



## Project Erebus Environmental Statement Chapter 2: Overview of EIA Methodology

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## Acronyms

Term	Definition
AOBN	Area of Outstanding Natural Beauty
CEA	Cumulative Effects Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
EEA	European Economic Area
EIA	Environmental Impact Assessment
EMF	Electromagnetic Frequency
ES	Environmental Statement
EU	European Union
HDD	Horizontal Directional Drilling
IEMA	Institute of Environmental Management and Assessment
MCAA	Marine and Coastal Access Act
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
PEDW	Planning and Environment Decision Wales
PDE	Project Design Envelope
PINS	The Planning Inspectorate
PPW	Planning Policy Wales
SIZ	Secondary Impact Zone
SMP	Shoreline Management Plans
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe
UXO	Unexploded Ordnance
WFD	Water Framework Directive
WTG	Wind Turbine Generator
ZOI	Zone of Influence

## Chapter 2 Overview of EIA Methodology

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### 2.1 Introduction

2.1.1.1 This chapter sets out the general approach and methodology to the EIA applied to the project. It has been developed in accordance with the key legislation (identified in Section 2.2) and relevant guidance, (identified in Section 2.3), and in consultation with NRW and PEDW (formerly PINS). The approach has been applied to ensure that the EIA and this ES is fit-for-purpose (focused, proportionate and effective) as a tool to aid the consent decision-making process.

2.1.1.2 This chapter outlines the approach that has been used to identify, evaluate and mitigate the environmental effects of the Project, and how the EIA core findings are clearly presented in the ES. This will enable the Regulatory bodies to come to reasoned conclusions on the likely significant effects of the proposed Project as part of their decision-making processes.

2.1.1.3 The Electricity Works EIA Regulations and the Marine Works EIA Regulations place a greater emphasis on the identification of the 'likely significant effects' of proposed projects, to allow the EIA to take a focused approach to assessment. The underlying tenet of the Regulations is to streamline assessments and limit their scope to those aspects of the environment that are likely to be significantly affected.

2.1.1.4 To streamline the EIA and ES for the Project, the following series of principles has been applied:

- Only environmental information that is relevant, necessary and material to the decision or to address issues raised by stakeholders will be provided in the ES;
- Whilst the ES provides a full factual description of the Project and its effects, emphasis is placed on the main or significant environmental effects to which the Project is likely to give rise;
- Impacts which have little or no significance will have only a very brief treatment to indicate that their possible relevance has been considered; and
- Conclusions about significant or non-significant effects in the ES will be supported by reasoning and evidence. The depth of this evidence will vary across issues and receptors.

2.1.1.5 This chapter is supported by the following technical appendices:

- Technical Appendix 2.1: EIA Scoping Report
- Technical Appendix 2.2: EIA Scoping Opinion
- Technical Appendix 2.3: Consultation Report

### 2.2 The EIA Process

#### 2.2.1 *Legislation and Guidance*

2.2.1.1 EIA is guided by the EIA Directive 2014/52/EU and relevant national legislation, which for the purposes of this Project are the Electricity Works EIA Regulations and the Marine Works EIA Regulations. Article 1(2)(g) of the EIA Directive describes the EIA process as follows:

- “(i) the preparation of an environmental impact assessment report by the developer, as referred to in Article 5(1) and (2);*

- (ii) *the carrying out of consultations as referred to in Article 6 and, where relevant, Article 7;*
- (iii) *the examination by the competent authority of the information presented in the environmental impact assessment report and any supplementary information provided, where necessary, by the developer in accordance with Article 5(3), and any relevant information received through the consultations under Articles 6 and 7;*
- (iv) *the reasoned conclusion by the competent authority on the significant effects of the project on the environment, taking into account the results of the examination referred to in point (iii) and, where appropriate, its own supplementary examination; and*
- (v) *the integration of the competent authority's reasoned conclusion into any of the decisions referred to in Article 8a.”*

2.2.1.2 The EIA process and ES preparation has been developed in accordance with the EIA Directive, key legislation (identified in Section 1.2) and relevant guidance, (identified in Section 2.3), and in consultation with NRW and PEDW (formerly PINS). It also draws on key relevant policies and guidance, including (amongst others):

- Environmental Impact Assessment for Offshore Renewable Energy Projects – Guide, (Innovative UK, 2015)
- EU Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017);
- EIA Guidance such as Delivering Proportionate EIA (IEMA, 2017),
- EIA Guide to Shaping Quality Development (IEMA, 2015)
- EIA Guide to Delivering Quality Development (IEMA, 2016);
- Future Wales: The National Plan 2040 (Welsh Government, 2021a.
- Planning Policy Wales (PPW) (Welsh Government, 2021b),
- Welsh National Marine Plan (Welsh Government, 2019); and
- The Planning Series: 10 – Environmental Impact Assessment (National Assembly for Wales, 2017)

2.2.1.3 Additional guidance, including those relevant to specialist disciplines are provided in the appropriate chapters. Further details of applicable legislation, development, spatial plans and policies and other guidance is provided in Chapter 5: Policy and Legislation.

2.2.1.4 The EIA adopts an iterative process as set out in Table 2.1.

**Table 2.1: Components of the Proposed Iterative EIA for the Project**

<b>Sensitivity</b>	<b>Description</b>
<b>Regulator and Stakeholder Consultation</b>	Clear and focussed consultation with various parties, at key stages in the assessment process to address key concerns and identify key data gaps.
<b>Scoping</b>	Initial scoping study to identify the potentially significant direct and indirect likely effects of the Project and Cumulative Impact Assessment (CIA). Initial assessment of the depth of evidence required for EIA topics and, where relevant, need and scope of additional project-specific surveys.

<b>Sensitivity</b>	<b>Description</b>
<b>Low</b>	The receptor has some tolerance to avoid, adapt to, accommodate or recover from the anticipated impact.
<b>Negligible</b>	The receptor is generally tolerant of and can accommodate or recover from the anticipated impact.
<b>Evidence Collection and Collation</b>	<p>Required to characterise the existing environment and gather appropriate data to enable an assessment of the environmental effects of the Project.</p> <p>EIA evidence collection and collation will include review and use of existing data and evidence, as well as project-specific survey activity to gather additional information or data, if necessary.</p> <p>This will likely also include project-specific specialist studies to provide further information on key parameters which may be affected by the project or on key impact pathways. These could include studies to predict changes to the physical environment as well as biological and human receptors.</p> <p>Nature and depth of evidence to assess the environmental effects of the Project are indicated in Chapters 4-7 but will be part of the iterative EIA process. This review will be based on the findings of initial baseline studies, the assessment of effects and consultation with regulatory authorities and other stakeholders</p>
<b>Impact Assessment</b>	<p>Evaluation of the existing environment, definition of receptors (including their sensitivity – tolerance, adaptability and recoverability). Evaluation and prediction of the potential positive and negative impacts of the Project on the receiving environment plus assessment of the likely significance of the effects.</p> <p>The impact assessment will consider interactions between the project and existing activities and interactions between environmental topics. It will also identify any monitoring programs needed to verify the predicted effects and the effectiveness of mitigation measures to allow an Adaptive Environmental Management Process (AEMP) to be followed where appropriate.</p>
<b>Mitigation and Optimisation including Project Design Refinement</b>	<p>Where significant adverse effects are identified, mitigation measures will be proposed, designed to eliminate or ameliorate these effects to acceptable levels.</p> <p>Any required design changes and / or practical mitigation measures to avoid, reduce or offset likely significant effects will be considered and fed back into the Project Design Envelope (i.e. through an Adaptive Environmental Management Plan (AEMP) process).</p> <p>The EIA will also identify proposed monitoring procedures to keep under systematic review any significant adverse effects on the environment resulting from the construction and operation of the Project, as well as to identify unforeseen significant adverse effects, in order to be able to undertake appropriate remedial action where required.</p>
<b>Determination of Residual Effects</b>	The likely significance of effects that remain after implementation of design optimisation and mitigation measures will be assessed (residual effects). The level of certainty associated with proposed mitigation measures both in terms of delivery and effectiveness will be considered as part of this stage.

Sensitivity	Description
<b>Cumulative Impact Assessment</b>	The potential for the effects of the project to interact cumulatively with those of other planned projects to result in likely significant effects will be assessed. If necessary additional optimisation mitigation or monitoring would be identified to avoid or reduce potentially significant cumulative effects.
<b>Inter-Related Effects</b>	An assessment will be made of the potential for individual effects to interact together to create likely significant effects.
<b>Production of Environmental Statement</b>	An ES will be produced to document the findings of the EIA as a tool to inform decision-making, in a format that is accessible to stakeholders. The ES will include a Non-Technical Summary (NTS).

## 2.2.2 Screening

2.2.2.1 Screening is the process by which it is determined whether or not a project should be subject to Environmental Impact Assessment.

2.2.2.2 Section 1.6.1.3 of this ES confirms that the Project is categorised under Schedule 2 of the Electricity Works EIA Regulations and Schedule A2 of the Marine Works EIA Regulations.

2.2.2.3 Schedule 3 of the Electricity Works EIA Regulations sets out the criteria that should be considered in determining whether a Schedule 2 development is likely to have significant environmental effects and hence require a formal EIA. These criteria are:

- The characteristics of the development (e.g. its size, cumulation with other developments, use of natural resources, resultant pollution, waste generated);
- The environmental sensitivity of the location; and
- The characteristics of the potential impacts (including extent, magnitude, probability and duration).

2.2.2.4 An inception meeting was held with WG, PINS (now PEDW) and NRW in July 2019, where it was agreed by all parties that Project Erebus should be subject to an EIA, due to the type, scale and location of the Project in relation to sensitive areas. Subsequently, a joint Screening and Scoping Opinion request, supported by an EIA Scoping Report for Project Erebus was submitted to NRW in October 2019.

## 2.3 Scope of the EIA

2.3.1.1 Scoping is a process of deciding what information should be contained in an ES and what methods should be used to gather and assess that information. It is defined in the EC guidance as: *'determining the content and extent of the matters which should be covered in the environmental information to be submitted in the ES'*.

2.3.1.2 EIA regulations provide an opportunity for the Developer to request a Scoping Opinion from the Relevant/Appropriate Authority for those Projects that require an EIA. The Regulations require that the Relevant/Appropriate Authority consult with a range of consultees before giving a scoping opinion identifying those issues that should be addressed in an EIA.

2.3.1.3 Accordingly, a Scoping Opinion Request, supported by an EIA Scoping Report for the Project, was submitted to NRW in October 2019 (MarineSpace, 2019). A copy of the Scoping Report was also submitted to PEDW (formerly PINS).

- 2.3.1.4 Subsequent to consideration of the Report, and following consultation with relevant and statutory stakeholders, NRW issued a formal Scoping Opinion in January 2020.
- 2.3.1.5 The Scoping Opinion Request (the Scoping Report) (MarineSpace, 2019) and NRW's Scoping Opinion (NRW, 2020) are provided in Volume 3, Technical Appendices 2.1 and 2.2 respectively.
- 2.3.1.6 This provided information on the extent and content (scope) of the assessment. The scope of the EIA, as detailed in this ES, takes account of the Scoping Report and associated Scoping Opinion (NRW, 2020), as well being informed by consultations with statutory and non-statutory stakeholders and the general public.
- 2.3.1.7 EC (2018) guidance advises that although Scoping can be considered as a discrete stage in the EIA process, one which ends with the issuing of the terms of reference for the ES, the activity of Scoping should continue throughout, so that the scope of work can be amended in light of new issues and new information. The scope of an ES must be flexible enough to allow new issues, which may emerge either during the process or as a result of design changes or through consultations, to be incorporated.
- 2.3.1.8 A summary of the scope of the EIA, in terms of technical, spatial and temporal scope, is provided in Table 2.2, with the Scoping Opinion referenced as necessary in the technical assessment chapters.

**Table 2.2 – Summary of Scoping Opinion comments and Applicable ES Chapters**

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
<p><b>Proposed Approach to Environmental Impact Assessment</b></p>	<p>The ES must include: A description of the likely significant effects of the Project, whether direct, indirect, secondary, cumulative, transboundary, short-term, medium-term, long-term, permanent, temporary, positive and negative.</p>	<p>Chapter 31: Summary of Residual effects</p>	<p>Descriptions of the Project's likely significant effects are included throughout the ES's chapters. A summary is available in Chapter 32: Summary of Residual Effects.</p>
	<p>A description of the methods used to make the assessment of the significant effects and difficulties encountered in compiling the information and uncertainties involved.</p>	<p>Chapter 2: Overview of EIA Methodology</p>	<p>Descriptions of the methods used to make the assessment of the significant effects and difficulties encountered in compiling the information and uncertainties involved are included in Chapter 2: Overview of the EIA Methodology. Certain topics deviate from the Methodology outlined in Chapter 2, this is clarified in the specific Chapter's method section.</p>
	<p>A description of measures to avoid, prevent, reduce or offset identified significant adverse effects, and proposed monitoring arrangements.</p>	<p>Chapter 3: Site Selection and Alternatives</p>	<p>Descriptions of measures to avoid, prevent, reduce, or offset identified significant adverse effects and proposed monitoring arrangements are included in Chapter 3: Site Selection and Alternatives. Each chapter also includes reference to specific mitigation and monitoring arrangements.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>A description of the expected significant adverse effects of the Project on the environment resulting from the vulnerability of the Project to risks of major accidents or disasters.</p>	<p>Chapter 28: major accidents and Disasters</p>	<p>Descriptions of the expected significant adverse effects of the Project on the environment resulting from the vulnerability of the Project to risks of major accidents or disasters are included in Chapter 29: major accidents and Disasters.</p>
<p><b>Project Description</b></p>	<p>The scoping report identifies that the service life of the Project is 25 years. You must ensure that the submitted ES fully clarifies the timescales for all lifecycle stages and therefore ensure that the timeline being assessed is clear.</p>	<p>Chapter 4: Proposed Development</p>	<p>The submitted ES fully clarifies the timescales for all lifecycle stages in Chapter 4: Proposed Development, under Section 4.12 Operation &amp; Maintenance. Each chapter also makes reference to impacts associated with lifespan.</p>
	<p>The submitted ES must clarify the export cable construction and ensure that any potential risks associated with the selected construction are appropriately assessed throughout the ES.</p>		<p>The submitted ES clarifies the export cable construction in Chapter 4: Proposed Development under Section 4.6.11 Offshore Export Cable. Each chapter also makes assessment on risks associated with export cable.</p>
<p><b>Sediment transport</b></p>	<p>The first paragraph of section 5.2.3.1 (page 5-15) discusses seabed sediment types of the west coast of Wales. However, sediment types from the Milford Haven are omitted. The scoping opinion advises this information, and assessment of impacts of cable installation, will be required should the cable be routed through this location.</p>	<p>Chapter 6: Marine and Coastal Processes</p>	<p>Sediment types from the Milford Haven are included in Chapter 7: Marine Seabed and Water Quality under Section 7.5.1 Marine Sediment Quality.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
<p><b>&amp; Water and sediment quality</b></p>	<p>The WFD waterbodies have been omitted from consideration within the water quality chapter. The scoping opinion would recommend the applicant consider these in the water and sediment quality section and feed through to the WFD assessment.</p>	<p>Chapter 7: Marine Seabed and Water Quality Technical Appendix 7.1 Water Framework Directive Assessment.</p>	<p>The WFD waterbodies are addressed throughout Chapter 7: Marine Seabed and Water Quality and detailed under Section 7.2.2 The Water Framework Directive and within Technical Appendix 7.1 Water Framework Directive Assessment.</p>
	<p>The scoping opinion agrees that background Suspended Sediment Concentration (SSC) and sediment properties should be considered (page 5-17 5.2.6. para 1). However, no further information is provided, so no further comment can be made at this stage. the scoping opinion would recommend that you engage with NRW advisory at an early stage to discuss how baseline conditions will be characterised.</p>		<p>Engagement with NRW is described in detail in the Consultation Plan. It is also detailed in Chapter 7: Marine Seabed and Water Quality under Table 7 5.</p>
	<p>On pages 5-17, section 5.2.6. para 3, no further data collection on marine sediment and water quality is being proposed due to the low risk of contamination. The scoping opinion advises of the need for data collection to understand the impacts of the SAC / WFD / BW sites inshore. NRW advisory queries how an assessment against the existing baseline will be made if that baseline is not available. Should no further data be collected, sufficient justification must be provided.</p>		<p>The data used in the marine sediment and water quality assessment is described in Chapter 7: Marine Seabed and Water Quality and, in particular, under Section 7.5 Baseline Conditions and 7.5.1 Marine Sediment Quality and within Technical Appendix 7.1 Water Framework Directive Assessment.</p>
	<p>You must ensure that both offshore and near-shore impacts on water and sediment quality are assessed within the submitted ES. This should include consideration of the potential impacts of heated cables on temperature-responsive bacterial growth and potential impacts on Bathing</p>		<p>Consideration of the potential impacts of heated cables on temperature-responsive bacterial growth and potential impacts on Bathing Waters from all impact</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>Waters from all impact pathways (including suspended sediment and bacterial growth).</p>		<p>pathways (including suspended sediment and bacterial growth) is given in Chapter 7: Marine Seabed and Water Quality and within Technical Appendix 7.1 Water Framework Directive Assessment.</p>
	<p>In order to ensure completeness of the submitted ES, it is recommended that the applicant engages with NRW advisory prior to conducting your assessment to clarify how sediment mobility will be considered for the Cable Burial Risk Assessment and foreshore steepening over the project lifetime, should the cable be trenched at landfall.</p>		<p>Assessment of the mobility and stability of the foreshore has been undertaken in Chapter 6: Marine and Coastal Processes under section 6.5.63.</p>
	<p>NRW Advisory have noted that they disagree with the stated approach: “Cable will be left in situ as far as is possible from a technical and environmental perspective” as it is considered a marine litter issue. NRW Advisory, therefore, recommend that the approach be modified such that everything that is placed on or within the seabed is able to be removed, including the cable and any cable protection, at decommissioning. The scoping opinion recommends that you engage with NRW Advisory in preparing a decommissioning plan to discuss the proposed approach, specifically with regard to potential variation in approach between buried and non-buried cables.</p>	<p>Chapter 4: Proposed Development Chapter 6: Marine and Coastal Processes</p>	<p>Decommissioning is addressed in Chapter 4: Proposed Development under Section 4.13 Decommissioning. Consultation with NRW will take place when preparing a decommissioning plan. Decommissioning is also addressed throughout Chapter 6: Marine and Coastal Processes and as part of Table 6-17 – Project Design Envelope Parameters Relevant to Marine and Coastal Processes.</p>
<p><b>Marine Coastal Processes</b></p>	<p>When assessing impacts on the physical environment, the scoping opinion agrees with the use of a tidal excursion to determine the Secondary Impact Zone (SIZ). However, it is unclear within the Screening and Scoping report as to whether the tidal excursion proposed is 10 km as</p>	<p>Chapter 6: Marine and Coastal Processes &amp;</p>	<p>Tidal Excursion is elaborated on in Chapter 6: Marine and Coastal Processes under Section 6.5 Baseline Conditions: Tidal Currents.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>identified in Section 5.1.1 (and applied in Figure 5.1) or 25 km, as referenced to Uncles and Stephens (2007) in Paragraph 5.1.4.2. The submitted ES must clarify the tidal excursion being proposed with sufficient justification to demonstrate why the value is considered appropriate.</p>	<p>Chapter 7: Marine Seabed and Water Quality &amp; Chapter 4: Proposed Development</p>	<p>It is also alluded to in Chapter 7: Marine Seabed and Water Quality under Section 7.9 Cumulative Assessment.</p>
<p><b>Water Framework Directive (WFD) Designated water bodies</b></p>	<p>In addition to the following: “Milford Haven Inner transitional water body (GB531006114100), which is at Moderate Ecological Status because of and high concentrations of mercury and mercury-containing compounds, Tributyltin (TBT), Brominated Diphenylether (BDPE) and dissolved inorganic nitrogen;” the submitted ES should be corrected to note that the Milford Haven Inner WFD water body is also failing (at moderate status) for opportunistic macroalgae.</p>	<p>Chapter 6: Marine Coastal Processes</p>	<p>This point was considered and addressed throughout the Technical Appendix 7.1: WFD Assessment.</p>
	<p>The submitted ES must ensure that the full range of data available to you is used when reviewing the baseline for the WFD. Potential data sources include the Lle data portal for spatial data and the Water Watch Wales website for biological and chemical data. This can be requested from NRW via the Access to Information Team.</p>	<p>Chapter 7: Marine Seabed and Water Quality Technical Appendix 7.1: WFD Assessment</p>	<p>Characterisation of baseline environment has been based on both site-specific survey data, NRW water quality monitoring data (provided on request), and information available from the Water Watch Wales website.</p>
	<p>The scoping opinion notes that it would be beneficial for Figure 5.12 to include project infrastructure in the spatial context of the water bodies determined to be in scope when it is incorporated into the submitted ES.</p>		<p>The equivalent figure in the Technical Appendix 7.1: WFD Assessment (Figure 7.1) illustrates the proposed location of Project</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
			infrastructure in addition to WFD features.
	<p>Section 5.5.6 of the Scoping report considers the potential relevance of the Project to Article 4(7) of the WFD. If the WFD assessment identifies any potential instances of Article 4(7) being triggered, then this would need to be raised with NRW as the Appropriate Agency in Wales for WFD, not the Environment Agency. The scoping opinion would encourage that this is raised at the earliest opportunity and that any potential impacts to the WFD objectives are avoided or reduced as far as possible through the design options appraisal stage.</p>		<p>This comment was noted. However, assessment outcomes have not necessitated consideration of Article 4(7).</p>
	<p>The submitted ES must list the Shellfish (Upper Cleddau) and Bathing Waters (Freshwater West, West Angle) and their quality status and subsequently assess any potential impacts on them. The scoping opinion recognises that the risk is likely to be low; the ES must demonstrate that potential risks have been considered and discounted with sufficient reasoning to conclude that activity on the proposed development will not affect bathing water quality.</p>		<p>In accordance with NRW advice, these have been included in assessment of WFD Protected Areas, see Technical Appendix 7.1: WFD Assessment under Section 7.7.5.</p>
	<p>It is expected that the WFD assessment will draw upon the wider EIA to inform its assessment and conclusions, and a consistent approach to assessment should therefore be applied. For example, the assessment outputs from the marine sediment and water quality chapter will need to adequately assess the potential project effects against WFD objectives for any water bodies included in the study area and the results transposed into the WFD Assessment. In relation to physical processes, the conclusions of the physical processes chapter of relevance to WFD will need to be transposed into the WFD Assessment where relevant to the hydromorphological quality element; this goes beyond assessing hydrology (as currently included in the screening tables for WFD). Any</p>		<p>The WFD assessment has been informed by outcomes of Chapter 6: Marine Coastal Processes and Chapter 7: Marine Sediment and Water Quality. Authors have endeavoured to ensure a synergistic approach to assessment and consistency in outcomes.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>physical effects to WFD water bodies, direct or indirect, must be adequately assessed within the submitted ES.</p> <p>In addition to the impacts scoped in Table 5-8, EMF and thermal effects on migratory fish must be scoped into the assessment and included in the WFD assessment as fish is considered a biological quality element in estuarine and river water bodies in the context of WFD.</p>		<p>Impacts of EMF and thermal effects on migratory fish species have been included in the WFD assessment, see Section 7.4.4 and Technical Appendix 7.2 EMF Assessment and discussed in Chapter 10: Fish and Shellfish Ecology.</p>
<p><b>Terrestrial Ecology</b></p>	<p>The scoping opinion notes the proposals laid down in Section 6.6 (Terrestrial Ecological) of the Environmental Impacts Scoping Report. Given that the terrestrial route of the cabling and the location of the sub-station is yet to be finalised, the scoping opinion would simply reiterate the importance of adequate surveys effort (for habitats and species) to be carried out. The scoping opinion would refer you to our website for further advice with regard to undertaking any relevant surveys which should be carried out in accordance with best practice guidance and by suitably licenced and experienced ecologists. In addition, should the proposal require the removal of any trees, these should also be assessed for potential bat roosting features. Trees identified as having moderate or higher bat potential features will require further inspection, such as tree climbing and/or endoscope inspections. These surveys/assessments will be required prior to the determination of any future planning application. It is recommended that you liaise with the Local Authority's Planning Ecologist during survey design.</p>	<p>Chapter 20 - Terrestrial and Coastal Ecology and Onshore Ornithology</p>	<p>A full suite of habitat and protected species surveys were undertaken in line with the latest and relevant guideline, all of which are outlined in Section 20.3.</p> <p>All surveys were completed by experienced and (where appropriate) licenced ecologists with considerable experience including South Wales and Pembrokeshire.</p> <p>All trees and structures within 50m of the proposed landfall and survey routes at the time of survey were assessed for the potential for bat roost features. Through the design iteration any trees and structures containing bat features, and which were potentially impacted by works were then subject to further</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>As the report states that there are no confirmed dormice (EPS) records within 10km of potential landfall sites. However, there is a very recent potential dormouse nest record in the area surrounding Pembroke Power Station. The record is not yet confirmed due to the nature of the nest. However, the ecologists on site considered it likely to be the nest of a young dormouse. The scoping opinion would recommend engaging with the National Park Authority on this point and appropriate assessment recorded in the submitted ES.</p>		<p>inspections with the completion of absence / presence bat surveys.</p> <p>The PCC ecologist was consulted with regard to survey design in terms of protected species such as reptiles and dormouse.</p> <p>This comment was acknowledged and addressed in volume 3, Technical Appendix 20.6 - Dormouse Mitigation Strategy.</p>
<p><b>Fish and shellfish</b></p>	<p>There is no reference made within Table 6-12 of the scoping report to possible impacts to larvae by increased turbulence or avoidance of area by fish and shellfish due to particle motion (vibration through an operational phase). The scoping opinion request that the applicant considers vibration transported down anchoring cables as well as EMF impacts on shellfish through cable routes. The scoping opinion request that the desk-based noise study discussed in 6.3.6 of the Scoping Report includes consideration of vibration as, although this has not been done in a number of previous assessments for other projects, new information has indicated it may have an impact at some levels on some fish/shellfish species. Furthermore, the scoping opinion request that consideration of impacts from the detonation of UXO and from cable ‘snapping’ associated</p>	<p>Chapter 10: Fish and Shellfish Ecology</p>	<p>The effects of vibration, noise, UXO detonation and cable ‘snapping’ are covered in detail within Technical Appendix 12.2: Underwater Noise and Vibration. Effects relevant to fish and shellfish, including larvae, are covered in Section 10.6 and discussed in Chapter 10: Fish and Shellfish Ecology.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	with cable tension release in the mooring system be included within the noise assessment.		
	The scoping opinion recommends that the applicant considers the potential for the floating devices to act as Fish Aggregating Devices and any subsequent impacts on fish or predator species (collision risk).		The effects of Fish Aggregating Device effects are considered in Chapter 10: Fish and Shellfish Ecology under Section 10.6.
	The scoping opinion recommends that the applicant includes angling data to support baseline characterisation, as this will include non-commercial species.		Receptor groups established within Chapter 10: Fish and Shellfish Ecology include a range of non-commercial species. The data used to establish these receptor groups is presented under Section 10.4.3.
	In light of the uncertainties as to the effect of EMF on fish and invertebrates and associated potential heating effects, the scoping opinion disagrees that EMF impacts on migratory fish and marine mammals/reptiles can be scoped out. Effect of EMF on fish and invertebrates must be scoped into and assessed within the submitted ES.		Following on from the Scoping Opinion, the impact of pollution due to unplanned leaks and spills and the potential for Electromagnetic Frequency (EMF) as a barrier to migratory fish were addressed in Chapter 10: Fish and Shellfish Ecology under Section 10.6. EMF is further discussed in Technical Appendix 7.2: EMF Assessment.
<b>Marine mammals</b>	The scoping opinion agrees with the current potential mitigation identified in Section 6.4.5 but would recommend the inclusion of consideration for UXO detonation if required. With regards to the following statement: "Vessels will travel at speeds below the threshold to cause injury to marine	Chapter 12: Marine Mammals	Assessment of low-order UXO clearance is provided (see assessment of PTS and disturbance

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>mammal species,” the scoping opinion would welcome clarification as to what speeds are considered below the threshold and would request additional detail within the submitted ES.</p>		<p>from UXO – Chapter 12: Marine Mammals section 12.6.2.2 et seq.).</p>
	<p>The scoping opinion recommends using SCANS III as the most up to date information on the bottlenose dolphin population rather than the cited Cardigan Bay SAC, 2019. the scoping opinion would also recommend using Lohrengel et al. (2018) for information on the Cardigan Bay bottlenose population but note that SCANS III would give a more proportionate estimate of the wider population likely to be found in the project development area. The scoping opinion recommends consulting SCOS (2018) and Büche &amp; Stubbings (2019) for information on the grey seal populations.</p>		<p>Density estimates are considered further in Technical Appendix 12.1: Marine Mammal and Turtle Baseline and Chapter 12: Marine Mammals.</p>
	<p>In addition to the impacts scoped into the assessment for Marine Mammal Ecology, the scoping opinion considers that underwater noise impacts during the operational phase should be scoped in for marine reptiles.</p>		<p>The Scoping out of marine reptiles (leatherback turtles) is described in Chapter 12: Marine Mammals under Section 12.5 Baseline Conditions and in Technical Appendix 12.1: Marine Mammal and Turtle Baseline.</p>
	<p>The scoping opinion agrees that entanglement risk from mooring lines and ghost fishing should be scoped in and recognise that it is difficult to quantify. However, the scoping opinion would be cautious with concluding that it is not likely to be significant at this stage and would encourage careful consideration of this risk as it has the potential to be of significant concern.</p>		<p>Assessment of entanglement has been considered in Chapter 12: Marine Mammals section 12.6.3.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>With regards to agreeing the exact approach to EIA for Marine Mammals, the scoping opinion advocate using the MMMUs as the appropriate screening scale for HRA for all Annex II marine mammal features as the scoping opinion consider areas of the sea beyond the boundaries of the SAC to be functionally linked habitat that may support the populations of the SAC. Thus, impacts occurring outside the boundary of the SAC may affect animals moving from or between SACs. Buffer distances that may be appropriate for one type of underwater sound are not appropriate to be arbitrarily applied to other impacts such as wider UXO injury/disturbance or potential entanglement, which does not have an impact footprint beyond the array but could impact on animals passing through the array.</p>		<p>This has been assessed in Technical Assessment 8.3: RIAA.</p>
	<p>The scoping opinion agrees with the proposed approach for construction, operational and decommissioning noise. However, there is a potential requirement for UXO detonation. Should UXO be discovered in the development area, more detailed consideration or underwater noise modelling may subsequently be required.</p>		<p>Assessment of low-order UXO clearance is provided (see assessment of PTS and disturbance from UXO Technical Appendix 12.2: Underwater Noise and Vibration and Chapter 12: Marine Mammals section 12.6.2.2 et seq.).</p>
	<p>Page 6-63, final para, somewhat confuses references to marine mammal injury thresholds and fish injury thresholds. This is assumed to be an error; however, the submitted ES should ensure that it clarifies this.</p>		<p>This scoping opinion has been considered throughout the ES. Marine mammal injury is addressed in Chapter 12: Marine Mammals, while the fish injury is addressed in Chapter 10: Fish and Shellfish Ecology.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>For the purposes of the noise assessment, you must include a review of behavioural dose-response relationships of marine mammals to noise sources.</p>		<p>The noise assessment is addressed in Chapter 12: Marine Mammals</p>
<p><b>Offshore ornithology</b></p>	<p>There is currently no proposed approach to assessment for the effects of underwater noise on diving birds. The scoping opinion request that this pathway (including UXO detonation) be scoped into and assessed appropriately in the submitted ES. In the absence of any published response thresholds for diving birds, a review of their hearing sensitivity and observed responses to underwater noise should be included in the underwater noise assessment.</p>	<p>Chapter 11: Offshore Ornithology</p>	<p>The potential impacts of underwater noise on diving birds have been assessed in Section 11.6 and Volume 3, Technical Appendix 12.2: Underwater Noise and Vibration.</p>
	<p>The scoping opinion disagrees with the reliance on the conclusions of Wakefield et al. (2013) when scoping Northern Gannet colonies, as it is based on a single year's data. The scoping opinion, therefore, considers that all gannet colonies are within the mean max. foraging range +1 SD (229.4 + 124.3 km) must be considered within the submitted ES. As such, the scoping opinion considers that Table 6-16 and Table 6-18 should include Northern Gannet.</p>		<p>The recommended foraging range has been used to apportion the predicted impacts to different SPAs in this Chapter and in Volume 3, Technical Appendix 11.2: Apportioning.</p>
	<p>Collision risk should be considered a direct, rather than indirect, impact and should include both injury and mortality (currently, the scoping report only includes injury).</p>		<p>Collision risk is assessed as a direct impact in Section 11.6 and in Volume 3, Technical Appendix 11.3: Collision Risk Modelling.</p>
	<p>The scoping opinion queries why North Cardigan Bay SPA (designated for Red-throated diver) has not been included within sites with ornithological features in Section 6.5 (ornithology), although it has been included within Table 6-4 in Section 6.1. the scoping opinion would consider it too early to</p>		<p>No confirmed red-throated diver was recorded in the two years of digital aerial survey work, Volume 3, Technical Appendix 11.6: 2-Year</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>screen out this site prior to completion of surveys which could identify Red-throated divers within the study area.</p>		<p>Bird Survey Report. Therefore, this species has not been scoped in for assessment.</p>
<p><b>Onshore ornithology</b></p>	<p>The scoping opinion notes that onshore ornithology surveys are not yet adequately defined. However, it recognises that onshore bird surveys will depend upon the final selection of the onshore project options. RSPB have stated that they can provide terrestrial bird data for onshore options, including chough data, and are happy to offer further advice if required on suitable survey methods.</p>	<p>Chapter 20 - Terrestrial and Coastal Ecology and Onshore Ornithology</p>	<p>Ornithology surveys were agreed with NRW in subsequent consultation, as outlined below.</p> <p>RSPB data for chough was obtained and used in both the breeding bird survey (Volume 3, Technical Appendix 20.7) and this assessment. BTO data was also purchased for the wintering bird survey (Volume 3, Technical Appendix 20.8) and used to help inform the final cable route and landfall options.</p> <p>Bird monitoring methods all took cognisance of appropriate methodologies and techniques including Gilbert et al. (2011).</p>
<p><b>Commercial fisheries</b></p>	<p>No comments were received from consultees in relation to commercial fisheries, and the scoping opinion has no comment to make on this section of the report (section 7.1).</p>	<p>Chapter 15: Commercial Fisheries</p>	<p style="background-color: #cccccc;"></p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
<p><b>Shipping and navigation</b></p>	<p>The following impacts must be scoped into and assessed within the submitted ES:</p> <ul style="list-style-type: none"> <li>• The impact of visual intrusion and noise on commercial and recreational craft.</li> <li>• The risk to drifting recreational craft in adverse weather or tidal conditions.</li> <li>• The effect on small craft navigational and communications equipment.</li> <li>• The likely squeeze of small craft into the routes of larger commercial vessels.</li> <li>• A Burial Protection Index study to be included where cable burial is proposed, and if applicable, an anchor penetration study should be considered.</li> </ul> <p>The scoping opinion request that the submitted ES also incorporates the following methodologies within the Navigation Risk Assessment:</p> <ul style="list-style-type: none"> <li>• Comprehensive vessel traffic analysis in accordance with MGN 543, taking account of MGN 372.                             <ul style="list-style-type: none"> <li>• Any proposed layouts should conform with MGN 543.</li> </ul> </li> </ul> <p>An assessment of the impact of, and emergency response to, a turbine breaking free of its moorings, along with appropriate risk mitigation measures (e.g. AIS / GPS monitoring of offshore structures).</p>	<p>Chapter 16: Shipping and Navigation</p> <p>Technical Appendix 16.1: Navigational Risk Assessment</p>	<p>Chapter 16: Shipping and Navigation and supporting Technical Appendix 16.1: Navigational Risk Assessment has considered the impacts and proposed mitigations outlined in the scoping opinion.</p> <p>The Maritime and Coastguard Agency (MCA) was consulted throughout the NRA process.</p> <p>The marine guidance notes (MGN) checklist is provided in Technical Appendix 16.1: Navigational Risk Assessment.</p> <p>A Burial Protection Index study has been included within Technical Appendix 16.1: Navigational Risk Assessment, and the Applicant intends to undertake a Cable Burial Risk Assessment (CBRA).</p>
	<ul style="list-style-type: none"> <li>• Should infrastructure be proposed to remain in situ following decommissioning, the ES must consider potential risks from this infrastructure beyond the lifetime of the Project. MGN 543 Annex 2 requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set and survey report to the MCA Hydrography Manager. Failure to report the surveyor to conduct it to Order 1a might invalidate the Navigational Risk Assessment if it was deemed not fit for</li> </ul>		

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>purpose. Trinity House has noted that they would consider that this development, potentially including export cables and vessels laying them, will need to be marked with marine aids to navigation by the developer/operator in accordance with the general principles outlined in IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities) Recommendation O-139 on the Marking of Man-Made Offshore Structures as a risk mitigation measure.</p> <p>Additional aids to navigation such as buoys may be necessary to mitigate the risk posed to the mariner, particularly during the construction phase. All marine navigational marking, which will be required to be provided and thereafter maintained by the developer, will need to be addressed and agreed upon with Trinity House. This will include the necessity for the aids to navigation to meet the internationally recognised standards of availability and the reporting thereof.</p> <p>It is recommended to engage with the MCA in order to discuss proposed turbine layouts, which should minimise risks to surface vessels, including rescue boats and surface rescue aircraft operating within the site. The MCA also requires consulting on the completion of an MGN checklist. In addition, the MCA has identified that a Third-Party Verification of the mooring arrangement will be required.</p>		
<p><b>Coastal, Marine Infrastructure and Other Users</b></p>	<p>No comments were received from consultees in relation to Coastal, and Marine Infrastructure and Other Users and the scoping opinion has no comment to make on this section of the report (section 7.3).</p>	<p>Chapter 18: Coastal and Marine Infrastructure and Other Users</p>	

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
<p><b>Military, UXO, aviation and radar</b></p>	<p>In the interests of air safety, the MOD have noted that they are likely to request fitting of MOD accredited aviation safety lighting in accordance with the Civil Aviation Authority, Air Navigation Order 2016 should the Project be progressed.</p>	<p>Chapter 17: Aviation and Radar</p>	<p>Requirements for MOD accredited aviation safety lighting are considered in Chapter 17: Aviation and Radar.</p>
<p><b>Archaeology and cultural heritage</b></p>	<p>Cadw have reviewed the scoping area and noted that there are 66 scheduled monuments, 3 registered historic park and gardens, 2 registered historic landscapes and 188 listed buildings located inside the submitted scoping area for the Environmental Impact Assessment. However, only one scheduled monument (PE554 West Angle Bay Early Medieval Settlement) and two listed buildings (5954 Corse Bridge and attached Walled Channel and 16583 Seaweed on foreshore) are located inside 500m of the proposed cable route below the mean high-water spring tide line. These must be included within the assessment contained within the submitted ES. LiDAR data identified as a data source in Table 7-9 tends to be low resolution or absent in many parts of Wales. The collection of LiDAR data should be considered as part of the archaeological surveys to inform the EIA. When considering reasonable alternatives within the submitted ES, you should ensure that consideration is given to Archaeology and Cultural Heritage receptors and whether impacts could be mitigated through alternative site or technology selection.</p>	<p>Chapter 14: Offshore Archaeology and Cultural Heritage  Chapter 23: Onshore Archaeology and Cultural Heritage</p>	<p>This comment is addressed throughout Chapter 24: Onshore Archaeology and Cultural Heritage. A summary of findings can be found in Table 14 2 – Consultation for Offshore Archaeology.</p> <p>The scoping opinion also contained comments on methodologies and datasets. Those are addressed in Chapter 2: Overview of EIA Methodology &amp; Chapter 3: Site Selection and Alternatives.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
<b>Land use</b>	No comments were received from consultees in relation to Land Use, and the scoping opinion has no comment to make on this section of the report (section 7.6).	Chapter 24: Land Use	
<b>Traffic and transport</b>	No comments were received from consultees in relation to Traffic and Transport, and the scoping opinion has no comment to make on this section of the report (section 7.7).	Chapter 25: Traffic and Transport	
<b>Landscape, seascape and visual impacts</b>	The scoping opinion advises the addition of the National Park Management Plan and reference to the Special Qualities of the park into the baseline data for the Pembrokeshire Coast National Park (PCNP).	Chapter 21: Landscape and Visual Impacts	The likely impacts of the Proposed Development on the special qualities of the PCNP are assessed in Chapter 13: Seascape and Visual Impacts under Section 13.8.7. Detailed assessments in LANDMAP are referred to in the assessment of the onshore substation and landfall in Chapter 22: Landscape and Visual Impacts.
	With regard to the Seascape Character Areas identified in the National Park's Seascape Character Assessment, the scoping opinion suggests that SCA32 Inner Milford Haven is included in relation to the potential landfall/substation. A number of other factors are noted in the SCAs as well as those mentioned in the report, e.g. coastal splendour, remote, unspoilt cliffs & sheltered bays. Full account needs to be taken of factors contributing to sensitivity.	Chapter 13: Seascape and Visual Impacts	The likely impacts of the Proposed Development on Seascape Character Areas within the PCNP are assessed in Chapter 13: Seascape and Visual Impacts under Section 13.8. SCA 32 is included in Chapter 21: Landscape and Visual Impacts under Section 22.10.

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>With regard to the Landscape Character Areas identified in the National Park’s Landscape Character Assessment, the scoping opinion suggests that LCA9 Marloes Peninsula and LCA10 Skomer &amp; Skokholm are included, as these landscapes have the potential for visual impacts.</p>		<p>The likely impacts of the Proposed Development on Landscape Character Areas within the PCNP are assessed within the assessment of potential seascape impacts in Chapter 13: Seascape and Visual Impacts under Section 13.8.</p>
	<p>With regard to potential mitigation (7.8.4), the scoping opinion advises that the size and height of turbines and the location, orientation and spread of the array and the inclusion or exclusion of lighting are also potential mitigation options for the Project.</p>		<p>Standard mitigation measures are presented in Chapter 13: Seascape and Visual Impacts under Section 13.4.6.</p>
	<p>The scoping opinion recommends that potential landscape and seascape impacts on the Heritage Coasts should also be included in the submitted ES.</p>		<p>The features which contribute to the definition of Heritage Coasts are considered in the assessment of effects on the seascape character, special qualities and visual amenity of the PCNP in Chapter 13: Seascape and Visual Impacts under Section 13.7 and 13.8.</p>
	<p>The scoping opinion suggests that, as well as the largest scale of turbine anticipated, consideration should also be given to the orientation of the array in relation to high sensitivity receptors, i.e. Pembrokeshire Coast National Park and highly sensitive viewpoints. In addition, the height of the offshore platforms, as well as the height of the turbines, needs to be taken into account.</p>		<p>The SLVIA is based on the maximum design scenario (MDS) set out in Chapter 13: Seascape and Visual Impacts under Section 13.6.1.</p>

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
	<p>The scoping opinion notes that turbines would be required to be marked in accordance with aviation requirements. If lighting is required, an assessment of night-time impacts would also be required.</p>		<p>Night-time visual impacts from WTG aviation lighting are assessed in Chapter 13: Seascape and Visual Impacts under Section 13.7.18.</p>
	<p>It is recommended that the applicant engages with NRW Advisory to support the selection of viewpoints and photomontage production.</p>		<p>LVIA viewpoints were agreed with NRW, PCC and PCNPA</p>
<p><b>Underwater noise and vibration</b></p>	<p>Section 7.9 does not identify potential noise from cable ‘snapping’. The applicant must ensure that both of these sources are captured throughout all noise assessments within the submitted ES. The underwater noise assessment will need to determine the potential zone of masking, i.e. the distance from the various sources of noise at which the received levels of underwater noise are less than background noise.</p>	<p>Chapter 10: Fish and Shellfish Ecology Chapter 12: Marine Mammals</p>	<p>The effects of vibration, noise, UXO detonation and cable ‘snapping’ are covered in detail within Technical Appendix 12.2: Underwater Noise and Vibration. Effects relevant to fish and shellfish, including larvae, are covered in Section 10.6 and Chapter 10: Fish and Shellfish Ecology</p>
<p><b>Airborne noise and vibration</b></p>	<p>No comments were received from consultees in relation to Airborne Noise, and Vibration and the scoping opinion has no comment to make on this section of the report.</p>	<p>Chapter 22: Onshore Noise and Vibration</p>	
<p><b>Air Quality</b></p>	<p>No comments were received from consultees in relation to Air Quality, and the scoping opinion has no comment to make on this section of the report.</p>	<p>Chapter 26: Air Quality</p>	

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
<b>Tourism and recreation</b>	No comments were received from consultees in relation to Tourism and Recreation, and the scoping opinion has no comment to make on this section of the report.	Chapter 27: Socio-Economics, Tourism and Recreation	
<b>Socioeconomic</b>	No comments were received from consultees in relation to Socioeconomics, and the scoping opinion has no comment to make on this section of the report.	Chapter 27: Socio-Economics, Tourism and Recreation	
<b>Human Health</b>	No comments were received from consultees in relation to Human Health, and the scoping opinion has no comment to make on this section of the report.	Chapter 26: Air Quality  Chapter 22: Onshore Noise and Vibration	
<b>Cumulative Effects Assessment</b>	The ES must include an assessment of cumulative and in-combination effects.	Chapter 29: Inter-related Effects	Chapters 29 & 30 on Inter-related Effects and Cumulative Effects respectively include assessments of cumulative and in-combination effects.
	For usefulness, the scoping opinion recommends the inclusion of distances and/or locations of projects and plans in relation to Project Erebus in the submitted ES.	Chapter 30: Cumulative Effects Assessment	This has been addressed throughout the relevant Technical

Topic/Receptor	Scoping Opinion Comment	Applicable ES Chapter	Commentary
			Chapters which consider the potential for cumulative effects.
	<p>The applicant should consider the inclusion of the Pembrokeshire Demonstration Zone (PDZ) within the CEA, depending on the current status of this Project.</p>		<p>This has been considered throughout the relevant offshore Technical Chapters</p>
	<p>The cumulative underwater noise and vibration effects of the Project with the nearby Castlemartin firing range and other marine activities (e.g. shipping) should be scoped in and appropriately assessed within the submitted ES.</p>		<p>This has been considered in Chapter 10 Fish and Shellfish, Chapter 11 Offshore Ornithology and Chapter 12 Marine Mammals</p>
	<p>The scoping opinion recommends that for marine birds, the extent of the Cumulative Effects Assessment (CEA) should be based on foraging ranges of features considered to be affected by the proposed Project. All projects within the foraging range of a colony/protected site should be considered within the CEA of the submitted ES.</p>		<p>This comment has been addressed in Chapter 11 Offshore Ornithology.</p>

### **2.3.2 Overview of Assessment Process**

2.3.2.1 The following provides an overview of the assessment steps that have been undertaken for EIA and ES preparation:

- Desktop studies including identification of potential environmental sensitivities and literature reviews to inform the design, assessment and site specific surveys.
- Baseline surveys (where appropriate and where possible) to provide information on the existing environmental character of the proposed site and the surrounding area.
- Preparation of the Project Design Envelope to account for initial assessment of potential environmental sensitivities and reduce/avoid impacts.
- Identification of possible interactions between the Project and the existing and predicted future site conditions. These interactions or effects are assessed using stated criteria based on accepted guidance and best practice.
- Using the design parameters for the Project, prediction of the likely environmental effects, including direct effects and any indirect, secondary, short, medium and long-term, permanent and temporary, beneficial and adverse effects.
- Identification of mitigation measures designed to avoid, and where that is not possible or practical, reduce or offset adverse effects as well as enhancement measures that could result in beneficial effects. Assessment of alterations to the design and the reassessment of previously proposed mitigation to establish suitable mitigation for the Project.
- Assessment of the significance of residual effects after mitigation, in relation to the sensitivity of the feature impacted upon and the magnitude of the effect predicted, in line with the methodology identified below (refer to Section 2.5).
- Identification of measures to monitor likely significant adverse effects, where appropriate (as per Regulation 33(2)(c)(iv) of the Electricity Works EIA Regulations and Regulation 22(1)(c) of the Marine Works EIA Regulations).
- Identification of any uncertainties inherent in the methods used, the predictions made, and the conclusions drawn during the course of the assessment process.
- Reporting of the results of the EIA in this ES.

### **2.3.3 Technical Scope**

2.3.3.1 The technical scope in this ES assesses potential impacts as agreed through the EIA Scoping process and pre-application consultation, as summarised in Table 2.2.

### **2.3.4 Spatial Scope**

2.3.4.1 The spatial scope of the EIA has taken account of a number of factors, in particular:

- The extent of the Project (refer to Volume 2 Figure 1.1);
- The nature of the baseline environment, sensitive receptors and the likely impacts that could arise; and
- The distance over which predicted effects are likely to remain significant and, in particular, the existence of pathways that could result in the transfer of effects to a wider geographical area than the extent of proposed physical works.

### 2.3.5 **Temporal Scope**

- The baseline years used for the assessment of environmental effects are 2019 to 2021, through which site specific surveys were undertaken. Datasets from other years used to describe the background or existing environment are noted in each technical assessment where relevant.
- For the purposes of the EIA, construction is anticipated to commence in early 2026 with operations expected to commence in early 2027. The Project will have an operational life of 25 years, which will be followed by a decommissioning phase of 2 years.
- Works associated with the Project are taken to occur within standard working hours (7am to 7pm Monday to Saturday), save where particular elements in each phase of the project lifecycle (construction, operation, decommissioning) require working outside those times.
- Further details relating to the timing and program of works associated with the Project is provided in Chapter 4: Proposed Development Description.

## 2.4 **Project Design Envelope**

- 2.4.1.1 At the preliminary design phase of the Project, there exists elements of the project that have not been fully determined or defined (e.g. turbine numbers, platform dimensions, mooring configurations, landfall installation methods, specific cable routing, substation design etc.). The EIA addresses these uncertainties by considering a range of design parameters in the Project design. This approach is commonly referred to as the Project Design Envelope (PDE) or the 'Rochdale Envelope'.
- 2.4.1.2 PINS Advice Note 9 (PINS, 2018) elaborates on the approach: *"The 'Rochdale Envelope' approach is employed where the nature of the Proposed Development means that some details of the whole project have not been confirmed (for instance the precise dimensions of structures) when the application is submitted, and flexibility is sought to address uncertainty. Such an approach has been used under other consenting regimes (the Town and Country Planning Act 1990 and the Electricity Act 1989) where an application has been made at a time when the details of a project have not been resolved."*
- 2.4.1.3 In accordance with NRW and PINS guidance, the EIA takes the PDE and identifies those parameters most likely to influence the magnitude of impacts arising from throughout the Project lifecycle (construction, operation and decommissioning). Design parameters with potential for significant impacts have been tightly defined. Other Project parameters that are more benign may retain a greater flexibility in the PDE. In all cases the parameters have been set to sufficient criteria that allows the Project to be properly assessed in accordance with legislative requirements and guidelines.
- 2.4.1.4 The EIA adopts a 'precautionary approach' and considers 'worst case' scenarios when assessing envelope parameters and in identifying any relationship between the Project, impact pathways, and sensitive receptors. This ensures a holistic and comprehensive assessment. This approach aligns with NRW guidance for marine renewable energy projects (NRW,2019) by ensuring that the scenario or design parameter that would have the greatest impact (e.g. largest footprint of project infrastructure on seabed; highest blade tip height / diameter of WTGs etc.), is fully assessed for each EIA topic.
- 2.4.1.5 The PDE approach also allows for future improvements in technology and construction methods to be accommodated. Technologies and methodologies that may not yet be fully developed but are anticipated to potentially form part of the proposed design will be developed within the parameters used to inform the EIA.

2.4.1.6 Details of the Project and the design parameters used to inform this EIA are provided Chapter 4: Proposed Development Description and in relevant ES chapters.

## 2.5 Assessment of Effects

2.5.1.1 In order to determine whether the potential effects of the Project are likely to be significant, a number of criteria are used, a key requirement of the EIA Regulations. The significance criteria may vary between topics but generally take into account the following (as per Annexes III and IV of the EIA Directive):

- International, national and local designations or standards;
- Relationship with planning policy;
- The sensitivity of the receiving environment;
- The magnitude of impact;
- Reversibility and duration of the effect;
- Mitigation measures;
- Proposed monitoring measures (where applicable); and
- Inter-relationship, transboundary and cumulative effects.

2.5.1.2 The EIA process will use a combination of approaches and the best available evidence to assess the significance of the effects. This will use significance ranking matrices (in this example, utilising the Chartered Institute of Ecology and Environmental Management (CIEEM) and Institute of Environmental Management and Assessment (IEMA) guidance) as well as a narrative based on organised reasoning and expert judgement.

2.5.1.3 With respect to relevant EIA guidance, the EIA takes full account of key policies, legislation, guidance and advice, including but not limited to those listed in Section 2.2 and Chapter 5: Policy and Legislation.

2.5.1.4 Table 2.3 details the sensitivity levels used in assessing significance with the guidelines used to determine the Magnitude detailed in Table 2.4.

**Table 2.3 - Sensitivity Levels for Receptors**

Sensitivity	Description
High	The receptor has very limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact.
Medium	The receptor has limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact.
Low	The receptor has some tolerance to avoid, adapt to, accommodate or recover from the anticipated impact.
Negligible	The receptor is generally tolerant of and can accommodate or recover from the anticipated impact.
Sensitivity	Description

High	The receptor has very limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact.
Medium	The receptor has limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact.
Low	The receptor has some tolerance to avoid, adapt to, accommodate or recover from the anticipated impact.
Negligible	The receptor is generally tolerant of and can accommodate or recover from the anticipated impact.

**Table 2.4 - Magnitude of Impact**

Magnitude	Description
High	<p>Loss of resource which could affect the integrity of the resource; partial loss of or damage to key characteristics, features or elements (adverse). Permanent/irreversible change, which is likely to occur.</p> <p>Improvement to, or addition of, key characteristics, features or elements of the resource; improvement of attribute quality (beneficial).</p>
Medium	<p>Minor loss of, or alteration to, one (or maybe more) key characteristics, features or elements; measurable change in attributes, quality or vulnerability (adverse). Long-term though reversible change, which is likely to occur.</p> <p>Minor improvement to, or addition of, one (maybe more) key characteristics, features or elements of the resource; a minor improvement to attribute quality (beneficial).</p>
Low	<p>Very minor loss of, or alteration to, one (or maybe more) key characteristics, features or elements; noticeable change in attributes, quality or vulnerability (adverse). Short to medium though reversible change could possibly occur.</p> <p>Very minor improvement to, or addition of, one (maybe more) key characteristic, feature or element; very minor improvement to attribute quality (beneficial).</p>
Negligible	<p>Temporary or intermittent very minor loss of, or alteration to, one (or maybe more) characteristic, feature or element; possible change in attributes, quality or vulnerability (adverse). Short-term, intermittent and reversible change, which is unlikely to occur.</p> <p>Possible very minor improvement to, or addition of, one (maybe more) characteristic or element; possible improvement to attribute quality (beneficial).</p>

2.5.1.5 The sensitivity of receptor (Table 2.3) will be combined with the magnitude of impact (Table 2.4) to determine the effect, as shown in the matrix provided in Table 2.5 (i.e. high magnitude and high sensitivity results in a major effect). The following terminology descriptions should be noted:

- **Impact** – actions resulting in a change, e.g. construction resulting in removal of trees

- **Effect** – outcome from an impact, e.g. tree removal resulting in change in landscape character
- **Sensitivity** – how sensitive is the receptor to the change, e.g. a rural area is likely to be more sensitive to removal of trees than an industrial area
- **Magnitude of impact** – how great is the impact, e.g. the extent, duration, scale and nature of the tree loss
- **Significance of effect** – combined sensitivity of receptor and magnitude of impact, e.g. total loss of woodland in a rural area will have a greater significance than loss of a few trees on an industrial estate.

2.5.1.6 When determining magnitude, spatial extent (size of geographical area/population), probability of impact occurring, frequency of impact(s) occurring, duration of impact, and reversibility of impact has been considered.

**Table 2.5 - Effect Assessment Matrix**

		Sensitivity			
		High	Medium	Low	Negligible
Magnitude	High	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Minor	Negligible	Negligible

2.5.1.7 The following terms are used in the ES, unless otherwise stated in specific chapters, to determine the level of effects predicted to occur:

- Major beneficial or adverse effect – where the Project would result in a significant improvement or deterioration to the existing environment;
- Moderate beneficial or adverse effect – where the Project would result in a noticeable improvement or deterioration to the existing environment;
- Minor beneficial or adverse effect – where the Project would result in a small improvement or deterioration to the existing environment; and
- Negligible – where the Project would result in no discernible improvement or deterioration to the existing environment.

2.5.1.8 Using professional judgement, and with reference to established good practice, the majority of the assessments within this ES consider moderate and major effects to be significant in EIA terms, while minor or negligible effects are considered to be non-significant. If there are deviations from this, these will be clearly stated within the individual technical chapters.

2.5.1.9 Summary tables that outline the predicted effects associated with an environmental issue, the appropriate mitigation measures required to address these effects and the subsequent overall residual effects are provided at the end of each technical chapter of the ES. Distinction has also been made between direct and indirect, short and long term, permanent and temporary, beneficial and adverse effects.

## 2.6 Mitigation Measures

2.6.1.1 Where an impact assessment identifies that an aspect of the project is likely to give rise to significant environmental impacts, mitigation measures will be proposed, in order to avoid impacts or reduce them to acceptable levels.

2.6.1.2 Mitigation will take place in the following hierarchy, where the first is not feasible due to constraints, including, engineering, technology or geology, the next measure will be engaged.

- The proposed Project design will aim to avoid placing permanent infrastructure or having temporary working areas within protected sites where possible;
- If avoidance of protected sites is not possible, best endeavours will be made to design the proposed Project to avoid direct impact on the specified features of interest within protected sites via specific construction and decommissioning methods, where possible;
- Where the feature is not static, the design of the infrastructure of the proposed Project must, where practicable, minimise impact on mobile species, therefore reducing the interaction and harm; and
- Where avoidance of features of interest are not possible, mitigation measure will be developed for construction, operation and decommissioning to minimise effects, such as work schedule, techniques and working areas, and agree reinstatement of temporary works with regulatory authorities, offsetting or enhancement measures.

2.6.1.3 Mitigation measures proposed for the Project are considered proportionate to the scale of the impact predicted. When appropriate to do so, proposed mitigation measures have been discussed and agreed with relevant regulatory authorities and stakeholders.

2.6.1.4 Where mitigation is proposed by the Project to address likely significant adverse effects, monitoring measures are proposed and included in the ES. Specific monitoring proposals have been developed to ensure or demonstrate that the significant adverse impacts from the construction and operation of Projects do not exceed impacts predicted in the ES and that measures taken to offset such impacts are carried out as planned.

2.6.1.5 It is also acknowledged that this project falls under a Test and Demonstration category. Consequently, in addition to evaluating the impacts of the Project, additional monitoring is proposed where it can help inform as to the effectiveness of the EIA procedure for the development of FLOW in the Celtic Sea, with regards to the quality of the data used and the accuracy of the approaches and methods.

## 2.7 Cumulative Effects

2.7.1.1 Schedule 4 paragraph 5 of the EIA Regulations requires 'A description of the likely significant effects of the development on the environment resulting from, inter alia: '(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources'

2.7.1.2 The approach for the CEA has been developed through the review of standard guidance, including Planning Inspectorate (PINS) Guidance Note 17: Cumulative Effects Assessment (PINS, 2019) and RenewableUK Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (RenewableUK, 2013) and in consultation with statutory consultees, primarily NRW and JNCC.

- 2.7.1.3 The RenewableUK Guiding Principles (RenewableUK, 2013) advises that a pragmatic approach is adopted in cumulative assessments. Where projects are known within the planning system but lack detailed project information, such as those projects that have not progressed past the scoping stage, assessment should be limited to those aspects where sufficient detail is available to undertake a meaningful assessment.
- 2.7.1.4 A four staged approach was undertaken for the CEA:
- 2.7.1.5 **Stage 1** – Establish the project's Zone of Influence (ZOI) and identify a long-list of 'other development'. An initial long list of projects was developed in consultation with NRW and JNCC, based on the zone of influence (ZOI) approach identified in Guidance Note 17 (PINS, 2019). The use of ZOIs is intended to provide a transparent and justifiable area of search within which other developments may be located. Full details of the ZOIs applied within the CEA are provided in Volume 3 Technical Appendix 30.1: Project Identification in support of Cumulative Effect.
- 2.7.1.6 **Stage 2** – Identify short-list of 'other development' for the CEA. Once the CEA long-list was created (Stage 1 above), all projects and plans were screened, based on the potential for interaction with the Project. Interaction may be either temporal, spatial or conceptual. On that basis only projects which are reasonably well described and sufficiently advanced to provide adequate information on which to base a meaningful and robust assessment have been included in the CEA. The CEA follows reflects the three-tier system set out in PINS Guidance (2019), The following type of projects have been considered:
- Projects started but not finished;
  - Projects with consent but not started;
  - Applications lodged and not determined;
  - Refusals subject to appeal;
  - Known projects not needing consent;
  - Proposals in adopted plans (potentially);
  - Firm proposals in published final draft plans (potentially).
- **Stage 3** – Information gathering on the short-listed 'other developments'. Publicly issued plans, drawings and reports that provided sufficient information to inform the CEA were compiled on shortlisted developments to inform the assessment.
- **Stage 4** – Assessment of cumulative effects. Projects that are built and operational during baseline site characterisation are considered to be part of the baseline for the CEA. However, where it is identified that there are ongoing impacts from built and operational projects, these have been considered within the CEA. For those projects that were only partially constructed, or have only recently been completed, the full extent of the impacts arising from the development(s) may not be known and have therefore been included within the CEA.
- 2.7.1.7 The assessment considered Tier 1 and Tier 2 'other existing development and/or approved development', where possible. For 'other existing development and/or approved development' falling into Tier 3, the assessment considered those projects where possible. A high level qualitative assessment was undertaken for projects where there was insufficient detail in the public domain.

- 2.7.1.8 In accordance with PINS Guidance Note 17, the Applicant proposed and agreed an assessment cut-off date of the 1st October 2021 to finalise their plans and assessments. However, the applicant is aware of the potential need to conduct additional assessments to reduce delays and questions during examination where new 'other existing development and/or approved development' comes forward following the stated assessment cut-off date.
- 2.7.1.9 A cumulative assessment is provided within each of the technical assessment chapters in the ES, with a summary provided in Chapter 30: Cumulative Effects Assessment.

## **2.8 Inter-related Effects**

- 2.8.1.1 Inter-related effects or interactions between impacts on different environmental factors have been considered in this ES. This includes where an element of the Project described and assessed in on particular discipline (e.g. Noise Assessment) may cause a direct or indirect effect on one or more sensitive receptors (e.g. Population and Human Health, Marine Mammals, Terrestrial Fauna). Additionally, various impacts can interact and present a greater effect on a sensitive receptor than each impact considered separately.
- 2.8.1.2 The assessment has taken a receptor led approach to identifying potential interactions and effects, based on the following:
- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the project (construction, operations, and decommissioning); to interact to potentially create a more significant effect on a receptor than if just assessed in isolation in these three key project stages (e.g. subsea noise effects from piling, operational Wind Turbine Generators (WTGs), vessels and decommissioning); and
  - Receptor led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on benthic ecology such as direct habitat loss or disturbance, sediment plumes, scour, jack- up vessel use etc., may interact to produce a different, or greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects might be short-term, temporary or transient effects, or incorporate longer term effects.
- 2.8.1.3 Inter-related effects are assessed through consideration of all effects on a receptor by the Project. An assessment of the potential for all effects on that receptor to interact, whether that be spatially or temporally, results in the identification of inter-related effects on a receptor.
- 2.8.1.4 The EIA incorporates the findings of the individual technical assessments to describe the potential, additional, inter-related effects that may be of greater significance than the isolated individual effects acting on the receptor.

## **2.9 Transboundary Effects**

- 2.9.1.1 Transboundary impacts are those that may have an impact on the environment in other European Economic Area (EEA) states. A formal transboundary screening opinion has not been sought from PEDW as the Project is not an NSIP. However, as per the CEA, PINS Advice Note 12 (PINS, 2020) has been used to guide the transboundary effects assessment.

- 2.9.1.2 The need to consider these transboundary impacts is enshrined within the United Nations Economic Commission for Europe (UNECE) Convention on EIA in a Transboundary Context, adopted in 1991 in the Finnish city of Espoo (the 'Espoo Convention').
- 2.9.1.3 The Espoo Convention has been incorporated into the EIA Directive and have been transposed into UK law through the EIA Regulations.
- 2.9.1.4 Potential transboundary impacts include, for example, displacement or barrier effects deterring migratory seabirds moving between colonies in other EEA state waters from entering the array area or displacement of fishing vessels from the area around the development into other EEA state waters.
- 2.9.1.5 Transboundary impacts are assessed in each technical assessment chapter. The transboundary impacts assessment has two stages, screening and assessment. This assessment methodology will follow that of the EIA methodology as detailed in Section 2.5 of this Chapter. Where any deviations are required on a topic by topic basis, these will be detailed within the relevant EIA topic chapter.

## **2.10 Assumptions, Limitations and Uncertainty**

- 2.10.1.1 The ES provides a clear documentary trail of the analysis used to arrive at conclusions, including a description of data and methods used, together with descriptions of the reliability and certainty of the results.
- 2.10.1.2 Nevertheless, some uncertainty is inherent in the EIA process.
- Limitations in identifying and describing baseline conditions: There may exist limited or no access to inspect relevant datasets or to physically access sites / areas to survey and describe the existing environment.
  - Dynamic nature of existing or baseline conditions: Baseline conditions presented in this assessment have been assumed to be accurate at the time of surveying, with the acknowledgement that due to the dynamic nature of the environment, these conditions may change over the 30 year lifecycle of the Project
  - Uncertainties in the Project Design. At preliminary design phase of the project, a number of uncertainties exist relating to the project design and construction methodology. Consequently, a range of parameters are used for assessment, using a PDE or 'Rochdale Envelope approach', as outlined in Section 2.4 above.
  - Uncertainties inherent in the assessment process. Uncertainties may be present to varying degrees in the determination or describing of the nature, intensity, complexity, probability, the expected onset, duration, frequency and reversibility of an impact.
  - Uncertainties around other plans and projects. There may be uncertainties around the nature and timing of other plans and projects, that may give rise to cumulative effects.
- 2.10.1.3 Consequently, a precautionary or worst case scenario has been taken where such uncertainties and limitations exist. For example, this includes the assumption of presence of protected species / habitats where surveys were incomplete or inconclusive, or in determining the potential impact of assessment, based on relevant project parameters.

- 2.10.1.4 Where present, assumptions that have been adopted by relevant specialists are objectively based using their professional judgement and experience. Such judgements are explicit and substantiated rather than presented as objective fact. Where applicable, they have been based using agreed approaches, using relevant guidelines and in consultation with the appropriate authority.
- 2.10.1.5 Limitations and uncertainties within the EIA are summarised in each technical chapter, where relevant. Residual uncertainties within the assessment are identified, together with any measures proposed to appropriate mitigate any arising significant effects.

## **2.11 Consultation**

- 2.11.1.1 Consultation is a key component of the EIA process. Consultation with statutory and non-statutory consultees along with public consultation has been undertaken by the Applicant since the feasibility stages of the Project.
- 2.11.1.2 The Applicant has undertaken a proactive approach to consultation and engaged extensively with relevant individuals and organisations throughout the development of the project. This includes formal consultation, such as the EIA Scoping Opinion and technical working groups, and also informally such as providing email updates. Engagement methods have included in-person and virtual meetings, phone calls, and written correspondence (email and letters). Details of relevant formal consultation, and additional consultation undertaken out with EIA scoping, is summarised within each technical chapter.
- 2.11.1.3 The Applicant has also consulted with the general public throughout development of the Project. This included a virtual public exhibition during the Covid-19 pandemic held in November 2020 and in August 2021 as well as two in person public exhibitions in July and August 2021 in Hundleton and Angle. A Pre-Application Consultation (PAC) Report has been prepared which provides details of consultation undertaken prior to submission of the consent application. This includes both public consultation and technical consultation undertaken as part of the EIA, a copy is provided in Volume 3 Technical Appendix 2.3: Consultation Report.
- 2.11.1.4 The scope of the EIA and the design of the Project has been influenced by all consultation, as described in the PAC Report.

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