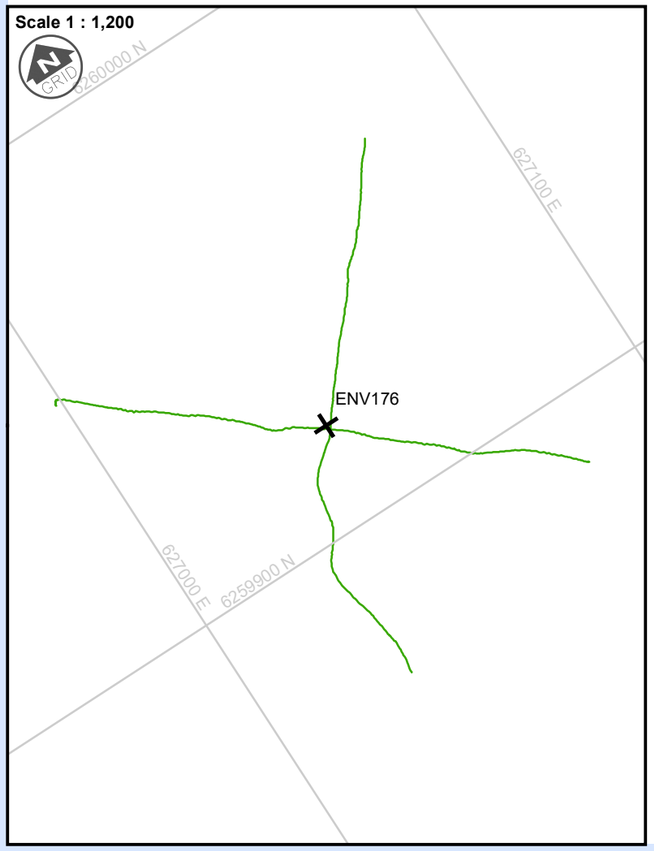
Station: ENV175
Fix: 9 **E:** 627 417 **N:** 6 263 903 **Depth (m):** 73
Retention: MFA

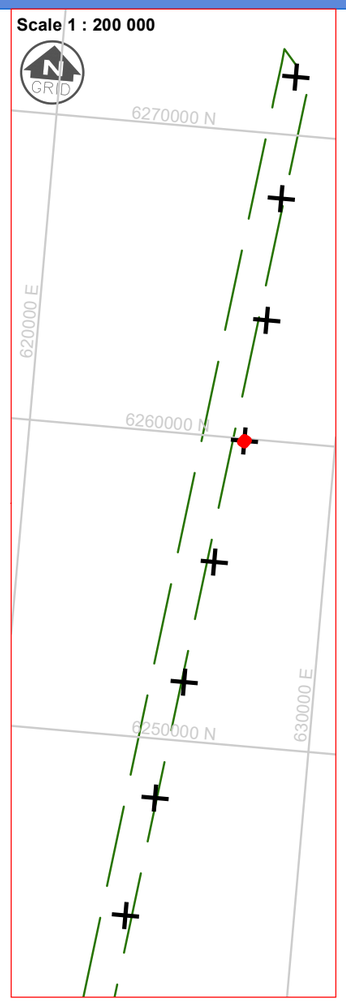
Sediment Description:
Fine to medium sand with shell fragments

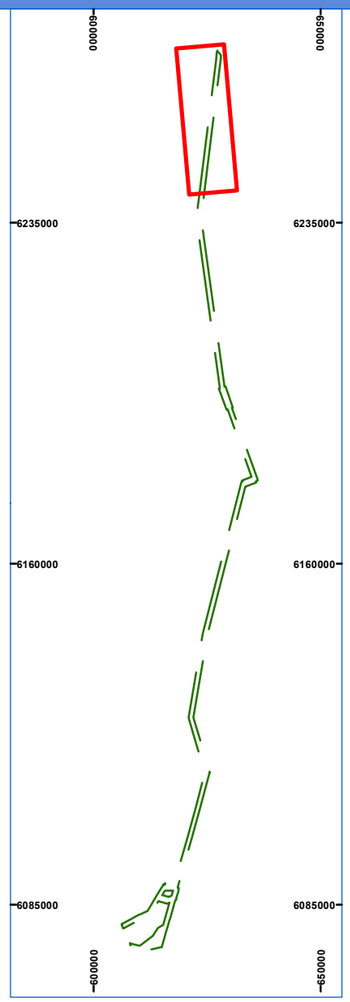
Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

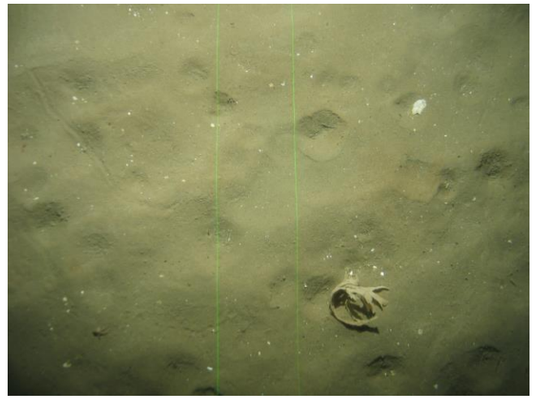
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV176

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV176
Fix: 170 **E:** 627 032 **N:** 6 259 903 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV176
Fix: 172 **E:** 627 032 **N:** 6 259 907 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
Echinodermata (*Astropecten irregularis*)



Station: ENV176
Fix: 16 **E:** 627 043 **N:** 6 259 921 **Depth (m):** 74
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
No visible fauna

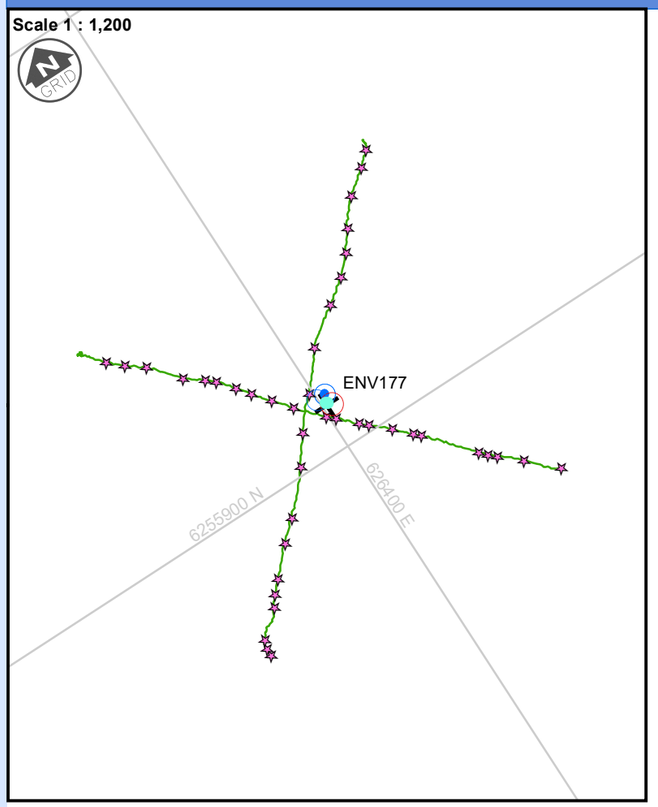


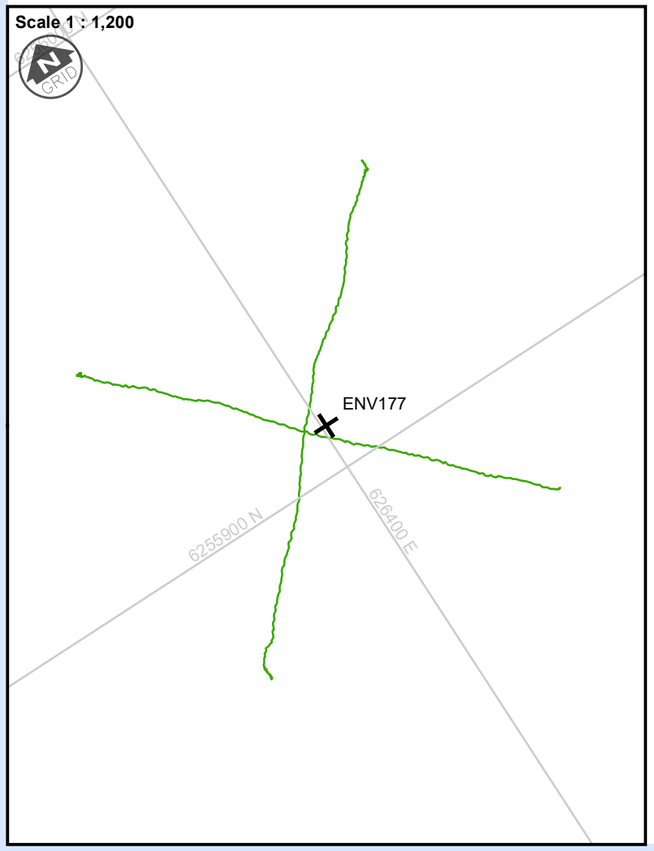
Station: ENV176
Fix: 16 **E:** 627 043 **N:** 6 259 921 **Depth (m):** 74
Retention: MFB

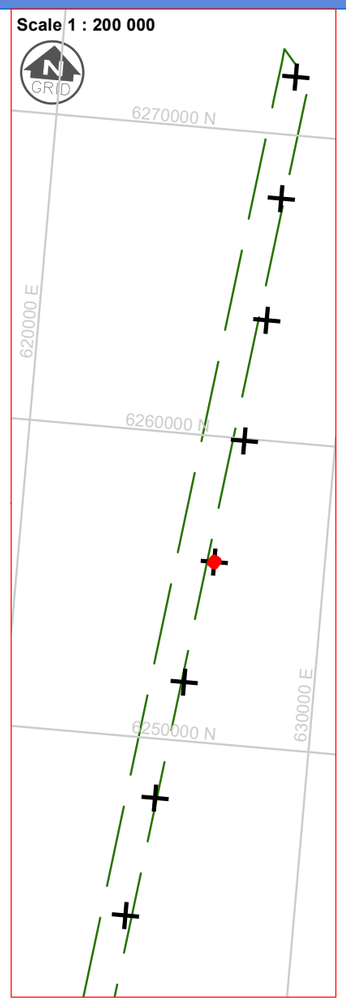
Sediment Description:
Fine to medium sand with shell fragments

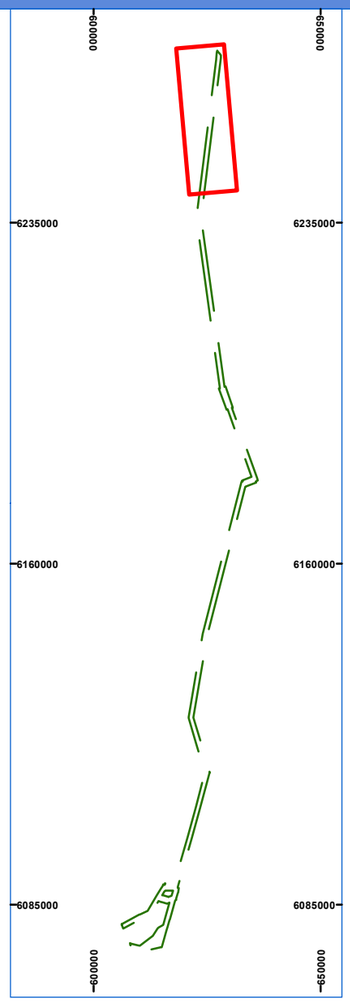
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

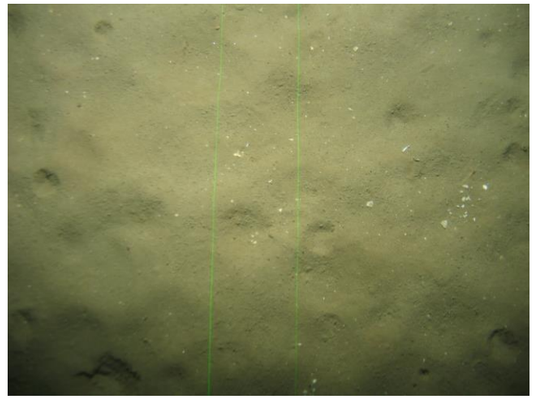
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV177

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV177
Fix: 202 **E:** 626 404 **N:** 6 255 903 **Depth (m):** 73

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV177
Fix: 210 **E:** 626 427 **N:** 6 255 879 **Depth (m):** 72

Sediment Description:
Sand with shell hash

Faunal Description:
Cnidaria (*Alcyonium digitatum*, *Urticina eques*), Echinodermata (Ophiuroidea *stet.*)



Station: ENV177
Fix: 19 **E:** 626 400 **N:** 6 255 911 **Depth (m):** 73
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

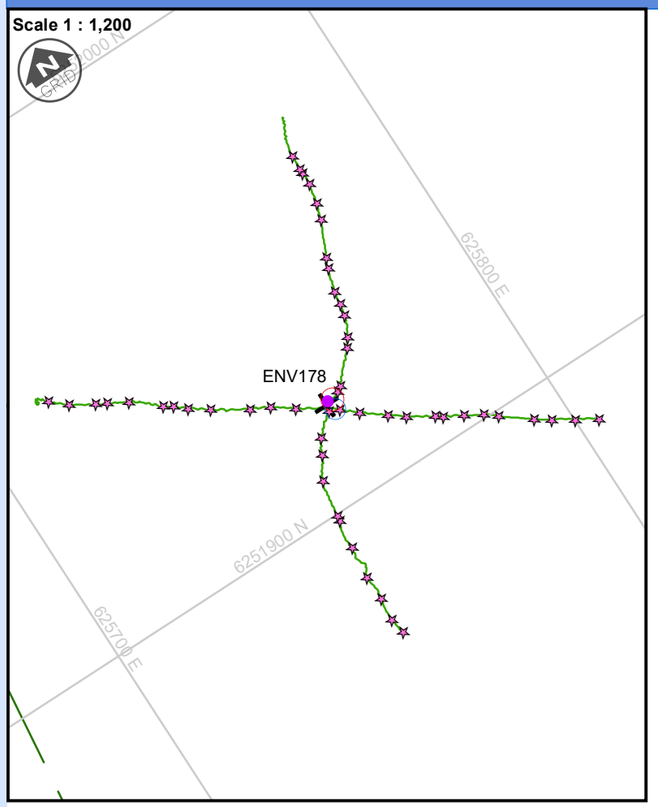


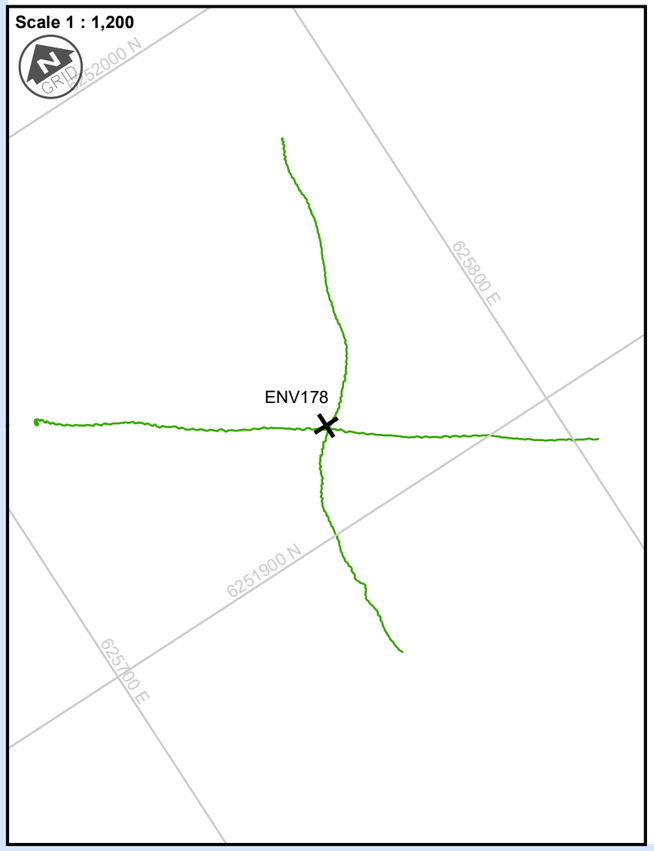
Station: ENV177
Fix: 19 **E:** 626 400 **N:** 6 255 911 **Depth (m):** 73
Retention: MFB

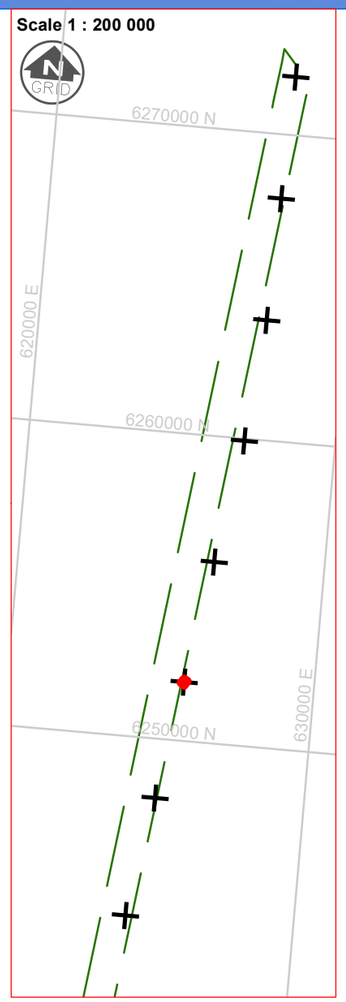
Sediment Description:
Fine to medium sand with shell fragments

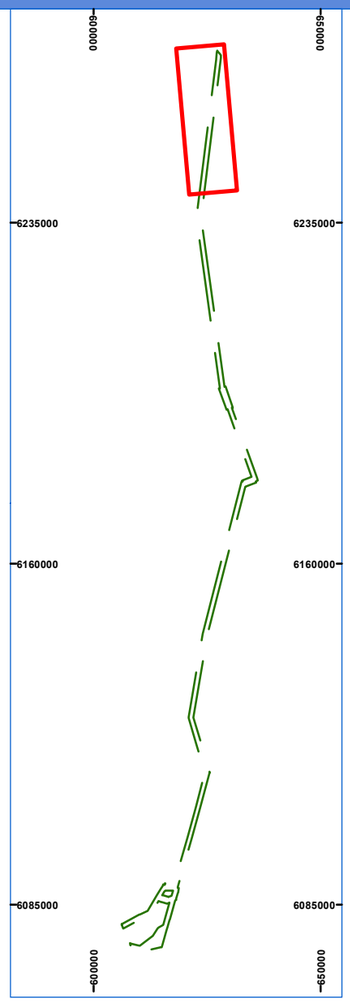
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

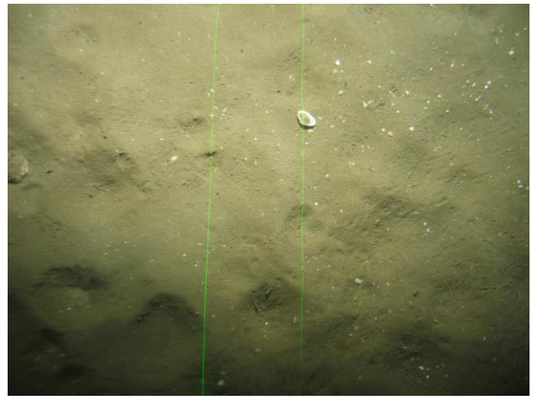
BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV178 — **Overview Scale 1 : 350,000 ED50/UTM Zone 30N (3°W)**



Station: ENV178
Fix: 266 **E:** 625 749 **N:** 6 251 882 **Depth (m):** 70

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV178
Fix: 278 **E:** 625 772 **N:** 6 251 928 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
Echinodermata (*Asterias rubens*)



Station: ENV178
Fix: 22 **E:** 625 762 **N:** 6 251 919 **Depth (m):** 70
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

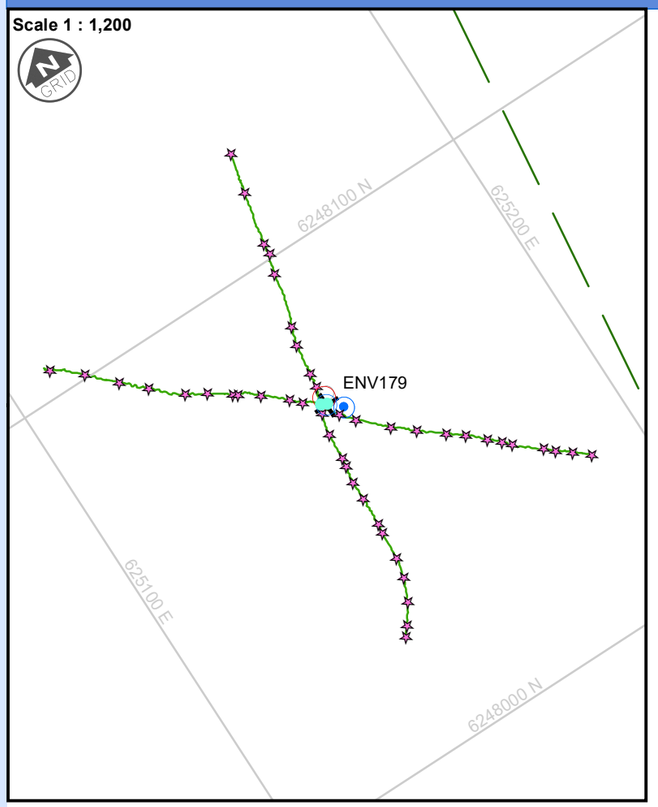


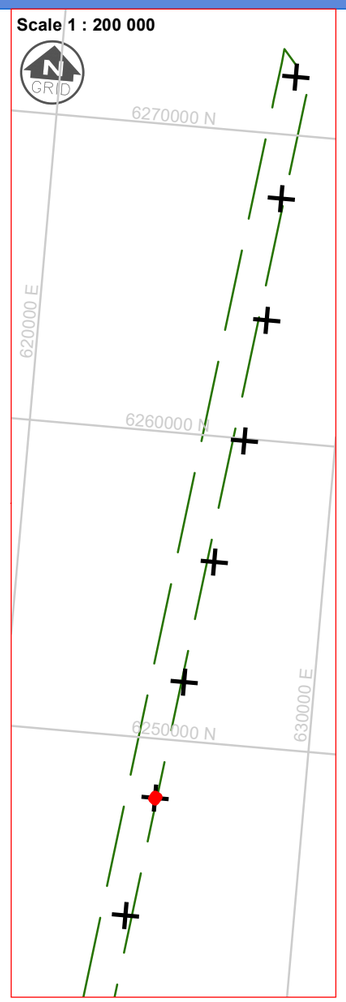
Station: ENV178
Fix: 22 **E:** 625 762 **N:** 6 251 919 **Depth (m):** 70
Retention: MFA

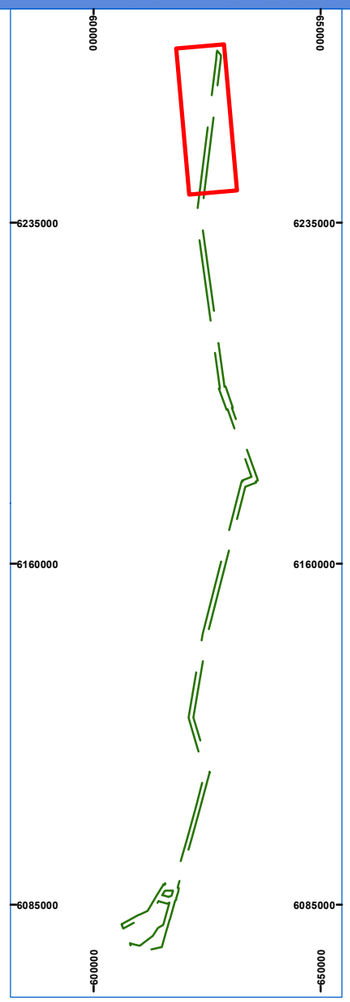
Sediment Description:
Fine to medium sand with shell fragments

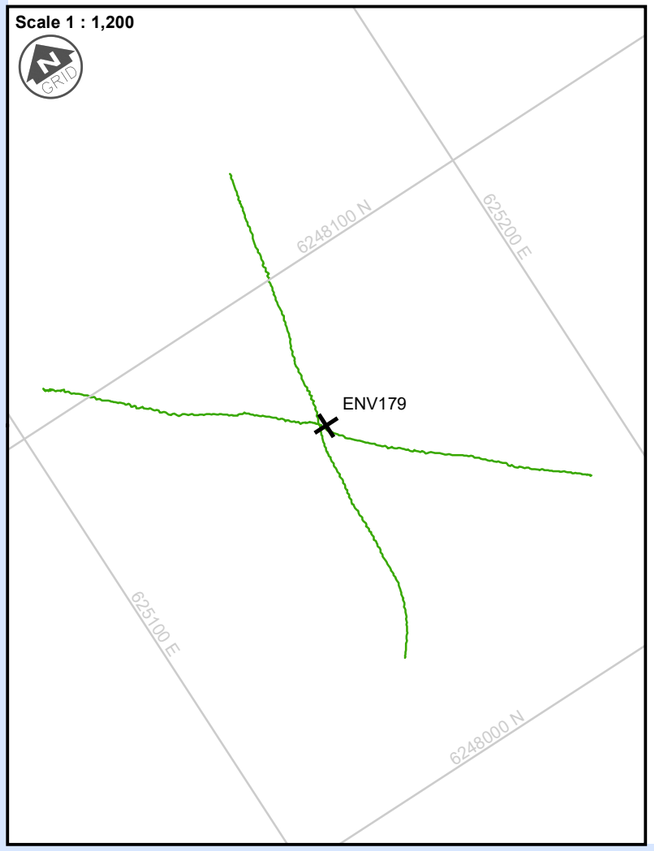
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

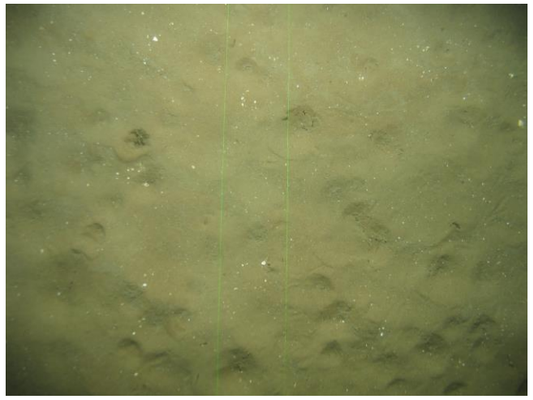
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV179

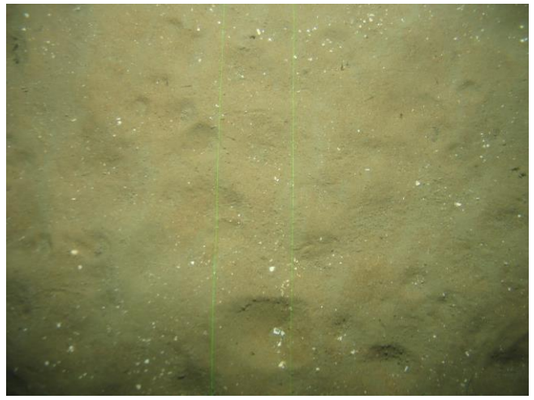
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV179
Fix: 296 **E:** 625 137 **N:** 6 248 082 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV179
Fix: 332 **E:** 625 153 **N:** 6 248 087 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV179
Fix: 26 **E:** 625 151 **N:** 6 248 071 **Depth (m):** 71
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

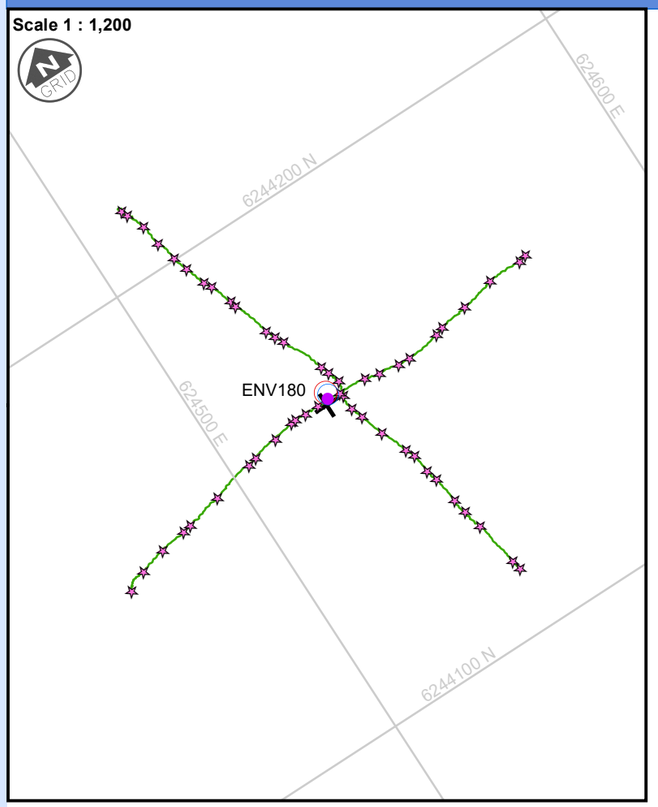


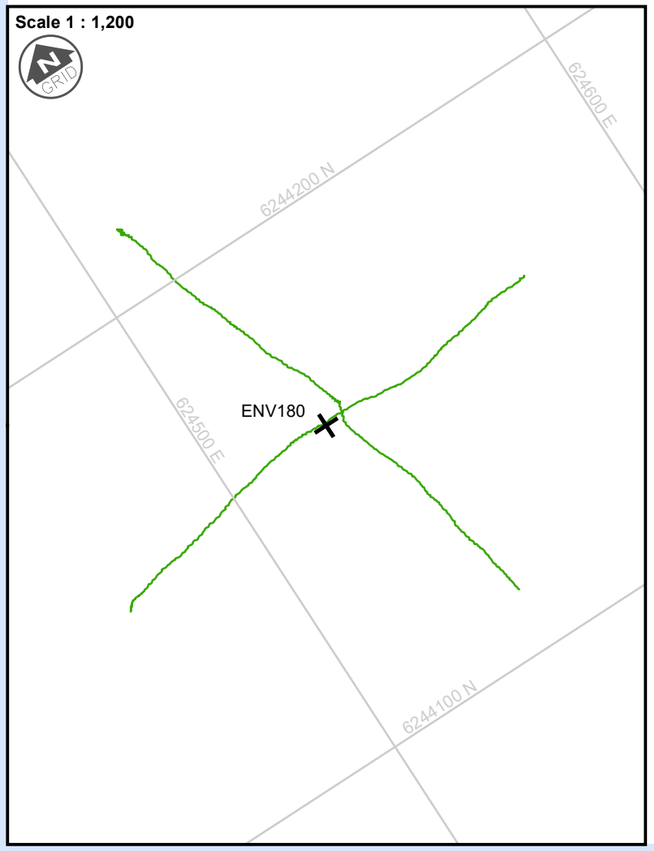
Station: ENV179
Fix: 26 **E:** 625 151 **N:** 6 248 071 **Depth (m):** 71
Retention: MFA

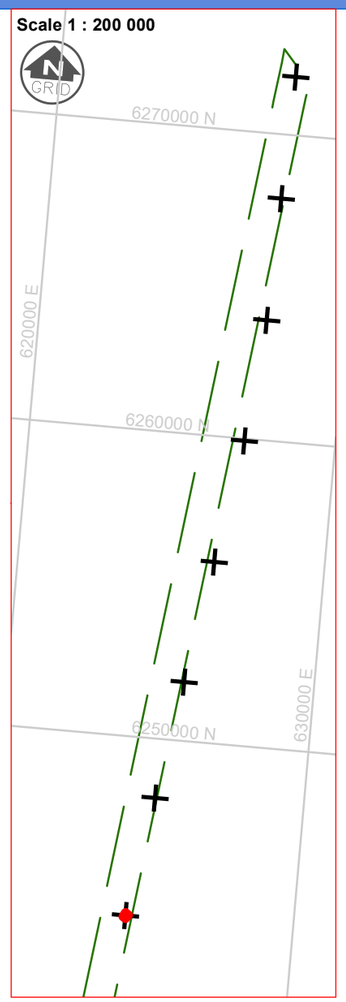
Sediment Description:
Fine to medium sand with shell fragments

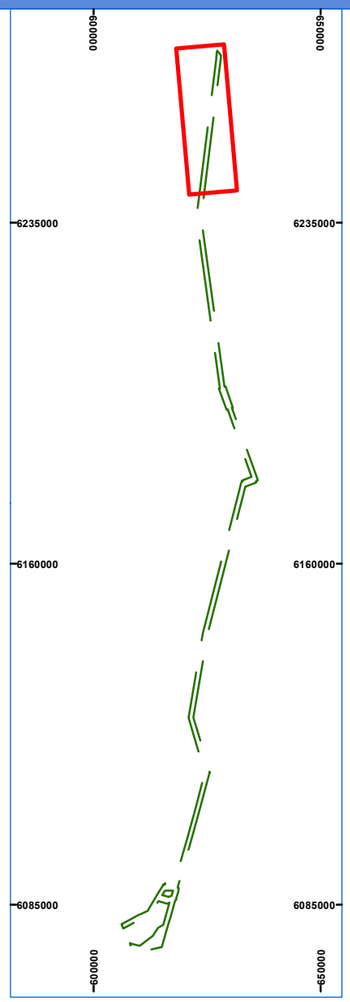
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

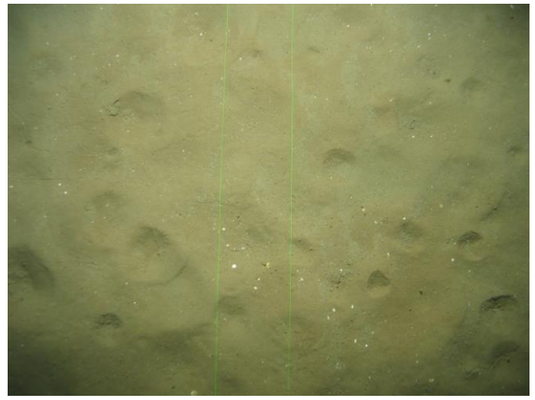
BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV180 — **Overview Scale 1 : 350,000 ED50/UTM Zone 30N (3°W)**



Station: ENV180
Fix: 360 **E:** 624 532 **N:** 6 244 139 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV180
Fix: 392 **E:** 624 571 **N:** 6 244 163 **Depth (m):** 69

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV180
Fix: 30 **E:** 624 524 **N:** 6 244 162 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta)

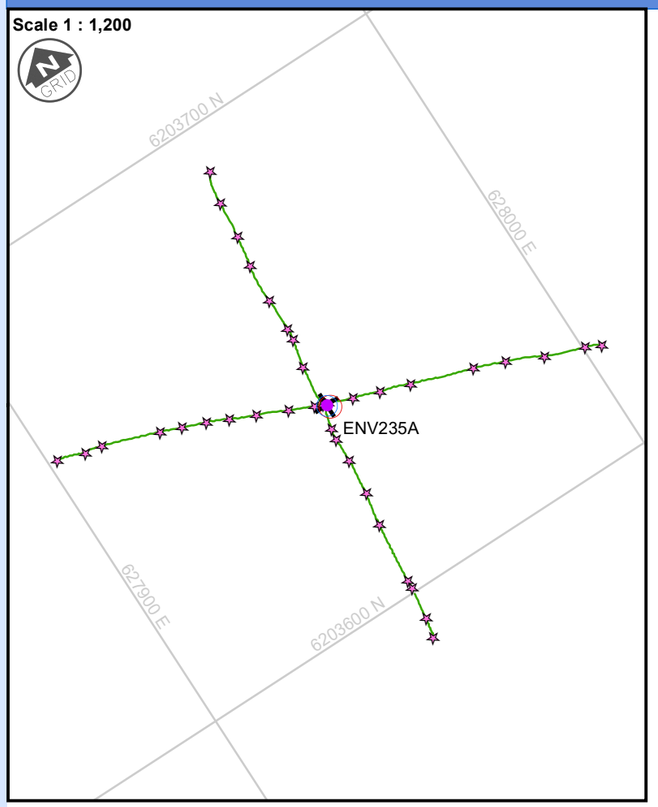


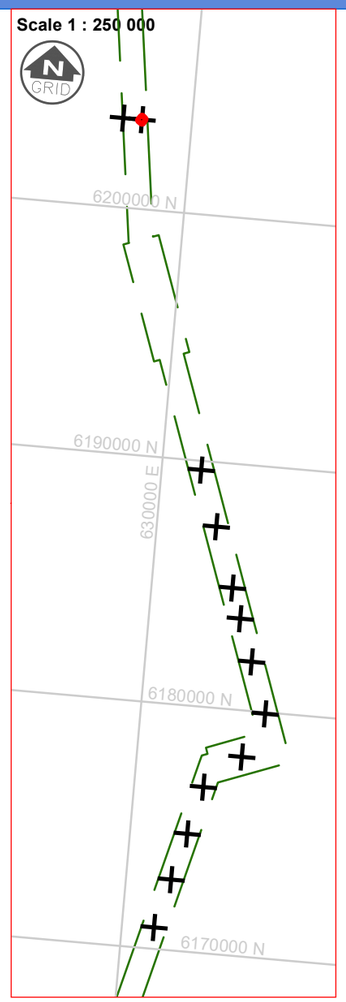
Station: ENV180
Fix: 30 **E:** 624 524 **N:** 6 244 162 **Depth (m):** 69
Retention: MFA

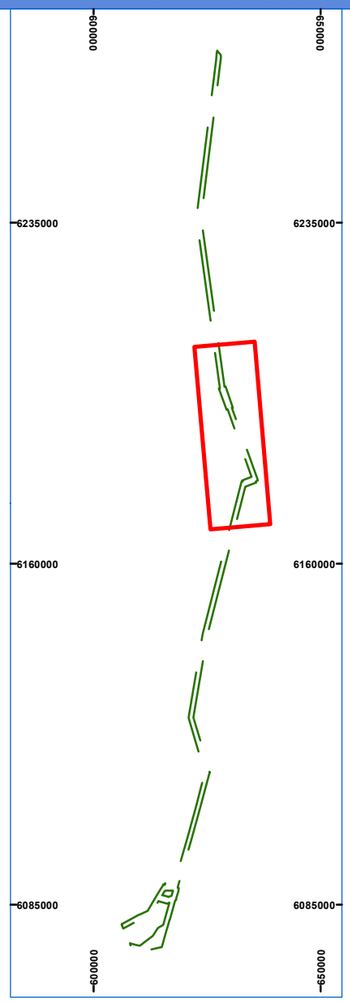
Sediment Description:
Fine to medium sand with shell fragments

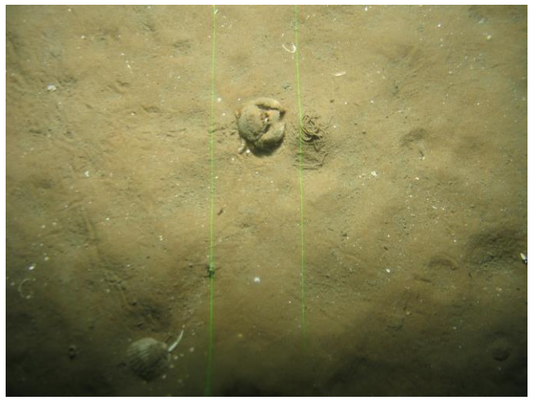
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





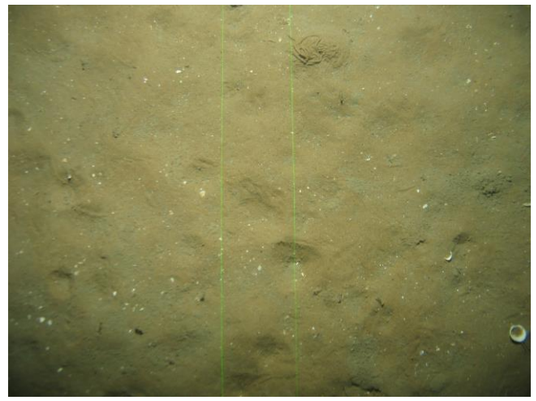




Station: ENV235A
Fix: 522 **E:** 627 954 **N:** 6 203 671 **Depth (m):** 66

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (Brachyura *stet.*)



Station: ENV235A
Fix: 532 **E:** 627 948 **N:** 6 203 615 **Depth (m):** 66

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV235A
Fix: 39 **E:** 627 952 **N:** 6 203 639 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

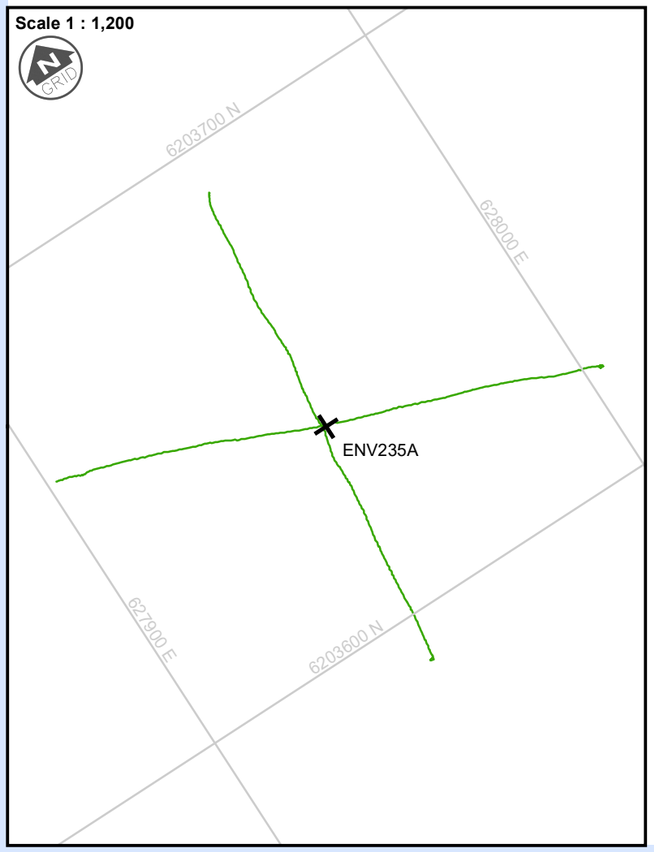
Faunal Description:
Arthropoda (Corystusidae), Annelida (Polychaeta)



Station: ENV235A
Fix: 39 **E:** 627 952 **N:** 6 203 639 **Depth (m):** 66
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Arthropoda (Corystusidae), Annelida (Polychaeta)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

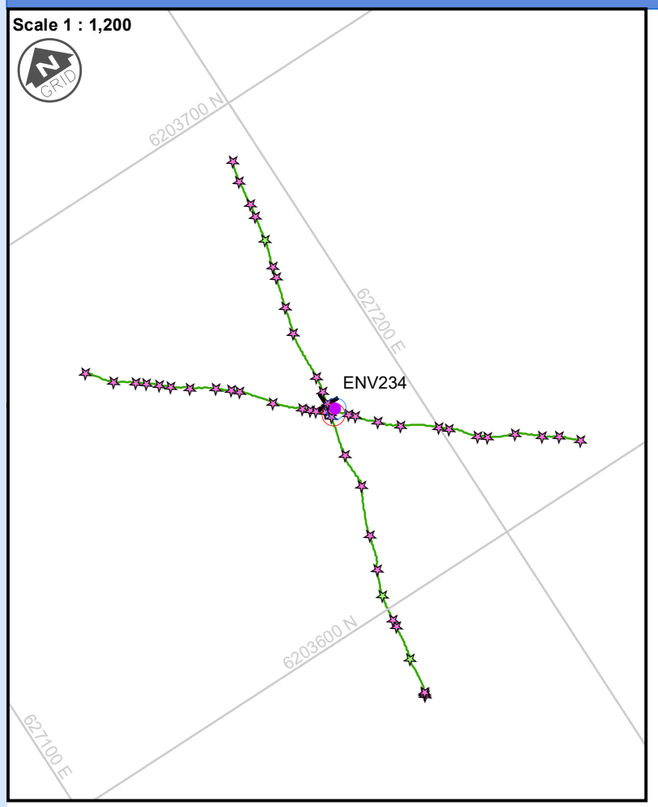
PROTECTED TAXA

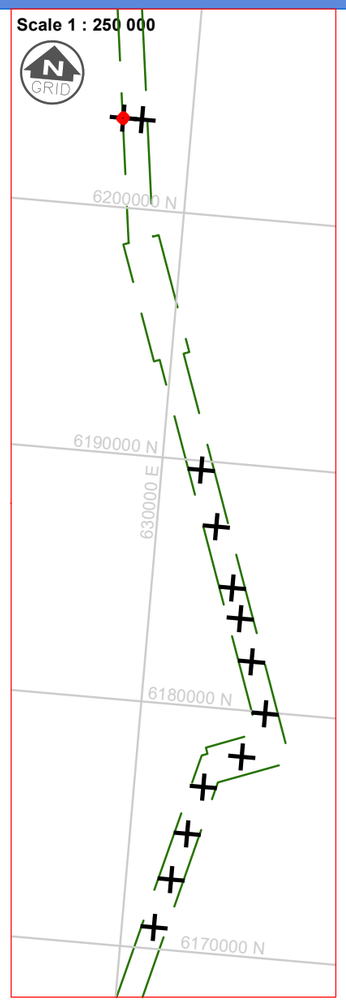
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

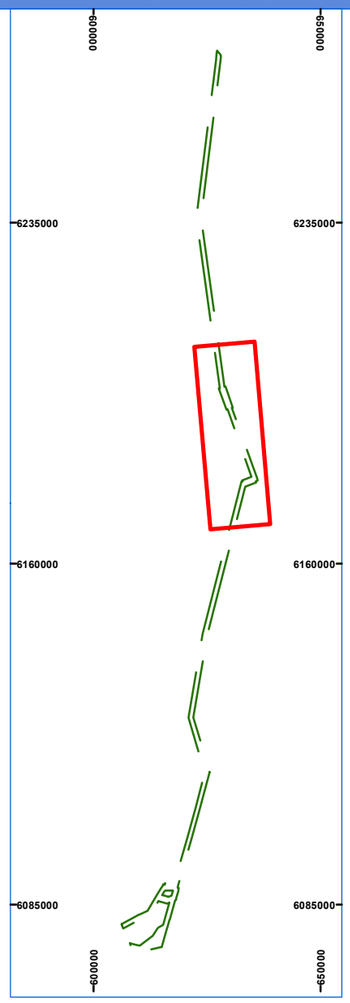
OVERVIEW OF STATION: ENV235A

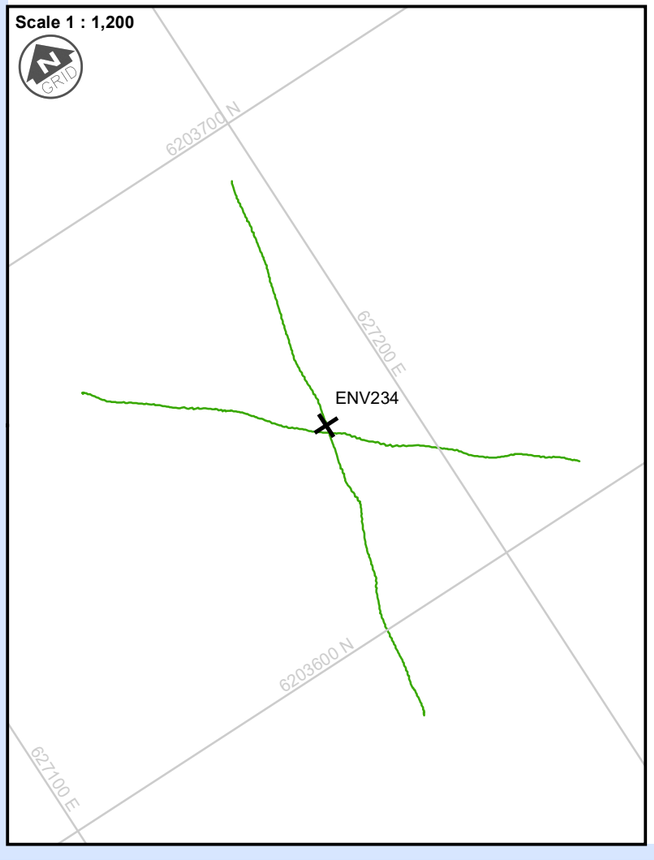
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

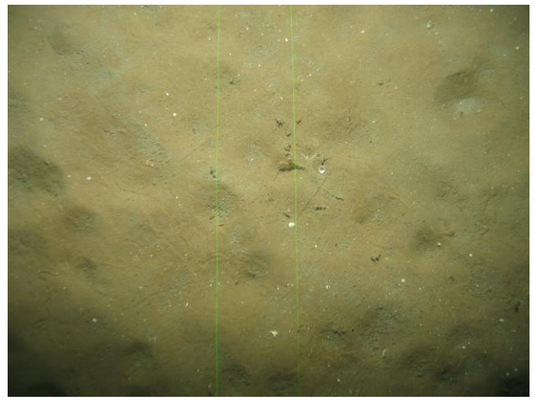
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV234

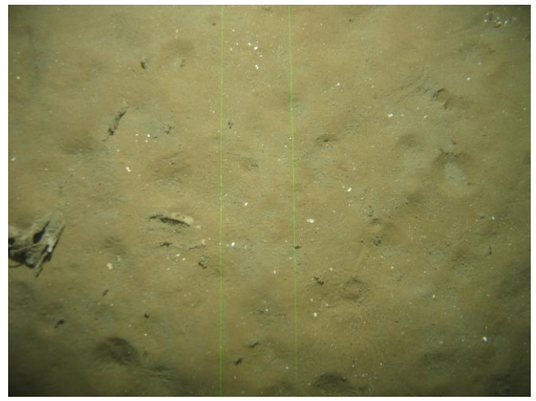
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV234
Fix: 409 **E:** 627 187 **N:** 6 203 636 **Depth (m):** 67

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV234
Fix: 449 **E:** 627 193 **N:** 6 203 686 **Depth (m):** 67

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV234
Fix: 33 **E:** 627 184 **N:** 6 203 638 **Depth (m):** 68
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Echinodermata (Echinoidea), Mollusca (Scaphopoda)

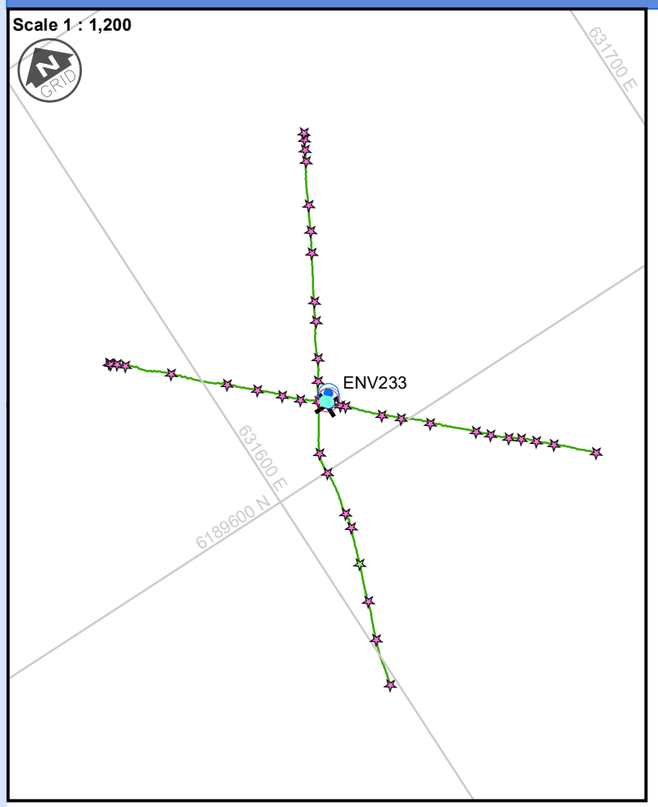


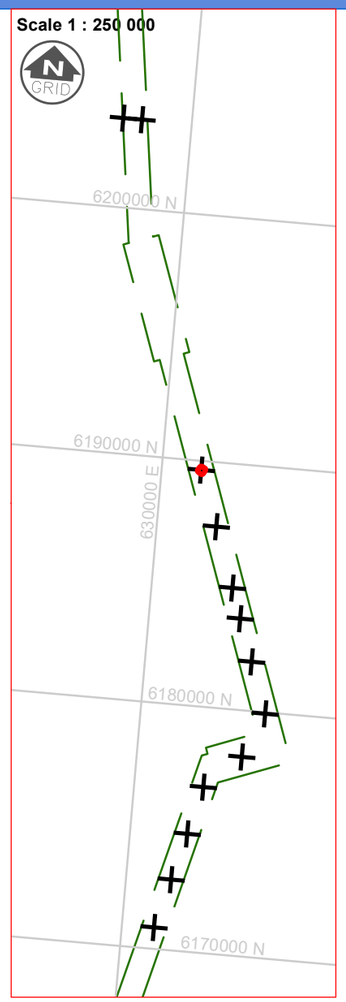
Station: ENV234
Fix: 33 **E:** 627 184 **N:** 6 203 638 **Depth (m):** 68
Retention: MFA

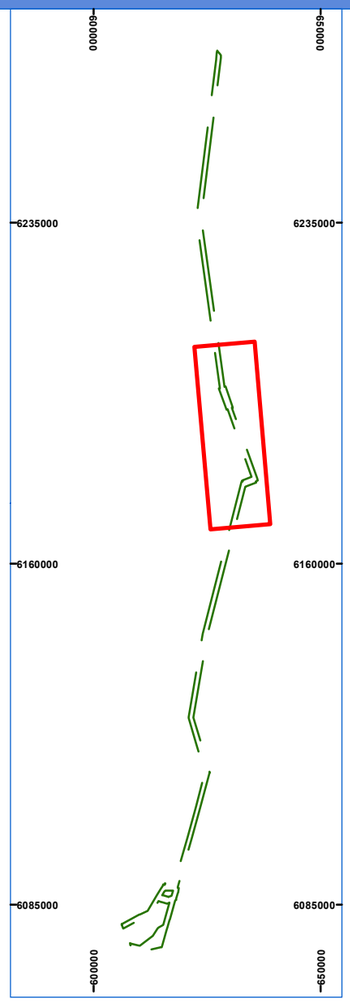
Sediment Description:
Fine to medium sand with shell fragments

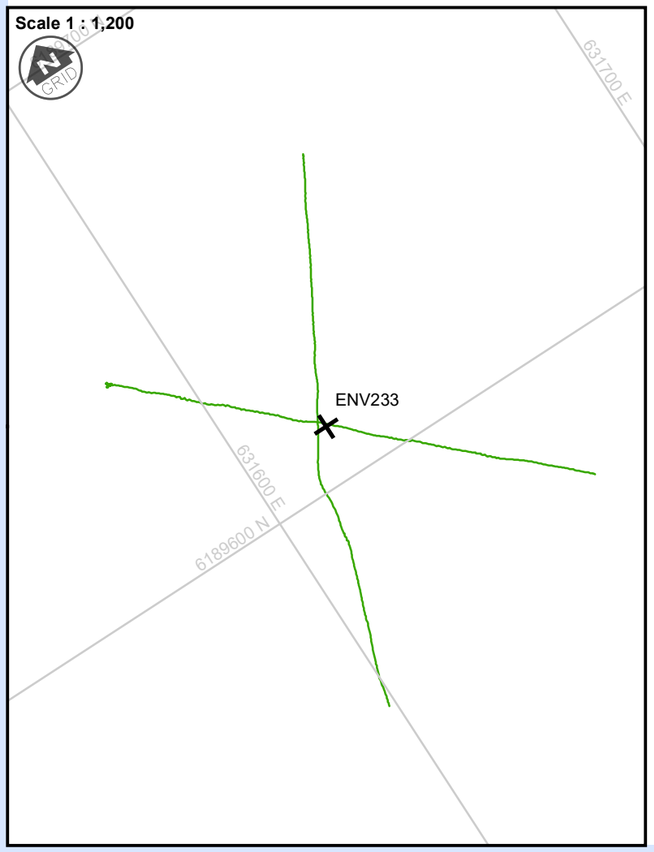
Faunal Description:
Echinodermata (Echinoidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV233

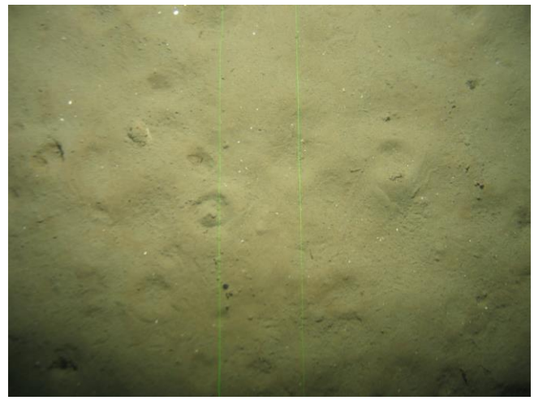
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV233
Fix: 548 **E:** 631 621 **N:** 6 189 609 **Depth (m):** 71

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV233
Fix: 574 **E:** 631 640 **N:** 6 189 653 **Depth (m):** 71

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV233
Fix: 43 **E:** 631 619 **N:** 6 189 612 **Depth (m):** 71
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Pharidae)

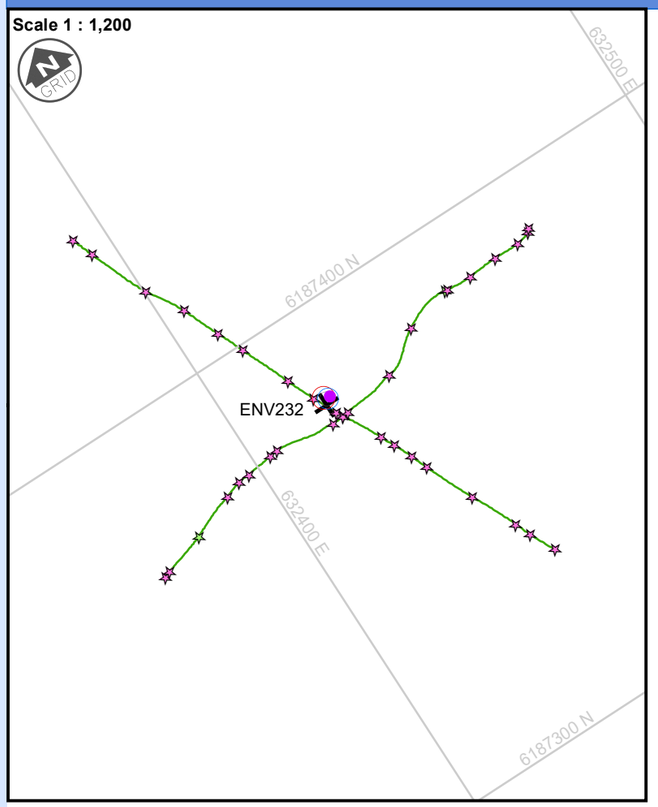


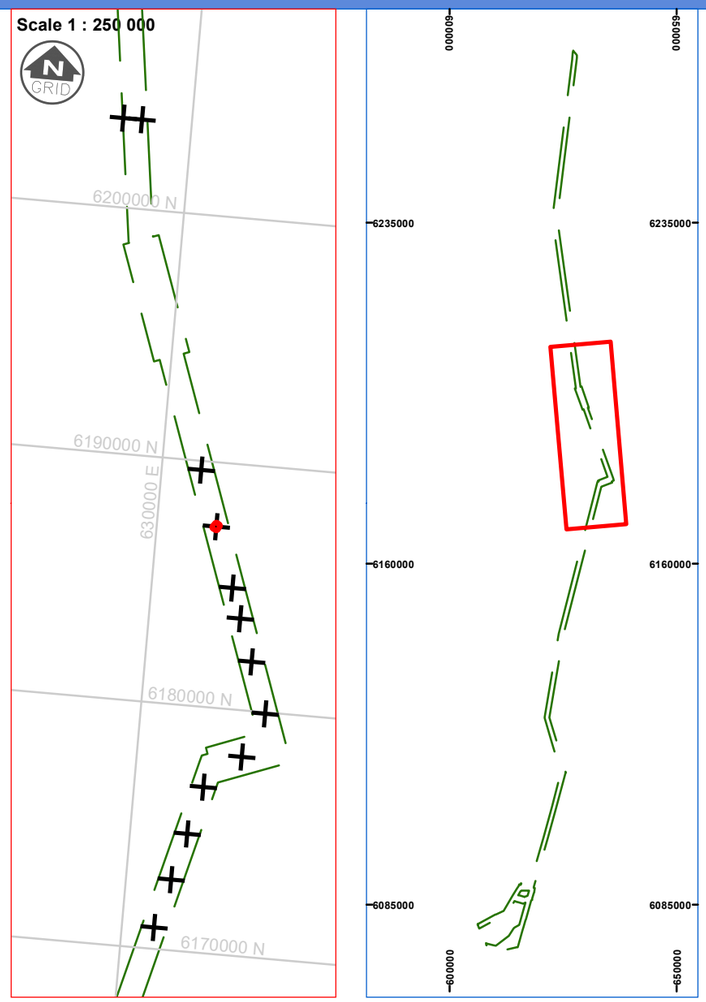
Station: ENV233
Fix: 43 **E:** 631 619 **N:** 6 189 612 **Depth (m):** 71
Retention: MFB

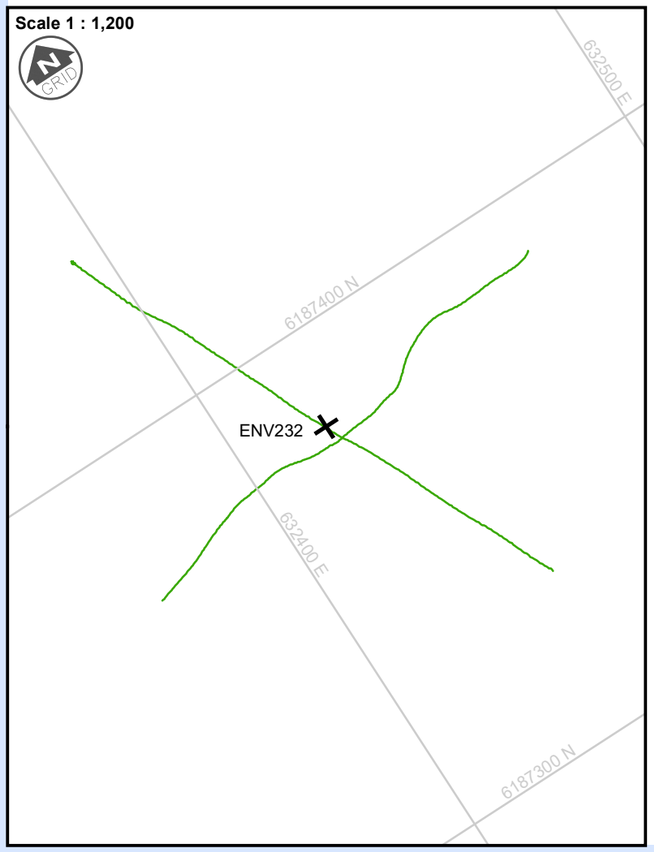
Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea), Mollusca (Pharidae)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

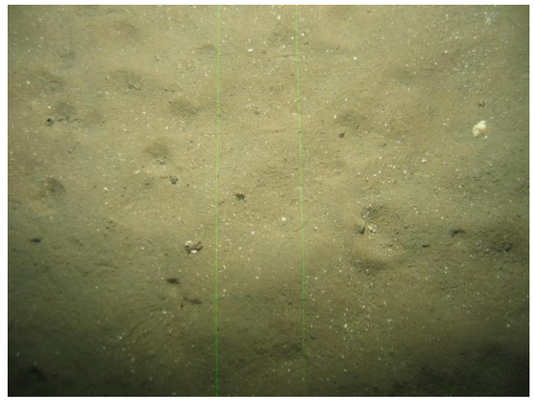
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV232

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV232
Fix: 590 **E:** 632 426 **N:** 6 187 364 **Depth (m):** 68

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV232
Fix: 609 **E:** 632 421 **N:** 6 187 378 **Depth (m):** 68

Sediment Description:
Soft sediment with shell hash

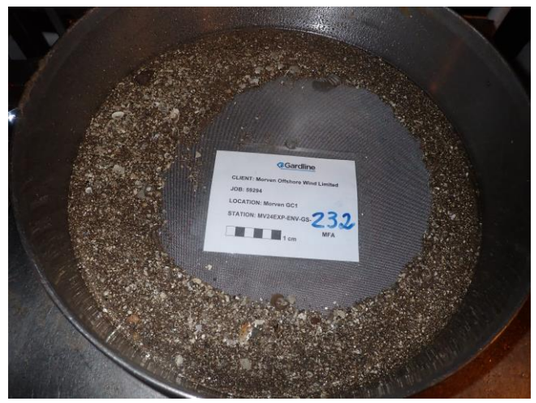
Faunal Description:
Echinodermata (*Henricia inc*)



Station: ENV232
Fix: 46 **E:** 632 418 **N:** 6 187 383 **Depth (m):** 69
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

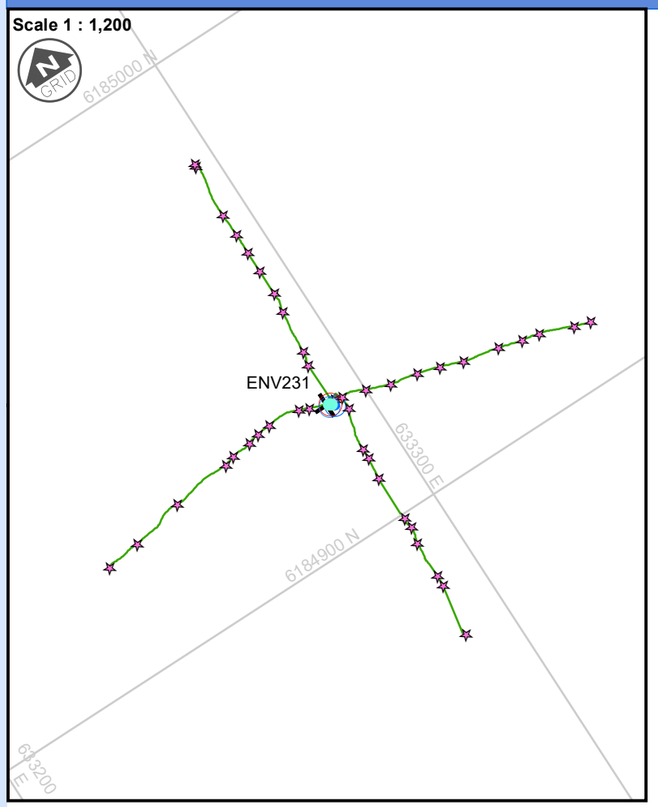
Faunal Description:
Annelida (Polychaeta)

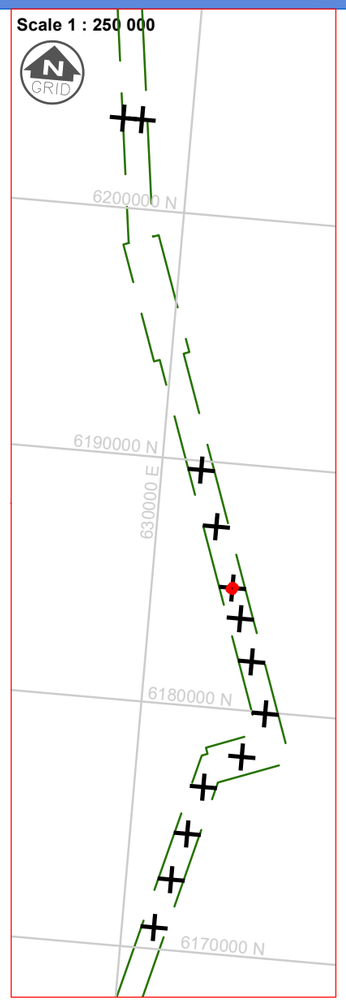


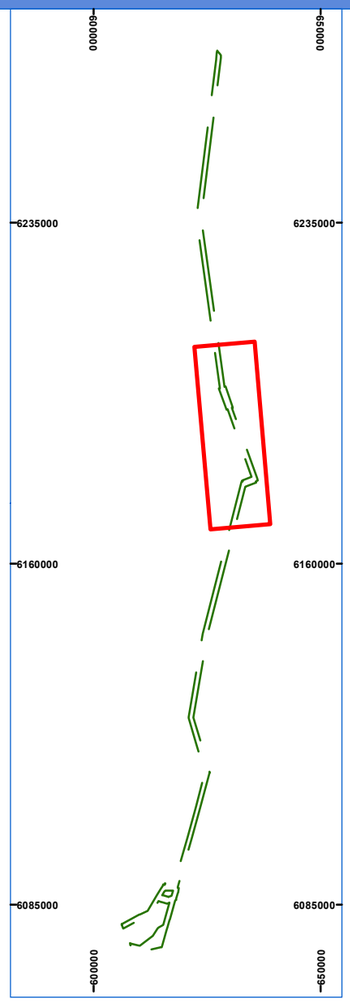
Station: ENV232
Fix: 46 **E:** 632 418 **N:** 6 187 383 **Depth (m):** 69
Retention: MFA

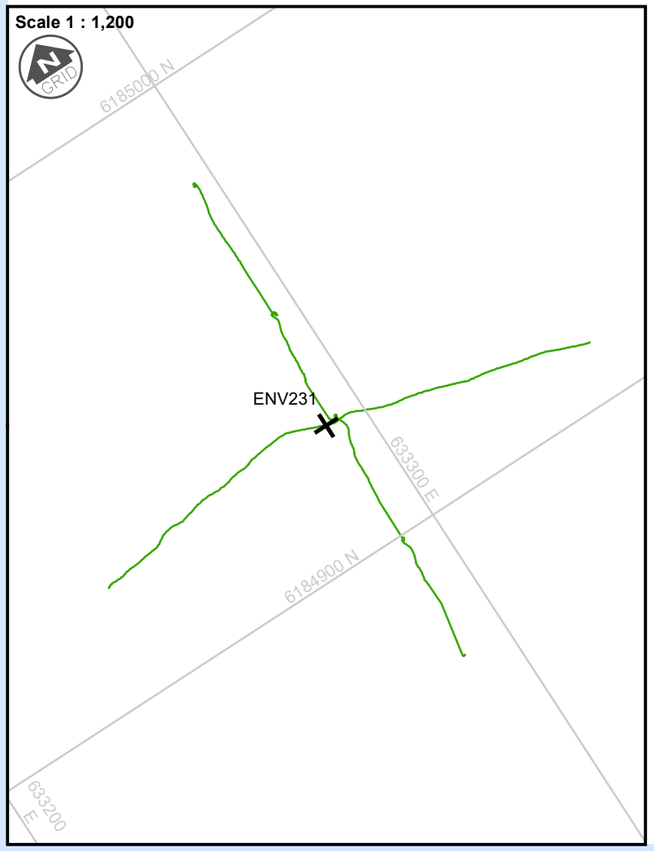
Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV231

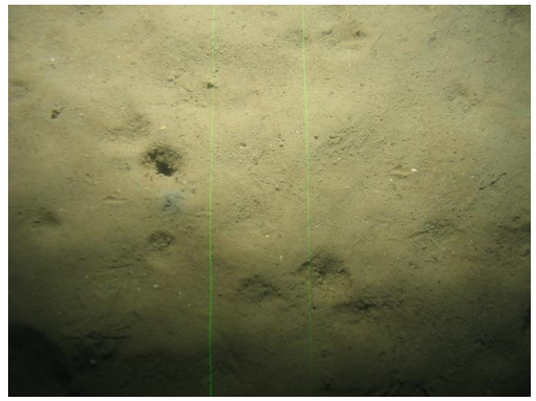
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV231
Fix: 629 **E:** 633 295 **N:** 6 184 923 **Depth (m):** 76

Sediment Description:
Soft sediment with shell hash

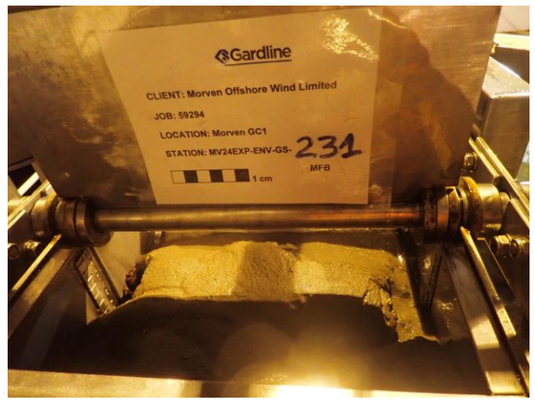
Faunal Description:
Chordata (Pleuronectiformes *stet.*), Cnidaria (*Pennatula phosphorea*), Faunal Turf



Station: ENV231
Fix: 653 **E:** 633 305 **N:** 6 184 923 **Depth (m):** 76

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV231
Fix: 51 **E:** 633 292 **N:** 6 184 925 **Depth (m):** 77
Retention: MFB

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea)

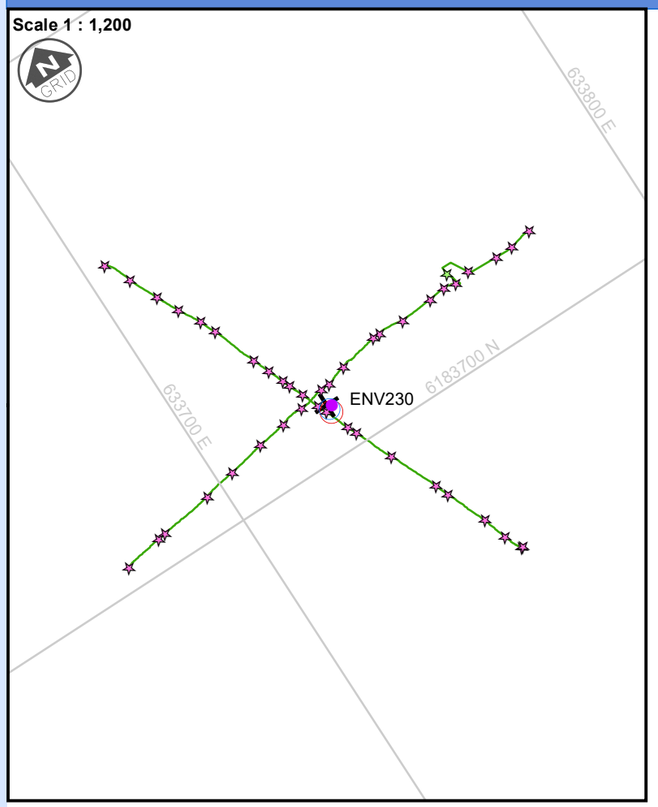


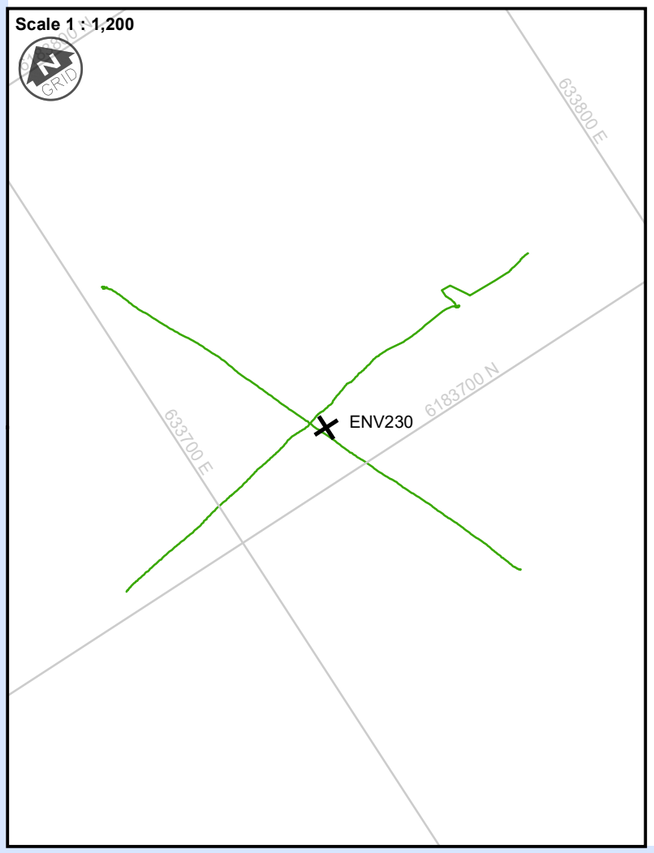
Station: ENV231
Fix: 50 **E:** 633 293 **N:** 6 184 926 **Depth (m):** 77
Retention: MFA

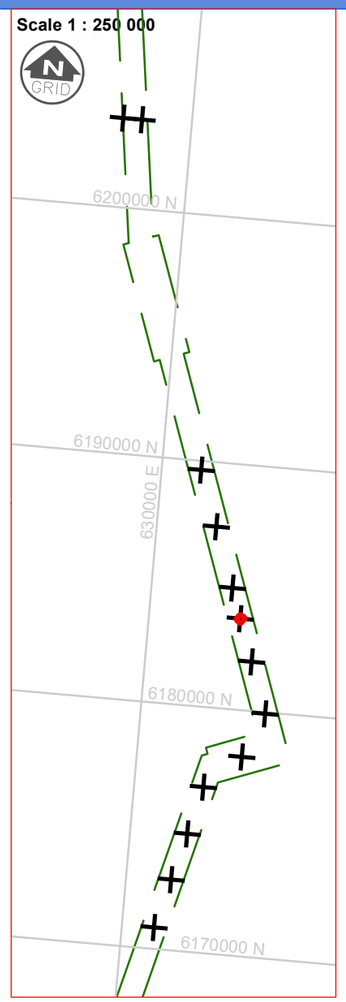
Sediment Description:
Fine to medium sand with shell fragments

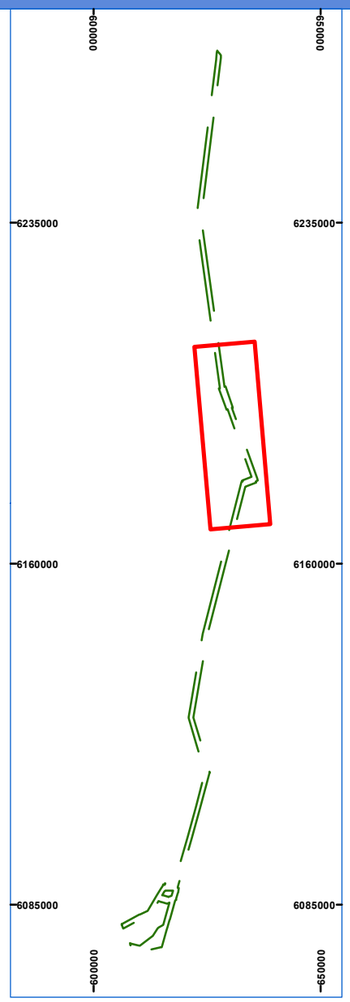
Faunal Description:
Annelida (Polychaeta), Cnidaria (Pennatuloidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV230

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV230
Fix: 669 **E:** 633 720 **N:** 6 183 722 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Annelida (Terebellidae), Cnidaria (*Pennatula phosphorea*)



Station: ENV230
Fix: 708 **E:** 633 684 **N:** 6 183 706 **Depth (m):** 83

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Hydractinia echinata*)



Station: ENV230
Fix: 54 **E:** 633 726 **N:** 6 183 708 **Depth (m):** 83
Retention: MFA

Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

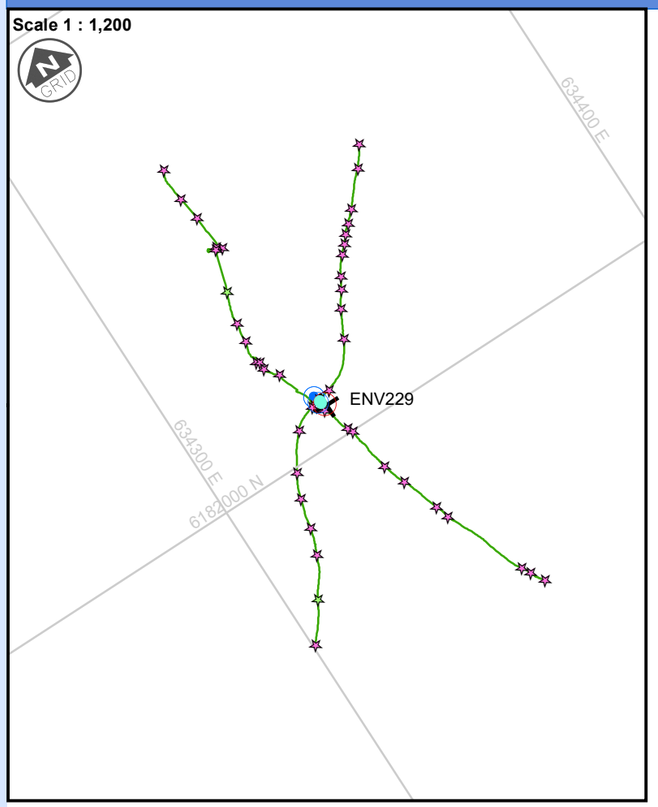


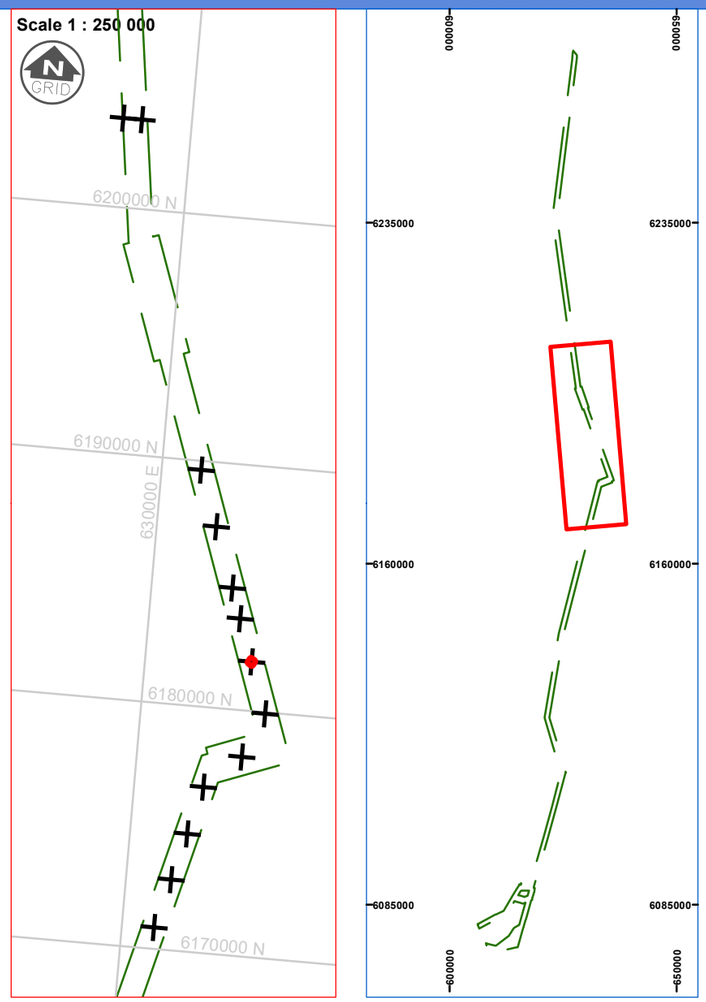
Station: ENV230
Fix: 54 **E:** 633 726 **N:** 6 183 708 **Depth (m):** 83
Retention: MFA

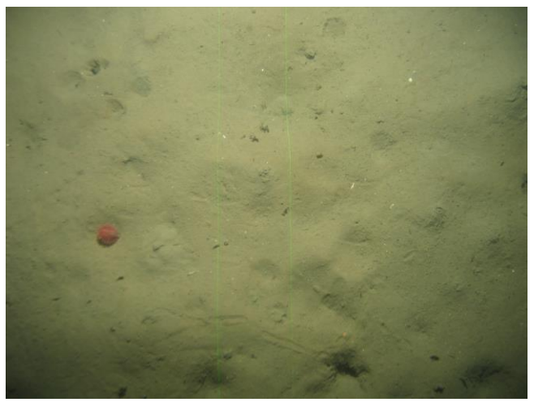
Sediment Description:
Fine to medium sand with shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







Station: ENV229
Fix: 742 **E:** 634 330 **N:** 6 182 009 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

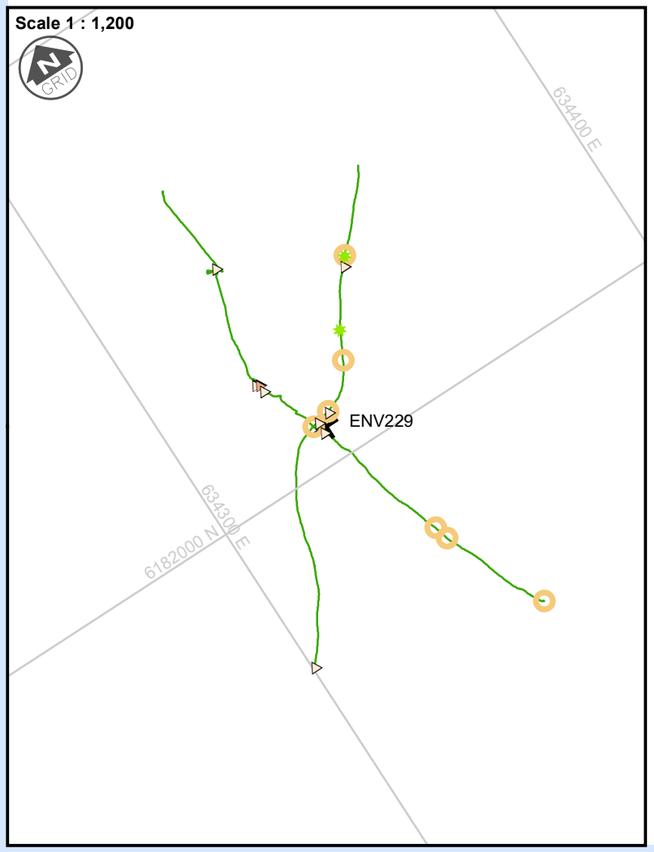
Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV229
Fix: 749 **E:** 634 349 **N:** 6 182 033 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Annelida (Terebellidae), Chordata (*Glyptocephalus cynoglossus*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV229

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV229
Fix: 57 **E:** 634 328 **N:** 6 182 007 **Depth (m):** 82
Retention: MFA

Sediment Description:
Silty fine sand

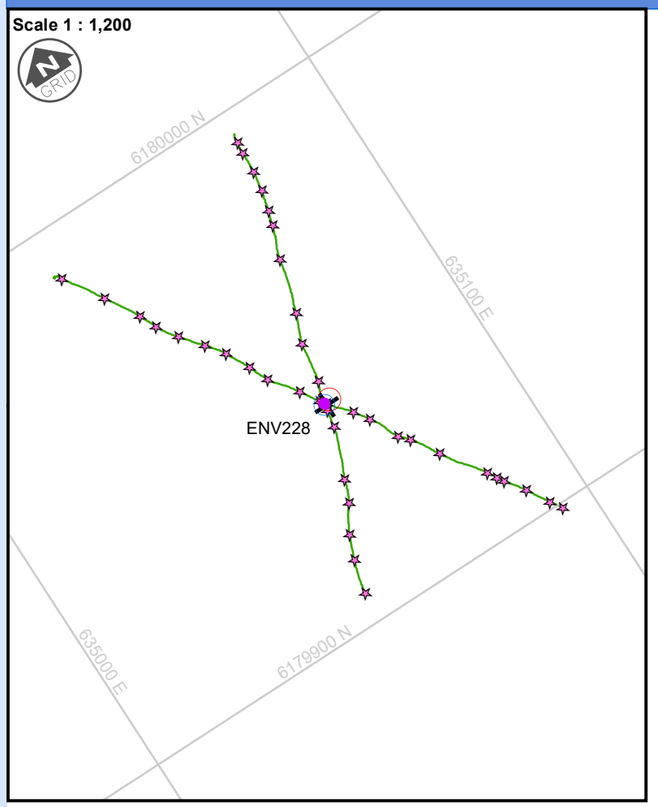
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

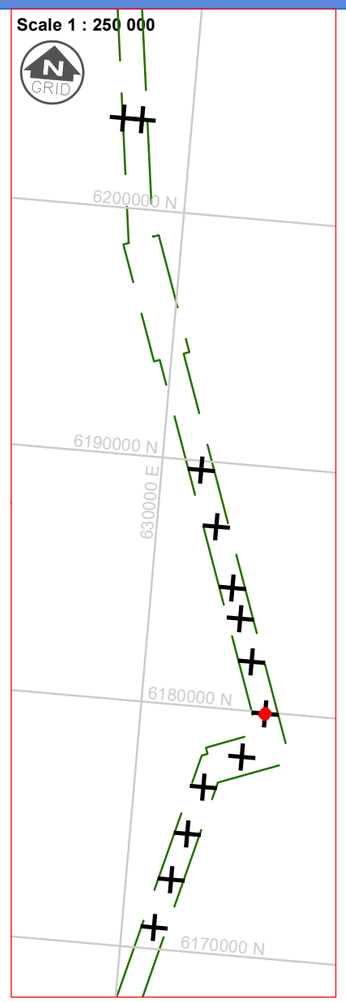


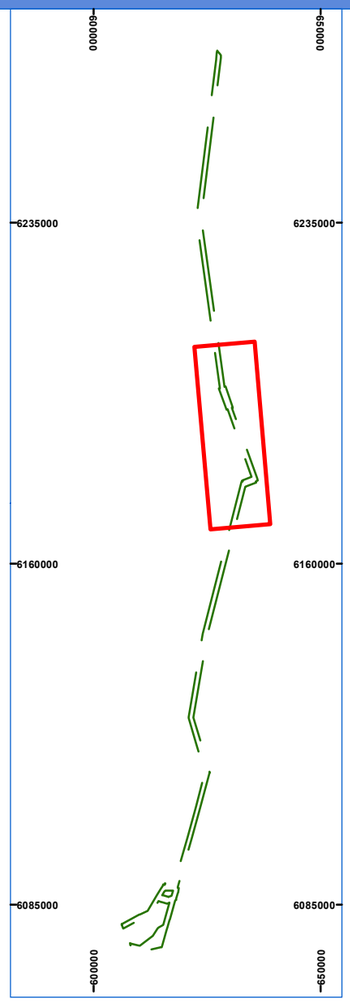
Station: ENV229
Fix: 57 **E:** 634 328 **N:** 6 182 007 **Depth (m):** 82
Retention: MFA

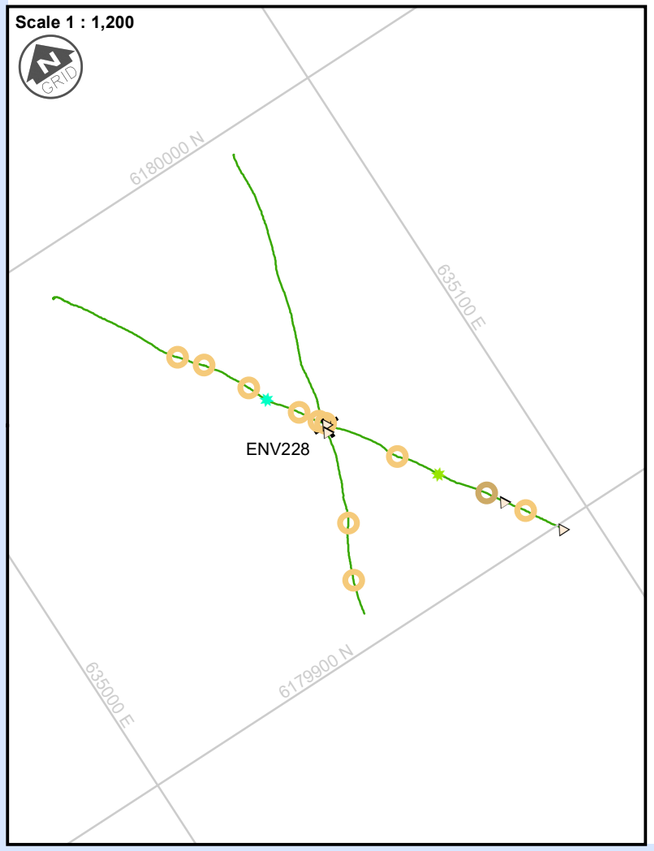
Sediment Description:
Silty fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

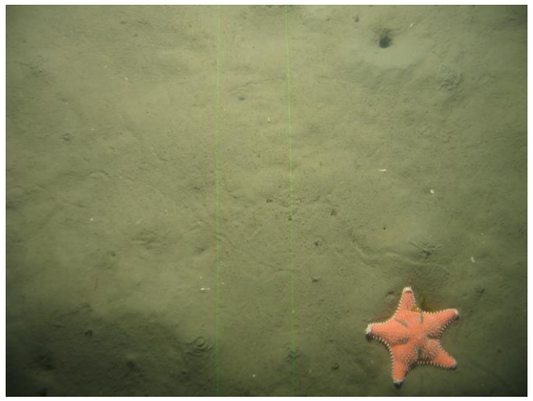
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV228

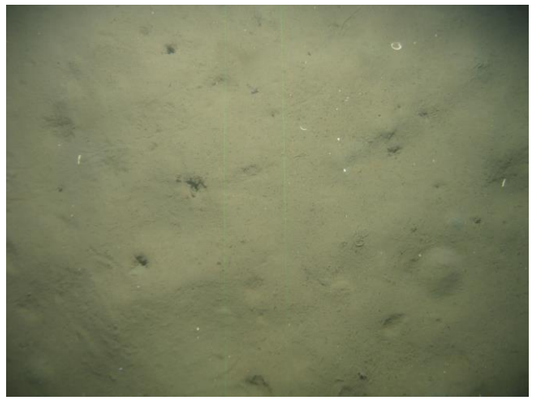
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV228
Fix: 768 **E:** 635 074 **N:** 6 179 928 **Depth (m):** 90

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Echinodermata (*Hippasteria phrygiana*)



Station: ENV228
Fix: 792 **E:** 635 078 **N:** 6 179 983 **Depth (m):** 90

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV228
Fix: 61 **E:** 635 067 **N:** 6 179 942 **Depth (m):** 90
Retention: MFA

Sediment Description:
Silty clayey fine sand

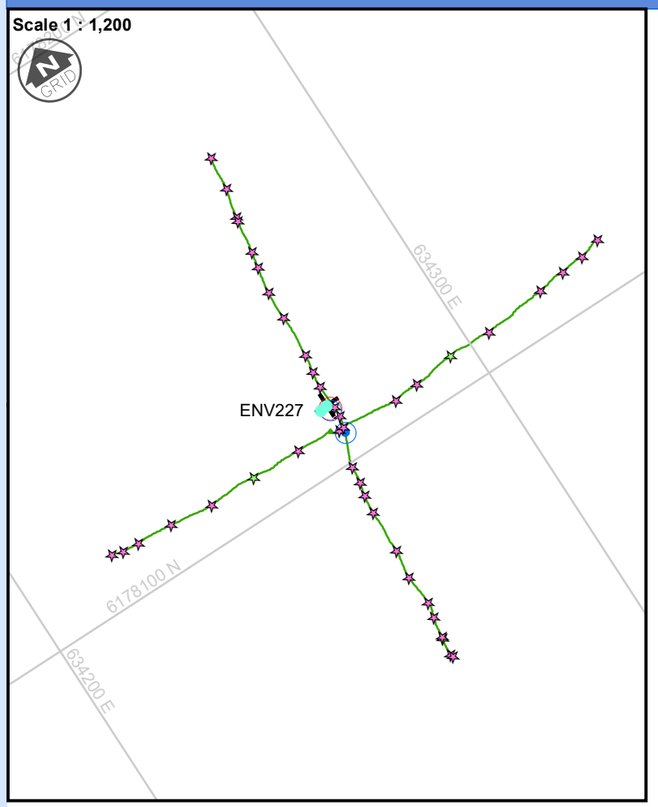
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)

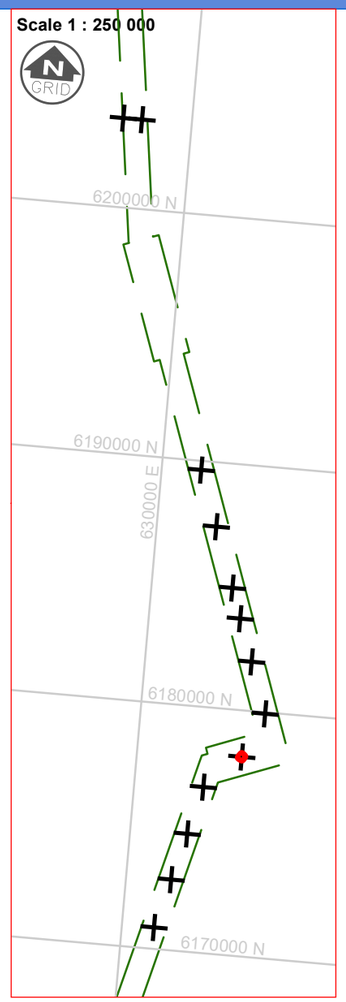


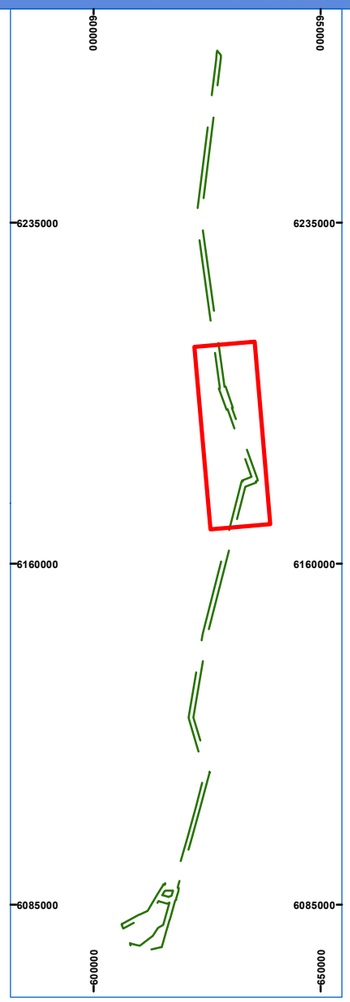
Station: ENV228
Fix: 61 **E:** 635 067 **N:** 6 179 942 **Depth (m):** 90
Retention: MFA

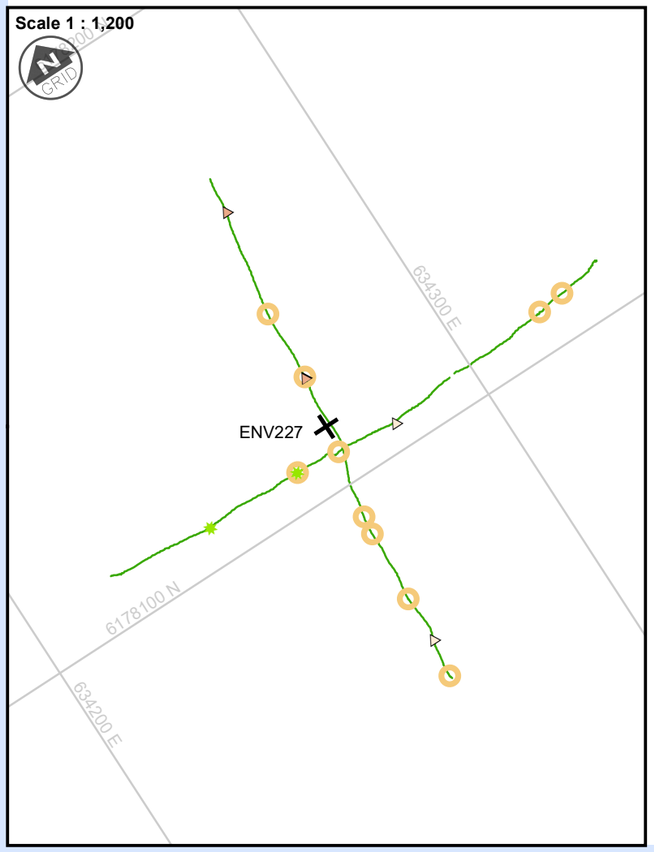
Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea), Mollusca (Scaphopoda)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

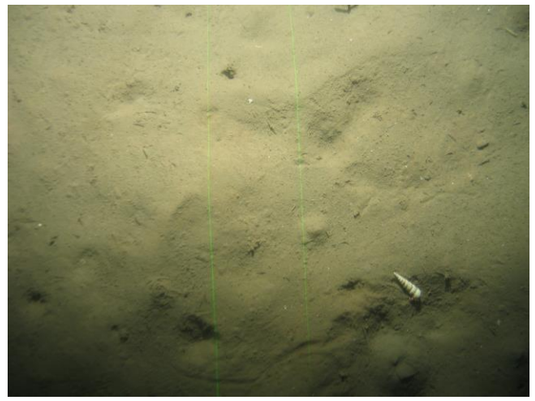
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV227

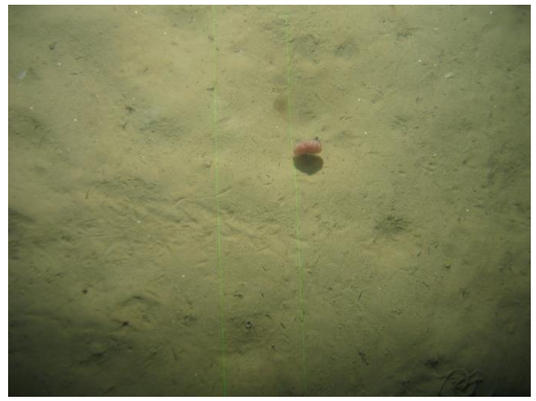
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV227
Fix: 802 **E:** 634 287 **N:** 6 178 106 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*)



Station: ENV227
Fix: 835 **E:** 634 265 **N:** 6 178 066 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV227
Fix: 64 **E:** 634 270 **N:** 6 178 111 **Depth (m):** 89
Retention: MFA

Sediment Description:
Silty clayey fine sand

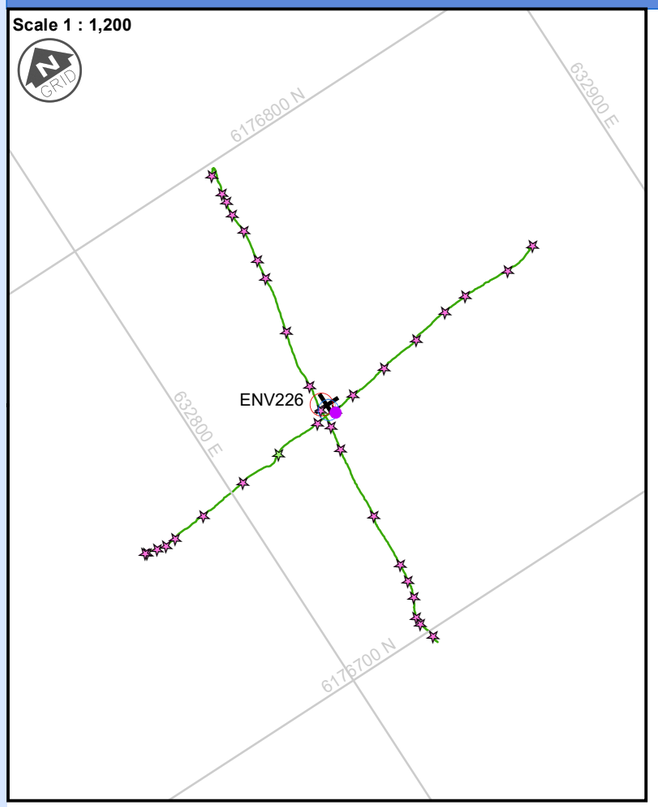
Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)

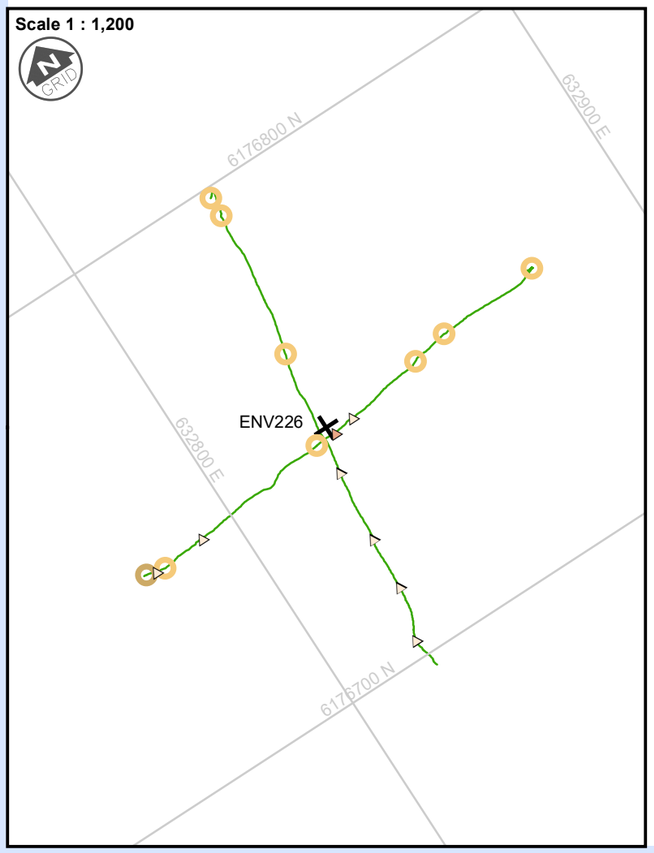


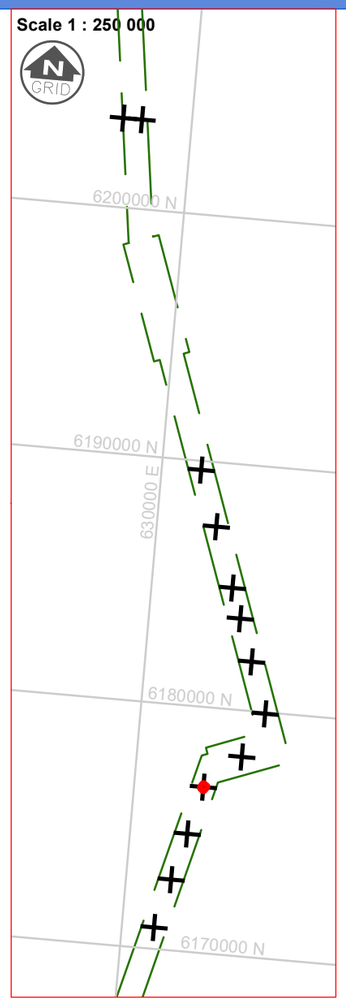
Station: ENV227
Fix: 64 **E:** 634 270 **N:** 6 178 111 **Depth (m):** 89
Retention: MFA

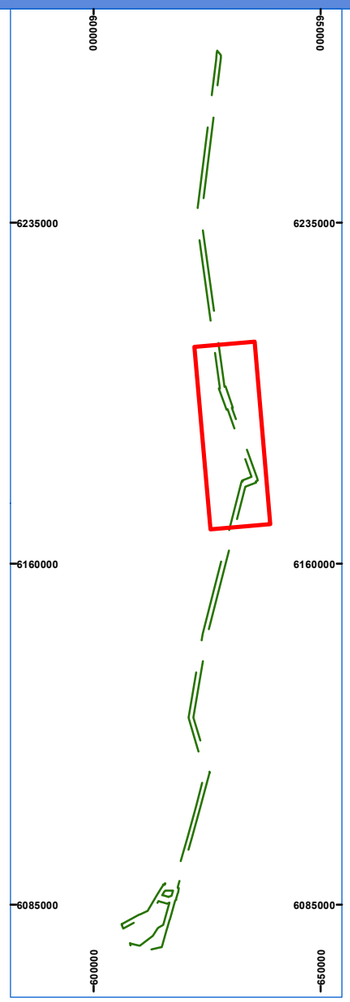
Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta), Mollusca (Scaphopoda)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

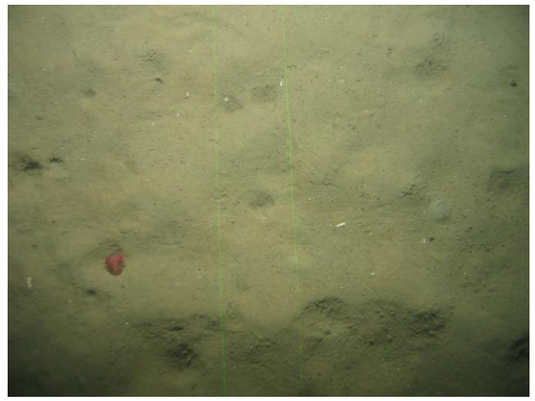
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV226

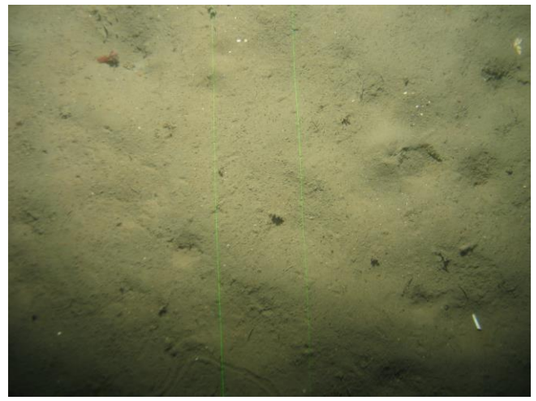
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV226
Fix: 849 **E:** 632 793 **N:** 6 176 743 **Depth (m):** 87

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV226
Fix: 868 **E:** 632 820 **N:** 6 176 714 **Depth (m):** 87

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV226
Fix: 70 **E:** 632 825 **N:** 6 176 747 **Depth (m):** 88
Retention: MFB

Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

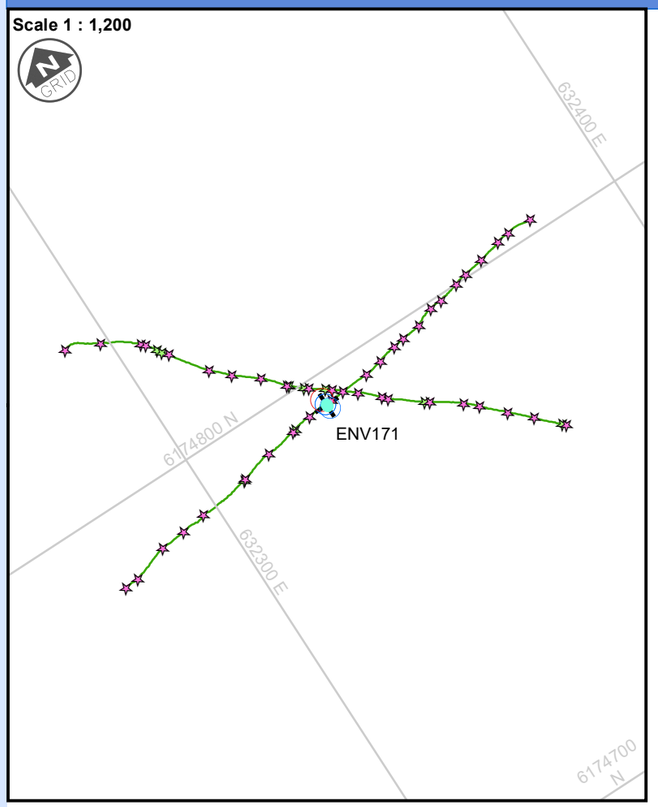


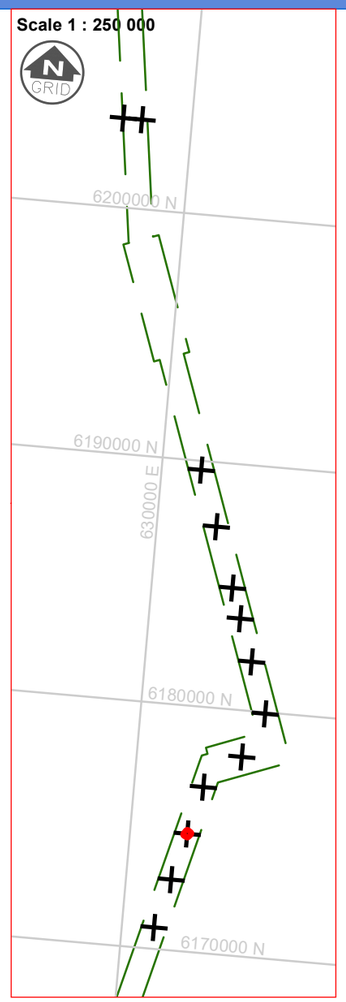
Station: ENV226
Fix: 70 **E:** 632 825 **N:** 6 176 747 **Depth (m):** 88
Retention: MFB

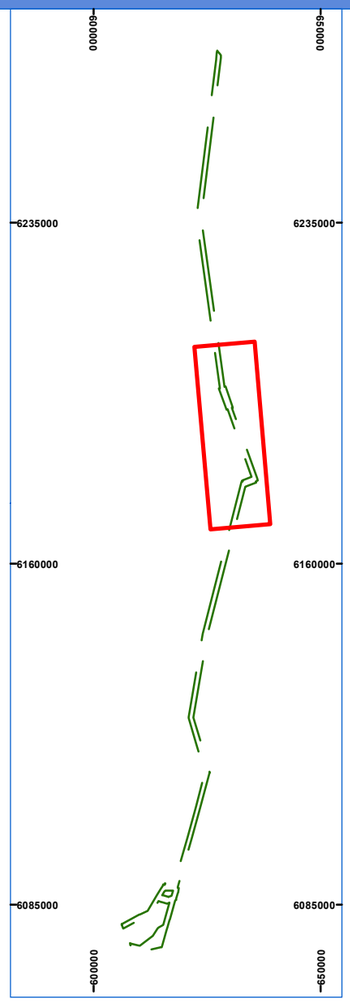
Sediment Description:
Silty clayey fine sand

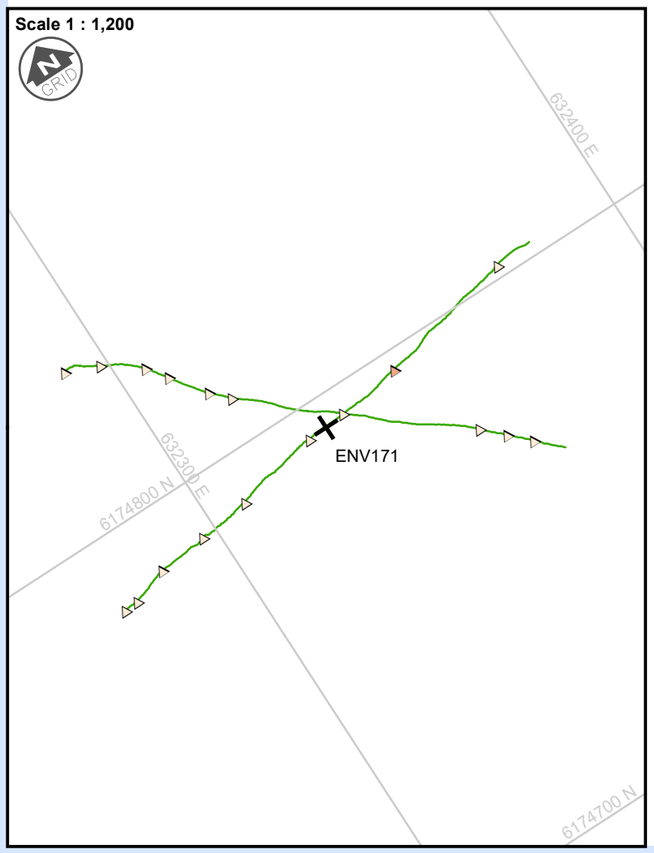
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea, Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV171

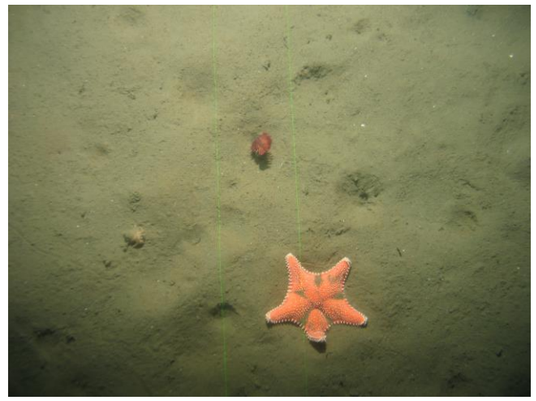
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV171
Fix: 889 **E:** 632 320 **N:** 6 174 793 **Depth (m):** 86

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV171
Fix: 916 **E:** 632 354 **N:** 6 174 778 **Depth (m):** 86

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Hydractinia echinata*, *Pennatula phosphorea*), Echinodermata (*Hippasteria phrygiana*)



Station: ENV171
Fix: 72 **E:** 632 329 **N:** 6 174 795 **Depth (m):** 86
Retention: MFA

Sediment Description:
Silty clayey fine sand

Faunal Description:
Annelida (Polychaeta)

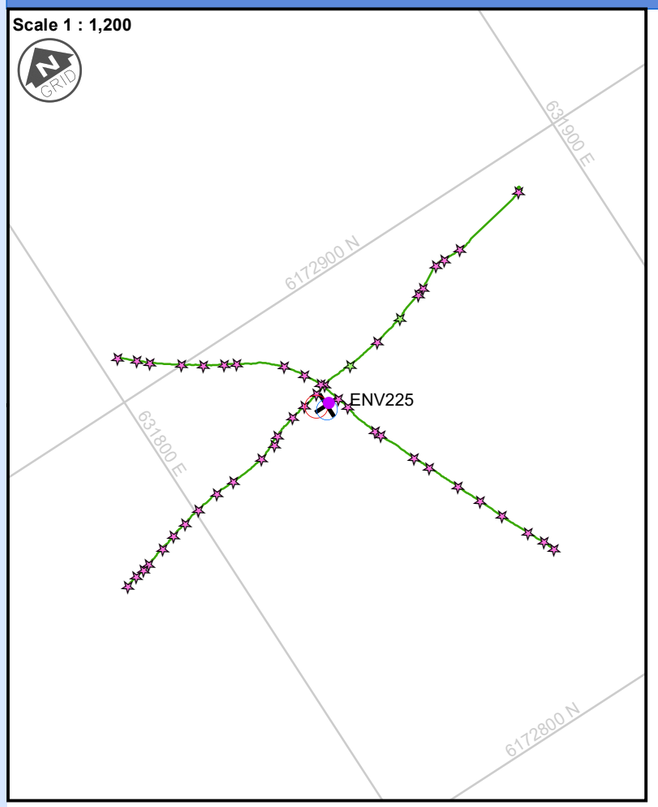


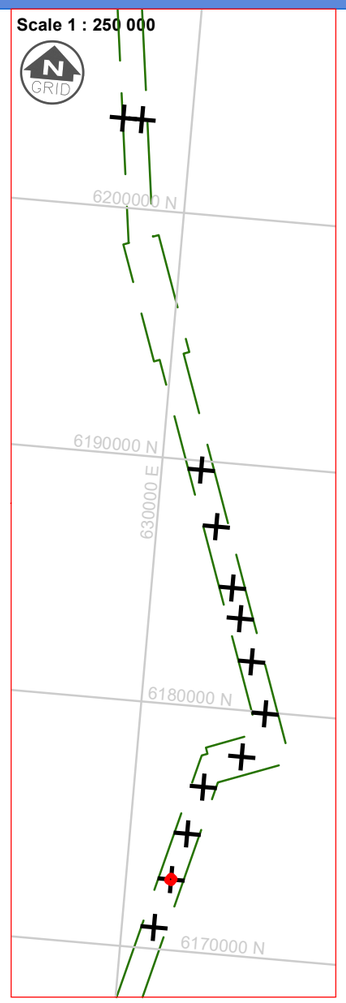
Station: ENV171
Fix: 72 **E:** 632 329 **N:** 6 174 795 **Depth (m):** 86
Retention: MFA

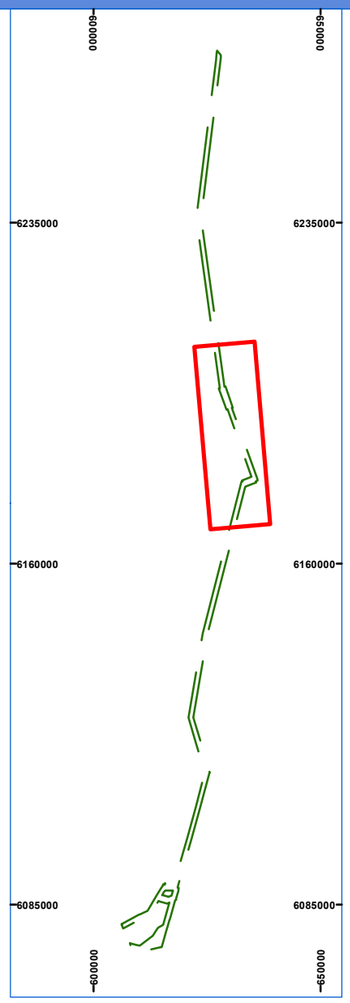
Sediment Description:
Silty clayey fine sand

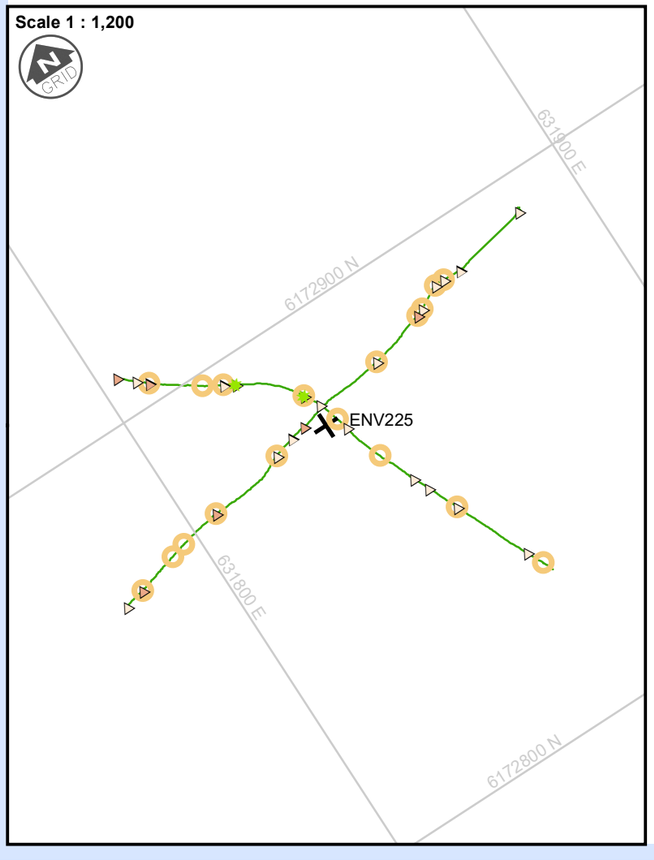
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

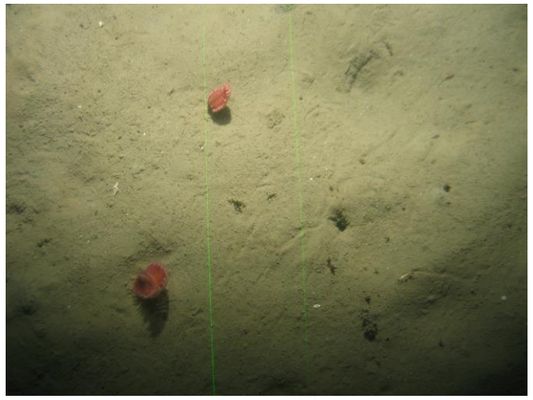
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV225

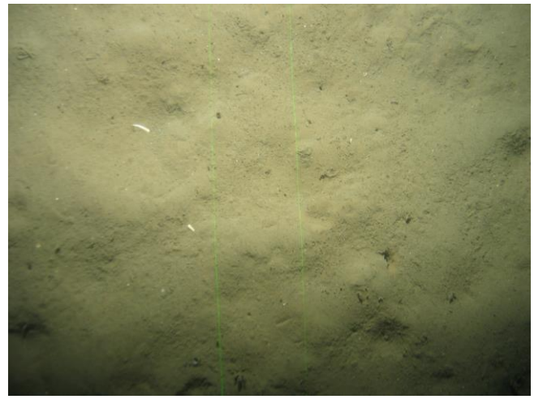
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV225
Fix: 934 **E:** 631 805 **N:** 6 172 875 **Depth (m):** 93

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV225
Fix: 963 **E:** 631 850 **N:** 6 172 841 **Depth (m):** 93

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV225
Fix: 77 **E:** 631 833 **N:** 6 172 877 **Depth (m):** 93
Retention: MFB

Sediment Description:
Silty clayey sand

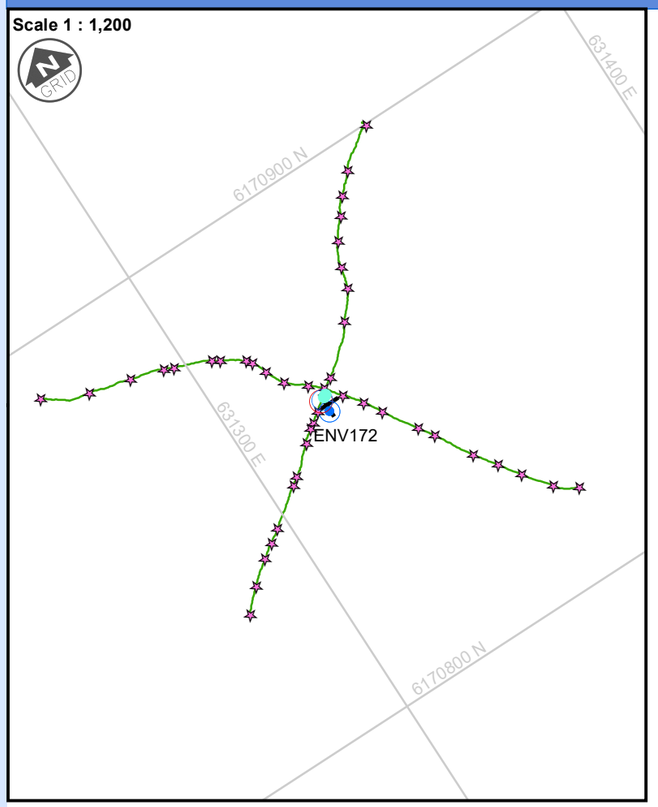
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)

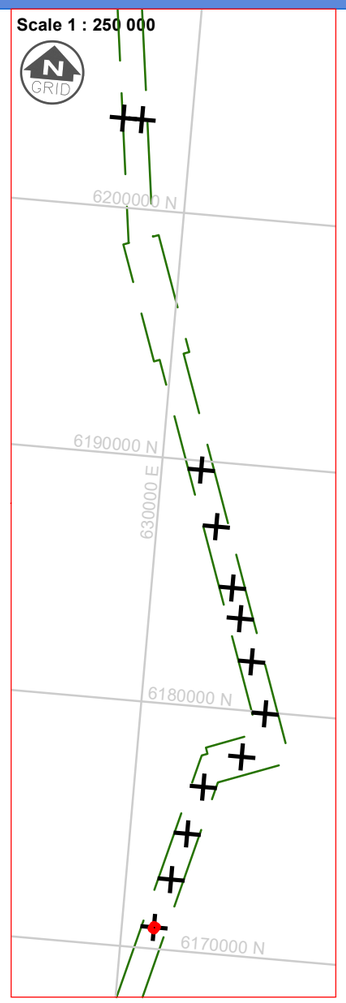


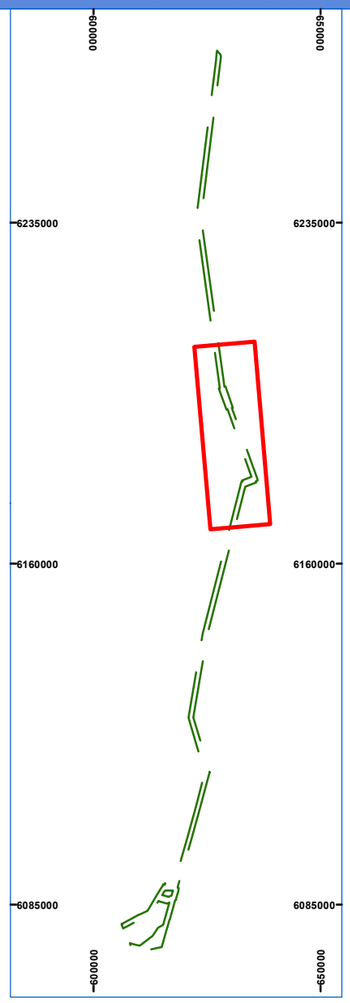
Station: ENV225
Fix: 77 **E:** 631 833 **N:** 6 172 877 **Depth (m):** 93
Retention: MFB

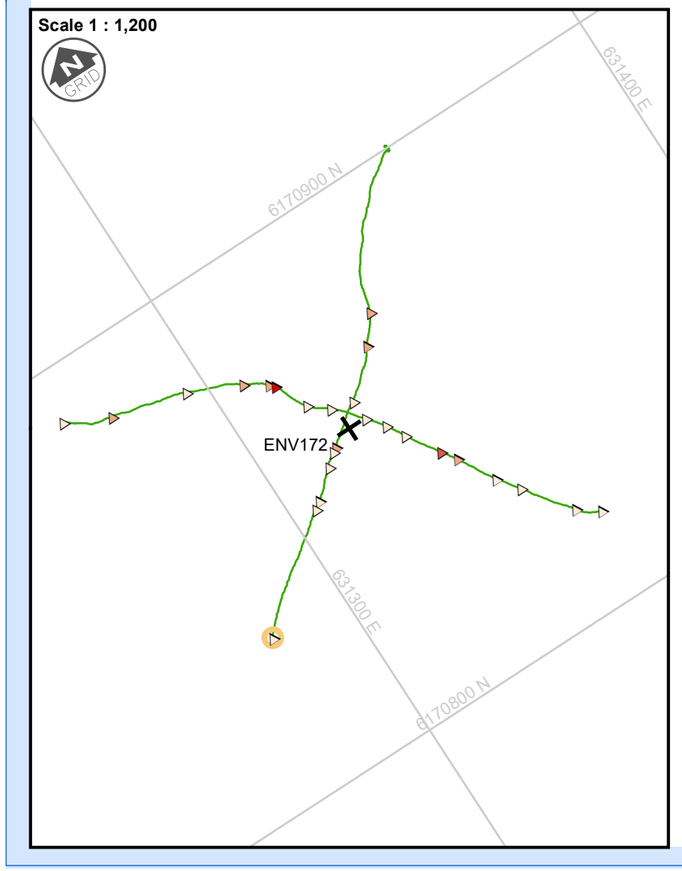
Sediment Description:
Silty clayey sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Bivalvia, Scaphopoda)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV172

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV172
Fix: 1009 **E:** 631 352 **N:** 6 170 818 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Pennatula phosphorea*)



Station: ENV172
Fix: 977 **E:** 631 315 **N:** 6 170 856 **Depth (m):** 88

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Cnidaria (*Pennatula phosphorea*)



Station: ENV172
Fix: 79 **E:** 631 318 **N:** 6 170 859 **Depth (m):** 88
Retention: MFA

Sediment Description:
Silty clayey sand

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

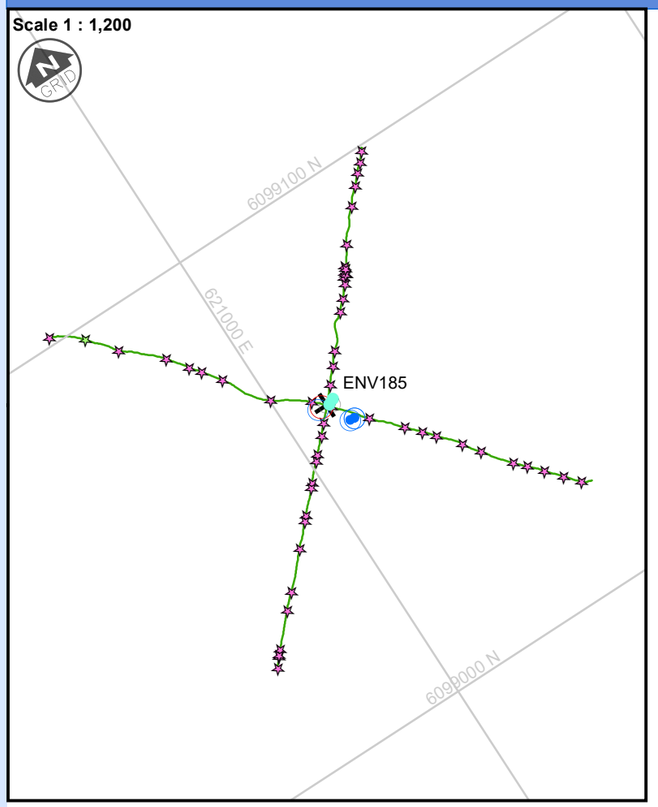


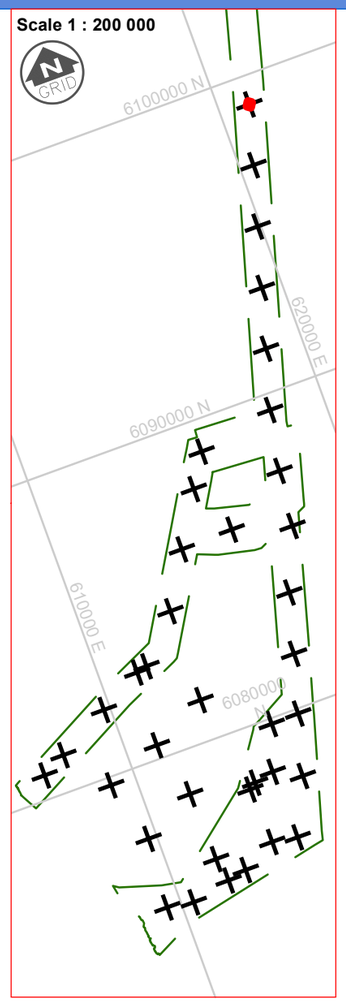
Station: ENV172
Fix: 79 **E:** 631 318 **N:** 6 170 859 **Depth (m):** 88
Retention: MFA

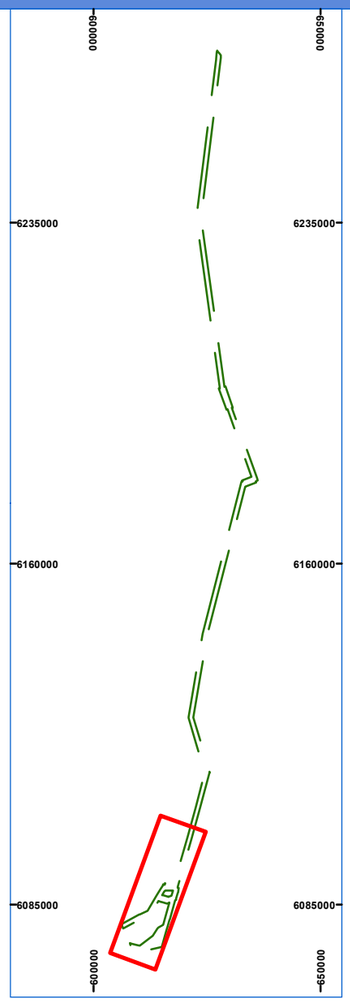
Sediment Description:
Silty clayey sand

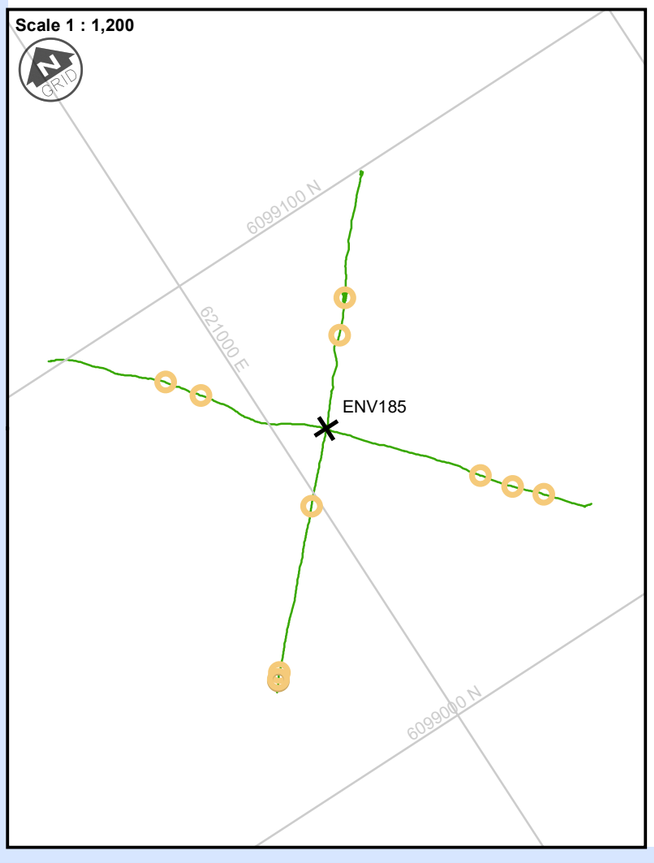
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV185

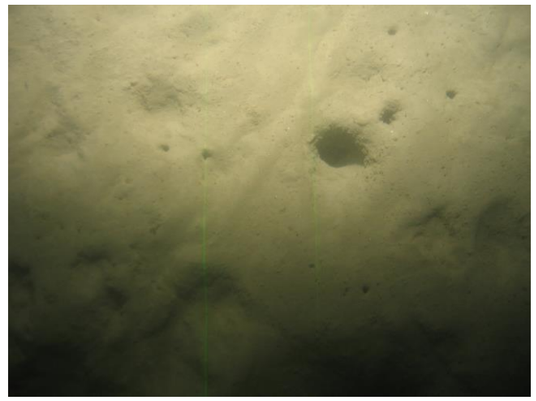
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV185
Fix: 1037 **E:** 620 983 **N:** 6 099 034 **Depth (m):** 83

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (*Nephrops norvegicus*)



Station: ENV185
Fix: 1061 **E:** 621 038 **N:** 6 099 027 **Depth (m):** 83

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Annelida (Terebellidae)



Station: ENV185
Fix: 85 **E:** 621 008 **N:** 6 099 061 **Depth (m):** 84
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

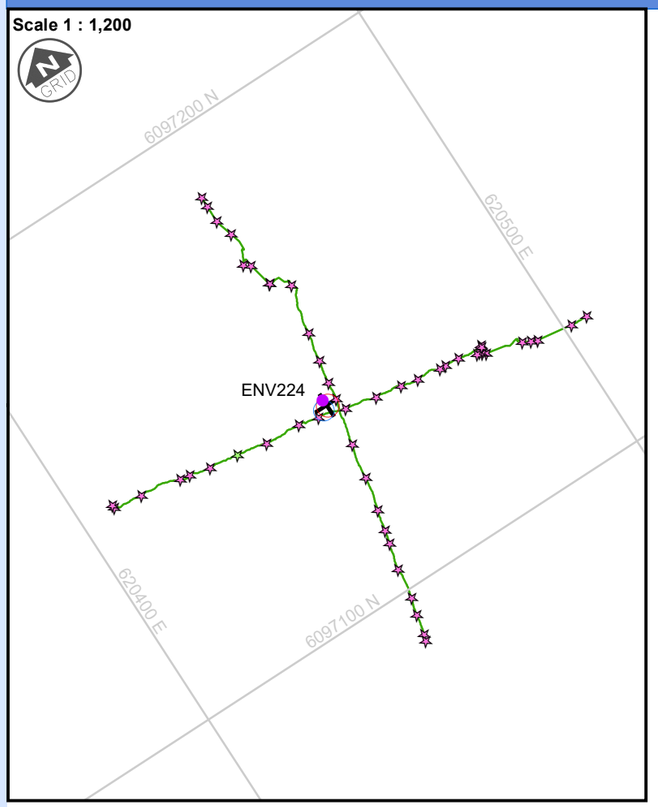


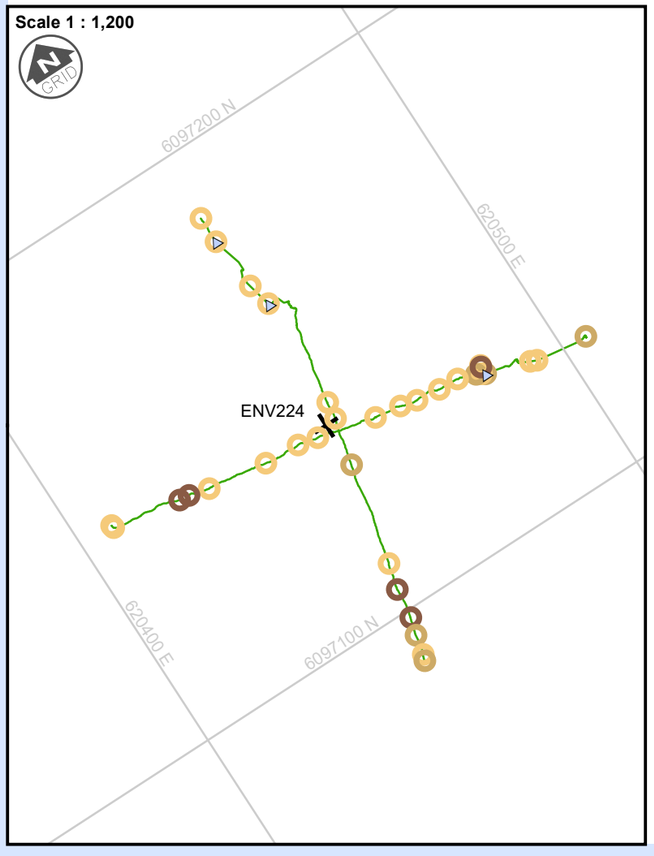
Station: ENV185
Fix: 85 **E:** 621 008 **N:** 6 099 061 **Depth (m):** 84
Retention: MFA

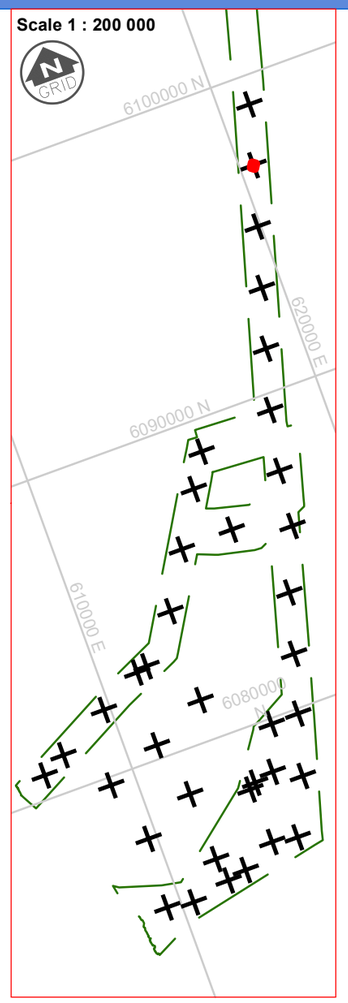
Sediment Description:
Soft silty sandy clay/mud

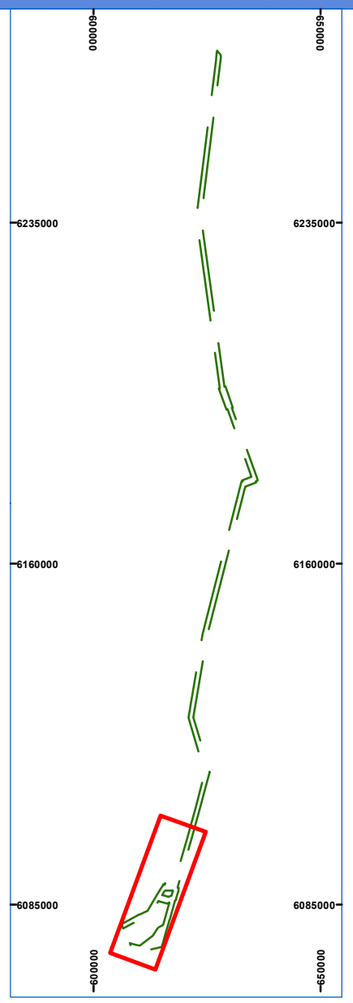
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV224

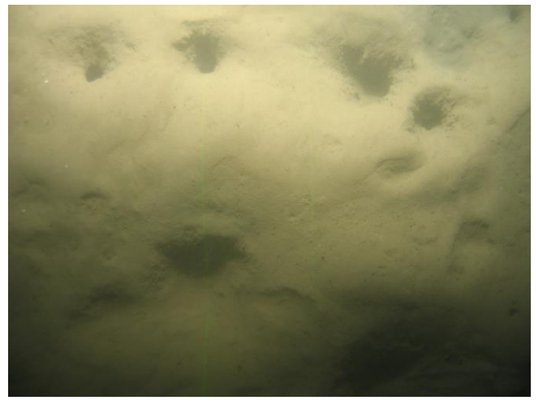
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV224
Fix: 1105 **E:** 620 456 **N:** 6 097 147 **Depth (m):** 77

Sediment Description:
Sand with shell hash

Faunal Description:
Annelida (*Sabella pavonina inc*), Cnidaria (*Alcyonium digitatum*)



Station: ENV224
Fix: 1113 **E:** 620 447 **N:** 6 097 105 **Depth (m):** 77

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV224
Fix: 89 **E:** 620 453 **N:** 6 097 139 **Depth (m):** 79
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta)

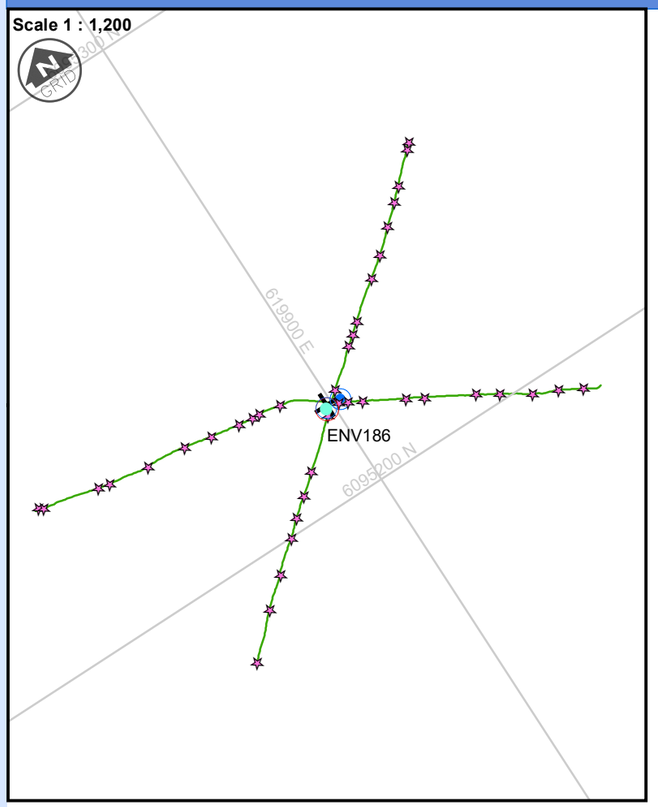


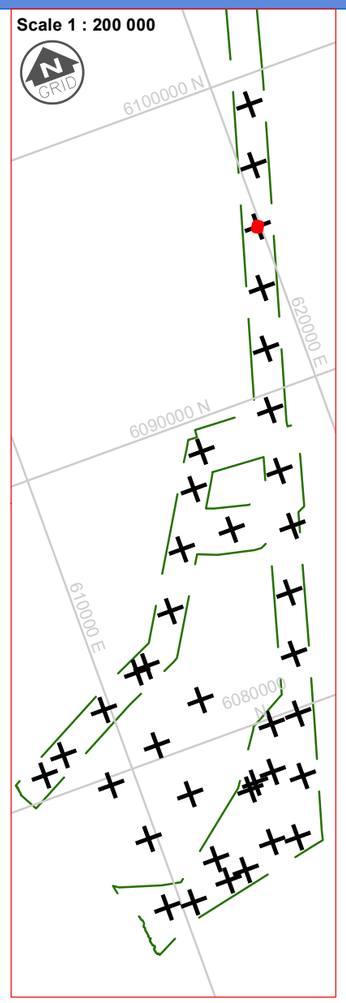
Station: ENV224
Fix: 89 **E:** 620 453 **N:** 6 097 139 **Depth (m):** 79
Retention: MFA

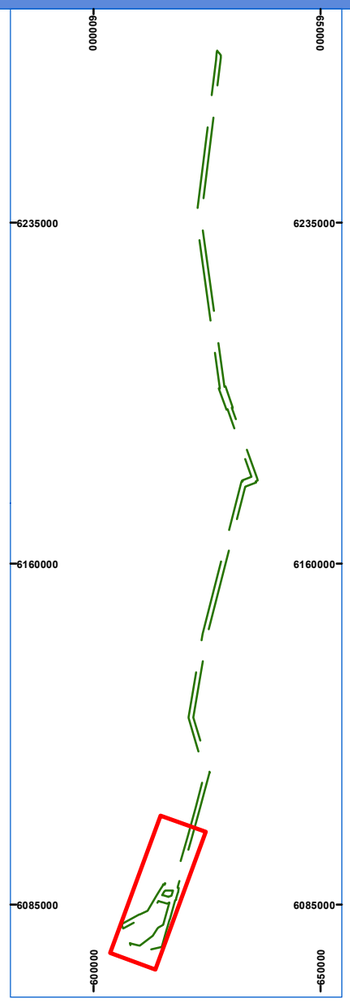
Sediment Description:
Soft silty sandy clay/mud

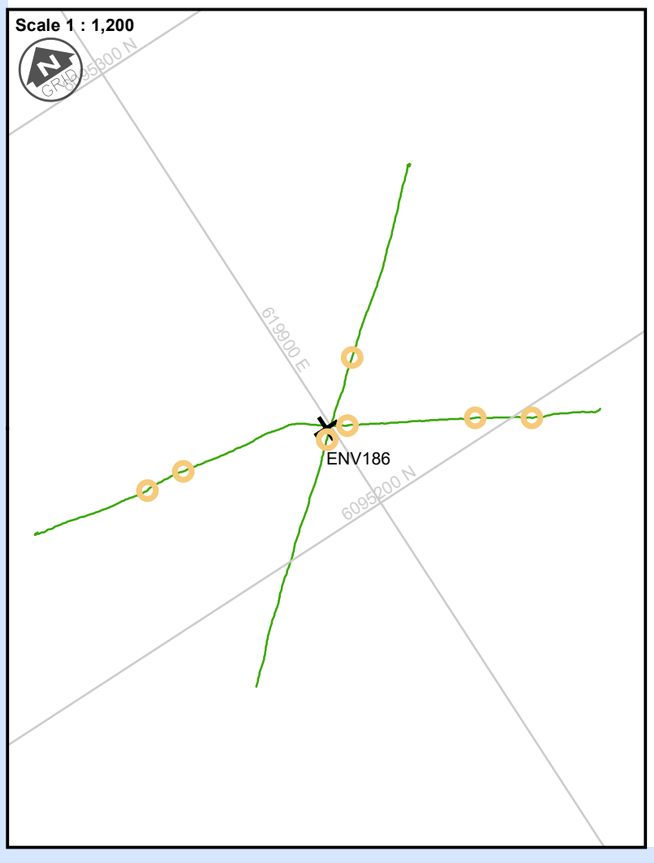
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

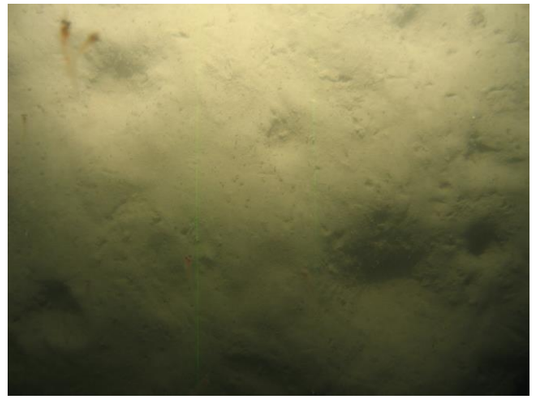
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV186

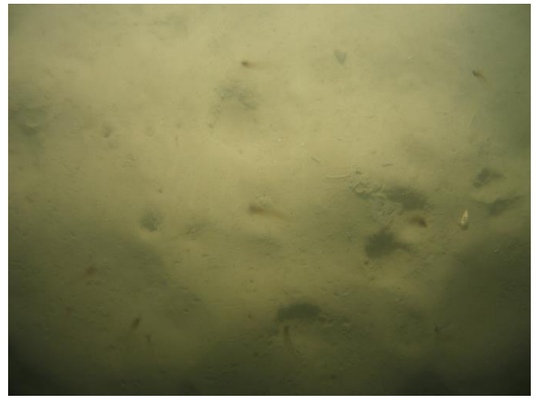
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV186
Fix: 1129 **E:** 619 898 **N:** 6 095 216 **Depth (m):** 65

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV186
Fix: 1151 **E:** 619 913 **N:** 6 095 211 **Depth (m):** 65

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*)



Station: ENV186
Fix: 92 **E:** 619 899 **N:** 6 095 217 **Depth (m):** 65
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

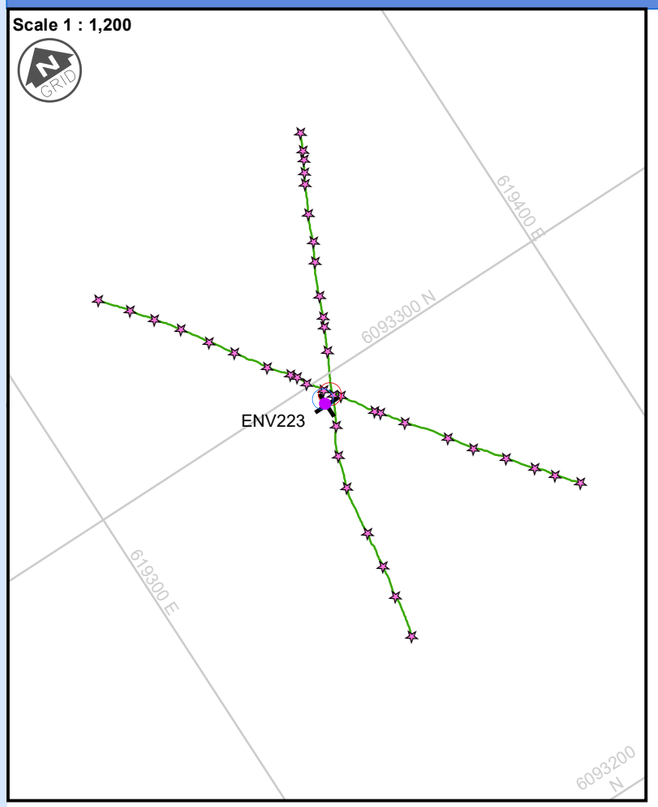


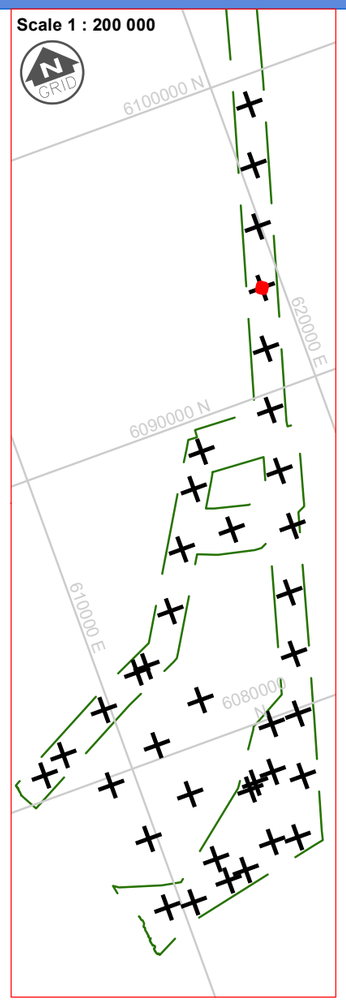
Station: ENV186
Fix: 92 **E:** 619 899 **N:** 6 095 217 **Depth (m):** 65
Retention: MFA

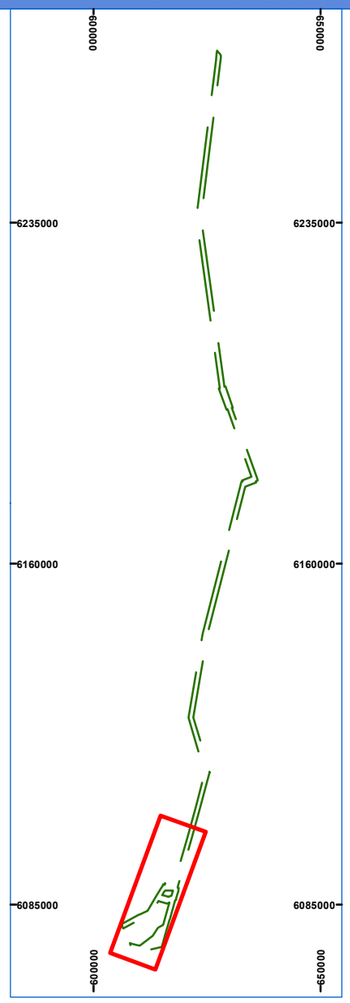
Sediment Description:
Soft silty sandy clay/mud

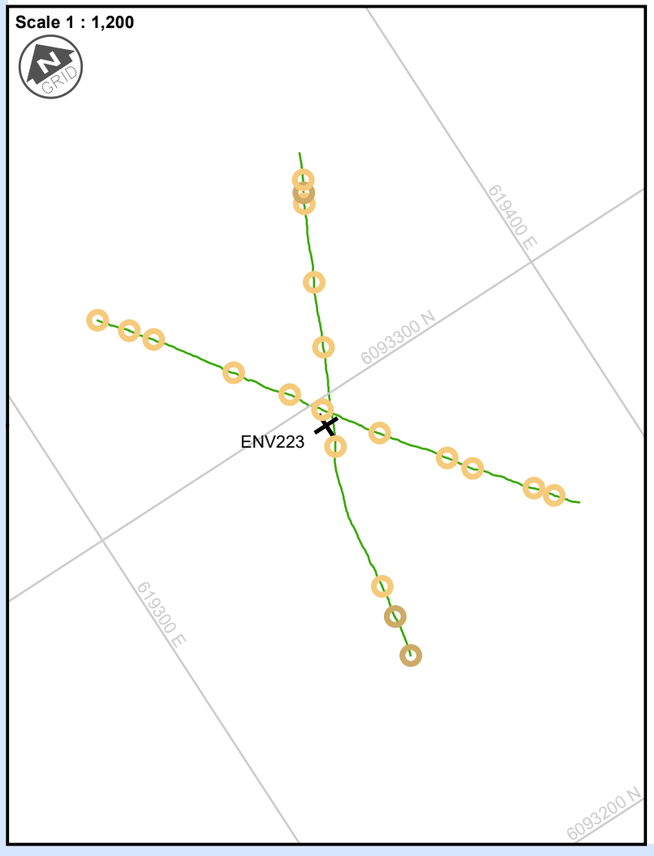
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

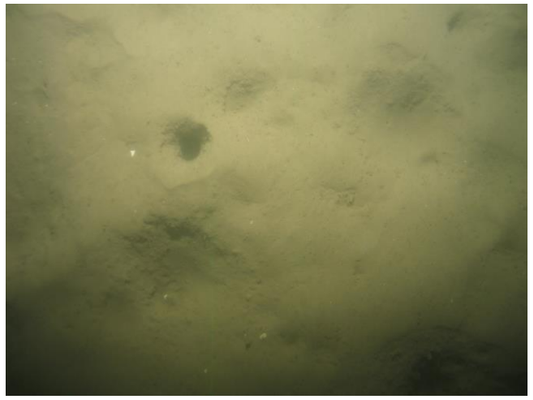
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV223

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV223
Fix: 1176 **E:** 619 376 **N:** 6 093 263 **Depth (m):** 60

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV223
Fix: 1193 **E:** 619 366 **N:** 6 093 328 **Depth (m):** 60

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01), Mollusca (Bivalvia siphons)



Station: ENV223
Fix: 96 **E:** 619 351 **N:** 6 093 296 **Depth (m):** 60
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Cnidaria (Alcyoniidae), Mollusca (Gastropoda)

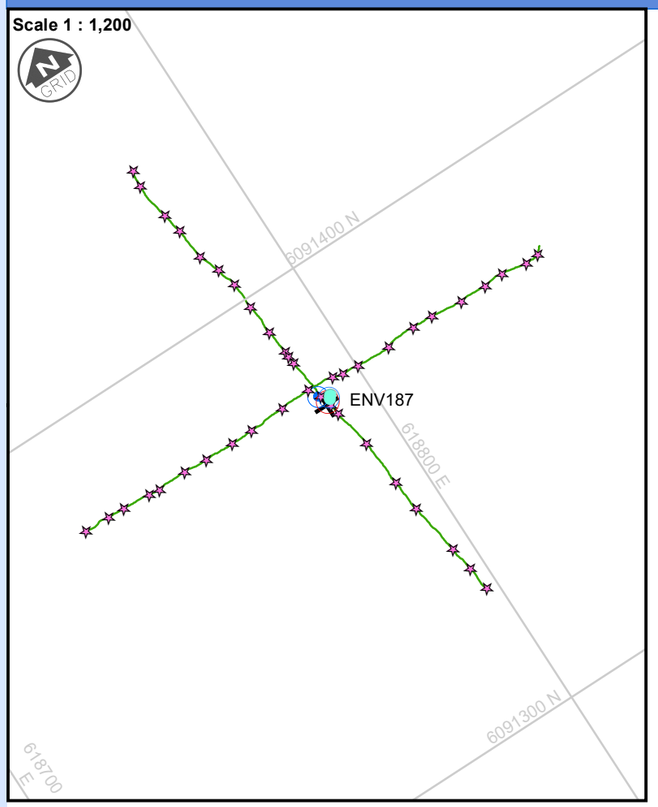


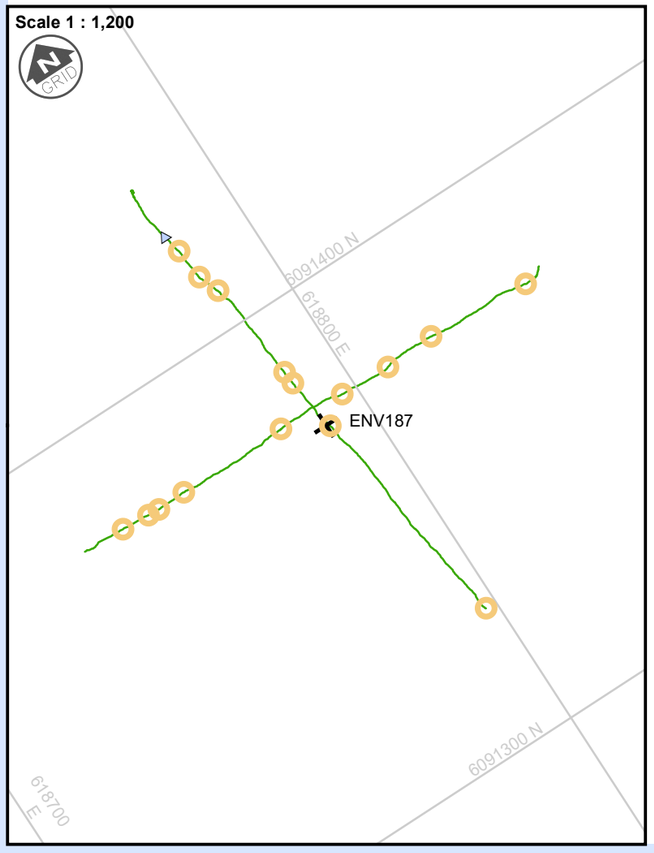
Station: ENV223
Fix: 96 **E:** 619 351 **N:** 6 093 296 **Depth (m):** 60
Retention: MFA

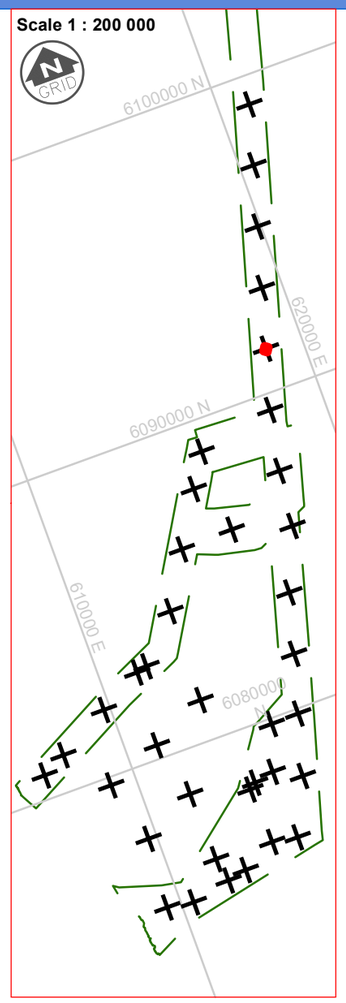
Sediment Description:
Soft silty sandy clay/mud

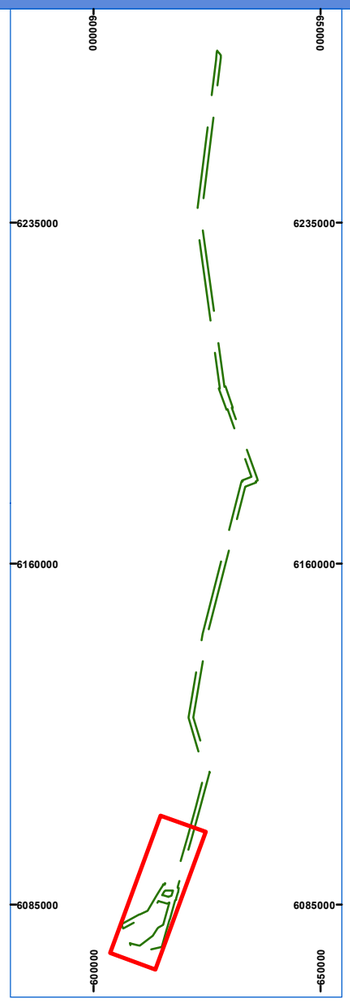
Faunal Description:
Annelida (Polychaeta), Cnidaria (Alcyoniidae), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

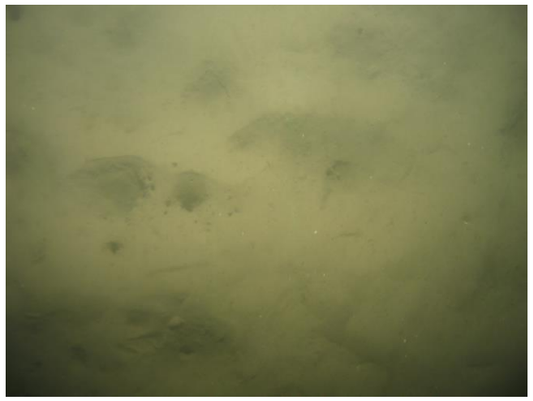
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV187

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV187
Fix: 1218 **E:** 618 797 **N:** 6 091 332 **Depth (m):** 59

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV187
Fix: 1242 **E:** 618 839 **N:** 6 091 376 **Depth (m):** 59

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01), Cnidaria (*Alcyonium digitatum*)



Station: ENV187
Fix: 100 **E:** 618 792 **N:** 6 091 375 **Depth (m):** 57
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

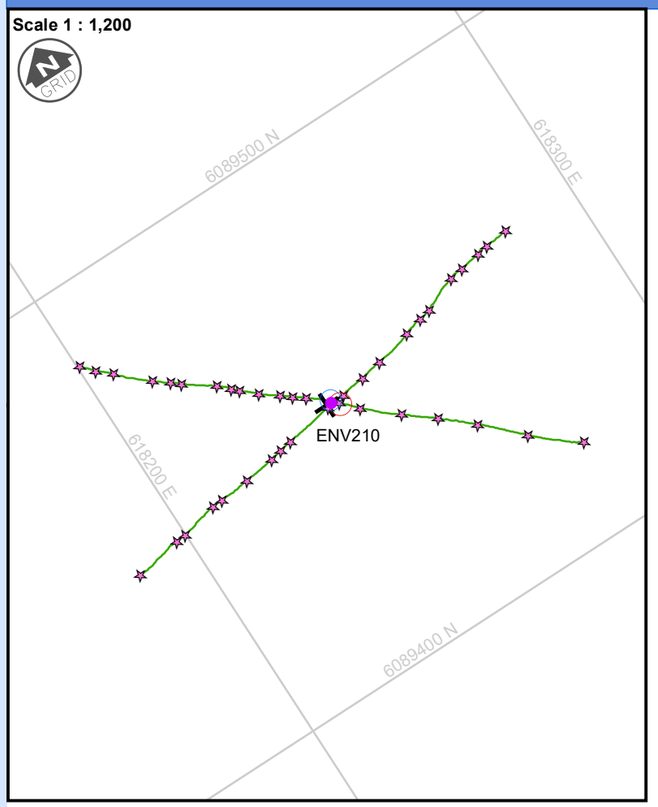


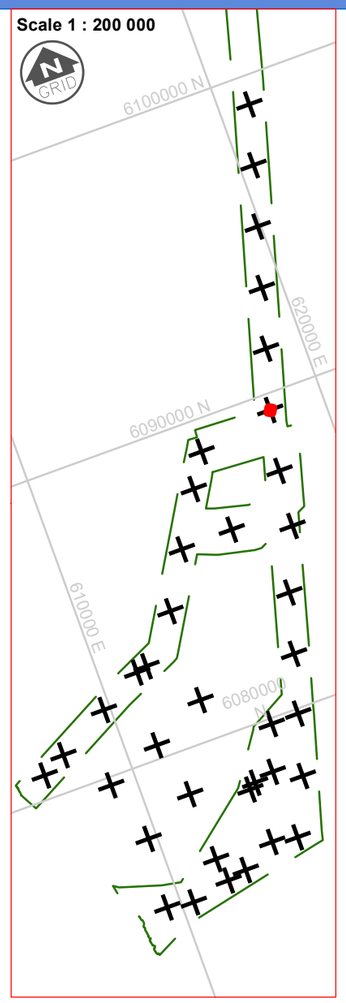
Station: ENV187
Fix: 100 **E:** 618 792 **N:** 6 091 375 **Depth (m):** 57
Retention: MFB

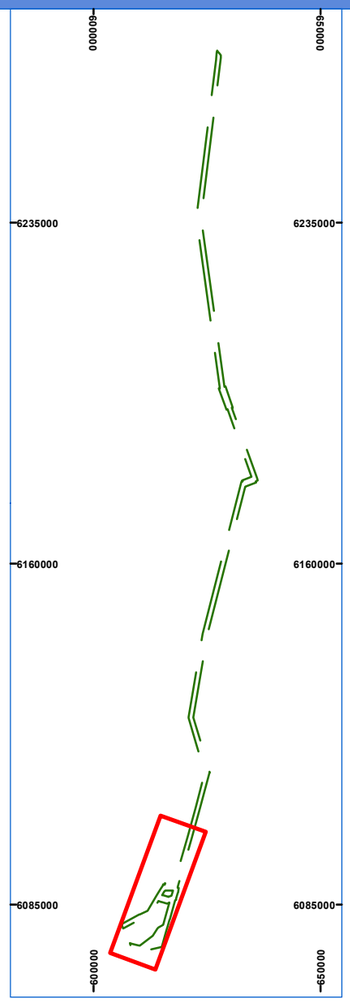
Sediment Description:
Soft silty sandy clay/mud

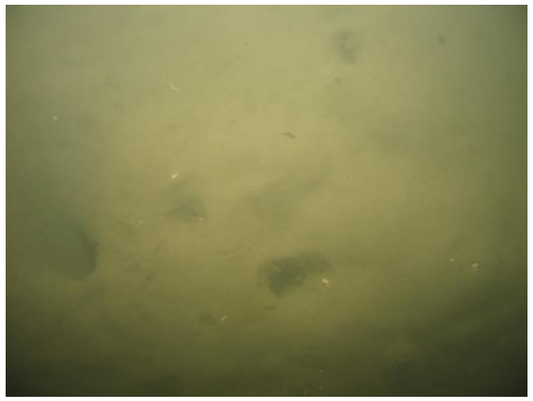
Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





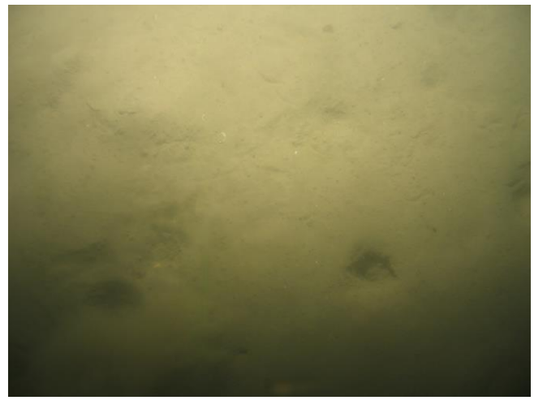




Station: ENV210
Fix: 1250 **E:** 618 261 **N:** 6 089 456 **Depth (m):** 55

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV210
Fix: 1279 **E:** 618 242 **N:** 6 089 448 **Depth (m):** 55

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV210
Fix: 105 **E:** 618 238 **N:** 6 089 452 **Depth (m):** 55
Retention: MFB

Sediment Description:
Soft clay sand with pebbles

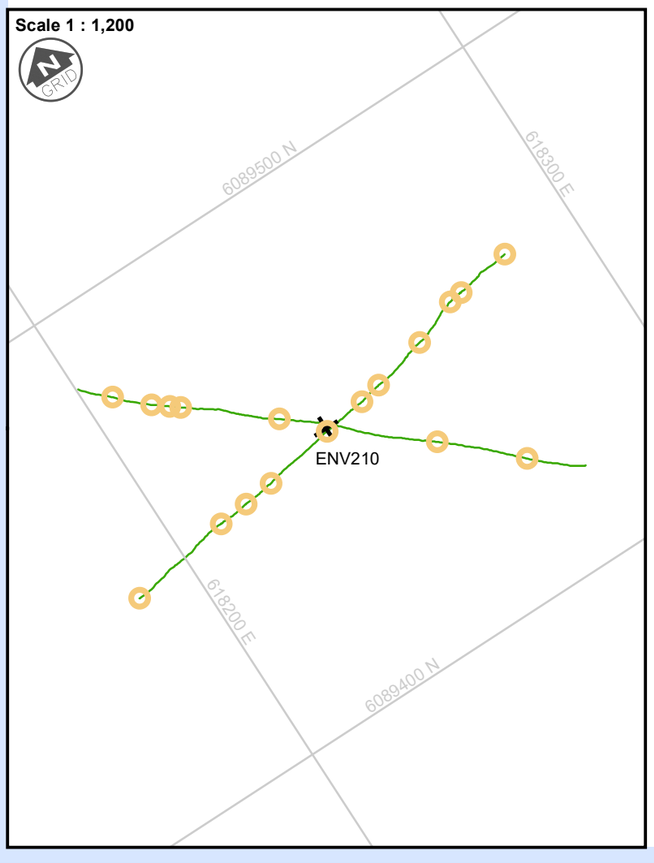
Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia, Pharidae)



Station: ENV210
Fix: 105 **E:** 618 238 **N:** 6 089 452 **Depth (m):** 55
Retention: MFB

Sediment Description:
Soft clay sand with pebbles

Faunal Description:
Annelida (Polychaeta), Arthropoda (Crustacea), Mollusca (Bivalvia, Pharidae)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

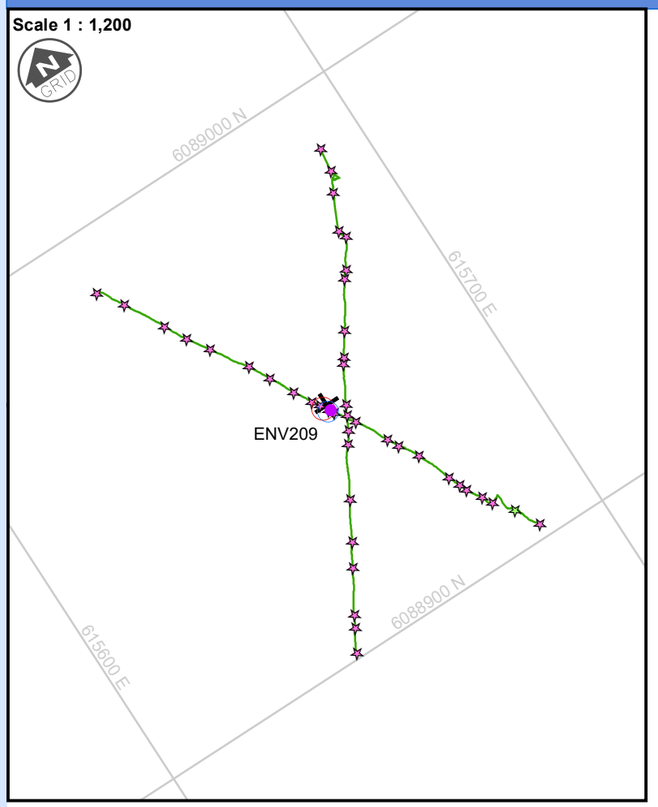
- 1-2
- 3-4
- 5-6

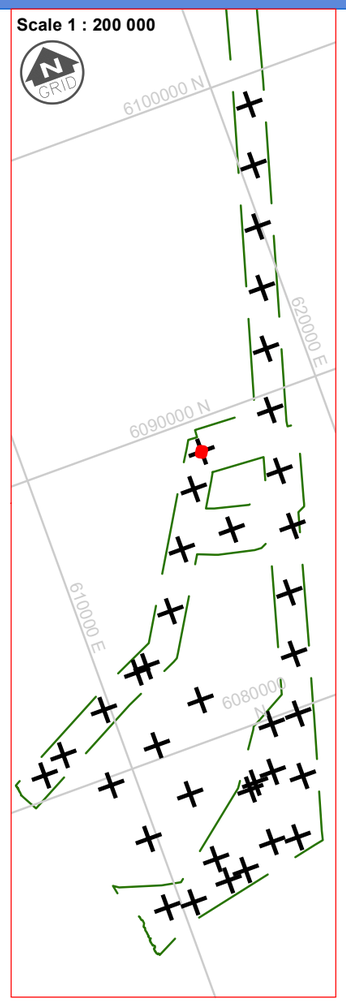
PROTECTED TAXA

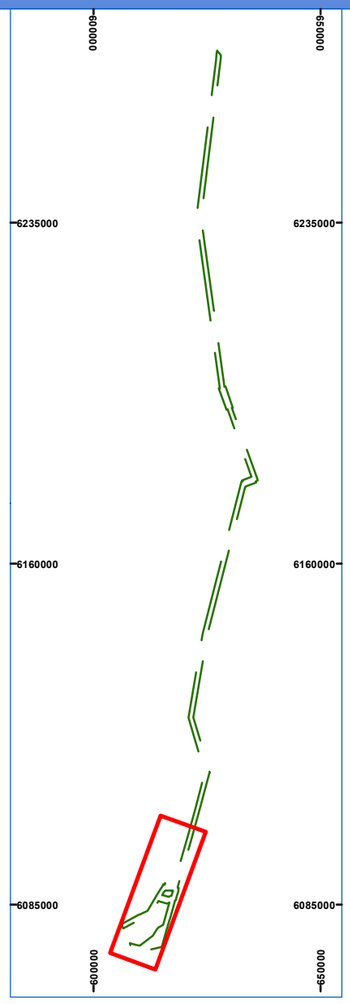
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

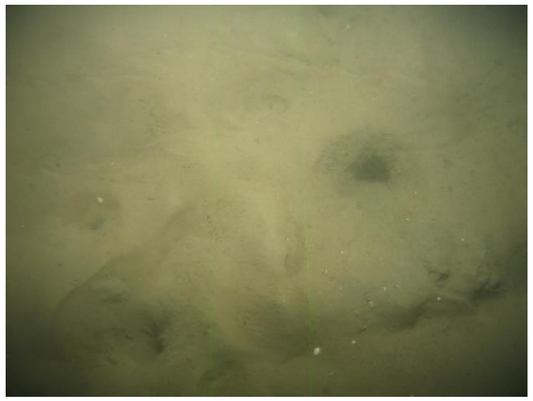
OVERVIEW OF STATION: ENV210

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)









Station: ENV209
Fix: 2096 **E:** 615 672 **N:** 6 088 931 **Depth (m):** 52

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV209
Fix: 2123 **E:** 615 676 **N:** 6 088 955 **Depth (m):** 52

Sediment Description:
Sand with shell hash

Faunal Description:
Arthropoda (*Cancer pagurus*, Paguroidea *stet.*)



Station: ENV209
Fix: 176 **E:** 615 664 **N:** 6 088 945 **Depth (m):** 54
Retention: MFA

Sediment Description:
Silty clayey fine to medium sand

Faunal Description:
Annelida (Polychaeta)



Station: ENV209
Fix: 176 **E:** 615 664 **N:** 6 088 945 **Depth (m):** 54
Retention: MFA

Sediment Description:
Silty clayey fine to medium sand

Faunal Description:
Annelida (Polychaeta)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

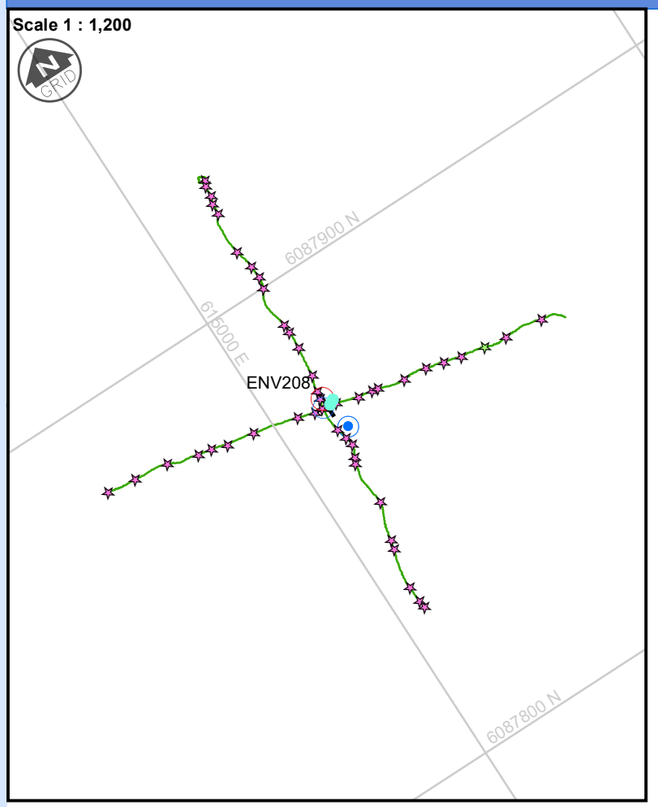
PROTECTED TAXA

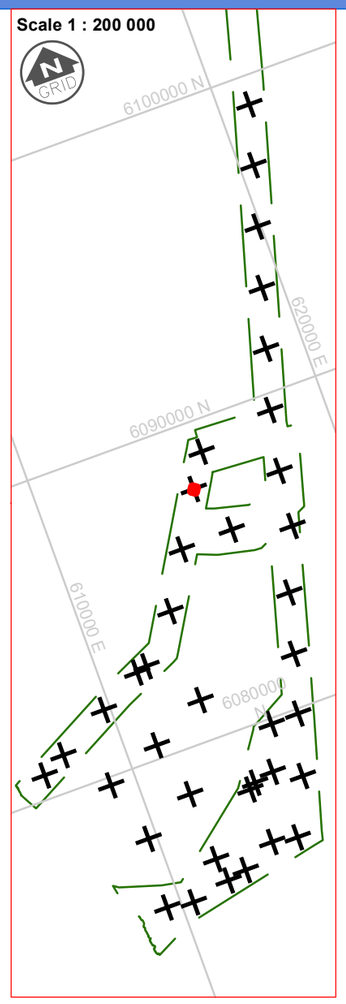
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

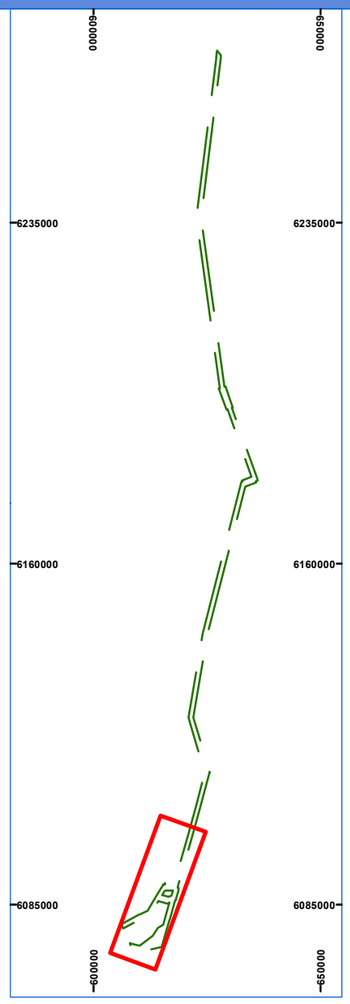
OVERVIEW OF STATION: ENV209

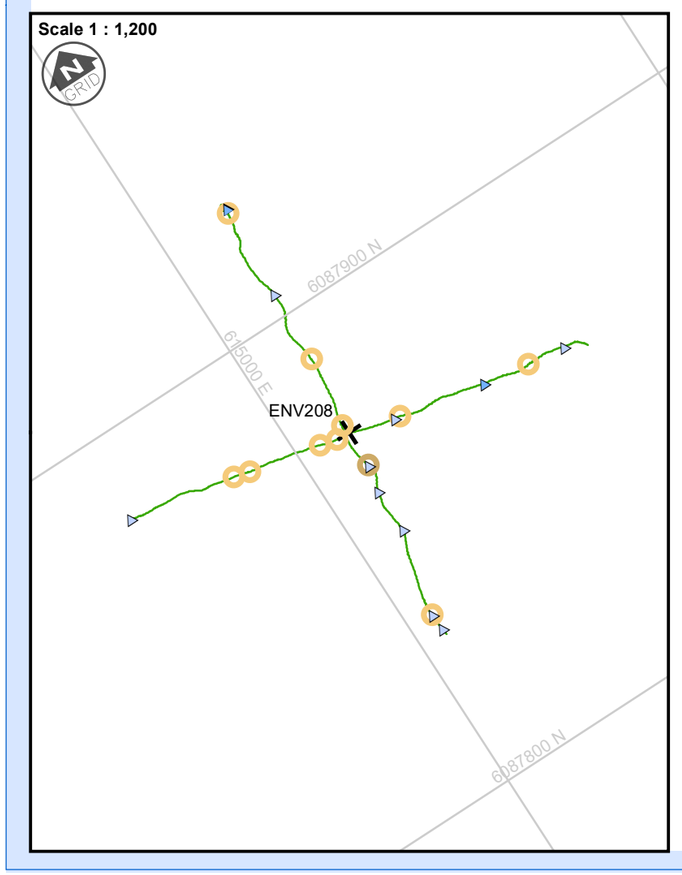
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV208

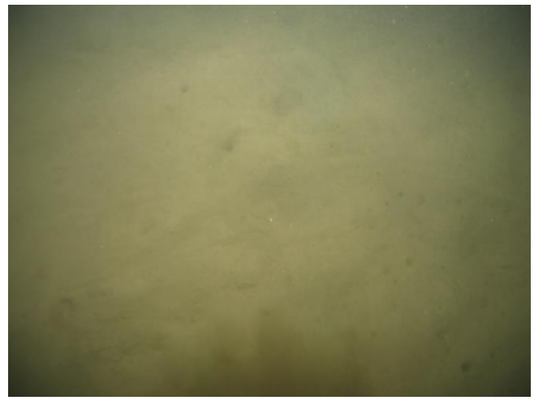
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV208
Fix: 2039 **E:** 615 013 **N:** 6 087 890 **Depth (m):** 50

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV208
Fix: 2075 **E:** 614 996 **N:** 6 087 877 **Depth (m):** 50

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV208
Fix: 173 **E:** 615 010 **N:** 6 087 874 **Depth (m):** 52
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

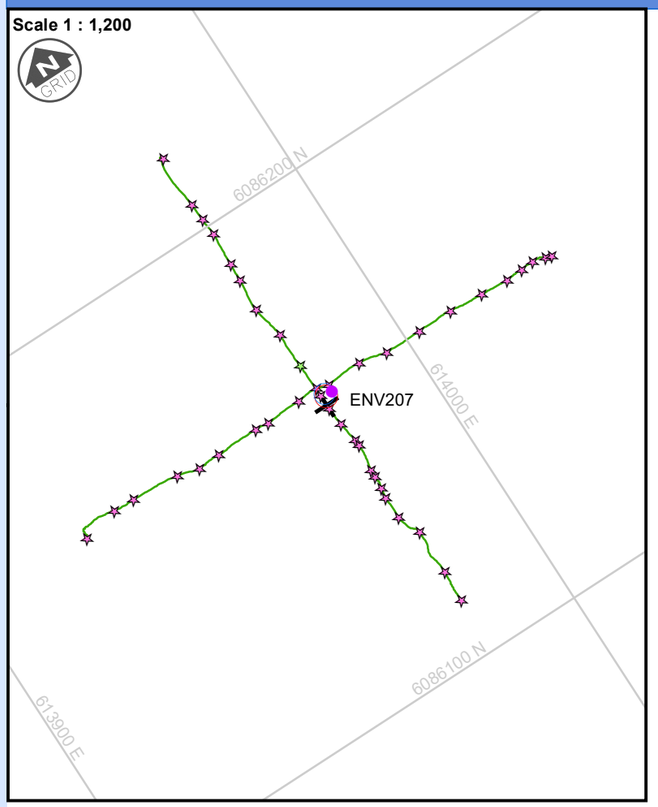
Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

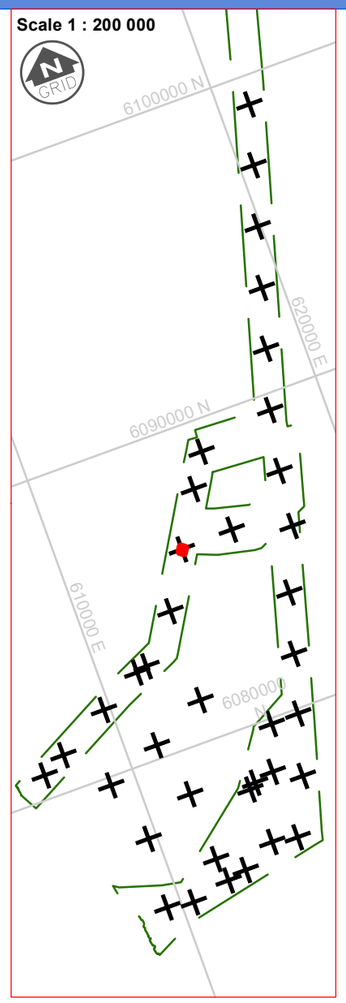


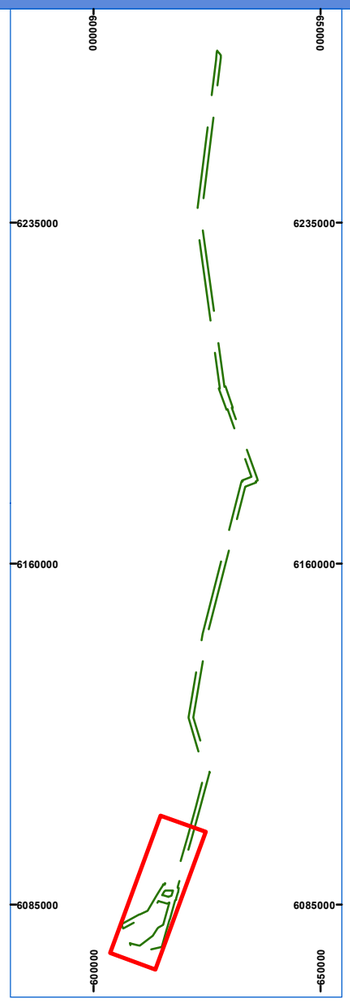
Station: ENV208
Fix: 173 **E:** 615 010 **N:** 6 087 874 **Depth (m):** 52
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)









Station: ENV207
Fix: 1954 **E:** 613 980 **N:** 6 086 157 **Depth (m):** 47

Sediment Description:
Sand with shell hash

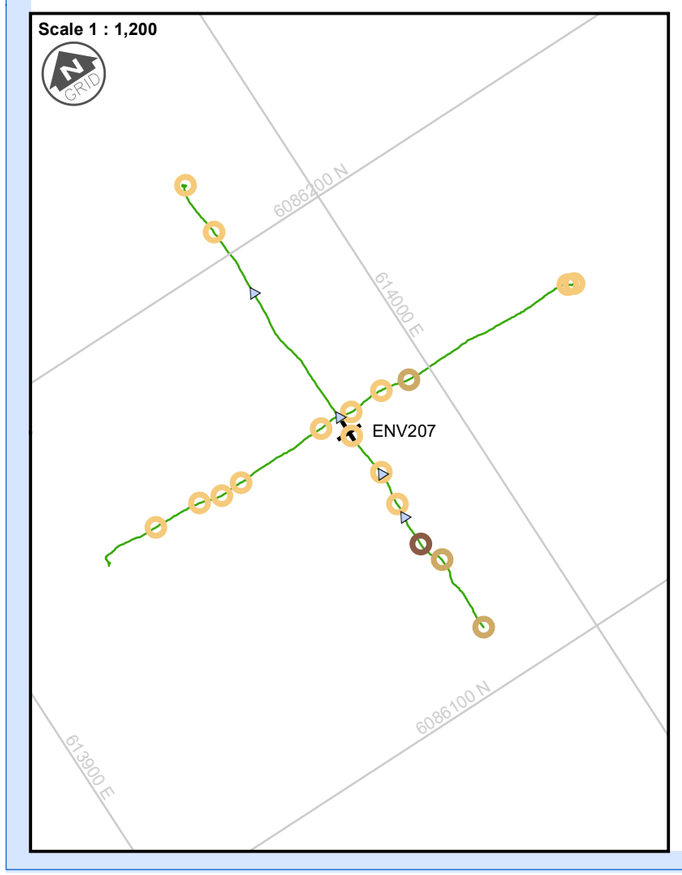
Faunal Description:
No visible fauna



Station: ENV207
Fix: 1973 **E:** 613 968 **N:** 6 086 161 **Depth (m):** 47

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Myxine glutinosa*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV207

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV207
Fix: 165 **E:** 613 981 **N:** 6 086 159 **Depth (m):** 45
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under tha surface

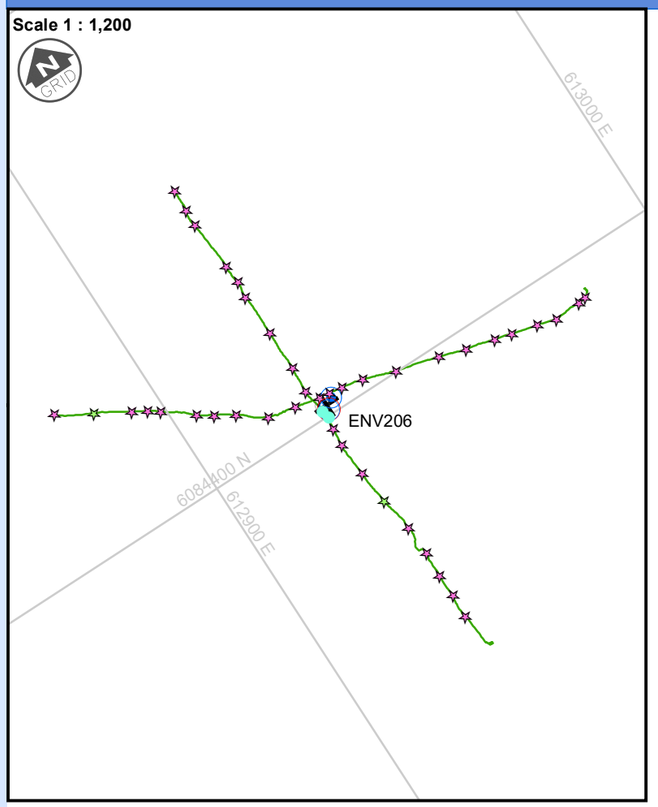
Faunal Description:
Annelida (Polychaeta)

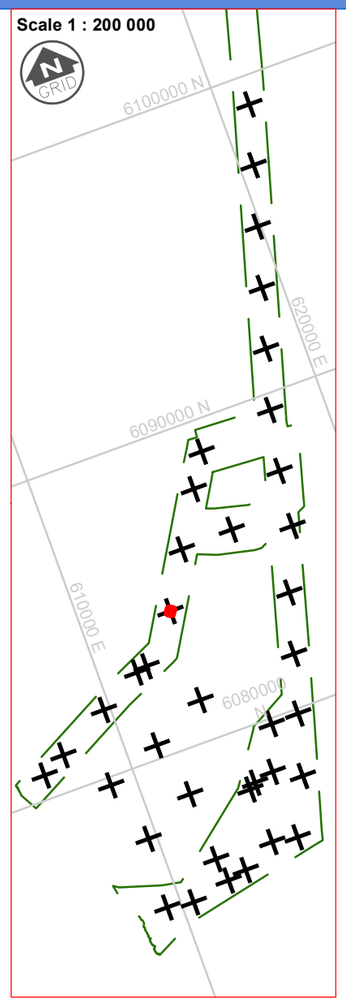


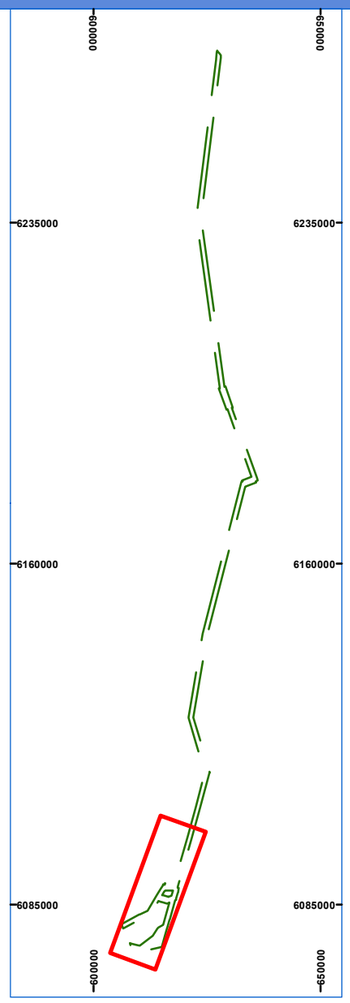
Station: ENV207
Fix: 165 **E:** 613 981 **N:** 6 086 159 **Depth (m):** 45
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under tha surface

Faunal Description:
Annelida (Polychaeta)







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV206

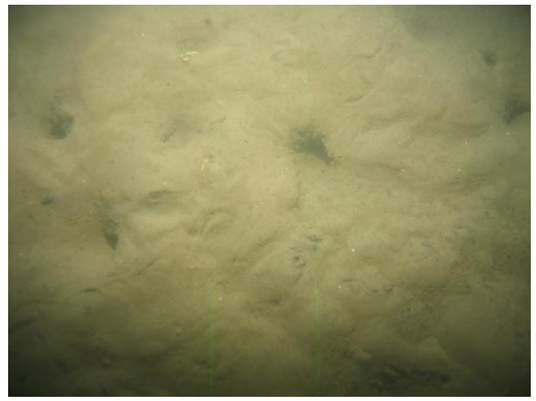
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV206
Fix: 1923 **E:** 612 881 **N:** 6 084 430 **Depth (m):** 42

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Scyliorhinus canicula*)



Station: ENV206
Fix: 1936 **E:** 612 942 **N:** 6 084 400 **Depth (m):** 42

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV206
Fix: 161 **E:** 612 927 **N:** 6 084 401 **Depth (m):** 42
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under the surface

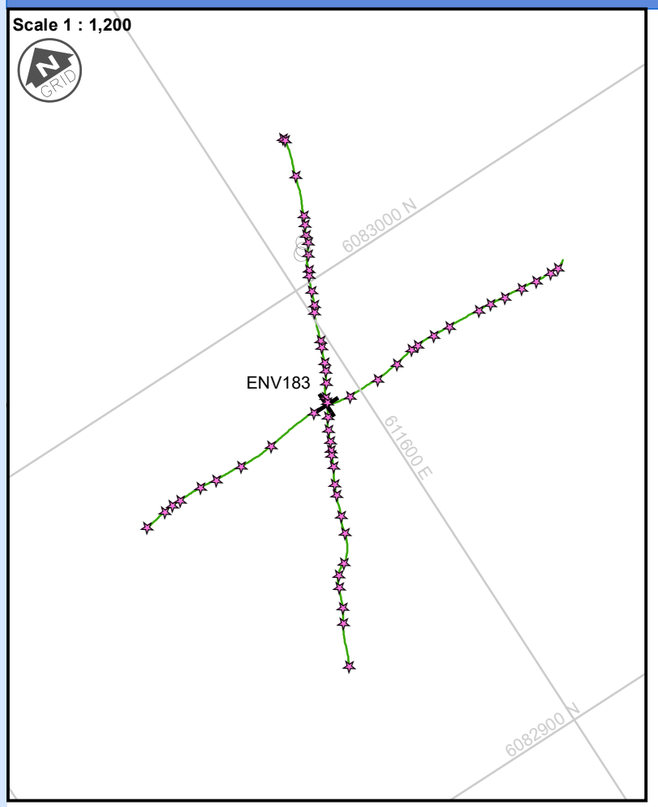
Faunal Description:
Annelida (Polychaeta)

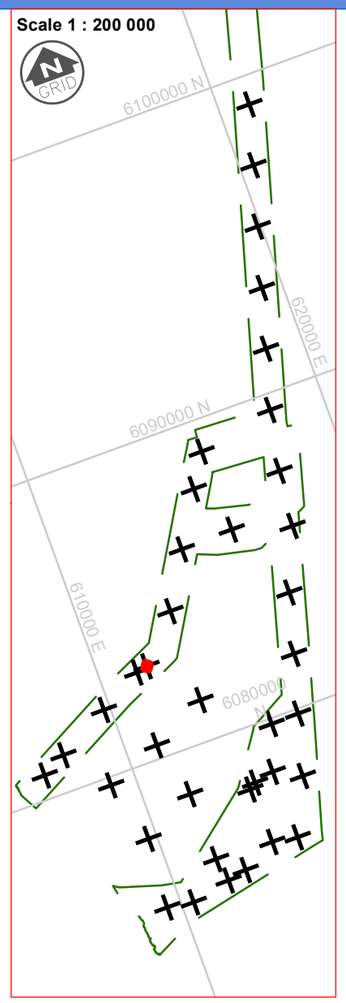


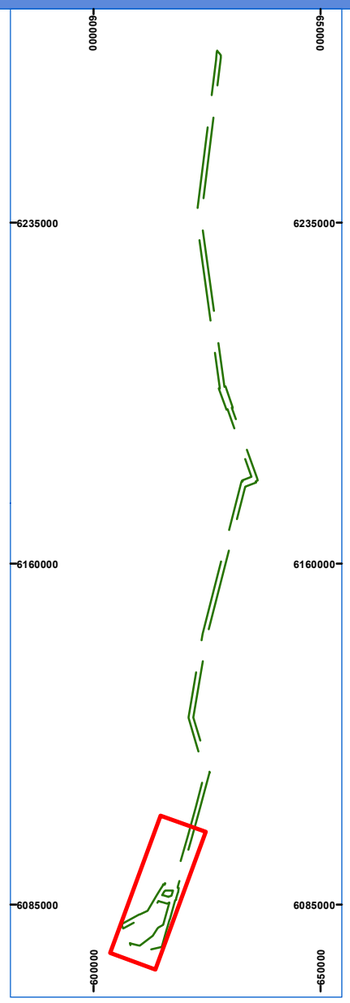
Station: ENV206
Fix: 161 **E:** 612 927 **N:** 6 084 401 **Depth (m):** 42
Retention: MFA

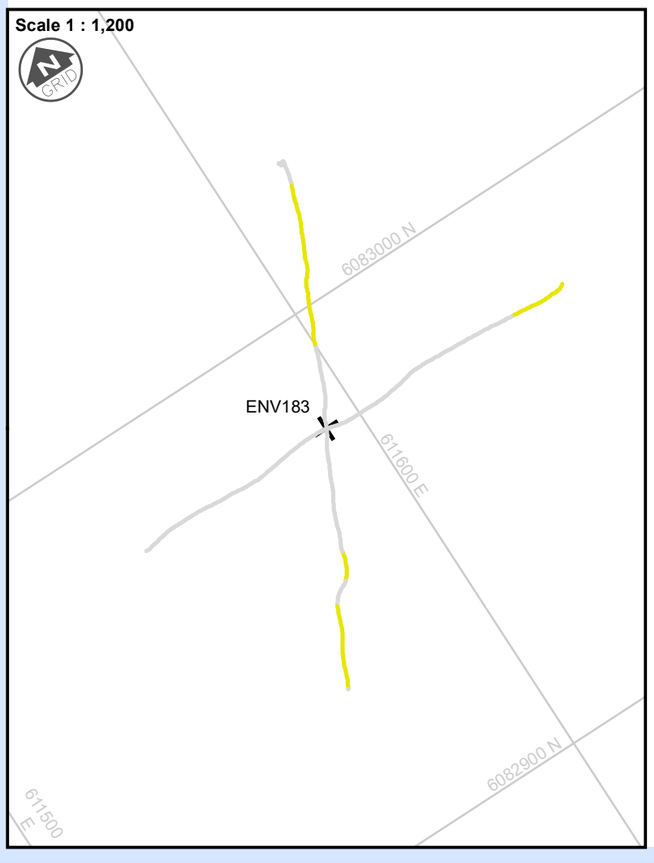
Sediment Description:
Soft silty sandy clay with pebbles under the surface

Faunal Description:
Annelida (Polychaeta)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV183

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV183
Fix: 1847 **E:** 611 614 **N:** 6 083 026 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV183
Fix: 1878 **E:** 611 576 **N:** 6 082 947 **Depth (m):** 32

Sediment Description:
Cobbles with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*)



Station: ENV183
Fix: 1885 **E:** 611 559 **N:** 6 082 978 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)

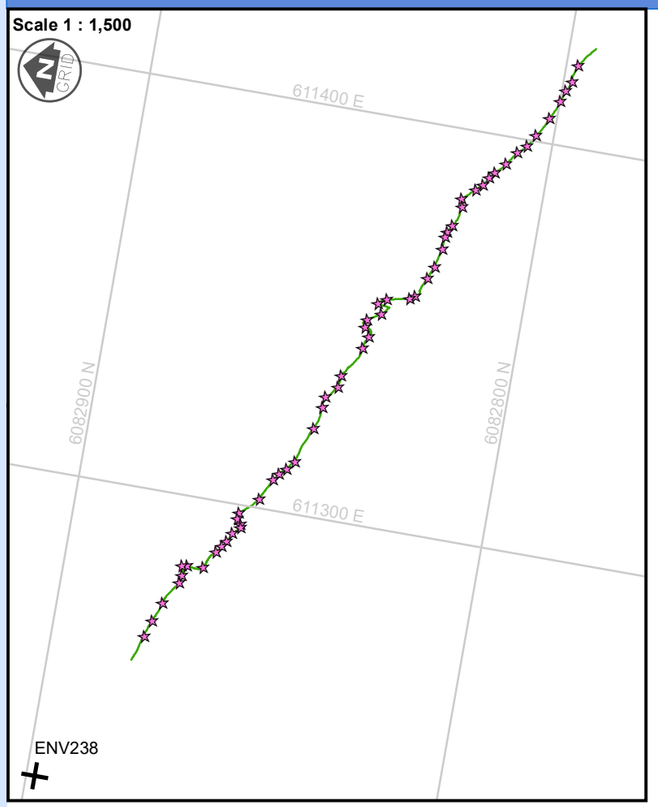


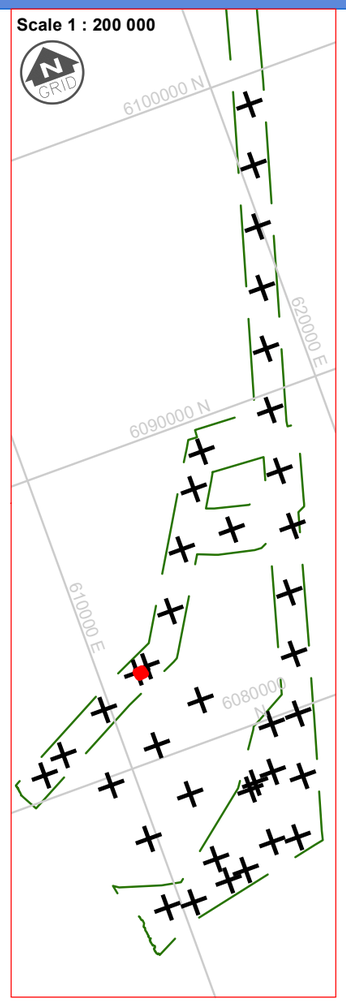
Station: ENV183
Fix: 1893 **E:** 611 609 **N:** 6 082 977 **Depth (m):** 32

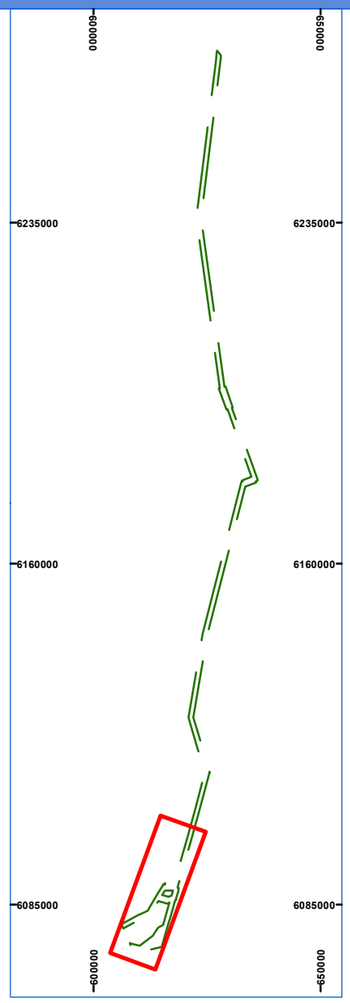
Sediment Description:
Sand with gravel and shell hash

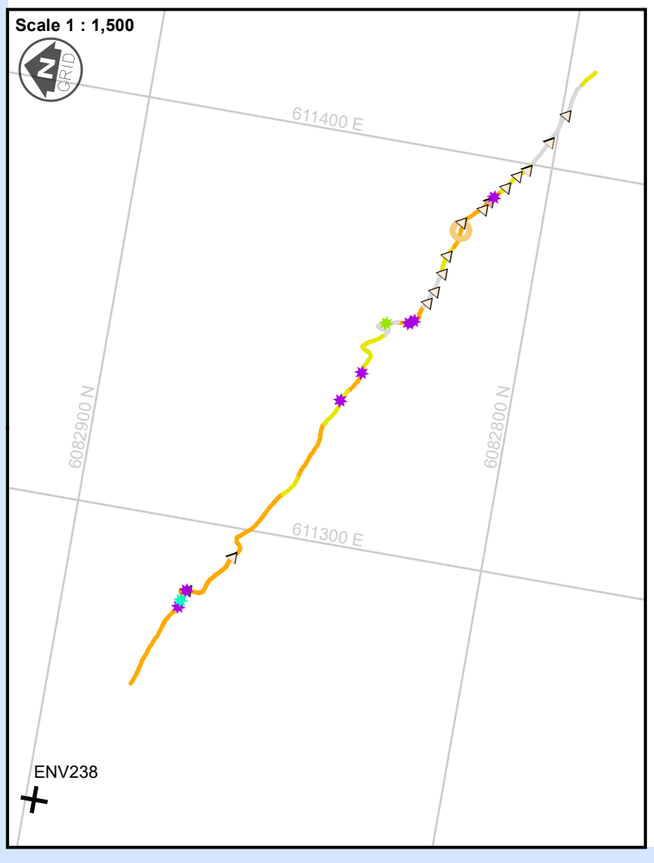
Faunal Description:
Arthropoda (*Cancer pagurus*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

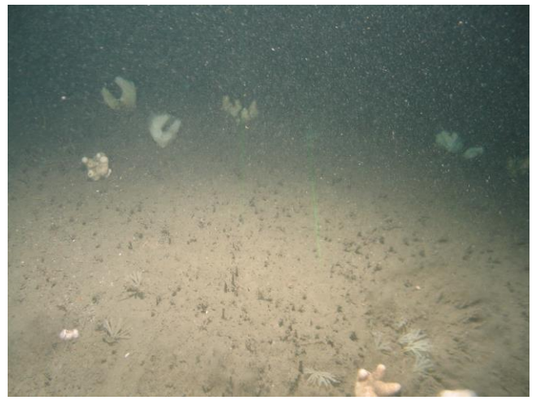
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF TRANSECT: ENV238

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV238
Fix: 562 **E:** 611 401 **N:** 6 082 804 **Depth (m):** 25

Sediment Description:
Sand with shell hash

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*)



Station: ENV238
Fix: 575 **E:** 611 370 **N:** 6 082 822 **Depth (m):** 25

Sediment Description:
Gravel with coarse sediment

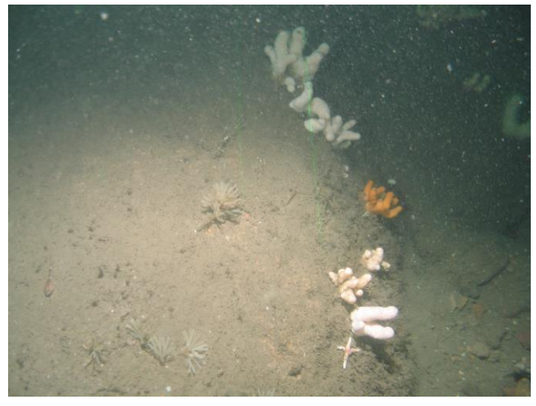
Faunal Description:
Faunal turf



Station: ENV238
Fix: 586 **E:** 611 343 **N:** 6 082 837 **Depth (m):** 24

Sediment Description:
Gravel with coarse sediment

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (*Asterias rubens*, *Echinus esculentus inc*), Faunal turf

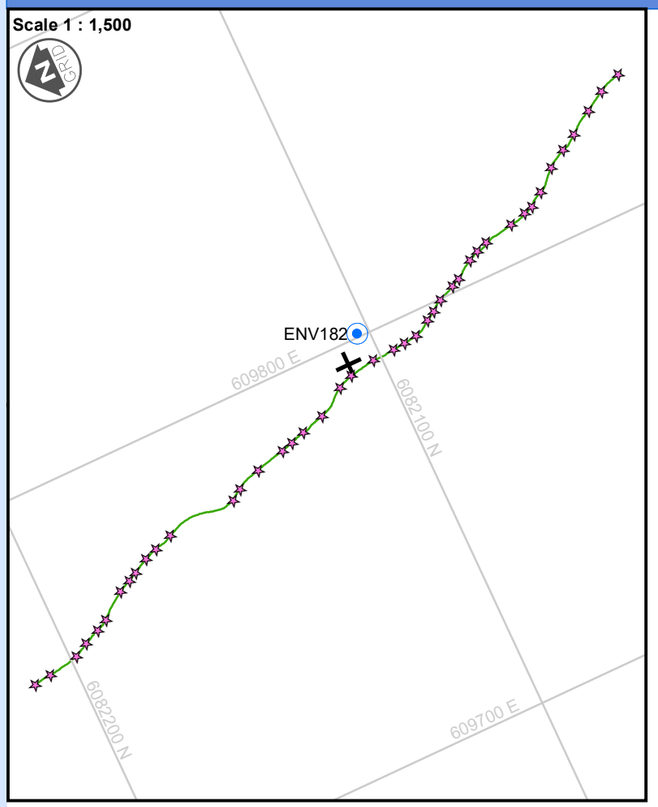


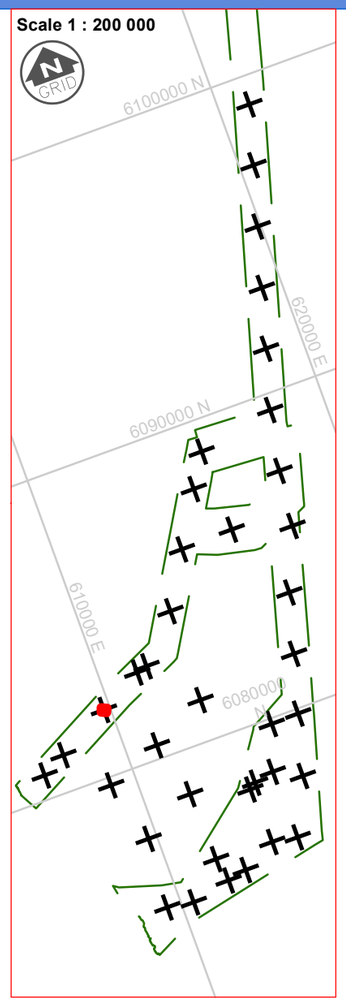
Station: ENV238
Fix: 608 **E:** 611 280 **N:** 6 082 871 **Depth (m):** 24

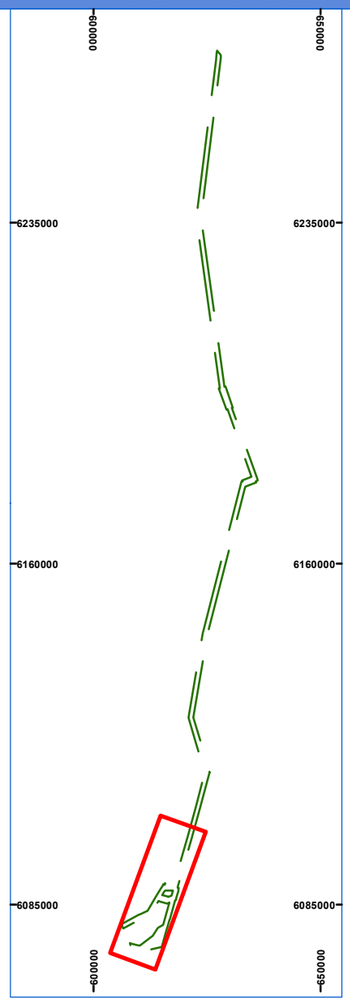
Sediment Description:
Sand with gravel and shell hash

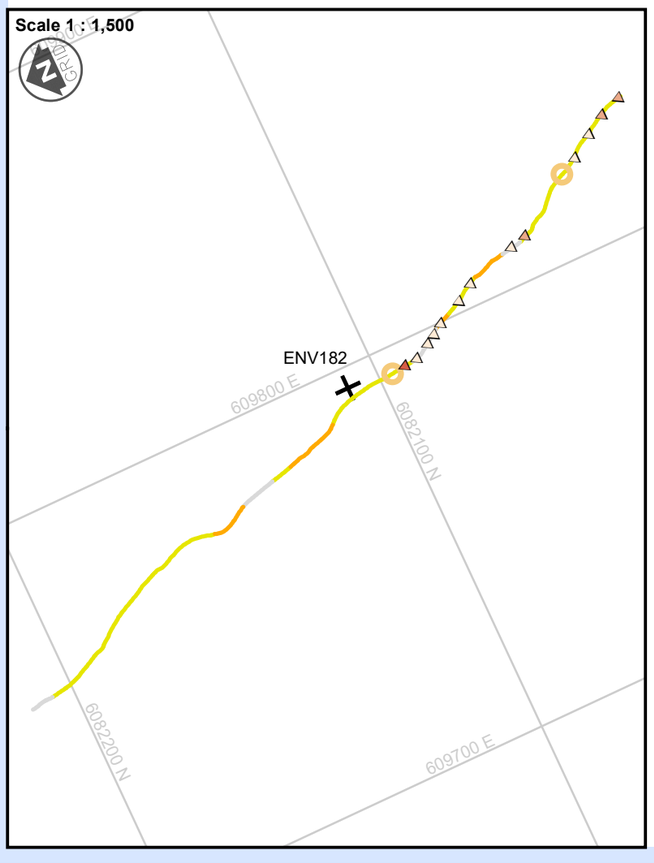
Faunal Description:
Bryozoa (Flustridae *stet.*), Chordata (*Callionymus lyra*), Cnidaria (*Alcyonium digitatum*, *Nemertesia ramosa inc*), Echinodermata (*Asterias rubens*), Faunal turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV182

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV182
Fix: 515 **E:** 609 757 **N:** 6 082 206 **Depth (m):** 16

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV182
Fix: 537 **E:** 609 794 **N:** 6 082 094 **Depth (m):** 17

Sediment Description:
Occasional cobbles and gravel

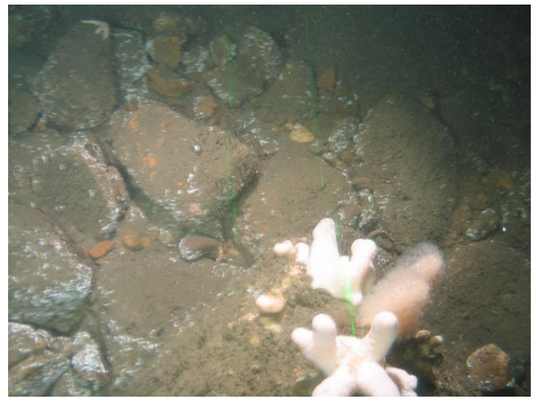
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf, Porifera



Station: ENV182
Fix: 538 **E:** 609 794 **N:** 6 082 090 **Depth (m):** 17

Sediment Description:
Gravel.

Faunal Description:
Bryozoa (Flustridae *stet.*), Chordata (Ascidiacea *stet.*), Faunal turf

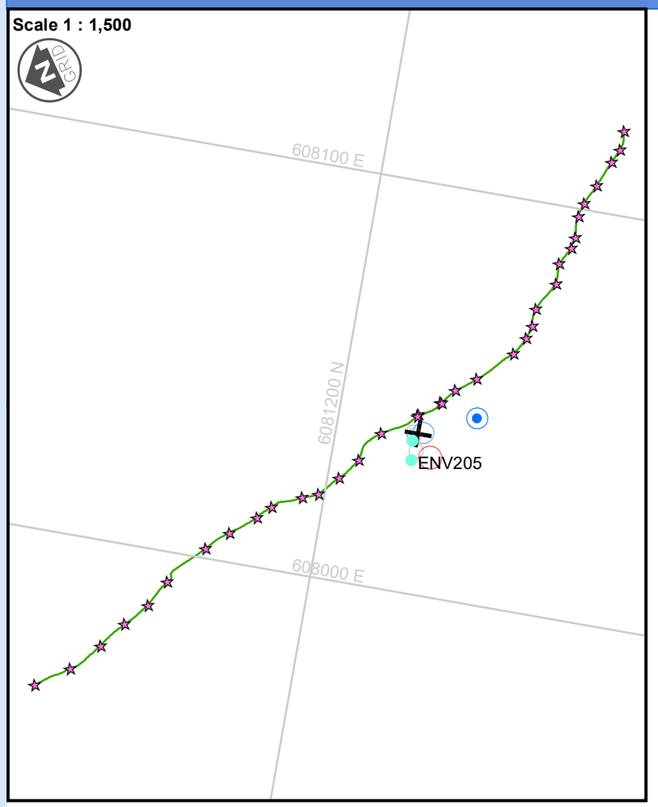


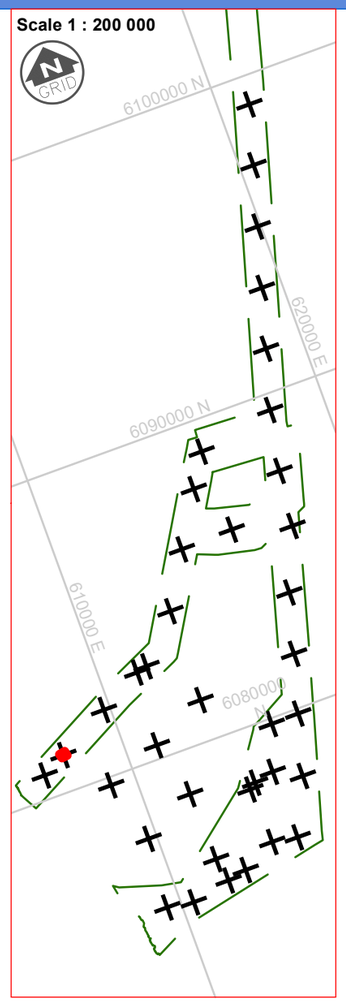
Station: ENV182
Fix: 546 **E:** 609 808 **N:** 6 082 065 **Depth (m):** 17

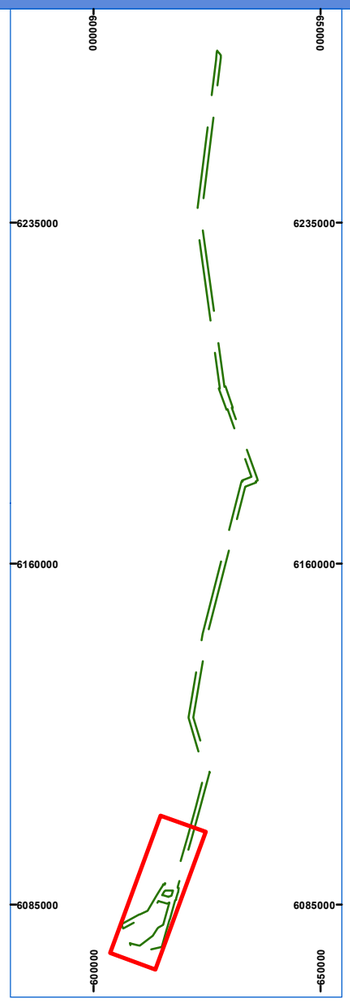
Sediment Description:
Gravel and occasional cobbles

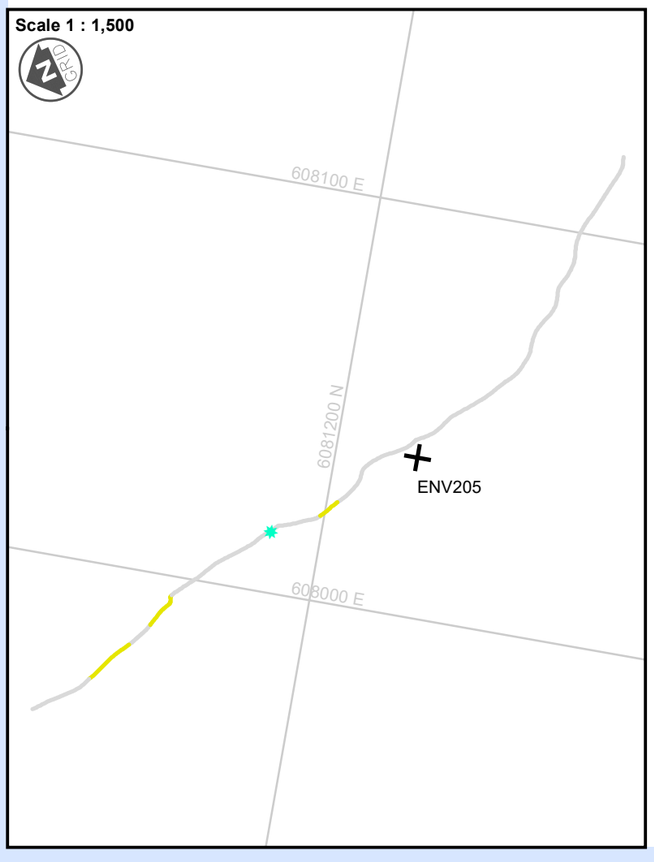
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (Asteroidea *stet.*), Porifera

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV205

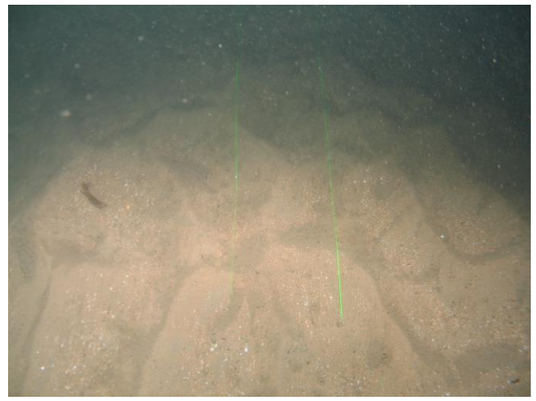
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV205
Fix: 290 **E:** 607 992 **N:** 6 081 234 **Depth (m):** 14

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
No visible fauna



Station: ENV205
Fix: 315 **E:** 608 054 **N:** 6 081 168 **Depth (m):** 15

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV205
Fix: 24 **E:** 608 034 **N:** 6 081 176 **Depth (m):** 15
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

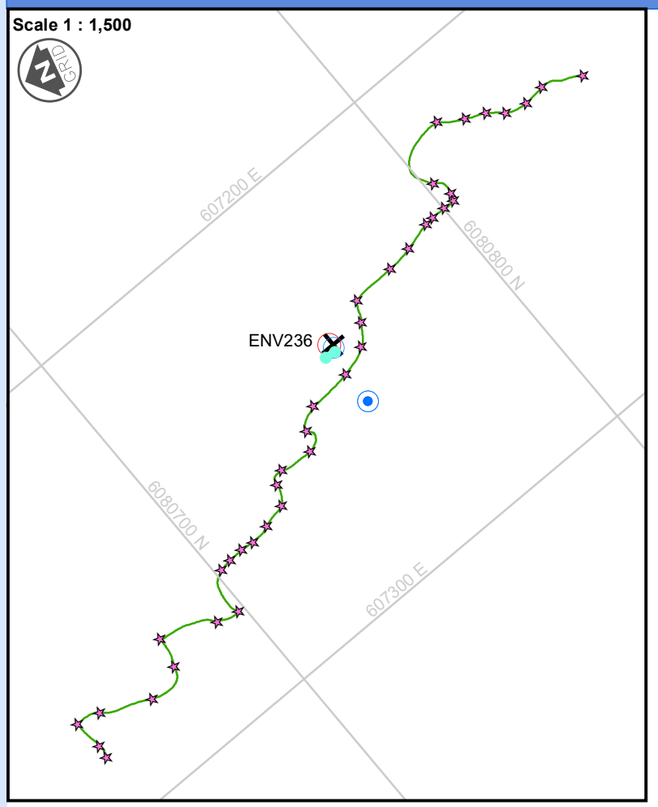


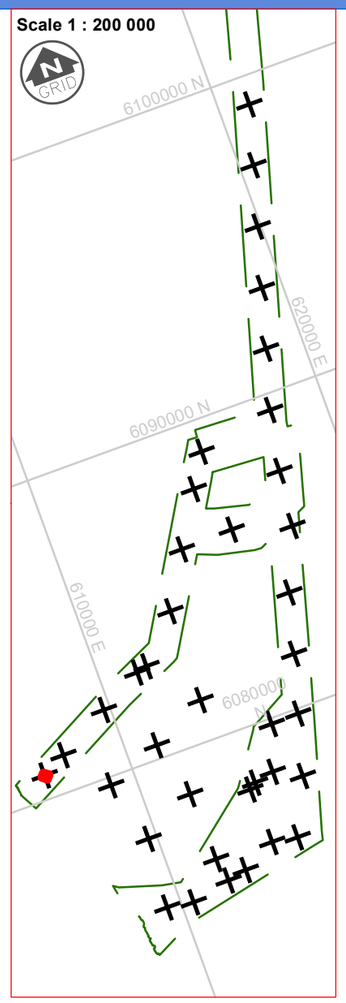
Station: ENV205
Fix: 24 **E:** 608 034 **N:** 6 081 176 **Depth (m):** 15
Retention: MFA

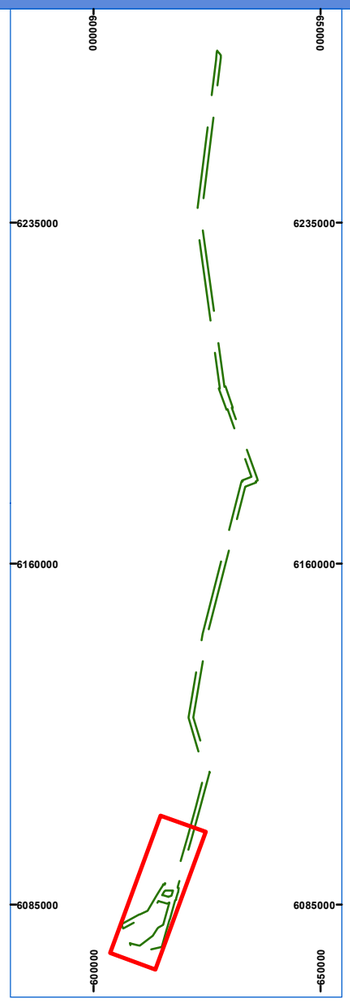
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

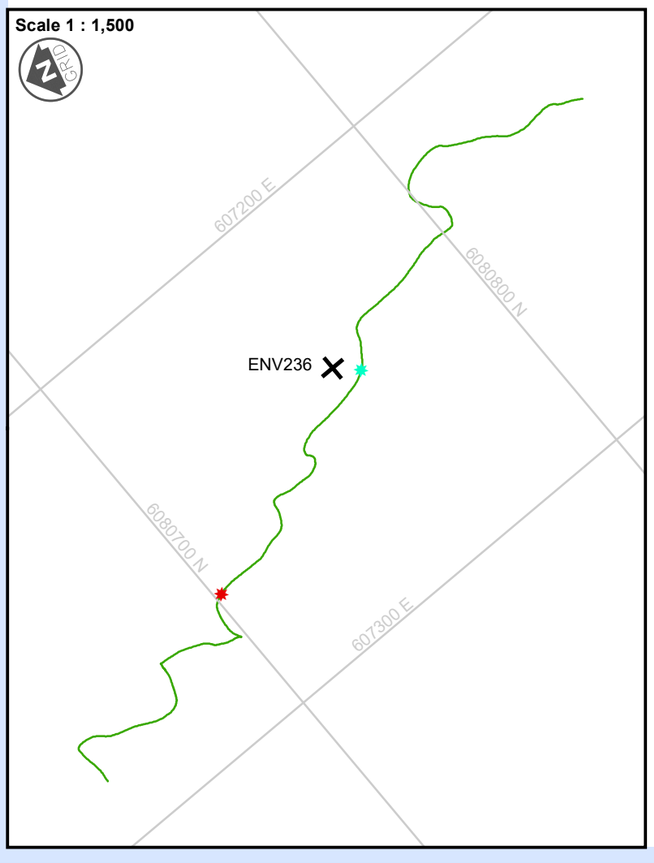
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

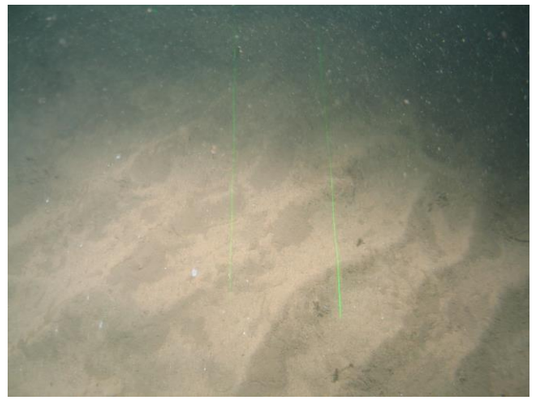
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV236

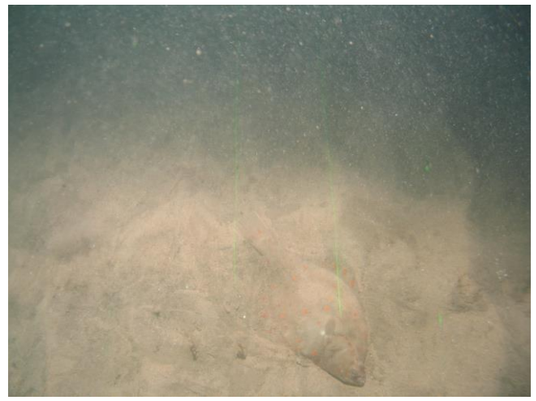
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV236
Fix: 247 **E:** 607 280 **N:** 6 080 651 **Depth (m):** 10

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV236
Fix: 267 **E:** 607 247 **N:** 6 080 763 **Depth (m):** 10

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Pleuronectes platessa*)



Station: ENV236
Fix: 31 **E:** 607 241 **N:** 6 080 757 **Depth (m):** 11
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta)

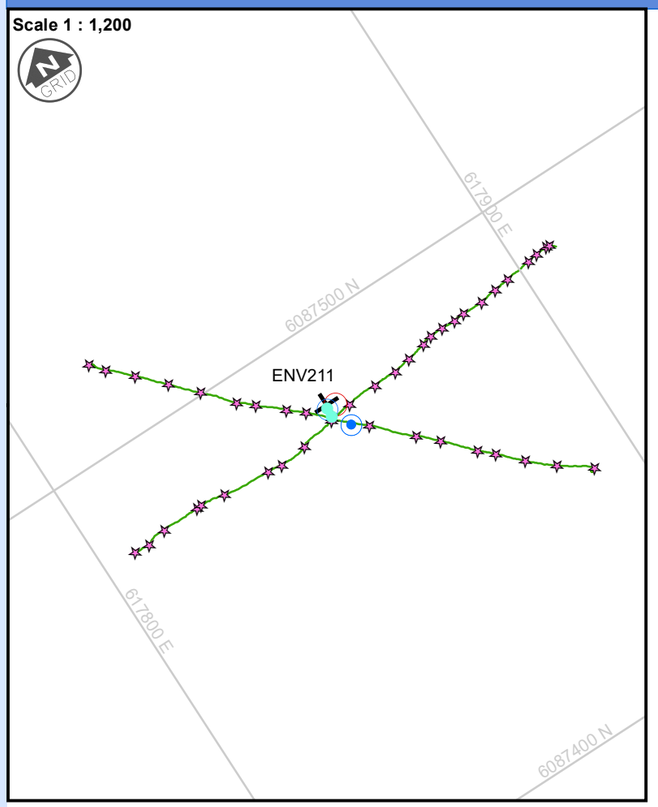


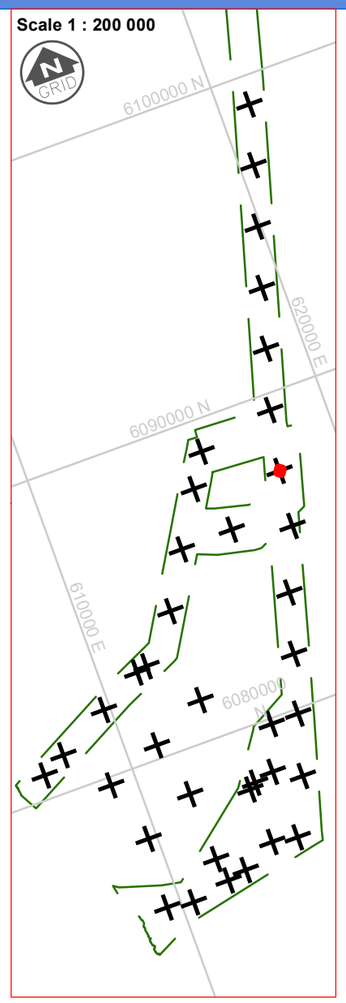
Station: ENV236
Fix: 31 **E:** 607 241 **N:** 6 080 757 **Depth (m):** 11
Retention: MFA

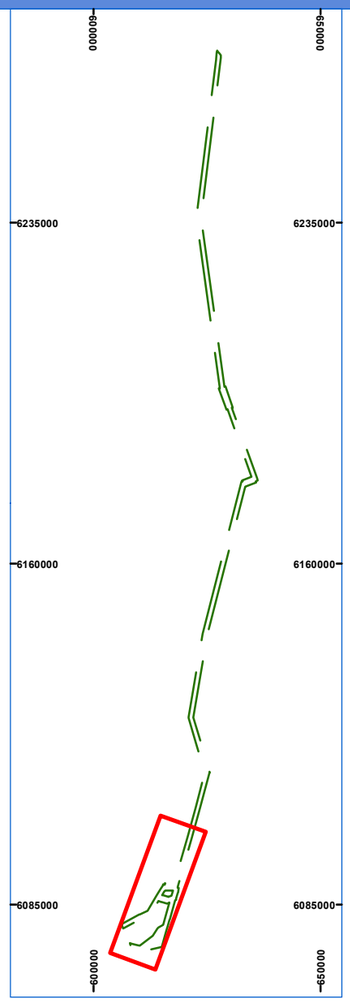
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

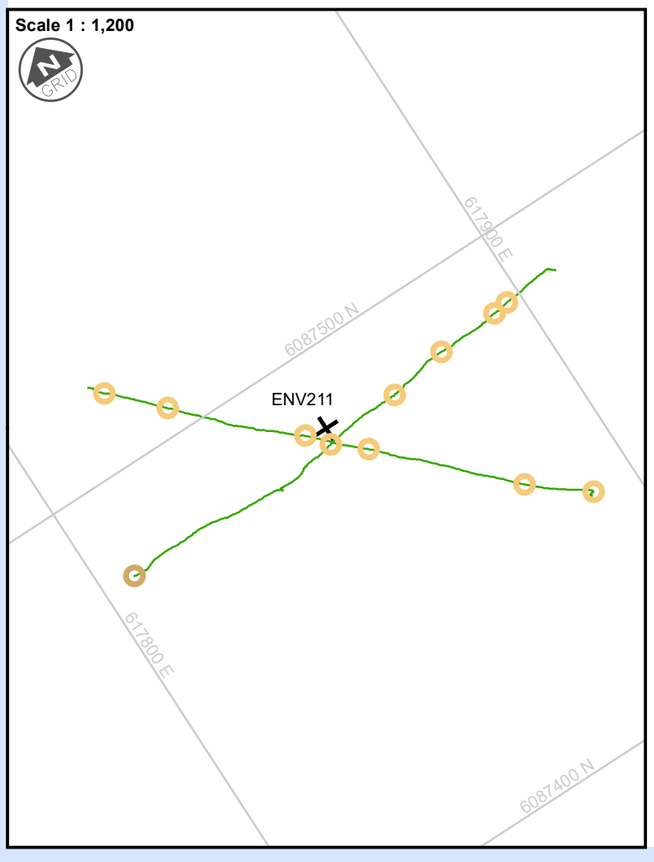
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

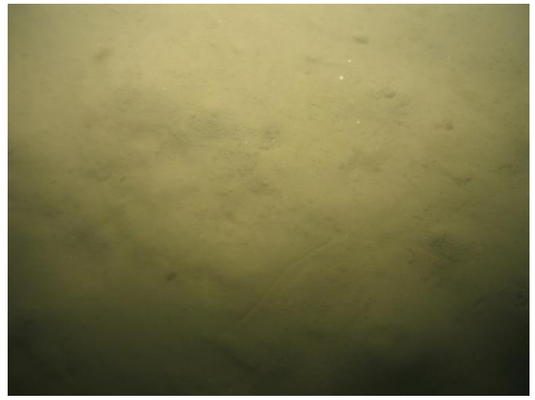
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV211

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV211
Fix: 1296 **E:** 617 842 **N:** 6 087 493 **Depth (m):** 52

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV211
Fix: 1330 **E:** 617 907 **N:** 6 087 487 **Depth (m):** 52

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV211
Fix: 107 **E:** 617 855 **N:** 6 087 484 **Depth (m):** 54
Retention: MFA

Sediment Description:
Soft clay sand with pebbles and shell fragments

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

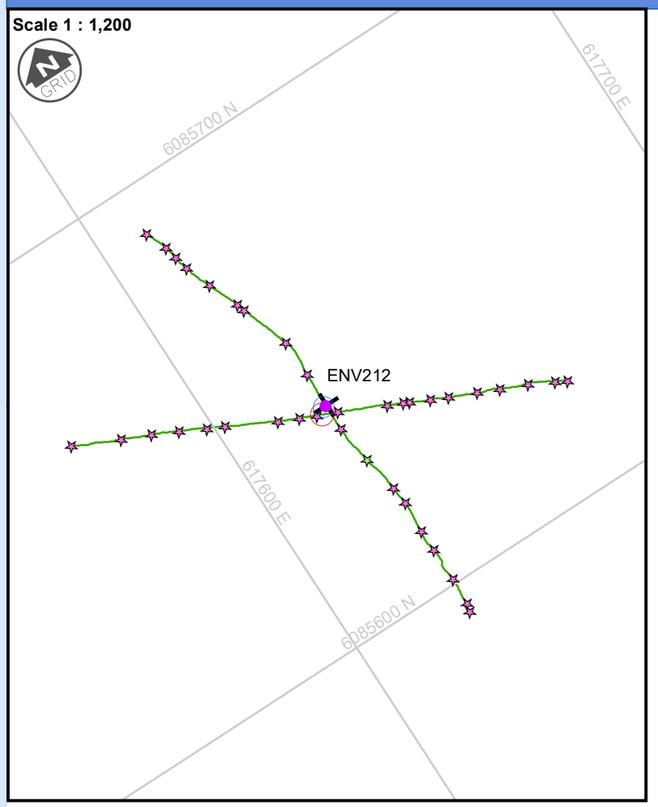


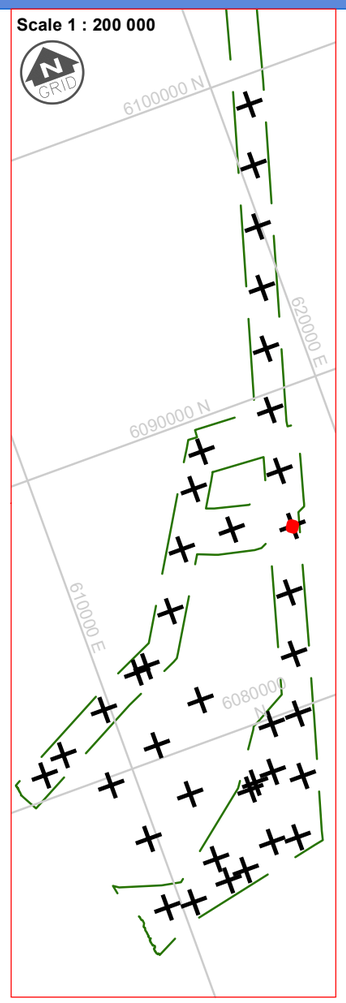
Station: ENV211
Fix: 107 **E:** 617 855 **N:** 6 087 484 **Depth (m):** 54
Retention: MFA

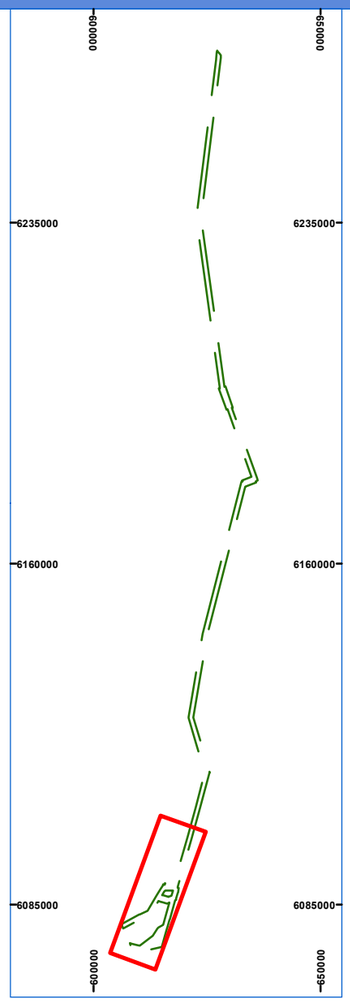
Sediment Description:
Soft clay sand with pebbles and shell fragments

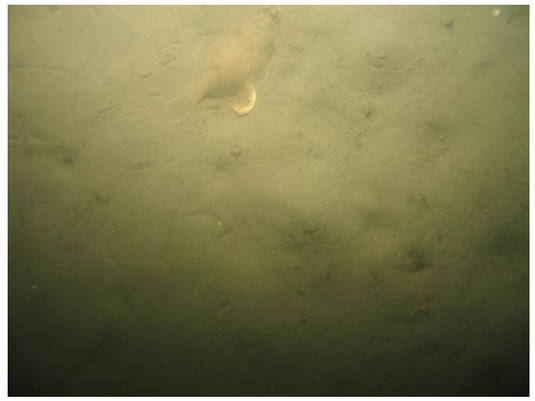
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





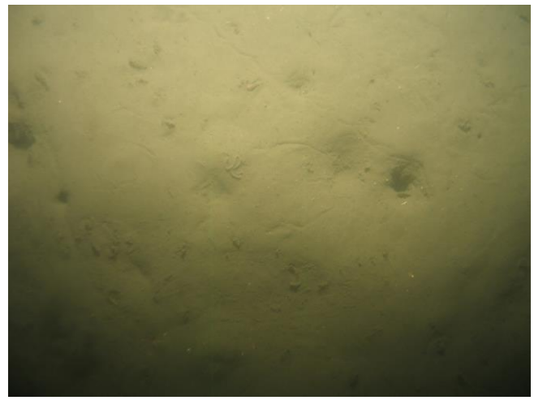




Station: ENV212
Fix: 1357 **E:** 617 617 **N:** 6 085 669 **Depth (m):** 49

Sediment Description:
Sand with shell hash

Faunal Description:
Chordata (*Glyptocephalus cynoglossus*)



Station: ENV212
Fix: 1364 **E:** 617 623 **N:** 6 085 612 **Depth (m):** 49

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV212
Fix: 111 **E:** 617 619 **N:** 6 085 642 **Depth (m):** 51
Retention: MFA

Sediment Description:
Soft clay sand with pebbles, gravels and shell fragments

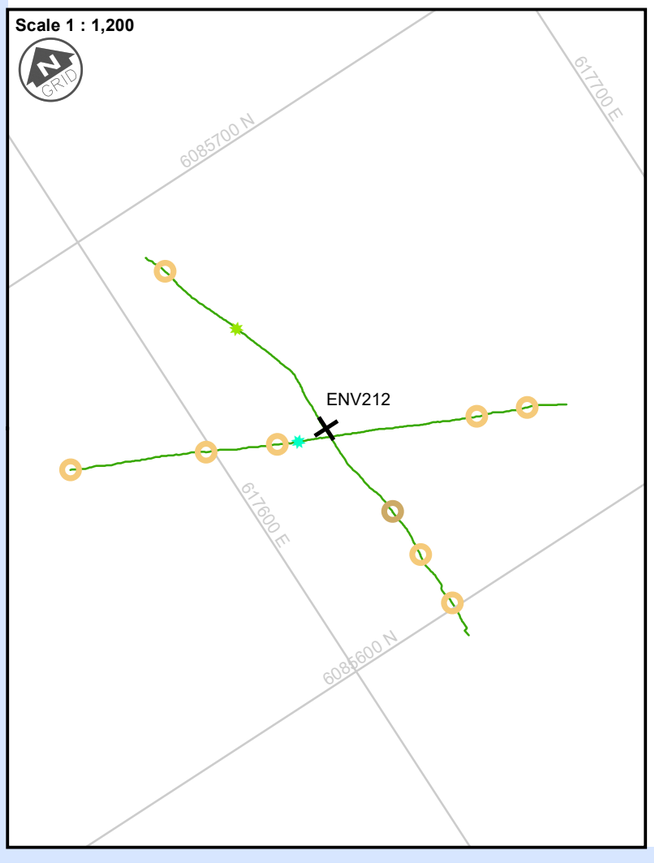
Faunal Description:
Echinodermata (Ophiuroidea)



Station: ENV212
Fix: 111 **E:** 617 619 **N:** 6 085 642 **Depth (m):** 51
Retention: MFA

Sediment Description:
Soft clay sand with pebbles, gravels and shell fragments

Faunal Description:
Echinodermata (Ophiuroidea)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

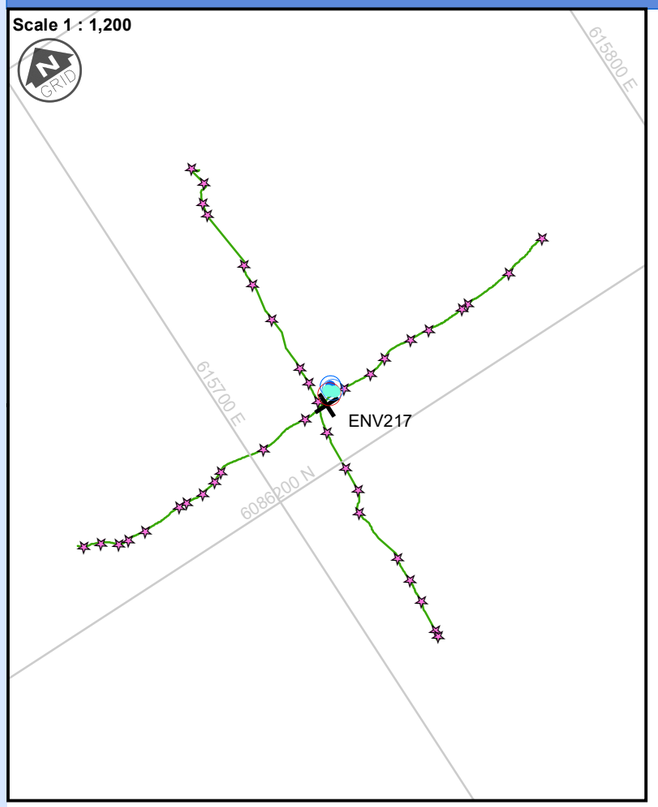
PROTECTED TAXA

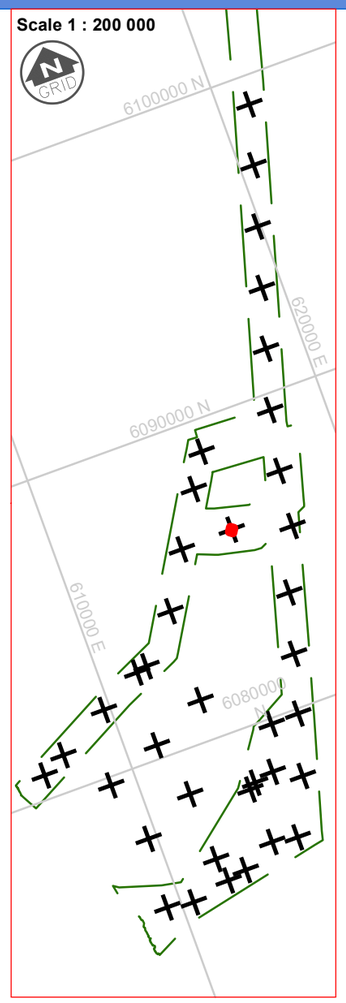
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

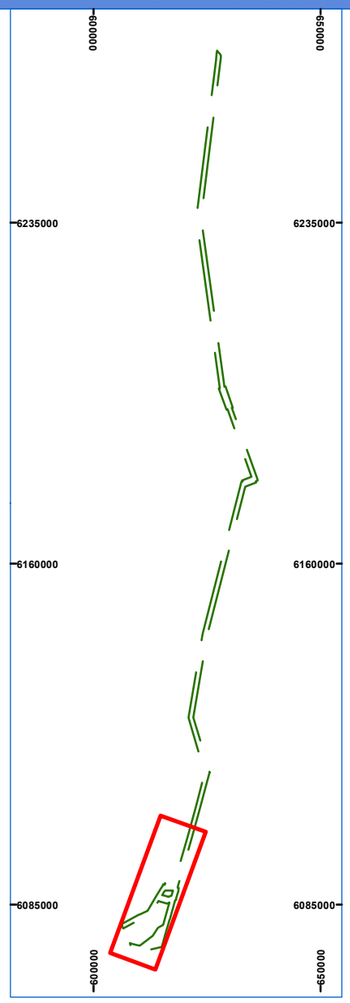
OVERVIEW OF STATION: ENV212

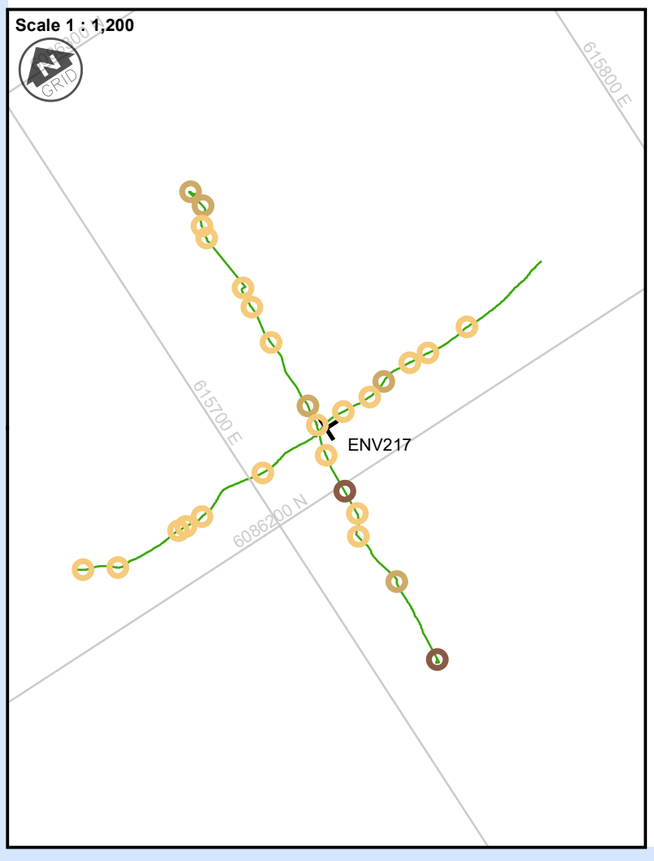
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

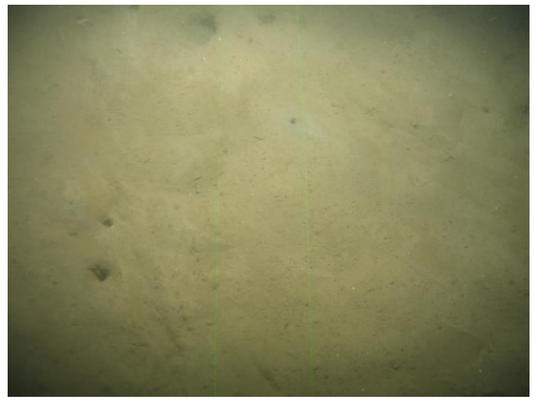
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV217

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV217
Fix: 1997 **E:** 615 715 **N:** 6 086 207 **Depth (m):** 49

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV217
Fix: 2015 **E:** 615 728 **N:** 6 086 212 **Depth (m):** 49

Sediment Description:
Soft sediment with shell hash

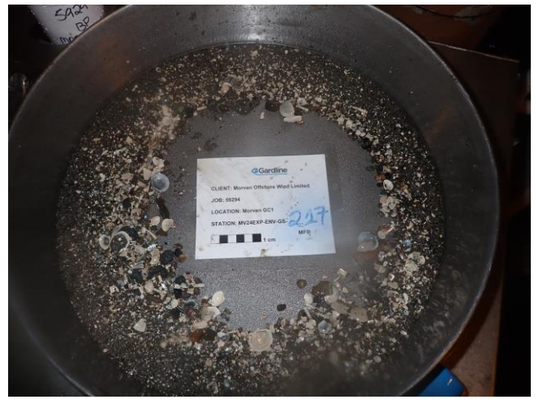
Faunal Description:
Arthropoda (Paguroidea *stet.*), Cnidaria (*Alcyonium digitatum*)



Station: ENV217
Fix: 169 **E:** 615 721 **N:** 6 086 213 **Depth (m):** 48
Retention: MFB

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

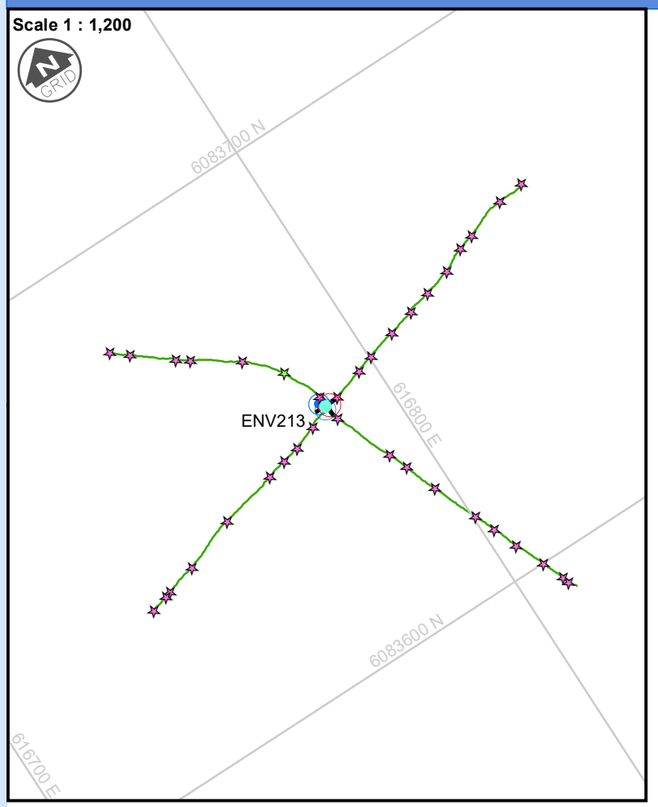


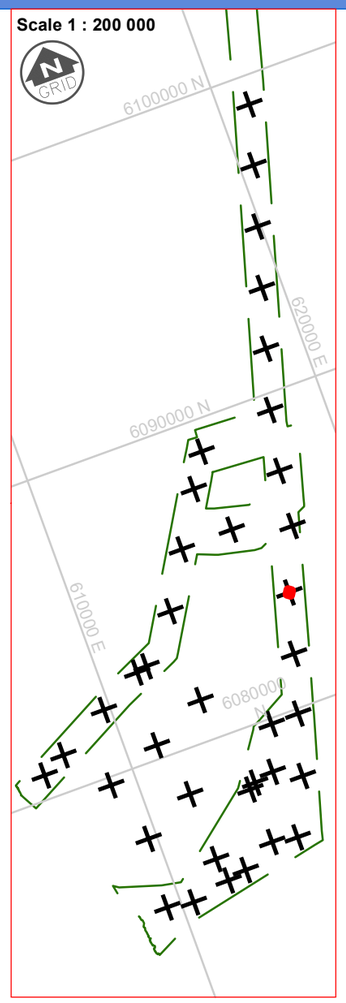
Station: ENV217
Fix: 169 **E:** 615 721 **N:** 6 086 213 **Depth (m):** 48
Retention: MFB

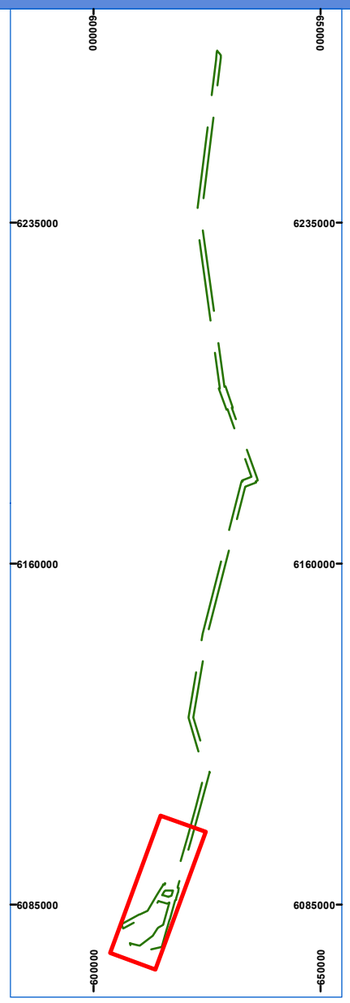
Sediment Description:
Soft silty sandy clay/mud

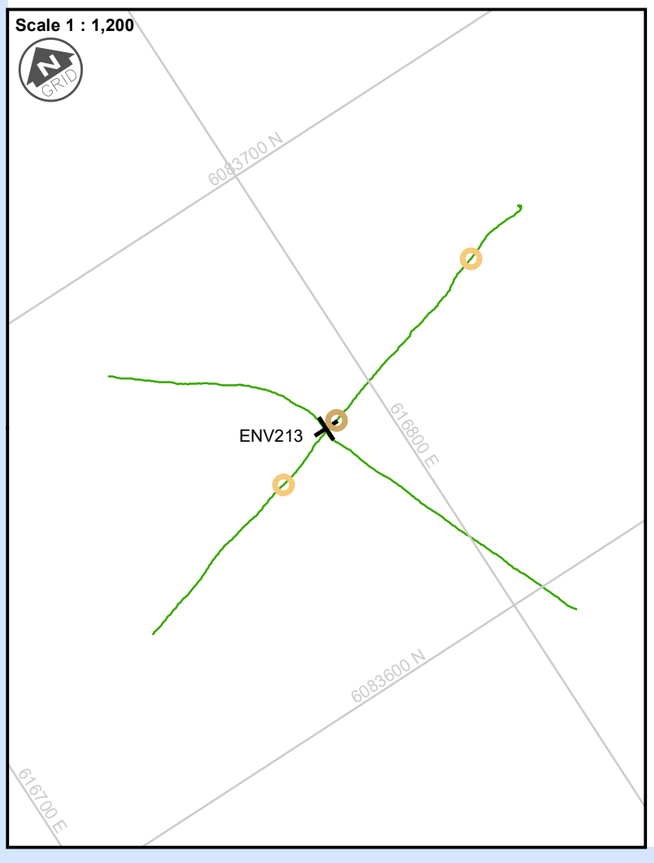
Faunal Description:
Annelida (Polychaeta), Mollusca (Gastropoda, Scaphopoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

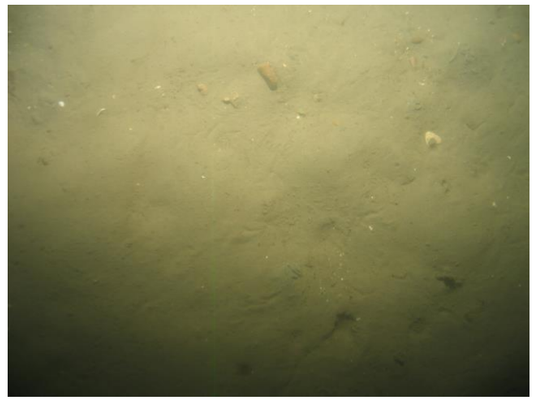
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV213

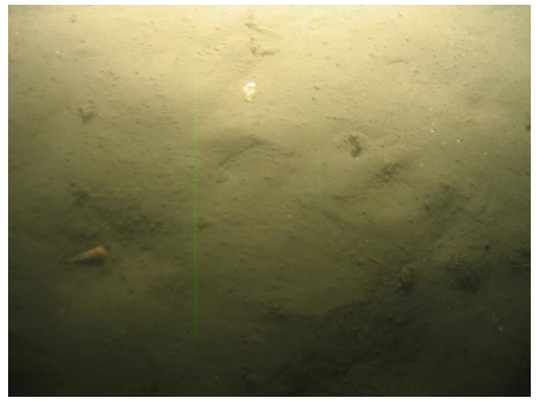
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV213
Fix: 1371 **E:** 616 830 **N:** 6 083 661 **Depth (m):** 48

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV213
Fix: 1401 **E:** 616 802 **N:** 6 083 611 **Depth (m):** 48

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV213
Fix: 114 **E:** 616 788 **N:** 6 083 649 **Depth (m):** 47
Retention: MFA

Sediment Description:
Soft clay sand with pebbles and shell fragments

Faunal Description:
Annelida (Polychaeta), Arthropoda (Malacostraca, Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

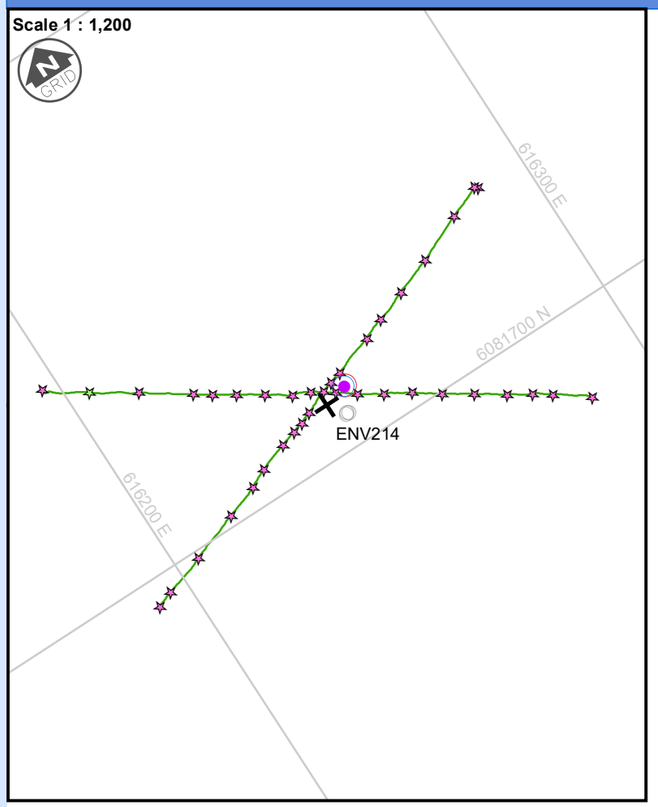


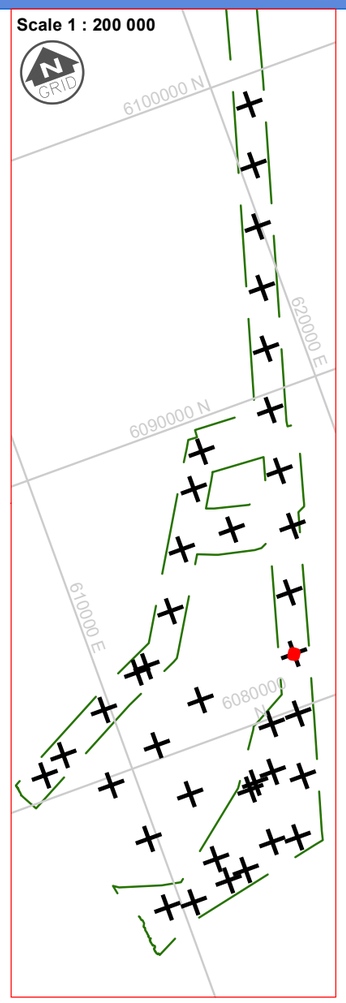
Station: ENV213
Fix: 114 **E:** 616 788 **N:** 6 083 649 **Depth (m):** 47
Retention: MFA

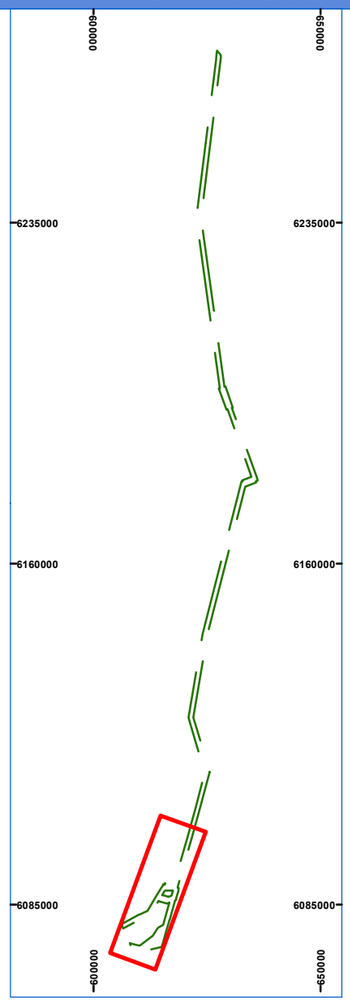
Sediment Description:
Soft clay sand with pebbles and shell fragments

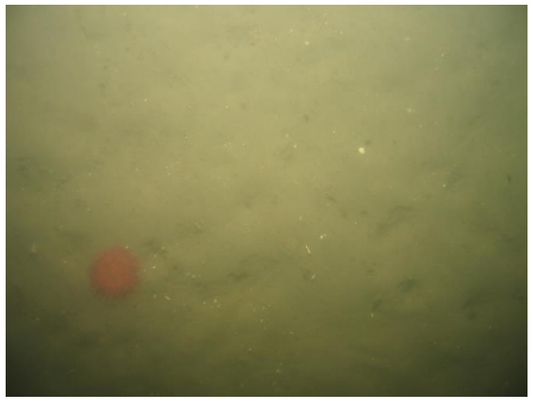
Faunal Description:
Annelida (Polychaeta), Arthropoda (Malacostraca, Paguroidea), Echinodermata (Ophiuroidea), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





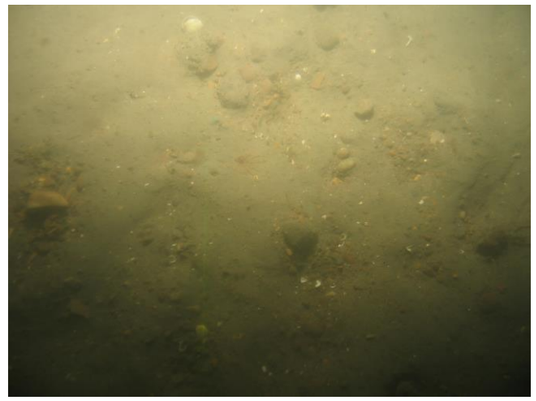




Station: ENV214
Fix: 1414 **E:** 616 245 **N:** 6 081 713 **Depth (m):** 45

Sediment Description:
Sand with shell hash

Faunal Description:
Cnidaria (Actiniaria *stet.*)



Station: ENV214
Fix: 1433 **E:** 616 233 **N:** 6 081 718 **Depth (m):** 45

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
Cnidaria (Edwardsiidae *stet.*)



Station: ENV214
Fix: 122 **E:** 616 247 **N:** 6 081 711 **Depth (m):** 44
Retention: MFB

Sediment Description:
Soft clay sand with pebbles and shell fragments

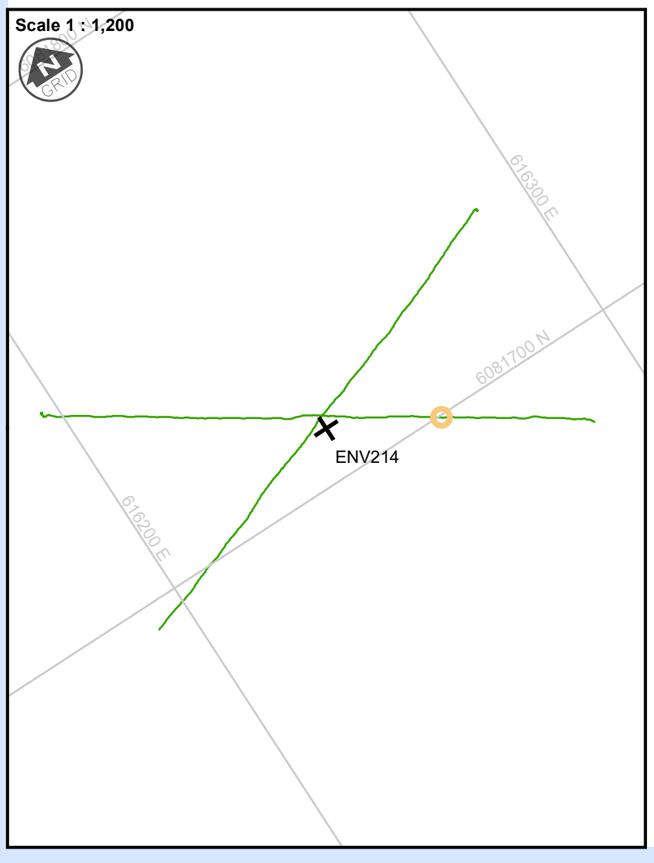
Faunal Description:
Mollusca (Bivalvia)



Station: ENV214
Fix: 122 **E:** 616 247 **N:** 6 081 711 **Depth (m):** 44
Retention: MFB

Sediment Description:
Soft clay sand with pebbles and shell fragments

Faunal Description:
Mollusca (Bivalvia)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

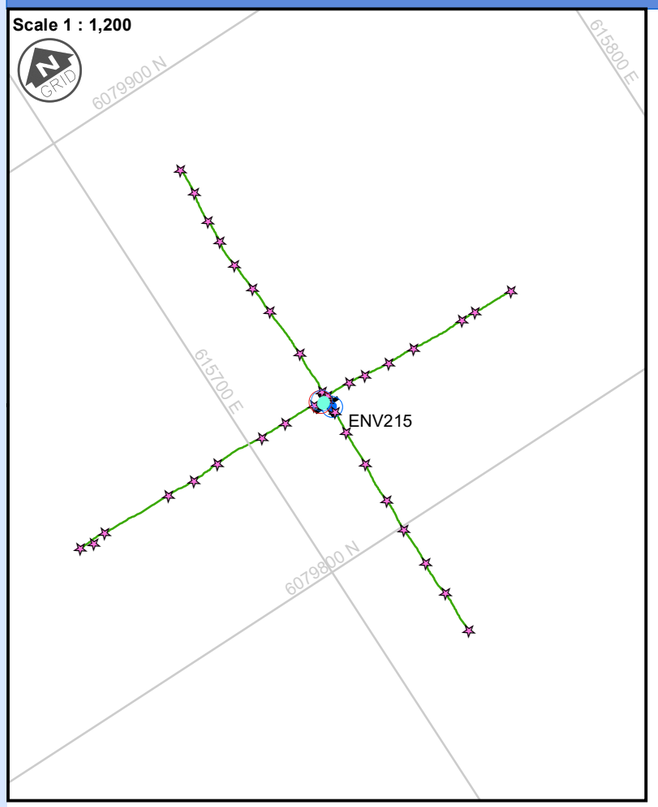
PROTECTED TAXA

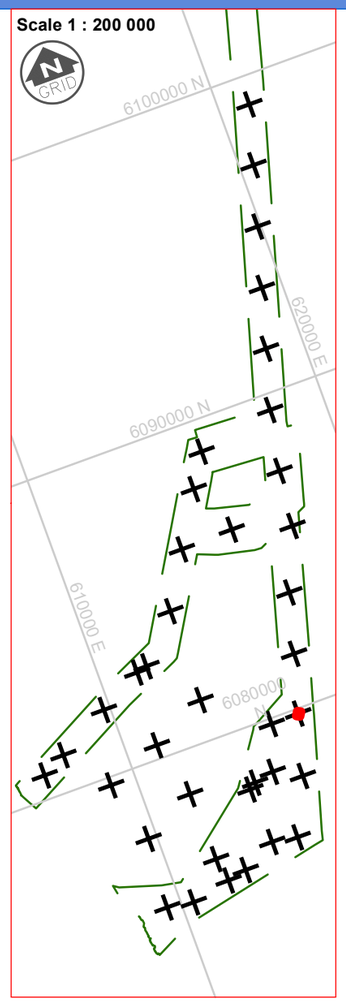
- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

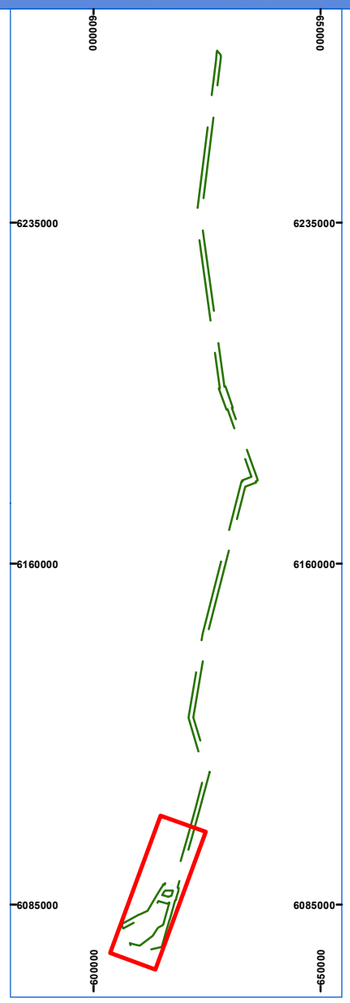
OVERVIEW OF STATION: ENV214

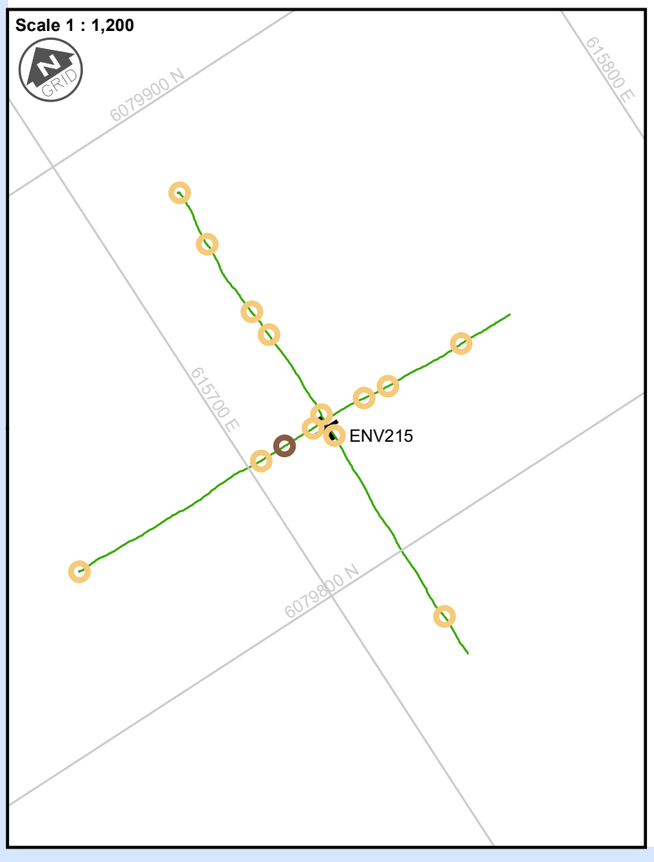
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

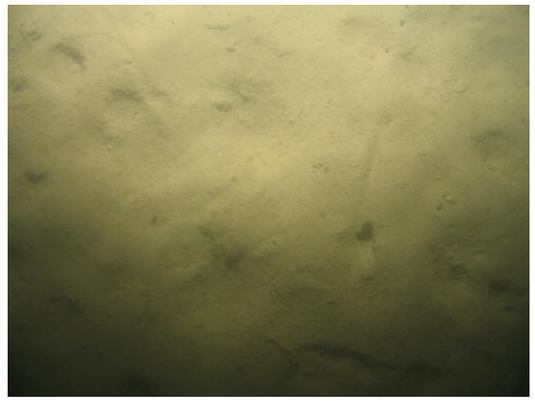
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV215

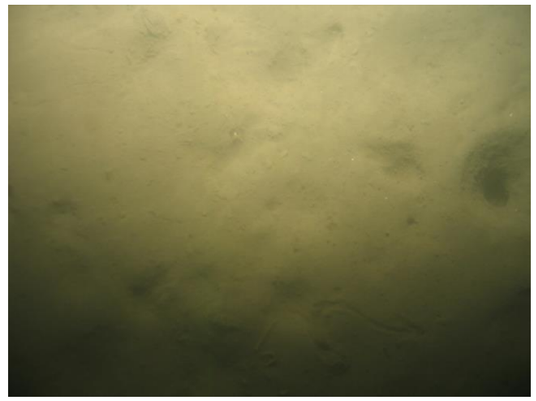
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV215
Fix: 1458 **E:** 615 718 **N:** 6 079 826 **Depth (m):** 44

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV215
Fix: 1478 **E:** 615 732 **N:** 6 079 828 **Depth (m):** 44

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV215
Fix: 124 **E:** 615 716 **N:** 6 079 829 **Depth (m):** 44
Retention: MFA

Sediment Description:
Soft silty sandy clay/mud

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

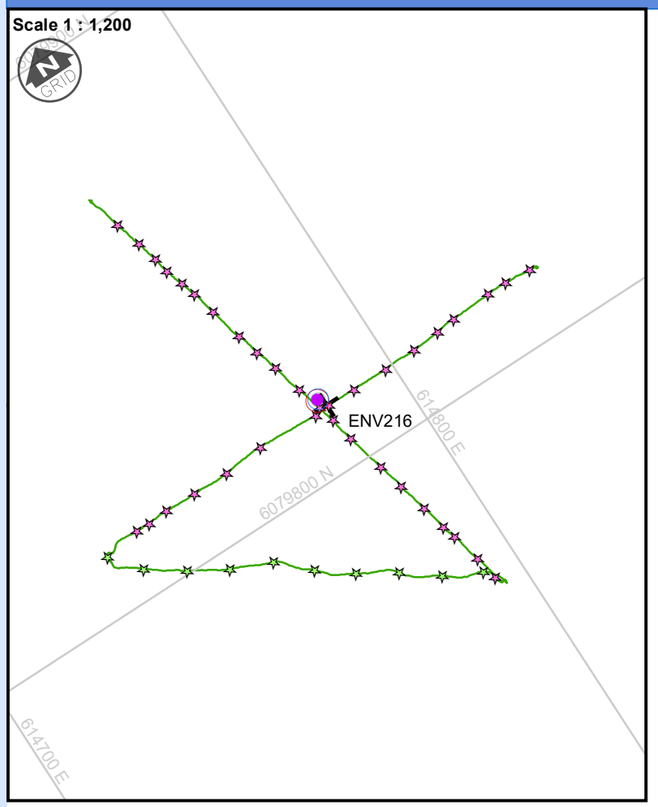


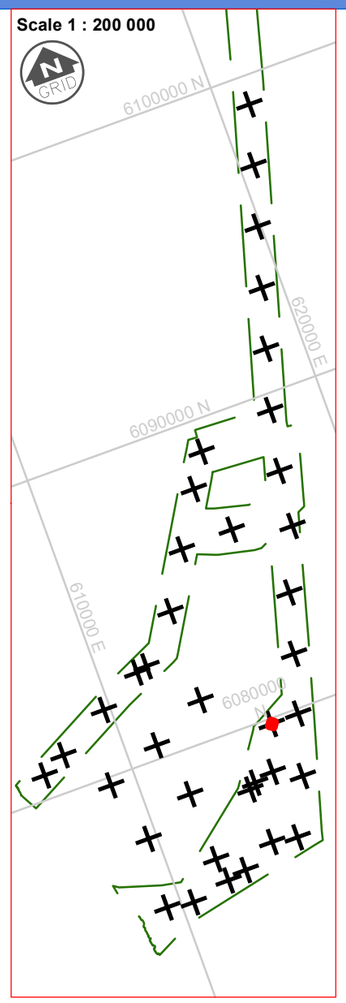
Station: ENV215
Fix: 124 **E:** 615 716 **N:** 6 079 829 **Depth (m):** 44
Retention: MFA

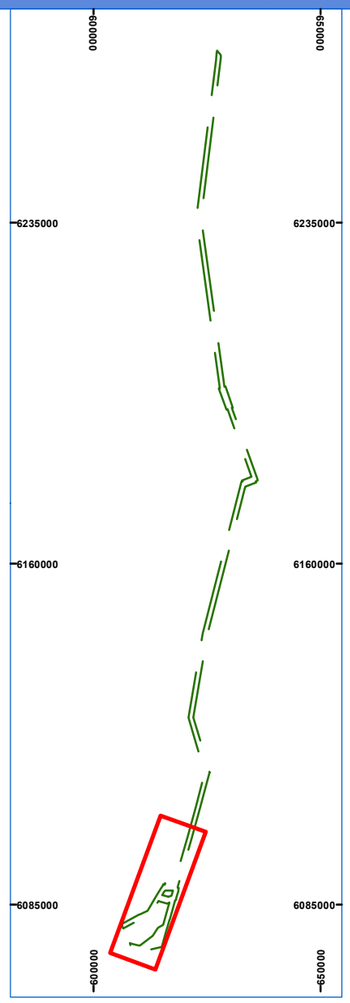
Sediment Description:
Soft silty sandy clay/mud

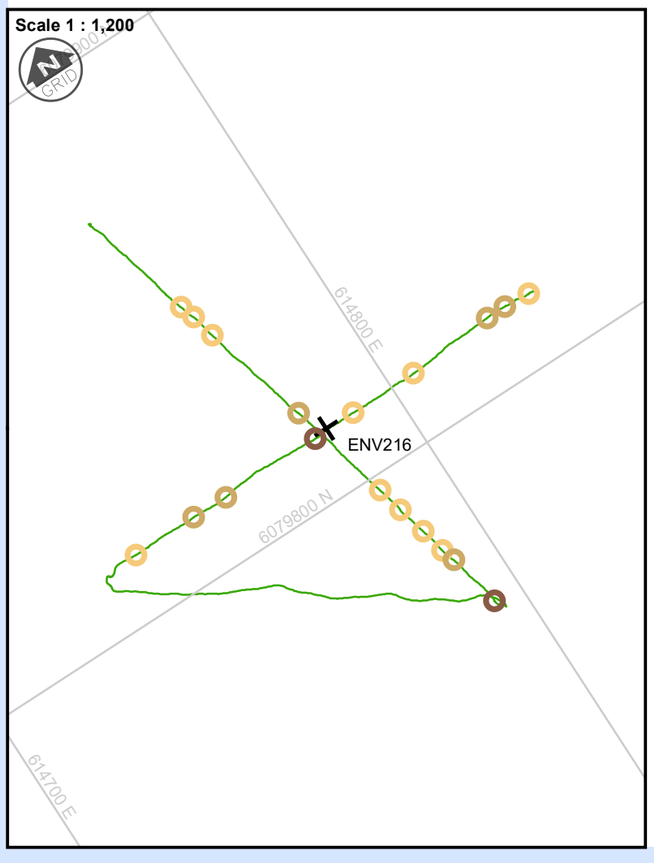
Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Echinodermata (Ophiuroidea), Mollusca (Gastropoda)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV216

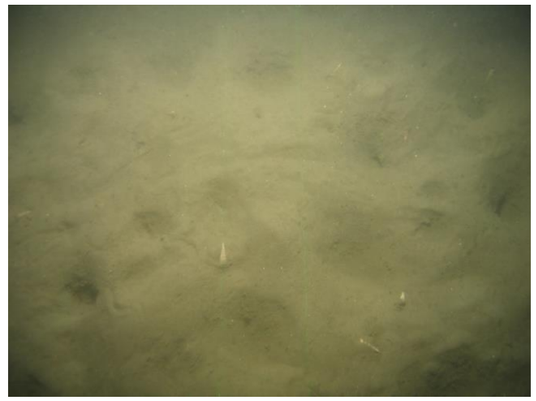
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV216
Fix: 1792 **E:** 614 792 **N:** 6 079 778 **Depth (m):** 42

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV216
Fix: 1805 **E:** 614 805 **N:** 6 079 813 **Depth (m):** 42

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV216
Fix: 151 **E:** 614 784 **N:** 6 079 815 **Depth (m):** 41
Retention: MFB

Sediment Description:
Soft silty sandy clay with shell fragments, gravels and pebbles under the surface

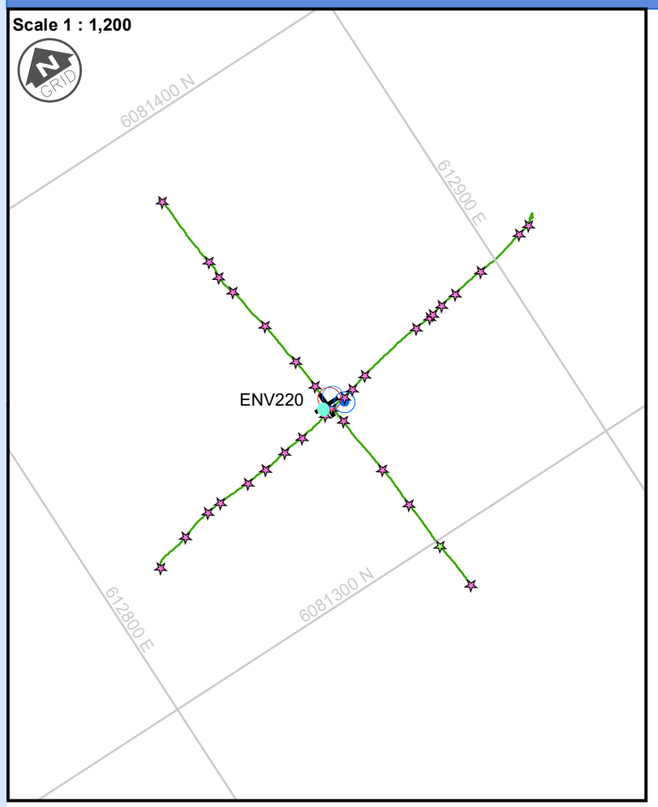
Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)

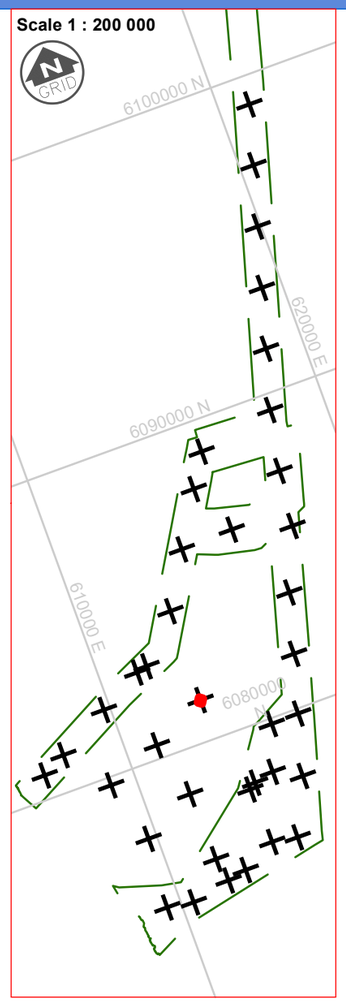


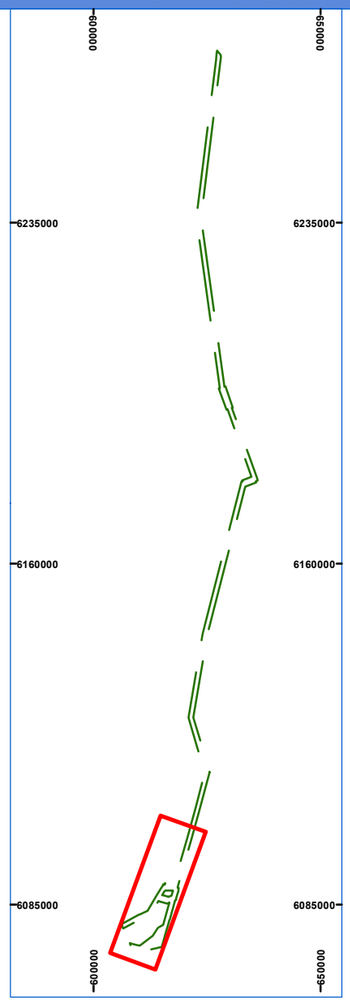
Station: ENV216
Fix: 151 **E:** 614 784 **N:** 6 079 815 **Depth (m):** 41
Retention: MFB

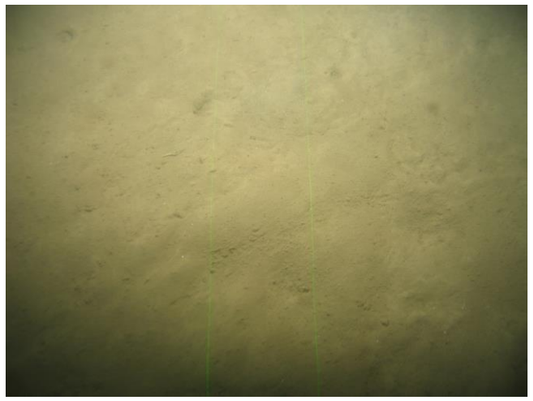
Sediment Description:
Soft silty sandy clay with shell fragments, gravels and pebbles under the surface

Faunal Description:
Annelida (Polychaeta), Echinodermata (Echinoidea)









Station: ENV220
Fix: 1818 **E:** 612 857 **N:** 6 081 333 **Depth (m):** 35

Sediment Description:
Soft sediment with shell hash

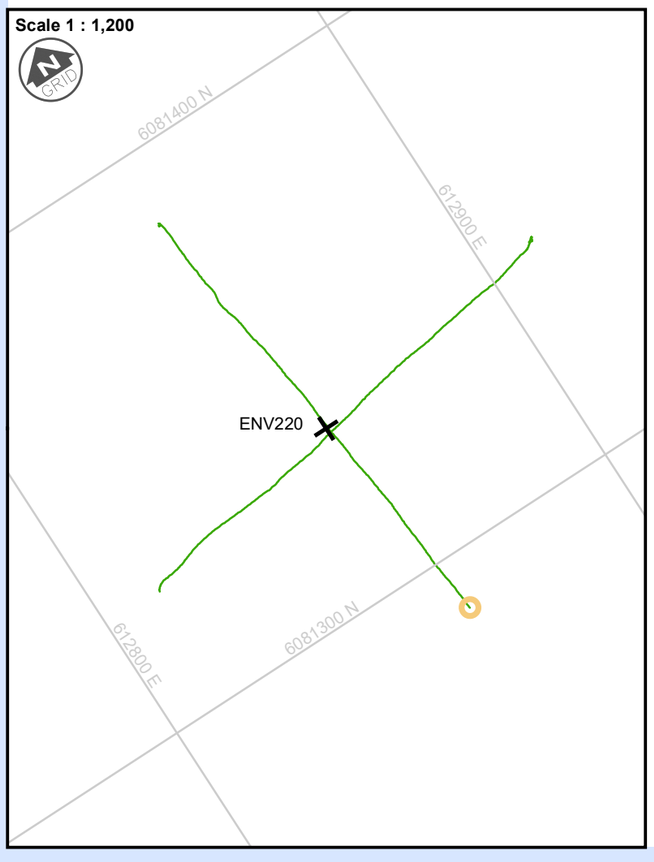
Faunal Description:
No visible fauna



Station: ENV220
Fix: 1839 **E:** 612 883 **N:** 6 081 337 **Depth (m):** 35

Sediment Description:
Soft sediment with shell hash

Faunal Description:
Arthropoda (Paguroidea *stet.*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV220

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV220
Fix: 153 **E:** 612 858 **N:** 6 081 335 **Depth (m):** 37
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under the surface

Faunal Description:
Annelida (Polychaeta)

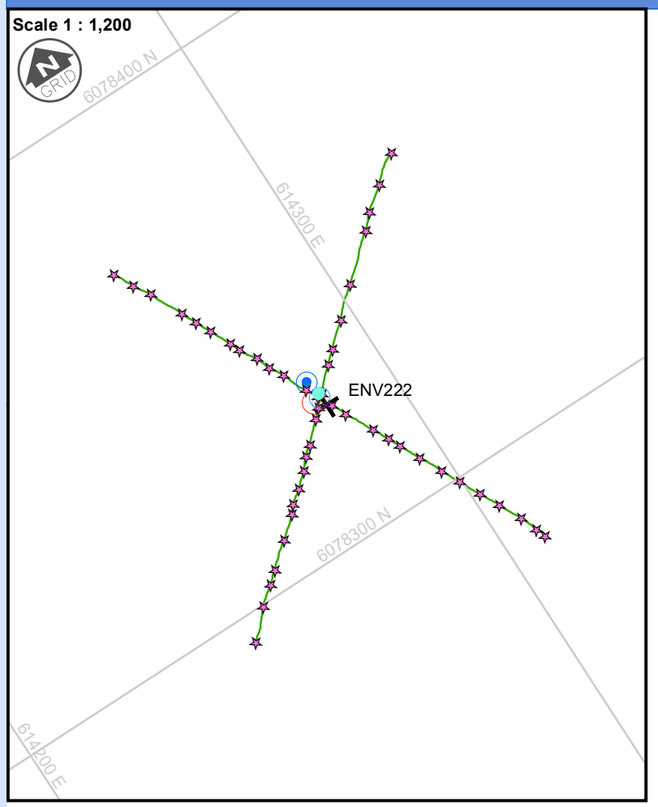


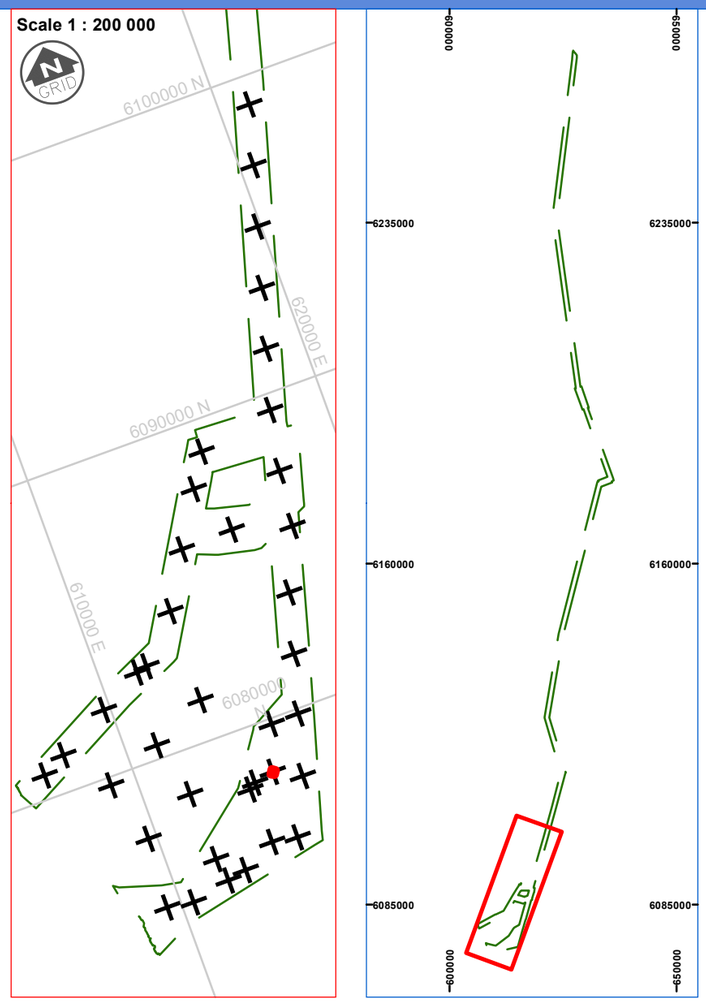
Station: ENV220
Fix: 153 **E:** 612 858 **N:** 6 081 335 **Depth (m):** 37
Retention: MFA

Sediment Description:
Soft silty sandy clay with pebbles under the surface

Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS





LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

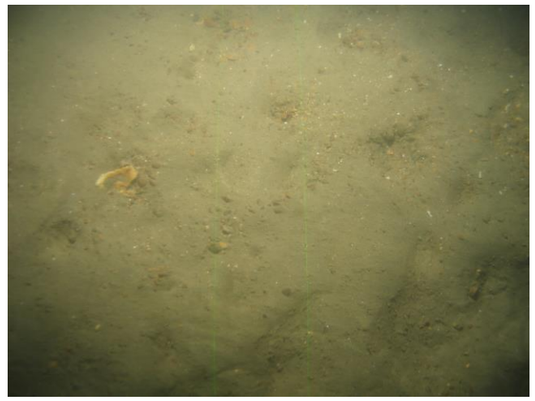
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV222

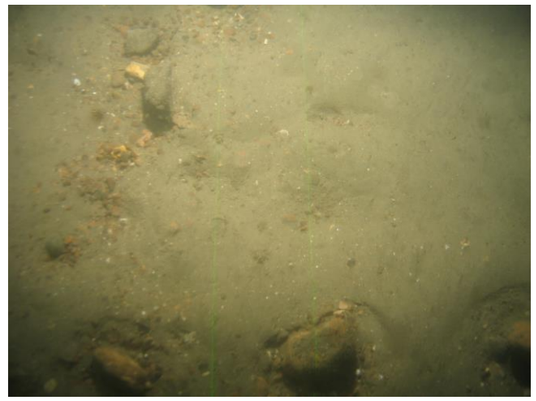
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV222
Fix: 1732 **E:** 614 277 **N:** 6 078 344 **Depth (m):** 37

Sediment Description:
Soft sediment with gravel and shell hash

Faunal Description:
No visible fauna



Station: ENV222
Fix: 1759 **E:** 614 272 **N:** 6 078 315 **Depth (m):** 37

Sediment Description:
Soft sediment with gravel and shell hash

Faunal Description:
No visible fauna



Station: ENV222
Fix: 145 **E:** 614 284 **N:** 6 078 328 **Depth (m):** 35
Retention: MFA

Sediment Description:
Silty clayey fine sand with gravels under the surface

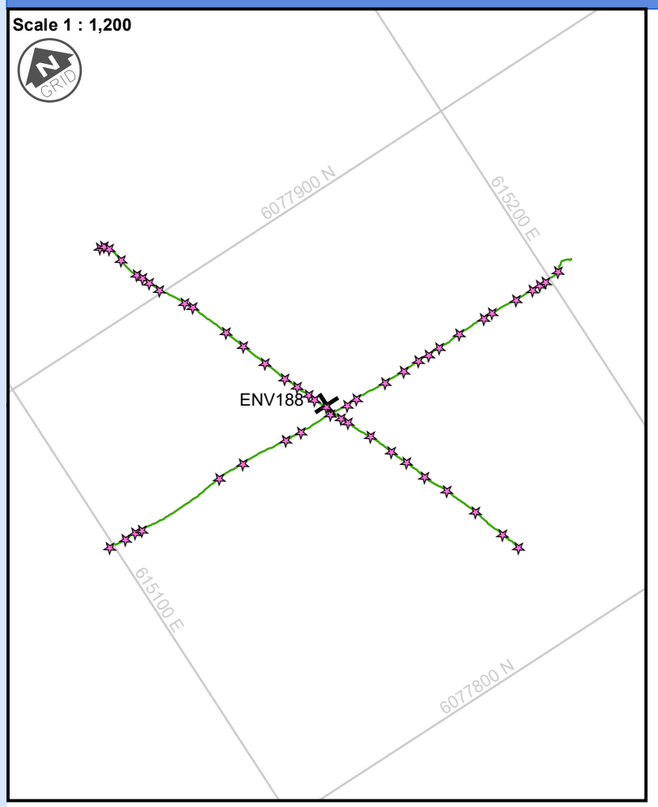
Faunal Description:
Annelida (Polychaeta)

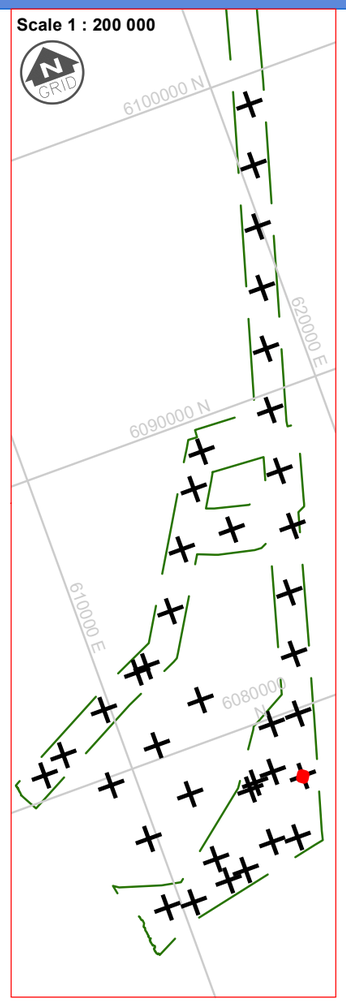


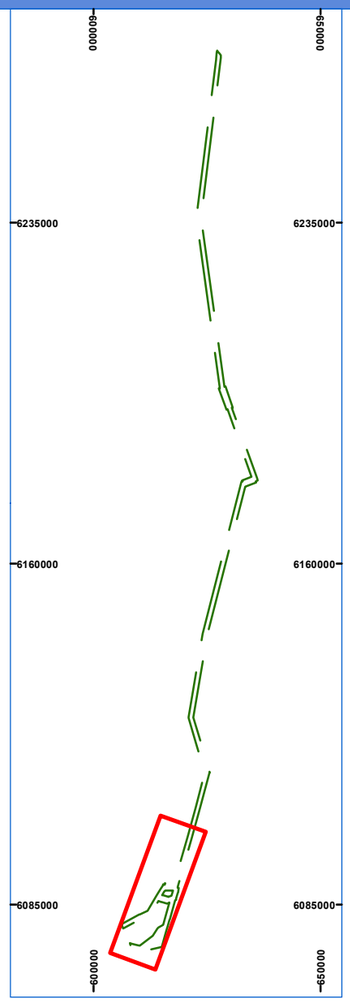
Station: ENV222
Fix: 145 **E:** 614 284 **N:** 6 078 328 **Depth (m):** 35
Retention: MFA

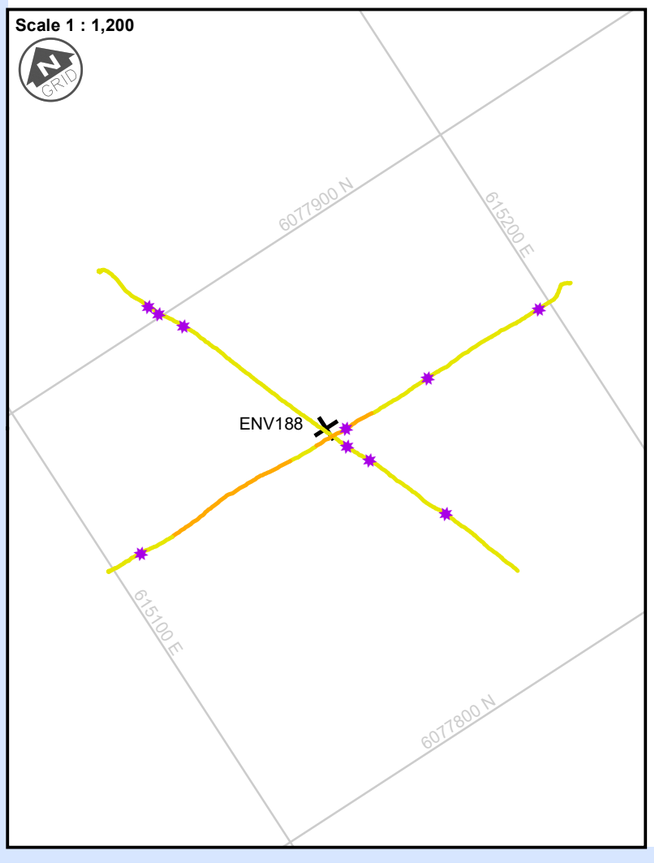
Sediment Description:
Silty clayey fine sand with gravels under the surface

Faunal Description:
Annelida (Polychaeta)









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV188

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV188
Fix: 1490 **E:** 615 135 **N:** 6 077 901 **Depth (m):** 34

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (*Echinus esculentus inc*, Ophiuroidea *stet.*)



Station: ENV188
Fix: 1523 **E:** 615 124 **N:** 6 077 863 **Depth (m):** 34

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*, *Urticina stet*), Echinodermata (Asteroidea *stet.*, Ophiuroidea *stet.*), Faunal Turf



Station: ENV188
Fix: 1535 **E:** 615 179 **N:** 6 077 862 **Depth (m):** 34

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Arthropoda (Decapoda *stet.*), Echinodermata (*Ophiocomina nigra*, Ophiuroidea *stet.*), Faunal Turf

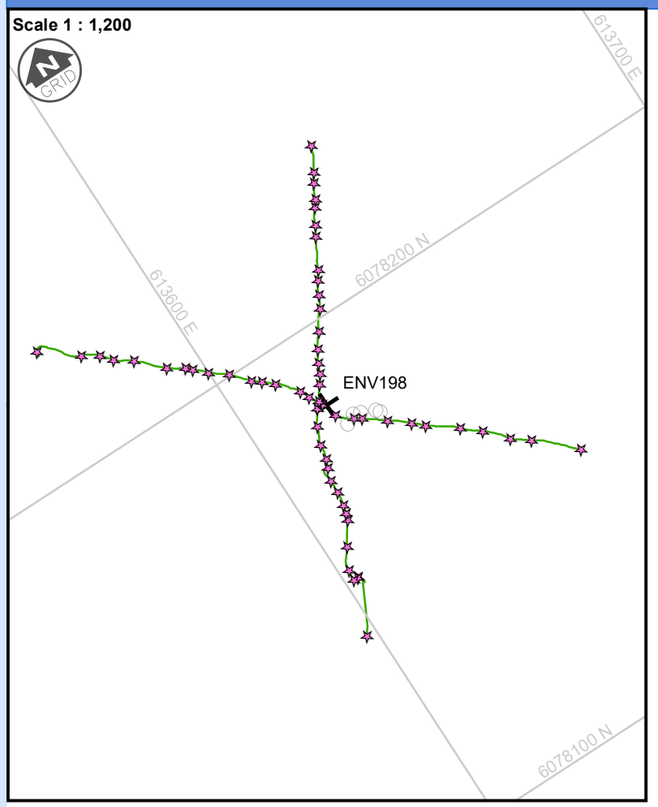


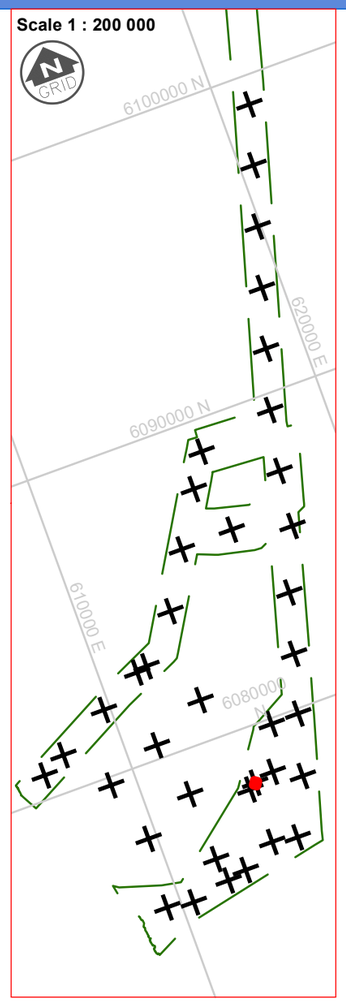
Station: ENV188
Fix: 1539 **E:** 615 196 **N:** 6 077 861 **Depth (m):** 34

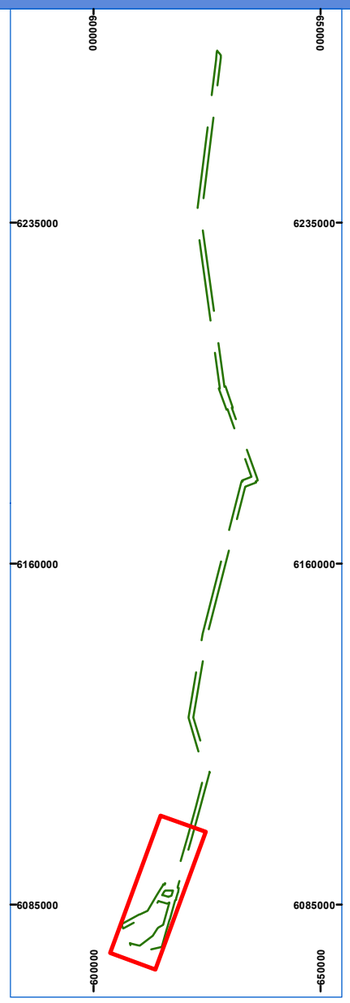
Sediment Description:
Cobbles and gravel with coarse sediment

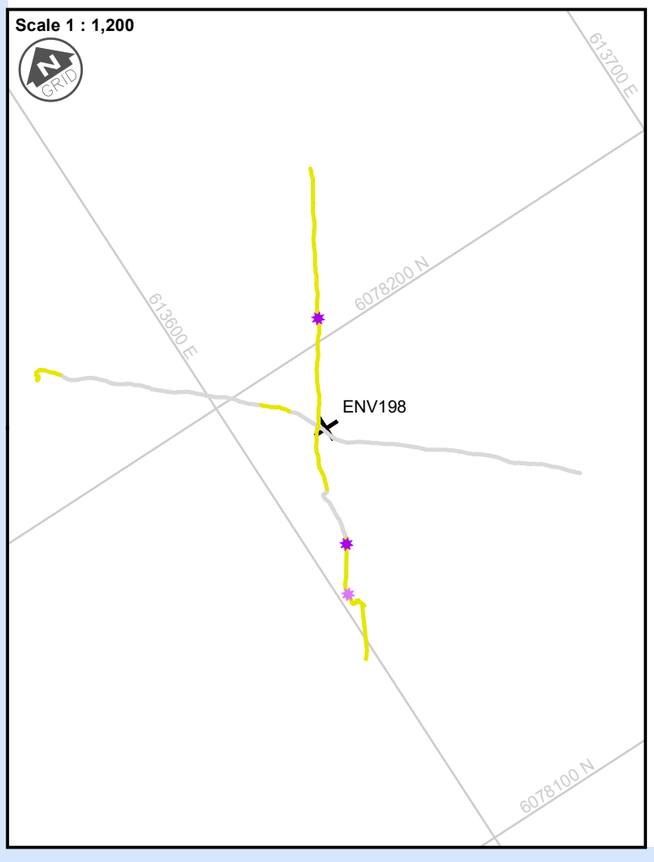
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea *stet.*), Faunal Turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV198

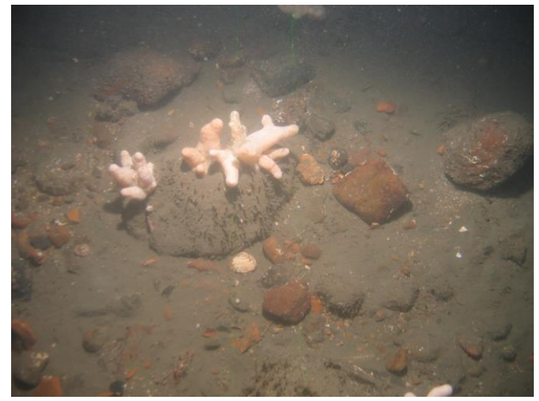
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV198
Fix: 1674 **E:** 613 603 **N:** 6 078 200 **Depth (m):** 32

Sediment Description:
Sand with gravel and shell hash

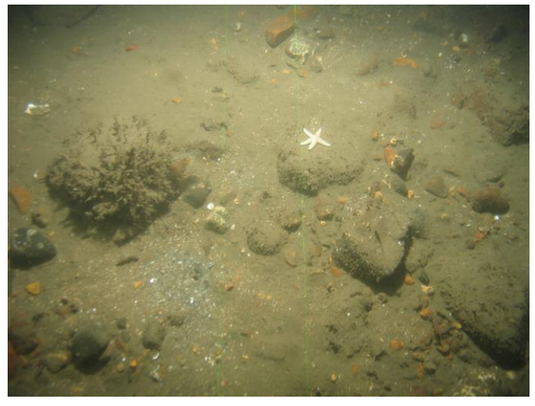
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal Turf



Station: ENV198
Fix: 1676 **E:** 613 608 **N:** 6 078 196 **Depth (m):** 32

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal Turf



Station: ENV198
Fix: 1709 **E:** 613 617 **N:** 6 078 189 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Chordata (Ascidiacea *stet.*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal Turf

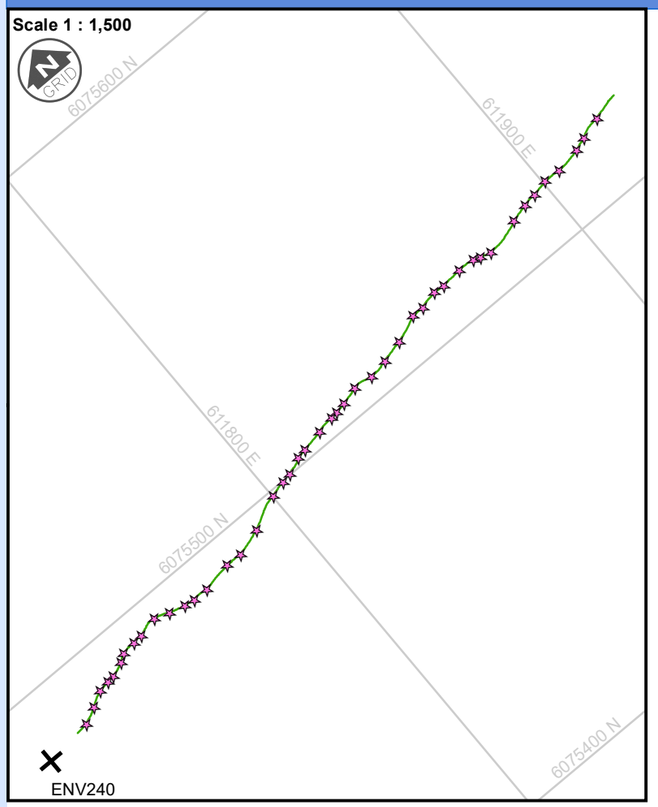


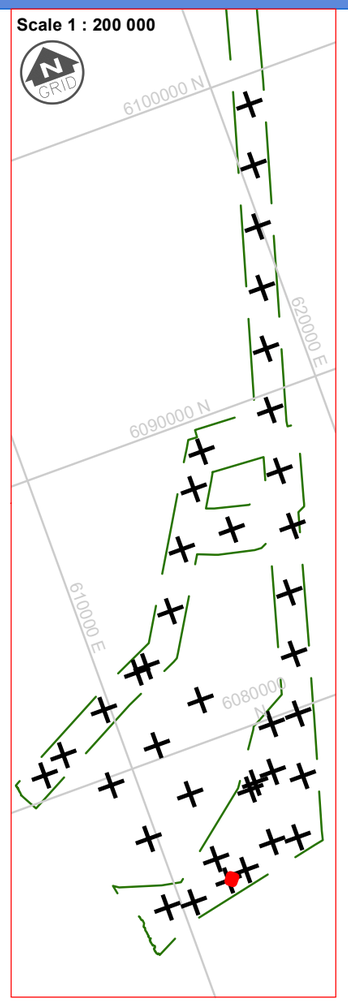
Station: ENV198
Fix: 1722 **E:** 613 637 **N:** 6 078 223 **Depth (m):** 32

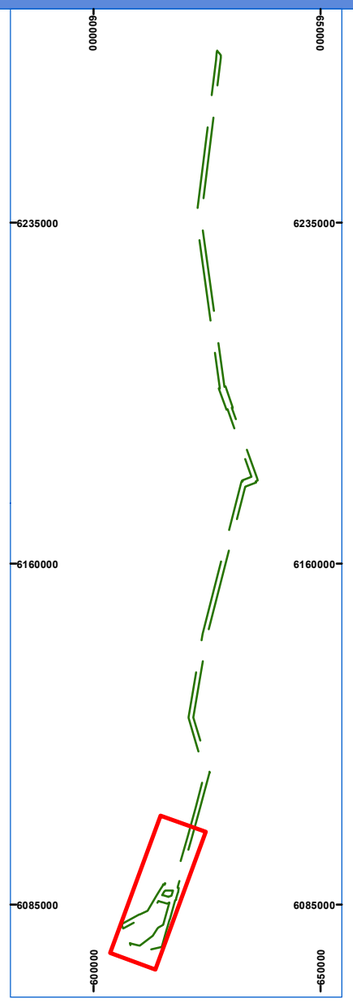
Sediment Description:
Cobbles and gravel with coarse sediment

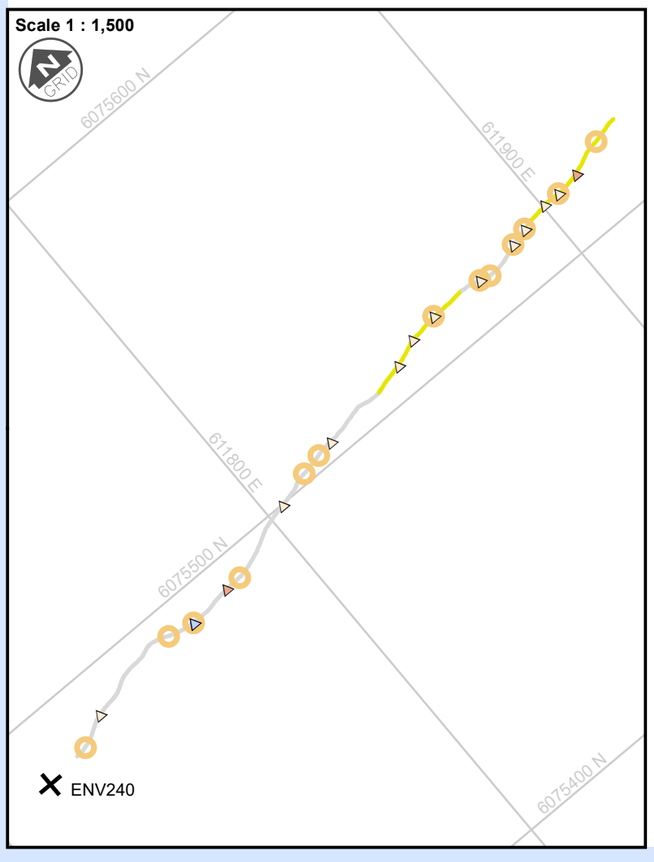
Faunal Description:
Arthropoda (Caridea *stet.*, *Munida stet*), Cnidaria (*Alcyonium digitatum*, Hydrozoa *stet.*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal Turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF TRANSECT: ENV240

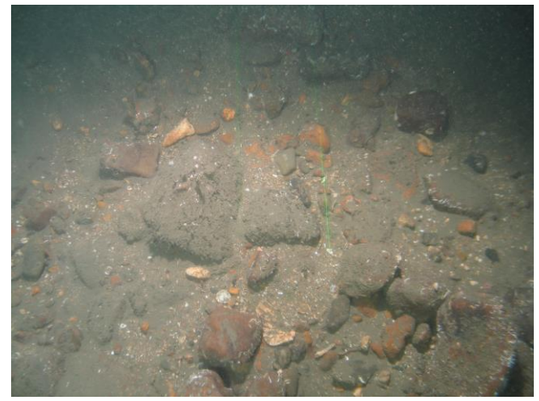
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV240
Fix: 617 **E:** 613 597 **N:** 6 078 027 **Depth (m):** 28

Sediment Description:
Sand with gravel and shell hash

Faunal Description:
Chordata (Actinopterygii *indet.* 01)



Station: ENV240
Fix: 625 **E:** 613 563 **N:** 6 078 027 **Depth (m):** 27

Sediment Description:
Sand with gravel and shell hash

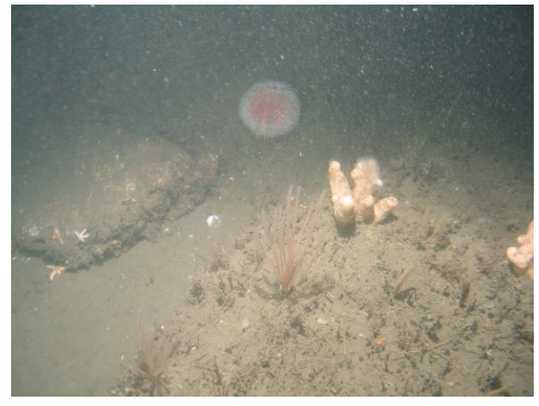
Faunal Description:
Arthropoda (Paguroidea *stet.*), Faunal turf



Station: ENV240
Fix: 637 **E:** 613 519 **N:** 6 078 030 **Depth (m):** 26

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Cnidaria (*Alcyonium digitatum*)

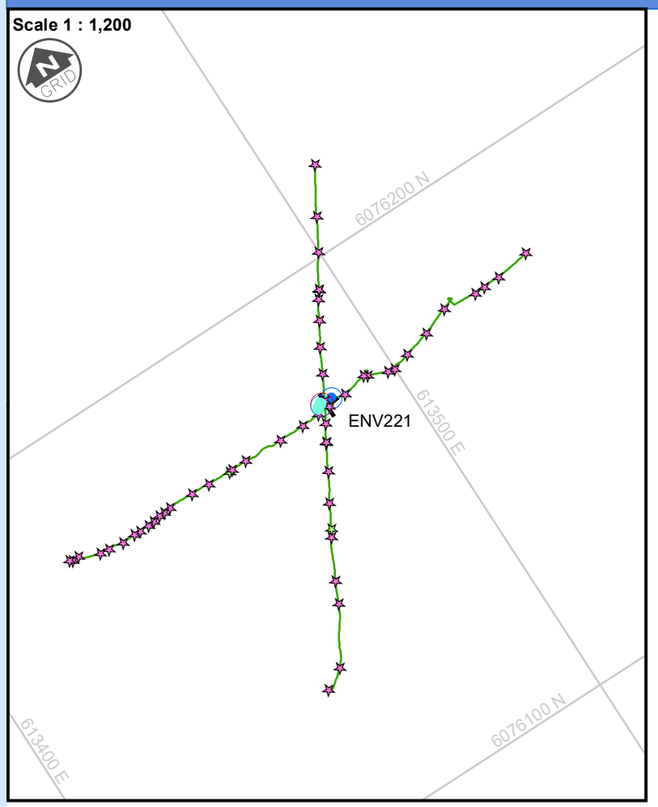


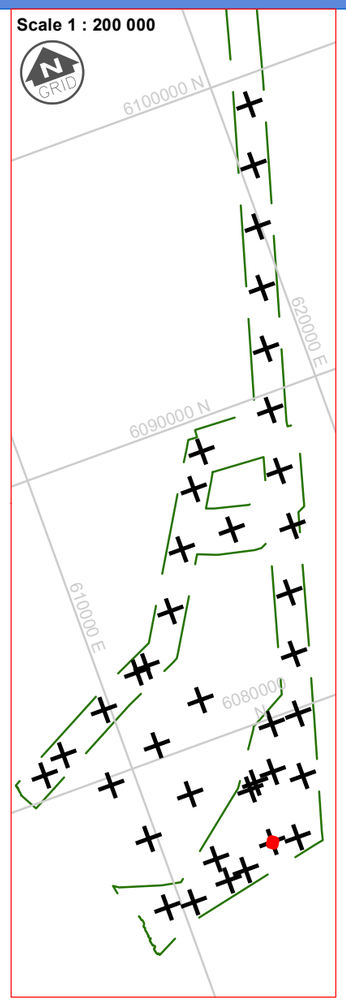
Station: ENV240
Fix: 651 **E:** 613 471 **N:** 6 078 032 **Depth (m):** 24

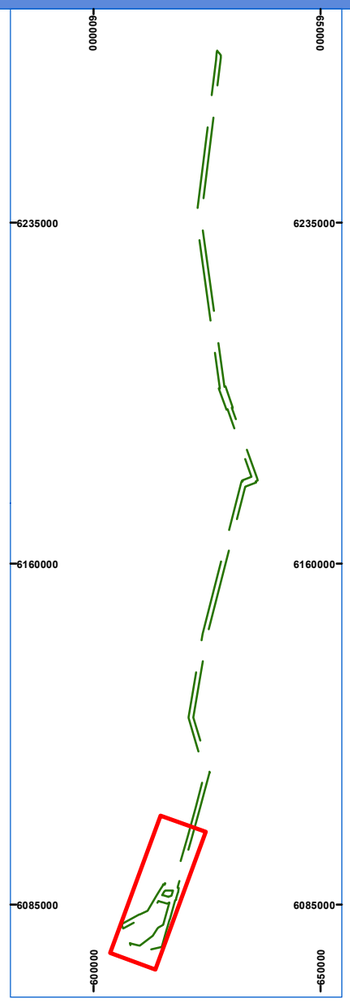
Sediment Description:
Sand with cobbles and shell hash

Faunal Description:
Bryozoa (*Alcyonidium diaphanum*), Cnidaria (*Alcyonium digitatum*, *Nemertesia antennina inc*), Echinodermata (*Asterias rubens*, *Echinus esculentus inc*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

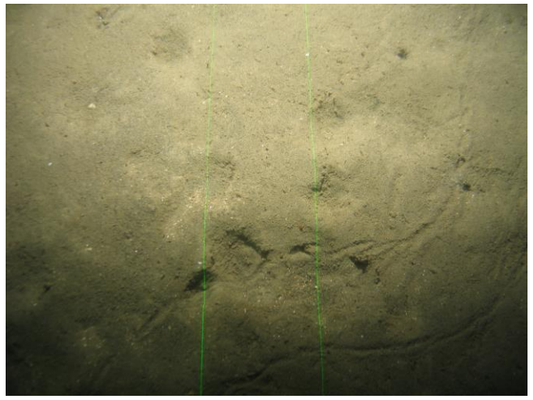
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV221

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV221
Fix: 1612 **E:** 613 495 **N:** 6 076 175 **Depth (m):** 31

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV221
Fix: 1626 **E:** 613 444 **N:** 6 076 174 **Depth (m):** 31

Sediment Description:
Soft sediment with gravel and shell hash

Faunal Description:
Faunal Turf



Station: ENV221
Fix: 135 **E:** 613 484 **N:** 6 076 176 **Depth (m):** 32
Retention: MFA

Sediment Description:
Silty compact fine to medium sand.

Faunal Description:
Annelida (Polychaeta)

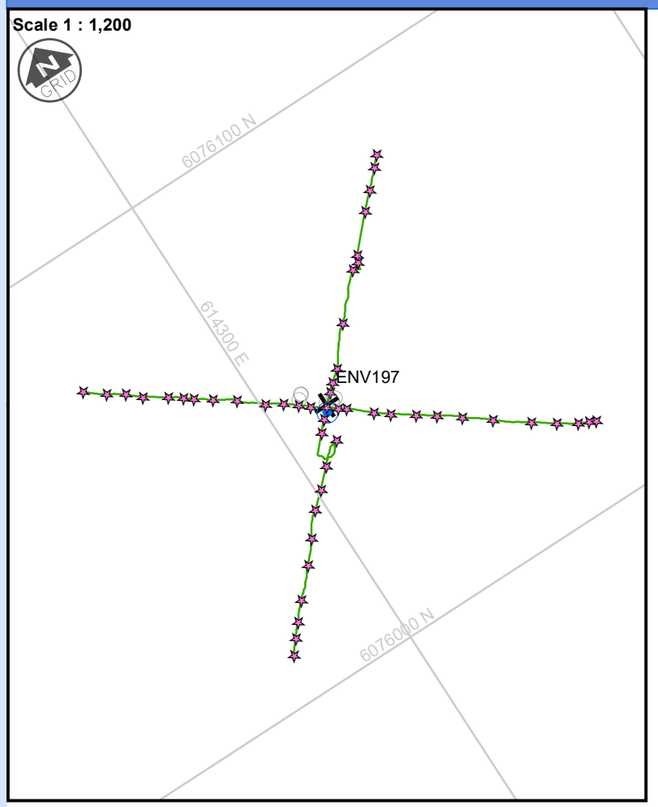


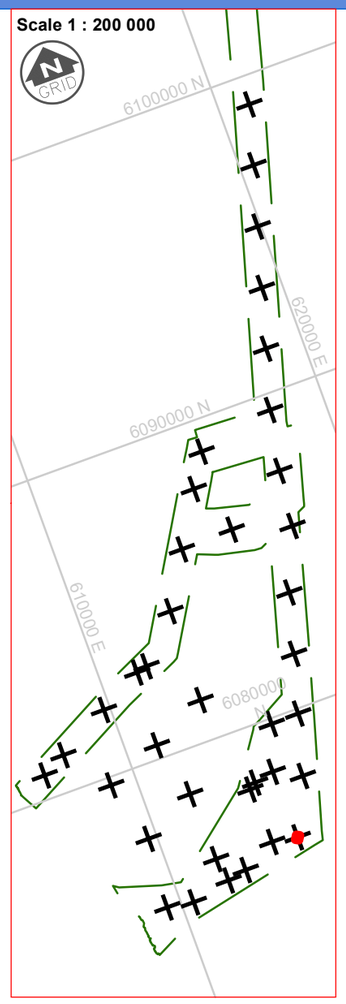
Station: ENV221
Fix: 135 **E:** 613 484 **N:** 6 076 176 **Depth (m):** 32
Retention: MFA

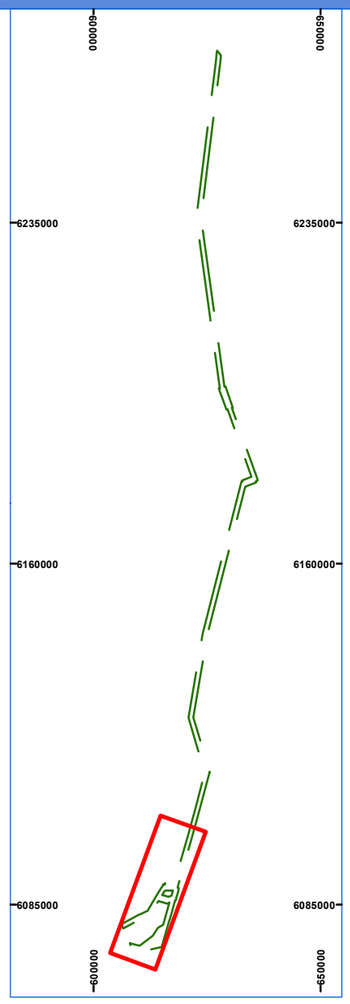
Sediment Description:
Silty compact fine to medium sand.

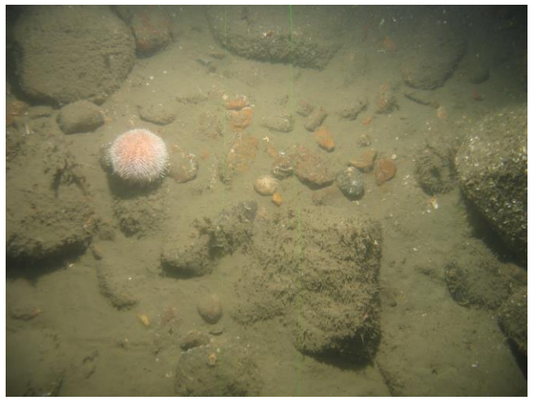
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









Station: ENV197
Fix: 1550 **E:** 614 328 **N:** 6 076 034 **Depth (m):** 32

Sediment Description:
Cobbles and gravel with coarse sediment

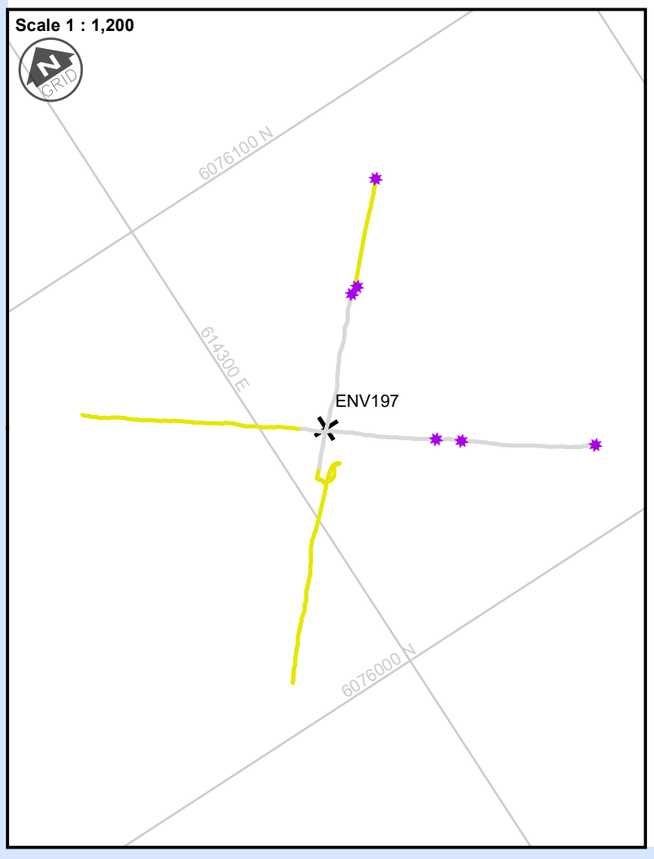
Faunal Description:
Echinodermata (*Echinus esculentus inc*, Ophiuroidea *stet.*), Faunal Turf



Station: ENV197
Fix: 1562 **E:** 614 290 **N:** 6 076 062 **Depth (m):** 32

Sediment Description:
Sand with cobbles, gravel and shell hash

Faunal Description:
Faunal Turf



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

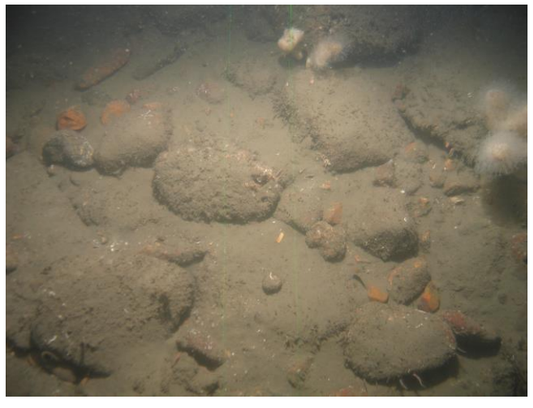
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV197

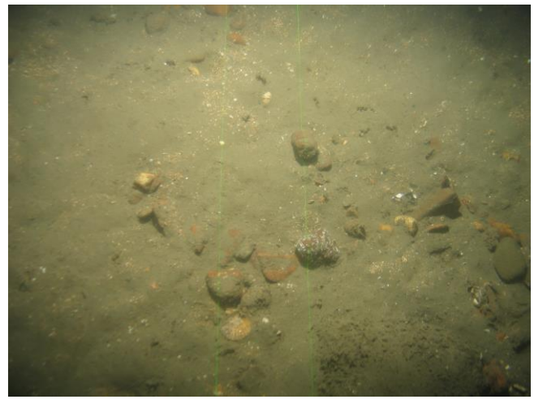
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV197
Fix: 1582 **E:** 614 338 **N:** 6 076 075 **Depth (m):** 32

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Echinodermata (Ophiuroidea *stet.*)

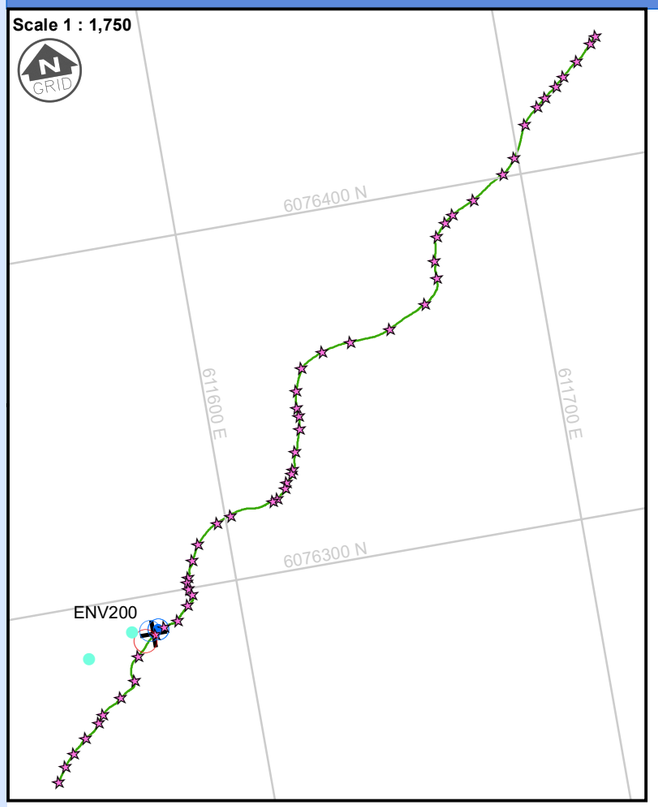


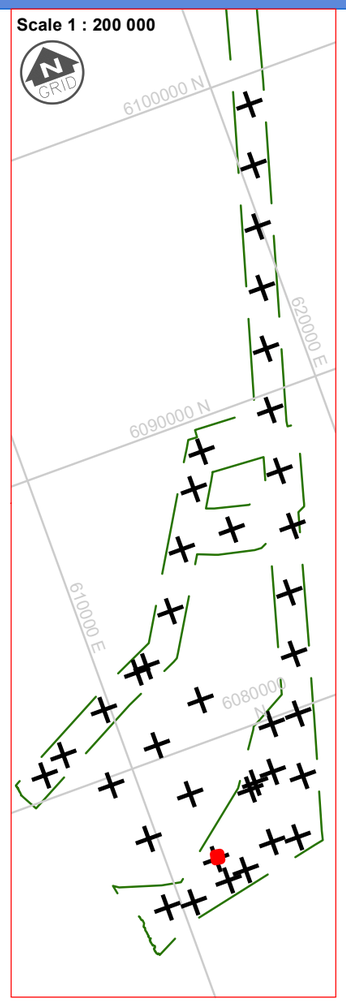
Station: ENV197
Fix: 1599 **E:** 614 286 **N:** 6 076 018 **Depth (m):** 32

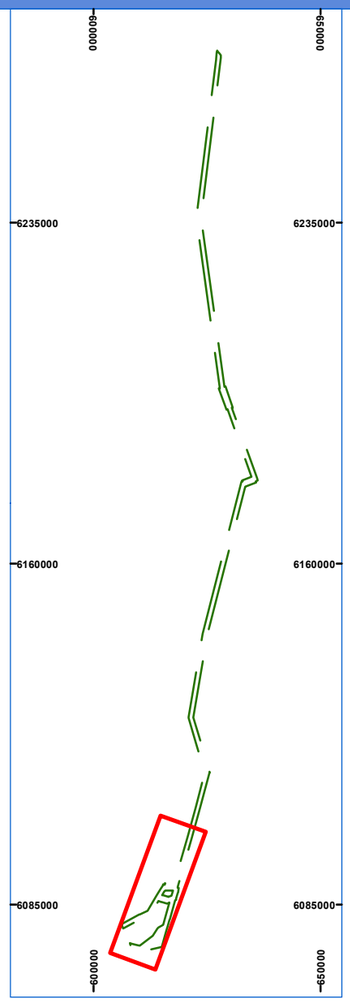
Sediment Description:
Sand with gravel and shell hash

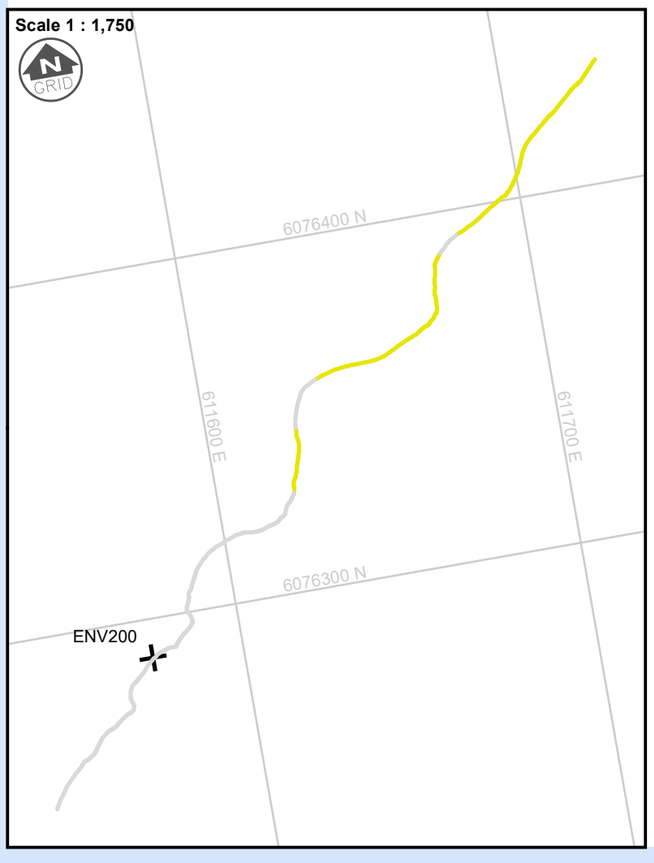
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV200

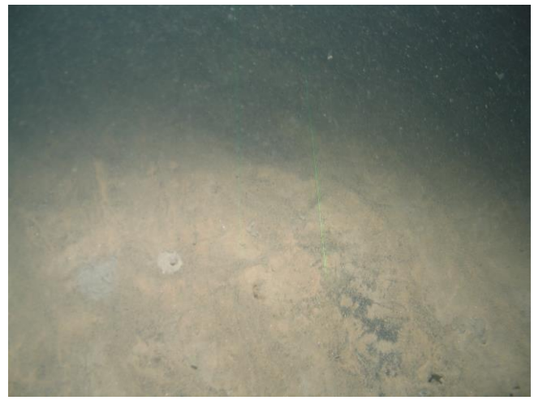
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV200
Fix: 386 **E:** 611 673 **N:** 6 076 387 **Depth (m):** 18

Sediment Description:
Gravel with coarse sediment

Faunal Description:
No visible fauna



Station: ENV200
Fix: 412 **E:** 611 587 **N:** 6 076 298 **Depth (m):** 18

Sediment Description:
Coarse sediment

Faunal Description:
No visible fauna



Station: ENV200
Fix: 6 **E:** 611 573 **N:** 6 076 290 **Depth (m):** 26
Retention: MFB

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta)

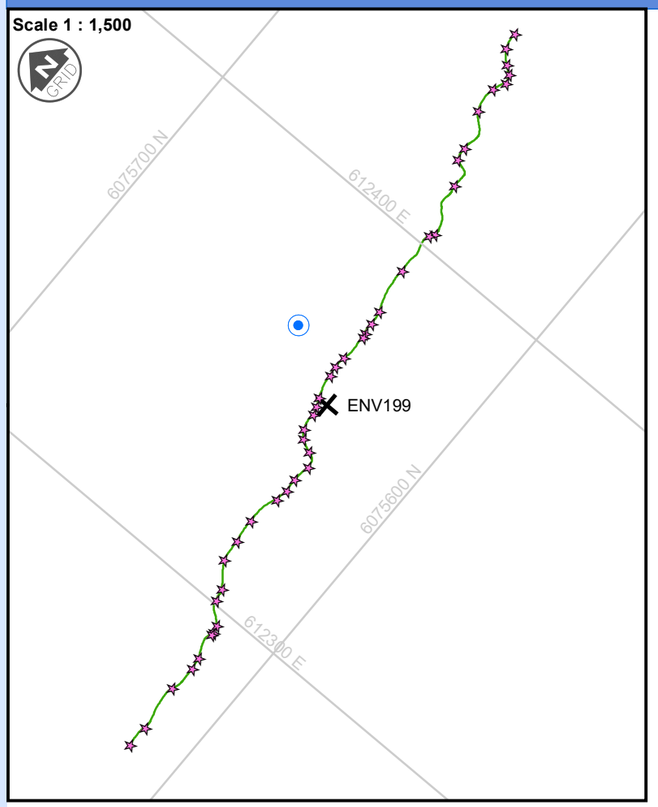


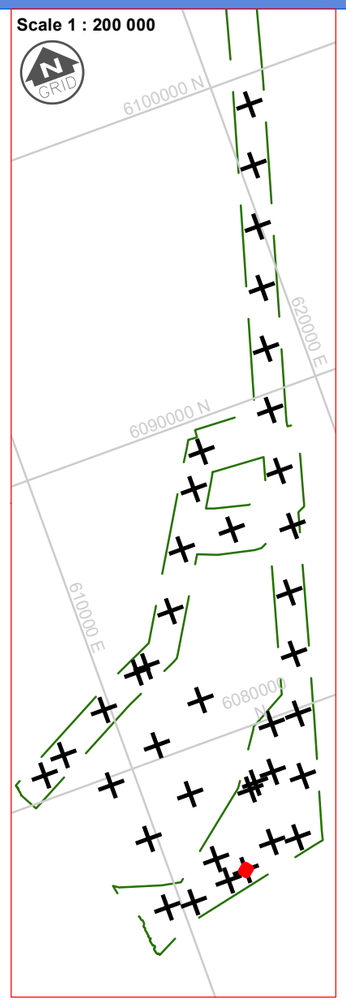
Station: ENV200
Fix: 6 **E:** 611 573 **N:** 6 076 290 **Depth (m):** 26
Retention: MFB

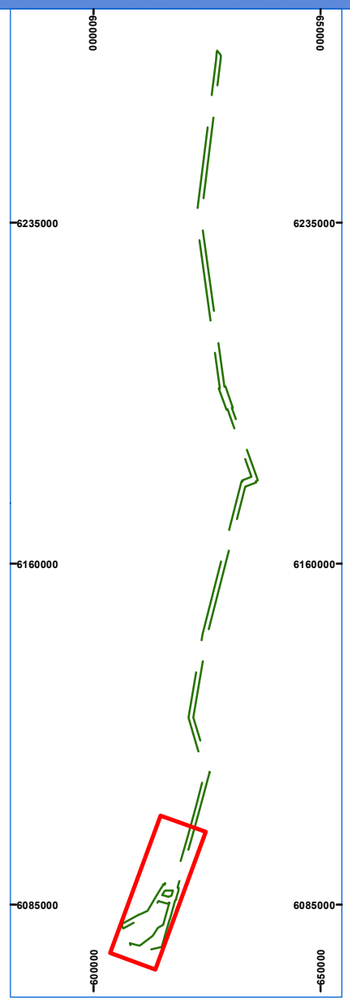
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

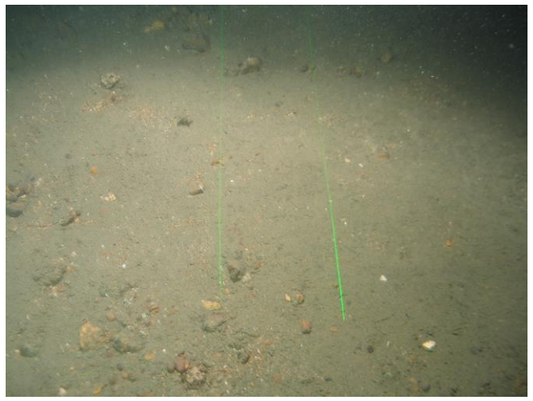
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









Station: ENV199
Fix: 333 **E:** 612 445 **N:** 6 075 647 **Depth (m):** 19

Sediment Description:
Soft sediment with gravel

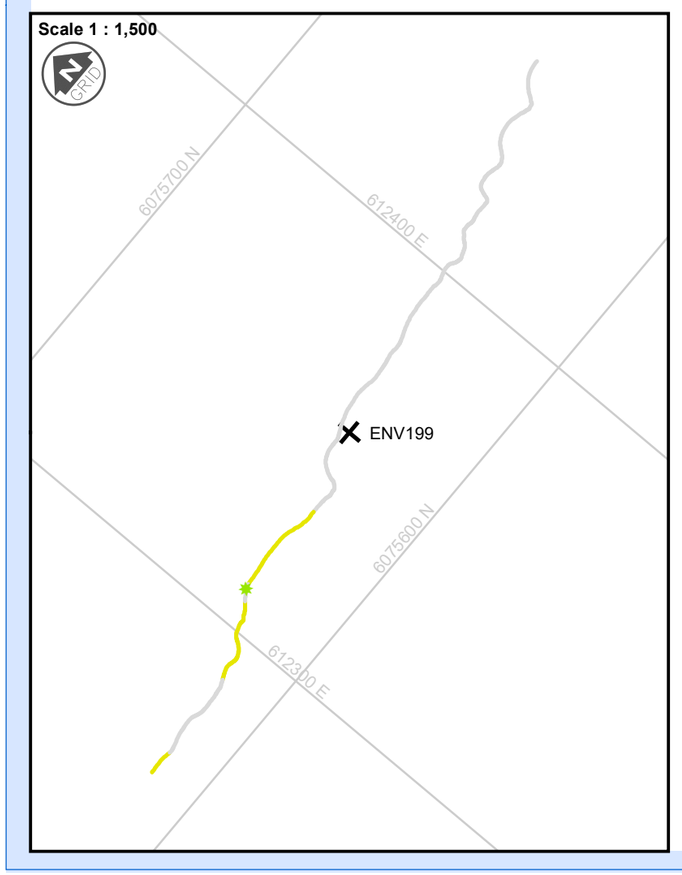
Faunal Description:
No visible fauna



Station: ENV199
Fix: 340 **E:** 612 404 **N:** 6 075 636 **Depth (m):** 18

Sediment Description:
Soft sediment with gravel

Faunal Description:
Echinodermata (Asteroidea *stet.*)



LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

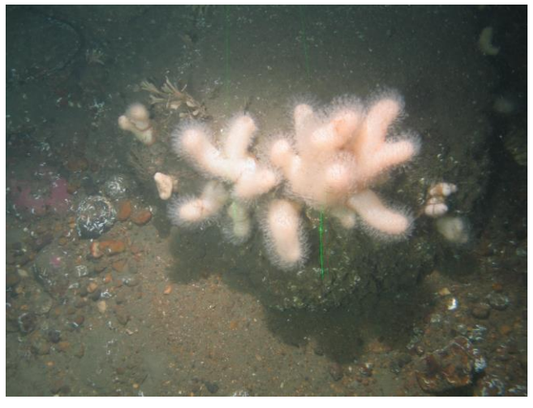
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV199

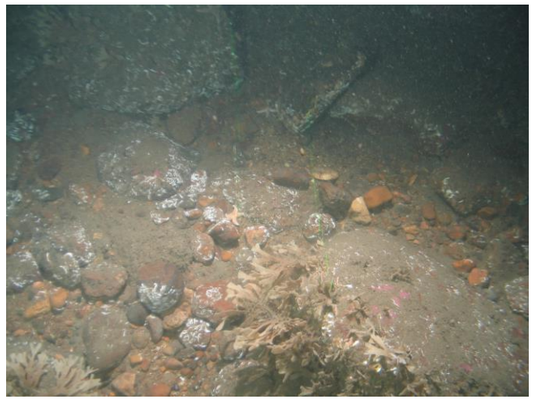
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV199
Fix: 366 **E:** 612 294 **N:** 6 075 614 **Depth (m):** 17

Sediment Description:
Soft sediment with gravel and cobble.

Faunal Description:
Bryozoa (Flustridae *stet.*), Cnidaria (*Alcyonium digitatum*), Echinodermata (*Asterias rubens*, Ophiuroidea *stet.*), Faunal turf

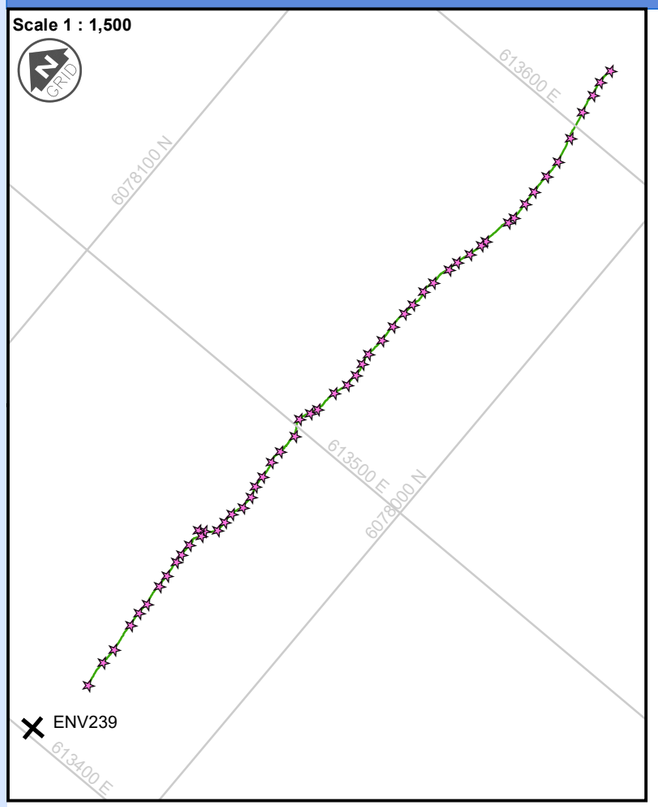


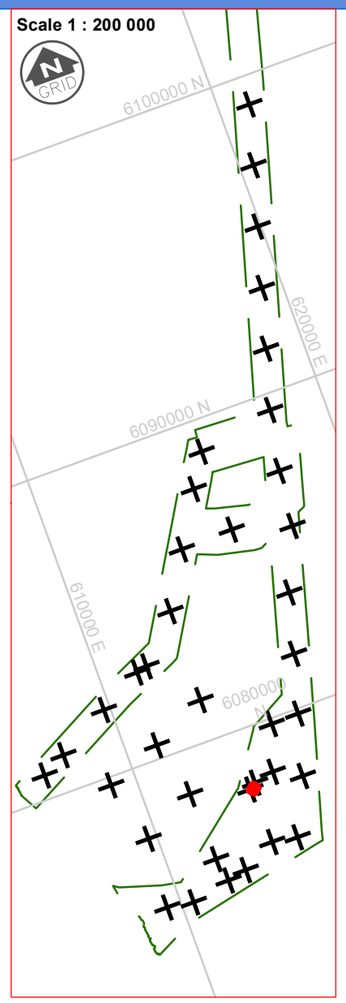
Station: ENV199
Fix: 372 **E:** 612 260 **N:** 6 075 612 **Depth (m):** 17

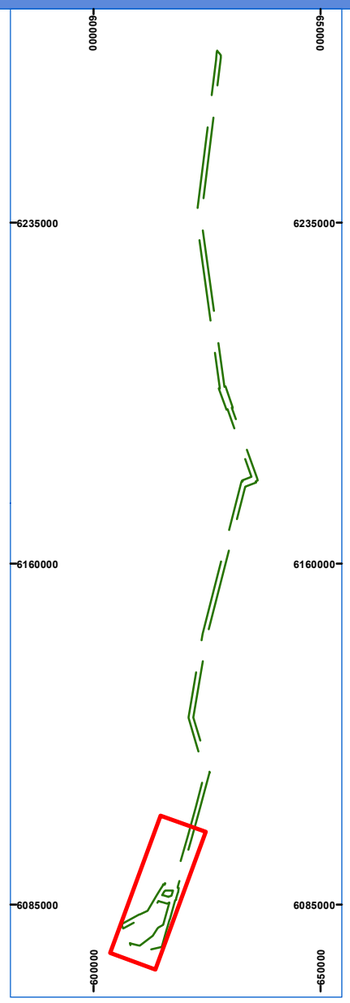
Sediment Description:
Cobbles and gravel

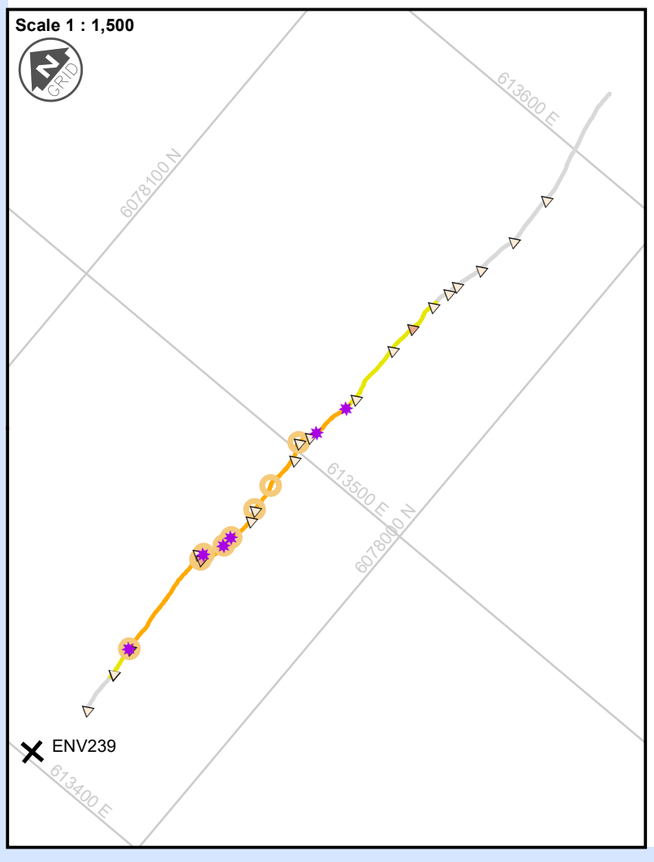
Faunal Description:
Bryozoa (Flustridae *stet.*), Echinodermata (*Asterias rubens*), Faunal turf

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

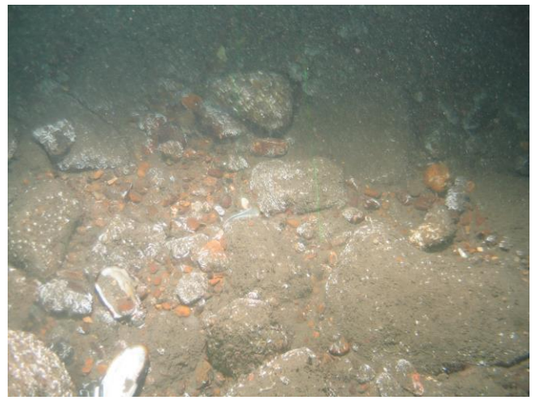
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF TRANSECT: ENV239

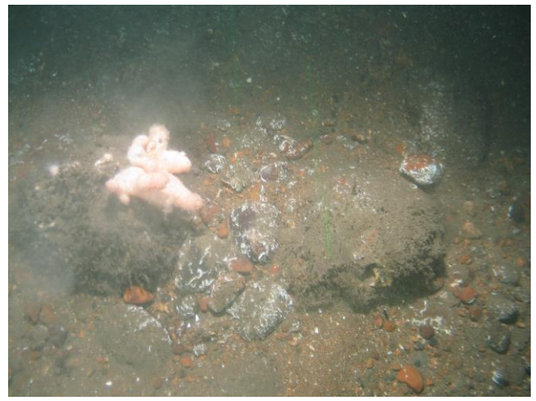
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV239
Fix: 670 **E:** 611 905 **N:** 6 075 515 **Depth (m):** 20

Sediment Description:
Gravel with coarse sediment

Faunal Description:
No visible fauna



Station: ENV239
Fix: 677 **E:** 611 875 **N:** 6 075 512 **Depth (m):** 20

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV239
Fix: 681 **E:** 611 858 **N:** 6 075 511 **Depth (m):** 20

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
No visible fauna

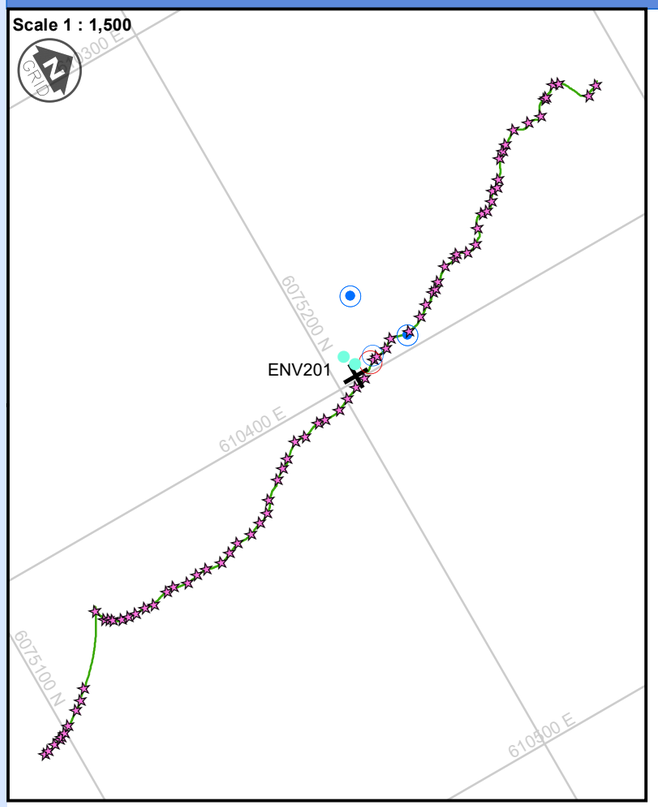


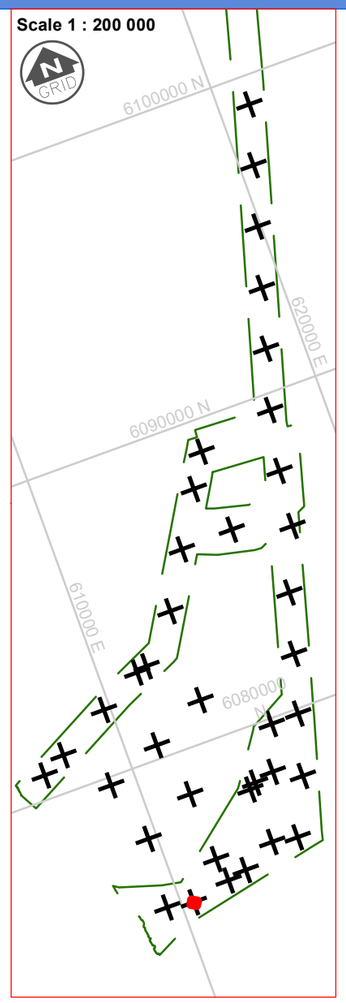
Station: ENV239
Fix: 703 **E:** 611 759 **N:** 6 075 494 **Depth (m):** 20

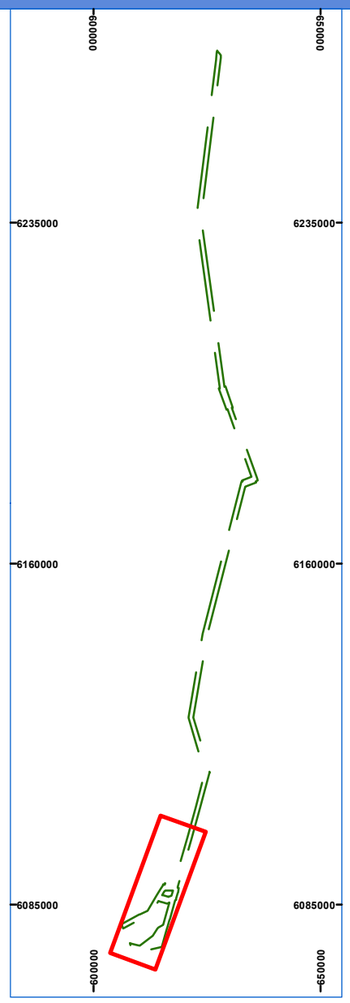
Sediment Description:
Soft sediment with sand ripples.

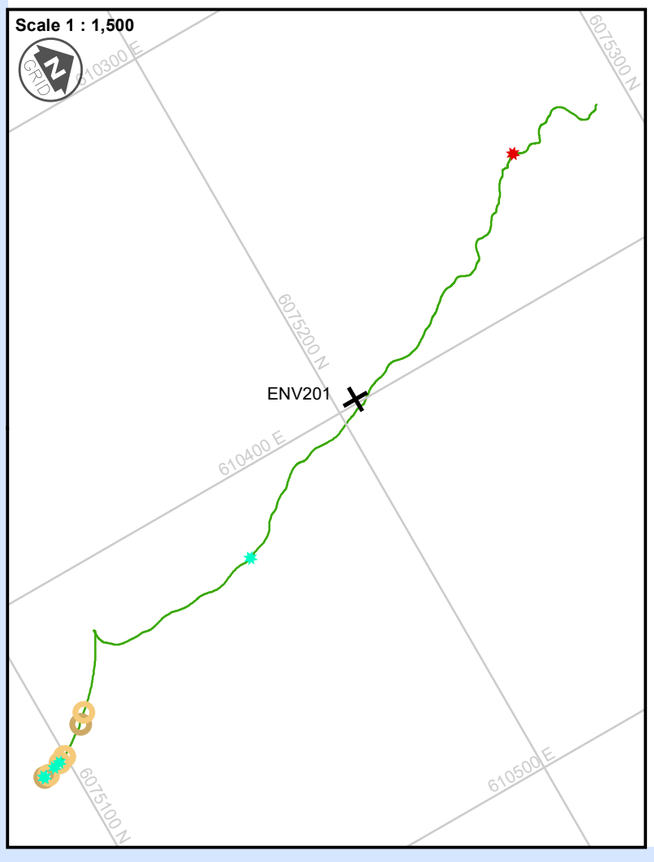
Faunal Description:
No visible fauna

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

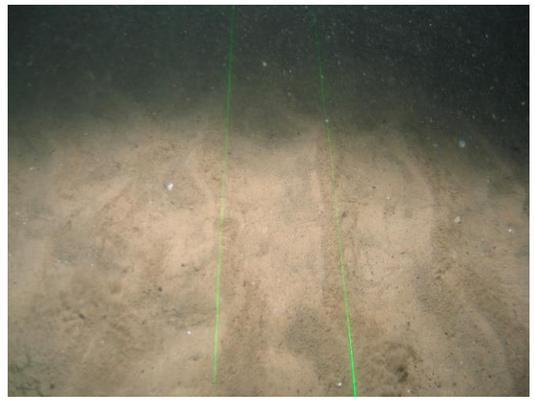
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV201

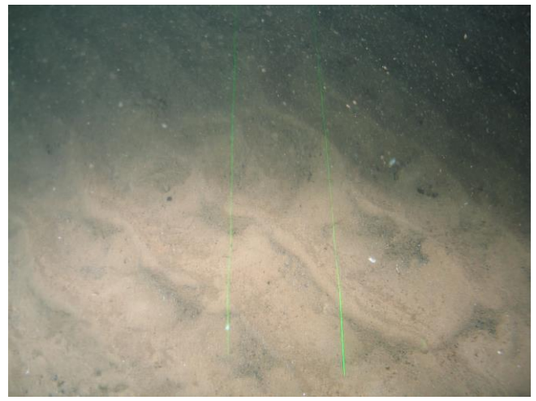
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV201
Fix: 11 **E:** 610 417 **N:** 6 075 121 **Depth (m):** 17

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV201
Fix: 48 **E:** 610 394 **N:** 6 075 226 **Depth (m):** 17

Sediment Description:
Soft sediment with shell hash and sand ripples.

Faunal Description:
No visible fauna



Station: ENV201
Fix: 1 **E:** 610 398 **N:** 6 075 210 **Depth (m):** 22
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

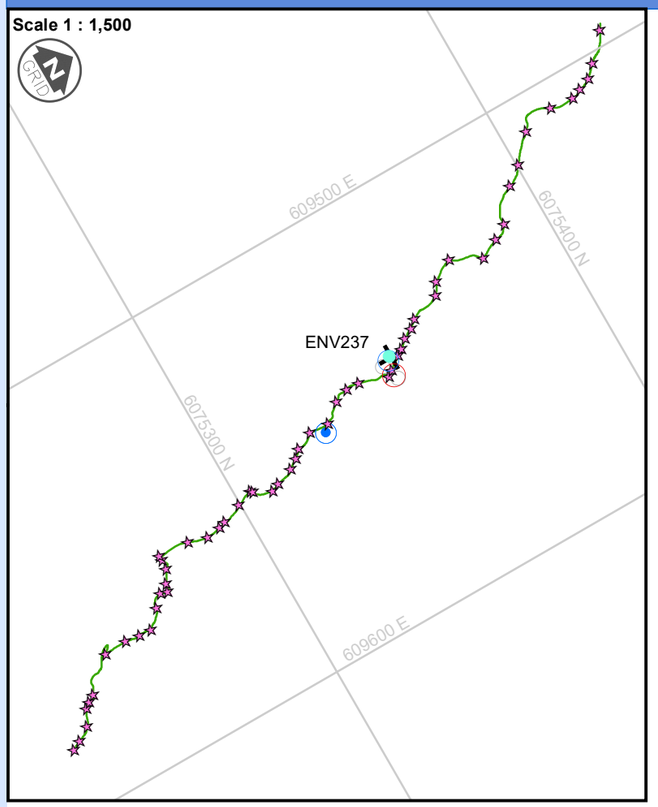


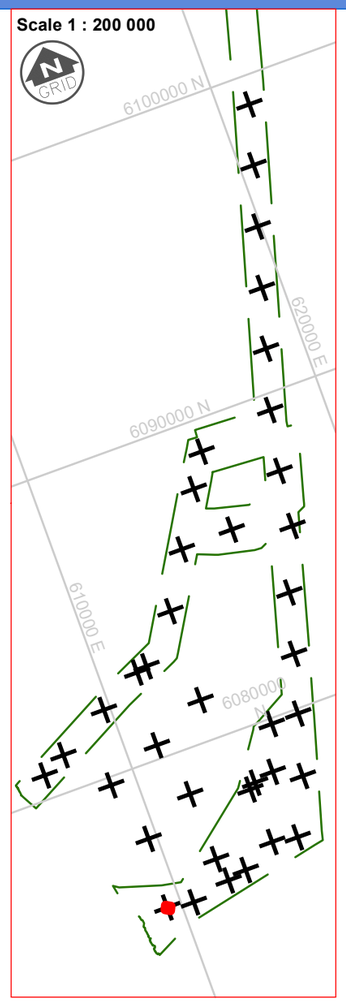
Station: ENV201
Fix: 1 **E:** 610 398 **N:** 6 075 210 **Depth (m):** 22
Retention: MFA

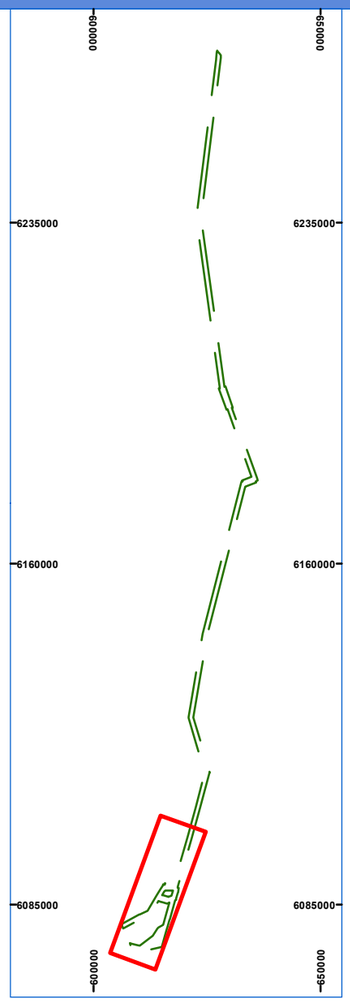
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

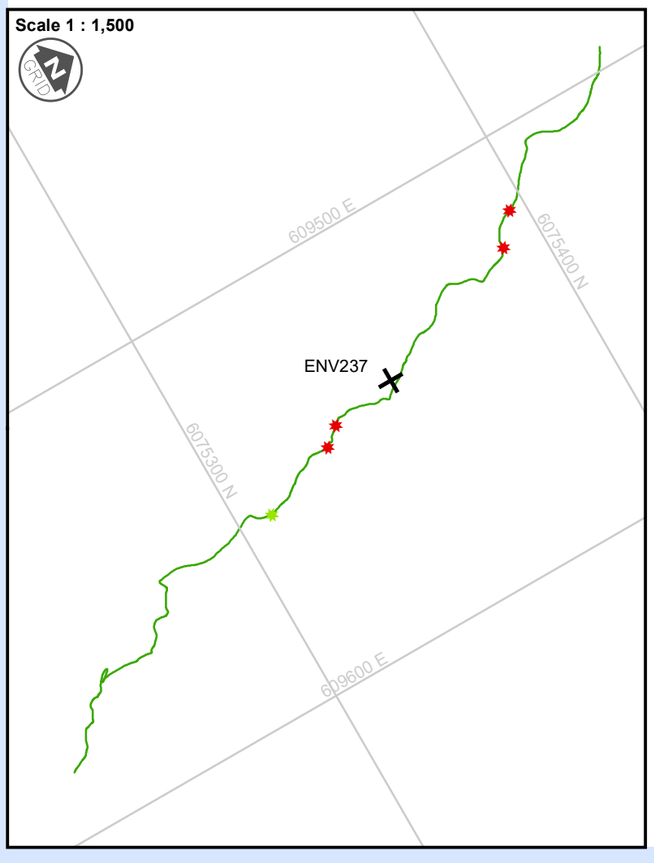
Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

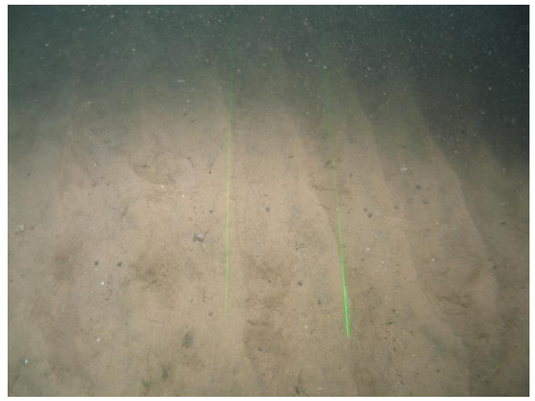
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV237

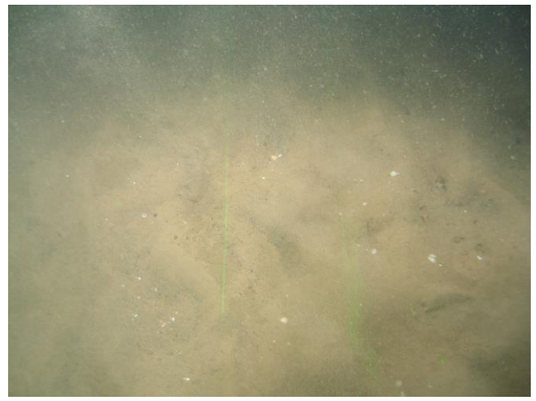
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV237
Fix: 126 **E:** 609 509 **N:** 6 075 406 **Depth (m):** 11

Sediment Description:
Soft sediment with shell hash and sand ripples.

Faunal Description:
No visible fauna



Station: ENV237
Fix: 92 **E:** 609 555 **N:** 6 075 277 **Depth (m):** 12

Sediment Description:
Soft sediment with shell hash

Faunal Description:
No visible fauna



Station: ENV237
Fix: 36 **E:** 609 544 **N:** 6 075 348 **Depth (m):** 14
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Bivalvia)

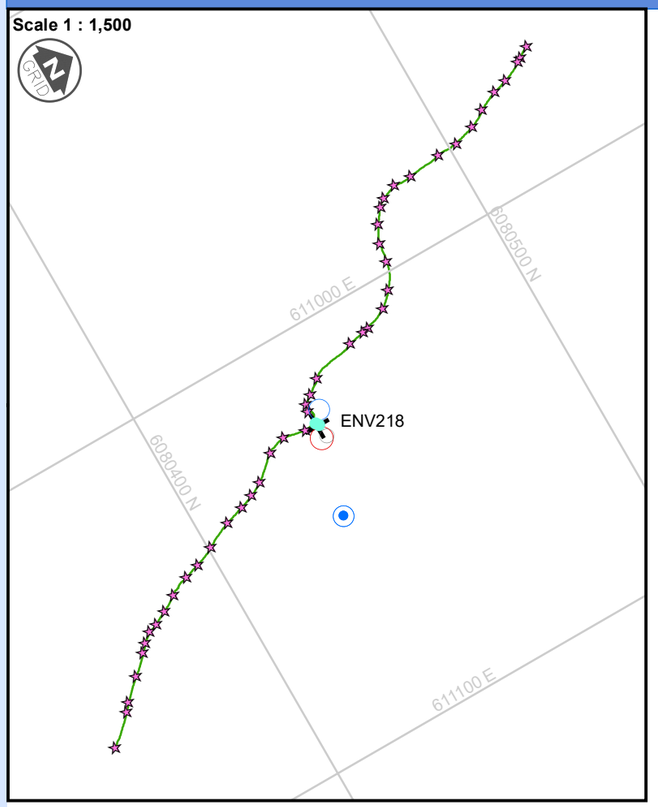


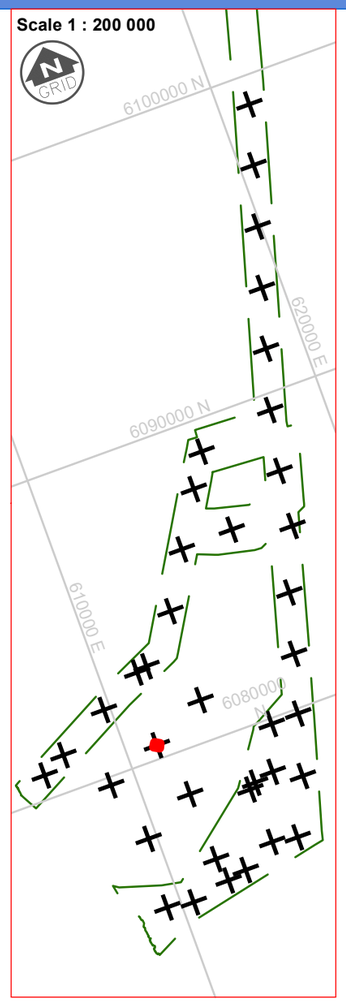
Station: ENV237
Fix: 36 **E:** 609 544 **N:** 6 075 348 **Depth (m):** 14
Retention: MFA

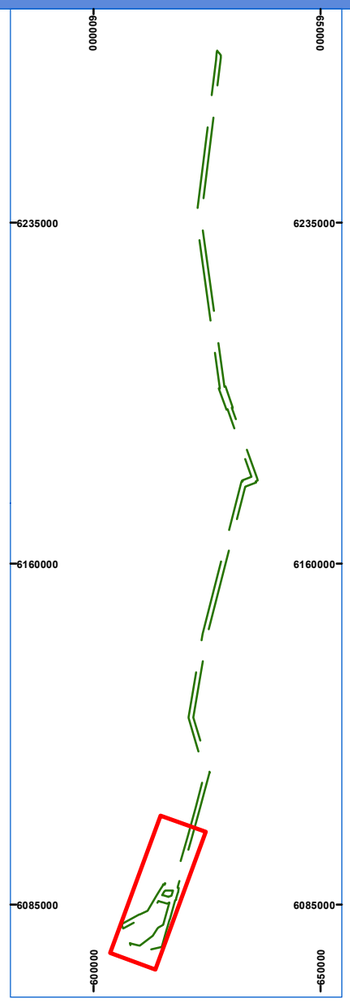
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

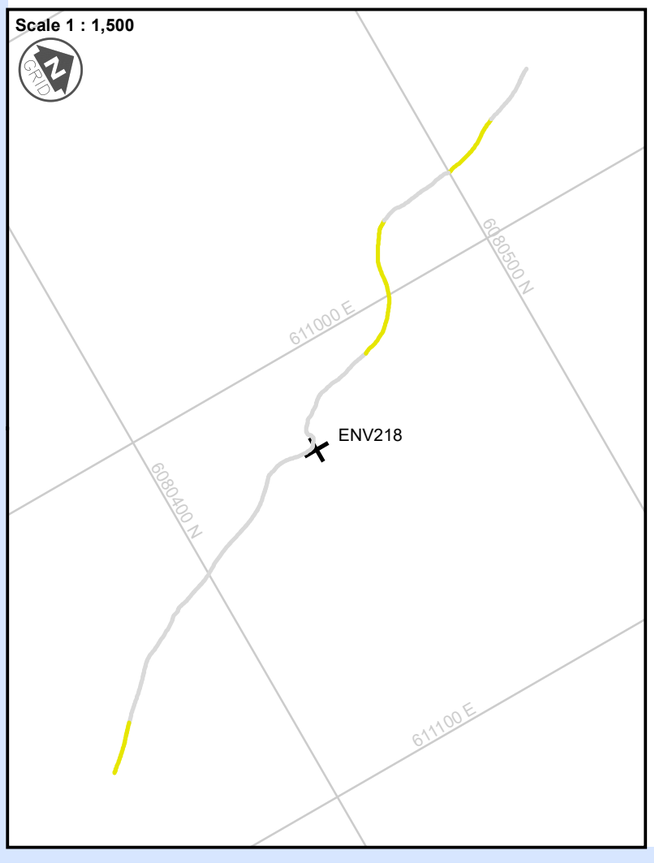
Faunal Description:
Annelida (Polychaeta), Arthropoda (Brachyura), Mollusca (Bivalvia)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

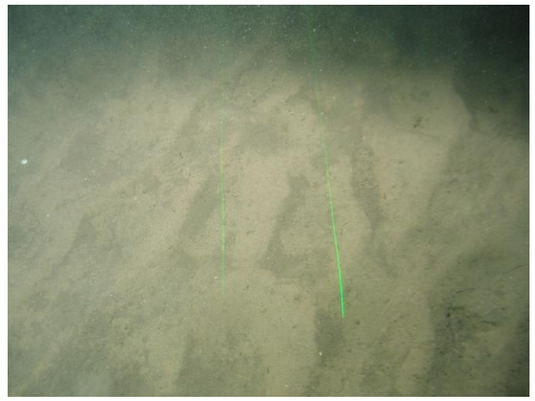
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV218

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV218
Fix: 493 **E:** 611 020 **N:** 6 080 438 **Depth (m):** 19

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV218
Fix: 512 **E:** 611 061 **N:** 6 080 363 **Depth (m):** 19

Sediment Description:
Gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV218
Fix: 19 **E:** 611 027 **N:** 6 080 438 **Depth (m):** 21
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

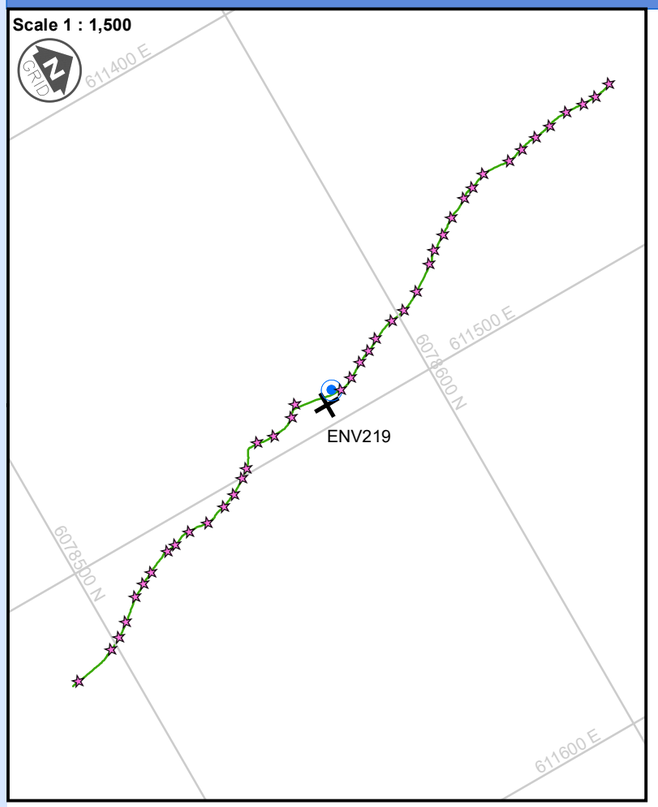


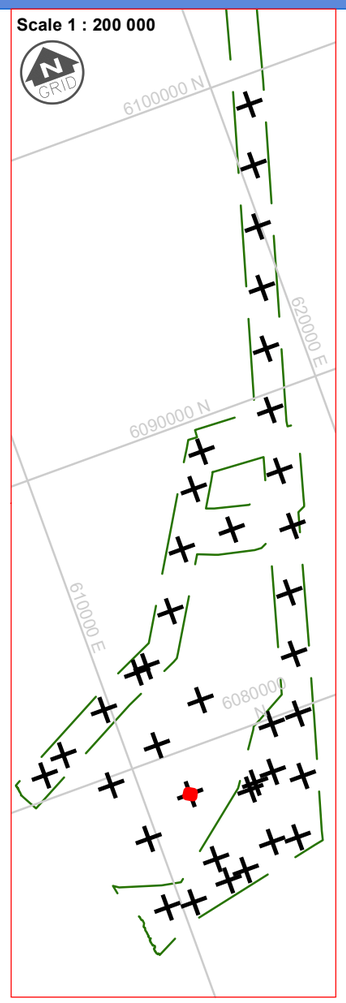
Station: ENV218
Fix: 19 **E:** 611 027 **N:** 6 080 438 **Depth (m):** 21
Retention: MFA

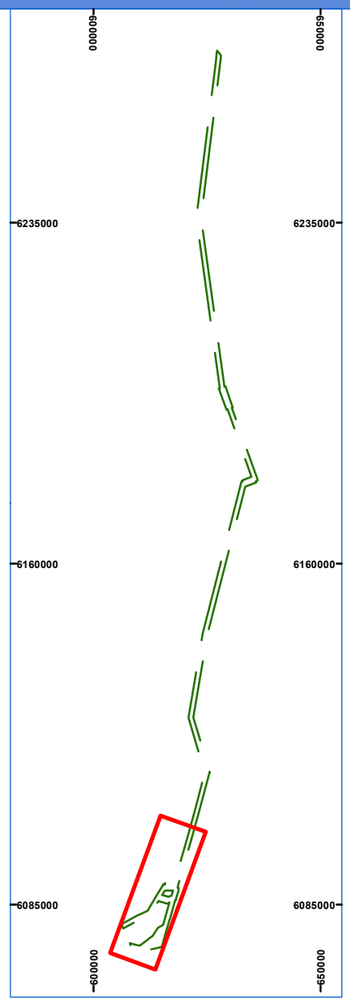
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Echinodermata (Ophiuroidea)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV219

Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV219
Fix: 429 **E:** 611 462 **N:** 6 078 661 **Depth (m):** 19

Sediment Description:
Gravel with coarse sediment

Faunal Description:
No visible fauna



Station: ENV219
Fix: 436 **E:** 611 468 **N:** 6 078 628 **Depth (m):** 19

Sediment Description:
Soft sediment with gravel and cobbles

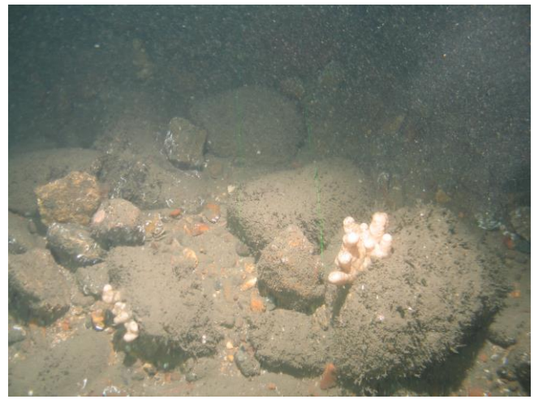
Faunal Description:
Cnidaria (*Alcyonium digitatum*), Faunal turf



Station: ENV219
Fix: 447 **E:** 611 492 **N:** 6 078 583 **Depth (m):** 19

Sediment Description:
Gravel with soft sediment.

Faunal Description:
No visible fauna

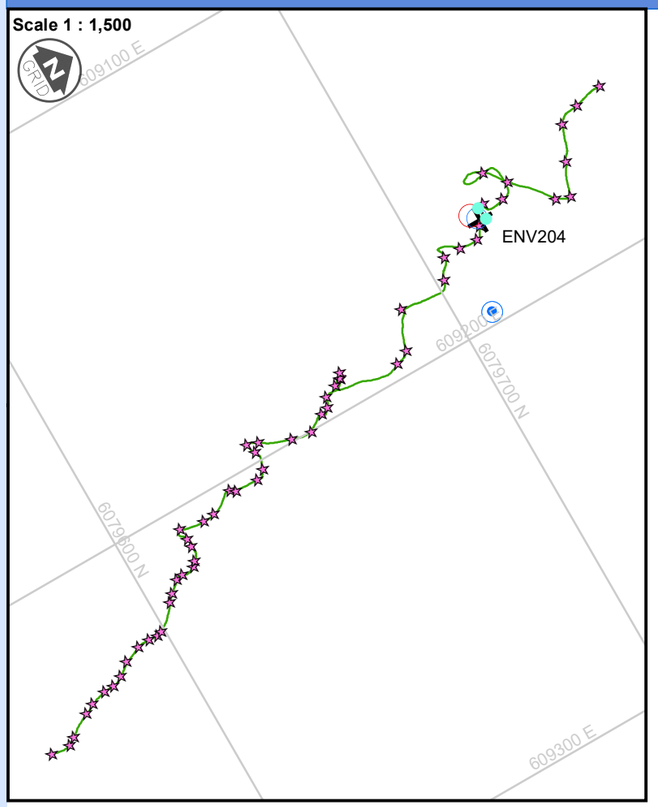


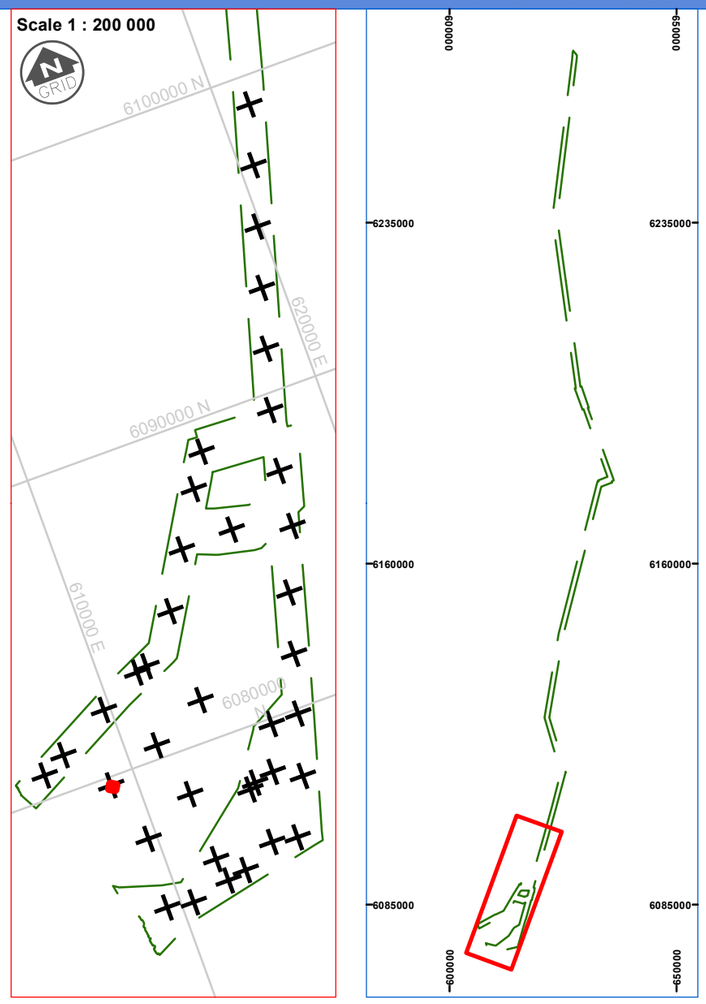
Station: ENV219
Fix: 463 **E:** 611 510 **N:** 6 078 513 **Depth (m):** 19

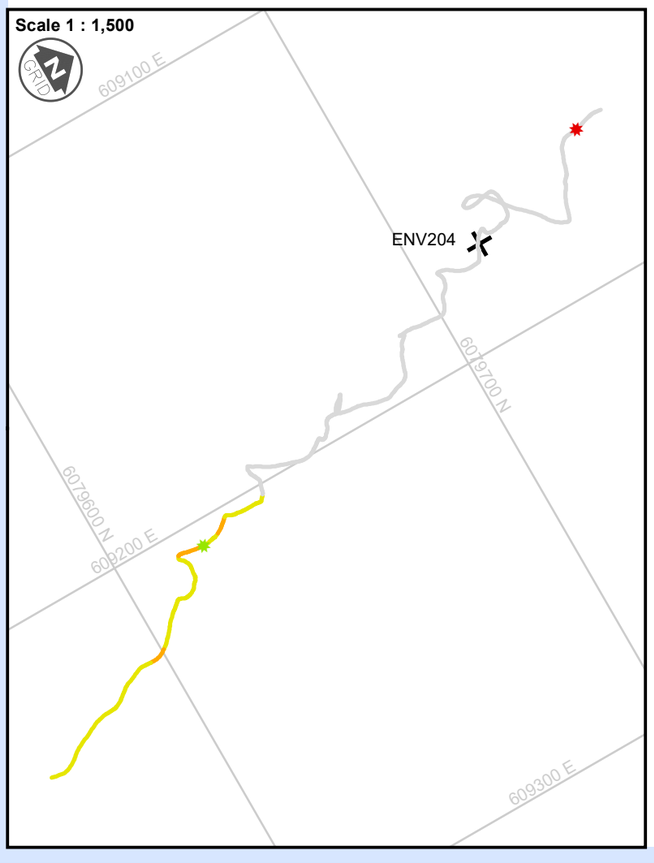
Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Cnidaria (*Alcyonium digitatum*)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS







LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

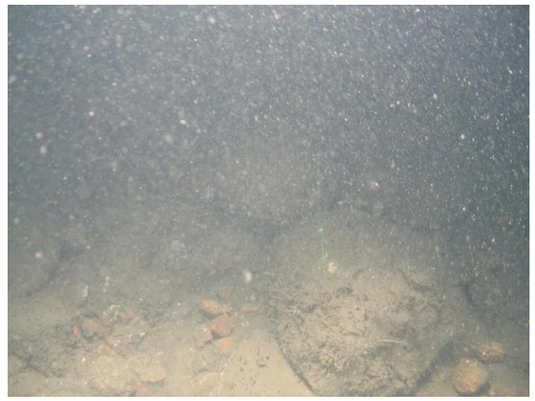
- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV204

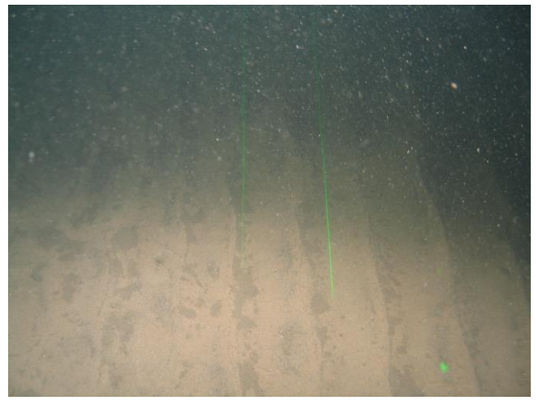
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV204
Fix: 204 **E:** 609 214 **N:** 6 079 614 **Depth (m):** 16

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Faunal turf



Station: ENV204
Fix: 221 **E:** 609 197 **N:** 6 079 662 **Depth (m):** 16

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV204
Fix: 15 **E:** 609 174 **N:** 6 079 716 **Depth (m):** 16
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta)

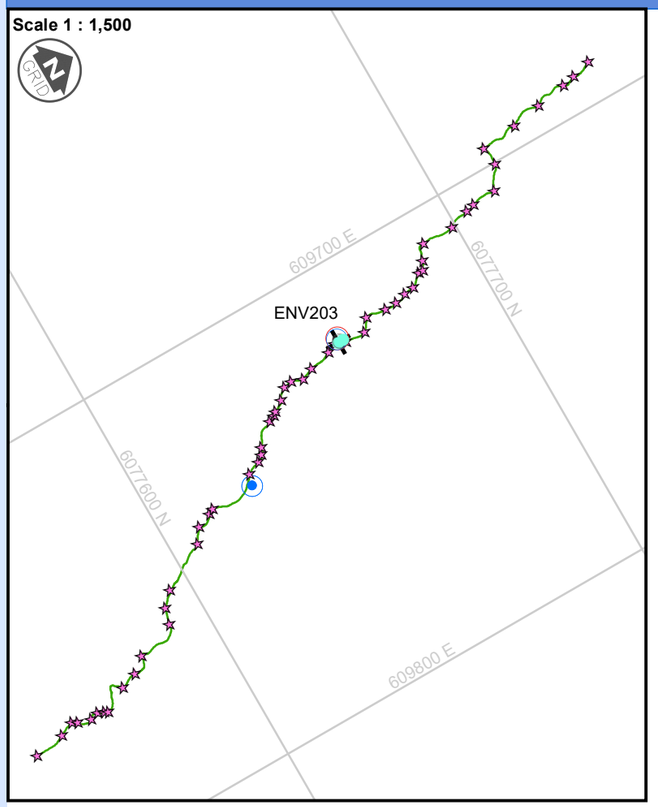


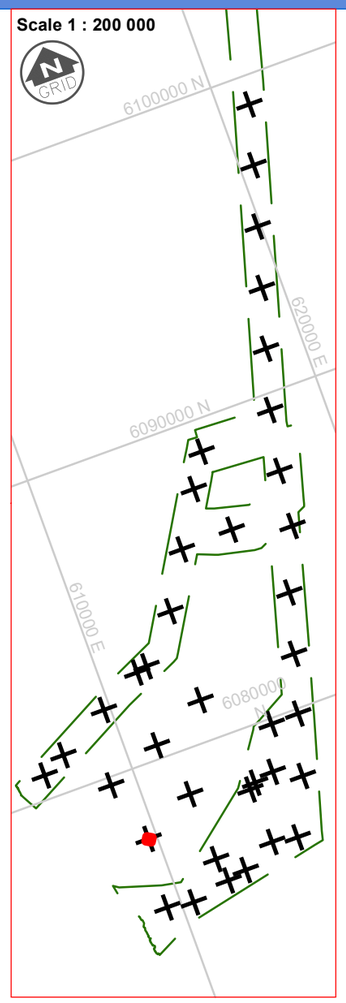
Station: ENV204
Fix: 15 **E:** 609 174 **N:** 6 079 716 **Depth (m):** 16
Retention: MFA

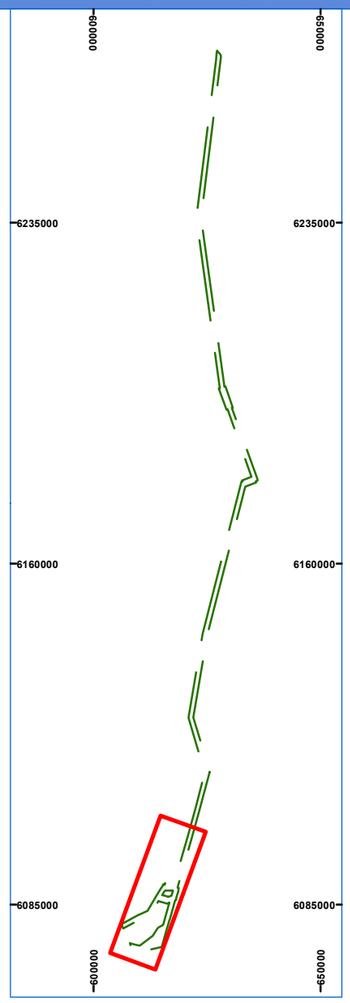
Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

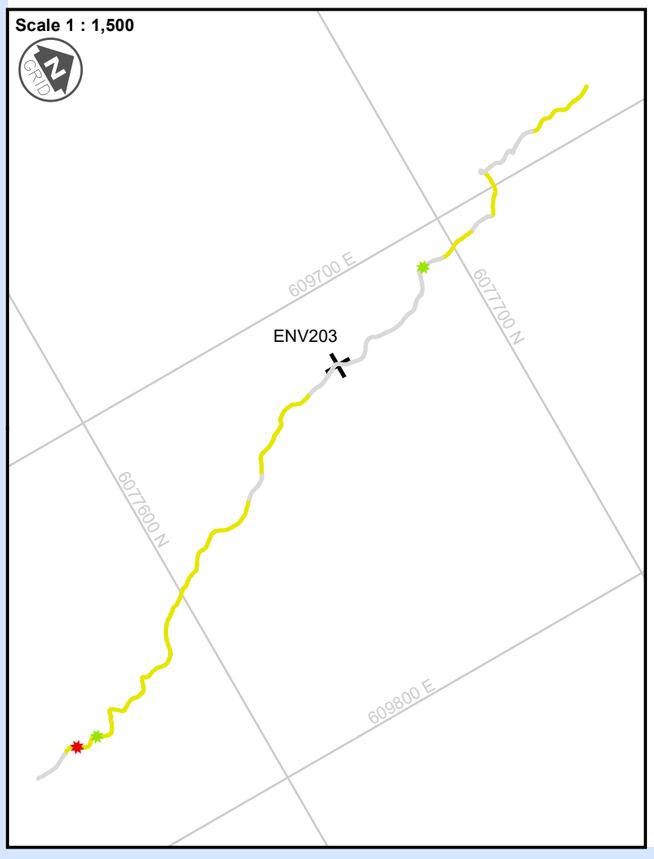
Faunal Description:
Annelida (Polychaeta)

APPENDIX C SAMPLING AND SEABED PHOTOGRAPHS AND LOCATIONS









LEGEND

- STATION TARGET
- CAMERA FIX
- VIDEO FRAME
- CAMERA TRANSECT
- CABLE ROUTE CORRIDOR

SAMPLE RETENTION

- PSA
- CHEM / FISH eDNA
- MFA / eDNA
- MFB / eDNA
- NO SAMPLE
- WATER eDNA

ROCKY REEF RESEMBLANCE

- LOW
- MEDIUM
- NONE

Virgularia stet.

- 1
- 2

Pennatula phosphorea

- 1
- 2
- 3
- 4

BURROWS

- 1-2
- 3-4
- 5-6

PROTECTED TAXA

- *Pleuronectes platessa*
- *Echinus esculentus inc.*
- *Arctica islandica* siphons
- *Glyptocephalus cynoglossus*
- *Lophius piscatorius*

OVERVIEW OF STATION: ENV203

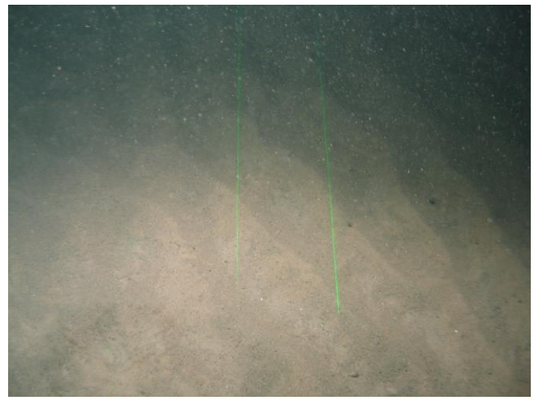
Overview Scale 1 : 350,000
ED50/UTM Zone 30N (3°W)



Station: ENV203
Fix: 138 **E:** 609 768 **N:** 6 077 565 **Depth (m):** 18

Sediment Description:
Cobbles and gravel with coarse sediment

Faunal Description:
Bryozoa (Flustridae *stet.*), Faunal turf



Station: ENV203
Fix: 160 **E:** 609 722 **N:** 6 077 646 **Depth (m):** 19

Sediment Description:
Sand with shell hash

Faunal Description:
No visible fauna



Station: ENV203
Fix: 9 **E:** 609 718 **N:** 6 077 661 **Depth (m):** 20
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)



Station: ENV203
Fix: 9 **E:** 609 718 **N:** 6 077 661 **Depth (m):** 20
Retention: MFA

Sediment Description:
Muddy fine sand Munsell: 5Y 4/3

Faunal Description:
Annelida (Polychaeta), Mollusca (Bivalvia)

APPENDIX D FAUNAL OBSERVATION SUMMARY

APPENDIX D FAUNAL OBSERVATION SUMMARY

Appendix D is embedded within the pdf as an Excel file named:

59294_E3 Appendix D - bp Morven Route Faunal Observation Summary.xlsx

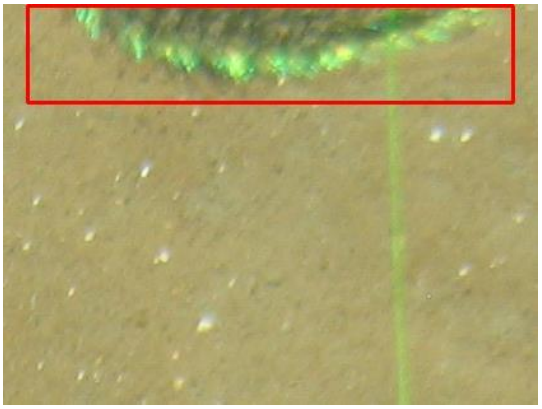
It comprises the following tabs:

- App D1 Species of Importance
- App D2 Faunal Summary

Press here to show/hide attachment pane

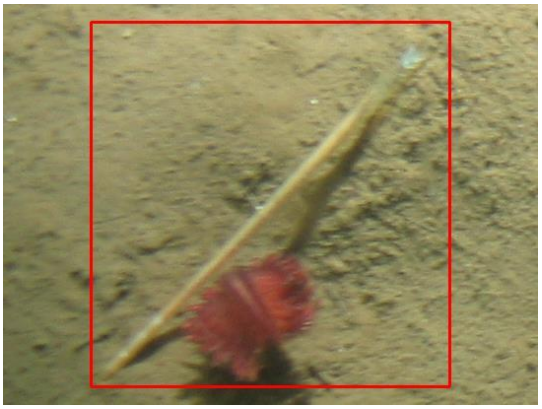
APPENDIX E FAUNAL CATALOGUE

APPENDIX E FAUNAL CATALOGUE



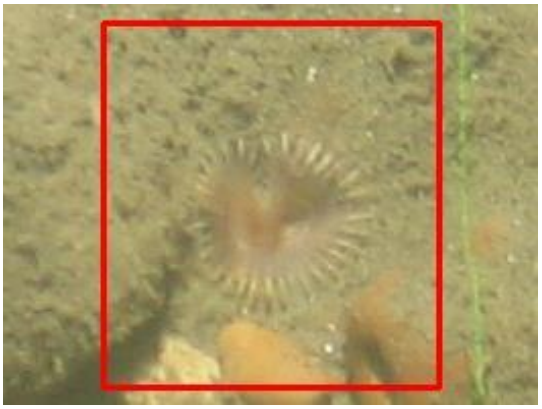
1. Annelida - *Aphrodita aculeata*

Oval bodied worm, sandy coloured body with irridescent chaetae. Two horn-like palps visible from the front of the animal.



2. Annelida - *Hyalinoecia tubicola*

Long, slender, transparent plastic-looking straw tube resting on the sediment. Worm may be seen emerging from the top of the tube.



3. Annelida - *Myxicola stet.*

Cylindrical worm found emerging from the benthos. Crown of tentacles can be seen with coloured tips either white or black.



4. Annelida - *Oxydromus flexuosus*

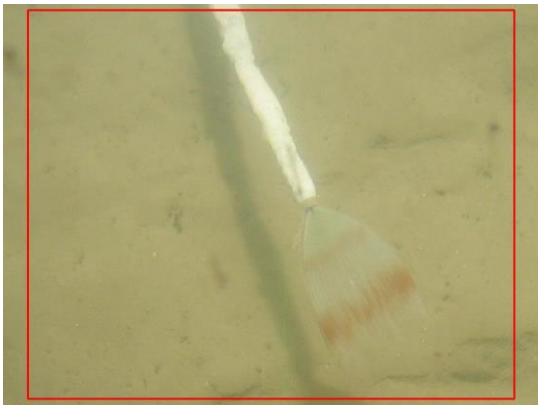
Bristle worm seen on the surface of the benthos. Colouration shows dark brown with blue-green stripes across a short and broad body.

APPENDIX E FAUNAL CATALOGUE



5. Annelida - Polychaeta *stet.*

Indistinct polychaete worm found in a burrow. Unable to identify further.



6. Annelida - *Sabella pavonina inc.*

Two fans of feathery tentacles protruding from the end of a long sediment coloured tube. Tentacles are brown-red with darker bands.



7. Annelida - Terebellidae *stet.*

Tentacles of worm emerging from the sediment. Unable to identify further.



8. Arthropoda - Brachyura *stet.*

Crab with two short chelipeds. Unable to identify further.

APPENDIX E FAUNAL CATALOGUE



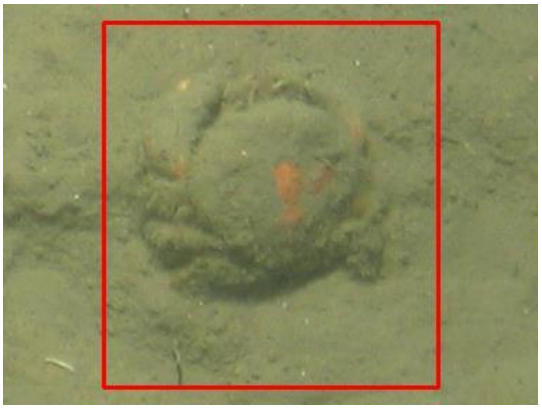
9. Arthropoda - *Cancer pagurus*

Heavy, large oval carapace, orange/brown in colour. Distinguisable as having a 'pie crust' edge of the carapace and black tips visible of front chelipeds.



10. Arthropoda - Caridea *stet.*

Small shimp like arthropods sitting on the seabed.



11. Arthropoda - Decapoda *stet.*

Unidentifiable crab with walking legs.



12. Arthropoda - *Ebalia stet.*

Carapace as broad as it is long giving the crab a diamond shape. Front chelipeds are short and thick.

APPENDIX E FAUNAL CATALOGUE



13. Arthropoda - *Goneplax rhomboides*

Small crab with a trapezoid shaped carapace. Each segment of front arms, about as long as the front of the carapace is wide, with pincers approximately half the length of the forearm.



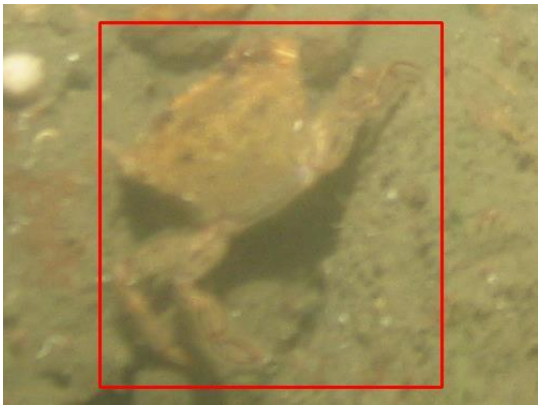
14. Arthropoda - Inachidae *stet.*

Small spider crab with oval or triangular carapace and long thin legs. Two front legs comparatively stout.



15. Arthropoda - *Munida stet.*

The first pair of legs of the lobster are long and thin with slender claws. The back end appears to be blunt and short.



16. Arthropoda - *Necora puber*

Velvet swimming crab. The dorsal surface has a finely velvety texture and the eyes are red.

APPENDIX E FAUNAL CATALOGUE



17. Arthropoda - *Nephrops norvegicus*

Long, pale orange carapace with long spiny rostrum at the front. Long, slender claws with characterised longitudinal spiny ridges.



18. Arthropoda - Paguroidea *stet.*

Hermit crabs living in gastropod shells. Pale red, pink, or orange colouration.



19. Arthropoda - *Pagurus prideaux*

Orange hermit crab. Adults often live in association with the cloak anemone (*Calliactis palliata*).



20. Arthropoda - *Polybius depurator*

Carapace of the crab is wider than long with distinct purple swimming paddles. Front chelipeds are large covering the front of the animal.

APPENDIX E FAUNAL CATALOGUE



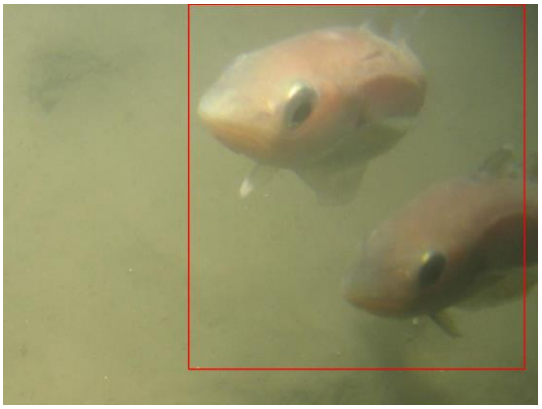
21. Bryozoa - *Alcyonidium diaphanum*

Colonial bryozoan forming various shapes from sausage to flattened lobes. Typically brown in colour and attached to hard substrate including cobbles and shells.



22. Bryozoa - Flustridae *stet.*

Pale grey-green sheet-like bifurcating structure.



23. Chordata - Actinopterygii *indet*. 01

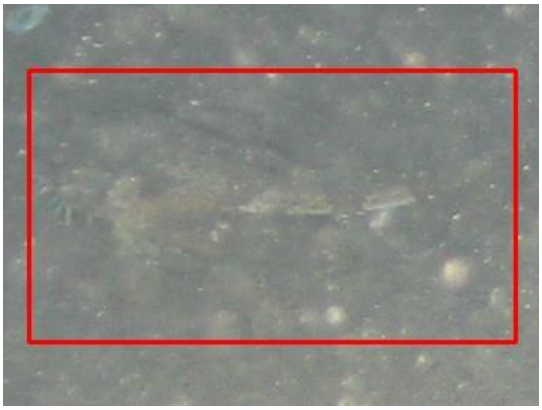
Pale pink ray finned fish with no characteristic, distinguishing features.



24. Chordata - Actinopterygii *indet*. 02

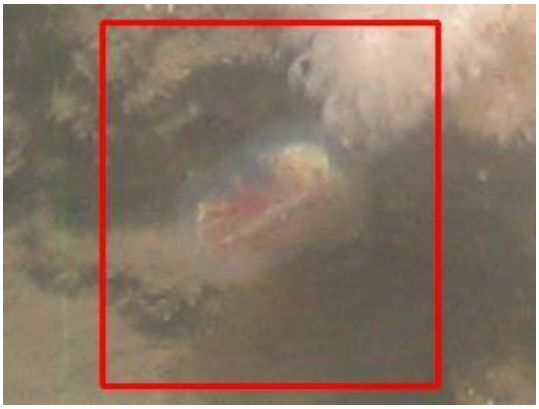
Ray finned fish with slight striped coloration along the body. Unable to indentify further.

APPENDIX E FAUNAL CATALOGUE



25. Chordata - *Agonus cataphractus*

Dull brown and paler on the back with banding pattern. Covered in hard bony plates.



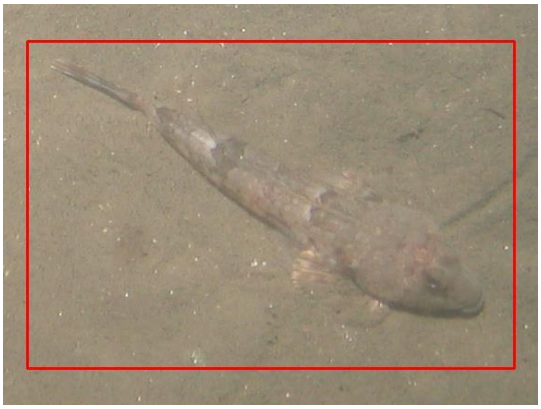
26. Chordata - Ascidiacea *stet.*

Small sea squirt, ovoid in shape with a pale look. Only able to identify to class due to lack of resolution in imagery.



27. Chordata - *Buglossidium luteum*

Characteristic oval shape and round head with curving snout. Every fifth or sixth ray of the dorsal or anal fin is black and this gives the fins a striped appearance.



28. Chordata - *Callionymus lyra*

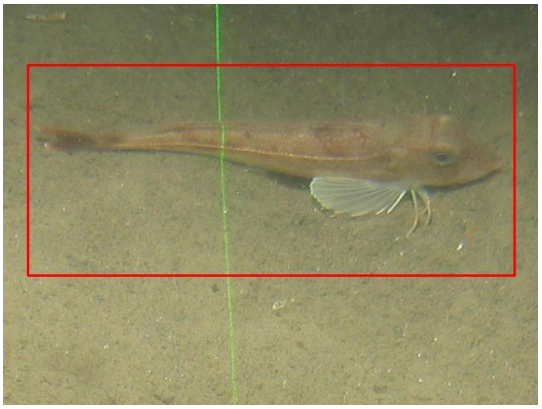
Triangular shaped head, with spiny long pectoral fins and eyes raised above head. Brown in colour with striping, and tapered body into tail fin.

APPENDIX E FAUNAL CATALOGUE



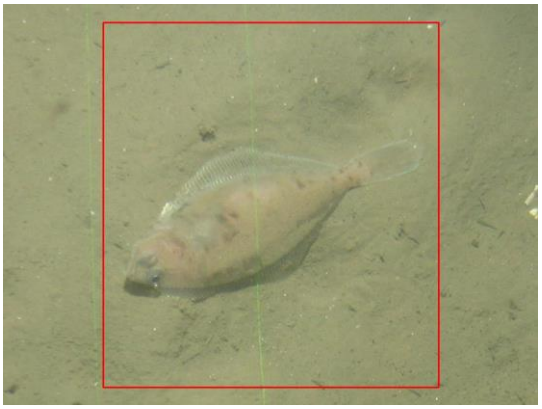
29. Chordata - *Chelidonichthys cuculus*

Red gurnard. Has large pectoral fins with finger-like feelers and is usually red in colour with a pale underside.



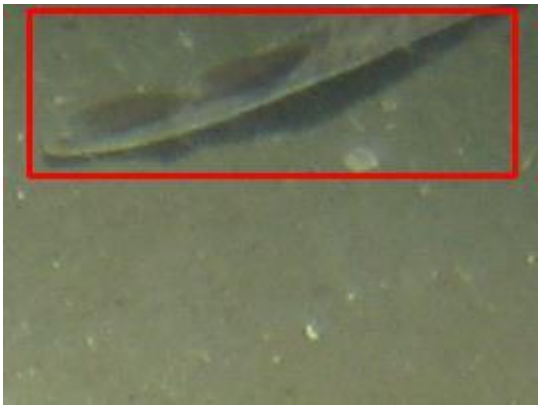
30. Chordata - *Eutrigla gurnhardus*

Large head with big eyes tapering evenly down to tail. Three finger-like feelers in front of the pectoral fin.



31. Chordata - *Glyptocephalus cynoglossus*

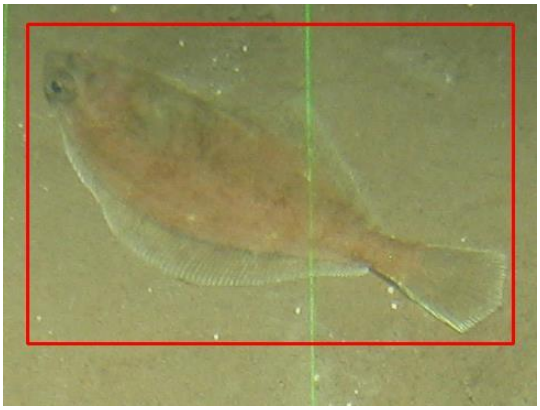
Right-sided flatfish with large eyes situated closed together. Body elongated and pale brown to pink with dark spots and marking on the pectoral fins.



32. Chordata - *Leucoraja naevus*

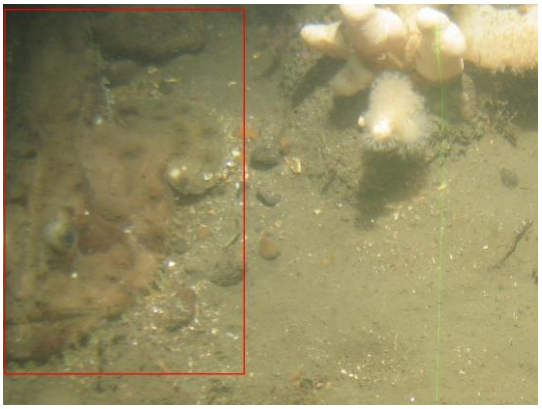
Cuckoo ray, with two visible spines on the tail. Further identified from video analysis.

APPENDIX E FAUNAL CATALOGUE



33. Chordata - *Limanda limanda*

Small flatfish with two large eyes and diamond-like shape. Fish is a brown colour with darker blotches and a strongly arched lateral line.



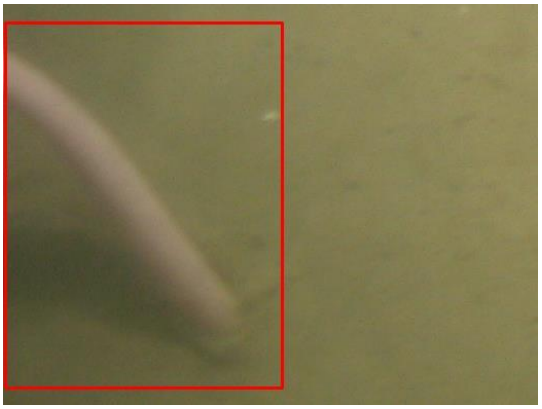
34. Chordata - *Lophius piscatorius*

Broad, depressed body with huge mouth. Fish flabby with a lateral fringe of small flaps.



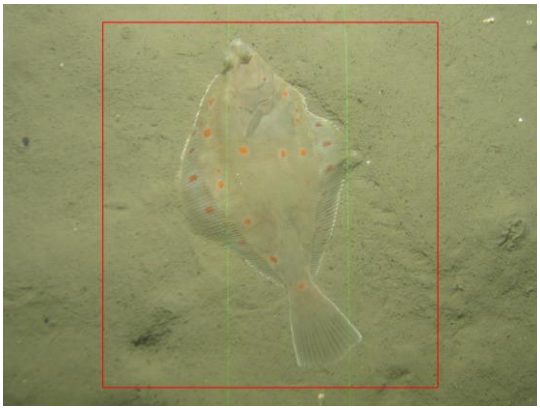
35. Chordata - *Melanogrammus aeglefinus*

Fish with a relatively small head and eyes. Large dark patch on the side of the fish below the first dorsal fin.



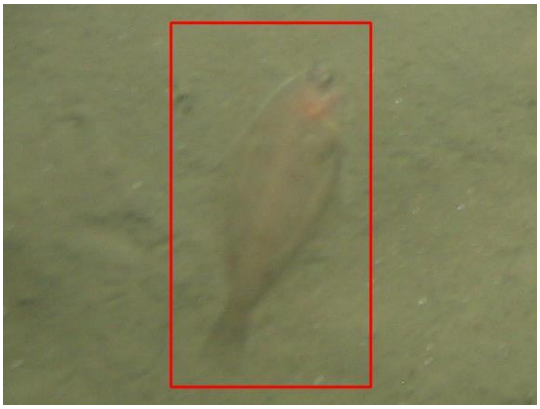
36. Chordata - *Myxine glutinosa*

Long, slender, pale pink coloured eel-like fish.



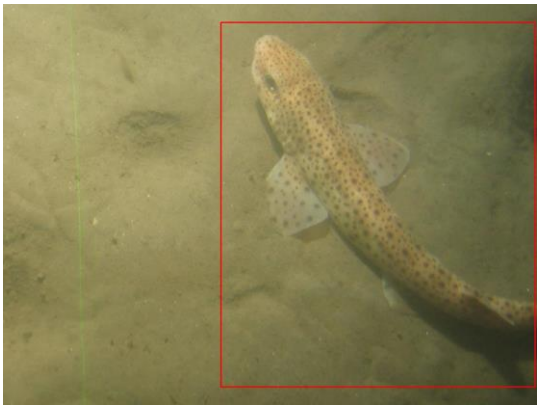
37. Chordata - *Pleuronectes platessa*

Right-sided greyish brown body with opaque fins with a white margin and orange dots covering both the body and the fins.



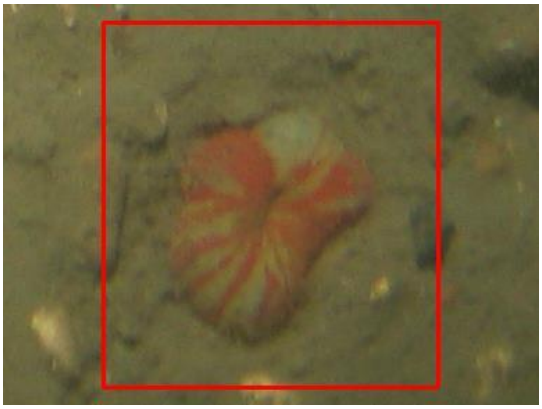
38. Chordata - Pleuronectiformes *stet.*

Flatfish with no distinctive markings. Unable to identify further due to lack of ID features.



39. Chordata - *Scyliorhinus canicula*

Small shark with blunt head and long tapering body, with two small, rounded dorsal fins set far back on the tail. Sandy brown colour with numerous, small, darker brown spots.



40. Cnidaria - Actiniaria *stet.*

Anemone with no defining features, Unable to identify further.

APPENDIX E FAUNAL CATALOGUE



41. Cnidaria - *Alcyonium digitatum*

Thick fleshy masses of irregular shape which can occur in many colour forms including white, orange, red or brown. Polyps may be retracted, giving a leathery look, or feeding, giving a fluffy look.



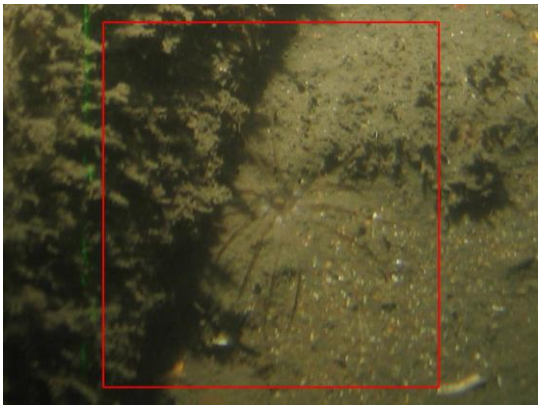
42. Cnidaria - *Calliactis palliata*

Cloak anemone living in association with the hermit crab *Pagurus prideaux*.



43. Cnidaria - *Caryophyllia stet.*

Genus of solitary corals. Oval in shape.



44. Cnidaria - Ceriantharia *stet.*

Solitary tube-dwelling anemones that live buried in the sediment. Only the tentacles and mouth openings are visible.

APPENDIX E FAUNAL CATALOGUE



45. Cnidaria - Edwardsiidae *stet.*

Non-tube dwelling buried anemone with visible tentacles and a small disc. Dark orange in colouration.



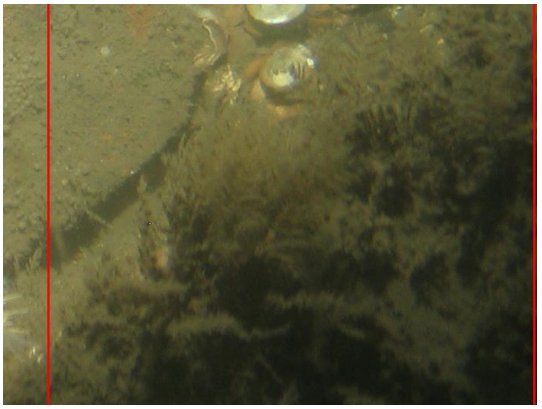
46. Cnidaria - Hexacorallia *stet.*

Hexacorallia is a class of Anthozoa that are formed of polyps with more than eight tentacles. Image resolution prevents further identification.



47. Cnidaria - *Hydractinia echinata*

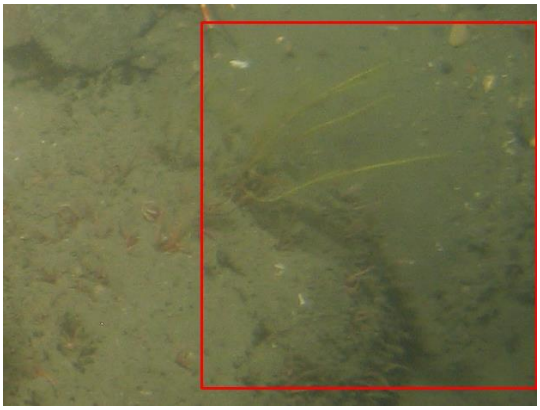
Furry mat with small polyps growing close to the shell, white to pale pink in colour. Often covering gastropod shells typically occupied by hermit crabs.



48. Cnidaria - Hydrozoa *stet.*

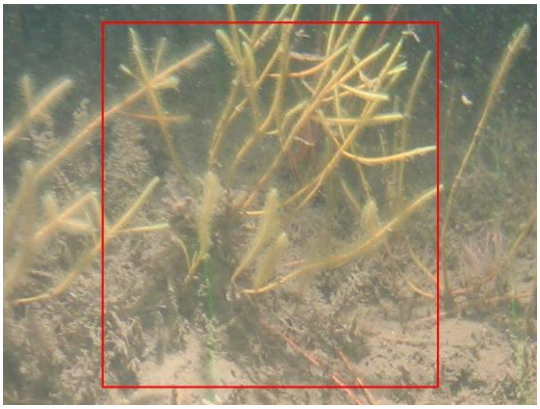
Colonial organism, with multiple polyps connected by tube-like hydrocauli.

APPENDIX E FAUNAL CATALOGUE



49. Cnidaria - *Nemertesia antennina inc.*

Unbranched colonial hydroid with thick erect stems coming from a central point. The stems are typically pale in colour with a fluffy appearance.



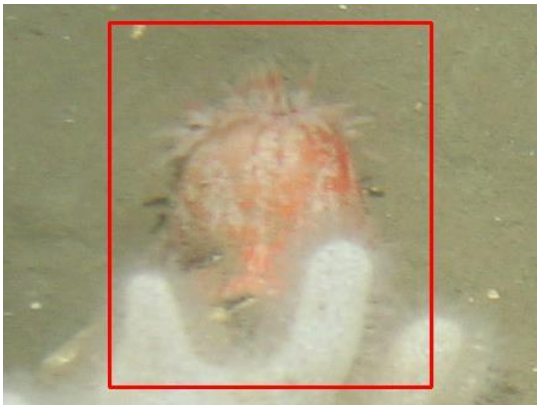
50. Cnidaria - *Nemertesia ramosa inc.*

Branched colonial hydroid with thick erect stems coming from a central point. The stems are typically pale in colour with a fluffy appearance.



51. Cnidaria - *Pennatula phosphorea*

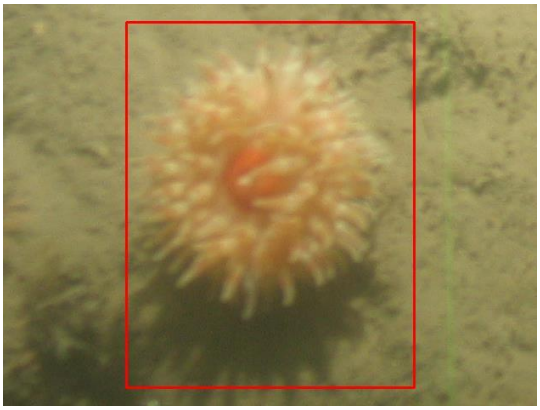
Stout red sea pen with white tips shaped like a fleshy feather.



52. Cnidaria - *Urticina eques*

Anemone with stout tentacles of moderate length. Column smooth with no visible warts.

APPENDIX E FAUNAL CATALOGUE



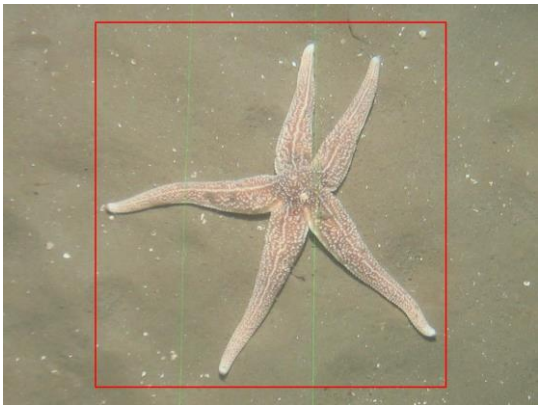
53. Cnidaria - *Urticina stet.*

Large and colourful anemone with club-like tentacles. Unable to identify to species due to not being able to see the column.



54. Cnidaria - *Virgularia stet.*

Slender sea pen with small leaves. Colour off white to creamy yellow.



55. Echinodermata - *Asterias rubens*

Starfish with five broad arm base and five tapering arms. Variable in colour (orange, pale brown) but frequently with pale tips that are turned up.



56. Echinodermata - Asteroidea *stet.*

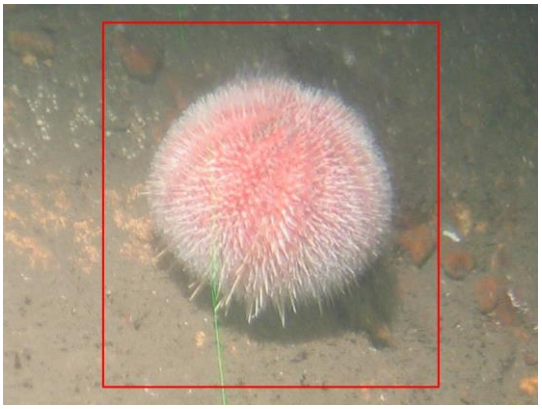
Small indistinct starfish. Unable to identify further.

APPENDIX E FAUNAL CATALOGUE



57. Echinodermata - *Astropecten irregularis*

Stiff flatterned body, dorsal surface finely granular, often with purple tips at the end of each arm. At the edge of each arm there is a double series of large marginal plates, thick spines on the edge of all arms.



58. Echinodermata - *Echinus esculentus inc.*

Large globular sea urchin may be up to 15cm in diameter. The urchin is typically pink in colour with white spines.



59. Echinodermata - *Henricia stet.*

Relatively small starfish with five arms. Arm tips may be pointing upwards.



60. Echinodermata - *Hippasteria phrygiana*

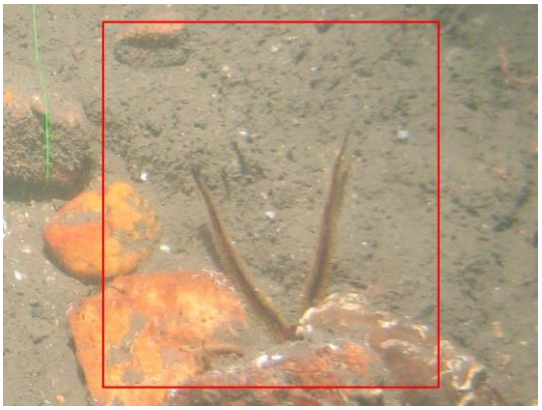
Yellow or orange with a surface covered by small tubercles and a large central disc. Edge of the arms often paler in colour to the main body of the starfish.

APPENDIX E FAUNAL CATALOGUE



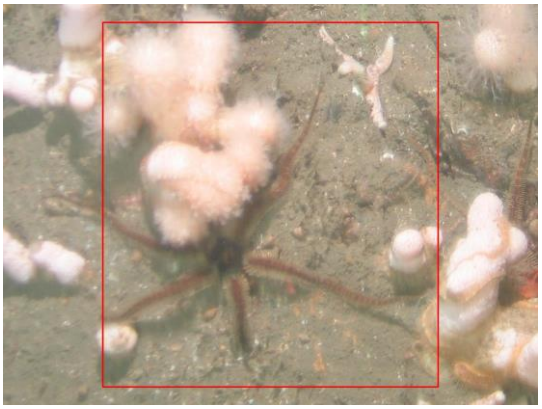
61. Echinodermata - *Luidia ciliaris*

Seven armed starfish, pale orange in colour, with white spines along the underside of each arm. Round central disc with fatter appearance than legs.



62. Echinodermata - *Ophiocomina nigra*

Brittlestar that in this instance is brown/black. Arms and disc are the same colour, and the arms aren't banded.



63. Echinodermata - *Ophiothrix fragilis*

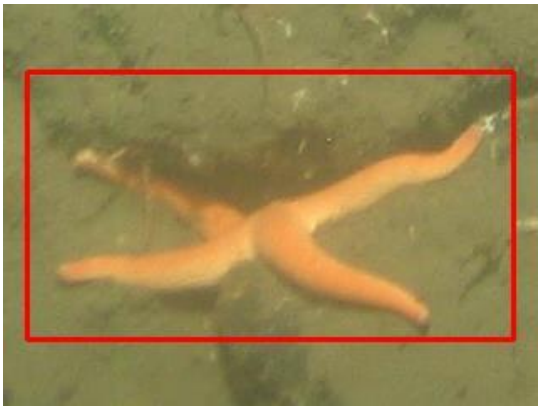
Large brittlestar with slender tapering arms that have 7 spines on each segment, giving them a spiky/fluffy appearance.



64. Echinodermata - Ophiuroidea *stet.*

Brittle star. Defining features not visible.

APPENDIX E FAUNAL CATALOGUE



65. Echinodermata - *Stichastrella rosea*

This starfish has long stiff tapering arms with regular linear pattern of rounded plates on dorsal surface, orange in colour sometimes brighter.



66. Mollusca - *Aporrhais pespelecani*

Tall, slender, conical shell. Outer lip of the opening fans out to five blunt rounded points, the first of which is fused with the conical shape of the shell.



67. Mollusca - *Arctica islandica* siphons

Observed buried in the sediment, seen as two 'pig-nosed' siphons.



68. Mollusca - Bivalvia *stet.* siphons

Bivalve buried in sediment. Two siphons visible with no other identifying features.

APPENDIX E FAUNAL CATALOGUE



69. Mollusca - *Calliostoma zizyphinum*

Straight sided conical shell. Similar to an equilateral triangle in shape.



70. Mollusca - *Coryphella stet.*

Narrow nudibranch with a pink body. The tentacles are located on dorsal surface and these are red with white tips.



71. Mollusca - Gastropoda *stet*.

Small conical shell. Unable to ID any further.



72. Mollusca - Nudibranchia *indet*. GL0001

Narrow nudibranch with a white body. The tentacles are located on dorsal surface, and these have bright white tips.

APPENDIX E FAUNAL CATALOGUE



73. Mollusca - Pectinidae *stet.*

Scallop with few identifying features.



74. Mollusca - Scaphopoda *stet.*

Tusk-shaped white shell typically seen lying on the benthos. Tapering shell with one end thicker than the other and the end of the shell ends with a blunt straight edge.



75. Mollusca - Sepiida *stet.*

Bobtail squid. Characterised by the body shape and large eyes relative to the body size.



76. Mollusca - Turritellidae *stet.*

Spiral shell that looks like a unicorn horn.

APPENDIX E FAUNAL CATALOGUE



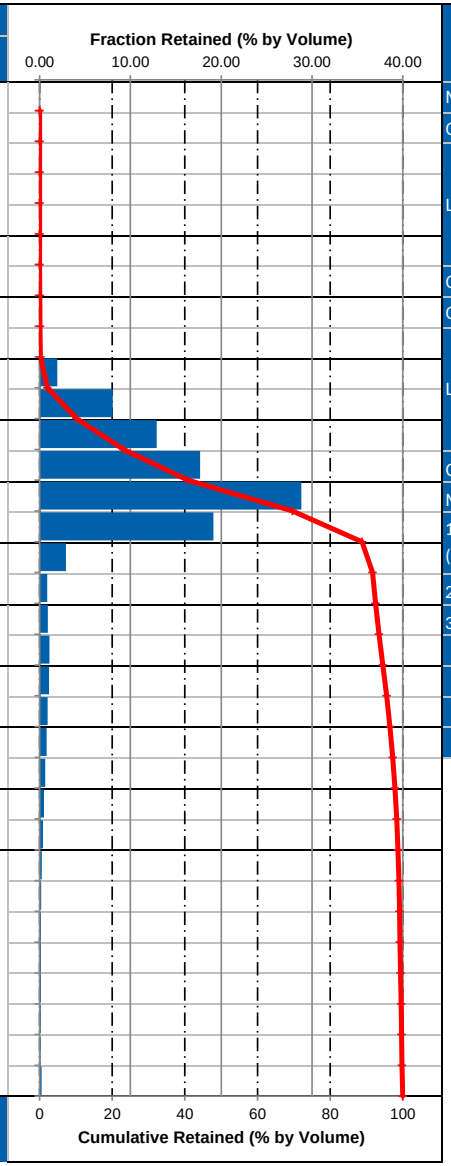
77. Porifera - Hard substrate

Encrusting Porifera. Unable to identify further due to lack of resolution and physical specimen.

APPENDIX F PARTICLE SIZE ANALYSIS

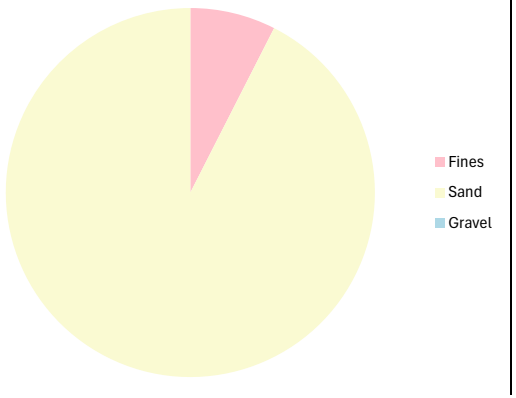
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-173				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.03	0.05	
1414.21	-0.50	0.04	0.09	Very coarse sand
1000.00	0.00	0.12	0.21	
707.11	0.50	1.94	2.15	Coarse sand
500.00	1.00	8.07	10.22	
353.55	1.50	12.90	23.12	Medium sand
250.00	2.00	17.68	40.80	
176.78	2.50	28.83	69.63	Fine sand
125.00	3.00	19.15	88.77	
88.39	3.50	2.91	91.68	Very fine sand
62.50	4.00	0.84	92.52	
44.19	4.50	0.91	93.43	Coarse silt
31.25	5.00	1.08	94.51	
22.10	5.50	1.04	95.55	Medium silt
15.63	6.00	0.89	96.44	
11.05	6.50	0.78	97.22	Fine silt
7.81	7.00	0.62	97.85	
5.52	7.50	0.49	98.33	Very fine silt
3.91	8.00	0.36	98.70	
2.76	8.50	0.24	98.93	Clay
1.95	9.00	0.16	99.10	
1.38	9.50	0.16	99.25	
0.98	10.00	0.16	99.41	
0.69	10.50	0.15	99.56	
0.49	11.00	0.12	99.69	
0.35	11.50	0.10	99.79	
<0.35	>11.5	0.21	100.00	



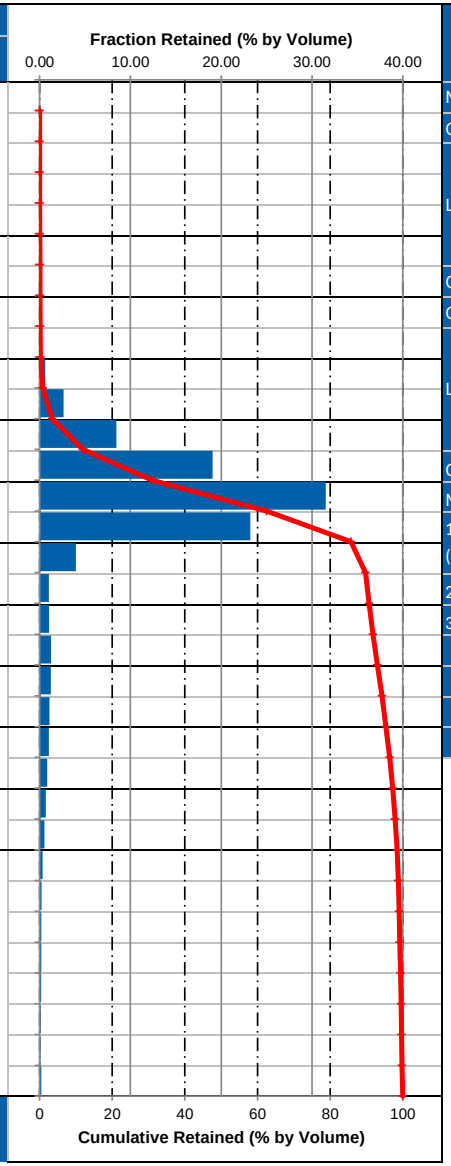
Method of Moments			
Geometric	Mean (µm)	200.78	Wentworth:
Logarithmic	Mean (Phi)	2.32	Fine sand
	Sorting	1.46	Poor
	Skewness	2.84	Very fine
	Kurtosis	15.14	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	235.47	Wentworth:
Logarithmic	Mean (Phi)	2.09	Fine sand
	Sorting	1.10	Poor
	Skewness	0.11	Fine
	Kurtosis	1.72	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.16	223.82	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	7.50%
EUNIS Folk	Sand and muddy sand	Sand	92.50%
Distribution	Bimodal	Gravel	0.00%



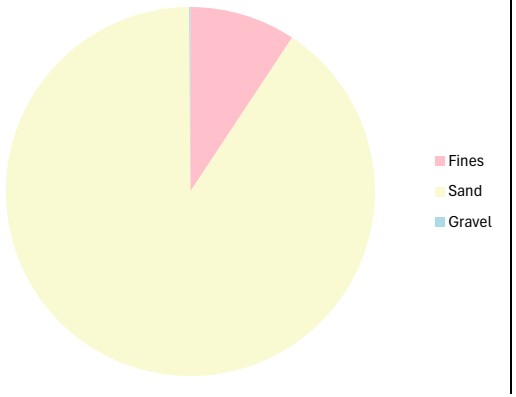
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-174				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.03	0.07	Granule
2000.00	-1.00	0.04	0.12	
1414.21	-0.50	0.06	0.17	Very coarse sand
1000.00	0.00	0.06	0.23	
707.11	0.50	0.62	0.85	Coarse sand
500.00	1.00	2.64	3.49	
353.55	1.50	8.45	11.94	Medium sand
250.00	2.00	19.05	30.99	
176.78	2.50	31.53	62.52	Fine sand
125.00	3.00	23.22	85.73	
88.39	3.50	4.00	89.74	Very fine sand
62.50	4.00	1.01	90.74	
44.19	4.50	1.04	91.78	Coarse silt
31.25	5.00	1.25	93.03	
22.10	5.50	1.25	94.28	Medium silt
15.63	6.00	1.08	95.36	
11.05	6.50	1.02	96.38	Fine silt
7.81	7.00	0.84	97.22	
5.52	7.50	0.69	97.91	Very fine silt
3.91	8.00	0.53	98.44	
2.76	8.50	0.33	98.77	Clay
1.95	9.00	0.22	98.99	
1.38	9.50	0.20	99.19	
0.98	10.00	0.20	99.39	
0.69	10.50	0.17	99.56	
0.49	11.00	0.13	99.70	
0.35	11.50	0.10	99.80	
<0.35	>11.5	0.20	100.00	



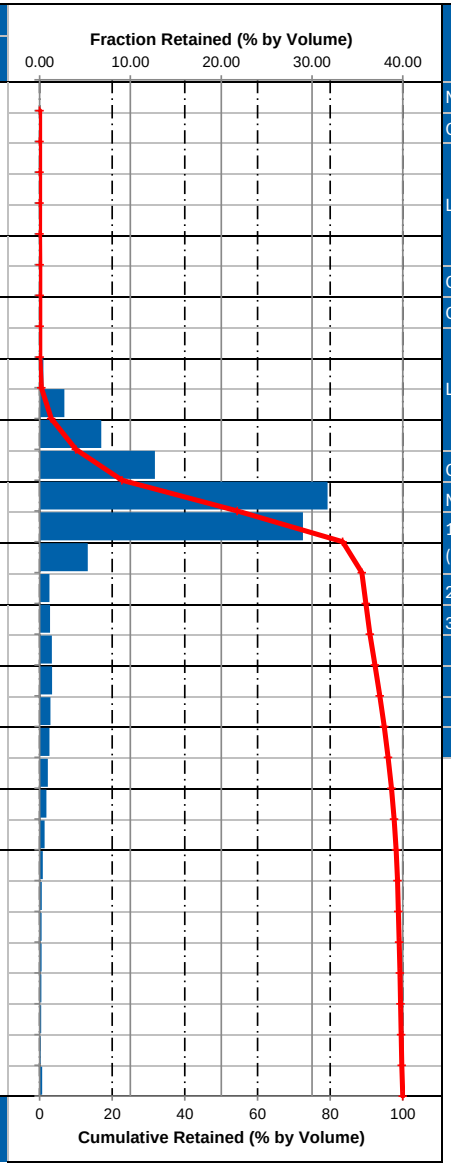
Method of Moments			
Geometric	Mean (µm)	168.51	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	1.49	Poor
	Skewness	2.81	Very fine
	Kurtosis	13.82	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	204.44	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.06	Poor
	Skewness	0.23	Fine
	Kurtosis	2.10	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.30	202.85	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	9.30%
EUNIS Folk	Sand and muddy sand	Sand	90.60%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

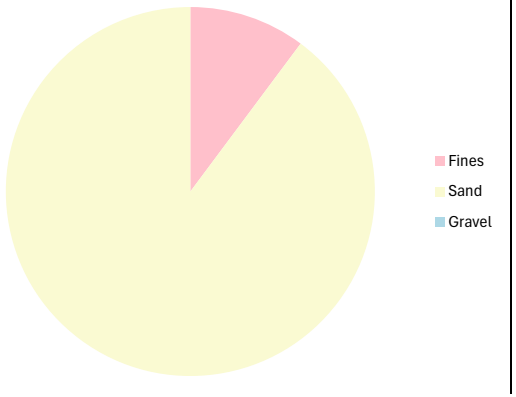
MV24EXP-ENV-GS-175				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.01	0.06	Very coarse sand
1000.00	0.00	0.01	0.07	
707.11	0.50	0.42	0.49	Coarse sand
500.00	1.00	2.72	3.21	
353.55	1.50	6.80	10.01	Medium sand
250.00	2.00	12.70	22.71	
176.78	2.50	31.71	54.42	Fine sand
125.00	3.00	29.01	83.44	
88.39	3.50	5.31	88.75	Very fine sand
62.50	4.00	1.08	89.82	
44.19	4.50	1.15	90.97	Coarse silt
31.25	5.00	1.36	92.33	
22.10	5.50	1.36	93.70	Medium silt
15.63	6.00	1.19	94.89	
11.05	6.50	1.08	95.97	Fine silt
7.81	7.00	0.91	96.88	
5.52	7.50	0.74	97.62	Very fine silt
3.91	8.00	0.56	98.18	
2.76	8.50	0.36	98.54	
1.95	9.00	0.24	98.78	
1.38	9.50	0.21	98.99	
0.98	10.00	0.22	99.21	Clay
0.69	10.50	0.20	99.41	
0.49	11.00	0.17	99.57	
0.35	11.50	0.13	99.71	
<0.35	>11.5	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	152.54	Wentworth:
Logarithmic	Mean (Phi)	2.71	Fine sand
	Sorting	1.53	Poor
	Skewness	2.85	Very fine
	Kurtosis	13.81	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	188.63	Wentworth:
Logarithmic	Mean (Phi)	2.41	Fine sand
	Sorting	1.07	Poor
	Skewness	0.21	Fine
	Kurtosis	2.46	Very leptokurtic

Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.43	185.53	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

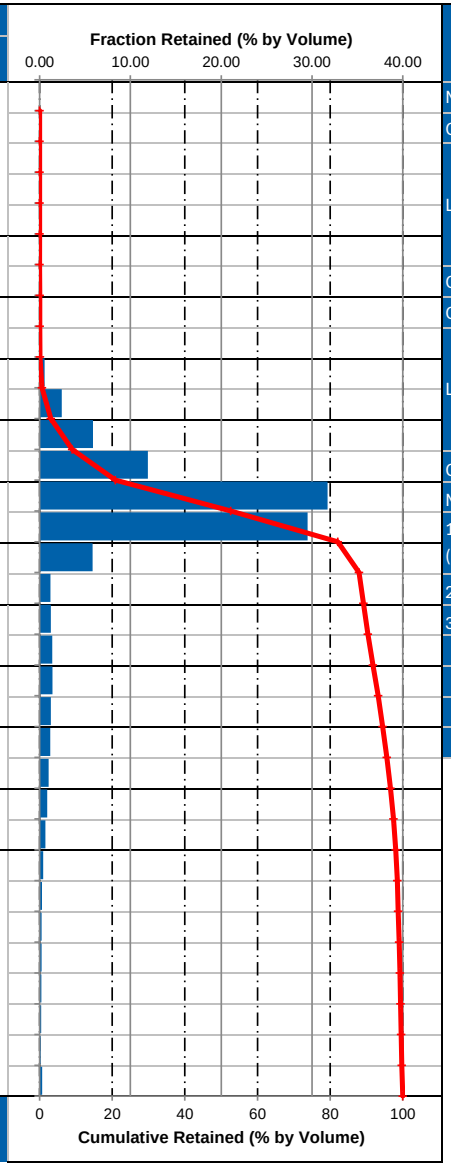
Classification		Composition	
Modified Folk	Muddy sand	Fines	10.20%
EUNIS Folk	Sand and muddy sand	Sand	89.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

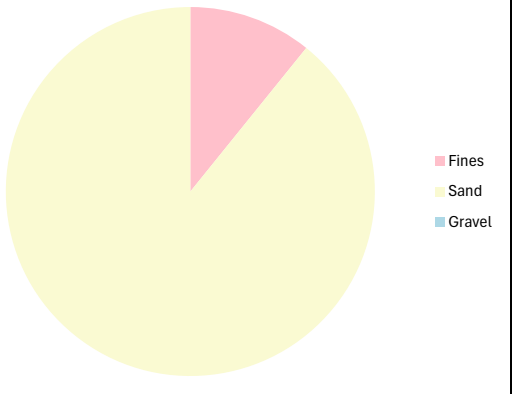
MV24EXP-ENV-GS-176

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.03	
1414.21	-0.50	0.01	0.04	Very coarse sand
1000.00	0.00	0.04	0.08	
707.11	0.50	0.55	0.63	Coarse sand
500.00	1.00	2.45	3.08	
353.55	1.50	5.88	8.96	Medium sand
250.00	2.00	11.93	20.89	
176.78	2.50	31.72	52.61	Fine sand
125.00	3.00	29.52	82.13	
88.39	3.50	5.84	87.97	Very fine sand
62.50	4.00	1.18	89.15	
44.19	4.50	1.24	90.40	Coarse silt
31.25	5.00	1.41	91.80	
22.10	5.50	1.41	93.22	Medium silt
15.63	6.00	1.24	94.45	
11.05	6.50	1.17	95.62	Fine silt
7.81	7.00	1.00	96.62	
5.52	7.50	0.83	97.46	Very fine silt
3.91	8.00	0.63	98.09	
2.76	8.50	0.40	98.49	Clay
1.95	9.00	0.26	98.75	
1.38	9.50	0.23	98.98	
0.98	10.00	0.23	99.21	
0.69	10.50	0.20	99.41	
0.49	11.00	0.17	99.58	
0.35	11.50	0.13	99.71	
<0.35	>11.5	0.29	100.00	



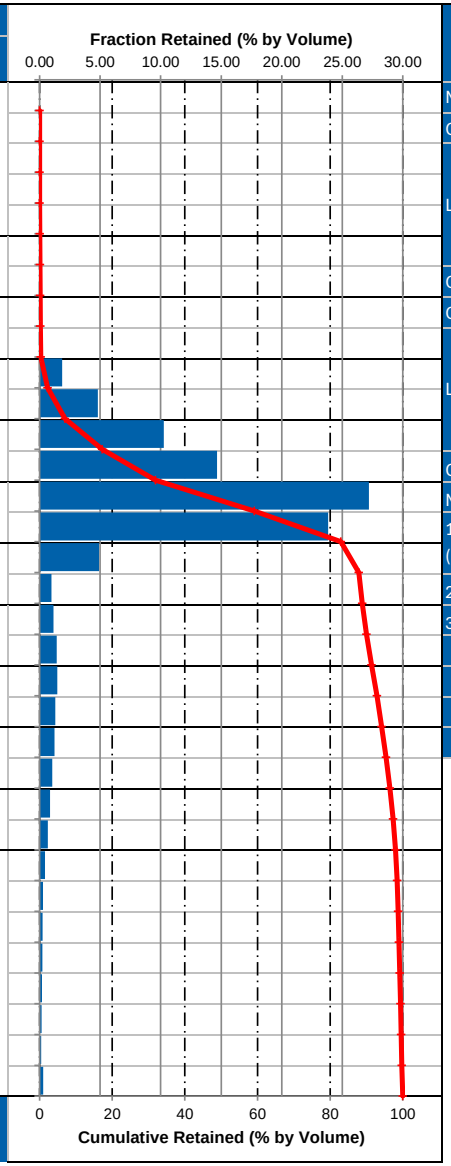
Method of Moments			
Geometric	Mean (µm)	147.12	Wentworth:
Logarithmic	Mean (Phi)	2.76	Fine sand
	Sorting	1.56	Poor
	Skewness	2.76	Very fine
	Kurtosis	12.95	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	180.31	Wentworth:
Logarithmic	Mean (Phi)	2.47	Fine sand
	Sorting	1.11	Poor
	Skewness	0.26	Fine
	Kurtosis	2.55	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.46	181.89	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.80%
EUNIS Folk	Sand and muddy sand	Sand	89.10%
Distribution	Bimodal	Gravel	0.00%



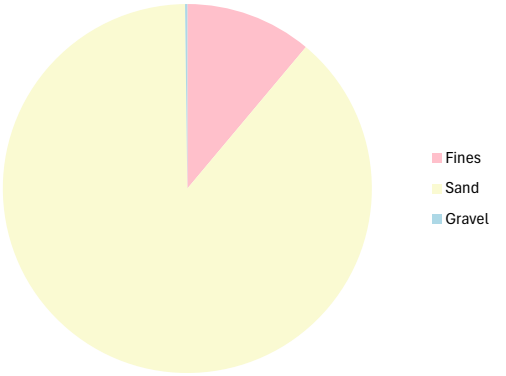
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-177				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.09	0.12	Granule
2000.00	-1.00	0.05	0.18	
1414.21	-0.50	0.06	0.23	Very coarse sand
1000.00	0.00	0.10	0.33	
707.11	0.50	1.87	2.20	Coarse sand
500.00	1.00	4.81	7.01	
353.55	1.50	10.27	17.28	Medium sand
250.00	2.00	14.66	31.94	
176.78	2.50	27.20	59.13	Fine sand
125.00	3.00	23.84	82.97	
88.39	3.50	4.91	87.88	Very fine sand
62.50	4.00	0.98	88.86	
44.19	4.50	1.14	90.00	Coarse silt
31.25	5.00	1.42	91.42	
22.10	5.50	1.46	92.88	Medium silt
15.63	6.00	1.29	94.17	
11.05	6.50	1.23	95.41	Fine silt
7.81	7.00	1.04	96.45	
5.52	7.50	0.87	97.32	Very fine silt
3.91	8.00	0.68	98.00	
2.76	8.50	0.44	98.44	
1.95	9.00	0.28	98.72	
1.38	9.50	0.24	98.97	
0.98	10.00	0.23	99.20	Clay
0.69	10.50	0.20	99.40	
0.49	11.00	0.17	99.57	
0.35	11.50	0.13	99.70	
<0.35	>11.5	0.30	100.00	



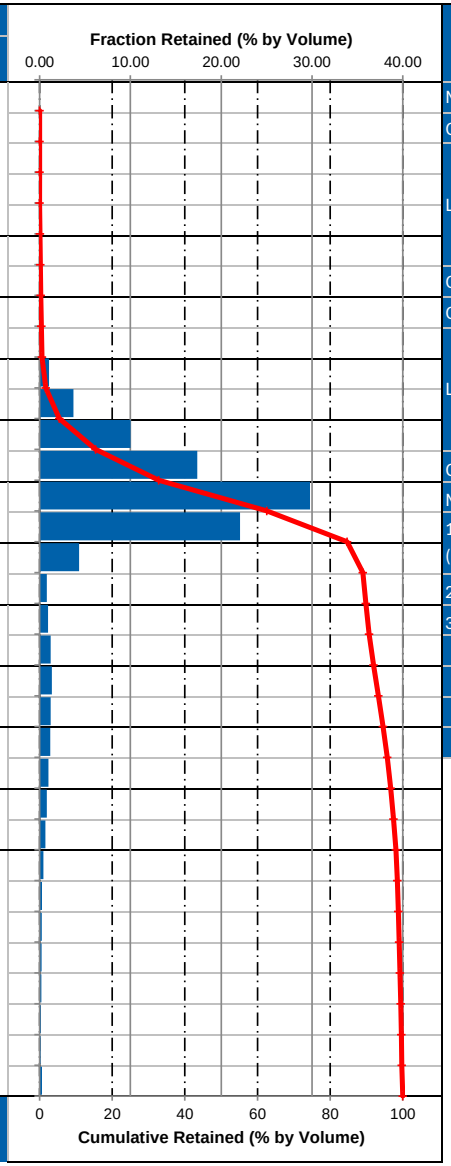
Method of Moments			
Geometric	Mean (µm)	163.49	Wentworth:
Logarithmic	Mean (Phi)	2.61	Fine sand
	Sorting	1.68	Poor
	Skewness	2.41	Very fine
	Kurtosis	11.03	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	204.26	Wentworth:
Logarithmic	Mean (Phi)	2.29	Fine sand
	Sorting	1.26	Poor
	Skewness	0.19	Fine
	Kurtosis	2.12	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.33	198.59	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.10%
EUNIS Folk	Sand and muddy sand	Sand	88.70%
Distribution	Bimodal	Gravel	0.20%



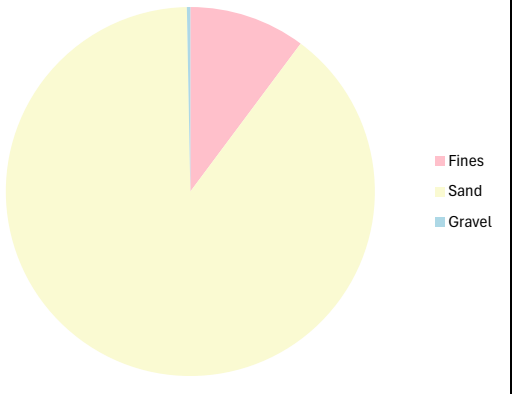
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-178				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.01	0.01	
4000.00	-2.00	0.07	0.08	
2828.43	-1.50	0.14	0.22	Granule
2000.00	-1.00	0.13	0.35	
1414.21	-0.50	0.15	0.50	Very coarse sand
1000.00	0.00	0.16	0.67	
707.11	0.50	1.03	1.70	Coarse sand
500.00	1.00	3.73	5.42	
353.55	1.50	10.02	15.44	Medium sand
250.00	2.00	17.36	32.81	
176.78	2.50	29.79	62.60	Fine sand
125.00	3.00	22.08	84.68	
88.39	3.50	4.34	89.02	Very fine sand
62.50	4.00	0.81	89.82	
44.19	4.50	0.92	90.74	Coarse silt
31.25	5.00	1.22	91.96	
22.10	5.50	1.35	93.31	Medium silt
15.63	6.00	1.23	94.54	
11.05	6.50	1.16	95.71	Fine silt
7.81	7.00	0.96	96.67	
5.52	7.50	0.80	97.47	Very fine silt
3.91	8.00	0.63	98.11	
2.76	8.50	0.41	98.52	Clay
1.95	9.00	0.27	98.79	
1.38	9.50	0.23	99.02	
0.98	10.00	0.23	99.25	
0.69	10.50	0.20	99.45	
0.49	11.00	0.16	99.60	
0.35	11.50	0.12	99.73	
<0.35	>11.5	0.27	100.00	



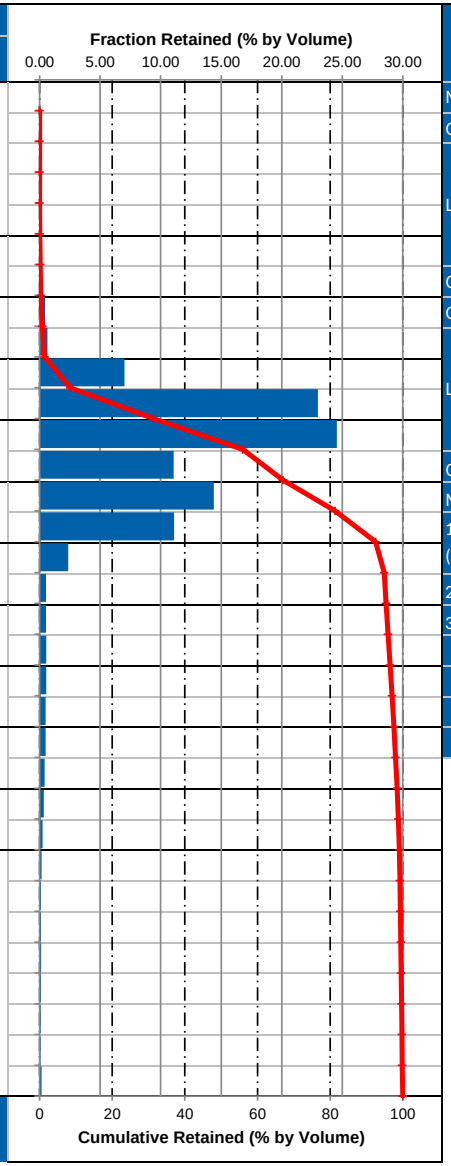
Method of Moments			
Geometric	Mean (µm)	168.33	Wentworth:
Logarithmic	Mean (Phi)	2.57	Fine sand
	Sorting	1.63	Poor
	Skewness	2.52	Very fine
	Kurtosis	11.99	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	208.33	Wentworth:
Logarithmic	Mean (Phi)	2.26	Fine sand
	Sorting	1.16	Poor
	Skewness	0.22	Fine
	Kurtosis	2.14	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.29	204.68	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.20%
EUNIS Folk	Sand and muddy sand	Sand	89.50%
Distribution	Bimodal	Gravel	0.30%



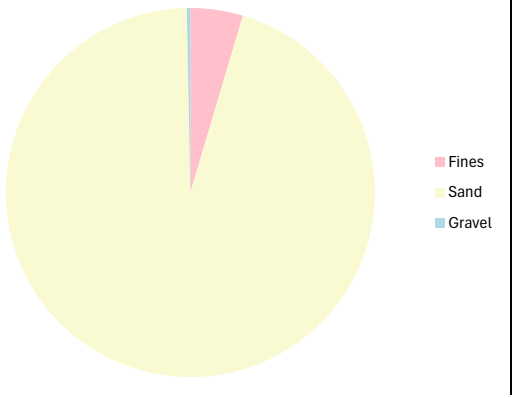
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-179				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.02	0.02	
4000.00	-2.00	0.04	0.05	
2828.43	-1.50	0.11	0.16	Granule
2000.00	-1.00	0.16	0.32	
1414.21	-0.50	0.45	0.76	Very coarse sand
1000.00	0.00	0.64	1.40	
707.11	0.50	7.00	8.40	Coarse sand
500.00	1.00	22.99	31.39	
353.55	1.50	24.56	55.95	Medium sand
250.00	2.00	11.08	67.03	
176.78	2.50	14.39	81.42	Fine sand
125.00	3.00	11.11	92.53	
88.39	3.50	2.36	94.89	Very fine sand
62.50	4.00	0.52	95.42	
44.19	4.50	0.53	95.95	Coarse silt
31.25	5.00	0.55	96.50	
22.10	5.50	0.55	97.05	Medium silt
15.63	6.00	0.49	97.54	
11.05	6.50	0.49	98.04	Fine silt
7.81	7.00	0.42	98.46	
5.52	7.50	0.34	98.80	Very fine silt
3.91	8.00	0.25	99.05	
2.76	8.50	0.16	99.21	Clay
1.95	9.00	0.11	99.32	
1.38	9.50	0.11	99.44	
0.98	10.00	0.12	99.56	
0.69	10.50	0.11	99.67	
0.49	11.00	0.09	99.77	
0.35	11.50	0.07	99.84	
<0.35	>11.5	0.16	100.00	



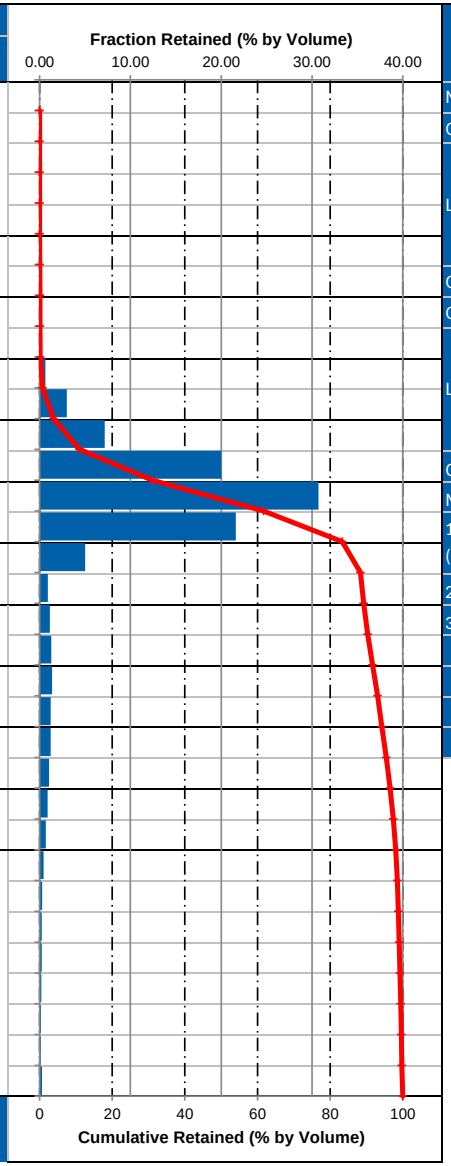
Method of Moments			
Geometric	Mean (µm)	305.39	Wentworth:
Logarithmic	Mean (Phi)	1.71	Medium sand
	Sorting	1.43	Poor
	Skewness	2.88	Very fine
	Kurtosis	16.43	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	340.70	Wentworth:
Logarithmic	Mean (Phi)	1.55	Medium sand
	Sorting	0.99	Moderate
	Skewness	0.30	Fine
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.38	384.52	Medium sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	4.60%
EUNIS Folk	Sand and muddy sand	Sand	95.10%
Distribution	Unimodal	Gravel	0.30%



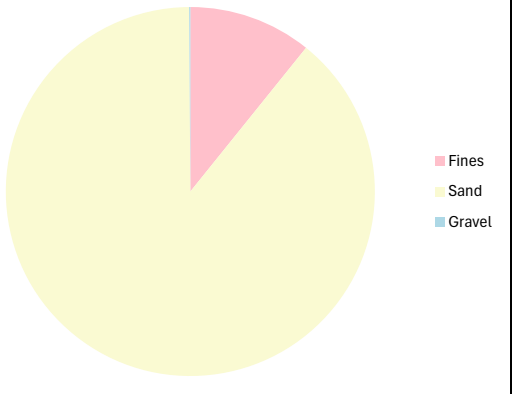
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-180				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.02	0.03	Granule
2000.00	-1.00	0.05	0.08	
1414.21	-0.50	0.05	0.12	Very coarse sand
1000.00	0.00	0.05	0.18	
707.11	0.50	0.63	0.81	Coarse sand
500.00	1.00	3.00	3.81	
353.55	1.50	7.17	10.98	Medium sand
250.00	2.00	20.02	31.00	
176.78	2.50	30.71	61.71	Fine sand
125.00	3.00	21.62	83.32	
88.39	3.50	5.02	88.34	Very fine sand
62.50	4.00	0.91	89.25	
44.19	4.50	1.12	90.37	Coarse silt
31.25	5.00	1.29	91.66	
22.10	5.50	1.38	93.04	Medium silt
15.63	6.00	1.21	94.26	
11.05	6.50	1.21	95.46	Fine silt
7.81	7.00	1.04	96.50	
5.52	7.50	0.88	97.37	Very fine silt
3.91	8.00	0.68	98.06	
2.76	8.50	0.44	98.50	
1.95	9.00	0.28	98.77	
1.38	9.50	0.24	99.01	
0.98	10.00	0.23	99.24	Clay
0.69	10.50	0.20	99.44	
0.49	11.00	0.16	99.60	
0.35	11.50	0.12	99.73	
<0.35	>11.5	0.27	100.00	



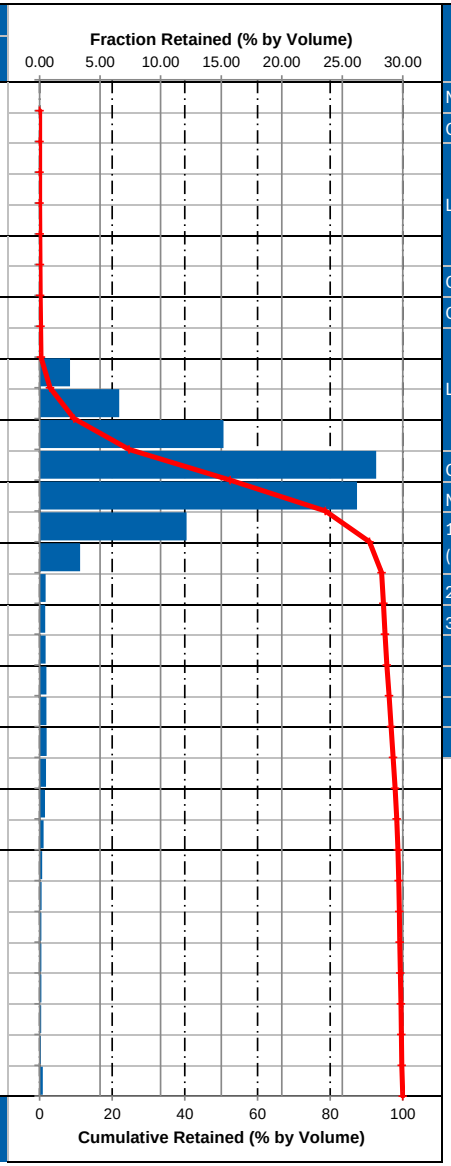
Method of Moments			
Geometric	Mean (µm)	159.49	Wentworth:
Logarithmic	Mean (Phi)	2.65	Fine sand
	Sorting	1.60	Poor
	Skewness	2.68	Very fine
	Kurtosis	12.21	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	198.33	Wentworth:
Logarithmic	Mean (Phi)	2.33	Fine sand
	Sorting	1.15	Poor
	Skewness	0.29	Fine
	Kurtosis	2.24	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.31	201.75	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	5.50	22.10	Medium silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.80%
EUNIS Folk	Sand and muddy sand	Sand	89.20%
Distribution	Bimodal	Gravel	0.10%



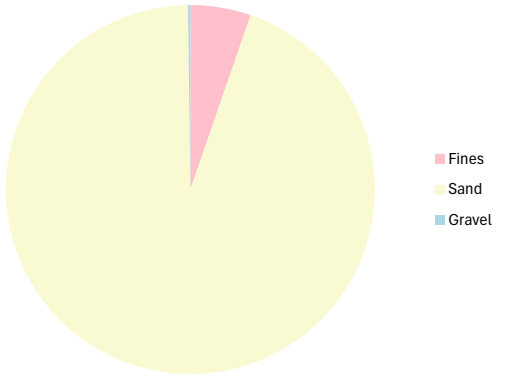
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-235A				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.04	0.04	
2828.43	-1.50	0.07	0.10	Granule
2000.00	-1.00	0.07	0.17	
1414.21	-0.50	0.08	0.25	Very coarse sand
1000.00	0.00	0.14	0.39	
707.11	0.50	2.51	2.90	Coarse sand
500.00	1.00	6.58	9.48	
353.55	1.50	15.19	24.67	Medium sand
250.00	2.00	27.80	52.47	
176.78	2.50	26.23	78.70	Fine sand
125.00	3.00	12.14	90.84	
88.39	3.50	3.35	94.18	Very fine sand
62.50	4.00	0.50	94.68	
44.19	4.50	0.46	95.14	Coarse silt
31.25	5.00	0.50	95.64	
22.10	5.50	0.56	96.21	Medium silt
15.63	6.00	0.56	96.76	
11.05	6.50	0.59	97.35	Fine silt
7.81	7.00	0.54	97.89	
5.52	7.50	0.45	98.34	Very fine silt
3.91	8.00	0.34	98.67	
2.76	8.50	0.22	98.89	
1.95	9.00	0.16	99.05	
1.38	9.50	0.15	99.19	
0.98	10.00	0.15	99.34	Clay
0.69	10.50	0.15	99.49	
0.49	11.00	0.13	99.62	
0.35	11.50	0.11	99.73	
<0.35	>11.5	0.27	100.00	



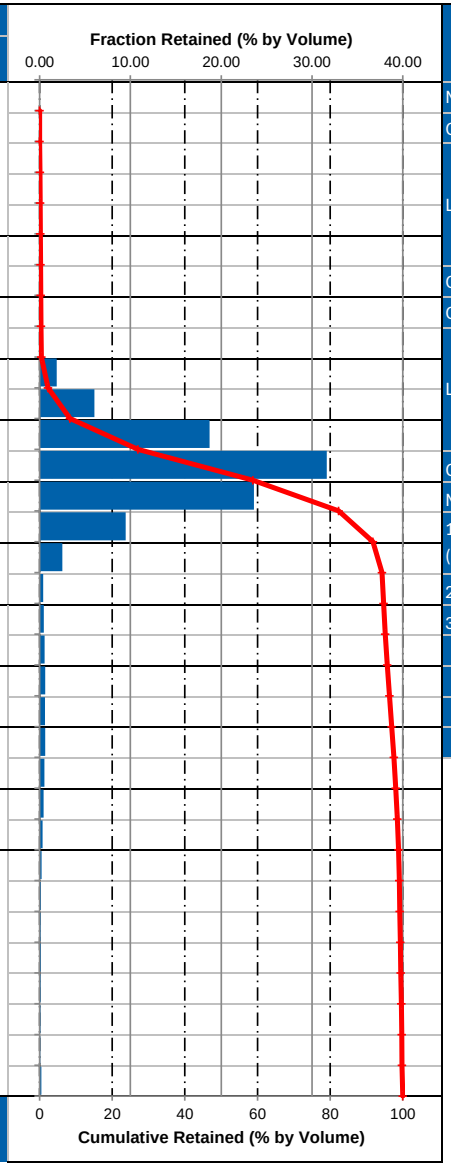
Method of Moments			
Geometric	Mean (µm)	225.20	Wentworth:
Logarithmic	Mean (Phi)	2.15	Fine sand
	Sorting	1.42	Poor
	Skewness	3.35	Very fine
	Kurtosis	19.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	256.52	Wentworth:
Logarithmic	Mean (Phi)	1.96	Medium sand
	Sorting	0.93	Moderate
	Skewness	0.16	Fine
	Kurtosis	1.64	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.96	257.82	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.30%
EUNIS Folk	Sand and muddy sand	Sand	94.50%
Distribution	Unimodal	Gravel	0.20%



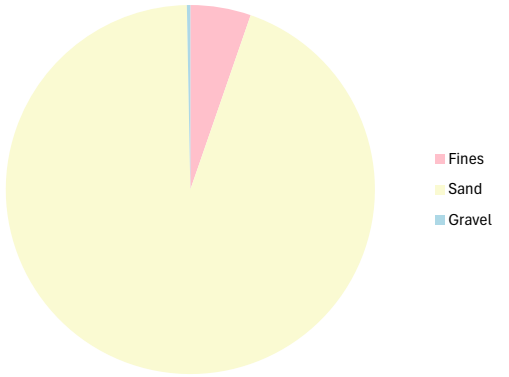
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-234				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.12	0.12	Pebble
5656.85	-2.50	0.03	0.15	
4000.00	-2.00	0.05	0.20	
2828.43	-1.50	0.08	0.28	Granule
2000.00	-1.00	0.04	0.32	
1414.21	-0.50	0.05	0.38	Very coarse sand
1000.00	0.00	0.08	0.46	
707.11	0.50	1.88	2.34	Coarse sand
500.00	1.00	6.04	8.39	
353.55	1.50	18.72	27.11	Medium sand
250.00	2.00	31.62	58.73	
176.78	2.50	23.61	82.34	Fine sand
125.00	3.00	9.47	91.81	
88.39	3.50	2.50	94.31	Very fine sand
62.50	4.00	0.40	94.71	
44.19	4.50	0.46	95.16	Coarse silt
31.25	5.00	0.56	95.72	
22.10	5.50	0.62	96.34	Medium silt
15.63	6.00	0.59	96.93	
11.05	6.50	0.61	97.54	Fine silt
7.81	7.00	0.53	98.07	
5.52	7.50	0.44	98.51	Very fine silt
3.91	8.00	0.33	98.84	
2.76	8.50	0.21	99.05	Clay
1.95	9.00	0.14	99.20	
1.38	9.50	0.13	99.33	
0.98	10.00	0.14	99.47	
0.69	10.50	0.13	99.60	
0.49	11.00	0.11	99.71	
0.35	11.50	0.09	99.80	
<0.35	>11.5	0.20	100.00	



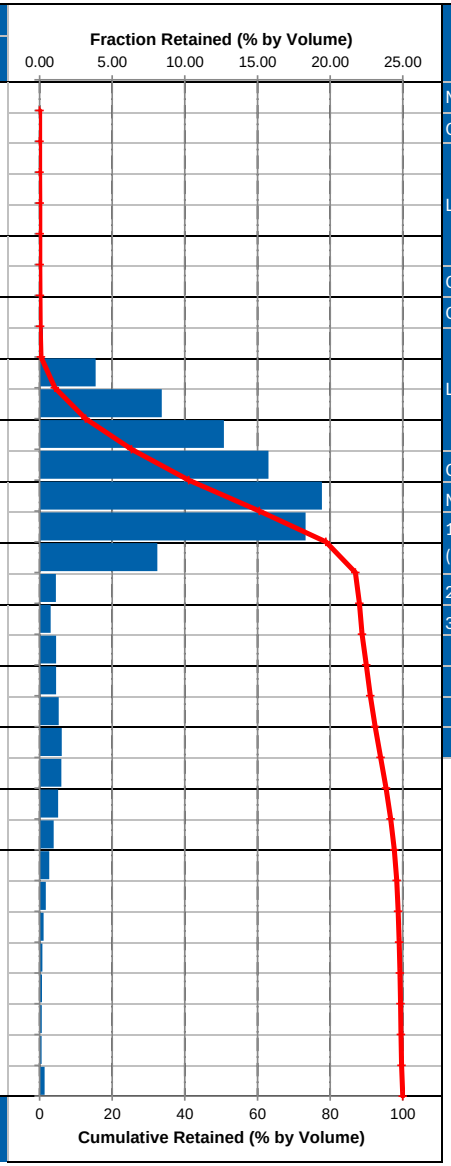
Method of Moments			
Geometric	Mean (µm)	237.08	Wentworth:
Logarithmic	Mean (Phi)	2.08	Fine sand
	Sorting	1.38	Poor
	Skewness	3.26	Very fine
	Kurtosis	19.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	270.87	Wentworth:
Logarithmic	Mean (Phi)	1.88	Medium sand
	Sorting	0.89	Moderate
	Skewness	0.21	Fine
	Kurtosis	1.64	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	1.86	275.09	Medium sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sand	Fines	5.30%
EUNIS Folk	Sand and muddy sand	Sand	94.40%
Distribution	Unimodal	Gravel	0.30%



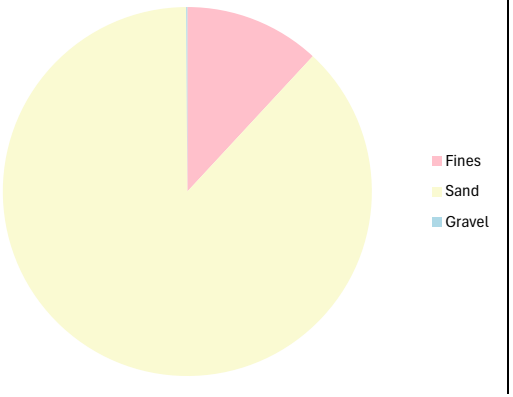
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-233				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.02	0.02	
4000.00	-2.00	0.01	0.03	
2828.43	-1.50	0.03	0.06	Granule
2000.00	-1.00	0.03	0.09	
1414.21	-0.50	0.05	0.14	Very coarse sand
1000.00	0.00	0.23	0.37	
707.11	0.50	3.86	4.23	Coarse sand
500.00	1.00	8.41	12.64	
353.55	1.50	12.69	25.33	Medium sand
250.00	2.00	15.76	41.09	
176.78	2.50	19.43	60.52	Fine sand
125.00	3.00	18.31	78.83	
88.39	3.50	8.10	86.94	Very fine sand
62.50	4.00	1.11	88.05	
44.19	4.50	0.75	88.81	Coarse silt
31.25	5.00	1.13	89.94	
22.10	5.50	1.13	91.07	Medium silt
15.63	6.00	1.32	92.39	
11.05	6.50	1.53	93.92	Fine silt
7.81	7.00	1.49	95.41	
5.52	7.50	1.27	96.68	Very fine silt
3.91	8.00	0.97	97.66	
2.76	8.50	0.67	98.33	
1.95	9.00	0.42	98.75	
1.38	9.50	0.27	99.02	
0.98	10.00	0.20	99.21	Clay
0.69	10.50	0.16	99.38	
0.49	11.00	0.15	99.52	
0.35	11.50	0.13	99.66	
<0.35	>11.5	0.34	100.00	



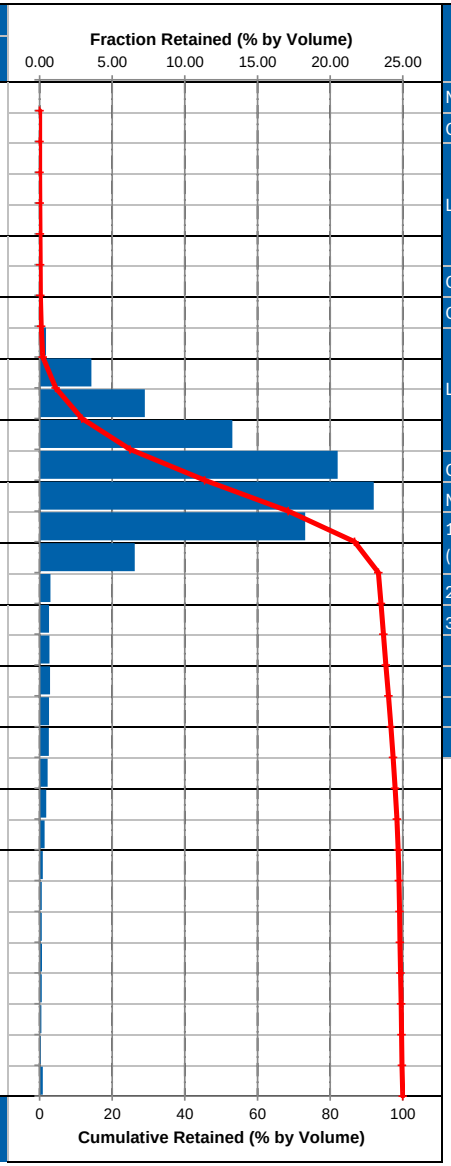
Method of Moments			
Geometric	Mean (µm)	169.35	Wentworth:
Logarithmic	Mean (Phi)	2.56	Fine sand
	Sorting	1.86	Poor
	Skewness	2.08	Very fine
	Kurtosis	8.56	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	213.63	Wentworth:
Logarithmic	Mean (Phi)	2.23	Fine sand
	Sorting	1.50	Poor
	Skewness	0.23	Fine
	Kurtosis	1.84	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.23	213.27	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	5.00	31.25	Coarse silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.90%
EUNIS Folk	Sand and muddy sand	Sand	88.00%
Distribution	Multimodal	Gravel	0.10%



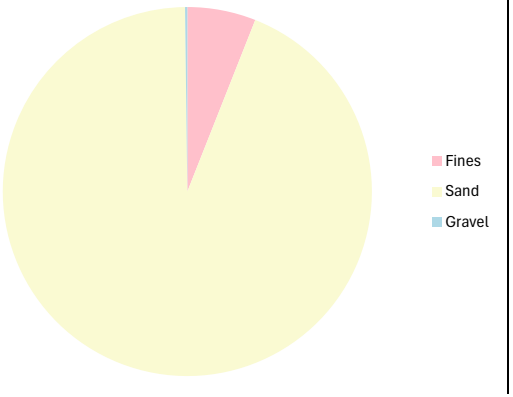
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-232				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.06	0.06	
4000.00	-2.00	0.03	0.09	
2828.43	-1.50	0.06	0.15	Granule
2000.00	-1.00	0.07	0.21	
1414.21	-0.50	0.21	0.42	Very coarse sand
1000.00	0.00	0.45	0.87	
707.11	0.50	3.56	4.43	Coarse sand
500.00	1.00	7.24	11.66	
353.55	1.50	13.26	24.93	Medium sand
250.00	2.00	20.52	45.45	
176.78	2.50	23.00	68.44	Fine sand
125.00	3.00	18.28	86.72	
88.39	3.50	6.55	93.27	Very fine sand
62.50	4.00	0.75	94.02	
44.19	4.50	0.65	94.67	Coarse silt
31.25	5.00	0.68	95.35	
22.10	5.50	0.72	96.08	Medium silt
15.63	6.00	0.66	96.73	
11.05	6.50	0.63	97.37	Fine silt
7.81	7.00	0.55	97.92	
5.52	7.50	0.46	98.37	Very fine silt
3.91	8.00	0.35	98.72	
2.76	8.50	0.23	98.94	
1.95	9.00	0.16	99.10	
1.38	9.50	0.15	99.25	
0.98	10.00	0.16	99.41	Clay
0.69	10.50	0.15	99.55	
0.49	11.00	0.12	99.68	
0.35	11.50	0.10	99.78	
<0.35	>11.5	0.22	100.00	



Method of Moments			
Geometric	Mean (µm)	211.22	Wentworth:
Logarithmic	Mean (Phi)	2.24	Fine sand
	Sorting	1.47	Poor
	Skewness	2.70	Very fine
	Kurtosis	15.46	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	239.37	Wentworth:
Logarithmic	Mean (Phi)	2.06	Fine sand
	Sorting	1.08	Poor
	Skewness	0.10	Symmetrical
	Kurtosis	1.46	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.10	233.42	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

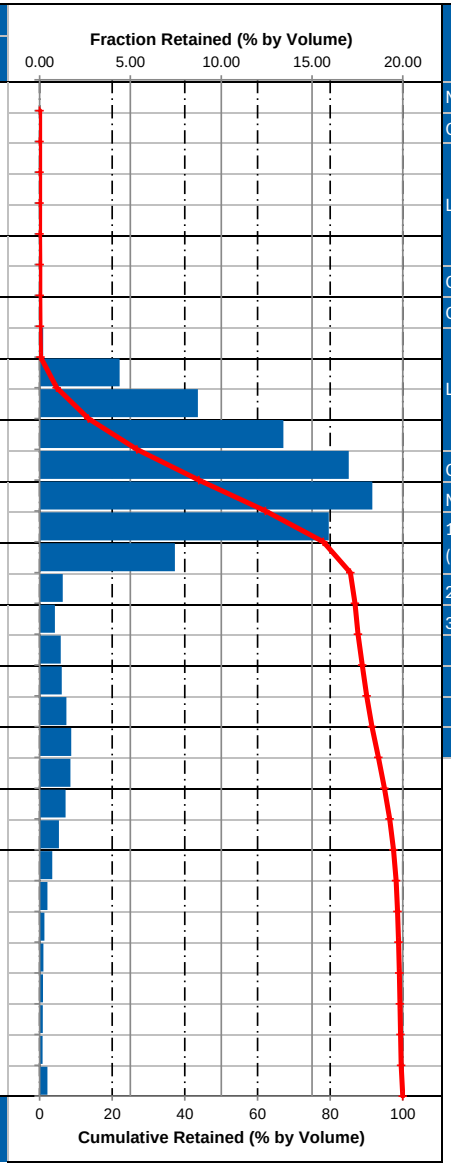
Classification		Composition	
Modified Folk	Sand	Fines	6.00%
EUNIS Folk	Sand and muddy sand	Sand	93.80%
Distribution	Unimodal	Gravel	0.20%



APPENDIX F PARTICLE SIZE ANALYSIS

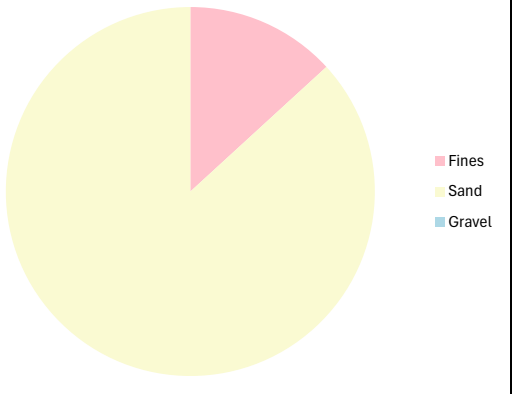
MV24EXP-ENV-GS-231

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.01	0.01	
2828.43	-1.50	0.03	0.03	Granule
2000.00	-1.00	0.01	0.04	
1414.21	-0.50	0.04	0.08	Very coarse sand
1000.00	0.00	0.20	0.28	
707.11	0.50	4.41	4.68	Coarse sand
500.00	1.00	8.72	13.40	
353.55	1.50	13.42	26.83	Medium sand
250.00	2.00	17.02	43.85	
176.78	2.50	18.33	62.17	Fine sand
125.00	3.00	15.93	78.10	
88.39	3.50	7.45	85.55	Very fine sand
62.50	4.00	1.28	86.83	
44.19	4.50	0.84	87.67	Coarse silt
31.25	5.00	1.16	88.84	
22.10	5.50	1.22	90.06	Medium silt
15.63	6.00	1.47	91.53	
11.05	6.50	1.74	93.27	Fine silt
7.81	7.00	1.69	94.97	
5.52	7.50	1.43	96.39	Very fine silt
3.91	8.00	1.06	97.46	
2.76	8.50	0.70	98.16	
1.95	9.00	0.43	98.58	
1.38	9.50	0.27	98.85	
0.98	10.00	0.20	99.06	Clay
0.69	10.50	0.18	99.24	
0.49	11.00	0.17	99.41	
0.35	11.50	0.16	99.57	
<0.35	>11.5	0.43	100.00	



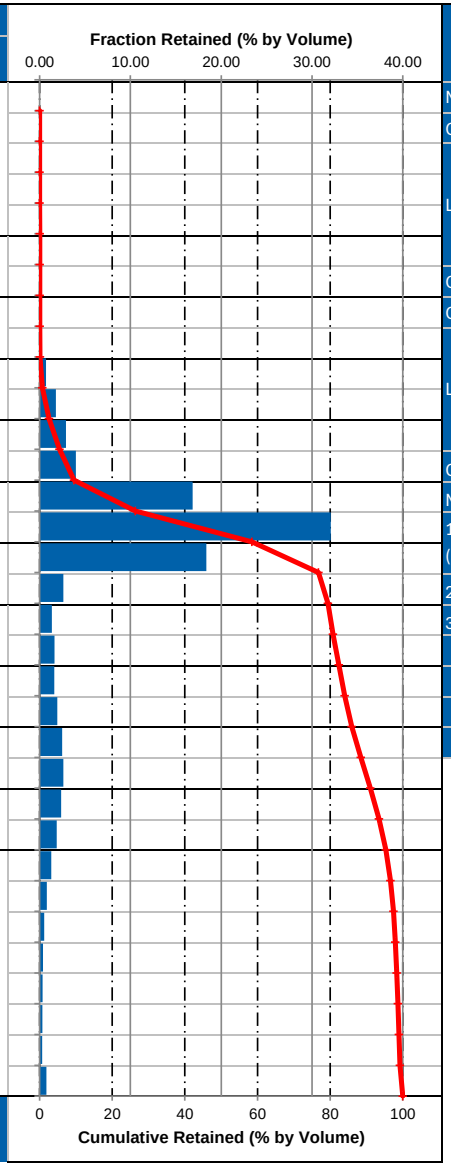
Method of Moments			
Geometric	Mean (µm)	167.45	Wentworth:
Logarithmic	Mean (Phi)	2.58	Fine sand
	Sorting	1.95	Poor
	Skewness	2.04	Very fine
	Kurtosis	8.06	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	214.62	Wentworth:
Logarithmic	Mean (Phi)	2.22	Fine sand
	Sorting	1.56	Poor
	Skewness	0.28	Fine
	Kurtosis	1.81	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.17	222.54	Fine sand
1st Local Maxima (Mode)	2.50	176.78	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	13.20%
EUNIS Folk	Sand and muddy sand	Sand	86.80%
Distribution	Bimodal	Gravel	0.00%



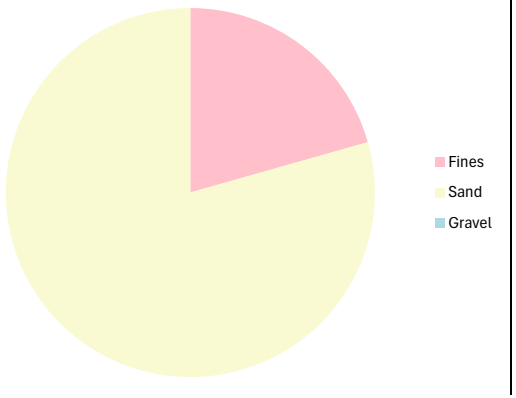
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-230				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.00	0.03	Granule
2000.00	-1.00	0.02	0.05	
1414.21	-0.50	0.02	0.07	Very coarse sand
1000.00	0.00	0.02	0.08	
707.11	0.50	0.71	0.79	Coarse sand
500.00	1.00	1.79	2.58	
353.55	1.50	2.91	5.50	Medium sand
250.00	2.00	4.00	9.50	
176.78	2.50	16.86	26.36	Fine sand
125.00	3.00	32.08	58.44	
88.39	3.50	18.36	76.80	Very fine sand
62.50	4.00	2.62	79.43	
44.19	4.50	1.36	80.78	Coarse silt
31.25	5.00	1.63	82.42	
22.10	5.50	1.62	84.04	Medium silt
15.63	6.00	1.95	85.98	
11.05	6.50	2.48	88.46	Fine silt
7.81	7.00	2.63	91.09	
5.52	7.50	2.38	93.47	Very fine silt
3.91	8.00	1.89	95.35	
2.76	8.50	1.29	96.65	
1.95	9.00	0.80	97.45	
1.38	9.50	0.51	97.95	
0.98	10.00	0.38	98.33	Clay
0.69	10.50	0.33	98.66	
0.49	11.00	0.31	98.97	
0.35	11.50	0.28	99.25	
<0.35	>11.5	0.75	100.00	



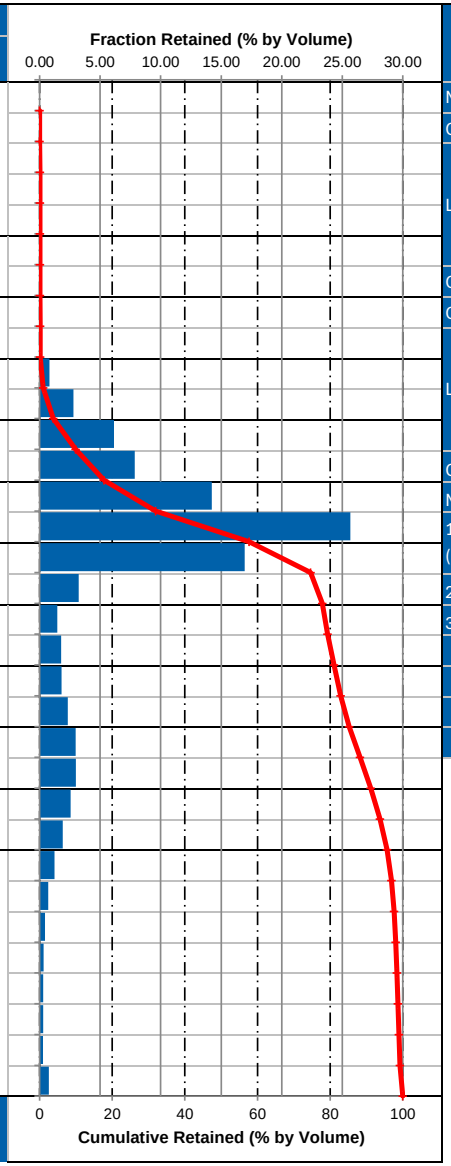
Method of Moments			
Geometric	Mean (µm)	87.64	Wentworth:
Logarithmic	Mean (Phi)	3.51	Very fine sand
	Sorting	2.04	Very poor
	Skewness	1.85	Very fine
	Kurtosis	6.66	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	87.37	Wentworth:
Logarithmic	Mean (Phi)	3.52	Very fine sand
	Sorting	1.81	Poor
	Skewness	0.57	Very fine
	Kurtosis	2.68	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.87	136.94	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	20.60%
EUNIS Folk	Mud and sandy mud	Sand	79.40%
Distribution	Bimodal	Gravel	0.00%



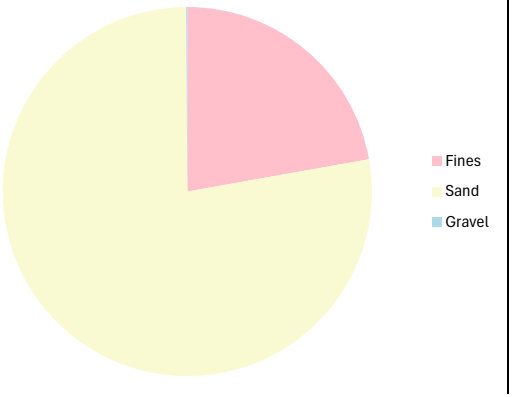
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-229				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.11	0.11	Pebble
5656.85	-2.50	0.00	0.11	
4000.00	-2.00	0.00	0.11	
2828.43	-1.50	0.01	0.12	Granule
2000.00	-1.00	0.01	0.12	
1414.21	-0.50	0.01	0.13	Very coarse sand
1000.00	0.00	0.03	0.16	
707.11	0.50	0.82	0.98	Coarse sand
500.00	1.00	2.79	3.77	
353.55	1.50	6.15	9.92	Medium sand
250.00	2.00	7.85	17.77	
176.78	2.50	14.23	32.00	Fine sand
125.00	3.00	25.67	57.67	
88.39	3.50	16.94	74.61	Very fine sand
62.50	4.00	3.23	77.84	
44.19	4.50	1.46	79.30	Coarse silt
31.25	5.00	1.78	81.08	
22.10	5.50	1.82	82.90	Medium silt
15.63	6.00	2.34	85.24	
11.05	6.50	2.97	88.21	Fine silt
7.81	7.00	2.99	91.20	
5.52	7.50	2.55	93.76	Very fine silt
3.91	8.00	1.90	95.66	
2.76	8.50	1.23	96.89	Clay
1.95	9.00	0.72	97.61	
1.38	9.50	0.44	98.05	
0.98	10.00	0.33	98.38	
0.69	10.50	0.30	98.68	
0.49	11.00	0.29	98.97	
0.35	11.50	0.27	99.24	
<0.35	>11.5	0.76	100.00	



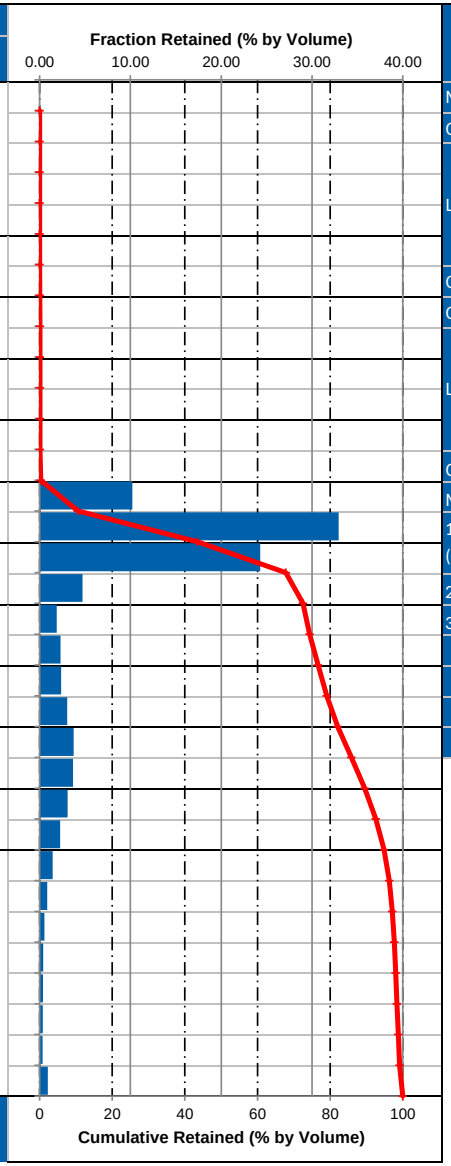
Method of Moments			
Geometric	Mean (µm)	91.38	Wentworth:
Logarithmic	Mean (Phi)	3.45	Very fine sand
	Sorting	2.13	Very poor
	Skewness	1.60	Very fine
	Kurtosis	5.90	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	88.95	Wentworth:
Logarithmic	Mean (Phi)	3.49	Very fine sand
	Sorting	1.98	Poor
	Skewness	0.49	Very fine
	Kurtosis	2.11	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.85	138.64	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	22.20%
EUNIS Folk	Mud and sandy mud	Sand	77.70%
Distribution	Bimodal	Gravel	0.10%



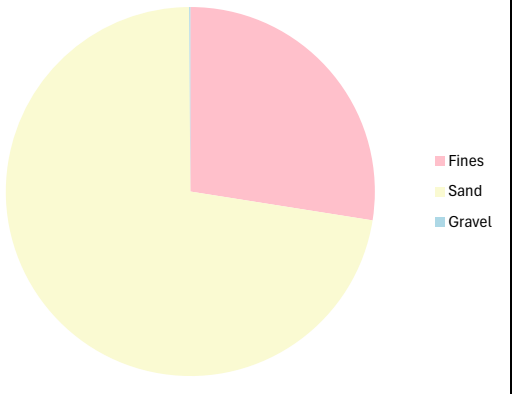
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-228				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.07	0.07	
1414.21	-0.50	0.01	0.07	Very coarse sand
1000.00	0.00	0.01	0.08	
707.11	0.50	0.00	0.08	Coarse sand
500.00	1.00	0.00	0.08	
353.55	1.50	0.00	0.08	Medium sand
250.00	2.00	0.24	0.33	
176.78	2.50	10.22	10.55	Fine sand
125.00	3.00	32.93	43.48	
88.39	3.50	24.29	67.77	Very fine sand
62.50	4.00	4.72	72.49	
44.19	4.50	1.87	74.37	Coarse silt
31.25	5.00	2.31	76.68	
22.10	5.50	2.37	79.04	Medium silt
15.63	6.00	3.04	82.08	
11.05	6.50	3.75	85.83	Fine silt
7.81	7.00	3.67	89.50	
5.52	7.50	3.08	92.58	Very fine silt
3.91	8.00	2.27	94.85	
2.76	8.50	1.45	96.30	
1.95	9.00	0.85	97.14	
1.38	9.50	0.52	97.66	
0.98	10.00	0.40	98.06	Clay
0.69	10.50	0.36	98.42	
0.49	11.00	0.35	98.77	
0.35	11.50	0.33	99.10	
<0.35	>11.5	0.90	100.00	



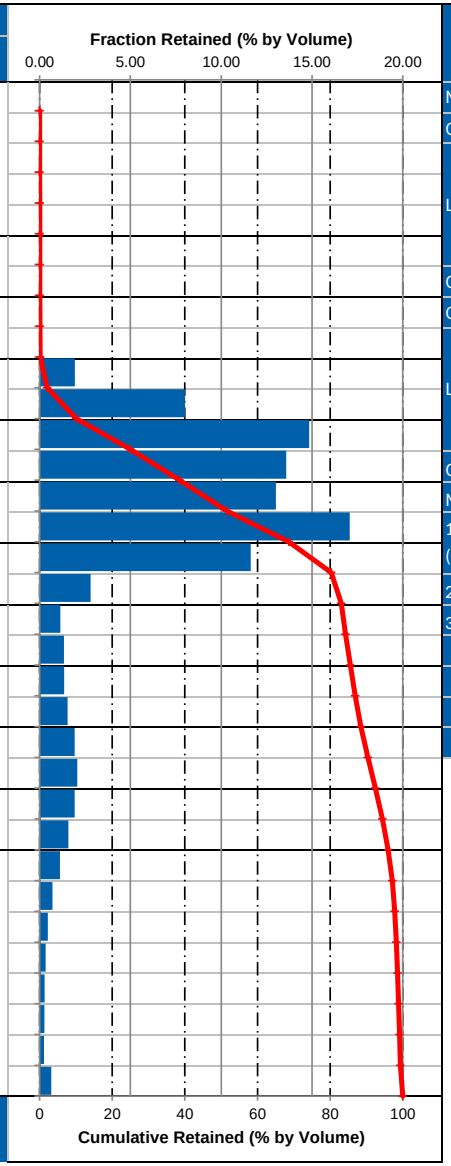
Method of Moments			
Geometric	Mean (µm)	63.44	Wentworth:
Logarithmic	Mean (Phi)	3.98	Very fine sand
	Sorting	2.02	Very poor
	Skewness	1.77	Very fine
	Kurtosis	5.98	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	62.90	Wentworth:
Logarithmic	Mean (Phi)	3.99	Very fine sand
	Sorting	1.80	Poor
	Skewness	0.69	Very fine
	Kurtosis	1.24	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.13	113.89	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	27.50%
EUNIS Folk	Mud and sandy mud	Sand	72.40%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

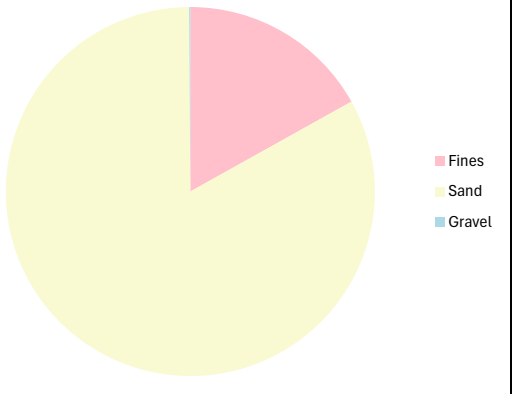
MV24EXP-ENV-GS-227				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.03	0.03	
4000.00	-2.00	0.00	0.03	
2828.43	-1.50	0.02	0.05	Granule
2000.00	-1.00	0.02	0.07	
1414.21	-0.50	0.04	0.11	Very coarse sand
1000.00	0.00	0.06	0.16	
707.11	0.50	1.94	2.10	Coarse sand
500.00	1.00	8.00	10.11	
353.55	1.50	14.85	24.96	Medium sand
250.00	2.00	13.58	38.54	
176.78	2.50	13.02	51.56	Fine sand
125.00	3.00	17.08	68.64	
88.39	3.50	11.63	80.27	Very fine sand
62.50	4.00	2.80	83.07	
44.19	4.50	1.14	84.22	Coarse silt
31.25	5.00	1.34	85.55	
22.10	5.50	1.35	86.90	Medium silt
15.63	6.00	1.54	88.44	
11.05	6.50	1.93	90.38	Fine silt
7.81	7.00	2.08	92.45	
5.52	7.50	1.93	94.39	Very fine silt
3.91	8.00	1.58	95.97	
2.76	8.50	1.12	97.09	
1.95	9.00	0.71	97.80	
1.38	9.50	0.45	98.25	
0.98	10.00	0.33	98.58	Clay
0.69	10.50	0.28	98.86	
0.49	11.00	0.26	99.12	
0.35	11.50	0.24	99.36	
<0.35	>11.5	0.64	100.00	



Method of Moments			
Geometric	Mean (µm)	132.25	Wentworth:
Logarithmic	Mean (Phi)	2.92	Fine sand
	Sorting	2.17	Very poor
	Skewness	1.78	Very fine
	Kurtosis	6.45	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	155.87	Wentworth:
Logarithmic	Mean (Phi)	2.68	Fine sand
	Sorting	1.86	Poor
	Skewness	0.36	Very fine
	Kurtosis	1.62	Very leptokurtic

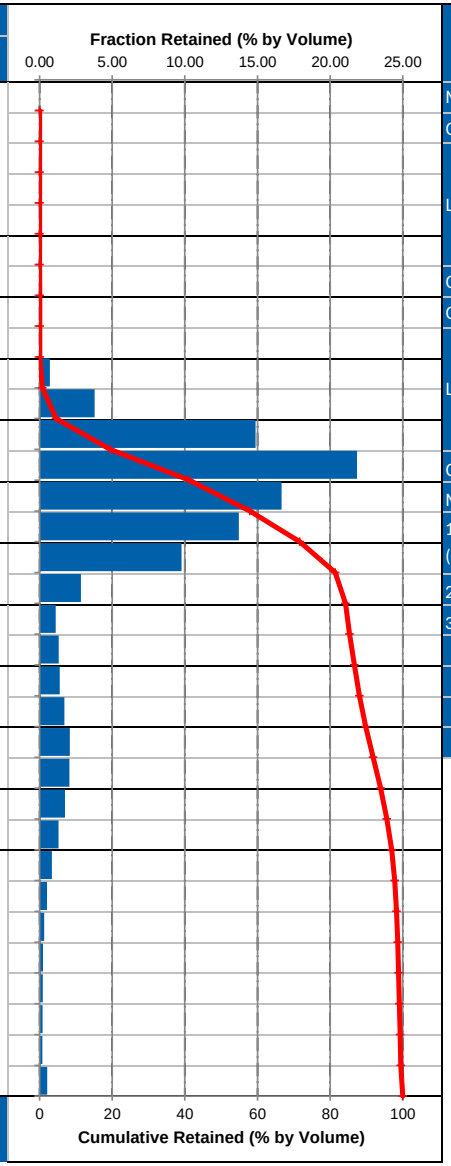
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.44	184.26	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	16.90%
EUNIS Folk	Sand and muddy sand	Sand	83.00%
Distribution	Multimodal	Gravel	0.10%



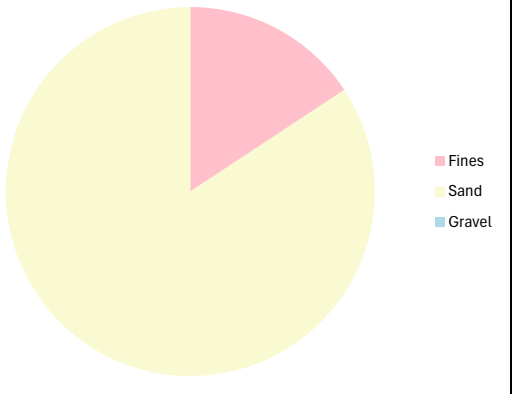
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-226				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.02	
1414.21	-0.50	0.01	0.03	Very coarse sand
1000.00	0.00	0.04	0.07	
707.11	0.50	0.70	0.77	Coarse sand
500.00	1.00	3.79	4.56	
353.55	1.50	14.86	19.42	Medium sand
250.00	2.00	21.85	41.27	
176.78	2.50	16.66	57.93	Fine sand
125.00	3.00	13.71	71.64	
88.39	3.50	9.78	81.42	Very fine sand
62.50	4.00	2.84	84.26	
44.19	4.50	1.11	85.37	Coarse silt
31.25	5.00	1.32	86.69	
22.10	5.50	1.38	88.07	Medium silt
15.63	6.00	1.70	89.77	
11.05	6.50	2.08	91.85	Fine silt
7.81	7.00	2.06	93.90	
5.52	7.50	1.74	95.64	Very fine silt
3.91	8.00	1.30	96.94	
2.76	8.50	0.85	97.79	Clay
1.95	9.00	0.51	98.30	
1.38	9.50	0.32	98.62	
0.98	10.00	0.24	98.86	
0.69	10.50	0.22	99.07	
0.49	11.00	0.21	99.28	
0.35	11.50	0.19	99.47	
<0.35	>11.5	0.53	100.00	



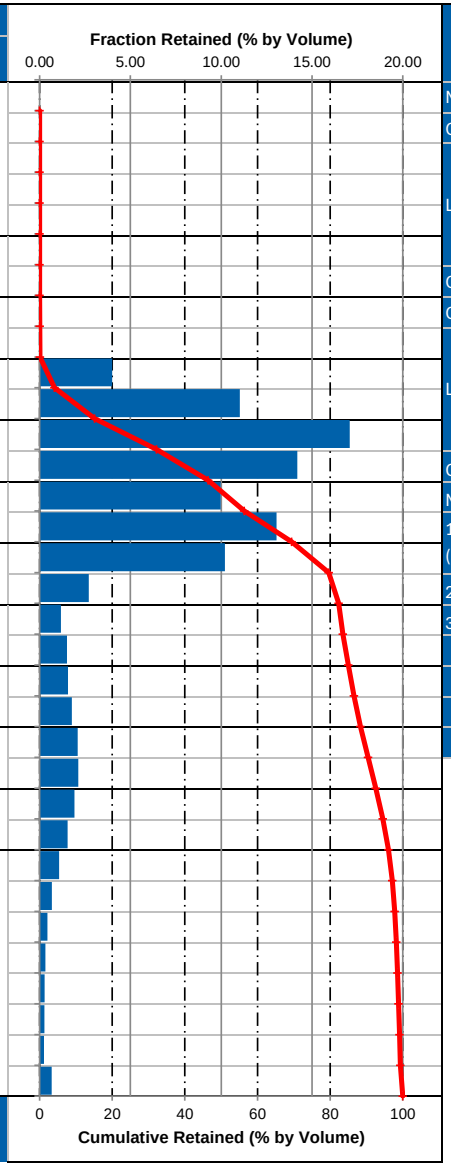
Method of Moments			
Geometric	Mean (µm)	138.86	Wentworth:
Logarithmic	Mean (Phi)	2.85	Fine sand
	Sorting	2.00	Poor
	Skewness	2.01	Very fine
	Kurtosis	7.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	172.68	Wentworth:
Logarithmic	Mean (Phi)	2.53	Fine sand
	Sorting	1.60	Poor
	Skewness	0.46	Very fine
	Kurtosis	1.67	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.26	208.48	Fine sand
1st Local Maxima (Mode)	2.00	250.00	Medium sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	15.70%
EUNIS Folk	Sand and muddy sand	Sand	84.20%
Distribution	Bimodal	Gravel	0.00%



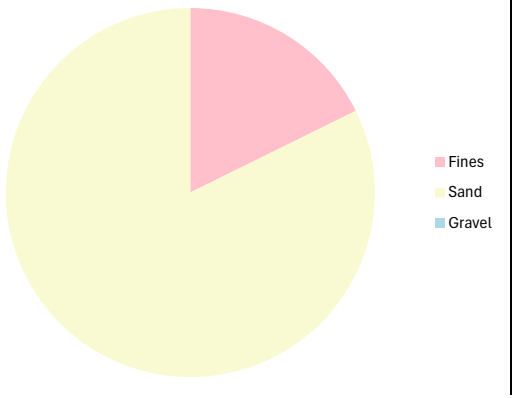
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-171				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.03	0.03	Very coarse sand
1000.00	0.00	0.08	0.11	
707.11	0.50	4.00	4.11	Coarse sand
500.00	1.00	11.02	15.13	
353.55	1.50	17.09	32.22	Medium sand
250.00	2.00	14.20	46.41	
176.78	2.50	9.97	56.38	Fine sand
125.00	3.00	13.05	69.43	
88.39	3.50	10.20	79.64	Very fine sand
62.50	4.00	2.71	82.35	
44.19	4.50	1.17	83.52	Coarse silt
31.25	5.00	1.50	85.02	
22.10	5.50	1.56	86.58	Medium silt
15.63	6.00	1.77	88.35	
11.05	6.50	2.09	90.44	Fine silt
7.81	7.00	2.13	92.57	
5.52	7.50	1.92	94.50	Very fine silt
3.91	8.00	1.54	96.04	
2.76	8.50	1.08	97.12	
1.95	9.00	0.68	97.79	
1.38	9.50	0.43	98.23	
0.98	10.00	0.32	98.55	Clay
0.69	10.50	0.28	98.83	
0.49	11.00	0.26	99.09	
0.35	11.50	0.24	99.33	
<0.35	>11.5	0.67	100.00	



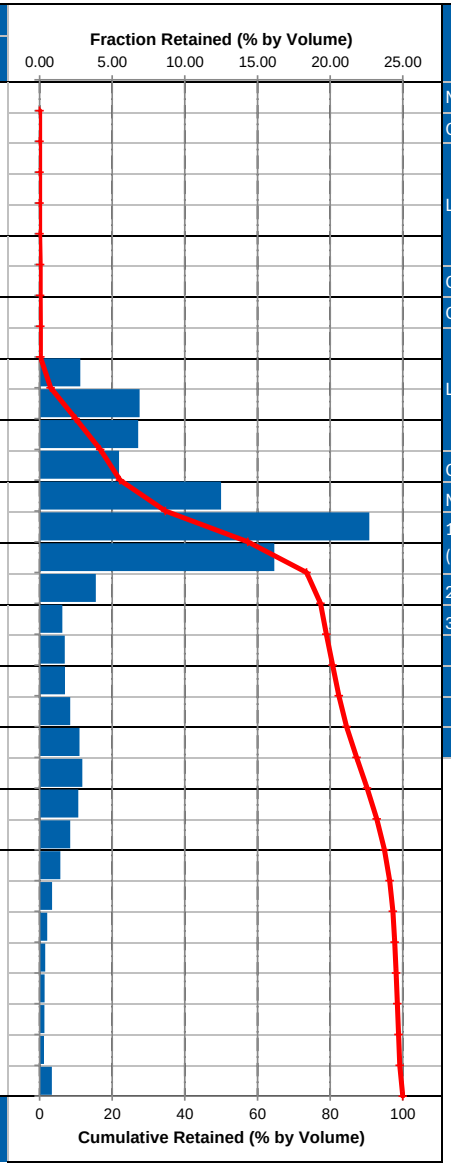
Method of Moments			
Geometric	Mean (µm)	144.05	Wentworth:
Logarithmic	Mean (Phi)	2.80	Fine sand
	Sorting	2.25	Very poor
	Skewness	1.72	Very fine
	Kurtosis	6.05	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	162.43	Wentworth:
Logarithmic	Mean (Phi)	2.62	Fine sand
	Sorting	1.99	Poor
	Skewness	0.45	Very fine
	Kurtosis	1.47	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.18	220.69	Fine sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	17.70%
EUNIS Folk	Sand and muddy sand	Sand	82.30%
Distribution	Bimodal	Gravel	0.00%



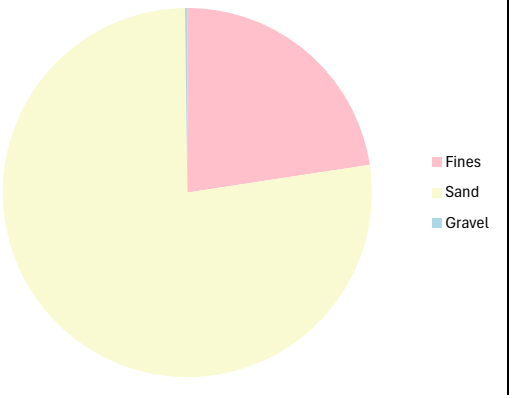
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-225				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.14	0.14	Granule
2000.00	-1.00	0.03	0.17	
1414.21	-0.50	0.03	0.20	Very coarse sand
1000.00	0.00	0.03	0.23	
707.11	0.50	2.80	3.02	Coarse sand
500.00	1.00	6.89	9.91	
353.55	1.50	6.79	16.70	Medium sand
250.00	2.00	5.46	22.16	
176.78	2.50	12.49	34.65	Fine sand
125.00	3.00	22.70	57.35	
88.39	3.50	16.16	73.51	Very fine sand
62.50	4.00	3.87	77.37	
44.19	4.50	1.57	78.94	Coarse silt
31.25	5.00	1.73	80.67	
22.10	5.50	1.74	82.41	Medium silt
15.63	6.00	2.11	84.52	
11.05	6.50	2.75	87.27	Fine silt
7.81	7.00	2.94	90.20	
5.52	7.50	2.67	92.87	Very fine silt
3.91	8.00	2.11	94.98	
2.76	8.50	1.43	96.41	
1.95	9.00	0.86	97.27	
1.38	9.50	0.53	97.80	
0.98	10.00	0.39	98.18	Clay
0.69	10.50	0.34	98.52	
0.49	11.00	0.33	98.85	
0.35	11.50	0.31	99.15	
<0.35	>11.5	0.85	100.00	



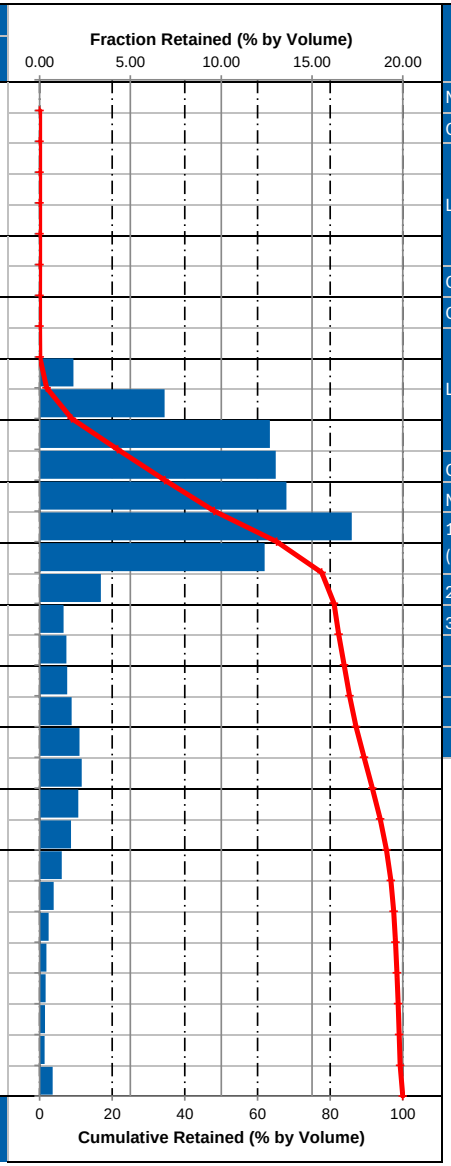
Method of Moments			
Geometric	Mean (µm)	95.52	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.29	Very poor
	Skewness	1.43	Very fine
	Kurtosis	5.20	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	95.54	Wentworth:
Logarithmic	Mean (Phi)	3.39	Very fine sand
	Sorting	2.22	Very poor
	Skewness	0.39	Very fine
	Kurtosis	1.91	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.84	139.85	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.00	500.00	Coarse sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	22.60%
EUNIS Folk	Mud and sandy mud	Sand	77.20%
Distribution	Multimodal	Gravel	0.20%



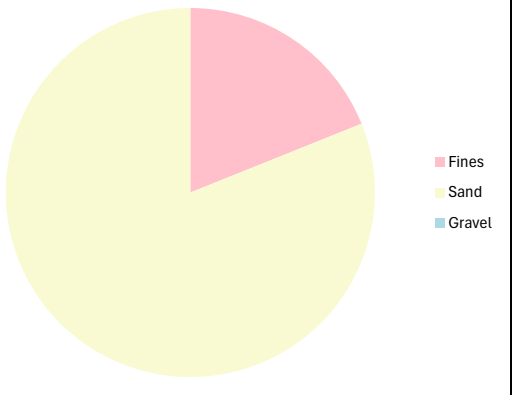
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-172				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.04	0.06	
707.11	0.50	1.87	1.92	Coarse sand
500.00	1.00	6.89	8.81	
353.55	1.50	12.69	21.50	Medium sand
250.00	2.00	13.00	34.50	
176.78	2.50	13.59	48.09	Fine sand
125.00	3.00	17.19	65.28	
88.39	3.50	12.39	77.67	Very fine sand
62.50	4.00	3.38	81.05	
44.19	4.50	1.32	82.37	Coarse silt
31.25	5.00	1.48	83.85	
22.10	5.50	1.52	85.36	Medium silt
15.63	6.00	1.76	87.12	
11.05	6.50	2.20	89.32	Fine silt
7.81	7.00	2.32	91.65	
5.52	7.50	2.13	93.78	Very fine silt
3.91	8.00	1.73	95.51	
2.76	8.50	1.22	96.73	Clay
1.95	9.00	0.78	97.50	
1.38	9.50	0.50	98.00	
0.98	10.00	0.38	98.38	
0.69	10.50	0.33	98.71	
0.49	11.00	0.30	99.01	
0.35	11.50	0.27	99.28	
<0.35	>11.5	0.72	100.00	



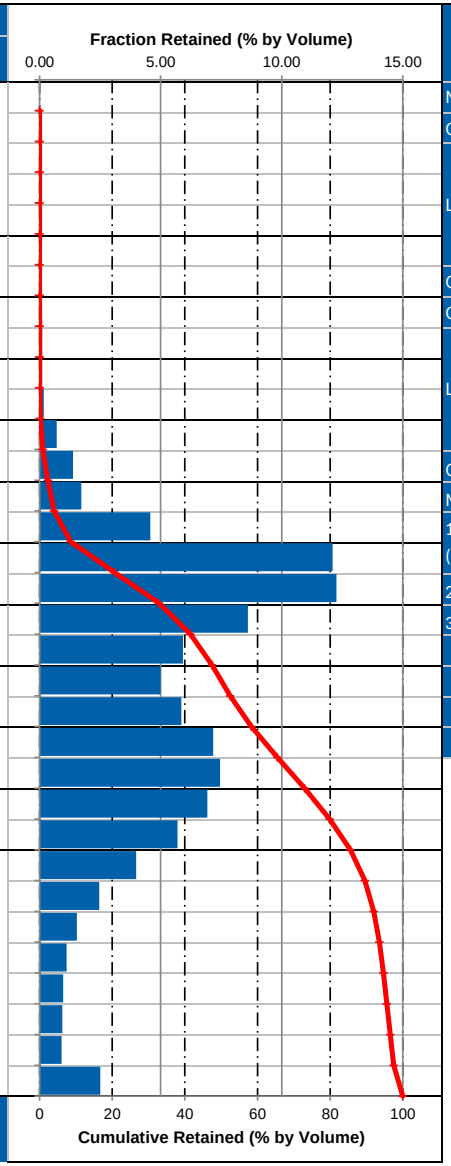
Method of Moments			
Geometric	Mean (µm)	118.47	Wentworth:
Logarithmic	Mean (Phi)	3.08	Very fine sand
	Sorting	2.22	Very poor
	Skewness	1.69	Very fine
	Kurtosis	5.97	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	128.22	Wentworth:
Logarithmic	Mean (Phi)	2.96	Fine sand
	Sorting	2.02	Very poor
	Skewness	0.41	Very fine
	Kurtosis	1.66	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.56	170.10	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	18.90%
EUNIS Folk	Sand and muddy sand	Sand	81.00%
Distribution	Bimodal	Gravel	0.00%



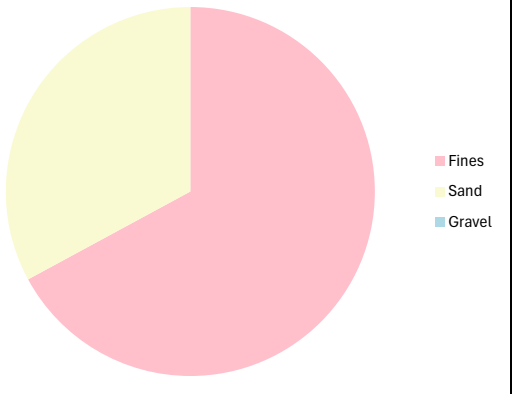
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-185				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.00	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.18	0.20	
353.55	1.50	0.70	0.90	Medium sand
250.00	2.00	1.38	2.28	
176.78	2.50	1.72	4.00	Fine sand
125.00	3.00	4.58	8.58	
88.39	3.50	12.10	20.68	Very fine sand
62.50	4.00	12.26	32.94	
44.19	4.50	8.61	41.55	Coarse silt
31.25	5.00	5.92	47.47	
22.10	5.50	5.00	52.46	Medium silt
15.63	6.00	5.86	58.32	
11.05	6.50	7.17	65.49	Fine silt
7.81	7.00	7.45	72.94	
5.52	7.50	6.93	79.87	Very fine silt
3.91	8.00	5.70	85.57	
2.76	8.50	3.99	89.56	
1.95	9.00	2.47	92.02	
1.38	9.50	1.54	93.56	
0.98	10.00	1.11	94.67	Clay
0.69	10.50	0.97	95.65	
0.49	11.00	0.94	96.59	
0.35	11.50	0.91	97.50	
<0.35	>11.5	2.50	100.00	



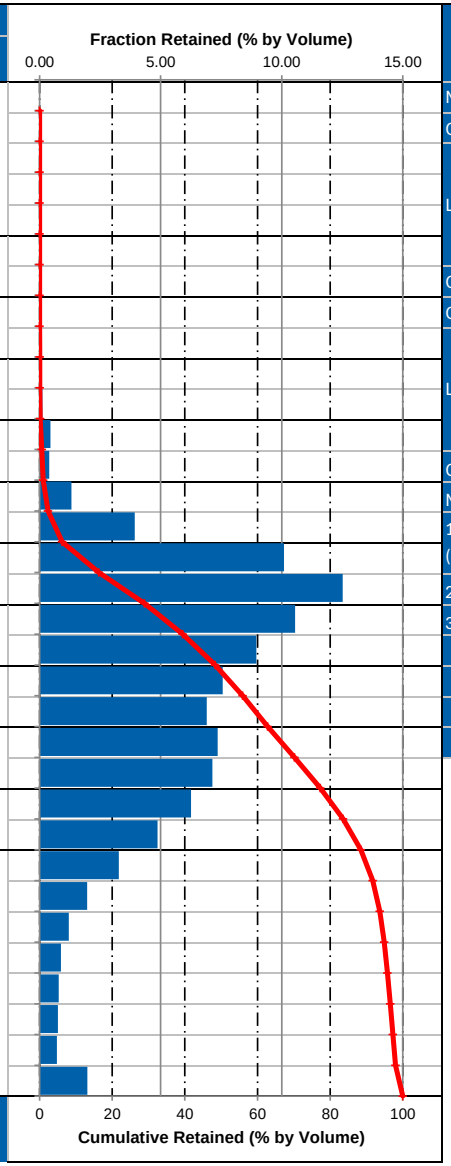
Method of Moments			
Geometric	Mean (µm)	20.60	Wentworth:
Logarithmic	Mean (Phi)	5.60	Medium silt
	Sorting	2.38	Very poor
	Skewness	0.74	Fine
	Kurtosis	3.29	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	22.50	Wentworth:
Logarithmic	Mean (Phi)	5.47	Medium silt
	Sorting	2.28	Very poor
	Skewness	0.22	Fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.25	26.21	Medium silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	67.10%
EUNIS Folk	Mud and sandy mud	Sand	32.90%
Distribution	Bimodal	Gravel	0.00%



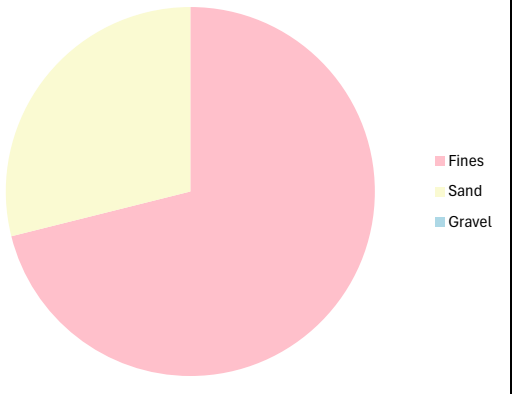
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-224				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.03	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.12	0.14	
353.55	1.50	0.45	0.59	Medium sand
250.00	2.00	0.40	0.99	
176.78	2.50	1.32	2.31	Fine sand
125.00	3.00	3.93	6.24	
88.39	3.50	10.10	16.33	Very fine sand
62.50	4.00	12.52	28.86	
44.19	4.50	10.55	39.41	Coarse silt
31.25	5.00	8.96	48.36	
22.10	5.50	7.56	55.92	Medium silt
15.63	6.00	6.90	62.83	
11.05	6.50	7.35	70.18	Fine silt
7.81	7.00	7.14	77.32	
5.52	7.50	6.25	83.57	Very fine silt
3.91	8.00	4.88	88.45	
2.76	8.50	3.27	91.72	
1.95	9.00	1.96	93.68	
1.38	9.50	1.21	94.88	
0.98	10.00	0.89	95.77	Clay
0.69	10.50	0.79	96.56	
0.49	11.00	0.76	97.31	
0.35	11.50	0.72	98.03	
<0.35	>11.5	1.97	100.00	



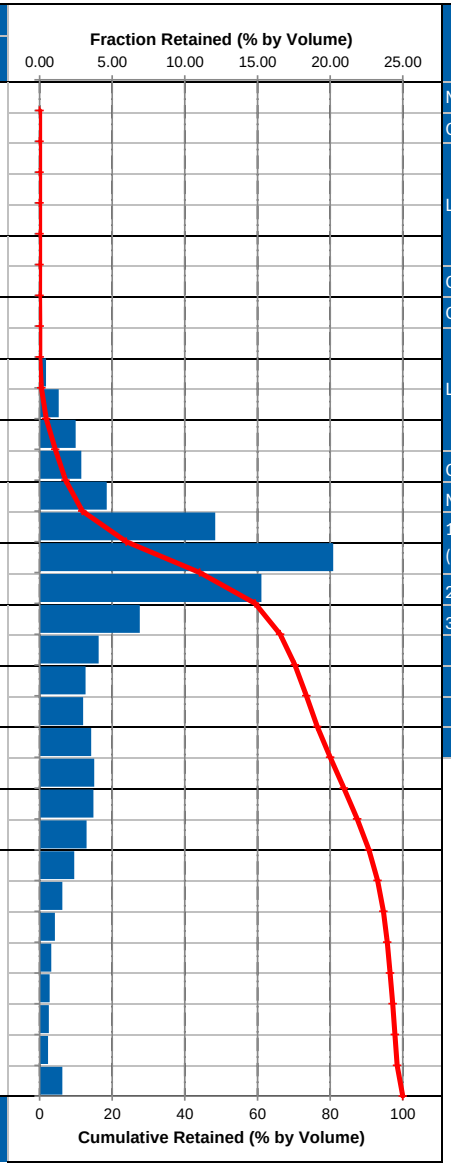
Method of Moments			
Geometric	Mean (µm)	21.87	Wentworth:
Logarithmic	Mean (Phi)	5.52	Medium silt
	Sorting	2.16	Very poor
	Skewness	0.93	Fine
	Kurtosis	3.92	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	24.04	Wentworth:
Logarithmic	Mean (Phi)	5.38	Medium silt
	Sorting	2.03	Very poor
	Skewness	0.26	Fine
	Kurtosis	0.92	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.11	28.99	Medium silt
1st Local Maxima (Mode)	4.00	62.50	Very fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	71.10%
EUNIS Folk	Mud and sandy mud	Sand	28.90%
Distribution	Unimodal	Gravel	0.00%



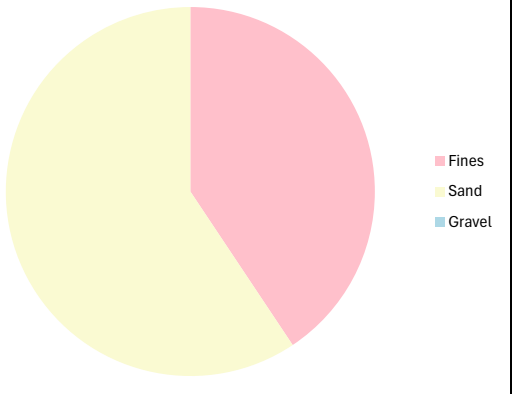
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-186				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.02	0.03	Very coarse sand
1000.00	0.00	0.03	0.06	
707.11	0.50	0.44	0.50	Coarse sand
500.00	1.00	1.32	1.82	
353.55	1.50	2.48	4.30	Medium sand
250.00	2.00	2.87	7.16	
176.78	2.50	4.62	11.79	Fine sand
125.00	3.00	12.10	23.88	
88.39	3.50	20.21	44.09	Very fine sand
62.50	4.00	15.26	59.35	
44.19	4.50	6.90	66.26	Coarse silt
31.25	5.00	4.06	70.31	
22.10	5.50	3.16	73.47	Medium silt
15.63	6.00	2.99	76.46	
11.05	6.50	3.55	80.01	Fine silt
7.81	7.00	3.76	83.77	
5.52	7.50	3.70	87.47	Very fine silt
3.91	8.00	3.23	90.70	
2.76	8.50	2.38	93.09	Clay
1.95	9.00	1.56	94.65	
1.38	9.50	1.06	95.71	
0.98	10.00	0.81	96.51	
0.69	10.50	0.69	97.21	
0.49	11.00	0.64	97.85	
0.35	11.50	0.59	98.43	
<0.35	>11.5	1.57	100.00	



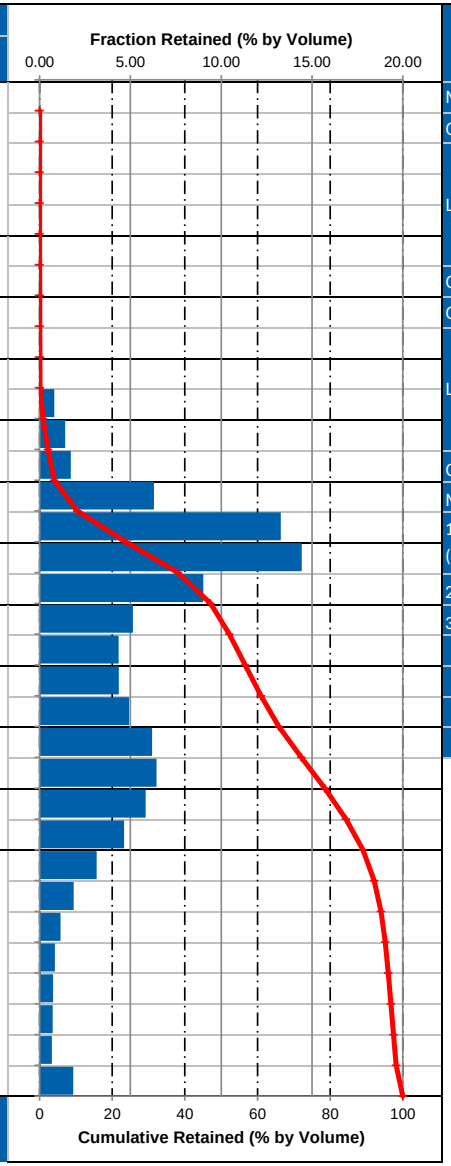
Method of Moments			
Geometric	Mean (µm)	44.65	Wentworth:
Logarithmic	Mean (Phi)	4.49	Coarse silt
	Sorting	2.36	Very poor
	Skewness	1.21	Fine
	Kurtosis	4.30	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	45.24	Wentworth:
Logarithmic	Mean (Phi)	4.47	Coarse silt
	Sorting	2.23	Very poor
	Skewness	0.49	Very fine
	Kurtosis	1.13	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.69	77.29	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	40.60%
EUNIS Folk	Mud and sandy mud	Sand	59.30%
Distribution	Bimodal	Gravel	0.00%



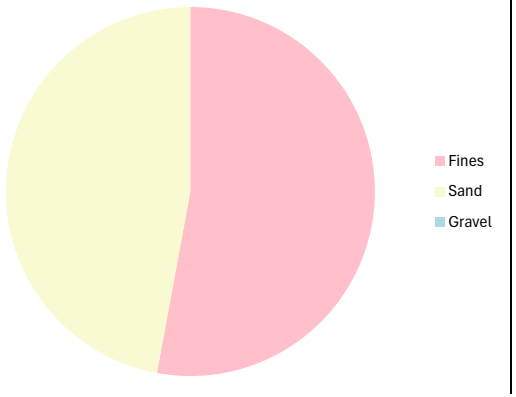
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-223				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.03	0.03	
1414.21	-0.50	0.04	0.07	Very coarse sand
1000.00	0.00	0.04	0.10	
707.11	0.50	0.02	0.12	Coarse sand
500.00	1.00	0.81	0.94	
353.55	1.50	1.40	2.34	Medium sand
250.00	2.00	1.72	4.06	
176.78	2.50	6.30	10.35	Fine sand
125.00	3.00	13.28	23.64	
88.39	3.50	14.43	38.07	Very fine sand
62.50	4.00	9.02	47.09	
44.19	4.50	5.14	52.23	Coarse silt
31.25	5.00	4.35	56.58	
22.10	5.50	4.37	60.95	Medium silt
15.63	6.00	4.93	65.87	
11.05	6.50	6.20	72.07	Fine silt
7.81	7.00	6.43	78.50	
5.52	7.50	5.84	84.35	Very fine silt
3.91	8.00	4.65	89.00	
2.76	8.50	3.14	92.14	Clay
1.95	9.00	1.88	94.02	
1.38	9.50	1.15	95.17	
0.98	10.00	0.84	96.01	
0.69	10.50	0.74	96.76	
0.49	11.00	0.72	97.47	
0.35	11.50	0.68	98.15	
<0.35	>11.5	1.85	100.00	



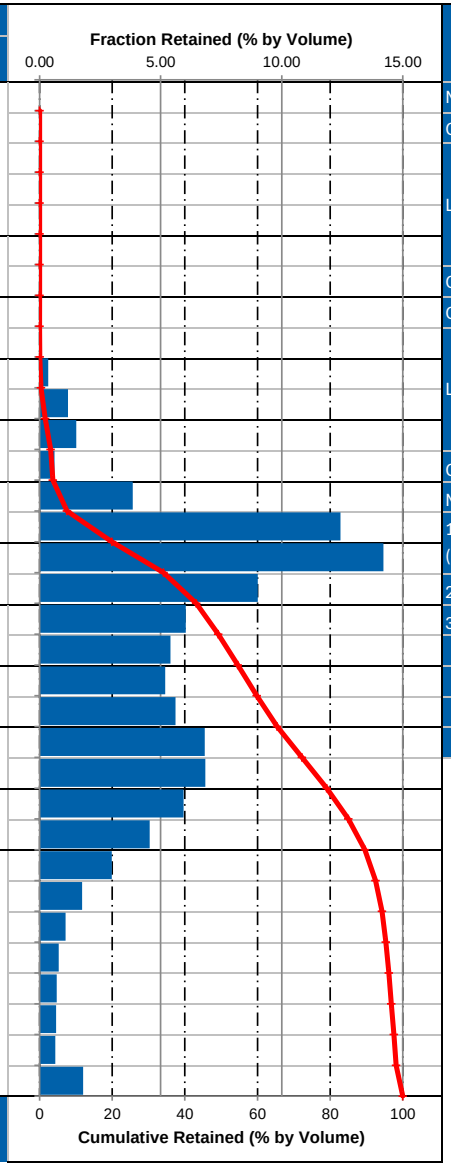
Method of Moments			
Geometric	Mean (µm)	31.66	Wentworth:
Logarithmic	Mean (Phi)	4.98	Coarse silt
	Sorting	2.45	Very poor
	Skewness	0.81	Fine
	Kurtosis	3.29	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	35.36	Wentworth:
Logarithmic	Mean (Phi)	4.82	Coarse silt
	Sorting	2.30	Very poor
	Skewness	0.37	Very fine
	Kurtosis	0.82	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.28	51.37	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	52.90%
EUNIS Folk	Mud and sandy mud	Sand	47.10%
Distribution	Bimodal	Gravel	0.00%



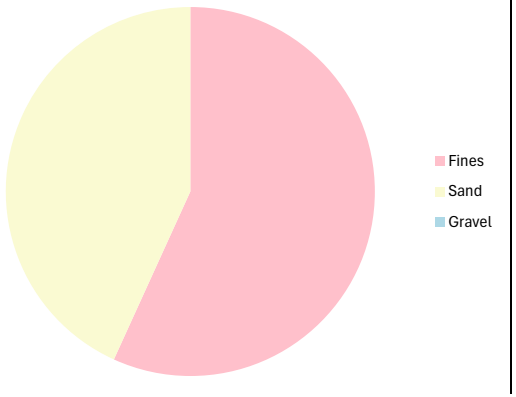
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-187				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.35	0.37	Coarse sand
500.00	1.00	1.17	1.54	
353.55	1.50	1.51	3.06	Medium sand
250.00	2.00	0.61	3.67	
176.78	2.50	3.84	7.51	Fine sand
125.00	3.00	12.42	19.94	
88.39	3.50	14.20	34.14	Very fine sand
62.50	4.00	9.01	43.15	
44.19	4.50	6.03	49.19	Coarse silt
31.25	5.00	5.40	54.59	
22.10	5.50	5.19	59.78	Medium silt
15.63	6.00	5.62	65.40	
11.05	6.50	6.82	72.22	Fine silt
7.81	7.00	6.84	79.06	
5.52	7.50	5.95	85.01	Very fine silt
3.91	8.00	4.54	89.55	
2.76	8.50	2.98	92.53	
1.95	9.00	1.76	94.29	
1.38	9.50	1.07	95.36	
0.98	10.00	0.79	96.16	Clay
0.69	10.50	0.71	96.87	
0.49	11.00	0.69	97.55	
0.35	11.50	0.65	98.20	
<0.35	>11.5	1.80	100.00	



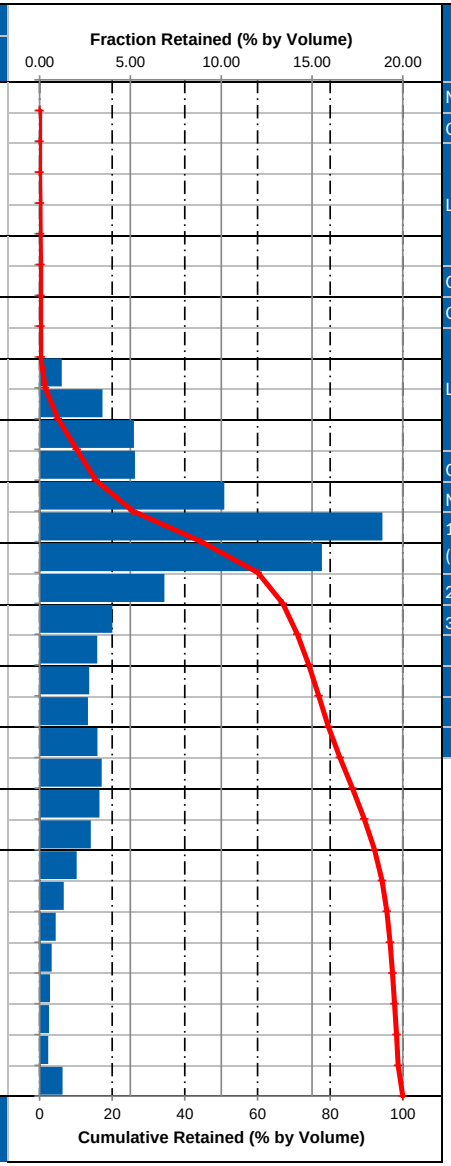
Method of Moments			
Geometric	Mean (µm)	29.86	Wentworth:
Logarithmic	Mean (Phi)	5.07	Medium silt
	Sorting	2.39	Very poor
	Skewness	0.77	Fine
	Kurtosis	3.42	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	32.49	Wentworth:
Logarithmic	Mean (Phi)	4.94	Coarse silt
	Sorting	2.23	Very poor
	Skewness	0.29	Fine
	Kurtosis	0.83	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.58	41.94	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	56.80%
EUNIS Folk	Mud and sandy mud	Sand	43.20%
Distribution	Multimodal	Gravel	0.00%



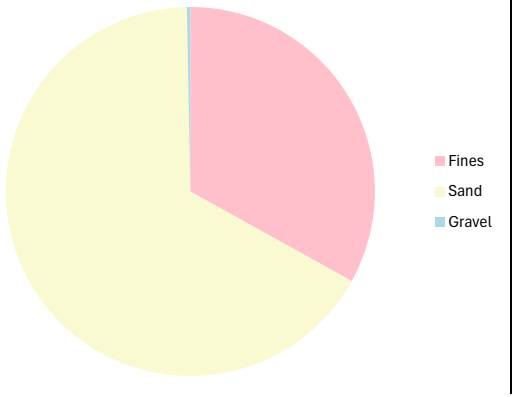
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-210				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.10	0.10	
4000.00	-2.00	0.05	0.15	
2828.43	-1.50	0.10	0.25	Granule
2000.00	-1.00	0.02	0.27	
1414.21	-0.50	0.02	0.29	Very coarse sand
1000.00	0.00	0.06	0.34	
707.11	0.50	1.22	1.56	Coarse sand
500.00	1.00	3.46	5.03	
353.55	1.50	5.19	10.22	Medium sand
250.00	2.00	5.25	15.47	
176.78	2.50	10.17	25.64	Fine sand
125.00	3.00	18.88	44.52	
88.39	3.50	15.55	60.07	Very fine sand
62.50	4.00	6.87	66.94	
44.19	4.50	4.01	70.95	Coarse silt
31.25	5.00	3.17	74.12	
22.10	5.50	2.72	76.85	Medium silt
15.63	6.00	2.66	79.51	
11.05	6.50	3.18	82.69	Fine silt
7.81	7.00	3.42	86.11	
5.52	7.50	3.30	89.41	Very fine silt
3.91	8.00	2.81	92.23	
2.76	8.50	2.05	94.27	Clay
1.95	9.00	1.33	95.61	
1.38	9.50	0.89	96.50	
0.98	10.00	0.67	97.16	
0.69	10.50	0.57	97.74	
0.49	11.00	0.52	98.26	
0.35	11.50	0.48	98.74	
<0.35	>11.5	1.26	100.00	



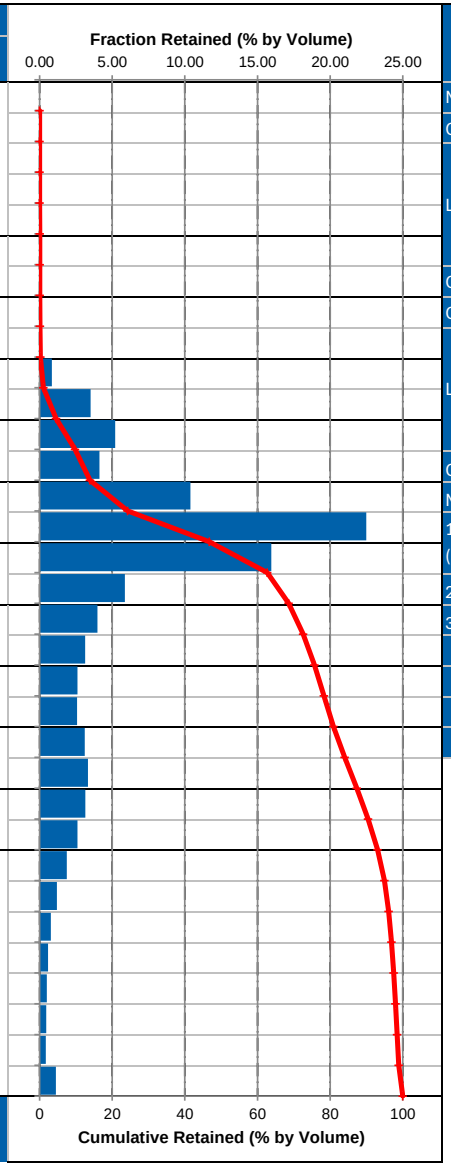
Method of Moments			
Geometric	Mean (µm)	64.57	Wentworth:
Logarithmic	Mean (Phi)	3.95	Very fine sand
	Sorting	2.46	Very poor
	Skewness	1.17	Fine
	Kurtosis	4.26	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	64.06	Wentworth:
Logarithmic	Mean (Phi)	3.96	Very fine sand
	Sorting	2.34	Very poor
	Skewness	0.47	Very fine
	Kurtosis	1.18	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.18	110.63	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	33.10%
EUNIS Folk	Mud and sandy mud	Sand	66.70%
Distribution	Bimodal	Gravel	0.30%



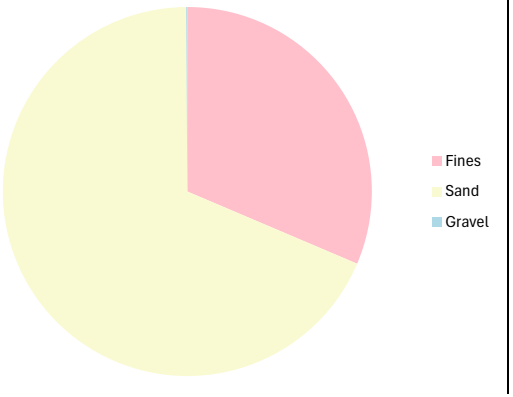
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-209				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.02	0.04	Granule
2000.00	-1.00	0.02	0.07	
1414.21	-0.50	0.05	0.12	Very coarse sand
1000.00	0.00	0.09	0.21	
707.11	0.50	0.84	1.05	Coarse sand
500.00	1.00	3.50	4.55	
353.55	1.50	5.20	9.75	Medium sand
250.00	2.00	4.12	13.88	
176.78	2.50	10.39	24.27	Fine sand
125.00	3.00	22.49	46.76	
88.39	3.50	15.95	62.71	Very fine sand
62.50	4.00	5.87	68.58	
44.19	4.50	3.98	72.56	Coarse silt
31.25	5.00	3.14	75.70	
22.10	5.50	2.61	78.31	Medium silt
15.63	6.00	2.58	80.89	
11.05	6.50	3.11	84.00	Fine silt
7.81	7.00	3.33	87.33	
5.52	7.50	3.14	90.47	Very fine silt
3.91	8.00	2.61	93.08	
2.76	8.50	1.87	94.95	
1.95	9.00	1.20	96.14	
1.38	9.50	0.78	96.92	
0.98	10.00	0.58	97.50	Clay
0.69	10.50	0.50	98.00	
0.49	11.00	0.46	98.46	
0.35	11.50	0.42	98.88	
<0.35	>11.5	1.12	100.00	



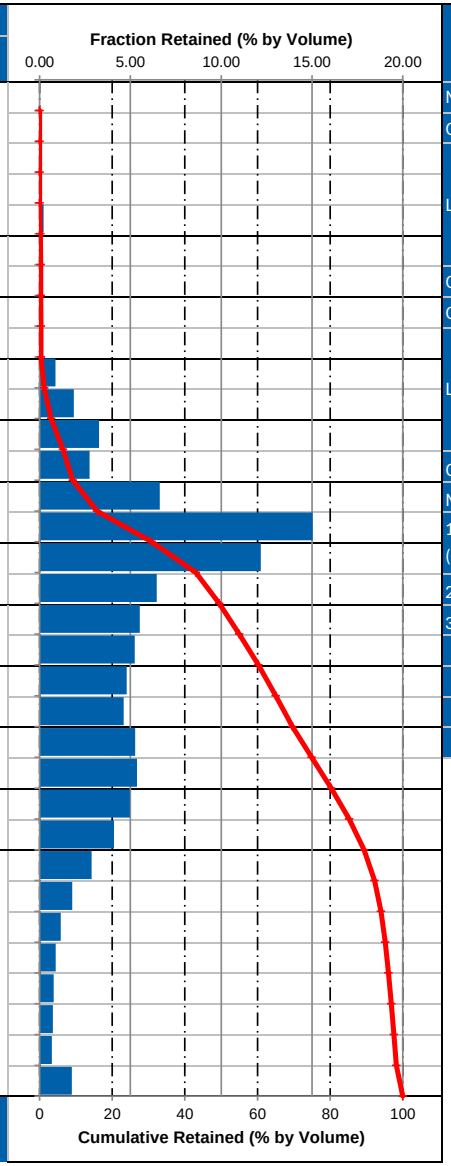
Method of Moments			
Geometric	Mean (µm)	67.87	Wentworth:
Logarithmic	Mean (Phi)	3.88	Very fine sand
	Sorting	2.36	Very poor
	Skewness	1.30	Fine
	Kurtosis	4.58	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	66.93	Wentworth:
Logarithmic	Mean (Phi)	3.90	Very fine sand
	Sorting	2.23	Very poor
	Skewness	0.50	Very fine
	Kurtosis	1.29	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.10	116.50	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Muddy sand	Fines	31.40%
EUNIS Folk	Mud and sandy mud	Sand	68.50%
Distribution	Multimodal	Gravel	0.10%



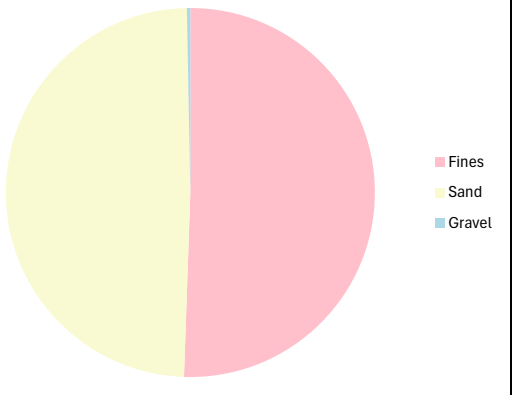
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-208				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.22	0.22	
2828.43	-1.50	0.11	0.33	Granule
2000.00	-1.00	0.00	0.33	
1414.21	-0.50	0.03	0.36	Very coarse sand
1000.00	0.00	0.03	0.40	
707.11	0.50	0.87	1.27	Coarse sand
500.00	1.00	1.89	3.15	
353.55	1.50	3.27	6.43	Medium sand
250.00	2.00	2.75	9.18	
176.78	2.50	6.62	15.80	Fine sand
125.00	3.00	15.04	30.83	
88.39	3.50	12.18	43.01	Very fine sand
62.50	4.00	6.46	49.47	
44.19	4.50	5.52	54.98	Coarse silt
31.25	5.00	5.24	60.22	
22.10	5.50	4.79	65.01	Medium silt
15.63	6.00	4.63	69.65	
11.05	6.50	5.26	74.91	Fine silt
7.81	7.00	5.36	80.27	
5.52	7.50	4.98	85.25	Very fine silt
3.91	8.00	4.10	89.34	
2.76	8.50	2.86	92.21	
1.95	9.00	1.79	94.00	
1.38	9.50	1.16	95.16	
0.98	10.00	0.88	96.05	Clay
0.69	10.50	0.77	96.82	
0.49	11.00	0.73	97.55	
0.35	11.50	0.67	98.22	
<0.35	>11.5	1.78	100.00	



Method of Moments			
Geometric	Mean (µm)	38.23	Wentworth:
Logarithmic	Mean (Phi)	4.71	Coarse silt
	Sorting	2.58	Very poor
	Skewness	0.73	Fine
	Kurtosis	3.33	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	40.02	Wentworth:
Logarithmic	Mean (Phi)	4.64	Coarse silt
	Sorting	2.45	Very poor
	Skewness	0.34	Very fine
	Kurtosis	0.90	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.05	60.44	Coarse silt
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

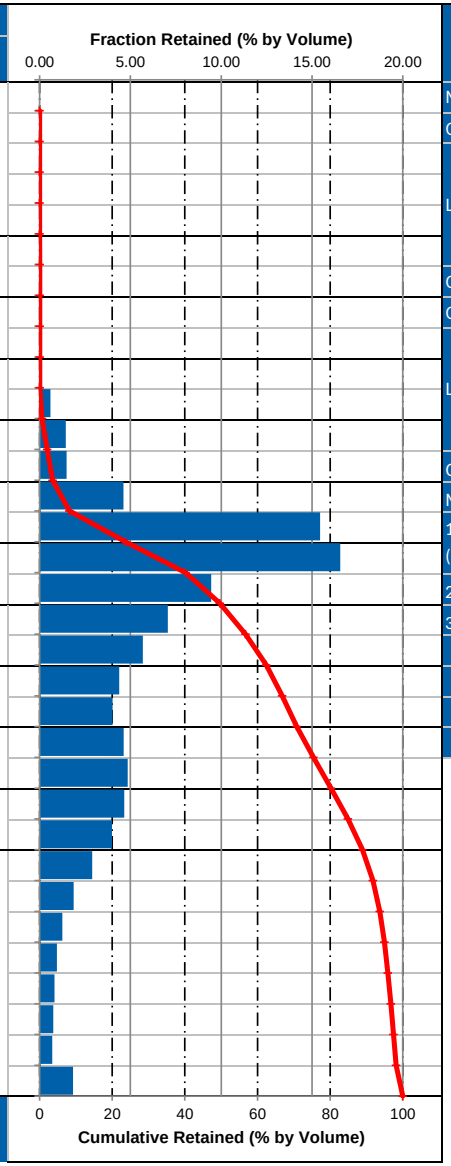
Classification		Composition	
Modified Folk	Sandy mud	Fines	50.50%
EUNIS Folk	Mud and sandy mud	Sand	49.10%
Distribution	Multimodal	Gravel	0.30%



APPENDIX F PARTICLE SIZE ANALYSIS

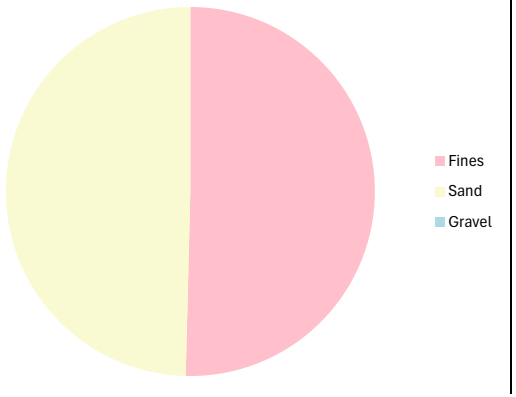
MV24EXP-ENV-GS-207

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.02	0.02	Granule
2000.00	-1.00	0.02	0.04	
1414.21	-0.50	0.00	0.04	Very coarse sand
1000.00	0.00	0.00	0.05	
707.11	0.50	0.01	0.06	Coarse sand
500.00	1.00	0.60	0.66	
353.55	1.50	1.44	2.09	Medium sand
250.00	2.00	1.48	3.58	
176.78	2.50	4.62	8.20	Fine sand
125.00	3.00	15.44	23.64	
88.39	3.50	16.56	40.20	Very fine sand
62.50	4.00	9.45	49.65	
44.19	4.50	7.06	56.71	Coarse silt
31.25	5.00	5.68	62.39	
22.10	5.50	4.39	66.77	Medium silt
15.63	6.00	4.02	70.79	
11.05	6.50	4.62	75.42	Fine silt
7.81	7.00	4.85	80.26	
5.52	7.50	4.66	84.93	Very fine silt
3.91	8.00	3.99	88.91	
2.76	8.50	2.89	91.81	Clay
1.95	9.00	1.88	93.69	
1.38	9.50	1.25	94.94	
0.98	10.00	0.95	95.89	
0.69	10.50	0.82	96.71	
0.49	11.00	0.76	97.47	
0.35	11.50	0.70	98.16	
<0.35	>11.5	1.84	100.00	



Method of Moments			
Geometric	Mean (µm)	34.76	Wentworth:
Logarithmic	Mean (Phi)	4.85	Coarse silt
	Sorting	2.42	Very poor
	Skewness	1.03	Fine
	Kurtosis	3.67	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	37.78	Wentworth:
Logarithmic	Mean (Phi)	4.73	Coarse silt
	Sorting	2.28	Very poor
	Skewness	0.47	Very fine
	Kurtosis	0.89	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.03	61.42	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

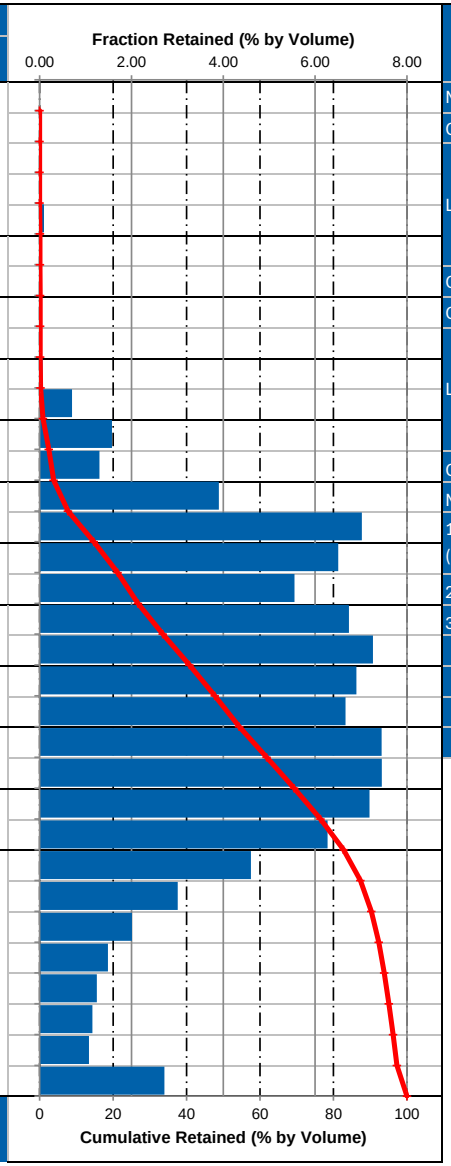
Classification		Composition	
Modified Folk	Sandy mud	Fines	50.40%
EUNIS Folk	Mud and sandy mud	Sand	49.60%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

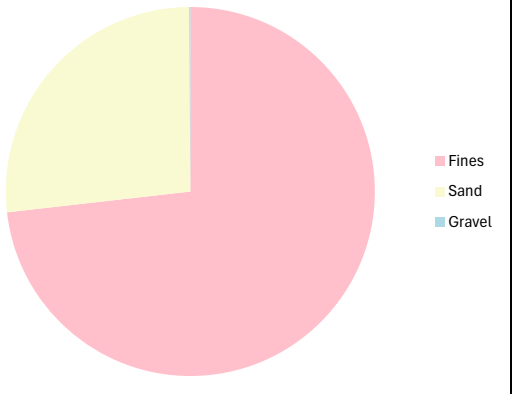
MV24EXP-ENV-GS-206

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.10	0.10	
2828.43	-1.50	0.02	0.12	Granule
2000.00	-1.00	0.01	0.13	
1414.21	-0.50	0.01	0.15	Very coarse sand
1000.00	0.00	0.03	0.18	
707.11	0.50	0.06	0.24	Coarse sand
500.00	1.00	0.71	0.95	
353.55	1.50	1.58	2.52	Medium sand
250.00	2.00	1.30	3.83	
176.78	2.50	3.90	7.73	Fine sand
125.00	3.00	7.02	14.75	
88.39	3.50	6.50	21.25	Very fine sand
62.50	4.00	5.55	26.80	
44.19	4.50	6.73	33.54	Coarse silt
31.25	5.00	7.26	40.80	
22.10	5.50	6.90	47.70	Medium silt
15.63	6.00	6.66	54.36	
11.05	6.50	7.45	61.80	Fine silt
7.81	7.00	7.45	69.26	
5.52	7.50	7.18	76.44	Very fine silt
3.91	8.00	6.27	82.71	
2.76	8.50	4.60	87.31	Clay
1.95	9.00	3.01	90.32	
1.38	9.50	2.01	92.33	
0.98	10.00	1.49	93.81	
0.69	10.50	1.25	95.06	
0.49	11.00	1.15	96.21	
0.35	11.50	1.07	97.28	
<0.35	>11.5	2.72	100.00	



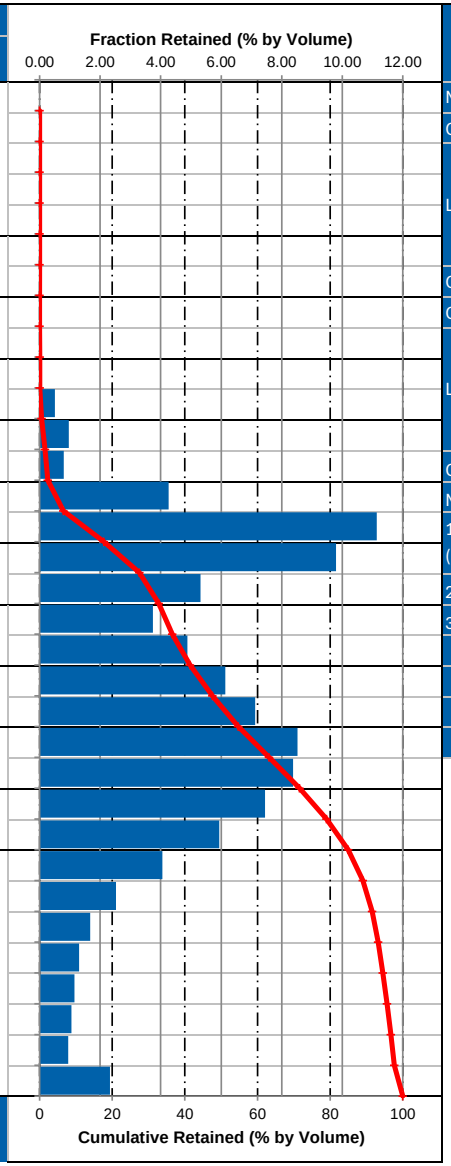
Method of Moments			
Geometric	Mean (µm)	18.22	Wentworth:
Logarithmic	Mean (Phi)	5.78	Medium silt
	Sorting	2.53	Very poor
	Skewness	0.41	Symmetrical
	Kurtosis	3.01	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	20.10	Wentworth:
Logarithmic	Mean (Phi)	5.64	Medium silt
	Sorting	2.52	Very poor
	Skewness	0.07	Symmetrical
	Kurtosis	0.96	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.67	19.60	Medium silt
1st Local Maxima (Mode)	7.00	7.81	Fine silt
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	3.00	125.00	Fine sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	73.20%
EUNIS Folk	Mud and sandy mud	Sand	26.70%
Distribution	Multimodal	Gravel	0.10%



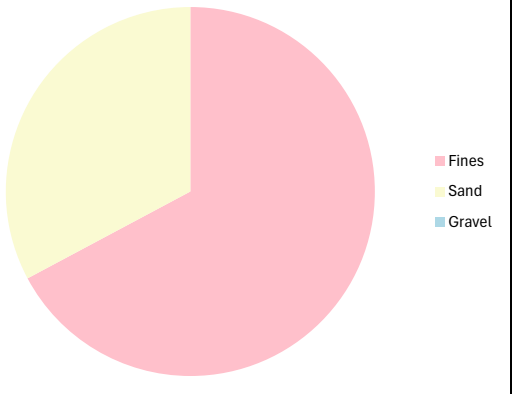
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-205				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.01	0.02	Coarse sand
500.00	1.00	0.50	0.53	
353.55	1.50	0.97	1.49	Medium sand
250.00	2.00	0.80	2.29	
176.78	2.50	4.27	6.56	Fine sand
125.00	3.00	11.14	17.70	
88.39	3.50	9.80	27.49	Very fine sand
62.50	4.00	5.31	32.81	
44.19	4.50	3.74	36.55	Coarse silt
31.25	5.00	4.88	41.43	
22.10	5.50	6.14	47.57	Medium silt
15.63	6.00	7.12	54.69	
11.05	6.50	8.52	63.21	Fine silt
7.81	7.00	8.38	71.59	
5.52	7.50	7.45	79.04	Very fine silt
3.91	8.00	5.93	84.97	
2.76	8.50	4.05	89.03	Clay
1.95	9.00	2.52	91.55	
1.38	9.50	1.67	93.22	
0.98	10.00	1.31	94.53	
0.69	10.50	1.15	95.68	
0.49	11.00	1.05	96.73	
0.35	11.50	0.94	97.68	
<0.35	>11.5	2.32	100.00	



Method of Moments			
Geometric	Mean (µm)	20.16	Wentworth:
Logarithmic	Mean (Phi)	5.63	Medium silt
	Sorting	2.48	Very poor
	Skewness	0.50	Fine
	Kurtosis	2.91	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	22.03	Wentworth:
Logarithmic	Mean (Phi)	5.50	Medium silt
	Sorting	2.44	Very poor
	Skewness	0.02	Symmetrical
	Kurtosis	0.84	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	5.67	19.63	Medium silt
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

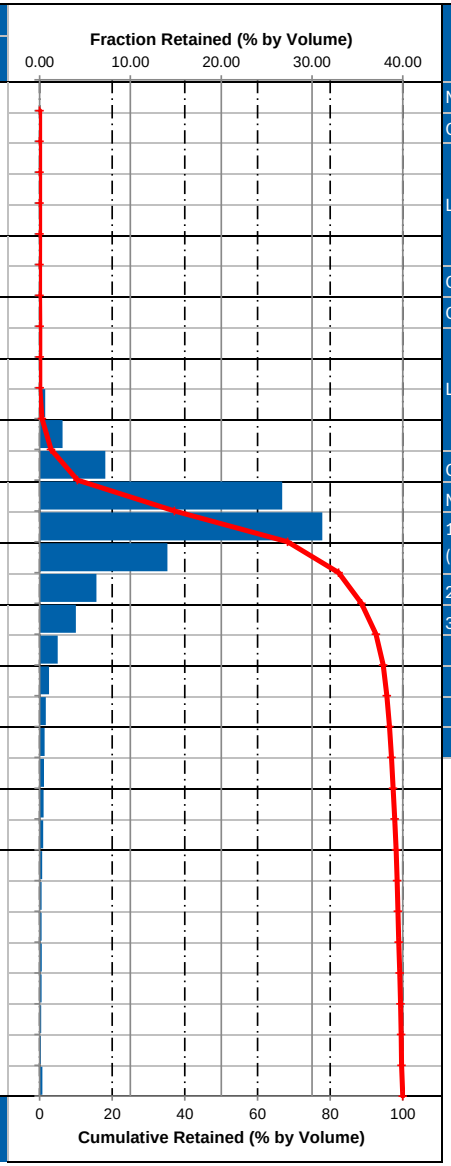
Classification		Composition	
Modified Folk	Sandy mud	Fines	67.20%
EUNIS Folk	Mud and sandy mud	Sand	32.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

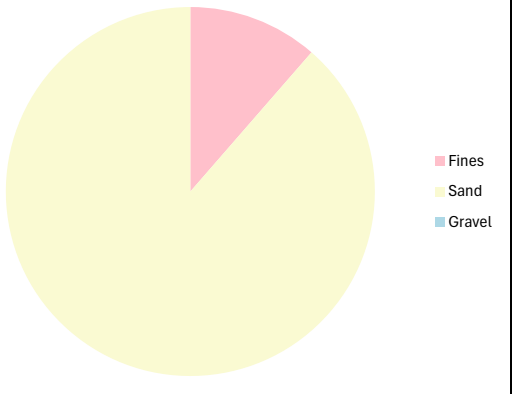
MV24EXP-ENV-GS-236

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.01	0.01	
1414.21	-0.50	0.01	0.02	Very coarse sand
1000.00	0.00	0.01	0.03	
707.11	0.50	0.00	0.03	Coarse sand
500.00	1.00	0.62	0.66	
353.55	1.50	2.52	3.18	Medium sand
250.00	2.00	7.23	10.41	
176.78	2.50	26.72	37.14	Fine sand
125.00	3.00	31.15	68.28	
88.39	3.50	14.08	82.36	Very fine sand
62.50	4.00	6.27	88.63	
44.19	4.50	3.99	92.62	Coarse silt
31.25	5.00	1.99	94.61	
22.10	5.50	1.04	95.65	Medium silt
15.63	6.00	0.67	96.32	
11.05	6.50	0.56	96.88	Fine silt
7.81	7.00	0.48	97.36	
5.52	7.50	0.45	97.81	Very fine silt
3.91	8.00	0.39	98.20	
2.76	8.50	0.27	98.47	Clay
1.95	9.00	0.21	98.69	
1.38	9.50	0.22	98.91	
0.98	10.00	0.24	99.15	
0.69	10.50	0.22	99.37	
0.49	11.00	0.18	99.56	
0.35	11.50	0.14	99.70	
<0.35	>11.5	0.30	100.00	



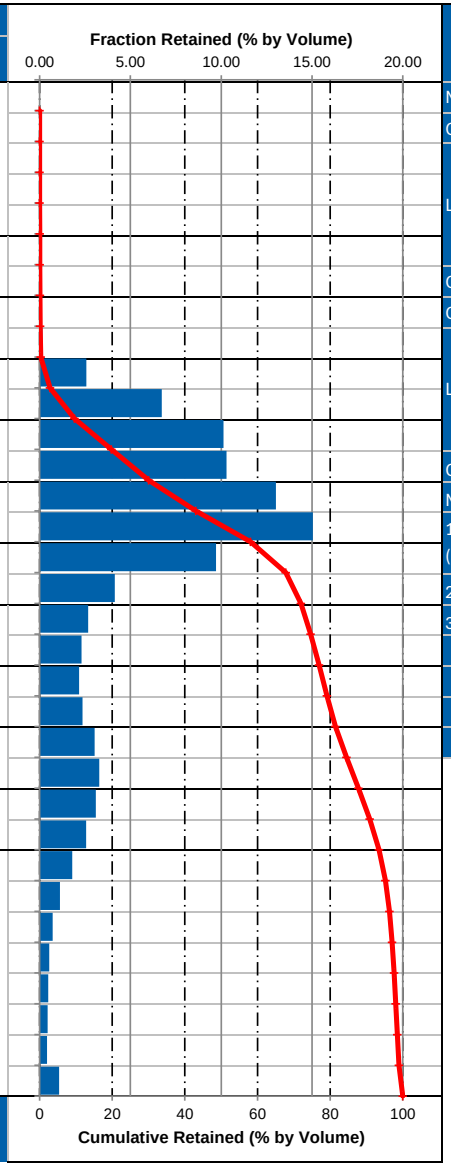
Method of Moments			
Geometric	Mean (µm)	126.62	Wentworth:
Logarithmic	Mean (Phi)	2.98	Fine sand
	Sorting	1.38	Poor
	Skewness	3.21	Very fine
	Kurtosis	17.58	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	142.21	Wentworth:
Logarithmic	Mean (Phi)	2.81	Fine sand
	Sorting	0.92	Moderate
	Skewness	0.30	Very fine
	Kurtosis	1.51	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.71	153.20	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	11.40%
EUNIS Folk	Sand and muddy sand	Sand	88.60%
Distribution	Unimodal	Gravel	0.00%



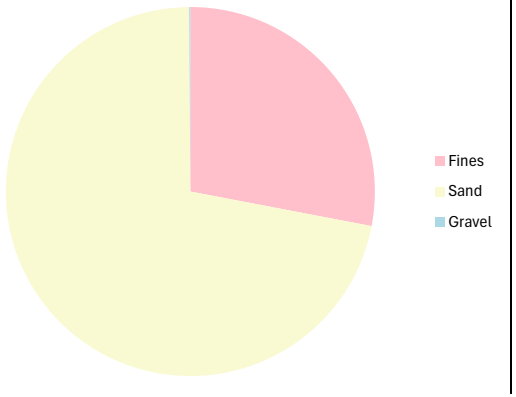
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-211				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.05	0.05	
2828.43	-1.50	0.02	0.07	Granule
2000.00	-1.00	0.03	0.10	
1414.21	-0.50	0.06	0.16	Very coarse sand
1000.00	0.00	0.16	0.32	
707.11	0.50	2.58	2.89	Coarse sand
500.00	1.00	6.73	9.62	
353.55	1.50	10.13	19.75	Medium sand
250.00	2.00	10.29	30.04	
176.78	2.50	13.01	43.05	Fine sand
125.00	3.00	15.05	58.10	
88.39	3.50	9.72	67.82	Very fine sand
62.50	4.00	4.15	71.96	
44.19	4.50	2.67	74.63	Coarse silt
31.25	5.00	2.30	76.94	
22.10	5.50	2.18	79.12	Medium silt
15.63	6.00	2.36	81.48	
11.05	6.50	3.02	84.51	Fine silt
7.81	7.00	3.28	87.79	
5.52	7.50	3.10	90.89	Very fine silt
3.91	8.00	2.56	93.45	
2.76	8.50	1.80	95.24	
1.95	9.00	1.12	96.36	
1.38	9.50	0.71	97.08	
0.98	10.00	0.54	97.61	Clay
0.69	10.50	0.47	98.08	
0.49	11.00	0.44	98.52	
0.35	11.50	0.41	98.93	
<0.35	>11.5	1.07	100.00	



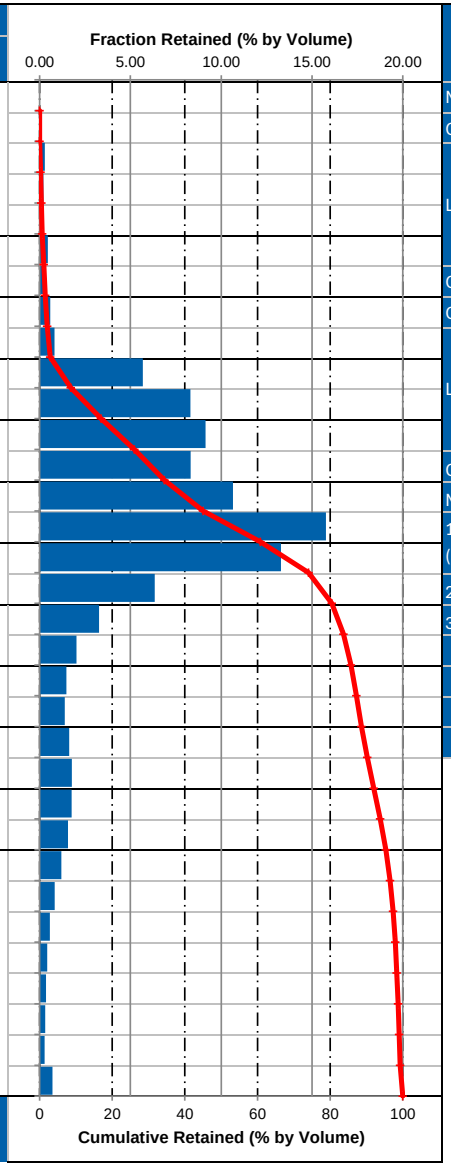
Method of Moments			
Geometric	Mean (µm)	89.38	Wentworth:
Logarithmic	Mean (Phi)	3.48	Very fine sand
	Sorting	2.52	Very poor
	Skewness	1.26	Fine
	Kurtosis	4.24	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	89.16	Wentworth:
Logarithmic	Mean (Phi)	3.49	Very fine sand
	Sorting	2.45	Very poor
	Skewness	0.46	Very fine
	Kurtosis	1.13	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.73	150.63	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	28.00%
EUNIS Folk	Mud and sandy mud	Sand	71.90%
Distribution	Bimodal	Gravel	0.10%



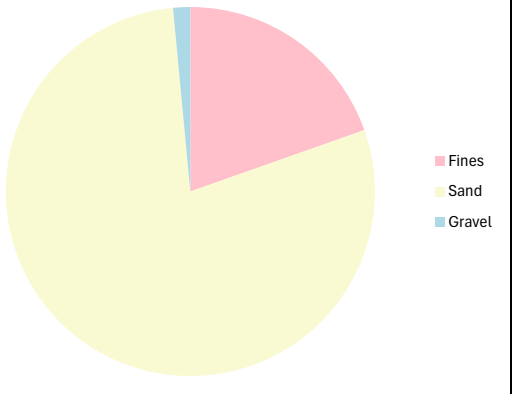
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-212				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.29	0.29	Pebble
5656.85	-2.50	0.21	0.50	
4000.00	-2.00	0.22	0.72	
2828.43	-1.50	0.45	1.17	Granule
2000.00	-1.00	0.36	1.53	
1414.21	-0.50	0.59	2.12	Very coarse sand
1000.00	0.00	0.82	2.94	
707.11	0.50	5.68	8.62	Coarse sand
500.00	1.00	8.31	16.93	
353.55	1.50	9.14	26.07	Medium sand
250.00	2.00	8.31	34.38	
176.78	2.50	10.65	45.03	Fine sand
125.00	3.00	15.77	60.80	
88.39	3.50	13.29	74.09	Very fine sand
62.50	4.00	6.34	80.43	
44.19	4.50	3.27	83.71	Coarse silt
31.25	5.00	2.03	85.73	
22.10	5.50	1.48	87.21	Medium silt
15.63	6.00	1.39	88.60	
11.05	6.50	1.63	90.22	Fine silt
7.81	7.00	1.78	92.00	
5.52	7.50	1.77	93.77	Very fine silt
3.91	8.00	1.56	95.33	
2.76	8.50	1.20	96.53	Clay
1.95	9.00	0.83	97.36	
1.38	9.50	0.57	97.93	
0.98	10.00	0.42	98.36	
0.69	10.50	0.35	98.71	
0.49	11.00	0.31	99.02	
0.35	11.50	0.27	99.29	
<0.35	>11.5	0.71	100.00	



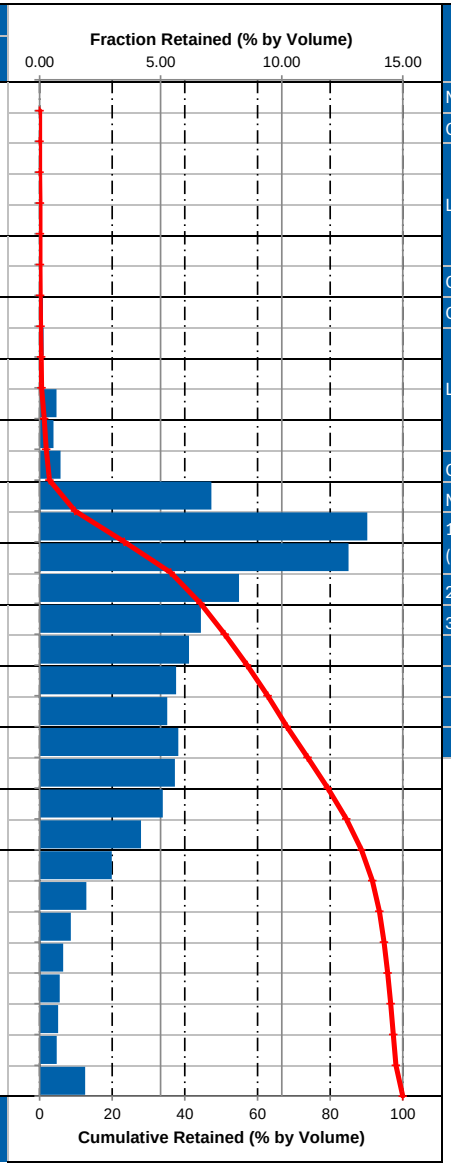
Method of Moments			
Geometric	Mean (µm)	128.74	Wentworth:
Logarithmic	Mean (Phi)	2.96	Fine sand
	Sorting	2.35	Very poor
	Skewness	1.27	Fine
	Kurtosis	5.51	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	151.29	Wentworth:
Logarithmic	Mean (Phi)	2.72	Fine sand
	Sorting	2.08	Very poor
	Skewness	0.21	Fine
	Kurtosis	1.48	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.66	158.50	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	19.60%
EUNIS Folk	Sand and muddy sand	Sand	78.90%
Distribution	Multimodal	Gravel	1.50%



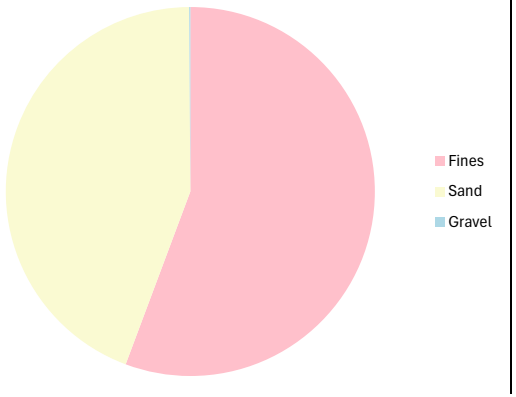
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-217				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.09	0.09	
4000.00	-2.00	0.00	0.09	
2828.43	-1.50	0.00	0.09	Granule
2000.00	-1.00	0.05	0.14	
1414.21	-0.50	0.14	0.28	Very coarse sand
1000.00	0.00	0.16	0.44	
707.11	0.50	0.13	0.57	Coarse sand
500.00	1.00	0.69	1.26	
353.55	1.50	0.57	1.83	Medium sand
250.00	2.00	0.86	2.69	
176.78	2.50	7.09	9.79	Fine sand
125.00	3.00	13.53	23.32	
88.39	3.50	12.76	36.08	Very fine sand
62.50	4.00	8.23	44.31	
44.19	4.50	6.67	50.98	Coarse silt
31.25	5.00	6.17	57.15	
22.10	5.50	5.64	62.78	Medium silt
15.63	6.00	5.28	68.06	
11.05	6.50	5.73	73.79	Fine silt
7.81	7.00	5.59	79.37	
5.52	7.50	5.08	84.46	Very fine silt
3.91	8.00	4.19	88.65	
2.76	8.50	2.98	91.63	
1.95	9.00	1.93	93.56	
1.38	9.50	1.29	94.85	
0.98	10.00	0.97	95.82	Clay
0.69	10.50	0.83	96.65	
0.49	11.00	0.76	97.41	
0.35	11.50	0.71	98.12	
<0.35	>11.5	1.88	100.00	



Method of Moments			
Geometric	Mean (µm)	31.45	Wentworth:
Logarithmic	Mean (Phi)	4.99	Coarse silt
	Sorting	2.44	Very poor
	Skewness	0.82	Fine
	Kurtosis	3.51	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	34.19	Wentworth:
Logarithmic	Mean (Phi)	4.87	Coarse silt
	Sorting	2.31	Very poor
	Skewness	0.34	Very fine
	Kurtosis	0.86	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.43	46.50	Coarse silt
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	-	-	-

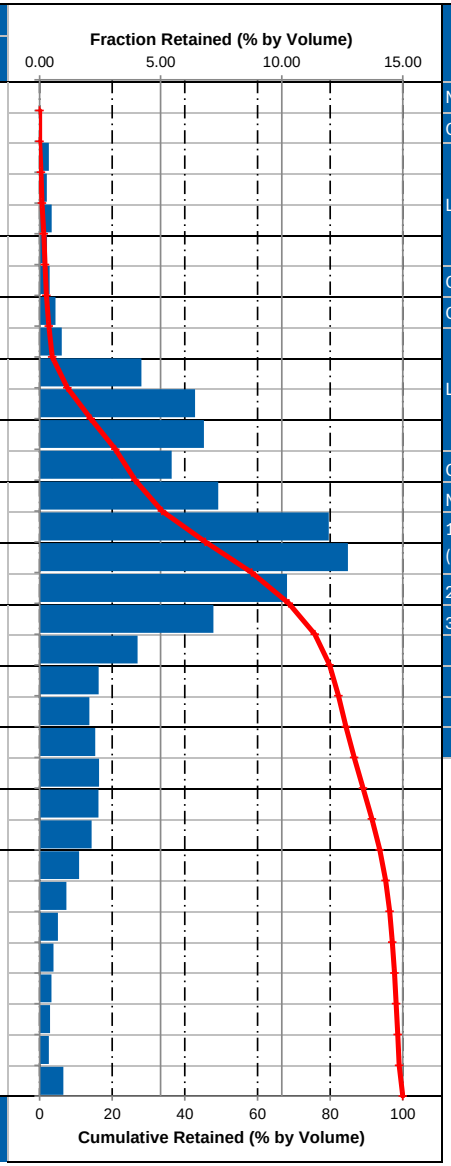
Classification		Composition	
Modified Folk	Sandy mud	Fines	55.70%
EUNIS Folk	Mud and sandy mud	Sand	44.20%
Distribution	Bimodal	Gravel	0.10%



APPENDIX F PARTICLE SIZE ANALYSIS

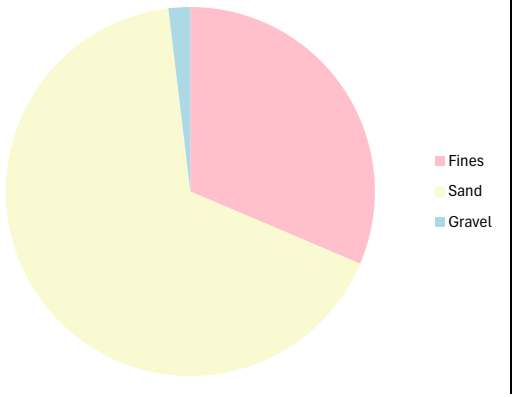
MV24EXP-ENV-GS-213

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.38	0.38	Pebble
5656.85	-2.50	0.30	0.68	
4000.00	-2.00	0.50	1.18	
2828.43	-1.50	0.31	1.49	Granule
2000.00	-1.00	0.41	1.90	
1414.21	-0.50	0.65	2.55	Very coarse sand
1000.00	0.00	0.91	3.46	
707.11	0.50	4.20	7.67	Coarse sand
500.00	1.00	6.42	14.08	
353.55	1.50	6.79	20.87	Medium sand
250.00	2.00	5.46	26.33	
176.78	2.50	7.38	33.71	Fine sand
125.00	3.00	11.94	45.65	
88.39	3.50	12.74	58.39	Very fine sand
62.50	4.00	10.22	68.61	
44.19	4.50	7.18	75.79	Coarse silt
31.25	5.00	4.05	79.83	
22.10	5.50	2.44	82.28	Medium silt
15.63	6.00	2.05	84.33	
11.05	6.50	2.30	86.63	Fine silt
7.81	7.00	2.45	89.08	
5.52	7.50	2.43	91.51	Very fine silt
3.91	8.00	2.15	93.65	
2.76	8.50	1.63	95.28	Clay
1.95	9.00	1.10	96.38	
1.38	9.50	0.76	97.14	
0.98	10.00	0.57	97.71	
0.69	10.50	0.49	98.20	
0.49	11.00	0.43	98.63	
0.35	11.50	0.39	99.02	
<0.35	>11.5	0.98	100.00	



Method of Moments			
Geometric	Mean (µm)	88.75	Wentworth:
Logarithmic	Mean (Phi)	3.49	Very fine sand
	Sorting	2.56	Very poor
	Skewness	0.84	Fine
	Kurtosis	4.32	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	94.04	Wentworth:
Logarithmic	Mean (Phi)	3.41	Very fine sand
	Sorting	2.44	Very poor
	Skewness	0.21	Fine
	Kurtosis	1.31	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.17	111.05	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	7.00	7.81	Fine silt

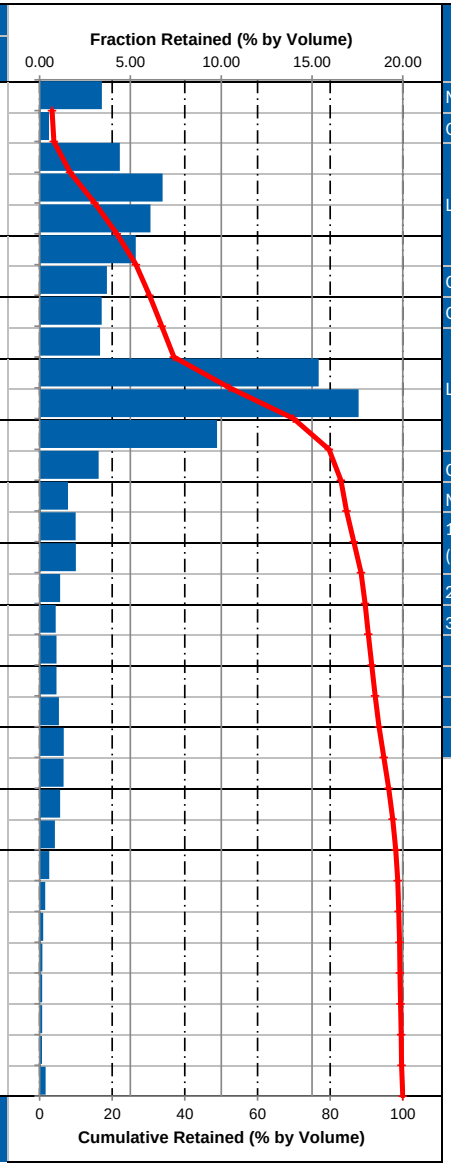
Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	31.40%
EUNIS Folk	Mud and sandy mud	Sand	66.70%
Distribution	Multimodal	Gravel	1.90%



APPENDIX F PARTICLE SIZE ANALYSIS

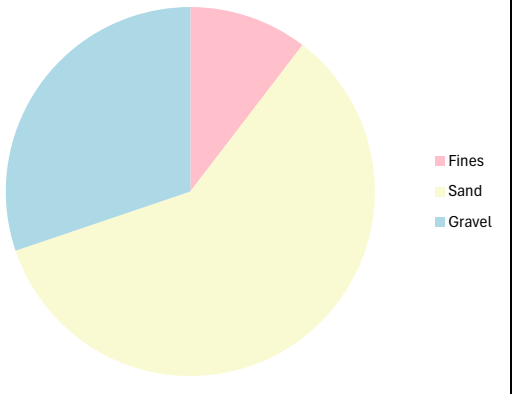
MV24EXP-ENV-GS-214

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	3.43	3.43	
11313.71	-3.50	0.51	3.94	
8000.00	-3.00	4.41	8.35	Pebble
5656.85	-2.50	6.77	15.13	
4000.00	-2.00	6.11	21.24	
2828.43	-1.50	5.29	26.53	Granule
2000.00	-1.00	3.71	30.24	
1414.21	-0.50	3.42	33.66	Very coarse sand
1000.00	0.00	3.33	36.99	
707.11	0.50	15.37	52.37	Coarse sand
500.00	1.00	17.56	69.93	
353.55	1.50	9.77	79.71	Medium sand
250.00	2.00	3.25	82.96	
176.78	2.50	1.57	84.53	Fine sand
125.00	3.00	1.98	86.51	
88.39	3.50	1.99	88.50	Very fine sand
62.50	4.00	1.13	89.63	
44.19	4.50	0.89	90.52	Coarse silt
31.25	5.00	0.93	91.45	
22.10	5.50	0.93	92.38	Medium silt
15.63	6.00	1.07	93.45	
11.05	6.50	1.33	94.77	Fine silt
7.81	7.00	1.32	96.10	
5.52	7.50	1.13	97.23	Very fine silt
3.91	8.00	0.84	98.07	
2.76	8.50	0.53	98.60	
1.95	9.00	0.31	98.91	
1.38	9.50	0.19	99.10	
0.98	10.00	0.15	99.26	Clay
0.69	10.50	0.14	99.40	
0.49	11.00	0.14	99.54	
0.35	11.50	0.13	99.67	
<0.35	>11.5	0.33	100.00	



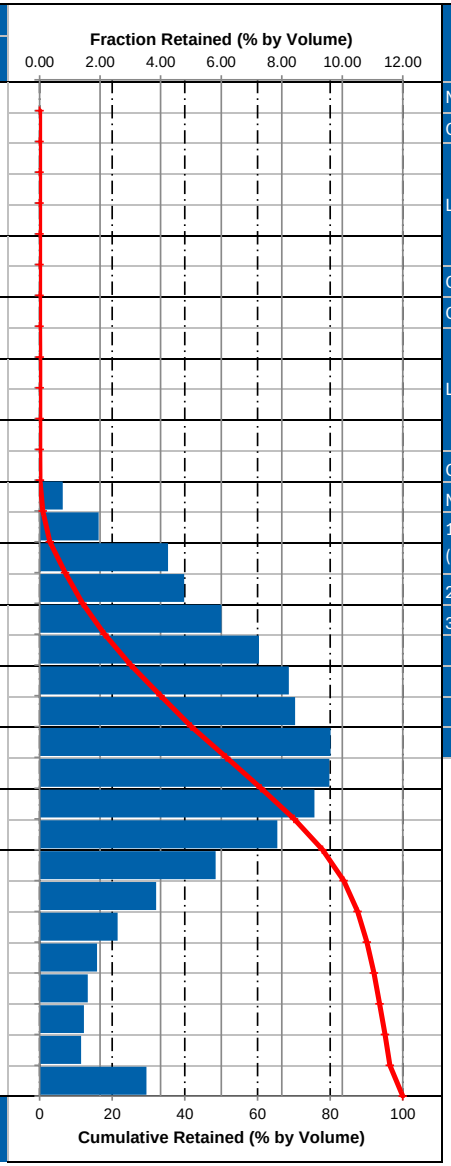
Method of Moments			
Geometric	Mean (µm)	736.27	Wentworth:
Logarithmic	Mean (Phi)	0.44	Coarse sand
	Sorting	2.84	Very poor
	Skewness	1.08	Fine
	Kurtosis	4.86	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	927.43	Wentworth:
Logarithmic	Mean (Phi)	0.11	Coarse sand
	Sorting	2.70	Very poor
	Skewness	0.02	Symmetrical
	Kurtosis	1.41	Leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	0.42	745.90	Coarse sand
1st Local Maxima (Mode)	1.00	500.00	Coarse sand
2nd Local Maxima	-2.50	5656.85	Pebble
3rd Local Maxima	-4.00	16000.00	Pebble

Classification		Composition	
Modified Folk	Muddy sandy gravel	Fines	10.40%
EUNIS Folk	Mixed sediments	Sand	59.40%
Distribution	Multimodal	Gravel	30.20%



APPENDIX F PARTICLE SIZE ANALYSIS

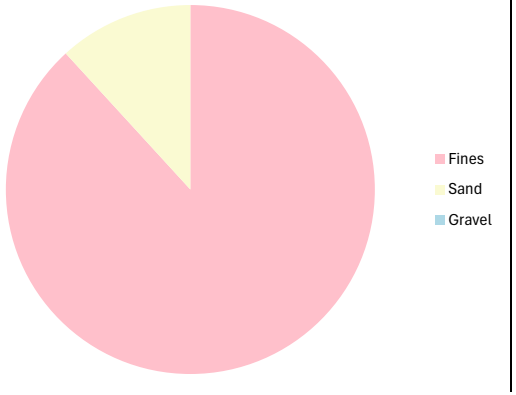
MV24EXP-ENV-GS-215				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.07	0.07	
707.11	0.50	0.00	0.07	Coarse sand
500.00	1.00	0.00	0.07	
353.55	1.50	0.00	0.07	Medium sand
250.00	2.00	0.04	0.10	
176.78	2.50	0.76	0.87	Fine sand
125.00	3.00	1.95	2.82	
88.39	3.50	4.25	7.06	Very fine sand
62.50	4.00	4.77	11.84	
44.19	4.50	6.01	17.85	Coarse silt
31.25	5.00	7.25	25.10	
22.10	5.50	8.24	33.33	Medium silt
15.63	6.00	8.44	41.78	
11.05	6.50	9.61	51.39	Fine silt
7.81	7.00	9.58	60.97	
5.52	7.50	9.08	70.05	Very fine silt
3.91	8.00	7.86	77.91	
2.76	8.50	5.82	83.72	Clay
1.95	9.00	3.85	87.57	
1.38	9.50	2.57	90.15	
0.98	10.00	1.90	92.04	
0.69	10.50	1.59	93.63	
0.49	11.00	1.47	95.10	
0.35	11.50	1.37	96.47	
<0.35	>11.5	3.53	100.00	



Method of Moments			
Geometric	Mean (µm)	10.51	Wentworth:
Logarithmic	Mean (Phi)	6.57	Fine silt
	Sorting	2.22	Very poor
	Skewness	0.57	Fine
	Kurtosis	3.29	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	11.54	Wentworth:
Logarithmic	Mean (Phi)	6.44	Fine silt
	Sorting	2.22	Very poor
	Skewness	0.09	Symmetrical
	Kurtosis	1.12	Leptokurtic

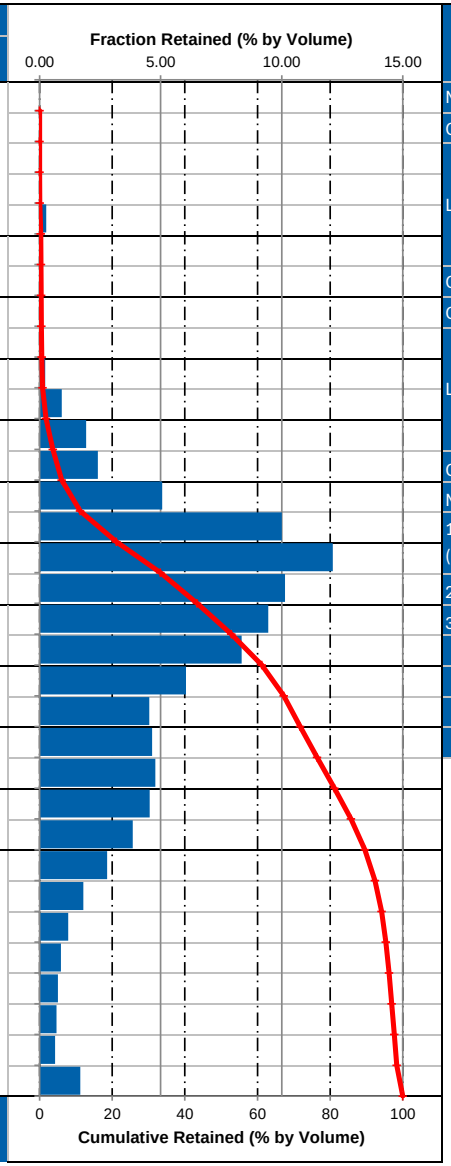
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	6.43	11.62	Fine silt
1st Local Maxima (Mode)	6.50	11.05	Fine silt
2nd Local Maxima	-	-	-
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	88.20%
EUNIS Folk	Mud and sandy mud	Sand	11.80%
Distribution	Unimodal	Gravel	0.00%



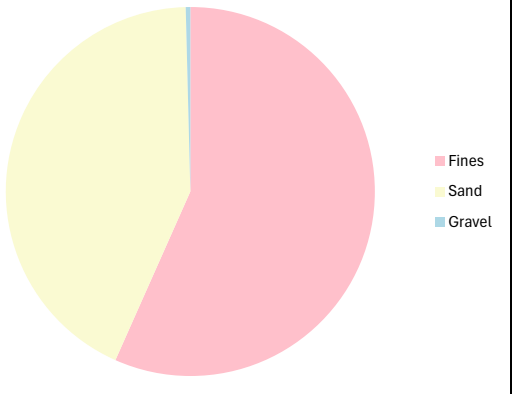
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-216				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.04	0.04	
4000.00	-2.00	0.27	0.32	
2828.43	-1.50	0.05	0.37	Granule
2000.00	-1.00	0.07	0.44	
1414.21	-0.50	0.06	0.50	Very coarse sand
1000.00	0.00	0.11	0.61	
707.11	0.50	0.23	0.84	Coarse sand
500.00	1.00	0.91	1.75	
353.55	1.50	1.92	3.67	Medium sand
250.00	2.00	2.41	6.07	
176.78	2.50	5.06	11.13	Fine sand
125.00	3.00	10.00	21.13	
88.39	3.50	12.11	33.25	Very fine sand
62.50	4.00	10.13	43.38	
44.19	4.50	9.45	52.83	Coarse silt
31.25	5.00	8.34	61.17	
22.10	5.50	6.04	67.22	Medium silt
15.63	6.00	4.53	71.75	
11.05	6.50	4.65	76.40	Fine silt
7.81	7.00	4.78	81.18	
5.52	7.50	4.54	85.72	Very fine silt
3.91	8.00	3.85	89.57	
2.76	8.50	2.79	92.36	
1.95	9.00	1.80	94.16	
1.38	9.50	1.18	95.34	
0.98	10.00	0.88	96.22	Clay
0.69	10.50	0.76	96.98	
0.49	11.00	0.70	97.68	
0.35	11.50	0.64	98.32	
<0.35	>11.5	1.68	100.00	



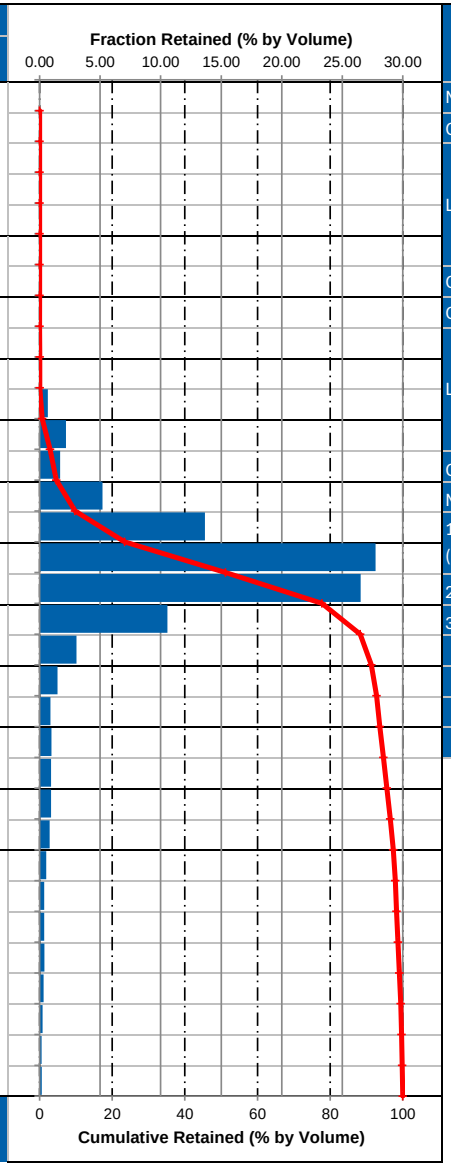
Method of Moments			
Geometric	Mean (µm)	34.47	Wentworth:
Logarithmic	Mean (Phi)	4.86	Coarse silt
	Sorting	2.41	Very poor
	Skewness	0.79	Fine
	Kurtosis	3.84	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	35.86	Wentworth:
Logarithmic	Mean (Phi)	4.80	Coarse silt
	Sorting	2.29	Very poor
	Skewness	0.31	Very fine
	Kurtosis	0.97	Mesokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.35	49.03	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	7.00	7.81	Fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Sandy mud	Fines	56.60%
EUNIS Folk	Mud and sandy mud	Sand	42.90%
Distribution	Bimodal	Gravel	0.40%



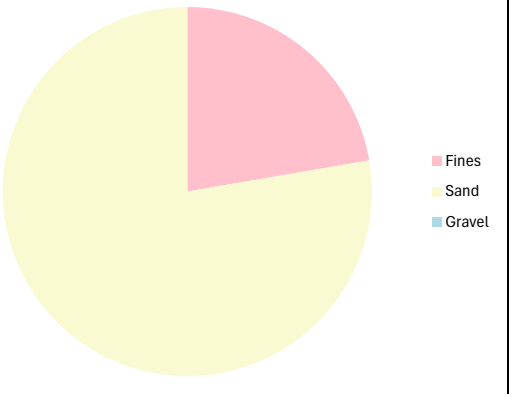
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-220				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.01	0.01	Very coarse sand
1000.00	0.00	0.01	0.02	
707.11	0.50	0.00	0.02	Coarse sand
500.00	1.00	0.68	0.70	
353.55	1.50	2.19	2.88	Medium sand
250.00	2.00	1.70	4.59	
176.78	2.50	5.20	9.79	Fine sand
125.00	3.00	13.65	23.44	
88.39	3.50	27.75	51.19	Very fine sand
62.50	4.00	26.53	77.72	
44.19	4.50	10.57	88.28	Coarse silt
31.25	5.00	3.04	91.32	
22.10	5.50	1.47	92.79	Medium silt
15.63	6.00	0.90	93.69	
11.05	6.50	0.99	94.68	Fine silt
7.81	7.00	0.95	95.63	
5.52	7.50	0.94	96.57	Very fine silt
3.91	8.00	0.82	97.39	
2.76	8.50	0.54	97.93	
1.95	9.00	0.37	98.30	
1.38	9.50	0.39	98.69	
0.98	10.00	0.40	99.09	Clay
0.69	10.50	0.34	99.43	
0.49	11.00	0.24	99.67	
0.35	11.50	0.16	99.82	
<0.35	>11.5	0.18	100.00	



Method of Moments			
Geometric	Mean (µm)	77.89	Wentworth:
Logarithmic	Mean (Phi)	3.68	Very fine sand
	Sorting	1.43	Poor
	Skewness	2.34	Very fine
	Kurtosis	11.45	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	88.32	Wentworth:
Logarithmic	Mean (Phi)	3.50	Very fine sand
	Sorting	1.09	Poor
	Skewness	0.21	Fine
	Kurtosis	2.06	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.48	89.72	Very fine sand
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

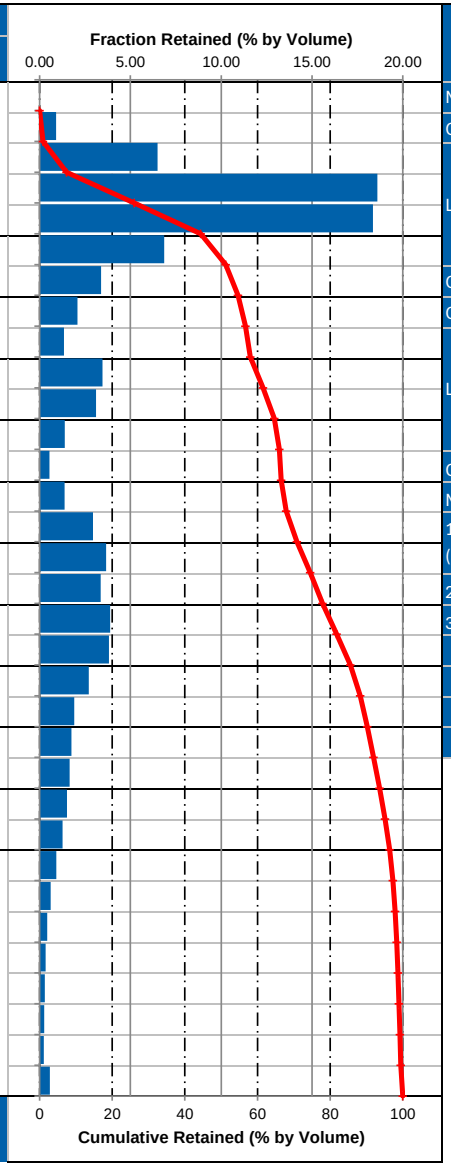
Classification		Composition	
Modified Folk	Muddy sand	Fines	22.30%
EUNIS Folk	Mud and sandy mud	Sand	77.70%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

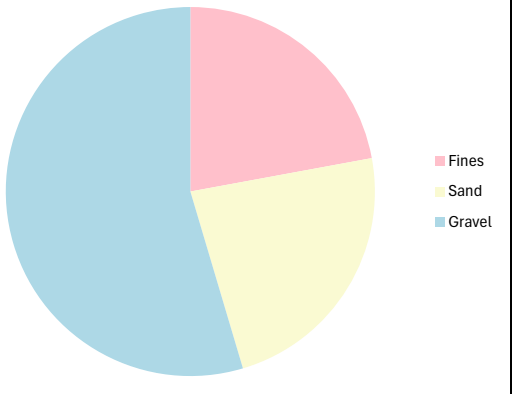
MV24EXP-ENV-GS-222

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.91	0.91	
8000.00	-3.00	6.50	7.41	Pebble
5656.85	-2.50	18.60	26.01	
4000.00	-2.00	18.36	44.37	
2828.43	-1.50	6.86	51.23	Granule
2000.00	-1.00	3.39	54.62	
1414.21	-0.50	2.09	56.70	Very coarse sand
1000.00	0.00	1.34	58.04	
707.11	0.50	3.47	61.51	Coarse sand
500.00	1.00	3.11	64.62	
353.55	1.50	1.38	66.00	Medium sand
250.00	2.00	0.55	66.54	
176.78	2.50	1.38	67.92	Fine sand
125.00	3.00	2.95	70.87	
88.39	3.50	3.66	74.52	Very fine sand
62.50	4.00	3.37	77.89	
44.19	4.50	3.89	81.78	Coarse silt
31.25	5.00	3.81	85.59	
22.10	5.50	2.71	88.30	Medium silt
15.63	6.00	1.91	90.21	
11.05	6.50	1.75	91.96	Fine silt
7.81	7.00	1.65	93.61	
5.52	7.50	1.51	95.12	Very fine silt
3.91	8.00	1.26	96.39	
2.76	8.50	0.92	97.31	
1.95	9.00	0.61	97.91	
1.38	9.50	0.42	98.34	
0.98	10.00	0.33	98.67	Clay
0.69	10.50	0.29	98.95	
0.49	11.00	0.26	99.21	
0.35	11.50	0.23	99.43	
<0.35	>11.5	0.57	100.00	



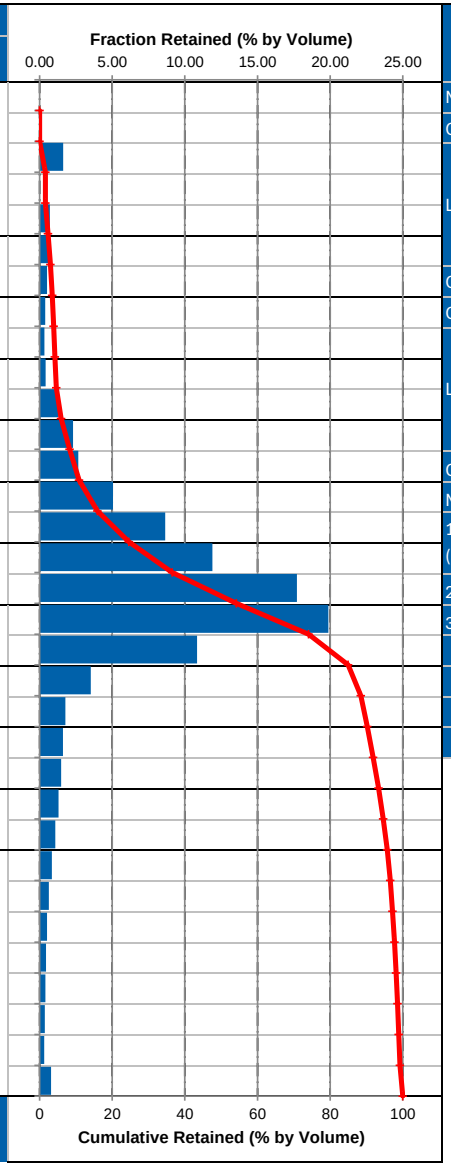
Method of Moments			
Geometric	Mean (µm)	735.18	Wentworth:
Logarithmic	Mean (Phi)	0.44	Coarse sand
	Sorting	3.73	Very poor
	Skewness	0.92	Fine
	Kurtosis	2.77	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	904.94	Wentworth:
Logarithmic	Mean (Phi)	0.14	Coarse sand
	Sorting	3.50	Very poor
	Skewness	0.69	Very fine
	Kurtosis	0.72	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	-1.59	3009.54	Granule
1st Local Maxima (Mode)	-2.50	5656.85	Pebble
2nd Local Maxima	4.50	44.19	Coarse silt
3rd Local Maxima	3.50	88.39	Very fine sand

Classification		Composition	
Modified Folk	Muddy sandy gravel	Fines	22.10%
EUNIS Folk	Mixed sediments	Sand	23.30%
Distribution	Multimodal	Gravel	54.60%



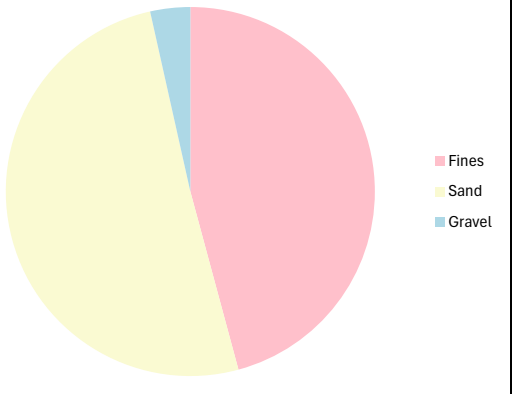
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-221				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	1.62	1.62	Pebble
5656.85	-2.50	0.00	1.62	
4000.00	-2.00	0.70	2.32	
2828.43	-1.50	0.65	2.97	Granule
2000.00	-1.00	0.51	3.47	
1414.21	-0.50	0.39	3.86	Very coarse sand
1000.00	0.00	0.34	4.20	
707.11	0.50	0.42	4.62	Coarse sand
500.00	1.00	1.32	5.94	
353.55	1.50	2.30	8.24	Medium sand
250.00	2.00	2.66	10.90	
176.78	2.50	5.06	15.95	Fine sand
125.00	3.00	8.65	24.60	
88.39	3.50	11.90	36.50	Very fine sand
62.50	4.00	17.71	54.22	
44.19	4.50	19.88	74.09	Coarse silt
31.25	5.00	10.84	84.93	
22.10	5.50	3.53	88.46	Medium silt
15.63	6.00	1.77	90.23	
11.05	6.50	1.61	91.85	Fine silt
7.81	7.00	1.49	93.33	
5.52	7.50	1.30	94.64	Very fine silt
3.91	8.00	1.08	95.72	
2.76	8.50	0.84	96.56	
1.95	9.00	0.64	97.20	
1.38	9.50	0.51	97.71	
0.98	10.00	0.44	98.15	Clay
0.69	10.50	0.39	98.54	
0.49	11.00	0.35	98.90	
0.35	11.50	0.31	99.21	
<0.35	>11.5	0.79	100.00	



Method of Moments			
Geometric	Mean (µm)	69.24	Wentworth:
Logarithmic	Mean (Phi)	3.85	Very fine sand
	Sorting	2.18	Very poor
	Skewness	0.21	Symmetrical
	Kurtosis	6.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	72.78	Wentworth:
Logarithmic	Mean (Phi)	3.78	Very fine sand
	Sorting	1.68	Poor
	Skewness	-0.02	Symmetrical
	Kurtosis	1.89	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.88	67.87	Very fine sand
1st Local Maxima (Mode)	4.50	44.19	Coarse silt
2nd Local Maxima	-3.00	8000.00	Pebble
3rd Local Maxima	-	-	-

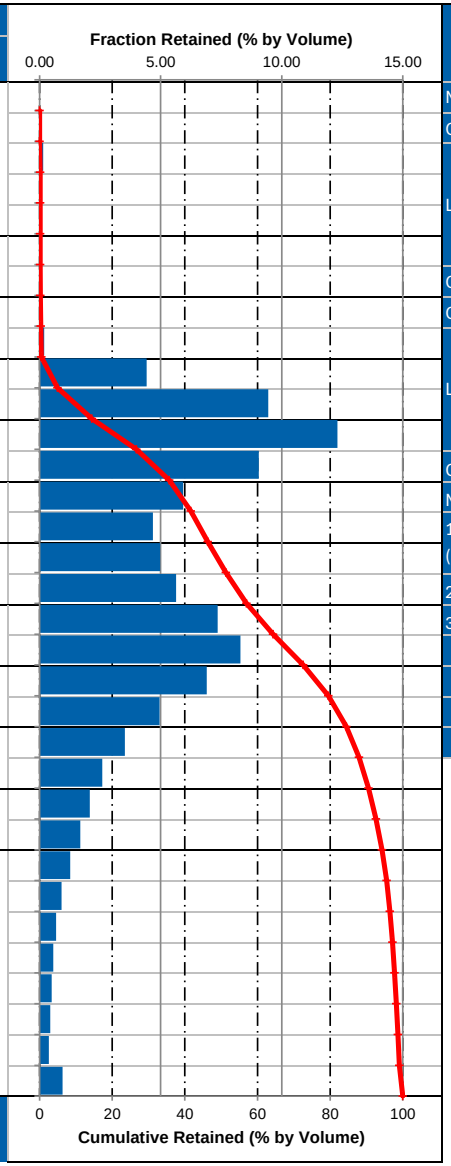
Classification		Composition	
Modified Folk	Slightly gravelly muddy san	Fines	45.80%
EUNIS Folk	Mud and sandy mud	Sand	50.70%
Distribution	Bimodal	Gravel	3.50%



APPENDIX F PARTICLE SIZE ANALYSIS

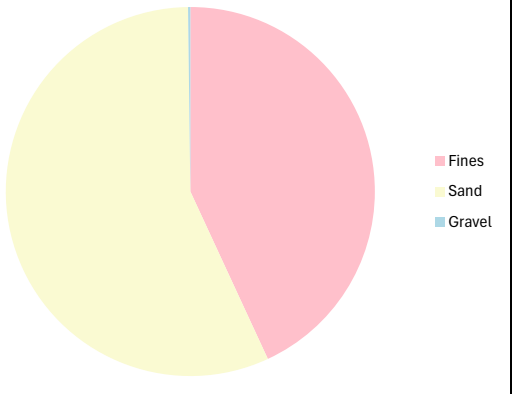
MV24EXP-ENV-GS-200

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.14	0.14	Pebble
5656.85	-2.50	0.00	0.14	
4000.00	-2.00	0.00	0.14	
2828.43	-1.50	0.02	0.16	Granule
2000.00	-1.00	0.05	0.21	
1414.21	-0.50	0.09	0.30	Very coarse sand
1000.00	0.00	0.19	0.48	
707.11	0.50	4.42	4.91	Coarse sand
500.00	1.00	9.45	14.36	
353.55	1.50	12.30	26.66	Medium sand
250.00	2.00	9.05	35.71	
176.78	2.50	5.93	41.64	Fine sand
125.00	3.00	4.68	46.32	
88.39	3.50	4.98	51.30	Very fine sand
62.50	4.00	5.64	56.94	
44.19	4.50	7.36	64.30	Coarse silt
31.25	5.00	8.29	72.59	
22.10	5.50	6.90	79.49	Medium silt
15.63	6.00	4.95	84.45	
11.05	6.50	3.52	87.97	Fine silt
7.81	7.00	2.59	90.56	
5.52	7.50	2.08	92.64	Very fine silt
3.91	8.00	1.68	94.32	
2.76	8.50	1.26	95.58	Clay
1.95	9.00	0.90	96.48	
1.38	9.50	0.68	97.16	
0.98	10.00	0.57	97.73	
0.69	10.50	0.50	98.23	
0.49	11.00	0.44	98.67	
0.35	11.50	0.38	99.06	
<0.35	>11.5	0.94	100.00	



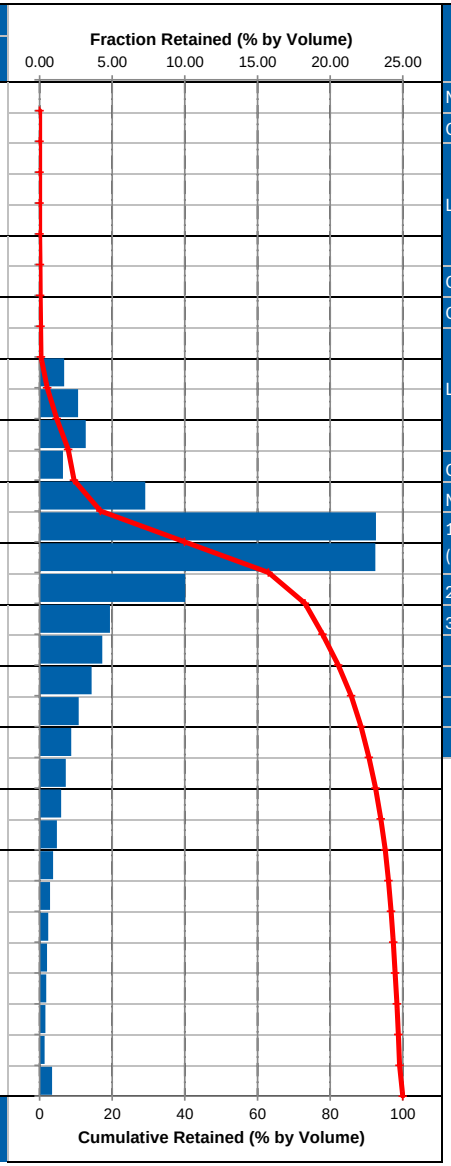
Method of Moments			
Geometric	Mean (µm)	81.75	Wentworth:
Logarithmic	Mean (Phi)	3.61	Very fine sand
	Sorting	2.55	Very poor
	Skewness	0.83	Fine
	Kurtosis	3.65	Mesokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	90.65	Wentworth:
Logarithmic	Mean (Phi)	3.46	Very fine sand
	Sorting	2.40	Very poor
	Skewness	0.16	Fine
	Kurtosis	0.85	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.37	96.76	Very fine sand
1st Local Maxima (Mode)	1.50	353.55	Medium sand
2nd Local Maxima	5.00	31.25	Coarse silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	43.10%
EUNIS Folk	Mud and sandy mud	Sand	56.70%
Distribution	Bimodal	Gravel	0.20%



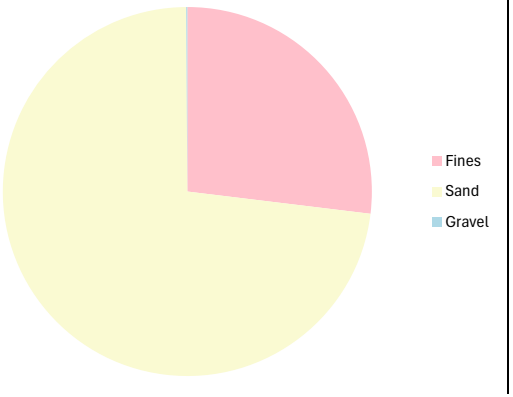
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-201				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.09	0.09	Granule
2000.00	-1.00	0.05	0.14	
1414.21	-0.50	0.11	0.24	Very coarse sand
1000.00	0.00	0.14	0.38	
707.11	0.50	1.69	2.07	Coarse sand
500.00	1.00	2.65	4.73	
353.55	1.50	3.17	7.90	Medium sand
250.00	2.00	1.60	9.50	
176.78	2.50	7.27	16.77	Fine sand
125.00	3.00	23.16	39.93	
88.39	3.50	23.12	63.05	Very fine sand
62.50	4.00	10.03	73.08	
44.19	4.50	4.84	77.92	Coarse silt
31.25	5.00	4.32	82.23	
22.10	5.50	3.58	85.82	Medium silt
15.63	6.00	2.69	88.51	
11.05	6.50	2.18	90.69	Fine silt
7.81	7.00	1.81	92.49	
5.52	7.50	1.48	93.98	Very fine silt
3.91	8.00	1.19	95.17	
2.76	8.50	0.92	96.09	
1.95	9.00	0.72	96.81	
1.38	9.50	0.59	97.41	
0.98	10.00	0.52	97.92	Clay
0.69	10.50	0.46	98.38	
0.49	11.00	0.41	98.79	
0.35	11.50	0.35	99.14	
<0.35	>11.5	0.86	100.00	



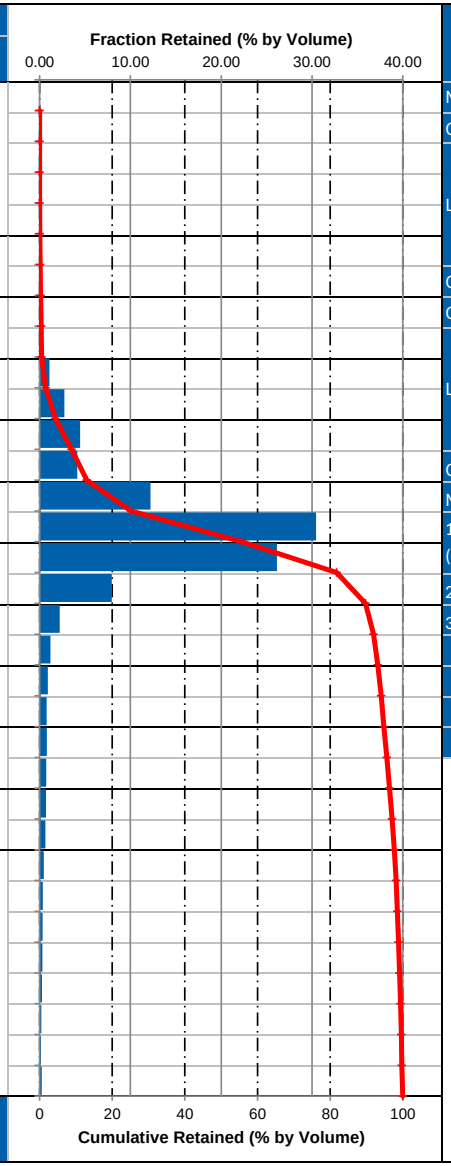
Method of Moments			
Geometric	Mean (µm)	76.46	Wentworth:
Logarithmic	Mean (Phi)	3.71	Very fine sand
	Sorting	2.03	Very poor
	Skewness	1.64	Very fine
	Kurtosis	6.91	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	80.38	Wentworth:
Logarithmic	Mean (Phi)	3.64	Very fine sand
	Sorting	1.74	Poor
	Skewness	0.41	Very fine
	Kurtosis	1.86	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.22	107.48	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	26.90%
EUNIS Folk	Mud and sandy mud	Sand	72.90%
Distribution	Bimodal	Gravel	0.10%



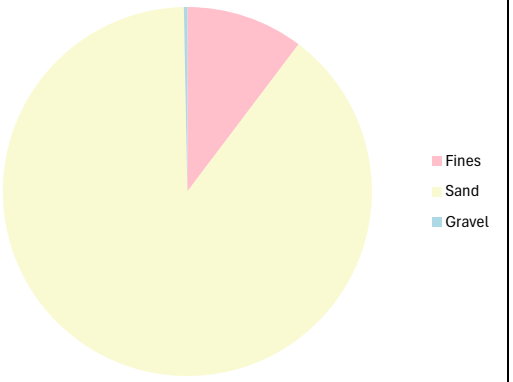
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-237				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.03	0.03	
2828.43	-1.50	0.12	0.15	Granule
2000.00	-1.00	0.12	0.27	
1414.21	-0.50	0.17	0.44	Very coarse sand
1000.00	0.00	0.12	0.56	
707.11	0.50	1.08	1.64	Coarse sand
500.00	1.00	2.73	4.37	
353.55	1.50	4.46	8.82	Medium sand
250.00	2.00	4.14	12.97	
176.78	2.50	12.22	25.19	Fine sand
125.00	3.00	30.45	55.64	
88.39	3.50	26.13	81.77	Very fine sand
62.50	4.00	7.95	89.72	
44.19	4.50	2.23	91.95	Coarse silt
31.25	5.00	1.18	93.13	
22.10	5.50	0.91	94.04	Medium silt
15.63	6.00	0.77	94.81	
11.05	6.50	0.79	95.60	Fine silt
7.81	7.00	0.73	96.33	
5.52	7.50	0.72	97.04	Very fine silt
3.91	8.00	0.65	97.69	
2.76	8.50	0.47	98.16	
1.95	9.00	0.34	98.50	
1.38	9.50	0.32	98.82	
0.98	10.00	0.31	99.13	Clay
0.69	10.50	0.27	99.40	
0.49	11.00	0.20	99.60	
0.35	11.50	0.15	99.75	
<0.35	>11.5	0.25	100.00	



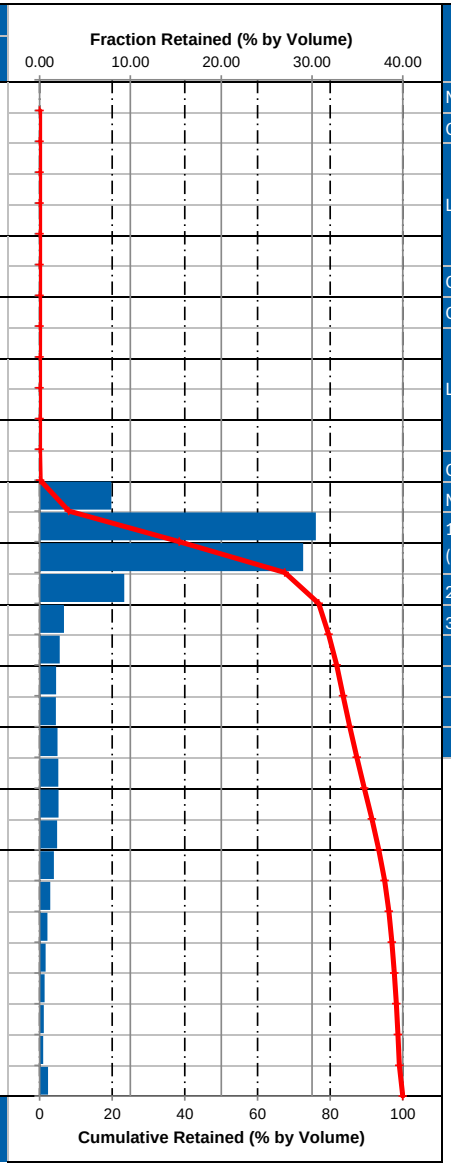
Method of Moments			
Geometric	Mean (µm)	118.77	Wentworth:
Logarithmic	Mean (Phi)	3.07	Very fine sand
	Sorting	1.54	Poor
	Skewness	2.27	Very fine
	Kurtosis	12.16	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	134.85	Wentworth:
Logarithmic	Mean (Phi)	2.89	Fine sand
	Sorting	1.14	Poor
	Skewness	0.12	Fine
	Kurtosis	2.36	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.91	133.28	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	10.30%
EUNIS Folk	Sand and muddy sand	Sand	89.40%
Distribution	Bimodal	Gravel	0.30%



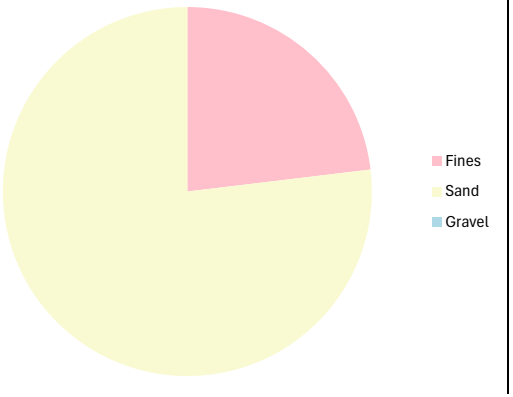
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-218				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.00	0.00	Granule
2000.00	-1.00	0.00	0.00	
1414.21	-0.50	0.00	0.00	Very coarse sand
1000.00	0.00	0.01	0.01	
707.11	0.50	0.00	0.01	Coarse sand
500.00	1.00	0.00	0.01	
353.55	1.50	0.00	0.01	Medium sand
250.00	2.00	0.15	0.16	
176.78	2.50	7.90	8.06	Fine sand
125.00	3.00	30.44	38.49	
88.39	3.50	29.04	67.53	Very fine sand
62.50	4.00	9.33	76.86	
44.19	4.50	2.68	79.54	Coarse silt
31.25	5.00	2.22	81.77	
22.10	5.50	1.82	83.58	Medium silt
15.63	6.00	1.80	85.38	
11.05	6.50	1.97	87.35	Fine silt
7.81	7.00	2.07	89.41	
5.52	7.50	2.09	91.50	Very fine silt
3.91	8.00	1.93	93.43	
2.76	8.50	1.57	94.99	Clay
1.95	9.00	1.16	96.16	
1.38	9.50	0.85	97.01	
0.98	10.00	0.66	97.67	
0.69	10.50	0.54	98.22	
0.49	11.00	0.46	98.68	
0.35	11.50	0.39	99.07	
<0.35	>11.5	0.93	100.00	



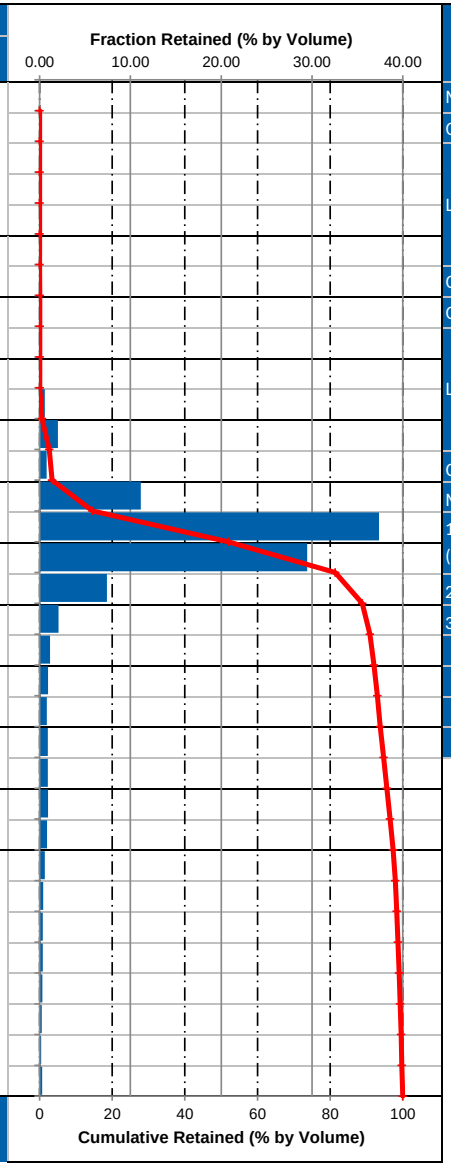
Method of Moments			
Geometric	Mean (µm)	65.55	Wentworth:
Logarithmic	Mean (Phi)	3.93	Very fine sand
	Sorting	2.00	Very poor
	Skewness	2.10	Very fine
	Kurtosis	7.10	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	71.06	Wentworth:
Logarithmic	Mean (Phi)	3.81	Very fine sand
	Sorting	1.69	Poor
	Skewness	0.67	Very fine
	Kurtosis	2.26	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	3.20	108.96	Very fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	7.50	5.52	Very fine silt
3rd Local Maxima	-	-	-

Classification		Composition	
Modified Folk	Muddy sand	Fines	23.10%
EUNIS Folk	Mud and sandy mud	Sand	76.90%
Distribution	Bimodal	Gravel	0.00%



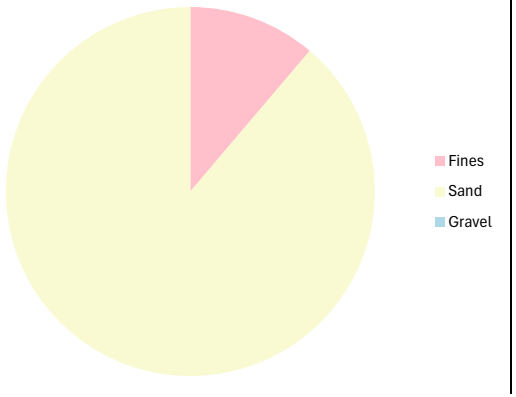
APPENDIX F PARTICLE SIZE ANALYSIS

MV24EXP-ENV-GS-204				
Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	Pebble
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.00	0.00	
2828.43	-1.50	0.01	0.01	Granule
2000.00	-1.00	0.04	0.05	
1414.21	-0.50	0.01	0.05	Very coarse sand
1000.00	0.00	0.01	0.06	
707.11	0.50	0.00	0.06	Coarse sand
500.00	1.00	0.58	0.64	
353.55	1.50	2.02	2.66	Medium sand
250.00	2.00	0.77	3.43	
176.78	2.50	11.14	14.57	Fine sand
125.00	3.00	37.38	51.96	
88.39	3.50	29.47	81.43	Very fine sand
62.50	4.00	7.41	88.84	
44.19	4.50	2.09	90.93	Coarse silt
31.25	5.00	1.15	92.09	
22.10	5.50	0.92	93.00	Medium silt
15.63	6.00	0.80	93.81	
11.05	6.50	0.90	94.71	Fine silt
7.81	7.00	0.90	95.61	
5.52	7.50	0.92	96.54	Very fine silt
3.91	8.00	0.82	97.36	
2.76	8.50	0.57	97.93	Clay
1.95	9.00	0.39	98.31	
1.38	9.50	0.35	98.66	
0.98	10.00	0.35	99.01	
0.69	10.50	0.30	99.31	
0.49	11.00	0.23	99.54	
0.35	11.50	0.17	99.71	
<0.35	>11.5	0.29	100.00	



Method of Moments			
Geometric	Mean (µm)	101.52	Wentworth:
Logarithmic	Mean (Phi)	3.30	Very fine sand
	Sorting	1.47	Poor
	Skewness	3.00	Very fine
	Kurtosis	14.24	Very leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	120.28	Wentworth:
Logarithmic	Mean (Phi)	3.06	Very fine sand
	Sorting	0.98	Moderate
	Skewness	0.41	Very fine
	Kurtosis	2.50	Very leptokurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	2.97	127.29	Fine sand
1st Local Maxima (Mode)	3.00	125.00	Fine sand
2nd Local Maxima	1.50	353.55	Medium sand
3rd Local Maxima	-	-	-

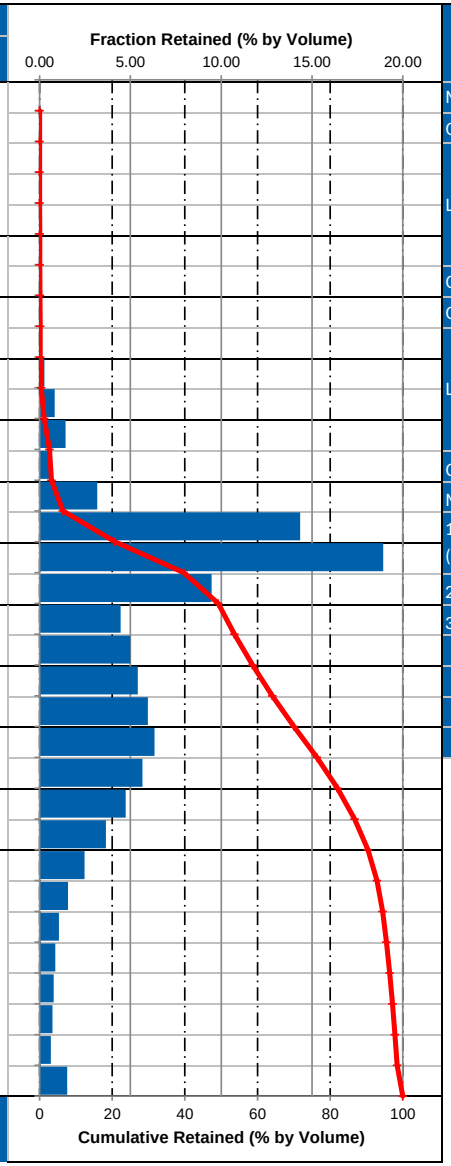
Classification		Composition	
Modified Folk	Muddy sand	Fines	11.20%
EUNIS Folk	Sand and muddy sand	Sand	88.80%
Distribution	Bimodal	Gravel	0.00%



APPENDIX F PARTICLE SIZE ANALYSIS

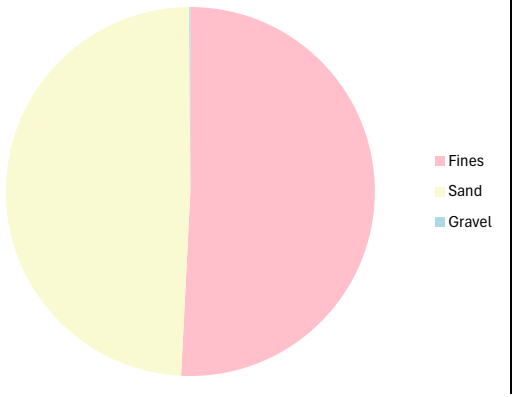
MV24EXP-ENV-GS-203

Aperature (µm)	Aperature (Phi)	Percentage Fraction	Cumulative Percentage	Sediment Description
16000.00	-4.00	0.00	0.00	
11313.71	-3.50	0.00	0.00	
8000.00	-3.00	0.00	0.00	Pebble
5656.85	-2.50	0.00	0.00	
4000.00	-2.00	0.02	0.02	
2828.43	-1.50	0.04	0.06	Granule
2000.00	-1.00	0.04	0.09	
1414.21	-0.50	0.06	0.15	Very coarse sand
1000.00	0.00	0.02	0.17	
707.11	0.50	0.26	0.44	Coarse sand
500.00	1.00	0.83	1.27	
353.55	1.50	1.43	2.70	Medium sand
250.00	2.00	0.55	3.25	
176.78	2.50	3.18	6.43	Fine sand
125.00	3.00	14.35	20.78	
88.39	3.50	18.93	39.71	Very fine sand
62.50	4.00	9.48	49.18	
44.19	4.50	4.47	53.65	Coarse silt
31.25	5.00	5.00	58.65	
22.10	5.50	5.40	64.05	Medium silt
15.63	6.00	5.97	70.02	
11.05	6.50	6.33	76.34	Fine silt
7.81	7.00	5.67	82.01	
5.52	7.50	4.74	86.75	Very fine silt
3.91	8.00	3.66	90.41	
2.76	8.50	2.48	92.88	
1.95	9.00	1.56	94.44	
1.38	9.50	1.07	95.51	
0.98	10.00	0.87	96.38	Clay
0.69	10.50	0.77	97.15	
0.49	11.00	0.70	97.85	
0.35	11.50	0.62	98.48	
<0.35	>11.5	1.52	100.00	



Method of Moments			
Geometric	Mean (µm)	34.31	Wentworth:
Logarithmic	Mean (Phi)	4.87	Coarse silt
	Sorting	2.34	Very poor
	Skewness	0.92	Fine
	Kurtosis	3.72	Leptokurtic
Graphic Folk and Ward			
Geometric	Mean (µm)	38.16	Wentworth:
Logarithmic	Mean (Phi)	4.71	Coarse silt
	Sorting	2.15	Very poor
	Skewness	0.45	Very fine
	Kurtosis	0.87	Platykurtic
Other Statistics	Phi (ϕ)	µm	Wentworth:
Median (D50)	4.09	58.66	Coarse silt
1st Local Maxima (Mode)	3.50	88.39	Very fine sand
2nd Local Maxima	6.50	11.05	Fine silt
3rd Local Maxima	1.50	353.55	Medium sand

Classification		Composition	
Modified Folk	Sandy mud	Fines	50.80%
EUNIS Folk	Mud and sandy mud	Sand	49.10%
Distribution	Multimodal	Gravel	0.10%



APPENDIX G STONY REEF SEGMENTATION ASSESSMENT

APPENDIX G STONY REEF SEGMENTATION ASSESSMENT

Table G.1 Stony Reef Assessment based on Segmentation of HD Video

Area	Station	Segment	Reef Resemblance	Start Distance (m)	End Distance (m)	Total Distance of Segment (m)	Average Reef Height (cm)[1]
Central	ENV183	1	No resemblance	0.00	6.36	6.36	NA
		2	Low	6.36	39.13	32.77	9.34
		3	No resemblance	39.13	79.76	40.63	NA
		4	Low	79.76	85.60	5.84	8.10
		5	No resemblance	85.60	90.99	5.39	NA
		6	Low	90.99	107.34	16.35	8.63
		7	No resemblance	107.34	121.33	13.99	NA
		8	No resemblance	194.79	288.97	94.18	NA
		9	Low	288.97	300.31	11.34	9.34
Southern	ENV238	1	Low	0.00	5.73	5.73	NA
		2	No resemblance	5.73	36.22	30.49	NA
		3	Low	36.22	50.44	14.21	11.81
		4	Medium	50.44	73.71	23.27	11.81
		5	Low	73.71	83.10	9.39	6.75
		6	No resemblance	83.10	95.38	12.28	NA
		7	Medium	95.38	106.48	11.10	10.00
		8	No resemblance	106.48	119.59	13.11	NA
		9	Low	119.59	135.89	16.30	9.00
		10	Medium	135.89	145.06	9.16	11.81
		11	Low	145.06	158.30	13.25	11.81
		12	Medium	158.30	177.80	19.50	11.81
		13	Low	177.80	185.03	7.23	12.10
		14	Medium	185.03	271.02	85.99	18.30
	ENV182	1	No resemblance	0.00	6.22	6.22	NA
		2	Low	6.22	68.77	62.54	10.03
		3	Medium	68.77	79.55	10.78	8.70
		4	No resemblance	79.55	89.80	10.25	NA
		5	Low	89.80	96.01	6.21	15.60
		6	Medium	96.01	111.86	15.85	11.80
		7	Low	111.86	139.47	27.61	11.28
		8	No resemblance	139.47	150.10	10.63	NA
		9	Medium	150.10	155.39	5.29	11.71
		10	Low	155.39	167.34	11.96	11.60
		11	Medium	167.34	176.87	9.53	11.35
		12	No resemblance	176.87	182.56	5.68	NA
		13	Low	182.56	229.96	47.40	13.57
	ENV205	1	No resemblance	0.00	22.15	22.15	NA
		2	Low	22.15	35.10	12.95	10.04
		3	No resemblance	35.10	42.17	7.07	NA
		4	Low	42.17	51.52	9.35	10.04
		5	No resemblance	51.52	93.32	41.79	NA
		6	Low	93.32	98.70	5.39	10.04
		7	No resemblance	98.70	135.83	37.13	NA
		8	No resemblance	279.61	410.23	130.63	NA
	ENV188	1	Low	0.00	140.09	140.09	8.27
		2	Low	161.70	204.68	42.98	8.70
		3	Medium	204.68	232.22	27.54	7.10
		4	Low	232.22	238.31	6.09	7.80
		5	Medium	238.31	250.81	12.50	7.37
		6	Low	250.81	298.26	47.45	7.50
	ENV198	1	Low	0.00	7.22	7.22	11.80
		2	No resemblance	7.22	47.01	39.80	NA
		3	Low	47.01	53.22	6.21	10.10
		4	No resemblance	53.22	112.96	59.73	NA
		5	Low	158.70	217.49	58.79	18.48
		6	No resemblance	217.49	228.75	11.26	NA
		7	Low	228.75	312.70	83.95	9.39
	ENV240	1	No resemblance	0.00	80.60	80.60	NA
		2	Low	80.60	122.23	41.63	8.90
		3	Medium	122.23	224.10	101.87	11.00
		4	Low	224.10	231.35	7.26	10.41
		5	No resemblance	231.35	242.44	11.09	NA
	ENV221	1	No resemblance	0.00	110.39	110.39	NA
		2	No resemblance	134.41	290.15	155.73	NA
	ENV197	1	Low	0.00	54.99	54.99	7.72
		2	No resemblance	54.99	93.81	38.81	NA
		3	Low	93.81	117.89	24.09	13.66

APPENDIX G STONY REEF SEGMENTATION ASSESSMENT

Area	Station	Segment	Reef Resemblance	Start Distance (m)	End Distance (m)	Total Distance of Segment (m)	Average Reef Height (cm)[1]
		4	Low	151.42	240.41	89.00	14.30
		5	No resemblance	240.41	300.33	59.91	NA
	ENV200	1	Low	0.00	77.13	77.13	6.95
		2	No resemblance	77.13	86.48	9.35	NA
		3	Low	86.48	156.14	69.65	8.80
		4	No resemblance	156.14	176.28	20.15	NA
		5	Low	176.28	196.57	20.28	8.26
		6	No resemblance	196.57	345.74	149.18	NA
	ENV199	1	No resemblance	0.00	169.38	169.38	NA
		2	Low	169.38	200.07	30.69	13.55
		3	No resemblance	200.07	205.61	5.54	NA
		4	Low	205.61	232.45	26.84	24.20
		5	No resemblance	232.45	261.16	28.72	NA
		6	Low	261.16	269.47	8.31	15.55
	ENV239	1	Low	0.00	35.92	35.92	8.20
		2	No resemblance	35.92	61.18	25.27	NA
		3	Low	61.18	96.13	34.94	7.90
		4	No resemblance	96.13	223.35	127.23	NA
	ENV218	1	No resemblance	0.00	17.51	17.51	NA
		2	Low	17.51	37.01	19.51	7.81
		3	No resemblance	37.01	60.00	22.98	NA
		4	Low	60.00	100.43	40.43	7.20
		5	No resemblance	100.43	231.65	131.22	NA
		6	Low	231.65	246.64	14.99	7.25
	ENV219	1	No resemblance	0.00	8.20	8.20	NA
		2	Low	8.20	102.84	94.64	10.29
		3	Medium	102.84	112.95	10.11	7.15
		4	Low	112.95	119.78	6.83	8.95
		5	No resemblance	119.78	125.00	5.22	NA
		6	Low	125.00	155.16	30.16	7.40
		7	No resemblance	155.16	161.09	5.93	NA
		8	Low	161.09	175.53	14.45	8.95
		9	No resemblance	175.53	179.83	4.29	NA
		10	Low	179.83	233.78	53.96	8.92
	ENV204	1	Low	0.00	49.73	49.73	9.65
		2	Medium	49.73	55.79	6.06	8.69
		3	Low	55.79	91.89	36.10	7.70
		4	Medium	91.89	101.22	9.33	8.69
		5	Low	101.22	106.56	5.34	6.80
		6	Medium	106.56	112.15	5.59	NA
		7	Low	112.15	127.54	15.39	8.69
		8	No resemblance	127.54	395.78	268.24	NA
	ENV203	1	No resemblance	0.00	12.24	12.24	NA
		2	Low	12.24	135.68	123.44	8.70
		3	No resemblance	135.68	145.17	9.49	NA
		4	Low	145.17	179.22	34.05	7.05
		5	No resemblance	179.22	237.39	58.17	NA
		6	No resemblance	237.39	251.33	13.94	NA
		7	Low	251.33	264.41	13.08	8.68
		8	No resemblance	264.41	273.28	8.87	NA
		9	Low	273.28	290.34	17.06	10.70
		10	No resemblance	290.34	316.19	25.85	NA
		11	Low	316.19	341.55	25.36	8.60

1 Reef height calculated based on average imagery measurements within the segment.

Appendix G OWC (2025) Biotope Mapping Technical Note

Technical Note

Project Name:	Morven Hawthorn Pit Grid Connection
Document Title:	Biotope Mapping Methodology
Client Name:	Morven Offshore Wind Limited
Document No.:	OWC-056884-001-TCN001-A
Document Status:	Approved
Contracted Entity:	Offshore Wind Consultants Ltd, No. 07861245 in England, at 1st Floor, The Northern & Shell Building, 10 Lower Thames Street, London, England, EC3R 6EN

Confidentiality Notice and Disclaimer

This document is **confidential** and may contain proprietary information and intellectual property of Client and/or OWC.

The document has been produced by OWC for the exclusive use and benefit of Client and may not be relied on by any third party. OWC does not accept any liability or duty of care to any other person or entity other than Client.

The document should not be reproduced (in whole or in part), referred to or disclosed in any other document or made available to any third party (in any format) without the prior written consent of OWC.

Document History

Rev	Date	Authored	Reviewed	Approved	Notes
A	2025-10-27	I. Symons, C. Chaptal	T. Holt, D. Rushton	D. Rushton	First issue
B	2025-11-18	I. Symons		D. Ruston	Second issue

1 Introduction

OWC has been commissioned by Morven Offshore Wind Limited to produce a biotope map for the Morven Hawthorn Pit Grid Connection (MHPGC) project. The objective of this technical note is to provide a summary of the methodology used to interpret the geophysical and environmental data to produce a full coverage biotope map for the MHPGC project.

2 Methodology

The environmental and geophysical survey data from the survey contractors included the following:

- EUNIS habitat classifications at each environmental sample location;
- Full coverage MBES and SSS data and associated reporting; and
- Reporting which identified the ground conditions along the route and geotechnical groupings.

2.1 Data Preparation and Geophysical Interpretation

Upon receipt of the various datasets, a selection was made for integration into a GIS project, with the objective of producing a EUNIS habitat map by correlating the relevant georeferenced data. The results are presented in the GIS package **OWC-056884-001-GIS001-A**, along with chart compilations **OWC-056884-001-DWG001-A** and **OWC-056884-001-DWG001-B**.

The process leading to the final deliverables followed several key steps:

- **Post-processing geophysical data** from the XOcean 2024 “01139” [1] dataset, including creating, merging, reshaping of original rasters and processing to generate derived products (e.g., contours, hillshades, slopes).
- **Gap-filling** within the “01139” dataset by identifying and integrating supplementary geophysical data from the “007411” [2] dataset.
- **Extrapolation of seabed sediment interpretation** to extend coverage over the area provided by the “007411” dataset based on morphological seabed texture.
- **Creation of a simplified representation** of seabed sediments and features.
- **Integration and analysis of geotechnical data** from 2023 and 2024 benthic stations.
- **Multiple iterations of habitat map development**, incorporating feedback from ecology experts through a series of collaborative meetings, reclassifying previously defined seabed zones into habitats (see Section 2.2).
- **Production of charts** to present the final iteration of the habitat map (DWG001-A and DWG001-B).
- **Compilation of all relevant provided, processed, and symbolised data** into a GIS APRX project file (**056884_MV_HabitatModel_GIS_v01_20251027.aprx**).

© 2025 OWC

2.2 Biotope Attribution

The geophysical team worked alongside the ecology team to provide an expert opinion on biotope areas. This included a review of the2023 and 2024 Habitat Assessment Reports and Baseline Survey Reports [3] [4] [5] [6]. EUNIS biotopes were identified using the analysis of benthic grab samples and drop-down video (DDV) footage, alongside the geomorphological terrain assessment to determine areas of seabed that could be categorised as a habitat or biotope. As far as possible, Ramboll's comments, that were provided via email, on the Gardline survey reports were taken into account when reviewing the data and assigning biotopes.

Biotope attribution was carried out by assigning EUNIS biotopes to geomorphological zones via correlating sample station data with geophysical signatures. Where the EUNIS biotope or habitat identified within a sample station between years or by analysis (e.g. grab sample vs drop-down video analysis) were different an additional review of the data was undertaken to determine the best EUNIS classification for the area. This also took into account the data from surrounding stations, and the geophysical interpretation at the site. In some cases, expert judgement was required to determine what biotope was assigned, and in some scenarios a mosaic was assigned due to the available grab sample and DDV survey data and the similarity of the biotopes and sediment types identified within a specific region.

Where a higher-level EUNIS classification was available, this was used as the default for a station or area.

3 Additional Notes

As previously described, in some scenarios expert judgement was used to assign a final habitat, biotope or mosaic to an area. Some notes on specific areas are provided below:

- Where the code "Two Habitats MC6216, MD6218" has been assigned this is as a result of differences in data analysis from the same sampling stations. "MC6216 Seapens and burrowing megafauna in Atlantic circalittoral mud" was identified using the DDV data. "MD6218 *Paramphinome jeffreysii*, *Thyasira spp*. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud" was identified using the faunal assessment of the grab sample. It was concluded by an ecology expert that both biotopes are present, and the analysis used to identify them accounts for the difference in which biotope is assigned. Seapens are unlikely to be present within a grab sample but would be visible within DDV footage, and conversely polychaete and bivalve species would be easily identified from a grab sample but unlikely to be visible in stills and video footage.
- The mosaic MC6216/MD6217, MD6218 was assigned due to a difference in biotope classification at survey samples within a similar region between survey years. A review of the data by an ecology expert concluded that, due to the biotopes present, it is likely that there are fluctuations in benthic populations between years but also spatially, therefore altering the biotopes that are recorded. Therefore, it was concluded that a mosaic is the best way to describe the communities likely to be present within this area on present information.
- Some areas of seabed have been classified as a lower level EUNIS habitat e.g. MC121 and MC421. Within these areas one sample station with a higher EUNIS biotope classification was present, however it was not considered sufficient to classify large areas of seabed. Therefore, the lower level EUNIS habitat has been defaulted to.
- Due to lack of survey data, extrapolation of seabed sediment interpretation was required to extend coverage over the area provided by the "007411" dataset. This area is highlighted within the EUNIS Habitat and Seabed Sediment Features chart.

© 2025 OWC

4 Results

The following charts and datasets have been provided as deliverables for this project:

- Chart01_Morven_EUNIS_Habitat
- Chart02_Morven_EUNIS_Habitat_Geotechnical
- Chart03_Morven_EUNIS_Habitat_SeabedSedimentsFeatures
- Chart04_Morven_Seabed_Elevation
- GIS package OWC-056884-001-GIS001-A, which contains:
    - **Geodatabase folder**: Contains all feature classes used in the study and presented in the GIS project and charts.
    - **Geotiff folder**: Contains all raster datasets used in the study and presented in the GIS project and charts.

      Note: Sidescan sonar rasters from the "01139" dataset were excluded from the final GIS project due to file size constraints.
    - **Register**: Provides a detailed listing of all layers included in the Table of Contents of the single map within the GIS project.

© 2025 OWC

5 Staff Expertise

The biotope mapping for the MHPGC project has been undertaken by experts in geophysics, GIS, benthic ecology and marine ecology. The bios for each staff member are provided below, and full CVs are available in Appendix A.

David Rushton

David Rushton holds the role of ABL Chair of Geoscience and oversees the geoscience operations and resourcing across the whole ABL group. David is also the Director of Soil for OWC. David has a background in geotechnical data acquisition and consultancy, starting his career in a major global geotechnical acquisition company, having graduated with an MESc in Earth Sciences from the University of Oxford.

David is an exceptional and dedicated consultant in geotechnical engineering and site investigation design. He has over 15 years of experience in offshore geotechnical data collection, laboratory test specification, parameter assessment, foundation engineering, data interpretation and site-specific analysis for renewable and oil and gas projects.

David has a practical approach to tasks and is readily able to find analytical solutions to geohazard and site characterisation problems, to quantify risk and uncertainties across spatially diverse development sites and deliver fit-for-purpose solutions within realistic project timescales.

Terry Holt

Terry Holt is a Marine Environmental Consultant with extensive experience in marine ecological impact, appropriate and strategic assessments for many major projects. He was a team member for the plan-level HRA assessments for The Crown Estate round 4 project (2021) and FLOW (floating offshore wind, Celtic Seas) 2022. Terry also undertook the lead technical role in benthic ecology section of Irish Offshore Oil & Gas SEA in 2014 and was a member of the expert team responsible for the UK Offshore Energy SEA in 2009. Terry has expertise in renewable energy (wind, wave and tidal), and coastal infrastructure projects such as electricity interconnectors, telecoms cables, ports/marinas, discharges and sea defences.

Terry is highly experienced in the assignment of subtidal and intertidal biotopes, including supporting statistical analysis. He is also experienced at high level reviews of draft survey reports and scoping studies.

Rachel Crabtree

Rachel Crabtree is a Principal Consultant with over ten years' experience working on offshore projects. With a background in marine ecology, Rachel is experienced in undertaking Environmental Impact Assessments (EIA) of marine developments. She has experience working with a variety of clients representing a range of seabed development sectors, both in the UK and Europe, such as marine aggregates; offshore wind farms; offshore transmission owners (OFTOs); interconnector cabling; wave and tidal energy; hydrogen storage; and statutory nature conservation agencies.

Rachel has a strong background within the offshore wind sector, having previously spent three years seconded to Ørsted working with the Environment and Consents team. She specialises in offshore wind and provides support to clients throughout the project life cycle,

© 2025 OWC

particularly in EIA, post-consent compliance, and operations and maintenance. Rachel has experience undertaking benthic ecology assessments for EIA chapters, as well as analysis of video and stills data from benthic surveys to identify sensitive benthic habitats including Annex I habitats.

Corentin Chaptal

Corentin Chaptal is a petroleum geologist by training, with prior experience in the geophysics industry. He joined OWC with a broad skillset encompassing field surveys, data interpretation and analysis, reporting, client communication, 3D modelling, GIS, and data management.

Since joining OWC, Corentin has enhanced his capabilities in GIS—particularly ground modelling—as well as in data management, interpretation, and reporting, including the creation of charts and figures. He has applied these skills across a wide range of offshore wind farm projects already.

Corentin is known for his adaptability, attention to detail, and commitment to meeting client expectations through open communication. These qualities support his effective integration and contribution as a new member of the OWC team.

Isla Symons

Isla is a Graduate Marine Consultant with OWC working within the Environment and Consents team. She has an educational background in both hydrographic surveying and offshore renewable energy and studied a range of topics including renewable energy law and policy, marine economics, marine biodiversity and data processing in a variety of different programmes, including a focus on port and dredging activities. Isla has also had practical experience mobilising and using survey equipment such as MBES, SSS, SBP and more.

She has previously worked within business development in subsea surveying, worked with potential clients on service offerings, developed market
strategy platforms and assisted wider commercial functions on tenders. Isla is now supporting the Environment and Consents team at OWC, assisting on projects throughout the project lifecycle including Pre-FEED, post consent compliance and marine licencing projects. She is also collaborating and working with other departments, assisting on a wide range of projects.

© 2025 OWC

6 References

[1] XOcean, “01139-BPX-SCO-WIND (XOcean Geophysical 2024_2025),” XOcean, 2025.

[2] XOcean, “00741-BPX-SCO-WIND (XOcean Data Purchase 2023),” XOcean, 2023.

[3] Gardline, “Morven Export Cable Route 2023 Habitat Assessment Report,” Gardline, 2024.

[4] Gardline, “Morven Export Cable Route 2023 Environmental Baseline Survey Report,” Gardline, 2023.

[5] Gardline, “Morven Grid Connection 1 Route Environmental Survey Habitat Assessment Report,” Gardline, 2024.

[6] Gardline, “Morven Grid Connection 1 Route Environmental Survey Environmental Baseline Survey Report,” Gardline, 2024.

© 2025 OWC

Appendix A CVs

David Rushton

Geotechnical and Geohazard Consultant
Oxford, UK

An exceptional and dedicated consultant in geotechnical engineering and site investigation design. Experienced in offshore geotechnical data collection, laboratory test specification, parameter assessment, foundation engineering, data interpretation and site-specific analysis for renewable and oil and gas projects. Practical and readily able to find analytical solutions to geohazard and site characterisation problems, to quantify risk and uncertainties across spatially diverse development sites and delivering fit-for-purpose solutions within realistic project timescales.

David is a British citizen and a native English speaker.

Qualifications

University of Oxford (2007) BSc and MESc (Oxon) Earth Sciences

Certificates: Offshore Survival (until Nov 2023), UKOOA medical (until Jan 2020), IOSH Managing Safely, CDM Regulations, Minimum Industry Safety Training, H2S Awareness, Faulk Nutec

Experience

ABL Chair of Geoscience (Jan 2021 – Present).

Director of East Point Geo (Nov 2017 – Present).

Innovative Technology Team Leader: Fugro GeoConsulting Limited (Jan 2012 – Nov 2017).

Staff / Project Engineer: Fugro GeoConsulting Limited (Sep 2007 – Jan 2012).

These roles involved **experience in the following areas:**

Geotechnical data acquisition planning and analysis: Planned and acquired geotechnical investigations including onshore/nearshore boreholes, trial pits, offshore downhole sampling and in situ testing in a range of sediment types and deploying a range of sampling and testing tools (WIP sampler, piston sampler, hammer sampler, cone penetrometer, piezoprobe, in situ vane, ball penetrometer and temperature probe).

Data integration and ground models: Experienced in integrating geological understanding of past and active processes with observed surface and sub-surface morphological features and measured geotechnical properties to develop engineering ground models.

Risk Modelling and Value of Information Analysis: Built risk models to represent a site characterisation programme and schedule, including event trees to assess the steps in each programme scenario. Risks and costs associated with decision points and branches are evaluated to determine the balanced risk-cost profile of each data acquisition strategy. This approach provides a transparent and auditable process for the evaluation of the value of information acquisition and ultimately helps justify data acquisition requirements in the context of an overall project risk strategy.

Geohazard risk assessment and probabilistic analysis: Designed Monte Carlo assessments to solve slope stability analyses probabilistically and to derive relationships between deterministic factor of safety and probability of slope failure. Probabilistically considered uncertainties for other geohazard problems, such as pipeline routing. Conducted vulnerability analysis to predict bending stresses, moments and displacements in the event of a geohazard impact, based on provided equipment specifications.

Geospatial analysis: Extensive experience applying novel geospatial analysis techniques to solve geotechnical engineering problems. Developed a GIS method to apply the shear band propagation geomechanical model for slope stability analysis to a geohazard assessment at the ACG field in the Caspian Sea in conjunction with academic experts. Performed pipeline and cable routing analysis using GIS-based least-cost routing algorithms. More novel examples of geospatial analysis experience include the use of GIS to map required foundation depth based on an integrated geotechnical ground model and for a given set of expected loads.

Project References

Ongoing – Overall technical coordination and oversight to ABL's geoscientific deliverables globally.

2025 May – Ongoing, Confidential OWF, South Korea (Yulchon LLC). Expert representative to an arbitration case concerning geophysical and geotechnical survey scoping and scheduling.

2025 May – Ongoing, GCI Sugi Interconnector, Indonesia (Vanda). Cable route definition, geoscience survey specification, ITT support and contractor shortlisting.

2025 May – 2025 July, San Miguel Bay and Lucena OWFs, Philippines (Nexif). Geotechnical desktop study, foundation feasibility assessment and survey scoping.

2025 Apr – Ongoing, Blauwwind OWF, Netherlands (Shell). Morphological study investigating the potential for scour development around monopile turbine foundations.

2025 Apr – 2025 June, Outer Dowsing OWF, UK (GTR4). Cable burial risk assessment for export cable route and array area.

2024 Nov – 2025 June, WLHC OWF, Taiwan (EDFR). Sediment transport modelling Phase 2 - numerical forecast modelling.

2024 Nov – 2025 June, Norfolk Vanguard East and West (RWE). Geotechnical interpretive report update and support to foundation design.

2024 October – 2025 June, Zeevonk OWF, Netherlands (Vattenfall). Project director and oversight of cyclic GIR, laboratory testing and static GIR review.

2024 October – 2025 June, Various Sites, Japan (Kanadevia). Suction bucket jacket design workflow and market assessment. Geoscience oversight and review role.

2024 August – 2025 March, Kailia and Odra OWF, Italy (Bluefloat). Geoscience data review and gap analysis and survey strategy definition.

2024 July – 2024 October, Maenggoldo OWF, South Korea (Bada Energy). Export cable routing and constraints analysis, combined using a least cost routing algorithm.

2024 May – 2024 June, TS-69 Platform, Saudi Arabia (Arabian Drilling Company). Geohazard (foundations and shallow drilling) assessment to reconstruct sequence of events leading to well issues, ultimately with the aim of supporting approval for jack-up site visit.

2024 May – 2024 June, Community Shores OWF, USA (COSW). Geotechnical review role for CBRA, sand wave volume screening for cable route clearance planning

2024 May – 2024 June, Absheron Field Development, Azerbaijan (SOCAR). Peer review for geohazard assessment as part of an overall project review to transition from into FEED for new development phase.

2024 Apr – 2024 June, Prefeasibility OWF sites, Sweden (Eolus). Desk study site characterisation and preliminary design brief, foundation feasibility screening.

2024 Mar – 2024 June, Bellrock and Broadshore OWF, UK (Bluefloat / Renantis). Anchor screening study, preliminary sizing and parametric analysis for floating offshore windfarm moorings.

2023 Nov – 2024 June, WLHC OWF, Taiwan (EDFR). Ground model, sediment transport assessment and overall project director for geoscience support contract.

2023 Aug – 2024 June, A07 Oléron OWF (RWE). Desktop study, followed by incrementally more detailed ground models as more data were made available by the French state.

2023 Mar – 2024 June, Confidential OWF Sites, Italy (Acciona Energia). Preliminary ground models for offshore windfarm, offshore and onshore export routes for selected development areas offshore Italy.

2022 Aug – 2024 June, MarramWind OWF (SPR and Shell JV). Support to survey management and laboratory testing programme, preliminary integrated ground model development.

2024 Apr – 2024 May, NDL2 OWF, Germany (Vattenfall). Reviewer to CBRA

2024 Mar – 2024 May, Noirmoutier OWF (Prysmian). Assessment of level of protection against dropped objects provided by rock bags of differing sizes.

2023 Nov – 2024 May, Norfolk Sites, UK (Vattenfall). Shallow ground model update.

2023 Oct – 2024 May, Generic OWF, Japan (Hitz). Geotechnical coordinator for suction pile design approach assessment for fixed structure OWF.

2023 Oct – 2024 May, Stoura OWF, Ireland (ESB). Geotechnical lead for desktop study ground model.

2023 Mar – 2024 May, A06 Mediterranean OWF (RWE). Desktop study, followed by incrementally more detailed ground models as more data were made available by the French state.

2023 Oct – 2024 June, Confidential OWF (DLA Piper). Expert representative to an arbitration case concerning rock protection along part of an offshore cable route, specifically supporting an assessment of the quantum.

2023 Nov – 2024 Feb, El King Field, Egypt (BP). Geohazard assessment of new planned well location

2023 Nov – 2024 Jan, F6/F7 OWF, Taiwan (Synera Renwable Energy). Development of geophysical and geotechnical technical specifications, review of tenderers and recommendation for most applicable contractor.

2023 Apr – 2023 Oct, Tablas Strait OWF, Philippines (GR8-Geo / Shell). Desk study ground model

2023 Apr – 2023 Sep, Vineyard OWF, USA (Prysmian). Determination of stable seabed level elevation through areas of sandwaves along export cable route.

2022 Nov – 2023 Jan, Hai Long OWF (Hai Long Offshore Windfarm Ltd). Sandwave dredging volumes verification study

2022 Jun – 2022 July, MarramWind OWF (SPR and Shell JV) export cable corridor constraints analysis.

2022 Nov – 2022 Dec, Baie de Lion, France (RWE). Desk study ground model development for 3 potential offshore windfarms.

2022 Oct – 2022 Nov, Vung Tau OWF, Vietnam (Sumitomo). Desk study ground model development for the Vung Tau offshore windfarm.

2022 Oct – 2023 Feb, Taichung and Hsinchu OWF (RWE). Coordination and contribution to the ground model team for two offshore windfarms in Taiwan.

2022 Aug – 2023 Mar, MarramWind OWF (SPR and Shell JV). Support to survey management and laboratory testing programme, preliminary integrated ground model development.

2022 Jun – 2022 July, MarramWind OWF (SPR and Shell JV) export cable corridor constraints analysis.

2022 Apr – 2022 May, Baltic Power OWF, Poland (Baltic Power). Shallow ground model development.

2022 Mar – 2022 Apr, Baltic Power OWF, Poland (Baltic Power). Cable burial risk assessment preliminary update.

2022 Mar – 2022 May, Norfolk Vanguard and Boreas offshore windfarm, UK sector, North Sea (Vattenfall). Cable burial risk assessment (x 3).

2022 Jan – 2022 Mar, UK (Confidential). Root cause analysis and spatial landslide risk assessment for Southern North Sea export cable route.

2021 Sep – 2021 Dec, St Nazaire Offshore Windfarm, France (Prysmian). Assessment of rock dumping volume calculations as part of an investigation into a claim for additional rock used by rock installation contractor

2021 Sep – Present, Erebus OWF, Celtic Sea, UK (Blue Gem Wind). Ground model lead and GIS lead to Erebus FEED stage development.

2021 Aug – 2022 Mar, Valorous OWF, Celtic Sea, UK (Blue Gem Wind). Input to pre-FEED studies for Valorous offshore windfarm development.

2021 Jul – 2021 Sep, Södra Midsjöbanken offshore windfarm, Baltic Sea, Sweden (RWE). Preliminary ground model for array area and export cable route.

2021 Jun – 2021 Jul, Formosa 2 development, Taiwan (Formosa 2 Offshore Windfarm). Shallow ground model update following receipt and re-interpretation of additional route-specific shallow geophysical data.

2021 May – 2021 Jun, Thor OWF, Danish North Sea (Iberdrola). Shallow preliminary ground model for the Thor offshore windfarm making use of site-specific geophysical data and reconnaissance geotechnical data to develop shallow soil zonations for cable design.

2021 Jan–2022 Apr, Norfolk Vanguard and Norfolk Boreas offshore wind farms, UK (Vattenfall). Geotechnical interpretive reporting for offshore substation design, including ground model development to inform laboratory and in situ test classification and grouping.

2020 Dec–2021 Sep, Vesterhav Nord and Syd offshore windfarms, Danish North Sea (Vattenfall). Cable Burial Risk Assessment update for inter array and export cables.

2020 Nov–2021 Jun, Vesterhav Nord and Syd offshore windfarms, Danish North Sea (Vattenfall). Geotechnical interpretive reporting for monopile design and installation, including ground model development to inform laboratory and in situ test classification and grouping. Management of advanced monopile design scope of work.

2020 Sep–2022 Sep, Norfolk Vanguard and Norfolk Boreas offshore wind farms, UK (Vattenfall). Ground model soils classification for cyclic test scheduling and interpretive reporting, and cable route geotechnical interpretive report.

2020 Oct–2020 Nov, Baltic Power offshore wind farm, Baltic Sea (PKN Orlen). Preliminary ground model and site investigation strategy determination.

2020 Sep–Nov, Offshore windfarm, CONFIDENTIAL, Eastern Seaboard, USA. Phase 2 ground model development (integration of geotechnical data).

2020 July, Chu Feng offshore wind farm, Taiwan (RWE). Preliminary ground model development (integration of geophysical interpretation, terrain assessment, geotechnical parameterisation, 3D GIS build).

2020 Jun, Caspian Sea (UBOC). Shallow hazard foundation risk assessment for new platform development.

2020 Apr–July, Offshore windfarm, CONFIDENTIAL, Eastern Seaboard, USA. Phase 1 ground model development (integration of geophysical interpretation, terrain assessment, 3D GIS build).

2020 Apr–Dec 2023, Erebus floating offshore windfarm, offshore UK. GIS data management and survey support.

2020 Jan–2020 Mar, Caspian Sea, UBOC. Geotechnical interpretative reporting for offshore platform development (pile foundations, well conductors and shallow-founded infrastructure).

2019 Nov–2020 Jan, Baltic Eagle Offshore Windfarm, (Iberdrola). Ground model development.

2019 Nov, Hai Long offshore windfarm, Taiwan Strait (Offshore Design Engineering). Geotechnical client representative, downhole sample and CPT acquisition, offshore wind farm intermediate geotechnical investigation.

2019 Jun–Oct, Caspian Sea (UBOC). Geotechnical interpretative reporting for offshore platform development (pile foundations, well conductors and shallow-founded infrastructure).

2018 Nov–2018 Dec, Caspian Sea, (UBOC). Offshore Client Representative, Manta seabed CPT and seismic CPT geotechnical acquisition, platform foundation design and earthquake hazard assessment.

2018 Sep–2021 May, Formosa 2, Taiwan. Ground model development, cables ground model development, cable burial risk assessment (CBRA) and cable burial feasibility assessment for offshore wind farm development in geologically complex and seismically active region.

2018 Sep–2019 Jul, Rovuma LNG development, offshore Mozambique (ENI). Geohazard QRA and pipeline burial risk assessment.

2018 Jul–2018 Aug, Caspian Sea (UBOC). Offshore Client Representative, pseudo 3D high resolution survey, mini airgun source, multichannel seismic recorder. Site survey for oil platform development and geohazard assessment.

2018 Feb–Mar, West Nile Delta subsea development, offshore Egypt (BP). Offshore Client Technical Representative for a deep water seabed excavation project, responsible for monitoring the effect of the excavation on surrounding seafloor stability and providing guidance on geotechnical conditions.

2018 Feb–Mar, River embankment relocation project, River Nith, Scotland (Fluidec). Specification of a geotechnical investigation, support to site activities, laboratory test scheduling and parameter reporting.

2017 Dec–2018 Jan, BTC Pipeline Project (BP). Bespoke GIS development for an onshore pipeline GIS database.

2017 Aug –Oct, Viking Link Cable Route, Southern North Sea (Ordtek Limited). Terrain and shallow seabed analysis and GIS database development and curation to support the scoping of a UXO-focussed survey.

2016 Dec–2017 Apr, Hai Long offshore windfarm development, Taiwan (ODE). Provision of a GIS data management plan, development of a geotechnical and environmental GIS database structure to support the future data acquisition and management.

2016 Aug–Dec, Vorlich Field, North Sea (BP). Regional desk study supported by GIS integration of geotechnical and environmental data to assess options for a new site development and export route options.

2016 Jun – Aug, Platina Development, Block 18, Angola (BP). Refinement and update to an existing geotechnical GIS database to incorporate new field layout data and update the integrated ground model.

2016 Mar–2017 Mar, Triton Knoll Windfarm (Triton Knoll Offshore Wind Limited). Provision of geotechnical data management and data visualisation with deliverables in both desktop GIS and webGIS formats.

2015 Sep-2016 Mar, Deepwater Caspian Sea (BP). Statistical review of seismic amplitude response to hard ground near seabed using novel Receiver Operator Characteristics method and development of summary guidance sheets.

2015 May –Jul, Blue Whale Field, Vietnam (ExxonMobil). Development of a regional GIS database to host and integrate reconnaissance level geotechnical and geophysical data.

2015 Feb–Oct, Chirag Deep Gas Project (SOCAR). Development of an integrated ground model supported by a geotechnical GIS ground model.

2014 Nov–2015 Mar, Whirlwind, Lincoln, Strathmore and Typhoon (Hurricane Energy). Geotechnical / Geospatial Lead responsible for the extension of the existing Lancaster GIS to incorporate desk study level data for the connected fields including.

2014 Nov–2015 Feb, Shah Deniz, Caspian Sea (BP). Development of a bespoke GIS data model to host subsea pipeline infrastructure information, including details such as diameter, wall thickness, bending radius, coating, buoyancy, etc,.

2014 May–Sep, Gulf of Mexico (BP). Geospatial Technical Support to a team of Houston-based colleagues constructing an extensive geotechnical GIS database for all offshore site investigation data.

2014 Jan –May, Scarborough Field, North West Shelf, Australia (EMDC). Geospatial Lead for the creation of a geotechnical GIS database for all infield and export route geotechnical data.

2014 Jan–Feb, Azeri field, Caspian Sea (BP). Offshore Client Technical Representative, Lead Shift Engineer and Geotechnical Survey Planner overseeing a geotechnical survey.

2013 Nov– 2014 Jul, Quad 204, West of Shetland (BP). Geotechnical specialist for the geotechnical and geophysical integration of more than 20 years of survey data to build an interpretive GIS-based ground model to support further field development.

2013 Nov–2014 Feb, Lancaster field, West of Shetland (Hurricane Energy). Geotechnical / Geospatial Lead responsible for integrated geotechnical data management and development of a bespoke GIS-based reporting module to support data integration activities.

2013 Sep–2017 Mar, ACG, Caspian Sea (BP). Appraise Field Development Geohazard Assessment (slope stability likelihood and impact specialist analysis, GIS database development and management, drilling hazard review, project manager for Fugro).

2013 Sep – 2014 Oct, Navitus Bay windfarm, UK (Eneco). Geotechnical data management and GIS database development and support to assist the consenting applications for the main site and export cable route associated with the OWF.

2013 Aug–2014 Mar, (PCSB). Geospatial consulting to develop a jack-up suitability GIS database for development areas offshore Malaysia, provision of training via teleconference and in person in Singapore, presentation of present work and future possibilities in the client head office in Malaysia.

2013 Aug–Sep, Kraken field, North Sea (EnQuest). Geotechnical collation and geospatial management of data associated with field development and related export infrastructure.

2013 Jun–2017 May, Offshore Mozambique (ENI). Geospatial data management and specialist slope stability analysis for deepwater developments and export pipelines.

2013 Mar–May, Domino Field, Romania (ExxonMobil). Development of a regional GIS database to host and integrate reconnaissance level geotechnical and geophysical data.

2013 Feb, Neart Na Gaoithe wind farm (Mainstream Renewable Power). Geotechnical and Geospatial Team Leader for the development of a GIS-based 3D integrated wind farm ground model.

2012 Oct–Dec, Tolmount field, North Sea (E.On). Geotechnical collation, SSDM survey data and geospatial management of data associated with field development and related export infrastructure.

2012 Jul–Nov, TEN field, offshore Ghana (Tullow). Geotechnical data collation and data management, integration with reconnaissance seismostratigraphic framework and development of a GIS-based 3D ground model.

2011 Apr–2012 Jan, Hornsea offshore windfarm (SMartWind). 3D geotechnical modelling, visualisation and GIS data management.

2010 Aug–Sep, Norwegian sector, North Sea (Statoil). Site manager on the M/V Bucentaur geotechnical drillship for a range of geotechnical investigations involving simultaneous operations within 500m of existing subsea structures.

2010 Jan–Jun, Middle East to India intercontinental pipeline project (SAGE). Geotechnical and GIS support to a desk study and reconnaissance survey and geotechnical investigation.

2009 Aug–Sep, Clair Ridge, West of Shetland (BP). Lead shift engineer for a geotechnical drilling campaign for platform jacket foundations.

2009 Apr–May, Seastorm 1 windfarm (Northern Energy Seastorm 1 GmBH). Lead shift engineer for a geotechnical site investigation for the foundation development.

2009 Jan–2012 Aug, Angola Deepwater Block 31 and 18 (BP). Geotechnical support and geohazard slope stability analysis, site characterisation, GIS database creation and overall integrated assessment as part of a geohazard assessment team.

2008 Nov–Dec, Norwegian sector, North Sea (Statoil). Lead shift engineer on four geotechnical site investigations.

2008 Jun–2009 Sep, Ringsend WwTW, Dublin Bay (Dublin City Council). Lead Geotechnical Specialist responsible for the development of a GIS-hosted 3D geological model to support the extension of a wastewater effluent outflow.

2008 Mar, Rosebank development, West of Shetland (Chevron). Geotechnical data management and GIS compilation.

2008 Jan–Feb, Norwegian sector, North Sea (Statoil / DNO). Lead shift engineer on three geotechnical site investigations.

2008 Jan–2013 Sep, (Angola Deepwater Geotechnical Consortium). Geospatial data management for all geotechnical data acquired in deepwater Angola (B14, B15, B17, B18, B31, operated by BP, Exxon, Chevron and Total) and development of bespoke tools to facilitate use of the GIS database.

2007 Sep–2020 Sep, West Nile Delta subsea developments, offshore Egypt (BP). Field Development Geohazard Assessment (slope stability likelihood and impact specialist analysis, GIS database management).

Activities and Publications

David Kay, **David Rushton**, Frans Van Herpen, Aad Van Es, Sanjay Shinde, Martyn Chapman, Stellios Panayides. Case Study: Rosetta Channel Pipeline Crossing. Proceedings of the International Symposium for Frontiers in Offshore Geotechnics, 2022, Austin, Texas.

D Rushton, M Nguyen. On the application and benefits of an integrated geophysical and geotechnical digital ground model to optimize a site investigation survey for an offshore wind farm project. Proceedings of the 4th International Conference on Geotechnics for Sustainable Infrastructure Development, 2019

L Jones, **D Rushton**. Optimising geotechnical correlations using Receiver Operating Characteristic (ROC) analysis. Proceedings of the XVII European Conference on Soil Mechanics and Geotechnical Engineering, 2019

C Villaret, A Avadis, **D Rushton**, A Mills. Morphodynamic modelling of the Norfolk-Suffolk coast using Telemac and Qmech. Telemac User Conference, 2018.

D. Rushton, A. Mills and D. Waring, Geotechnical and geohazard challenges for onshore and offshore pipelines. British Geotechnical Association Evening Lecture, Institute for Civil Engineers, 21 February 2018

D. Rushton, L. Jones, T. Nott and M. Rattley. Geospatial Analysis for Geotechnical Design. Proceedings of the 8th International Offshore Site Investigation and Geotechnics Conference. 2017

A. M. Puzrin, **D. Rushton**, B. Mackenzie, L. Germanovich and M. Randolph. Submarine Landslides – Stability Analysis and Risk Assessment for Offshore Developments. Encylopedia of Maritime and Offshore Engineering. 2017

D. Rushton, W. C. Haneberg, C. A. Devine and J. Brown. A Modern Approach to Subsea Pipeline Route Determination. Proceedings of the Offshore Pipeline Conference 2016.

D. Rushton, T. Gray, A. Puzrin, A. Hill. GIS-Based Probabilistic Slope Stability Assessment Using Shear Band Propagation. Proceedings of the Offshore Technology Conference 2015 (OTC-25871-MS)

D. Rushton, W. Jardine, D. Harrison, A. Hill. Redeveloping the North Sea – Ground Model Data Integration using a GIS. Proceedings of the UK Hydrographic Conference, 2014.

B. Mackenzie, J. Hooper and **D. Rushton**. Spatial Analysis of Shallow Slope Instability Incorporating an Engineering Geological Ground Model. Proc. Of 4th International Symposium for Submarine Mass Movements and Their Consequences, Mosher et al., 2009;

P. Power, M. Clare, **D. Rushton** and M. Rattley. Reducing Geo-risks for Offshore Developments. ISGSR 2011, Vogt, Schuppener, Straub & Bräu (eds) - © 2011 Bundesanstalt für Wasserbau ISBN 978-3-939230-01-4;

M. Clare, **D. Rushton**, Rolf Balthes. A ground model-based approach to efficient assessment and management of risk for pile installation and behaviour. Proceedings of the 8th Hans Lorenz Symposium, Albers, B. (eds) (Berlin, 2012) ISBN 978-3-8440-1377-1;

D. Rushton. Use of Geographic Information Systems to Manage Data in Offshore Wind Developments. Poster presented at the European Wind Energy Association conference, Amsterdam, The Netherlands, 2011.

Dr Terry Holt

full name Terence James Holt



Position Self-employed Marine Environmental Consultant
Nationality British

Asahi House, 10 Church Road, Port Erin, IM9 6AQ, Isle of Man
Tel: +44 (0)1624 834960. Mob: +44(0)7624 414229. Email: tjholt@iom.com

EDUCATION, PROFESSIONAL QUALIFICATIONS & MEMBERSHIPS

Year	Degree	Institute
1980	B.Sc. Hons Marine Biology	University of Liverpool
1984	Ph.D. Seaweed Cultivation	University of Liverpool
2007	JNCC Approved Marine Mammal Observer	Aberdeen

SAFETY CERTIFICATES

ENG 1 Seafarer Medical Certificate	Expires 1 Jan 2026
Offshore Survival: BOSIET (FOET) & Huet	Expires 24 April 2024

PROFESSIONAL HISTORY

June 2016 – July 2017	Niras Consulting Ltd	Technical Director
2003-2016	Centre for Marine and Coastal Studies Ltd (CMACS Ltd)	Founding Director
2000 – 2003	Environmental Research & Consultancy, Uni. of Liverpool	Senior Consultant
1991 – 2000	Port Erin Marine Laboratory, Isle of Man	Consultant & Lecturer
1986 - 1996	Kelp Farm Ltd	Founding Director
1985 – 1986	Nature Conservancy Council	Botanical Surveyor
1984 – 1985	Scarborough Borough Council	Botanical Surveyor

KEY EXPERIENCE

Client representative and Environmental management

Over 35 years of marine environmental survey experience in NE Atlantic, South Atlantic and W Atlantic/Caribbean; I have acted as sole scientist or lead scientist in teams of surveyors operating grabs, cameras, trawls, water samplers, ctd and acoustic survey on large & small scale surveys (inshore & offshore) regularly since 1996 in the Irish Sea North Sea and NE Atlantic in UK & Ireland, including preserving of various samples. Familiar with ad-hoc interpretation of various acoustic datasets to design or adapt ground-truthing during surveys. Some experience of UHR and HR seismic survey, SBP survey; geotechnical including coring; Environmental DNA sampling for water and sediments.

Client representative/Environmental QC/ Environmental management experience includes:

- Five months Environmental manager for Oxagon stage 1 project, North west Saudi Arabia (see project summary below)
- 11 days environmental surveys investigating possible impacts of a small oil spill from an Irish Sea pipeline for ENI.
- 47 days EBS QC/ permitting of grab and camera surveys covering numerous Liverpool Bay assets and adjacent areas (Hynet CCS scheme involving planned decommissioning, partial decommissioning and installation of CCS related assets) for ENI.

- 37 days EBS QC/ permitting at Marigold/Sunflower Northern North sea Aug-Sep 2022 on a complex series of surveys involving grab and camera baselines for potential well developments and pipeline tie backs; wellhead inspections; analogue (sparker, pinger, magnetometer, sidescan and mbes) survey.
- 10 days for Neo/Perenco/RPS at "Christian Bligh" overseeing final runs and re-runs for a geophysical survey involving SBP, UHR and HR as well as analogue surveys; followed by camera and grab surveys, N. North Sea, for EBS and habitat mapping.
- 78 days environmental core survey using mainly Geobore & vibrocore (some grab sampling and water sampling and geotechnical field logging) for core analysis in support of a dredging license for HPC / EDF for Hinkley Point C nuclear power station development, Aug – Nov 2020. Subsamples collected from core samples for storage and subsequent analysis of chemical and physical determinands, radionuclides and particle size determination. Additional project familiarisation /preparation of methods in July – Aug 2020.
- 37 days EBS QC wrt stills and video camera, box core and ctd / water sampling and profiling for EXXON Hammerhead development off Guyana 20 April – 26 May 2019; including ad-hoc additional work developed mid-survey aimed at ground truthing possible reefs/hard ground and possible gas seeps, some of which was related to investigation of a possible pipeline route to shore. Up to 3300m depth.
- 11 days EBS QC for TEP; included extensive and detailed benthic grab and camera surveys of potential sponge beds in circa 700m of waters within the Faeroe-Shetland Channel Marine Protected Area in very challenging sea conditions Oct 2018, TEP Ltd.
- 18 days EBS QC for benthic grab and camera, and water column sampling and ctd surveys, including eDNA (sediments and water) in 1500-3000m of water off Guyana in relation to two separate EBS surveys for different developments, S America Sept 2018.
    - EXXON Lisa EBS and
    - Canje site survey,
- 1 month EBS QC for a large scale groundtruthing survey (grabs and cameras) based on ongoing interpretation of multibeam and sidescan information (Irish sea, Centrica and Dong Energy); special attention paid to potential for identification of possible biogenic geogenic or chemosynthetic reefs. Irish sea Round 3 OWF Zone, 2010.
- 10 days EBS QC / party chief on a 10 day pipeline route survey in the Corrib gas field N Atlantic off Ireland; day grab sampling for contaminants, fauna and sediment psa analysis, and S.P.I. (ground penetrating) cameras (Shell); 2007.

Environmental Assessment and interpretation	Marine ecological impact, appropriate and strategic assessments for many major projects. Team member for plan-level HRA assessments for Crown estate round 4 project (2021) and FLOW (floating offshore wind, Celtic Seas) 2022; lead technical role in benthic ecology section of Irish Offshore Oil & Gas SEA in 2014 & Member of the expert team responsible for the UK Offshore Energy SEA in 2009. Expertise in renewable energy (wind, wave and tidal). Experienced in relation to oil & gas projects (since 1994), and coastal infrastructure projects such as electricity interconnectors, telecoms cables, ports/marinas, discharges and sea defences. Highly experienced in assignment of subtidal and intertidal biotopes, including supporting statistical analysis. Also experienced in assessment of water and sediment quality against guidelines. Experienced at high level reviews of draft survey reports, scoping studies etc.
Survey &	Knowledge of a wide range of groups, notably benthic invertebrates, fish, and marine

Monitoring	mammals, and survey techniques. Have prepared and run a course on underwater camera survey techniques, including in relation to acoustic survey data, for Natural England (NW region). Highly experienced in both field work and reporting. Prepared numerous reports for monitoring programmes including final reports for long term benthic monitoring programmes (up to seventeen years) for North Hoyle, Gwynt y Mor and Greater Gabbard offshore wind farms. Have acted as party chief / lead scientist and client representative on offshore survey programmes. Highly experienced at intertidal survey techniques on both sediment and, especially, rocky shores. Primarily UK and Ireland but also some experience in Kattegat, Mediterranean, Red Sea, Sub-Arctic and S America.
Protected Species and Habitats Work	Expertise in relation to protected marine and coastal habitats and species including Annex I features since 1990s. Preparation of reports for UK Conservation Agencies on the sensitivities of specific marine communities to human activities; drafting of biodiversity action plans for UK and Isle of Man, and production of numerous summaries of marine biological information for specific geographical areas. Invited participant at workshop to develop criteria for assessing reefiness of *Modiolus modiolus* communities. Knowledge of many Annex I habitats notably blue mussels *Mytilus edulis*, *Sabellaria spinulosa*, *Sabellaria alveolata*, *Modiolus modiolus*. Also experienced with protected/vulnerable species eg pink sea fans, corals, seagrass.
Marine Fisheries including Fisheries Auditing	Involved in numerous assessments of fisheries to the Marine Stewardship Council standards for sustainable and well managed fisheries. Involved in full MSC assessments, annual audits, peer reviews and pre-audit advice of mollusc and finfish fisheries in **UK**, **Denmark**, Isle of Man, Holland, **Faeroes, Canadian** & USA Atlantic Coast, **Gulf of St Lawrence, the sub- Antarctic, Greenland,** Bering sea **& Vietnam**. (In-country experience in bold). Managed surveys from commercial fishing vessels to determine effects of pipeline and cable laying on commercial stocks of whelks, scallops, crabs and lobsters; experience of fish and bycatch surveys using lobster and whelk pots, commercial otter trawls, scallop and queen scallop dredge fisheries, towed camera and divers. Have used sidescan sonar to collect evidence of illegal dredging that was used to support a successful prosecution. Have installed mussel cultivation systems into disused docks, and acted as expert assessor in a public enquiry re effects of marine development on mussel lays.
Cultivation and commercial use of seaweeds (1980 – 1996)	Phd in seaweed cultivation, pilot scale studies of cultivation in Scotland, Ireland and Isle of Man, followed by several years as director of a commercial seaweed farming company selling seaweeds for food in UK. I have also consulted on seaweed cultivation and harvesting in Morocco, Madagascar, Maldives, Oman, Kiribati, Mozambique and Ireland with additional experience in Philippines, United States and S. Korea. Trained for assessment of seaweed suppliers against MSC/ASC sustainability standards.
Other	Regular reviewer for bids to Cefas for grants from Seafood innovation Fund (2020-2023; total 47 bids reviewed.

PROJECT EXPERIENCE

The following are representative examples from a limited number of projects.

Boskalis, Oxagon stage 1 - Environmental Manager August 2023 – December 2023
Responsible for management of the environmental team monitoring and advising client (NEOM) in respect of stage 1 of NEOM port expansion; (installation and maintenance of a suite of 24 hour monitoring buoys transmitting and recording live data on suspended sediment and a variety of other water quality parameters; key role in turbidity management group for the project; management of baseline surveys and

daily/weekly/monthly monitoring surveys monitoring surveys for in situ water quality, sediment quality, coral reef and fish status and underwater noise; marine mammal and turtle surveys; coral and seagrass surveys and liaison with coral translocation group from KAUST; checking of maintenance and positioning of silt curtains; survey and monitoring of terrestrial ecology including wadi trees and associated vegetation; reptile bat and bird surveys; soil surveys and monitoring, archaeological walkovers, contaminated land remediation in co-operation with specialist remediation team; monitoring of PM10 and PM25 dust levels, other construction related potential terrestrial pollutants including exhaust related chemicals, light, noise; groundwater borehole monitoring; upkeep of ad-hoc wildlife observation register; responsible for managing tree translocation projects; weekly meetings and ad-hoc liaison with client (NEOM); environmental training and project inductions for all project staff.

GGOWL Ltd; Gabbard Offshore Wind Farm monitoring programme. 2005 - 2023
Recently took part in final (year 5 post – development survey) sediment and benthos grab and camera survey. Some involvement in survey preparation and planning; prepared final monitoring report including all statistical analysis for pre- and post-development surveys. Wase been involved in many aspects of the EIA survey and monitoring for this wind farm for over 17 years.

ENI Liverpool Bay Assets October-November 2022 and April 2023.
47 days EBS QC/ permitting of grab and camera surveys covering numerous Liverpool Bay hydrocarbon assets and adjacent areas and the Hynet CCS scheme; involving planned decommissioning, partial decommissioning and installation of CCS related assets); from a small inshore day vessel;
And;
Monitoring study on pipeline event (sediment and faunal sampling and camera work) spring 2022; from a small inshore day vessel.

Vysus Group & Hibiscus petroleum/Marigold and Sunflower developments August Sept 2022
Was client representative overseeing a complex series of surveys involving grab and camera baselines for potential well developments and pipeline tie backs; wellhead inspections; analogue (sparker, pinger, magnetometer, sidescan and mbes) survey. Responsible for permitting for entry/survey into a production facility 500m exclusion zone. Involved in survey planning during the workand in liaising/checking of MMo permit applications.

NEO/Perenco Christian Bligh July 2022
Was client representative overseeing final runs and re-runs for a geophysical survey involving SBP, UHR and HR as well as analogue surveys; followed by camera and grab surveys, N. North Sea, for EBS and habitat mapping.

Fugro Searcher Sweden Kattegatt SYD wind farm
Benthic scientist on board this EA related benthic survey; involved with sample site selection after on-board review of multibeam and sidescan but also heavily limited by magnetometer survey due to potential for UXO. Double Van Veen grabs for contaminant, psa and fauna analysis; gravity core sampling for deep contaminant analysis; camera survey.

Grace Hopper cable project Dec 202 – July 2021
Review of existing cable route survey data; review of available methods for transplantation of Pink Sea Fans (PSFs); design and oversight of dedicated survey to quantify and minimise potential impacts of Google's Grace Hopper cable on protected species (Pink Sea Fan).

Scotwind bid; confidential Dec 2020-Jan 2021
Subcontracted for high level screening work in relation to a Scotwind Offshore wind bid; responsibility for reviewing sensitivities of all Scotwind bid areas in relation to birds, benthos, fish, commercial fisheries, marine mammals, archaeology and seascape, with input also for defence issues.

ICENI and Mercator routes for BT cable 2020 - 2022

Review and updating of drafted EIA chapters with regard to changes to project including timing and addition of likely sandwave removal; follow up work addressing impacts on fisheries in French sector. Also took part in surveys January 2022 to finalise maps of Sabellaria reefs and sandwave areas.

EDF / HPC Ltd - Hinkley Point "C" Nuclear Power Station July, Nov 2020
Almost three months of environmental client representative work on sediment coring campaign in support of a dredge license application for Hinkley point "C" nuclear power station development. CR work was carried out over two campaigns, plus additional support before and during the survey work (liaison with interim client representatives and preparatory work including contributing to method statements). Subsamples were taken from geobor and vibrocore samples for subsequent analysis for chemical contaminants, radionuclides and particle size determination, with more limited grab and water sampling. Survey was carried out from the Jack up barge Fugro Excalibur.

Crogga Ltd - Crogga gas field, 2019-2020
Drafting of environmental scopes in relation to a long term programme of gas exploration in the Irish Sea; ongoing; ad hoc advice re environmental issues including preparation of survey specifications, contributing to tender evaluation and contract award, and anticipated management of surveys in coming years.

ExxonMobil – Esso Exploration & Production Guyana Hammerhead development, April-May 2019)
Client representative for Environmental Baseline Surveys for hydrocarbons in 100 – 2000m deep waters off Guyana. Involved supervision of benthic grab and camera work for both EBS of the production area and a potential gas pipeline to shore survey aboard Fugro Brasilis.

Faeroe-Shetland Channel Marine Protected Area oil and gas exploration - Total Exploration and Production Ltd, October 2018)
Client representative for TEP Ltd, supervising extensive and detailed benthic grab and camera surveys of potential sponge beds in circa 700m of waters within the Faeroe-Shetland Channel Marine Protected Area, involving client meetings pre and post survey, regular contact with client environmental managers during survey. Project involved innovative methods of obtaining grab samples via ROV in extremely challenging sea conditions aboard Stril-Explorer, MMT.

ExxonMobil – Esso Exploration & Production Guyana, September 2018)
Client representative for Environmental Baseline Surveys for hydrocarbons in 1500-3000m deep waters off Guyana. Involved supervision of benthic grab and camera work and water column sampling and ctd survey aboard MV Sable, Chouest. Stabroek, Kaiteur and Canje blocks, primarily on Lisa wellhead.

Gwynt y Môr Offshore Wind Farm (Npower - RWE – GyM OW Ltd, 2003-2021)
Lead on large program of benthic surveys and assessments for the EIA (including noise issues especially re spawning fish). Included survey design, liaison and sign off with authorities, and project management. Post-consent development of monitoring methods for FEPA Licence compliance (lead on benthic ecology, also involved with fish surveys. Subsequently involved with re-designing post-development survey; prepared final benthic monitoring report covering the whole survey period.

Rhyl Flats Offshore Wind Farm (Npower – RWE - Rhyl Flats OW Ltd, 2005-2016)
Survey design, data analysis and report preparation for fish and benthic ecology monitoring for the whole monitoring period 2005-2011, including preparation of final benthic monitoring report. Was project manager for some periods. Prepared a report on colonisation of turbine monopiles and scour protection.

Rhiannon OWF (Celtic Array 2012-2014)
Lead for drafting of EIA chapters; responsible for drafting benthic ecology chapter and involved in drafting fish ecology chapter for EIA. Included contributions to survey design using existing broadscale survey data from Irish Sea Round 3 OWF surveys (see below). Extensive liaison with NRW in respect of Annex I habitats, especially horse mussel *Modiolus* reefs.

Irish Sea Round 3 OWF Centrica (2011-2012)
Was client representative to ensure high quality survey data was obtained during month-long seabed surveys of the Irish Sea round 3 offshore wind farm zone using grabs and camera and interpretation of sidescan and backscatter data, on board a ship with a crew of 21. Reviewed report of above survey. Prepared a ZAP (Zonal Appraisal and Planning) Assessment report on fish and benthos for this area, which involved taking part in ZAP meetings with a large number of other consultants and stakeholders.

Proposed SACs NE Irish sea (Natural England 2013-2014)
Support role, including some interpretation of images, in camera surveys to determine status of possible conservation features in three areas of subtidal reef. Prepared and ran a one day workshop on camera survey for Natural England Irish Sea Team and other invited attendees as a subsequent contract, primarily in order to allow NE staff with a greater understanding of capabilities and limitations of camera surveys.

North Hoyle Offshore Wind Farm (Npower, 2000-2007)
Heavily involved for circa eight years from scoping studies through EIA including survey design, implementation and reporting.
This included management of a five year monitoring programme and post - monitoring review; including survey design, management, implementation and analysis/reporting; primarily responsible for infauna, epibenthos and fish. Contributed to a workshop that CMACS organised in order to present findings of the monitoring programme and review.

Ronaldsway Airport Runway Extension Works (Isle of Man Government Department of Transport, 2007-2013)
Contributed to Environmental Impact Assessment and baseline surveys for monitoring purposes for intertidal and subtidal benthos in relation to Ronaldsway airport runway extension; plus repeat surveys following development. Planned, carried out and reported on all intertidal phase I & quadrat surveys, and sublittoral grab surveys; planned, interpreted and reported diving video surveys, pole (including scallop counts), & quadrat surveys. Included interpretation of possible impacts from the development.

UK Offshore Energy SEA (Hartley Anderson for BERR, now DECC, 2008-09)
I was one of two CMACS members of expert team responsible for delivering the Strategic Environmental Assessment (OESEA: including Round 3 wind, seaward rounds of oil and gas licencing and gas storage in depleted offshore fields) to the UK Government (Department of Energy and Climate Change). Contributed at two day workshop sessions and reviewed all draft chapters.

Corrib Gas Field surveys, Ireland (RSK Ltd/Shell, 2007)
Survey manager (party chief) on a ten day baseline benthic environmental survey; managing two survey teams (day and night shifts) on 24 hour ops utilising Day Grab /Hamon grab / SPI camera / water sampler. Although RSK were project managing the survey, OSIRIS Surveys, Benthic Solutions and Bangor university (vessel supplier) were also involved.

London Array OWF (PowerGen/Shell/E.ON – (London Array Limited 2003-2005)
Managed a large programme of Intertidal and Offshore Surveys and Environmental Impact Assessment for the world's then largest proposed offshore wind farm development (intertidal & offshore benthos & sediments; offshore fish; including additional responsibility for assessment of noise and EMF effects).

Ramboll ltd (SSE) 2016-17
Drafting benthic and commercial fisheries chapters for Environmental report on Shetland – Caithness HVDC cable. Also carried out intertidal survey in respect of cable landfall for this project.

EXAMPLE PUBLICATIONS

Cook R, Fariñas-Franco JM, Gell FR, Holt RFH,·Holt TJ, Lindenbaum C, Porter JS, Seed R, Skates LR, Stringell TB, &·Sanderson WG (2013). The Substantial First Impact of Bottom Fishing on Rare Biodiversity Hotspots: A

Dilemma for Evidence-Based Conservation. PLoS ONE 08/2013; 8(8):e69904. DOI:10.1371/journal.pone.0069904

Vella G, Rushforth I, Mason E, Hough A, England R, Styles P, Holt T & Thorne P (2001). Assessment of the effects of noise and vibration from offshore wind farms on marine wildlife. Report to ETSU (Department of Trade and Industry). DTI/Pub URN 01/1341. 71 pp.

Shalla SHA & Holt TJ (1999). The Lessepsian migrant *Pomatoleios kraussii* (Annelida, Polychaeta) - recent formation of intertidal reefs in Lake Timasah and the Bitter Lakes (Suez Canal, Egypt). *Egyptian Journal of Biology*, **1**, 133-137.

Holt, TJ, Rees EI, Hawkins SJ, & Seed R, (1998). Biogenic Reefs (volume IX). An overview of dynamic and sensitivity characteristics for conservation management of marine SACs. Scottish Association for Marine Sciences (UK Marine SACs Project), Oban, Scotland, UK; 170 pages.

Signed 

Terence James Holt 4/1/2024

Rachel Crabtree

Principal Consultant: Environment and Consents
London, UK

Rachel has worked as a Principal Consultant at OWC since 2024. With a background in marine ecology, Rachel is experienced in undertaking Environmental Impact Assessments (EIA) of marine developments. She has experience working with a variety of clients representing a range of seabed development sectors such as offshore wind farms; offshore transmission owners (OFTOs); interconnector cabling; wave and tidal energy; marine aggregates; and statutory nature conservation agencies. Rachel has worked on projects in the UK, Ireland and internationally.

Qualifications

MRes Marine Biology – University of Plymouth
BSc (Hons) Marine and Freshwater Biology – University of Wales – Aberystwyth

Experience

Principal Consultant, Environment and Consents, OWC (2024 – Present). Rachel joined OWC in 2024 as part of the Environment and Consents Team, which supplements existing services offered by OWC, supporting clients through the consenting process and managing the EIA and consent interface between developers, consultants and OWC.

Senior Consultant, ERM (2022-2024). Worked as a Project Manager across a variety of sectors, focusing on OWF and OFTO. Provided support to clients throughout the project life cycle, particularly in EIA, post-consent compliance, and operations and maintenance.

Senior Consultant, MarineSpace (2019-2022). Worked as a Project Manager across a variety of sectors, focusing on OWF and OFTO. Provided support to clients throughout the project life cycle, particularly in EIA, post-consent compliance, and operations and maintenance.

External Consultant, Environment and Consents, Ørsted (2019-2022). Secondment within the Operations and Maintenance team providing consent compliance support for the full portfolio of Ørsted's operational OWFs within the UK. Engagement and liaison with the Marine Management Organisation (MMO) to discharge licence conditions. Supported on consenting for unforeseen and reactionary works.

Referrals Analyst, Tseil Waututh Nation, Vancouver, Canada (2018). Reviewed EIA referrals for development projects within British Columbia as part of the EIA consultation process in Canada. Assessed potential impacts that proposed development projects and policy changes may have on Tsleil-Waututh's Indigenous rights, title, and interests. Represented Tsleil-Waututh on project files and built relationships with external agencies and developers.

Consultant, MarineSpace (2013-2018). Consultant within the Ecology Team. Production of EIA chapters for a range of offshore sectors including aggregates, and wave and tidal developments. Production of documents such as Supporting Information Documents, Annual Monitoring Reports, Environmental Appraisals, and Fisheries Liaison Plans. Management of environmental and consent support for OFTOs.

Project References

2025, SELC, Export Cable Environmental Review (USA). Environmental lead on a review of environmental constraints and impacts for export cable installation, and mitigation methods that have been used at past projects. Review of how project learnings could be implemented at offshore wind farm export cable routes in the USA.

2025, Confidential Client, Neart Na Gaoithe OFTO (UK). Project manager for due diligence input for the Neart Na Gaoithe export cable including a review of surveys required for consent compliance, asset management surveys, and input to a cost model for the lifetime of the OFTO asset.

2024-2025, Confidential Client, OWF Site Selection Constraints Analysis (DE). Ecology lead on review of environmental constraints for PDAs in Germany to inform heat mapping and final site selection.

2024, Confidential Client, OWF Site Selection Constraints Analysis (PT). Ecology lead on review of environmental constraints for PDAs in Portugal to inform heat mapping and final site selection.

2024, Confidential Client, Round 5 Bidding Support (UK) Project manager for support on Social Value documents. Production of EIA timeline, input into EIA strategy document, and environmental review of export cable routes.

2023 – 2024, Dogger Bank A, B, C Cable Installation, (UK). Project Manager for post-consent support during the export cable installation phase for three OWFs.

2024, Seagreen Offshore Wind Farm, (UK). Project Manager for post-consent environmental support for S36 Licence Variation for the Seagreen OWF in Scotland. Production of Supporting Information Document for submission to MD-LOT.

2023-2024, XLinks UK to Morocco Power Project, (UK, Europe). Project Manager for geophysical and environmental survey consenting support across the UK, France, Spain, Portugal and Morocco for 2023 and 2024 surveys.

2023-2024 Aldbrough Hydrogen Storage Project, (UK). Offshore team lead for the marine components of the project including management of marine surveys and of the PEIR chapter production.

2022-2024, Kyle Rhea Overhead Cable Project, (UK). Project Manager for marine licence application for replacement of overhead cables in the Kyle Rhea Strait. Management of subcontractors for marine surveys.

2019 – 2024, Confidential Clients, Environmental and Consenting Technical Due Diligence, (UK). Management and coordination of TDD for confidential clients identifying and quantifying environmental and consenting risks for lenders and bidders for both OWF and OFTO clients.

2022 – 2023, Shelmalere Offshore Wind, (IR). Assistant Project Manager for the up to 1GW proposed Shelmalere offshore wind farm project located off the coast of Wicklow and Wexford in Ireland. Production of offshore components of EIAR Scoping Report, and specific technical EIAR scoping consultation with key consultees.

2023, Celtic Array Offshore Wind, (IR). Assistant Project Manager for the up to 1GW proposed Celtic Array offshore wind farm project located off southeast coast of Ireland. Production of offshore components of EIAR Scoping Report, and management of subcontractors.

2023, Confidential Client, (IR). Assistant Project Manager for the up to 1GW proposed offshore wind farm project located off southeast coast of Ireland. Production of offshore components of EIAR Scoping Report, and management of subcontractors.

2022, Unnamed, Confidential, (UK). PM for a confidential client in the Celtic Sea delivering consent support including site refinement and constraint analysis; and consenting and permitting support.

2019, Greenlink Interconnector, (UK). Production of herring and sandeel assessment for the interconnector route.

2019-2022, Ørsted Secondment, (UK). Three-year secondment working full time for Ørsted within the Environment and Consents department, specifically within the Operations and Maintenance team.

2017, Strangford Lough Tidal Device Decommissioning, (UK). Production of EIA for the decommissioning of a tidal turbine device within Strangford Lough. Including stakeholder engagement and liaison with DAERA in Northern Ireland.

2015-2017, O&M Support OFTO Clients, (UK). Project management for a portfolio of OFO clients providing environmental and consenting support during the operational phase. OFTO projects were for a number of clients and included the following sites: Gwynt y Môr; Race Bank; London Array; Lincs; LID; Humber Gateway; Greater Gabbard; and Burbo Bank.

Corentin Chaptal

Geologist – 3D Ground Modeller
Oxford, UK

A petroleum geologist by training with three years of experience in the geophysics industry. Skilled in field surveys, data interpretation, analysis and reporting, client communication, 3D modelling, GIS, and data management. Participated in international field surveys ranging from one week to several months, as well as academic conferences in the Oil & Gas sector.

Joined OWC with a focus on offshore wind farm projects, where he has strengthened his expertise in GIS—particularly ground modelling—alongside data management, interpretation, and reporting, including the creation of charts and figures to support project delivery.

Key strengths include adaptability, attention to detail, and a strong commitment to meeting client expectations through open communication. He relies on these qualities to integrate smoothly and contribute effectively as a new member of the OWC team.

French citizen living in the United Kingdom, native French speaker, and fluent English speaker.

Qualifications

MSc and BSc in Petroleum Geoscience (UniLaSalle, Beauvais, France)

BSc in Engineering Sciences (ENSE3, Grenoble, France)

Foundation Degree in Mathematics and Physics (Lycée Faidherbe, Lille, France)

Experience

Geologist – 3D Ground Modeller, East Point Geo (OWC), (May 2025 – Present).

- Contributing and delivering various renewable energy projects through the development of GIS-based 3D ground models as part of onshore/offshore site characterisation.
- Collating, interpreting and presenting various geoscience datasets in a GIS 2D and 3D environment.
- Use of sound geological principles and conceptual understanding to assemble, analyse and troubleshot 3D geological models in a GIS environment
- Workflow improvement and documentation

Geoscientist – Project delivery specialist, Zetica Limited (Aug 2021 – Apr 2025).

- Office work: Geophysical and geological project specialist for pre-maintenance rail network assessments, in charge of bidding; Ground Penetrating Radar (GPR) and LiDAR data acquisition, processing and interpretation; and client delivery.
- Fieldwork: Field operation coordinator in the UK, France, and the UAE.
- Special work: GIS, drone and photogrammetry projects.

PhD student, University of Aberdeen (Feb 2020 – Apr 2021).

- Virtual outcrop studies of structural geometries for reservoir performance.
- Drone data acquisition and fieldwork in the French Alps and Merseyside.
- Developed workflows for modelling complex 3D outcrops.
- Modelling/interpretation of 3D outcrops to fill the SafariDB Geological Outcrop database.

Junior Geologist, UniLaSalle, France & GNS Science, New Zealand (Jan 2019 – Dec 2019).

- Geological modelling of gravity-driven deposits along the Hikurangi Margin.
- 40-day coastal fieldwork with drone surveying and 3D outcrop modelling for structural analysis, sedimentological measurements, and 3D modelling.
- Workflow creation for 3D outcrop model development and interpretation.

- Oral presentations and publications at 2019 IAS, EAGE and ASF conferences.

Project references

2025, AO9 Floating Offshore Wind Farm (FR) – OWF Ground Model. Development of the GIS ground model to support the preliminary study of the AO9 extension site. Dataset review and data management. Desktop study and ground modelling. Creation of figures and charts. Reporting and addressing client review comments.

2025, Rampion 2 Offshore Wind Farm (UK) – Landfall Ground Model. Ground model development and reporting. Integration of newly surveyed geophysical and geotechnical data (4 boreholes, 2 trial pits and 4 onshore geophysical lines) for ground modelling purpose. Drawing of geological cross-section profiles throughout the landfall site to characterise the depth of interest for Horizontal Directional Drilling (HDD). Illustrating and detailing the site through the writing of a technical note, the creation of maps and vectorised cross-sections and a GIS project.

2025, Outer Dowsing Offshore Wind Farm – 3D model and Charts (UK). Creation of charts following the update of horizons within the OSS, ORCP and ANS areas. 3D model of the Export Cable Corridor.

2025, West of Orkney Offshore Wind Farm – GIS Ground model, 3D models and Charts (UK). Ground model development of the OAA and ECC area phase 2 study. 3D modelling of the OAA and ECC sites. Creation of charts and figures to update the phase 2 report.

Publications and presentations

Improved 3D coastal outcrop models using multiple Unmanned Aerial Vehicle acquisitions (journal publication and presentation at the First EAGE Unmanned Aerial Vehicle Workshop, Toulouse, France, Dec 2019; https://doi.org/10.3997/2214-4609.201903327)

3D coastal outcrop modelling workflows for deep-water system characterisation (oral presentations at IAS Roma, Italy, Sep 2019 and ASF Beauvais, France, Oct 2019)

Isla Symons

Environment and Consents Intern
South West England, UK

Isla is a Graduate Marine Consultant with OWC working within the Environment and Consents team. She has an educational background in both hydrographic surveying and offshore renewable energy and studied a range of topics including renewable energy law and policy, marine economics, marine biodiversity and data processing in a variety of different programmes, including a focus on port and dredging activities. Isla has also had practical experience mobilising and using survey equipment such as MBES, SSS, SBP and more. She has previously worked within business development in subsea surveying, worked with potential clients on service offerings, developed market strategy platforms and assisted wider commercial functions on tenders. Isla is now supporting the Environment and Consents team at OWC, assisting on projects throughout the project lifecycle including Pre-FEED, post consent compliance and marine licencing projects. She is also collaborating and working with other departments, assisting on a wide range of projects.

Isla is a British citizen and a native English speaker.

Qualifications

MSc Offshore Renewable Energy, University of Plymouth (2023)

BSc Ocean Exploration and Surveying, University of Plymouth (2022)

Experience

Graduate Marine Consultant, OWC, (Sept 2025 – Present). Isla supports the Environment and Consents Team in delivering environmental permitting and advisory services for renewable energy projects. This involves preparing marine consents and compliance documentation across all project phases and producing client-facing deliverables such as reports and presentations. She also collaborates with other technical teams and contributing to environmental analysis, proposals, and business development.

Environment and Consents Intern, OWC, (Jun 2025 – Aug 2025). Isla joined OWC in 2025 as part of the Environment and Consents Team, and supports existing services offered by OWC, including early feasibility, survey support, environmental impact assessment (EIA) interface and post-consent compliance.

Business Development Intern, Reach Subsea, (Jul 2024 – Oct 2024). Experience focussed on the commercial department and assisted the Business Development Manager in creating a market strategy. Studied and analysed changes in the energy industry to apply to the market strategy. Strategy development includes CRM interface enhancements and sales pursuit plans to. Produced an internal platform for easy understanding of the strategy, created from Microsoft Office packages including MS Excel, PowerBI and Power Pages. Supported the wider commercial team on tenders.

Project References

2025, Confidential Client, Vessel Study, (UK, Europe). Review of relevant laws and legislations for the use of certain vessels in European waters. Consideration of maritime law and permits needed for geophysical surveys.

2025, Confidential Client, Survey Consent Support, (UK). Completion of applications and exemption forms for relevant licences for geophysical and geotechnical surveys.

2025, Confidential Client, Survey Management, (PNG). Input involved research to understand legislation in Papua New Guinea, the specification of any previous surveys in the country, Papua New Guinea environmental legislation and subsequent designations as well as international standards (both for survey and general IFC standards for EIA and environmental assessments).

2025, Confidential Client, Environmental Constraints Analysis, (Asia). Research into marine protected areas and environmental/social factors. Input on baseline information and RAG rating for proposed sites.

2025, Confidential Client, Stakeholder Analysis, (GR). Contributing author to a stakeholder engagement plan, including stakeholder analysis.


OWC
An ABL Group Company

Appendix H Intertidal Benthic Survey Methodology

H.1 Intertidal Phase I survey

An intertidal Phase I walkover survey will be completed in 2026 to map the distribution of biotopes and species present, in line with standard JNCC intertidal survey guidelines (Davies *et al.*, 2001) and common standards monitoring guidance (JNCC, 2004).

The surveys will involve a full visual assessment and UAV surveys of the intertidal area to characterise the habitats and species present. The visual assessment will be completed on foot, walking across the available intertidal area.

Location coordinates will be taken at habitat transition points to ensure habitat boundaries are accurately represented on the habitat maps produced. In addition to the full habitat walkover, several transects, between the MHWS and mean low water springs (MLWS), will be surveyed. Biotope assessments will take place in the upper, middle and lower shore sections of each transect by qualitatively assessing the habitat type and species present. The number and location of transects will be decided *in situ* based on habitat heterogeneity to ensure the full range of habitats present within the study area are accurately represented. Information recorded will include, but not be limited to:

- General site conditions;
- Sediment type and characteristics (including visual estimation of Folk sediment classification);
- Topography;
- Biotope distribution;
- Epifaunal species presence and abundance;
- Any anthropogenic pressures observed on site (e.g. bait digging or other disturbance).

The presence and distribution of species or any features of conservation interest will also be recorded where encountered. Biotopes will be allocated according to the EUNIS (EEA, 2021) whilst in the field, in line with EUNIS habitat classification guidance (Parry, 2019) (unless further office-based research is required to allocate a specific biotope). The presence of any INNS will also be noted and their location recorded. Photos of all habitats and species within the survey area will be taken along with coordinates to enable cross-referencing to habitat maps.

H.2 Intertidal Phase II survey

Quantitative Phase II sediment sampling will be completed to collect samples for the identification of macroinvertebrate assemblages and sediment characteristics present within the survey area. Sediment characteristics also provide a valuable insight into the benthic characteristics of an area and associated macroinvertebrate biota that would typically be expected to occur. Macroinvertebrates are important indicators of overall ecological health because they closely reflect ambient environmental conditions and respond rapidly to contamination events.

The indicative Phase II survey area will be the same as the Phase I survey area, as shown in **Sheet 3** of **Figure** 3-1. Sampling will be carried out in accordance with the JNCC Marine Monitoring guidance (Davies *et al.*, 2001) at survey stations distributed across the intertidal zone.

Ten stations are to be sampled across the survey area at the landfall location. All will undergo PSA and macroinvertebrate analysis, and three stations will also be sampled for chemistry analysis.

The precise locations of the sample stations will be determined during the intertidal Phase I survey, to be completed before the Phase II sampling, to ensure sampling targets the full range of habitats present.

At each survey station the following will be taken:

- Single 0.01m^2 faunal cores inserted into the sediment to a depth of 15cm and removed before being sieved through 0.5 millimetre (mm) mesh and preserved in a suitably sized container for later faunal analysis;
- Single sediment sub-sample for PSA is removed with a 0.01m^2 sediment core.

Faunal samples taken will be preserved in a 4% buffered formalin solution following safe working procedures outlined in safe working plans that will be produced before the surveys commence. The samples will then be delivered to an approved laboratory for analysis.

Sediment characteristics that will be measured include:

- PSA (laboratory analysis post sample collection);
- Macroinvertebrate fauna identification and counts;
- Sediment chemistry analysis.

Faunal analysis involves the counting and identification of macroinvertebrates to the lowest taxonomic level possible. Major faunal group biomass will also be determined, which is particularly useful to identify faunal communities that may be representative of disturbed conditions, such as areas subject to increased concentration of nutrients, amongst others. Species nomenclature will follow the World Register of Marine Species (WoRMS) (WoRMS, 2025) except where more recent revisions are known to supersede WoRMS. All samples will be analysed by an approved laboratory that participates in the NMBAQC (North Atlantic Marine Biological Analytical Quality Control) scheme.

Appendix I 2023 and 2024 survey sample locations

9.1.1.1 **Table 9.1** details the relevant sample stations located within the MHPGC Project PEIR Red Line Boundary, with these are illustrated in **Figure** 3-1**.**

Table 9.1: Subtidal benthic sample locations within the MHPGC Project PEIR Red Line Boundary

Survey	Sample station	Latitude	Longitude	Nearest KP
Scottish waters				
2024	ENV173	000° 55.412' W	56° 34.321' N	208
2024	ENV174	000° 55.662' W	56° 32.17' N	204
2024	ENV175	000° 55.9' W	56° 30.018' N	200
2024	ENV176	000° 56.383' W	56° 27.879' N	196
2024	ENV177	000° 57.122' W	56° 25.729' N	192
2024	ENV178	000° 57.859' W	56° 23.59' N	188
2024	ENV179	000° 58.561' W	56° 21.526' N	184
English waters				
2024	ENV180	000° 59.282' W	56° 19.429' N	180
2023	ENV082	001° 0.907' W	56° 15.884' N	173
2023	ENV083	001° 0.442' W	56° 13.699' N	169
2023	ENV084	001° 0.069' W	56° 11.561' N	165
2023	ENV085	000° 59.657' W	56° 9.411' N	161
2023	ENV086	000° 59.246' W	56° 7.274' N	157
2023	ENV087	000° 58.808' W	56° 5.168' N	153
2023	ENV088	000° 58.43' W	56° 3.009' N	149
2023	ENV089	000° 58.018' W	56° 0.841' N	145
2023	ENV090	000° 57.613' W	55° 58.702' N	141
2024	ENV234	000° 57.861' W	55° 57.557' N	139
2024	ENV235A	000° 57.124' W	55° 57.545' N	139
2023	ENV091	000° 57.195' W	55° 56.518' N	137
2023	ENV092	000° 56.802' W	55° 54.427' N	133
2024	ENV233	000° 54.012' W	55° 49.928' N	124
2024	ENV232	000° 53.311' W	55° 48.713' N	122
2024	ENV231	000° 52.547' W	55° 47.376' N	119
2024	ENV230	000° 52.168' W	55° 46.714' N	118
2024	ENV229	000° 51.643' W	55° 45.786' N	116
2024	ENV228	000° 50.999' W	55° 44.661' N	114
2023	ENV101	000° 51.848' W	55° 44.084' N	111

Survey	Sample station	Latitude	Longitude	Nearest KP
2024	ENV227	000° 51.813' W	55° 43.689' N	111
2024	ENV226	000° 53.232' W	55° 42.978' N	109
2024	ENV171	000° 53.762' W	55° 41.933' N	107
2024	ENV225	000° 54.291' W	55° 40.909' N	105
2024	ENV172	000° 54.839' W	55° 39.829' N	103
2023	ENV110	000° 57.351' W	55° 35.059' N	94
2023	ENV113	001° 0.801' W	55° 29.016' N	82
2023	ENV114	001° 1.534' W	55° 26.893' N	78
2023	ENV115	001° 2.289' W	55° 24.861' N	74
2023	ENV116	001° 3.051' W	55° 22.678' N	70
2023	ENV117	001° 3.778' W	55° 20.592' N	66
2023	ENV118	001° 4.516' W	55° 18.45' N	62
2023	ENV119	001° 5.251' W	55° 16.337' N	58
2023	ENV120	001° 4.643' W	55° 14.263' N	54
2023	ENV121	001° 3.652' W	55° 12.17' N	50
2023	ENV122	001° 2.665' W	55° 10.09' N	46
2023	ENV123	001° 3.251' W	55° 8.02' N	42
2023	ENV124	001° 4.353' W	55° 5.895' N	38
2023	ENV125	001° 5.395' W	55° 3.879' N	34
2023	ENV126	001° 6.48' W	55° 1.817' N	30
2024	ENV185	001° 6.526' W	55° 1.302' N	29
2024	ENV224	001° 7.096' W	55° 0.274' N	27
2023	ENV127	001° 7.61' W	54° 59.764' N	26
2024	ENV186	001° 7.663' W	54° 59.247' N	25
2024	ENV223	001° 8.227' W	54° 58.218' N	23
2023	ENV128	001° 8.732' W	54° 57.704' N	22
2024	ENV187	001° 8.797' W	54° 57.191' N	21
2024	ENV210	001° 9.363' W	54° 56.163' N	19
2023	ENV130	001° 11.951' W	54° 53.919' N	18
2024	ENV211	001° 9.77' W	54° 55.109' N	17
2023	ENV063	001° 10.028' W	54° 54.748' N	16
2024	ENV212	001° 10.033' W	54° 54.119' N	15
2023	ENV131	001° 14.138' W	54° 51.996' N	14
2024	ENV213	001° 10.861' W	54° 53.056' N	13
2024	ENV214	001° 11.418' W	54° 52.019' N	11
2023	ENV132	001° 10.019' W	54° 55.721' N	10

Survey	Sample station	Latitude	Longitude	Nearest KP
2024	ENV215	001° 11.954' W	54° 51.012' N	9
2024	ENV216	001° 12.824' W	54° 51.017' N	8
2024	ENV222	001° 13.326' W	54° 50.222' N	7
2024	ENV219	001° 15.926' W	54° 50.394' N	6
2024	ENV198	001° 13.955' W	54° 50.156' N	6
2024	ENV239	001° 14.158' W	54° 50.078' N	6
2023	ENV068	001° 13.774' W	54° 50.076' N	6
2024	ENV188	001° 12.53' W	54° 49.962' N	6
2023	ENV070	001° 16.281' W	54° 49.481' N	4
2024	ENV221	001° 14.124' W	54° 49.074' N	4
2024	ENV197	001° 13.356' W	54° 48.994' N	4
2024	ENV200	001° 15.905' W	54° 49.161' N	4
2024	ENV199	001° 15.192' W	54° 48.795' N	4
2024	ENV201	001° 17.027' W	54° 48.593' N	2

Appendix J Species scientific common names and biotopes

J.1 Latin and common names

Scientific name	Common name
Abra alba	White furrow shell
Abra prismatica	Elongated furrow shell
Acrocnida brachiate	Sand burrowing brittlestar
Alcyonidium diaphanum	Sea chervil
Alcyonium digitatum	Dead mans fingers
Amphiura filiformis	Brittlestar
Arachnanthus sarsi	Scarce tube-dwelling anemone
Arctica islandica	Ocean quahog
Ascidella scabra	Sea squirt
Astropecten irregularis	Sand star
Bathyporeia elegans	Sand digger shrimp
Corella eumyota	Orange-tipped sea squirt
Echinocyamus pusillus	Pea urchin
Ennucula tenuis	Smooth nut clam
Fabulina fabula	Bean-like tellin
Galathea intermedia	Squat lobster
Galathowenia oculata	Oweniid tube worm
Heteromastus filifirmis	Red thread worm
Hydroides norvegica	Norweigan tube worm
Kurtiella bidentata	Two-toothed montagu shell
Laminaria digitata	Oarweed
Laminaria hyperborea	Tangle/Cuvie
Levinsenia gracilis	Paraonid bristle worm
Ligia asellus	Sea slater
Magelona mirabilis	Shovelhead worm
Mediomastus fragilis	Capitellid bristle worm
Modiolus modiolus	Horse mussel
Nephtys hombergii	Catworm
Nucula nitidosa	Shiny nut clam
Ophelia borealis	Bristleworm
Owenia fusiformis	Tubeworm
Pennatula phosphorea	Phosphorescent sea pen
Paradoneis lyra	Paraonid bristle worm

Scientific name	Common name
Paramphinome jeffreysii	Bristle worm
Spiophanes bombyx	Bee spinoid
Sabellaria spinulosa	Ross worm
Spisula subtruncata	Cut trough shell
Virgularia mirabilis	Slender sea pen

J.2 Biotopes

Biotope code	Biotope name
MC121/CR.HCR.FaT	Faunal turf communities on Atlantic circalittoral rock
MD32/SS.SCS	Atlantic offshore circalittoral coarse sediment
MD321/SS.SCS.OCS	Faunal communities in Atlantic offshore circalittoral coarse sediment
MC62/SS.SMu	Atlantic circalittoral mud
MC6212/SS.SMu.CSaMu.ThyEten	*Thyasira* spp. and *Ennucula tenuis* in circalittoral sandy mud
MC6216/SS.SMu.CFiMu.SpnMeg	Sea pens and burrowing megafauna in Atlantic circalittoral fine mud
MD62/SS.SMu	Atlantic offshore circalittoral mud
MD6217/SS.SMu.OMu.LevHet	*Levinsenia gracilis* and *Heteromastus filiformis* in Atlantic offshore circalittoral mud and sandy mud'
MD6218/SS.SMu.OMu.PjefThyAfil	*Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in Atlantic offshore circalittoral sandy mud
MC42/SS.SMx.CMx	Atlantic circalittoral mixed sediment
MC421/SS.SMx.CMx	Faunal communities of Atlantic circalittoral mixed sediment
MC4213/SS.SMx.CMx.KurThyMx	*Kurtiella bidentata* and *Thyasira* spp. in circalittoral muddy mixed sediment
MD42/SS.SMx	Atlantic offshore circalittoral mixed sediment
MD4211/SS.SMx.OMx.PoVen	Polychaete-rich deep *Venus* community in offshore mixed sediments
MC52/SS.SSa	Atlantic circalittoral sand
MC521/SS.SSa.CFiSa	Faunal communities of Atlantic circalittoral sand
MC5211/SS.SSa.CFiSa.EpusOborApri	*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand
MC5212/SS.SSa.CFiSa.ApriBatPo	*Abra prismatica*, *Bathyporeia elegans* and polychaetes in circalittoral fine sand
MD5212/SS.SSa.OSa.OfusAfil	*Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand

Biotope code	Biotope name
MB5236/SS.SSa.IMuSa.FfabMag	*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sand
MB5238/SS.SSa.IMuSa.SsubNhom	*Spisula subtruncata* and *Nephtys hombergii* in Atlantic infralittoral muddy sand

J.3 Responses to Natural England Discretionary Advice Service Provided (August, 2026)

Comment	How and where addressed in this technical report and PEIR
Natural England notes that a precautionary 9 km buffer was set based on the maximum spatial extent over which benthic impacts may occur. Natural England notes that sediment dispersion modelling is yet to have been undertaken so the Zone of Influence (ZoI) for the project has yet to be determined.	Sediment plume modelling has been undertaken and is available to view within **Volume 2, Annex 2.2: Model Design Validation and Results**. The modelling indicates that sediment plumes are spatially constrained and transient, with measurable deposition generally limited to within approximately 200 m of the source and SSC increases reducing to background levels within 24 to 48 hours. The results demonstrate that sediment-related effects are largely confined to the immediate vicinity of construction activities. Nevertheless, a precautionary study area extending 9 km from the Offshore Development Area has been adopted for the assessment. Further discussion is provided in **Volume 2, Chapter 3: Benthic Subtidal and Intertidal Ecology, of the PEIR**.
Natural England notes that some baseline data sources more than 10 years old. Whilst these datasets can provide useful contextual information, they should not be relied upon for baseline characterisation or environmental assessments. Natural England refers the Section 12.1: Principles for using existing datasets of our Phase I Offshore Wind Best Practice Advice (Parker et al. 2025a[1]).	The Applicant acknowledges that some data sources included within **Table 3.1** are based on survey data collected more than 10 years ago. The dates of the underlying surveys and datasets and coverage of the Benthic Subtidal and Intertidal Ecology Study Area are presented within **Table 3.1** to provide context and support transparency in the interpretation of the evidence base. These sources were considered alongside more recent site-specific surveys and contemporary datasets as part of a precautionary multiple-lines-of-evidence approach to inform the potential occurrence of benthic habitats and biotopes within the Benthic Subtidal and Intertidal Ecology Study Area and for temporal contextualisation. Greater weight was attributed to MHPGC Project-specific survey data collected within the MHPGC Project PEIR Red Line Boundary, while older datasets were used to supplement the evidence base for the wider ZoI, particularly where they were spatially relevant to the MHPGC Project. Habitats of conservation importance identified within the MHPGC Project PEIR Red Line Boundary have been characterised and ground-truthed using project-specific survey data.
Natural England notes that only 35 of 133 grab samples from 2023 survey were located within the MHPGC Project PEIR Red Line Boundary in 2023, and 42 of 59 stations in 2024. This is understood to be due to the survey covering multiple cable corridor route options. However, Natural England notes that there appears to be large areas without any grab sampling. For example, between KP133 and KP124 (9 km), KP103 and KP94 (11 km), KP94 and KP82 (12 km). Natural England advises that clarification is provided as to why these areas were not surveyed with greater resolution and questions how the benthic communities within these areas will be characterised.	Natural England's comment is noted. The distribution of benthic sampling stations reflects the survey design, which was developed to meet the survey objectives and provide coverage across the alternative offshore export cable route and landfall options under consideration at the time. In 2023, a total of 133 stations were selected as part of a benthic survey strategy desktop study of publicly available data prior to survey acquisition and were spaced at approximately 4 km intervals across the eastern and western route options and associated landfall options (Gardline, 2024a / **Appendix C**). Prior to grab sampling, MBES, magnetometer and side-scan sonar reconnaissance data were reviewed to identify potential archaeological features, unexploded ordnance and other seabed constraints. A subsequent survey in 2024 comprised 59 pre-selected stations focused on the refined export cable route, with stations generally spaced at approximately 2 to 4

Comment	How and where addressed in this technical report and PEIR
	km intervals and adjusted in the field where necessary to avoid seabed hazards and other obstructions (Gardline, 2025a / **Appendix E**). Habitat characterisation was subsequently undertaken using an integrated assessment of sediment sampling, seabed imagery and habitat classification analyses. Biotopes were shown to be relatively homogenous between the locations stated by Natural England (**Figure 4-3**).
Natural England notes some discrepancies between the text within Section 3.3.3 and Table 3-2 regarding the spatial applicability of benthic surveys for the MHPGC Project PEIR Red Line Boundary. Natural England advises that clarification should be provided regarding the spatial overlap of 2023 and 2024 benthic surveys for the Project PEIR Red Line Boundary.	**Section 3.3.3** and **Table 3.2** have been updated to clarify the spatial applicability of the benthic surveys to the MHPGC Project PEIR Red Line Boundary and to distinguish between the number of survey stations located within the boundary and the number of stations where successful grab samples were obtained. Survey stations are shown in **Figure** 3-1.
Natural England notes that DDV surveys were undertaken but only limited information is provided regarding the location and coverage of transects. For example, only grab samples are reported within Figure 3-1. Natural England advises that location, length and coverage of DDV transects is made clearer within the survey report, and that a figure is provided to show the distribution of transects across the survey area. Information should also be provided regarding the sampling strategy for DDV, including whether possible habitats of conservation interest identified by geophysical surveys were targeted for ground-truthing.	**Section 3.3.3** and **Table 3.2** have been updated to provide additional information on the DDV survey methodology, coverage and station selection. DDV was successfully obtained at all sample stations shown in **Figure** 3-1 (this fact has now been detailed within this report), with DDV surveys comprising camera transects typically extending approximately 200 m in total and centred on each survey station. Transects are displayed in full in **Appendix D** and **Appendix F** (see Appendix C of these respective documents). The Applicant notes Natural England's comment regarding the presentation of the DDV survey data. Information on the DDV survey strategy, station locations and transect methodology is provided within the survey documentation (Gardline, 2023; Gardline 2024a,b [**Appendix C** and **Appendix D**]; Gardline 2025a,b [**Appendix E** and **Appendix F**]). Survey stations were pre-selected prior to survey acquisition as part of the survey design process, based on a desktop study of publicly available data. Prior to sampling, geophysical survey data were used to confirm that station locations were suitable for sampling operations.
Natural England notes that the survey report uses surveys from the Cambois Connection export cable corridor project to characterise the regional benthic environment. Whilst Natural England agrees that data from this project may provide useful data for the wider region, the spatial position of this project in relation to the MHPGC Project Boundary is unclear. Whilst 0.25 km is provided as the distance, this is presumably at the closest location and does not represent proximity along the whole cable corridor. In addition, the Cambois Connection landfalls in Northumberland so will not provide useful information for the southern section of the MHPGC Project Boundary. Natural England advises that clarification is provided for the location of the Cambois Connection export cable corridor in relation to the MHPGC Project Boundary to help inform the relevance of provided regional information.	**Table 3.1** has been updated to clarify the spatial relationship between the Cambois Connection export cable corridor and the MHPGC Project PEIR Red Line Boundary by including the location of the Cambois Connection landfall relative to the MHPGC Project landfall. Corresponding clarification has also been included within **Sections 4.3, 4.4, 4.5, 5.2** and **5.3** where the Cambois Connection dataset is discussed in relation to English waters. Reference to Cambois Connection has been removed in relation to intertidal characterisation considering the significant distance from the landfall of the MHPGC Project (**Section 5.3**).

Comment	How and where addressed in this technical report and PEIR
Natural England notes that no areas of Sabellaria spinulosa reef were identified within the survey area, despite being present locally. Natural England questions whether drop-down video transects were located in areas of possible reef, identified by geophysical surveys, to provide confidence that this habitat is not present. Natural England advises that clarification is provided regarding the DDV survey strategy and whether areas of possible S. spinulosa reef were targeted.	The geophysical survey data was not analysed for biogenic reef features ahead of the DDV survey campaign. However, it should be noted that there were 76 DDV samples collected across the MHPGC Project PEIR Red Line Boundary none of which identified of *S. spinulosa* reef. The areas of *S. spinulosa* reef identified by EMODnet (2023) and JNCC (2022) data were also targeted by five DDV samples and no records of reef were recorded. As *S. spinulosa* is an ephemeral feature, its presence will be re-evaluated at the pre-construction phase of the development. However, it has not been recorded within the site-specific survey data collected to date.
Natural England notes that areas of Sea pen and burrowing megafauna were identified by the survey report. Sea pens and burrowing megafauna is a NERC Act (2006) Habitat of Principal Importance and OSPAR listed threatened and/or declining habitat. Natural England advises that the extent of this habitat is quantified and mapped within this region. We also question whether sufficient underwater imagery data has been used, in combination with geophysical survey data, to inform assessments at PEIR stage (and possible micro siting activities during construction, if required).	Natural England's comment is noted. Sea pen and burrowing megafauna communities have been assessed using DDV imagery, sediment sampling and supporting geophysical survey data. Full details of the habitat assessment can be found within Gardline 2024b (**Appendix D**) and Gardline 2024b (**Appendix F**). The distribution of the associated EUNIS biotope MC6216 (Sea pens and burrowing megafauna in Atlantic circalittoral fine mud) is presented in **Figure 4-3** and **Figure 4-4**, based on interpretation of the survey data. Additional text has been included within **Section 4.5** to clarify the distribution of stations exhibiting characteristics of sea pen and burrowing megafauna communities. DDV imagery was acquired at all survey stations and interpreted alongside sediment sampling and available geophysical survey data to support habitat characterisation and ground-truthing. The Applicant therefore considers that sufficient survey data have been collected to inform the PEIR assessment.
Natural England notes that areas of Annex I qualifying stony reef were identified within the survey area, with patches of 'Medium' resemblance reef identified at KP6. Natural England advises that the extent of stony reef is quantified and mapped within this region. We also question whether sufficient underwater imagery data has been used, in combination with geophysical survey data, to sufficiently quantify this habitat and inform assessments at PEIR stage (and possible micrositing activities during construction, if required).	Natural England's comment is noted. Potential stony reef was assessed using DDV imagery, applying the criteria adopted by Irving (2009). Sediment composition and supporting geophysical survey data were used to inform interpretation of the seabed and target investigations of areas with potential stony reef characteristics. To specifically investigate areas of potential stony reef in the nearshore region, three camera-only transects were targeted during the 2024 survey (ENV238, ENV240, and ENV239, with the latter lying within the MHPGC Project PEIR Red Line Boundary). Additional text has been included in **Section 4.5** to clarify the distribution of stations assessed for stony reef resemblance. Of the stations assessed within the MHPGC Project PEIR Red Line Boundary, only ENV188 and ENV219 demonstrated medium resemblance to stony reef, with all other stations showing low or no resemblance. The Applicant considers that the DDV imagery and supporting geophysical data provide an appropriate basis for the assessment of potential stony reef.
Natural England notes discrepancies regarding the occurrence of Annex I qualifying stony reef between the Benthic Ecology Technical Report and the Habitat Assessment Report.	Natural England's comment is noted. The Applicant acknowledges that the text presented within the PEIR focussed on survey stations located within the MHPGC Project PEIR Red Line Boundary and therefore did not fully reflect the wider stony reef resemblance assessment presented in the associated habitat assessment

Comment	How and where addressed in this technical report and PEIR
Natural England advises that clarification is provided regarding the occurrence of stony reef across the survey area.	report. **Section 4.5** has been updated to align with the habitat assessment report and clarify that 17 survey stations were assessed for stony reef resemblance, of which six survey stations showed medium resemblance to stony reef. Two of these stations (ENV188 and ENV219) are located within the MHPGC Project PEIR Red Line Boundary. The assessment was informed by DDV imagery, sediment composition and supporting geophysical survey data.
Natural England notes that IQI scores are reported. However, IQI information is not presented within the Appendices supplied (ref: MHPGC_PEIR_Vol 2_Annex 3.1_Benthic Ecology Technical Report Appendices). Natural England advises that further information on the production of IQI values is presented to provide further evidence.	Following a review of the Benthic Ecology Technical Report and supporting survey documentation, references to Infaunal Quality Index (IQI) scores have been removed from the reporting. No supporting evidence for the reported IQI values could be identified within the available survey reports or appendices, and it is therefore considered that these references were inadvertently carried forward from an earlier draft of the document. The Applicant has amended the report accordingly to ensure consistency between the assessment and the supporting evidence base. The Applicant considers that the benthic baseline characterisation remains robust and adequately supported by the survey data and analyses presented within the report and associated appendices. Consequently, no further information regarding IQI values is available or considered necessary to support the conclusions of the baseline assessment.
Natural England is unclear as to why intertidal surveys at Cambois, Northumberland, are relevant to landfall works in County Durham, 39 km south. Natural England is similarly unclear as to how circalittoral biotopes are relevant to intertidal baseline ecology.	Natural England's comment is noted. As a project-specific intertidal survey had not been undertaken at the time of writing, information from the Cambois Connection project was included solely to provide regional context. To avoid potential confusion regarding the evidence base for the MHPGC Project, references to the Cambois Connection project have been removed from the intertidal ecology baseline (**Section 5**). Site-specific intertidal survey data have been collected across the intertidal study area and will be presented within the technical report submitted in support of the DCO application.
Natural England notes that MPAs designated for benthic habitats have been identified within the ZoI for secondary impacts (e.g. Farnes East MCZ and North East of Farnes Deep HPMA). Natural England advises that modelling may be required to determine the likely impacts upon benthic MPAs within the ZoI for secondary impacts (e.g. sediment deposition modelling).	Sediment plume modelling has been undertaken and is presented **in Volume 2, Annex 2.2: Model Design Validation and Results**. The modelling, together with associated sediment deposition estimates, has been used to define the extent and magnitude of potential sediment-related effects and to inform the assessment of potential impacts on benthic receptors, including the Farnes East MCZ and North East of Farnes Deep HPMA. Modelling scenarios included locations at the closest point to the Farnes East MCZ, representing a precautionary worst-case assessment for potential sediment plume effects on the site. The assessment has considered the predicted overlap of suspended sediment concentration increases and sediment deposition with both the Farnes East MCZ and North East of Farnes Deep HPMA. The results indicate that sediment-related effects would be spatially constrained and largely limited to the vicinity of construction activities. Additional work will be undertaken to assess impacts on the North East of Farnes Deep HPMA,

Comment	How and where addressed in this technical report and PEIR
	as discussed in **Approach to Marine Protected Area/Marine Conservation Zone and Highly Protected Marine Area Assessments, prepared to accompany the PEIR**.
Natural England notes that VERs are included within Table 7-2 and assessment provided as to whether they occur within the MHPGC Project PEIR Red Line Boundary. However, Natural England advises that consideration is provided for habitats and species which are present outside of the boundary, but within the ZoI for the Project – i.e. those habitats which have a potential to be impacted by the project. Natural England advises that Table 7-2 is updated to reflect that habitat and species outside of the Red Line Boundary but within the ZoI have a potential to be impacted by the Project.	The Applicant considers that **Table 7.2** already identifies VERs occurring both within the MHPGC Project PEIR Red Line Boundary and within the wider Benthic Subtidal and Intertidal Ecology Study Area. Within **Table 7.2**, Column 4 ("Distribution within the Benthic Subtidal and Intertidal Ecology Study Area") describes the distribution of each VER across the wider study area, including receptors occurring outside the MHPGC Project PEIR Red Line Boundary but within the potential Zone of Influence. Column 5 ("Within the MHPGC Project PEIR Red Line Boundary?") then indicates whether each VER occurs within the MHPGC Project PEIR Red Line Boundary. The Applicant therefore considers that receptors occurring outside the MHPGC Project PEIR Red Line Boundary, but within the wider study area and potential Zone of Influence, are already captured within **Table 7.2**, and no further amendment is considered necessary.
Natural England notes that Sea pen and burrowing megafauna is also a NERC Act (2006) Habitat of Principal Importance.	Natural England's comment is noted. The Applicant understands Natural England's reference to relate to the association between sea pen and burrowing megafauna communities and the Habitat of Principal Importance (HPI) 'Mud habitats in deep water'. This association has been clarified at the first mention of sea pen and burrowing megafauna communities in English waters within **Section 4.5.2**.
Natural England notes that kelp beds have been identified at Nose's Point but not within the MHPGC Project Red Line Boundary. Natural England notes that no evidence has been provided to demonstrate that kelp beds are not present, noting that they occupy infralittoral waters close to shore and that intertidal survey reports have yet to be provided. In addition, Natural England notes that kelp beds at Nose's Point will remain within the ZoI for the project and have the potential to be affected by secondary impacts. Natural England advises that kelp beds should remain as a VER for further assessment, even if no beds are recorded within the Red Line Boundary.	Natural England's comment is noted. The Applicant acknowledges that kelp beds were not recorded during the project-specific subtidal surveys but are known to occur within the wider study area, including at Nose's Point. Accordingly, kelp beds have been considered as a VER within the wider Benthic Subtidal Ecology Study Area. The outcomes of the project-specific intertidal surveys will be considered during subsequent stages of the assessment, as appropriate. Should evidence of kelp beds be identified within the MHPGC Project PEIR Red Line Boundary, their inclusion as a VER within the Project Red Line Boundary will be reviewed and incorporated into the assessment where warranted.
Natural England advises that Ocean quahog (*Arctica islandica*) is included as a VER as a protected species which is present within the Project Red Line Boundary. Natural England advises that A. islandica is included as a VER within Table 7-2 and that the extent and distribution of this species is characterised.	Natural England's comment is noted. Ocean quahog was mistakenly not included as a VER in English waters and has been added as a VER within **Table 7.2**. Records of ocean quahog identified during the project-specific surveys, including information on its distribution within the MHPGC Project PEIR Red Line Boundary, have also been included within **Section 4.5.2**.
Natural England questions whether peat and clay exposures were identified by the geophysical or benthic ecology surveys.	Natural England's comment is noted. Project-specific geophysical and benthic survey data were reviewed for evidence of peat and clay exposures. No peat exposures were identified during interpretation of the geophysical survey data or

Comment	How and where addressed in this technical report and PEIR
Peat and clay exposures is a NERC Act (2006) Section 41 Habitat of Principal Importance and a Marine Irreplaceable Habitat (Tillin et al. 2022[2]). Natural England advises that the survey report is updated to reflect whether peat and clay exposures were identified across the survey area, and quantified if present.	benthic surveys. In the nearshore section, geophysical interpretation identified areas of rock outcrop and rocky morphology, and noted that some exposed features may represent either bedrock or glacial till. No evidence of piddock borings or piddock communities was recorded during the subtidal benthic surveys. A project-specific intertidal survey has not yet been undertaken and will provide further information on the presence or absence of intertidal peat and clay exposure habitats within the landfall area. Absence of this habitat is now noted within **Section 4.5.2**.
identified as a feature of Teesmouth and Cleveland Coast SPA/Ramsar (UK9006061/UK11068) within the table "Benthic Ecology baseline: designated sites". However, Natural England notes that Saltmarsh is missing from the list of Intertidal VERs. Natural England advises that saltmarsh is included as an intertidal VER if there is potential for impact upon this SPA supporting habitat (i.e. within the Project ZoI).	Natural England's comment is noted. While saltmarsh supports the bird features of the Teesmouth and Cleveland Coast SPA/Ramsar, review of the designated site interest features confirms that saltmarsh is a feature of the Teesmouth and Cleveland Coast SSSI. Although the SSSI overlaps the SPA/Ramsar, the areas of saltmarsh lie further south, outside the Benthic Subtidal Ecology Study Area. The section of the SPA/Ramsar within the Benthic Subtidal Ecology Study Area is associated with the Durham Coast SSSI, which is not designated for saltmarsh. Saltmarsh has therefore been removed from **Table 6.1** to avoid confusion, and additional explanatory text has been included in **Section 5.3.1**. Similarly, reference to saline lagoon has been removed from **Table 6.1**, with supporting justification provided in **Section 5.3.1**.
Natural England notes that 5 VERs are listed as features of the North East of Farnes Deep MCZ / HPMA. Natural England refers to the conservation advice package for the site which describes that the whole ecosystem is protected, defined as: "all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea." See: Conservation Advice for North East of Farnes Deep HPMA. Natural England advises that the VERs for North East of Farnes Deep MCZ/HPMA should reflect the designated feature for the site.	Natural England's comment is noted. The Applicant acknowledges that the designated feature of the North East of Farnes Deep HPMA is the marine ecosystem of the area, encompassing all marine flora and fauna, marine habitats, geological and geomorphological interests, associated abiotic elements, and supporting ecosystem functions and processes. The five features presented in the Benthic Ecology assessment relate to the North East of Farnes Deep MCZ and are not intended to represent the designated feature of the HPMA. Identification of the relevant ecosystem components and receptors for the North East of Farnes Deep HPMA will be undertaken as part of the dedicated HPMA assessment, which will adopt a whole-ecosystem approach consistent with the site's conservation advice. Additional work will be undertaken to assess impacts on the North East of Farnes Deep HPMA, as discussed in the **Approach to Marine Protected Area/Marine Conservation Zone and Highly Protected Marine Area Assessments, prepared to accompany the PEIR.**
Natural England notes that the Appendices are provided combined into a very large document without any index or navigational information. Natural England requests that future documents for review include an index for navigation to enable review.	Natural England's comment is noted. The Applicant will ensure an index is provided for the Appendices.