Environmental Impact Assessment Report
Volume 3, Appendix 5.3: Marine Strategy Framework Directive Assessment

MarramWind Offshore Wind Farm

December 2025

MarramWind

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Contents

1. Introduction

1.1 Background

1.1.1.1 This Appendix has been prepared with reference to Directive 2008/56/EC of the European Parliament and of the Council 17 June 2008 establishing a framework for community action in the field of marine environmental policy (the Marine Strategy Framework Directive (MSFD)) for the MarramWind Offshore Wind Farm (hereafter, referred to as 'the Project'). The MSFD is transposed into United Kingdom (UK) law by the Marine Strategy Regulations 2010.

1.1.1.2 The Project is wholly owned by ScottishPower Renewables UK Limited (SPR). MarramWind Limited, a subsidiary of SPR, is the Applicant for the Project.

1.1.1.3 A summary of the Project is provided in **Volume 1, Chapter 1: Introduction** and a comprehensive description of the Project is provided in **Volume 1, Chapter 4: Project Description** of the Environmental Impact Assessment (EIA) Report.

1.1.1.4 Under Provision 5 of the Marine Strategy Regulations 2010, the UK has developed a Marine Strategy that provides the framework for delivering marine policy at the UK level. It sets out how the vision of clean, healthy, safe, productive, and biologically diverse oceans and seas will be achieved.

1.1.1.5 The UK Marine Strategy consists of a simple three-stage framework for achieving Good Environmental Status (GES)[1], as defined by the MSFD, in UK marine water bodies. Achieving GES is about protecting the marine environment, preventing its deterioration, and restoring it where practical, while allowing the sustainable use of marine resources. In line with the way GES is defined by the MSFD, the Marine Strategy covers eleven qualitative Descriptors: biodiversity; non-indigenous species; commercial fish; food webs; eutrophication; sea-floor integrity; hydrographical conditions; contaminants; contaminants in seafood; marine litter, and underwater noise.

1.1.1.6 An MSFD assessment has been undertaken for the 'the Project, with the findings presented in this Appendix. This provides the Marine Directorate with the information it needs to determine whether the installation, operation and decommissioning of the Project in the UK Exclusive Economic Zone (EEZ) has the potential to influence the GES of the UK's marine waters and therefore the UK Government's ability to uphold its responsibilities under the MSFD.

1.1.1.7 The conclusions of this Appendix have been derived from aspect-specific assessments, and therefore should be read in conjunction with the following chapters from **Volume 1**:

- **Chapter 6: Marine Geology, Oceanography and Physical Processes**;
- **Chapter 7: Marine Water and Sediment Quality**;
- **Chapter 10: Benthic, Epibenthic and Intertidal Ecology**;
- **Chapter 11: Marine Mammals**;
- **Chapter 12: Offshore and Intertidal Ornithology**;
- **Chapter 13: Fish Ecology**; and

[1] As defined in Article 3(5) of the MSFD Directive, GES refers to: *the environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas that are clean, healthy and productive within their intrinsic conditions, and the use of the marine environment is at a level that is sustainable, thus safeguarding the potential for uses and activities by current and future generations*.

- **Chapter 14: Commercial Fisheries**.

1.2 Legislative context

1.2.1.1 This Section identifies the relevant legislation and policy context that has informed the scope of the MSFD Assessment. Further information on policies relevant to the EIA and their status is set out in **Volume 1, Chapter 2: Legislative and Policy Context**, which provides an overview of the relevant legislative and policy context for the Project. **Volume 1, Chapter 2: Legislative and Policy Context** is supported by **Appendix 2.1: Planning Policy Framework**, which provides a detailed summary of international, national, marine and local planning policies of relevance to the EIA. Individual policies of specific relevance to this assessment and associated appendices have been taken into account.

1.2.1.2 This summary provides a foundation for understanding of the legislative and policy context that has informed the MSFD assessment in this Appendix

1.2.1.3 The legislation relevant to MSFD includes:

- Marine Strategy Regulations 2010;
- Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (MSFD); and
- Water Framework Directive (European Union, 2000).

1.2.2 Marine Strategy Framework Directive

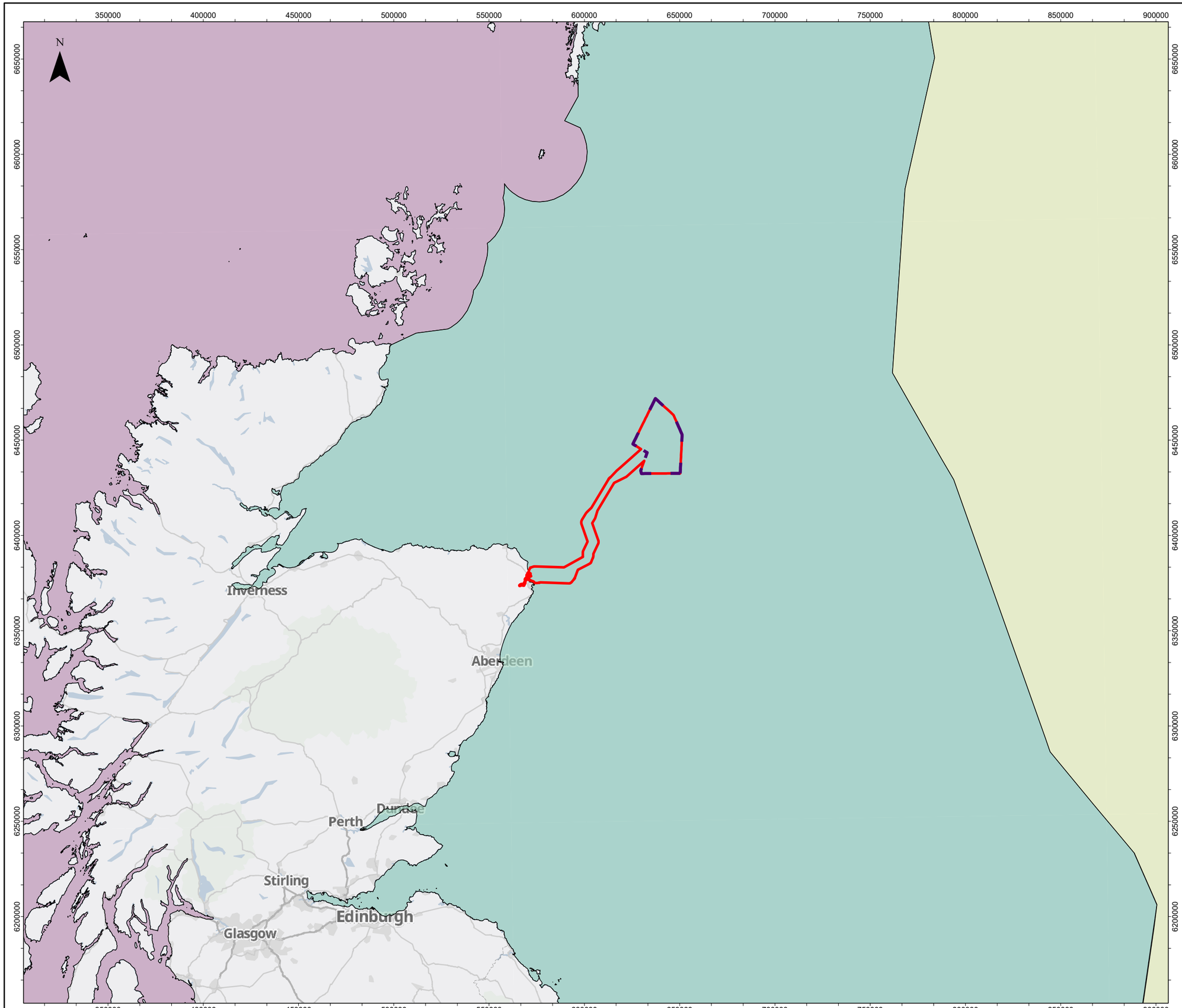
1.2.2.1 Article 3(1)(a) of the MSFD defines "*marine water*" as:

"*a) waters, the seabed and subsoil on the seaward side of the baseline from which the extent of territorial waters is measured extending to the outmost reach of the area where a Member State has and/or exercises jurisdictional rights, in accordance with the Unclos, with the exception of waters adjacent to the countries and territories mentioned in Annex II to the Treaty and the French Overseas Departments and Collectivities; and*

b) coastal waters as defined by Directive 2000/60/EC, their seabed and their subsoil, in so far as particular aspects of the environmental status of the marine environment are not already addressed through that Directive or other Community legislation".

1.2.2.2 Article 3(2) defines "*marine regions*" as "*a sea region which is identified under Article 4. Marine regions and their subregions are designated for the purpose of facilitating implementation of this Directive and are determined taking into account hydrological, oceanographic and biogeographic features.*"

1.2.2.3 The marine region of relevance to the Project, is defined in Article 4(2)(a)(i) of the MSFD as in the "*North-East Atlantic Ocean*" within "*the Greater North Sea, including the Kattagat, and the English Channel*". The Greater North Sea subdivision includes all waters along the eastern coast of England and Scotland. It includes the UK EEZ and UK territorial waters, from the Orkney and Shetland Islands in the north, to Devon in the south. The Greater North is also bounded by the coastlines of Norway, Sweden, Denmark, Germany, the Netherlands, Belgium and France. The Project is therefore located entirely within the Greater North Sea region as defined by the MSFD (see **Figure 1**).



Red Line Boundary

Option Agreement Area

Marine Strategy Framework Directive (WSFD)

- Celtic Seas
- Greater North Sea
- Greater North Sea, incl. the Kattegat and the English Channel

0 20 40 60 80 100 Kilometres

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REV	REV DATE	GIS CREATOR	GIS REVIEWER	TECHNICAL CHECKER	TECHNICAL APPROVER

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PROJECT TITLE

MarramWind Offshore Wind Farm

DRAWING TITLE

Figure 1 The Project within the Greater North Sea marine region subdivision as defined by the Marine Strategy Framework Directive

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Appendix 5.3

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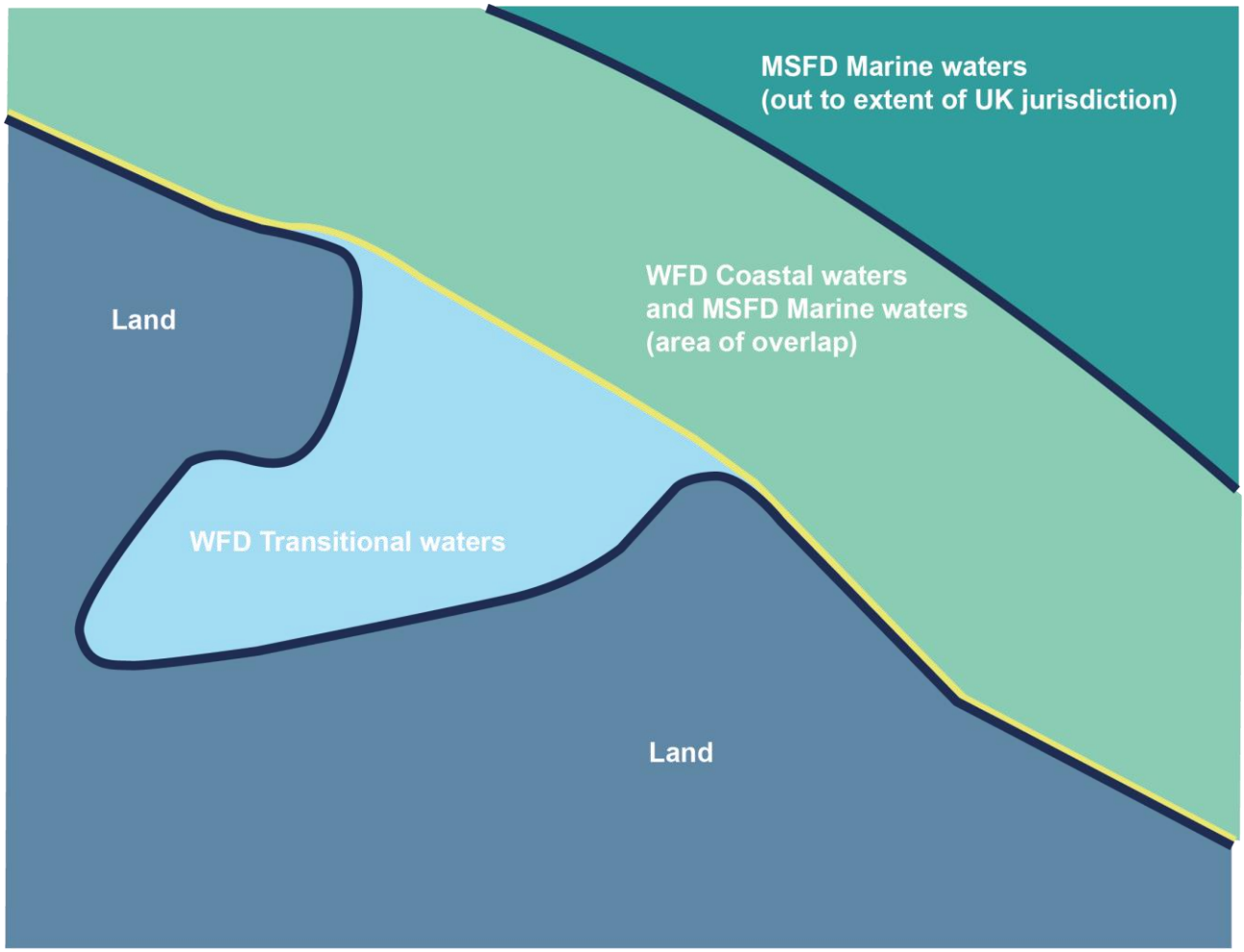
1.2.3 Relationship with the Water Framework Directive

1.2.3.1 There is some overlap between the jurisdictions and objectives of the MSFD and the Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the community action in the field of water policy (the Water Framework Directive, or WFD). The WFD's aim is to improve and protect the chemical and ecological status of surface waters from rivers, lakes, groundwaters, estuaries and coastal waters out to 1 nautical mile. The MSFD includes coastal waters, but not WFD transitional waters (for example estuaries, sea lochs or coastal lagoons). The line between the two directives is 'bay closing line', or the seaward limit of transitional waters as defined under the WFD. This is presented in **Plate 1.1**.

Plate 1.1 Diagram illustrating the extent of MSFD and WFD boundaries



2. Marine Strategy Framework and the Marine Strategy Framework Directive Status in the UK Exclusive Economic Zone

2.1 Marine Strategy Framework

2.1.1.1 Marine strategies include the following key stages:

- Initial assessment of the current (at the time) environmental status of national marine waters and the environmental impact and socioeconomic analysis of human activities in these waters.
- Determination of what GES means for each European Union (EU) Member States' and UK's national marine waters.
- Establishment of environmental targets and associated indicators to show how / if GES will have been achieved by 2020.
- Establishment of a monitoring programme for the ongoing assessment and regular update of targets.
- Development of a Programme of Measures (PoM) design to achieve or maintain GES by 2020.

2.1.1.2 The MSFD, which required the UK and all EU Member States to take measures to achieve GES in their seas by 2020, puts in place a framework to allow co-ordinated action across Europe to improve the marine environment. It provides tools required to achieve clean, healthy, safe, productive and biologically diverse oceans and seas for the UK. The requirements of the MSFD were transposed into national legislation through the Marine Strategy Regulations 2010 (covering England, Scotland, Wale and Northern Ireland.

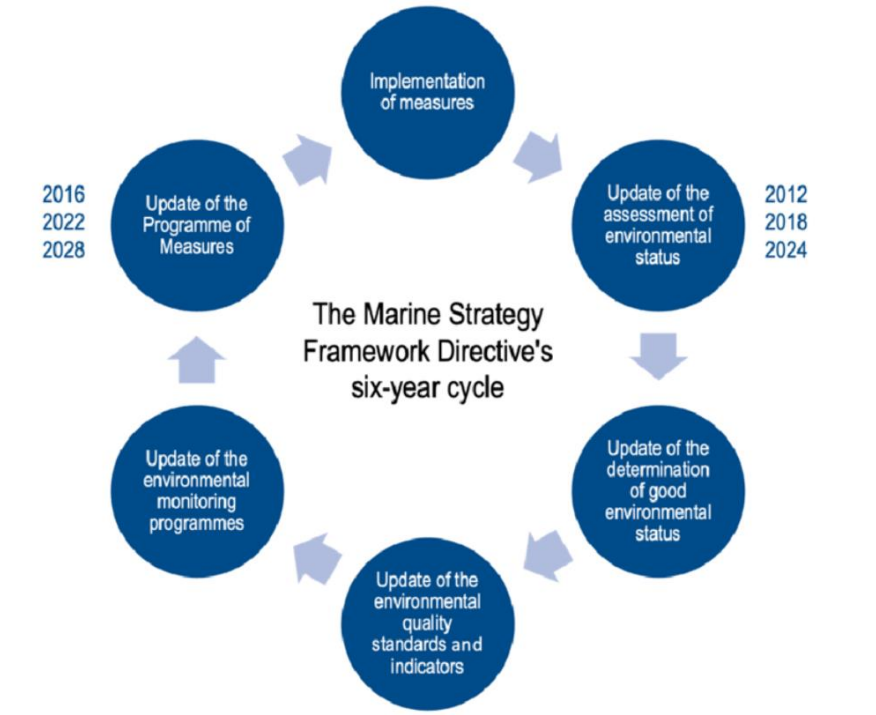
2.1.1.3 Key stages in the UK MSFD process to date have been:

- The UK completed the first implementation stage of the MSFD in December 2012 with the publication of the UK's Marine Strategy Part One. The UK' updated assessment of GES of the UK's Marine Strategy Part One was published in October 2019 (Department for Environment, Food and Rural Affairs (Defra), 2019).
- The second phase was the development of a UK marine monitoring programme to monitor progress towards GES. This was completed in July 2014 with the publication of the UK's Marine Strategy Part two. The UK updated monitoring programmes was published in October 2022 (Defra, 2022).
- The PoM constitutes the third stage in the implementation of the MSFD. The PoM was developed in December 2015 and implemented December 2016. The consultation of the updated PoM concluded in November 2021. Defra published the programme of measures in January 2025 (Defra, 2025).

2.1.1.4 Each stage of the UK Marine Strategy must be reviewed every six years and revised if necessary. Where appropriate, the PoM will be updated to take account of new developments and knowledge.

2.1.1.5 The process is cyclical in nature (**Plate 2.1**), the second cycle commenced in 2018, and the third in 2022.

Plate 2.1 The MSFD cycle (Zweifel *et al*., 2024)



2.1.1.6 The Marine Directorate, as the competent authority, will carry out the assessment to determine whether the Project has the potential to influence GES of the UK's marine water and therefore the UK Government's ability to uphold its responsibilities under the MSFD.

2.2 Marine Strategy Framework Directive descriptors

2.2.1.1 GES will involve protecting the marine environment, preventing deterioration, and restoring it, while using marine resources sustainably. The MSFD sets out 11 high level Descriptors of GES which covers all the key aspects of the marine ecosystem and all the main human pressures on them. These Descriptors are presented in **Table 2.1** and will be discussed in greater context for the UK in **Section 3**.

Table 2.1 The 11 descriptors used to steer the Marine Strategy Framework Directive

Descriptor	Overarching objective (European Commission, 2023)
1 – Biodiversity	The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
2 – Non-indigenous species	Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
3 – Populations of commercial species	Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
4 – Food web structures	All elements of the marine food webs, to the extent that they are known occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
5 – Eutrophication	Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algae blooms, and oxygen deficiency in bottom waters.
6 – Sea floor integrity	Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
7 – Alterations to hydrography	Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
8 – Contaminants	Contaminants are at a level not giving rise to pollution effects.
9 – Seafood contaminants	Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.
10 – Marine litter	Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
11 – Energy and noise	Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

2.3 Current Marine Strategy Framework Directive status in the UK

2.3.1.1 Publication of the UK Marine Strategy Part 1, Part 2 and Part 3 between December 2012 and December 2015 marked a significant step forward in the protection and management of the waters around the UK's coasts. The updated UK Marine Strategy Part 1, published in 2019, marks the beginning of the second implementation cycle of the UK Marine Strategy. It provides an opportunity to show what progress has been made towards the shared vision since 2012 and what further action is necessary. The UK Marine Strategy Part 2, published in 2022, provides an update on UK monitoring programmes that have been proposed to use to provide the evidence to support the 2024 assessment of progress towards achieving GES within the UK Marine Strategy area.

2.3.1.2 The monitoring and assessment work for the various indicators has been carried out by experts and scientists working in the UK Marine Monitoring and Assessment Strategy (UKMMAS) Evidence Groups which were coordinated and guided by the UK Monitoring and Assessment Reporting Group.

2.3.1.3 A progress report was published by UKMMAS (2024) providing a summary of progress towards GES since its first assessment in 2012. It noted the following findings outlined in **Table 2.2**.

Table 2.2 Summary of progress towards GES since 2012 (UKMMAS, 2024)

Descriptor		**GES achieved**	**Situation since 2012**
Descriptor 1 – Biodiversity	**Cetaceans**	GES not achieved.	Stable situation since 2012.
	Seals	GES partially achieved.	Improving situation since 2012.
	Birds	GES not achieved.	Declining situation since 2012.
	Fish	GES not achieved.	Improving situation since 2012.
	Pelagic habitats	GES not achieved.	Uncertain situation since 2012.
	Benthic habitats	GES not achieved.	Stable situation since 2012.
Descriptor 2 – Non-indigenous species		GES uncertain.	Stable situation since 2012.
Descriptor 3 – Commercial fish and shellfish		GES partially achieved.	Improving situation since 2012.
Descriptor 4 – Food web structure		GES not achieved.	Improving situation since 2012.
Descriptor 5 – Eutrophication		GES achieved.	Stable situation since 2012.
Descriptor 6 – Sea floor integrity		GES partially achieved	Uncertain situation since 2012.
Descriptor 7 – Alterations to hydrography		GES fully achieved	stable situation since 2012
Descriptor 8 – Contaminants		GES not achieved.	Improving situation since 2012.
Descriptor 9 – Contaminants in seafood		GES partially achieved.	Improving situation since 2012.

3. Approach to Marine Strategy Framework Directive Approach

3.1.1.1 There is no formal approach or guidance associated with the completion of an MSFD assessment, unlike WFD Assessment, for which detailed guidance is available. Therefore, the approach used here is qualitative and narrative-based, drawing on the findings of the EIA Report for the components of the Project in the UK EEZ. The findings of the MSFD assessment also draw upon the outcomes of consultation upon the EIA Report and the Project more widely to date.

3.1.1.2 The objective of the MSFD assessment is to determine whether the Project has the potential to influence the UK's ability to achieve or maintain GES (as defined by the MSFD) in UK marine waters. The MSFD assessment therefore reviews the targets and indicators set by the UK Government, in order to reach or maintain GES in line with its obligations under the MSFD and provides a qualitative assessment of the degree to which activities relating to the Project could influence the success of the UK's Marine Strategy. The 'Marine strategy part three: 2025 UK programme of measures' (Defra, 2025) provides the targets and indictors specified by the UK PoM that constitutes the third stage in the implementation of the MSFD in the UK.

3.1.1.3 Each of the 11 MSFD Descriptors can be associated with an aspect addressed by the EIA Report. The MSFD assessment is therefore closely linked with the assessment of potential effects on that aspect.

3.1.1.4 The purpose of **Table 3.1** is to record the potential linkage between environmental effects resulting from activities relating to the Project and the 11 MSFD Descriptors. The subsequent narrative in **Section 4** then explains the likelihood of the effects identified having an influence on the UK's ability to meet or maintain its current GES status against each Descriptor.

Table 3.1 Alignment of MSFD Descriptors against activities relating to the Project

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
Volume 1, Chapter 6: Marine Geology, Oceanography and Physical Processes	Project construction activities (such as cable trenching and anchor installation) and decommissioning activities causing seabed disturbance, leading to elevated suspended sediment concentrations (SSC), changes in bed level and sediment type (construction and decommissioning).	Potential changes to suspended sediment concentration, bed levels and sediment type.	6. Sea floor integrity; and 7. Alterations to hydrography.
	Project construction activities (such as cable trenching and anchor installation) and decommissioning activities leading to seabed disturbance and associated morphological change (construction and decommissioning).	Potential impacts to seabed morphology.	6. Sea floor integrity; and 7. Alterations to hydrography.
	Project construction activities at the landfall zones and in nearshore areas (such as horizontal directional drilling (HDD) exit pit excavation) and decommissioning activities leading to seabed disturbance and associated morphological change (construction and decommissioning).	Potential impacts to landfall morphology.	6. Sea floor integrity; and 7. Alterations to hydrography.
	Hydrodynamic blockage due to the presence of Project infrastructure (such as WTG floating units) in the water column and at the seabed (operation and maintenance (O&M)).	Potential changes to the tidal regime.	7. Alterations to hydrography.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
	Wave blockage due to the presence of Project infrastructure (such as WTG floating units) in the water column (O&M).	Potential changes to the wave regime.	7. Alterations to hydrography.
	Sediment transport blockage due to the presence of Project infrastructure (such as WTG floating units) in the water column and at the seabed (O&M).	Potential changes to the sediment transport regime.	6. Sea floor integrity; and 7. Alterations to hydrography.
	Morphological impact to designated seabed areas caused by blockage of hydrodynamic, wave and sediment transport processes arising from the presence of Project infrastructure in the water column and at the seabed (O&M).	Potential changes to seabed morphology.	6. Sea floor integrity; and 7. Alterations to hydrography.
	Morphological impact to the coast caused by blockage of hydrodynamic, wave and sediment transport processes arising from the presence of Project infrastructure in the water column and at the seabed (O&M).	Potential impacts to coastal morphology.	7. Alterations to hydrography.
	Presence of Project infrastructure at the seabed, resulting in localised accelerated flow and scouring of sediments (O&M).	Scour	7. Alterations to hydrography.
	Hydrodynamic blockage due to the presence of Project infrastructure as well as possible atmospheric wake effects altering water column mixing processes (O&M).	Potential changes to stratification and frontal systems.	7. Alterations to hydrography.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
Volume 1, Chapter 7: Marine Water and Sediment Quality	Direct seabed disturbance during construction (substrate preparation and installation of infrastructure) may release potentially contaminated sediments into the water column causing deterioration of water quality due to increased concentrations of contaminants in the water column (construction).	Mobilisation of sediments causing potential mobilisation of contaminants into the water column, leading to deterioration of water quality in offshore and inshore waters and, potentially, protected areas.	8. Concentrations of contaminants.
	Trenchless techniques are a method of installation for the export cable, such as HDD, to transition the export cable to the onshore grid at the landfall(s) area during the construction stage. This activity can release drilling fluids (muds), containing bentonite, polymer additives and drill cuttings, increasing fine sediment in suspension in the water column, which may impact water and sediment quality (construction).	Release of drilling muds from HDD at landfall impacting water and sediment quality.	5. Eutrophication; and 8. Concentrations of contaminants.
	Deposit of material into the sea may result in leaching of toxicants into the sea water from metallic components or coatings (construction).	Leaching of contaminants from WTG mooring components or cable armouring leading to deterioration of water quality in offshore and inshore waters.	8. Concentrations of contaminants.
	Direct seabed disturbance during maintenance and remedial work may release potentially contaminated sediments into the water column causing deterioration of water quality due to increased concentrations of contaminants in the water column (O&M).	Mobilisation of sediments leading to potential mobilisation of contaminants into the water column, with potential resettlement, leading to deterioration of water in inshore and offshore waters and, potentially, protected areas.	8. Concentrations of contaminants.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
	Material deposited into the sea as part of the Project may result in ongoing leaching of toxicants into the sea water from metallic components or coatings (O&M).	Ongoing leaching of toxicants from material deposited into the sea.	5. Eutrophication; and 8. Concentrations of contaminants.
Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology	Temporary disturbance of seabed habitat (construction, O&M and decommissioning).	Potential physical disturbance / damage to benthic habitats and displacement or mortality of associated benthic species.	1. Biodiversity; 3. Commercially exploited fish and shellfish; 4. Food web structures;
	Temporary increase in suspended sediment and deposition (construction, O&M and decommissioning).	Increased turbidity and smothering by resettling sediments may interfere with breeding, feeding or gas exchange mechanisms of benthic invertebrates, or photosynthesis of phytobenthos.	1. Biodiversity; 3. Commercially exploited fish and shellfish; 4. Food web structures;
	Disturbance of the seabed resulting in the mobilisation of sediment associated contaminants (for example, heavy metals, hydrocarbons) (construction, O&M and decommissioning).	Potential toxicity to benthic species.	1. Biodiversity; 3. Commercially exploited fish and shellfish; 4. Food web structures; and 8. Contaminants.
	Underwater noise, vibration and particle motion (construction, O&M and decommissioning).	Potential mortality, injury to and behavioural changes of benthic species and alterations to predator prey dynamics.	4. Food web structures; and 11. Input of anthropogenic noise.
	Long-term habitat loss (O&M).	Reduction in habitat availability for benthic species, potential alteration of local species composition and potential barrier to recovery or original habitat type.	1. Biodiversity; 3. Commercially exploited fish and shellfish; 4. Food web structures;
	Creation of areas of hard substrate (O&M).	Colonisation of hard structures leading to potential attraction of opportunistic or non-native species,	1. Biodiversity; 3. Commercially exploited fish and shellfish;

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
		alteration of local species composition and potential increase in biodiversity or risk of ecosystem imbalance.	4. Food web structures;
	Electromagnetic fields (EMF) generated by array and export cables (O&M).	Potential behavioural changes in EMF-sensitive benthic species and alteration of predator-prey dynamics.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Increased risk of introduction of spread of marine Invasive Non-Native Species (INNS) (construction and decommissioning).	Increased competition with, or displacement of native species and alteration of habitat structure and ecosystem function.	2. Non-indigenous species; 4. Food web structures;
Volume 1, Chapter 11: Marine Mammals	Underwater noise (UWN) from pre-construction surveys, piling or unexploded ordnance (UXO) clearance (construction).	Potential for direct effects including death, physical injury, temporary reduction in hearing sensitivity, behavioural disturbance or habitat displacement.	11. Input of anthropogenic noise.
	UWN from other construction activities such as drilling, dredging, trenching, cable laying, installing drag embedment anchors, rock placement, suction caisson installation (construction).	Potential for direct effects including physical injury, temporary reduction in hearing sensitivity, behavioural disturbance or habitat displacement.	11. Input of anthropogenic noise.
	UWN and physical presence of vessels (construction, O&M and decommissioning).	Potential for death or physical injury resulting from a collision of a marine mammal with a vessel, or behavioural disturbance.	4. Food web structures; and 11. Input of anthropogenic noise.
	Changes to prey availability (construction, O&M and decommissioning).	Potential for indirect effects from changes to prey availability or distribution due to the Project's activities on fish or benthic receptors.	1. Biodiversity; and 4. Food web structures.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
	Changes to prey availability from increased risk of introduction or spread of INNS. (construction and decommissioning).	Potential for indirect effects from changes to prey availability or distribution due to the Project's activities on fish or benthic receptors.	2. Non-indigenous species; and 4. Food web structures.
	UWN associated with WTG floating foundations including operational noise and mooring line strumming (O&M).	Potential for direct effects including injury, temporary reduction in hearing sensitivity, behavioural disturbance or habitat displacement.	11. Input of anthropogenic noise.
	Entanglement risk with mooring lines and dynamic array cables (O&M).	Potential for indirect effects including death or injury from entanglement with ghost gear caught of floating mooring lines and dynamic array cables.	1. Biodiversity; and 4. Food web structures.
	Habitat loss or change (O&M).	Potential for habitat loss or a change in use of the Project site resulting from presence of the structures.	1. Biodiversity; and 4. Food web structures.
	Physical barrier effects (O&M).	Potential for displacement or reduction in access to the Project site.	1. Biodiversity; and 4. Food web structures.
	EMF (O&M).	Potential for disturbance or indirect effects from disturbance to prey species from the EMF emitted from subsea cables.	1. Biodiversity; and 4. Food web structures.
	UWN from cable burial or retrieval.	Potential for direct effects including, physical injury, temporary reduction in hearing sensitivity, behavioural disturbance or habitat displacement.	11. Input of anthropogenic noise.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
	UWN from the removal of fixed infrastructure above the seabed (for example, driven piles).	Potential for direct effects including, physical injury, temporary reduction in hearing sensitivity, behavioural disturbance or habitat displacement.	11. Input of anthropogenic noise.
Volume 1, Chapter 12: Offshore and Intertidal Ornithology	Direct temporary habitat loss / disturbance (OAA and offshore export cable corridor) (construction and decommissioning).	Potential for temporary habitat loss of important feeding and roosting areas.	1. Biodiversity; and 4. Food web structures.
	Indirect impacts due to effects on prey species and habitats (OAA and offshore export cable corridor) (construction, O&M and decommissioning).	These mechanisms could potentially alter the amount of prey available in the area of active construction works and surrounding area.	1. Biodiversity; and 4. Food web structures.
	Distribution responses (OAA) from the presence of WTGs has the potential to disturb and displace birds from within and around the Project area. Additionally, the presence of WTGs may lead to barrier effects for bids whilst undertaking migratory, foraging or commuting flights (O&M).	This may result in energetic consequences due to reduced areas available for foraging and loafing or additional energetics to fly around the OAA.	1. Biodiversity; and 4. Food web structures.
	Collision risk (OAA) from bird colliding with rotating WTG blades (O&M).	As a worst-case, collision with infrastructure could result in consequent mortality of birds.	1. Biodiversity; and 4. Food web structures.
	Entanglement with mooring lines (OAA) (O&M).	Birds entangled within derelict / lost fishing gear are expected to suffer consequent mortality.	1. Biodiversity; and 4. Food web structures.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
Volume 1, Chapter 13: Fish Ecology	Pre-construction seabed preparation works (construction).	Potential effect on feeding and spawning patterns through temporary / permanent, direct habitat loss and disturbance through pre-construction activities.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Temporary habitat loss and / or disturbance (construction, O&M and decommissioning).	Potential effect on feeding and spawning patterns through temporary / permanent, direct habitat loss and disturbance through construction activities.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Temporary localised increases in SSC and smothering (construction, O&M and decommissioning).	Potential effect through smothering of species from the placement of infrastructure and associated construction activities within the marine environment.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Direct and indirect seabed disturbances leading to the release of sediment contaminants (construction, O&M and decommissioning).	Potential effect through contamination resulting in ecological or behavioural changes in sensitive receptors.	1. Biodiversity; 3. Commercially exploited fish and shellfish; 4. Food web structures; 8. Contaminants; and 9. Contaminants in seafood.
	Potential impacts on designated sites (construction, O&M and decommissioning).		1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Changes in water quality (construction and decommissioning).	Potential effect resulting from construction and decommissioning activities (both on land and offshore), which could cause changes in water quality.	1. Biodiversity; 3. Commercially exploited fish and shellfish; 4. Food web structures 8. Concentrations of contaminants; and 9. Contaminants in seafood.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
	Mortality, injury and behavioural changes resulting from underwater noise, vibration and particle motion (construction and decommissioning).	Potential effect through mortality, injury, behavioural changes and auditory masking for sensitive receptors.	4. Food web structures; and 11. Input of anthropogenic noise.
	Increased risk of introduction and / or spread of INNS (construction and decommissioning).	Potential effect on fish receptors through changes to prey availability resulting from the introduction of INNS or the colonisation of new structures.	2. Non-indigenous species; and 4. Food web structures.
	Long-term habitat loss and / or disturbance due to presence of offshore substation foundations, scour protection and cable protection (O&M).	Potential effect on feeding and spawning patterns through temporary / permanent, direct habitat loss and disturbance through operational and maintenance activities.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Introduction / colonisation of hard substrate (O&M).	Potential effect on fish receptors through habitat changes resulting from the introduction of new structures.	2. Non-indigenous species; and 4. Food web structures.
	EMF effects arising from cables (O&M).	Potential effect through behavioural changes in receptors that are receptive to EMF.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Heat effects arising from cables (O&M).	Potential effect through behavioural changes in sensitive receptors.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.
	Secondary entanglement risk (O&M).	Potential effect on elasmobranchs through secondary entanglement to abandoned fishing gear caught on mooring lines or cables.	1. Biodiversity; 3. Commercially exploited fish and shellfish; and 4. Food web structures.

Relevant chapter of the EIA Report	Activity or impact	Potential effects of the Project as identified in the EIA Report, that could relate to MSFD Descriptors	MSFD Descriptor
Volume 1, Chapter 14: Commercial Fisheries	Disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity (construction, O&M and decommissioning).	Potential effect of reduced catchability or availability of target species, causing disruption to fishing activity and potential economic losses during construction, O&M and decommissioning stages.	3. Commercially exploited fish and shellfish; and 9. Contaminants in seafood.

4. Marine Strategy Framework Directive Assessment

4.1 Overview

4.1.1.1 This Section considers the current MSFD status of marine waters in the UK (as noted in **Volume 1, Chapter 2: Legislative and Policy Context**, the relevant MSFD targets and indicators for each MSFD Descriptor (as listed in Defra, 2025) and relates the potential for the effects of the Project (as identified in the EIA Report and summarised in **Table 3.1**) to influence whether GES will be achieved or maintained.

4.1.1.2 Full details of the individual aspect-specific assessments (see **paragraph 1.1.1.7**) conclusions are not repeated in this MSFD assessment. It is important to note however, that the EIA Report concludes that there will be **No Significant** residual effects from the Project from the potential activities or impacts outlined in **Table 3.1** on the following receptor groups:

- marine geology, oceanography and physical processes (all receptors);
- marine water and sediment quality (all receptors);
- benthic, epibenthic and intertidal ecology (all receptors);
- marine mammals (all receptors);
- offshore and intertidal ornithology (all receptors except those mentioned in **paragraph 4.1.1.3**);
- fish ecology (all receptors); and
- commercial fisheries (all receptors).

4.1.1.3 **Volume 1, Chapter 12: Offshore and Intertidal Ornithology** presents residual likely significant effects of **Moderate Adverse** (**Significant**) on guillemot from distributional responses (O&M).

4.1.1.4 Additional information and details can be obtained by referring to the relevant chapter of the EIA Report.

4.2 Descriptor 1: Biodiversity

4.2.1.1 GES for Descriptor 1 in the UK seeks to safeguard, maintain, and restore marine biodiversity, to protect ecosystem structures and maintain healthy population dynamics. The UK has assessed its GES for Descriptor 1 as partially achieved, and the UK PoM sets targets against Descriptor 1 for three species groups (marine mammals, birds, and fish) and three habitat groups (pelagic habitats, sediment habitats, and rock and biogenic reef habitats) (see Defra, 2025 for detail). The findings of the EIA Reports in relation to the targets for these species and habitat groups is described below.

4.2.1.2 **Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology**; **Chapter 11: Marine Mammals**; **Chapter 12: Offshore and Intertidal Ornithology**; and **Chapter 13: Fish Ecology** report upon the potential for the Project to impact on benthic receptors, shellfish, marine mammals, birds and fish, respectively via the effects identified in **Table 3.1**.

4.2.1.3 The assessment of the effects noted in **Table 3.1**, as documented by the marine ecology EIA Report chapters outlined in **paragraph 4.2.1.2**, did not conclude any significant residual

effects on species distribution or abundance, population condition, or ecosystem structure more widely. The mobile nature of marine mammals, birds, and fish species means that they are able to avoid sedimentary disturbances, changes in water quality, underwater noise, and EMF. They are also well adapted to hunting or foraging over wide ranges so are tolerant of localised change. Within the wider scale of available habitat, the impacts of the Project were assessed as not having significant effects upon these species groups. The Project is therefore unlikely to affect the biological diversity of marine mammals, birds or fish in UK waters such that there would be no influence on the UK's current partial achievement of GES.

4.2.1.4 **Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology** and the **Nature Conservation Marine Protected Area Assessment** reports upon the offshore export cable corridor of the Project in relation to marine habitats. The offshore export cable corridor was designed to avoid passing through key sensitive areas of the protected feature burrowed mud of the Southern Trench Nature Conservation Marine Protected Area. The geophysical and benthic surveys for the OAA and offshore export cable corridor for the Project (**Appendix 10.4: Geophysical and Environmental Offshore Windfarm Survey Volume 2 of 11 Benthic Survey Interpretative Report** and **Appendix 10.3: Confidential Geophysical and Environmental Export Cable Corridor Survey - Benthic Survey Interpretative Report 2024**, respectively) found a number of species and habitats of conservation importance (see Section 10.6.1 of **Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology** for further details).

4.2.1.5 Given the scale of the Project, and the likely recolonisation rates, the habitat and species distribution patterns and population structures are unlikely to be affected to such a degree that would influence the ability of the UK to meet GES.

4.2.1.6 In line with the targets and indicators listed in (Defra, 2025) and with consideration of the non-significant findings of the EIA Report chapters in relation to biodiversity, the Project is unlikely to influence the ability of the UK to fully achieve GES for Descriptor 1.

4.3 Descriptor 2: Non-indigenous species

4.3.1.1 GES for Descriptor 2 in the UK requires the implementation of appropriate measures to reduce the vectors that act as pathways for the introduction and spread of non-indigenous species.

4.3.1.2 **Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology** concludes that construction and decommissioning activities that may pose a risk of introducing or facilitating the spread of INNS will not give rise to residual likely significant effects for intertidal habitats and species; subtidal habitats and species; shellfish; habitats of conservation importance; species of conservation importance; or blue carbon.

4.3.1.3 **Volume 1, Chapter 11: Marine Mammals** concludes that construction O&M and decommissioning activities that may pose a risk of introducing or facilitating the spread of INNS will not give rise to residual likely significant effects for all marine mammal receptors.

4.3.1.4 **Volume 1, Chapter 13: Fish Ecology** concludes that construction, O&M and decommissioning activities that pose a risk of introducing or facilitating the spread of INNS will not give rise to residual likely significant effects for all fish receptors.

4.3.1.5 **Appendix 5.2: Commitments Register** incudes embedded environmental measures such as the Offshore Invasive Non-Native Species Management Plan (M-102).

4.3.1.6 The Project therefore demonstrates good management practice, which relates to the improved management referred to in the Target for Criterion 1 (Defra, 2025).

4.3.1.7 The Project is therefore unlikely to influence the ability of the UK to achieve GES for Descriptor 2.

4.4 Descriptor 3: Commercial fish and shellfish species

4.4.1.1 GES for Descriptor 3 relates to the sustainable management of commercially exploited fish stocks, with targets and indicators relating to the specific management measures required to achieve this.

4.4.1.2 Targets set out for this Descriptor (see Defra, 2025) relate to the exploitation of stocks within the maximum sustainable yield (MSY). The exploitation rate of each stock is required to be at or below fishing mortality at maximum sustainable yield (FMSY), or within the range of plausible fishing mortalities consistent with FMSY.

4.4.1.3 **Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology** concludes that construction, O&M and decommissioning activities that may pose a risk to shellfish species will not give rise to residual likely significant effects.

4.4.1.4 **Volume 1, Chapter 13: Fish Ecology** concludes construction, O&M and decommissioning activities will not have any significant effects on spawning and nursery grounds.

4.4.1.5 **Volume 1, Chapter 14: Commercial Fisheries** concludes construction, O&M and decommissioning activities that pose a risk to disturbance of commercially important fish and shellfish resources leading to displacement will not give rise to residual likely significant effects for all commercial fisheries receptors.

4.4.1.6 It is therefore unlikely that the Project will influence the ability of the UK to meet its targets, and it is also therefore unlikely that the Project will influence the ability of the UK to achieve GES for Descriptor 3.

4.5 Descriptor 4: Food web structures

4.5.1.1 GES for Descriptor 4 in the UK seeks to safeguard food webs such that populations of key species, particularly those that have important roles in the food web such as predators, are maintained at healthy levels of abundancy and distribution in line with the prevailing natural environment. Associated targets and indicators for Descriptor 4 state that the size composition of species communities should not be impacted by human activity. The UK has reported partial achievement of GES for Descriptor 4, but the exact extent to which GES has been achieved in the UK is uncertain. For example, plankton communities are changing; some fish communities are recovering, but others are not; breeding seabird populations are in decline; grey seal numbers are increasing and trends in cetacean populations are unclear. It is known that components of the marine food web are changing, but it is not clear how they are affecting each other.

4.5.1.2 As described in relation to Descriptor 1, the marine ecology EIA Report chapters outlined in **paragraph 4.2.1.2** conclude that loss or disturbance of habitat is localised, and that the benthic and fish species involved are largely tolerant of displacement. The introduction of hard substrate where cable protection is required could result in localised biodiversity net gain by providing a more diverse habitat for localised colonisation by macrobenthic communities. Overall however, the EIA Report concludes that there will be no significant residual impacts on benthic communities, fish, marine mammal and communities as a result of activities relating to the Project. such as changes in water quality, sedimentary disturbance, EMF, or underwater noise.

4.5.1.3 **Volume 1, Chapter 32: Inter-Related Effects** has included an ecosystem assessment which outlines the food web structure. Overall, given the scale of the Project in relation to

the scale of the ecosystem, the effect on the wider ecosystem (and therefore food web structure) is considered **Not Significant**.

4.5.1.4 With consideration of the non-significant findings of the EIA Report, the Project is unlikely to influence the ability of the UK to fully achieve GES for Descriptor 4.

4.6 Descriptor 5: Eutrophication

4.6.1.1 **Volume 1, Chapter 7: Marine Water and Sediment Quality** concludes that activities relating to the Project will not give rise to significant effects on marine water quality through the release of contaminants held within marine sediments.

4.6.1.2 The UK has reported that it has fully achieved its aim of GES for eutrophication. UKMMAS has reported a small number of eutrophication problems remaining in coastal and estuarine waters, representing 0.03% of the UK EEZ, and 0.41% of estuarine and coastal waters. However, the Marine Strategy Part One concluded that all UK marine waters are 'non-problem areas', due to limited human-induced eutrophication.

4.6.1.3 The Project is therefore unlikely to influence the UK's ability to meet the Targets set by the UK for Descriptor 5 as it does not introduce or otherwise cause an increase in concentrations of the nutrients that result in eutrophication. It is therefore unlikely that the Project will influence the ability of the UK to maintain GES for Descriptor 5.

4.7 Descriptor 6: Sea floor integrity

4.7.1.1 **Volume 1, Chapter 6: Marine Geology, Oceanography and Physical Processes** concludes no significant residual impacts on marine physical processes (which represents a key component of sea floor integrity) as a result of the installation of the cable and external cable protection. Given the relatively small scale of the Project footprint in the wider context of the North Sea subdivision of the North-east Atlantic marine region and the embedded environmental measure to bury the offshore export cable where possible (M-057), it is unlikely that the Project will limit the extent or diversity of sea-floor habitats described by Descriptor 6. In the areas where cable protection is required, this will be designed following a cable burial risk assessment (M-054) and monitored during the operation of the Project. It is therefore also unlikely that the Project will alter the physical structure of seabed habitats to such a degree that the productivity natural functionality of the seafloor ecosystem (and indeed the wider ecosystem that it supports) would be affected.

4.7.1.2 Therefore, the Project is therefore unlikely to influence the UK's ability to meet the targets outlined in (Defra, 2025) for seabed integrity concerning the long term viability of key marine habitats, and with consideration of the findings of **Volume 1, Chapter 6: Marine Geology, Oceanography and Physical Processes** it is considered unlikely that the Project will influence the current partial achievement of GES in relation to Descriptor 6 in the UK.

4.8 Descriptor 7: Alterations to hydrography

4.8.1.1 GES for Descriptor 7 in the UK makes specific reference to the consideration of impacts from developments in the marine environment. GES for Descriptor 7 requires that developments do not result in significant long-term impacts on marine ecosystems from changes to hydrographical conditions.

4.8.1.2 **Volume 1, Chapter 6: Marine Geology, Oceanography and Physical Processes** includes and assessment of marine geology, oceanography and physical processes, which include consideration of hydrographical conditions and the potential for these to be impacted by:

- construction activities (such as cable trenching and anchor installation) causing seabed disturbance and associated morphological change;
- construction activities at the landfall zones and in nearshore areas (such as HDD) leading to seabed disturbance and associated morphological change;
- morphological impact to designated seabed areas; the coast; and designated frontal systems caused by blockage of hydrodynamic wave and sediment transport processes arising from the presence of Project infrastructure in the water column and at the seabed;
- decommissioning activities leading to seabed disturbance and associated morphological change; and
- decommissioning activities at the landfall zones and in nearshore areas leading to seabed disturbance and associated morphological change.

4.8.1.3 **Volume 1, Chapter 6: Marine Geology, Oceanography and Physical Processes** concludes that construction, O&M and decommissioning activities that may pose risk to alterations to hydrography will not give rise to residual likely significant effects to designated seabed areas; the coast; or designated frontal systems.

4.8.1.4 Targets under this descriptor, described in Defra, 2025 have been met by the Project through the undertaking of a full EIA and its inclusion of the assessment undertaken in **Volume 1, Chapter 6: Marine Geology, Oceanography and Physical Processes**. Given the conclusion of the EIA Report in this regard, it is unlikely that the Project will influence the UK's ability to maintain its achievement of GES for Descriptor 7.

4.9 Descriptor 8: Contaminants

4.9.1.1 GES for Descriptor 8 in the UK concerns concentrations of contaminants in the marine environment in general terms, including in the water, sediment and in biota. During all works at sea, there is potential for the loss of chemicals, fuels, or other pollutants as a result of accidental spills. To minimise such risks, international good practice will be followed by the Project, including for example adherence to the International Convention for the Prevention of Pollution from Ships (the MARPOL Convention), and Project-specific requirements and procedures. Project-specific measures will also be set out within the Environmental Management Plan and any topic-specific sub-plans, as required.

4.9.1.2 Analysis of marine water and sediment quality within the OAA and offshore export cable corridor indicated minimal contamination risk (see paragraph 7.61.23 to 7.6.1.31 of **Volume 1, Chapter 7: Marine Water and Sediment Quality**.

4.9.1.3 See **Section 4.6.1.1** for conclusions from **Volume 1, Chapter 7: Marine Water and Sediment Quality.**

4.9.1.4 The Project is therefore unlikely to influence UK's ability to meet its targets for contaminants in sea water as described in Defra (2025), as it does not introduce or otherwise cause an increase in concentrations of contaminants as specified in the targets for Descriptor 8.

4.9.1.5 The presence of vessels, and plant machinery operating during construction and decommissioning, introduces the risk of accidental release of pollutants from leaks or spills of fuels and lubricants. In relation to the targets set out for contamination concerning the occurrence of an oil / chemical spill, the EIA Report includes **Volume 4: Outline Environmental Management Plan** and its appendix **Outline Marine Pollution Contingency Plan** that outline appropriate measures in accordance with the MARPOL Convention and Shipboard Oil Pollution Emergency Plans to ensure the risk of accidental

pollution events is minimised. Therefore, accidental release of pollutants from vessels is scoped out of this MSFD Assessment.

4.9.1.6 Given the Project's commitment to the MARPOL Convention, it is unlikely that activities relating to the Project will influence the ability of the UK to continue achieving GES for Descriptor 8.

4.10 Descriptor 9: Contaminants in seafood

4.10.1.1 GES for Descriptor 9 in the UK relates to concentrations of contaminants in fish and other seafood as specified in EU Regulation 1881/2006 (as amended) with a view to protecting public health through the prevention and reduction of bioaccumulated toxins and carcinogens in food. The Annex to these EU Regulations sets out the maximum permissible levels for six groups of contaminants (nitrate, mycotoxins, metals, 3-monochloropropane-1,2-diol [3-MCPD], dioxins and polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons [PAHs]) across a broad range of food types and products.

4.10.1.2 Of relevance to fish and marine food products, EU Regulation 1881/2006 (as amended) set maximum permissible concentrations for lead, cadmium, and mercury in the muscle meat of fish, crustacea (excluding brown meat of crab and excluding head and thorax meat of lobster and similar large crustaceans [Nephropidae and Palinuridae]), bivalve molluscs, and cephalopods (without viscera).

4.10.1.3 The regulations also set maximum permissible concentrations for dioxins and PCBs in the muscle meat of fish, fishery products and products thereof, and for PAHs in the muscle meat of fish, crustaceans, cephalopods, and bivalve molluscs.

4.10.1.4 Whilst most of the contaminant concentration and biological effects indicators are meeting their target thresholds quite consistently at the level of the Greater North Sea, there are still some cases where the threshold values are significantly exceeded. This is particularly apparent for PCB 118, one of the most toxic polychlorinated biphenyls, which is above the environmental assessment criterion in 4 of the 5 assessed Charting Progress 2 regions, and therefore adverse effects on marine organisms may still be possible in these areas. The usage of polychlorinated biphenyls was banned over 30 years ago because these compounds are highly persistent. The main source of polychlorinated biphenyls for sea life is marine sediments, which became contaminated largely before the ban was put in place. The removal and safe disposal of these widespread marine sediments is not a practicable option for both technical and financial reasons and so the UK has placed a MSFD Article 14 exception on this Descriptor, as GES is unlikely to be able to be fully achieved.

4.10.1.5 As is the case for all hydrocarbon-powered vessels, the vessels used during the installation and operation of the Project will introduce trace levels of PCBs and PAHs to the atmosphere and marine environment through the standard combustion of marine fuel. **Volume 1, Chapter 7: Marine Water and Sediment Quality** concludes that construction, O&M and decommissioning activities of the Project will not give rise to significant effects on marine water quality nor consequently on marine organisms as a result of the accidental release of chemicals or fuel, or due to changes in water quality through the release of contaminants held within marine sediments. The trace concentrations released through Project-related fuel combustion are unlikely to independently influence the ability of the UK to achieve the targets outlined in **Table 3.1** for seafood contamination that make direct reference to the limitation of contaminants.

4.10.1.6 There is no credible pathway from activities relating to the Project for the other contaminants listed of relevance to sea food so there it is therefore not likely that the Project will influence the UK's ability to maintain GES for Descriptor 9.

4.11 Descriptor 10: Marine litter

4.11.1.1 **Volume 1, Chapter 7: Marine Water and Sediment Quality** concludes that construction and O&M activities relating to the Project will not give rise to residual likely significant effects on water quality receptors which includes the potential for impacts as a result of Project-related waste streams.

4.11.1.2 The targets set out for marine litter (Defra, 2025), require a reduction in levels of litter in the UK marine environment. While it is not the responsibility of the Project to implement any such reduction, the Project is responsible for the careful management of its own waste streams such that it does not increase levels of litter and therefore act in opposition to these targets. All vessels used by the Project will be managed in line the MARPOL Convention including Annex V relating to solid waste streams such as garbage. It is therefore unlikely that activities relating to the Project will influence the ability of the UK to meet GES for Descriptor 10.

4.12 Descriptor 11: Energy and noise

4.12.1.1 GES for Descriptor 11 in the UK seeks to prevent adverse effects on marine ecosystems by limiting the introduction of sound to the marine environment.

4.12.1.2 **Volume 1, Chapter 10: Benthic, Epibenthic and Intertidal Ecology**; **Chapter 11: Marine Mammals**; and **Chapter 13: Fish Ecology** conclude that there is potential for effects on shellfish, fishes and marine mammals from the following activities (but not limited to):

- geophysical surveys;
- piling of jacket foundations of the offshore substations and reactive compensation platforms;
- piling from WTG anchor installation;
- installation of offshore export cables;
- UXO; and
- operational mooring lines and array cables slacking then becoming taught, creating UWN.

4.12.1.3 The above activities can cause behavioural disturbance, and in extreme cases can cause auditory injury and mortality. The EIA chapter assessments outlined in **paragraph 4.12.1.2** concluded the **No Significant** effects.

4.12.1.4 **Appendix 5.2** outlines that the Project is committed to submitting a Marine Mammal Mitigation Protocol (M-032) and a Piling Strategy (M-105) to manage the risk of any potential effects to marine fauna.

4.12.1.5 Following consideration of the findings of the EIA Report and the Applicant's commitment to mitigation, it is unlikely that the Project will influence the UK's current partial achievement of GES (Defra, 2025) for Descriptor 11 in the UK.

5. Summary

5.1.1.1 There is no formal guidance on how to undertake MSFD assessment in the UK or elsewhere in the EU. A qualitative and narrative-based assessment has therefore been undertaken. It has considered the definitions of GES for each of the 11 MSFD Descriptors in the UK including any targets and indicators that have been defined by the UK Government and its advisors. The MSFD assessment for the Project has related the definitions, targets, and indicators for the UK against the findings of the EIA Report. This has included consideration of the potential for effects to occur on the indicators defined for GES where appropriate.

5.1.1.2 In the context of the UK's definitions of GES as well as its targets and indicators for success, the MSFD assessment has concluded that the Project is unlikely to independently influence the ability of the UK to achieve or maintain GES under any of the 11 MSFD Descriptors.

6. References

Department for Environment, Food and Rural Affairs (Defra), (2019). *Marine strategy part one: UK updated assessment and Good Environmental Status.* [online] Available at: https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status [Accessed: 08 October 2025].

Department for Environment, Food and Rural Affairs (Defra), (2022). *Marine Strategy Part Two: UK updated monitoring programmes.* [online] Available at: https://assets.publishing.service.gov.uk/media/63a08d10d3bf7f37598edab2/uk-marine-strategy-part-two-monitoring-programmes-2021.pdf [Accessed: 08 October 2025].

Department for Environment, Food and Rural Affairs (Defra), (2025). *Marine strategy part three: 2025 UK programme of measures.* [online] Available at: https://assets.publishing.service.gov.uk/media/67990f039a6dc0352ab341e1/Marine_strategy_part_three_-_2025_UK_programme_of_measures.pdf [Accessed: 08 October 2025].

European Union, (2006). *Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs (Text with EEA relevance).* [online] Available at: https://eur-lex.europa.eu/eli/reg/2006/1881/oj/eng [Accessed: 08 October 2025].

European Union, (2008). *DIRECTIVE 2008/56/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive).* [online] Available at: https://eur-lex.europa.eu/eli/dir/2008/56/oj [Accessed: 29 August 2025].

European Commission, (2023). *Marine Environment: EU policies to protect Europe's ocean, seas and coasts.* [online] Available at: https://environment.ec.europa.eu/topics/marine-environment_en [Accessed: 29 August 2025].

European Union, (2000). *Water Framework Directive* [online]. Available at: https://eur-lex.europa.eu/eli/dir/2000/60/oj/eng [Accessed: 29 August 2025].

The Marine Strategy Regulations 2010. (2010 No. 1627). [online] Available at: https://www.legislation.gov.uk/uksi/2010/1627/contents [Accessed: 08 October 2025].

UK Government, (2012). *Marine Strategy Part One.* [online] Available at: https://assets.publishing.service.gov.uk/media/5a758cf8e5274a545822c637/pb13860-marine-strategy-part1-20121220.pdf [Accessed: 29 August 2025].

Zweifel, U.L., Gipperth, J., Bergstrom, J., Westerberg, A.I., Stage, J., Sundblad, E., Wennhage, H. and Westholm, A., (2024). *Strengthened follow-up and evaluation of the Swedish programme of measures for the Marine Environment.* [online] Available at: https://www.researchgate.net/publication/380434338_STRENGTHENED_FOLLOW-UP_AND_EVALUATION_OF_THE_SWEDISH_PROGRAMME_OF_MEASURES_FOR_THE_MARINE_ENVIRONMENT#full-text [Accessed: 29 August 2025].

7. Glossary and abbreviations

Abbreviations

Acronym	Definition
Defra	Department for Environment, Food and Rural Affairs
EIA	Environmental Impact Assessment
EEZ	Exclusive Economic Zone
EMF	Electromagnetic Fields
EU	European Union
FMSY	Fishing Mortality at Maximum Sustainable Yield
GES	Good Environmental Status
HDD	Horizontal Directional Drilling
INNS	Invasive Non-Native Species
MARPOL	International Convention for the Prevention of Pollution from Ships
MSFD	Marine Strategy Framework Directive
MSY	Maximum Sustainable Yield
OAA	Option Agreement Area
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PoM	Programme of Measures
SPR	ScottishPower Renewables UK Limited
SSC	Suspended Sediment Concentrations
UK	United Kingdom
UWN	Underwater Noise
UKMMAS	United Kingdom Marine Monitoring and Assessment Strategy
UXO	Unexploded Ordnance
WFD	Water Framework Directive
WTG	Wind Turbine Generator

Glossary of terms

Term	Definition
Contaminants	Chemical substances introduced into the marine environment that may cause harm to organisms or ecosystems.
Contaminants in seafood	Pollutants bioaccumulated in edible marine organisms that pose a risk to human health.
Eutrophication	Enrichment of water by nutrients leading to excessive growth of algae and depletion of oxygen, negatively affecting marine ecosystems.
Food web structure	The complex network of predator-prey relationships that sustain marine ecosystems.
Good Environmental Status	The environmental status of marine waters where these provide ecologically diverse and dynamic oceans and seas which are clean, healthy, and productive.
Marine Litter	Any persistent, manufactured, or processed solid material discarded, disposed of, or abandoned in the marine and coastal environment.
Marine Regions and Subregions	Geographical divisions established under the MSFD for assessment and management purposes (for example, Greater North Sea).
Marine Strategy Framework Directive	The European Union Directive (2008/56/EC) seeking to achieve good environmental status (GES) in Europe's seas.
Programme of Measures	The set of actions developed under the UK Marine Strategy to achieve or maintain GES under the MSFD.
Sea-floor Integrity	The condition of the seabed in terms of structure, function, and biological diversity, ensuring ecosystem health and resilience.

MarramWind