Outer Dowsing Offshore Wind

Environmental Statement

Chapter 5 Environmental Impact Assessment Methodology

Volume 1

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Reference Documentation

Document Number	Title
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5.1.2a	Scoping Opinion
5.1.2b	Scoping Report
6.1.2	Chapter 2 Need, Policy and Legislative Context
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Acronyms & Definitions

Abbreviations / Acronyms

Abbreviation / Acronym	Description	
ANS	Artificial Nesting Structure	
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	
DMRB	Design Manual for Roads and Bridges	
ECC	Export Cable Corridor	
EEA	European Economic Area	
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	
LSE	Likely Significant Effect	
MDS	Maximum Design Scenario	
NGET	National Grid Electricity Transmission	
NGSS	National Grid Substation	
NPS	National Policy Statement	
NSIP	Nationally Significant Infrastructure Project	
ODOW	Outer Dowsing Offshore Wind (The Project)	
OnSS	Onshore Substation	
ORCP	Offshore Reactive Compensation Platform	
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	
PEMP	Project Environmental Management Plan	
RWC	Realistic Worst Case	
SoCG	Statement of Common Ground	



Abbreviation / Acronym	Description
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 Order Limits 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,
(dML)	and set out within a Schedule of the Development Consent Order
	(DCO).
Development Consent	An order made under the Planning Act 2008 granting development
Order (DCO)	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	A statutory process by which certain planned projects must be
Assessment (EIA)	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
LIA DII ECCIVE	amended in 2014 by Directive 2014/52/EU).
EIA Regulations	Infrastructure Planning (Environmental Impact Assessment)
2	Regulations 2017.
Environmental	The suite of documents that details the processes and results of the
Statement (ES)	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)



Term	Definition
	and information to support the 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.
Maximum Design	The maximum design parameters of the combined project assets that
Scenario	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	A document setting out national policy against which proposals for
Statement (NPS)	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	The Project.
Wind (ODOW)	
Order Limits	The area subject to the application for development consent, including
	all permanent and temporary works for Outer Dowsing Offshore
	Wind.
Preliminary	The PEIR is written in the style of a draft Environmental Statement (ES)
Environmental	and provides information to support and inform the statutory
Information Report	consultation process in the pre-application phase. Following that
(PEIR)	consultation, the PEIR documentation is updated to produce the
	Project's ES which accompanies 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.
Statement of Common	A statement of common ground is a written statement produced jointly
Ground	between The Applicant and another Interested Party setting out the areas of
Statutory concultor	agreement and /or disagreement between parties.
Statutory consultee	Organisations that are required to be consulted by the Applicant, the
	Local Planning Authorities and/or The Planning 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



Term	Definition
	Project and the DCO application. These include the 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	The agency responsible for operating the planning process for
Inspectorate	Nationally Significant Infrastructure Projects (NSIPs).
The Project	Outer Dowsing Offshore Wind including proposed onshore and
	offshore infrastructure.
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	All the components of a wind turbine, including the tower, nacelle, and
(WTG)	rotor.



1 Environmental Impact Assessment Methodology

1.1 Introduction

- This chapter of the Environmental Statement (ES) presents the Environmental Impact Assessment methodology process undertaken for Outer Dowsing Offshore Wind ("the Project"). Specifically, this chapter summarises the methodology generally used to assess the impacts arising from the Project including the array area, offshore export cable corridor (ECC), landfall, the onshore ECC, and onshore substation (OnSS) during each of the construction, operation and maintenance, and decommissioning phases.
- GT R4 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 53km from the Lincolnshire coastline in the southern North Sea.
- 3. The Project will include both offshore and onshore infrastructure including:
 - Offshore generating station (windfarm);
 - Offshore export cables to landfall;
 - Offshore Reactive Compensation Platforms (ORCP);
 - Onshore export cables from landfall to the OnSS;
 - OnSS and 400kV cables to the National Grid substation¹ (NGSS); and,
 - Ancillary and/or Associated Development including areas for the delivery of up to two Artificial Nesting Structures (ANS) and the creation and recreation of a biogenic reef (if these compensation measures are deemed to be required by the Secretary of State) (see Volume 1, Chapter 3: Project Description (document reference 6.1.3) for full details).
- 4. 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 ES. Information on topic-specific assessment methodologies, including surveys, is presented within the methodology sections of the relevant chapter/s and/or supporting documents of this ES and may in certain cases deviate from the general methodology set out here in accordance with relevant guidance and best practice.
- 5. The Environmental Impact Assessment (EIA) process 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 current time. The ES has been produced to summarise the findings of the EIA process to support the Development Consent Order (DCO) application with the intention of

¹ 400kV cables will run underground between the OnSS and the National Grid substation (NGSS) that will be built, owned and operated by the National Grid Electricity Transmission (NGET) and is anticipated to be located within, or near to, an area identified by the Project as the "Connection Area". (See Volume 1, Chapter 3: Project Description for full details).



providing regulators and stakeholders with the information necessary to make a reasoned judgement on the LSE arising from the Project.

6. 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 evaluates the impacts arising from the construction, operation and maintenance and decommissioning phases of the Project.

1.2 Requirement for an Environmental Impact Assessment (EIA)

- 7. The legislative requirement for the undertaking of an EIA process is set out in Volume 1, Chapter 2: Need, Policy and Legislative Context (document reference 6.1.2).
- 8. Specifically the EIA has been carried out and prepared in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 and with due regard additional policy, guidance and best practice documents.
- 9. This application is being brought forward as a DCO, including deemed Marine Licence(s) (dML). The Project has taken into account relevant guidance and specific approaches, which are described below. This includes due regard to the matters set out in the relevant National Policy statement (NPS)'s in relation to the potential environmental effects arising from offshore wind projects and associated transmission infrastructure (document reference 6.1.2).
- 10. The approach to the Project EIA and the ES has had due regard to the relevant guidance and has been conducted in line with current offshore wind industry best practice.
- 11. Relevant policy and best practice includes;
 - The Planning Inspectorate Advice Notes:
 - Advice Note Three (EIA Notification and Consultation) (The Planning Inspectorate, 2017);
 - Advice Note Six (Preparation and Submission of Application) (The Planning Inspectorate, 2022);
 - Advice Note Seven (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements) (The Planning Inspectorate, 2020a);
 - Advice note Nine (Rochdale Envelope) (The Planning Inspectorate, 2018);
 - Advice Note Twelve (Transboundary Impacts and Process) (The Planning Inspectorate, 2020b); and
 - Advice Note Seventeen (Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects) (The Planning Inspectorate, 2019).
 - National Policy Statements (NPSs):
 - Overarching National Policy Statement for Energy (EN-1) (DESNZ, 2023a);



- National Policy Statement for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b); and
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023c).
- UK Marine Policy Statement (MMO, 2011)
- East Inshore and East Offshore Marine Plans (MMO, 2014) ; and
- National Planning Policy Framework (DLUHC, 2023).

12. 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 (Institute of Environmental Management and 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 (EcIA) in the UK and Ireland (CIEEM, 2019).
- 13. 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 the assessment (Volume 1, Chapters 7 to 31).

1.3 Information for Inclusion in the Environmental Statement (ES)

- 14. This ES provides an assessment of the predicted environmental impacts arising from the Project, using the most current data available at the time of writing. The ES has been informed by the Preliminary Environmental Information Report (PEIR) which was drafted to support and inform the pre-application statutory consultation process.
- 15. The potential environmental effects of the Project, identified to date, have been assessed for each relevant topic in line with the EIA Scoping Opinion (document reference 5.1.2a), PEIR and subsequent Section 42 responses, and agreements and discussions with relevant stakeholders during subsequent consultation. Details of the consultation undertaken is presented in



document 5.1 Consultation Report, and Volume 1, Chapter 6 Technical Consultation (document reference 6.1.6). Consultation involved 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.

- 16. The assessments for each topic are presented in separate chapters within this ES, 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, PEIR, and subsequent Section 42 responses, 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 the embedded mitigation which
 has been identified and adopted as part of the evolution of the project design of relevance to
 the topic is also included;
 - 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, considering 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, the purpose is to provide a comprehensive understanding of the potential environmental, social, and economic impacts that may result from multiple projects operating together in a specific region;
 - 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.

Table 1.1 Compliance	with the EIA	Regulations 2017
Tuble I.I compliance		negalations zoz/

Requirement	Where this has been addressed within the ES	
Schedule 4		
 A description of the development, including in particular (a) A description of the location of the development; (b) A description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c) A description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) An estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases 	 Volume 1, Chapter 3: Project Description (document reference 6.1.3) provides a detailed description of the Project. This includes the location and physical characterisation of the offshore and onshore components. The main characteristics of the works required throughout the lifetime of the Project are also described, including the estimated duration of tasks, and the materials and equipment likely to be required. Natural resources and waste management is also considered within this chapter. Within dedicated technical chapters and technical appendices, details are provided on potential impacts such as noise and vibration (Volume 1, Chapter 26: Noise and Vibration (document reference 6.1.26)), air quality (Volume 1, Chapter 19: Onshore Air Quality (document reference 6.1.19)), seascape and landscape (Volume 1, Chapter 17: Seascape, landscape (document reference 6.1.17) and visual impact and Volume 1, Chapter 28: Landscape and visual impact (document reference 6.1.28) respectively), water (Volume 1, Chapter 24: Hydrology and Flood Risk (document reference 6.1.24)). 	
A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for	Within Volume 1, Chapter 3: Project Description (document reference 6.1.3) and Volume 1, Chapter 4: Site Selection and Assessment of Alternatives (document reference 6.1.4) and its technical appendices, the reasonable alternatives considered in the development of the	
selecting the chosen option, including a comparison of the environmental effects.	proposed project design are discussed and presented. Additionally, within this ES chapter, the process of the design development for the	



Requirement	Where this has been addressed within the ES
	Project is described, with the consultation undertaken and how the feedback received has influenced the final project design.
	The comparative environmental effects of key design decisions and options are considered and also presented as part of Chapter 4 (document reference 6.1.4).
A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	For each of the technical chapters within the ES, the detailed baseline environment is described, as agreed through the scoping and EPP processes. In many cases this uses survey information gathered specifically to support the robust EIA for the Project. In all relevant technical assessment chapters, the likely evolution of the baseline without the implementation of the Project is also presented
A description of the factors specified in regulation 5(2) of the EIA Regulations likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	 This requirement is fulfilled in the following chapters within the ES: Population and Health Chapter 31: Human Health (document reference 6.1.31) Biodiversity Chapter 9: Benthic and Intertidal Ecology (document reference 6.1.9)
	 Chapter 10: Fish and Shellfish Ecology (document reference 6.1.10) Chapter 11: Marine Mammals (document reference 6.1.11) Chapter 12: Offshore Ornithology (document reference 6.1.12) Chapter 21: Onshore Ecology (document reference 6.1.21)

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Requirement	Where this has been addressed within the ES
	 Chapter 22: Onshore Ornithology (document reference 6.1.22)
	 Land Chapter 24: Hydrology and Flood Risk (document reference 6.1.24) Chapter 25: Land Use (document reference 6.1.25)
	 Soil Chapter 23: Geology and Ground Conditions (document reference 6.1.23)
	 Water Chapter 24: Hydrology and Flood Risk (document reference 6.1.24)
	Air Chapter 19: Onshore Air Quality (document reference 6.1.19)
	Climate
	 Chapter 30: Climate Change (document reference 6.1.30)
	Material Assets
	 Chapter 7: Physical Processes (document reference 6.1.7)
	 Chapter 18: Marine Infrastructure and Other Users (document reference 6.1.18)
	 Chapter 23: Geology and Ground Conditions (document reference 6.1.23)

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Requirement	Where this has been addressed within the ES
	 Chapter 24: Hydrology and Flood Risk (document reference 6.1.24) Chapter 25: Land Use (document reference 6.1.25) Chapter 27: Traffic and Transport (document reference 6.1.27) Chapter 29: Socio-Economic Characteristics (document reference 6.1.29)
	 Cultural Heritage Chapter 13: Marine and Intertidal Archaeology (document reference 6.1.13) Chapter 20: Onshore Archaeology and Cultural Heritage (document reference 6.1.20)
	 Landscape Chapter 17: Seascape and Visual Impact Assessment (document reference 6.1.17) Chapter 28: Landscape and Visual Impact Assessment (document reference 6.1.28)
 A description of the likely significant effects of the development on the environment resulting from, inter alia (a) The construction and existence of the development, including, where relevant, demolition works; (b) The use of natural resources, in particular land, soil, water 	The significant effects arising from the proposed development alone and cumulatively with other relevant developments have been comprehensively assessed within each technical assessment (Chapters 7 – 31 within this ES).
 and biodiversity, considering as far as possible the sustainable availability of these resources; (c) The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; 	 Potential impacts from major accidents or disasters are discussed in Chapter 3 (document reference 6.1.3). Potential implications of climate change are discussed within Chapter 30 (document reference 6.1.30).



Requirement	Where this has been addressed within the ES
 (d) The risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (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; (f) The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) The technologies and the substances used. The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union level (as they had effect immediately before exit day) or United Kingdom level which are relevant to the project, including in particular those established under the law of any part of the United Kingdom that implemented Council Directive 92/43/EEC and Directive 2009/147/EC. 	Technologies and materials likely to be deployed in the development of the Project are discussed in Chapter 3 (document reference 6.1.3) and throughout the technical assessment chapters. This chapter (document reference 6.1.5) sets out the generalised EIA methodology including cumulative impact assessment and interrelationships used in this ES to ensure a consistency of approach. Each technical chapter presents the detailed and specific assessment data analysis, and impact assessment methodologies applied to assess each potential impact identified. Each technical chapter also considers the potential cumulative impacts of the Project taken together with other relevant projects and the potential inter-relationships and interactions between impacts.
A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Forecasting methods used to identify and assess significant effects on the environment are discussed in the overall EIA methodology in this chapter and are also covered in more detail in each technical chapter.
A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring	Mitigation measures include embedded mitigation, which are design decisions taken to reduce environmental impact of the Project as part of the design development, and additional mitigation measures which



Requirement	Where this has been addressed within the ES
arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	are proposed as ways of further reducing the assessed likely significant environmental impacts. Each technical assessment chapter includes an explanation of the embedded mitigation measures and, where appropriate, additional mitigations proposed. Monitoring arrangements are proposed where relevant and discussed in outline within the relevant technical chapters. The schedule of mitigation (document reference 8.19) details all mitigation measures that the Project have committed to.
A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to retained European Union (EU) law such as any law that implemented Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or UK environmental assessments may be used for this purpose provided that the requirements of any law that implemented this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Potential impacts from major accidents or disasters are discussed in Chapter 3 (document reference 6.1.3) A Navigational Risk Assessment (Volume 3, Appendix 15.1 (document reference 6.3.15.1) has also been prepared and is included as an Appendix to the Volume 1, Chapter 15: Shipping and Navigation (document reference 6.1.15).
A non-technical summary of the information provided under paragraphs 1 to 8 of Schedule 4 to the EIA Regulations.	A Non-Technical Summary (document reference 6.1) is provided as part of this ES.
A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	A reference list is provided at the end of each chapter. Where important documents are cited or are not available as references, they are provided as technical appendices to each chapter.



Requirement		Where this has been addressed within the ES	
<u> </u>	ation 14		
14(2) / least—	An environmental statement is a statement which includes at - (a)a description of the proposed development comprising information on the site, design, size and other relevant features of the development;	The Project design envelope and project site is detailed within Volume 1, Chapter 3: Project Description (document reference 6.1.3). The site selection process is detailed in Chapter 4: Site Selection and Assessment of Alternatives (document reference 6.1.4). Embedded mitigation is detailed within the relevant chapters. The	
1	(b)a description of the likely significant effects of the proposed development on the environment;	design of the Project to reduce impact on receptors is also detailed within the relevant chapters and within Chapter 4 (document reference 6.1.4). The schedule of mitigation (document reference	
1	(c)a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;	8.19) details all mitigation measures that the Project have committed to.A non-technical summary (document 6.1) is provided as part of the	
ľ	(d)a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;	application submission. Information specified in Schedule 4 that are relevant, have been provided in the chapters.	
1	(e)a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and		
ľ	(f)any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.		
14(3) must-	The environmental statement referred to in paragraph (1) -	Within the ES chapters, in the consultation section, relevant scoping opinion comments have been provided and details of how this has been adopted by the Project.	



Requirem	nent	Where this has been addressed within the ES
m de	a)where a scoping opinion has been adopted, be based on the nost recent scoping opinion adopted (so far as the proposed evelopment remains materially the same as the proposed evelopment which was subject to that opinion);	Details of any data sources, project specific surveys, and assessment methodology used to inform the impact assessments have been provided within the relevant ES chapters.
re de	b)include the information reasonably required for reaching a easoned conclusion on the significant effects of the evelopment on the environment, taking into account current nowledge and methods of assessment; and	
UI th	be prepared, taking into account the results of any relevant K environmental assessment, which is reasonably available to applicant with a view to avoiding duplication of ssessment.	
environm (a st. (b st.	In order to ensure the completeness and quality of the mental statement - a) the applicant must ensure that the environmental catement is prepared by competent experts; and b) the environmental statement must be accompanied by a catement from the applicant outlining the relevant expertise r qualifications of such experts	The competency of the EIA team and experts is described in Section 1.10 and provided in Volume 3, Appendix 5.1 Statement of Competence (Document reference 6.3.5.1).

1.4 The Project Design Envelope and Maximum Design Scenarios

- 17. The Project's EIA has considered a Project Design Envelope (PDE) approach (also known as the 'Rochdale Envelope' approach). 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 Chapter 3 (document reference 6.1.3)) inform the MDS of the Project for which a DCO is being 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.
- 18. 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 4.3.12), NPS EN-3 (paragraph 2.61-2.6.3) and The Planning Inspectorate's Advice Note Nine (Rochdale Envelope) (The Planning 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 that 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 evolving, and larger and more efficient turbines and other aspects of the associated development are being rapidly developed.

1.5 A Proportionate Approach to Environmental Assessment

1.5.1 Overview

- 19. 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. This gives 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.
- 20. 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 inaccessible 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.

- 21. Additionally, The Planning Inspectorate's Advice Note Six: Preparation and Submission of Application Documents (The Planning 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.
- 22. 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."

1.5.2 Route Planning and Site Selection

23. 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 (document reference 6.1.4), with supporting information presented within Volume 3, Appendix 4.1: Landfall Assessment & Offshore ECC Route Optioneering (document reference 6.3.4.1). 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.

1.5.3 Evidence Based Approach

- 24. 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.
- 25. 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.
- 26. The Project's Scoping Report (document reference 5.1.2b; 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 (document reference 5.1.2a; The Planning Inspectorate, 2022), further discussions with key stakeholders has enabled the continued refinement and agreement of the baseline data requirements and the scope of each of the technical topic assessments through consultation, including where appropriate via the EPP. The Project's PEIR (ODOW, 2023) was published in June 2023 and feedback was received from Section 42 and public consultation, allowing the ES to be updated accordingly.

27. Therefore, adequate data collection has been undertaken 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 in support of the EIA process.

1.5.4 Embedded Mitigation

- 28. 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 is likely to give rise to significant environmental impacts, mitigation measures have been proposed where practicable, in order to avoid, prevent or reduce impacts to acceptable levels.
- 29. 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: consisting of mitigation measures that are identified during the EIA process specifically to reduce or eliminate any predicted significant impacts.
- 30. Any embedded mitigation, including where necessary any changes to the design of the Project, has been identified during the iterative EIA process, and is clearly identified within the ES. Where appropriate, these measures are being secured within the DCO, dML(s) or outline documents. This ensures that the significance of the effect presented for each identified impact is 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).

1.5.5 Consultation

31. Pre-application consultation is a major 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 dialogue and agreements on specific methodologies for aspects such as assessment and the supporting evidence base. More details of the Project consultation and Evidence Plan process are provided in Chapter 6 (document reference 6.1.6), Volume 3, Appendix 6.1: Evidence Plan Report (document reference 6.3.6.1) and the Consultation Report (document reference 5.1).



- 32. A Scoping Report was submitted to The Planning Inspectorate on 28th July 2022 (ODOW, 2022) and the formal Scoping Opinion was received from The Planning Inspectorate (on behalf of the Secretary of State) on 9th September 2022 (The Planning Inspectorate, 2022). The Scoping Opinion has been adopted in preparing this ES and is referred to as relevant in each of the topic chapters.
- 33. A draft EIA methodology was provided within the Project's Scoping Report (document reference 5.1.2b). The feedback received within the Scoping Opinion (The Planning Inspectorate, 2022) on the EIA Methodology is provided in Table 1.1, alongside a commentary on how these comments have been addressed in the preparation of the ES.

Date and Consultation Phase/ Type	Consultation and Key Issues Raised	Section Where Comment Addressed
Scoping Opinion (The Planning 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 1.4 and within the relevant technical chapters.
Scoping Opinion (The Planning Inspectorate, 2022)	The Planning 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 Planning 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 1.7.8 below and considered within the relevant technical chapters (Volume 1, Chapters 7 to 31).
Scoping Opinion (The Planning 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 Planning Inspectorate to comment on such matters at this stage. The Planning 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.
Scoping Opinion	The Planning Inspectorate notes reference to a project environmental management and monitoring plan (PEMMP) in the majority of the aspect chapters as the means for controlling accidental spills, but also	The ES describes the relevant management plans which will be developed as mitigation for the Project, including a Project Environmental

Table 1.2 Summary of consultation relating to EIA methodology



Date and Consultation Phase/ Type	Consultation and Key Issues Raised	Section Where Comment Addressed
(The Planning Inspectorate, 2022)	a PEMMP. 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 management plans. The ES should also explain how such measures will be secured.	Management Plan (an outline has been produced as part of the DCO Application, document reference 8.4). Information on the mitigation measures is provided within the relevant chapters of this ES. Mitigation measures are being secured through the DCO, DMLs, outline documents and agreements with other parties, as appropriate.
Scoping Opinion (The Planning 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 Chapter 3 (document reference 6.1.3). It sets out the design scenarios for the Project. A glossary of acronyms and abbreviations is included at the start of each ES chapter.
Scoping Opinion (The Planning 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 the ES and are intended to be of appropriate scale and shading to support the EIA process.
Natural England (Section 42 comments, received 20th July 2023)	Whilst we acknowledge that some survey data are to be presented in the Environmental Statement (ES), we are concerned that there may not be sufficient time for these results to be fully considered and assessed prior to the anticipated application submission. We would, therefore, encourage the Project to use the EPP via post-PEIR ETGs to discuss outstanding issues, additional data requirements, and the assessment of impacts and levels of significance, prior to submission. Natural England considers that a critical next step within the EPP is for a steering group meeting to be convened to discuss, and agree, with all interested parties, the subsequent next steps and processes	Post PEIR, a September ETG round and a November ETG round were held to discuss outstanding issues. There was also additional targeted consultation as the Project design developed.



Date and Consultation Phase/ Type	Consultation and Key Issues Raised	Section Where Comment Addressed	
	required to resolve outstanding issues in order to successfully enter the application phase.		
Natural England (Section 42 comments, received 20th July 2023)	We also recommend that a Statement of Common Ground (SoCG) is started by the Project early within the EPP, in order to accurately catalogue all areas of agreement for the project and highlight any areas of disagreement. The ETG meeting minutes and consultation logs have been successfully used by other projects as the foundation for the SoCG.	The draft consultation logs were updated and issued with the minutes of the ETGs (Appendix 6.1, Annex C Consultation logs, document reference 6.3.6.1). The logs were completed by the Project and reviewed by the consultees. The consultation logs have been finalised with the positions of consultees at the time of DCO submission and these will inform the SoCGs.	
Natural England (Section 42 comments, received 20th July 2023)	We acknowledge that a matrix approach to determining the significance of effects on ecological features, is commonly used. However, this method often relies on value- rather than evidence-based judgements. The subjective evaluation of magnitude of impact and sensitivity/ importance of receptors through expert judgement has led to many impact magnitudes and receptor importance/ sensitivities being downgraded across topics in the PEIR. We also note that any effect that is concluded to be of moderate or major significance in the PEIR, is deemed to be 'significant' in EIA terms, whereas effects concluded to be of negligible or minor significance, are deemed 'not significant' in EIA terms. This cut-off could exclude any effect concluded to be less than moderate, in turn, this could lead to errors in assessing cumulative effects adequately.	The Applicant understands Natural England's concern with regard to the matrix approach; however, this approach has been retained within the ES as it provides a standardised, established approach to the impact assessment. Where any uncertainty arises within the assessment approach, the precautionary principle is followed, with the sensitivity of the receptor or magnitude of the impact being upgraded as deemed appropriate by the topic experts. Furthermore, where evidence or data gaps may lead to a degree of uncertainty in the assessment, further mitigation and monitoring has been proposed where these are considered appropriate. The cumulative effects assessment for each aspect has given careful consideration of the potential for many small impacts to combine into a larger scale effect as an integral component of the assessment.	

34. A more detailed description of the technical consultation process is set out in Chapter 6 (document reference 6.1.6), including a description of the statutory consultation process and the Evidence Plan Process (EPP).

1.6 Characterisation of the Existing Environment (The Baseline)

- 35. The existing environment has been characterised and described to determine the baseline conditions 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. These data have been reviewed to ensure that they are robust and allow the required level of assessment for the determination of any potential effects with sufficient confidence. The approach to each topic is set out in respect to the key environmental receptors in Volume 1, Chapters 7 to 31.
- 36. 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.
- 37. 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 (Chapter 6 Technical Consultation (document reference 6.1.6)).
- 38. 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, as it is predicted to change 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.
- 39. 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.



1.7 Assessment of Effects

1.7.1 Identification of Receptors

- 40. The Project has taken a topic by topic approach on identifying elements of the environment that are potentially subject to variation as a result of the proposed Project. The technical assessments define a study area for that topic and provide justification of the area selected to incorporate potential significant effects, for direct and indirect effects.
- 41. Where there are multiple similar receptors (for example: vessel activity displacement and the effect of restricted access to areas from the use of safety zones on vessels) these may have been placed into groups within assessments for worst-case scenarios.

1.7.2 Impacts, Effects, Mitigation and Significance

- 42. 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).
- 43. 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.
- 44. 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 assess the likely significance of an effect using the methods described in the sections below and using the matrix illustrated in Table 1.2. The matrix has been based on the guidance within the DMRB (Highways England, 2020), with adaptations to tailor it to the Project. The categories for scoring the magnitude and sensitivity are defined in line with the guidance provided. Additionally, the assessment for magnitude and sensitivity includes the factors described within the guidance.
- 45. 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.
- 46. The methodology used broadly across the EIA is intended to provide overarching guidance to technical authors to enable, as far as reasonably possible, a transparent and consistent approach which results in comparative outputs, whilst retaining topic-specific assessment



guidelines and allowing a degree of professional and expert judgement which is inherent to the EIA process.

1.7.3 Approach to Developing the Scope of the EIA

1.7.3.1 The Technical Scope

47. 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 Planning Inspectorate, 2022) and developed through subsequent consultation (see document reference 5.1 and 6.1.6). This accords with the EIA Regulations which require that an environmental statement must, where a scoping opinion has been adopted, be based on that opinion. The Planning Inspectorate's Advice Note Seven (Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements) (The Planning Inspectorate, 2020a) observes that the Scoping Opinion (document reference 5.1.2a) is an important document which should form the basis of the ES accompanying the DCO application. The scope has evolved throughout the EIA process as more information has become available through surveys, more defined project descriptions or commitments towards implementing mitigation, and as a result of ongoing consultation, including the statutory consultation following the publication of the PEIR.

1.7.3.2 The Spatial Scope

48. The spatial scope of a technical assessment has been determined by the following factors:

- The physical extent of the proposed work (using the defined area from the 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.
- 49. In agreement 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.

1.7.3.3 The Temporal Scope

- 50. 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.
- 51. The temporal scope is important when there is direct cause-effect from a specific project phase. An indicative pre-construction and construction programme is set out in Chapter 3 (document reference 6.1.3), with project lifetime high level duration estimates summarised as follows:
 - Construction: The maximum construction duration varies with each project element, with a maximum design scenario considered as appropriate and relevant within each technical assessment. The indicative construction programme for the Project is included in the Project Description (document reference 6.1.3),
 - Operation: up to 35 years; and



Decommissioning; following the end of the operational phase. In the absence of any repowering; a decommissioning plan will be developed providing further details on the decommissioning of the each of the elements of the Project in accordance with the decommissioning requirement of the DCO.

1.7.4 Sensitivity, Magnitude and Significance

1.7.4.1 Overview

- 52. In most cases the assessment of the potential impacts on each receptor has been described using a standard EIA matrix approach derived from guidance within Highways England (2020), 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.
- 53. The significance of an impact 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.

1.7.4.2 Determining Magnitude

- 54. The magnitude of an impact has been determined taking account 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.
- 55. 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.
- 56. 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.

1.7.4.3 Determining Sensitivity

- 57. 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.
- 58. The sensitivity of a receptor is defined within each topic on the following scale:
 - Negligible;
 - Low;
 - Medium; or
 - High.
- 59. 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.
- 60. Where topic-specific methodology is used, this is clearly explained within the methodology section of the topic assessment.

1.7.4.4 Allocating Significance

- 61. 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 1.2.
- 62. In general, only the categories of Moderate and Major are considered significant in EIA terms, however the exact definition of these terms is defined further within each topic section.
- 63. 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 (see Table 1.2) and therefore will not be considered significant in EIA terms.



Table 1.3 An example of a matrix for determining the significance of effects

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

1.7.5 Determining the Requirement for Additional Mitigation and Monitoring

- 64. Section 1.4 above describes the process and importance of embedded mitigation measures within the design of the project and how these measures have been incorporated into the assessments set out in this ES. 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. Additional 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 is unproven. Where relevant, additional mitigation measures are outlined in the topic chapters after the assessment of significance section.
- 65. Through consultation and agreement with stakeholders, the need for monitoring may 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.
- 66. 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.



67. A number of Outline Documents have been submitted as part of the DCO Application, alongside this ES, which secure mitigation measures and monitoring as required. These can be found in Part 8 of the DCO application.

1.7.6 Inter-Relationships

- 68. The potential for inter-related impacts arising from the Project has 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, potentially creating 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.
- 69. 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 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.
- 70. 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.

1.7.7 Cumulative Effects Assessment

1.7.7.1 Overview

71. In accordance with the EIA Regulations, the Project's ES has also considered the potential for cumulative effects to occur – these are effects arising from the Project alongside effects arising on the same receptor from another existing or proposed project, plan or activity. The approach



to the Cumulative Effects Assessment (CEA) has taken account of the advice provided in The Planning Inspectorate's Advice Note Seventeen (Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects) (The Planning Inspectorate, 2019) and has considered other projects, plans and activities on a tiered basis (relating to certainty of implementation and accuracy of the available information) as follows:

Table 1.4: Description of the tiers used for the CEA

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 Planning Inspectorate's Programme of Projects where a Scoping	
	Report has been submitted.	
Tier 3	Projects on The Planning 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.	

- 72. It is proposed that projects that are built and operational at the time that any baseline survey data was collected are classified as part of the baseline conditions. The most up to date details for all other projects and plans have been used as the basis of the CEA including, for those projects already implemented, the final 'as built' details unless otherwise stated.
- 73. 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.

1.7.7.2 The Longlist and Shortlisting Process

- 74. A detailed search of projects, plans and activities to produce a 'long list' and then screening to generate a 'short list' for consideration in the CEA was undertaken and subsequently used as appropriate in the assessment of cumulative effects for each receptor/potential impact, with each 'other development' allocated to one of the Tiers listed above.
- 75. For offshore assessments, projects and plans 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).
- 76. Screening criteria for the offshore CEA are presented as an appendix to this chapter (see Appendix 5.2: Offshore Cumulative Effects Assessment Approach (document reference 6.3.5.2). The long list of other developments in the offshore CEA is presented in Annex 1 of Appendix 5.2, Offshore Cumulative Effects Long List (document reference 6.3.5.2).
- 77. For onshore assessments, other developments within the Project's Zone of Influence (ZoI) (1km along the route of the onshore ECC and 400kV cable corridor and 5km from the centre of the



OnSS) were identified on the basis of their nature, scale and temporal scope. Those other developments with the potential to result in contributions to cumulative effects were included on the long list. Several potentially substantive projects beyond the ZoI were added to the long list as exceptions.

- 78. Subsequently each project, plan or activity on the long list was screened at the individual technical discipline level, to identify those other developments 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 other developments on the short list was undertaken and is reported on in the respective ES chapters.
- 79. The methodology for the onshore CEA is presented in Appendix 5.3 Onshore Cumulative Effects Assessment Approach (document reference 6.3.5.3). The long list of other developments in the onshore CEA is included in Annex 1 of Appendix 5.3, Long list of Other Developments Onshore (document reference 6.3.5.3).

1.7.8 Transboundary Effects

- 80. 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 Planning Inspectorate's Advice Note Twelve (Transboundary Impacts and Process) (The Planning Inspectorate, 2020c).
- 81. The location of the Project in relation to the borders with adjacent EU member states is set out in Volume 2, Figure 5.1 The proximity to the EEZ of adjacent states to the Project Array Area (document reference 6.2.5.1). Table 1.3 shows a summary of the limits of the French, Belgian, Dutch, German and Danish Exclusive Economic Zones (EEZs) respectively from the Project array area.

Approximate Distance from the Project to nearest marine border (km)
94.5
196.9
224.9
253.9
279.4
293.6

Table 1.5 Summary of approximate distance to nearest EEZ (median line) of other EEA states

82. A screening matrix was completed at the Scoping stage by the Project, and The Planning Inspectorate undertook a Transboundary Screening exercise on behalf of the SoS under Regulation 32 of the EIA Regulations. These concluded that for onshore aspects no transboundary impacts will occur and therefore onshore transboundary effects will not be considered further in the EIA.



- 83. 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).
- 84. 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).

1.8 Other EIA Matters

- 85. The EIA must identify, describe and assess, the direct and indirect significant effects of a proposed development, including operational effects where appropriate), on several factors including human health under the EIA Regulations (Regulation 5(2) and paragraph 4 of schedule 4). Impacts on human health are addressed in Chapter 31 Human Health (document reference 6.1.31).
- 86. Regulation 5(4) of the EIA Regulations also requires the Project to consider the vulnerability of the proposed development to major accident or disaster, this has been considered in Chapter 3 (document reference 6.1.3) and in chapters where relevant to the topic.

1.9 Competent Experts

- 87. Throughout the undertaking of the Project EIA, the Applicant is being supported by a number of organisations experienced in assessing environmental impacts in UK waters:
 - GoBe consultants: EIA co-ordination and offshore assessments and HRA;
 - SLR consulting: Onshore assessments;
 - Dalcour Maclaren: Land Agents; and
 - Shepherd and Wedderburn: Legal Aspects.
 - Specialist Consultancies:
 - Optimised Environments Ltd (OPEN): Seascape, landscape and visual impact assessment experts;
 - Subacoustech Environmental: Underwater acoustic advice and modelling experts;



- Poseidon: Commercial fisheries experts;
- Anatec: Shipping and navigational risk experts;
- Maritime Archaeology: Marine archaeology experts;
- Cyrrus: Aviation experts;
- MetOceanWorks: Marine physical processes modelling experts;
- Biggar Economics: Socio-economics experts; and
- SMRU Consulting: Marine mammal research experts.
- 88. The assessments have been led by a technical lead, who is a specialist and has significant experience in the preparation of impact assessments. Additionally, the authors are often a recognised expert in the field and/ or a chartered member of a relevant professional body. Further details of the experts used to undertake this ES are described in Appendix 5.1: Statement of Competency (document reference 6.3.5.1).



1.10 References

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