NORTH FALLS

Offshore Wind Farm

ENVIRONMENTAL STATEMENT

Chapter 6 Environmental Impact Assessment Methodology

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Glossary of Acronyms

DESNZ	Department for Energy Security & Net Zero
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture
DCO	Development Consent Order
EEA	European Economic Area
EIA	Environmental Impact Assessment
EPP	Evidence Plan Process
ES	Environmental Statement
EU	European Union
GW	Gigawatt
HRA	Habitats Regulations Assessment
ICES	International Council for the Exploration of the Seas
IEMA	Institute of Environmental Management and Assessment
LSE	Likely Significant Effect
NFOW	North Falls Offshore Wind Farm Limited
OSPAR	Oslo/Paris Convention (for the Protection of the Marine Environment of the North-East Atlantic)
PEIR	Preliminary Environmental Information Report
PINS	Planning Inspectorate
UK	United Kingdom
UNECE	United Nations Economic Commission for Europe

Glossary of Terminology

The Project or North Falls	North Falls Offshore Wind Farm, including all onshore and offshore infrastructure.
The Applicant	North Falls Offshore Wind Farm Limited (NFOW).

6 Environmental Impact Assessment Methodology

6.1 Introduction

1. This chapter describes the methodology used in the Environmental Impact Assessment (EIA) presented within the Environmental Statement (ES) for the North Falls Offshore Wind Farm (herein 'North Falls' or 'the Project').

2. The EIA considers all relevant topics identified in the North Falls scoping report. Specifically, this chapter describes the approach used to identify, evaluate and mitigate potential likely significant effects (LSE), in EIA terms, using a defined proportionate approach to the assessment process.

3. 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'). Furthermore, the approach to the EIA and the production of this ES closely follows relevant guidance including:

   - Planning Inspectorate Advice Notes:
     - Advice Note Three: EIA consultation and notification (Planning Inspectorate, 2017a).
     - Advice Note Seven: Environmental Impact Assessment, Preliminary Environmental Information, Screening and Scoping (Planning Inspectorate, 2020a).
     - Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018).
     - Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects (Planning Inspectorate, 2022).
     - Advice Note Twelve: Transboundary impacts and process (Planning Inspectorate, 2020b).
     - Advice Note Seventeen: Cumulative Effects Assessment (CEA) relevant to nationally significant infrastructure projects (Planning Inspectorate, 2019).
   - National Policy Statements:
     - for Energy EN-1 (Department for Energy Security & Net Zero (DESNZ), 2023);
     - for Renewable Energy Infrastructure EN-3 (DESNZ, 2023); and
     - for Electricity Networks Infrastructure EN-5 (DESNZ, 2023);
   - South-east Marine Plan (HM Government, 2021);
   - East Inshore and East Offshore Marine Plans (HM Government, 2014);
   - Assessment of the environmental impact of offshore wind-farms (OSPAR Commission, 2008);
   - Relevant guidance issued by other UK Government and non-governmental organisations; and

- Receptor-specific guidance documents, described in each technical chapter.

4. This ES also gives due regard to the requirements of the Marine and Coastal Access Act 2009 and the Habitats Regulations (i.e. the Conservation of Habitats and Species Regulations 2017 and the Conservation of Offshore Marine Habitats and Species Regulations 2017). The Habitats Regulations Assessment (HRA) and Marine Conservation Zone Assessment are provided in separate documents.

6.2 Requirement for an EIA

5. The EIA process originates from the European Union (EU) and is codified by Directive 2011/92/EU (as further amended by Directive 2014/52/EU), to ensure the assessment of environmental effects of certain public and private projects. The provisions of the EU Directive were incorporated into English law for Nationally Significant Infrastructure Projects by the EIA Regulations. Such provisions have been retained in English law following the United Kingdom's (UK) exit from the EU in January 2020.

6. The EIA is intended to provide decision-makers with an understanding of the potential environmental consequences of a project and thereby facilitate the making of environmentally sound decisions (Bailey and Hobbs, 1990).

7. The primary objective of EIAs, as described in Article 2 of the EU 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*".

8. Further emphasis is given to treating each case individually, with a focus on significant effects considering evidence and consultations through the provisions contained in Article 3 and Article 8:

   "The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project…"

   "The results of consultations and information gathered pursuant to Articles 5 to 7 shall be duly taken into account in the development consent procedure".

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 North Falls during its construction, operation (and maintenance) and decommissioning.

6.3 Guidance for an EIA

10. The approach to the EIA closely follows relevant guidance notes, policy statements, and industry best practice documents as set out in Table 6.1. It should be noted that Table 6.1 presents guidance documents applicable to the general approach to undertaking an EIA. Where additional topic-specific assessment guidance is available, this is detailed within the corresponding topic chapter of this ES. Furthermore, Chapter 3 Policy and Legislative

Context of the ES (Document Reference: 3.1.5) presents the relevant policies and legislation applicable to the Project.

Table 6.1 Documents used to guide the EIA methodology

Document
National Policy Statements
Overarching National Policy Statement for Energy (EN-1) (DESNZ, 2023a)
National Policy Statement for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b)
National Policy Statement for Electricity Networks Infrastructure (EN-5) (DESNZ, 2023c)
Planning Inspectorate Advice Notes
Advice Note Three: EIA Consultation and Notification (Planning Inspectorate, 2017a)
Advice Note Six: Preparation and submission of application documents (Planning Inspectorate, 2021a)
Advice Note Seven: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements (Planning Inspectorate, 2020a)
Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018)
Advice Note Ten: Habitat Regulations Assessment relevant to nationally significant infrastructure projects (Planning Inspectorate, 2022)
Advice Note Eleven: Working with public bodies in the infrastructure planning process (Planning Inspectorate, 2021b)
Advice Note Twelve: Transboundary Impacts and Process (Planning Inspectorate, 2020b)
Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects (Planning Inspectorate, 2019)
Advice Note Eighteen: The Water Framework Directive (Planning Inspectorate, 2017c)
Industry EIA Guidance Documents
Assessment of the environmental impact of offshore wind-farms (OSPAR Commission, 2008)
Offshore Wind Farms: Guidance Note for Environmental Impact Assessment in Respect of Food and Environment Protection Act 1985 and Coastal Protection Act 1949 requirements (Cefas, 2004)
Cumulative Impact Assessment Guidelines - Guiding Principles For Cumulative Impact Assessment in Offshore Wind Farms (RenewableUK, 2013)
Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Cefas, 2012)
Professional EIA Guidance Documents
Guidelines for Environmental Impact Assessment (IEMA, 2004)
Guide to Shaping Quality Development (IEMA, 2016)
Delivering Proportionate EIA, A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017)

6.4 Competent Experts

11. As per Regulation 14(4) of the EIA Regulations, the EIA must be prepared by ‘competent experts’ with details of that competency (including relevant expertise and qualifications of such experts) provided within the associated ES.

12. Royal HaskoningDHV has provided environmental, development and consenting support on over 14GW of renewable energy projects across 26 UK offshore wind farms. Their EIA activities and ESs are accredited by the

Institute of Environmental Management and Assessment (IEMA) under the EIA Quality Mark Scheme. This demonstrates Royal HaskoningDHV's commitment to ensuring EIA is undertaken at high quality and in accordance with industry practice.

13. Royal HaskoningDHV's lead authors are senior and chartered professionals with a significant track record in undertaking technical assessment and EIA in their discipline. The team undertaking the EIA for the Project are predominantly Royal HaskoningDHV professional consultants. The team is comprised of a dedicated core team 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 then supported by a wider team of technical specialists taking responsibility of the data collection, data analysis and technical impact assessment.

14. Some of the technical assessment and associated chapters have been undertaken by specialist consultancies outside Royal HaskoningDHV (see Table 6.2).

Table 6.2 Third party specialist ES chapter authors

Chapter	Author	Competency
ES Chapter 11 Fish and Shellfish Ecology (Document Reference: 3.1.13)	Brown and May Marine Ltd (BMM)	BMM has authored Commercial Fisheries and Fish Ecology ES chapters and technical reports for a wide range of consented offshore wind farm projects off the east coast of England. BMM are currently fulfilling the Fisheries Liaison Officer (FLO) role for a wide range of projects in the region, including Greater Gabbard and Galloper offshore wind farms.
ES Chapter 14 Commercial Fisheries (Document Reference: 3.1.16)	BMM	
ES Chapter 15 Shipping and Navigation (Document Reference: 3.1.17)	Anatec	Anatec has extensive experience of carrying out shipping and navigation assessments for offshore renewables projects as well as other marine developments in the UK and Worldwide.
ES Chapter 17 Aviation and Radar (Document Reference: 3.1.19)	Cyrrus	Cyrrus Limited has extensive experience in the aviation and renewable energy industries, working with airports across Europe and the Middle East, and wind energy developers in the UK and the Republic of Ireland.
ES Chapter 28 Human Health (Document Reference: 3.1.30)	Ben Cave Associates (BCA)	BCA is an independent public health consultancy, conducting robust analysis and using creative approaches. BCA conduct Health Impact Assessment and provide health input to environmental assessment and have been doing so across the UK and globally, since 2001. BCA has worked on various offshore wind farms, including Norfolk Vanguard and Sheringham and Dudgeon Extension Projects (east coast of England), and White Cross offshore wind farm on the west coast of England.
ES Chapter 31 Socio-economics and Chapter 32 Tourism and Recreation (Document Reference: 3.1.33)	Hatch	Hatch are a global independent consultancy with extensive experience in analysing and communicating economic impacts of offshore wind projects.

15. In addition, technical consultation (such as through the Evidence Plan Process (EPP) discussed below and in ES Chapter 7 Technical Consultation, (Document Reference: 3.1.9) provides additional expert input into the assessment process.

6.5 Consultation

16. As outlined in ES Chapter 1 Introduction (Document Reference: 3.1.3) and discussed further in ES Chapter 7 Technical Consultation, (Document Reference: 3.1.9), the EIA methodology has been informed by a Scoping Opinion that was provided by the Planning Inspectorate in August 2021.

17. In addition, ongoing technical consultation (e.g., via the EPP) has informed the methodology for the EIA, including via written exchange on method statements for most topics. Each technical chapter (Chapters 8 to 33, (Document References: 3.1.10 to 3.1.35)) provides details of the feedback received on each topic.

6.6 Scope

6.6.1 Study area

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

6.6.2 Project design envelope

19. The EIA for the Project is based on a project design envelope (or 'Rochdale Envelope') approach on a topic-by-topic basis. As is recognised by the Planning Inspectorate in Advice Note Nine (PINS, 2018), at the time of submitting an application, offshore wind developers may not know the precise nature and arrangement of infrastructure and associated infrastructure that make up the proposed development. This is due to a number of factors such as the evolution of technology and the need for further detailed 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 granting of the Development Consent Order (DCO).

20. The general principle of the assessment, under the project design envelope approach, is that for each receptor and potential impact, the impact assessment will be based on assessing project design parameters likely to result in the maximum adverse effect (i.e., the worst case scenario). The Rochdale Envelope for a project outlines the realistic worst case scenario for each individual impact, so that it can be safely assumed that all other scenarios within the design envelope will have a less significant effect.

21. If a combination of design parameters leads to a scenario that cannot realistically occur, then the worst case scenario will be reconsidered, and a realistic set of worst case parameters will be assessed. The end result will be an EIA based on clearly defined environmental parameters that will define the range of development possibilities and hence the likely significant environmental effects that could result from the Project. This represents a precautionary but robust assessment of likely significant effects at this stage of the development process.

22. Using the project design envelope approach means that receptor-specific likely significant effects draw on the options from within the wider envelope that represent the most realistic worst case scenario. It is also worth noting 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.

23. As discussed in ES Chapter 5 Project Description (Document Reference: 3.1.7), one area of optionality is in relation to the national grid connection point. NFOW is currently reviewing the following options for the Project's electricity transmission national grid connection point:

- Option 1: Onshore electrical connection at a national grid connection point within the Tendring peninsula of Essex, with a project alone onshore cable route and onshore substation infrastructure.
- Option 2: Onshore electrical connection at a national grid connection point within the Tendring peninsula of Essex, sharing an onshore cable route (but with separate onshore export cables) and co-locating separate project substation infrastructure, with Five Estuaries; or
- Option 3: Offshore electrical connection, supplied by a third party.

24. These options are discussed further in ES Chapter 5 Project Description (Document Reference: 3.1.7) and the relevant worst case scenario is assessed in each technical chapter (Chapters 8 to 33 (Document Reference: 3.1.10 to 3.1.35)). A project design envelope approach is also used during the Cumulative Effects Assessment (CEA) (described in more detail in Section 6.7.3). In particular, optionality has been included within the project design envelope for three different build-out 'scenarios' for how the onshore infrastructure for North Falls and Five Estuaries may be constructed, under Options 1 and 2 described above. The relevant worst case scenario is assessed within the CEA section of each technical chapter (Chapters 8 to 33 (Document Reference: 3.1.10 to 3.1.35)). These scenarios are described in Chapter 5 Project Description (Document Reference: 3.1.7).

6.6.3 Mitigation

25. For the purposes of the ES, two types of mitigation have been defined:

- Embedded mitigation: consisting of mitigation measures that are identified and adopted as part of the design evolution of the Project, and are included and 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

likely significant effects. Additional mitigation is therefore subsequently adopted as a commitment of the Project.

26. Embedded mitigation which has been agreed at this stage is set out within ES Chapter 5 Project Description (Document Reference: 3.1.7) and outlined where relevant within each topic chapter of the ES.

27. Where an impact assessment predicts that an aspect of the Project will give rise to likely significant effects or in response to stakeholder feedback where appropriate, additional mitigation measures have been considered and discussed with the statutory consultees in order to avoid impacts or reduce them to acceptable levels.

28. Additional mitigation is typically specific to a limited number of receptors and is referenced in each chapter of relevance. An exception is the commitment to an exclusion zone for surface piercing infrastructure within 1 nautical mile (nm) of The Sunk International Maritime Organisation Routing Measures, unless otherwise agreed with the Maritime and Coastguard Agency (MCA) (discussed further in ES Chapter 15 Shipping and Navigation). While this mitigation would benefit other receptors, in particular Offshore Ornithology (ES Chapter 13) and Seascape and Landscape Visual Impact Assessment (ES Chapter 29), all offshore assessments (other than Chapter 15) are based on surface piercing infrastructure throughout the array area, which represents an appropriate worst case scenario in the event that an alternative to the 1nm exclusion zone can be agreed with the MCA post consent.

6.7 Approach to EIA

29. Undertaking an EIA relies on a series of steps to identify a potential impact and arrive at a conclusion of likely significance of effect for each potential impact identified. The process involves following the following steps:

- Characterise the existing environment (environmental baseline) with respect to each topic area;
- Assess the likely significant environmental effects of the Project by:
    - Identifying the source of potential impacts (e.g., specific construction activities or design features);
    - Establishing if a pathway exists between the source of the impact and the identified receptors (e.g., airborne, waterborne or subterranean);
    - Identify the sensitivity of each receptor to the relevant impacts;
    - Identify the magnitude of the impact predicted;
    - Consideration of the receptor sensitivity and likely impact magnitude, in order to assess the likely significance of effect for the potential impact.
- Assess the potential for the likely significant effects of the Project to act cumulatively with the effects of other plans and projects:
    - In the UK (CEA); and
    - Internationally (transboundary effects assessment).

30. The following sections provide further details on the above steps.

6.7.1 Characterisation of the existing environment (environmental baseline)

31. In order to undertake an assessment of likely significant effects, an understanding of the current condition of the environmental baseline is required. For each topic chapter, a review of the existing environment has been undertaken in order to determine, and agree, the existing environmental conditions in the study area.

32. Characterisation of the environmental baseline for each topic followed the steps listed below with the details provided in each of the respective technical chapters:

- Review of available information and data (either through a desk-based exercise and/or survey data where necessary);
- Determine if sufficient data is available to assess the significance of likely environmental effects with sufficient confidence;
- If further data is required, ensure data gathered addresses key data gaps;
- Review information gathered to ensure the environment can be characterised in sufficient detail; and
- Identify the presence of relevant receptors with respect to each topic.

33. The specific approach to establishing the characteristics of the existing environment (upon which likely significant effects can be assessed) is set out in each technical chapter within this ES. This approach has taken into account feedback in the Scoping Opinion alongside consultation with a range of statutory and non-statutory stakeholders.

6.7.1.1 Future trends

34. In addition to characterising the existing environment, anticipated trends in baseline conditions are identified and incorporated in the impact assessments, for example the likely significant effects of climate change on receptors, in accordance with the requirements of the EIA Regulations.

35. The EIA Regulations require an outline of the expected evolution of the baseline, in the absence of the Project being developed (as far as this can be assessed 'with reasonable effort' based on available information and scientific knowledge). Each respective topic chapter presents the anticipated trend of the existing environment over the anticipated timescales of the Project's construction and operational lifespan. Such trends reflect natural changes in the baseline environment that may be expected to occur without development.

6.7.1.2 Confidence and limitations

36. Limitations to characterising the baseline environment (e.g., data coverage and confidence) are noted within each respective topic chapter. Where it is practicable to do so, such limitations will be addressed within the ES submitted with the DCO application. Addressing such limitations may be achieved through continued consultation with stakeholders and / or further survey efforts where appropriate and proportionate. The extent to which

certain limitations may materially influence the outcome of the EIA are highlighted within the respective topic chapters.

6.7.2 Assessment of likely significant effects

37. The approach to making balanced assessments for the Project has been guided by the professional judgement of a team of technical specialists using available data and new data, drawing on extensive prior experience. In order to provide a consistent framework and system of common tools and terms, a matrix approach has been used to frame and present the expert judgements made. For each topic, definitions of sensitivity and magnitude of impact are presented and then applied to the impact scenarios and receptors being assessed (see Section 6.7.2.3 and Section 6.7.2.3). These definitions are detailed fully in each technical chapter.

6.7.2.1 Impact identification

38. The impact assessment considers the potential for impacts during the construction, operation and maintenance, and decommissioning phases of the Project. Potential impacts may be classified as follows:

- Direct impacts: these may arise from impacts associated with the construction, operation and maintenance, or decommissioning of the Project;
- Indirect impacts: these may be 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).
- Inter-relationships between environmental topic areas (see Section 6.7.2.6);
- Interactions between impacts, whereby the same receptor or receptor group is affected by multiple impacts acting together (see Section 6.7.2.7; or
- Cumulative impacts: these may occur as a result of the Project in conjunction with other existing or planned projects within the study area for each receptor (see Section 6.7.2.6).

6.7.2.2 Impact pathway

39. The assessment will use 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 but robust 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 cable installation and a resultant effect e.g. re-suspension of sediments);
- Pathway – the means by which the effect of the activity could impact a receptor (e.g., for the example above, re-suspended sediment could settle and smother seabed); 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 seabed).

40. In general, the impact assessment for each topic will use this model when considering the potential impacts arising during the construction, operation and maintenance and decommissioning phases of the Project. In some cases, it is appropriate to use other models for assessment, for example for the shipping and navigation assessment where a risk assessment approach is required instead.

6.7.2.3 Receptor sensitivity

41. As discussed in Section 6.7.1, each topic chapter identifies the relevant receptors within the associated study area which may experience potential direct or indirect effects as a result of the construction, operation, maintenance or decommissioning of the Project. Identification of the receptors has been aided through engagement with stakeholders, both statutory and non-statutory as discussed in ES Chapter 7 Technical Consultation, (Document Reference: 3.1.9).

42. Once identified, receptors have been assigned a level of sensitivity proportionate to its vulnerability to each relevant impact. The overall receptor sensitivity is determined by considering a combination of 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.

43. Example definitions of the different sensitivity levels for a generic receptor are given in Table 6.3. It should be noted that the definitions of sensitivity are not constant across all topic areas, and specific reference to the definitions of sensitivity for the topic-relevant receptors are provided within each respective topic chapter.

Table 6.3 Example definition 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 tolerance to accommodate, adapt to or recover from the anticipated impact.
Negligible	Individual receptor is generally tolerant to and can accommodate or recover from the anticipated impact.

44. In addition, the receptor value is considered as a factor in the expert judgement conclusions in the impact assessment. For example, whether the receptor is rare, has protected or threatened status, importance at local, regional, national or international scale, and in the case of biological receptors whether the receptor has a key role in the ecosystem function. An example definition for each value level which could be attributed to a generic receptor is given in Table 6.4.

Table 6.4 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 / rare but with high potential for mitigation.
Negligible	Not considered to be important (for example common or widespread).

45. The terms 'high value' and 'high sensitivity' are not necessarily linked within a particular impact, and it is important not to inflate effect significance specifically because a feature is valued.

46. Expert judgement is particularly important when determining the sensitivity of receptors. For example, an Annex II species (under the Habitats Regulations) 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.

6.7.2.4 Assessment of impact magnitude

47. In order to predict the significance of effect, it is fundamental to establish the magnitude and probability of an impact occurring through a consideration of:

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

48. Definitions of magnitude are topic specific and are provided in each topic chapter. Examples are provided in Table 6.5.

Table 6.5 Example of definitions of the magnitude levels for a generic receptor

Magnitude	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.
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.
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.
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.

6.7.2.5 Assessment of significance

49. The significance of effect 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.

50. Where guidance is available for defining sensitivity and magnitude (whether from professional guidance, UK Government publications or bespoke definitions agreed with stakeholders) this is referred to. If such sources are available but have not been used, the reason for the approach taken is given.

51. The assessment of effect significance is a function of the sensitivity of the receptor (see Section 6.7.2.3) and the magnitude of the impact (see Section 6.7.2.4). The determination of significance is guided by the use of a significance of effect matrix, as shown in Table 6.6.

52. Definitions of each level of significance are provided in each topic chapter and examples are provided in Table 6.7.

Table 6.6 Significance of effect matrix

		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*	*Negligible*	*Negligible*	*Negligible*	*Minor*	*Minor*	*Moderate*
	Negligible	*Minor*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Minor*

Table 6.7 Example definitions of effect significance

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 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 localised issues but are unlikely to be important in the decision making process.
Negligible	No discernible change in receptor condition.
No change	No effect, therefore, no change in receptor condition.

53. Likely significant effects identified within the assessment as major or moderate are regarded within the ES as significant. As discussed in Section 6.6.3, mitigation will be identified where practicable to avoid or reduce likely significant effects.

6.7.2.6 Inter-relationships

54. The impact assessment also considers the inter-relationship of effects on individual receptors. For example, a landscape and visual effect and noise

effect may result in a cumulative effect on a single receptor; or the effects on fish and shellfish inter-relate with the effects of changes to prey resource for marine mammals and ornithology. This has been covered within each technical chapter in the inter-relationship section.

6.7.2.7 Interactions

55. The effects identified and assessed for each topic have the potential to interact with each other, which could give rise to synergistic effects as a result of that interaction. The areas of interaction between effects are presented in each chapter, along with an indication as to whether the interaction may give rise to synergistic effects. This provides a screening tool for which effects have the potential to interact. There is then an assessment for each receptor (or receptor group) related to these effects in two ways. Firstly, the effects are considered within a development phase (i.e., construction, operation or decommissioning) to see if, for example, multiple construction effects could combine. Secondly, a lifetime assessment is undertaken which considers the potential for effects on receptors across development phases.

6.7.3 Cumulative effects assessment methodology

56. A cumulative effect is an effect that results from changes caused by other past, present or reasonably foreseeable actions when considered together with North Falls. The CEA therefore considers other reasonably foreseeable development-related activities occurring within a similar timeframe to the construction and operation of North Falls, for which there is reasonable information upon which to base a meaningful assessment.

57. The Planning Inspectorate Advice Note Nine and its complementary guidance in Advice Note Seventeen (Planning Inspectorate, 2018a; Planning Inspectorate, 2019) advise that the following plans and projects should be considered in the CEA:

- Projects that are under construction;
- Permitted applications, not yet implemented;
- Submitted applications not yet determined;
- Projects on the Planning Inspectorate's Programme of Projects;
- Development identified in relevant Development Plans, with weight being given as they move closer to adoption and recognising that much information on any relevant proposals will be limited; and
- Projects identified in other policy documents as development reasonably likely to come forward.

58. Where it is helpful to do so 'tiers' of these other projects' statuses have been defined as well as the availability of information to be used within the CEA. This approach is based on the three tier system proposed in Planning Inspectorate Advice Note Seventeen which indicates the certainty which can be assigned to each development.

59. As advised by Natural England in the Benthic and Intertidal Ecology, Marine Mammals and Offshore Ornithology chapters, a more refined tiering system

based on the guidance issued by Natural England and Defra (2022) is employed and involves seven tiers as presented below:

- Tier 1: built and operational projects where they have not been included within the environmental characterisation survey, i.e., they were not operational when baseline surveys were undertaken, and/or any residual effect may not have yet fed through to and been captured in estimates of "baseline" conditions, such as "background" distribution or mortality rate for birds;
- Tier 2: projects under construction plus Tier 1 projects;
- Tier 3: projects that have been consented (but construction has not yet commenced) plus Tiers 1 and 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 have produced a Preliminary Environmental Information Report (PEIR) and have characterisation data within the public domain, plus Tiers 1-4; and
- Tier 6: 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 1-5; and
- Tier 7: projects that have been identified in relevant strategic plans or programmes plus Tiers 1-6.

60. The CEA is a two part process in which an initial list of projects with the potential to interact with North Falls are identified, based on the potential mechanism of interaction. The tiered approach is then adopted to enable further assessment based on the availability of information for each project.

61. In line with the RenewableUK CEA Guidelines for offshore wind farms (RenewableUK, 2013), the approach to CEA 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 significant effects), particularly those that are known but currently lack detailed design documentation, such as those projects at the scoping stage only. Projects can be considered in the CEA only where it is considered that there is sufficient detail with which to undertake a meaningful assessment. Where there is a lack of specific information in the public domain, such as how and when (or if) projects will be built, it is not always possible to undertake a meaningful CEA.

62. Where projects which were sufficiently implemented at the time of undertaking the characterisation of the existing environment as their effects had been fully determined, these are considered as part of the baseline for the EIA in line with Advice Note Seventeen (Planning Inspectorate, 2019).

63. Offshore cumulative effects may arise from interactions with the following activities and industries (but are not limited to):

- Other offshore wind farms;
- Aggregate extraction and dredging;

- Licensed disposal sites;
- Sub-sea cables and pipelines;
- Potential port/harbour development; and
- Oil and gas activities.

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

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

65. Due to ongoing co-ordination and collaboration with the Five Estuaries Offshore Wind Farm Limited (VEOWFL), the projects have shared data and information informing their environmental assessments, as well as collaboration on design of the Projects' onshore infrastructure. This has included the development of build-out scenarios for the build out of the Projects' onshore infrastructure. The CEA section of each technical chapter therefore include a detailed consideration of the Five Estuaries project considering these different build-out scenarios.

66. Using the design information provided by VEOWL, and checked/updated against the submission of the Five Estuaries ES, a realistic worst case cumulative scenario has been developed for each onshore chapter.

67. This realistic worst case cumulative scenario considers three potential cumulative scenarios, as outlined in ES Chapter 5 Project Description (Document Reference: 3.1.7):

- **Scenario 1:** North Falls 'Option 2' build out is progressed, and VEOWL undertakes landfall, onshore substation construction and cable pull which overlaps with North Falls equivalent works. In this scenario, onshore cable route associated works, including TCCs, accesses and haul road, all remain in place and are used by the second project during its construction.
- **Scenario 2:** North Falls 'Option 1 build out is progressed, and VEOWL undertakes landfall, onshore substation and onshore cable route construction and cable pull, all of which does not overlap with North Falls' equivalent works. There would be a gap of between 1 and 3 years between each Projects' construction. In this scenario, onshore cable route associated works, including TCCs, accesses and haul road, all remain in place and are used by the second project during its construction.
- **Scenario 3:** North Falls 'Option 1' build out is progressed, and VEOWL undertakes a separate landfall, onshore substation and onshore cable route construction and cable pull with a multi-year (i.e. >3 year) gap between the two construction activities. In this scenario, there is no reuse

in onshore temporary works between the two projects, and all onshore cable route associated works are rebuilt and reinstated in full by the second project.

68. The outcomes of this detailed CEA with Five Estuaries has then been subject to a further CEA with other plans and projects identified through the approach outlined above, to reach overall conclusions about the potential cumulative effects arising from the development of North Falls and other plans and projects. The specific approach taken for each technical topic is described the CEA section of each chapter.

6.7.4 Transboundary effects assessment methodology

69. 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 effects.

70. Regulation 32 of the EIA Regulations sets procedures to address issues associated with a development that is likely to have a significant effect on the environment in a Member State of the European Economic Area (EEA).

71. 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 is provided in the Planning Inspectorate Advice Note Twelve (Planning Inspectorate 2020b).

72. For the Project, the potential for transboundary effects has been identified in relation to marine mammals, offshore ornithology, commercial fisheries, shipping and navigation, aviation and radar during all phases, and offshore archaeology and marine heritage during construction within the Scoping Report (North Falls Offshore Wind Farm Ltd., 2021).

6.7.5 Assumptions and limitations

73. Topic-specific assumptions and limitations to the assessment are highlighted within the respective topic chapters. Assumptions and limitations within the respective topic chapters do not affect the ability to carry out a meaningful and robust assessment. Further consultation with statutory and non-statutory stakeholders will be undertaken to agree on the approach to address such limitations as far as is practicable.

6.8 Summary

74. This chapter of the North Falls ES sets out a framework methodology for the assessments presented within each of the individual technical topic chapters to follow. Where a technical topic assessment departs from the framework set out within this chapter, it will be highlighted and explained within the respective topic chapter.

75. The approach to the EIA outlined within this chapter accords with all relevant legislation and policy, in particular the Planning Act 2008 and associated EIA Regulations.

6.9 References

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