Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

Volume 1

Chapter 5 - EIA Methodology

August 2022
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Table of Contents

Table of Tables

Volume 2

Glossary of Acronyms

BEIS	Department for Business Energy and Industrial Strategy
CIA	Cumulative Impact Assessment
DCO	Development Consent Order
DECC	Department for Energy and Climate Change
DEP	Dudgeon Offshore Wind Farm Extension Project
EEA	European Economic Area
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
EU	European Union
GW	Gigawatts
HRA	Habitats Regulations Assessment
HSE	Health and Safety Executives
ICES	International Council for the Exploration of the Seas
IEMA	Institute of Environmental Management and Assessment
JNCC	Joint Nature Conservation Committee
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
OWF	Offshore Wind Farm
PEIR	Preliminary Environmental Information Report
PINS	The Planning Inspectorate
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SoCC	Statement of Community Consultation
SLVIA	Seascape, Landscape and Visual Impact Assessment
UK	United Kingdom
UN	United Nations
UNECE	United Nations Economic Commission for Europe

Glossary of Terms

Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.
European site	Sites designated for nature conservation under the Habitats Directive and Birds Directive. This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2017.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the EIA and HRA for certain topics. The EPP provides a mechanism to agree the information required to be submitted to the Planning Inspectorate as part of the Development Consent Order application. This function of the EPP helps Applicants to provide sufficient information in their application, so that the Examining Authority can recommend to the Secretary of State whether or not to accept the application for examination, and whether an appropriate assessment is required.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable corridor which would house HDD entry or exit points.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.
Offshore substation platform (OSP)	A fixed structure located within the wind farm site/s, containing electrical equipment to aggregate the power from the wind turbine and convert it into a more suitable form for export to shore.
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Sheringham Shoal Offshore Wind Farm Extension site	Sheringham Shoal Offshore Wind Farm Extension offshore wind farm boundary.
The Applicant	Equinor New Energy Limited

Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Shoal Offshore Wind Farm Extension onshore and offshore sites including all onshore and offshore infrastructure.

5 EIA METHODOLOGY

5.1 Introduction

1. This chapter describes the methodology and approach applied to the Environmental Statement (ES) assessment chapters for the proposed Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP). SEP and DEP are being developed in parallel and are subject to a single development consent order (DCO) application.
2. Whilst SEP and DEP are the subject of a single DCO application (with a combined Environmental Impact Assessment (EIA) process and associated submissions), each project is assessed individually so that mitigation is project specific (where appropriate). As such, the assessments cover the possibility that SEP or DEP are developed in isolation, as well as both SEP and DEP being developed, either concurrently or sequentially.
3. The EIA considers all relevant topics covered under the following three general areas:
   - Offshore environment;
   - Onshore environment; and
   - Wider environment.
4. The EIA has been carried out in accordance with the Planning Act 2008 and the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) (see **Section 5.10** and **Chapter 2 Policy and Legislative Context**).
5. The approach to the EIA and the production of this ES also closely follows relevant guidance including:
   - Planning Inspectorate (PINS) Advice Notes (The Planning Inspectorate 2017a, 2017b, 2018, 2019a, 2020a, 2020b);
   - Overarching National Policy Statements for Energy EN-1, Renewable Energy Infrastructure EN-3 and Electricity Networks Infrastructure EN-5 (Department of Energy and Climate Change, 2011a, 2011b, 2011c);
     - It is noted that National Policy Statement (NPS) EN-1, EN-3 and EN-5 are in the process of being revised. A draft version of each NPS was published for consultation in September 2021 (Department for Business Energy and Industrial Strategy (BEIS), 2021). A review of the draft versions has been undertaken in the context of this and topic specific ES chapters.
   - Assessment of the environmental impact of offshore wind farms (OSPAR Commission, 2008);
   - Relevant guidance issued by other government and non-governmental organisations;
   - Technical chapter specific guidance documents; and
   - Receptor-specific guidance documents.

6. The EIA also gives due regard to the requirements of the Conservation of Habitats and Species Regulations 2017, the Conservation of Offshore Marine Habitats and Species Regulations 2017 and the Marine and Coastal Access Act 2009.

5.2 Requirement for EIA

7. The EIA framework is set out within European Union (EU) Directive 2011/92/EU (as amended by Directive 2014/52/EU) (the EIA Directive). The EIA Directive is transposed into English law for Nationally Significant Infrastructure Projects (NSIPs) by the EIA Regulations, which set out the requirements for EIA. The EIA process includes collation of data required to identify and assess the potential effects of a development, the identification of any significant adverse impacts and any measures to avoid, prevent or reduce and, if necessary, offset, such impacts.

8. The primary objective of an EIA, as described in Article 2 of the EIA Directive, is that "*Member States shall adopt all measures necessary to ensure that, before development consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects on the environment*". In addition, the EIA provides the public early and effective opportunities to participate in the decision-making process.

9. The purpose of this ES is to provide the decision-maker, stakeholders and all interested parties with the information required to develop an informed view of any likely significant effects that would result from SEP and DEP during their construction, operation and decommissioning (where relevant).

5.3 Consultation on Approach and Methodology

10. Consultation is a key component of the EIA process, and continues throughout the lifecycle of a project, from its initial stages through to consent and post-consent. Under the Planning Act 2008 consultation relating to a Nationally Significant Infrastructure Project (NSIP) must be undertaken with statutory or prescribed bodies (under section 42), with local communities (under section 47) and more widely through the general publication of a proposed application (under section 48).

11. Consultation has been carried out in accordance with the Statement of Community Consultation (SoCC), which outlined how Equinor would consult with local communities regarding the plans to develop SEP and DEP. Public consultation has included (but not been limited to):

- Community feedback reports shared with all registered participants, key local and community stakeholders, and on the Equinor project website;
- Phase 1 consultation (2019/2020) with statutory consultees and the public;
- Phase 2 consultation (2021) with statutory consultees and the public;
- Parish Council briefings;
- Direct discussions with landowners;
- Newsletters distributed throughout the onshore substation(s) site selection study area;

- Dedicated project e-mail address and freepost address to assist local communities in contacting the Applicant;
- Provision of a dedicated project website; and
- Regular and targeted discussions with regulators and other stakeholder bodies through various means including Expert Topic Group (ETG) meetings as a part of the Evidence Plan Process (EPP).

12. Full details of the consultation process are presented in the **Consultation Report** (document reference 5.1), which forms part of the DCO application.

13. Where appropriate, relevant responses from technical consultation with statutory consultees and topic specific consultation responses from stakeholders are presented in each ES technical chapter (**Chapters 6** – **29**).

5.3.1 Scoping

14. An EIA Scoping Report for SEP and DEP was submitted to the Planning Inspectorate on 8th October 2019 (Royal HaskoningDHV, 2019). A Scoping Opinion was received on 18th November 2019 (The Planning Inspectorate, 2019b) and has informed the development of the ES.

15. One topic was scoped out entirely, Offshore Air Quality, and particular impacts within topics have been scoped out as detailed in the Scoping Opinion and summarised within each relevant topic chapter (**Chapters 6** – **29**). Topic specific matters raised in the Scoping Opinion are referenced in the consultation summary tables within each of the topic chapters.

16. **Table 5-1** provides a summary of responses from the Scoping Opinion that relate to the approach to the EIA Methodology.

5.3.2 Preliminary Environmental Information Report

17. The preliminary findings from the EIA process were reported within a Preliminary Environmental Information Report (PEIR), which was published in April 2021 to support the consultation requirements under Sections 42, 47 and 48 of the Planning Act 2008 and Regulation 13 of the EIA Regulations. Feedback from this consultation has been taken into consideration and where relevant, used to inform the final design and impact assessment of SEP and DEP, as detailed in this ES and other documents submitted as part of the DCO application.

18. **Table 5-1** provides a summary of those consultation responses that have been received that relate to the approach to the EIA Methodology. Full details are provided in the **Consultation Report** (document reference 5.1).

5.3.3 Section 51 Pre-Application Advice

19. A suite of draft documents, including **Chapter 5: EIA Methodology**, were submitted on 1st April 2022 for review by the Planning Inspectorate as part of it's Pre-application Service. **Table 5-1** provides a summary of the advice provided by the Planning Inspectorate.

Table 5-1: Consultation Responses Related to Chapter 5 EIA Methodology

Consultee	Date	Comment	Project Response
Scoping Responses			
PINS	November 2019	Comment: The Inspectorate recommends that in order to assist the decision-making process, the Applicant uses tables: • to demonstrate how the assessment has taken account of this Opinion; • to identify and collate the residual effects after mitigation for each of the aspect chapters, including the relevant interrelationships and cumulative effects; • to set out the proposed mitigation and/or monitoring measures including cross-reference to the means of securing such measures (eg a DCO requirement); • to describe any remedial measures that are identified as being necessary following monitoring; and • to identify where details are contained in the Habitats Regulations Assessment (HRA report) (where relevant), such as descriptions of European sites and their locations, together with any mitigation or compensation measures, are to be found in the ES.	As recommended and where relevant, the technical assessment chapters have used tables to: • Demonstrate how the assessment has taken account of PINS consultation responses (**Table 5-1**); • Identify and collate the residual effects after mitigation; • Explain embedded and additional mitigation measures, and outline monitoring arrangements; • Describe any remedial measures that are identified as being necessary following monitoring; and • Make reference to where details are contained in the Habitats Regulations Assessment (HRA report).
PINS	November 2019	Comment: The ES should include a description of the baseline scenario with and without implementation of the development as far as natural changes from thebaseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Technical **Chapters 6** – **29** within the ES provide a description of the baseline environment, as agreed through the scoping and EPP processes. In many cases this uses survey information gathered specifically to support the robust EIA for SEP and DEP. In all relevant technical assessment chapters, the likely evolution of the baseline without the implementation of SEP and DEP is also presented.

Consultee	Date	Comment	Project Response
PINS	November 2019	Comment: In relation to the offshore environment, the Scoping Report states that it will draw on data from the ES's for, and post-construction monitoring of, the existing Dudgeon and Sheringham Offshore Wind Farms. The Inspectorate agrees that this data will provide a useful starting point to inform the environmental baseline. The Inspectorate advises the Applicant seeks to agree with relevant consultation bodies the degree to which this existing information is applicable for the Proposed Development and can be used to inform the baseline; particular consideration should be given to the methods and the spatial and temporal scope of previous surveys.	Engagement with the relevant consultation bodies for each of the offshore technical ES chapters has been undertaken and agreements made on the collection of baseline environmental data. Details of consultation can be found in ES **Chapters 6** – **29** and the **Consultation Report** (document reference 5.1).
PINS	November 2019	Comment: Paragraph 190 of the Scoping Report states that projects which are sufficiently implemented during the site characterisation for DEP and SEP will be considered as part of the baseline for EIA. The ES should clearly define what is meant by 'sufficiently implemented'.	**Section 5.8** of **Chapter 5 EIA Methodology** describes the approach to cumulative impact assessment. A tiered approach based on development stage has been followed, in line with version 2 of Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS, 2019a)
PINS	November 2019	Comment: Although the majority of onshore aspect chapters have identified a study area for the purposes of scoping, the Inspectorate assumes that given the onshore route will be refined and the onshore substation location determined prior to application, this is unlikely to be the same study area for the assessments in the ES. The Inspectorate notes that where surveys are proposed, the aspect chapters of the Scoping Report have identified (at a high level), the spatial coverage of baseline surveys. The extent of study areas should relate to the zone of influence of potential effects and should be clearly defined and justified within the ES. Reference should be made to recognised professional guidance, where relevant. Figures depicting the extent of study areas should be provided where relevant.	Where relevant, all onshore technical chapters have made reference to professional guidance and provided figures depicting the extent of the onshore study area.

Consultee	Date	Comment	Project Response
PINS	November 2019	Comment: Some aspect chapters of the Scoping Report have identified specific receptors, but the majority of the Scoping Report identifies broad categories of receptors only. Specific receptors should be clearly identified within the ES, alongside a categorisation of their sensitivity and value. Section 1.6.4.1 of the Scoping Report explains that receptor sensitivity would be identified in order to assess the potential impacts upon each receptor and discusses considerations that will be taken into account in doing so. The Inspectorate expects a transparent and reasoned approach to be applied to assigning receptor sensitivity and that this will be clearly set out in the ES.	**Section 5.7.4** outlines how receptor sensitivity has been assessed and provides a description of the different levels of receptor sensitivity.
PINS	November 2019	The ES should contain the timescales upon which the surveys which underpin the technical assessments have been based. For clarity, this information should be provided either in the introductory chapters of the ES (with confirmation that these timescales apply to all chapters), or in each aspect chapter.	Each technical chapter provides information on the timescales of site-specific surveys.
PINS	November 2019	The Inspectorate expects the ES to include a chapter setting out the overarching methodology for the assessment, which clearly distinguishes effects that are 'significant' from 'non-significant' effects. Any departure from that methodology should be described in individual aspect assessment chapters.	**Chapter 5 EIA Methodology**, describes the overarching methodology and approach applied to the ES assessment chapters. The matrix presented in **Table 5-5** below outlines the significance levels used in the assessment process. Each assessment chapter will provide a description to the approach to impact assessment and the interpretation of significance levels.
PINS	November 2019	The ES should include details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Technical **Chapters 6** – **29** detail any difficulties and/or uncertainties encountered.
PINS	November 2019	The Scoping Report explains that SEP/DEP would have separate offshore export cables which would be installed in separate trenches in separate installation campaigns. The	There will be a spacing of up to 100m between the two offshore export cables. Further details on the

Consultee	Date	Comment	Project Response
		ES should identify the spatial separation between the two cables and assess any likely significant effects that could arise from repetitive disruption/disturbance to receptors within the export cable corridor.	offshore export cables can be found in **Section 4.4.7.1** of **Chapter 4 Project Description**. A discussion of any significant effects on receptors within the export cable corridor can be found within the relevant offshore technical chapters.
PINS	November 2019	The onshore export system would comprise either a common trench for the two circuits or two separate trenches. The ES should identify a worst-case scenario for the assessment, which considers the implications of constructing two separate trenches over temporally distinct time periods and the maximum land take required. The potential for repeat disruption/disturbance should be assessed.	**Table 4-33** in **Chapter 4 Project Description** outlines the main construction parameters for the onshore cable corridor, including the worst-case parameters.
PINS	November 2019	Tables 1-11 and 1-12 of the Scoping Report provide significance matrix and impact significance definitions, respectively. The ES should clearly distinguish between significant and non-significant residual effects.	Where relevant, all technical chapters of the ES (**Chapters 6** – **29**) have distinguished between significant and non-significant residual effects.
PINS	November 2019	The approach to assessing and interpreting significance levels should be consistent across aspect chapters. Where matrices are used, they too should be consistent so that a given magnitude/ sensitivity combination results in the same level of overall significance. The terminology used to define magnitude and sensitivity should also be consistent, where possible, and the ES should clearly explain where and how professional judgement has been applied in assessing the significance of effects.	The matrix presented in **Table 5-5** below has been used in all assessment chapters to maintain consistency when assessing significance levels. Where relevant, each chapter clarifies that the assessments are based on the application of expert judgement.
PINS	November 2019	The aspect chapters of the Scoping Report confirm that cumulative effects will be assessed within the ES and that the scope (in terms of relevant issues and projects) will be established with consultation bodies (including other developers). The Scoping Report states that the full list of plans and projects to be included in the assessment will be developed as part of on-going consultation with technical consultation bodies. Section 1.6.4.7 of the Scoping Report states that that “only projects which are reasonably well	Following the approach set out in Advice Note Seventeen and where it is helpful to do so, the development status of other projects have been defined as ‘tiers’. Further information regarding the Cumulative Impact Assessment (CIA) can be found in **Section 5.8** of this chapter, **Chapter 5 EIA Methodology**.

Consultee	Date	Comment	Project Response
		described and sufficiently advanced to provide information on which to base a meaningful and robust assessment will be included in the CIA". The tiered approach set out in Advice Note Seventeen enables Applicant's to group plans and projects according to the level of information available; the Inspectorate recommends that this approach is adopted.	
PINS	November 2019	The Inspectorate notes the proximity of the Proposed Development to other proposed NSIPs, including Norfolk Vanguard, Norfolk Boreas and Hornsea Project Three offshore wind farms. Whilst there is the possibility that these projects may not overlap temporally, the assessment should take into account the effects of repetitive impacts over a prolonged duration.	The list of plans or projects included in the CIA is specific to each topic and is detailed within each technical chapter (**Chapters 6** – **29**).
PINS	November 2019	The Scoping Report explains that an Evidence Plan Process with specialist stakeholders has commenced in effort to agree the approach and information required to support the assessment of certain environmental aspects. A large number of aspect chapters, state that the assessment methodology will be agreed through this process or through the production of method statements. As a result, there is little detail regarding the proposed assessment methodologies for a number of the aspect chapters. This approach to agreeing the finer details of the assessment is welcomed. The Applicant should ensure that any agreements reached during this process are evidenced within the ES.	Where appropriate, any agreements arising from technical consultation with statutory consultees and topic specific consultation responses from stakeholders are presented in technical **Chapters 6** – **29**.
PINS	November 2019	The EIA Regulations require an estimate, by type and quantity, of expected residues and emissions. Specific reference should be made to water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases, where relevant. This information should be provided in a clear and consistent fashion and may be integrated into the relevant aspect assessments.	Further details of impacts such as potential impacts on noise (**Chapter 23 Noise and Vibration**), air quality (**Chapter 22 Air Quality**), landscape (**Chapter 25 Seascape, Landscape and Visual Impact Assessment** and **Chapter 26 Landscape and Visual Impact Assessment**), water (**Chapter 18 Water Resources and Flood Risk**) and other natural resources (e.g. **Chapter 20 Onshore Ecology and Ornithology**) are provided in dedicated technical

Consultee	Date	Comment	Project Response
			impact assessment chapters and their technical appendices.
PINS	November 2019	Although the Scoping Report states that mitigation will be developed for the Proposed Development if required, no specific examples have been provided at this stage. Any mitigation relied upon for the purposes of the assessment should be explained in detail within the ES. The likely efficacy of the mitigation proposed should be explained with reference to residual effects. The ES should also address how any mitigation proposed is secured, with reference to specific DCO requirements or other legally binding agreements.	Each technical assessment chapter in the ES (**Chapters 6** – **29**) details an explanation of the embedded mitigation measures, any additional mitigation measures proposed and the residual impacts following mitigation. Where appropriate, the technical assessment chapters outline where mitigation is secured, either through a specific DCO requirement or other appropriate mechanism.
PINS	November 2019	The ES should clearly demonstrate how the Applicant has had regard to the mitigation hierarchy, for example by giving consideration to the avoidance of key receptors.	Where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts, mitigation measures have been proposed and discussed with the relevant authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels. Mitigation measures are detailed in technical **Chapters 6** – **29.**
PINS	November 2019	Paragraph 13 of the Scoping Report confirms that each project will be assessed individually so that mitigation is project specific (where appropriate). Where mitigation is proposed for one of SEP or DEP, this should be clearly explained and delineated within the ES.	**Section 4.1.1** in **Chapter 4 Project Description** states that "…*the assessment considers both projects being developed in isolation, sequentially and concurrently, so that mitigation is specific to each development scenario.*" Where relevant, each technical chapter (**Chapters 6** – **29**) will clearly state the project-specific mitigation proposed for one of SEP or DEP.
PINS	November 2019	The ES should also identify and describe any proposed monitoring of significant adverse effects and how the results of such monitoring would be utilised to inform any necessary remedial actions.	Monitoring arrangements are proposed where relevant and discussed in detail within the relevant technical chapters (**Chapters 6** – **29**).
PINS	November 2019	The Scoping Report does not address the risk of major accidents and/or disasters. The ES should include a description and assessment (where relevant) of the likely significant effects resulting from accidents and disasters	**Section 4.7.3** of **Chapter 4 Project Description** details the potential impacts from major accidents or disasters.

Consultee	Date	Comment	Project Response
		applicable to the Proposed Development. The Applicant should make use of appropriate guidance (e.g. that referenced in the Health and Safety Executives (HSE) Annex to Advice Note 11) to better understand the likelihood of an occurrence and the Proposed Development's susceptibility to potential major accidents and hazards. The description and assessment should consider the vulnerability of the Proposed Development to a potential accident or disaster and also the Proposed Development's potential to cause an accident or disaster. The assessment should specifically assess significant effects resulting from the risks to human health, cultural heritage or the environment. Any measures that will be employed to prevent and control significant effects should be presented in the ES.	
PINS	November 2019	HSE's consultation response identifies a number of major accident hazard sites and major accident hazard pipelines within the scoping study areas presented in the Scoping Report; any likely significant effects to, or that could result from, these features should be assessed in the ES.	**Section 4.7.3** of **Chapter 4 Project Description** details the potential impacts from major accidents or disasters. Relevant risks are covered further within **Chapters 6** – **29** of this ES.
PINS	November 2019	Relevant information available and obtained through risk assessments pursuant to European Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of 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.	A Navigation Risk Assessment has been prepared and is included as **Appendix 13.1 Navigational Risk Assessment**.
PINS	November 2019	The Scoping Report recognises climate change policy and UK commitments. However, it does not address the likely significant effects the Proposed Development would have on climate (for example having regard to the nature and	Potential implications of climate change are discussed within the relevant technical chapters of this ES. A greenhouse gas assessment is provided in **ES**

Consultee	Date	Comment	Project Response
		magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change. The ES should include a description and assessment of these matters (where relevant). Where relevant, the ES should describe and assess the adaptive capacity that has been incorporated into the design of the Proposed Development. This may include, for example, alternative measures such as changes in the use of materials or construction and design techniques that will be more resilient to risks from climate change.	**Appendix 6.3.4.2 Greenhouse Gas Footprint Assessment**.
PINS	November 2019	Schedule 4 Part 5 of the EIA Regulations requires a description of the likely significant transboundary effects to be provided in an ES. Regulation 32 of the EIA Regulations inter alia requires the Inspectorate to publicise a DCO application on behalf of the SoS if it is of the view that the proposal is likely to have significant effects on the environment of another EEA state, and where relevant, to consult with the EEA state affected. The Inspectorate considers that where Regulation 32 applies, this is likely to have implications for the examination of a DCO application.	**Chapter 29 Transboundary** provides a summary of the potential transboundary impacts of SEP and DEP.
PINS	November 2019	The Scoping Report states that transboundary impacts will be assessed for the following aspects: • Fish and shellfish ecology; • Marine mammals; • Offshore ornithology; • Commercial fisheries; • Shipping and navigation; • Offshore archaeology and cultural heritage; and • Ecology and Ornithology (including Sites of Nature Conservation Interest); and	**Section 29.6** and **Section 29.7** of **Chapter 29 Transboundary** present a summary of the potential impacts on offshore transboundary receptors and onshore transboundary receptors, respectively. No transboundary effects are anticipated for **Chapter 9 Fish and Shellfish Ecology**, and transboundary impacts have been scoped out of **Chapter 20 Onshore Ecology and Ornithology** and **Chapter 21 Onshore Archaeology and Cultural Heritage.** A more detailed summary of potential transboundary effects and the European Economic Area (EEA) States affected can be found in the following Chapters:

Consultee	Date	Comment	Project Response
		• Onshore archaeology and cultural heritage. The Inspectorate recommends that the ES should identify whether the Proposed Development has the potential for significant transboundary effects and if so, what these are and which EEA States would be affected.	• **Chapter 10 Marine Mammal Ecology**; • **Chapter 11 Offshore Ornithology**; • **Chapter 12 Commercial Fisheries**; • **Chapter 13 Shipping and Navigation**; and • **Chapter 14 Offshore Archaeology and Cultural Heritage.**
PINS	November 2019	A reference list detailing the sources used for the descriptions and assessments must be included in the ES.	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.
PINS	November 2019	In some circumstances it will be appropriate for information to be kept confidential. In particular, this may relate to information about the presence and locations of rare or sensitive species such as badgers, rare birds and plants where disturbance, damage, persecution or commercial exploitation may result from publication of the information. Where documents are intended to remain confidential the Applicant should provide these as separate paper and electronic documents with their confidential nature clearly indicated in the title and watermarked as such on each page. The information should not be incorporated within other documents that are intended for publication or which the Inspectorate would be required to disclose under the Environmental Information Regulations 2004.	When appropriate, confidential information has been treated as such and has not been incorporated within documents intended for publication or those that the Planning Inspectorate would be required to disclose under the Environmental Information Regulations 2004.
Section 42 Responses			
Natural England	June 2021	Comment: Definition of EPP is missing part of the purpose. Recommendation: The EPP also helps NSIP applicants meet the requirements to provide sufficient information in their application, so that the Examining Authority can recommend to the Secretary of State whether or not to accept the application for examination, and whether an appropriate assessment is required.	An updated definition of the EPP has been included in the Glossary of Terms in **Chapter 5 EIA Methodology**.

Consultee	Date	Comment	Project Response
Natural England	June 2021	Comment: The primary objective of an EIA. Recommendation: The primary aim of EIA is to protect the environment through the process described in Point 7, but also to ensure that the public are given early and effectives opportunities to participate in the decision-making procedures.	Text has been updated in **Section 5.2** to include reference to the fact that the EIA also provides the public early and effective opportunities to participate in the decision-making process.
Natural England	June 2021	Comment: The purpose of the ES (and this PEIR) is to inform the decision maker, stakeholders, and all interested parties of any significant effects that would result from DEP and SEP during their construction, operation and (where relevant) decommissioning. Recommendation: The PEIR provides information which is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development). Repowering should also be included here. In other words, all stages of the project lifespan.	Whilst the eventual life of SEP and DEP may include repowering, the Applicant is seeking to consent SEP and DEP with a 40-year life span and the assessments presented within this ES cover the assessment of impacts associated with that definition. Any repowering would in effect be outside of the consent granted for the projects and would be subject to a separate planning process at that time.
Natural England	June 2021	Comment: 'for each receptor and potential impact, the impact assessment will be based on assessing project design parameters likely to result in in the maximum adverse effect' Recommendation: This should also refer to potential pathways for change.	Source-pathway-effect is discussed in **Section 5.7.2**.
Natural England	June 2021	Comment: A review of the existing environment has been undertaken in order to determine, and agree, the existing environmental conditions in the study area in question. Recommendation: The aim of the characterisation of the existing environment is also to provide a robust baseline to inform understanding of the existing environmental conditions, how the different	Text has been updated in **Section 5.6** to provide further clarity on the aim of the baseline characterisation.

Consultee	Date	Comment	Project Response
		processes link together and how they evolve in response to applied forces.	
Natural England	June 2021	Comment: Impact Significance Definitions. Recommendations: Minor impacts should refer to change throughout the associated project development (i.e. construction/operation and/or decommissioning). Major impact implies change to key environmental characteristics which are well in excess of the natural range of variability, and likely to occur some distance away from the development area. Moderate impact implies change to key environmental characteristics which are in excess of the natural range of variability but largely restricted to the development area. Change occurs throughout associated project development phase. Low impact implies change to key environmental characteristics which are similar to, but occasionally in excess of, the natural range of variability. Change occurs intermittently during associated project development phase and is restricted to the development area.	Definitions in **Table 5-6** have been updated to refer to change throughout the associated project development, as recommended.
Natural England	June 2021	Comment: NE note the Applicant lists a number of outline documents to be submitted, does the Applicant intend to submit one per development, or just one to cover both projects? If it is the latter, how will this be captured and how will differing issues be addressed? Recommendation: Please advise.	A single Outline Plan will be produced to provide a framework and the mitigation principles for relevant topics, with a clear indication within it if any proposed mitigation is appropriate to only SEP or DEP, or vice versa. The management plans will be secured through an appropriate requirement in the DCO or condition in the DMLs which will allow for staged working for each project. Final management plans will be produced which are suitable for any given stage of either given project, e.g. the Applicant may discharge multiple management plans which are all in accordance with a common Outline plan.

Consultee	Date	Comment	Project Response
Section 51 advice regarding draft application documents			
PINS	May 2022	**Section 5.1**: Where assessments relate to only SEP or DEP in isolation, or both SEP and DEP concurrently or sequentially this should be clearly set out in the ES and any conclusions over likely significant effects fully justified based on evidence submitted in support of the ES conclusions.	Text added to **Section 5.1**: *Where assessments relate to SEP or DEP in isolation, or both SEP and DEP either concurrently or sequentially, this is set out in each ES technical chapter and any conclusions over likely significant effects justified based on the evidence submitted in support of the ES conclusions.* The realistic worst-case scenario and associated development scenarios assessed are described fully in each technical chapter of the ES.
PINS	May 2022	**Section 5.3.1**: The draft chapter states that topic specific matters raised in the Scoping Opinion are referenced in the consultation summary tables within each of the topic chapters. It is not made clear how any general / overarching matters raised in the Scoping Opinion have been responded to or informed the ES. It would be useful if a summary table listing how all such matters raised in the Scoping Opinion and other consultation advice (i.e., that is not topic specific) have been considered.	General / overarching comments raised in the Scoping Opinion, and the Project Response to these comments, have been included in **Table 5-1** of **Chapter 5 EIA Methodology**.
PINS	May 2022	**Section 5.5**: The impact assessment is based on assessing project design parameters likely to result in the maximum adverse effect (the 'worst-case scenario'). If a combination of design parameters leads to a scenario that cannot realistically occur, then the worst-case scenario would be reconsidered. It is not made clear in the draft chapter whether this would constitute part of the initial consideration of alternatives in the EIA to ensure that a realistic set of worst-case parameters is assessed.	The realistic worst-case scenario is clearly defined in each technical chapter of the ES, and within the worst-case scenario tables in each chapter. **Chapter 4 Site Selection and Assessment of Alternatives** sets out other scenarios which have been ruled out of the assessment to ensure that a realistic set of worst-case parameters are assessed.

Consultee	Date	Comment	Project Response
PINS	May 2022	**Section 5.6**: Study areas defined for each receptor are to be based on the relevant characteristics of the receptor. The study areas should be clearly defined based on relevant guidance and evidence and the ES should demonstrate that the Applicant has taken account of advice from relevant consultation bodies where necessary in identifying the study areas. Any assumptions would need to be clearly set out in the ES from which any conclusions on likely significant effects have been based. Where study areas which have been determined by a number of factors such as the distribution of receptors, footprint of potential impacts, or administrative/management boundaries but where agreement has not been reached with regulators, advisors and relevant consultation bodies, the Applicant is encouraged to clearly frame where agreement has not been achieved and ensure robust justification of the chosen study areas with evidence in the ES.	Text updated in **Section 5.6** (paragraph 39) to: *Study areas have been defined for each receptor based on the relevant guidance and evidence, and the relevant characteristics of the receptor (e.g. mobility/range)* Paragraph 42 states that 'where possible these have been agreed with regulators or advisors'. There are no instances of disagreement on the study areas, either for offshore or onshore receptors. These matters have been discussed either during ETG meetings or through the Section 42 consultation process on the PEIR, depending on the topic in question.
PINS	May 2022	**Section 5.6**: Likely or potential impacts that might be expected to arise from SEP and DEP in isolation need to be defined for each individual development as well as those which arise from the concurrent or sequential development of SEP and DEP.	Text updated in **Section 5.6** to: *Review likely or potential impacts that might be expected to arise from SEP and DEP in isolation, SEP and DEP concurrently and SEP and DEP sequentially (**Section 5.7.1**)*
PINS	May 2022	**Section 5.7.4** Paragraph 59: The Applicant should ensure that the distinctions between value and sensitivity are made clear in the ES, and how they have been combined where applicable, to avoid any confusion over how conclusions on significance of effects have been reached, when comparing the magnitude of an effect with the sensitivity and/or value of a receptor.	Distinction between value and sensitivity has been made in the technical chapters, where relevant.
PINS	May 2022	**Section 5.7.5 Table 5-4**: In the example definition of 'Low' magnitude compared to 'Negligible' magnitude the distinction between "minority" of a receptor and "small" part of a receptor is not made clear.	The definitions of the magnitude of effect given in **Table 5-4** are examples, and this has been clarified in the text. It is also noted that these are the same example definitions used by other recently consented

Consultee	Date	Comment	Project Response
		Also, the use of the distinction "limited but discernible alteration to key characteristics or features" for 'Low' magnitude to "slight alteration to key characteristics or features" for 'Negligible' needs clarification on the terms "limited but discernible" and "slight alteration" assuming these are both temporary effects. The ES should ensure it is made clear what the distinction is between Low and Negligible magnitude of effect.	offshore wind farm (OWF) projects, including East Anglia One North and Two. As described in the chapter, the assessments have been guided by the Royal HaskoningDHV EIA team and technical specialists using their experience and expert judgement. For each topic considered in the EIA, the most relevant and latest guidance or best practice has been used and therefore definitions of sensitivity and magnitude of impact are tailored to each topic and receptor, with these definitions detailed in each technical chapter. For example, **Chapter 11 Offshore Ornithology** applies its own set of magnitude definitions specific to that topic, whilst others are the same or more closely aligned to the examples provided in **Chapter 5 EIA Methodology**. The definitions are used to provide transparency to the assessment process; however, there is no one size fits all and it must be stressed that the assessments are based on the application of expert judgement.
PINS	May 2022	**Section 5.7.5** Paragraph 63: If using quantitative distinctions in the assessment when determining the difference between the magnitude of effect on a receptor this should be made clear for the assessment in the relevant topic (aspect) chapter. Assuming that professional judgement will be made use of where a qualitative assessment is required, any assumptions made within each topic's assessment when determining significance of effects should be made clear and **Section 5.7.5**. Para 63 be based on best practice guidance where this is available.	Any assumptions made within each assessment are included in each technical chapter of the ES. Text in **Section 5.7.5** has been updated to: *Descriptions of the approach to impact assessment and the interpretation of significance levels, including any assumptions made, are provided within the relevant chapters of this ES. This approach, based on best practice guidance where available, ensures that the definition of impacts is transparent and specific to each topic under consideration.*

5.4 Requirement for Competent Experts

20. In order to ensure the ES is complete, is of a high-quality, and is compliant with Regulation 14(4) of the IEIA Regulations, the Applicant has appointed experienced and competent EIA consultants to undertake the assessment work. This section outlines the relevant expertise of the consultancies who have undertaken the EIA and prepared the ES.

5.4.1 Competent Experts

5.4.1.1 Royal HaskoningDHV

21. Royal HaskoningDHV is the UK's leading EIA consultant working in the offshore wind sector, successfully providing environmental, development and consenting support on over 14 GW of renewable energy projects across 30 UK offshore wind farms. Royal HaskoningDHV holds the EIA quality mark from the Institute of Environmental Management and Assessment (IEMA) for EIA activities and Environmental Statements.
22. The EIA team is overseen by Adam Pharaoh as Project Director. Adam is Renewables Technical Director and an experienced Project Director with Royal HaskoningDHV. Adam is a Chartered Environmentalist with 18 years' experience. The EIA process and EIA team has been led by Adam Pharaoh as Project Director and Offshore Technical Director, and Jon Allen as Onshore Technical Director. Adam and Jon are supported by a dedicated core EIA management team who are all chartered EIA professionals.
23. The majority of the technical impact assessments reported within the ES have been led by experienced technical experts from within Royal HaskoningDHV's UK team. The technical assessments draw on the very significant track record of previous offshore wind impact assessments Royal HaskoningDHV has successfully undertaken.
24. Royal HaskoningDHV's lead authors undertaking the EIA for SEP and DEP are predominantly senior and chartered professionals with a significant track record in undertaking technical assessment and EIA in their discipline. The team is comprised of a dedicated core of EIA professionals who take the lead role in the co-ordination and management of the EIA and the preparation of this ES. The core team is supported by a wider team of technical specialists taking responsibility of the data collection, data analysis and technical impact assessment.
25. Royal HaskoningDHV undertook the technical impact assessment and were lead authors on the following ES chapters:
    - **Chapter 1 Introduction**;
    - **Chapter 2 Policy and Legislative Context**;
    - **Chapter 3 Site Selection and Assessment of Alternatives**;
    - **Chapter 4 Project Description**;
    - **Chapter 5 EIA Methodology**;
    - **Chapter 6 Marine Geology, Oceanography and Physical Processes**;

- **Chapter 7 Marine Water and Sediment Quality**;
- **Chapter 8 Benthic Ecology**;
- **Chapter 9 Fish and Shellfish Ecology**;
- **Chapter 10 Marine Mammal Ecology**;
- **Chapter 11 Offshore Ornithology**;
- **Chapter 12 Commercial Fisheries**;
- **Chapter 13 Shipping and Navigation**;
- **Chapter 14 Offshore Archaeology and Cultural Heritage**;
- **Chapter 15 Aviation and Radar**;
- **Chapter 16 Petroleum Industry and Other Marine Users**;
- **Chapter 17 Onshore Ground Conditions and Contamination**;
- **Chapter 18 Water Resources and Flood Risk**;
- **Chapter 19 Land Use, Agriculture and Recreation**;
- **Chapter 20 Onshore Ecology and Ornithology**;
- **Chapter 21 Onshore Archaeology and Cultural Heritage**;
- **Chapter 22 Air Quality**;
- **Chapter 23 Noise and Vibration**;
- **Chapter 24 Traffic and Transport**;
- **Chapter 28 Health**; and
- **Chapter 29 Transboundary**.

26. Each lead author is a member of a relevant professional body and takes responsibility for the quality and veracity of the data gathered and used in the assessment, the impact assessment methodology to be undertaken, the impact assessments made, and any proposed mitigation and monitoring measures proposed. The lead author is supported by a team and their work is subject to both technical and consistency review by a Technical Director and the EIA core team.

27. A small number of the ES chapters have been undertaken by specialist consultancies outside Royal HaskoningDHV. These include:

- **Chapter 25 Seascape and Visual Impact Assessment** (LDA Design);
- **Chapter 26 Landscape and Visual Impact Assessment** (LDA Design); and
- **Chapter 27 Socio-Economics and Tourism** (Hatch).

28. Information about these companies is presented below.

5.4.1.2 LDA Design

29. LDA Design is a leading independent consultancy in Seascape, Landscape and Visual Impact Assessment (SLVIA), with master planning, urban design, landscape architecture and environmental planning at its core. The environmental planners within the LDA Design team are experts in a range of disciplines, equipped with the skills and experience needed to apply an understanding of key issues to problem solving and to the planning and design of new developments. The team at LDA Design has a considerable level of knowledge and are specialists in energy related SLVIAs, having carried out SLVIAs for a number of onshore and offshore wind farms.

30. LDA Design are lead author on **Chapter 25 Seascape and Visual Impact Assessment** and **Chapter 26 Landscape and Visual Impact Assessment**.

5.4.1.3 Hatch Regeneris

31. Hatch are an innovative independent consultancy with expertise in a range of sectors, helping businesses deliver on their sustainability objectives and driving the transition to clean energy. The diverse teams at Hatch have a vast background in engineering and business. As leading advisors, Hatch guide strategic decision-making to achieve mutually beneficial financial and social goals. Hatch has undertaken socio-economic impact assessments for a number of EIA projects.

32. Hatch authored the technical report for **Chapter 27 Socio-Economics and Tourism**.

5.4.1.4 Other Technical Assessments

33. In addition to those consultancies listed above, the following competent experts undertook technical assessments which have informed the ES.

5.4.1.4.1 Subacoustech Environmental

34. Subacoustech offer specialist underwater acoustic advice and modelling. Subacoustech authored **Appendix 10.2 Underwater Noise Modelling Report** which supports the assessments within **Chapter 9 Fish and Shellfish Ecology** and **Chapter 10 Marine Mammal Ecology.**

5.4.1.4.2 Poseidon Aquatic Resource Management

35. Poseidon are fisheries consultants working globally to provide advice in support of sustainable fisheries and aquaculture, marine planning, and blue growth. Poseidon authored the technical appendices for **Chapter 12 Commercial Fisheries**.

5.4.1.4.3 Osprey Consulting Services

36. Osprey are a leading aviation consultancy in the UK, specialising in operational and engineering support to both commercial and military aviation projects. Osprey authored the Aviation Impact Assessment, which forms the technical appendices to **Chapter 15 Aviation and Radar**.

5.4.1.4.4 Anatec

37. Anatec are the leading service provider in risk-based decision-marking with extensive experience in Navigation (Safety) Risk Assessments in line with national regulator requirements. Anatec completed the Navigation Risk Assessment technical appendices to inform **Chapter 13 Shipping and Navigation** in addition to authoring the technical appendices for **Chapter 16 Petroleum Industry and Other Marine Users.**

5.4.1.4.5 Wind Frontier Ecology

38. Wild Frontier Ecology is an independent ecological and arboricultural consultancy based in Norfolk. Wild Frontier Ecology undertook ecological and arboricultural surveys and authored the technical appendices for **Chapter 20 Onshore Ecology and Ornithology**.

5.5 Project Design Envelope

39. The SEP and DEP EIA is based on a project design envelope approach, also known as the 'Rochdale Envelope' approach. Planning Inspectorate Advice Note Nine (the Planning Inspectorate, v3 2018) recognises that, at the time of submitting an application, offshore wind developers may not know the precise nature and arrangement of infrastructure, and any associated infrastructure, which make up the proposed development. This is due to a number of factors such as the evolution of technology, the need for flexibility in key commercial project decisions and the need for further detailed surveys (especially geotechnical surveys), which are required before a final design and layout can be determined. This flexibility is important as it prevents consent being granted for specific infrastructure or a particular layout which is not possible or optimal by the time of construction, which may be several years after the DCO application was made. The project design envelope for SEP and DEP is detailed in **Chapter 4 Project Description**.

40. Where necessary, a range of parameters for each aspect of SEP and DEP have been defined and the worst-case scenario associated with each parameter and receptor has been used in each impact assessment. This helps to ensure that the EIA process has considered the maximum effects of SEP and/or DEP, whilst also allowing for further optimisation and refinement at the time of construction, noting that this may be several years after the DCO application is made. The project design envelope therefore provides the maximum extent of the consent sought. The detailed design of SEP and DEP can then be developed, refined and procured within this consented envelope prior to construction.

41. The general principle of the assessment, under the project design envelope approach, is that for each receptor and potential impact, the impact assessment is based on assessing project design parameters likely to result in the maximum adverse effect (i.e. the worst-case scenario). If a combination of design parameters leads to a scenario that cannot realistically occur then the worst-case scenario is reconsidered and a realistic set of worst-case parameters is assessed. The end result is an EIA based on clearly defined environmental parameters that will define the range of development possibilities and hence the likely environmental impacts that could result from SEP and DEP.

42. Using the project design envelope approach means that receptor-specific potential impacts draw on the options from within the wider envelope that represent the most realistic worst-case-scenario. It should also be noted that under this approach the combination of project options constituting the realistic worst-case scenario may differ from one receptor to another and from one impact to another.

43. In accordance with the accepted industry approach, the impact assessment is being undertaken based on a realistic worst-case scenario of predicted impacts, which are set out within each technical chapter.

5.6 Characterisation of the Existing Environment

44. A review of the existing environment has been undertaken in order to determine, and agree, the existing environmental conditions in the study area in question. This characterisation of the existing environment provides a robust baseline to inform understanding of the existing environmental conditions, how different processes link together and how they evolve in response to applied forces. The characterisation has followed the steps listed below with the details provided in each technical chapter (**Chapters 6 – 29**):

- Study areas defined for each receptor based on the relevant guidance and evidence, and the relevant characteristics of the receptor (e.g. mobility/range);
- Review available information;
- Review likely or potential impacts that might be expected to arise from SEP and DEP in isolation, SEP and DEP concurrently and SEP and DEP sequentially (**Section 5.7.1**);
- Determine if sufficient data are available to make the EIA judgements with sufficient confidence;
- If further data is required, ensure data gathered are targeted and directed at answering the key question and filling key data gaps; and
- Review information gathered to ensure the environment can be characterised in sufficient detail and the data are suitable to make the EIA judgements with sufficient confidence.

45. Equinor has collated a significant amount of existing data from a number of sources. These are detailed in each technical chapter.

46. The specific approach to establishing the characteristics of the existing environment (upon which impacts can be assessed) is set out in each technical chapter within this ES. This approach is based on feedback in the Scoping Opinion, and has also been informed by feedback on the PEIR and subsequent consultation with stakeholders. The approach has also evolved and been adapted as new data have been collected and the design of SEP and DEP has advanced.

47. Study areas have been defined for each topic at the relevant scale, and are described within the technical chapters. These have been determined by a number of factors such as the distribution of receptors, footprint of potential impacts, or administrative/management boundaries (e.g. territorial waters, International Council for the Exploration of the Seas (ICES) rectangles) and where possible these have been agreed with regulators or advisors.

5.7 Assessment of Impacts

48. The approach to making balanced assessments for SEP and DEP has been guided by the Royal HaskoningDHV EIA team and technical specialists using available data, newly acquired project-specific data, experience and expert judgement. This chapter sets out the framework methodology for the assessment with each technical chapter providing details of how the methodology has been applied for that topic. For each topic considered in the EIA, the most relevant and latest guidance or best practice has been used and therefore definitions of sensitivity and magnitude of impact are tailored to each topic and receptor. These definitions are detailed fully in each technical chapter. The impact assessment considers the potential for impacts during the construction, operation and maintenance, and decommissioning phases of SEP and DEP.

49. Impacts can be classified as follows:

- Direct impacts: occurring at the same time and place as the action or activity.
- Indirect impacts: experienced by a receptor that is removed (e.g. in space or time) from the direct impact (e.g. noise impacts upon fish which are a prey resource for fish or mammals). These indirect impacts equate to inter-relationships as highlighted by the Planning Inspectorate guidance (Advice Note 17).
- Inter-relationships between impacts (where different impacts interact to affect a single receptor, which may need to be brought together from assessments presented in separate chapters) and interactions between impacts (where impacts assessed in each chapter have the potential to interact with one another).
- Cumulative impacts: these may occur as a result of SEP and DEP in conjunction with other existing or planned projects within the study area for each receptor, including other offshore wind farms.

5.7.1 Scenarios

50. The EIA is undertaken on the basis of a several development scenarios. Details of the development scenarios are presented in **Chapter 4 Project Description** and the **Scenarios Statement** (document reference 9.28).

51. These different scenarios could give rise to different potential impacts, magnitude of impact and/or different effects on receptors, therefore an assessment of potential impacts is provided against each scenario, where relevant.

52. Where assessments relate to SEP or DEP in isolation, or both SEP and DEP either concurrently or sequentially, this is set out in each ES technical chapter and any conclusions over likely significant effects justified based on the evidence submitted in support of the ES conclusions.

5.7.2 Impact Identification

53. Where appropriate to do so, the assessment has used the conceptual 'source-pathway-receptor' model. The model identifies potential impacts resulting from the proposed activities on the environment and sensitive receptors within it. This process provides an easy-to-follow assessment route between impact sources and potentially sensitive receptors ensuring a transparent impact assessment. The aspects of this model are defined as follows:

- Source – the origin of a potential impact (i.e. an activity such as earthworks and a resultant effect e.g. contaminated run-off from the site);
- Pathway – the means by which the effect of the activity could impact a receptor (e.g. for the example above, changes to the water quality in the watercourses affected); and
- Receptor – the element of the receiving environment that is impacted (this could either be a component of the physical, ecological or human environment such as water quality or benthic habitat, e.g. for the above example, species living on or in the watercourses affected).

54. Where a different approach has been necessary to reflect the specific assessment requirements of a particular topic, this is described in the corresponding technical chapter.

5.7.3 Significance of the Impact

55. The significance of impacts is evaluated with reference to definitive standards, accepted criteria, technical guidance or legislation where these exist, for each topic. Where it is not possible to quantify impacts, and where a qualitative or semi-qualitative assessment is made, a reasoned framework for the assessment is provided in the technical chapter.

56. Where guidance is available for defining sensitivity and magnitude (whether from professional guidance or UK Government publications or bespoke definitions agreed with stakeholders) this is referred to. If such sources are available but have not been used, then a justification for not using these are given.

57. Specific significance definitions for impacts have been developed, giving due regard to both sensitivity of the receptor and magnitude of the effect.

5.7.4 Determining Receptor Value and Sensitivity

58. The characterisation of the existing environment helps to determine the receptor sensitivity in order to assess the potential impacts upon it.

59. Receptor value considers whether, for example, the receptor is rare, has protected or threatened status, has importance at a local, regional, national or international scale and; in the case of biological receptors, whether the receptor has a key role in the ecosystem function.

60. The ability of a receptor to adapt to change, tolerate, and/or recover from potential impacts is key to assessing its sensitivity to the impact under consideration. For ecological receptors, tolerance could relate to short term changes in the physical environment; for human environment receptors, tolerance could relate to impacts upon community or socio-economics. The time required for recovery is an important consideration in determining receptor sensitivity.

61. The overall receptor sensitivity is determined by considering a combination of value, adaptability, tolerance and recoverability. This is achieved through applying known research and information on the status and sensitivity of the feature under consideration coupled with professional judgement and past experience.

62. Expert judgement is particularly important when determining the sensitivity of receptors. For example, an Annex II species (under the Habitats Directive) would have a high inherent value but may be tolerant to an impact or have high recoverability. In this case, sensitivity should reflect the ecological robustness of the species and not necessarily default to its protected status. Example definitions of the different sensitivity levels for a generic receptor are given in **Table 5-2**.

Table 5-2: Example Definitions of Different Sensitivity Levels for a Generic Receptor

Sensitivity	Definition
High	Individual receptor has very limited or no capacity to avoid, adapt to, accommodate or recover from the anticipated impact
Medium	Individual receptor has limited capacity to avoid, adapt to, accommodate or recover from the anticipated impact
Low	Individual receptor has some capacity to accommodate, adapt or recover from the anticipated impact
Negligible	Individual receptor can generally accommodate or recover from the anticipated impact

63. The definitions of sensitivity given within each chapter are relevant to that particular EIA topic and are clearly defined by the assessor within the context of that assessment.

64. In addition, for some assessments the value of a receptor may also be an element to add to the assessment where relevant, for instance if a receptor is designated or has economic value.

65. Example definitions of the value levels for a generic receptor are given in **Table 5-3**.

Table 5-3: Example Definitions of the Value Levels for a Generic Receptor

Value	Definition
High	Internationally/nationally important (for example internationally or nationally protected site)
Medium	Regionally important/regionally protected site
Low	Locally important
Negligible	Not considered to be important (for example common or widespread)

66. The terms ‘high value’ and ‘high sensitivity’ are not necessarily linked within a particular impact and it is important not to inflate impact significance specifically because a feature is ‘valued’. For example, a receptor could be of high value (e.g. an Annex I habitat) but have a low or negligible physical/ecological sensitivity to an effect.

5.7.5 Determining the Magnitude of Effect

67. In order to predict the level and significance of an impact, it is necessary to establish the magnitude of effect, as well as the probability of an impact occurring through consideration of:

- Scale or spatial extent (small scale to large scale or a few individuals to most of the population);
- Duration (short term to long term);
- Likelihood of impact occurring;
- Frequency; and
- Nature of change relative to the pre-impact condition of the existing environment.

68. Example definitions of the magnitude of effect are given in **Table 5-4**.

Table 5-4: Example Definitions of Magnitude of Effect

Value	Definition
High	Fundamental, permanent/irreversible changes, over the whole receptor, and/or fundamental alteration to key characteristics or features of the particular receptor’s character or distinctiveness. May include change to key environmental characteristics which are well in excess of the natural range of variability, and likely to occur some distance away from the DCO order limits.
Medium	Considerable, permanent/irreversible changes, over the majority of the receptor, and/or discernible alteration to key characteristics or features of the particular receptor’s character or distinctiveness. May include change to key environmental characteristics which are in excess of the natural range of variability but may be largely restricted to the development area. Change occurs throughout the associated project construction phase.
Low	Discernible, temporary (throughout project duration) change, over a minority of the receptor, and/or limited but discernible alteration to key characteristics or features of the particular receptor’s character or distinctiveness. May include change to key environmental characteristics which are similar to, but occasionally in excess of, the natural range of variability. Change occurs intermittently during associated project construction phase and is likely to be restricted to the development area.
Negligible	Discernible, temporary (for part of the project duration) change, or barely discernible change for any length of time, over a small area of the receptor, and/or slight alteration to key characteristics or features of the particular receptor’s character or distinctiveness.

5.7.6 Evaluation of Significance

69. Subsequent to establishing the sensitivity of the receptor and the magnitude of effect, the impact significance is predicted by using quantitative or qualitative criteria, as appropriate, to ensure a robust assessment. The matrix presented in **Table 5-5** has been used to provide transparency to the assessment process; however, it should be stressed that the assessments are based on the application of expert judgement.

Table 5-5: Significance of an Impact Resulting from Each Combination of Receptor Sensitivity and the Magnitude of the Effect

		Adverse Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	*Major*	*Major*	*Moderate*	*Minor*	*Minor*	*Moderate*	*Major*	*Major*
	Medium	*Major*	*Moderate*	*Minor*	*Minor*	*Minor*	*Minor*	*Moderate*	*Major*
	Low	*Moderate*	*Minor*	*Minor*	*Negligible*	*Negligible*	*Minor*	*Minor*	*Moderate*
	Negligible	*Minor*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Minor*

70. **Table 5-5** provides an indication of the significance levels used in the assessment process for the majority of parameters. Any exceptions to these definitions are due to the application of best practice methodologies for a particular topic, as described above. In general, impacts which are of major or moderate significance are considered to be significant with respect to the EIA Regulations. It is also possible that a moderate impact may not be considered significant under the EIA Regulations however, in these cases a justification and rationale is provided in the impact assessment text.

71. Descriptions of the approach to impact assessment and the interpretation of significance levels, including any assumptions made, are provided within the relevant chapters of this ES. This approach, based on best practice guidance where available, ensures that the definition of impacts is transparent and specific to each topic under consideration.

72. Example definitions of the significance levels for a generic receptor are given in **Table 5-6**.

Table 5-6: Impact Significance Definitions

Significance	Definition
Major	Very large or large change in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision-making process.
Negligible	No discernible change in receptor condition.

73. For each topic within the EIA, best practice methodology (based on the latest available guidance) has been followed, which may augment the assessment framework presented above. In all cases the specific approach taken to assess impacts is described within each technical chapter.

5.7.7 Confidence

74. Once an assessment of a potential impact has been made, a confidence value may be assigned to the assessment to assist in the understanding of the judgement. This is undertaken on a simple scale of high-medium-low, where high confidence assessments are made on the basis of robust evidence, medium confidence assessment being based, for example, on academic or scientific studies/papers, and lower confidence assessments being based, for example, on extrapolation and use of proxies.

5.7.8 Mitigation

75. Where the assessment identifies that an aspect of the development is likely to give rise to significant environmental impacts, mitigation measures have been proposed and discussed with the relevant authorities and stakeholders in order to avoid, prevent or reduce impacts to acceptable levels.

76. 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. Additional mitigation is therefore subsequently adopted by SEP and DEP as the EIA process progresses.

77. All mitigation associated with SEP and DEP is identified and described in more detail in the relevant chapters of the ES (**Chapters 6** – **29**).

5.7.8.1 SEP and DEP Biodiversity Net Gain Commitment

78. In addition to the mitigation measures outlined in **Chapter 20 Onshore Ecology and Ornithology**, biodiversity net gain will be sought for onshore elements so that it can be demonstrated that SEP and DEP are improving biodiversity (see **Chapter 20 Onshore Ecology and Ornithology** for more information). This commitment is currently voluntary, pending anticipated updates to the Environment Act in relation to biodiversity net gain and NSIPs (expected November 2025).

79. Biodiversity net gain discussions for SEP and DEP initially focused on onshore project elements only but have been expanded voluntarily to also consider potential mechanisms in the offshore environment. SEP and DEP will follow these discussions and any new guidance or statutory requirements in relation to intertidal and offshore net gain.

5.7.9 Assessing Residual Impacts

80. Following initial assessment, if the impact does not require additional mitigation (or none is possible) the residual impact will remain the same. However, if additional mitigation measures are identified, impacts are re-assessed, and all residual impacts clearly described.

5.7.10 Inter-relationships and Interactions

81. As described above, the assessment also considers the potential for:

- Inter-relationships between impacts – where different impacts interact to affect a single receptor, which may need to be brought together from assessments presented in separate chapters. The offshore assessments are largely receptor based (e.g. marine mammals, fish ecology etc.) and as such inter-relationships are covered as an integral part of the assessment. In this case, a sign-posting section is provided to demonstrate that relevant inter-relationships have been taken into account. The onshore assessments tend to be topic based (e.g. air quality, noise etc.) and the same receptor may be assessed in multiple chapters, e.g. a residential property may be assessed separately for noise, air quality, traffic and visual impacts. There is the potential for these separate effects to interact, spatially and temporally, to create inter-related effects on a receptor and where this is the case this is identified and assessed.
- Interactions between impacts – where impacts assessed in each chapter have the potential to interact with one another. Impacts are assessed relative to each development phase (a ‘phase assessment’ i.e. construction, operation or decommissioning) to see if (for example) multiple construction impacts affecting the same receptor could increase the level of impact upon that receptor. Following this, a ‘lifetime assessment’ is undertaken which considers the potential for impacts to affect receptors across all development phases.

5.8 Cumulative Impact Assessment

82. The CIA is a key component of the overall EIA process. The aim of the CIA for SEP and DEP is to assess whether impacts on a receptor may occur on a cumulative basis between SEP and DEP and other projects, activities, and plans. The CIA is undertaken as part of each topic impact assessment, with specific methodology and outcomes presented within each technical chapter.

83. The scope of the CIA (in terms of relevant issues and projects) has been established with consultees (including other developers) as the EIA has progressed. In addition, Equinor has considered the experience from other projects in the wider North Sea and other UK projects, as well as incorporating continuing work from industry-wide initiatives with regard to cumulative impacts.

84. Version 3 of Planning Inspectorate Advice Note Nine: Rochdale Envelope (PINS, 2018) and version 2 of Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS, 2019a) provide guidance on plans and projects that should be considered in the CIA including:

- Projects that are under construction;
- Permitted application(s) not yet implemented;
- Submitted application(s) not yet determined;
- All refusals subject to appeal procedures not yet determined;
- Projects on the National Infrastructure Planning programme of projects; and
- Projects identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited and the resulting degree of uncertainty in the assessment that is possible.

85. Where it is helpful to do so, the development status of other projects have been defined as ‘tiers’, as well as the availability of information to be used within the CIA. This approach is based on the three-tier system proposed in version 2 of Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS, 2019a).

86. Where relevant, the assessment will present relevant cumulative effects of projects based on their stage of development using the six-tiered approach as devised by Natural England (JNCC and Natural England, 2013) and presented below:

- Tier 1: built and operational projects;
- Tier 2: projects under construction plus Tier 1 projects;
- Tier 3: projects that have been consented (but construction has not yet commenced) plus Tier 1 and Tier 2;
- Tier 4: projects that have an application submitted to the appropriate regulatory body that have not yet been determined, plus Tiers 1-3;
- Tier 5: projects that the regulatory body are expecting to be submitted for determination (e.g. projects listed under the Planning Inspectorate programme of projects), plus Tiers 1-4;

- Tier 6: projects that have been identified in relevant strategic plans or programmes, plus Tiers 1-5.

87. The CIA is a two-part process in which an initial list of projects with the potential to interact with SEP and DEP is identified, based on the potential mechanism of interaction. A further assessment is then carried out using the tiered approach, based on the nature and availability of information to inform a cumulative assessment.

88. In line with the RenewableUK CIA Guidelines for offshore wind farms (RenewableUK 2013), the approach to CIA attempts to incorporate an appropriate level of pragmatism. This is demonstrated in the confidence levels applied to the understanding of other projects (either their design or their likely impacts), particularly those that are known but currently lack detailed design documentation, such as those projects at the scoping stage only. Only projects which are well described and sufficiently advanced, with sufficient detail available with which to undertake a meaningful and robust assessment, have been included in the CIA.

89. Other projects which are sufficiently implemented during the characterisation surveys undertaken for SEP and DEP are considered as part of the existing or 'prevailing' environment for the EIA in line with version 2 of Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS, 2019a). This includes commercial fishing as these are ongoing activities that are accounted for in the baseline conditions, as confirmed in the Scoping Opinion (PINS, 2019b).

90. Offshore cumulative impacts may arise from interactions with the following activities and industries:

- Other offshore wind farms;
- Marine renewables (wave and tidal);
- Port and harbour developments;
- Marine aggregate extraction and dredging;
- Licensed disposal sites;
- Oil and gas exploration and production;
- Mariculture; and
- Subsea cables and pipelines.

91. Onshore plans or projects to be taken into consideration include (but are not limited to):

- Other energy generation infrastructure;
- Building and/or housing developments;
- Installation or upgrade of roads;
- Installation or upgrade of cables and pipelines; and
- Coastal protection works.

92. The list of plans or projects included in the CIA is specific to each topic and is detailed in each technical chapter (**Chapters 6 – 29**), having been developed through ongoing consultation with stakeholders.

5.9 Transboundary Impact Assessment

93. The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context (referred to as the Espoo Convention) requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts.

94. Regulation 32 of the EIA Regulations sets procedures to address issues associated with a development that might have significant impacts on the environment in another European Member State.

95. The procedures involve providing information to the Member State and for the Planning Inspectorate to enter into consultation with that State regarding the significant impacts of the development and the associated mitigation measures. Further advice on transboundary issues, in particular with regard to consultation requirements is given in Advice Note Twelve: Transboundary Impacts and Process (PINS, 2020).

96. In October 2019, following the request for a Scoping Opinion, the Planning Inspectorate issued a Transboundary Impacts Screening Matrix in accordance with Regulation 32 of the EIA Regulations and published a notification in the London Gazette inviting relevant EEA member states to notify the Planning Inspectorate if they wish to be consulted on SEP and DEP.

97. Potential transboundary impacts have been considered as an integral part of the wider EIA process, with a clear audit trail provided to demonstrate why any potential effects on other EEA member states have been screened in or out for assessment. As such, transboundary matters are addressed where relevant in each chapter of the ES and **Chapter 29 Transboundary** provides a summary of the transboundary assessment process and outcomes. In accordance with the advice detailed above, relevant EEA member states have been consulted through targeted consultation. Relevant EEA member states were also consulted on the **HRA screening report** (document reference 5.4.1).

5.10 Compliance with the Infrastructure Planning (EIA) Regulations 2017 (the EIA Regulations)

98. Regulation 14(2) contains requirements for what an ES must include at least:

- *(a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development;*
- *(b) a description of the likely significant effects of the proposed development on the environment;*
- *(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;*

- *(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;*
- *(e) a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and*
- *(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.*

99. Schedule 4 of the EIA Regulations presents the information to be included within Environmental Statements undertaken.

100. In demonstrating compliance with the EIA Regulations, **Table 5-7** summarises each of the information requirements and signposts to where these can be found within the ES.

Table 5-7: Compliance with the Infrastructure Planning (EIA) Regulations 2017

Schedule 4 Information for Inclusion in Environmental Statements	How/Where this Information has been Provided within this ES
(1) 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.	**Chapter 4 Project Description** provides a detailed description of SEP and DEP including location and physical characteristics onshore and offshore. This chapter also describes the main characteristics of the works required during the construction, operation and decommissioning phases of SEP and DEP, setting out estimated durations of tasks, materials required and equipment likely to be used. The chapter also considers approaches to waste management and use of natural resources. Further details of impacts such as potential impacts on noise (**Chapter 23 Noise and Vibration**), air quality (**Chapter 22 Air Quality**), landscape (**Chapter 25 Seascape, Landscape and Visual Impact Assessment** and **Chapter 26 Landscape and Visual Impact Assessment**), water (**Chapter 18 Water Resources and Flood Risk**) and other natural resources (e.g. **Chapter 20 Onshore Ecology and Ornithology**) are provided in dedicated technical impact assessment chapters and their technical appendices.
(2) 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 selecting the chosen option, including a comparison of the environmental effects.	The reasonable alternatives considered in the development of the proposed project design are discussed and presented in **Chapter 3 Site Selection and Assessment of Alternatives** and its technical appendices. The process of the design development for SEP and DEP, the consultation undertaken and how the views expressed during consultation have influenced the design development decisions and final project design are summarised within **Chapter 3 Site Selection and Assessment of Alternatives.** The comparative environmental effects of key design decisions and options considered are also presented as part of **Chapter 3 Site Selection and Assessment of Alternatives.**
(3) 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	For each of the technical assessment chapters within the ES, a detailed baseline environment is described, as agreed through the scoping and EPP processes. In many cases this uses survey

Schedule 4 Information for Inclusion in Environmental Statements	How/Where this Information has been Provided within this ES
scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	information gathered specifically to support the robust EIA for SEP and DEP. In all relevant technical assessment chapters, the likely evolution of the baseline without the implementation of SEP and DEP is also presented.
(4) 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 Human Health **Chapter 28 Health** Biodiversity **Chapter 8 Benthic Ecology** **Chapter 9 Fish and Shellfish Ecology** **Chapter 10 Marine Mammal Ecology** **Chapter 11 Offshore Ornithology** **Chapter 20 Onshore Ecology and Ornithology** Land **Chapter 18 Water Resources and Flood Risk** **Chapter 19 Land Use, Agriculture and Recreation** Soil **Chapter 17 Onshore Ground Conditions and Contamination** Water **Chapter 18 Water Resources and Flood Risk** Air **Chapter 22 Air Quality** Climate **Chapter 2 Policy and Legislative Context** **Chapter 6 Marine Geology, Oceanography and Physical Processes**

Schedule 4 Information for Inclusion in Environmental Statements	How/Where this Information has been Provided within this ES
	Chapter 18 Water Resources and Flood Risk Material Assets **Chapter 6 Marine Geology, Oceanography and Physical Processes** **Chapter 16 Petroleum Industry and Other Marine Users** **Chapter 17 Onshore Ground Conditions and Contamination** **Chapter 18 Water Resources and Flood Risk** **Chapter 19 Land Use, Agriculture and Recreation** **Chapter 24 Traffic and Transport** **Chapter 27 Socio-Economics and Tourism** Cultural Heritage **Chapter 14 Offshore Archaeology and Cultural Heritage** **Chapter 21 Onshore Archaeology and Cultural Heritage** Landscape **Chapter 25 Seascape and Visual Impact Assessment** **Chapter 26 Landscape and Visual Impact Assessment** A greenhouse gas assessment is provided in **ES Appendix 6.3.4.2 Greenhouse Gas Footprint Assessment**.
(5) 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 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; • (d) The risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	The significant effects arising from the proposed development alone and cumulatively with other relevant developments have been comprehensively assessed within each technical assessment (**Chapters 6 – 29** within this ES). Potential impacts from major accidents or disasters are discussed in **Chapter 4 Project Description**. Potential implications of climate change are discussed within relevant technical chapters. A greenhouse gas assessment is provided in **ES Appendix 6.3.4.2 Greenhouse Gas Footprint Assessment**.

Schedule 4 Information for Inclusion in Environmental Statements	How/Where this Information has been Provided within this ES
• (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 SEP and DEP are discussed in **Chapter 4 Project Description** and throughout the technical assessment chapters. This chapter (**Chapter 5 EIA Methodology**) 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 SEP and DEP taken together with other relevant projects and the potential inter-relationships and interactions between impacts.
(6) 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 (**Chapter 5 EIA Methodology**) and are also covered in more specific detail in each technical chapter EIA methodology and impact assessment.
(7) 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 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.	Mitigation measures include embedded mitigation, which are design decisions taken to reduce environmental impact of SEP and DEP as part of the design development and additional mitigation measures which 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.
(8) 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	Potential impacts from major accidents or disasters are discussed in **Chapter 4 Project Description**.

Schedule 4 Information for Inclusion in Environmental Statements	How/Where this Information has been Provided within this ES
information available and obtained through risk assessments pursuant to retained 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.	A Navigational Risk Assessment has also been prepared and is included as **Appendix 13.1 Navigation Risk Assessment**.
(9) 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.
(10) 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.
Competent Expert Regulation 14 (4): In order to ensure the completeness and quality of the environmental statement— (a) the applicant must ensure that the environmental statement is prepared by competent experts; and (b) the environmental statement must be accompanied by a statement from the applicant outlining the relevant expertise or qualifications of such experts.	The competency of the EIA team and experts is described in **Section 5.4**.

5.11 References

Department of Energy and Climate Change (DECC) (2011a). Overarching National Policy Statement for Energy (EN-1). July 2011
Department of Energy and Climate Change (DECC) (2011b). Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3). July 2011
Department of Energy and Climate Change (DECC) (2011c). Overarching National Policy Statement for Electricity Networks Infrastructure (EN-3). July 2011
Joint Nature Conservation Committee and Natural England (2013). Suggested Tiers for Cumulative Impact Assessment, 12 September 2013. JNCC, Peterborough
OSPAR Commission (2008). Assessment of the environmental impact of offshore wind-farms.
The Planning Inspectorate (2017a). Advice Note Three: EIA consultation and notification (version 7).
The Planning Inspectorate (2017b). Advice Note Ten: Habitats Regulations Assessment (version 8).
The Planning Inspectorate (2018) Advice Note Nine: Rochdale Envelope. Assessment (version 3).
The Planning Inspectorate (2019a) Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (version 2).
The Planning Inspectorate (2019b) Proposed Dudgeon and Sheringham Shoal Offshore Wind Farm Extensions Case Reference: EN010109
The Planning Inspectorate (2020a). Advice Note Seven: Environmental Impact Assessment, Preliminary Environmental Information, Screening and Scoping (version 7).
The Planning Inspectorate (2020b) Advice Note Twelve: Transboundary impacts and process (version 6).
RenewableUK (2013) RenewableUK CIA Guidelines for offshore wind farms.