



Morven Hawthorn Pit Grid Connection Project

Preliminary Environmental Information Report

Volume 1, Annex 3.1: Selection and Refinement of
Landfall

MVCNS-J4029-JVW-00004
October 2026
B01

Document status

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

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Glossary

Term	Meaning
AC connection cables	Alternating Current (AC) cables that will connect the proposed onshore land substation to the National Grid Hawthorn Pit Substation.
Applicant	The legal entity making the applications for consent; Morven Offshore Wind Limited (MvOWL).
Anchorage area	An area of seabed formally designated and charted by the relevant maritime authority for the anchoring of vessels, subject to applicable navigational and safety controls.
Annex I Habitat	Annex I refers to a habitat as defined under the European Union Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive).
Archaeological Exclusion Zones	An area surrounding any features or geophysical anomalies of known or potential archaeological interest within which no activity may occur.
Cable protection	Measures used to protect subsea cables where burial is not possible, due to seabed conditions or at cable crossings, to ensure cable stability and reduce risks from anchors, fishing gear and environmental forces.
Commitments	Measures (embedded mitigation and secondary) to be adopted during the construction, operation and maintenance and decommissioning phases of the MHPGC Project.
Development Consent Order (DCO)	An order made under the Planning Act 2008, as amended, granting development consent.
Direct impact	This is associated with the direct activities of the MHPGC Project as well as the activities of primary suppliers.
Environmental Impact Assessment (EIA)	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Expert Working Groups (EWGs)	A topic-specific group of specialists formed under the evidence plan process (EPP) to resolve technical issues and agree approaches for environmental assessments.
High Voltage Direct Current (HVDC)	A HVDC electric power transmission system uses direct current for electric power transmission, in contrast to the more common alternating current systems. Most HVDC links use voltages between 100kV and 800kV.
High Voltage Alternating Current (HVAC)	A HVAC electric power transmission system uses alternating current for electric power transmission that periodically reverses direction at regular intervals.
Highly Protected Marine Area (HPMA)	Areas of the sea (including the shoreline) that allow the protection and full recovery of marine ecosystems. HPMAs protect all species and habitats and associated ecosystem processes within the site boundary, including the seabed and water column.
Impact	A change caused by an action that occurs during a project's lifetime.
Intertidal area	The area between Mean High Water Springs and the Mean Low Water Springs.

Term	Meaning
Landfall	The area in which the offshore export cables make landfall (come onshore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area between the trenchless technique exit pits and the transition joint bay inclusive of all construction works.
Marine Conservation Zone (MCZ)	An area designated under the Marine and Coastal Access Act 2009 in English waters for the purpose of conserving marine flora, fauna, habitats, or features of geological or geomorphological interest.
Marine Protected Area (MPA)	Areas within the United Kingdom's seas designated for the protection of marine life and habitats against damage caused by human activities.
Marine Directorate Licensing Operations Team (MD-LOT)	The part of the Scottish Government's Marine Directorate responsible for assessing and administering applications for marine licences and Section 36 consent (offshore) in Scotland.
MHPGC Project Environmental Statement (ES)	The document presenting the results of the Environmental Impact Assessment process.
MHPGC Project PEIR Red Line Boundary	The area within which all components of the MHPGC Project will be located, including areas required on a temporary basis during construction and/or decommissioning (such as construction compounds).
MHPGC Project Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach to, and information to support, the EIA and Habitats Regulations Assessment processes for certain topics.
MHPGC Project Preliminary Environmental Information Report (PEIR)	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project and which helps to inform consultation responses.
MHPGC Project Report to Inform Appropriate Assessment (RIAA)	A report prepared by the Applicant containing information that the Competent Authority needs to inform an Appropriate Assessment at Stage 2 of the HRA process. The MHPGC Project will consider whether the MHPGC Project could have adverse effects, either alone or in-combination with other plans or projects, on the integrity of the National Site Network for which the likely significant effects has been previously established.
MHPGC Project Scoping Opinions	Separate scoping opinions received from PINS (on behalf of the Secretary of State) and MD-LOT (on behalf of the Scottish Ministers) in response to the MHPGC Project Scoping Report. The MHPGC Project Scoping Opinions contain the range of issues that PINS, and MD-LOT in consultation with statutory stakeholders, have identified should be considered within the EIA process.
MHPGC Project Scoping Boundary	The spatial extent of the area used to define the environmental baseline to inform impact assessments at the time the MHPGC Project Scoping Report was submitted.
Morven Hawthorn Pit Grid Connection Project	The MHPGC Project is comprised of the offshore export cables in Scottish and English waters from the Morven North or the Morven South offshore substation platform(s) (OSP), landfall, onshore export cables, the onshore land substation (LSS) and AC connection cables.

Term	Meaning
	Also referred to in this report as the MHPGC Project, for ease of reading.
Morven North Offshore Wind Array Project ('Morven North')	The Morven North Offshore Wind Array Project which includes the wind turbines and foundations, Offshore Substation Platforms and foundations, inter-array and interconnector cables and associated infrastructure located within the Morven North Boundary.
Morven North Offshore Wind Array Project and Morven South Offshore Wind Array Project ('Morven North and Morven South')	Morven North and Morven South comprises the Morven North Offshore Wind Array Project and Morven South Offshore Wind Array Project, collectively.
Morven South Offshore Wind Array Project ('Morven South')	The Morven South Offshore Wind Array Project, which includes the wind turbines and foundations, Offshore Substation Platforms and foundations, inter-array and interconnector cables and associated infrastructure located within the Morven South Boundary.
National Grid Hawthorn Pit Substation	The National Grid substation at Hawthorn Pit, County Durham, which the AC connection cables will connect into from the Onshore Land Substation.
Offshore export cables	HVDC cables which bring electricity from either the Morven North or Morven South offshore substation platform to the TJB at landfall.
Offshore export cable corridor	The proposed corridor in which the offshore export cables will be located, from either the Morven North or Morven South offshore substation platform to the transition joint bay (TJB) at landfall.
Offshore substation platforms (OSP(s))	OSP(s) comprise the support structure, topside and electrical components used for collecting the electricity generated by the wind turbine generators, in Scottish waters, for the passage or transmission to landfall. These OSP(s) can be divided into two types: • HVAC collector substations; • HVDC converter substations.
Offshore waters	The area seaward of 12nm, extending out to the UK's continental shelf.
Onshore export cables	HVDC cables which bring electricity from the TJB to the Onshore Land Substation.
Onshore Land Substation (LSS)	A purpose-built site comprising a compound containing the electrical components for converting the HVDC to HVAC power. The LSS site associated with the MHPGC Project adjusts the power quality and power factor to meet the requirements of power supply being fed to the National Grid Hawthorn Pit Substation.
Planning Inspectorate (PINS)	The PINS is an executive agency of the UK Government responsible for administering and examining DCO applications for NSIPs in England. PINS manages the application process, oversees consultation and examination, and makes a recommendation to the relevant Secretary of State on whether consent should be granted.
Point of Interconnection (PoI)	The Point of Interconnection (PoI) is the point identified by NESO (the National Energy System Operator) where a project connects to the electricity grid. It is the location at which electricity from the project is transferred into the national transmission network.

Term	Meaning
Significance	Effect factor that is determined by the magnitude of impact along with the sensitivity of the receptor.
Sites of Special Scientific Interest (SSSI)	Designated areas which feature rare flora or fauna or are host to important features (physiological or geological) which are of scientific interest, designated under the Wildlife and Countryside Act 1981 (as amended).
Special Area of Conservation (SAC)	A site designation specified in the Habitats Directive (Council Directive 92/43/EEC) and protected in the UK under the Conservation (Natural Habitats, &c.) Regulations 1994 (in Scotland), the Conservation of Habitats and Species Regulations 2017 (in England) and Conservation of Offshore Marine Habitats and Species Regulations 2017 (in Scotland and England). Each site is designated for one or more of the habitats and species listed in the Directive. The Habitats Directive requires the necessary conservation measures to be established involving, if need be, appropriate management plans for each SAC to ensure the favourable conservation status of the habitats or species for which it was designated.
Special Protection Area (SPA)	Locations within the UK designated to conserve rare, vulnerable, and migratory bird species of European importance, as classified by the Conservation (Natural Habitats, &c.) Regulations 1994 (in Scotland), the Conservation of Habitats and Species Regulations 2017 (in England) and Conservation of Offshore Marine Habitats and Species Regulations 2017 (in Scotland and England).
Transition Joint Bay (TJB)	An underground bay housing a joint which connects the offshore export cables to the onshore export cables. The TJB will be located in the vicinity of the onshore side of the landfall.

Acronyms

Unit	Meaning
AC	Alternating current
AOD	Above Ordnance Datum
EIA	Environmental Impact Assessment
EnBW	Energie Baden-Württemberg AG
EPP	Evidence Plan Process
EWG	Expert Working Group
FUE	Follow-Up Exercise
HVAC	High Voltage Alternating Current
HND	Holistic Design Network
HVDC	High Voltage Direct Current
LSS	Land Substation
JNBP	JERA Nex bp Limited
MBAGC	Morven Branxton Area Grid Connection
MCAA 2009	Marine and Coastal Access Act 2009

Unit	Meaning
MD-LOT	Marine Directorate – Licensing and Operations Team
MHPGC	Morven Hawthorn Pit Grid Connection
MMO	Marine Management Organisation
MvOWL	Morven Offshore Wind Limited
OSP	Offshore Substation Platform
OTNR	Offshore Transmission Network Review
RIAA	Report to Inform Appropriate Assessment
RLB	Red Line Boundary
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
Pol	Point of Interconnection
SoS	Secretary of State
TJB	Transition Joint Bay

Units

Unit	Meaning
GW	Gigawatt

1 Selection and Refinement of the Landfall

1.1 Introduction

1.1.1 Overview and background

- 1.1.1.1 This Annex presents a summary of the site selection process undertaken to date for the landfall of Morven Hawthorn Pit Grid Connection Project (hereafter 'the MHPGC Project'). It forms **Annex 3.1: Selection and Refinement of the Landfall** to **Volume 1, Chapter 3: Site Section and Consideration of Alternatives of the Preliminary Environmental Information Report (PEIR)**, prepared for the MHPGC Project, as described in **Volume 1, Chapter 2: Project Description, of the PEIR**. The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process undertaken to date for the MHPGC Project.
- 1.1.1.2 Morven Offshore Wind Limited (MvOWL), a joint venture between JERA Nex bp Limited (JNBP) and EnBW Energie Baden-Württemberg (EnBW) (hereafter 'the Applicant'), was awarded a seabed option under the 2021/22 ScotWind Leasing Round for the Morven Option Lease Agreement Site (hereafter Morven Site), located wholly within Plan Option Area E1, identified in the Scottish Government's Sectoral Marine Plan for Offshore Wind Energy (the SMP) (Scottish Government, 2020).
- 1.1.1.3 In the 2020 Progress Report to the Parliament on Reducing UK emissions, the Committee on Climate Change called for the UK Government to "develop a strategy to coordinate interconnectors and offshore networks for wind farms and their connections to the onshore network and bring forward any legislation necessary to enable coordination" (Committee on Climate Change, 2020). Following this, the UK Government announced the Offshore Transmission Network Review (OTNR) to identify near-term actions and opportunities for offshore windfarm projects to coordinate and thereby address the barriers of the then existing offshore transmission regime to the deployment of offshore wind; the intention being to develop an offshore transmission network that facilitates coordination between offshore wind developments.
- 1.1.1.4 The OTNR led to the publication of the Holistic Design Network (HND) (NGESO, 2022); which established an integrated approach to connecting new offshore wind generation to the electricity transmission network. Half of the generating capacity of the Morven Site was included within the HND assessment alongside other offshore wind developments in the East Coast Region. The remaining capacity was not included due to limitations on the total ScotWind generation considered within the HND.
- 1.1.1.5 The output of 2022 HND recommended that half of the generating capacity of the Morven Site, for up to 1.5 GW, is connected to the grid network at the Point of Interconnection (Pol) at the National Grid Hawthorn Pit Substation in County Durham, England.
- 1.1.1.6 The HND Follow Up Exercise (HND FUE) (Ofgem, 2024) was subsequently undertaken and considered the additional ScotWind projects and generating capacity that had not formed part of HND. This included the remaining half of the Morven Site generating capacity. The HND FUE recommended a second grid connection, for up to 1.5 GW, at a Pol within the Branxton area in East Lothian, Scotland.
- 1.1.1.7 The HND (and HND FUE) assessments both considered an interconnected offshore wind network, where a coordinated connection between other offshore assets was initially proposed.
- 1.1.1.8 Against this strategic grid connection context, in 2024 the Applicant decided to progress the Morven Site as two distinct projects: the Morven North Offshore Wind Array Project (hereafter 'Morven North') and the Morven South Offshore Wind Array Project (hereafter 'Morven South'). Both projects would be located off the coast of Aberdeenshire in the North Sea, within Scottish waters.
- 1.1.1.9 The Applicant also commenced the site selection process for the MHPGC Project, based on the recommended Pol at the National Grid Hawthorn Pit Substation identified through the 2022 HND. The alternatives considered for the MHPGC Project therefore relate to the feasible means of connecting Morven North or Morven South to the National Grid Hawthorn Pit Substation including the identification and assessment of offshore cable routes, landfall locations, onshore cable routes and associated onshore infrastructure.

- 1.1.1.10 In April 2025, NESO subsequently confirmed that the original proposal of a coordinated connection design was discounted and a radial connection for half of the generating capacity of the Morven Site would be connected to the grid network at National Grid Hawthorn Pit Substation in County Durham. This decision is evidenced in the outcome of the HND North Cluster 2 Impact Assessment and Asset Classification (Ofgem, 2025).
- 1.1.1.11 In March 2024, following the recommendations of the HND FUE, NESO also confirmed that the remaining half of the Morven Site generating capacity would connect to the electricity transmission network within the Branxton area (Ofgem, 2025). In September 2025, NESO subsequently confirmed that the original proposal of a coordinated connection design was discounted and a radial connection for remaining half of the generating capacity of the Morven Site would be connected to the grid network at Branxton area. (NESO – Sep 2025, Ofgem - Nov 2025).
- 1.1.1.12 The transmission infrastructure associated with the Hawthorn Pit connection is planned as part of this application with the MHPGC Project seeking development consent and Marine Licence(s) for assets in Scottish and English waters and England. The transmission infrastructure associated with the Branxton connection is planned to be progressed separately through the Morven Branxton Area Grid Connection Project (hereafter referred to as 'MBAGC Project') and does not form part of the application for the MHPGC Project. Further the applications for the generation assets, Morven North and Morven South, are being progressed separately and the Section 36 (s36) applications were submitted to the Scottish Ministers in May 2026 and are undergoing a separate consultation process.
- 1.1.1.13 The MHPGC Project will connect the OSPs in either Morven North or Morven South to the Pol at Hawthorn Pit and will comprise the offshore export cables transiting through Scottish offshore waters, English offshore and inshore waters, to landfall in County Durham where the offshore export cables will connect to the onshore export cables in the transition joint bay (TJB), with onshore export cables connecting to the Onshore Land Substation (LSS) and National Grid substation.
- 1.1.1.14 This Annex summarises the Landfall site selection undertaken to date for the MHPGC Project only.

1.1.2 Purpose of this annex

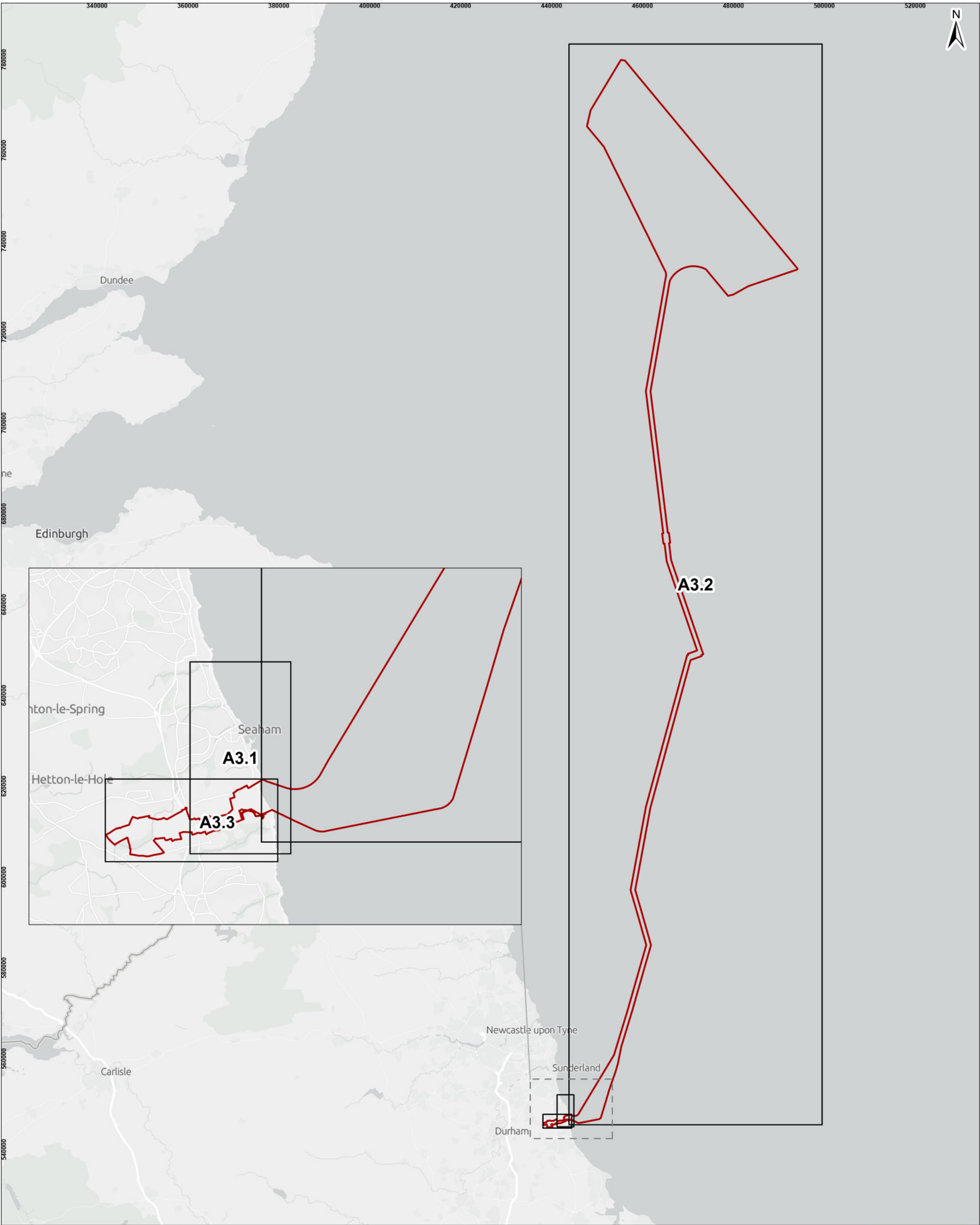
- 1.1.2.1 This Annex sets out the phases of siting and design iterations that the MHPGC Project landfall location has been through from inception to PEIR. Landfall refers to the area in which the offshore export cables make landfall (come onshore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area on the Durham Coast between the trenchless technique subtidal exit pits located between 360m and 1,660m seaward of Mean Low Water Springs (MLWS) and the transition joint bays (TJBs) above Mean High Water Springs (MHWS), inclusive of all construction works and landfall compound(s).
- 1.1.2.2 An important part of the MHPGC Project design process is the consideration, selection and refinement of potential siting options for landfall to communicate to consultees and stakeholders the rationale for how decisions have been reached and how potential adverse effects have been avoided, reduced and/ or mitigated as far as practicable.
- 1.1.2.3 This Annex forms part of a wider suite of site selection documents within the PEIR supporting the MHPGC Project. The overall site selection process is presented in **Volume 1, Chapter 3: Site Selection and Consideration of Alternatives**, with supporting annexes covering the following: **Volume 1, Chapter 3, Annex 3.1: Selection and Refinement of the Landfall** (this Annex), **Volume 1, Chapter 3, Annex 3.2: Selection and Refinement of the Offshore Infrastructure** and **Volume 1, Chapter 3, Annex 3.3: Selection and Refinement of the Onshore Infrastructure**. The relationship between these Annexes and the areas they cover is illustrated in **Figure 1-1**. Together, these documents present the iterative process undertaken to identify and refine the proposed configuration of the MHPGC Project from offshore export cabling through to the point of connection at Hawthorn Pit.
- 1.1.2.4 The site selection and refinement process followed an iterative approach to ensure the most appropriate and efficient solution was identified with consideration to environmental and engineering constraints. The site selection has been progressed through three stages, incorporating feedback received at each phase to further refine the siting and design of the landfall infrastructure in the next stage. These three stages are described in **Table 1.1** and **Figure 1-1**.

Table 1-1: Site selection and refinement stages

Stage	Associated Document
Stage 1 – Identification of Point of Interconnection (PoI)	Volume 1, Chapter 3: Site Selection and Consideration of Alternatives
Stage 2 – Identification of areas of search • Stage 2a – identification of landfall areas of search • Stage 2b – identification of offshore infrastructure search area • Stage 2c – identification of onshore substations search area • Stage 2d – identification of onshore export cable route search area	Volume 1, Chapter 3, Annex 3.1: Selection and Refinement of the Landfall, of the PEIR Volume 1, Chapter 3, Annex 3.2: Selection and Refinement of the Offshore Infrastructure, of the PEIR Volume 1, Chapter 3, Annex 3.3: Selection and Refinement of the Onshore Infrastructure, of the PEIR
Stage 3 – Refinement of the siting and design of the MHPGC Project for PEIR • Stage 3a – refinement of landfall for PEIR • Stage 3b – refinement of offshore infrastructure options for PEIR • Stage 3c – refinement of onshore substation search areas for PEIR • Stage 3d – refinement of onshore export cable route options for PEIR	Volume 1, Chapter 3, Annex 3.1: Selection and Refinement of the Landfall, of the PEIR Volume 1, Chapter 3, Annex 3.2: Selection and Refinement of the Offshore Infrastructure, of the PEIR Volume 1, Chapter 3, Annex 3.3: Selection and Refinement of the Onshore Infrastructure, of the PEIR

1.1.2.5 This Annex focuses on the landfall siting and design considerations between the trenchless technique subtidal exit pits located between 700m and 1,660m seaward of MLWS and the TJBs above MHWS associated with Stages 2a and 3a as detailed in **These three** stages are described in **Table 1.1** and **Figure 1-1..** In particular, this Annex details the following considerations for each stage (considered holistically, rather than in a particular order):

- The approach taken to defining the spatial boundaries and constituent parts of landfall requirements;
- The siting decisions taken by the Applicant; and
- The reasonable alternatives considered for the MHPGC Project, including location and siting options.





Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PEIR

Drawing Title:
MHPGC PROJECT SITE SELECTION ANNEXES

051015202530 km

Scale@A3:1:750,000

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Drawing Number:
MV-CON-REG-0026

Data Sources:
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VER	DATE	DETAILS	BY	CHECK
01	16/07/26	Initial Issue	GM	PRW
02	20/08/26	Extent Update	GM	MP
03	23/09/26	Layer Update	GM	MP

LEGEND

MHPGC Project PEIR

Red Line Boundary

Site Selection Annexes within the PEIR

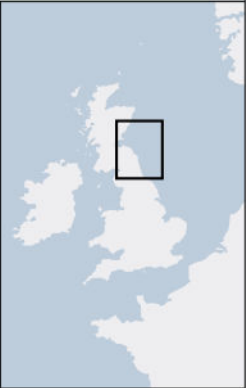


Figure 1-1: MHPGC Project Site Selection Annexes

1.1.3 Consultation and engagement

1.1.3.1 Stakeholder engagement and public consultation is recognised as vitally important for shaping the approach to development throughout each programme stage. **Table 1-2** provides a summary of consultation and engagement undertaken since the recommendation of the 2022 HND process was published to PEIR submission relevant to site selection for the MHPGC Project and **Figure 1-1** provides a summary of the site selection stages.

Table 1-2: Summary of consultation and engagement relevant to site selection for the MHPGC Project

Programme stage	Description of activities	Site selection stage
Consultation July – September 2024	Public consultation events to present: • Overview of the Morven Programme, providing justification for separate consent applications for the MHPGC Project; • Provided context on the HND and HND FUE process and the identification of two separate grid connections for the Morven Site; and • Explanation on how the MHPGC Project will tie in with the Morven Site.	Stage 2a – identification of landfall search area
EIA scoping February 2025	Submission of EIA Scoping Report for MHPGC Project covering: • Scoping boundary; • Landfall search area; • Two offshore export cable options; and • Onshore infrastructure search area.	Stage 2a – identification of landfall search area and progression to identification of a Scoping boundary
Consultation October – November 2025	Public consultation events to present: • Preferred offshore export cable corridor; • Two landfall options; • Two indicative onshore export cable routes; • Three indicative onshore substation locations; • Request for feedback from stakeholders and communities; • Landowner liaison;	Stage 3a – refinement of landfall options for PEIR
Evidence Process Plan (EPP) Steering Group and Expert Working Groups (EWGs) (tranche 1) November 2025	EPP Steering Group and EWGs to discuss ongoing site selection activities and approach to assessments.	Stage 3a – refinement of landfall options for PEIR

Programme stage	Description of activities	Site selection stage
EPP and EWGs (tranche 2) July 2026	EPP Steering Group and EWGs on preliminary PEIR findings and proposed commitments.	Stage 3a – refinement of landfall options for PEIR
Community council meetings July – August 2026	Overview of project refinements since scoping covering: • Selected offshore export cable corridor; • Selected landfall option; • Indicative onshore export cable route; • Two indicative onshore substation locations; • Request for feedback from stakeholders and communities; and • Landowner liaison;	Stage 3a – refinement of landfall options for PEIR

- 1.1.3.2 From the publication of the HND recommendation up to publication of the PEIR, the Applicant has engaged with a range of stakeholders on site selection and the design of the MHPGC Project through consultation events, direct engagement and through the EPP. This included engaging through the EPP during the pre-application phase. The development and monitoring of the EPP and its subsequent progress was undertaken by the EPP Steering Group. The Steering Group comprises the Planning Inspectorate, the Applicant, NatureScot, the Marine Management Organisation (MMO), Natural England, the Environment Agency, and the relevant Local Planning Authorities (Durham County Council and Sunderland County Council) as the key regulatory bodies. Additionally, EWGs were set up to discuss and agree topic specific issues with the relevant stakeholders and to disseminate site and design refinements.
- 1.1.3.3 A summary of the key topics raised during consultation activities undertaken to date specific to the site selection and refinement of the landfall location is presented in **Volume 1, Chapter 3: Site Selection and Consideration of Alternatives, of the PEIR**, alongside how consultation has shaped each stage of site selection.

1.2 Guiding Principles for Site Selection of the Landfall

- 1.2.1.1 Alongside the legislation and policies detailed in **Volume 1, Chapter 3: Site Selection and Consideration of Alternatives, of the PEIR**, the following general principles guided the selection and refinement process at the landfall site, alongside Applicant-led considerations of cost of implementation and engineering constructability:
- Landfall that achieves the shortest route for the offshore export cables (from either Morven North or Morven South OSP to the Landfall Search Area) and onshore export cables (from Landfall Search Area to the onshore substation area of search) to reduce potential for environmental and social impacts by minimising the footprint of the MHPGC Project, as well as minimising electrical transmission losses;
 - Avoidance of key sensitive features / receptors where practicable, and where not, reduce interaction;
 - Minimise disruption to populated areas; and
 - Find a site able to accommodate the design envelope at the relevant stage of the project (such as space and access requirements).
- 1.2.1.2 Each step of the process (as described in **Table 1**) involved gathering desktop data and feedback from stakeholders and the public to inform the assessment of landfall options. Internal workshops were also held to collate and review data and feedback gathered to reach cross-discipline decisions about refining landfall options.

1.2.2 BRAG Assessment Methodology

- 1.2.2.1 A Black/ Red/ Amber/ Green (BRAG) Assessment was adopted to assess onshore infrastructure options during the site selection process (see **Section 1.4.5** and **Section 1.5.2** for assessment details and conclusions). This approach is considered appropriate to compare different LSS sites or onshore export cable corridors or routes, enabling a clear and direct comparison between options. Once constraints have been identified they are classified under four Appraisal Criteria, whereby the constraint is ranked as black, red, amber or green relative to a specific category criteria. Table 1-3 presents a high-level summary of the BRAG Appraisal Criteria and Table 1-5 provides a detailed breakdown of constraint specific category criteria.

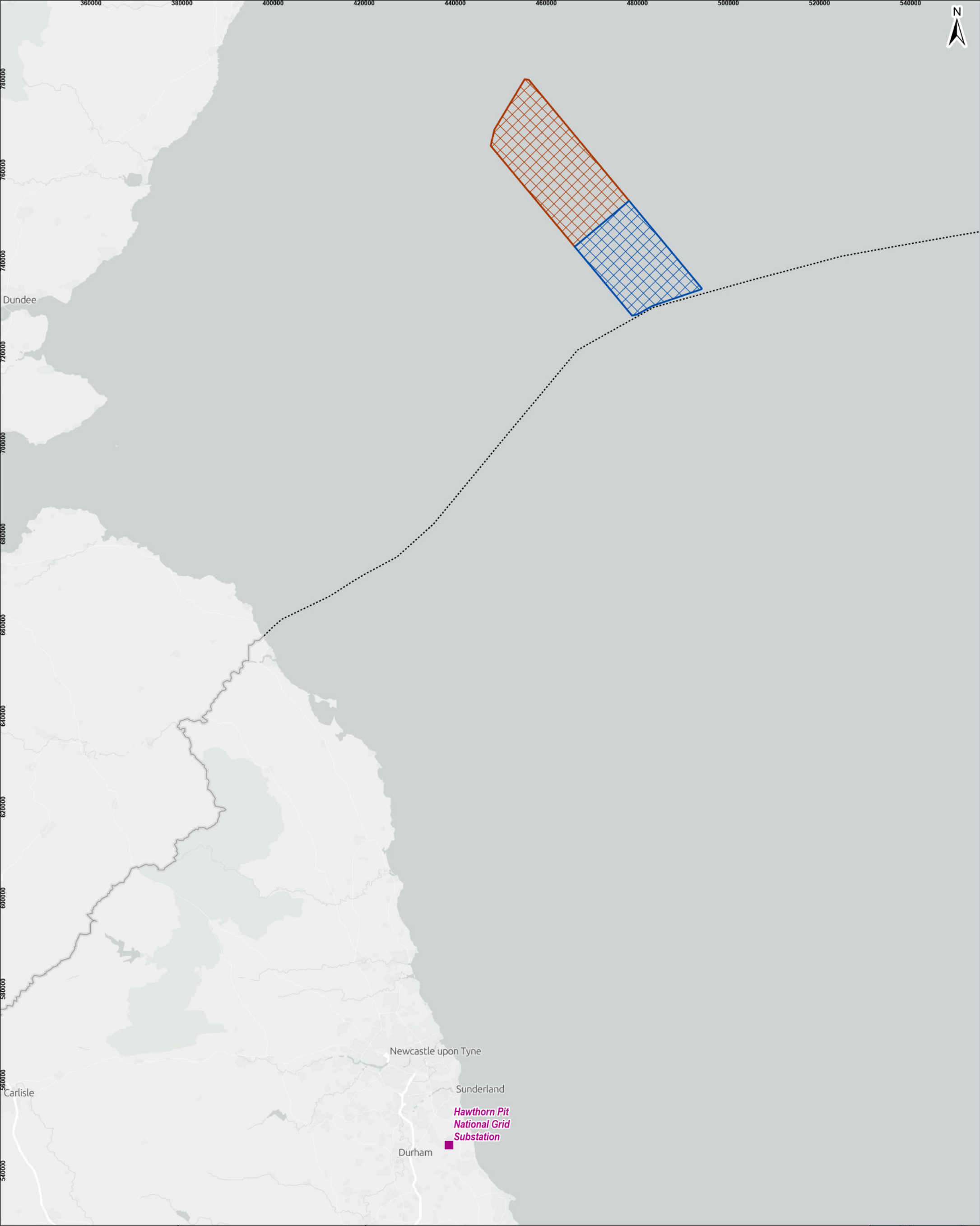
Table 1-3: BRAG definitions

Rating	Summary
Black	Constraints cannot be overcome and option is not feasible
Red	High potential to constrain development
Amber	Intermediate potential to constrain development
Green	Low potential to constrain development

- 1.2.2.2 Development considerations captured within the BRAG assessment include archaeology and cultural heritage, ecology, landscape, hydrology and hydrogeology, engineering, community, landscape and visual, property and planning. These were defined by a team of specialists comprising engineers, EIA consultants, and landscape, archaeology and ecological experts that have experience in undertaking site selection BRAG analysis. The BRAG analysis qualitatively assesses the influence of future developments, either using defined parameters, professional judgement, or assessing the issue relative to other potential options.

1.3 Stage 2a: Identification of Landfall Search Area

- 1.3.1.1 Following recommendation of the point of interconnection (PoI) at the National Grid Hawthorn Pit Substation (see **Volume 1, Chapter 3: Site Selection and Consideration of Alternatives, of the PEIR**, for further details on the PoI), a Landfall Search Area was defined based on the location of Morven North and Morven South and the National Grid substation at Hawthorn Pit as guided by the principles outlined in **Section 1.1.3.3**. The Landfall Search Area extended from the south of Sunderland to north of Peterlee as shown in **Figure 1-2** covering approximately 12km of coastline, and extended approximately 3km seaward of MLWS within the nearshore area.
- 1.3.1.2 The terrestrial elements of the Landfall Search Area are primarily located within the administrative area of Durham County Council, however, a small area to the north of the Landfall Search Area overlapped with Ryhope, the administrative area of Sunderland City Council.
- 1.3.1.3 The northern and southern extents of the Landfall Search Area were defined by urban areas to the north, and nature designations to the south, where extending beyond these constraints would result in substantially longer onshore cable.
- 1.3.1.4 The potential interaction with multiple designated sites did not align with the Applicants' Guiding Principles, see **Section 1.1.3.3**, and therefore it was determined that these represented hard constraints within which landfall optioneering would not be considered.
- 1.3.1.5 Therefore, the width of the Landfall Search Area was defined by the 12km section of coastline, with the northern and southern extents representing a natural boundary, with existing hard constraints, within which to consider landfall options. Any landfall further north or south would create disruption to local communities, increasing the footprint of the project and potential environmental and social impacts and significantly increasing the potential length of an onshore cable route.





Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PEIR

Drawing Title:
MORVEN NORTH MORVEN SOUTH, AND HAWTHORN PIT POINT OF INTERCONNECTION

0 5 10 15 20 25 30 km
Scale@A3:1:750,000

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Drawing Number:
MV-CON-REG-0020

Data Sources:
Morven,
Crown Copyright and database right [2026] Ordnance Survey AC0000808122

Service Layer Credits:
GB Light Grey: Contains OS data © Crown Copyright and database right 2026. Contains data from OS
Zoomstack
OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri Community Maps
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VER	DATE	DETAILS	BY	CHECK
01	16/07/26	Initial Issue	GM	PRW
02	28/08/26	Layer Updates	GM	PRW
03	23/09/26	Layer Updates	GM	PRW
04	29/09/26	layer Updates	GM	PRW

LEGEND

 Morven North

 Morven South

 Hawthorn Pit National Grid Substation

 Scottish/ English jurisdictional boundary



Figure 1-2 : Landfall Search Area and Offshore Infrastructure Search Area

1.4 Stage 3a: Refinement of landfall options

1.4.1 Updated Guiding Principles and Identification of Landfall Options

- 1.4.1.1 The process for identifying viable landfall options was to establish broad zones within the landfall search area based on an initial constraints analysis and guided by the design principles outlined in **Section 1.1.3.3**.
- 1.4.1.2 The Applicant undertook an internal review of the Guiding Principles for Site Selection to identify key features and receptors sensitive to development activities within the Landfall Search Area along the Durham Coast.
- 1.4.1.3 Within the context of the Guiding Principles, environmental, technical and engineering considerations were identified within the Landfall Search Area. These are presented in **Table 1-4**.

Table 1-4: Environmental, technical and engineering considerations within the Landfall Search Area

Environmental Consideration	Description
Biological	Statutory ecological designations are present along the majority of the coastline within the Landfall Search Area including: • The Durham Coast SAC, designated for the Annex I habitats, vegetated sea cliffs, which are present along the coastline; • The Durham Coast SSSI, designated for biological, geological and physiographic interest features including vegetated cliffs and populations of breeding and non-breeding birds; • The Northumbria Coast SPA and Ramsar, designated for the bird populations it supports including breeding little tern, migratory turnstone and purple sandpiper; and • The Teesmouth and Cleveland Coast SPA and Ramsar site, designated for bird populations and supporting avocet, common tern, little tern, knot, redshank, ruff, sandwich tern and waterbird assemblage. In addition to statutory designations, priority habitat (maritime cliff and slope) is present in the north of the Landfall Search Area partly coinciding with the Durham Coast SSSI. There are also a small number of local ecological designations identified in the County Durham Local Plan along and slightly inland of the coastline including (from north-south) Byron's Dene Local Wildlife Site (LWS), Seaham Dene LWS, Rockhouse Dene Local Nature Reserve (LNR), Nose's Point LNR, Hawthorn Quarry LWS and Easington Colliery LNR. Within the marine environment and approaches to the Landfall Search Area, there are areas of potential Annex 1 reef (undesigned <i>sabellaria spinulosa</i> reefs on mixed sediment substrate) and potential sporadic patches of Annex 1 reef (undesigned bedrock and/ or stony) on rock and boulders (JNCC, 2022). These records are not associated with an SAC.
Physical	The Landfall Search Area is mostly underlain by bedrock of the Dolomitised Limestone; this is consistent with the SAC and SSSI designations referred to above which also highlight the presence of limestone. Superficial deposits comprising marine beach deposits of sand and gravel lie on the bedrock for stretches of the Landfall Search Area, with areas recording no mapped superficial deposits also present. Defra's Intertidal Substrate foreshore dataset indicates that the foreshore area is comprised of sand, a mix of rock platform and gravel adjacent to Seaham and mainly gravel with some pockets of rock or sand to the south of Seaham. The coastline within the Landfall Search Area is formed by cliff heights ranging from 20 to 50m high. While these are less preferred for landfalls due to the increased technical complexity of installation, there are no opportunities for a landfall avoiding cliffs without either significantly increasing terrestrial and/or marine routing requirements or widening the Landfall Search Area to incorporate areas of the coastline that include significantly more environmental, technical and/ or engineering constraints. The National Coastal Erosion Risk Mapping identifies that the coastline within the Landfall Search Area is at risk of erosion. It also identifies the Short-term Shoreline Management Plan Policy along the coastline. The policy along the majority of section of the coastline which coincides with Seaham is 'hold the line' (i.e. the current alignment of the sea wall which is present is maintained). However, a small section is 'managed realignment'. To the north and south of Seaham where the coastline is largely undeveloped the policy is 'no active intervention' meaning those sections of the coastline are allowed to erode naturally.
Historic	There are a limited number of historic environment considerations present. There are no scheduled monuments within the vicinity of the coastline, however, there are a small number of listed buildings within the settlement of Seaham. Because of the preference to avoid siting within Seaham itself these are not considered to be a constraint on landfall siting. The coastline to the north and south of Seaham coincides with areas designated as Heritage Coastline. This is not a statutory designation but is intended to conserve and protect the coastline, in particular undeveloped coastline. It is not possible for landfalls to avoid the Heritage Coastline as

Environmental Consideration	Description
	the designation stretches along the majority of the Landfall Search Area, but given impacts will be temporary and it is assumed there will be no significant above-ground infrastructure at the coastline, this does not significantly constrain potential landfalls. Within the marine environment and approaches to the Landfall Search Area, there are several wrecks and obstructions.
Socio-economic	The main socio-economic consideration within the Landfall Search Area is the settlement of Seaham. This extends along the coastline north to south for approximately 3km from the B1287 in the north to the A182 in the south. This section of the coastline is considered to be unsuitable for landfall siting as where Seaham abuts the coastline it limits landfall opportunities and significantly constrains onwards underground cable routing due to landownership, physical obstacles and significant human activity (it is preferable to avoid routing through built-up areas due to the potential disturbance which would occur). The Port of Seaham is situated within the Landfall Search Area, and moderate to high levels of shipping traffic are associated with the port. There is also an anchorage area directly east of the Port of Seaham. Two designated bathing waters are located immediately to the north of Seaham; Seaham Hall Beach and Seaham Beach bathing water sites. Low levels of fishing effort are recorded adjacent to the Landfall Search Area and no key fishing grounds are recognised within the area of search.
Other infrastructure	Other infrastructure considerations include existing and proposed infrastructure present along and near to the coastline. The most notable existing infrastructure is the Seaham Harbour Marina, located within Seaham, and the Durham Coast Railway Line which runs between Newcastle and Middlesbrough and broadly parallel to the coastline within the Landfall Search Area. Within the north of the Landfall Search Area the railway line is within Seaham or located slightly further inland in more open countryside whereas south of Seaham it more closely hugs the coastline. In this southern part of the Landfall Search Area, this may be a constraint on landfall selection as it may require to be crossed by any trenchless technique methods out towards the foreshore. The most notable proposed infrastructure is the Eastern Green Link 1 (EGL1), a subsea HVDC link between Torness and Hawthorn Pit, which will make landfall to the north of Seaham, east of the B1287. Subject to where potential landfall for the MHPGC Project is located this could require crossing EGL1 onshore and / or offshore. Marine and terrestrial consents for EGL1 have been granted and the project commenced construction in 2024. It is located towards within the northern extent of the Landfall Search Area. The Northumbrian Water outfall pipe is located centrally within the Landfall Search Area, extending 1.75km seaward from MHWS. Noses Point marine disposal site is located approximately 762m from MLWS in the central area of the Landfall Search Area.

- 1.4.1.4 Consideration of the updated Guiding Principles and the environmental considerations outlined in **Table 1-4** led to identification of three landfall zones within the Landfall Area of Search (see **Figure 1-3**):

- Northern landfall (north of Seaham);
- Central landfall (Nose's Point); and
- Southern landfall (Beacon Hill).

Northern landfall (north of Seaham)

- 1.4.1.5 The Northern landfall zone is located 7km northeast of the Pol at Hawthorn Pit to the north of Seaham in the vicinity of the (now) consented landfall for EGL1. The northern landfall zone is approximately 500m in length, avoiding statutory designated sites described in **Table 1-4** which are otherwise present for the majority of the Landfall Search Area.
- 1.4.1.6 Cliff heights along this section of the coast are typically lower than elsewhere within the Landfall Search Area and range from 25-30m Above Ordnance Datum (AOD). Land gently slopes down eastwards from the B1287 to the top of the cliff beyond which there is a narrow foreshore area.
- 1.4.1.7 Access to the Northern landfall zone is feasible with the potential to establish a new access from the B1287 towards a temporary working area between the road and the cliff. The existing fields are gently sloping but are considered to be suitable for establishing temporary works areas for landfall works.
- 1.4.1.8 Proximity to the EGL1 landfall is considered a constraint, and would require crossing EGL1 either offshore and/ or onshore, subject to landfall siting and subsea cable route selection. The consented marine corridor for EGL1 is 500m and would present a hard constraint for offshore route optioneering.
- 1.4.1.9 The location of the EGL1 landfall presents a hard constraint for landfall options to the south of the Northern landfall zone, with limited space further south before reaching the outskirts of Seaham. Landfall options are less constrained to the north of the Northern landfall zone, where this could be coordinated with EGL1.

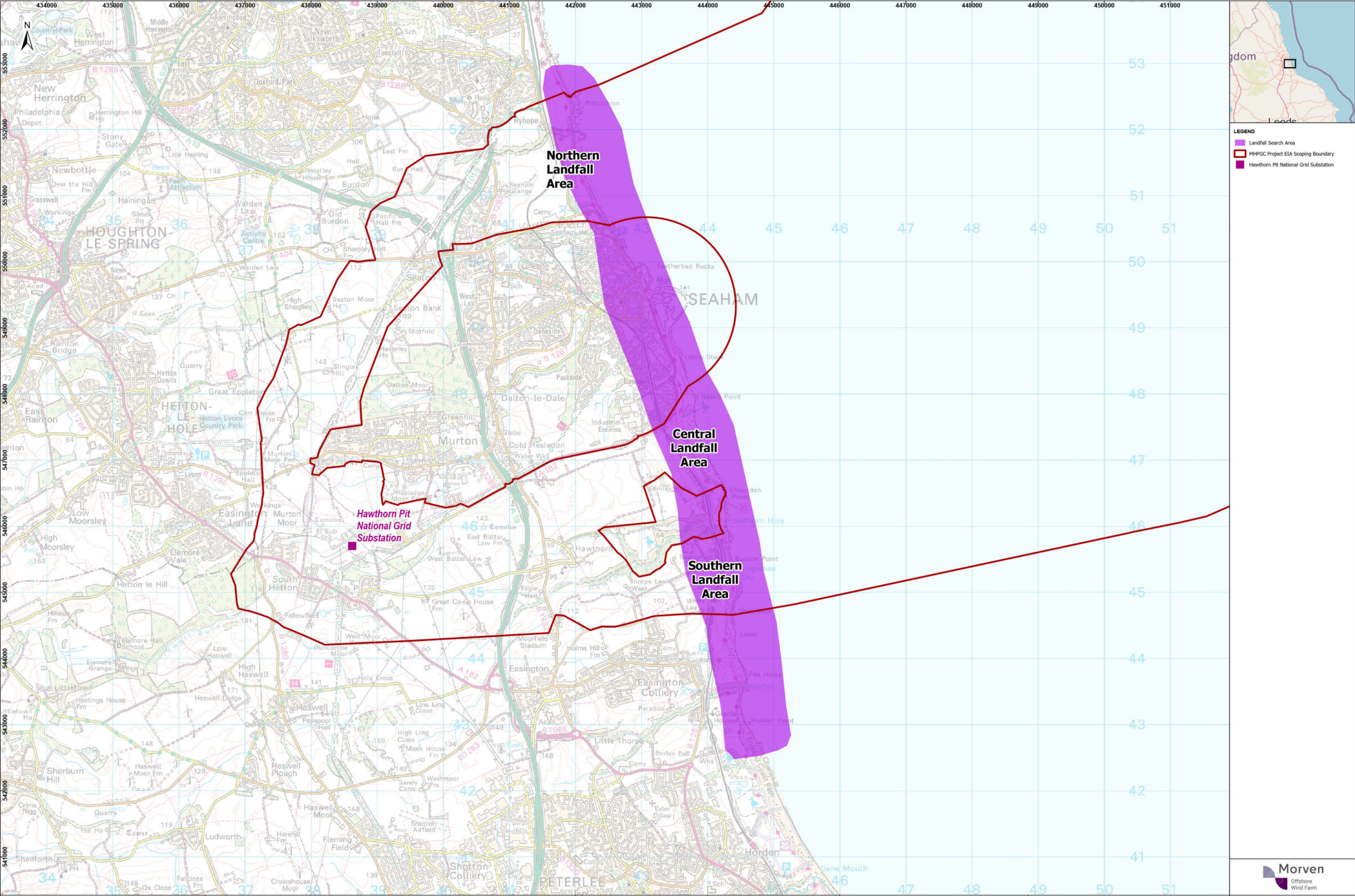
Central landfall (Nose's Point)

- 1.4.1.10 The Central landfall zone is located to the south of Seaham approximately 5km east of the Pol at Hawthorn Pit. The central landfall zone is approximately 1km long, extending from Nose's Point in the north to Chourdon Point in the south.
- 1.4.1.11 The Central landfall zone overlaps the Durham Coast SAC and SSSI (**Figure 1-4**) although noting the area of overlap varies with the topography and boundary of the designated site, extending from beach level to cliff top.
- 1.4.1.12 The Durham Coast railway line is routed north to south approximately 100-200m inland of the coastal cliffs. The majority of the railway line is at grade i.e. a similar level to adjacent land in this area, however, there is a small length within a cutting. Landform slopes down at a relatively steady gradient; from 60-70m AOD west of railway line to 20-30m AOD at the top of the cliff at a shallow gradient. Cliff heights in this section of the coast are typically between 20-30m AOD with the railway line typically following the 40m AOD contour.
- 1.4.1.13 The proximity of the railway line has been considered in evaluating the feasibility of a landfall within the Central landfall zone, and engineering solutions such as trenchless crossings would be required to avoid the railway line and environmental designations, including Durham Coast SAC and SSSI and the Nose's Point Local Nature Reserve.
- 1.4.1.14 In addition, space and access constraints are likely to limit siting of landfall infrastructure on the seaward side of the railway line. The land to the north of the Central landfall zone, closer to the A182, is less constrained and offers alternative, less constrained options for landfall and associated working areas and compounds. Access may be feasible via the A182 which provides access to the Nose's Point viewpoint.

- 1.4.1.15 Historic mining activity has been recorded to the north of the Central landfall zone while an active quarry is located to the south. Offshore constraints associated with the Central landfall zone include the Northumbrian Water outfall and Noses Point disposal site. The disposal site is considered a hard constraint and would limit the approaches to landfall, requiring landfall activities and the cable corridor to avoid interacting with the disposal site. The outfall pipe does represent a hard constraint although noting engineering solutions, such as trenchless techniques could be employed to avoid the infrastructure in the marine environment.
- 1.4.1.16 Areas potential Annex 1 reef (undesigned *sabellaria spinulosa* reefs on mixed sediment substrate) and potential sporadic patches of Annex 1 reef (undesigned bedrock and/ or stony) on rock and boulders (JNCC, 2022) have been recorded adjacent to the Central landfall zone.

Southern landfall (Beacon Hill)

- 1.4.1.17 The Southern landfall zone is located approximately 6km south east of the Pol at Hawthorn Pit, stretching approximately 1km south of Hawthorn Dene to the north-east periphery of the settlement of Easington.
- 1.4.1.18 The Southern landfall zone overlaps the Durham Coast SAC and SSSI although noting the extent of the designated sites vary, with the SSSI extending further inland over the Durham Coast railway line. The SAC is typically bounded on the west by the railway line, extending over the cliffs and including a narrow strip of the foreshore.
- 1.4.1.19 The Durham Coast railway line is routed north to south, broadly parallel with the coastal cliffs. Sections of the railway line are within a cutting. Landform is steeper within the Southern landfall zone, sloping down from Beacon Hill at 80m AOD to approximately 30m AOD at the top of the cliff. Cliff heights in this section of the coast are typically around 50m AOD with the railway line typically following the 40m AOD contour. Shallower gradient slopes are present to the north and south of Beacon Hill.



Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PEIR

Drawing Title: Figure 1-3:
MHPGC PROJECT EIA SCOPING BOUNDARY AND LANDFALL SEARCH AREAS

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Scale@A3: 1:50,000

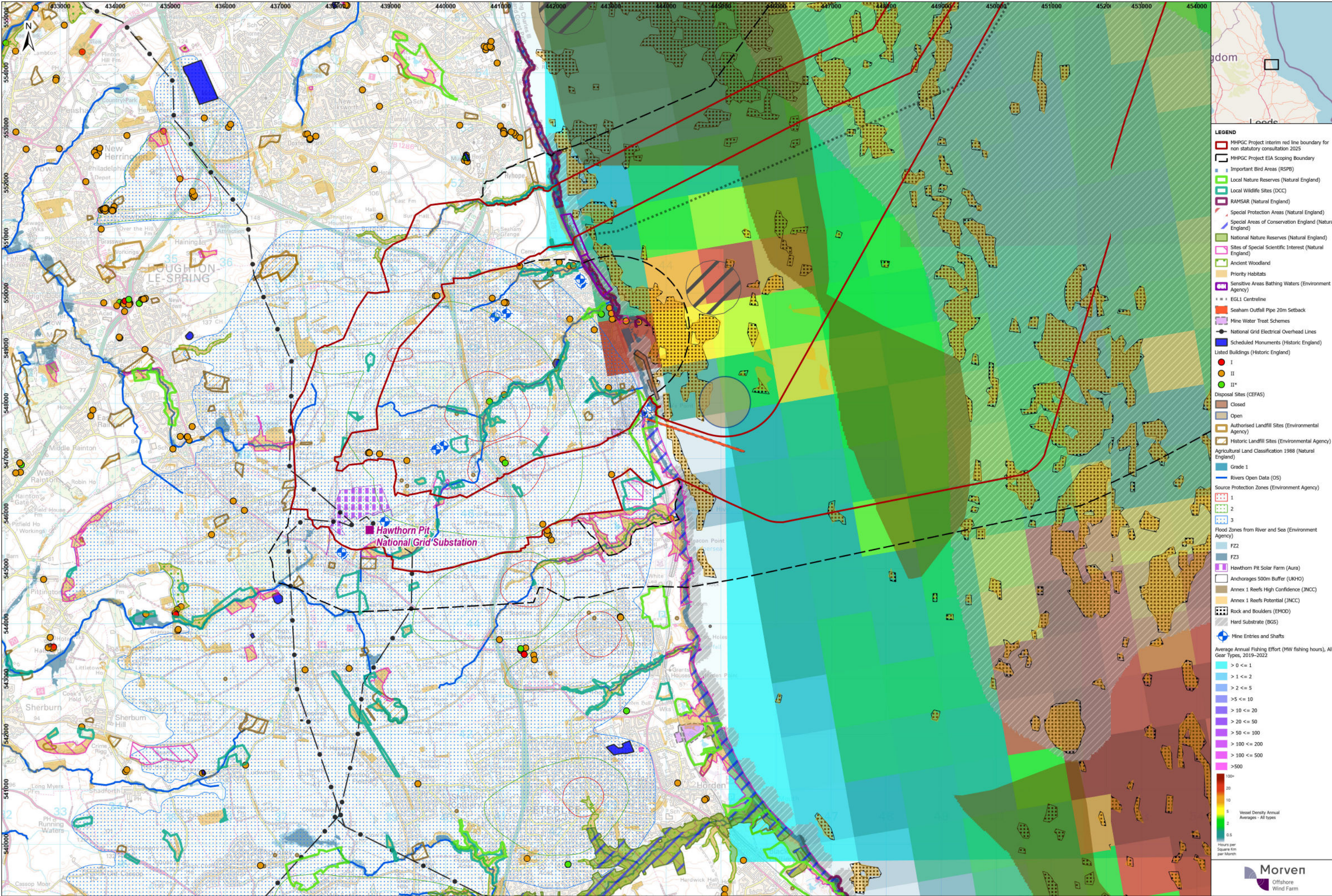
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
Morven,
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Service Layer Credits:
GB Light Grey: Contains OS data © Crown Copyright and database right 2026. Contains data from OS Zoomstack
OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri
Community Maps contributors, Map layer by Esri

Drawing Number:
MV-CON-REG-0053

VER	DATE	DETAILS	BY	CHECK
01	23/09/26	Initial Issue	GM	MP
02	23/09/26	Layer Updates	GM	PRW



Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PEIR

Drawing Title: Figure 1-4
DURHAM COAST CONSTRAINTS

0 500 1,000 Meters

Scale@A3: 1:60,000

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
Morven,
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Service Layer Credits:
Pipelines (Kis Orca)
Subsea Cables (Kis Orca)
Safety Zones Surface (Kis Orca)
Safety Zones Subsea (Kis Orca)
Offshore Wind Site Agreements (The table / Crown Estate Scotland)
EMODnet Vessel Average 2017 to 2020

Drawing Number:
MV-CON-REG-0021

VER	DATE	DETAILS	BY	CHECK
03	04/09/26	Layer Updates	GM	PRW
04	23/09/26	Layer Updates	GM	PRW

1.4.2 Landfall Options BRAG Assessment

1.4.2.1 A BRAG constraints analysis was undertaken for the three landfall zones where:

- Black: Constraints cannot be overcome and option is not feasible
- Red: High potential to constrain development
- Amber: Intermediate potential to constrain development
- Green: Low potential to constrain development

1.4.2.2 The BRAG criteria determined for the landfall zones is based on the Applicant's experience and decision-making associated with site selection and consideration of alternatives, and advice provided by EIA consultants and engineering. The criteria is provided within **Table 1-5** with the BRAG analysis provided in **Table 1-6**. Justification for **Black** scores, as well as Red, Amber and Green scores, is included within **Table 1-6**.

Table 1-5: Landfall BRAG criteria summary

Category	Red	Amber	Green
Engineering: cable distance	Longest distance of onshore cabling required (>10km).	Between longest and shortest distance of onshore cabling required (5-10km).	Shortest distance of onshore cabling required (<5km)
Engineering: cliff height	Cliff heights over 20m	Cliff heights between 10m to 20m	Cliff heights under 10m
Engineering: coastal erosion / cliff retreat	Erosion of approximately 1m to 2m per year based on proposed landfall profile over a 60 year period	Erosion of approximately 0.5m to 1m per year based on proposed landfall profile over a 60 year period	Erosion of less than 0.5m per year based on proposed landfall profile over a 60 year period
Engineering: known geology (nearshore)	Hard substrate, extensive rocky outcrops and very stiff clays	Intermediate and soft clays	Sandy bed and gravels
Engineering: known geology (onshore)	Rock (requiring more invasive construction techniques).	Soft clay and loose sand	Firm clay and dense sand
Engineering: history of mining	Record of shallow/deep mining activity within 20 to 100m of proposed landfall location	Record of shallow/deep mining activity beyond 100m of proposed landfall location	No evidence or record of historic mining activity in the area, confirmed by desk study and site investigation
Engineering: construction constraints	More than five construction constraints (environmental and human)	Between one and four construction constraints (environmental and human)	No known construction constraints

Category	Red	Amber	Green
Human: residential development	Interacts directly with dense areas of residential settlements (e.g. cities and large towns where there are limited to no gaps in settlement)	Interacts with areas of moderate residential settlement / periphery of residential settlement (e.g. smaller towns or areas where settlement has clear patterns of separation which could enable cable routing between residential areas)	Avoids areas of dense and moderate residential settlement
Human: recreational and travel receptors (e.g. golf courses, tourism facilities, railway lines, airports, etc.)	Interacts directly with five or more recreational or travel receptors	Interacts with between one and four recreational or travel receptors	Avoids key recreational or travel receptors
Human: existing infrastructure (utilities)	Cables/ pipelines present within gaps between built up areas so that open areas where landfall could be facilitated are already taken.	Cables/ pipelines present but not within gaps between built up areas so that landfall could be facilitated.	No Cables/ pipelines
Human: dredge areas and disposal sites	≤250m	≤500m	≤1km
Human: shipping	Between 0.5 and 3.5nm from a heavily used shipping route and running alongside	Other commercial routes which are less heavily used and have adequate sea room to be deviated, including crossing the routes	Avoids any regular commercial shipping routeing
Human: anchorages	N/A	≤1 nautical mile (nm) from designated anchorage area	> 1nm from designated anchorage area
Human: bathing waters	Interacts directly with a designated bathing water site	Within 2km of a designated bathing water site	Avoids bathing waters
Human: commercial fisheries	Overlapping with key fishing grounds with consistent high fishing effort, of high value and/or targeted by a fleet with limited operational range or limited ability to fish alternative grounds.	Overlapping with fishing grounds with moderate fishing effort, with catches of moderate value and/or targeted by a fleet with moderate operational range or moderate ability to fish alternative grounds.	No overlap with key fishing grounds, low fishing effort, with catches of low value and/or targeted by a fleet with wide operational range or good ability to fish alternative grounds.

Category	Red	Amber	Green
Environmental: nature designations (e.g. SAC, SSSI, NRR, etc.)	Has the most designations (statutory and national) covering the intertidal and beach area (between MLWS and along the coast)	Has the least designations (statutory and national) covering the intertidal and beach area (between MLWS and along the coast)	Has no designations (statutory and national) covering the intertidal and beach area (between MLWS and along the coast)
Environmental: mineral designations	Within a Mineral Safeguarding Area/Mineral Consultation Area or Preferred Area	Within a Mineral Search Areas or Area of Search	No mineral resources identified
Environmental: agricultural land use	Grade 3a or higher OR Permanent loss/reduction of one or more soil function(s) and restriction to current or approved future use (e.g. through degradation, compaction, erosion of soil resource)	Grade 3B or lower OR Temporary loss/reduction of one or more soil function(s) and restriction to current or approved future use (e.g. through degradation, compaction, erosion of soil resource)	No classification OR No discernible loss/reduction of soil function(s) that restrict current or approved future use.
Environmental: cultural heritage	Within 50m of a Scheduled Monument, Conservation Area or other nationally important assets, or, within/adjacent to Grade I, II or II* Listed Buildings or other regionally important assets	Within 250m of a Scheduled Monument, Conservation Area or other nationally important assets, or, within 50m of Grade I, II or II* Listed Buildings or other regionally important assets, or, within locally listed buildings/important archaeological assets	>250m from a Scheduled Monument, Conservation Area or other nationally important assets, or >50m from Grade I, II or II* Listed Buildings or other regionally important assets, or locally listed buildings/important archaeological assets
Environmental: marine archaeology	Within 25m of known wreck and associated debris/debris field	Within 50m of known wreck and associated debris/debris field	Over 50m from known wreck and associated debris/debris field

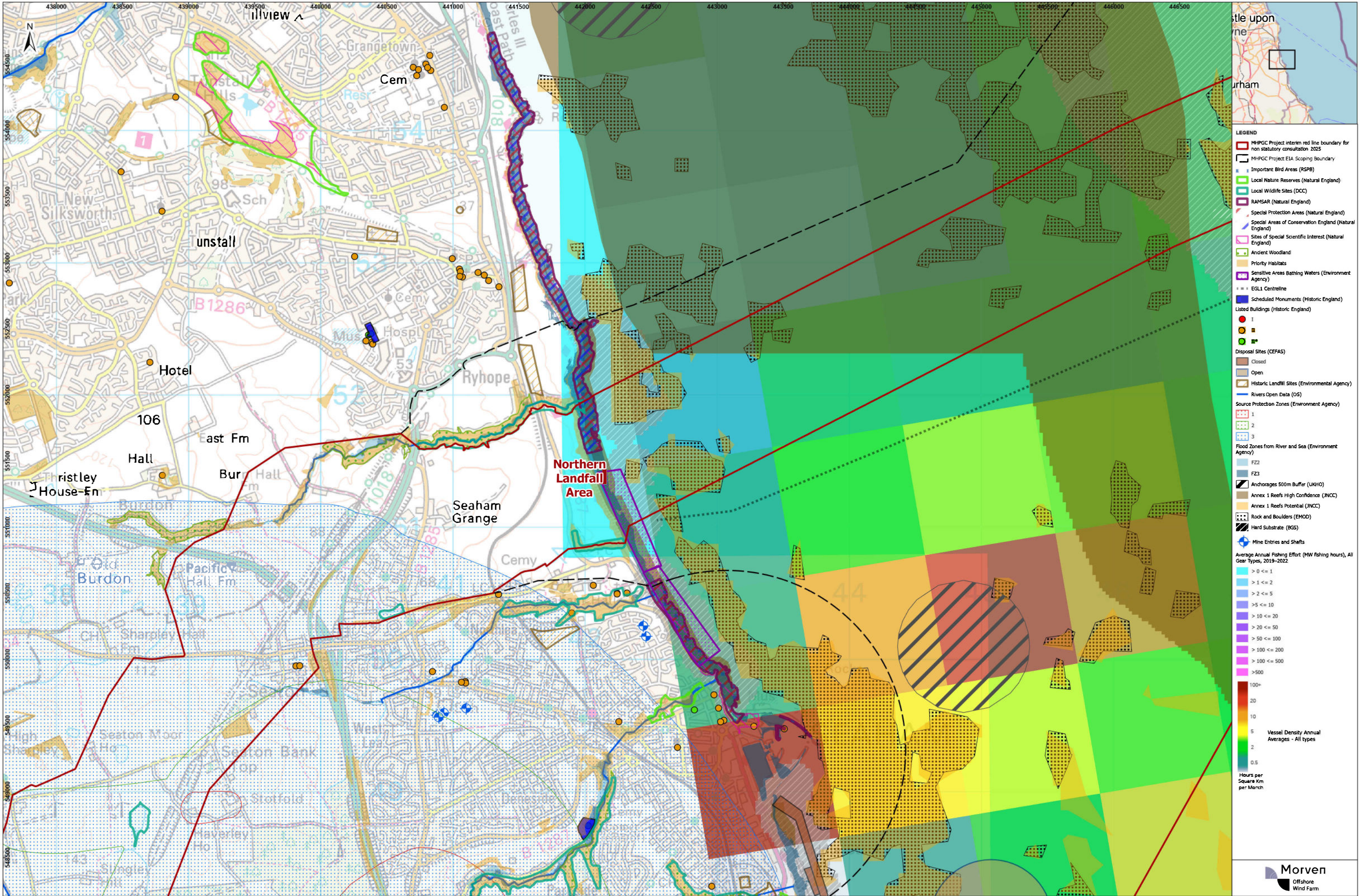
Table 1-6: Landfall options initial BRAG analysis summary

Constraint	Northern Landfall (north of Seaham): Figure 1-5	Central Landfall (Nose's Point): Figure 1-6	Southern Landfall (Beacon Hill): Figure 1-6
Engineering: cable distance	Approximate cabling length: - Distance to landfall from exit pit: approximately 1km (but proximity to rail requires additional stand-off) - Distance from landfall to Hawthorn Pit: approximately 10km	Approximate cabling length: - Distance to landfall from exit pit: approximately 1km - Distance from landfall to Hawthorn Pit: approximately 7.5km	Approximate cabling length: - Distance to landfall from exit pit: approximately 1km - Distance from landfall to Hawthorn Pit: approximately 9km
Engineering: cliff height	Approximate cliff height: 25m	Approximate cliff height: 30m	Approximate cliff height: 50m Height is potentially too great due to technical challenges associated with thermal loading (due to need for burial depth to overcome cliff height).
Engineering: coastal erosion/ cliff retreat	0.84 to 1.13 m per year	0.10 to 0.14 m per year	0.14 to 0.84 m per year
Engineering: known geology (nearshore)	The seabed is generally gravelly sand, with boulder fields and rocky zones. Shallow bedrock or bedrock outcropping on the seafloor may be encountered at the trenchless technique exit point. The seafloor is generally flat with slope angles below 2° (Waterman Infrastructure & Environment Ltd, 2025).	The seabed is generally covered by gravelly sand, with limited boulders. The seafloor is generally flat with slope angles below 2° (Waterman Infrastructure & Environment Ltd, 2025).	The seabed is generally covered by gravelly sand, with limited boulders. The seafloor is generally flat with slope angles below 2° (Waterman Infrastructure & Environment Ltd, 2025).
Engineering: known geology (onshore)	The Northern Landfall is underlain by firm silty CLAY, medium dense SAND and Gravel and stiff to very stiff silty sandy gravelly CLAY with cobbles to depths in excess of 11m borehole geometry log. Bedrock (dolomite) is present at depth and will need to be drilled through as part of works.	Historical borehole information records ground conditions that comprised Made Ground to 2.8m borehole geometry log (stiff stoney clay with limestone cobbles) over superficial deposits of firm to stiff sandy CLAY with cobbles and occasional limestone boulders to a depth of 7.95m borehole geometry log. Bedrock is then present, comprising DOLOMITE and weathered LIMESTONE. Made ground (embankment) recorded in northern part of the Central Landfall, and southern part of site records the presence of made ground adjacent to Hawthorn Quarry. Landscaped ground is also indicated to the east of the Central Landfall, above the cliffs, likely associated with remediation works from the former mineral railway and colliery waste disposal area along the coastline. This assessment has classed the category as green for the firm clay but increased to amber due to possible presence of Made Ground in southern part of Central Landfall, as well as to the east above cliffs, mining waste present above the beach deposits, and presence of bedrock near surface as well as cobbles and boulders of limestone and dolomite in superficial deposits.	An area of worked ground associated with the Northern Railway line is recorded within the eastern portion of the site. In addition, an area of mapped made ground is recorded immediately adjacent to the northeast of the site in the beach area associated with historic waste deposition. Natural superficial deposits across the eastern and central areas of the Southern Landfall location are recorded to comprise Devensian Till, with pockets of Glaciofluvial Deposits (sand and gravel) present on the northern and along the eastern boundaries of the site. Bedrock is recorded as being at, or close to surface across much of the western and southern areas of the site. Bedrock below the central and eastern site areas is recorded to comprise the Roker Formation (Dolostone), with the Ford Formation (Limestone) present in the west. There are no available historical borehole records located within the boundaries of the Southern Landfall location.
Engineering: history of mining	There is no evidence of historic mining activity at the Northern Landfall. At the Northern Landfall there is a record of a lime kiln and immediately next to it (and offsite) is an area recorded variously as a gravel pit, unspecified pit, lime kiln, and old quarry. The same area is indicated to have been recorded as a dolomite extraction site where operations have ceased.	There is no evidence of coal mining at the Central Landfall although a colliery was present approximately 500m to the north east of the Landfall. It is also noted that Blast Beach was used extensively for tipping of colliery waste from railway sidings on top of the cliffs, so the area is likely to be impacted by mining activity. Clean up of the beaches took place in the late 19990's/early 2000's (Turn the Tide), but waste deposits and pools of orange/brown coloured water remain on the beach. The southern part of the Central Landfall is encroaching on Hawthorn Quarry and may be situated on worked ground with unknown quality of infill. Furthermore, whilst deep coal mining works are present to the north west (actively being pumped and treated) it is unlikely that the proposed works for the landfall will be affected (at least geotechnically) by its presence.	There is no evidence of coal mining at the Southern Landfall although a quarry was present 50 m to the south of the Landfall on Beacon Hill. The Southern Landfall location is located within a Coal Mining Reporting area, but out with a Development High Risk Area.

Constraint	Northern Landfall (north of Seaham): Figure 1-5		Central Landfall (Nose's Point): Figure 1-6		Southern Landfall (Beacon Hill): Figure 1-6	
Engineering: construction constraints	Access is compromised by Seaham Solar Park and pre-existing EGL rights. Based on the assumption that the Northern Landfall will drill under the B1287, there is no apparent interaction with the B1287. While the B1285 appears to be able to accommodate existing traffic volumes, the route through residential areas is likely to be unsuitable for construction site related traffic. There is a narrow pedestrian footway on the eastern side of the road; there may be low volumes of pedestrian/cycle traffic between neighbouring towns. The Northern Landfall is located in Flood Zone 1 (less than a 1 in 1,000 annual probability of flooding from rivers or the sea).		Three distinct access options exist for a landfall compound access. All will require some new assets to be constructed, but this gives flexibility to deliver low impact solution to satisfaction of transport planners/local community. Based on the assumption that the Central Landfall will drill under the coastal footpath/hiking routes, there is no apparent interaction with transport features, nor any proximate sensitive receptors. Access will be taken from the A182, which appears to be able to accommodate existing traffic. Rail, part of trenchless drill trajectory, partially restricts the available compound area. The Central Landfall is located in Flood Zone 1 (less than a 1 in 1,000 annual probability of flooding from rivers or the sea). National Trust Land (associated with Nose's Point) in the northern-most extent of the Central Landfall zone, and Hawthorn Quarry approximately 500m south of the Central Landfall zone.		Access would require to be established via temporary road as the local highway network is not sufficiently wide to facilitate construction traffic. The length of this access would be approximately 2km in order to reach the B1432. Compound area is severely restricted by steep slopes associated with Beacon Hill which would require extensive earthworks to ensure a feasible launch platform and compound. This would introduce significant disturbance to the area, with notable landscape impact created by the cut and fill required, whilst the excavated soil would also need to be transported and stored elsewhere, creating further negative impacts on the local environment through vehicles movements and additional community disturbance. Much of this spoil would also become a waste product and require licenced disposal. The onshore cable routing beyond landfall would require the crossing of steep incised river/drainage channels which would present a significant geotechnical challenge in installation in addition to exposing the cable to future flooding / scour risk. The Southern Landfall is located in Flood Zone 1 (less than a 1 in 1,000 annual probability of flooding from rivers or the sea). No conflicting land uses.	
Human: residential development	Nearest residential receptor is over 200m away		Nearest residential receptor is over 200m away		Nearest residential receptor is over 200m away	
Human: recreational and travel receptors (e.g. golf courses, tourism facilities, railway lines, airports, etc.)	The land parcel does not form part of any coastal or recreational amenities.		The land parcel does not form part of any coastal or recreational amenities. The King Charles III Coast Path runs east of the railway line indicating that landfall trenchless techniques would pass beneath the Public Right of Way.		The land parcel does not form part of any coastal or recreational amenities. The King Charles III Coast Path runs east of the railway line indicating that landfall trenchless techniques would pass beneath the Public Right of Way.	
Human: existing infrastructure (utilities)	No recorded utilities, both onshore and nearshore. The planned EGL1 landfall is in close proximity to the Northern Landfall.		There are no recorded utilities. An outfall pipe is installed in the nearshore section, which may become an obstacle to development. There is a Northumbrian Water outfall pipe which runs from the Central Landfall to approximately 1.75km seawards in the subtidal zone.		No recorded utilities, both onshore and nearshore.	
Human: dredge areas and disposal sites	The Northern Landfall is over 1km away from the closest marine disposal site, Nose's Point. The Northern Landfall is within 1.5km of Seaham Harbour, which has been dredged historically.		The Central Landfall is within 250m of Nose's Point marine disposal site. The Central Landfall is within 1.5km of Seaham Harbour, which has been dredged historically.		The Southern Landfall is over 1km away from the closest marine disposal site, Nose's Point. The Southern Landfall is over 2.5km of Seaham Harbour, which has been dredged historically.	
Human: shipping	The Port of Seaham is located approximately 1.5km south of the Northern Landfall, and while the nearshore approaches see moderate to high levels of shipping traffic in inshore waters around the port, the Northern Landfall avoids commercial shipping routes.		The Port of Seaham is located approximately 1.5km north of the Central Landfall, and while the nearshore approaches see moderate to high levels of shipping traffic in inshore waters around the port, the Central Landfall avoids commercial shipping routes.		The Port of Seaham is located approximately 2.5km north of the Southern Landfall, and while the nearshore approaches see moderate to high levels of shipping traffic in inshore waters around the port, the Southern Landfall avoids commercial shipping routes.	
Human: anchorages	The southern extent of the Northern Landfall overlaps with an anchorage area in the nearshore area off the coast of Seaham.		The Central Landfall is within 1 nautical mile (nm) of an anchorage area in the nearshore area off the coast of Seaham.		The Southern Landfall avoids designated anchorages and is over 1 nautical mile (nm) away from an anchorage area.	
Human: bathing waters	The Northern Landfall overlaps with two designated bathing water sites: Seaham Beach and Seaham Hall Beach.		Seaham Beach and Seaham Hall Beach are located over 2km away from the Central Landfall.		Seaham Beach and Seaham Hall Beach are located over 2km away from the Southern Landfall.	

Constraint	Northern Landfall (north of Seaham): Figure 1-5	Central Landfall (Nose's Point): Figure 1-6	Southern Landfall (Beacon Hill): Figure 1-6
Human: commercial fisheries	The Northern Landfall nearshore approaches has low levels of fishing effort and does not overlap with key fishing grounds.	The Central Landfall nearshore approaches has low levels of fishing effort and does not overlap with key fishing grounds.	The Southern Landfall nearshore approaches has low levels of fishing effort and does not overlap with key fishing grounds.
Environmental: nature designations (e.g. SAC, SSSI, SPA, NRR etc.)	The Northern Landfall is located in excess of 200m from Northumbria Coast SPA, Teesmouth and Cleveland SPA and Ramsar and Durham Coast SSSI at its northeastern corner. The Northern Landfall lies adjacent to an area of Deciduous Woodland. Within the approaches to the intertidal zone and the Northern Landfall, there are areas of potential Annex 1 reef (undesigned <i>sabellaria spinulosa</i> reefs on mixed sediment substrate) and potential sporadic patches of Annex 1 reef (undesigned bedrock and/ or stony) on rock and boulders (JNCC, 2022).	The Durham Coast SAC and SSSI, which is designated for vegetated sea cliffs, are located within the Central Landfall zone. The landfall is located adjacent to the Hawthorn Pit SSSI and Local Wildlife Site. The Central Landfall is located upslope of the following Priority Habitats, with potential for indirect impacts: • Lowland calcareous grassland; • Maritime cliffs; • Lowland fens; • Saline lagoons. East of the railway, the Central Landfall is a LNR and is used primarily for recreational purposes. The Central Landfall is not within the vicinity of Northumbria Coast SPA and Ramsar site. Within the approaches to the intertidal zone and the Central Landfall, there are records of potential Annex 1 reef (undesigned <i>sabellaria spinulosa</i> reefs on mixed sediment substrate) and potential sporadic patches of Annex 1 reef (undesigned bedrock and/ or stony) on rock and boulders (JNCC, 2022).	The Southern Landfall is located approximately 50m from Durham Coast SAC and SSSI, which is designated for vegetated sea cliffs. The landfall is located adjacent to the Hawthorn Dene SSSI and White Lea Local Nature Reserve. The onshore cable routing beyond landfall would require the crossing of the steep incised river/drainage channels associated with Hawthorn Dene SSSI as the SSSI is directly between the Southern landfall zone and the Pol with no alternatives to route around it; which would present a significant environmental challenge in installation to prevent disturbance to qualifying features of the SSSI. The southern extent of the Southern Landfall is a LNR and is used primarily for recreational purposes. The Southern Landfall is not within the vicinity of Northumbria Coast SPA and Ramsar site. Within the approaches to the intertidal zone and the Southern Landfall, there are smaller areas of potential Annex 1 reef (undesigned <i>sabellaria spinulosa</i> reefs on mixed sediment substrate) and potential sporadic patches of Annex 1 reef (undesigned bedrock and/ or stony) on rock and boulders (JNCC, 2022).
Environmental: mineral designations	The very north eastern tip of the Northern Landfall is situated within a Mineral Safeguarding Area for glacial sand and gravel, which extends eastwards and to the south. The Northern Landfall could only sterilise a very small area of this mineral resource temporarily.	The whole Central Landfall is situated within a Mineral Safeguarding Areas for dolomite, and the very north eastern tip of the site is situated within a Mineral Safeguarding Area for glacial sands and gravels. The central and southern parts of the Central Landfall are also situated within a Safeguarding Zone for limestone associated with Hawthorn Quarry to the south of the Central Landfall.	The whole Southern Landfall is situated within a Mineral Safeguarding Areas for dolomite, and the very south eastern and south western tips of the site are situated within a Mineral Safeguarding Area for glacial sands and gravels. The Southern Landfall would only sterilise a very small area of this mineral resource temporarily.
Environmental: agricultural land use	The Northern Landfall is situated on a combination of Grade 2 (very good quality, towards middle of site) and Grade 3a (good quality, most of site) and Grade 3b (moderate quality, towards middle of the site) agricultural land. There is the potential for loss/reduction of soil function, however landfall will only result in temporary change of use with a very small lost to access for maintenance at the TJB. Following completion of the Northern Landfall, the temporary land take can be returned to agriculture uses provided that soils are properly managed.	The Central Landfall that is above the cliffs is rated on a combination of Grade 2 (very good quality, towards the south of site) and as Grade 3a agricultural land (good to moderate quality). There is the potential for loss/reduction of soil function, however landfall will only result in temporary change of use with a very small lost to access for maintenance at the TJB.	The Southern Landfall that is above the cliffs is rated on a combination of Grade 2 (very good quality, towards middle of site) and Grade 3 (good to moderate quality, most of site). There is the potential for loss/reduction of soil function, however landfall will only result in temporary change of use with a very small lost to access for maintenance at the TJB.
Environmental: cultural heritage	The Northern Landfall is located to the west within 500m of Heritage Coast and an Area of Higher Landscape Value. No nationally important designated heritage assets within 250m, or regionally important designated assets within 50m. Range of non-designated asset records that might entail further investigation and potentially mitigation.	The Central Landfall is located fully within an Area of Higher Landscape Value as it is within the Durham Heritage Coast designation. No nationally important designated heritage assets within 250m, or regionally important designated assets within 50m. Non-designated asset records, mainly of ridge and furrow, plus World War II remains pillbox/bomb craters) that might entail further investigation and potentially mitigation.	The Southern Landfall is partially located within an Area of Higher Landscape Value as it is partially within the Durham Heritage Coast designation. No nationally important designated heritage assets within 250m, or regionally important designated assets within 50m. Non-designated asset records, mainly of ridge and furrow, plus World War II remains pillbox/bomb craters) that might entail further investigation and potentially mitigation.

Constraint	Northern Landfall (north of Seaham): Figure 1-5		Central Landfall (Nose's Point): Figure 1-6		Southern Landfall (Beacon Hill): Figure 1-6	
Environmental: marine archaeology	There is one designated wreck (PMRA 1986) within the vicinity of the Northern Landfall zone (RFA Creosol UKH05669), in the nearshore approaches to all landfall options. However, there is adequate space to include an appropriate buffer around the wreck and establish an Archaeological Exclusion Zone where required.		There is one designated wreck (PMRA 1986) within the vicinity of the Central Landfall zone (RFA Creosol UKH05669), in the nearshore approaches to all landfall options. However, there is adequate space to include an appropriate buffer around the wreck and establish an Archaeological Exclusion Zone where required.		There is one designated wreck (PMRA 1986) within the vicinity of the Southern Landfall zone (RFA Creosol UKH05669), in the nearshore approaches to all landfall options. However, there is adequate space to include an appropriate buffer around the wreck and establish an Archaeological Exclusion Zone where required.	



Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PEIR

Drawing Title: Figure 1-5:
NORTHERN LANDFALL (NORTH OF SEAHAM) CONSTRAINTS MAPPING

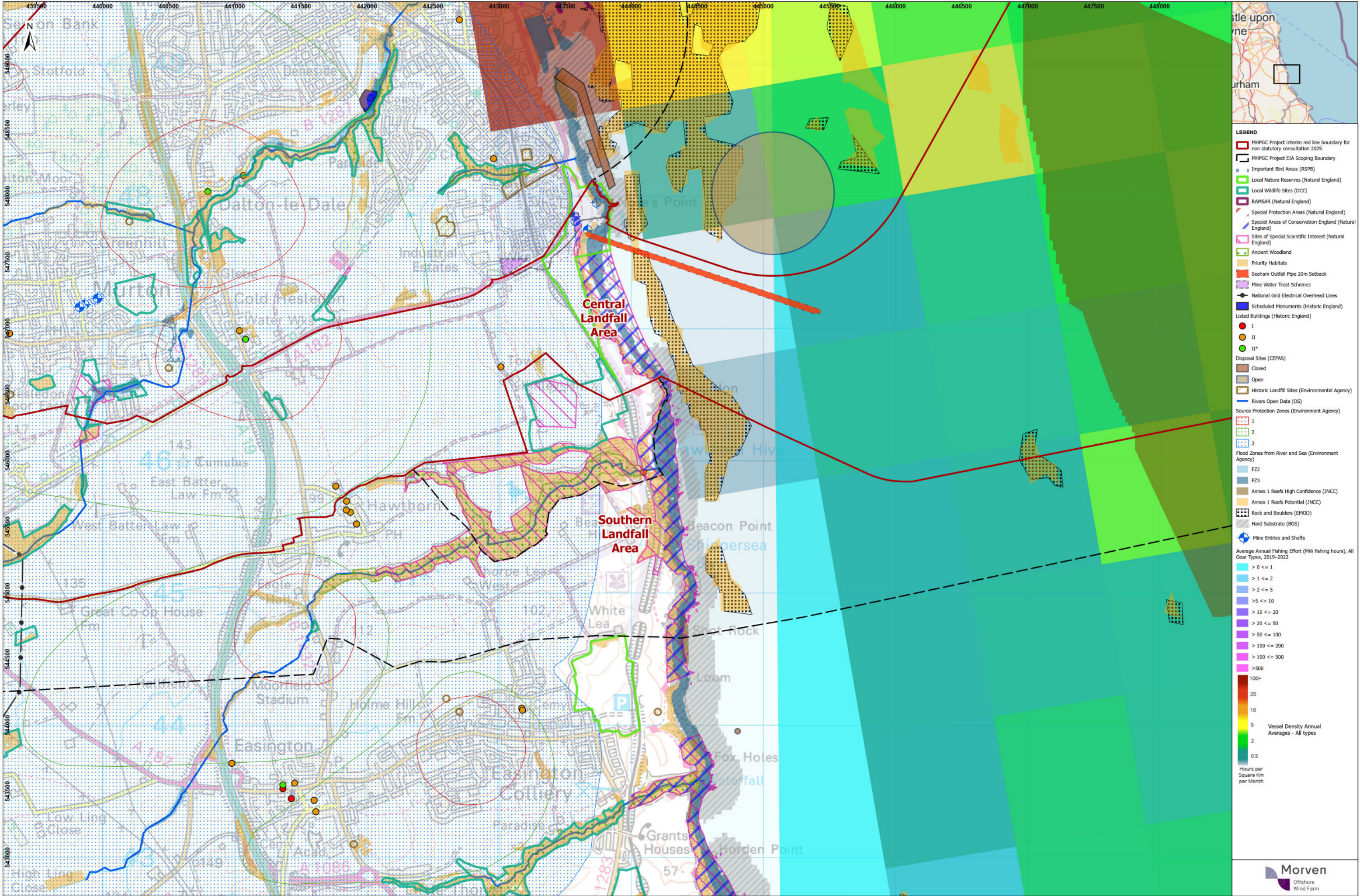
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Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
Morven,
Crown Copyright and database right (2026) Ordnance Survey AC0000808 122

Service Layer Credits:
Pipelines (Kis Orca),
Subsea Cables (Kis Orca),
Safety Zones Surface (Kis Orca),
Safety Zones Subsea (Kis Orca),
Offshore Wind Site Agreements (The Crown Estate / Crown Estate Scotland),
EMODnet Vessel Average 2017 to 2024.

Drawing Number: MV-CON-REG-0023				
VER	DATE	DETAILS	BY	CHECK
03	04/09/26	Layer Updates	GM	PRW
04	23/09/26	Layer Updates	GM	PRW



Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PEIR

Drawing Title: Figure 1-6
CENTRAL LANDFALL (NOSE'S POINT) AND SOUTHERN LANDFALL (BEACON HILL)
CONSTRAINTS MAPPING

0 500 Meters
Scale@A3: 1:25,000

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
Morven,
Crown Copyright and database right (2026) Ordnance Survey AC0000808122.

Service Layer Credits:
Pipelines (Kis Orca)
Subsea Cables (Kis Orca)
Safety Zones Surface (Kis Orca)
Safety Zones Subsea (Kis Orca)
Offshore Wind Site Agreements (The Crown Estate / Crown Estate Scotland)
EMODnet Vessel Average 2017 to 2024.

Drawing Number:
MV-CON-REG-0024

VER	DATE	DETAILS	BY	CHECK
03	04/09/26	Layer Updates	GM	PRW
04	23/09/26	Layer Updates	GM	PRW

- 1.4.2.3 Based on the results of the BRAG Analysis, presented in **Table 1-6**, each landfall option is summarised below and whether the landfall option was taken forward for further consideration.

Northern landfall (north of Seaham)

- 1.4.2.4 The Northern landfall (**Figure 1-5**) co-exists with Sharpley Burn watercourse, which has been cited by Northumbrian Water as potentially affecting bathing water quality at nearby designated bathing water site Seaham Hall Beach (Defra, 2026). The nearshore approaches to the Northern Landfall overlap with two designated bathing water sites: Seaham Beach and Seaham Hall Beach. Proximity to Sharpley Burn could pose a notable design constraint associated with potential mitigation of runoff or discharge.
- 1.4.2.5 The distance of the overall onshore cable route from the Northern landfall of over 10km makes it less favourable compared to the other two landfall options. The onshore cable route would also be required to pass through ecological statutory designated sites such as the Northumbria Coast SPA, Ramsar and Durham Coast SSSI due to the need to avoid built up areas along the coast.
- 1.4.2.6 Within the approaches to the Northern Landfall, there are records of potential Annex 1 reef and sporadic patches of Annex 1 reef (JNCC, 2022).
- 1.4.2.7 The southern extent of the Northern landfall zone overlaps with an anchorage area in the nearshore area off the coast of Seaham.
- 1.4.2.8 The northern landfall also has a higher forecast coastal erosion rate (60m over the MHPGC Project lifespan compared to 7.7m at the central landfall location). This was highlighted by the scoping response submitted by Seaham Town Council that the beach cliffs at the Northern landfall location are rapidly eroding with frequent and recent land slips. General feedback from the 2024 and 2025 consultation events was that there was less preference for the Northern landfall, compared to the Central landfall.
- 1.4.2.9 Viable highway access is more limited for the Northern landfall zone and the need to cross the EGL1 project.
- 1.4.2.10 Most significantly, the Northern landfall zone is constrained by pre-existing property rights associated with Seaham Solar Park. This would require the solar park to relinquish or allow the MHPGC Project to sterilise part of the development to allow an onshore export cable route to run through, as solar panels cannot be placed above the onshore cable route permanent easement. In summary, there is insufficient space for the MHPGC to route onshore export cables via the Northern landfall to connect to Hawthorn Pit National Grid Substation.
- 1.4.2.11 The review of the Northern landfall has determined that it has a high and moderate potential to constrain the development based on human, environmental and engineering BRAG appraisal in **Table 1-5**. As a result, the Northern Landfall zone was not recommended to be taken forward as there was limited ability to design viable engineering solutions to adequately avoid / minimise interaction with sensitive features.

Central landfall (Nose's Point)

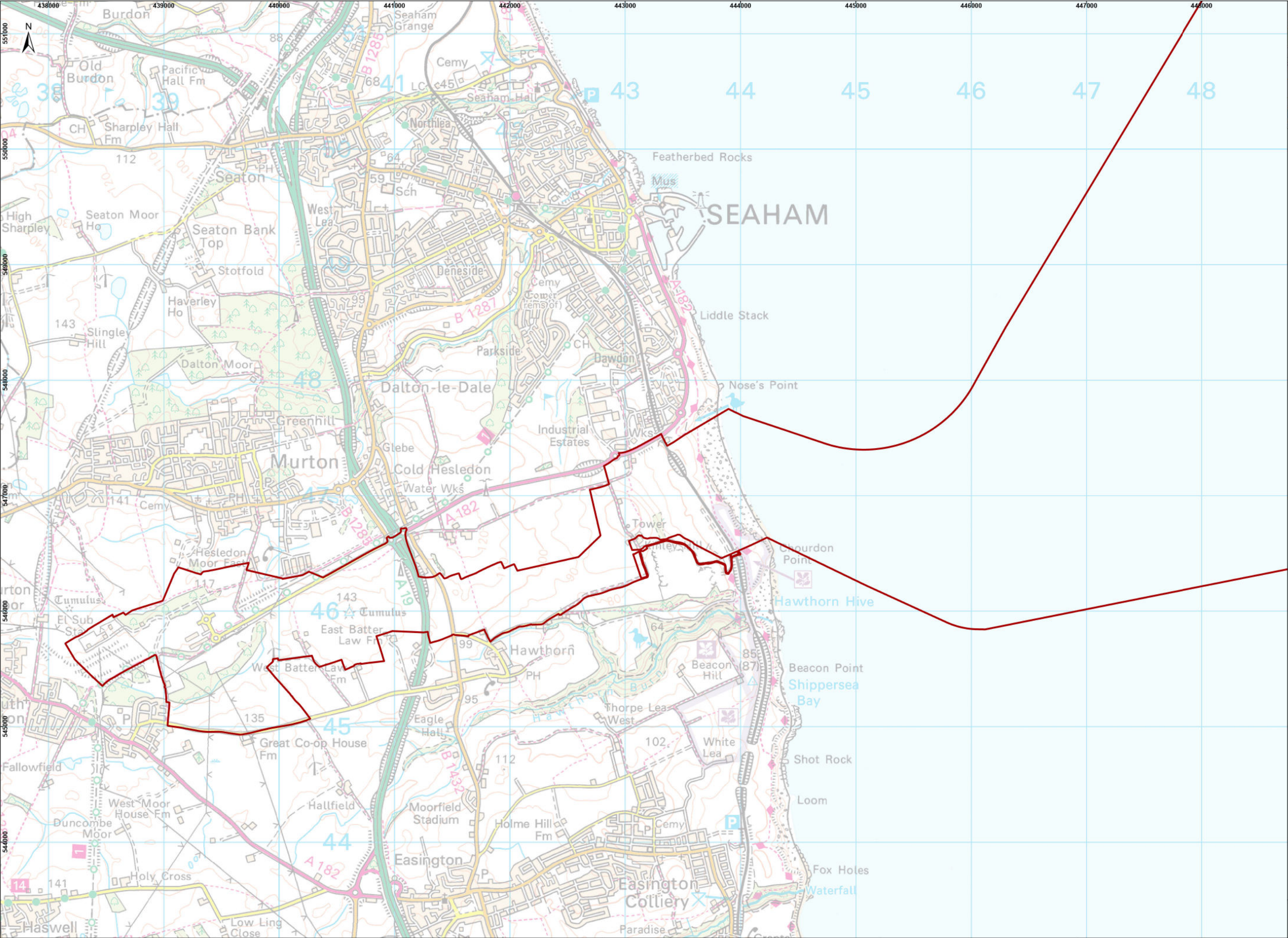
- 1.4.2.12 The Central landfall option (Nose's Point) (**Figure 1-6**) includes designated sites but minimises interaction with the Durham Coast SAC and SSSI and Hawthorn Pit SSSI and LNR due to this landfall zone requiring a commitment to a trenchless technique drill, partly because of the Durham Coast Railway Line and partly because of the steep cliff face.
- 1.4.2.13 Within the approaches to the Central landfall zone, there are extensive patches of potential Annex 1 reef and potential sporadic patches of Annex 1 reef on rock and boulders (JNCC, 2022). These run adjacent to the coastline.
- 1.4.2.14 The Northumbrian Water outfall pipe extends approximately 1.75 km seawards from the Central landfall e., The Central landfall zone is also within 250m of Nose's Point marine disposal site, which was identified as a hard constraint, and would require routing around to ensure no direct interaction with the site.
- 1.4.2.15 The review of the Central landfall zone has determined that whilst there is some potential to constrain development (mostly Amber in the BRAG appraisal in **Table 1-6**), there is only one high

potential (Red) development constraint. Amber constraints can likely be overcome through sensitive design, engineering solutions and mitigation. As a result, the Central landfall option (Nose's Point) was recommended to be taken forward into the short list of options for further assessment.

- 1.4.2.16 The Central landfall location was the landfall option that received the most support from consultation feedback from the community, with recommendations from Seaham Town Council that the onshore cable route make landfall at the Central landfall option (south of Seaham Docks) and follow the old mineral line to Hawthorn Pit (referencing the historic route of mineral export).

Southern landfall (Beacon Hill)

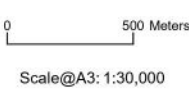
- 1.4.2.17 The Southern landfall (**Figure 1-6**) presented the most challenging of the three options. The coastline north of Easington Colliery is the greatest cliff height, which means that the overburden on the cable (depth below surface) will be greatest. This creates technical challenges for the cable, including greater thermal loading.
- 1.4.2.18 The landfall and associated onshore cable route would be located closer to and/ or through environmentally designated sites (Durham Coast SSSI/SAC and the Hawthorn Dene SSSI) to a greater extent than the Northern and Central landfall zones. The onshore cable route from this landfall location could not avoid interaction with the Hawthorn Dene SSSI and would require significant engineering and mitigation requirements due to the requirement to cross steep incised river/ drainage channels across the Hawthorn Dene valley. This presents a significant geotechnical risk associated with installation, in addition to potential to expose the onshore cable to future flooding/ scour risk.
- 1.4.2.19 The landform north of Easington Colliery has significantly steeper slopes compared to the Northern and Central landfall zones which would require extensive earthworks to ensure a feasible launch platform for trenchless technique installation, establishment of a level platform for the TJB and associated compound(s) for the works. This would introduce significant disturbance to the area, with notable landscape impact created by the cut and fill required, whilst the excavated soil would also need to be transported and stored elsewhere, creating further negative impacts on the local environment through vehicle movements and additional community disturbance. Much of this spoil would also become a waste product and require licenced disposal.
- 1.4.2.20 Within the approaches to the Southern landfall zone, there are small areas of potential Annex 1 reef and potential sporadic patches of Annex 1 reef
- 1.4.2.21 The review of the Southern landfall has determined that it has a high potential to constrain the development based on engineering requirements, and greater potential to interact with environmental designations based on the BRAG appraisal in **Table 1-6**, and would require significant landform works to provide a suitable working area for the landfall transition joint bays and compound. It is noted the offshore constraints are less than those associated with the Northern and Central landfall zones, however the onshore constraints are considered too significant to overcome and as a result, the Southern landfall zone (Beacon Hill) was not recommended to be taken forward as there was limited ability to design viable engineering solutions to adequately avoid/ minimise interaction with environmental designations and the associated landscape.



LEGEND
MHPGV Project PEIR Red Line Boundary
MHPGV Project PEIR Red Line Boundary

Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PEIR

Drawing Title: Figure 1-7:
PREFERRED LANDFALL OPTION - CENTRAL LANDFALL (NOSE'S POINT) MHPGV
PROJECT PEIR REDLINE BOUNDARY



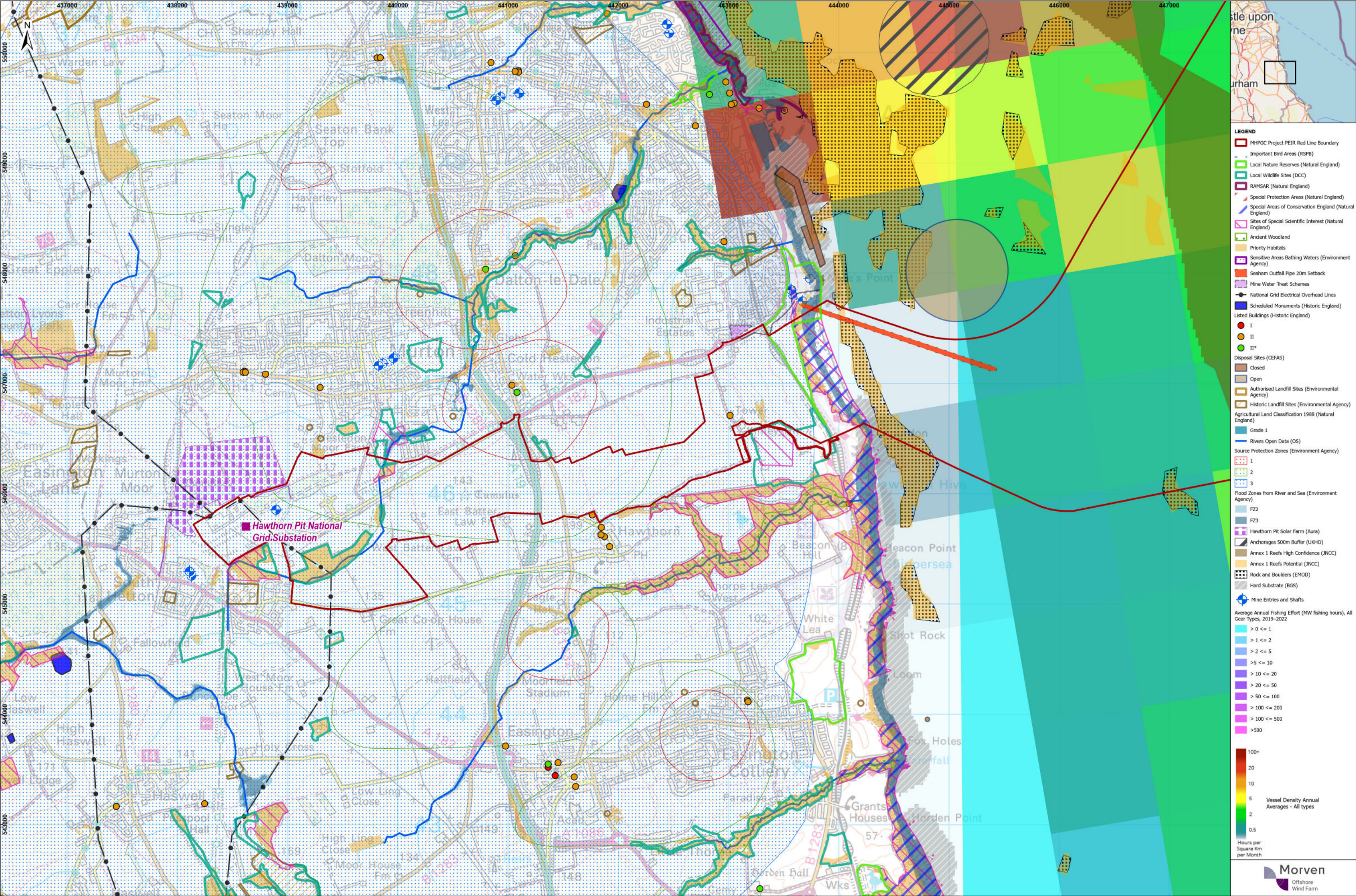
Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
Morven,
Crown Copyright and database right (2026) Ordnance Survey AC0000808122

Service Layer Credits:
GB Light Grey: Contains OS data © Crown Copyright and database right 2026. Contains data from OS Zoomstack
OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Facebook, Google, Esri
Community Maps contributors, Map layer by Esri



Drawing Number: MV-CON-REG-0025				
VER	DATE	DETAILS	BY	CHECK
02	28/08/26	Update Layers	GM	PRW
03	23/09/26	Update Layers	GM	PRW



Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PEIR

Drawing Title: Figure 1-8:
PREFERRED LANDFALL OPTION – CENTRAL LANDFALL (NOSE'S POINT) MHPGC
PROJECT PEIR RED LINE BOUNDARY WITH CONSTRAINTS

0 500 Meters
Scale@A3: 1:30,000

Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
Morven,
Crown Copyright and database right (2026) Ordnance Survey AC0000808122.

Service Layer Credits:
Pipelines (Kis Orca)
Subsea Cables (Kis Orca)
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Safety Zones Subsea (Kis Orca)
Offshore Wind Site Agreements (The Crown Estate / Crown Estate Scotland);
EMODnet Vessel Average 2017 to 2024.

Drawing Number: MV-CON-REG-0050				
VER	DATE	DETAILS	BY	CHECK
01	11/09/26	Initial Issue	GM	PRW
02	23/09/26	Layer Updates	GM	PRW

1.5 Landfall refinement summary

- 1.5.1.1 Of the three potential landfall zones identified within the Landfall Search Area, the Southern landfall (Beacon Hill) was discounted as a result of a high potential to constrain development due to engineering constraints associated with establishing landfall within challenging topography (associated with Beacon Hill and the valleys of Hawthorn Dene SSSI). While the offshore approaches to the Southern landfall were less constrained than the other landfall options (Northern and Central), onshore constraints, including interaction with designated sites (Durham Coast SSSI and SAC and the Hawthorn Dene SSSI) and associated landscape, were considered too significant to overcome. The Southern landfall (Beacon Hill) therefore ranks comparatively the worst of all options considered as part of the landfall site selection process.
- 1.5.1.2 As the Southern landfall (Beacon Hill) was being discounted, the remaining two cable landfall options (Northern and Central) and their associated onshore cable corridors along with indicative onshore LSS sites) were taken forward as part of the consultation undertaken between October and November 2025.
- 1.5.1.3 The key themes which emerged from the 2025 consultation included, but were not limited to, support for the Central landfall option and associated onshore cable route (however, the Northern landfall option was considered preferable if co-construction with Eastern Green Link 1 (EGL1) was a possibility), potential impacts on landowners (e.g. field boundaries, land severance, productive farmland), concern about the impact on the environment/biodiversity/wildlife/coastline, and concern about cumulative impacts (including with other ongoing projects). The feedback received (**Section 3.4**) has subsequently been considered alongside the outcome of the BRAG constraints analysis to further refine the site selection process.
- 1.5.1.4 As a result, the Northern landfall (north of Seaham) was also considered to be a less feasible landfall option. The Northern landfall option interacts with the Northumbria Coast SPA and Ramsar site and Durham Coast SSSI and SAC designations, and to avoid these sites onshore cable routes would need to be longer and less direct compared to other landfall options. The offshore approaches to the Northern landfall were constrained by other consented infrastructure (EGL1), an overlap with the anchorage associated with the Port of Seaham, and areas of Annex I Reef. Coastal constraints associated with the Northern landfall include more potential to interact with populated areas around Sunderland City, and as raised by Seaham Town Council during Scoping, the landfall location at beach cliffs which are rapidly eroding with frequent and recent land slips. This landfall option also presents constraints in relation to the cable alignment with the EGL1 project and with Seaham Solar Park. These constraints result in limited ability to design viable engineering solutions with this landfall option to adequately avoid/ minimise interaction with sensitive features.
- 1.5.1.5 The Central landfall (Nose's Point) is therefore the only landfall option which is being taken forward for the MHPGC Project at PEIR, taking into account available engineering solutions to potential interaction with environmental designations and solutions to engineering feasibility and constraints (**see Figure 3.6**) The Central landfall option does interact with designated sites but minimises interaction with the Durham Coast SSSI and SAC and Hawthorn Pit SSSI and LNR by committing to a trenchless techniques at the landfall. The trenchless techniques will traverse the Durham Coast Railway Line and the steep cliff face at Blast Beach which also minimises interaction with these existing physical assets and natural features. The Central landfall is located south of the built-up urban areas around Seaham, and consequently limits interaction of the MHPGC Project onshore infrastructure with residences and urban development. Through careful routing, the Central landfall also avoids direct impacts on offshore constraints such as Nose's Point marine disposal site, the designated bathing waters of Seaham Beach and Seaham Hall Beach, the Northumbrian outfall pipe and areas of Annex I Reef. The Central landfall location was the landfall option that received the most support from consultation feedback from the community, with recommendations from Seaham Town Council that the onshore cable route make landfall at the Central landfall option (south of Seaham Docks) and follow the old mineral line to Hawthorn Pit (referencing the historic route of mineral export)
- 1.5.1.6 A series of landowner meetings were also held between the 2025 consultation and the presentation of the landfall for the PEIR to obtain feedback in order to allow the MHPGC Project to incorporate feedback into the site selection process early, wherever possible. Key changes were made to the

Central landfall to refine it down to within the PEIR Red Line Boundary: Onshore as a result of defining key infrastructure parameters and feedback from the 2025 consultation and landowner feedback. These include:

- refinement of any potential interaction with residential developments adjacent to the A182 (i.e. the northern extent of the Central landfall), such as refinement around the boundary of Seaham Garden Village following clarity based on its start of construction;
- alignment of the PEIR Red Line Boundary: Onshore along field margins to reduce severance to landowners; and
- addition of access that runs to the Hawthorn Quarry to include an alternative access (to the A182 option) to the proposed landfall location.

1.6 Landfall Next Steps

- 1.6.1.1 Stage 3 of the selection and refinement of the cable landfall has identified the landfall area for the MHPGC Project in accordance with the site selection Guiding Principles, outlined in **Section 1.1.3.3**).
- 1.6.1.2 The proposed landfall option presented at PEIR is shown in **Figure 7** and has been selected based on balancing environmental, human and technical constraints against engineering feasibility.
- 1.6.1.3 The Central landfall option is the only landfall option which is being taken forward for assessment for this PEIR as it avoids key infrastructure associated with the corresponding onshore cable corridor and minimises the interaction with designations and sensitive features including the challenging topography of the Durham coastline. This landfall option will continue to be developed and refined, where possible, through further study, survey work and feedback received from stakeholders as part of the EPP (described in **Section 1.1.3**) and the upcoming round of consultation in autumn 2026 following publication of the PEIR.

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