

# **Outer Dowsing Offshore Wind Preliminary Environmental Information Report Volume 1, Chapter 5: Environmental Impact Assessment Methodology**

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## Abbreviations

Acronym	Expanded name
BEIS	Department for Business, Energy & Industrial Strategy (now the Department for Energy Security and Net Zero (DESNZ))
BSI	British Standards Institution
CCUS	Carbon Capture Utilisation and Storage
CEA	Cumulative Effects Assessment
CIEEM	Chartered Institute of Ecology and Environment Management
DCO	Development Consent Order
DECC	Department of Energy & Climate Change (now to Department for Energy Security and Net Zero (DESNZ))
DESNZ	Department for Energy Security and Net Zero
dML	Deemed Marine Licence
DMRB	Design Manual for Roads and Bridges
EC	European Commission
ECC	Export Cable Corridor
EEA	European Economic Area
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
EU	European Union
IEMA	Institute of Environmental Management and Assessment
IOMU	Infrastructure and Other Marine Users
LEDPP	Landscape and Ecology Design Principles Plan
LSE	Likely Significant Effect
MDS	Maximum Design Scenario
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
ODOW	Outer Dowsing Offshore Wind (The Project)
OSPAR	Oslo / Paris convention (for the Protection of the Marine Environment of the North-East Atlantic)
PDE	Project Design Envelope
PDS	Project Design Statement
PEIR	Preliminary Environmental Information Report
PEMMP	Project Environmental Management and Monitoring Plan
PEMP	Project Environmental Management Plan
RWC	Realistic Worst Case
UK	United Kingdom
WSI	Written Schemes of Investigation
WTG	Wind Turbine Generator
Zol	Zone of Influence

## Terminology

Term	Definition
Array area	The area offshore within the PEIR Boundary within which the generating stations (including wind turbine generators (WTG) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling are positioned.
Baseline	The status of the environment at the time of assessment without the development in place
Cumulative effects	The combined effect of the Project acting cumulatively with the effects of a number of different projects, on the same single receptor/resource.
Cumulative impact	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with the Project.
Deemed Marine Licence	A licence administered under the Marine and Coastal Access Act 2009. The licence set out within a Schedule within the Development Consent Order (DCO).
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP) from the Secretary of State (SoS) for Department for Energy Security and Net Zero (DESNZ).
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of an impact with the sensitivity of a receptor, in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Environmental Impact Assessment (EIA) Regulations, including the publication of an Environmental Statement (ES).
EIA Directive	European Union Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.
Environmental Statement (ES)	The suite of documents that detail the processes and results of the Environmental Impact Assessment (EIA).
Evidence Plan	A voluntary process of stakeholder consultation with appropriate Expert Topic Groups (ETGs) that discusses and, where possible, agrees the detailed approach to the Environmental Impact Assessment (EIA) and information to support Habitats Regulations Assessment (HRA) for those relevant topics included in the process, undertaken during the pre-application period.
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.

Term		Definition
Maximum Design Scenario		The maximum design parameters of the combined project assets that result in the greatest potential for change in relation to each impact assessed
Mitigation		Mitigation measures, or commitments, are commitments made by the Project to reduce and/or eliminate the potential for significant effects to arise as a result of the Project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.
National Policy Statement (NPS)		A document setting out national policy against which proposals for Nationally Significant Infrastructure Projects (NSIPs) will be assessed and decided upon
Non-statutory consultee		Organisations that the Applicant may be required to (under Section 42 of the 2008 Act) or may otherwise choose to engage during the pre-application phases (if, for example, there are planning policy reasons to do so) who are not designated in law but are likely to have an interest in a proposed development.
Outer Dowsing Offshore Wind (ODOW)		The Project.
Preliminary Environmental Information Report (PEIR)		The PEIR is written in the style of a draft Environmental Statement (ES) and provides information to support and inform the statutory consultation process in the pre-application phase. Following that consultation, the PEIR documentation will be updated to produce the Project's ES that will accompany the application for the Development Consent Order (DCO).
Project design envelope		A description of the range of possible elements that make up the Project's design options under consideration, as set out in detail in the project description. This envelope is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the "Rochdale Envelope" approach.
Statutory consultee		Organisations that are required to be consulted by the Applicant, the Local Planning Authorities and/or The Inspectorate during the pre-application and/or examination phases, and who also have a statutory responsibility in some form that may be relevant to the Project and the DCO application. This includes those bodies and interests prescribed under Section 42 of the Planning Act 2008.
study area		Area(s) within which environmental impact may occur – to be defined on a receptor by receptor basis by the relevant technical specialist.
The Planning Inspectorate		The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects (NSIPs).
The Project		Outer Dowsing Offshore Wind including proposed onshore and offshore infrastructure

Term	Definition
Transboundary impacts	Transboundary effects arise when impacts from the development within one European Economic Area (EEA) state affects the environment of another EEA state(s)
Wind turbine generator (WTG)	All the components of a wind turbine, including the tower, nacelle, and rotor.



## 5 Environmental Impact Assessment Methodology

### 5.1 Introduction

- 5.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents the Environmental Impact Assessment methodology process undertaken to date for Outer Dowsing Offshore Wind (“the Project”). Specifically, this chapter summarises the methodology generally used to assess the impacts arising from the whole Project incorporating the array area, offshore export cable corridor (ECC), landfall, the onshore ECC, and onshore substation sites (OnSS) and during the construction, operation and maintenance, and decommissioning phases.
- 5.1.2 GTR4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the 'Applicant', is proposing to develop the Project. The Project will be located approximately 54km from the Lincolnshire coastline in the southern North Sea. The Project will include both offshore and onshore infrastructure including an offshore generating station (wind farm), export cables to landfall, onshore cables, and connection to the electricity transmission network, and ancillary and associated development (see Volume 1, Chapter 3: Project Description for full details).
- 5.1.3 Specifically, this chapter describes the general approach taken to identify, evaluate and mitigate the potential Likely Significant Effects (LSE) of the Project in preparing this PEIR. Information on topic-specific assessment methodologies, including surveys, is presented within the Methodology sections of the relevant chapters and/or supporting documents of this Preliminary Environmental Information Report (PEIR) and may in certain cases deviate from the general methodology set out here in accordance with relevant guidance and best practice.
- 5.1.4 The EIA process to date is intended to provide a systematic analysis of the impacts of the Project in relation to the existing (baseline) environment as it is understood at this stage. An Environmental Statement (ES) will subsequently be used to summarise the findings of the complete EIA process to support the DCO application with the intention of providing regulators and stakeholders with the information necessary to make a reasoned judgement on the LSE arising from the Project as defined in the final DCO application.
- 5.1.5 The EIA process has become widely used for identifying the potential impacts of new developments (Glasson *et al*, 1999), thereby allowing the making of more environmentally sound decisions (Bailey and Hobbs, 1990) and allowing the decision maker to evaluate the acceptability of a given development and its potential impacts throughout its lifespan. In this case the EIA will evaluate the impacts arising from the construction, operation and maintenance and decommissioning phases of the Project.

### 5.2 Requirement for an Environmental Impact Assessment (EIA)

- 5.2.1 The legislative requirement for the undertaking of an EIA process is set out in Volume 1, Chapter 2: Need, Policy and Legislative Context.

5.2.2 Specifically the EIA will be carried out and prepared in accordance with the Environmental Impact Assessment Infrastructure Planning Regulations 2017 (the EIA Regulations) and with due regard to a number of additional policy, guidance and best practice documents, which are described below:

- The Planning Inspectorate (The Inspectorate) Advice Notes:
  - Advice Note Three (EIA Notification and Consultation) (The Inspectorate, 2017);
  - Advice Note Six (Preparation and Submission of Application) (The Inspectorate, 2022);
  - Advice Note Seven (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements) (The Inspectorate, 2020a);
  - Advice note Nine (Rochdale Envelope) (The Inspectorate, 2018);
  - Advice Note Twelve (Transboundary Impacts and Process) (The Inspectorate, 2020b); and
  - Advice Note Seventeen (Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects) (The Inspectorate, 2019).
- National Policy Statements:
  - Overarching National Policy Statement for Energy (EN-1) (Department of Energy and Climate Change (DECC), 2011a);
  - National Policy Statement for Renewable Energy Infrastructure (EN-3) (DECC, 2011b);
  - National Policy Statement for Electricity Networks Infrastructure (EN-5) (DECC, 2011c);
  - Draft Overarching National Policy Statement for Energy (EN-1) (DESNZ, 2023a);
  - Draft National Policy Statement for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b); and
  - Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023c).
- Habitats and Species Regulations 2017;
- Conservation of Offshore Marine Habitats and Species Regulations 2017;
- Marine and Coastal Access Act 2009;
- UK Marine Policy Statement
- East Inshore and East Offshore Marine Plans; and
- National Planning Policy Framework.

- 5.2.3 This application is being brought forward as a Development Consent Order (DCO), including deemed Marine Licence(s) (dML). The Project will take into account relevant guidance and specific approaches, including draft NPS' and relevant NPS' at the time of writing. This is including due regard to the matters set out in the relevant NPS' in relation to the potential environmental effects arising from offshore wind projects and associated transmission infrastructure (see Volume 1, Chapter 2: Need, Policy and Legislative Context).
- 5.2.4 Furthermore, the approach to the Project EIA and the final ES will have due regard to the relevant guidance and be conducted in line with current offshore wind industry best practice.
- 5.2.5 Relevant guidance includes, but may not be limited to:
- Assessment of the Environmental Impact of Offshore Wind farms (OSPAR Commission, 2008);
  - Offshore Wind Farms: Guidance Note for Environmental Impact Assessment in Respect of Food and Environment Protection Act 1985 and Coastal Protection Act 1949 requirements (Cefas, 2004);
  - Natural England's Approach to Offshore Wind: Our Ambitions, Aims and Objectives (Natural England, 2021);
  - Cumulative Impact Assessment Guidelines - Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (RenewableUK, 2013);
  - Guidelines for Data Acquisition to Support Marine Environmental Assessments of Offshore Renewable Energy Projects (Cefas, 2012);
  - Guidelines for Environmental Impact Assessment (IEMA, 2004);
  - Environmental Impact Assessment Guide to: Delivering Quality Development (IEMA, 2016);
  - Delivering Proportionate EIA, A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017); and
  - Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland (CIEEM, 2019).
- 5.2.6 Guidance relevant to the assessment of the Project on specific receptors and in relation to specific issues is set out in topic specific sections. Each technical assessment also refers, as relevant, to a range of specific guidance documents in order to frame and undertake their assessments (Volume 1, Chapters 7 to 31).

### **5.3 Information for Inclusion in the Preliminary Environmental Information**

#### **Report (PEIR)**

- 5.3.1 This PEIR provides a preliminary assessment of the predicted environmental impacts arising from the Project, using the most current data available at the time of writing. Where possible, the PEIR is written in the style of a draft ES and has been drafted to support and inform the pre-application statutory consultation process.

- 5.3.2 The potential environmental effects of the Project, identified to date, have been assessed for each relevant topic in line with the EIA Scoping Opinion and agreements and discussions with relevant stakeholders during subsequent consultation, by comparing the baseline environmental conditions with the expected conditions that will prevail if the maximum design scenario (MDS) of the Project was developed. The baseline environment has been determined through studies and surveys as agreed, where possible, through consultation with the relevant stakeholders.
- 5.3.3 The assessments for each topic are presented in separate chapters within this PEIR and for each chapter, the following aspects are considered:
- Statutory and policy context: Provides a summary of the relevant legislation and policy that has been taken into account in assessing each individual topic;
  - Consultation: Provides a summary of the consultation responses received to date from statutory and non-statutory consultees through Scoping, the Evidence Plan Process (EPP) and direct consultation;
  - Baseline environment: Provides detail confirming the extent of the study area, description of the existing environmental baseline condition, drawing on the relevant data sources and survey data, as well as a description of the anticipated evolution of the baseline over the lifetime of the Project;
  - Basis of assessment: Provides detail on the scope of the assessment, a summary of the potential impacts and the MDSs assessed for each; details of embedded mitigation which have been identified and adopted as part of the evolution of the project design of relevance to the topic;
  - Assessment methodology: provides detail on the methods used in undertaking the technical study and outlines the significance criteria used;
  - Impact assessment: Presents an assessment of the significance of any identified effects (during construction, operation and maintenance and decommissioning), taking account of the magnitude of impacts, sensitivity of receptors any embedded mitigation, identification of any further mitigation measures required, and an assessment of the confidence in the conclusions of that assessment;
  - Identification of residual effects, taking into account further mitigation (where necessary) and/or monitoring requirements;
  - Cumulative impact assessment: Provides an assessment of any cumulative effects arising from interaction between the Project and other plans, projects or activities. Within each technical chapter, any relevant cumulative effects are discussed;
  - Inter-relationships: Provides an assessment of the potential for and significance of any project lifetime effects on the topic throughout multiple phases on a receptor led basis; and
  - Transboundary effects: Provides an assessment of any likely significant effects arising from the Project on the environment of other European member states.

## 5.4 The Project Design Envelope and Maximum Design Scenarios

- 5.4.1 The Project's EIA has considered a Project Design Envelope (PDE) approach (also known as the 'Rochdale Envelope' approach<sup>1</sup>). Throughout the EIA process, and for each receptor and potential impact considered, the MDS has been identified, described and justified and subsequently used as the basis for the Realistic Worst Case (RWC) assessment. This approach to the EIA is intended to ensure that the scenario with the greatest potential impact is considered when describing the environmental effects of the Project (e.g., largest footprint, longest exposure, or largest dimensions). The Project parameters outlined in the Project Description chapter (see Volume 1, Chapter 3: Project Description) informs the MDS of the Project for which a DCO would be sought. The MDS is used as a basis for the 'realistic worst case' assessment, meaning that it can be assumed that any other (lesser) project design scenario for each impact considered would give rise to a level of environmental effect that would have a lesser or no greater significance.
- 5.4.2 This approach is considered helpful for large-scale projects that have multi-year development programmes and complex engineering and for which the precise details of the final scheme cannot be fully realised at the time the EIA is prepared. Indeed, it is recognised in NPS EN-1 (at paragraph 4.2.8) , NPS EN-3 (at paragraph 2.6.43) and the Inspectorate's Advice Note Nine (Rochdale Envelope) (The Inspectorate, 2018), that offshore wind developers may not know the precise design or the nature and arrangement of turbines, and associated infrastructure that make up the proposed development, at the time of the DCO application. The time of construction will be several years after the DCO Application is made, and the MDS approach allows an appropriate level of flexibility for the design and construction of the Project, whilst still providing sufficient detail to enable a robust EIA to be undertaken and the Project to be suitably controlled by the requirements of the DCO. This means the Project is not limited to the existing technology at the time of assessment, an important consideration for offshore wind projects where the technology is constantly improving, and larger and more efficient turbines and other aspects of the associated development are being rapidly developed.

## 5.5 A Proportionate Approach to Environmental Assessment

### Overview

- 5.5.1 It is a widely held view among EIA practitioners , regulators and statutory advisers that EIA practice has become more complex over time, with a trend towards including detailed consideration of every conceivable impact giving rise to large volumes of information being developed which are often perceived to be inaccessible; this is contrary to the requirements of the EIA Regulations which specifically require the focus to be on the consideration of those impacts that are considered most likely to result in LSE.

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<sup>1</sup> The background to the 'Rochdale Envelope' approach and its adoption for NSIP projects is set out in the Inspectorates Advice Note Nine: Rochdale Envelope (2018a) which has been considered in adopting the approach to the project design envelope basis for the EIA for the Project.

- 5.5.2 The need to deliver more proportionate EIA is a key challenge for the UK planning and consenting system, for EIA practitioners, regulators, stakeholders and developers alike, as noted by the UK's professional body for EIA, the Institute of Environmental Management and Assessment (IEMA) in its 2017 report (IEMA, 2017). Disproportionate EIAs can make the findings in-accessible for decision-makers, stakeholders and the public, leading to delays and confusion in the planning process. A proportionate approach is therefore advocated in an attempt to better focus the EIA on those impacts most likely to give rise to significant effects.
- 5.5.3 Additionally, The Inspectorate's Advice Note Six: Preparation and Submission of Application Documents (The Inspectorate, 2022) encourages Applicants to think about the size of documents submitted, with duplication and superfluous content discouraged. ESs are welcomed that are proportionate to the scale and complexity of the EIA undertaken, although it is appreciated that for Nationally Significant Infrastructure Projects (NSIPs), such documentation will comprise several volumes.
- 5.5.4 For the Project, the following definition of proportionality in the EIA has been adopted:

*“Proportionate EIA – relative to the actual or perceived risk of likely significant effect, with due regard to the precautionary principle and uncertainty, and measured by the proportionate scope and approach to the corresponding assessment and reporting; ensuring our outputs are accessible and understandable and provide a proportional level of evidence to the risk.”*

## Route Planning and Site Selection

- 5.5.5 The route planning and site selection process adopted by the Applicant in developing the Project is described in Volume 1, Chapter 4: Site Selection and Consideration of Alternatives, with supporting information presented within Volume 1, Appendix 4.1: Site Selection and Alternatives Report. The site selection process, in addition to bringing forward a technically and commercially feasible project, has incorporated early commitments that seek to avoid/reduce the impacts on sensitive, important or valuable environmental features and receptors early in the project design process.

## Evidence Based Approach

- 5.5.6 The evidence-based approach to EIA involves utilising available data of a suitable quality to support the assessment process, including as necessary data collected specifically for the Project, to inform the understanding of the baseline and provide the basis for the impact assessments.
- 5.5.7 The Project is located in the southern North Sea, amongst multiple other offshore wind, oil and gas, Carbon Capture Utilisation and Storage (CCUS) and pipeline and subsea cable developments, for which there are a variety of existing data and knowledge regarding the baseline environment. Where possible, appropriate, and agreed with the relevant stakeholders, the Project has made use of this existing data to aid in the characterisation of the baseline environment.

- 5.5.8 The Project's Scoping Report (ODOW, 2022) set out and sought agreement on the data requirements considered necessary to properly characterise the site and enable a robust EIA. On receipt of the Scoping Opinion (The Inspectorate, 2022), further discussions with key stakeholders have continued to refine and agree the baseline data requirements and the scope of each of the technical topic assessments through consultation, including where appropriate via the EPP.
- 5.5.9 Therefore, adequate data collection has been undertaken (and at the time of writing this PEIR in some cases remains ongoing) for the purposes of providing sufficient evidence to undertake a robust EIA, allowing the receiving environment to be appropriately characterised. Each topic chapter sets out the data sources used, and data collected (or proposed to be collected) in support of the EIA process.

### Embedded Mitigation

- 5.5.10 EIA is an inherently iterative process and provides feedback on the likely environmental effects that can, where appropriate and necessary, be used to inform the development of the final project design and the final DCO application. Where the EIA identifies that an aspect of the Project which is likely to give rise to significant environmental impacts, mitigation measures have been proposed in order to avoid, prevent or reduce impacts to acceptable levels.
- 5.5.11 For the purposes of the EIA, two types of mitigation are defined:
- Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the evolution of the project design, and form part of the project design that is assessed in the EIA; and
  - Additional mitigation (see section 5.10): consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts.
- 5.5.12 Any embedded mitigation, including where necessary any changes to the design of the Project, are identified during the iterative EIA process, will be clearly identified within the PEIR and ES. Where appropriate, these measures will be secured in the DCO or dML(s). This will ensure that the significance of the effect presented for each identified impact may be presumed to be representative of the maximum residual effect that the development will have, should it be approved and constructed (i.e., the significance of the residual effect will have taken into account the embedded mitigation measures in advance).
- 5.5.13 For the onshore aspects of the Project the following management measures documents are provided alongside PEIR:
- Outline Flood Risk Assessment;
  - Landscape and Ecology Design Principles Plan (LEDPP);
  - Onshore Archaeological WSI;
  - Outline Noise and Vibration Management Plan;
  - Outline Air Quality Management Plan;

- Outline Soil Management Plan;
- Outline Pollution Prevention and Emergency Incident Response Plan;
- Outline Construction Traffic Management Plan;
- Outline Travel Plan;
- Outline Public Access Management Plan; and
- Outline Preliminary Crossing Schedule.

5.5.14 Included in regard to the offshore Project aspects are the following documents are provided alongside PEIR as management measures:

- Marine Archaeological WSI;
- Outline Marine Mammal Mitigation Protocol; and
- Outline Preliminary Crossing Schedule.

5.5.15 Other documents to be submitted alongside the PEIR include:

- Planning Statement; and
- Biodiversity Net Gain and Marine Net Gain Principles and Approach.

5.5.16 Further outline documents may be submitted alongside the ES.

### Consultation and Evidence Plan Process

5.5.17 Pre-application consultation is a key part of the EIA process. It enables the identification of key issues, scopes out others that have been agreed to be not significant and establishes a dialogue and agreements on specific methodologies for aspects such as assessment and the supporting evidence base.

5.5.18 In relation specifically to the EIA process, a Scoping Report was submitted to the Inspectorate on 28<sup>th</sup> July 2022 (ODOW, 2022) and the formal Scoping Opinion was received from the Inspectorate (on behalf of the Secretary of State) on 9<sup>th</sup> September 2022 (The Inspectorate, 2022). The Scoping Opinion has been adopted in preparing this PEIR and is referred to as relevant in each of the topic chapters.

5.5.19 A draft EIA methodology was provided within the Project's Scoping Report. The feedback received within the Scoping Opinion (The Inspectorate, 2022) on the EIA Methodology is provided in Table 5.1, alongside a commentary on how these comments have been addressed in the preparation of this PEIR.



Table 5.1: Summary of consultation relating to EIA methodology

Date and Consultation Phase/ Type	Consultation and Key Issues Raised	Section Where Comment Addressed
Scoping Opinion (The Inspectorate, 2022)	The Scoping Report identifies that for each receptor and potential impact, the MDS will be identified, described and justified and subsequently used as the basis for the [Realistic Worst Case] RWC assessment. With regards to the RWC, the Applicant is reminded that the ES should assess the full range of potential impacts which could occur as a result of the works which would be permitted by the DCO.	MDS and RWC are discussed in section 5.4 and within the relevant technical chapters.
Scoping Opinion (The Inspectorate, 2022)	The Inspectorate has provided commentary on transboundary effects within the relevant aspect tables of this Opinion below, where the Applicant has requested to scope out transboundary effects on aspects/matters in the ES. The Inspectorate notes that it has an ongoing duty in relation to consideration of transboundary effects and will undertake a separate transboundary screening exercise on behalf of the SoS under Regulation 32 of the EIA Regulations following adoption of the Scoping Opinion.	The approach to Transboundary effects is set out in section 5.13 below, and considered within the relevant technical chapters (Volume 1, Chapters 7 to 31).
Scoping Opinion (The Inspectorate, 2022)	The Scoping Report in many places provides only an outline of the proposed surveys, modelling and analysis methods that are proposed to be undertaken and presented in the ES, as such it has not been possible for the Inspectorate to comment on such matters at this stage. The Inspectorate welcomes the intention to discuss such matters in more detail with consultation bodies as part of the Evidence Plan Process (EPP) and ongoing and future consultations. The ES should detail the specific methodologies and modelling, this information could be included within appendices to the relevant ES aspect chapters.	Methodologies, including proposed surveys, modelling and assessment are set out in Volume 1, Chapters 7 to 31. The Project will seek further consultation with relevant stakeholders on the methods used as necessary in developing the ES and DCO application.
Scoping Opinion (The Inspectorate, 2022)	The Inspectorate notes reference to a PEMP in the majority of the aspect chapters as the means for controlling accidental spills, but also a PEMP. The latter is referenced in Chapters 7.4 Fish and Shellfish Ecology and 9.1 Human Health only. The ES should clearly describe the purpose of the various management plans, their relationship to one another (as applicable), and the mitigation they intend to deliver. The ES should provide details of the proposed mitigation measures to be included in the	The ES will describe the relevant management plans which will be developed as mitigation for the Project. Information on the mitigation measures is provided within the relevant aspect chapters of this PEIR. Mitigation

Date and Consultation Phase/ Type	Consultation and Key Issues Raised	Section Where Comment Addressed
	management plans. The ES should also explain how such measures will be secured.	measures will be secured through the draft DCO as appropriate which accompanies the PEIR.
Scoping Opinion (The Inspectorate, 2022)	This table includes first reference to the PDS; however, it is not explained what this statement comprises or its purpose. The ES should ensure acronyms are explained for understanding. Where statements or documents are relied upon for the purposes of securing elements of the project design or mitigation, they should be adequately secured through the DCO or other means.	The Project Design Statement (PDS) is set out in Volume 1, Chapter 3: Project Description. It sets out the design scenarios for the Project. A glossary of acronyms is included at the start of each PEIR chapter.
Scoping Opinion (The Inspectorate, 2022)	Where figures are presented within the ES, these should be of an appropriate scale and shading to allow each element on the figure to be clearly distinguishable.	Figures have been set out in this PEIR and are intended to be of appropriate scale and shading to support the EIA process.

5.5.20 A more detailed description of the consultation process is set out in Volume 1, Chapter 6: Consultation, including a description of the statutory consultation process and the Evidence Plan Process (EPP).

## 5.6 Characterisation of the Existing Environment (The Baseline)

5.6.1 The existing environment has been characterised and described to determine the baseline conditions, to the extent possible at the time of preparing this PEIR, as a basis for the assessment of the potential impacts arising from the Project. Characterisation has been undertaken within the relevant study areas defined for each topic and has broadly consisted of the collation of existing desktop information, augmented where necessary and appropriate by the collection of site-specific information and/or data. This data has been reviewed to ensure that it is robust and allows the required level of assessment for the determination of any potential effects with sufficient confidence, to the extent possible at the time of preparing this PEIR. The approach for each topic is set out in respect to the key environmental receptors in Volume 1, Chapters 7 to 31.

5.6.2 In each case and for each topic, a step-wise approach has been adopted which can be summarised as follows:

- Determine the proposed study area (typically defined by the area that might be potentially affected by the impacts arising from the Project – otherwise known as the Zone of Influence (Zoi));
- Undertake a preliminary desk top study of available information; and
- Where the existing information is deemed insufficient to provide an adequate baseline, undertake further information or data gathering.

5.6.3 The sufficiency of baseline information and the need for and scope of additional studies has been the subject of consultation with key stakeholders, including, for example, through the Project’s EPP (see Volume 1, Chapter 6: Consultation).

5.6.4 Schedule 4, paragraph 3, of the EIA Regulations requires that an outline of the likely evolution of the baseline, in the absence of the development (as far as this can be assessed ‘with reasonable effort’ based on available information and scientific knowledge) is provided. Each technical assessment has, therefore, set out the anticipated evolution of the baseline that is predicted to occur over the time between the point of assessment and the time over which the Project will be built and operational. This reflects changes in the baseline that might be expected from natural variation (e.g., natural changes in habitat condition etc.) and other external factors that would occur in the absence of the Project.

5.6.5 Limitations with the data collected to inform the baseline are also identified and described in each technical assessment chapter, setting out clearly where either the data itself, or any subsequent subjective evaluation may introduce uncertainty. An explanation on how data limitations were managed or commentary on confidence levels is included where appropriate. Key data limitations with the baseline data, and their ability to materially influence the outcome of the EIA, are noted and commented on.

## 5.7 Assessment of Effects

5.7.1 Throughout the Project EIA, the term ‘impact’ is used to define a change to the receiving environment resulting from a Project ‘action’. Impacts are described in relation to the receiving environment, which is described as the receptor (or series of receptor groups). The result of an impact on a receptor is termed the ‘effect’. For example: pile driving during construction (action) may result in a temporary increase in underwater noise levels during construction (impact) and cause fish and marine mammals (receptors) to experience temporary disturbance (effect).

5.7.2 Within the EIA, effects are described in terms of their ‘significance’, which takes into account the ‘magnitude’ of an impact, combined with the ‘sensitivity’ of the relevant receptors to the impact, in line with defined criteria. The following sections describe these steps in more detail, and it should be noted that each topic chapter describes the specific criteria for that topic, as well as where and why there may be any deviations from standard industry assessment guidance.

5.7.3 As set out in various widely used methodologies (e.g., Design Manual for Roads and Bridges (DMRB) (Highways England, 2020) and the British Standards Institute (BSI) PD 6900: 2015 Environmental Impact Assessment for Offshore Renewable Energy Projects – Guide (BSI, 2015)), most technical topics will assess the likely significance of an effect using the methods described in the sections below and using the matrix illustrated in Table 5.2.

- 5.7.4 For some topics, the significance of an effect is established by comparing the magnitude of an impact with a quantified standard. In this instance, the quantified standard is in turn based on a level at which recognised effects are triggered (e.g., sleep disturbance for airborne noise). Such topic-specific methodologies are described in detail within the relevant assessment chapters as carried out by suitably qualified technical experts.
- 5.7.5 The methodology used broadly across the EIA is intended to provide overarching guidance to technical authors so as to enable, as far as reasonably possible, a transparent and consistent approach which outputs comparative results, whilst retaining topic-specific assessment guidelines and allowing a degree of professional and expert judgement which is inherent to the EIA process.

## 5.8 Approach to Developing the Scope of the EIA

### The Technical Scope

- 5.8.1 The technical scope for the EIA has been determined through the scoping process, primarily the guidance and requirements set out in the Scoping Opinion (The Inspectorate, 2022) and developed through subsequent consultations (see Volume 1, Chapter 6: Consultation). The Inspectorate's Advice Note Seven (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements) (The Inspectorate, 2020a) observes that the Scoping Opinion is an important document which should form the basis of the ES accompanying the DCO application. The scope nonetheless is expected to evolve throughout the EIA process as more information becomes available through surveys, more defined project descriptions or commitments towards implementing mitigation and as a result of ongoing consultation, including the statutory consultation process informed by this PEIR.

### The Spatial Scope

- 5.8.2 In summary, the spatial scope of a technical assessment has been determined by the following factors:
- The physical extent of the proposed work (using defined area from PDE);
  - The baseline environment and the way that the impacts are likely to be received; and
  - The pattern of governmental administrative boundaries, providing the planning and policy context for the project.
- 5.8.3 In agreement with relevant assessment with consultees and specialists, appropriate study areas have been considered for each environmental topic. A commentary is provided within each technical chapter describing the study area adopted.

### The Temporal Scope

- 5.8.4 The temporal scope determines the period in which a given impact may be experienced. Impacts may be temporary, permanent, short-term or long-term. These temporal definitions are established for each technical discipline and in discussion with stakeholders.

- 5.8.5 The temporal scope is important when there is direct cause-effect from a specific project phase. The project programme is set out in Volume 1, Chapter 3: Project Description, with the high level durations summarised as follows:
- Construction: For the whole project, a maximum duration of approximately 48 months, with variability between differing components and onshore and offshore works;
  - Operation: 35 years; and
  - Decommissioning; following the end of the operational phase, and in the absence of any repowering; a decommissioning programme will be created nearer the end of life of the Project.

## 5.9 Sensitivity, Magnitude and Significance

### Overview

- 5.9.1 In most cases the assessment of the potential impacts on each receptor has been described using a standard EIA matrix approach, allowing each resulting environmental effect to be allocated a level of significance, in line with standard EIA best practice. The assessment has considered direct, indirect, secondary, cumulative, inter-related and transboundary effects (being beneficial or adverse), in line with the requirements of the EIA Regulations.
- 5.9.2 The significance has been determined by combining the assessment of the magnitude of the potential impact with the sensitivity of the receptor. Key uncertainties or limitations have been identified.

### Determining Magnitude

- 5.9.3 The magnitude of an impact has been determined taking account of a number of factors, including:
- Extent - The geographical area over which an impact occurs;
  - Duration - The time over which the impact occurs;
  - Frequency - How often the impact occurs; and
  - Severity - The degree of change relative to the baseline level.
- 5.9.4 Based on the criteria above, the magnitude of an impact is assessed as being within one of the groups below, and is also assigned a direction of 'adverse' or 'beneficial':
- Negligible;
  - Low;
  - Medium; or
  - High.
- 5.9.5 Each topic presents a 'magnitude of impact' table within the assessment chapter, which presents how the magnitude of impact is defined based on topic-specific criteria.

## Determining Sensitivity

- 5.9.6 The sensitivity of the receptor has been determined by assessing a number of considerations, including:
- Adaptability - The degree to which a receptor can avoid or adapt to an impact;
  - Tolerance - The ability of a receptor to accommodate temporary or permanent change without a significant adverse impact;
  - Reversibility - the temporal scale over and extent to which a receptor will recover following an impact; and
  - Value - a measure of the receptor's importance in terms of its relative ecological, social or economic value or status.
- 5.9.7 The sensitivity of a receptor is defined within each topic on the following scale:
- Negligible;
  - Low;
  - Medium; or
  - High.
- 5.9.8 Each topic area presents a 'sensitivity of receptors' table within its assessment, which contains information on how the sensitivity is determined for its receptors based on topic-specific criteria.
- 5.9.9 Where topic-specific methodology is used, this is clearly explained within the methodology section of the topic assessment.

## Allocating Significance

- 5.9.10 The significance of an effect, either adverse or beneficial, has been determined by combining the magnitude and the sensitivity using a matrix approach, an example of which is provided in Table 5.2.
- 5.9.11 In general, only the categories of Moderate – Significant and Major – Significant are considered significant in EIA terms, however the exact definition of these terms will be defined further within each topic section.
- 5.9.12 For example, if the magnitude of the impact is assessed as High (negative/adverse) and the sensitivity of the receptor is assessed as Negligible, then the significance will be Minor – Not Significant (see Table 5.2) and therefore will not be considered significant in EIA terms.

Table 5.2: An example of a matrix for determining the significance of effects

		Magnitude of impact							
		Negligible		Low		Medium		High	
Sensitivity of receptor	Negligible	Negligible significant) (Not	Negligible significant) (Not	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not
	Low	Negligible significant) (Not	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not	Moderate (Significant)	Moderate (Significant)	Moderate (Significant)
	Medium	Minor significant) (Not	Minor significant) (Not	Minor significant) (Not	Moderate (Significant)	Moderate (Significant)	Moderate (Significant)	Major (Significant)	Major (Significant)
	High	Minor significant) (Not	Moderate (Significant)	Moderate (Significant)	Major (Significant)	Major (Significant)	Major (Significant)	Major (Significant)	Major (Significant)

## 5.10 Determining the Requirement for Additional Mitigation and Monitoring

5.10.1 Section 5.5 above describes the process and importance of embedded mitigation measures incorporated within the design of the project and how these measures have been incorporated into the assessments set out in this PEIR. Where the assessment determines significant adverse effects even when accounting for the embedded mitigation, further mitigation measures may be required. Any additional mitigation measures are outlined in the topic chapters. The extra mitigation measures may be deemed necessary where:

- An effect is considered significant in EIA terms, even with embedded mitigation, but additional mitigation measures are available to reduce the level of residual effect; or
- Mitigation has been proposed but has not yet been agreed with regulators, stakeholders, etc. or it is unproven. Where relevant, these additional mitigation measures are outlined in the topic chapters, after the assessment of significance section.

5.10.2 Through consultation and agreement with stakeholders, the need for monitoring may also be required to validate the conclusions of the assessment or the effectiveness of mitigation. Where monitoring is proposed, each technical chapter also considers the requirement for remedial measures following monitoring.

5.10.3 Where necessary, for example in response to the identification of potential LSEs, the identification of key uncertainties or to meet the applicable statutory requirements, the need for environmental monitoring may be identified as part of the EIA process. Additionally, a number of Outline Monitoring Documents have been submitted alongside this PEIR. These can be found in Part 8 of the PEIR submission.

## 5.11 Inter-Relationships

- 5.11.1 The potential for inter-related impacts arising from the Project have also been considered as part of the EIA process. The assessment considers the potential for multiple impacts from the construction, operation and maintenance or decommissioning of the Project to give rise to effects on the same receptor. Effects on a given receptor have the potential to interact, whether that be spatially or temporally, resulting in the identification of inter-related effects on that receptor (for example all effects on human amenity - noise and air quality, access, and traffic acting together to create a greater inter-related effect). Broadly, inter-related effects have been considered in relation to:
- Project lifetime effects: Those arising during more than one phase of the project interacting to potentially create an effect of greater significance than for each project phase considered in isolation; and
  - Receptor-led effects: Potential for the scope of two or more effects to interact to create an effect of greater significance than each effect in isolation. For example, temporary disturbance to marine mammals from underwater noise together with temporary disturbance from increased vessel traffic.
- 5.11.2 The assessment has combined the findings of the individual topic assessments to describe the potential additional effects that may have a greater significance than when being considered as isolated impacts. Where there is potential for inter-related effects, a qualitative assessment has been undertaken using expert judgment. The approach can be described by the following steps:
- Identification of relevant receptors from the assessment of significance within each topic chapter;
  - Identification of the source-impact-receptor pathways that can affect the receptor in question and identification of the topic chapter where those are described and assessed; and
  - Identification of potential effects on these receptor groups through a review of assessments.
- 5.11.3 It is important to note that, for some topics, consideration of inter-related effects is an inherent part of the process and so may not be explicitly stated. An example of this might be the assessment of impacts on marine mammals and offshore ornithology assessments which may consider the secondary impacts of reduced prey availability caused by primary impacts to fish and shellfish receptors. In these cases, the links with other assessment topics are clearly referenced and explained within the relevant assessment chapters.



## 5.12 Cumulative Effects Assessments

### Overview

5.12.1 In accordance with the EIA Regulations, the Project’s EIA has also considered the potential for cumulative effects to occur – that is effects arising from the Project alongside effects arising on the same receptor from another existing or proposed plan or project. The approach to the Cumulative Effects Assessment (CEA) has taken account of the advice provided in the Inspectorate’s Advice Note Seventeen (Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects) (The Inspectorate, 2019) and has considered other plans or projects on a tiered basis (relating to certainty of implementation) as follows:

Tier	Description
Tier 1	Projects under construction; Consented projects (not yet under construction); and Projects with consent applications but not yet determined.
Tier 2	Projects on the Inspectorate’s Programme of Projects where a Scoping Report has been submitted.
Tier 3	Projects on the Inspectorate’s Programme of Projects where a Scoping Report has not been submitted; Projects identified in the relevant Development Plan; and Projects identified in other plans and programmes which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

5.12.2 It is proposed that projects that are built and operational at the time that any baseline survey data was collected will be classified as part of the baseline conditions. The most up to date details for all other plans/projects have been used as the basis of the CEA, including for those projects already implemented, the final ‘as built’ details unless otherwise stated.

5.12.3 Where appropriate, specific topics have used revised tiering where further definition between tiers is required to enable a robust assessment for specific receptors or impacts; where this has been applied, the deviation from the standard approach is detailed and justified within the relevant topic chapter.

### The Longlist and Shortlisting Process

5.12.4 A detailed search to produce a ‘longlist’ and a ‘shortlist’ of projects to be considered in the CEA has been undertaken and subsequently used as appropriate in the assessment of cumulative effects for each receptor/potential impact, with each project allocated to one of the Tiers listed above.

5.12.5 For offshore assessments, plans and projects have been screened based on both their proximity to the Project but also the range over which receptors may be cumulatively affected (for mobile species such as birds or marine mammals, for example, this could be very extensive with many relevant projects drawn into the long list). Screening criteria for the offshore CEA long list have been developed and are presented within the (Volume 2, Appendix 5.1: CEA long list)

- 5.12.6 The longlist for onshore plans and projects has been generated by identifying relevant projects within a CEA search area, determined based on the largest likely ZoI identified.
- 5.12.7 Subsequently each longlist has been screened at the individual topic CEA level, to identify those longlist plans or projects for which a receptor-source-pathway (spatially and/or temporally) exists and therefore where cumulative effects with the Project have the potential to occur; a detailed cumulative assessment of the shortlist plans and projects has then been undertaken in each case.

### 5.13 Transboundary Effects

- 5.13.1 Transboundary effects are those effects that may arise in the environment of other states outside of the UK. Regulation 32 of the EIA Regulations sets out the requirement to consider potential transboundary impacts, where a project might have an adverse effect on the environment of adjacent states in the EEA, as well as setting out the procedures to be followed. The requirements are further set out in the Inspectorate’s Advice Note Twelve (Transboundary Impacts and Process) (The Inspectorate, 2020c).
- 5.13.2 The location of the Project in relation to the borders with adjacent EU member states is set out in Figure 5.1. Table 5.3 shows a summary of the limits of the French, Belgian, Dutch, German and Danish Exclusive Economic Zones (EEZs) respectively from the Project array area.

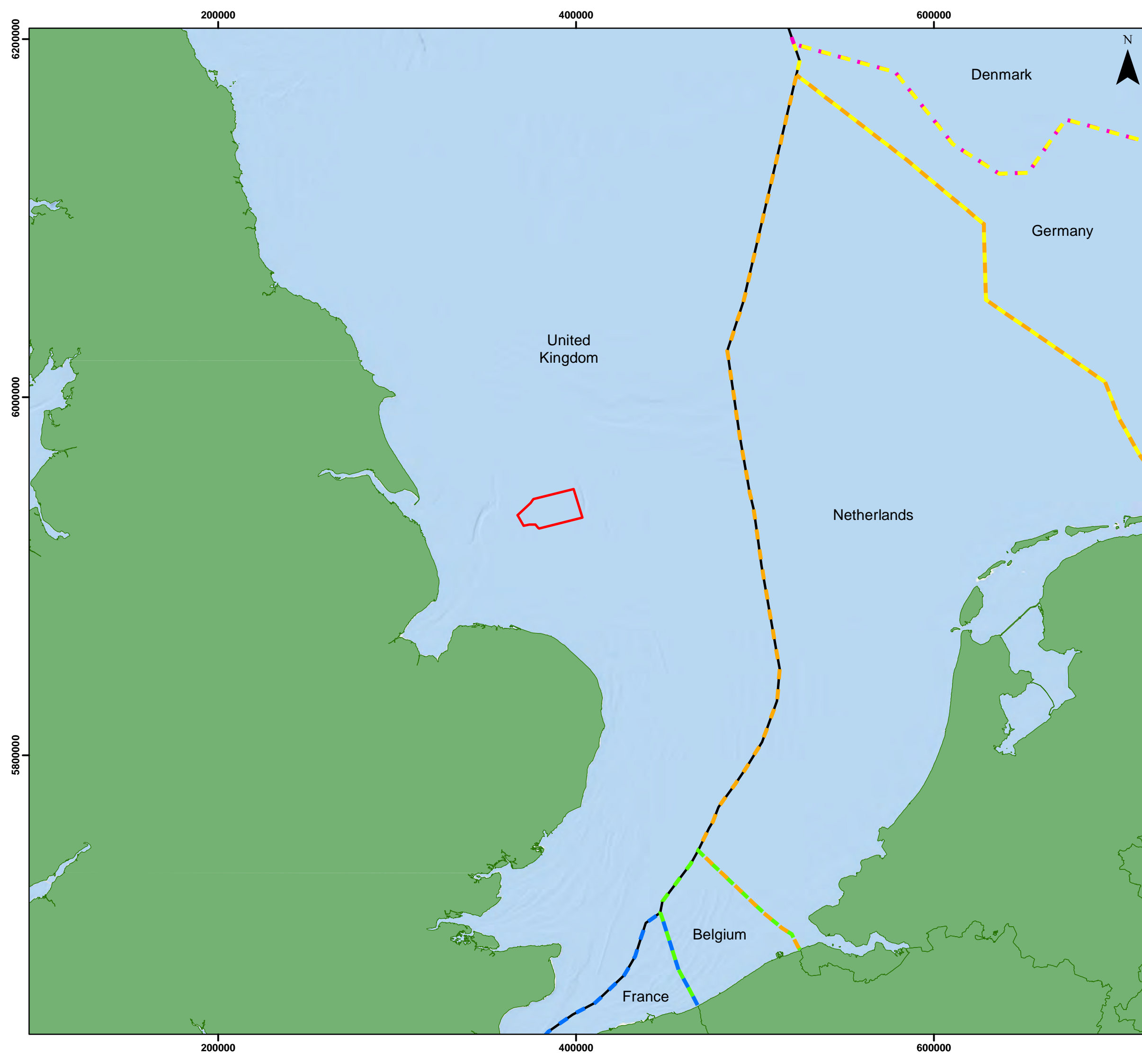
Table 5.3: Summary of approximate distance to nearest EEZ (median line) of other EEA states

EEZ	Approximate Distance from the Project to nearest marine border (km)
The Netherlands	95
Belgium	196
France	225
Germany	263
Denmark	277
Norway	292

- 5.13.3 A screening matrix was completed at the Scoping stage by the Project and the Inspectorate undertook a Transboundary Screening exercise on behalf of the SoS under Regulation 32 of the EIA Regulations. These concluded for onshore aspects no transboundary impacts will occur and therefore onshore transboundary effects will not be considered further in the EIA.
- 5.13.4 Potential transboundary impacts have been scoped out for all offshore aspects, with the exception of the following topics where, based on information available at the Scoping phase, it was not possible to scope out transboundary effects:
  - Marine Mammals;
  - Offshore and Intertidal Ornithology;
  - Commercial Fisheries;
  - Shipping and Navigation;

- Aviation, Radar, Military and Communication;
- Fish and Shellfish Ecology; and
- Infrastructure and Other Marine Users (IOMU).

5.13.5 The potential for transboundary impacts has been considered as part of each topic assessment, supported as appropriate by consultation with interests from relevant member states (for example where non-UK fishing interests are identified in the vicinity of the Project).



**Legend**

- Array Area
- Exclusive Economic Zone (EEZ)
  - Belgium
  - Denmark
  - France
  - Germany
  - Netherlands
  - United Kingdom

Coordinate System: WGS 1984 UTM Zone 31N

0 50 100 km

Scale: 1:2,000,000

Preliminary Environmental Information Report

The proximity to the EEZ of adjacent states to the Project Array Area

Figure 5.1

**OUTER DOWSING**  
OFFSHORE WIND

Date: 30/05/2023  
Produced By: BPHB  
Revision: 0.1

Contains ESRI Basemapping; Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

**GoBe**

Document Path: G:\GIS\GIS\_P\Projects\0152 Outer Dowsing EIA\GIS\Figures\PER\RIA Methodology\ODOW\_0152\_Figs\_1\_Transboundary\_EEZ.mxd

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