



Morven Hawthorn Pit Grid Connection Project

Preliminary Environmental Information Report

Volume 3, Annex 2.3: Onshore Water Framework
Directive Assessment

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Table of contents

Executive Summary.....	1
1 Introduction	2
1.1 Overview.....	2
1.2 Legislative context	2
1.3 Policy and guidance context.....	3
1.4 Consultation and engagement	5
2 Methodology	10
2.1 Water Framework Directive Assessment approach	10
2.2 Future status objectives	11
2.3 Data sources and survey methods.....	11
3 Baseline characterisation	14
3.1 Water Framework Directive Assessment Areas	14
3.2 Baseline environment.....	16
3.3 Maximum Design Scenario.....	25
3.4 Commitments adopted as part of the MHPGC Project	34
4 Water Framework Directive Assessment	38
4.1 Stage 1 - Water Framework Directive Screening.....	38
4.2 Stage 2 - Water Framework Directive Scoping.....	42
4.3 Stage 3 - Water Framework Directive Impact Assessment.....	64
5 Summary	79
5.2 Stage 1: WFD Screening.....	79
5.3 Stage 2: WFD Scoping.....	79
5.4 Stage 3: WFD Impact Assessment.....	79
5.5 Compliance Conclusions	80
6 References.....	82

List of tables

Table 1.1 National Policy Statement provisions relevant to the WFD Assessment and where they are addressed	4
Table 1.2: Summary of scoping responses relevant to the WFD Assessment.....	5
Table 3.1 Summary of hydrogeological aquifer designation for the MHPGC Project.....	16
Table 3.2 Summary of onshore WFD water body status, key failing elements, and sensitivity to change	23
Table 3.3 WFD protected areas within the Onshore WFD Assessment Areas	24
Table 3.4 WFD protected areas connected to the water bodies within the Onshore WFD Assessment Area .	25
Table 3.5 MDS relevant for the assessment of potential impacts on WFD water bodies	26
Table 3.6 Embedded mitigation relevant to the WFD Assessment implemented as part of the MHPGC Project	35
Table 4.1 Characteristics of the water bodies within the Onshore WFD Assessment Areas	39

Table 4.2 Onshore specific risk information: hydromorphology	42
Table 4.3 Onshore specific risk information: macroinvertebrates	45
Table 4.4 Onshore specific risk information - fish	46
Table 4.5 Onshore specific risk information: macrophytes and phytobenthos.....	48
Table 4.6 Onshore specific risk information - water quality	49
Table 4.7 Onshore specific risk information: WFD protected areas	52
Table 4.8 Onshore specific risk information: INNS	58
Table 4.9 Specific risk information: groundwater	60
Table 4.10 Potential risks scoped into Stage 3 Impact Assessment	63
Table 4.11 RBMP objectives for water bodies assessed at Stage 3.....	64
Table 4.12 Onshore Stage 3 Impact Assessment – Hydromorphology.....	66
Table 4.13 Onshore Stage 3 Impact Assessment – Benthic Macroinvertebrates.....	66
Table 4.14 Onshore Stage 3 Impact Assessment – Fish	67
Table 4.15 Onshore Stage 3 Impact Assessment – Macrophytes and Phytobenthos.....	69
Table 4.16 Onshore Stage 3 Impact Assessment – Water Quality (Physico-chemical Quality Elements)"	70
Table 4.17 Onshore Stage 3 Impact Assessment – WFD Protected Areas	72
Table 4.18 Mitigation Measures Assessment	78
Table 5.1 Summary of WFD Scoping outcomes.....	79
Table 5.2 Summary of no-deterioration conclusions by water body and quality element.....	80
Table 5.3 Summary of RBMP objectives.....	80

List of figures

Figure 3.1: Onshore WFD Assessment Areas.....	15
Figure 3.2 SPZs within the Onshore Water Framework Directive Assessment Area	18
Figure 4.1 Surface water bodies within the Onshore WFD Assessment Areas	40
Figure 4.2 Designated groundwater bodies within the Onshore WFD Assessment Area	41
Figure 4.3 WFD protected areas within the Onshore WFD Assessment Areas	56

Glossary

Term	Meaning
Applicant	The legal entity making the applications for consent; Morven Offshore Wind Limited (MvOWL).
Bathing Waters	Waters designated under the Bathing Water Regulations 2013 (SI 2013/1675) for the purpose of protecting public health, where water quality is routinely monitored for bacteria levels and the results are published.
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.
Climate change	A change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
Commitments	Measures (embedded mitigation and secondary) to be adopted during the construction, operation and maintenance, and decommissioning phases of the Morven Hawthorn Pit Grid Connection (MHPGC) Project.
Construction	Used to refer to the whole construction phase of a project.
Cumulative effect	For each environmental topic, the baseline environment will be characterised, and the likely significant effect will be described within a topic-specific Study Area. Specific Study Areas are defined for each topic and are based on the maximum spatial extent
Cumulative effects assessment	Assessment of the likely effects arising from the MHPFC Project alongside the likely effects arising from other proposed developments on the same receptor or resource.
Development Consent Order (DCO)	A DCO is the consent required for Nationally Significant Infrastructure Projects (NSIPs) in England and Wales, granted by the Secretary of State under the Planning Act 2008. A DCO may incorporate a range of subsidiary consents and powers, including deemed planning permission, compulsory acquisition of land, and a Deemed Marine Licence (DML) for works below Mean High Water Springs (MHWS). The MHPGC Project is being promoted as an NSIP and will be consented through the DCO process.
Embedded mitigation	Measures included as part of the project design. Includes both primary and tertiary mitigation.
Environment Agency (EA)	The EA is the public body responsible for protecting and improving the environment in England, including regulating activities that affect land, water, and biodiversity. For a DCO, the EA acts as a statutory consultee, advising on flood risk, water quality and ecological impacts.
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.

Term	Meaning
Future baseline	Refers to the predicted situation in future years without the MHPGC Project.
Good Ecological Status	Is the status of a body of surface water and is defined as a slight variation from undisturbed conditions.
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 100 kilovolts (kV) and 800kV.
Impact	A change caused by an action that occurs during a project's lifetime.
Inter-related effects	Effects that may arise from the interactions between different topic effects considered within the alone assessment, potentially leading to more significant effects than if they were to be considered in isolation.
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.
Lowest Astronomical Tide (LAT)	The lowest level that can be expected to occur under average meteorological conditions and under any combination of astronomical conditions.
Magnitude	A combination of the spatial extent, duration, frequency and reversibility of an impact
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.
Marine licence	A marine licence permits the undertaking of different activities in the marine environment, including construction, the deposition or removal of substances or objects from the seabed and dredging. The Marine and Coastal Access Act 2009 requires a marine licence to be obtained for licensable marine activities within the Scottish offshore region (12nm – 200nm) and in English offshore and inshore regions (noting that deemed marine licences will be included within the Development Consent Order application).
Marine Management Organisation (MMO)	The MMO, as a UK government body, is responsible for licensing, regulating and overseeing activities in the marine environment for English waters. For a DCO and deemed marine licence, the MMO acts as a statutory consultee, advising on marine planning, environmental impacts, habitats and compliance with marine licensing regulations.
MDS (MDS)	The realistic worst case scenario, selected on a topic-specific and impact specific basis, from a range of potential parameters for the MHPGC Project.
Mean High Water Springs (MHWS)	The most inshore level location reached by the sea at high tide during mean high water spring tide. This is defined as the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest.
Mean Low Water Springs (MLWS)	The average height of the low water levels of each pair of successive low waters during the periods of about 24 hours when the tidal range is at its greatest.

Term	Meaning
MHPGC Project Environmental Statement (ES)	The document presenting the results of the Environmental Impact Assessment process.
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 PEIR Red Line Boundary: Onshore	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 Scoping Report	A Scoping Report for the MHPGC Project, scoping the likely significant effects of the project on the environment, was submitted and accepted by Planning Inspectorate (PINS) and submitted to the Scottish Ministers, via the Marine Directorate – Licencing Operations Team (MD-LOT) in February 2025.
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.
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. 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 the Morven South Offshore Wind Array Projects collectively.
Morven South Offshore Wind Array Project ('Morven South')	The Morven South Offshore Wind Array Project entirely in Scottish waters, which includes the wind turbines and foundations, OSP(s) and foundations, inter-array and inter-connector cables and associated infrastructure located within the Morven South Boundary.
National Policy Statement (NPS)	Policy statements published by the Department for Energy Security and Net Zero and designated under the Planning Act 2008, setting out national policy for Nationally Significant Infrastructure Projects.
Natural England (NE)	NE is the UK Government's statutory adviser on the natural environment in England, focusing on conserving biodiversity, landscapes, and access to nature. For a DCO and marine licence, NE provides statutory and technical advice to competent authorities on potential effects on designated sites, habitats and

Term	Meaning
	protected species, supporting environmental assessment and decision-making.
NatureScot (NS)	NS is the Scottish Government's nature agency responsible for protecting and promoting Scotland's natural heritage. For a marine licence in Scottish waters, NS advises on impacts to Scottish habitats, species and designated sites.
Offshore export cables	High voltage direct current (HVDC) cables which bring electricity from either the Morven North OSP or the Morven South OSP to the transition joint bay (TJB) at landfall.
Offshore export cable corridor	The proposed offshore area in which the offshore export cables will be laid, from either the Morven North OSP or Morven South OSP to the TJB at landfall.
Offshore substation platforms (OSPs)	OSPs comprise the support structure, topside and electrical components used for collecting the electricity generated by the wind turbine generators for the passage or transmission to landfall. These OSPs can be divided into two types: • HVAC (High Voltage Alternating Current) collector substations; • HVDC (High Voltage Direct Current) converter substations.
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.
Operations and maintenance phase (O&M)	The operational and maintenance phase of the MHPGC Project lifecycle.
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.
Polyaromatic hydrocarbons (PAH)	A class of chemicals that occur naturally in coal, crude oil, and gasoline.
Polychlorinated biphenyls (PCB)	They belong to a broad family of human-created organic chemicals known as chlorinated hydrocarbons. Although most were banned in 1986, they linger on in detectable levels in animals, fish and humans.
Primary mitigation	Measures included as part of the location or design of the MHPGC Project made during the pre-application phase that are an inherent part of the MHPGC Project and do not require additional action to be taken. This includes modifications arising through the iterative design process. These measures will be secured through the consent itself through the description of the MHPGC Project, the parameters and associated commitments secured by the DCO and marine licence, or both.
Receptor	In the context of this WFD Assessment, a receptor is a WFD quality element or protected area that could be affected by the MHPGC Project. For surface water bodies, receptors include the biological quality elements (macroinvertebrates, macrophytes, phytobenthos, and fish), hydromorphological supporting elements (hydrological

Term	Meaning
	regime, river continuity, and morphological conditions), and physico-chemical supporting elements (thermal conditions, oxygenation, salinity, acidification status, nutrient conditions, and specific pollutants) defined under Annex V of the Water Framework Directive (2000/60/EC) and transposed into English law by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. For groundwater bodies, receptors include quantitative status and chemical status as defined under the same legislation. WFD protected areas – including designated bathing waters, Natura 2000 sites (SACs and SPAs), and drinking water protected areas – are also assessed as receptors where a credible impact pathway exists. This definition differs from the broader use of the term "receptor" in Environmental Impact Assessment (EIA), where it may also encompass human populations, built assets, and other environmental features not classified as WFD quality elements.
River Basin Management Plan (RBMP)	RBMPs set the legally binding locally specific environmental objectives that underpin water regulation and planning activities.
Secondary mitigation	Actions that will require further activity to achieve the anticipated outcome and may be imposed as part of the planning consent, or through inclusion in the ES. These include measures required to reduce the significance of environmental effects and may be secured through an environmental management plan. For secondary mitigation measures, both pre-mitigation and residual effects are presented.
Scottish Environment Protection Agency (SEPA)	SEPA is Scotland's principal environmental regulator, responsible for protecting and improving the water environment, regulating pollution, and managing flood risk. Although the MHPGC Project is located entirely within England, SEPA guidance – particularly relating to river crossings, pollution prevention, and engineering works in the water environment – is referenced within this assessment where it provides relevant good practice that supplements EA guidance.
Significance	Effect factor that is determined by the magnitude of impact along with the sensitivity of the receptor.
Surface water	Inland water bodies present on the Earth's surface, including rivers, streams, lakes and transitional waters, and, for regulatory purposes, extending to certain coastal waters.
Tertiary mitigation	Actions that would occur with or without input from the EIA process feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.
Tidal cycle	One high tide plus a successive low tide.
Trenchless techniques	Construction methods used to install underground or sub-surface infrastructure without the need for continuous open trench excavation, thereby avoiding or minimising disturbance to surface features, habitats and existing land users.
Water bodies	The WFD 'water environment' includes rivers, lakes, transitional waters, groundwater and coastal waters out to 1nm for English waters and 3nm for Scottish waters (12nm for chemical status, i.e. for

Term	Meaning
	territorial waters). These waters are divided into units called water bodies.
Water Framework Directive (WFD)	The WFD (Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy) was published in December 2000 and is transposed into English and Welsh law by the Water Environment (England and Wales) Regulations 2017 (as amended). Under Section 2 of the European Union (Withdrawal) Act 2018, the 2017 Regulations continue to have effect in domestic law following the UK's withdrawal from the European Union. The WFD provides rules to protect water in Europe with the aim of achieving 'Good' status for lakes, rivers and groundwater.
Water Framework Directive (WFD) Assessment Area	Specific WFD Assessment Areas defined for the purposes of the offshore and onshore assessments for potential impacts on the relevant receptors.

Acronyms

Acronym	Meaning
AC	Alternating Current
AL	Action Level
ANSI	American National Standards Institute
ASA	Acoustical Society of America
BAC	Background Assessment Concentration
BBP	Bentonite Breakout Plan
BGS	British Geological Survey
BMV	Best and Most Versatile (agricultural land)
BWM Convention	Ballast Water Management Convention
BWR	Bathing Water Regulations
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan
CLGDS	Contaminated Land and Groundwater Discovery Strategy
CLV	Cable Lay Vessel
CMS	Construction Method Statement
CoCP	Code of Construction Practice
CSIP	Cable Specification and Installation Plan
DCO	Development Consent Order
DDSCP	Dredging and Disposal Site Characterisation Plan
DDT	Dichlorodiphenyltrichloroethane
Defra	Department for Environment, Food and Rural Affairs
DrWPA	Drinking Water Protected Areas
EA	Environment Agency

Acronym	Meaning
EAC	Environmental Assessment Criteria
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMP	Environmental Management Plan
EQSD	Environmental Quality Standards Directive
ERL	Effects Range Low
ES	Environmental Statement
FLCP	Fisheries Liaison and Coexistence Plan
FMMCP	Fisheries Mitigation, Monitoring and Communication Plan
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HDD	Horizontal Directional Drilling
HRA	Habitats Regulations Assessment
HVDC	High Voltage Direct Current
ISEP	Institute of Sustainability and Environmental Professionals
IMO	International Maritime Organisation
IQI	Infaunal Quality Index
INNS	Invasive non-native species
LAT	Lowest Astronomical Tide
LEMP	Landscape and Ecological Management Plan
LSS	Land Substation
MarESA	Marine Evidence-based Sensitivity Assessment
MARPOL	Maritime Organisation and International Convention for the Prevention of Pollution from Ships
MBP	Marine Biosecurity Plan
MD-LOT	Marine Directorate – Licensing Operations Team
MDS	Maximum Design Scenario
MHPGC	Morven Hawthorn Pit Grid Connection
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MoRPH	Modular River Physical survey.
MPCP	Marine Pollution Contingency Plan
NERC	Natural Environment and Rural Communities
NVZ	Nitrate Vulnerable Zone
ODMP	Operational Drainage Management Plan
O&M	Operations and Maintenance
OS	Ordnance Survey

Acronym	Meaning
OSP	Offshore Substation Platform
OSPAR	Oslo and Paris Conventions
PAH	Polycyclic Aromatic Hydrocarbon
PBDE	Polybrominated diphenyl ether
PCB	Polychlorinated Biphenyl
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
PLONOR	Pose Little or No Risk
PPE	Personal Protective Equipment
PPG	Pollution Prevention Guidance
PPP	Pollution Prevention Plan
RBD	River Basin District
RBMP	River Basin Management Plan
RIAA	Report to Inform Appropriate Assessment
RNAG	Reason for Not Achieving Good
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SgZ	Drinking Water Safeguard Zones
SPA	Special Protection Area
SPZ	Source Protection Zone
SSC	Suspended Sediment Concentrations
SuDS	Sustainable Drainage Systems
SWGMP	Surface Water and Groundwater Management Plan
THC	Total Hydrocarbon Content
TOC	Total Organic Carbon
UKTAG	United Kingdom Technical Advisory Group
uPBTs	Ubiquitous, Persistent, Bioaccumulative and Toxic Substances
UWWTD	Urban Wastewater Treatment Directive
WFD	Water Framework Directive
ZoI	Zone of Influence

Units

Unit	Meaning
%	Percent
Ha	Hectare
km	Kilometre

Unit	Meaning
m	Metre
m ²	Square metre
m ³	Cubic metre
m/hr	Metre per hour
mg/l	Milligram per litre
mbgl	Metres below ground level
mm	Millimetre
nm	Nautical miles

Executive Summary

This Report provides an assessment under the Water Framework Directive (WFD) (Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy) for the Morven Hawthorn Pit Grid Connection Project (hereafter 'the MHPGC Project').

The purpose of the WFD is to establish a framework for protecting and enhancing the ecological status of inland surface waters and groundwater, in line with River Basin Management Plans (RBMPs). This Annex assesses the onshore elements of the MHPGC Project landward of Mean High Water Springs (MHWS) at landfall to the National Grid Hawthorn Pit Substation. WFD coastal and transitional water bodies seaward of MHWS are assessed in the Offshore WFD Assessment (Volume 2, Annex 2.1 of the PEIR); together the two annexes assess the Project in full. This Report specifically addresses the potential impacts of the onshore components of the MHPGC Project on designated WFD waters through a three-stage approach: screening, scoping, and impact assessment.

Key findings of the assessment include:

- **Screening Stage:** Identifying water bodies, within the Northumbria River Basin Management Plan (RBMP), potentially impacted by the onshore components of the MHPGC Project include four surface water bodies (Dalton Beck to North Sea, Hawthorn Burn from Source to North Sea, Pittington Beck from Coalford to Old Durham Beck and Lumley Park Burn from Source to Herrington Burn) along with one groundwater body (Wear Magnesian Limestone).
- **Scoping Stage:** Determining the potential impacts to receptors such as hydromorphology, biology (habitats and fish), water quality, WFD protected areas, invasive non-native species, and groundwater. The assessment scoped in WFD-protected areas into the impact assessment stage for the onshore water bodies. Groundwater bodies were scoped out for further assessment.
- **Impact Assessment Stage:** Evaluated effects from the construction, operations, maintenance, and decommissioning phases of the MHPGC Project. Findings indicate no significant impacts on WFD-protected areas due to short-lived and localised impacts. Embedded mitigation measures were found to effectively manage potential risks.
- **Compliance with Mitigation Measures:** The MHPGC Project will not jeopardise existing WFD mitigation measures for any relevant onshore WFD water bodies, supporting the Northumbria RBMP.

Overall, the onshore components of the MHPGC Project comply with the requirements of the WFD for the relevant water bodies without impairing the objectives set out in the Northumbria RBMP.

1 Introduction

1.1 Overview

- 1.1.1.1 This Report presents the Water Framework Directive (WFD) Assessment for the Morven Hawthorn Pit Grid Connection Project (hereafter 'the MHPGC Project'). It forms **Volume 3, Annex 2.3: Onshore Water Framework Directive Assessment, of the Preliminary Environmental Information Report (PEIR)** prepared for the MHPGC Project.
- 1.1.1.2 Specifically, it relates to the onshore elements of the MHPGC Project landward of Mean High Water Springs (MHWS) at landfall to the National Grid Hawthorn Pit Substation in England, comprising the landfall (including the trenchless drill entry compound and transition joint bays), the onshore export cable corridor, the onshore land substation (LSS), and the AC connection cables.
- 1.1.1.3 This WFD Assessment has been prepared with reference to the following PEIR chapters and annexes, which provide supporting baseline data and impact assessment information relevant to the onshore components of the MHPGC Project:
- **Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR;**
 - **Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR;**
 - **Volume 3, Chapter 9: Agriculture and Soils, of the PEIR;**
- 1.1.1.4 The offshore (transitional and coastal) WFD assessment covers the Project seaward of MHWS at landfall to the offshore substation platform(s), and is presented in **Volume 2, Annex 2.1: Offshore Water Framework Directive Assessment, of the PEIR**. The two annexes are mutually exclusive and jointly exhaustive: no element of the MHPGC Project falls outside the scope of one or the other. There is no further consideration of offshore WFD receptors within this Annex.

1.2 Legislative context

- 1.2.1.1 The WFD (Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy) was published in December 2000 and is transposed into English and Welsh law by the Water Environment (England and Wales) Regulations 2017 (hereafter, 'the 2017 Regulations'). Under Section 2 of the European Union (Withdrawal) Act 2018, the 2017 Regulations continue to have effect in domestic law following the UK's withdrawal from the European Union.
- 1.2.1.2 The implementation of the WFD establishes a legislative framework for the prevention of deterioration and the protection of surface water (coastal waters, rivers, lakes, transitional waters, estuaries, man-made docks and canals) and groundwater out to 3 nautical miles (nm) in Scotland and 1nm in England.
- 1.2.1.3 Regulation 3 of the 2017 Regulations requires that the Secretary of State, the Environment Agency and every public body exercise their relevant functions to secure compliance with the requirements of the WFD. In determining the application for development consent, the Secretary of State must therefore be satisfied that the MHPGC Project would not cause deterioration of the status of any water body, and would not prevent the achievement of the objectives set out in the Northumbria RBMP. This Annex provides the information necessary to enable that duty to be discharged.
- 1.2.1.4 The purpose of the WFD is to establish a framework for the protection and enhancement of the ecological status of inland surface waters, transitional waters, coastal waters and groundwater. The WFD aims to prevent further deterioration in, and enhance, water quality, and promote sustainable water use while addressing a wide range of aspects of the water environment. The WFD defines a set of quality elements – the specific biological, hydromorphological, physico-chemical and chemical parameters against which the ecological status or potential of a water body is classified. For onshore water bodies, these include:
- Hydromorphological quality elements: the physical characteristics of water bodies, including water flow, sediment composition and movement, continuity, and the structure of the habitat. For rivers, the relevant hydromorphological elements are: quantity and dynamics of water flow, connection to groundwater bodies, river continuity, and morphological conditions (channel

patterns, river depth and width variation, structure and substrate of the bed, and structure of the riparian zone).

- Biological quality elements: the ecological components used to assess biological condition. For rivers, these include: benthic macroinvertebrates, fish fauna, macrophytes, and phytobenthos. The presence of invasive non-native species (INNS) is also considered;
- Physio-chemical: including environmental standards for supporting physio-chemical conditions, such as dissolved oxygen, phosphorus and ammonia;
- Chemical: defined by compliance with environmental standards for chemicals that are 'priority substances' and/or 'priority hazardous substances' in accordance with the Environmental Quality Standards Directive (2008/105/EC);
- Specific pollutants: assessing compliance with environmental standards for concentrations of pollutants such as zinc, cypermethrin or arsenic.

1.2.1.5 The environmental objectives of the WFD, as set out in Article 4 of the Directive and transposed into Regulation 13 of the 2017 Regulations, are to:

- Enhance the status and prevent further deterioration of surface water bodies, groundwater bodies and their ecosystem;
- Ensure progressive reduction of groundwater pollution;
- Reduce water pollution, especially by Priority Substances and Certain Other Pollutants under Annex II of the Environmental Quality Standards Directive 2008/105/EC;
- Support mitigating the effects of floods and droughts;
- Achieve at least good surface water status for all surface water bodies and good chemical status in groundwater bodies by 2015 (Article 4), or good ecological potential for artificial or heavily modified water bodies;
- Support sustainable water use.

1.2.1.6 Under the WFD, water bodies are the basic management units forming part of a larger River Basin District (RBD), for which RBMP are used to summarise baseline conditions and set broad improvement objectives. The 2017 Regulations require the 'appropriate agency' (i.e. in England, the Environment Agency (EA)) to prepare the RBMP for each RBD.

1.2.1.7 The WFD aims to protect and enhance (or improve) the ecological status/potential of all WFD water bodies including surface water bodies and groundwater bodies. As such, it requires all natural water bodies to achieve both Good Chemical Status and Good Ecological Status (as defined by the WFD) and all artificial and heavily modified water bodies to achieve Good Ecological Potential. There is also a requirement to view the water environment holistically, integrating water quality, quantity and physical habitat with ecological indicators. In addition, Regulation 5(2)(l)(iii) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 requires an application for development consent to be accompanied by a plan, with accompanying information, identifying water bodies in a river basin management plan, together with an assessment of any effects on such bodies likely to be caused by the proposed development.

1.3 Policy and guidance context

1.3.1.1 The Overarching National Policy Statement for Energy (NPS EN-1) (DESNZ, 2024) provides the primary policy framework for decision-making on applications for development consent. Section 5.16 of NPS EN-1 addresses the water environment and states that the Applicant's assessment should describe:

- the existing quality of waters affected by the proposed project, and the impacts of the proposed project on water quality, water resources, and the physical characteristics of the water environment;
- how the project has been designed to avoid, minimise and mitigate adverse impacts on the water environment;
- any cumulative effects with other existing and proposed developments;
- whether the project is compliant with the requirements of the WFD, including the no-deterioration objective and the objective to achieve Good Ecological Status or Good Ecological Potential.

- 1.3.1.2 NPS EN-1 (paragraph 5.16.6) states that *"the Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the Water Framework Directive [...] including that the proposal would not cause a deterioration of the status of any body of surface water or groundwater, and would not prevent the achievement of 'good' status in accordance with the relevant RBMP."*
- 1.3.1.3 NPS provisions relevant to the WFD Assessment and where they are addressed is provided in **Table 1.1**. NPS EN-3 and NPS EN-5 do not contain further policy of relevance to this assessment.

Table 1.1 National Policy Statement provisions relevant to the WFD Assessment and where they are addressed

NPS	Paragraph / section	Policy requirement	Where addressed in this Annex
NPS EN-1	Section 5.16 (Water quality and resources) – general requirement	The Applicant's assessment should describe the existing quality of waters affected by the proposed project, and the impacts of the proposed project on water quality, water resources, and the physical characteristics of the water environment.	Baseline water quality, hydromorphological and groundwater conditions for the four onshore river water bodies and the Wear Magnesian Limestone groundwater body are characterised in Section 3.2 and Table 3.2. Impacts are assessed at Stage 2 (Section 4.2, Table 4.2 – Table 4.9) and Stage 3 (Section 4.3, Table 4.12 – Table 4.17).
NPS EN-1	Section 5.16 (Water quality and resources) – design and mitigation	The assessment should describe how the project has been designed to avoid, minimise and mitigate adverse impacts on the water environment.	Embedded mitigation secured through the commitments register is set out in Table 3.6 and applied throughout the Stage 2 and Stage 3 assessments. Routing and siting constraints, including WFD surface water bodies and functionally linked tributaries, are described in [Volume 1, Chapter 3: Site Selection and Consideration of Alternatives, of the PEIR].
NPS EN-1	Section 5.16 (Water quality and resources) – cumulative effects	The assessment should describe any cumulative effects with other existing and proposed developments.	[Placeholder – to be completed at ES stage. The PEIR Stage 3 assessment addresses the in-combination temporal effect of sequential watercourse crossings across the 42-month onshore construction programme (Table 4.16). A full cumulative assessment with other developments will be provided in the ES, consistent with the approach in Volume 1, Chapter 4: Approach to Environmental Impact Assessment, of the PEIR.]
NPS EN-1	Section 5.16 (Water quality and resources) – WFD compliance	The assessment should describe whether the project is compliant with the requirements of the WFD, including the no-deterioration objective and the objective to achieve Good Ecological Status or Good Ecological Potential.	The three compliance tests (no-deterioration, RBMP objectives, and RBMP mitigation measures) are addressed in Section 5.4 , supported by Table 5.2 and Table 5.3 .
NPS EN-1	Paragraph 5.16.6	"The Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the Water Framework Directive [...] including that the proposal would not cause a deterioration of the status of any body of surface water or groundwater, and would not prevent the achievement of 'good' status in accordance with the relevant RBMP."	RBMP objectives for each water body are identified in Table 4.11 and carried through each Stage 3 conclusion. The overall compliance statement at Section 5.4 concludes that the MHPGC Project will not cause deterioration of any water body and will not prevent achievement of the Northumbria RBMP objectives.

- 1.3.1.4 This WFD Assessment has been undertaken in accordance with the guidance Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (PINS, 2025), which superseded Advice Note 18: The Water Framework Directive (PINS, 2017).
- 1.3.1.5 The Environment Agency's 'Clearing the Waters for All' guidance sets out a risk-screening method specific to estuarine (transitional) and coastal water bodies. It does not contain assessment criteria for river water bodies and has therefore not been used for the onshore river assessment. The four onshore river water bodies assessed in this Annex – Dalton Beck to North Sea, Hawthorn Burn from Source to North Sea, Pitlington Beck from Coalford to Old Durham Beck, and Lumley Park Burn from Source to Herrington Burn – have instead been assessed against the WFD quality element definitions for rivers set out in Schedule 2 of the 2017 Regulations, in accordance with United Kingdom Technical Advisory Group (UKTAG) classification guidance and the PINS advice (2025).
- 1.3.1.6 For the groundwater component, the potential impact on groundwater bodies has been assessed using 'Groundwater chemical status assessment (classification) and trend assessment' method statement (EA, 2022).

1.4 Consultation and engagement

1.4.1 Scoping

- 1.4.1.1 A Scoping Report for the MHPGC Project was issued to the Planning Inspectorate (PINS) and Marine Directorate – Licencing Operations Team (MD-LOT) in February 2025 (RPS, 2025). Following consultation with the appropriate statutory bodies, PINS (on behalf of the SoS) and MD-LOT both provided Scoping Opinions in March 2025 (PINS, 2025; MD-LOT, 2025, respectively).
- 1.4.1.2 The MMO consultation response relates to the offshore components of the MHPGC Project and has therefore been considered in the Offshore WFD Assessment. No MMO comments requiring specific consideration within the Onshore WFD Assessment were identified.
- 1.4.1.3 **Table 1.2** summarises the key comments raised during the scoping process specific to the WFD Assessment - Onshore and how these comments have been addressed within this WFD Assessment.

Table 1.2: Summary of scoping responses relevant to the WFD Assessment

Comment		How and where considered in the PEIR
Onshore		
Environment Agency	WFD surface water bodies do not appear to have been considered as constraints currently being considered within the options appraisal. We note that the main rivers have been included. There is a risk that the potential importance of these habitats (and functionally-linked tributaries) could be overlooked as part of the site selection process, which could mean sites that pose more damage to biodiversity are selected. The Applicant should consider all WFD surface water bodies and functionally-linked tributaries as constraints to be assessed as part of the options appraisal. It is also observed that WFD water bodies in this locale are not designated as main rivers.	All WFD surface water bodies and their functionally linked tributaries that interact with the Onshore WFD Assessment Area are identified in Section 3.2 . An assessment of the potential impacts on relevant WFD surface water bodies is considered in the WFD Scoping in Section 4.2 and assessed further in the WFD Impact Assessment stage in Section 4.3 of this WFD Assessment. WFD surface water bodies, EA main rivers and ordinary watercourses were included as environmental constraints in the routeing and siting process for the onshore export cable and AC connection cable corridor. The site selection process and the constraints applied are described in Volume 1, Chapter 3: Site Selection and Consideration of Alternatives, of the PEIR .
	Culverts can adversely affect the WFD status of a watercourse. Avoid the use of culverts. Open span crossings are preferred.	The three identified cable watercourse crossings are currently assumed to be undertaken using open-cut construction techniques with full reinstatement of bed and bank profiles, secured through CoT29 and the Outline CoCP (CoT18).. Temporary haul-road crossings of frequently-dry ordinary watercourses

Comment	How and where considered in the PEIR
If culverting can't be avoided, the WFD Assessment will need to identify and assess potential risks to: • Hydromorphology; • Biology: habitats; • Biology: fish; • Water quality; • Protected areas.	may use temporary culverts or bridging that maintains flow; these are temporary and will be removed and the channel reinstated before the end of construction. The potential risks to hydromorphology, biology (habitats, fish, macrophytes and phyto-benthos), water quality, and protected areas arising from open-cut crossing works and temporary haul-road crossings have been assessed in the WFD Scoping (Section 4.2 and, where applicable, carried forward to the WFD Impact Assessment (Section 4.3). Crossing methods and associated mitigation are secured through the Onshore Crossing Schedule (CoT51 and CoT49 Outline Construction Method Statement; Table 3.6). The Maximum Design Scenario (MDS) for culvert installation is presented in Section 3.3. The potential risks arising from watercourse crossings have been identified and assessed for each of the receptor groups raised by the Environment Agency. Hydromorphology, biology (habitats), biology (fish), water quality and WFD protected areas were each screened at Stage 2 scoping (Table 4.12 – Table 4.17), and those receptors scoped in were carried forward to the Stage 3 impact assessment (Table 4.12 – Table 4.17). No permanent culverts would be installed.
Proposals for potentially required freshwater surveys do not detail any kind of riparian habitat, hydromorphological or geomorphological assessment methods. Hydromorphological assessments are mentioned elsewhere in the MHPGC Project Scoping Report, but no methods are provided. Not carrying out such assessments could mean that impacts and mitigation requirements are not properly assessed. Where watercourses are affected, proposals for riparian habitat assessments should be considered. Please consult the EA on the appropriateness of such assessments. Dependent upon the nature of the MHPGC Project, such assessments may be required to inform the Guidelines for Ecological Impact Assessment and WFD assessments. They may also be required to inform any associated requirements for avoidance, mitigation and/or compensation measures. Modular River Physical (MoRPH) surveys may be sufficient to address this issue.	A desk-based baseline characterisation of hydromorphological conditions has been undertaken for all onshore WFD water bodies using available data sources, including the EA Catchment Data Explorer (EA, 2025), Ordnance Survey mapping, aerial imagery, and BGS geological mapping (BGS, 2025). The data sources and methods underpinning the baseline and assessment are described in Section 2.3. A fluvial geomorphology walkover survey was undertaken on 21 July 2026 to inform the baseline characterisation and assessment of hydromorphological quality elements within the onshore WFD Assessment Area. Access and visibility were constrained by dense seasonal vegetation and land access restrictions. Consequently, the survey was limited to a high-level characterisation of channel conditions. The results of the July 2026 fluvial geomorphology walkover survey are presented in Volume 3, Chapter 2: Water Resources and Flood Risk, of the PEIR, and have informed this WFD Assessment. Further information on riparian habitats is presented in Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR.
The identified risk issues identified for Impact Assessment are not fully comprehensive. Potentially significant risks to WFD groundwater bodies may not be assessed in the proposed WFD Assessment. The following impact risks should also be considered: • The potential for piling and other foundation works to result in the creation of new contaminant migration pathways affecting the WFD groundwater bodies.	The four potential risks to WFD groundwater bodies identified in the EA's scoping response have each been carried into the Stage 2 groundwater scoping assessment (Section 4.2, Table 4.9), as follows: Piling and other foundation works creating new contaminant migration pathways. Assessed in Table 4.9. Foundations for the onshore land substation (LSS) may comprise raft or pile caps or piled foundations. Where rotary bored piles are used these would be cased and grouted, limiting the potential for creating preferential flow pathways through the

Comment	How and where considered in the PEIR
	low-permeability Devensian Till that confines the Wear Magnesian Limestone aquifer across much of the MHPGC PEIR Red Line Boundary: Onshore. Managed through the Outline CoCP (CoT18), Outline PPP (CoT34) and Outline CLGDS (CoT33) (Table 3.6). Outcome: scoped out. Trenchless cable installation methods creating new contaminant migration pathways. Assessed in Table 4.9. Trenchless crossings (excluding landfall) would be undertaken at depths of up to 30m, and at landfall up to 80m below ground level, and therefore have the potential to penetrate the confining superficial deposits. Risks arise both from the loss of drilling fluids to the subsurface and from the creation of a preferential vertical pathway through the confining layer. Managed through the Outline Bentonite Breakout Plan (CoT47), Outline Onshore CMS (CoT49), Outline Landfall CMS (CoT59) and Outline CoCP (CoT18) (Table 3.6). Residual below-ground infrastructure following decommissioning acting as a contamination source or preferential pathway. Assessed in Table 4.9. The MDS (Section 3.3) assumes onshore cables are left in place at decommissioning to avoid the environmental disturbance associated with their recovery. The potential for retained ducts, joint bays, link boxes and foundations to act as a source of contamination or as a preferential pathway for contaminant mobilisation is therefore assessed. Managed through the Onshore Decommissioning Plan (CoT16), which includes provisions for the decommissioning of below-ground infrastructure where relevant and practicable, and for pollution prevention and the avoidance of ground disturbance (Table 3.6). Drainage infrastructure introducing mobile contaminants such as fire water, or spills and leaks from operational plant is assessed in Table 4.9. Operational drainage at the LSS, including the proposed SuDS features, presents a potential pathway for mobile contaminants to reach the underlying Principal Aquifer, particularly given that parts of the MHPGC PEIR Red Line Boundary: Onshore fall within groundwater Source Protection Zone 1. Managed through the Outline Operational Drainage Management Plan (CoT22) (Table 3.6). Further information on impacts to groundwater are presented in Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR.
As the onshore cable route is not yet defined, it is not clear whether any river crossings will be required. If crossings are required, then the preference would be for trenchless techniques to be used and appropriate consideration given to the potential for disturbance or barriers to be caused by localised heating of riverbeds, and the presence of EMF. The following are general guiding principles to consider when designing watercourse	The potential impacts on water quality and hydromorphology resulting from onshore cable construction (including watercourse crossings) have been assessed in the WFD Scoping in Section 4.2 and, where applicable, in the WFD Impact Assessment in Section 4.3 of this WFD Assessment. The assessment of hydromorphological impacts at watercourse crossings was informed by a fluvial geomorphology walkover survey conducted early July 2026. These surveys will assess channel

	Comment	How and where considered in the PEIR
	crossings to avoid negatively affecting geomorphology and natural processes: • Avoid unnecessary interference with natural processes. For instance, encourage use of trenchless techniques such as HDD to minimise the likelihood of cables entering the water environment. • Consider opportunities to deliver WFD mitigation measures as part of the design. Avoid preventing delivery of mitigation measures, e.g. avoid bringing cables to surface level in floodplains earmarked for future river restoration. • Ensure watercourse crossing design is informed by assessment of fluvial processes and geomorphology. For example, depth of HDD crossing should consider the likelihood of vertical channel change. • Avoid designs which present legacy risks to natural processes and geomorphology beyond the project lifespan. For example, infrastructure such as access tunnels, which are left in-situ after decommissioning, could be exposed by future river movement, becoming an impediment to natural processes.	sensitivity to disturbance, substrate conditions, and the likelihood of vertical and lateral channel change, which will inform crossing design (including the depth of trenchless installations) and the assessment of legacy risks from any below-ground infrastructure left in situ after decommissioning. The guiding principles set out in the EA's scoping response (avoidance of unnecessary interference with natural processes; consideration of WFD mitigation measure delivery; geomorphology-informed design; and avoidance of legacy risks) have been adopted as design principles for watercourse crossings and will be secured through the Onshore Crossing Schedule (CoT51) and the CoCP (CoT18) (Table 3.6). Further information on potential impacts to watercourses is presented in Volume 3, Chapter 2: Water Resources and Flood Risk, of the PEIR. The site selection process and the constraints applied are described in Volume 1, Chapter 3: Site Selection and Consideration of Alternatives, of the PEIR.
PINS ID 4.2.6	The MHPGC Project Scoping Report suggests that crossings of sensitive watercourses may be required. The ES should describe the nature of any proposed works within or in proximity of sensitive watercourses. Information should be provided regarding the location, scale, and dimensions of any proposed watercourse crossings/instream structures, as well as the nature of any associated construction works. The ES should consider the potential of such works to negatively impact watercourses within the study area, including the ecological status of any watercourses protected under the WFD.	The potential impacts on watercourses resulting from onshore cable construction (including watercourse crossings) have been considered in the WFD Scoping in Section 4.2 of this WFD Assessment. The nature, location, scale, and dimensions of the proposed open-cut cable watercourse crossings, together with any temporary haul-road crossings, are described in the MDS (Section 3.3) and assessed against the relevant WFD quality elements for river water bodies in Section 4.2. The ecological status of all water bodies within the Onshore WFD Assessment Area are presented in Table 4.1 in Section 4. Further information on potential impacts to watercourses are presented in Volume 3, Chapter 2: Water Resources and Flood Risk, of the PEIR.

1.4.2 Further consultation and engagement

- 1.4.2.1 There has been no consultation undertaken specifically on the WFD Assessment since receipt of the Scoping Opinions. However, matters relevant to the WFD Assessment have been discussed through the wider MHPGC Project consultation and Evidence Plan process, including the Hydrology and Flood Risk Expert Working Group. Ongoing engagement with the EA and Natural England will continue as part of the Evidence Plan process and through future Expert Working Group meetings. The outcomes of this engagement, including any further advice on survey scope, methodology, and assessment approach, will be reflected in the ES-stage WFD Assessment.

- 1.4.2.2 The WFD Assessment was not a specific agenda item at the EWG 1 meetings held between November and December 2025. However, matters relevant to the WFD Assessment were discussed at the Hydrology and Flood Risk EWG 1 (11 November 2025), including watercourse crossing approaches, water quality sampling requirements (Proposed Agreement ON-HFR-1.3), and the use of the RBMP to inform the assessment of water-dependent protected sites. The outcomes of this discussion have been reflected in **Sections 2, 3, and 4** of this WFD Assessment. The WFD Assessment approach, including the onshore river assessment methodology, was presented to the EA at the EWG 2 meeting in August 2026, and the outcomes of that engagement are reflected in the ES-stage WFD Assessment.

2 Methodology

2.1.1.1 This section sets out the approach, guidance framework, and data sources underpinning the WFD Assessment for the MHPGC Project.

2.1 Water Framework Directive Assessment approach

2.1.1.1 In accordance with the EA guidance (EA, 2023) and the PINS advice (Planning Inspectorate, 2025), this report follows the three-stage approach to WFD Assessment:

- **Stage 1 WFD Screening:** Identification of the MHPGC Project activities that are to be assessed, and determination of which WFD water bodies could potentially be affected through identification of a Zone of Influence (Zoi). This step also provides detail regarding the baseline environment present in the water bodies screened into the assessment and provides a rationale for any water bodies screened out of the assessment.
 - **Stage 2 WFD Scoping:** For each water body identified in Stage 1, an assessment is carried out to identify the effects and potential risks to quality elements from all MHPGC Project activities. The assessment is made taking into consideration embedded mitigation and good practice measures. This stage identifies the WFD parameters which need to be considered to inform WFD Impact Assessment (Stage 3). The potential risks assessed at Stage 2 are derived from the WFD quality elements defined in the 2017 Regulations (Schedule 2) for each water body type. As set out in **paragraph 1.3.1.5** for river water bodies, the scoping assessment is structured around the WFD quality element groups defined in the 2017 Regulations for rivers, namely:
 - **Biological quality elements:** benthic macroinvertebrates, fish fauna, macrophytes, and phytobenthos;
 - **Hydromorphological quality elements** supporting good status: quantity and dynamics of water flow, connection to groundwater bodies, river continuity, and morphological conditions;
 - **Physico-chemical quality elements** supporting good status: thermal conditions, oxygenation conditions, salinity, acidification status, and nutrient conditions;
 - **Specific pollutants** contributing to ecological status classification;
 - For each quality element, the scoping assessment considers whether the MHPGC Project activities (as defined by the MDS in **Section 3.3**) could cause a risk of deterioration in that element, taking into account the baseline classification and sensitivity of the water body (as characterised in **Section 3.2**), the nature and magnitude of the potential impact pathway, and the effectiveness of embedded mitigation (**Section 3.4**). Where a risk of deterioration cannot be excluded, the quality element is scoped into Stage 3 for detailed impact assessment;
 - For **groundwater bodies**, the scoping criteria follow the structure set out in UKTAG (2024) guidance, assessing risks to groundwater quality (including saline intrusion, impacts on surface water, Groundwater Dependent Terrestrial Ecosystems (GWDEs) and Drinking Water Protected Areas (DrWPAs)) and groundwater quantity (water balance).
 - **Stage 3 WFD Impact Assessment:** Depending on the outcome of Stage 1 and 2, a detailed assessment of the water bodies and activities carried forward from the WFD Screening and Scoping stages. It involves:
 - The consideration of the baseline conditions of the concerned water bodies;
 - An assessment of the risk of deterioration in relation to the RBMP objectives for each water body (either in isolation or cumulatively);
 - A description of any additional mitigation that is required (if applicable) and how it will be implemented;
 - An explanation of any positive contributions to the RBMP objectives proposed, and how they will be delivered.
- 2.1.1.2 The PINS advice (Planning Inspectorate, 2025) and the 2017 Regulations define deterioration as occurring when the status of at least one quality element falls by one class — for example, a biological quality element moving from Good to Moderate status. If a quality element is already at the lowest status class (Bad), then any further reduction in its condition counts as deterioration.

Whilst deterioration within a status class does not contravene the requirements of the WFD, the WFD requires that action should be taken to limit within-class deterioration as far as practicable.

2.1.2 Guidance framework

2.1.2.1 The guidance framework applied in this WFD Assessment varies by water body type, reflecting the different quality elements and assessment approaches applicable to each:

2.1.2.2 **River water bodies (onshore):** The four onshore (i.e. above MHWS) water bodies screened into this assessment are classified as river water bodies under the WFD. The assessment has been undertaken in accordance with Planning Inspectorate guidance on the WFD, UKTAG guidance, Environment Agency river basin planning guidance and the Water Environment (England and Wales) Regulations 2017, considering the relevant biological, hydromorphological and physico-chemical quality elements, protected areas and River Basin Management Plan objectives.

2.1.2.3 Accordingly, the onshore river assessment has been undertaken in accordance with the PINS advice (Planning Inspectorate, 2025) and the WFD quality element definitions for rivers as set out in Schedule 2 of the 2017 Regulations, supplemented by UKTAG guidance on the classification of river water bodies.

2.1.2.4 **Groundwater bodies:** The potential impact on groundwater bodies has been assessed using the 'Groundwater chemical status assessment (classification) and trend assessment' method statement (EA, 2022), which outlines the conditions for the achievement of good status in groundwater, including chemical and quantitative tests.

2.2 Future status objectives

2.2.1.1 RBMPs are used to outline water body pressures and the actions that are required to address them. The future status objective assessment considers the ecological potential of a water body and the mitigation measures that defined the ecological potential. Assessments undertaken for the MHPGC Project are based on mitigation measures defined in the Northumbria RBMP. This WFD Assessment considers whether the MHPGC Project has the potential to prevent the implementation or impact the effectiveness of the defined measures.

2.3 Data sources and survey methods

2.3.1.1 The baseline characterisation and impact assessment presented in this WFD Assessment have been informed by the data sources and methods described below. At this PEIR stage, the assessment is based primarily on desk-based data sources. A fluvial geomorphology walkover survey was undertaken on 21 July 2026 and its findings have been used to verify the desk-based baseline presented in this PEIR.

2.3.2 Desk-based data sources

2.3.2.1 The following desk-based data sources have been used to characterise the baseline environment and inform the assessment:

- **WFD classification and water body data:**
 - EA Catchment Data Explorer (EA, 2025): WFD classification status (overall, ecological, chemical), individual quality element classifications, Reasons for Not Achieving Good (RNAG), pressures, and RBMP objectives for all screened water bodies;
 - Northumbria River Basin Management Plan (EA, 2022): RBMP objectives, programme of measures, and water body-specific mitigation measures for relevant water bodies.
- **Water quality and physico-chemical data:**
 - EA Water Quality Archive (Defra, 2025): Physico-chemical monitoring data for surface water bodies, including dissolved oxygen, phosphate, ammonia, temperature, and specific pollutants where available.
- **Hydrological and hydrogeological data:**

- National River Flow Archive (NRFA): Hydrological flow statistics (where available for nearby gauging stations) to characterise flow regime in onshore water bodies;
- BGS 1:50,000 and 1:625,000 geological and hydrogeological mapping (BGS, 2025): Bedrock and superficial geology, aquifer designations, and hydrogeological properties;
- EA Groundwater Source Protection Zone mapping.
- **Ecological and habitat data:**
 - MAGIC Interactive Map (Natural England, 2025): Designated sites, protected areas, habitat mapping, and WFD protected area boundaries;
 - EA Catchment Data Explorer (EA, 2025): Biological quality element classifications (invertebrates, fish, macrophytes and phytobenthos) for onshore river water bodies.
- **Spatial and land use data:**
 - Ordnance Survey mapping: Watercourse identification, channel planform, and land use characterisation;
 - Aerial imagery (publicly available): Assessment of channel condition, riparian vegetation, land use, and visible modifications to watercourses within the Onshore WFD Assessment Area;
- **Other PEIR chapters and technical reports:**
 - The data sources and assessment outputs from the technical chapters listed in **Section 1.1** have been drawn upon to inform this WFD Assessment, including geology, hydrogeology and ground conditions (**Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR**), water resources and flood risk (**Volume 3, Chapter 2: Water Resources and Flood Risk, of the PEIR**), and terrestrial ecology (**Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology of the PEIR**).
 - The information contained in **Volume 1: Chapter 2: Project Description, of the PEIR**.

2.3.3 Field surveys

2.3.3.1 The following field surveys were conducted early July 2026 to supplement the desk-based baseline::

- **Fluvial geomorphology walkover assessment:** A walkover survey of watercourses within or adjacent to the MHPGC Project MHPGC PEIR Red Line Boundary: Onshore to assess channel sensitivity to disturbance, substrate composition, planform characteristics, evidence of channel mobility (lateral and vertical), and the condition of the riparian zone. This assessment will inform crossing design and evaluate the likelihood of vertical channel change (relevant to the depth of trenchless installations) and legacy risks from below-ground infrastructure.
- **Photographic record:** Baseline condition photographs at all watercourse crossing locations and at representative reaches within each onshore WFD water body, to support the assessment and provide a pre-construction baseline.

2.3.3.2 A fluvial geomorphology walkover survey was completed on 21 July 2026. The scope of the survey was informed by the Hydrology and Flood Risk EWG discussions and relevant regulatory guidance. Due to land access restrictions and dense seasonal vegetation cover, the survey was limited to a high-level characterisation of channel and riparian conditions.

2.3.4 Impact analysis methods

2.3.4.1 The methods used to assess impacts on WFD quality elements are summarised below:

- **Hydromorphology (rivers):** Assessment of channel sensitivity to physical disturbance, informed by aerial imagery, OS mapping and EA classification data, and verified by the fluvial geomorphology walkover survey undertaken on 21 July 2026. MoRPh surveys undertaken as part of the River Condition Assessment in August 2025 classified South Hetton Burn as moderate condition and Hillfield Burn as fairly good condition, both with a straight–sinuous planform (Volume 3, Annex 3.2: UK Habitat Classification, National Vegetation Classification, River Condition Assessment and Hedgerow Surveys Technical Report, of the PEIR). For the PEIR,

the assessment is qualitative. The full MoRPh dataset will be used at ES stage to refine the assessment of channel sensitivity at crossing locations.

- **Biology – fish (rivers):** Desk-based assessment informed by EA biological quality element classifications for fish and records from the EA Ecology & Fish Data Explorer. Project-specific fish (electrofishing) and white-clawed crayfish (eDNA) surveys have been undertaken to support the application. The results were not available at the time of PEIR preparation and will be reported in the ES (Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR). Riparian habitat information from the otter and water vole surveys and the River Condition Assessment (Volume 3, Annex 3.2 of the PEIR) has also informed the assessment. The assessment considers risks to resident fish populations, fish passage (river continuity), and spawning/nursery habitat.
- **Biology – macrophytes and phytobenthos (rivers):** Desk-based assessment informed by EA quality element classifications and records from the EA Ecology & Fish Data Explorer. Project-specific macrophyte surveys have been undertaken; the results were not available at the time of PEIR preparation and will be reported in the ES (Volume 3, Chapter 3 of the PEIR).
- **Biology – benthic macroinvertebrates (rivers):** Desk-based assessment informed by EA biological quality element classifications for invertebrates and records from the EA Ecology & Fish Data Explorer. Project-specific freshwater macroinvertebrate surveys have been undertaken; the results were not available at the time of PEIR preparation and will be reported in the ES (Volume 3, Chapter 3 of the PEIR).
- **Water quality (rivers):** Assessment of the risk of deterioration in physico-chemical quality elements (dissolved oxygen, nutrients, specific pollutants) based on existing EA monitoring data, the current classification of each quality element, and the nature and duration of the potential impact pathway.
- **Water quality (groundwater):** Assessment informed by EA groundwater body classification data, BGS hydrogeological mapping, and the geology and hydrogeology assessment in **Volume 3, Chapter 1 Geology, Hydrogeology and Ground Conditions, of the PEIR**.
- **Protected areas:** Assessment informed by MAGIC-designated site boundaries, HRA Screening Report, RIAA, and the relevant PEIR technical chapters.
- **INNS:** Assessment informed by the commitment to providing an Outline Biosecurity Protocol (CoT48), this would include measures such as the use of proven invasive species control and other biosecurity measures to avoid the spread of INNS and INNS contaminated materials.

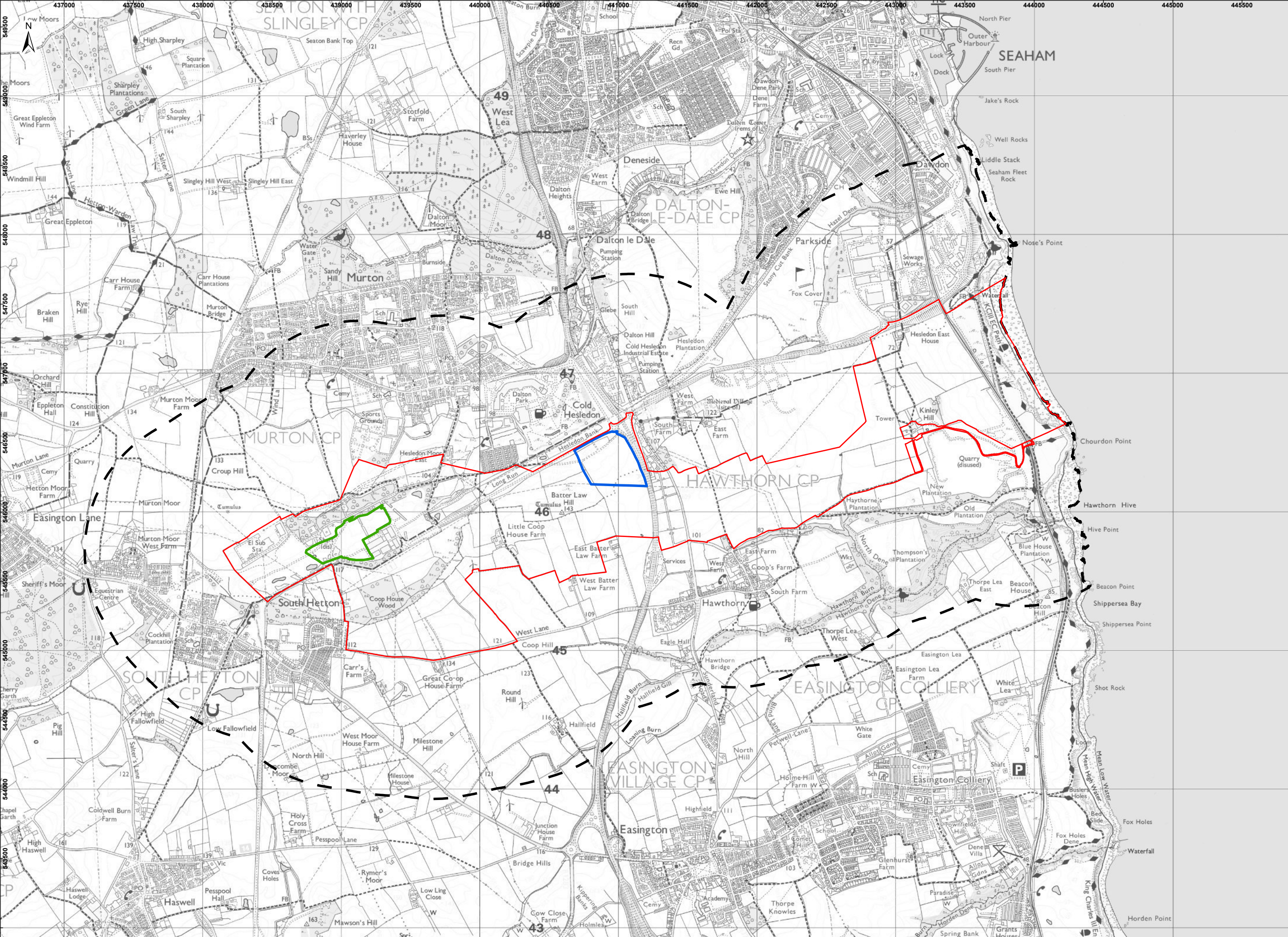
2.3.4.2 Professional judgement has been applied where quantitative data is unavailable, and any assumptions are stated within the relevant assessment sections.

3 Baseline characterisation

3.1 Water Framework Directive Assessment Areas

3.1.1 Onshore Water Framework Directive Assessment Area

- 3.1.1.1 The Onshore WFD Assessment Area is bounded seaward by MLWS at landfall; WFD receptors seaward of MHWS are assessed in the Offshore WFD Assessment. The Onshore WFD Assessment Area is defined as the MHPGC PEIR Red Line Boundary: Onshore plus a buffer extending 1km. A 1km buffer is considered appropriate for data collection, considering the Zol for hydrological receptors. However, surface water and groundwater are often assessed at a river catchment level. Therefore, any WFD catchment areas that fall within the 1km buffer will be incorporated into the Onshore WFD Assessment Area in its entirety. The Onshore WFD Assessment Area aligns with the Water Resources and Flood Risk Study Area defined in **Volume 3, Chapter 2: Water Resources and Flood Risk, of the PEIR**.
- 3.1.1.2 Within the Onshore WFD Assessment Area lies the Landfall (as defined in the Glossary – 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) would be located north of Hawthorn Quarry, south of the A182 and west of the railway line.
- 3.1.1.3 There are currently two proposed options/locations for the onshore land substation (LSS), both of which are considered within this PEIR:
- Green onshore LSS Option Area, located in between Jade Business Park (Spring Rd, Murton, Seaham SR7 9DR) and the National Grid Hawthorn Pit Substation;
 - Blue onshore LSS Option Area, located just west of the A19 and south of the access road to the Jade Business Park.
- 3.1.1.4 The Onshore WFD Assessment Areas are shown on **Figure 3.1** along with the locations of the Green onshore LSS Option Area and the Blue onshore LSS Option Area. The surface water bodies within the Onshore WFD Assessment Areas are shown in **Figure 4.1**, and the designated groundwater bodies are shown on **Figure 4.2**.



- LEGEND**
- MHPGC PEIR Red Line Boundary: Onshore
 - Onshore WFD Assessment Area
 - LSS Search Area (Blue Option)
 - LSS Search Area (Green Option)

Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PROJECT

Drawing Title:
FIGURE 3.1: ONSHORE WATER FRAMEWORK DIRECTIVE (WFD) ASSESSMENT
AREAS

0 0.5 km
Scale@A3: 1:25,000

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

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
GB Background: Contains OS data © Crown Copyright and database right 2026. Contains data from OS Zoomstack
Contains public sector information licensed under the Open government License v3.0.
© Crown copyright and database rights 2026 Ordnance Survey AC0000848283

Drawing Number: MHPGC-WSP-PEIR-HYD-104				
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3.2 Baseline environment

3.2.1 Onshore

Geology and hydrogeology

- 3.2.1.1 Detailed information regarding the geology and hydrogeology within the MHPGC PEIR Red Line Boundary: Onshore can be found in **Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR**. Pertinent information is summarised below.
- 3.2.1.2 The geological units and associated aquifer designation within the MHPGC PEIR Red Line Boundary: Onshore is summarised in **Table 3.1**.

Table 3.1 Summary of hydrogeological aquifer designation for the MHPGC Project

Stratum*	Aquifer Designation	Hydrogeological Significance
Made Ground	None	None.
Beach Deposits	Secondary A	Permeable formations with potential to support localised abstractions.
Alluvium		
River Terrace Deposits		
Glaciofluvial Deposits		
Devensian Till	Secondary Undifferentiated	Variable permeability formation with potential to support small or localised abstractions.
Seaham Formation - Dolomitic Limestone*	Principal	Highly permeable, with significant water storage. Able to support large abstractions.
Roker Formation – Dolostone*		
Ford Formation (Shelf-Edge Reef) - Dolostone*		
Ford Formation – Dolostone*		

*The old name of Magnesian Limestone is often used in literature and other information sources. Magnesian Limestone is a Principal Aquifer.

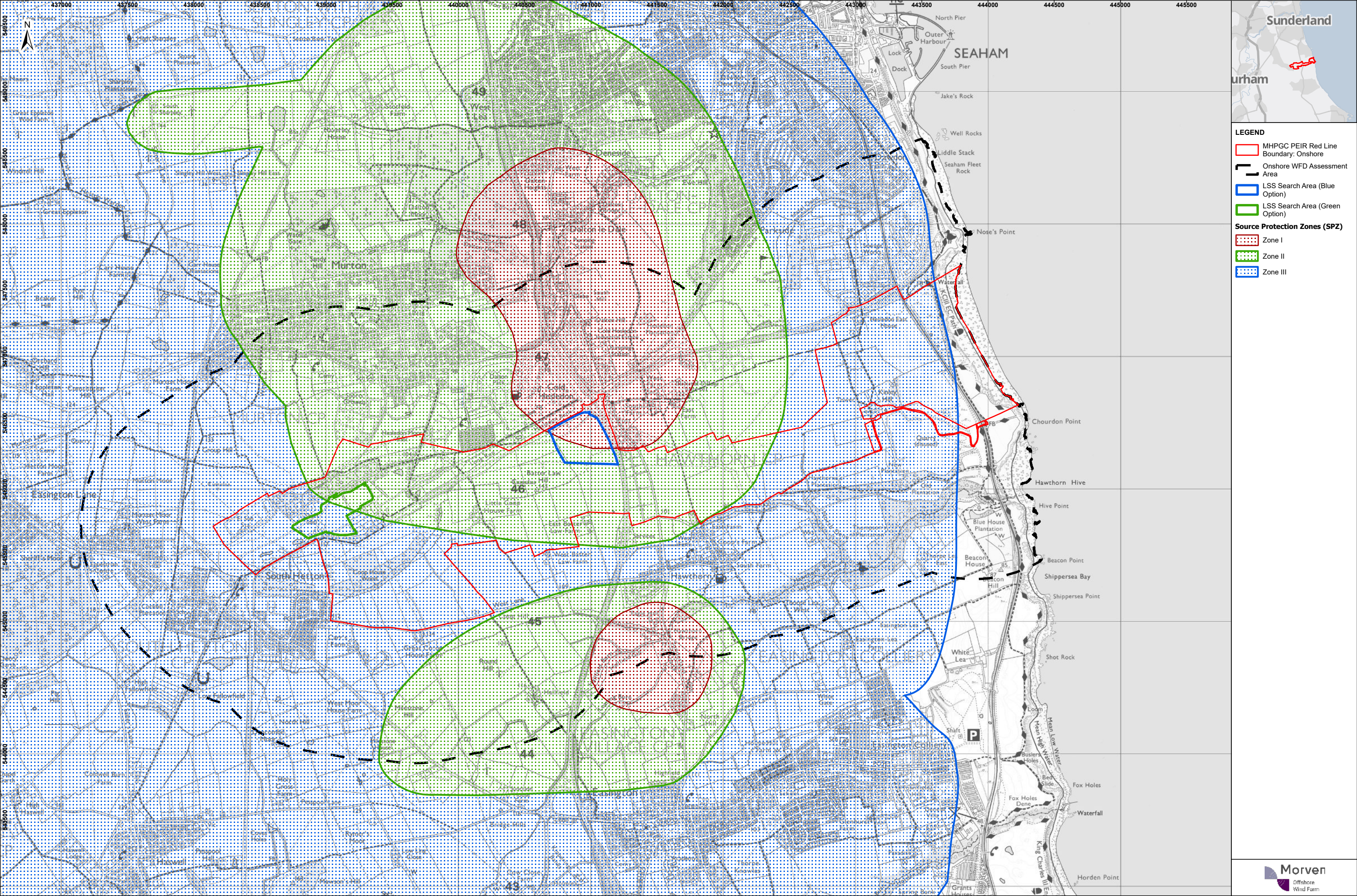
Groundwater environment

- 3.2.1.3 The 1:50,000 scale map series from the British Geological Survey (BGS) (2025) indicates that the eastern extent of the Onshore WFD Assessment Area is underlain by bedrock geology of the Roker Formation (Dolostone), a small linear section of the bedrock Shelf Edge Reef Ford Formation is located to the east of Kinley Hill in the east of the Onshore WFD Assessment Area. The remainder of the bedrock geology is formed of the Ford Formation (Dolostone) (see **Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR, Figure 1.4**).
- 3.2.1.4 The majority of the Onshore WFD Assessment Area is covered by superficial deposits of Devensian Till. Scattered regions of superficial Glaciofluvial Deposits are predominantly found in the central and western sections. Superficial deposits of Alluvium are present across the existing drainage channels in the west of the Onshore WFD Assessment Area (see **Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR, Figure 1.3**).
- 3.2.1.5 The BGS 1:625,000 hydrogeological map of the UK, also presented via the online GeoIndex Onshore Map service shows the bedrock geology to be a highly productive aquifer (BGS, 2025).
- 3.2.1.6 There are three groundwater Source Protection Zones (SPZ) located across the Onshore WFD Assessment Area. SPZs are zones defined by the Environment Agency around groundwater abstraction sources used for public drinking water supply, to protect them from contamination. The east and west of the Onshore WFD Assessment Area is situated within Zone 3, which indicates a

broader area where pollutants may take a longer time to reach the source of groundwater. The central part of the Onshore WFD Assessment Area lies within Zone 2, suggesting a more sensitive area where potential contaminants could affect the groundwater more rapidly. Three areas of SPZ1 fall within the Onshore WFD Assessment Area, and part of the MHPGC PEIR Red Line Boundary: Onshore lies within SPZ1. SPZ1 is the most sensitive zone, representing a 50-day groundwater travel time to the abstraction point. The SPZs within the Onshore WFD Assessment Area are shown on **Figure 3.2**.

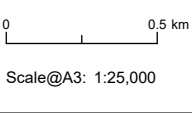
Water Framework Directive groundwater bodies

- 3.2.1.7 The Onshore WFD Assessment Area is underlain by one WFD groundwater body: the Wear Magnesian Limestone (Water Body ID: GB40301G703900), which extends from Sunderland southwards to the Butterknowle Fault, covering a total area of approximately 269km² (Environment Agency, 2025a). The Wear Magnesian Limestone was classified in the Cycle 3 River Basin Management Plan (2019) as having 'Good' quantitative status and 'Poor' chemical status, giving a 'Poor' overall status. The 'Poor' chemical status is attributable to failure of the Chemical Drinking Water Protected Area element. The EA identifies Reasons for Not Achieving Good (RNAGs) associated with diffuse pollution pressures from the agriculture and rural land management sector (Environment Agency, 2025a). All other classification sub-elements – including quantitative water balance, dependent surface water body status, GWDTEs test, saline intrusion, and the general chemical test – achieved 'Good' status. No trend in chemical status was identified.
- 3.2.1.8 It should be noted that the Wear Magnesian Limestone groundwater body covers an area significantly larger than the MHPGC PEIR Red Line Boundary: Onshore, and the water-body-scale classification reflects pressures acting across the entire 269km² catchment – predominantly agricultural diffuse pollution in the rural hinterland – rather than conditions specific to the Onshore WFD Assessment Area. Within the MHPGC PEIR Red Line Boundary: Onshore, the Magnesian Limestone bedrock (comprising the Seaham Formation, Roker Formation, and Ford Formation of the Zechstein Group) is designated as a Principal Aquifer by the Environment Agency and BGS (BGS, 2025). Groundwater flow within the aquifer is strongly fracture-controlled, with two dominant fracture sets oriented WNW–NNW and NNE–ENE, and a general eastward flow direction towards the coast (Kortas and Younger, 2013). Across much of the MHPGC PEIR Red Line Boundary: Onshore, the Magnesian Limestone is overlain by low-permeability Devensian Till, which acts as a confining layer and provides a degree of natural protection to the underlying aquifer against surface-derived contamination (Price *et al.*, 2007; see also **Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR**).
- 3.2.1.9 The MHPGC PEIR Red Line Boundary: Onshore falls within groundwater Source Protection Zones SPZ1 (Inner Protection Zone), SPZ2 (Outer Protection Zone), and SPZ3 (Total Catchment), as shown on **Figure 3.2** indicating the presence of nearby public water supply abstractions from the Magnesian Limestone aquifer. The presence of SPZ1 within the MHPGC PEIR Red Line Boundary: Onshore is a key constraint, as it represents the zone within which groundwater reaches the abstraction point within 50 days, and where the risk of rapidly degrading pollutants reaching the supply is highest. The implications of SPZ designations for the MHPGC Project are assessed in the Stage 2 groundwater scoping (**Table 4.9**).



Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PROJECT

Drawing Title:
FIGURE 3.2: SOURCE PROTECTION ZONES (SPZ) WITHIN THE ONSHORE WATER
FRAMEWORK DIRECTIVE (WFD) ASSESSMENT AREA



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

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
GB Background: Contains OS data © Crown Copyright and database right 2026. Contains data from OS Zoomstack
Contains public sector information licensed under the Open government License v3.0.
© Crown copyright and database rights 2026 Ordnance Survey AC0000848283

Drawing Number:				
MHPGC-WSP-PEIR-HYD-105				
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Surface water environment

Surface Water Features

- 3.2.1.10 Detailed information regarding the hydrology within the MHPGC PEIR Red Line Boundary: Onshore can be found in **Volume 3, Chapter 2: Water Resources and Flood Risk, of the PEIR**. Pertinent information is summarised below. The locations of the surface watercourses described below are shown on **Figure 4.1**. The descriptions are based on a desk-based review of Ordnance Survey mapping, aerial imagery, and the EA Catchment Data Explorer (EA, 2025).
- 3.2.1.11 No EA main rivers are located within the Onshore WFD Assessment Area. The Dalton Beck originates southeast of South Hetton and flows in a northeasterly direction to a confluence with an unnamed tributary that originates approximately 720m north of the MHPGC PEIR Red Line Boundary: Onshore, flowing west to east to the south of the residential area of Murton. The Dalton Beck appears to be discontinuous on Ordnance Survey (OS) mapping and at Cold Hesledon (southeast of Dalton Park) becomes a series of small ponds. Dalton Beck continues east of the A19 carriageway and is joined by an unnamed tributary flowing from the Watergate Fishing Lake directly north of Murton. The Dalton Beck then flows northeast through the narrow valley of Dawdon Dene and through Seaham where it discharges to the sea approximately 1.8km north of the MHPGC PEIR Red Line Boundary: Onshore.
- 3.2.1.12 A tributary of Hawthorn Burn is located in the east of the MHPGC PEIR Red Line Boundary: Onshore; this flows in a southerly direction before discharging into the Hawthorn Burn approximately 180m south of the MHPGC PEIR Red Line Boundary: Onshore within the Onshore WFD Assessment Area. The Hawthorn Burn originates as the Loaning Burn southeast of Easington. The burn flows northeast through Hawthorn Dene where it is then labelled as Hawthorn Burn. It then flows in a westerly direction before discharging into the North Sea approximately 640m south of the MHPGC PEIR Red Line Boundary: Onshore and is located within the Hawthorn Burn from Source to North Sea water body, as defined by the EA.
- 3.2.1.13 Coldwell Burn originates near Tuthill Quarry to the southeast of Haswell and approximately 2.1km south of the MHPGC PEIR Red Line Boundary: Onshore. The burn flows to the north and then west through a predominantly rural catchment to later become Coalford Beck and then Pittington Beck before joining the Sherburnhouse Beck. A tributary of Coldwell Burn is located approximately 270m west of the MHPGC PEIR Red Line Boundary: Onshore. This flows in a western then southern direction before discharging into the Coldwell Burn approximately 1.5km southwest of the MHPGC PEIR Red Line Boundary: Onshore.
- 3.2.1.14 A series of shallow surface water flow paths are evident across the landfall. These represent minor overland drainage routes that operate primarily during periods of intense or prolonged rainfall. They convey runoff from the higher lying western fields towards low points adjacent to the railway sidings in the eastern extent. There are no formal watercourses at landfall and the hydrology is dominated by natural runoff processes.
- 3.2.1.15 A number of surface water flow paths intersect the Blue Onshore (LSS) Option Area, conveying runoff to the land immediately adjacent to the access road to Jade Business Park which acts as a basin for accumulated runoff. Hydrological analysis indicates surface water is conveyed from the basin to land north of the access road to Jade Business via a culvert.
- 3.2.1.16 The Green LSS Option Area comprises two distinct surface-water catchments: an eastern catchment and a western catchment. The eastern catchment includes land located to the north and immediately west of Jade Business Park, with surface-water draining predominantly toward the northeast. The western catchment encompasses the remainder of the site, including land situated both east and west of the farm track at the western extent of the Green LSS Option Area, and drains generally southwards toward Dalton Beck.

Surface Water Quality

- 3.2.1.17 A review of the EA's Catchment Data Explorer (EA, 2025) and water quality archive for surface water bodies gives an indication of water quality across the catchments within the Onshore WFD Assessment Area.
- 3.2.1.18 The Onshore WFD Assessment Area falls within four WFD water bodies, as shown in **Figure 4.1**:

- Dalton Beck to North Sea (within the Seaham Peterlee Coast Operational Catchment);
- Hawthorn Burn from Source to North Sea (within the Seaham Peterlee Coast Operational Catchment);
- Pitlington Beck from Coalford to Old Durham Beck (within the Wear Lower and Estuary Operational Catchment);
- Lumley Park Burn from Source to Herrington Burn. (within the Wear Lower and Estuary Operational Catchment) (**Figure 4.1**).

3.2.1.19 The following subsections summarise the key baseline characteristics, failing elements, pressures, and sensitivity to change for each water body.

Hawthorn Burn from Source to North Sea (GB103025075950)

3.2.1.20 Hawthorn Burn from Source to North Sea is not designated artificial or heavily modified. The water body achieved a Poor ecological status in 2022, driven by Poor classifications for both invertebrates and phosphate. Fish were not assessed in the most recent WFD cycle (2019 – 2022), whilst macrophytes and phytobenthos combined were classified as High. Dissolved oxygen, ammonia, pH, and temperature are classified at High status. The hydromorphological supporting elements are classified as Not High, with the hydrological regime at Supports Good.

3.2.1.21 An assessment of macroinvertebrates for the Hawthorn Burn from Source to North Sea water body shows that this water body holds Poor status for macroinvertebrates. The most recent macroinvertebrate population data available from the EA Ecology & Fish Data Explorer was from a single survey location undertaken in April 2018 at NZ4382945994. A total of twenty-two species were recorded, no species of conservation interest were identified, however, one invasive non-native species (INNS) was recorded, the New Zealand mud snail *Potamopyrgus antipodarum*. It should be noted that the New Zealand mud snail is now considered to be naturalised within Great Britain.

3.2.1.22 The Reasons for Not Achieving Good (RNAG) are poor nutrient management attributed to agricultural and rural land management, point source pollution attributed to sewage discharge and misconnections and diffuse source pollution from septic tanks. The RBMP objective for ecological status is Poor by 2021 (an alternative objective reflecting disproportionate cost), with physico-chemical quality elements targeted to reach Good by 2027 (low confidence). Chemical status failed in 2019 due to mercury and PBDE (ubiquitous priority hazardous substances), with a long-term target of Good by 2063.

3.2.1.23 The water body is at Poor ecological status with invertebrates and phosphate as the primary failing elements. The no-deterioration requirement applies – any activity that increases suspended sediment loading (affecting invertebrates), increases nutrient inputs (affecting phosphate), or physically disturbs in-channel habitat could cause deterioration. The Hawthorn Burn from Source to North Sea NVZ overlaps the MHPGC PEIR Red Line Boundary: Onshore, indicating existing nutrient sensitivity. A tributary of Hawthorn Burn is located within the eastern extent of the MHPGC PEIR Red Line Boundary: Onshore.

Dalton Beck to North Sea (GB103025075970)

3.2.1.24 Dalton Beck to North Sea is not designated artificial or heavily modified. The water body achieved a Moderate ecological status in 2022. Invertebrates are classified at Good status, whilst macrophytes and phytobenthos combined are classified at Moderate status, fish have not been assessed in the most recent cycle (2019 - 2022). The physico-chemical quality elements are classified at Moderate status, due to phosphate and ammonia (phys-chem). Dissolved oxygen, ammonia, pH, and temperature are all classified at High status. The hydromorphological supporting elements are Not High, with hydrological regime at Supports Good. Specific pollutants (copper, iron, manganese, zinc) are at High status.

3.2.1.25 An assessment of macrophytes for the Dalton Beck to North Sea water body shows that this water body holds Moderate status for macrophytes. The most recent macrophyte population data available from the EA Ecology & Fish Data Explorer was from a single survey location undertaken in August 2018 at NZ4104648154. A total of seven species were recorded; no species of conservation interest or INNS were identified.

3.2.1.26 The RNAG status is currently unknown and is under investigation by the EA with elevated levels of ammonia (phys-chem) and phosphate levels being elevated. Additionally, macrophytes and

phytobenthos combined have shown recent deterioration, the cause of which is also under investigation. Chemical status failed in 2019 due to mercury, PBDE, and benzo(g-h-i)perylene, with a long-term target of Good by 2063. The RBMP objective for ecological status is Good by 2027 (low confidence).

- 3.2.1.27 The water body is at Moderate ecological status, with phosphate and ammonia (phys-chem) as the primary elements below Good. Any activity that increases nutrient loading or disrupts the physico-chemical balance could prevent the water body from achieving its RBMP objective. The Dalton Beck is crossed by the MHPGC PEIR Red Line Boundary: Onshore in the vicinity of the watercourse flowing between Coop House Woods and Dalton Park, and activities at this crossing location are the primary pathway for potential impact.

Pittington Beck from Coalford to Old Durham Beck (GB103024077540)

- 3.2.1.28 Pittington Beck from Coalford to Old Durham Beck is not designated artificial or heavily modified. The water body achieved a Bad ecological status in 2022 – the lowest possible WFD classification. The Bad status is due to the fish biological quality element, which is classified as Bad. Invertebrates, macrophytes and phytobenthos combined are both classified at Good status. Physico-chemical quality elements are classified at Moderate status, with all elements classified at High status except for phosphate, which is classified at Poor status. The hydromorphological supporting elements are Not High, with a hydrological regime at Supports Good.
- 3.2.1.29 An assessment of fish for the Pittington Beck from Coalford to Old Durham Beck water body shows that this water body currently holds Bad status for fish in 2022, a significant decline from the previous classification of Good in 2019. Fish population data is available from the EA Ecology & Fish Data Explorer at two locations monitored in the last ten years. The most recent survey was undertaken at NZ3334843892, in October 2019. A total of two species were recorded including three spined stickle back *Gasterosteus aculeatus* and bullhead *Cottus gobio*.
- 3.2.1.30 An assessment of macroinvertebrates for the Pittington Beck from Coalford to Old Durham Beck water body shows that this water body holds Good status for macroinvertebrates. The most recent macroinvertebrate population data available from the EA Ecology & Fish Data Explorer was from a single survey location undertaken in September 2018 at NZ3134143129. A total of twenty-seven species were recorded, no species of conservation interest were identified, however, one INNS was recorded, the New Zealand mud snail.
- 3.2.1.31 An assessment of macrophytes for the Pittington Beck from Coalford to Old Durham Beck water body shows that this water body holds Good status for macrophytes. The most recent macrophyte data available from the EA Ecology & Fish Data Explorer was from a single survey location undertaken in July 2018 at NZ3110142401. A total of ten species were recorded. No species of conservation interest were identified, however, two INNS were recorded: Himalayan balsam *Impatiens glandulifera* and giant Hogweed *Heracleum mantegazzianum*.
- 3.2.1.32 The RNAG for fish and phosphate are both unknown and are under investigation by the EA (sector and activity unknown). The Bad fish classification is the element driving the overall Bad ecological status under the one-out-all-out principle. The RBMP objective for overall water body status is Moderate by 2015 (an alternative objective reflecting disproportionate cost). Chemical status failed in 2019 due to mercury and PBDE, with a long-term target of Good by 2063.
- 3.2.1.33 The water body has no headroom for the fish quality element; any further reduction in condition at the lowest status class constitutes WFD deterioration. Phosphate at Poor status means even modest nutrient inputs could cause within-class deterioration. The MHPGC PEIR Red Line Boundary: Onshore does not directly cross Pittington Beck, but a tributary of Coldwell Burn (which feeds into Pittington Beck) is located approximately 270m west of the MHPGC PEIR Red Line Boundary: Onshore, providing an indirect pathway for potential impact via surface water connectivity.

Lumley Park Burn from Source to Herrington Burn (GB103024077580)

- 3.2.1.34 Lumley Park Burn from Source to Herrington Burn is designated as a heavily modified water body, with the modification associated with flood protection. The water body achieved a Moderate ecological potential in 2022. Invertebrates are classified at High status, whilst macrophytes and phytobenthos combined are classified at Poor status. Physico-chemical quality elements are classified at Good status, ammonia (phys-chem) and phosphate are classified at Good status, whilst

dissolved oxygen, pH, temperature are all classified at High status. The hydrological regime is classified as Does Not Support Good, and the Mitigation Measures Assessment is at Moderate or less, indicating that the measures needed to achieve Good Ecological Potential are not yet fully in place.

- 3.2.1.35 An assessment of fish for the Lumley Park Burn from Source to Herrington Burn water body has not been undertaken under the most recent WFD cycle (2019 – 2022). However, fish population data is available from the EA Ecology & Fish Data Explorer at one location monitored in the last ten years. The most recent survey was undertaken at NZ2836751353, in October 2019. A total of two species were recorded including brown / sea trout *Salmo trutta* and European eel *Anguilla anguilla*.
- 3.2.1.36 An assessment of macroinvertebrates for the Lumley Park Burn from Source to Herrington Burn water body shows that this water body holds High status for macroinvertebrates. The most recent macroinvertebrate population data available from the EA Ecology & Fish Data Explorer was from a single survey location undertaken in September 2018 at NZ3348949069. A total of twenty-eight species were recorded, no species of conservation interest were identified, however, one INNS was recorded, the New Zealand mud snail.
- 3.2.1.37 An assessment of macrophytes for the Lumley Park Burn from Source to Herrington Burn water body shows that this water body holds Poor status for macrophytes. The most recent macrophyte data available from the EA Ecology & Fish Data Explorer was from a single survey location undertaken in August 2018 at NZ3200050800. A total of eight species were recorded. No species of conservation interest were identified, however, two INNS were recorded, Himalayan balsam *Impatiens glandulifera* and Japanese knotweed *Fallopia japonica*.
- 3.2.1.38 The RNAG are flood protection (physical modification), INNS (riparian plants), misconnections, sewage discharge, and urbanisation. The RBMP objective for ecological potential is Good Ecological Potential by 2027 (low confidence). Chemical status failed in 2019 due to mercury and PBDE, with a long-term target of Good by 2063.
- 3.2.1.39 The water body is sensitive to activities that could further degrade macrophyte communities (already at Poor), alter the hydrological regime (already Does Not Support Good), introduce or spread INNS, or prevent the delivery of RBMP mitigation measures. The AC connection cable corridor between the Green onshore LSS option area and the National Grid Hawthorn Pit Substation traverses land within the NVZ for Lumley Park Burn shown on **Figure 4.3** and described in **Table 3.3**.

Hydromorphological characteristics

- 3.2.1.40 At this PEIR stage, the hydromorphological characterisation of the onshore watercourses is based on a desk-based review of Ordnance Survey mapping, publicly available aerial imagery, and the EA Catchment Data Explorer classifications. This has been verified by a fluvial geomorphology walkover survey and photographic record undertaken on 21 July 2026, the findings of which have informed this PEIR assessment.
- 3.2.1.41 All four onshore water bodies are classified as Not High for hydromorphological supporting elements (EA, 2025), indicating some degree of physical modification from natural reference conditions. The hydrological regime is classified as Supports Good for Hawthorn Burn, Dalton Beck, and Pittington Beck, and Does Not Support Good for Lumley Park Burn (reflecting its heavily modified designation for flood protection). Desk-based review of aerial imagery and OS mapping indicates the following characteristics at a catchment scale:
- **Hawthorn Burn:** A small, predominantly rural watercourse flowing through Hawthorn Dene, a steep-sided wooded valley. The channel appears semi-natural within the Dene, with a meandering planform and vegetated riparian corridor. Upstream of the Dene, the catchment is dominated by arable agriculture with field drainage. The tributary within the MHPGC PEIR Red Line Boundary: Onshore flows through agricultural land with limited riparian buffer;
 - **Dalton Beck:** A low-gradient watercourse draining a mixed urban/rural catchment. The channel appears discontinuous on OS mapping near Cold Hesledon, becoming a series of small ponds, suggesting possible modification or seasonal intermittency. Downstream, the beck flows through Dawdon Dene. The watercourse crossing the MHPGC PEIR Red Line Boundary: Onshore (between Coop House Woods and Dalton Park) flows through an area with evidence of culverting and channel modification;

- **Pittington Beck (Coldwell Burn tributary):** A rural watercourse flowing through a predominantly agricultural catchment. The tributary near the MHPGC PEIR Red Line Boundary: Onshore appears to be a small, low-order stream with limited riparian vegetation. No direct crossing is proposed, but surface water connectivity exists;
- **Lumley Park Burn:** A modified urban/peri-urban watercourse. The heavily modified designation reflects physical modifications for flood protection. Aerial imagery suggests sections of channelisation, engineered banks, and urban encroachment. The catchment includes residential areas (Murton, Hetton-le-Hole) and industrial land uses.

3.2.1.42 A fluvial geomorphology walkover survey was undertaken on 21 July 2026. Access restrictions and dense vegetation cover limited observations at a number of locations; therefore, the survey was used primarily to verify desk-based baseline information and undertake a high-level characterisation of channel conditions.

Summary

3.2.1.43 The baseline status of the four onshore WFD water bodies and their key characteristics relevant to the WFD Assessment are summarised in **Table 3.2**.

Table 3.2 Summary of onshore WFD water body status, key failing elements, and sensitivity to change

Water Body	ID	Ecological Status (2022)	HM Designation	Key Failing Elements	RNAG Pressures	RBMP Ecological Objective	Sensitivity
Hawthorn Burn	GB103025075950	Poor	Natural	Invertebrates (Poor), Phosphate (Poor)	Agriculture, sewage, septic tanks	Poor by 2021 (alt.)	High
Dalton Beck	GB103025075970	Moderate	Natural	Phosphate (Moderate)	Under investigation	Good by 2027 (low)	Medium
Pittington Beck	GB103024077540	Bad	Natural	Fish (Bad), Phosphate (Poor)	Under investigation	Moderate by 2015 (alt.)	Very High
Lumley Park Burn	GB103024077580	Moderate (EP)	Heavily Modified	Macrophytes (Poor), Hydrological Regime (DNSG)	Flood protection, INNS, sewage, urbanisation	GEP by 2027 (low)	Medium

Note: Full quality element classifications and RBMP objectives are provided in in **Section 3.2** and **Table 3.2** and **Table 4.11**.

EP = Ecological Potential; GEP = Good Ecological Potential; DNSG = Does Not Support Good; alt. = alternative objective.

3.2.2 Water Framework Directive protected areas

3.2.2.1 WFD protected areas include Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Shellfish Waters, Bathing Waters, Coastal Sensitive Areas, Drinking Water Safeguard Zones (SgZ), Nitrate Vulnerable Zones (NVZ), and sites listed under the Urban Waste Water Treatment Directive (UWWTD).

3.2.2.2 The protected areas within the Onshore WFD Assessment Areas are provided in **Table 3.3** and **Table 3.4**, and presented on **Figure 4.3**.

Table 3.3 WFD protected areas within the Onshore WFD Assessment Areas

WFD Protected Area	Designated Site	Distance from MHPGC Project PEIR Red Line Boundary: Onshore at the closest point (km)
NVZ	The entire length of the Hawthorn Burn from its source in County Durham to its confluence with the North Sea is classified as a Nitrate Vulnerable Zone. The catchment is protected to prevent nitrate pollution from agricultural run off and land management activities impacting the water quality.	0km (Within the MHPGC PEIR Red Line Boundary: Onshore)
NVZ	Part of the Lumley Park Burn from Herrington Burn to R Wear NVZ. The catchment is protected to prevent nitrate pollution from agricultural run off and land management activities impacting the water quality.	0km (Within the MHPGC PEIR Red Line Boundary: Onshore)
NVZ	Part of the Durham NVZ. The catchment is protected to prevent nitrate pollution from agricultural run off and land management activities impacting the water quality.	0km (Within the MHPGC PEIR Red Line Boundary: Onshore)
DW -SGZ	Drinking Water Safeguard Zones (surface water) - Lumley Safeguard Zone. Catchment areas that influence the water quality of a surface water body used for drinking supply, which are officially assessed as being "at risk" of failing clean water protection standards. This catchment is at risk for sulphate.	0km (Within the MHPGC Project Water Framework Directive Assessment Area - 1km Buffer)
SAC	The Durham Coast SAC is the only example of vegetated sea cliffs on magnesian limestone exposures in the UK. These cliffs extend along the North Sea coast for over 20 km from South Shields southwards to Blackhall Rocks. Their vegetation is unique in the British Isles and consists of a complex mosaic of paramaritime, mesotrophic and calcicolous grasslands, tall-herb fen, seepage flushes and wind-pruned scrub. Within these habitats rare species of contrasting phytogeographic distributions often grow together forming unusual and species-rich communities of high scientific interest. The communities present on the sea cliffs are largely maintained by natural processes including exposure to sea spray, erosion and slippage of the soft magnesian limestone bedrock and overlying glacial drifts, as well as localised flushing by calcareous water.	0km (Within the MHPGC PEIR Red Line Boundary: Onshore)
SSSI	Durham Coast SSSI includes six Geological Conservation Review sites. The geology of the area is characterised by the exposure on the cliffs and beaches of the dolomite and limestone formed in the late Permian period. The Durham coast also supports a variety of birds, including nationally important populations of sanderling, wintering purple sandpiper and breeding little tern. There is also a rich variety of invertebrates.	0km (Within the MHPGC PEIR Red Line Boundary: Onshore)
SSSI	Hesledon Moor East SSSI - The unimproved neutral grassland feature is unfavourable declining due to inappropriate grazing levels. The basin fen feature is in poor condition, with high levels of scrub. It has changed significantly since the time of designation. Basin fen loss of hydrological regime from climate change also as a pressure.	0km (Within the MHPGC PEIR Red Line Boundary: Onshore)

Table 3.4 WFD protected areas connected to the water bodies within the Onshore WFD Assessment Area

Connected water body	WFD Protected area	Designation	Basis of connection
Dalton Beck to North Sea	Durham Coast SAC; Durham Coast SSSI	SAC; SSSI	Surface water discharge to the North Sea coast adjacent to the designated cliff habitats
Hawthorn Burn from Source to North Sea	Hawthorn Burn NVZ; Durham Coast SAC; Durham Coast SSSI	NVZ; SAC; SSSI	Entire water body designated as NVZ; surface water discharge to the coast
Pittington Beck from Coalford to Old Durham Beck	None identified	—	No protected area connection identified
Lumley Park Burn from Source to Herrington Burn	Lumley Park Burn NVZ; Lumley Safeguard Zone	NVZ; DrW-SgZ	Catchment designated as NVZ; surface water source area for drinking water supply (at risk for sulphate)
Wear Magnesian Limestone	Durham Coast SAC; Durham Coast SSSI; Hesledon Moor East SSSI; Chemical Drinking Water Protected Area; Durham NVZ	SAC; SSSI; DrWPA; NVZ (groundwater)	Groundwater support to fen and seepage flush habitats; DrWPA element is the basis of the Poor chemical status; groundwater designated as vulnerable to nitrate pollution

3.3 Maximum Design Scenario

- 3.3.1.1 The MDS relevant to the WFD Assessment is presented in **Table 3.5**. This MDS presents the MHPGC Project activities that are proposed to take place within 1km from MHWS within the MHPGC PEIR Red Line Boundary: Onshore. A full description of the MHPGC Project is presented in **Volume 1, Chapter 2: Project Description, of the PEIR**.

Table 3.5 MDS relevant for the assessment of potential impacts on WFD water bodies

Impact	MDS	Explanation
Construction		
<i>Landfall</i>		
Indirect release of drilling fluids and suspended sediment to surface waters during trenchless drilling at landfall, including risk of bentonite breakout Creation of preferential migration pathways to the Wear Magnesian Limestone aquifer from trenchless installation to 80m bgl Mobilisation of sediment and potential contaminants from TJB excavation, compound construction and access track formation	No construction works directly related to the onshore components are proposed outside of MHPGC PEIR Red Line Boundary: Onshore. Landfall (trenchless drill) Landfall trenchless drill installation method: HDD Maximum burial depth of trenchless drill (per bore): 80m bgl Maximum trenchless drill length: 2km Duration of trenchless drilling activity: 300 days Construction period for Landfall: 3.5 years Landfall Infrastructure onshore (landward of MHWS) Maximum width of trenchless drill area, west of Durham Coast Line: 400m Corridor length 800m Location of trenchless drill entry point: Within 400m from centre point (E: 443667, N: 546834) except to the east, due to the railway restriction. Number of trenchless drill entry points: 4 bores Material quantities associated with excavation: 130,000m³ Transition Joint Bays Number of TJBs: 2 Location of TJBs: Within 150m of landfall trenchless drill entry point Working Area for TJB (construction): 750m² Depth of TJB: 2.5m Landfall construction compound Number of main compounds: 1 Dimension of main compound: 48,000m²	The MDS for the landfall is defined by the combination of parameters giving the greatest potential for sediment and contaminant release to the water environment: Extent of ground disturbance. The main landfall construction compound (48,000m²), secondary compound (900m²), two access tracks at 10m width, and the TJB working area (750m²) together represent the largest area of topsoil and subsoil stripping and hardstanding formation at landfall, and therefore the greatest area of exposed ground available for sediment mobilisation during rainfall. Excavation volume. 130,000m³ of excavated material across the bore trajectory, launch/entry pits, TJB excavation (to 2.5m depth), compound foundations and access roads represents the greatest volume of disturbed material requiring handling, stockpiling and management. Duration of exposure. A 3.5-year landfall construction period, including 300 days of trenchless drilling activity, represents the longest period over which disturbed ground and drilling operations present a potential pathway to surface water and groundwater. Number of bores. Four trenchless drill bores to a maximum depth of 80m bgl represents the greatest number of penetrations through the superficial deposits confining the Wear Magnesian Limestone aquifer, and the greatest cumulative opportunity for bentonite breakout.

Impact	MDS	Explanation
	Number of secondary compounds: 1 Dimension of secondary compound: 900m ² Number of access tracks: 2 from A192 Construction access track widths: 10m Construction compounds will be prepared by removing and storing topsoil and subsoil and then constructing hardstanding areas using clean crushed stone.	Trenchless installation is retained as the MDS for indirect disturbance, as it presents a risk of contaminating surface waters hydraulically connected to the drill alignment through bentonite breakout, spillage and sediment movement, notwithstanding that it avoids direct in-channel works. <u>Trenchless drill length</u> The maximum total trajectory distance for the landfall trenchless drill is 2km (from entry pit to exit pit), within the parameters defined for the maximum length of trenchless drill above MHWS (800m), between MHWS – MLWS (60m) and seaward of MLWS (1,660m). <u>Excavated material volumes:</u> Bore trajectory excavation material (full bore lengths) Launch / Entry Pit excavation TJB excavation Compound foundation Access road excavation <u>TJB</u> Whilst the maximum number of TJBs is 2, the MDS for 'working area for TJB construction' is defined by the construction area for a single TJB, which joints both HVDC export cables.
<i>Onshore Export Cable and AC Connection Cable Corridor</i>		
Direct physical disturbance of channel bed, banks and riparian	No construction works directly related to the onshore components are proposed outside of MHPGC PEIR Red Line Boundary: Onshore. Construction corridor length: 9.59km	<u>Component export cables</u> HVAC (24) = Comprising of Power Cores, Earth Continuity Conductors, Fibre and control cables

Impact	MDS	Explanation
zone at open-cut watercourse crossings Temporary interruption of river continuity and flow conveyance during in-channel works Temporary increase in suspended sediment concentrations downstream of crossing locations Mobilisation of nutrients from soil disturbance and topsoil stripping within the Hawthorn Burn, Lumley Park Burn and Durham NVZs Release of specific pollutants from plant, fuel storage, or disturbance of potentially contaminated ground Introduction or spread of INNS between catchments via plant, materials and vehicle movements Temporary alteration of flow conveyance at haul-road crossings of frequently-dry ordinary watercourses	Construction period for Onshore Export Cable and AC connection cables: 42 months Dimensions of trench for AC connection cable (HVAC) – Blue LSS Number of export cables: 24 Length of cable route: 4,260m Number of cable trenches: 4 Width of cable corridor (temporary including permanent): 100m Onshore cable area (temporary): 426,000m² Trench width at top per circuit: 4.8m Trench width at base per circuit: 2.8m Trench depth per circuit: 1.8m Depth of stabilised backfill: 450mm Number of cable route joint bays: 32 Number of link boxes: 32 Volume of material excavated per joint bay: 2,264m³ (<u>total = 18,112m³, assuming 4 circuits are jointed in a single excavation</u>) Construction land take for link box: 100m² (total = 3200m²) Volume of material excavated per link box: 12.5m³ Volume of material excavated (link boxes): 400m³ Dimensions of trench for onshore export cable (HVDC) – Blue LSS Number of export cables: 4 Length of cable route: 4.83km Width of cable corridor (temporary inc. permanent): 40m Number of cable trenches: 2 Onshore cable area (temporary): 193,200m² Trench width at top: 6.85m Trench width at base: 4m Cable trench depth: 1.8m Depth of stabilised backfill: 450mm Number of cable route joint bays: 12 Volume of material excavated per joint bay: 700m³ (total = 8,400m³)	HVDC (4) = 2-off Conductors and 2-off Fibre Optics cables. The Onshore Export Cable parameters defined in this MDS are those required to construct the MHPGC Project, including the Blue LSS option. The Blue LSS option constitutes the worst-case due to the larger cable corridor width and thus area of temporary land-take required, when compared to the Green LSS Option. The MDS for water quality and flood risk is the greatest length and number of cable trenches, and number of joint bays, link boxes and construction compounds. These parameters represent the greatest potential for impacts on water quality and increased flood risk because of land disturbance. In regards to watercourse crossings, open cut trenching represents the MDS in terms of direct disturbance. The use of open cut trenching to cross watercourses represents the greatest impacts to surface water quality. Any disruption to the local surface watercourses may affect the hydrological regime of the area increasing turbid runoff into the watercourse, leading to a reduction in WFD classification. Trenchless techniques represents the MDS in terms of indirect disturbance. Trenchless methods present a risk of indirectly contaminating surface watercourses where they are hydraulically connected with surface runoff caused by bentonite breakout, spillages and the movement of sediment.

Impact	MDS	Explanation
	Number of monitoring boxes: 12 Volume of material excavated per monitoring box: 18m³ (total = 216m³) Construction land take per monitoring box: 64m² Construction land take for all monitoring boxes: 768m² Watercourse crossings Maximum number of open-cut cable crossings: three crossings of ordinary watercourses; Following installation, the channel bed and banks will be reinstated to pre-construction condition in accordance with the Outline CoCP and associated management plans. Temporary haul roads and construction access Temporary crossings of frequently-dry ordinary watercourses by construction haul roads may be undertaken using temporary culverts or bridging structures that maintain existing flow. All such crossings are temporary, will be designed to maintain flow conveyance during construction, and will be removed and the channel reinstated prior to the end of the construction phase. No permanent hydromorphological change is anticipated as a result of temporary haul-road crossings. Number of haul roads: 1 Haul road construction: geogrids and 500mm stone Haul road widths: 8m Haul road depth: 0.5 Dimensions of temporary culvert/bridge crossings for the haul road: 10 x 6 x 5 Number of construction access tracks (excluding existing tracks): 6 Construction compounds Number of main compounds: 2 Main compound area: 7ha Total area of main compounds: 14ha Number of secondary construction compounds: 6 Dimensions per secondary construction compound: 10,000m² Total area of secondary construction compounds: 6ha.	Open-cut crossing represents the MDS for direct in-channel disturbance, involving temporary physical disturbance of the channel bed and banks, temporary sediment mobilisation, and short-term alteration of the local flow regime at the crossing location during construction. No permanent in-channel crossing structures are proposed for the cable crossings; therefore, no permanent modification of channel morphology, loss of natural bed substrate, or permanent barrier to river continuity or fish passage is anticipated.

Impact	MDS	Explanation
	Trenchless Drill Crossings Major Crossings understood to be: 1) A19 road (crossed by all HVDC routes), 2) Dalton Beck and Jade Business Park (crossed by HVAC or HVDC depending on LSS option taken and cable route taken), 3) Pinch-point between Jade Business Park and future asset SEGL convertor station (crossed by HVAC or HVDC depending of selected LSS site and chosen cable route). Trenchless drill methodology: HDD, micro-tunnelling (auger bore or direct pipe) Number of trenchless drill compounds: 6 (3 entry and 3 exit trenchless drill compounds) Dimensions of trenchless drill compounds: 6,000m ² Total trenchless drill compound area: 36,000m ² Trenchless depth (excluding landfall): 30m Drilling mud used: bentonite and/or polymer fluids	
Onshore Land Substation		
Mobilisation of sediment and potential contaminants from foundation excavation, cut and fill, and laydown area formation Creation of preferential migration pathways to the Magnesian Limestone aquifer from piled foundations within SPZ1.	Dimensions Construction period for LSS: 4.5 years Area of temporary construction footprint: 7ha Area of temporary works (laydown and storage): 3.5ha LSS Construction Description of foundations: raft or pile caps (suspended structure) or piled foundations and suspended structures Volume of excavation for foundations, trenches, road box and drainage: 20,000m ³ Cut and fill balance: 50,000m ³ Material types and quantities associated to excavation: 14,000m ³ topsoil, 65,000m ³ other materials Estimated waste quantities: 50,000m ³ Access Temporary width of access including passing bays: 15m Number of temporary accesses: 2 Reinstatement of temporary land: 4 months	The MDS is represented by the largest working areas and excavation volumes which arise from the construction of the LSS. With respect to the optionality between an AIS and GIS solutions, the MDS is defined by the worst-case parameter from either design solution.
Operation and Maintenance		

Impact	MDS	Explanation
Landfall		
Localised sediment or pollutant release during inspection and maintenance of the TJBs and associated access	Typical duration of operation: 35 years Operational land take for TJB (surface area): 25m ² Total area of TJB: 150m ² Activities anticipated during operation and maintenance: quarterly	The O&M MDS is represented by the largest permanent areas of impermeable surface/hard standing at the onshore LSS, which represent the worst case in terms of changes in runoff rates and water quality to the surrounding area. No permanent watercourse crossing structures are installed for the cable crossings; consequently, no operational inspection or maintenance of in-channel crossing structures is required. The quarterly to annual inspection regime for joint bays and link boxes, and the monthly to annual maintenance regime at the LSS, represent the maximum frequency of operational activities with a potential pathway to WFD water bodies.
Onshore Export cable		
Localised sediment or pollutant release during inspection and maintenance of joint bays, link boxes, monitoring boxes and operational access tracks	Typical duration of operation: 35 years HVAC Cable Corridor – Blue LSS Length of cable route: 4.26km Width of cable corridor (permanent): 25m HVAC Onshore cable area (permanent): 106,500m ² HVAC Operational land take per access cover: 25m ² (total = 200m ²) HVDC Cable Corridor – Blue LSS Length of cable route: 4.83km Width of cable corridor (permanent): 8.65m HVDC Onshore cable area (permanent): 41,780m ² HVDC Operational land take per access cover: 6.25m ² (total = 75m ²) Number of operational access tracks (excluding existing tracks): 6 Operational access track construction: Assume the additional access tracks into the cable route (if required) will use existing access points and unpaved farm tracks where possible. Potential access tracks from the construction works will be retained during operation. Activities anticipated during operation and maintenance: quarterly	
Land Substation		
Introduction of mobile contaminants to surface water and groundwater via operational	Typical duration of operation: 35 years Area of permanent footprint: 6.5ha	

Impact	MDS	Explanation
drainage at the LSS, including fire water and plant leakage Altered runoff regime from 3.5ha of permanent impermeable surface	Impermeable permanent area: 3.5ha SuDS area: 2,300m ² SuDS volume: 3,500m ³ Number of buildings: 15 Width of main building/structure: 100m Length of main building/structure: 200m Height of main building/structure: 30m, excluding the lighting rod, which would be up to 35m in height Number of permanent accesses: 2 Permanent access width: 15m Permanent access points: 2 Activities anticipated during operation: Monthly day visit inspections; Quarterly detailed inspections/ non-intrusive work; Annual turnaround/shutdown.	
Decommissioning		
Landfall		
Retained below-ground infrastructure at landfall acting as a long-term contamination source or preferential pathway	Leave cables in place, to minimise/ avoid environmental disturbance. Leaving the cables in place has little or no environmental impact whilst recovering them would disturb the local environment.	Decommissioning is likely to operate within the parameters identified for construction. The MDS during decommissioning is the removal of above-ground infrastructure at the LSS, as this presents the greatest disturbance and potential risk of sediment and contaminants being released. The retention of onshore cables in-situ means that no re-trenching of watercourse crossing points is required during decommissioning, which removes the principal construction-phase impact pathway for cable installation. No permanent watercourse crossing structures are proposed. Temporary haul-road crossings will already have been removed and channels reinstated during construction. Consequently, decommissioning is not anticipated to require removal of in-channel crossing infrastructure, and no associated
Onshore Export Cable		
Retained cables, ducts, joint bays and link boxes acting as a long-term contamination source or preferential pathway to groundwater		
Land Substation		
Mobilisation of sediment and contaminants during demolition and removal of above-ground	Deconstruction in the inverted sequence of installation, after the Land Substation (LSS) has been decommissioned. All equipment and materials including foundations will be demolished and disposed of, in accordance with the latest relevant guidance. The site will be reinstated.	

Impact	MDS	Explanation
infrastructure and foundations at the LSS		hydromorphological impacts have been assessed.

3.4 Commitments adopted as part of the MHPGC Project

- 3.4.1.1 As set out in **Volume 1, Chapter 4: Approach to Environmental Impact Assessment, of the PEIR** and **Volume 1, Annex 4.1: Draft Commitments Register, of the PEIR**, measures have been adopted as part of the MHPGC Project to reduce the potential for impacts.
- 3.4.1.2 The embedded measures relevant to the WFD Assessment are outlined in **Table 3.6**. As there is a secured commitment to implementing these measures, they are considered inherently part of the design of the MHPGC Project and have therefore been considered in the WFD Assessment presented in **Section 4**.

Table 3.6 Embedded mitigation relevant to the WFD Assessment implemented as part of the MHPGC Project

Commitment number	Measure adopted	How the measure will be secured
CoT13	The installation of the offshore export cables under the Durham Coast SSSI and SAC will be undertaken by trenchless technologies. The exit pits associated with the trenchless installation will be at least 100 m seaward of the eastern boundary of the Durham Coast SSSI and SAC.	Will be secured via DCO Schedule &/or Requirement
CoT16	An Onshore Decommissioning Plan will be developed prior to decommissioning. It will include provisions for the removal of all onshore above ground infrastructure and the decommissioning of below ground infrastructure (if and where relevant and practicable), and details relevant to flood risk, pollution prevention, protection of soils and avoidance of ground disturbance. The Onshore Decommissioning Plan will be in line with the latest relevant legislation and available guidance at the time of production, as far as reasonably practicable.	Will be secured via DCO Schedule &/or Requirement
CoT18	An Outline Code of Construction Practice (CoCP) will be prepared and submitted with the application for development consent. A Detailed CoCP will be developed in accordance with the Outline CoCP. The Outline CoCP will include (but is not limited to) measures to maintain and address: • Flood protection and control measures; • Water environment and drainage; • Noise and vibration management measures; • Air quality and dust management; • Pollution prevention and management; • Geology and ground conditions; • Soil and materials management; • Land use, tourism and recreational assets; • Waste management.	Will be secured via DCO Schedule &/or Requirement
CoT22	An Outline Operational Drainage Management Plan (ODMP) for the onshore land substation will be prepared and submitted with the application for development consent. The Outline ODMP will detail measures to ensure that existing land drainage is reinstated and/or maintained, including limiting discharge rates and attenuate flows to maintain greenfield runoff rates at the onshore substation. A Detailed ODMP will be developed in accordance with the Outline ODMP and in line with the latest relevant drainage guidance notes in consultation with the Environment Agency and the Lead Local Flood Authority.	Will be secured via DCO Schedule &/or Requirement
CoT23	An Outline Surface Water and Groundwater Management Plan (SWGMP) will form part of the Outline CoCP, will be submitted with the application for development consent. The Outline SWGMP will set out measures to protect surface water and groundwater during construction,	Will be secured via DCO Schedule &/or Requirement

Commitment number	Measure adopted	How the measure will be secured
	covering surface water and drainage management measures, flood risk control measures, and management of foul water from construction compounds. A detailed SWGMP will be developed in accordance with the Outline SWGMP.	
CoT29	Post-construction, the temporary working areas will be reinstated to pre-existing condition as far as reasonably practical, in line with best practice guidance.	Will be secured via DCO Schedule &/or Requirement
CoT33	An Outline Contaminated Land and Groundwater Discovery Strategy (CLGDS) will form part of the Outline CoCP, which will be prepared and submitted with the application for development consent, to identify any suspected areas of contamination and any remedial measures which may be required. A Detailed Strategy will be developed in accordance with the Outline Strategy and will identify the construction protocol for discovery of any currently unknown contamination and any remedial measures that may be required.	Will be secured via DCO Schedule &/or Requirement
CoT34	An Outline Pollution Prevention Plan (PPP) will form part of the Outline CoCP, which will be prepared and submitted with the application for development consent. A Detailed PPP will be developed in accordance with the Outline PPP. This will include details of emergency spill procedures and good practice guidance such as the Environment Agency's Pollution Prevention Guidance notes (including Pollution Prevention Guidance notes 01, 05, 08 and 21) will be followed where appropriate, or the latest relevant available applicable guidance.	Will be secured via DCO Schedule &/or Requirement
CoT47	An Outline Bentonite Breakout Plan will form part of the Outline CoCP, which will be submitted as part of the application for the development consent. A Detailed Bentonite Breakout Plan will be developed in accordance with the outline plan.	Will be secured via DCO Schedule &/or Requirement
CoT48	An Outline Biosecurity Protocol will form part of the Outline CoCP, which will be prepared and submitted as part of the application for the development consent. It will include measures such as the use of proven invasive species control and other biosecurity measures to avoid the spread of INNS and INNS contaminated materials. A Detailed Biosecurity Protocol will be developed in accordance with the Outline Biosecurity Protocol.	Will be secured via DCO Schedule &/or Requirement
CoT49	An Outline Onshore Construction Method Statement (CMS) will form part of the Outline CoCP, which will be prepared and submitted as part of the application for development consent. A Detailed Onshore CMS will be produced in accordance with the Outline Onshore CMS and will include details of cable installation and methodology.	Will be secured via DCO Schedule &/or Requirement
CoT51	An Onshore Crossing Schedule will be submitted with the application for development consent based on the refined design for the application. The following features will be crossed using trenchless techniques: - A, B and Classified unnumbered roads (known as C roads) (including the A19 and B1432); - all railway lines (including the section of railway line which runs between Seaham and Horden); - the Durham Coast SSSI and SAC;	Will be secured via DCO Schedule &/or Requirement

Commitment number	Measure adopted	How the measure will be secured
	- Hesledon Moor East SSSI.	
CoT59	An Outline Landfall Construction Method Statement (CMS) will form part of the Outline Code of Construction Practice (CoCP), which will be prepared and submitted as part of the application for development consent. A Detailed Landfall CMS will be produced substantially in accordance with the Outline Landfall CMS and will include details of cable installation and methodology.	Will be secured via DCO Schedule &/or Requirement

4 Water Framework Directive Assessment

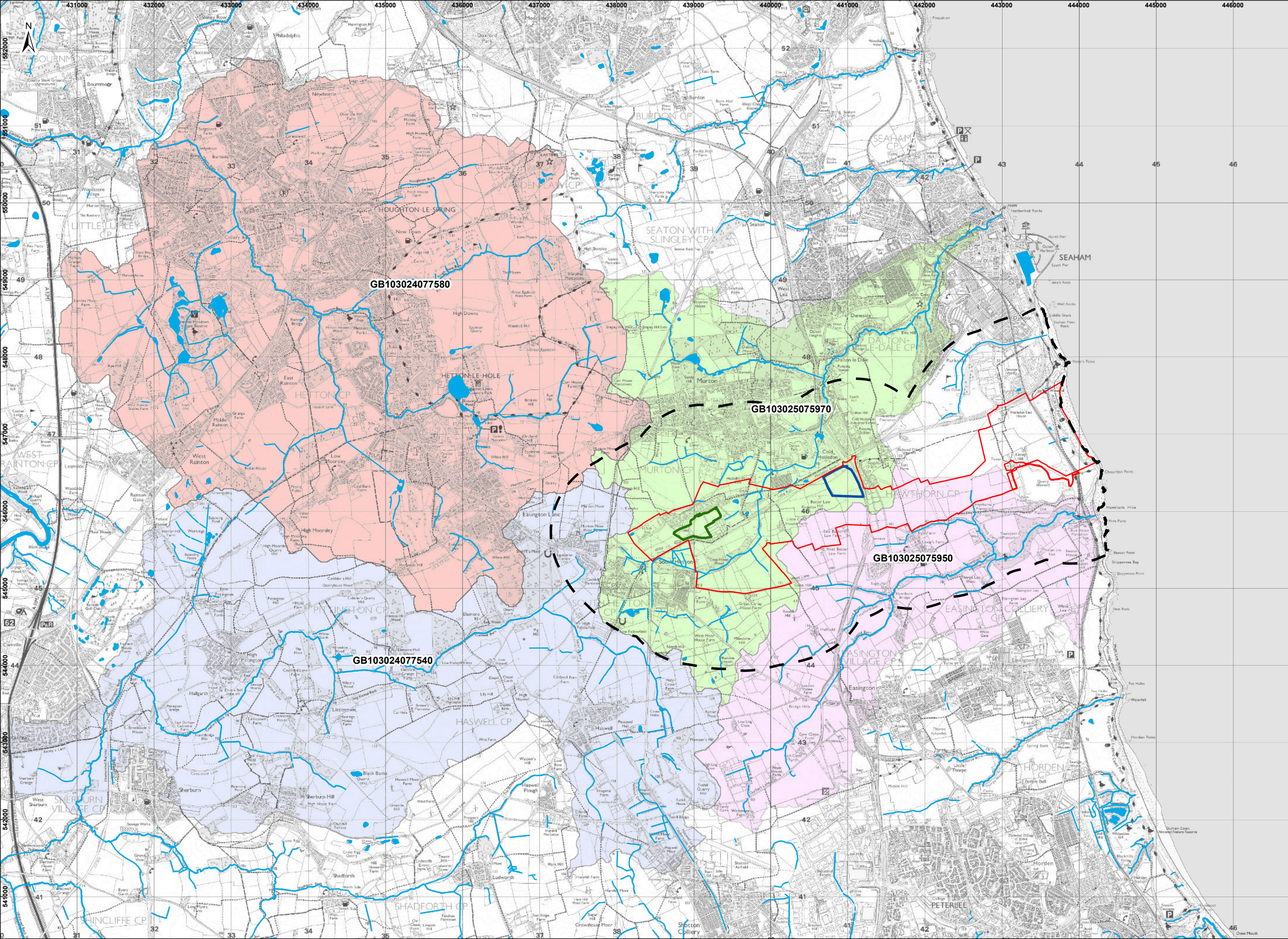
4.1 Stage 1 - Water Framework Directive Screening

- 4.1.1.1 This stage of the assessment identifies which WFD water bodies are present within the Zol, screening these water bodies into the further stages of the assessment due to their potential to deteriorate as a result of activities associated with the MHPGC Project. Water bodies that are within the Zol but are not considered to have the potential to be impacted, due to lack of direct or indirect connectivity, or due to distance, are screened out at this stage.
- 4.1.1.2 The Zol has been defined as the Onshore WFD Assessment Areas, as per **Section 3.1**.
- 4.1.1.3 For the onshore assessment, the Zol is defined as the MHPGC Project MHPGC PEIR Red Line Boundary: Onshore plus a 1km buffer, extended to incorporate the full catchment area of any WFD water body that falls within this buffer. Water bodies beyond the Zol have no direct or indirect hydrological connectivity to the MHPGC Project activities and are therefore screened out. Therefore, the water bodies that fall within the Onshore WFD Assessment Areas (and their characteristics) (EA, 2025), and are thus taken through to Stage 2, are presented in **Table 4.1**.
- 4.1.1.4 A detailed breakdown of quality element classifications, RBMP objectives, Reasons for Not Achieving Good (RNAG), and sensitivity to change for each water body is provided in the baseline characterisation (**Section 3.2**) and in **Table 3.2** and **Table 4.11**.
- 4.1.1.5 Designated surface water bodies that fall within the Onshore WFD Assessment Areas are presented in **Figure 4.1** and designated groundwater bodies that fall within the Onshore WFD Assessment Area are presented in **Figure 4.2**.

Table 4.1 Characteristics of the water bodies within the Onshore WFD Assessment Areas

WFD water body name	Water body ID	River basin district name	Water body type	Water body total area (km ²)	Overall water body status	Quantitative status	Ecological status	Chemical status	Target water body status and deadline	Heavily modified water body?	Phytoplankton status	History of harmful algae	Key Receptors (see Stage 2 Scoping)
Onshore: Surface Water													
Dalton Beck to North Sea	GB103025075970	Northumbria	River	15.59	N/A	N/A	Moderate (2022)	Does not require assessment (2022), Fail (2019)	N/A	Not designated artificial or heavily modified	Information not available	Information not available	Surface water: hydromorphology, biology (macroinvertebrates, macrophytes, fish), water quality, protected areas (Table 4.2–Table 4.8)
Hawthorn Burn from Source to North Sea	GB103025075950	Northumbria	River	11.32	N/A	N/A	Poor (2022)	Does not require assessment (2022), Fail (2019)	N/A	Not designated artificial or heavily modified	Information not available	Information not available	Surface water: hydromorphology, biology (macroinvertebrates, macrophytes, fish), water quality, protected areas (Table 4.2–Table 4.8)
Pittington Beck from Coalford to Old Durham Beck	GB103024077540	Northumbria	River	26.12	N/A	N/A	Bad (2022)	Does not require assessment (2022), Fail (2019)	N/A	Not designated artificial or heavily modified	Information not available	Information not available	Surface water: hydromorphology, biology (macroinvertebrates, macrophytes, fish), protected areas (Table 4.2–Table 4.8)
Lumley Park Burn from Source to Herrington Burn	GB103024077580	Northumbria	River	34.78	N/A	N/A	Moderate (2022)	Does not require assessment (2022), Fail (2019)	N/A	Heavily modified	Information not available	Information not available	Surface water: hydromorphology, biology (macroinvertebrates, macrophytes, fish), protected areas (Table 4.2–Table 4.8)
Onshore: Groundwater													
Wear Magnesian Limestone	GB40301G703900	Northumbria	Groundwater body	268.99	Poor (2019)	Good (2019)	N/A	Poor (2019)	N/A	N/A	N/A	N/A	Groundwater: quantitative status, chemical status, drinking water protected areas (Table 4.9)

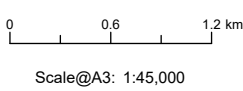
Note: Overall water body status is not reported for onshore river water bodies because the EA Catchment Data Explorer does not assign an overall status where ecological and chemical status are assessed on different cycles. The ecological status (2022) and chemical status (2019) are reported separately in the table.



- LEGEND**
- MHPGC PEIR Red Line
 - Boundary: Onshore
 - Blue LSS Option Area
 - Green LSS Option Area
 - Onshore WFD Assessment Area
- Surface Water Features**
- Ordinary Watercourses
 - Open Waterbodies
- WFD Waterbody Catchment**
- Dalton Beck to North Sea
 - Hawthorn Burn from Source to North Sea
 - Lumley Park Burn from Source to Herrington Burn
 - Pittington Beck from Coalford to Old Durham Beck

Project Name:
MORVEN HAWTHORN PIT GRID
CONNECTION PROJECT

Drawing Title:
FIGURE 4.1 - SURFACE WATER BODIES WITHIN THE ONSHORE WFD
ASSESSMENT AREAS

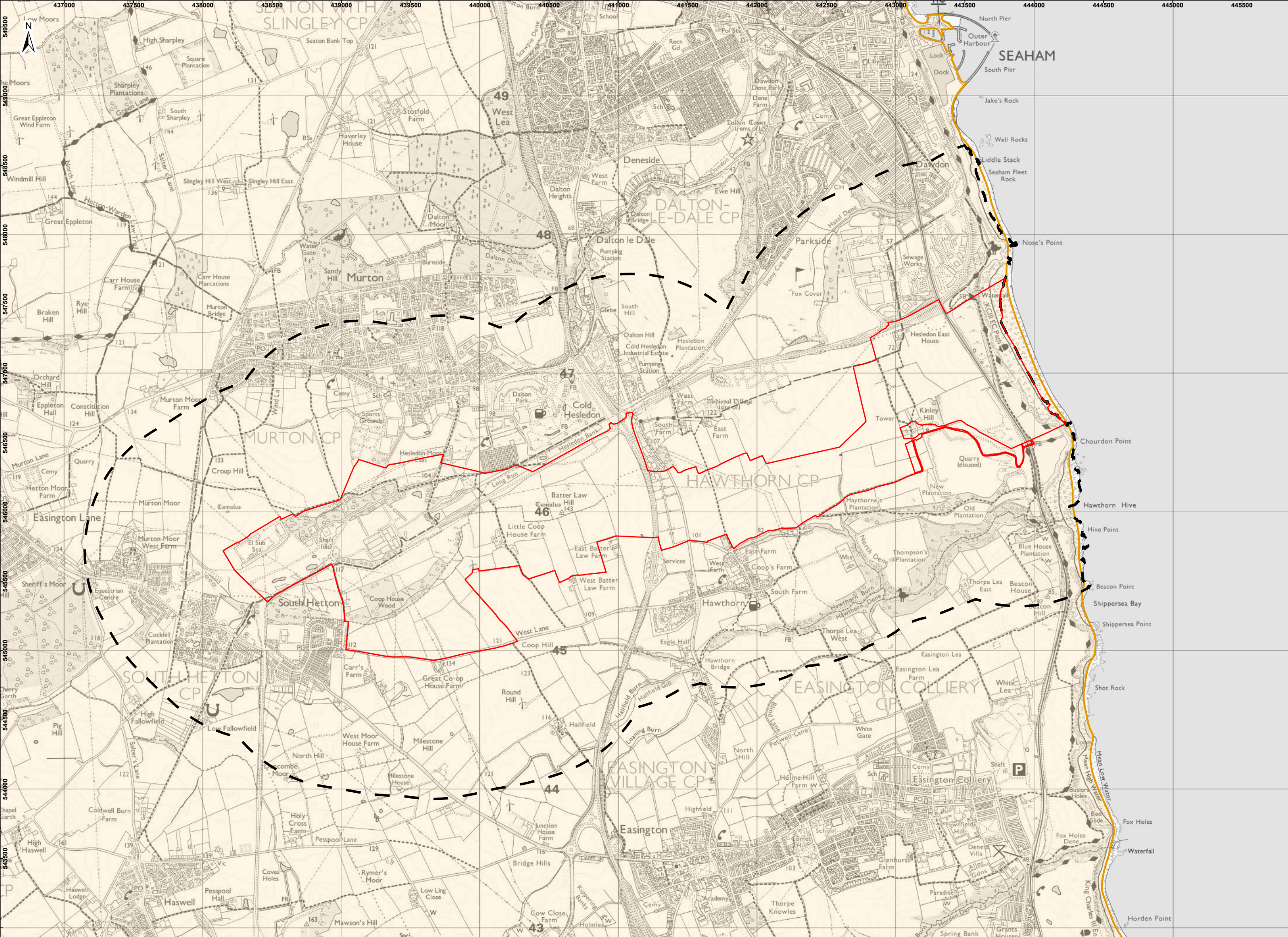


Geodetic Information:
Datum: OSGB 1936
Projection: British National Grid

Data Sources:
BP, Ordnance Survey, Environment Agency

Service Layer Credits:
GB Background: Contains OS data © Crown Copyright and database right 2026. Contains data from OS Zoomstack © Crown copyright and database rights 2026 Ordnance Survey AC0000848283

Drawing Number:				
MHPGC-WSP-PEIR-HYD-106				
VER	DATE	DETAILS	BY	CHECK
01	29/09/2026	Initial Issue	RE	LT
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- LEGEND**
- MHPGC PEIR Red Line Boundary: Onshore
 - Onshore WFD Assessment Area
 - Groundwater Body Catchment**
 - Wear Magnesian Limestone (GB40301G703900)

Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
FIGURE 4.2: DESIGNATED GROUNDWATER BODIES WITHIN THE WATER FRAMEWORK DIRECTIVE (WFD) ASSESSMENT AREA

0 0.5 km
Scale@A3: 1:25,000

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

Data Sources:
BP, Ordnance Survey

Service Layer Credits:
GB Background: Contains OS data © Crown Copyright and database right 2026. Contains data from OS Zoomstack
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Drawing Number: MHPGC-WSP-PEIR-HYD-107				
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4.2 Stage 2 - Water Framework Directive Scoping

4.2.1.1 A scoping assessment is required to determine which receptors may be impacted by the MHPGC Project and, therefore, need to be assessed in Stage 3, the impact assessment. These receptors are defined in accordance with the EA guidance (EA, 2017).

4.2.2 Surface water - Water Framework Directive Scoping

Hydromorphology

4.2.2.1 Hydromorphology encompasses the physical characteristics of water bodies. For river water bodies, the hydromorphological quality elements are: quantity and dynamics of water flow, connection to groundwater bodies, river continuity, and morphological conditions (channel patterns, depth and width variation, structure and substrate of the bed, and structure of the riparian zone). Impacts on hydromorphology include changes to these elements arising from direct physical modification (e.g., open-cut watercourse crossings) or indirect disturbance (e.g., changes in sediment supply or flow regime).

Onshore

4.2.2.2 **Table 4.2** provides specific risk information relating to onshore hydromorphology to determine which water bodies and potential risks should be taken forward to Stage 3.

Table 4.2 Onshore specific risk information: hydromorphology

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
Current hydromorphological classification	Not High (Hydrological Regime: Supports Good)	Not High (Hydrological Regime: Supports Good)	Not High (Hydrological Regime: Supports Good)	Not High (Hydrological Regime: Does Not Support Good)
Could the activity alter the quantity and dynamics of water flow?	Scoped out. No abstraction, impoundment, or flow diversion is proposed within the Pittington Beck from Coalford to Old Durham Beck catchment. Temporary dewatering during construction would be localised and short-term, and would be managed through the SWGMP (Commitment: CoT23; Table 3.6).	Scoped out. No abstraction, impoundment, or flow diversion is proposed within the Dalton Beck to North Sea catchment. The open-cut crossing of Dalton Beck would result in only temporary and localised flow disruption during construction, with the channel reinstated on completion. Temporary dewatering during construction would be managed through the SWGMP (Commitment: CoT23; Table 3.6).	Scoped out. No abstraction, impoundment, or flow diversion is proposed within the Hawthorn Burn from Source to North Sea catchment. Any open-cut crossings would result in temporary and localised flow disruption only, with the channel reinstated on completion. Temporary dewatering during construction would be managed through the SWGMP (Commitment: CoT23; Table 3.6).	Scoped out. No abstraction, impoundment, or flow diversion is proposed within the Lumley Park Burn from Source to Herrington Burn catchment. The hydrological regime is already classified as Does Not Support Good due to existing flood protection modifications, and the MHPGC Project would not introduce additional modifications to the flow regime. Temporary dewatering during construction would be managed through the SWGMP (Commitment: CoT23; Table 3.6).

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
Could the activity affect connection to groundwater bodies?	Scoped out. Onshore cable installation within the Pittington Beck catchment is predominantly within superficial deposits and would not penetrate the underlying Wear Magnesian Limestone aquifer. Trenchless techniques at depth (up to 30m) will be managed through the BBP and CoCP (Commitment: CoT47, CoT18; Table 3.6).	Scoped out. Onshore cable installation within the Dalton Beck catchment is predominantly within superficial deposits and would not penetrate the underlying Wear Magnesian Limestone aquifer. Trenchless techniques at depth (up to 30m) will be managed through the BBP and CoCP (Commitment: CoT47, CoT18; Table 3.6).	Scoped out. Onshore cable installation within the Hawthorn Burn catchment is predominantly within superficial deposits and would not penetrate the underlying Wear Magnesian Limestone aquifer. Trenchless techniques at depth (up to 30m) will be managed through the BBP and CoCP (Commitment: CoT47, CoT18; Table 3.6).	Scoped out. Onshore cable installation within the Lumley Park Burn catchment is predominantly within superficial deposits and would not penetrate the underlying Wear Magnesian Limestone aquifer. Trenchless techniques at depth (up to 30m) will be managed through the BBP and CoCP (Commitment: CoT47, CoT18; Table 3.6).
Could the activity disrupt river continuity (e.g., create barriers to fish migration)?	Scoped out. The MHPGC Project MHPGC PEIR Red Line Boundary: Onshore does not directly cross Pittington Beck. The tributary of Coldwell Burn, approximately 270m west of the MHPGC PEIR Red Line Boundary: Onshore, is outside the construction footprint. No in-channel structures are proposed within this water body.	Scoped in. Open-cut crossings are proposed at watercourses within the Dalton Beck catchment (see Section 3.3). Open-cut works require temporary disturbance of the channel bed and banks; however, as no permanent in-channel structure is installed and the channel is reinstated on completion, no permanent barrier to the movement of aquatic organisms is anticipated. Temporary construction-phase disruption cannot be excluded at PEIR stage pending confirmation of crossing locations.	Scoped in. A tributary of Hawthorn Burn is located within the eastern extent of the MHPGC PEIR Red Line Boundary: Onshore. Open-cut crossing of this or other watercourses within the Hawthorn Burn catchment would cause temporary construction-phase disturbance to the channel; as no permanent structure is installed and the channel is reinstated on completion, no permanent disruption to river continuity is anticipated. This cannot be fully excluded at PEIR stage pending confirmation of crossing locations.	Scoped out. The MHPGC Project MHPGC PEIR Red Line Boundary: Onshore does not directly cross Lumley Park Burn. No in-channel structures are proposed within this water body.
Could the activity alter morphological conditions (channel patterns, depth/width variation, substrate, riparian zone)?	Scoped out. No direct in-channel works are proposed within the Pittington Beck water body.	Scoped in. Open-cut crossings within the Dalton Beck catchment could temporarily disturb channel morphology at the crossing location, including disturbance of bed substrate, bank profiles, and riparian	Scoped in. A tributary of Hawthorn Burn is located within the eastern extent of the MHPGC PEIR Red Line Boundary: Onshore and may require a direct crossing. The MDS assumes open-cut crossing, which	Scoped out. No direct in-channel works are proposed within the Lumley Park Burn water body.

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
		vegetation during construction. Disturbance would be temporary, with the channel bed and banks reinstated following completion of works, secured through CoT29 (reinstatement of temporary working areas) and the Outline CoCP (CoT18), and with crossing methodology detailed in the Outline Onshore CMS (CoT49) (Table 3.6)	represents the worst case for direct in-channel disturbance (Table 3.5) On that basis, the works would disturb bed substrate, bank profiles and riparian vegetation across the full width of the channel at the crossing location for the duration of the works. Disturbance would be temporary, with the channel bed and banks reinstated following completion, secured through CoT29 and the Outline CoCP (CoT18), and with crossing methodology detailed in the Outline Onshore CMS (CoT49) (Table 3.6). No permanent in-channel structure would be installed.	
Is the activity in a water body that is heavily modified for the same use?	Scoped out. Not designated as heavily modified.	Scoped out. Not designated as heavily modified.	Scoped out. Not designated as heavily modified.	Scoped out. Designated as heavily modified for flood protection, which is not the same use as the MHPGC Project.

4.2.2.3 Hydromorphology has been scoped in to Stage 3 Impact Assessment for Dalton Beck to North Sea and Hawthorn Burn from Source to North Sea, where open-cut in-channel works are proposed at watercourse crossings. Hydromorphology has been scoped out for Pittington Beck from Coalford to Old Durham Beck and Lumley Park Burn from Source to Herrington Burn, as no direct in-channel works are proposed within this water body.

Biology

4.2.2.4 The following sections outline the potential impacts to biological quality elements that may arise from the MHPGC Project. For river water bodies, the biological quality elements defined in the 2017 Regulations are:

- Macroinvertebrates ;
- Fish;
- Macrophytes;
- Phytobenthos.

Macroinvertebrates

4.2.2.5 **Table 4.3** provides specific risk information relating to onshore biology (macroinvertebrates) to determine which water bodies and potential risks should be taken forward to Stage 3.

Table 4.3 Onshore specific risk information: macroinvertebrates

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
Current classification	Good (objective: Good by 2021)	Good (objective: Good by 2021)	Poor (objective: Poor by 2021)	Good (objective: Good by 2015)
Could the activity cause deterioration of macroinvertebrate communities through direct physical disturbance of the channel bed?	Scoped out. No direct in-channel works are proposed within this water body.	Scoped in. Open-cut crossings would temporarily disturb the channel bed, disturbing benthic substrate and associated macroinvertebrate communities at the crossing location during construction. Disturbance would be temporary, with recolonisation expected following reinstatement.	Scoped in. As for Dalton Beck. Hawthorn Burn invertebrates are already at Poor status – any further reduction in condition constitutes deterioration.	Scoped out. No direct in-channel works are proposed within this water body.
Could the activity cause deterioration of macroinvertebrate communities through indirect effects (increased sediment, reduced water quality)?	Scoped out. No direct pathway. Indirect connectivity via Coldwell Burn tributary is approximately 270m from the MHPGC PEIR Red Line Boundary: Onshore, and embedded mitigation (CoT47, CoT18; Table 3.6) would manage surface runoff quality.	Scoped in. Construction activities adjacent to watercourses within the Dalton Beck catchment could mobilise fine sediment, increasing turbidity and smothering benthic habitats downstream. Direct risk of pollution from construction activities impacting water quality.	Scoped in. As for Dalton Beck. The Poor invertebrate status indicates the community is already under stress and may be more sensitive to additional sediment or nutrient loading.	Scoped out. No direct pathway. Further, embedded mitigation (CoT47, CoT18; Table 3.6) would manage surface runoff quality.

4.2.2.6 Macroinvertebrates have been **scoped in** to Stage 3 for Dalton Beck and Hawthorn Burn, and have been **scoped out** for Pittington Beck and Lumley Park Burn (no direct in-channel works and no direct connectivity).

Fish

4.2.2.7 **Table 4.4** provides specific risk information relating to onshore biology (fish) to determine which water bodies and potential risks should be taken forward to Stage 3.

Table 4.4 Onshore specific risk information - fish

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
Bad (driving overall Bad ecological status)	Not classified: fish not assessed in the 2019–2022 cycle	Not classified: fish not assessed in the 2019–2022 cycle	Not classified: fish not assessed in the 2019–2022 cycle	Bad (driving overall Bad ecological status)
Could the activity create a barrier to fish movement or disrupt river continuity?	Scoped out. No in-channel structures proposed within this water body. However, the fish element is at Bad status with zero headroom – any indirect impact via connected tributaries would be critical. The tributary of Coldwell Burn (~270m from the MHPGC PEIR Red Line Boundary: Onshore) provides an indirect pathway, but embedded mitigation (CoT23, CoT34; Table 3.6) would manage construction runoff quality, limiting the risk of pollution.	Scoped in. Open-cut crossing works have the potential to temporarily affect fish through direct in-channel disturbance, temporary increases in suspended sediment concentrations and short-term disturbance of habitat during construction. Following reinstatement, no permanent barrier to fish movement is anticipated. Fish were not assessed for this water body in the most recent WFD cycle (2019–2022), and no fish records were returned from the EA Ecology & Fish Data Explorer (2016–2026) for watercourses intersected by, or hydrologically connected within 2km of, the MHPGC PEIR Red Line Boundary: Onshore (Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR). Project-specific fish (electrofishing) surveys have been undertaken; the results were not available at the time of PEIR preparation and will be reported	Scoped in. As for Dalton Beck. The watercourse within the MHPGC PEIR Red Line Boundary: Onshore that flows into Hawthorn Dene was dry at the time of the ecology surveys and is not considered suitable for fish (Volume 3, Chapter 3 of the PEIR). It is retained on a precautionary basis because surveys were undertaken during unusually dry conditions and the fish survey results are not yet available.	Scoped out. No in-channel structures proposed within this water body.

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
		in the ES. Aquatic habitat within the MHPGC PEIR Red Line Boundary: Onshore is considered likely to provide only limited habitat for fish; however, consistent with Volume 3, Chapter 3, fish are assumed to be present in permanently wetted watercourses on a precautionary basis.		
Could the activity impact fish spawning or nursery habitat?	Scoped out. No in-channel works proposed.	Scoped in. Fish were not assessed for this water body in the most recent WFD cycle (2019–2022), and project-specific fish survey results were not available at the time of PEIR preparation. In the absence of survey data, the assessment proceeds on the precautionary basis that spawning habitat (including clean gravels) and nursery habitat may be present at the crossing locations. No seasonal restriction on in-channel works is currently committed to by the MHPGC Project; the assessment therefore assumes that in-channel works could be undertaken at any time of year, including during the salmonid spawning period (October to February inclusive), and that spawning or nursery habitat could be disturbed during that period.	Scoped in. No project-specific fish surveys have been conducted. The absence of survey data means that the presence or absence of spawning habitat (e.g., clean gravels) and nursery habitat at crossing locations cannot be confirmed. Brown trout are present within the wider catchment, however due to the water body's proximity to the ocean it is likely only used as a migratory corridor as opposed to spawning habitat as salmonids prefer to spawn in more stable conditions closer to the headwater. This will be assessed on a precautionary basis, in-channel works should not be undertaken during the salmonid spawning season (October to February inclusive).	Scoped out. No in-channel works proposed.

Potential risk	WFD water bodies			
	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
Could the activity affect resident fish populations through changes in water quality, flow, or habitat?	Scoped out. No direct pathway. any indirect impact via connected tributaries would be critical. The tributary of Coldwell Burn (~270m from the MHPGC PEIR Red Line Boundary: Onshore) provides an indirect pathway, but embedded mitigation (CoT23, CoT34; Table 3.6) would manage construction runoff quality, limiting the risk of pollution.	Scoped in. Construction activities could indirectly affect fish through increased suspended sediment (gill abrasion, reduced visibility), changes in dissolved oxygen, or alteration of flow conditions at crossing locations.	Scoped in. Construction activities could indirectly affect fish through increased suspended sediment (gill abrasion, reduced visibility), changes in dissolved oxygen, or alteration of flow conditions at crossing locations.	Scoped out. No direct pathway. Further, embedded mitigation (CoT23, CoT34; Table 3.6) would manage construction runoff quality, limiting the risk of pollution.

4.2.2.8 Fish fauna have been scoped in to Stage 3 for Dalton Beck to North Sea and Hawthorn Burn from Source to North Sea, where open-cut watercourse crossings are proposed. Fish have been scoped out for Pittington Beck from Coalford to Old Durham Beck and Lumley Park Burn from Source to Herrington Burn, where no direct in-channel works are proposed and the only pathway is indirect via surface water connectivity, managed through the embedded mitigation (CoT18, CoT23, CoT34; **Table 3.6**). The Bad fish classification and absence of headroom in Pittington Beck is noted as a sensitivity in reaching that conclusion. The assessment has been informed by a desk-based review of EA classification data and the biological records available from the EA Ecology & Fish Data Explorer, noting that fish were not assessed for Dalton Beck or Hawthorn Burn in the most recent WFD cycle (2019–2022). Project-specific fish (electrofishing) surveys have been undertaken; the results were not available at the time of PEIR preparation and will be reported in the ES (Volume 3, Chapter 3 of the PEIR).

Macrophytes and phytobenthos

Table 4.5 Onshore specific risk information: macrophytes and phytobenthos

Potential risk	WFD water bodies			
	Pittington Beck	Dalton Beck	Hawthorn Burn	Lumley Park Burn
Current classification	Good (objective: Good by 2021)	Moderate (objective: Good by 2015)	High (objective: Good by 2015)	Poor (objective: Good by 2027)
Could the activity cause direct loss or damage to macrophyte/phytobenthos communities through physical disturbance of the channel?	Scoped out. No direct in-channel works proposed.	Scoped in. Open-cut crossings would temporarily remove aquatic vegetation at the crossing location, including any macrophyte beds and phytobenthos (diatom/algal) communities. Loss	Scoped in. Open-cut crossings would temporarily remove aquatic vegetation at the crossing location, including any macrophyte beds and phytobenthos (diatom/algal) communities. Loss	Scoped out. No direct in-channel works proposed.

		would be temporary, with recolonisation expected following reinstatement of natural substrate and flow. Any impact would be localised and unlikely to result in deterioration at the water body scale.	would be temporary, with recolonisation expected following reinstatement of natural substrate and flow. Any impact would be localised and unlikely to result in deterioration at the water body scale.	
Could the activity cause indirect deterioration of macrophyte/phytobenthos communities (e.g., through increased turbidity, nutrient release, or shading)?	Scoped out. No direct pathway.	Scoped in. Increased suspended sediment from construction activities could reduce light penetration, suppressing macrophyte growth and phytobenthos productivity downstream of the crossing location. Nutrient mobilisation from disturbed soils could also alter the trophic conditions impacting the macrophyte community.	Scoped in. Increased suspended sediment from construction activities could reduce light penetration, suppressing macrophyte growth and phytobenthos productivity downstream of the crossing location. Nutrient mobilisation from disturbed soils could also alter the trophic conditions impacting the macrophyte community.	Scoped out. No direct pathway.

4.2.2.9 Macrophytes and phytobenthos have been scoped in to Stage 3 for Dalton Beck and Hawthorn Burn. They have been scoped out for Pittington Beck and Lumley Park Burn (no direct in-channel works and no direct connectivity).

Water quality

4.2.2.10 In accordance with WFD guidance, water quality relates to physical conditions (such as water clarity, temperature, salinity and oxygen levels), biological conditions (such as nutrients or microbial patterns, phytoplankton status and harmful algae) and chemical conditions (such as the presence of chemicals on the Environmental Quality Standards Directive (EQSD) (EA, 2016) or above Cefas Action Levels (Marine Management Organisation, 2014)).

Onshore

4.2.2.11 **Table 4.6** provides specific risk information relating to onshore water quality to determine which water bodies and potential risks should be taken forward to Stage 3.

Table 4.6 Onshore specific risk information - water quality

Potential risk	WFD water bodies			
	Pittington Beck	Dalton Beck	Hawthorn Burn	Lumley Park Burn
Current physico-chemical classification	Moderate (Phosphate: Poor)	Moderate (Phosphate: Moderate)	Below Good (Phosphate: Poor)	Good
Could the activity affect dissolved oxygen levels?	Scoped out. No direct in-channel works. DO currently at Good. Embedded mitigation (CoT23, CoT34; Table 3.6)	Scoped in. Construction activities at watercourse crossings could temporarily increase	Scoped in. As for Dalton Beck. Hawthorn Burn is at Poor ecological status; even temporary reduction	Scoped out. No direct in-channel works. Embedded mitigation (CoT23, CoT34; Table 3.6)

Potential risk	WFD water bodies			
	Pittington Beck	Dalton Beck	Hawthorn Burn	Lumley Park Burn
	manage runoff quality.	suspended sediment, which can reduce dissolved oxygen through increased biochemical oxygen demand. DO is currently at Good; a drop to Moderate would constitute deterioration. The duration of in-channel works at any single crossing is limited to the period required to complete the open-cut crossing and reinstate the channel, as set out in Table 3.4, but works at multiple crossings across the onshore construction programme could extend the overall period over which the water body is subject to sediment inputs.	in DO could compound existing pressures on invertebrate communities.	manage runoff quality.
Could the activity affect nutrient levels (phosphate, ammonia)?	Scoped out. No direct in-channel works. Indirect pathway via Coldwell Burn tributary (~270m) managed by embedded mitigation. Phosphate already at Poor – any indirect nutrient input from surface runoff would be managed through SWGMP and PPP (CoT23, CoT34; Table 3.6).	Scoped in. Construction earthworks and soil disturbance adjacent to watercourses could mobilise nutrients (particularly phosphate from agricultural soils) into the Dalton Beck catchment. Phosphate is at Moderate, with an RBMP objective of Good by 2015. Additional nutrient loading could prevent achievement of this objective.	Scoped in. Phosphate is at Poor status. The Hawthorn Burn NVZ designation reflects existing nutrient sensitivity. Mobilisation of nutrient-rich soils during construction within the NVZ could worsen phosphate conditions. Embedded mitigation (CoT23, CoT34; Table 3.6) reduce but may not eliminate this risk at PEIR stage.	Scoped out. Phosphate and ammonia are classified at Good status, with dissolved oxygen, pH and temperature at High. Neither the onshore export cable corridor nor the AC connection cable corridor crosses a watercourse within this catchment; no direct in-channel works are proposed. Works within the catchment are limited to trenching, topsoil stripping and stockpiling on land within the Lumley Park Burn and Durham NVZs, giving an indirect pathway via surface runoff only. This is managed through the Outline SWGMP and Outline CoCP

Potential risk	WFD water bodies			
	Pittington Beck	Dalton Beck	Hawthorn Burn	Lumley Park Burn
				(CoT23, CoT18; Table 3.5), which include control and management of surface water runoff from working areas, installation of sediment fencing and silt traps downslope of construction areas, stockpiling of topsoil away from watercourses, limitation of the duration and extent of exposed ground, and treatment of pumped or intercepted water prior to discharge. On this basis no risk of deterioration in the physico-chemical quality elements is identified.
Could the activity release specific pollutants or priority substances (e.g., metals, hydrocarbons)?	Scoped out. No direct in-channel works. Managed by PPP (CoT34; Table 3.6).	Scoped in (on a precautionary basis). Construction plant and fuel/chemical storage near watercourses present a risk of accidental release. Although managed through the Outline PPP (CoT34) and the Outline CoCP (CoT18), which includes spill response procedures, the risk cannot be fully eliminated at PEIR stage. Where construction activities cross or are adjacent to areas of potentially contaminated land (former colliery land, made ground), disturbance could mobilise existing contaminants; this is managed through the Outline CLGDS (CoT33).	Scoped in. As for Dalton Beck.	Scoped out. There is no direct crossing of watercourses in this catchment, so no in-channel impact pathway exists. Surface water runoff from working areas within the catchment is managed through the Outline SWGMP (CoT23), which secures the management of surface water and construction drainage, and the Outline CoCP (CoT18); accidental release is managed through the Outline PPP (CoT34).

Potential risk	WFD water bodies			
	Pittington Beck	Dalton Beck	Hawthorn Burn	Lumley Park Burn
Could the activity affect water quality for longer than 14 days at any single location?	Scoped out. There are no direct in-channel works in this catchment. Nutrient input from surface runoff is managed through the Outline SWGMP (CoT23), which secures the management of surface water and construction drainage, and the Outline PPP (CoT34). Any nutrient mobilisation would be intermittent and rainfall-driven rather than sustained, and is not considered to represent a credible pathway to deterioration of the physico-chemical quality elements of this water body.	Scoped in. Whilst in-channel works at any single crossing are expected to be short-term, the overall construction programme for the onshore export cable (42 months) means that sequential crossings could result in repeated water quality impacts across the Dalton Beck catchment over an extended period. The cumulative temporal effect is assessed in Stage 3.	Scoped in. As for Dalton Beck. Construction at the landfall area and along the cable corridor within the Hawthorn Burn catchment could result in prolonged periods of elevated surface runoff and sediment mobilisation.	Scoped out. No direct crossings.

4.2.2.12 Based on the scoping assessment presented in **Table 4.6**, water quality (physico-chemical) elements have been scoped into the Stage 3 WFD Impact Assessment for Dalton Beck to North Sea and Hawthorn Burn from Source to North Sea, owing to the potential for temporary adverse effects on dissolved oxygen, phosphate, and specific pollutants during open-cut watercourse crossings. Water quality elements have been scoped out for Pittington Beck from Coalford to Old Durham Beck and Lumley Park Burn from Source to Herrington Burn, where the absence of direct watercourse crossings or proximity to construction activities means that no realistic impact pathway to physico-chemical quality elements has been identified.

Water Framework Directive protected areas

4.2.2.13 WFD protected areas include SACs, SPAs, Shellfish Waters, Bathing Waters, Coastal Sensitive Area, Drinking Water Safeguard Zones (SgZs), NVZs, and sites listed under the UWWTD. The protected areas within the Onshore WFD Assessment Areas are illustrated in **Figure 4.3**.

Onshore

4.2.2.14 **Table 4.7** provides specific risk information relating to Onshore WFD protected areas to determine which water bodies and potential risks should be taken forward to Stage 3.

Table 4.7 Onshore specific risk information: WFD protected areas

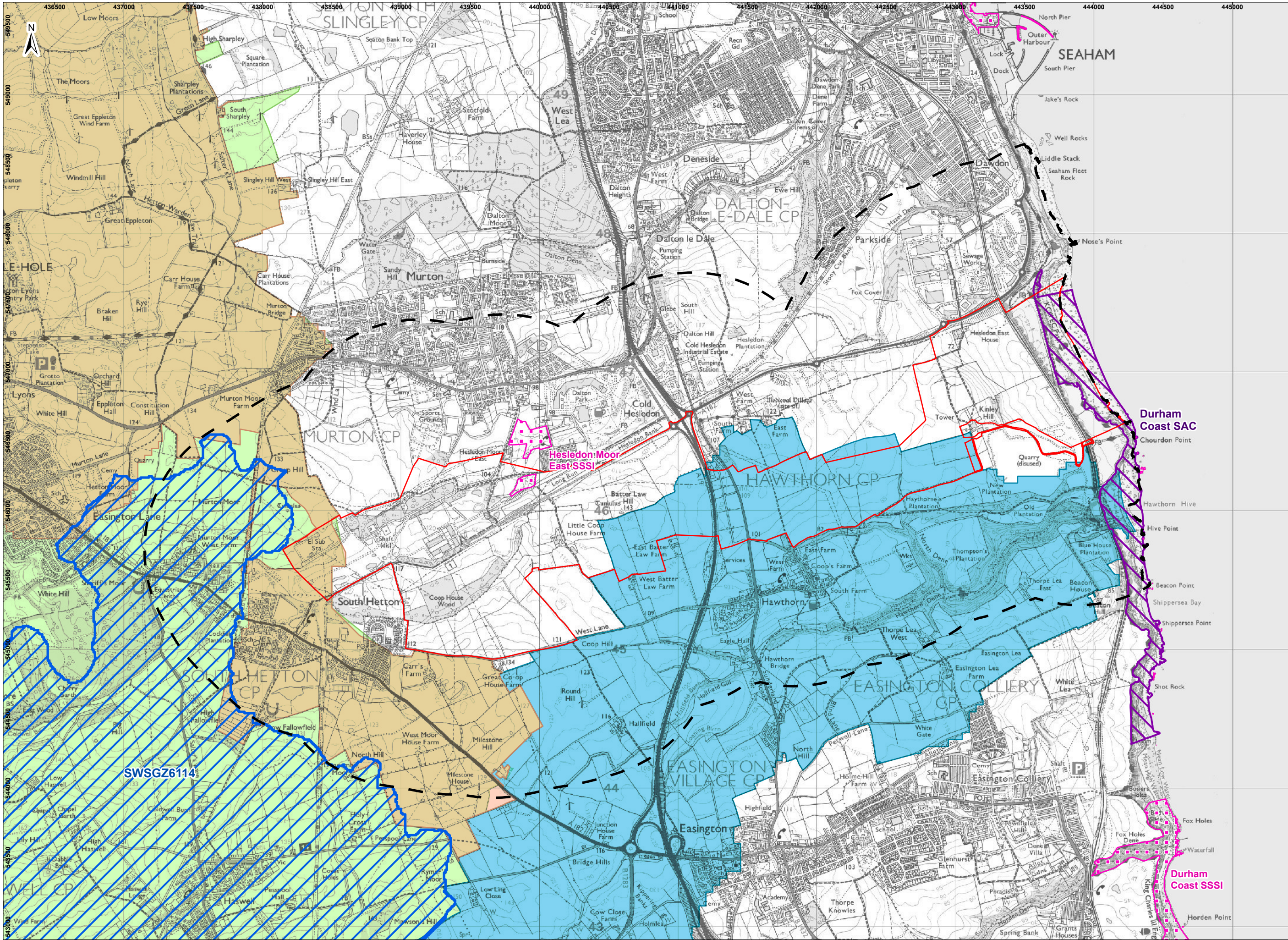
WFD protected area	Distance from MHPGC PEIR Red Line Boundary: Onshore	Designation basis / qualifying features	Credible impact pathway from the MHPGC Project	Relevant embedded mitigation measures (Table 3.6)	Scoping outcome
Durham Coast SAC	0km (within the MHPGC)	The only example of vegetated sea cliffs	Potential effects on water-dependent features	Outline CoCP (CoT18),	Scoped in to Stage 3 Impact

WFD protected area	Distance from MHPGC PEIR Red Line Boundary: Onshore	Designation basis / qualifying features	Credible impact pathway from the MHPGC Project	Relevant embedded mitigation measures (Table 3.6)	Scoping outcome
	Project MHPGC PEIR Red Line Boundary: Onshore)	on Magnesian Limestone exposures in the UK; a complex mosaic of paramaritime, mesotrophic and calcicolous grasslands, tall-herb fen, seepage flushes and wind-pruned scrub; communities maintained by natural processes including sea spray, cliff erosion and localised flushing by calcareous water.	(seepage flushes, calcareous water flushing) via: (i) alteration of shallow groundwater flow pathways in the confined Magnesian Limestone / superficial deposits during trenchless crossings; (ii) accidental release of pollutants (fuels, drilling fluids, concrete leachate) with a pathway to the cliff-face habitats.	Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), Outline Onshore CMS (CoT49), crossing schedule approach (CoT51), trenchless crossings (CoT13).	Assessment. Water-dependent qualifying features (seepage flushes / calcareous flushing) cannot be fully excluded at PEIR stage.
Durham Coast SSSI	0km (within the MHPGC Project MHPGC PEIR Red Line Boundary: Onshore)	Includes six Geological Conservation Review sites; exposures of late-Permian dolomite and limestone; supports nationally important populations of sanderling, wintering purple sandpiper and breeding little tern, and a rich invertebrate assemblage. Notable flora includes wet flushes and associated vegetation communities.	Potential effects on water-dependent features (wet flushes) via: (i) alteration of shallow groundwater flow pathways in the confined Magnesian Limestone / superficial deposits during trenchless crossings; (ii) accidental release of pollutants (fuels, drilling fluids, concrete leachate) with a pathway to the cliff-face habitats	As for Durham Coast SAC Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), Outline Onshore CMS (CoT49), crossing schedule approach (CoT51), trenchless crossings (CoT13).	Scoped in to Stage 3 Impact Assessment. Overlapping impact pathways with the Durham Coast SAC and the WFD water bodies discharging to the North Sea coast (Dalton Beck to North Sea; Hawthorn Burn from Source to North Sea).
Hesledon Moor East SSSI	0km (within the MHPGC Project MHPGC PEIR Red Line Boundary: Onshore)	The unimproved neutral grassland feature is unfavourable declining due to inappropriate grazing levels. The basin fen feature is in poor condition, with high levels of scrub. It has changed significantly since the time of designation. Basin	Potential effects on the water environment of the SSSI via alteration of shallow drainage/seepage pathways; (assessed further in Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology.	Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), Outline LEMP (CoT43), Outline Onshore CMS	Scoped in to Stage 3 Impact Assessment. Water-dependent qualifying features (seepage flushes / calcareous flushing) cannot be fully excluded at PEIR stage.

WFD protected area	Distance from MHPGC PEIR Red Line Boundary: Onshore	Designation basis / qualifying features	Credible impact pathway from the MHPGC Project	Relevant embedded mitigation measures (Table 3.6)	Scoping outcome
		fen loss of hydrological regime from climate change also as a pressure.		(CoT49), crossing schedule approach (CoT51).	
Hawthorn Burn from Source	0km (within the MHPGC Project MHPGC PEIR Red Line Boundary: Onshore – the entire length of the Hawthorn Burn from source to the North Sea is designated as an NVZ)	Designated to prevent nitrate pollution of the Hawthorn Burn catchment from agricultural run-off and land management activities.	Potential nutrient (nitrate/phosphate) mobilisation from disturbed soils and construction runoff into the Hawthorn Burn catchment, particularly during earthworks, watercourse crossings (including a tributary of Hawthorn Burn within the eastern extent of the MHPGC PEIR Red Line Boundary: Onshore), and construction at the landfall area. Phosphate is already at Poor status in this water body (Table 3.2/Section 3.2), so any additional nutrient loading is critical.	Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), and Outline Onshore CMS (CoT49)	Scoped in to Stage 3 Impact Assessment. Consistent with the "Scoped in" outcome for water quality (physico-chemical) in Table 4.6 for the Hawthorn Burn water body.
Lumley Park Burn from Herrington Burn to R Wear NVZ	0km (within the MHPGC Project MHPGC PEIR Red Line Boundary).	Designated to prevent nitrate pollution of the Lumley Park Burn catchment from agricultural run-off and land management activities.	Potential nutrient (nitrate/phosphate) mobilisation from disturbed soils and construction runoff into the Lumley Park Burn catchment, particularly during earthworks, watercourse crossings.	Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), and Outline Onshore CMS (CoT49)	Scoped in to Stage 3 Impact Assessment.
Durham NVZ	0km (within the MHPGC Project MHPGC PEIR Red Line Boundary).	Designated to prevent nitrate pollution of the Durham NVZ catchment from agricultural run-off and land management activities.	Potential nutrient (nitrate/phosphate) mobilisation from disturbed soils and construction runoff into the Lumley Park Burn catchment, particularly during earthworks, watercourse crossings.	Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), and Outline Onshore CMS (CoT49)	Scoped in to Stage 3 Impact Assessment.

WFD protected area	Distance from MHPGC PEIR Red Line Boundary: Onshore	Designation basis / qualifying features	Credible impact pathway from the MHPGC Project	Relevant embedded mitigation measures (Table 3.6)	Scoping outcome
Drinking Water Safeguard Zones (surface water) - Lumley Safeguard Zone	0km (Within the MHPGC Project Water Framework Directive (WFD) Assessment Area - 1km Buffer)	Designated to manage the risk of further increases in sulphate levels compromising the useability / increasing treatment costs of water taken from this surface source area for drinking water supply.	Potential sulphate contaminant mobilisation from disturbed soils particularly during earthworks, watercourse crossings.	Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline BBP (CoT47), Outline CLGDS (CoT33), and Outline Onshore CMS (CoT49)	Scoped in to Stage 3 Impact Assessment.

4.2.2.15 Protected sites have been scoped in to the Onshore WFD Impact Assessment (**Section 4.3**). The Stage 3 assessment will consider the potential for the MHPGC Project to prevent achievement of the objectives of each protected area and, where relevant, will cross-refer to the Habitats Regulations Assessment and **Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology**.



Sunderland

urham

LEGEND

- MHPGC PEIR Red Line Boundary: Onshore
- Onshore WFD Assessment Area
- Special Area of Conservation
- Site of Special Scientific Interest
- Drinking Water Safeguard Zones (Surface Water)

Nitrate Vulnerable Zones 2021 Designations

- Durham NVZ
- Hawthorn Burn from Source to North Sea NVZ
- Lumley Park Burn from Herrington Burn to R Wear NVZ

Morven

Offshore Wind Farm

Drawing Number:

MHPGC-WSP-PEIR-HYD-108

VER	DATE	DETAILS	BY	CHECK
02	29/09/2025	Initial Issue	RE	LT
-	-	-	-	-

Project Name:
MORVEN HAWTHORN PIT GRID CONNECTION PROJECT

Drawing Title:
FIGURE 4.3: WATER FRAMEWORK DIRECTIVE (WFD) PROTECTED AREAS WITHIN THE ONSHORE WFD ASSESSMENT AREAS

0 0.5 km
Scale@A3: 1:25,000

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

Data Sources:
BP, Ordnance Survey

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Invasive non-native species

4.2.2.16 Non-native species are plants and animals that have been introduced, either deliberately or accidentally, through human activity to locations outside their natural past or present range. Where such species establish, spread rapidly, and cause significant harm to the environment, the economy, or human health, they are classified as Invasive Non-Native Species (INNS). This section assesses whether the MHPGC Project may pose a potential risk associated with the introduction or spread of INNS within or between WFD water bodies.

Onshore

4.2.2.17 **Table 4.8** provides specific risk information relating to INNS to determine which water bodies and potential risks should be taken forward to Stage 3. The baseline characterisation of INNS risk has been informed by:

- EA Ecology & Fish Data Explorer biological survey records (2018 – 2019) for each of the four onshore WFD water bodies, as reported in the baseline characterisation (**Section 3.2**);
- EA Catchment Data Explorer (EA, 2025), which identifies INNS (riparian plants) as a Reason for Not Achieving Good (RNAG) for the Lumley Park Burn from Source to Herrington Burn water body (**Section 3.2**);
- Terrestrial ecology baseline surveys reported in **Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR**, including habitat walkover records along the onshore cable corridor.

4.2.2.18 Available EA biological survey records confirm the presence of the following INNS within the Onshore WFD Assessment Area:

- Pittington Beck from Coalford to Old Durham Beck – New Zealand mud snail (*Potamopyrgus antipodarum*) recorded during the September 2018 macroinvertebrate survey at NZ3134143129; Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*) recorded during the July 2018 macrophyte survey at NZ3110142401.
- Dalton Beck to North Sea – No INNS identified during the August 2018 macrophyte survey at NZ4104648154; no EA macroinvertebrate INNS record available.
- Hawthorn Burn from Source to North Sea – New Zealand mud snail recorded during the April 2018 macroinvertebrate survey at NZ4382945994. The species is now considered naturalised within Great Britain.
- Lumley Park Burn from Source to Herrington Burn – New Zealand mud recorded during the September 2018 macroinvertebrate survey at NZ3348949069; Himalayan balsam and Japanese knotweed (*Fallopia japonica*) recorded during the August 2018 macrophyte survey at NZ3200050800. INNS (riparian plants) is identified as a RNAG for this water body in the Northumbria RBMP.

Table 4.8 Onshore specific risk information: INNS

Potential risk	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
INNS recorded within the water body (EA Ecology & Fish Data Explorer, 2018 – 2019)	New Zealand mud snail (<i>Potamopyrgus antipodarum</i>); Himalayan balsam (<i>Impatiens glandulifera</i>); giant hogweed (<i>Heracleum mantegazzianum</i>).	None recorded (August 2018 macrophyte survey; no macroinvertebrate INNS record available).	New Zealand mud snail (<i>Potamopyrgus antipodarum</i>) – species now considered naturalised within Great Britain.	New Zealand mud snail (<i>Potamopyrgus antipodarum</i>); Himalayan balsam (<i>Impatiens glandulifera</i>); Japanese knotweed (<i>Fallopia japonica</i>).
Current INNS status (EA Catchment Data Explorer, EA 2025)	INNS not identified as a RNAG.	INNS not identified as a RNAG.	INNS not identified as a RNAG.	INNS (riparian plants) identified as a RNAG, contributing to failure to achieve Good Ecological Potential.
Could the activity introduce INNS	Scoped out. The MHPGC PEIR Red Line Boundary: Onshore does not directly cross Pittington Beck; the nearest watercourse (tributary of Coldwell Burn) is approximately 270m from the MHPGC PEIR Red Line Boundary: Onshore. The known presence of Himalayan balsam and giant hogweed within the water body means construction plant, PPE and vehicles moving through or near the catchment could act as a vector. This risk is managed through the Outline CoCP (CoT18), of which the Outline Biosecurity Protocol (CoT48) forms part, and ECoW supervision secured through the Outline LEMP where required (CoT43). See Table 3.6	Scoped out. No INNS were recorded in the August 2018 EA macrophyte survey at NZ4104648154. However, the onshore export cable corridor crosses the Dalton Beck catchment, with a trenchless crossing of Dalton Beck itself and potential open-cut/culvert crossings at minor watercourses. Movement of plant and materials from adjacent catchments (Pittington Beck, Lumley Park Burn, Hawthorn Burn) where INNS are known to be present creates a credible pathway for introduction. The Outline Biosecurity Protocol (Commitment: CoT48; Table 3.6) will manage this risk through pre-construction INNS surveys, 'Check, Clean, Dry' procedures, species-specific management measures where INNS are identified during pre-construction surveys, and licensed off-site disposal of INNS-contaminated arisings, supported by ECoW supervision, where required, through the Outline LEMP (Commitment: CoT43; Table 3.6).	Scoped out. The only INNS recorded is the New Zealand mud snail, which is now considered naturalised within Great Britain. The MHPGC PEIR Red Line Boundary: Onshore crosses the Hawthorn Burn catchment, including a tributary of Hawthorn Burn within the eastern extent of the MHPGC PEIR Red Line Boundary: Onshore, and works are proposed at the landfall within the Hawthorn Burn NVZ. Movement of plant, PPE and vehicles from adjacent catchments where terrestrial/riparian INNS are known to be present (Pittington Beck, Lumley Park Burn) creates a credible pathway for introduction of new species. The Outline Biosecurity Protocol (Commitment: CoT48; Table 3.6) will manage this risk through pre-construction INNS surveys, 'Check, Clean, Dry' procedures for all plant, PPE and vehicles, and species-specific management measures where identified, supported by the Outline	Scoped out (with heightened attention). Three INNS are already recorded within this water body (New Zealand mud snail, Himalayan balsam, Japanese knotweed), and INNS (riparian plants) is identified as a RNAG in the Northumbria RBMP, contributing to failure to achieve Good Ecological Potential. The Outline Biosecurity Protocol (Commitment: CoT48; Table 3.6) will manage this risk through pre-construction INNS surveys at all working areas and crossing locations within this catchment, targeted management of Himalayan balsam and Japanese knotweed in accordance with the Wildlife and Countryside Act 1981 (as amended) and EA guidance, 'Check, Clean, Dry' procedures for all plant, PPE and vehicles, and licensed off-site disposal of INNS-contaminated arisings (including a strict Japanese

Potential risk	Pittington Beck from Coalford to Old Durham Beck	Dalton Beck to North Sea	Hawthorn Burn from Source to North Sea	Lumley Park Burn from Source to Herrington Burn
			LEMP (Commitment: CoT43; Table 3.6).	knotweed management plan given its legal status as controlled waste). ECoW supervision, where required, is secured through the Outline LEMP (Commitment: CoT43; Table 3.6).

4.2.2.19 On the basis that: (i) the INNS recorded in the EA baseline surveys (New Zealand mud snail, Himalayan balsam, giant hogweed, Japanese knotweed) are widespread and well understood species that can be effectively managed through routine biosecurity practice and species-specific control measures; (ii) INNS (riparian plants) is identified as a RNAG for only one of the four onshore water bodies (Lumley Park Burn from Source to Herrington Burn) (iii) pre-construction INNS surveys will update the baseline ahead of vegetation clearance at every work location; and (iv) the Outline Biosecurity Protocol (Commitment: CoT48; **Table 3.6**) and Outline LEMP (Commitment: CoT43; **Table 3.6**) will manage the introduction and spread of INNS within and between water bodies – the potential risk of INNS has been scoped out of the WFD Impact Assessment for the Pittington Beck from Coalford to Old Durham Beck, Dalton Beck to North Sea, Hawthorn Burn from Source to North Sea, and Lumley Park Burn from Source to Herrington Burn WFD water bodies. The fluvial geomorphology walkover survey undertaken on 21 July 2026 did not record any INNS additional to those identified in the EA baseline surveys, although the survey was not a targeted INNS survey and observations were constrained by land access and dense seasonal vegetation.

4.2.3 Groundwater Water Framework Directive Scoping

- 4.2.3.1 In accordance with UKTAG (2024) guidance, groundwater quality relates to intrusion, impact to surface water, impact to Groundwater Dependent Terrestrial Ecosystems (GWDTE), impacts to Drinking Water Protected Areas (DrWPA), and general chemical assessment Impacts to groundwater quantity are also required to be assessed to ensure that the water balance of a groundwater body is considered.
- 4.2.3.2 **Table 4.9** provides specific risk information relating to groundwater to determine which water bodies and potential risks should be taken forward to Stage 3.

Table 4.9 Specific risk information: groundwater

Potential risk	Details
WFD water bodies	Wear Magnesian Limestone
Assess further if activity could result in a substantial increase in conductivity levels in a groundwater body or the introduction of groundwater of substantially different chemical composition	Scoped out. Excessive abstraction and over-pumping of the Wear Magnesian Limestone water body may alter groundwater levels, potentially causing intrusion. However, no pumping of the Wear Magnesian Limestone water body is proposed by the MHPGC Project.
Assess further if activity could cause a groundwater body to fail to meet WFD requirements through the presence of pollutants at concentrations in excess of their respective Environmental Quality Standards.	Scoped out. Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions of the PEIR assesses the effect of construction on the groundwater quality of the Principal Aquifer as minor and not significant. Potential effects are managed through the Outline Code of Construction Practice (CoT18), Outline Surface Water and Groundwater Management Plan (CoT23), Outline Pollution Prevention Plan (CoT34), Outline Contaminated Land and Groundwater Discovery Strategy (CoT33), and Outline Bentonite Breakout Plan (CoT47) (Table 3.6). On this basis, no realistic pathway has been identified by which the MHPGC Project would cause the groundwater body to fail WFD requirements through the presence of pollutants at concentrations exceeding the relevant standards.
Assess further if activity could impact a Groundwater Dependent Terrestrial Ecosystem (GWDTE) through changes in groundwater quality or flow	Scoped out. Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR indicates that there are anticipated to be no significant effects on GWDTE through changes in groundwater quality or flow as a result of the MHPGC Project. The groundwater pathway to the water-dependent features of the Durham Coast SAC and SSSI and Hesledon Moor East SSSI is carried forward to Stage 3 and assessed under WFD protected areas (Table 4.17).
Assess further if activity could impact the quality of a groundwater body designated as a Drinking Water Protected Area	Scoped out. The Wear Magnesian Limestone water body is a Principal Aquifer and is present across the Onshore WFD Assessment Area which is a significant

Potential risk	Details
WFD water bodies	Wear Magnesian Limestone
(DrWPA) such that new or additional treatment of water treatment is required	source of water for public supply and agriculture. The Onshore WFD Assessment Area includes areas within groundwater SPZ 1, SPZ 2 and SPZ 3 (Figure 3.2). They are delineated on the basis of groundwater travel times and catchment boundaries and are classified into three zones of decreasing sensitivity: • SPZ1 (Inner Protection Zone) – the area within which groundwater reaches the abstraction point within 50 days travel time. This zone provides protection against the transmission of rapidly degrading pollutants and is the most restrictively managed. • SPZ2 (Outer Protection Zone) – the area within which groundwater reaches the abstraction point within 400 days travel time. This zone provides protection against slowly degrading pollutants and is subject to restrictions on potentially polluting activities. • SPZ3 (Total Catchment) – the total area of the groundwater catchment from which the abstraction source draws water. All groundwater within this zone will eventually reach the abstraction point, but over longer timescales. There is potential for impact on groundwater quality in the Wear Magnesian Limestone water body, from factors such as disturbance and potential mobilisation of existing land contamination, introduction of new contaminants from construction materials and physical disturbance of the aquifer. However, the water body is confined across much of the Onshore WFD Assessment Area by superficial geological deposits and works are unlikely to penetrate the underlying Wear and Magnesian Limestone water body. Where proven, the Devensian Till is recorded as between 4.8m and 26.8m thick, and cable trenches are typically 1.8m deep (maximum 3.5m bgl) (Volume 3, Chapter 1: Geology, Hydrogeology and Ground Conditions, of the PEIR). The Principal Aquifer is exposed without superficial cover in a small area (less than 5%) along the eastern boundary of the landfall. Groundwater vulnerability is classed as High across parts of the landfall and the eastern part of the Blue LSS Option Area. During the construction, O&M and decommissioning phases, accidental spills would only likely impact the shallow soils associated with the Made Ground and superficial deposits, therefore not impacting the Wear Magnesian Limestone WFD water body which is present at depth. The implementation of the Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34) and Outline CLGDS (CoT33) (Table 3.6) reduces the potential for impacts on groundwater quality arising from all MHPGC Project onshore earthworks and excavation activities within the MHPGC PEIR Red Line Boundary: Onshore. Volume 3, Chapter 1: Geology, Hydrogeology, and Ground Conditions, of the PEIR indicates that the quality of the Wear Magnesian Limestone water body would not be significantly impacted by the MHPGC Project.
Assess further if activity could impact on the water balance of a groundwater body in a non-sustainable manner	Scoped out. MHPGC Project activities may temporarily impact the groundwater levels, however, the water body is confined across much of the Onshore WFD Assessment Area by superficial geological deposits and works are unlikely to penetrate the underlying Wear and Magnesian Limestone aquifer. Impacts to groundwater levels are likely to be short-term, temporary, and localised. The groundwater levels are expected to return to normal once activities are complete. Mitigation measures will manage and reduce potential impacts on groundwater levels (commitment numbers: CoT18; Table 3.6), including implementation of a CoCP.

Potential risk	Details
WFD water bodies	Wear Magnesian Limestone
	Volume 3, Chapter 1: Geology, Hydrogeology, and Ground Conditions, of the PEIR indicates that the water balance of the Wear Magnesian Limestone water body would not be significantly impacted by the MHPGC Project.
Assess further if activity could result in a discharge to groundwater (direct or indirect input of pollutants) that could cause deterioration in the chemical status of the groundwater body or compromise the objectives of a Drinking Water Protected Area.	Scoped out. Under the Environmental Permitting (England and Wales) Regulations 2016 (Schedule 22), a groundwater activity includes any discharge that results in, or might lead to, the direct or indirect input of a pollutant to groundwater (Defra and Environment Agency, 2025). Several MHPGC Project activities have the potential to result in discharges to groundwater: • Construction dewatering: Where excavations for joint bays, cable trenches, or LSS foundations intercept the water table, pumped groundwater may require discharge. Any dewatering discharge returned to ground (rather than to surface water or sewer) would constitute a direct or indirect input to groundwater and may require an environmental permit or registration as an exempt groundwater activity; • Drilling fluid losses: The use of bentonite and/or polymer drilling fluids during HDD and trenchless crossings carries a risk of fluid loss to the subsurface. Where drilling fluids percolate through the superficial deposits to the Magnesian Limestone aquifer, this would constitute an indirect input to groundwater; • Concrete and grout leachate: The construction of TJBs, joint bay structures, and LSS foundations involves wet concrete and grout, which can generate highly alkaline leachate (pH >12). Where this leachate infiltrates through soil to groundwater, it would constitute an indirect input; • Surface runoff infiltration: Runoff from construction areas, haul roads, and stockpiles may infiltrate through disturbed or exposed ground to the underlying aquifer, particularly where the Devensian Till confining layer has been removed or thinned by excavation. However, the Wear Magnesian Limestone aquifer is confined across much of the Onshore WFD Assessment Area by low-permeability Devensian Till, which provides a degree of natural protection against surface-derived contamination (Price <i>et al.</i>, 2007). Cable trenches and joint bay excavations are typically shallow (maximum 3.5m depth) and are unlikely to penetrate through the full thickness of the superficial deposits to the underlying bedrock aquifer in most locations. The LSS foundations may extend deeper (piled foundations), but rotary bored piles would be cased and grouted, limiting the potential for creating preferential flow pathways. Potential discharges to ground would be managed through the Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34), Outline CLGDS (CoT33) and Outline Bentonite Breakout Plan (CoT47) (Table 3.6)." Also change reason (iii) to "drilling fluids will be managed through the Outline Bentonite Breakout Plan (CoT47) On the basis that: (i) the Magnesian Limestone aquifer is confined by superficial deposits across much of the MHPGC PEIR Red Line Boundary: Onshore; (ii) excavations are predominantly shallow and unlikely to penetrate to the bedrock aquifer; (iii) drilling fluid management will follow industry best practice; it is concluded that the MHPGC Project would not result in a discharge to groundwater that could cause deterioration in the chemical status of the Wear Magnesian Limestone groundwater body or compromise the objectives of the associated Drinking Water Protected Area. Discharge to groundwater is therefore scoped out of the Stage 3 WFD Impact Assessment. Notwithstanding this scoping conclusion, the requirement for environmental permits or exempt groundwater activity registrations for

Potential risk	Details
WFD water bodies	Wear Magnesian Limestone
	specific construction activities (particularly dewatering and drilling fluid management) will be confirmed during detailed design, in consultation with the Environment Agency.
Assess further if the activity could create new preferential migration pathways through confining strata, allowing contaminants to reach the groundwater body.	Scoped out. Cable trenches and joint bay excavations are shallow (maximum 3.5m depth) and are unlikely to penetrate the full thickness of the superficial deposits. Piled foundations at the LSS and trenchless crossings at depths of up to 30m (and up to 80m bgl at landfall) have greater potential to penetrate the Devensian Till confining layer. Rotary bored piles would be cased and grouted. Trenchless installations would be undertaken in accordance with the Outline Onshore CMS (CoT49) and Outline Landfall CMS (CoT59), with drilling fluid losses managed through the Outline Bentonite Breakout Plan (CoT47).
Assess further if below-ground infrastructure retained following decommissioning could act as a source of contamination or as a preferential pathway for contaminant mobilisation.	Scoped out. The MDS assumes onshore cables are left in place at decommissioning. Retained infrastructure would comprise cables, ducts, joint bays, link boxes and monitoring boxes, and LSS foundations where their removal is not practicable. The Onshore Decommissioning Plan (CoT16) will include provisions for the decommissioning of below-ground infrastructure where relevant and practicable, and for pollution prevention and the avoidance of ground disturbance.
Assess further if operational drainage infrastructure could introduce mobile contaminants to the groundwater body during the operational phase.	Scoped out. Operational drainage at the LSS includes SuDS features with a design area of 2,300m ² and volume of 3,500m ³ . Potential contaminant sources include fire water in the event of an incident, and spills or leaks from operational plant, including transformer oils. Part of the MHPGC PEIR Red Line Boundary: Onshore lies within SPZ1, within which groundwater reaches the abstraction point within 50 days. Managed through the Outline ODMF (CoT22), which will limit discharge rates and attenuate flows, and the Outline PPP (CoT34).

4.2.3.3 Therefore, the potential risk to the Wear Magnesian Limestone groundwater body has been scoped out of the WFD Impact Assessment. The groundwater pathway to groundwater-dependent protected areas is assessed at Stage 3 under WFD protected areas (**Table 4.17**).

4.2.4 Scoping summary

4.2.4.1 Where no risk to potential receptors is identified at scoping stage, impact assessment does not need to be completed.

Onshore Water Framework Directive Scoping summary

4.2.4.2 The onshore potential risks to receptors that the scoping exercise concludes need to be taken forward for WFD Impact Assessment are presented in **Table 4.10**.

Table 4.10 Potential risks scoped into Stage 3 Impact Assessment

Receptor	WFD water body	Reason for scoping into the WFD Impact Assessment
Onshore – surface water		
Hydromorphology: river continuity and morphological conditions	Dalton Beck, Hawthorn Burn	Open-cut crossings may temporarily disturb river continuity and morphological conditions at crossing locations during construction, with reinstatement on completion.

Receptor	WFD water body	Reason for scoping into the WFD Impact Assessment
Biology: benthic macroinvertebrates	Dalton Beck, Hawthorn Burn	Direct physical disturbance of channel bed at crossing locations and indirect sediment impacts. Hawthorn Burn invertebrates at Poor (sensitive).
Biology: fish fauna	Dalton Beck, Hawthorn Burn	Potential temporary disturbance to fish during open-cut crossing works; no permanent barrier anticipated. Fish surveys to be completed and reported in the ES.
Biology: macrophytes and phytobenthos	Dalton Beck, Hawthorn Burn	Mandatory river quality element. Direct loss from in-channel works; indirect impacts from turbidity and nutrient mobilisation.
Water quality: physico-chemical	Dalton Beck, Hawthorn Burn	Risk of deterioration in DO, nutrients, and specific pollutants from construction activities at/adjacent to watercourses. Hawthorn Burn phosphate at Poor, within NVZ.
Protected Areas	N/A (Onshore)	The Durham Coast SAC, Hawthorn Burn NVZ, Lumley Park Burn from Herrington Burn to R Wear NVZ, Durham NVZ, Durham Coast SSSI, Hesledon Moor East SSSI, and Lumley Drinking Water Source Protection Zone within the Onshore WFD Assessment Area.

4.3 Stage 3 - Water Framework Directive Impact Assessment

4.3.1 RBMP objectives and the no-deterioration requirement

- 4.3.1.1 The Water Environment (England and Wales) Regulations 2017 (Regulation 33) require that decision-makers have regard to the relevant River Basin Management Plan. The Stage 3 Impact Assessment has therefore been undertaken with regard to the RBMP objectives for each water body, the quality elements that are failing or at risk, the pressures already affecting the water body (Reasons for Not Achieving Good, RNAG), and the sensitivity of each quality element to change, as characterised in **Section 3.2** and summarised in **Table 4.11**. Each conclusion in **Table 4.12** to **Table 4.17** is framed against these four points, and the conclusions are carried forward to the compliance tests in **Section 5.5**.
- 4.3.1.2 The no-deterioration requirement, as interpreted by the Court of Justice in Case C-461/13 (*Bund für Umwelt und Naturschutz Deutschland*), provides that deterioration occurs when the status of at least one quality element falls by one class. Where a quality element is already at the lowest class (Bad), any further reduction in its condition constitutes deterioration. The MHPGC Project must demonstrate that it will not cause deterioration of any quality element in any water body and will not prevent the achievement of the RBMP objectives set out below.

Table 4.11 RBMP objectives for water bodies assessed at Stage 3

Water Body	Current Ecological Status	RBMP Ecological Objective	Target Year	Key Failing Elements	Headroom
Dalton Beck	Moderate	Good by 2027 (low confidence)	Phosphate (Moderate); Ammonia (Moderate); Macrophytes and phytobenthos (Moderate)	[insert from Section 3.2]	Moderate: one class above Poor. Nutrient-sensitive; any added nutrient or sediment load works against the Good 2027 objective
Hawthorn Burn	Poor	Poor by 2021 (alternative objective)	Invertebrates (Poor); Phosphate (Poor)	[insert from Section 3.2]; NVZ	Poor: one class above Bad. Invertebrate community already under stress; high sensitivity to

Water Body	Current Ecological Status	RBMP Ecological Objective	Target Year	Key Failing Elements	Headroom
					sediment and nutrients
Lumley Park Burn (HMWB)	Moderate potential	Good Ecological Potential by 2027 (low confidence)	Macrophytes and phytobenthos (Poor); Hydrological regime (Does Not Support Good)	Flood protection; INNS (riparian plants); misconnections; sewage discharge; urbanisation	Assessed at Stage 3 for protected areas only (NVZ, Lumley Safeguard Zone)
Pittington Beck	Bad	Moderate by 2015 (alternative objective)	Fish (Bad); Phosphate (Poor)	Unknown (under EA investigation)	No headroom for fish. Indirect pathway only (Coldwell Burn tributary, about 270 m away)

Note: Pittington Beck and Lumley Park Burn are not carried forward to Stage 3 for any receptor other than protected areas, but Pittington Beck's Bad ecological status (Fish = Bad, zero headroom) is noted as a sensitivity. Chemical status objectives for all water bodies are Good by 2063 (driven by ubiquitous priority hazardous substances).

4.3.2 Onshore Water Framework Directive Impact Assessment

- 4.3.2.1 The following tables present the Stage 3 WFD Impact Assessment for the onshore quality elements scoped into Stage 3 at **Section 4.2**. The assessment considers the potential for the MHPGC Project to cause deterioration of quality element status or to prevent the achievement of RBMP objectives, taking into account the embedded mitigation set out in **Table 3.6**. The RBMP objectives for each water body are summarised in **Table 4.11 (Section 4.3)**.
- 4.3.2.2 The Stage 3 WFD Impact Assessment has been undertaken against the MDS presented in **Table 3.4**. Where detailed design information is not yet fixed, the assessment assumes the parameter or construction method with the greatest potential for effect and assesses that scenario. The assessment therefore considers the worst-case extent, duration and nature of construction, operation, maintenance and decommissioning activities within the Onshore WFD Assessment Area. The fluvial geomorphology walkover survey completed on 21 July 2026 has informed the baseline characterisation presented in **Section 3.2**.

Hydromorphology

Table 4.12 Onshore Stage 3 Impact Assessment – Hydromorphology

Element	Dalton Beck (Moderate; Natural)	Hawthorn Burn (Poor; Natural)
Current classification	Not High (Hydrological Regime: Supports Good)	Not High (Hydrological Regime: Supports Good)
River continuity	Open-cut works require temporary disturbance of the channel bed and banks during construction, but do not install any permanent in-channel structure. Following reinstatement of the channel bed and banks to pre-construction condition, no permanent barrier to the passage of aquatic organisms or to sediment continuity is anticipated.	As for Dalton Beck. A tributary of Hawthorn Burn is located within the eastern extent of the MHPGC PEIR Red Line Boundary: Onshore and may require a direct crossing.
Morphological conditions	Open-cut works would temporarily disturb channel morphology at the crossing location (bed substrate, bank profiles, riparian zone). Disturbance would be temporary, with reinstatement to pre-construction condition post-construction and no permanent in-channel structure remaining. The hydromorphological supporting elements are already Not High, indicating some existing modification. Temporary disturbance at a minor watercourse is not anticipated to change the overall classification, provided the channel is reinstated and natural channel processes upstream and downstream are maintained.	As for Dalton Beck.
Key mitigation	Outline CoCP (CoT18); Outline Onshore CMS (CoT49); reinstatement of temporary working areas (CoT29) (Table 3.6).	As for Dalton Beck.
Conclusion	No deterioration anticipated. The assessment has been undertaken against the MDS presented in Table 3.4, assuming open-cut crossing as the worst case for direct in-channel disturbance. Temporary disturbance of channel morphology, bed substrate and banks would be localised to the crossing location and would not result in deterioration of the hydromorphological quality elements or prevent achievement of the RBMP objectives for the water body. Channel reinstatement following completion of works is secured through CoT29 and the Outline CoCP (CoT18) (Table 3.6).	No deterioration anticipated. The assessment has been undertaken against the MDS presented in Table 3.4, assuming open-cut crossing as the worst case for direct in-channel disturbance. Temporary disturbance of channel morphology, bed substrate and banks would be localised to the crossing location and would not result in deterioration of the hydromorphological quality elements or prevent achievement of the RBMP objectives for the water body. Channel reinstatement following completion of works is secured through CoT29 and the Outline CoCP (CoT18) (Table 3.6).

Biological Quality Elements

Table 4.13 Onshore Stage 3 Impact Assessment – Benthic Macroinvertebrates

	Dalton Beck	Hawthorn Burn
Current classification	Good (objective: Good by 2021)	Poor (objective: Poor by 2021, alt.)
Direct disturbance	In-channel works (culvert installation or open-cut) would result in localised loss of macroinvertebrate habitat within the construction footprint. Open-cut works cause temporary disturbance only, with recolonisation expected within 1 to 3 years following	Invertebrates are at Poor status – any further reduction in condition, even within the Poor class, constitutes deterioration under the no-deterioration principle (Case C-461/13). In-channel works (culvert installation or open-cut) would result in localised loss of

Dalton Beck		Hawthorn Burn
	reinstatement. No permanent in-channel structure is installed.	macroinvertebrate habitat within the construction footprint and increased sedimentation impacting downstream habitat. Open-cut works cause temporary disturbance only, with recolonisation expected within 1 to 3 years following reinstatement. No permanent in-channel structure is installed.
Indirect effects	Increased suspended sediment from construction could temporarily smother benthic habitat downstream. Increased sedimentation and pollution from construction activities and run off could impact water quality within the water body. Managed by SWGMP and PPP (CoT23, CoT34).	Increased suspended sediment from construction could temporarily smother benthic habitat downstream. Increased sedimentation and pollution from construction activities and run off could impact water quality within the water body. Managed by SWGMP and PPP (CoT23, CoT34).
Key mitigation	SWGMP; PPP (CoT23, CoT34). Open-cut crossings with full channel reinstatement on completion (CoT29).	SWGMP; PPP (CoT23, CoT34; Table 3.6). Open-cut crossings with full channel reinstatement on completion (CoT29).
Conclusion	No deterioration anticipated. Dalton Beck is at Moderate ecological status against an RBMP objective of Good by 2027. Macroinvertebrates are at Good and are not a failing element; the failing elements are phosphate, ammonia and macrophytes/phytobenthos. Under the MDS, open-cut crossing would cause localised, temporary loss of benthic habitat, with recolonisation expected following reinstatement (CoT29). Sediment and pollution pathways are controlled through CoT18, CoT23 and CoT34 (Table 3.6), so the MHPGC Project would not add to the existing nutrient pressures. No decline from Good to Moderate is anticipated at water body scale, and achievement of the Good 2027 objective would not be prevented.	No deterioration anticipated. The assessment has been undertaken against the MDS presented in Table 3.4 , assuming open-cut watercourse crossing as the worst case for direct disturbance of benthic macroinvertebrate habitat. Temporary disturbance of bed substrate and increased suspended sediment concentrations would be localised to the crossing location and limited to the construction period. Embedded mitigation secured through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34), together with reinstatement of temporary working areas (CoT29) (Table 3.6), would limit sediment mobilisation and facilitate recovery of habitat following completion of works. Given the small spatial extent of disturbance relative to the length of the Hawthorn Burn water body, no deterioration of the macroinvertebrate quality element and no conflict with the RBMP objectives is anticipated.

Table 4.14 Onshore Stage 3 Impact Assessment – Fish

	Dalton Beck	Hawthorn Burn	Lumley Park Burn (scoped out – for context)	Pittington Beck (scoped out – for context)
Current classification	Not separately classified (biological QEs at Good overall)	Not separately classified (biological QEs at Poor, driven by invertebrates)	Not separately classified (biological QEs at Moderate, driven by macrophytes)	Bad – driving overall Bad ecological status. Zero headroom.
Barrier to fish movement	Open-cut crossing works would cause temporary in-channel disturbance	Open-cut crossing works would cause temporary in-channel disturbance	No in-channel works proposed	No in-channel works proposed within this water body. Indirect

	Dalton Beck	Hawthorn Burn	Lumley Park Burn (scoped out – for context)	Pittington Beck (scoped out – for context)
	during construction but install no permanent structure. Following reinstatement, no physical or hydraulic barrier to fish passage is anticipated. Managed by channel reinstatement and timing of in-channel works.	during construction but install no permanent structure. Following reinstatement, no physical or hydraulic barrier to fish passage is anticipated. Managed by channel reinstatement and timing of in-channel works.	within this water body.	pathway via Coldwell Burn tributary (~270m from MHPGC PEIR Red Line Boundary: Onshore) managed by embedded mitigation (CoT47, CoT18; Table 3.6).
Spawning / nursery habitat	Scoped in. No project-specific fish surveys have been undertaken for this water body, and fish were not assessed in the most recent WFD classification cycle (2019–2022). The assessment therefore proceeds on the precautionary basis that spawning habitat (including clean gravels), nursery habitat and migratory pathways may be present at the crossing locations. Open-cut crossing works have the potential to temporarily disturb spawning and nursery habitat through direct disturbance of bed substrate and increased suspended sediment concentrations. The assessment has been undertaken on the basis that such habitat is present and could be affected during the construction period.	No project-specific fish surveys conducted although EA data records brown trout and European eel within the catchment. Presence/absence of spawning habitat (clean gravels) and nursery habitat at crossing locations cannot be confirmed until further assessment undertaken.	N/A – scoped out.	N/A – scoped out.
Water quality effects on fish	Increased suspended sediment could cause short-term behavioural disturbance (gill abrasion, reduced visibility, avoidance). Localised and temporary, ceasing upon completion of works.	Increased suspended sediment could cause short-term behavioural disturbance (gill abrasion, reduced visibility, avoidance). Localised and temporary, ceasing upon completion of works.	N/A – scoped out.	N/A – scoped out.
Key mitigation	Channel reinstatement following open-cut works (CoT29). SWGMP; PPP (CoT23, CoT34).	Channel reinstatement following open-cut works (CoT29). SWGMP; PPP (CoT23, CoT34).	Embedded mitigation (CoT23, CoT34;) manage indirect runoff pathway.	Embedded mitigation (CoT23, CoT34) manage indirect runoff pathway.

	Dalton Beck	Hawthorn Burn	Lumley Park Burn (scoped out – for context)	Pittington Beck (scoped out – for context)
Conclusion	No deterioration anticipated. The assessment has been undertaken against the MDS presented in Table 3.4, assuming open-cut watercourse crossing as the worst case for direct disturbance of fish habitat. Temporary disturbance of bed substrate, spawning habitat, nursery habitat and fish movement may occur at the crossing location during construction, including during sensitive life-cycle periods. However, the disturbance would be localised, temporary and confined to the crossing footprint. Embedded mitigation secured through the Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34) and reinstatement of temporary working areas (CoT29) (Table 3.6) would limit sediment mobilisation and facilitate recovery of habitat following completion of works. No permanent barrier to fish passage would be created and no deterioration of the fish quality element, or conflict with the RBMP objectives for the water body, is anticipated.	No deterioration anticipated, subject to same mitigation measures.	Scoped out. No direct impact pathway. Indirect pathways managed.	Scoped out. No direct impact pathway has been identified. No in-channel works are proposed within the Pittington Beck from Coalford to Old Durham Beck water body and the nearest connected tributary lies approximately 270m from the MHPGC PEIR Red Line Boundary: Onshore. The assessment has therefore been undertaken on the basis of the MDS presented in Table 3.4 and concludes that any potential effects would be limited to indirect surface runoff pathways. These pathways are managed through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6). The Bad fish classification and lack of headroom are noted as sensitivities; however, in the absence of a direct impact pathway, no deterioration of the fish quality element and no conflict with the RBMP objectives for the water body is anticipated.

Table 4.15 Onshore Stage 3 Impact Assessment – Macrophytes and Phytobenthos

	Dalton Beck	Hawthorn Burn
Current classification	Good (objective: Good by 2015)	Good (objective: Good by 2015)
Direct loss	Open-cut works would temporarily remove aquatic vegetation at the crossing footprint, with recolonisation expected following reinstatement of natural substrate and flow. No permanent in-channel structure is installed.	Open-cut works would temporarily remove aquatic vegetation at the crossing footprint, with recolonisation expected following reinstatement of natural substrate and flow. No permanent in-channel structure is installed.

	Dalton Beck	Hawthorn Burn
Indirect effects	Increased suspended sediment could reduce light penetration, suppressing macrophyte growth and phytobenthos productivity downstream. Nutrient mobilisation from disturbed soils could alter trophic conditions.	Increased suspended sediment could reduce light penetration, suppressing macrophyte growth and phytobenthos productivity downstream. Nutrient mobilisation from disturbed soils could alter trophic conditions.
Key mitigation	SWGMP; PPP (CoT23, CoT34; Table 3.6). Reinstatement of natural bed conditions at temporary crossing locations (CoT29).	SWGMP; PPP (CoT23, CoT34; Table 3.6). Reinstatement of natural bed conditions at temporary crossing locations (CoT29).
Conclusion	No deterioration anticipated. Macrophytes and phytobenthos are at Moderate and are a failing element against the RBMP objective of Good by 2027. The main risk is indirect, through turbidity and nutrient mobilisation. With CoT23 and CoT34 in place and bed reinstatement under CoT29, loss would be localised and temporary. No decline to Poor is anticipated, and the MHPGC Project would not add to the nutrient pressures that are preventing Good status.	No deterioration anticipated. Macrophytes and phytobenthos are at High and are not driving the Poor ecological status (invertebrates and phosphate are). Given the NVZ designation and Poor phosphate class, nutrient mobilisation is the relevant pathway; it is controlled through CoT18, CoT23 and CoT34. No decline from High is anticipated, and the Poor 2021 objective would not be prevented.

Water Quality (Physico-chemical Quality Elements)

Table 4.16 Onshore Stage 3 Impact Assessment – Water Quality (Physico-chemical Quality Elements)"

	Dalton Beck (Physico-chem: Moderate)	Hawthorn Burn (Physico-chem: Below Good)
Dissolved oxygen (both at Good)	Construction at crossings could temporarily increase suspended sediment, elevating biochemical oxygen demand and reducing DO. DO expected to recover rapidly post-works. Managed by SWGMP, (CoT23; Table 3.6).	As for Dalton Beck. Hawthorn Burn is at Poor ecological status – even temporary DO reduction could compound existing pressures on invertebrate communities.
Nutrients – Phosphate	Phosphate at Moderate (RBMP objective: Good by 2027). The assessment has been undertaken against the MDS presented in Table 3.5 , assuming the greatest extent of earthworks, soil disturbance and watercourse crossing activities within the Dalton Beck catchment. Construction earthworks and disturbance of agricultural soils have the potential to mobilise phosphate to surface waters through runoff and sediment transport. Embedded mitigation secured through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6) would control runoff, sediment mobilisation and pollution pathways. On that basis, no deterioration of the phosphate quality element and no prevention of the RBMP objective for the water body is anticipated.	Phosphate is currently classified as Poor, and the Hawthorn Burn catchment lies within an NVZ, indicating existing nutrient sensitivity. The assessment has therefore assumed no available headroom for further deterioration. Under the MDS presented in Table 3.5 , earthworks, soil disturbance and watercourse crossing activities could mobilise phosphate from agricultural soils through surface runoff and sediment transport. These pathways would be controlled through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34), as summarised in Table 3.6 . On this basis, the MHPGC Project would not cause further deterioration within the Poor class or prevent achievement of the RBMP objective for the water body.
Specific pollutants	Risk of accidental release (fuels, oils, chemicals) managed by PPP and spill response (CoT34). Where construction crosses potentially contaminated land (former colliery, made ground), disturbance could mobilise existing contaminants. CLGDS (CoT33) manages unexpected contamination.	Risk of accidental release (fuels, oils, chemicals) managed by PPP and spill response (CoT34). Where construction crosses potentially contaminated land (former colliery, made ground), disturbance could mobilise existing contaminants. CLGDS (CoT33) manages unexpected contamination.
Duration >14 days?	The assessment has been undertaken against the MDS presented in Table 3.5 including a 42-month onshore cable construction programme and the	As for Dalton Beck. Landfall area and cable corridor within the catchment could result in

Dalton Beck (Physico-chem: Moderate)		Hawthorn Burn (Physico-chem: Below Good)
	maximum extent of watercourse crossing and earthworks activities. Temporary increases in suspended sediment concentrations and associated effects on physico-chemical water quality elements may occur during construction activities at crossing locations. Embedded mitigation secured through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6) would control sediment mobilisation and runoff pathways. Although construction activities may occur intermittently across the duration of the onshore cable programme, the disturbance at any individual crossing location would be localised and temporary. No deterioration of the physico-chemical quality elements or conflict with the RBMP objectives for the water body is anticipated.	prolonged periods of elevated surface runoff and sediment mobilisation.
Key mitigation	SWGMP; PPP; CoCP; CLGDS; (CoT23, CoT34, CoT18, CoT33).	SWGMP; PPP; CoCP; CLGDS; (CoT23, CoT34, CoT18, CoT33).
Conclusion	No deterioration anticipated for dissolved oxygen, phosphate or specific pollutants under the MDS. Temporary increases in suspended sediment concentrations and associated changes in physico-chemical conditions may occur during construction, particularly at open-cut watercourse crossings; however, these effects would be localised, short term and controlled through the Outline CoCP (CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34) and Outline CLGDS (CoT33). On this basis, the MHPGC Project would not cause deterioration in the status of the water body and would not prevent achievement of its WFD objectives.	No deterioration anticipated. The assessment has been undertaken against the MDS presented in Table 3.5, assuming the greatest extent of construction activities, soil disturbance and watercourse crossing works within the Hawthorn Burn catchment. Phosphate is currently classified as Poor, and the assessment therefore assumes no headroom for further deterioration. Construction activities have the potential to mobilise nutrients and sediment through surface runoff; however, embedded mitigation secured through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6) would manage runoff pathways, sediment mobilisation and pollution risks. On this basis, no deterioration of the phosphate quality element and no conflict with the RBMP objectives for the water body is anticipated.

Note: Scoped into Stage 3 for Dalton Beck and Hawthorn Burn only. Scoped out for Pittington Beck (no direct works) and Lumley Park Burn (no direct crossings; physico-chemical elements at Good; managed by embedded mitigation).

Water Framework Directive protected areas

Table 4.17 Onshore Stage 3 Impact Assessment – WFD Protected Areas

Assessment field	Durham Coast SAC (Onshore)	Durham Coast SSSI	Hesledon Moor East SSSI	Hawthorn Burn from Source to North Sea NVZ	Lumley Park Burn from Herrington Burn to R Wear NVZ	Durham NVZ	Lumley Safeguard Zone
Distance from MHPGC PEIR Red Line Boundary: Onshore	Within the MHPGC PEIR Red Line Boundary: Onshore – qualifying feature habitats (grassland, fen, flushes, scrubland mosaic forming part of Annex I habitat H1230 vegetated sea cliffs of Atlantic and Baltic coasts) (see Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR for further information).	Within the MHPGC PEIR Red Line Boundary: Onshore – coincident with the Durham Coast SAC. Notified for Magnesian Limestone sea cliffs and associated flora, and for nationally important populations of sanderling, wintering purple sandpiper and breeding little tern.	Within the MHPGC PEIR Red Line Boundary: Onshore. Includes basin fen – current issue on loss of hydrological regime from climate change also as a pressure.	Within the MHPGC PEIR Red Line Boundary: Onshore – the entire length of the Hawthorn Burn from source to the North Sea is designated as an NVZ.	Small area of this NVZ is within the MHPGC Project PEIR Red Line Boundary.	Small area of this NVZ is within the MHPGC Project PEIR Red Line Boundary.	Small area of this drinking water Safeguard Zone is within the MHPGC Project Water Framework Directive (WFD) Assessment Area - 1km Buffer.
Impact pathway	These fen and flush habitats are supported by the WFD groundwater body (Wear Magnesian Limestone), and are considered rare and highly sensitive to potential impacts. Potential impacts could arise to the groundwater from trenchless	These fen and flush habitats are supported by the WFD groundwater body (Wear Magnesian Limestone) and are considered rare and highly sensitive to potential impacts. Potential impacts to groundwater-dependent habitats could arise from the trenchless	Trenching and the associated use and movement of machinery and vehicles during construction, O&M, and decommissioning has the potential to compact and damage hydrological connectivity. Trenchless installation under	Construction earthworks within the NVZ could mobilise nutrients – particularly phosphate – from agricultural soils into the Hawthorn Burn catchment via surface water runoff and soil disturbance. The MHPGC Project will not introduce additional point-	Construction earthworks within the NVZ could mobilise nutrients – particularly phosphate – from agricultural soils in the catchment via surface water runoff and soil disturbance. The MHPGC Project will not introduce additional point-source nitrate	Construction earthworks could mobilise nitrate from disturbed agricultural soils, with a potential leaching pathway to the Wear Magnesian Limestone. The aquifer is confined beneath Devensian Till across much of the Onshore WFD	Construction earthworks could mobilise sulphate rich sediments/water in the catchment via soil disturbance, associated with topsoil stripping, stockpiling, and trench excavation as well as trenchless techniques.

Assessment field	Durham Coast SAC (Onshore)	Durham Coast SSSI	Hesledon Moor East SSSI	Hawthorn Burn from Source to North Sea NVZ	Lumley Park Burn from Herrington Burn to R Wear NVZ	Durham NVZ	Lumley Safeguard Zone
	installation proposed under the SAC.	installation proposed beneath the Durham Coast SAC. Trenchless installation beneath the SAC is secured through the Onshore Crossing Schedule (CoT51; Table 3.6), while the management of drilling fluids, groundwater protection measures and pollution prevention measures are secured through the Outline Bentonite Breakout Plan (CoT47), Outline Surface Water and Groundwater Management Plan (CoT23) and Outline CoCP (CoT18) (Table 3.6).	the SSSI avoids potential for significant impacts.	source nitrate loads into the catchment. However, diffuse nutrient mobilisation from soil disturbance during construction is a credible impact pathway. The onshore cable corridor crosses agricultural land within the NVZ, and topsoil stripping, stockpiling, and trench excavation could expose nutrient-rich soils to rainfall and surface runoff.	loads into the catchment. However, diffuse nutrient mobilisation from soil disturbance during construction is a credible impact pathway. The onshore cable corridor crosses agricultural land within the NVZ, and topsoil stripping, stockpiling, and trench excavation could expose nutrient-rich soils to rainfall and surface runoff.	Assessment Area and excavations are shallow (Table 4.9). Runoff and pollution pathways would be managed through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6). No conflict with the objectives of the NVZ designation is anticipated.	
Assessment	Trenchless installation methods will be used at landfall. Potential impacts from the trenchless installation on the groundwater environment would be managed through	Trenchless installation methods will be used at landfall. Potential impacts to the groundwater body from trenchless installation beneath the Durham Coast	The precise crossing locations and proximity of construction earthworks to this SSSI have not been confirmed at PEIR stage. CoT51 confirms a trenchless crossing would be used to go	Phosphate in Hawthorn Burn is currently at Poor status (Table 4.16), and any further reduction within the Poor class would constitute within-class deterioration. The	The assessment has been undertaken against the MDS presented in Table 3.5 . Runoff and nutrient mobilisation pathways would be managed through the	The assessment has been undertaken against the MDS presented in Table 3.5 . Runoff and nutrient mobilisation pathways would be managed through the	The assessment has been undertaken against the MDS presented in Table 3.5 . Runoff and potential contaminant mobilisation pathways would be managed through the Outline CoCP

Assessment field	Durham Coast SAC (Onshore)	Durham Coast SSSI	Hesledon Moor East SSSI	Hawthorn Burn from Source to North Sea NVZ	Lumley Park Burn from Herrington Burn to R Wear NVZ	Durham NVZ	Lumley Safeguard Zone
	the Outline Surface Water and Groundwater Management Plan (CoT23), Outline CoCP (CoT18), Outline PPP (CoT34), Outline Bentonite Breakout Plan (CoT47) and the Outline Landfall Construction Method Statement (CoT59). These commitments secure controls on pollution prevention, construction drainage, management of groundwater and surface water, and trenchless installation activities. On this basis, impacts on groundwater quality and groundwater flow pathways are not anticipated to cause deterioration of the Wear Magnesian Limestone groundwater body or prevent achievement of its WFD objectives. The	SAC are managed through the commitments secured within the MHPGC Project, including the Outline Surface Water and Groundwater Management Plan (CoT23), Outline Code of Construction Practice (CoT18), Outline Pollution Prevention Plan (CoT34) and Outline Bentonite Breakout Plan (CoT47) (Table 3.6). These commitments provide measures for the management of drilling fluids, pollution prevention, surface water runoff and groundwater protection during construction. Trenchless installation beneath the SAC is secured through the Onshore	under the SSSI. The ES-stage assessment will provide a more detailed evaluation of risk once crossing locations and construction methodology are finalised.	assessment has been undertaken against the MDS presented in Table 3.5 , assuming the greatest extent of earthworks and soil disturbance within the NVZ. Runoff and nutrient mobilisation pathways would be managed through the Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6). On this basis, no additional nutrient loading that would worsen phosphate condition within the NVZ is anticipated.	Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6). On this basis, no additional nutrient loading that would conflict with the objectives of the NVZ designation is anticipated.	Outline CoCP (CoT18), Outline SWGMP (CoT23) and Outline PPP (CoT34) (Table 3.6). On this basis, no additional nutrient loading that would conflict with the objectives of the NVZ designation is anticipated.	(CoT18), Outline SWGMP (CoT23), Outline PPP (CoT34) and Outline CLGDS (CoT33) (Table 3.6). On this basis, no additional sulphate loading and no conflict with the objectives of the Safeguard Zone is anticipated.

Assessment field	Durham Coast SAC (Onshore)	Durham Coast SSSI	Hesledon Moor East SSSI	Hawthorn Burn from Source to North Sea NVZ	Lumley Park Burn from Herrington Burn to R Wear NVZ	Durham NVZ	Lumley Safeguard Zone
	Outline Bentonite Breakout Plan (CoT47) would address actions in the event of frac out, from a groundwater perspective the use of use of the non-toxic bentonite in the drilling fluid would minimise the risk of the selected technique causing any contamination. No O&M activities would affect the groundwater. The cables would be left in place during decommissioning therefore no impact would occur. Habitat Regulations Assessment for the SAC is provided in the draft Report to Inform Appropriate Assessment.	Crossing Schedule (CoT51). The assessment has been undertaken against the MDS presented in Table 3.5, assuming trenchless installation beneath the SAC as the worst case. On this basis, and with the secured mitigation listed above, no significant effect on the groundwater body or the groundwater-dependent fen and flush habitats is anticipated. The Outline Bentonite Breakout Plan (CoT47) would address actions in the event of frac out, from a groundwater perspective the use of use of the non-toxic bentonite in the drilling fluid would minimise the risk of the selected technique causing any contamination.					

Assessment field	Durham Coast SAC (Onshore)	Durham Coast SSSI	Hesledon Moor East SSSI	Hawthorn Burn from Source to North Sea NVZ	Lumley Park Burn from Herrington Burn to R Wear NVZ	Durham NVZ	Lumley Safeguard Zone
		No O&M activities would affect the groundwater. The cables would be left in place during decommissioning therefore no impact would occur. in Volume 3, Chapter 3: Terrestrial Ecology and Terrestrial and Intertidal Ornithology, of the PEIR.					
Key mitigation (Table 3.5)	Outline CoCP (CoT18); Outline LCMS (CoT59), Outline Bentonite Breakout Plan (CoT47)	Outline CoCP (CoT18); Outline CMS (CoT49)).	Outline SWGMP; Outline PPP; Outline CoCP (Commitments: CoT23, CoT34, CoT18). CoT51 Onshore Crossing Schedule.	Outline SWGMP; Outline PPP; Outline CoCP (Commitments: CoT23, CoT34, CoT18).	Outline SWGMP; Outline PPP; Outline CoCP (Commitments: CoT23, CoT34, CoT18).	Outline SWGMP; Outline PPP; Outline CoCP (Commitments: CoT23, CoT34, CoT18).	Outline SWGMP; Outline PPP; Outline CoCP (Commitments: CoT23, CoT34, CoT18).
Conclusion	No significant impact anticipated. The assessment has been undertaken against the MDS presented in Table 3.5 , including trenchless installation beneath the SAC. Trenchless installation is secured through CoT51 and managed through CoT18,	No significant impact anticipated. The assessment has been undertaken against the MDS presented Table 3.5 including trenchless installation beneath the SSSI. Trenchless installation is secured through CoT51 and managed through CoT18, CoT23, CoT34 and	No significant impact anticipated. The assessment has been undertaken against the MDS presented in Table 3.5 , with trenchless installation beneath the SSSI secured through CoT51. No significant effects on hydrological connectivity or water-dependent	No significant impact anticipated. The assessment has been undertaken against the MDS presented in Table 3.5 , assuming the greatest extent of soil disturbance and watercourse works within the catchment. Embedded	No significant impact anticipated. The assessment has been undertaken against the MDS presented in Table 3.5 . Embedded mitigation secured through CoT18, CoT23 and CoT34 (Table 3.6) would manage nutrient mobilisation and	No significant impact anticipated. The assessment has been undertaken against the MDS presented in Table 3.5 . Embedded mitigation secured through CoT18, CoT23 and CoT34 (Table 3.6) would manage nutrient mobilisation and	No significant impact anticipated. The assessment has been undertaken against the MDS presented in Table 3.5 . Embedded mitigation secured through CoT18, CoT23, CoT33 and CoT34 (Table 3.6) would manage runoff pathways

Assessment field	Durham Coast SAC (Onshore)	Durham Coast SSSI	Hesledon Moor East SSSI	Hawthorn Burn from Source to North Sea NVZ	Lumley Park Burn from Herrington Burn to R Wear NVZ	Durham NVZ	Lumley Safeguard Zone
	CoT23, CoT34 and CoT47 (Table 3.6). No deterioration of the groundwater body and no adverse effect on the groundwater-dependent fen and flush habitats that support the SAC qualifying features is anticipated.	CoT47 (Table 3.6). No significant effects on groundwater-dependent habitats or hydrological connectivity are anticipated.	features are anticipated.	mitigation secured through CoT18, CoT23 and CoT34 (Table 3.6) would manage nutrient mobilisation and runoff pathways. No deterioration of water quality or conflict with the objectives of the NVZ designation is anticipated.	runoff pathways. No conflict with the objectives of the NVZ designation is anticipated.	runoff pathways. No conflict with the objectives of the NVZ designation is anticipated.	and potential contaminant mobilisation. No deterioration of water quality within the Safeguard Zone and no conflict with its objectives is anticipated.

Table 4.18 Mitigation Measures Assessment

Water Body	HM Designation	Mitigation Measures Assessment Applicable?	Assessment	Conclusion
Dalton Beck	Natural	Not applicable (not HM)	No additional mitigation beyond Table 3.6 required at this stage.	RBMP mitigation measures not jeopardised .
Hawthorn Burn	Natural	Not applicable (not HM)	No additional mitigation beyond Table 3.6 required at this stage.	RBMP mitigation measures not jeopardised .
Pittington Beck	Natural	Not applicable (not HM)	No in-channel works proposed. Indirect pathways managed.	RBMP mitigation measures not jeopardised .
Lumley Park Burn	Heavily Modified (flood protection)	Yes – assessment of whether MHPGC Project could prevent delivery of RBMP mitigation measures.	MHPGC Project activities are not related to flood protection and would not interfere with delivery of RBMP mitigation measures. No in-channel works proposed within this water body.	RBMP mitigation measures not jeopardised .
Wear Magnesian Limestone (GW)	Not heavily modified	Not applicable (not HM)	Scoped out at Stage 2.	N/A

5 Summary

5.1.1.1 This WFD Assessment has been undertaken in accordance with the Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (PINS, 2025). For the onshore (river) component, the assessment has been structured around the WFD quality element definitions for rivers as set out in Schedule 2 of the Water Environment (England and Wales) Regulations 2017. The assessment followed a three-stage approach: WFD Screening (Stage 1), WFD Scoping (Stage 2), and WFD Impact Assessment (Stage 3).

5.2 Stage 1: WFD Screening

5.2.1.1 Five water bodies within the Northumbria River Basin District were identified as potentially affected by the MHPGC Project:

- Four onshore (river) surface water bodies: Dalton Beck to North Sea, Hawthorn Burn from Source to North Sea, Pittington Beck from Coalford to Old Durham Beck, and Lumley Park Burn from Source to Herrington Burn;
- One groundwater body: Wear Magnesian Limestone.

5.3 Stage 2: WFD Scoping

5.3.1.1 The WFD Scoping assessment identified the following quality elements and receptors for further assessment at Stage 3.

Table 5.1 Summary of WFD Scoping outcomes

Quality Element / Receptor	Dalton Beck (River)	Hawthorn Burn (River)	Lumley Park Burn (River, HM)	Pittington Beck (River)	Wear Magnesian Limestone (GW)
Hydromorphology	Scoped in	Scoped in	Scoped out	Scoped out	N/A
Biology: macroinvertebrates (rivers)	Scoped in	Scoped in	Scoped out	Scoped out	N/A
Biology: fish	Scoped in	Scoped in	Scoped out	Scoped out	N/A
Biology: macrophytes and phytobenthos	Scoped in	Scoped in	Scoped out	Scoped out	N/A
Water quality (physico-chemical)	Scoped in	Scoped in	Scoped out	Scoped out	N/A
WFD protected areas	—	Scoped in (NVZ)	Scoped in (NVZ)	—	N/A
INNS	Scoped out	Scoped out	Scoped out	Scoped out	N/A
Groundwater	N/A	N/A	N/A	N/A	Scoped out

5.4 Stage 3: WFD Impact Assessment

5.4.1.1 The Stage 3 assessment evaluated the potential for the MHPGC Project to cause deterioration in quality element status, or to prevent the achievement of RBMP objectives, for each water body and quality element scoped in at Stage 2. The assessment considered the embedded mitigation set out in **Table 3.6** and the baseline sensitivity of each water body as characterised in **Section 3.2**.

5.5 Compliance Conclusions

5.5.1 No-deterioration test

Table 5.2 Summary of no-deterioration conclusions by water body and quality element

Quality Element	Dalton Beck	Hawthorn Burn	Lumley Park Burn	Pittington Beck
Hydromorphology	No deterioration	No deterioration	Scoped out	Scoped out
Macroinvertebrates	No deterioration	No deterioration	Scoped out	Scoped out
Fish	No deterioration	No deterioration	Scoped out	Scoped out
Macrophytes / phytobenthos	No deterioration	No deterioration	Scoped out	Scoped out
Water quality (physico-chemical)	No deterioration	No deterioration	Scoped out	Scoped out
WFD protected areas	—	No significant impact	—	—
Chemical status	Not assessed	Not assessed	Not assessed	Not assessed

Note: Chemical status is not assessed for any water body. All four onshore water bodies fail chemical status due to ubiquitous priority hazardous substances (mercury, PBDE) that are not related to the MHPGC Project activities and cannot be influenced by the MHPGC Project. The RBMP chemical status objectives for all water bodies are Good by 2063, reflecting national-scale action required to address these substances.

5.5.2 RBMP objectives test

5.5.2.1 The MHPGC Project will not prevent the achievement of the RBMP objectives for any of the water bodies assessed. The RBMP ecological objectives and the assessment conclusion for each are summarised below:

Table 5.3 Summary of RBMP objectives

Water Body	RBMP Ecological Objective	Target Year	Conclusion
Dalton Beck	Good	2027 (low confidence)	Not prevented
Hawthorn Burn	Poor (alternative objective)	2021	Not prevented
Lumley Park Burn	Good Ecological Potential	2027 (low confidence)	Not prevented
Pittington Beck	Moderate (alternative objective)	2015	Not prevented
Wear Magnesian Limestone	Good	2015	Not prevented (scoped out at Stage 2)

5.5.3 RBMP mitigation measures test

5.5.3.1 The MHPGC Project will not jeopardise existing RBMP mitigation measures for any of the relevant WFD water bodies. Lumley Park Burn is designated as a heavily modified water body for flood protection; the MHPGC Project activities are not related to flood protection and would not interfere with the delivery of the RBMP mitigation measures for this water body. The remaining water bodies are not designated as heavily modified, and the mitigation measures assessment for ecological potential is not applicable.

5.5.4 Overall WFD compliance statement

- 5.5.4.1 Based on the Stage 3 Impact Assessment presented in **Section 4.3**, and subject to the implementation of the embedded mitigations set out in **Table 3.6**, this WFD Assessment concludes that:
- The MHPGC Project **will not cause deterioration** in the ecological status or ecological potential of any WFD surface water body or the quantitative or chemical status of any groundwater body within the Onshore WFD Assessment Areas;
 - The MHPGC Project **will not prevent the achievement** of the RBMP objectives for any WFD water body;
 - The MHPGC Project **will not jeopardise** existing RBMP mitigation measures for any relevant water body;
 - The MHPGC Project **is compliant** with the requirements of the Water Environment (England and Wales) Regulations 2017 and supports the objectives of the Northumbria RBMP.
- 5.5.4.2 This conclusion is reached at PEIR stage on the basis of a desk-based assessment supplemented by available monitoring data from the EA Catchment Data Explorer
- 5.5.4.3 An Article 4(7) assessment is not required, as no deterioration of WFD water body status has been identified.

6 References

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