Muir Mhòr Offshore Wind Farm

Environmental Impact Assessment Report

Volume 3, Appendix 8.1: Water Framework Directive Report

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Glossary

Term	Definition
Array Area	The area in which the generation infrastructure (including Wind Turbine Generators and associated foundations, and inter-array cables) and Offshore Electrical Platform(s) and an interconnector cable will be located.
Developer	Muir Mhòr Offshore Wind Farm Limited
Entrainment	The entrapment of organisms in a waterbody
Floating Foundations	The floating structures on which the Wind Turbine Generators are installed.
Foundation anchors	The structures which anchor the floating foundations to the seabed, connected to the foundation mooring.
Horizontal Directional Drilling (HDD)	A method of cable installation where the cable is drilled beneath a feature without the need for trenching.
Hydromorphology	The physical characteristics of the waterbody including the size, shape, structure and (for marine bodies) the flow and quantity of water and sediment.
Inter-array cables	Cables which link the wind turbines generators to each other and the Offshore Electrical Platform(s).
Interconnector cable	Cable which links the Offshore Electrical Platform(s) to one another, allowing for power to be transferred between the platforms.
Landfall	The area between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS) where the offshore export cables are brought onshore.
Offshore Electrical Platform (OEP)	Offshore platform consisting of High Voltage Alternating Current (HVAC) equipment, details depending on the final electrical set up of the Project.
Offshore Export Cable Corridor (ECC)	The area within which the offshore export cables will be installed.
Offshore export cables	The subsea electricity cable circuits running from the Offshore Electrical Platform to the landfall which will transmit the electricity generated by the offshore wind farm to the onshore export cables for transmission onwards to the onshore substation and the national electrical transmission system along with auxiliary cables such as fibre optic cables.
Offshore transmission infrastructure	The proposed transmission infrastructure comprising: Offshore Electrical Platform(s) and associated foundations and substructures; the offshore export cables; and the landfall area up to MHWS.
Project	Muir Mhòr Offshore Wind Farm – comprises the wind farm and all associated offshore and onshore components.
Proposed Development	The offshore Muir Mhòr Offshore Wind Farm project elements to which this Offshore EIA Report relates.
Wind Turbine Generator (WTG)	The wind turbines that generate electricity consisting of tubular towers and blades attached to a nacelle housing mechanical and electrical generating equipment.

Acronyms

Term	Definition
AA	Annual Average
ECC	Export Cable Corridor
EIAR	Environmental Impact Assessment Report
E. Coli	Escherichia coli
EMP	Environmental Management Plan
EQSD	Environmental Quality Standards Directive
EU	European Union
HDD	Horizontal Directional Drilling
HMWB	Heavily Modified Waterbody
IAC	Inter-array cable
IMO	International Maritime Organisation
INNS	Invasive Non-Native Species
MAC	Maximum Allowable Concentration
MAGIC	Multi-Agency Geographic Information for the Countryside
MFE	Mass Flow Extraction
MHWS	Mean High Water Spring
MLWS	Mean Low Water Spring
nm	Nautical Mile
NMPi	National Marine Plan Interactive
NVZ	Nitrate Vulnerable Zone
O&M	Operations and Maintenance
OCNS	Offshore Chemical Notification Scheme
OEP	Offshore Electrical Platform
OSPAR	Oslo-Paris Convention
PLGR	Pre-lay Grapnel Run
RBMP	River Basin Management Plan
rBWD	Revised Bathing Water Directive
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SPA	Special Protection Area
SSC	Suspended Sediment Concentration
SWPA	Shellfish Water Protected Area
TTS	Temporary Threshold Shift
UK	United Kingdom
UWN	Underwater Noise
UXO	Unexploded Ordnance
UWWTD	Urban Wastewater Treatment Directive
VER	Valued Ecological Receptor
WFD	Water Framework Directive
WTG	Wind Turbine Generator

1. WATER FRAMEWORK DIRECTIVE REPORT

1.1. INTRODUCTION

1.1.1. Muir Mhòr Offshore Wind Farm Limited (hereafter referred to as 'the Developer') is proposing to develop the Muir Mhòr Offshore Wind Farm (hereafter 'the Project'). The Project is made up of both offshore and onshore components. The subject of this offshore Environmental Impact Assessment Report (EIAR) is the offshore infrastructure of the Project seaward of Mean High-Water Springs (MHWS) which is hereafter referred to as 'the Proposed Development'.

1.1.2. The Muir Mhòr Array Area covers an area of approximately 200 km^2 and is located approximately 63 km east of Peterhead on the east coast of Scotland. The offshore infrastructure of the Proposed Development includes Wind Turbine Generators (WTGs) and associated floating foundations, the Offshore Electrical Platforms (OEP) and associated foundations, the Inter-array Cables (IACs), interconnector cable, offshore export cables and landfall.

1.1.3. The purpose of this assessment is to determine that the Proposed Development is compliant with the objectives of the Water Framework Directive (WFD) (Directive 2000/60/EC of the European Parliament). This is to ensure the Proposed Development does not result in a deterioration of designated waterbodies and does not prevent future waterbody targets from being achieved.

1.1.4. This Appendix has been informed by the assessments presented within the EIAR and should be read alongside the following chapters and appendices:

- Volume 2, Chapter 7 (Marine and Coastal Processes);
- Volume 2, Chapter 8 (Marine Water and Sediment Quality);
- Volume 2, Chapter 9 (Benthic Subtidal and Intertidal Ecology);
- Volume 2, Chapter 10 (Fish and Shellfish Ecology);
- Volume 3, Appendix 3.1 (Subsea Noise Technical Report);
- Volume 3, Appendix 7.1 (Marine and Coastal Processes Technical Report); and
- Volume 3, Appendix 7.2 (Marine Processes Modelling Report).

1.1.5. This Appendix refers to the design of the Proposed Development as described in Volume 1, Chapter 3 (Project Description).

1.1.6. This Appendix presents the findings of the WFD Assessment for the potential impacts of the marine activities associated with the Proposed Development and details the assessment for the transitional and coastal WFD waterbodies. The offshore Export Cable Corridor (ECC) crosses the Cairnbulg Point to the Ugie Estuary and Ugie Estuary to Buchan Ness (Peterhead) coastal waterbodies (IDs: 200142 and 200131 respectfully). A separate WFD assessment has been prepared for onshore waterbodies and groundwater and is presented within the separate EIAR for the onshore elements of the Project currently being prepared.

1.2. LEGISLATION AND POLICY CONTEXT

1.2.1. Overarching legislation, policy, and guidance in relation to the EIAR for the Proposed Development is provided in Volume 1, Chapter 2 (Legislation and Policy). A summary of legislation, policy, and guidance relevant to the WFD assessment is provided below.

WATER FRAMEWORK DIRECTIVE

1.2.2. The European Union (EU) WFD (2000/60/EC) was established in 2000 (European Parliament and Council of the European Union (2000)) to provide a single framework for the protection of surface waterbodies (including rivers, lakes, coastal waterbodies and estuaries) and groundwater. The WFD is transposed into Scottish law through the Water Environment and Water Services (Scotland) Act 2003 (Scottish Government, 2003) and the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (Scottish Government, 2011), more commonly known as the Controlled Activity Regulations. Post EU-exit, legislation relevant to the Scottish marine environment remains in force but has been amended to ensure the law continues to be operable and effective, maintaining the standards of environmental protection. These amendments were made via the Marine Environment (EU Exit) (Scotland) (Amendment) Regulations 2019 (UK Government, 2019; Scottish Government, 2020a).

1.2.3. Each waterbody has an assigned ecological status which is assigned by considering the biological, hydromorphological and chemical environment of the waterbody. The different ecological statuses are:

- High;
- Good;
- Moderate;
- Poor; and
- Bad.

1.2.4. When it was first enacted, the aim of the WFD was for all EU waterbodies covered under the Directive to achieve ‘Good’ status by 2015. This target was not achieved however, as of 2021 87% of Scottish waterbodies had achieved ‘Good status’ in regards to water quality (SEPA, 2021a). The Scottish Environment Protection Agency (SEPA) is aiming to achieve ‘Good status’ in 94% of waters by 2027 (SEPA, 2015).

1.2.5. ‘Good status’ is comprised of two parts: the first is ‘Good ecological status’ (or ‘Good ecological potential’ for waterbodies classed as heavily modified or artificial), and the second is ‘Good chemical status’. ‘Good ecological status/potential’ includes biological, hydromorphological and physicochemical quality elements and specific pollutants, whereas ‘Good chemical status’ concerns a series of priority substances (including priority hazardous substances). With exception to waterbodies that provide significant environmental or social benefits caused by a new activity, SEPA also require no deterioration in designated status (SEPA, 2014).

1.2.6. The actions needed to address problems affecting water quality, physical condition, water resources, and the migration of wild fish are produced by SEPA on behalf of the Scottish Government in the form of River Basin Management Plans (RBMPs) for Scotland and are reviewed and updated every six years. This assessment aims to ensure the Proposed Development complies with the requirements under the WFD, which seeks to ensure there is no deterioration in quality (as presented in the RBMP) of the protected areas and waterbodies in the north-east region.

1.2.7. Monitoring of the aquatic environment in relation to physical, chemical, and biological parameters started in 2006 with a view to ensuring a 'Good ecological status' of all surface waterbodies. A programme of measures is implemented in order to improve surface waters that do not meet the required status.

1.2.8. The Directives' objective of 'Good chemical status' is defined in terms of compliance with all the quality standards within the waterbody, as established for chemical substances at a European level. The Directive also provides a process for renewing these standards and establishing new ones by means of a prioritisation mechanism for hazardous chemicals. This will ensure at least a minimum chemical quality, particularly in relation to very toxic substances.

1.2.9. The Directives' objective of 'Good Ecological Status' also requires certain chemical conditions. The chemical requirements include the achievement of environmental quality objectives for discharged priority substances. It also identifies any other substances liable to cause pollution or being discharged in significant quantities.

ENVIRONMENTAL QUALITY STANDARDS DIRECTIVE

1.2.10. The Environmental Quality Standards Directive (EQSD) (2008/105/EC) (European Parliament and of the Council, 2008a) sets out quality standards for waterbodies across the EU to protect aquatic environments and human health. These standards are in line with the strategy and objectives of the WFD. Within the EQSD, there are two key terms related to the assessment of pollutants in surface/ coastal waters:

- Annual Average (AA):
  - Definition: The AA concentration refers to the average concentration of a particular pollutant over the course of a year.
  - Purpose: The AA standard is designed to protect the aquatic environment and human health from long-term exposure to pollutants. It ensures the overall level of pollution remains within safe limits throughout the year.
  - Measurement: This value is typically calculated based on periodic sampling of water throughout the year, giving a mean concentration that should not be exceeded on average.
- Maximum Allowable Concentration (MAC):
  - Definition: The MAC concentration refers to the highest concentration of a particular pollutant that is allowed in surface water at any given time.
  - Purpose: The MAC standard is aimed at protecting aquatic life and human health from short-term, high-level exposures to pollutants, which could cause immediate or acute harm.
  - Measurement: This value represents a threshold that should not be exceeded in any individual sample, ensuring that short-term spikes in pollution are controlled.

1.2.11. In summary, the AA concentration standard focuses on controlling long-term average exposure to pollutants, while the MAC concentration standard addresses the prevention of harmful short-term exposure peaks. Both standards work together to ensure comprehensive protection of water quality under the EQSD. By setting and enforcing these standards, the EQSD aims to reduce the levels of harmful pollutants in surface waters, thus safeguarding the environment and public health.

BATHING WATERS DIRECTIVE

1.2.12. The EU's revised Bathing Water Directive (rBWD) (2006/7/EC; European Parliament and of the Council, 2006) came into force in March 2006, replacing the previous Bathing Water Directive (76/160/EEC; Council of the European Committees, 1975). The rBWD establishes more stringent standards and places an emphasis on providing information to the public. In Scotland, it is implemented through the Bathing Waters Regulations (Scotland) 2008 (as amended). The rBWD sets limits on bacterial indicator concentrations at designated Bathing Waters in Scotland.

1.2.13. The 2008 Regulations aim to protect human health at locations where large numbers of people make use of the beaches and bathe during the bathing season (1 June to 15 September). This requires that Bathing Waters are monitored every year by SEPA. The monitoring schedule requires at least four samples per bathing season, taken during the summer months from (15 May to 15 September), except in cases of very short seasons or special geographic constraints.

1.2.14. The rBWD groups Bathing Water quality into four categories:

- Excellent – the highest, cleanest class;
- Good – generally good water quality;
- Sufficient- the water meets minimum standards; and
- Poor – the water has not met the minimum required standards.

1.2.15. Most Bathing Water sites are sampled 18 times per season, with remote sites sampled ten times, and consistently excellent quality sites sampled five times. Water quality classifications are calculated at the end of the season and apply to each Bathing Water for the following season. In 2012, the bacterial parameters were updated based on World Health Organization recommendations to test for:

- Escherichia coli (E. coli);
- Intestinal enterococci; and
- Observations on phytoplankton growth, including cyanobacteria (blue-green algae), and macroalgae (seaweed).

SHELLFISH WATERS DIRECTIVE

1.2.16. The Shellfish Waters Directive (2006/113/EC) (European Parliament and of the Council, 2006) was repealed in 2013 and subsumed within the WFD. In Scotland, it has been replaced by the Water Environment (Shellfish Water Protected Areas: Designation) (Scotland) Order 2013 (as amended) (Scottish Government, 2013). The Order identifies 85 coastal areas as shellfish waters.

1.2.17. The Water Environment (Shellfish Water Protected Areas: Environmental Objectives etc.) (Scotland) Regulations 2013 (2013) set environmental objectives for Shellfish Water Protected Areas (SWPAs), while The Scotland River Basin District (Quality of Shellfish Water Protected Areas) (Scotland) Directions 2021 (Scottish Parliament, 2021) direct SEPA on how to assess and classify the quality of SWPAs for the Scotland River Basin District. The Directions enable SEPA to assess and classify SWPAs as either Excellent, Good or Insufficient based on thresholds for the 'most probable number of *E. coli* per 100g sample of shellfish flesh and intra-valvular liquid as a 90-percentile standard'.

1.2.18. These regulations aim to prevent the deterioration of water quality in SWPAs, improve their condition, and support the growth of healthy bivalve and gastropod molluscs, thereby ensuring good quality edible shellfish.

URBAN WASTE WATER TREATMENT DIRECTIVE

1.2.19. The Urban Waste Water Treatment Directive (UWWTD) (91/271/EEC; Council of the European Committees, 1991), implemented in Scotland via the Urban Waste Water Treatment (Scotland) Regulations 1994 (as amended) (Scottish Parliament, 1994), aims to protect the environment from the adverse effects of the collection, treatment and discharge of urban waste water. It sets treatment levels on the sizes of sewage discharges and the sensitivity of waters receiving the discharges. In general, the UWWTD requires that collected waste water is treated to at least secondary treatment standards for significant discharges. Secondary treatment is a biological treatment process where bacteria are used to break down the biodegradable matter (already much reduced by primary treatment) in waste water.

1.2.20. Sensitive areas under the UWWTD are waterbodies affected by eutrophication or elevated nitrate concentrations and act as an indication that action is required to prevent further pollution caused by nutrients.

NITRATES DIRECTIVE

1.2.21. The Nitrates Directive (91/676/EEC; Council of the European Committees, 1991b) is an EU directive aimed at protecting water quality across Europe by preventing nitrates from agricultural sources from polluting ground and surface waters. The Nitrates Directive is part of the broader WFD and focuses on promoting sustainable agricultural practices to reduce nitrate pollution.

1.2.22. The Nitrates Directive has been transposed into Scottish law through several regulations of which the Action Programme for Nitrate Vulnerable Zones (NVZs) (Scotland) Regulations 2008 (2008) is the latest. These regulations cover the actions farmers should take to prevent, or at least minimise the loss of nitrate from the farm to the water environment. Under these regulations, NVZs must be identified where water is polluted or at risk of pollution by nitrates. The goal is to protect drinking water supplies, aquatic ecosystems, and human health by promoting sustainable agricultural practices and reducing nutrient runoff into waterbodies.

1.3. ASSESSMENT METHODOLOGY

1.3.1. SEPA does not issue specific guidance on the WFD assessment for Scottish waters. Whilst Scottish waters are not under Environment Agency jurisdiction the ‘Clearing the Waters for All’ Guidance (Environment Agency, 2023) provides an appropriate outline for WFD assessment in Scotland[1]. The spatial contiguity of European Sites and Annex I habitats across English and Scottish boundaries, and the cross-jurisdiction habitat used by biological qualifying features, support the relevance of this guidance. Additionally, to ensure a thorough and standardised approach to this assessment, advice has also been drawn from Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive (Planning Inspectorate, 2024) formerly Advice Note Eighteen: The Water Framework Directive (Planning Inspectorate, 2017).

1.3.2. Development within coastal or transitional waterbodies must comply with the requirements of the WFD and a compliance assessment must be carried out demonstrating that the project

[1] SEPA were consulted for development.

will not lead to deterioration in waterbody status. Alongside this, all practicable steps should be taken to prevent any future deterioration of the status of waters as a result of the project.

1.3.3. This WFD assessment focuses on those elements of the Proposed Development relevant to the offshore/coastal areas required to be assessed against the objectives for each relevant WFD waterbody (i.e., extending out to 1 nautical mile (nm) from MHWS). As such, activities of relevance relate to the installation activities within the offshore ECC that could have a potential impact within 1 nm of the coast and at the landfall (i.e., rather than considering any of the offshore elements of the Proposed Development seawards of 1 nm from the coast). A WFD assessment can comprise up to three stages, with the need to undertake latter stages dependent on the outcomes of the preceding stages. These three stages are:

- Screening - To determine if there are any activities associated with the Proposed Development that do not require further consideration. For example, activities which have been ongoing since before the current RBMP plan cycle and therefore, have formed part of the baseline;
- Scoping - To identify risks of the Proposed Development activities to receptors based on the relevant waterbodies and their water quality elements (including information on status, objectives, and the parameters for each waterbody); and
- Impact Assessment - A detailed assessment of waterbodies and their quality elements that are considered likely to be affected by the Proposed Development; and identification of any areas of non-compliance, consideration of mitigation measures, enhancements, and contributions to the RBMP objectives.

1.3.4. In instances where the potential for deterioration of waterbodies is identified in the impact assessment and mitigation is not possible to limit impacts to avoid deterioration, the Proposed Development would need to be assessed against the criteria set out in Article 4.7 of the WFD.

WFD SCREENING

1.3.5. According to the Environment Agency's 'Clearing the Waters for All' guidance (Environment Agency 2023) screening is required for the Proposed Development as it is not considered a low-risk activity. Examples of low risk activities include:

- Maintaining pumps at pumping stations;
- Removing blockages within 10 m of an existing structure;
- Replacing or removing exiting pipes and;
- 'Over water' replacement or repairs such as bridges, piers, jetties etc.).

WFD SCOPING

1.3.6. The scoping stage identifies the receptors that are potentially at risk from the proposed activities and, therefore, may need to be subject to an impact assessment. At the scoping stage, it is necessary to identify all potential risks to each receptor associated with the Proposed Development. The Environment Agency (2023) guidance defines the receptors as:

- Hydromorphology;
- Biology – Habitats;
- Biology – Fish;
- Water Quality; and,

- Protected Areas.

1.3.7. In addition, Invasive and Non-Native Species (INNS) must be considered during the scoping stage.

1.3.8. The criteria for consideration of a receptor during the scoping stage is outlined in Table 1-1 and Section 1.5 presents the associated risks, issues and justification provided for each receptor as per the Environment Agency (2023) guidance.

Table 1-1 Criteria for Inclusion of Designated Receptors During the WFD Scoping Stage.

Receptor	Criteria
Hydromorphology	Hydromorphology in the context of the WFD assessment is defined and assessed as changes to the physical characteristics of the waterbody including the size, shape, structure and (for marine bodies) the flow and quantity of water and sediment. Hydromorphology should be included if the Proposed Development could have an impact on the hydromorphology of a waterbody at high status or alternatively a significant impact on the hydromorphology of any waterbody. Impacts on hydrology include changes to: • Morphological conditions including depth variations, the seabed and intertidal zone; and • Tidal patterns such as dominant currents, freshwater flow and wave exposure.
Biology: Habitats	Biological habitats (both those designated as higher or lower sensitivity habitats) will be scoped in if the footprint (including sediment plumes and dredging areas) of activities is: • 0.5 km^2 or greater; • >1% of the waterbody's area; • Within 500 m of any higher sensitivity habitat; or • >1% of any lower sensitivity habitat.
Biology: Fish	The following impacts on fish are considered during scoping: • The activity is in an estuary and could affect the fish in the estuary; • The activity could delay or prevent fish from entering the estuary; or • The activity could affect fish migrating through the estuary to freshwater.
Water Quality	The impacts resulting from the proposed activities on water quality will be assessed in terms of: • Whether it could affect water clarity, temperature, salinity, oxygen levels, nutrients, or microbial patterns continuously or for longer than a spring/neap tidal cycle; • Whether it is in a waterbody with a phytoplankton status of 'Moderate', 'Poor' or 'Bad'; or • Whether the waterbody has a history of harmful algae. The water quality assessment will assess the potential for release of chemicals (on the EQSD list) and sediment bound contaminants as a result of the Proposed Development.
Protected Areas	Any identified protected areas within 2 km of the offshore ECC will be scoped in for further assessment. For WFD purposes the following are considered to be protected areas: • Special Areas of Conservation (SACs); • Special Protection Areas (SPAs); • Bathing waters; • Shellfish waters; and • Nutrient sensitive waters.

Receptor	Criteria
INNS	INNS should be included in the WFD compliance assessment, if the proposed activities have the potential to introduce or spread INNS to or within the area.

WFD IMPACT ASSESSMENT

1.3.9. Following the scoping stage, if it is determined that the impact assessment stage is required, i.e. a receptor cannot be scoped out, the Environment Agency (2023) guidance sets out that an impact assessment should be undertaken for each receptor identified as being at risk from the activity. The impact assessment should consider what (if any) pressures the activity may create on the marine environment and specifically the receptors identified. The key aim of the impact assessment is to determine whether there is potential for deterioration in the status of the waterbody.

1.3.10. Deterioration is defined as when the status (ecological or chemical) of a quality element reduces by one class, for example, ecological quality elements move from 'Good' to 'Moderate' status. If a quality element is already at the lowest status (Bad), then any reduction in its condition also counts as deterioration. According to the Environment Agency (2023) guidance, temporary effects due to short-duration activities like construction and maintenance are not considered to cause deterioration if the waterbody would recover in a short time without any restoration measures. Where relevant, mitigation measures should be included to avoid or minimise risks of deterioration (if predicted).

1.3.11. If the activity may cause deterioration, either of the quality element or supporting habitat, an explanation must be provided of how this deterioration could occur, including consideration of whether the impact is:

- Direct and immediate – it will happen at the same time and place as the activity; or
- Indirect – it will happen later or further away, including in other linked waterbodies.

1.3.12. Where the activity may cause deterioration, alternatives should be considered to minimise the impact, including changes to the materials or substances used, the size, scale or timing of the activity or methods of working and/or how equipment or services are used.

1.3.13. In addition to assessing the potential for deterioration of the current status of a waterbody, the impact assessment must consider the risk of jeopardising 'Good status'. Every waterbody has a target status that it is expected to achieve, with an expected date by when this should be achieved as set out in the RBMPs. Where the status of a waterbody or quality element is less than 'Good', the impact assessment should consider whether the activity may jeopardise the waterbody achieving 'Good status' in the future. These may include activities which reduce the effectiveness of improvement activities taking place or prevent improvement activities taking place in the future. Details of these activities or measures are set out in the RBMPs.

GENERAL BACKGROUND

1.3.14. The Proposed Development will comprise an Array Area, and an offshore ECC, incorporating OEP(s), an interconnector cable, IACs and associated infrastructure making landfall on the Aberdeenshire coastline north of Peterhead, which will allow transmission of generated power to the National Grid network, see Volume 1, Chapter 3 (Project Description). The minimum distance between the Array Area and the coastline is 63 km. An assessment of the inland WFD waterbodies (above MHWS) is presented in the Onshore Environmental Impact Assessment Report. A separate onshore EIAR is being prepared which will provide a

description of the onshore elements of the Project landward of Mean Low Water Springs (MLWS), and an assessment of the associated likely significant effects.

PROPOSED ACTIVITIES FOR CONSIDERATION

1.3.15. This WFD assessment focusses on the elements of the Proposed Development of relevance to the offshore and coastal areas designated for WFD consideration. Therefore, this WFD assessment considers the construction, Operation and Maintenance (O&M), and decommissioning activities relevant below the MHWS as presented in Volume 1, Chapter 3 (Project Description).

CONSTRUCTION

1.3.16. The earliest construction start date for the Proposed Development is expected to be 2030 for offshore works and construction is anticipated to last approximately four years based on 24/7 operations although this is highly dependent upon favourable weather conditions. The Array Area is situated 63 km offshore (approximately 34 nm) and consequently distanced sufficiently from any WFD waterbodies (1 nm for ecological status and 12 nm for chemical status) to have and therefore Array Area activities will not be considered in this assessment as no potential receptor pathways exist.

1.3.17. Offshore export cables, associated cable protection, landfalls works and increased marine traffic are therefore the primary applicable components of the offshore activities relevant to this WFD assessment. Anchor and foundation piling, whilst occurring within the Array Area, has the potential for the resulting Underwater Noise (UWN) to impact fish receptors within WFD waterbodies and is consequently included in this WFD assessment. A maximum of three offshore export cables are considered in the Proposed Development, making landfall on the Aberdeenshire coastline north of Peterhead. At landfall, trenchless technology such as Horizontal Directional Drilling (HDD) is proposed to install the export cables underneath the intertidal zone. The drilling installation will commence above MHWS, and the HDD exit pit located seaward of MLWS resulting in no surface cable work within the intertidal region.

1.3.18. The primary activities associated with the construction phase of the Proposed Development considered to be relevant regarding the WFD assessment are:

- Anchor and foundation piling UWN;
- Preparatory works including Pre-lay Grapnel Runs (PLGR), boulder grabs and Unexploded Ordinance (UXO) clearance;
- Installation of offshore cables via a combination of jet or mechanical trenching, ploughing;
- Export cable landfall works via HDD;
- Installation of cable protection; And
- Increased marine traffic.

1.3.19. There is anticipated to be a maximum of 60 total vessel round trips to port for Export cable installation. The number of these operating within the WFD waterbodies will be a fraction of the total provided.

1.3.20. Chemicals listed in the EQSD are not anticipated to be released intentionally into the environment during construction, O&M or decommissioning phases of the Proposed Development. The Developer has made a commitment (C-08 in Volume 3, Appendix 6.1 (Commitments Register) to develop and adhere to an Environmental Management Plan

(EMP) which includes mitigation measures relevant to chemical usage and pollution prevention of note, see Volume 4, Appendix 2 (Outline Environmental Management Plan).

OPERATION AND MAINTENANCE

1.3.21. During the operational phase of the Proposed Development, there will be no planned maintenance or replacement of the subsea cables; however, repairs could be required should the cable fail or be damaged. Periodic surveys will be required to ensure the cables remain buried and, if they do become exposed, then if deemed necessary corrective maintenance may be undertaken (such as deployment of cable protection or reburial). The vessel type chosen for any necessary remedial burial and repair work will be dependent on the outcomes of these period surveys.

1.3.22. Effects during the operational phase of the Proposed Development are not expected to exceed those identified and assessed during the construction phase. These have been considered in the scoping process where relevant, however no additional effect pathway is likely given the nature and scale of the activities.

DECOMISSIONING

1.3.23. The Proposed Development infrastructure will be decommissioned in accordance with the Decommissioning Plan. Structures are proposed to be removed in reverse order of the installation procedure however aspects, in particular inter-array, interconnector and export cables, may be left *in situ* to minimise disturbance to the seabed. Decommissioning has been considered in the scoping process where relevant, however no additional receptor pathways from those identified for construction are identified given the nature and scale of the activities.

1.3.24. The following data sets and literature have been utilised to inform the WFD assessment;

- Site specific data geophysical and benthic data including sediment PSA and contaminant sampling and imagery to establish baseline conditions of habitats, faunal communities obtained within the offshore ECC (Volume 3, Appendix 9.1 Offshore Baseline Survey Reports);
- Project specific modelling including Volume 3, Appendix 7.2 (Marine Processes Modelling Report) and Volume 3, Appendix 3.1 (Subsea Noise Technical Report);
- Scotland's Bathing Waters (SEPA, 2023);
- Water Classification Hub (SEPA, 2022);
- Water Environment Hub (SEPA, 2021);
- Shellfish Water Protected Area: Maps (Scottish Government, 2019);
- Urban Waste Water Treatment Directive Areas (SEPA, 2019);
- Nitrate Vulnerable Zones: Maps (Scottish Government, 2015); and
- Multi-Agency Geographic Information for the Countryside (MAGIC) Maps (Defra, 2024).

1.4. RELEVANT WATERBODIES

IDENTIFICATION OF WATERBODIES

1.4.1. As required under the Environment Agency (2023) guidance, coastal and transitional waterbodies were identified based on whether the Proposed Development may have an impact on the immediate and linked waterbodies.

1.4.2. The Proposed Development has the potential to directly impact the Ugie Estuary to Buchan Ness (Peterhead) and Cairnbulg Point to the Ugie Estuary coastal waterbodies as the offshore ECC directly transects sections of these waterbodies. In addition, the Ugie Estuary transitional waterbody is included as a linked waterbody, although the offshore ECC does not directly overlap with the waterbody.

1.4.3. Figure 1-1 presents the location of the Proposed Development in relation to these WFD coastal waterbodies.

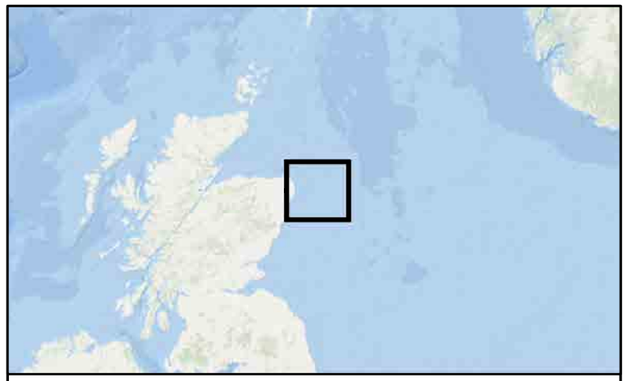
575000
600000
625000
650000

6400000
6375000
6350000

Cairnbulg Point to the Ugie Estuary

Ugie Estuary

Ugie Estuary to Buchan Ness (Peterhead)



Legend:

- Array Area
- Offshore Export Cable Corridor
- 500m Buffer from Offshore Export Cable Corridor
- 2km Buffer from Offshore Export Cable Corridor
- WFD Transitional Waterbody

WFD Coastal Waterbodies

- Cairnbulg Point to the Ugie Estuary
- Ugie Estuary to Buchan Ness (Peterhead)

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WFD Coastal and Transitional Waterbodies in Relation to the Offshore ECC

Figure: 1-1	Drawing No: GoBe-0122		
Revision:	Date:	Drawn:	Checked:
01	27/09/24	EV	BPHB

Map scale 1:350,000 @ A3

0 5 10 km

N

Co-ordinate system: ETRS 1989 UTM Zone 30N **EPSG:** 25830

MUIR MHÒR OFFSHORE WIND FARM

A joint venture between Fred. Olsen Seawind & Vattenfall

Service Layer Credits: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

UGIE ESTUARY TO BUCHAN NESS (PETERHEAD) (ID: 200131)

1.4.4. Ugie Estuary to Buchan Ness (Peterhead) is a 46.31 km^2 coastal waterbody located in the Scotland river basin district, managed by the north east Scotland advisory group (SEPA, 2014a). Ugie Estuary to Buchan Ness (Peterhead) is classified as a heavily modified waterbody (HMWB) on account of physical alterations that cannot be addressed without a significant impact on navigation. The most recent (2022) overall status classified this waterbody as having Good Ecological Potential and a target objective of maintaining Good Ecological Potential by 2027. The identified pressures on the Ugie Estuary to Buchan Ness (Peterhead) impact the physical condition of the waterbody via modifications to bed, banks and shores from land uses and navigation (SEPA, 2021).

1.4.5. The Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody overlaps with the following WFD relevant protected areas:

- Buchan Ness to Collieston SPA; and
- Peterhead (Lido) Bathing Water.

1.4.6. A summary of the waterbody is provided in Table 1-2

Table 1-2 Summary of Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody.

Ugie Estuary to Buchan Ness	
Waterbody ID	200131
River basin district name	Scotland
Area Advisory Group	North east Scotland
Waterbody type	Coastal
Waterbody size (km^2)	46.31
Overall status	Good Ecological Potential
Ecological Status	Moderate
Chemical Status	Pass
Target waterbody status and deadline	Good Ecological Potential by 2027
Hydromorphology Status	Moderate
HMWB and what for	Yes: Physical alterations that cannot be addressed without a significant impact on navigation
Phytoplankton Status	High
Freedom from Invasive Species	High

CAIRNBULG POINT TO THE UGIE ESTUARY (ID: 200142)

1.4.7. Cairnbulg Point to the Ugie Estuary is a 127.88 km^2 coastal waterbody in the Scotland river basin district managed by the north east Scotland advisory group (SEPA, 2014b). Cairnbulg Point to the Ugie Estuary is not currently classified as a HMWB and has an overall status of High as of 2022 with a 2027 target objective of maintaining High status. There are currently no identified pressures on this waterbody.

1.4.8. The Cairnbulg Point to the Ugie Estuary coastal waterbody overlaps with one WFD relevant protected areas, the Loch of Strathbeg SPA. A summary of the waterbody is provided in Table 1-3

Table 1-3 Summary of Cairnbulg Point to the Ugie Estuary coastal waterbody

Cairnbulg Point to the Ugie Estuary	
Waterbody ID	200142
River basin district name	Scotland
Area Advisory Group	North east Scotland
Waterbody type	Coastal
Waterbody size (km^2)	127.88
Overall status	High
Ecological Status	High
Chemical Status	Pass
Target waterbody status and deadline	High by 2027
Hydromorphology Status	High
HMWB and what for	No
Phytoplankton Status	High
Freedom from Invasive Species	High

UGIE ESTUARY (ID: 200129)

1.4.9. Ugie Estuary is a 0.1 km^2 transitional waterbody in the Scotland river basin district managed by the north east Scotland advisory group (SEPA, 2014c). Ugie Estuary is not currently classified as a HMWB and has an overall status of High as of 2022. The target objective for 2027 is to maintain the High overall status. There are currently no identified pressures on this waterbody.

1.4.10. The Ugie Estuary does not overlap with any WFD relevant protected areas. A summary of the waterbody is provided in Table 1-4

Table 1-4 Summary of Ugie Estuary transitional waterbody.

Ugie Estuary	
Waterbody ID	200129
River basin district name	Scotland
Area Advisory Group	North east Scotland
Waterbody type	Transitional
Waterbody size (km^2)	0.1
Overall status	High
Ecological Status	High
Chemical Status	Pass
Target waterbody status and deadline	High 2027
Hydromorphology Status	High
HMWB and what for	No
Phytoplankton Status	-
Freedom from Invasive Species	High

1.5. SCOPING

1.5.1. The potential risks of the Proposed Development on the Environment Agency (2023) guidance receptor groups across the identified waterbodies is presented in the following section.

HYDROMORPHOLOGY

1.5.2. Hydromorphological risks from the Proposed Development upon WFD waterbodies are presented in Table 1-5.

Table 1-5 Hydromorphology risks from the Proposed Development

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
Could impact on the hydromorphology (for example morphology or tidal patterns) of a waterbody at high status	The Cairnbulg Point to the Ugie Estuary coastal waterbody is currently at High status, however, changes to hydromorphological regimes are not anticipated to reduce the classification of the waterbody as described by modelling in Volume 3, Appendix 7.2 (Marine Processes Modelling Report) and Volume 2, Chapter 7: (Marine and Coastal Processes). The worst case design states cable protection may be required for 50% of the export cable using rock berms. This will likely result in a localised change in the seabed profile during the operational phase of the Proposed Development. Consequently, further assessment of hydromorphology is required and considered within Section 1.6 of this report.	Yes
	The Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody is currently at 'Good Ecological Potential status'.	No
	The Ugie Estuary transitional waterbody is currently at high status however no conceptual impact pathway to alter hydromorphology is identified due to the proposed project design incorporating HDD at landfall as described for The Cairnbulg Point to the Ugie Estuary coastal waterbody above.	No
Could significantly impact the hydromorphology of any waterbody	There will be no physical barrier placed within the identified waterbodies as a result of the construction activities from the Proposed Development. The presence of the export cables buried in the seabed will not affect current speeds and will, as a worst-case, result in a minor depth reduction at cable crossings and where cable protection is used. Therefore, changes to water depth and currents are not considered to be significant throughout all phases of the Proposed Development as presented in Volume 2, Chapter 7: (Marine and Coastal Processes).	No
Waterbody is heavily modified for the same use as your activity	The Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody is designated as HMWB due to navigation. It is not modified for the purpose of renewable energy and therefore is not considered further in this WFD assessment.	No

BIOLOGY: HABITATS

1.5.3. The Environment Agency (2023) guidelines define certain habitats as higher or lower sensitivity resulting in different considerations based on the classification. An assessment of biological habitats must be included in the WFD assessment if the Proposed Development is larger than 0.5 km^2, within 500m of any higher sensitivity habitats or if the activity footprint is over more than 1% of a lower sensitivity habitat of any waterbody.

1.5.4. The recognised higher and lower sensitivity habitats for consideration in a WFD assessment as described in the Environment Agency (2023) guidance are presented in Table 1-6.

Table 1-6 Categorisation of Higher and Lower Sensitivity Biological Habitats for WFD Assessments (Environment Agency, 2023)

Higher Sensitivity Habitats	Lower Sensitivity Habitats
Chalk Reef	Cobbles, gravel and shingle
Clam, cockle and oyster beds	Intertidal soft sediments like sand and mud
Intertidal Seagrass	Rocky shore
Maerl	Subtidal boulder fields
Mussel beds, including blue and horse mussel	Subtidal rocky reef
Polychaete Reef	Subtidal soft sediments like sand and mud
Saltmarsh	
Subtidal kelp beds	
Subtidal seagrass	

1.5.5. Scotland's National Marine Plan interactive (NMPi) map includes datasets displaying some of the biological habitats and indicates the WFD study area does not contain any higher sensitivity habitats, as detailed in Table 1-6 Categorisation of Higher and Lower Sensitivity Biological Habitats for WFD Assessments (Environment Agency, 2023). However, during a site-specific environmental survey (Volume 3, Appendix 9.1 (Environmental Baseline Report (ECC and intertidal (LOT 2 & LOT 3)), evidence of the following higher sensitivity habitats of note were identified in the nearshore ECC and consequently will be considered precautionarily in this WFD assessment:

- Subtidal kelp beds;

1.5.6. Each of these higher sensitivity habitats have therefore been considered on a precautionary basis, as there is potential for such habitats to be within 500 m of the Proposed Development. Further information on benthic habitats is presented in Volume 2, Chapter 9: (Benthic and Subtidal Ecology).

1.5.7. Utilising MAGIC interactive map, several lower sensitivity habitats were found to transect with the offshore ECC of the Proposed Development, such as, gravel and cobbles, subtidal soft sediment (for example sand and mud) and subtidal rocky reef. Project specific surveys by Volume 3, Appendix 9.1 (Environmental Baseline Report (ECC and intertidal (LOT 2 & LOT 3)) have confirmed the presence of:

- Gravel & Cobbles;
- Subtidal Soft Sediment; and
- Subtidal Rocky Reef.

1.5.8. Although the Proposed Development is not expected to exceed the 1% footprint of the lower sensitivity habitats, these habitats have been included in the assessment as a precautionary measure.

1.5.9. As such, biological (habitats) are precautionarily scoped into this assessment based on the potential for higher sensitivity habitats within 500 m of the Proposed Development. Additionally, biological (habitats) are scoped into this assessment based on the potential presence of lower sensitivity habitats such as gravel and cobbles, subtidal soft sediment and subtidal rocky reef, where the percentage of the area potentially impacted by the Proposed Development footprint is unknown.

Table 1-7 Risks to WFD sensitive habitats from the Proposed Development

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
0.5 km² or greater	The maximum length of the offshore ECC cable that crosses the WFD waterbodies is 1 nm (1,852 m) with a maximum of three cables. As described in the Marine and Coastal Processes worst case design scenario for construction (Volume 2, Chapter 7 (Marine and Coastal Processes)) the export cable seabed trench width is expected to be approximately 5 m. In the unlikely event this is required for the entire length of each export cable including a 1.5 times multiplier for dredging[2] as described in the Environment Agency (2023) guidelines the affected seabed footprint would be 1,852 m (trench length) x 3 (trenches) x 5 m (trench width) x 1.5 (The footprint for the associated sediment plume, based upon that stipulated for dredging) = 0.042 km² (41,670 m²) and therefore lower than the 0.5 km² threshold.	No
1% or more of the waterbody's area	The footprint of the construction works, including a stipulated factor of 1.5 times the footprint for the associated sediment plume, based upon that stipulated for dredging, totals approximately 0.09% of the Cairnbulg Point to Ugie Estuary coastal waterbody and therefore falls below the 1% threshold.	No
	The footprint of the construction works including a factor of 1.5 times the footprint for the associated sediment plume, based upon that stipulated for dredging, totals approximately 0.03% of the Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody and therefore falls below the 1% threshold.	No
	The Ugie Estuary transitional waterbody, whilst within the 2 km WFD buffer, does not have a conceptual impact pathway to alter biological habitats. The waterbody terminates at the MHWS and due to the implementation of HDD at landfall during construction suspended sediment increases are not anticipated to impact the intertidal area as presented by numerical modelling in Volume 3, Appendix 7.2 (Marine Processes Modelling Report).	No
Within 500 m of any higher sensitivity habitat	No higher sensitivity habitats were identified in the Cairnbulg Point to the Ugie Estuary coastal waterbody using publicly available data. However, evidence of kelp was identified in the Environmental Baseline Survey: Volume 3, Appendix 9.1 (Environmental Baseline Report: ECC and Intertidal (LOT 2	Yes - Precautionary

[2] Whilst the Proposed Development is not specifically a dredging project the associated sediment plume footprint is anticipated to act similarly to dredging and consequently the 1.5 x multiplier has been retained.

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
	& 3)). As such, biological habitats are taken forward to assessment on a precautionary basis that subtidal kelp beds may be within 500 m of the Proposed Development.	
	No higher sensitivity habitats were identified in the Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody using publicly available data. However, evidence of kelp was identified in the Environmental Baseline Survey (Volume 3, Appendix 9.1 (Environmental Baseline Report: ECC and Intertidal (LOT 2 & 3)). As such, biological habitats are taken forward to assessment on a precautionary basis that subtidal kelp beds may be within 500 m of the Proposed Development.	Yes - Precautionary
	No pathway to alter the habitats of the Ugie Estuary transitional waterbody has been identified due to proposed project design (HDD). The waterbody terminates at the MHWS and due to the implementation of HDD at landfall during construction suspended sediment increases are not anticipated to impact the intertidal area as presented by numerical modelling in Volume 3, Appendix 7.2 (Marine Processes Modelling Report).	No
1% or more of any lower sensitivity habitat	The footprint of the Proposed Development activities was calculated to be 0.04 km² of the Cairnbulg Point to Ugie Estuary coastal waterbody. Due to the limited spatial coverage of Scotland on Defra's MAGIC Maps, it could not be determined whether the footprint of the Proposed Development would encompass 1% or more of any lower sensitivity habitat. The offshore ECC could traverse areas of subtidal rocky reef, gravel and cobbles and subtidal soft sediments and consequently biological habitats have been taken forward to assessment on a precautionary basis.	Yes – Precautionary
	The footprint of the Proposed Development activities was calculated to be 0.04 km² of the Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody. Due to the limited spatial coverage of Scotland on Defra's MAGIC Maps, it could not be determined whether the footprint of the Proposed Development would encompass 1% or more of any lower sensitivity habitat The offshore ECC could traverse areas of subtidal rocky reef, gravel and cobbles and subtidal soft sediments and consequently biological habitats have been taken forward to assessment on a precautionary basis.	Yes – Precautionary
	No pathway to alter the habitats of the Ugie Estuary transitional waterbody has been identified due to proposed project design (HDD). The waterbody terminates at the MHWS and due to the implementation of HDD at landfall during construction suspended sediment increases are not anticipated to impact the intertidal area as presented by numerical modelling in Volume 3, Appendix 7.2 (Marine Processes Modelling Report).	No

BIOLOGY: FISH

1.5.10. Risks from the Proposed Development upon fish receptors within WFD waterbodies are presented in Table 1-8.

Table 1-8 Risks from the Proposed Development on WFD fish receptors

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
Is in an estuary and could affect fish in the estuary but could delay or prevent fish entering it or could affect fish migrating through the estuary	The activities associated with the Proposed Development's offshore export cables will take place within 2 km of the Ugie estuary however it is highly unlikely to prevent fish entering, or migrating, through the waterbody. This is further supported by Volume 2, Chapter 10: (Fish and Shellfish Ecology) which concluded that no EIA significant effects from any identified impacts across all Proposed Development phases on fish populations with the exception of spawning herring. Further with the inclusion of the proposed In Principle Mitigation Plan for static and spawning Herring were predicted as a result of the Proposed Development. on fish populations (including migratory populations) with the exception of spawning herring (which do not migrate into estuaries) were predicted as a result of any phase of the Proposed Development.	No
Could impact on normal fish behaviour like movement, migration or spawning (for example by creating a physical barrier, noise, chemical change or a change in depth or flow)	The proposed activities will not cause a physical barrier during construction, O&M or decommissioning to prevent fish from entering the estuaries or their migration patterns. The presence of the export cable buried in the seabed will not significantly affect current speeds and will, as a worst-case result in a minor reduction in terms of total water depth at cable crossings and areas of cable protection. Therefore, changes to water depth and changes in currents (both tidal and non-tidal) are not considered to be significant and are not considered to impact on normal fish behaviour, such as, movement, migration or spawning. There will not be any outfalls or discharges associated with any phase of the Proposed Development and so the activities are not expected to cause a reduction in the dissolved oxygen concentration in the water column. Therefore, the potential for chemical changes and its implication on fish species will not be taken forward as a consideration of the impact assessment. Volume 3, Appendix 3.1 (Subsea Noise Technical Report) presents the modelling of UWN scenarios to determine the potential impacts of noise and vibration on fish receptors as a result of the Proposed Development. Moderate significance from UWN on recoverable injury and Temporary Threshold Shift (TTS) and behavioural impacts of spawning Herring due to concurrent pilling operations were concluded and further mitigation measures have been proposed. These are detailed within Volume 4, Appendix 10 (In Principle Fish Mitigation Plan). Consequently, further assessment is required and considered within Section 1.6 of this report. Increased SSC and sediment deposition have the potential smother the newly deposited herring eggs and larvae therefore impact normal fish behaviour by potentially reducing spawning success rate as presented in Volume 2, Chapter 10 (Fish and	Yes – UWN and spawning impacts

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
	Shellfish Ecology) and further mitigation measures have been proposed. These are detailed within Volume 4, Appendix 10 (In Principle Fish Mitigation Plan) Consequently, further assessment is required and considered within Section 1.6 of this report.	
Could cause entrainment or impingement of fish	No entrainment or impingement will occur as a result of the offshore ECC works associated with the Proposed Development.	No

WATER QUALITY

1.5.11. Risks from the Proposed Development upon water quality receptors within WFD waterbodies are presented in Table 1-9.

Table 1-9 Risks on water quality receptors from the Proposed Development

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
Could affect water clarity, temperature, salinity, oxygen levels nutrients or microbial patterns continuously for longer than a spring-neap tidal cycle (approximately 14 days)	It is not anticipated that temperature or salinity would be affected as a result of export cable installation activities and, therefore, these parameters have been excluded from further assessment. The resuspension of sediments into the water column resulting from construction activities such as cable installation and boulder clearance would result in short-term increases in Suspended Sediment Concentration (SSC). The methods used for cable installation would affect the amount of sediment disturbed. The worst case design scenario impacts modelled within Volume 3, Appendix 7.2 (Marine Processes Modelling Report) are considered to be localised, short-lived, and high SSC levels would disperse to background levels following cessation of the activity. The proposed landfall is within the Cairnbulg Point to the Ugie Estuary coastal waterbody, however the potential increase in SSC including the release of bentonite due to HDD are not anticipated to effect water clarity for longer than 14 days. Volume 3, Appendix 7.2 (Marine Processes Modelling Report) presents marine processes modelling for the Proposed Development activities. Modelling of cable installation shows that increases in SSC above 50 mg/l will occur for less than 7.2 hours with 10 mg/l increases occurring for less than six days. Further consideration of this impact is discussed in Volume 2, Chapter 8 (Marine Water and Sediment Quality).	No
Is in a waterbody with a phytoplankton status of 'Moderate', 'Poor' or 'Bad'	Both coastal waterbodies considered for WFD assessment are classified as having a phytoplankton status of High so will not be taken forward for further assessment.	No
	The Ugie Estuary transitional waterbody does not have a phytoplankton classification however is classified as High quality overall so will not be taken forward for further assessment	No

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
Is in a waterbody with a history of harmful algae	All three waterbodies do not have a history of significant and persistent algal blooms or toxic algal blooms and consequently will not be taken forward for further assessment	No
Release or use of chemicals which are on the EQSD list	The Proposed Development activities do not include the direct discharge of any chemicals listed under the EQSD list during any stage of the Proposed Development. The only chemical which may be released into the environment as a result of the Proposed Development's activities is bentonite during construction (during HDD used for cable installation at landfall). Bentonite is a non-toxic, inert, natural clay mineral (<63µm diameter particle), and is not included on the EQSD list. It is included on the List of Notified Chemicals approved for use and discharge into the marine environment and is classed as a Group E substance under the Offshore Chemical Notification Scheme (OCNS). Substances assigned to Group E under the OCNS are defined as the least likely to cause environmental harm and are 'readily biodegradable and is non-bioaccumulative'. This is also supported by the inclusion of bentonite on the Oslo and Paris Conventions (OSPAR) List of Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment (OSPAR Commission, 2021). While bentonite is the only substance which may be released as part of the Proposed Development's activities, there is potential for accidental spills and pollution events of other substances (such as fuel oil) during construction, O&M and decommissioning. The Scoping Opinion received previously approved the methodologies presented in the Scoping Report, which concluded accidental spills and pollution events would be scoped out on the basis of the in-built measures such as the EMP (C-38) (Volume 3, Appendix 6.1 (Commitments Register)) and that standard practice is implemented.	No
Disturbance of sediment with contaminants above Cefas Action Level 1	The composition and grain size identified within the offshore ECC is predominantly sand with limited proportions of fine sediments. The site-specific survey identified one exceedance of action level 1 for arsenic. This grab sample was recorded at ECC_28_SEC_DNA which is located outside of the WFD coastal waterbodies boundaries (Volume 3, Appendix 9 (Environmental Baseline Report: ECC and Intertidal (LOT 2 & 3)). Therefore, potential for disturbance of contaminated sediments has not been considered further based on the baseline characterisation.	No
If your activity has a mixing zone (like a discharge pipeline or outfall) consider if the chemicals released are on the EQSD list	The Proposed Development does not have a discharge pipe or outfall, nor does the project intend to release substances on the EQSD list. Therefore, the Proposed Development will not have a mixing zone for these chemicals.	No

PROTECTED AREAS

1.5.12. Risks from the Proposed Development upon Protected Areas are presented in Table 1-10. As detailed in Table 1-1 protected areas relevant to WFD assessments include:

- SACs;
- SPAs;
- Bathing waters;
- Shellfish waters; and
- Nutrient sensitive waters.

1.5.13. None of the aforementioned protected areas were identified within the Environment Agency (2023) guidance recommended 2 km buffer (as shown in Figure 1-2). The protected areas in closest proximity to the 2 km buffer of the Proposed Development are presented below, along with the distance from the Proposed Development:

- Peterhead (Lido) Bathing Water (2.88 km); and
- Buchan Ness to Collieston Coast SPA (4 km).

1.5.14. Nutrient sensitive waters (UWWTD and NVZs) in the vicinity of the Proposed Development are designated for nitrate concentrations on land or extending to the tidal mark and are not considered to be part of the marine environment and therefore not considered within this offshore WFD assessment.

550000 575000 600000 625000 650000

6400000 6375000 6350000 6325000

Troup, Pennan and Lion's Heads SPA

Rosehearty

Fraserburgh (Tiger Hill)

Fraserburgh (Philorth)

Peterhead (Lido)

Cruden Bay

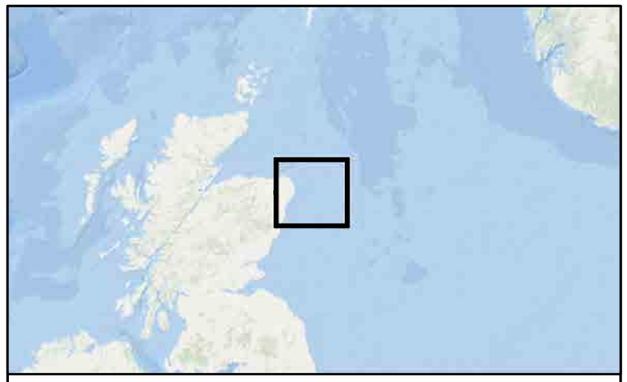
Buchan Ness to Collieston Coast SPA

Collieston

Ythan Estuary, Sands of Forvie and Meikle Loch SPA

Balmedie

River Dee SAC



Legend:

- Array Area
- Offshore Export Cable Corridor
- 500m Buffer from Offshore Export Cable Corridor
- 2km Buffer from Offshore Export Cable Corridor
- Special Protection Areas
- Special Areas of Conservation
- Aberdeenshire, Banff, Buchan and Moray Nitrate Vulnerable Zone
- Bathing Water Locations

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WFD Protected Areas in the Vicinity of the Proposed Development

Figure: 1-2	Drawing No: GoBe-0123		
Revision:	Date:	Drawn:	Checked:
01	27/09/24	EV	BPHB

Map scale 1:400,000 @ A3 — 0 5 10 km

Co-ordinate system: ETRS 1989 UTM Zone 30N **EPSG:** 25830

MUIR MHÒR OFFSHORE WIND FARM

A joint venture between Fred. Olsen Seawind & Vattenfall

Service Layer Credits: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

Table 1-10 Risks from the Proposed Development on WFD relevant Protected Areas

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
Within 2 km of any WFD protected area	The Proposed Development is not located within 2 km of any SWPAs, Bathing Waters, SPAs or SACs.	No

INVASIVE NON-NATIVE SPECIES

1.5.15. Risks from the Proposed Development related to INNS are presented in Table 1-11.

Table 1-11 Proposed Development risks related to INNS within WFD waterbodies.

Consideration of the Activity	Key Risks, Issues and Justification	Scoped into assessment?
Potential to introduce or spread INNS	The installation of offshore export cables for the Proposed Development provides a pathway to increase the risk of introducing INNS. Increased vessel traffic and structures placed on the seabed (i.e. cable protection) during construction will likely be colonised by a range of marine species. These structures have the potential to act as artificial reefs and therefore could facilitate the spread of non-native species already present in the area although, as detailed in Table 1-2, Table 1-3 and Table 1-4 all three waterbodies are classified as having a high freedom from invasive species in the most recent classification. As cable protection may be installed along the offshore ECC there is potential for these structures to be implemented in either of the identified WFD coastal waterbodies and subsequent colonisation from non-native species could occur.	Yes

SCOPING CONCLUSION

1.5.16. The scoping assessment is provided in Section 1.5, for each of the WFD receptors. A summary of the scoping conclusions are outlined in Table 1-12 outlining the receptors and impacts scoped into the impact assessment.

Table 1-12 Summary of Receptors and Impacts Scoped into the Impact Assessment

Receptor	Potential Risk	Waterbody/Protected Areas	Risk issues for impact assessment
Hydromorphology	Yes		
Biology: Habitats	Yes	Cairnbulg Point to Ugie Estuary coastal waterbody Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody	Potential Proximity to Higher Sensitivity Habitats and potential footprint to exceed 1% or more of any lower sensitivity habitat
Biology: Fish	Yes	Cairnbulg Point to Ugie Estuary coastal waterbody Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody	Underwater noise impacts on normal fish behaviour like movement, migration or spawning
Water Quality	No	N/A	N/A
Protected Areas	No	N/A	N/A
INNS	Yes	Cairnbulg Point to Ugie Estuary coastal waterbody Ugie Estuary to Buchan Ness (Peterhead) coastal waterbody	Potential to introduce or increase the spread of INNS

1.6. IMPACT ASSESSMENT

HYDROMORPHOLGY

1.6.1. As identified in Table 1-5, installed cable protection may result in hydromorphological impacts upon the Cairnbulg Point to the Ugie Estuary coastal waterbody.

1.6.2. During construction offshore export cables will be installed at landfall using trenchless techniques such as HDD. This technique avoids interaction with surface features and is used to install ducts through which cables can be pulled. The length of HDD can vary depending on ground conditions, with the maximum length proposed for the Proposed Development being 3 km. Minimal disturbance to the coastline will occur as HDD does not directly interact with the active parts of the beach (between entry and exit pits). Consequently, it will not impact littoral processes in these areas. Provided the cable remains buried to the 2 m target depth beyond the HDD exit point throughout the operational lifespan of the Proposed Development, there is no possibility of interaction with, or effect on, nearshore beach processes or morphology, including coastal erosion.

1.6.3. Where burial alone is insufficient for the safety of cabling the installation of cable protection in the offshore ECC will be deployed. This could be any variation of rock placement, grout/rock bags and frond or concrete mattresses as described in Volume 1, Chapter 3 (Project Description). Installation of cable protection will therefore result in a localised change in the seabed profile of up to 2 m in addition to a change in substrate type, with potential effects which may persist over the operational period. These could result in increased drag forces resulting in localised scour. In areas of sand the installation of rock berms will result in a change to the sediment substrate. Following installation, an initial period of sediment accumulation to infill any void spaces is expected however, saltation is expected to be largely unaffected by the presence of the cable protection such that existing transport process (including bedform migration) will remain unaffected.

1.6.4. During operation these formations have the potential to impact wave and tidal regimes, albeit unlikely, due to limited locations along the cable route that are likely to require supplementary protection. The patterns of processes governing the overall evolution of the hydromorphological systems (the flow regime, water depths and sediment availability) are at a much larger scale than the local works of the Proposed Development. When combined with the current high hydromorphological status of the waterbody as described in Table 1-3, it is not anticipated that hydromorphology in the Cairnbulg Point to the Ugie Estuary coastal waterbody will be significantly affected throughout all phases of the Proposed Development.

1.6.5. As such there is not predicted to be a deterioration in the ecological status of this waterbody receptor. The Proposed Development is therefore considered to be compliant with the WFD requirements and there would not be a significant deterioration in the status of either the Cairnbulg Point to Ugie Estuary, Ugie Estuary to Buchan Ness (Peterhead) or Ugie estuary coastal or transitional waterbodies.

BIOLOGY: HABITATS

1.6.6. As identified in Table 1-7, cable installation may result in temporary habitat loss/disturbance of less than 0.042 km² within the Ugie Estuary to Buchan Ness (Peterhead) and/or Cairnbulg Point to the Ugie Estuary coastal waterbodies during the construction phase. The footprint of the Proposed Development has the potential to interact with gravel and cobbles, subtidal soft sediment habitat and subtidal rocky reef habitats within the waterbodies. Evidence of kelps

that are likely to continue until at least the shallow intertidal were identified in the Environmental Baseline survey: Volume 3, Appendix 9.1 (Environmental Baseline Report: ECC and Intertidal (LOT 2 & 3)) and as such the higher sensitivity habitats of subtidal kelp beds are taken forward on a precautionary basis.

1.6.7. Works associated with cable installation within both WFD waterbodies include seabed preparation, cable installation into the seabed and the use of HDD at the landfall. Further details are provided in Volume 1, Chapter 3: (Project Description).

1.6.8. A characterisation of the benthic and subtidal habitats which may be directly or indirectly impacted by the Proposed Development is provided in Volume 2, Chapter 9 (Benthic, Subtidal and Intertidal Ecology). The EIAR assessment concluded that there would be no adverse significant effects on benthic receptors from the habitat disturbance from the proposed activities in the offshore ECC in the construction, O&M or decommissioning phases. None of the likely affected biotopes are rare or geographically restricted, with comparable habitats distributed within the wider region and the Northern North Sea. Given the relatively small spatial scale of the temporary habitat disturbance, this loss is not expected to undermine regional ecosystem functions or diminish biodiversity.

1.6.9. The impact of temporary habitat loss on benthic receptors during construction is predicted to be of local spatial extent, short term duration (as it is limited to the duration of construction activities), intermittent and with high reversibility. Given the benthic habitats that characterise the study area are typically widespread throughout the region, the temporary habitat disturbance during construction activities would have an impact on a very limited footprint compared to their overall extent. Furthermore, all benthic habitats are predicted to recover to the baseline condition within four years (limited to the duration of construction activities).

1.6.10. The sensitivity of all biotopes that are known to characterise the Proposed Development's benthic environment have been assessed according to the detailed Marine Evidence Based Sensitivity Assessments in Volume 2, Chapter 9 (Benthic, Subtidal and Intertidal Ecology). This assessment determined that most biotopes have a negligible to medium sensitivity to a disturbance of this nature. Only *Fucus serratus* and *Modiolus modiolus* were assessed to have high sensitivity to increases in SSC as detailed within Volume 2, Chapter 9 (Benthic, Subtidal and Intertidal Ecology). Comparable habitats are distributed within the wider region therefore, given the relatively small spatial scales for the total temporary habitat disturbance outlined above, this loss is not expected to undermine regional ecosystem functions or diminish biodiversity.

1.6.11. The HDD installation method proposed for export cables at landfall is expected to avoid areas of potential subtidal kelp, as kelp are likely to be attached to subtidal boulders and in more rocky areas. The punch-out area will be in a sedimentary area and as such should avoid any direct impact on potential kelp areas.

1.6.12. Long term habitat loss or alteration over the O&M phase of the Proposed Development is assessed within Volume 2, Chapter 9 (Benthic Subtidal and Intertidal Ecology) as the presence of cable protection within WFD waterbodies represents a change from the baseline sedimentary conditions via the introduction of hard substrate. All benthic receptors are deemed to have no resistance to long term or permanent habitat loss according to the MarESA criteria and are consequently considered to have a high sensitivity over the Proposed Development lifespan. Despite this the impact is assessed to be low due to the footprint of affected area being highly localised representing only a minor divergence in baseline conditions

1.6.13. Impacts related to decommissioning works will be equal to or less than that assessed for construction due to the potential for aspects of the Proposed Development's infrastructure to

remain *in situ* in accordance with the decommissioning plan. Consequently, the impacts are considered to be of a similar magnitude

1.6.14. Since the loss of subtidal habitat is only temporary deterioration is only predicted to be on a small scale and limited extent. As such there is not predicted to be a deterioration in the ecological status of this waterbody receptor. The Proposed Development is therefore considered to be compliant with the WFD requirements and there would not be a significant deterioration in the status of either the Cairnbulg Point to Ugie Estuary or Ugie Estuary to Buchan Ness (Peterhead) coastal waterbodies.

BIOLOGY: FISH

1.6.15. A full and detailed assessment of relevant activities during the construction, O&M and decommissioning phases of the Proposed Development upon fish receptors is provided in Volume 2, Chapter 10 (Fish and Shellfish Ecology), with further detail provided in Volume 3, Appendix 3.1 (Subsea Noise Technical Report). However, regarding this WFD assessment, consideration is made for fish receptors within the Cairnbulg Point to the Ugie Estuary, Ugie Estuary to Buchan Ness (Peterhead) coastal waterbodies and Ugie estuary transitional waterbody, which have the potential to be affected by generation of noise and vibrations resulting from Proposed Development activities at the landfall site and the concurrent piling of foundations.

1.6.16. The installation of infrastructure may act as a barrier to fish that would typically inhabit or traverse these waterbodies. UWN from construction of the Proposed Development has been demonstrated to cause a range of adverse effects on fish and marine life. These impacts include behavioural changes, such as avoidance and disruption of feeding; physiological stress and hearing damage; reproductive impairments; and the masking of critical environmental sounds necessary for normal functioning, such as predator-prey interactions and navigational cues. Additionally, excessive underwater noise can lead to physical injuries, including barotrauma and tissue damage, and can alter community structures within marine ecosystems.

1.6.17. Activities which are likely to generate underwater noise are those associated with general seabed clearance, installation and vessel operations, cofferdam installation for HDD operations and any UXO specific seabed clearance. Trenchless techniques will be used to install cables below the Cairnbulg Point to the Ugie Estuary and Ugie Estuary to Buchan Ness (Peterhead) coastal waterbodies, thereby minimising direct, and indirect impacts on marine life. HDD involves drilling through the ground from an onshore HDD site compound to a point offshore beyond the intertidal area, ideally with sufficient water depth for the cable laying vessel to access. It is anticipated that the HDD punch-out location will be situated within the shallow subtidal area. This installation technique therefore presents the least disturbance in terms of public access/use as well as reducing any environmental impact (particularly to intertidal and shallow subtidal fish receptors and associated habitats).

1.6.18. Fish receptors of relevance to the Proposed Development include Group 1 (least sensitive), Group 2, and Group 3 (most sensitive). Those fish receptors of relevance to the Proposed Development (Offshore) are provided in Table 1-13. Where published peer reviewed literature for fish species hearing sensitivity is not available then Group 3 has been assumed to ensure that assessment is precautionary.

Table 1-13 Hearing Categories of Fish Receptors Relevant to the Proposed Development (Popper et al., 2014)

Hearing Category	Fish Receptors Relevant to the Proposed Development
Group 1 (least sensitive)	Lemon sole, plaice, sandeel, anglerfish, mackerel, thornback ray, spotted ray, blonde ray, common skate, spurdog, tope shark (Galeorhinus galeus), basking shark, river lamprey and sea lamprey.
Group 2	Atlantic salmon and sea trout.
Group 3 (most sensitive)	Herring, Cod, Sprat, Whiting, blue whiting, ling, Norway pouting, European eel, twaite shad, allis shad, haddock and European hake.
Eggs and larvae	Species with spawning grounds in affected areas (cod, herring, plaice, sprat, whiting and sandeel).

1.6.19. The migratory fish presented in Table 1-13 with the potential to traverse the WFD study area and exist in nearby rivers and estuaries of relevance to this WFD assessment include: river and sea lamprey (Group 1); Atlantic salmon and sea trout (Group 2), European eel, twaite shad and allis shad (Group 3).

1.6.20. Fish are expected to be broadly capable of adapting to impacts from underwater noise, with mobile species likely adapting to the impact by temporarily leaving the area. Those species which rely on specific substrates for spawning are less likely to display a fleeing response during spawning, therefore increasing their theoretical exposure to underwater noise. However, all affected species will have some measure of mobility, rapidly recolonising the affected area from adjacent locations, with the wider population capable of replacing any lost individuals. Of note, it is not envisaged that cofferdams will be required at the HDD punch-out locations, reducing any impacts associated with piling (i.e., killing, injury or behavioural disturbances).

1.6.21. The assessment presented in Volume 2, Chapter 10 (Fish and Shellfish Ecology) concluded moderate adverse effects upon static and spawning herring receptors, within the ZoI for UWN impacts from piling during the construction phase of the Proposed Development. Implementation of further mitigation measures have been proposed. These are detailed within Volume 4, Appendix 10 (In Principle Fish Mitigation Plan). This additional mitigation is required to specifically protect spawning Buchan stock herring from UWN related to piling of anchors and OEP foundations in the Array Area and not due to any landfall or export cable installation works within the WFD waterbodies. As stated in Section 1.3.17 piling has been included in the assessment as the extent of UWN has the potential to impact normal fish behaviour within the identified WFD waterbodies.

1.6.22. Increased SSC and sediment deposition from construction activities in the ECC has the potential to directly interact with and smother newly deposited herring eggs causing a barrier to spawning success rate. Volume 2, Chapter 10 (Fish and Shellfish Ecology) concluded moderate adverse significance due to the regional importance of herring, the medium vulnerability of herring eggs and larvae to this impact, low recoverability and the overlap with the Buchan spawning ground.

1.6.23. The presence of Electromagnetic Fields (EMFs) because of the electricity passing through the export cables have the potential to impact fish receptors with WFD waterbodies. Volume 2, Chapter 10 (Fish and Shellfish Ecology) assessed the ongoing effects of EMF throughout the Proposed Development operational lifespan to be low due to the implemented mitigation such as cable burial and protection. Regular monitoring of segments of cable not able to be protected will ensure any EMF emissions will minimise the duration and extent of impacts.

1.6.24. The decommissioning phase will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. The maximum levels of UWN during decommissioning are expected from underwater cutting required to remove structures, with piled foundations cut approximately 1 m below the seabed. The noise levels from this process are expected to be less than piling and therefore UWN impacts would be less than as assessed during the construction phase.

1.6.25. It should be noted that the assessment of fish is largely associated with estuarine waterbodies rather than coastal waterbodies under the WFD. There is not predicted to be a deterioration in the ecological status of the identified waterbodies within the assessment, with respect to fish species. The Proposed Development is therefore considered to be compliant with the WFD requirements. The Proposed Development will not result in a deterioration of ecological status of any waterbodies or jeopardise the attainment of 'Good' status.

INVASIVE NON-NATIVE SPECIES

1.6.26. An assessment of the increased risk of introduction or spread of marine INNS due to presence of infrastructure and vessel movements associated with the Proposed Development is provided in Volume 2, Chapter 9 (Benthic, Subtidal and Intertidal Ecology) and this impact was scoped out of Volume 2, Chapter 10: (Fish and Shellfish Ecology) consideration of the mitigation and control of invasive species measures in line with International Maritime Organization (IMO, 2019). These standards and procedures will be incorporated into the EMP. Volume 4, Appendix 2 (Outline Environmental Management Plan) contains an Outline Invasive Non-Native Species Management Plan (Annex B)) and are embedded in the Proposed Development design, and as such ensure that no significant impacts arise from INNS.

1.6.27. There is a risk that the introduction of hard substrate such as cable protection into a predominantly sedimentary habitat during the construction phase may enable the colonisation of the introduced substrate by INNS that might otherwise not have had a suitable habitat for colonisation, thereby enabling their spread. This along with the movement of vessels throughout the WFD waterbodies and other plant that is required for the HDD punch-out area, cable installation, protection, and associated activities have the potential to impact upon benthic ecology and biodiversity locally and in the broader region.

1.6.28. Colonisation in general may result in an overall increased biodiversity; however, it represents a change from the baseline that occurs in the area. Whether this is considered a positive or negative can be subjective, and both are possible. Positive effects could include an increase in abundance of commercially important invertebrate species, which would benefit commercial fisheries. Negative effects could include providing habitat that may allow the establishment of non-native species. Rock outcrop has been recorded at various foreshore promontories flanking the landfall area, consisting of Peterhead Granite (Volume 3, Appendix 9.1 (Environmental Baseline Report: ECC and Intertidal (LOT 2 & 3)); therefore, the introduction of hard substrate will not fundamentally change the type of available habitats available within the wider study area despite being predominantly sand based with regards to surficial sediments. The existing rocky outcrops may already act as a vector for the spread of INNS. Therefore, the addition of cable protection within the offshore ECC is not considered to provide a significant risk in the spread of INNS.

1.6.29. In addition to this an increase in marine traffic during the construction phase could contribute to the risk of introduction of INNS via ballast water discharge. During the construction phase up to 1711 round trips to port could occur with a further 509 during O&M.

1.6.30. Precautionary measures to ensure that the risk of potential introduction and spread of INNS will be minimised are included in the commitments register through the development of and adherence to an EMP (C-08 in Volume 3, Appendix 6.1 (Commitments Register)), which will incorporate the IMO ballast water management convention to reduce the risk of marine INNS throughout all phases of the Proposed Development. The outline INNS management plan is detailed further within Annex B of Volume 4, Appendix 2 (Outline Environmental Management Plan).

1.6.31. The impacts on benthic receptors within the offshore ECC are predicted to be of low spatial extent. The introduction of hard structures may serve as 'stepping stones' and extend the impact beyond a local scale during the O&M of the Proposed Development as presented in Volume 2, Chapter 9 (Benthic Subtidal and Intertidal Ecology). However, based on current scientific knowledge it is not possible to predict whether such a spread will occur, to what extent and which species, if any, this may involve. The impact is predicted to be of long-term permanent duration, continuous and irreversible, though it is predicted that the impact will affect the receptors indirectly. With the implementation of an EMP with associated INNS plan to mitigate and manage INNS, the magnitude of this impact is not considered to be significant.

1.6.32. Therefore, considering the existing hard substrate within the waterbody, the proposed management of INNS and the embedded mitigation, there is not predicted to be a significant deterioration in the status of any waterbody in regard to INNS, nor prevent any waterbody from achieving future objectives under the WFD.

1.7. CONCLUSIONS

1.7.1. This WFD assessment has considered the potential effects of the Proposed Development to ensure that the associated activities will not result in (or contribute to) a deterioration in the status of designated waterbodies or jeopardise the attainment of 'Good' status in the future.

1.7.2. The conclusions of the different elements of the WFD assessment are summarised in Table 1-14.

Table 1-14 Offshore WFD Assessment Conclusions

Receptor	WFD Assessment Conclusion
Hydromorphology	No deterioration in the status of the WFD waterbodies are predicted.
Biology: Habitats	No deterioration in the status of the WFD waterbodies are predicted.
Biology: Fish	No deterioration in the status of the WFD waterbodies are predicted.
Water Quality	No deterioration in the status of the WFD waterbodies are predicted.
Protected Areas	No deterioration in the status of the WFD waterbodies are predicted.
INNS	No deterioration in the status of the WFD waterbodies are predicted.

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