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Environmental Impact Assessment - Scoping Report CampionWind Offshore Wind Farm

Array Area

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Executive Summary

In January 2022, as part of Crown Estate Scotland's (CES) ScotWind Leasing Round, Shell and ScottishPower Renewables were successfully awarded an Option Agreement (granting exclusive rights) to jointly develop a floating offshore wind farm within part of the East 2 (E2) Plan Option – located off the east coast of Scotland (as set out withing the Sectoral Marine Plan for Offshore Wind). This offshore wind farm will be developed within the E2b area (hereafter referred to as the E2b Option Agreement Area (OAA)). The E2b OAA is located approximately 100 kilometres (km) east offshore of the Aberdeenshire coast and is 860 km² in size.

CampionWind Ltd ('the Applicant') has been created as a 50/50 Joint Venture company between Shell and ScottishPower Renewables to progress the proposals for an offshore wind farm in the E2b OAA, which will be named CampionWind Offshore Wind Farm.

Working together for a cleaner energy future, the Applicant has 70 years of combined experience in Scotland and over 50 years' experience in the North Sea. In addition, the partners have over 15 years of combined experience in floating wind.

CampionWind will help support the Scottish Government's target of net-zero emissions of all greenhouse gases by 2045 and will also help drive ambitions for green energy independence.

The Terms of the Option to Lease Agreement are dependent upon the Applicant being awarded all key consents and permissions to construct and operate the Project from the relevant regulatory authorities. This process will be subject to an Environmental Impact Assessment (EIA), with an EIA Report to be prepared to underpin any consent applications.

Due to ongoing discussions with the National Energy System Operator (NESO) regarding the outcome of the Holistic Network Design Follow Up Exercise (HND FUE), the grid connection location and timelines for CampionWind Offshore Wind Farm are currently unknown. Therefore, separate scoping and consent applications will be submitted for:

- The Offshore Wind Farm Array Area ('the Project'); and
- Transmission Infrastructure (transmission related offshore export cable corridor and onshore infrastructure (i.e. landfall, cable corridor and substation).

This Scoping Report will only relate to the offshore aspects of the Project. Scoping and the subsequent consent application for Transmission Infrastructure will be progressed following confirmation of the grid connection location and timelines. To ensure the entirety of CampionWind is assessed, Transmission Infrastructure will be assessed within the Cumulative Effects Assessment of the Project application commensurate to the level of detail available at the time. Furthermore, dependant on timelines the Transmission Infrastructure Scoping Report will likely include residual assessments from the Project Scoping and / or consent applications.

The Project will have a maximum electrical export capacity of up to 3 gigawatts (GW). Whilst the Applicant's Option to Lease Agreement (OLA) with CES states an intended installed capacity of 2 GW, the Applicant intends to engage further with CES and the upcoming Sectoral Marine Plan review process with the intention of amending this capacity to 3 GW. The exact generating capacity of the offshore wind farm array depends upon a range of Wind Turbine Generator (WTG) specifications, which are not yet agreed.

The Project will comprise of the following:

- up to 210 WTGs including floating units (platforms and station keeping system) and associated moorings and anchoring systems or fixed foundations;
- array cables;
- accommodation platform(s) (if required); and

• offshore substation(s).

CampionWind Offshore Wind Farm will utilise floating WTGs, to be installed within the OAA with water depths on average of 77 metres (m), as the water depth range across the site generally exceeds the maximum depth at which fixed structure foundations are generally deployed. However, there is potential for fixed WTGs to be incorporated into the Project as the design evolution progresses. Fixed design WTGs are an established technology, that may be deployed at greater water depths in the future and therefore be suitable for CampionWind. Whilst floating offshore wind is a comparatively novel technology, WTG floating units have already been successfully proven off the Aberdeenshire coast. The current and projected rate of floating technology development and the volume effect of an up to 3 GW project is anticipated to decrease costs. Therefore, there is a high confidence in the feasibility of floating technology for CampionWind Offshore Wind Farm, which has the potential to become the joint largest floating offshore wind project in the world. The final design, including the incorporation of floating, and fixed technologies within the Project, will be confirmed in the EIA Report.

As the EIA progresses, the Project design will be refined as further information is gained from surveys and responses from stakeholder and public engagement.

The Applicant will seek consent to develop the offshore array area components of the CampionWind Offshore Wind Farm project located within the OAA, which is the subject of this EIA Scoping Report. Following this, the Applicant will seek the following consents, licences, and permissions for the Array Area:

- Section 36 consent application under The Electricity Act 1989; and
- Marine Licence(s) under Marine and Coastal Access Act 2009.

This Scoping Report considers the proposed infrastructure associated with the CampionWind Offshore Wind Farm located within the OAA in the offshore environment. As such, it is submitted to Marine Directorate Licensing Operations Team (MD-LOT) with a request for a formal EIA Scoping Opinion. The purpose of the Scoping Report is as follows:

- to establish the people and environmental receptors likely to be significantly affected by the Project, and the work required to take forward the assessment of potentially significant effects. Impacts that are unlikely to have a significant effect on relevant receptors are identified and proposed to be scoped out of the EIA where there is clear justification for doing so;
- to summarise key legislation and policy relevant to the Project; and
- to provide stakeholders with information on the Project to refine the scope of the assessment; focus on key issues and engagement on the key topics to be addressed, plus provide the baseline data sources and assessment methodologies to be used in the EIA Report.

Scoping occurs before the Project is at an advanced stage of engineering design. This allows the stakeholder feedback obtained via the Scoping Opinion to inform the ongoing design evolution of the Project. Within this Scoping Report, additional studies and surveys are proposed to inform the EIA process and preliminary discussions on potential mitigation measures are also included.

The resultant EIA Report will be based upon the Scoping Opinion received in response to the formal request for Scoping Opinion.

/sA

Richard Eakin Project Director – CampionWind Limited

1. Introduction

1.1 **CampionWind**

- 1.1.1 CampionWind Limited ('the Applicant') is a 50/50 Joint Venture company between Shell New Energies Holding Limited (Shell) and ScottishPower Renewables (SPR) United Kingdom (UK) Limited. The Joint Venture is formalised by way of a Shareholder Agreement.
- 1.1.2 In January 2022, Crown Estate Scotland (CES) awarded Shell and SPR an exclusivity agreement to jointly develop a project (CampionWind) within the East 2b (E2b) Option Agreement Area (OAA) (Crown Estate Scotland 2022). This is located in the East Region as defined in the Scottish Government's Sectoral Marine Plan for Offshore Wind Energy (Crown Estate Scotland 2022). An Option to Lease Agreement (OLA) for CampionWind was signed in April 2022.
- 1.1.3 CampionWind is a proposed floating offshore wind farm with a grid connection capacity of up to 3 gigawatts (GW). There is the potential to incorporate fixed structures into the design.

1.2 Purpose of this Scoping Report

- 1.2.1 This Scoping Report relates to the offshore aspects of CampionWind within the Offshore Wind Farm Array Area ('the Project') only and as such, it supports requests to the relevant competent authority (Marine Directorate Licensing and Operations Team (MD-LOT)) for an Environmental Impact Assessment (EIA) Scoping Opinion. A separate Scoping Report(s) will be submitted to cover the CampionWind Offshore Wind Farm Transmission Infrastructure (offshore export cable corridor and onshore infrastructure (i.e., landfall, cable corridor and substation) following confirmation of Grid Connection.
- 1.2.2 Establishing which aspects of the environment are likely to be significantly impacted by the Project is captured in the EIA Scoping process, which involves identifying the following:
 - the people and environmental resources (collectively known as 'receptors' or 'features') that could be significantly affected by the Project; and
 - the work required to take forward the assessment of these potentially significant effects.
- 1.2.3 The potential environmental impacts that are proposed to be scoped into the EIA are based on the existing evidence base. Impacts that are unlikely to have a significant effect on relevant receptors are identified and proposed to be scoped out of the EIA where there is clear justification for doing so. It is recognised that a number of items cannot be scoped out until further information is known about the Project and the existing environment and this is highlighted accordingly.
- 1.2.4 This Scoping Report aims to provide stakeholders with information on the Project to refine the scope of the assessment; focus on the key issues and engage on the key topics to be addressed, plus provide the baseline data sources and assessment methodologies to be used in the Environmental Impact Assessment Report (EIA Report).
- 1.2.5 Scoping occurs before the Project is at an advanced or fixed stage of engineering design. This allows the stakeholder feedback obtained via the Scoping Opinion to be used to inform the ongoing design evolution of the Project. The resultant EIA Report will be based upon the Scoping Opinion received in response to this Scoping Report.
- 1.2.6 This Scoping Report has been prepared in accordance with the following EIA Regulations:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 in regards to Section 36 consent; and
- The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended 2017).
- 1.2.7 EIA Scoping is not mandatory, under the EIA Regulations; however, it is considered good practice to request a Scoping Opinion. The purpose of this Scoping Report is to request a formal Scoping Opinion from the Scottish Ministers in accordance with Requirement 12 of the Electricity Works (EIA) Regulations 2007, Regulation 13 of the Marine Works (EIA) Regulations 2007 (as amended 2017). Therefore, in accordance with the EIA Regulations, the Applicant is providing this Scoping Report to help refine the scope of the assessment and focus on the key issues.
- 1.2.8 **Table 1.2.1** sets out the requirements for scoping under the EIA Regulations. The table also describes where in this Scoping Report the requirements have been addressed.

Table 1.2.1 The EIA Regulations requirements for Scopin	Table 1.2.1	The EIA Regulations	requirements	for Scopin
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Requirement	Location in the Scoping Report
A description of the location of the development and a plan sufficient to identify the land.	Figure 1.1: Scoping Boundary in Appendix 1A, Section 1.4, and Section 2.3 in Chapter 2: Project Description.
A brief description of the nature and purpose of the development and its likely significant effects on the environment.	Chapter 2: Project Description for a description of the nature and purpose of the development.Chapter 5: Environmental Aspects for description of the likely significant effects on the environment.
Such other information or representations as the developer may wish to provide or make.	Contained within Chapter 5: Environmental Aspects.

1.2.9 The Applicant hereby requests that Scottish Ministers state in writing their respective opinion, on/in relation to the scope and level of detail of information to be provided in the EIA Report, as stipulated in Regulation 12 and 14 of the two sets of EIA Regulations.

1.3 Key consents, licences, and permissions

1.3.1 **Table 1.3.1** summarises the key consents, licences, and permissions that are required to construct and operate the Project.

Consents / Licences / permits	Regulatory body	Consent requirements
Electricity Act 1989, Section 36 (s.36) Consent	Marine Scotland (on behalf of Scottish Ministers)	Scottish Ministers are responsible for determining applications under Section 36 (s.36) of the Electricity Act 1989 for offshore generating stations with an installed capacity exceeding 1 megawatt (MW) in Scottish territorial waters, and over 50MW in the Scottish Renewable Energy Zone (REZ), extending out to

Table 1.3.1 Key consents

Consents / Licences / permits	Regulatory body	Consent requirements
		200nm from shore. Such applications are processed on behalf of Scottish Ministers by MD-LOT.
		s.36 consent is required for the generating station and ancillary infrastructure, including the offshore wind array and inter-array cables, as well as to establish the overall principle of the Project.
		The requirement for an EIA for electricity generation projects requiring consent under s.36 of the Electricity Act 1989 is provided for in Scotland by The Electricity Works (EIA) (Scotland) Regulations 2017 (herein referred to as 'Electricity Works (EIA) (Scotland) Regulations 2017').
Marine licences under the Marine and Coastal Access Act 2009 (between 12 and 200nm)	Marine Directorate	The Marine and Coastal Access Act 2009 introduces a framework for sustainable management of the UK seas, including around Scotland, beyond 12 nm.
		Marine licences will be required to undertake prescribed marine licensable activities for the Project, including deposition of cables or other objects on or within the seabed, installation of any necessary cable protection, installation of mooring lines and anchors, and the installation of any wider infrastructure or substructures required.
		The Marine Works (EIA) Regulations 2007 (as amended 2017) are applicable to applications made to MD-LOT for marine licences.

- 1.3.2 CampionWind will secure a connection point to supply the energy produced from the wind farm to the grid with the National Energy System Operator (NESO). The location of this connection point is currently undetermined and will be confirmed following the finalisation of the National Electricity System Operator Holistic Network Design Follow Up Exercise (HND FUE).
- 1.3.3 This Scoping Report considers all the offshore infrastructure within the Array Area only (as listed in **paragraph 1.4.3**) for application of a Section 36 consent under The Electricity Works (EIA) (Scotland) Regulations 2017 and a Marine Licence application under The Marine Works (EIA) Regulations 2007 (as amended 2017). A separate Scoping Report(s) will be produced for the remaining elements of CampionWind once a grid connection location has been confirmed. Therefore, the proposed Transmission Infrastructure will not be discussed further in this Scoping Report.
- 1.3.4 An EIA Report (in accordance with the EIA Regulations) which considers all infrastructure relevant to the Array Area infrastructure will be prepared to support the consents and licenses identified in **Table 1.3.1**, and as such forms the basis of this Scoping Report. The EIA Report will be informed by a Scoping Opinion that is based on responses to this Scoping Report from key statutory and non-statutory consultees.

1.4 **Overview of the Project**

1.4.1 CampionWind's generating infrastructure will be located in the North Sea, within the 'Scottish Zone' (as defined in the Scotland Act 1998) of the UK Exclusive Economic Zone (EEZ). It will be located within the spatial boundary of the E2b OAA, as defined in the

Scottish Government's Sectoral Marine Plan for Offshore Wind Energy (Scottish Government, 2020). The OAA is located east of Aberdeenshire in northeast Scotland. The OAA (and therefore the Project's generating infrastructure) is located approximately 93.2 kilometres (km) at its nearest point to shore and 132.9 km at its furthest point. The location of the Project is illustrated in **Figure 1.1, Appendix 1A**.

- 1.4.2 The Project will have a grid connection capacity up to 3GW. Grid connection dates are still to be confirmed and will be provided following confirmation of the grid connection location in National Grid's HND FUE (National Energy System Operator, 2022). It is currently expected that the grid connection date will be after 2035.
- 1.4.3 The Project will have a maximum electrical export capacity of up to 3 gigawatts (GW). Whilst the Applicant's Option to Lease Agreement (OLA) with CES states an intended installed capacity of 2 GW, the Applicant intends to engage further with CES and the upcoming Sectoral Marine Plan review process with the intention of amending this capacity to 3 GW. The exact generating capacity of the offshore wind farm array depends upon a range of Wind Turbine Generator (WTG) specifications, which are not yet agreed.
- 1.4.4 The Project and includes the following infrastructure within the OAA:
 - Wind Turbine Generators (WTGs), including floating units with the potential for fixed units (platforms and station keeping system);
 - array cables;
 - accommodation platform(s) (if required); and
 - offshore substations.
- 1.4.5 The Scoping Boundary, within which the offshore wind farm and associated infrastructure will be located, is presented in **Figure 1.1**, **Appendix 1A** and described in **Section 2.3** in **Chapter 2: Project Description**.

1.5 Applicant and EIA project team

The Applicant

- 1.5.1 The Applicant is CampionWind Limited, a 50/50 Joint Venture company between Shell and SPR. Shell and SPR have extensive experience in the industry as highlighted in **Table 1.5.1**.
- 1.5.2 Working together for a cleaner energy future Shell and SPR have 70 years' combined experience in Scotland, with over 50 years' experience in the North Sea. In addition, the partners have over 15 years of combined experience in floating offshore wind.

Table 1.5.1	Shell and SPR's	energy experience
-------------	-----------------	-------------------

Shell	SPR
Shell today has more than 2 GW of offshore wind capacity in operation and under construction. Globally, Shell is building an integrated power business that will provide customers with low-carbon and renewable energy solutions. Shell's target is to become a net zero emissions energy business by 2050.	SPR is part of the Iberdrola group, one of the world's largest utilities and the leading wind energy producer. Responsible for progressing Iberdrola's renewable energy projects in the UK, SPR manages the development, construction, and operation of offshore windfarms throughout the world and currently has over 40 operational windfarm sites generating more than 3 GW of renewable energy generation across the UK.
	ScottishPower continues to be one of the leading renewables developers in the UK and is investing almost £3 billion between 2023-25 across offshore and onshore wind and solar generation, increasing home grown green electricity generation in the UK to support energy security. ScottishPower is the first integrated energy company to generate 100% green electricity in the UK. Focused on wind energy, smart grids and driving the change to a greener future, ScottishPower is investing over £8m every working day to make that happen.
	Iberdrola is a world leader in the development of offshore wind energy, with an operational capacity portfolio and early-stage developments of approximately 35 GW. Focused on countries with ambitious targets, the company expects to have 12 GW of offshore wind power in operation by 2030.

EIA project team

- 1.5.3 The preparation of the EIA for the Project is being led by WSP UK Limited (WSP). WSP is registered with the Institute of Environmental Management and Assessment (IEMA) and its Environmental Impact Assessment Quality Mark scheme. The scheme allows organisations that lead the co-ordination of EIAs in the UK to make a commitment to excellence in their EIA activities and have this commitment independently reviewed.
- 1.5.4 A number of specialist consultancies are providing expert input into the EIA assessments, as indicated in **Table 1.5.2**. Pursuant to the EIA Regulations, the EIA Report will be prepared by competent experts, and the EIA Report will outline the relevant expertise or qualifications of the expert.

Table 1.5.2 EIA project team

	Aspect	Author
	Chapter 1: Introduction	WSP
Introductory chapters	Appendix 1A: Figures	WSP
	Appendix 1B: Glossary	WSP
	Appendix 1C: Acronyms	WSP
	Chapter 2: The Project Description	WSP
	Chapter 3: Legislative and Policy Context	WSP
	Appendix 3A: Planning Policy Framework	WSP
	Chapter 4: Approach to Scoping and EIA	WSP
	Appendix 4A Transboundary Screening Matrix	WSP
	Appendix 4B Nature Conservation Marine Protected Area Assessment	WSP
	Chapter 5, Section 5.1: Marine geology, oceanography, and physical processes	WSP
	Chapter 5, Section 5.2: Marine water and sediment quality	WSP
	Chapter 5, Section 5.3: Underwater noise and vibration	WSP
	Chapter 5, Section 5.4: Electromagnetic fields	WSP
	Appendix 5.4A Key sources of Electromagnetic fields data	WSP
Environmental	Chapter 5, Section 5.5: Benthic, epibenthic, and shellfish ecology	WSP
aspects	Appendix 5.5A Benthic, epibenthic and shellfish legislation and policy	WSP
	Chapter 5, Section 5.6: Marine mammals	WSP
	Chapter 5, Section 5.7: Offshore ornithology	HiDef
	Chapter 5, Section 5.8: Fish ecology	WSP
	Chapter 5, Section 5.9: Commercial fisheries	WSP
	Chapter 5, Section 5.10: Shipping and navigation	Anatec Ltd
	Chapter 5, Section 5.11: Marine archaeology and cultural heritage	WSP
Summary	Chapter 6: Summary and Next Steps	WSP

1.6 Structure of this Scoping Report

- 1.6.1 The remainder of this Scoping Report is structured as follows:
 - Chapter 2 provides a description of the Project;
 - Chapter 3 provides an overview of the legislation and policies relevant to the Project;
 - Chapter 4 explains the approach that has been taken to identify the scope of the EIA;
 - **Chapter 5** sets out the proposed scope and methodology for physical, biological and human environmental aspects, where significant environmental impacts are likely to arise as a result of the Project;

- **Chapter 6** summarises those effects that are scoped in and out of the EIA and sets out the proposed content of the EIA Report and provides an overview of the next steps;
- Appendix 1A provides figures that support this Scoping Report;
- Appendix 1B provides a glossary to support this Scoping Report;
- Appendix 1C provides abbreviations, that have informed this Scoping Report;
- Appendix 3A provides the Planning Policy Framework relevant to the Project;
- Appendix 4A provides a Transboundary Screening Matrix of the Project;
- **Appendix 4B** provides a Nature Conservation Marine Protected Area Assessment relevant to the Project; and
- **Appendix 5.4A** provides the key sources of data relevant to the Electromagnetic fields chapter.
- **Appendix 5.5A** provides the key sources of legislation and policy relevant to benthic , epibenthic and shellfish ecology

1.7 Accessing the EIA Scoping Report

- 1.7.1 This Scoping Report is available online via the CampionWind website at the following link: <u>https://www.campionwind.co.uk/scoping</u>
- 1.7.2 Hard copies and pen drives can be made available on request from the Applicant via the website.
- 1.7.3 Responses and comments on this Scoping Report should be made directly to MD-LOT, and not to the Applicant.

1.8 **References**

Crown Estate Scotland (2022). Three ScotWind Clearing project agreements confirmed. Available at: https://www.crownestatescotland.com/news/three-scotwind-clearing-project-agreements-confirmed. [Accessed on: 17 February 2025].

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Marine and Coastal Access Act 2009. (c. 23). [online] Available at: <u>https://www.legislation.gov.uk/ukpga/2009/23/contents</u> [Accessed 17 February 2025].

National Energy System Operator, (2022). Pathway to 2030 Holistic Network Design July 2022. [online] Available at: <u>https://www.nationalgrideso.com/document/262681/download</u> [Accessed: 17 February 2025].

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The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (SI 2017 101). [online] Available at: <u>https://www.legislation.gov.uk/ssi/2017/101/made</u> [Accessed: 17 February 2025].

The Marine Works (Environmental Impact Assessment) Regulations 2007. (SI 2017 1518). [online] Available at: <u>https://www.legislation.gov.uk/uksi/2007/1518/data.xht?view=snippet&wrap=true</u> [Accessed: 24 February 2025].

The Marine Works (Environmental Impact Assessment) (Amendment) Regulations 2017. [online] Available at: <u>https://www.legislation.gov.uk/uksi/2017/588/made</u> [Accessed: 24 February 2025]

2. Project Description

2.1 Introduction

2.1.1 This Chapter of the Scoping Report provides an outline description of the Offshore Wind Farm Array Area (the 'Project') and summarises the key design components including the offshore wind farm and associated infrastructure required within the Array Area. It also describes the key activities that will be undertaken during construction, Operation and Maintenance (O&M), and decommissioning, in addition to key parameters and indicative timescales. This Chapter also includes an overview of the Applicant's approach to the consideration of options throughout the assessment stage.

2.2 **Design envelope**

- 2.2.1 At this early stage the Project description should be considered indicative to allow the appropriate design development to progress and to facilitate understanding for the purpose of the Scoping Stage. In accordance with industry standard practices, a parameter-based 'design envelope' approach has been adopted. The indicative design envelope is intended to identify key parameters that are suitable to enable initial environmental appraisals to be carried out in a robust and proportionate manner. This will also enable the subsequent Environmental Impact Assessment (EIA) to be based on a description of the location, design and size of the Project that is suitable to allow a comprehensive assessment of its likely significant environmental effects, whilst retaining sufficient flexibility to accommodate further refinement during detailed design. Further details of this approach are provided in **Chapter 4: Approach to Scoping and EIA**.
- 2.2.2 The Project design envelope will be refined as the Project continues to evolve through the key subsequent stages of the iterative design and EIA process, culminating in the EIA Report that will accompany the applications for consent.

2.3 **Description of the Project**

Scoping Boundary

- 2.3.1 The Scoping Boundary used to inform this Scoping Report is illustrated in **Figure 1.1: Scoping Boundary**, **Appendix 1A**). It is defined as the area within which the Project and associated infrastructure will be located, including the temporary and permanent construction and operational work areas.
- 2.3.2 The E2 Plan Option Area was split into two sites (E2a and E2b) and awarded to two separate applicants. The Applicant was awarded the E2b area, which occupies the eastern portion of the E2 Plan Option Area (hereafter referred to as 'E2b Option Agreement Area (OAA)') for CampionWind (**Figure 2.1, Appendix 1A**). The Scoping Boundary and proposed wind farm array area are, at this stage of development and in advance of finalisation of an agreed site layout, spatially identical to the OAA.
- 2.3.3 The OAA covers an area of approximately 860km2 and is located approximately 93.2 km offshore, east of the Aberdeenshire coastline at its nearest point, and in water depths averaging 77 m.
- 2.3.4 The Project's Scoping Boundary has been designed to provide adequate flexibility in circumnavigating key areas of identified environmental sensitivity or construction risk along

the route. Elements of the Scoping Boundary will be further refined as ongoing engineering and environmental information is gathered and incorporated into the design of the Project.

2.3.5 The proposed indicative design envelope for key characteristics of the Scoping Boundary for the Project is summarised in **Table 2.3.1**.

Table 2.3.1 Scoping Boundary characteristics

Parameters	Values
Scoping Boundary area	860 km ²
Average Water depth of Scoping Boundary	77 m
Closest distance to shore from Scoping Boundary	93.2 km

- 2.3.6 The Offshore Transmission Network Review (OTNR) (Department for Energy Security & Net Zero (DESNZ), 2023) was launched by the UK Government in 2020 and published in 2023. The OTNR aimed to ensure that the transmission connections relating to offshore wind generation are delivered efficiently and consider the balance between environmental, social and economic costs (HM Government, 2022a). The Holistic Network Design Follow up Exercise (HND FUE) (National Energy System Operator (NESO), 2024) initially recommended a highly co-ordinated offshore design with other wind farms in the area; however there are numerous deliverability, operability and economic challenges with this design and alternative solutions are now being evaluated as part of an impact assessment exercise. As the final network design is not expected to be agreed until 2025 or later, the point(s) of connection for CampionWind currently remain undetermined.
- 2.3.7 As a result, the Applicant will apply for separate consents for the proposed offshore array area (this application) and Transmission Infrastructure (transmission related offshore export cable corridor and onshore infrastructure (i.e., landfall, cable corridor and substation))to grid connection location including the associated infrastructure (future project application, if required this could include an onshore planning application under the Town and Country Planning (Scotland) Act 1997 for works located landward of Mean Low Water Springs) (see Figure 2.1, Appendix 1A). The subsequent application will be progressed following the final agreed outcome of HND FUE and the wider OTNR are made available. An overview of the potential separate consents are provided in **Plate 3.3.1**. **Plate 2.3.1** depicts the potential infrastructure to be considered for a future application outlined is indicative and will be reviewed and updated accordingly (i.e. if an offshore grid connection location is confirmed it will not be necessary to include onshore infrastructure in a future application).

Overview of the Project infrastructure

- 2.3.8 The key components are solely located within the Array Area. These subsequent sections provide detail and parameters where possible at this stage of design development and are described in accordance with the indicative design envelope principle. As the Project progresses through the EIA process, further clarity and refinements to the design will be presented. The Project design evolution will be described in the EIA Report.
- 2.3.9 The key components of the Project are shown in **Plate 2.3.1** and a description of the component function is outlined below.

Plate 2.3.1 Key infrastructure components¹



¹ This graphic presents indicative infrastructure design components. Further detail on the infrastructure is provided in the sections below.

Elements of the Project

Overview

- 2.3.10 The Scoping Boundary is presented in **Figure 1.1**, **Appendix 1A** and the Project will include the following key components:
 - Wind Turbine Generators (WTGs), including floating units (platforms and station keeping system) and associated moorings and anchoring systems or fixed foundations (numbered area 1 in **Plate 2.3.1**);
 - array cables (numbered area 2 in Plate 2.3.1);
 - accommodation platform(s) (numbered area 3 in Plate 2.3.1) (if required); and
 - offshore substation(s) (numbered area 4 in Plate 2.3.1).

Wind turbine generators

- 2.3.11 WTGs convert wind energy to electricity (shown as numbered area 1 in **Plate 2.3.1**). Each WTG will comprise a tower (assembled in sections), a rotor with multiple blades (typically three) attached to a nacelle. The nacelle typically houses a gearbox (except for direct drive technologies), generator, converter, transformer, and control equipment.
- 2.3.12 The Project is expected to have a total electrical export capacity of up to 3GW. Depending on the final WTG size selected, the Project is expected to have in the region of 126 to 210 WTGs. The installed capacity is likely to slightly larger than the final export capacity (likely to be in the region of 5%). This ensures the most efficient use of the grid infrastructure. As WTG technology is continually evolving, it is difficult to definitively predict the generating capacity of WTGs that will be commercially available at the point of construction. The final design, number, size, capacity, and layout of WTGs will be determined based upon further assessment of the optimum wind resource, prevailing site conditions, the capacity of each individual WTG and findings of environmental and engineering surveys.
- 2.3.13 The methods and locations for the fabrication and assembly of the WTGs are not yet known as these are reliant on supply chain availability and the design of the support for the WTGs (i.e. floating or fixed). The required modes of transportation for the WTGs to array area or wet storage², whether as components or assembled is not yet known as this will depend upon the type of WTG design selected, as well as the fabrication and assembly locations. The basis for assessment will evolve subject to supply chain and design evolution and through engagement with stakeholders.
- 2.3.14 The proposed indicative design envelope for the WTGs is provided in **Table 2.3.2**. These indicative maximum parameters are subject to further design review following offshore site surveys, technological development, and stakeholder engagement.

² Wet storage is defined as temporary mooring of floating units or dedicated mooring locations.

Table 2.3.2 Indicative WTG parameters

Parameter	Indicative design envelope
Number of WTGs	In the region of 126 to 210 turbines.
Maximum rotor diameter (m)	326 m.
Maximum blade tip height (m) above Highest Astronomical Tide (HAT)	356 m.
Minimum blade clearance above Lowest Astronomical Tide (LAT)	22 m.
Foundation type	Floating and potential for portion of site to include fixed.
Navigational lighting	Included as required, subject to further assessment.

Plate 2.3.2 Illustration of WTG key dimensions³



³ This graphic presents indicative infrastructure design components. Further detail on the infrastructure is provided in the WTG section.

Foundation design

- 2.3.15 The Project will utilise floating WTGs as the water depth range across the site generally exceeds the maximum depth at which fixed structure foundations are currently deployed. However deeper water fixed designs are being developed and as such there are sections of this site where the water depth allows for deeper water fixed WTGs to be incorporated into the Project as the design evolution process progresses.
- 2.3.16 The following sections of this Chapter provide further detail on both foundation types for the purposes of this Scoping Report and **Plate 2.3.3** provides an illustration of foundation types being considered.

Floating WTG foundations

- 2.3.17 The floating WTGs may each be mounted on positively buoyant floating units, which will consist of a floating platform or "floater" that will be stabilised to the seabed and kept in position by a dedicated "station keeping system". The station keeping system consists primarily of mooring lines and seabed anchors. Several design options are being considered for the floating unit at this stage of the Project. The final design concept will be identified following further market engagement, site survey, and design/technology development. The EIA will consider a design envelope associated with a potential range of floating unit types. Typical floating unit type variations, with indicative numbers of mooring lines are illustrated in **Plate 2.3.3** and **Plate 2.3.4**. The number of mooring lines associated with the chosen floating unit is yet to be determined and will be described in the EIA Report.
- 2.3.18 A key component of floater design also involves establishing moorings to anchor points on the seabed. The purpose of moorings is to maintain the position of the floating structure.
- 2.3.19 The overall seabed footprint of the WTG floating unit, whichever design concept is selected, will depend on the mooring concept applied (see **Plate 2.3.5**), which could be:
 - catenary mooring (in which each mooring line hangs in a slack curve dictated by its own weight);
 - taut line mooring (in which each mooring line is tensioned until it is taut); and
 - semi-taut mooring (in which slack and taut elements are used in combination in the mooring system).







Plate 2.3.4 Floating platform key spatial parameters



⁴ This graphic presents indicative infrastructure design components and is not exhaustive.

Plate 2.3.5 Mooring concepts



- 2.3.20 Anchoring is an integral part of the overall mooring system and there is a wide spectrum of anchoring and mooring solutions that could be fitted to the floater concepts identified above. These include drag embedment anchors, driven piles, suction anchors, drilled and grouted piles. The final design for anchoring will be dependent on the ground conditions present and the loading strength required to maintain the position of the floater.
- 2.3.21 Further detail on floating foundation parameters and anchoring will be presented within the Project Description chapter within the EIA Report.

Fixed WTG foundations

- 2.3.22 The EIA may consider fixed foundations in addition to floating within the design envelope. A range of typical fixed foundation designs are described below and illustrated in **Plate 2.3.6**. The final design concept will be identified following further market engagement, site survey, stakeholder engagement, and design development. Further detail on foundation parameters will be presented within the Project Description chapter within the EIA Report
- 2.3.23 The results of preliminary engineering assessment indicate that several design options for the fixed WTG foundations could be considered for the Project, which could include (but not exclusively):
 - Monopiles (included supported monopiles); and
 - Multi-leg foundations.

Monopile

- 2.3.24 Monopile foundations are welded tubular steel foundations with a large diameter. Monopiles are installed vertically into the seabed either by driving (use of a pile-driving hammer), or a combination of driving and drilling techniques where harder ground conditions are present. Other appropriate alternative methods may be used as they become available and practicable, such as supported monopile design.
- 2.3.25 The dimensions of the monopiles that may be used for the Project will depend on the size of the WTG, hydrodynamic forces, and ground conditions. A typical monopile foundation schematic is provided in **Plate 2.3.6**.

Multi-leg foundations

- 2.3.26 Multi-leg foundations (for example jacket structures) are typically lattice structures comprising of steel tubulars to support the WTG. Depending on the soil conditions present, the multi-leg foundation can be secured to the seabed by:
 - small diameter pin piles which are driven into the seabed through pile sleeves at each leg. Alternatively, the pin piles may be pre-installed into the seabed through a template, prior to the arrival of the structure. The pin piles can be connected to the multi-leg foundation legs via a grouted or deformed connection; and
 - suction caissons that comprise of a large steel cylinder that is sealed at the top and, therefore, they do not require pile driving for installation. The suction caisson is embedded into the seabed by creating a negative (suction) pressure inside the caisson. The difference in pressure across the top plate as a result further pushes the caisson into the seabed.
- 2.3.27 A typical multi-leg foundation with piles and multi-leg foundation with suction caissons schematic is provided in **Plate 2.3.6**.



Plate 2.3.6 Illustration of fixed unit types⁵

Array cables

2.3.28 Array cables will be used to connect the WTGs to one another in a configuration that will be refined through the design process. Design options for this configuration include, but are

⁵ This graphic presents indicative infrastructure design components. Further detail on the infrastructure is provided in the fixed WTG foundation section.

not limited to string, loops, star, and to the offshore substation(s) (shown as numbered area 2 in **Plate 2.3.1**). The cables will have a requirement to withstand both dynamic conditions at the floaters (for floating designs) (see **Plate 2.3.8**) as well as static lay and burial in or on the seabed (for both floating and fixed designs) (see **Plate 2.3.7**).

- 2.3.29 The cables may be buried below the seabed or otherwise protected from damage using secondary protection such as rock berms or concrete mattresses.
- 2.3.30 A tethered reverse pliant ('lazy wave') configuration is shown in **Plate 2.3.7** by way of an example design for a dynamic section, but the actual approach will be determined in consideration of structure type and anticipated and extreme loading conditions.

Plate 2.3.7 Illustration of 'lazy wave' dynamic cable







- 2.3.31 The prevailing voltage in use for offshore array cables at the present time is 66 kilovolt (kV), but higher voltages are in development (up to 145 kV) to support larger turbines. The rating to be used will be selected in line with the WTG and associated electrical infrastructure. The length of cable sections will be dependent on the distance between WTGs and location where it is to be connected to, e.g. another WTG if in string configuration, a power collector if in star configuration, or directly to an offshore substation.
- 2.3.32 The proposed indicative design envelope for key characteristics of the array cables for the Project are summarised in **Table 2.3.3**.

Table 2.3.3 Array cable parameters

Parameter	Indicative design envelope
Array cable voltage	Between 66-145 kV.
Target cable burial depth (m)	Typically 1-2 m, subject to Cable Burial Risk Assessment (CBRA) and seabed mobility.
Secondary protection	Typically concrete mattresses / rock berm.

2.3.33 Depending on at-sea risks and hydrodynamic conditions, it is likely that the static sections of the array cables will be protected by burial, typically by ploughing, jetting or trenching, depending on the seabed conditions along the array cable routes. Cables for which optimal burial depths are not achievable may be subject to secondary protection measures such as rock placement or installation of concrete mattresses.

Substation platforms

- 2.3.34 Offshore substation platforms are installed to collect the energy generated by the WTGs and house the transmission equipment, this includes main electrical equipment, auxiliary, controls and operational systems necessary (shown as numbered area 4 in **Plate 2.3.1**). The latter is required to convert the wind farm electricity to higher voltages necessary for long distance transmission through subsea cables to the onshore grid. The offshore substations may also include a helideck for personnel movement. Several platforms may be required for the Project.
- 2.3.35 The offshore substation(s) will be installed on fixed foundations (i.e. solid structures standing on and secured to the seabed). This is due to the site depth being suitable for fixed substation platform structures. Several different designs may be considered with either steel or concrete construction. The fixed design concept types being considered are shown in **Plate 2.3.9**.
- 2.3.36 The WTGs will connect (via the array cables) to a substation platform located within the OAA. The number of substations required will depend on the chosen technology and the site layout. The substations may be interconnected by link cables to funnel the combined output to a common export location, and for redundancy.



Plate 2.3.9 Illustration of fixed foundation types

Jacket with pin piles

Jacket with caissons

Gravity base

- 2.3.37 Prior to installation, it may be necessary to prepare and level the seabed by activities such as dredging/pre-sweeping of sandwaves, ground reinforcement or the application of a filter layer of rock. Debris and boulder removal may also be required, and the vicinity will have to be cleared of any potential Unexploded Ordnance (UXO) targets.
- 2.3.38 Foundations will be fabricated offsite at a portside facility and transported to site for installation. This is likely to require the use of specialist heavy lift vessels, and pin piling may be required to secure (for example) jacket structures to the seabed.

- 2.3.39 Once the foundations are installed, additional scour protection may be required, typically in the form of a circular rock berm laid around the foundations to prevent sediments from being eroded by localised currents around the structure.
- 2.3.40 Topside units or modules may be lifted into place once the foundations are secured, also using heavy lift vessels or barges.

Accommodation platforms

- 2.3.41 The O&M strategy for the wind farm may include the use of a permanent accommodation platform within the OAA, to allow access to the WTGs and substations for prolonged periods (shown as numbered area 3 in **Plate 2.3.1**).
- 2.3.42 If an additional structure or structures are required, it is expected that the size and footprint of the structure will be smaller than, or equivalent in size to, the offshore substation platforms. Since the water depth will be similar, the height, and consequently breadth, of the substructure will also be similar.
- 2.3.43 Topside equipment and modules will be different to other functional platforms, in that the focus will be around accommodation, welfare, and housekeeping, as well as safety equipment and facilities. The accommodation platform may include a helideck and suitable craft for travelling between the accommodation platform and the other structures will also need to be berthed/housed. A typical accommodation platform is shown as number three on **Plate 2.3.1**.
- 2.3.44 Installation activities will be comparable to those described for the offshore substation platforms.

Construction programme

2.3.45 The overall duration of construction of the offshore infrastructure is anticipated to take in the region of eight to twelve years. This will be subject to various factors, such as technology development and supply chain readiness, along with key infrastructure availability, e.g. ports and timing of successful Contract for Difference auctions (or any other such mechanism identified by government).

Operation and maintenance

- 2.3.46 The O&M strategy will be finalised once the technical specifications of the Project are confirmed, including the WTG model and arrangement (floating or fixed) and associated subsea infrastructure.
- 2.3.47 Both preventative and corrective maintenance activities will be undertaken. Offshore O&M services would typically be undertaken via service operation vessels but may also be undertaken via helicopters / specialised vessels. Offshore accommodation may be provided via an accommodation platform.
- 2.3.48 The lease agreement allows the Project to remain operational for up to 60 years following first commission, which would be the maximum operational lifetime.

Decommissioning

2.3.49 The requirements for decommissioning are detailed in sections 105 to 114 of the Energy Act 2004 (as amended) and associated Offshore Renewable Energy Installation decommissioning guidance (Scottish Government, 2022). Under the terms of the Act, developers of offshore renewable energy projects are required to develop a costed decommissioning programme for submission to, and approval by, Scottish Ministers.

- 2.3.50 A decommissioning plan and programme will be developed prior to construction and updated during the operational phase of the Project to account for any changes to industry best practice, relevant legislation and policy, or developments in technology.
- 2.3.51 Decommissioning of the Project is anticipated to involve the removal of all offshore infrastructure above the seabed, including floating and fixed platform substructures and associated mooring lines. Electrical cables could be removed or left in-situ offshore to minimise environmental effects and associated navigational safety risks associated with removal.
- 2.3.52 The EIA will be developed in line with current decommissioning policies in place (outlined in **Chapter 3**). The necessary approach at the time of decommissioning will depend on the relevant regulations and guidance in place at that future time. The Project will engage with Marine Directorate Licencing Operations Team (MD-LOT) at an appropriate time to ensure that any future policy developments are accounted for in decommissioning strategy decisions.
- 2.3.53 The decommissioning works are likely to be carried out in reverse to the sequence of construction works and will involve similar levels of equipment. Further detail will be progressed as part of the design evolution process and provided in the decommissioning plan.

2.4 **Consideration of alternatives**

- 2.4.1 The EIA Report will set out the options considered for the Project and the main reasons for selecting particular options, taking into consideration environmental sensitivities, technical feasibility and the overall objectives of the Project. In addition, the EIA Report will also consider a 'no development option', which will outline the scenario without the implementation of the Project.
- 2.4.2 The Project will consider alternatives and a summary of this will be presented in the EIA Report. The process for considering alternatives will be holistic for this Project (the Array Area) and Transmission Infrastructure with the aim being to identify the best end-to-end solution. Due to the ongoing uncertainty with grid connection the Applicant may need to incorporate flexibility in the alternatives considered to ensure the overall project design is aligned with the Transmission Infrastructure.
- 2.4.3 The EIA Report will provide further detail on the iterative design process, including how the design has evolved over time and any refinements that take place. The optioneering methodology and findings will be consulted on during the pre-application process. Refinements made as a result of the EIA process, taking into account environmental sensitivities and the application of the EIA mitigation hierarchy; and in response to stakeholder feedback as part of the pre-application consultation, will be described. Alternative Project infrastructure that has been considered and discounted will also be described in the EIA Report.

Offshore wind farm area

Overview

2.4.4 The location of the Project infrastructure and Transmission Infrastructure is determined by the location of the OAA and the grid connection location, which dictates where the connecting electrical network will start and end. All project infrastructure included in this

Project is located within the OAA. The Transmission Infrastructure will be subject to a separate EIA Scoping Report and consenting application(s) in due course.

2.5 Next steps

- 2.5.1 A preferred holistic solution will be identified for the Project infrastructure, and consideration for flexibility regarding the grid connection infrastructure will be incorporated as required.
- 2.5.2 Project design will then be developed, and engineering envelopes established, along with final envelope design parameters, environmental mitigation measures, and methodologies for construction, operation and maintenance, and decommissioning.
- 2.5.3 The EIA Report will outline further how the Project design has evolved as the Project progresses through the EIA process.
2.6 **References**

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3. Legislation and policy context

3.1 Introduction

- 3.1.1 This Chapter provides an overview of the relevant legislative and policy context for the Offshore Wind Farm Array Area ('the Project') and the Environmental Impact Assessment (EIA). This Chapter supports a policy-led approach to EIA by providing an overview of the applicable consenting legislative framework, identifying the strategic policy context for the Project and outlining the applicable policy framework to guide proportionate technical assessments. **Appendix 3A: Planning Policy Framework** provides a detailed summary of individual national, marine and local planning policies of relevance to the EIA, and which have informed the proposed scope of assessment. It should be read in conjunction with the Project description provided in **Chapter 2: Project Description**.
- 3.1.2 The purpose of this Chapter is to help inform the scope of the EIA Report and demonstrate compliance with applicable legislative and policy requirements. The EIA will be progressed taking account of all applicable legislation, policy, guidance and best practice. At this stage, relevant legislative and policy frameworks will guide the scope of the EIA and help to inform the types of receptors, likely significant effects and environmental issues that should be assessed, as well as potential mitigation requirements. Where specific legislation, policy or guidance requirements inform the proposed scope of assessment for technical areas within the EIA, this is set out in the relevant sections of **Chapter 5: Environmental Aspects**, **Chapter 6: Summary** of this Scoping Report. The implications of relevant statutory and policy requirements, as identified below, will subsequently be considered in further detail within the EIA Report and associated consenting applications for the Project.
- 3.1.3 In addition to considering applicable legislation and policies, this Scoping Report has been informed by Scottish Government's Marine environment: licensing and consenting requirements online guidance and Marine Directorate's Marine Licensing and consenting: offshore renewable energy projects guidance (Scottish Government, 2025) which provide guidance on applying for licences and consents for marine renewable energy projects within Scottish offshore waters (12 200 nautical miles (nm)).

3.2 ScotWind leasing context

- 3.2.1 ScotWind was the first round of offshore wind leasing in Scottish waters for a decade. It was the process of making seabed available for commercial-scale offshore wind projects to benefit Scottish business and communities for decades to come (Crown Estate Scotland (CES), 2021). The ScotWind leasing process was designed to make sure that the best projects and strongest applicants progressed, rather than being focused on highest option fees (CES, 2021).
- 3.2.2 CES will offer a full seabed lease once developers have secured the necessary consents, licences and finance. The ScotWind process is 'plan-led', therefore all projects are sited in Plan Options defined within the Sectoral Marine Plan for Offshore Wind (Scottish Government, 2020a), which was subject to plan-level Strategic Environmental Assessment (SEA), Habitats Regulations Appraisal (HRA), and socio-economic assessment throughout its preparation.
- 3.2.3 The Sectoral Marine Plan sought to:

"contribute to the achievement of Scottish and UK energy and climate change policy objectives and targets, through the provision of a spatial strategy to inform the seabed leasing process for commercial offshore wind energy in Scottish waters, which:

- minimises the potential adverse effects on other marine users, economic sectors and the environment resulting from further commercial-scale offshore wind development; and
- maximises opportunities for economic development, investment and employment in Scotland, by identifying new opportunities for commercial-scale offshore wind development, including deeper water wind technologies" (Scottish Government, 2020a).
- 3.2.4 This process saw 24 Areas of Search evolve into 17 Draft Plan Option Areas, which were later reduced to a short-list of 15 Plan Option Areas that were subject to further refinement. This was undertaken to avoid the areas of the highest levels of constraint, including fishing activity, identified via consultation and analysis (Scottish Government, 2020a).
- 3.2.5 The final E2 Plan Option Area was identified by the Scottish Government as a seabed area that met key policy objectives for the identification of opportunities for commercial-scale offshore wind development, whilst recognising that some potential adverse environmental effects could remain. On balance, the findings of the SEA indicated that the E2 Plan Option Area is a favourable site for offshore wind development when considered alongside the alternative Plan Option Areas identified by the constraints analysis exercise.
- 3.2.6 The E2 Plan Option Area was split into two sites (E2a and E2b) and awarded to two separate applicants. The Applicant was awarded the E2b area, which occupies the eastern portion of the E2 Plan Option Area (hereafter referred to as 'E2b Option Agreement Area (OAA)') for CampionWind (**Figure 2.1**, **Appendix 1A**). The Scoping Boundary and proposed wind farm array area are, at this stage of development and in advance of finalisation of an agreed site layout, spatially identical to the OAA.
- 3.2.7 The ScotWind leasing process saw the award of 17 sites for offshore wind farm development which exceeded the 10 GW assessed in the Sectoral Marine Plan. Following this in April 2022, the Marine Directorate commenced a formal Iterative Plan Review (IPR) of the Sectoral Marine Plan. Draft outputs from the review were initially expected to be completed in late 2023. The process of consultation on this revised plan has been delayed with the current intention to consult on a new draft Sectoral Marine Plan and associated impact assessments in Spring 2025 and finalise the plan by Autumn 2025. The Applicant is engaging in the IPR process.
- 3.2.8 The ScotWind process contains Option to Lease programme milestones for applicants to meet to ensure developments progress at a rate to support the Scottish Government's strategic offshore wind ambitions, including the submission of a Scoping Report. The successful completion of milestones has been a consideration for the Applicant when progressing the submission of this Scoping Report ahead of confirmation of the grid connection location (see **Section 2.3** in **Chapter 2**).

3.3 **Consenting legislation**

3.3.1 The following section covers the key consents required for the construction and operation of the Project. **Plate 3.3.1** illustrates the applicable consenting regimes and jurisdictions across the marine interface of relevance to the Project.



Plate 3.3.1 Offshore consenting regimes⁶

Section 36 Consent under the Electricity Act 1989

3.3.2 Scottish Ministers are responsible for determining applications under s.36 of the Electricity Act 1989 for offshore generating stations with an installed capacity exceeding 11 Megawatt (MW) in Scottish territorial waters, and over 50MW in the Scottish Renewable Energy Zone (REZ), extending out to 200 nm from shore. CampionWind will therefore make an application to the Scottish Ministers for electricity generation consent under this legislation. Such applications are processed on behalf of Scottish Ministers by the Marine Directorate - Licensing Operations Team (MD- LOT). The Electricity Act 1989 imposes specific obligations on electricity companies in respect of the preservation of amenity and fisheries through Section 38 and Schedule 9. A package of reforms to consenting arrangements under the Electricity Act 1989 is planned to be brought forward through the UK Government's Planning and Infrastructure Bill, but at which was introduced to Parliament on 11 March 2025. At the time of writing the Bill is at an early stage of parliamentary scrutiny and any potential implications for the consenting of inflight projects cannot yet be confirmed.

⁶ This graphic presents the offshore consenting regimes and shows indicative infrastructure design components. Further detail on the infrastructure for this Project is provided in **Chapter 2**.

3.3.3 S.36 consent is required for the generating station and ancillary infrastructure, including the offshore wind array and inter-array cables. Section 36A covers the public rights of navigation with Section 36B setting out duties in relation to navigation.

Marine and Coastal Access Act 2009 (between 12 and 200 nm)

- 3.3.4 The Marine and Coastal Access Act 2009 (the 2009 Act) provides a statutory framework for sustainable management of the UK seas, including around Scotland, beyond 12 nm. The requirement for a marine licence to undertake certain licensable activities was introduced under the 2009 Act.
- 3.3.5 A marine licence will be required to undertake prescribed marine licensable activities for the Project as described in **Chapter 2**. The infrastructure proposed would be constructed and operated beyond 12 nm requiring consent under the 2009 Act.
- 3.3.6 The location of the Project assessed within this Scoping Report is 93.2 km from shore at the nearest point. For the avoidance of doubt, marine licensing requirements under the Marine (Scotland) Act 2010 (between 0 12nm) are not engaged by this specific EIA Scoping Request.
- 3.3.7 At the time of writing, grid connection arrangements for the Project remain under discussion and a separate EIA Scoping Request for Transmission Infrastructure (offshore export cable corridor and onshore infrastructure (i.e., landfall, cable corridor and substation)) will follow in due course (as outlined in **Section 2.3, Chapter 2**).
- 3.3.8 The Scottish Ministers are the determining authority in the case where marine licences, under the 2009 Act, and a consent under S.36 is required.
- 3.3.9 The consultation requirements of relevance to these legislative requirements are discussed in **Chapter 4**.

EIA Regulations

3.3.10 There are two sets of EIA Regulations applicable to the Project, as outlined below. Where relevant, these are collectively referred to as the 'EIA Regulations' in this Scoping Report. In addition to the EIA Regulations, a range of environmental legislation at international and national level will apply to the EIA for the Project. This environmental legislation will be described in the EIA Report and some key guidance is described in **Section 3.7** below.

Requirements of the EIA Regulations

3.3.11 The EIA Regulations set out procedures for assessing, consulting upon, and informing decision-making for projects that are likely to have significant environmental effects. The EIA Regulations require the provision of an EIA Report alongside the applications for the s.36 consent and marine licences (see **Section 4.1** in **Chapter 4** for further details).

The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017

3.3.12 The requirement for an EIA for electricity generation projects requiring consent under s.36 of the Electricity Act 1989 is provided for in Scotland by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (hereafter referred to as 'Electricity Works EIA Regulations 2017'). These regulations set out the statutory process and minimum requirements for EIA.

- 3.3.13 The Electricity Works EIA Regulations 2017 identify that certain developments will be, or may be, subject to EIA. Offshore wind farm development fall under Schedule 2 of the Electricity Works EIA Regulation 2017 regulations as "a generating station". Where a Schedule 2 project is likely to have significant effects on the environment by virtue of factors such as its nature, size or location, an EIA is required. Due to the location and scale of the Project, the Applicant accepts that it could have significant effects on the environment and therefore an EIA will be prepared under the Electricity Works EIA Regulations 2017.
- 3.3.14 The Electricity Works EIA Regulations 2017 also make provision for a written request to be submitted to the Scottish Ministers (in this case through MD-LOT) for an opinion as to the scope of the information to be provided within the EIA Report (a Scoping Opinion).

The Marine Works (Environmental Impact Assessment) Regulations 2007

- 3.3.15 The Marine Works (Environmental Impact Assessment) Regulations 2007 (amended in 2017) (hereafter referred to as the 'Marine Works EIA Regulations 2007 (as amended 2017)') are relevant for the marine licences to be applied for the works on or under the seabed in Scottish offshore waters beyond 12 nm under the Marine and Coastal Access Act 2009.
- 3.3.16 The Marine Works EIA Regulations 2007 (as amended 2017) identify that an EIA is required for certain developments likely to have significant effects on the environment by virtue of factors such as its nature, size, or location. The proposed offshore wind farm falls under Schedule A2 of the Marine Works EIA Regulations 2007 (as amended 2017).
- 3.3.17 The Project will need a marine licence and, due to the location and scale of the Project, the Applicant accepts that it could have significant effects on the environment. A screening request has not been submitted as the Applicant intends to undertake an EIA under the Marine Works EIA Regulations 2007 (as amended 2017).
- 3.3.18 Similar to the Electricity Works EIA Regulations 2017, the Marine Works EIA Regulations 2007 (as amended 2017) make provision for a written request to be submitted to the Scottish Ministers (through MD-LOT) for an opinion as to the scope of the information to be provided within the EIA Report (a Scoping Opinion).

Strategic policy context for the Project

- 3.3.19 The need for a secure energy supply in the face of climate change has led to the development of legislation and policies to both tackle climate change and support renewable energy deployment at pace and scale. This is of relevance to the consenting process for the Project and therefore to this EIA.
- 3.3.20 The strategic policy context demonstrates the need for the Project through considering the relevance and implications of legislation and policies relating to tackling climate change and supporting renewable energy generation at international, European, and national levels. An appraisal of the needs case and planning merits of the Project will be provided in separate documentation to support the consenting applications for the Project in due course. Table 3.3.1 provides a summary of legislation and policies relevant to climate change and Table 3.3.2 provides a summary of relevant UK and Scottish energy policies.

Policies and directives	Summary	
United Nations Framework Convention on Climate Change (UNFCCC), 1992	At the international level, action to tackle climate change is informed by the Intergovernmental Panel on Climate Change and underpinned by the UNFCCC. The UNFCCC aims to stabilise atmospheric greenhouse gas (GHG) concentrations at a level sufficiently low "to prevent dangerous anthropogenic interference with the climate system" (Article 2).	
The Kyoto Protocol, 1997	The Kyoto Protocol commits industrialised countries and economies in transition to limit and reduce GHG emissions in accordance with agreed individual targets The Doha Amendment was adopted on 08 December 2012, lasting until 2020. The Amendment includes new commitments for Annex I Parties to the Kyoto Protocol, a revised list of GHG to be reported on by Parties and amendments to several articles of the Kyoto Protocol. The UK is a signatory to the Kyoto Protocol and its commitments were transposed into UK law by the Climate Change Act 2008.	
The Paris Agreement - 21 st United Nations Climate Change Conference of the Parties (COP21), 2015	The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 countries at the Paris Climate Conference (COP21) on 12 December 2015 and entered into force on 04 November 2016. The Agreement sets out a target to limit global warming to well below 2° Celsius above pre-industrial global average temperature levels, with the preferable aim of limiting global warming to 1.5° Celsius. In accordance with the Paris Agreement, on 12 December 2020, the UK communicated its Nationally Determined Contribution (NDC). This was superseded on 12 December 2024, as the UK announced its ambitions and credible NDC target to reduce all greenhouse gas emissions by at least 81% by 2035, compared to the 1990 levels (Department for Energy Security and Net Zero (DESNZ), 2025).	
26th United Nations Climate Change Conference of the Parties (COP26), 2021	The COP26 summit brought parties together to accelerate action towards the goals of the Paris Agreement and the UNFCCC. COP26 marked a step forward in global effort to address climate change, and an increase in ambitions to reduce emissions across the world. 197 countries agreed to a new climate deal 'The Glasgow Climate Pact', and the Paris Rulebook was finalised. The 2018 Paris Rulebook governs how the world's communities must pledge emissions reduction targets in the Paris Agreement.	
The Climate Change Act 2008, amended by the 2050 Target Amendment Order 2019	The Climate Change Act 2008 is the basis for the UK's approach to tackling and responding to climate change. It establishes the framework to deliver on these requirements. The Act was amended in 2019 so that the minimum percentage by which the net UK carbon account for the year 2050 must be lower than the 1990 baseline is increased from 80% to 100%.	

Table 3.3.1 Climate legislation and policy summary

Policies and directives	Summary
The Climate Change (Scotland) Act 2009, amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2024	The Climate Change (Scotland) Act 2009 is an act of the Scottish Parliament creating the statutory framework for greenhouse gas emissions reductions in Scotland. The Climate Change (Scotland) Act 2009 was amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, and shortly after the Scottish Government declared a Climate Emergency in April 2019. The amended Act placed climate change at the heart of all policy decisions and actions and increased the ambition of Scotland's statutory renewable energy targets to net zero by 2045. The objective of this Act is to contribute appropriately to the world's efforts to deliver on the Paris Agreement reached at the 21st COP of the UNFCCC. The Climate Change (Scotland) Act 2009 was further aligned with the amended Climate Change (Emissions Reduction Targets) (Scotland) Act 2024 which introduced the framework for a carbon budget-based approach for setting emission reductions targets up to 2045. Additionally, the Act introduced timescales for the next Climate Change Plan to reflect the process for development of the new carbon budget framework. In response to the 2024 Act the Scottish Government is expected to publish a full new Climate Change Plan by Summer 2025.
The Climate Change Plan, Third Report on Proposals and Policies (2018-2032), Updated 2020	This Climate Change Plan is the Scottish Government's third report on proposals and policies for meeting its climate change targets (Scottish Government, 2020b). It sets out how Scotland can deliver its target of 66% emissions reductions, relative to the baseline for the period 2018–2032. Part 1 of the plan shows the emissions reductions pathway to 2032, and states that " <i>by 2032, Scotland's energy system will be largely decarbonised and be increasingly important as a power source for heat and transport.</i> " At the time of writing, in response to the 2024 Act the Scottish Government is expected to publish a full new Climate Change Plan by Summer 2025.

Table 3.3.2Energy policy summary

Title	Summary	
The Scottish Energy Strategy 2017	 The Scottish Energy Strategy: The Future of Energy in Scotland (Scottish Government, 2017a) sets out the Scottish Government's vision for the future energy system, focusing on a vision for Scotland by the year 2050. The Strategy states that "a diverse, well balanced energy supply portfolio or 'energy mix' will remain essential as Scotland decarbonises, providing the basis for secure and affordable heat, mobility, and power in future decades". The Strategy sets two new targets for the Scottish energy system by 2030: The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources. An increase by 30% in the productivity of energy use across the Scottish economy. 	
Energy Strategy and Just Transition Plan (2023)	The Energy Strategy: Position Statement, published in January 2023 sets out policy positions and key ambitions for Scotland's energy future, including potential additional renewable energy capacity from offshore wind projects in construction and the wider project pipeline It reinforces a commitment to remain guided by the key principles set out in Scotland's Energy Strategy and sets out a number of key priorities for the short to medium-term. The Position Statement summarises how the recent policy publications such as the Hydrogen Policy Statement, Local Energy Policy Statement and Offshore Wind Policy Statement collectively support the delivery of the Climate Change Plan update. While it sets out the comprehensive programme of work across the energy sector, the current Energy Strategy (Scottish Government, 2021) remains in place until any further Energy Strategy refresh is adopted by Ministers. At the time of writing, a draft refreshed Energy Strategy and Just Transition Plan is expected to be published for consultation shortly.	
Energy white paper: Powering our net zero future 2020	The energy white paper sets out how the UK will clean up its energy system and reach net zero emissions by 2050. It addresses the transformation of the UK's energy system though the green industrial revolution, by promoting high-skilled jobs and clean, resilient economic growth to deliver net-zero emissions by 2050.	
Clean Power 2030 Action Plan 2024	The Clean Power Plan published 13 December 2024 provides the foundation for the UK to build an energy system that can reduce energy pricing for households and businesses. The Plan sets out the government's view of the pathway to 2030 and the steps required to secure a clean power sector to achieve the clean power goal, noting the particularly important role that offshore wind had underpinning the clean power system. The Action Plan includes expectations for the capacities of key technology at national and regional levels, specifically, an installed capacity of 43-50 GW in 2030 and 23-89 GW in 2035 from offshore wind. These expectations are outlined as being required to underpin the delivery of clean power and the achievement of a net zero economy.	
Offshore Wind Policy Statement 2020	The Statement sets out ambitions for the future of offshore wind in Scotland and is the context for Marine Directorate's Sectoral Marine Plan for Offshore Wind. The Statement, which was prepared in line with the 2017 Energy Strategy and pre-dates the announcement of ScotWind leasing results (where an exceedance of 10 GW of capacity was	

Title	Summary		
	awarded), confirms the Scottish Government's support for offshore wind deployment and set an ambition for 11GW deployment by 2030. The Statement (Scottish Government, 2020c) sets out further ambitions to capitalise on offshore wind development and the role this technology could play in meeting the commitment of net zero by 2045.		
Offshore Wind Sector Deal, Updated 2020	The Offshore Wind Sector Deal builds on the UK's global leadership position in offshore wind and seeks to maximise the advantages for UK industry from the global shift to clean growth, consistent with the Clean Growth Grand Challenge. The Deal (Department for Business, Energy & Industrial Strategy (BEIS) ⁷ , 2020a) sets out how the Crown Estate and CES will undertake new seabed leasing to ensure a sustainable pipeline of new projects for the late 2020s and early 2030s. The ambition is to increase the industry's productivity, competitiveness, and innovation, while helping to grow coastal economies. Eight regional offshore wind clusters are being developed across the UK, one of which is Deep Wind (North Scotland).		
UK Net Zero Strategy: Build Back Greener 2021	 This strategy set out policies and proposals for decarbonising all sectors of the UK economy to meet its net zero target by 2050. Key policies from the strategy <i>include</i>: <i>"40GW of offshore wind by 2030 with a new approach to onshore and offshore electricity networks to incorporate new low carbon generation and demand in the most efficient manner that takes account of the needs of local communities; and</i> <i>moving to 1GW of floating offshore by 2030 to put us at the forefront of this new technology that can utilise our North and Celtic Seas" (DESNZ, 2021).</i> 		
Offshore Transmission Network Review (OTNR) 2020	The OTNR was launched in July 2020 to ensure that transmission connections for offshore wind generation can be delivered to support the UK Government's ambitions to increase offshore wind power to 40GW by 2030 and to deliver on its Net Zero ambitions by 2050. In 2020 the Committee on Climate Change called for government to "develop a strategy to coordinate interconnectors and offshore networks for wind farms and their connections to the onshore network and bring forward any legislation necessary to enable coordination" (BEIS, 2020b). The OTNR Summary (HM Government, 2023 sets out the blueprint for the strategic network infrastructure necessary to deliver Government targets, including the new ambition for 50 GW of offshore wind by 2030. The Electricity System Operator (ESO)'s ⁸ Holistic Network Design (HND) was one of the outputs of the OTNR, and included a Follow-up Exercise (HND FUE). The HND FUE will be followed by a Detailed Network Design (DND) stage and consenting process that will develop the HND FUE recommendations further to determine technology choices, transmission routes and where substations and converter stations will be located.		
The Electricity Generation Policy Statement 2013	The Scottish Government's Electricity Generation Policy Statement was published in June 2013, based on research studies looking at future energy supply, storage, and demand. It sets out the Scottish		

⁷ BEIS existed until 2023 when it was split to form the Department for Business and Trade (DBT), the Department for Energy Security and Net Zero (DESNZ). ⁸ The Electricity System Operator (ESO) has been rebranded as the National Energy System Operator (NESO) as of 1

October 2024.

Title	Summary		
	Government's future plans for renewable energy and fossil fuel thermal generation in Scotland's energy mix (Scottish Government, 2013). It is required under the Climate Change (Scotland) Act 2009 to set out proposals and policies for meeting annual emissions reductions targets from 2010 to 2022. An updated Electricity Generation Policy Statement was expected to be reviewed and published towards the end of 2022, ahead of the next Climate Change Plan (Scottish Government, 2020b).		
European Union (EU) Renewable Energy Directive (2018/2001/EU), 2018	The Renewable Energy Directive (RED) is the legal framework for development of renewable energy sectors across the EU economy. The Directive was originally established in 2009 (2009/28/EC) (The European Commission, 2009) and set a target of achieving 20% of EU energy consumption from renewable sources by 2020. The Renewable Energy Directive was amended in 2018 (2018/2001/EU) (The European Commission, 2018), setting a revised and binding renewable energy target of achieving a minimum of 32% energy consumption from renewable energy sources within the EU by the year 2030. It is of note that the UK formally withdrew from the European Union (EU) on 31 January 2020 under terms set out in the European Union (Withdrawal Agreement) Act 2018 ('the Withdrawal Act'). The Withdrawal and the subsequent Trade and Cooperation Agreement releases the UK from the targets under the amended RED.		
National Policy Statements (NPSs) 2024	The Scottish Ministers hold executively devolved powers under s.36 of the Electricity Act 1989 and therefore primarily apply relevant Scottish level policies in the determination of consenting applications. However, energy generally remains a UK reserved matter and therefore the UK Government's policy for the delivery of energy infrastructure, as set out within a suite of Energy National Policy Statements (NPSs), are also relevant considerations. The UK NPSs form part of both the energy and planning policy frameworks applicable to the consenting of the Project. As detailed in Appendix 3A: Planning Policy Framework , policy coverage within the NPSs regarding UK reserved matters is of particular importance. This means the NPSs have limited relevance in relation to specific aspects of this EIA. There are six energy NPSs, three of which are relevant to offshore wind farm development. These comprise, The Overarching NPS for Energy (NPS-EN 1) and The NPS for Renewable Energy Infrastructure (NPS EN-3); (DESNZ, 2024a; DESNZ, 2024b). Following a review of the NPSs in response to the Energy White Paper, updated draft energy NPSs were published for consultation in 2021. The revised suite of NPSs were subsequently designated by Parliament in January 2024. NPS EN-1 and EN-3 include the identification of nationally significant offshore wind infrastructure as a critical national priority (CNP). This means that there is an urgent need for offshore wind projects, and the NPSs appreciate that it will not be possible to development the necessary amount of this type of infrastructure without some significant residual adverse impacts (though such impacts are still expected to be minimised as much as, and where, possible. The aforementioned NPSs conferring critical national priority status on all renewable and low carbon energy generation proposals, including offshore wind. This policy position has already been engaged by the Scottish Ministers in the consenting of relevant projects and will apply equally in respect of future conse		

Title	Summary	
	A package of reforms to consenting arrangements under the Electricity Act 1989 is planned to be brought forward through the UK Government's Planning and Infrastructure Bill, which was introduced to Parliament on 11 March 2025. The aim of this bill is to streamline the delivery of critical infrastructure (such as offshore wind farms), fast tracking planning decisions on major economic infrastructure projects, and support the Government's Clean Power 2030 target.	

3.4 Legislative and policy framework for this EIA

3.4.1 In order to provide a robust assessment evidence base, **Section 3.5** provides an overview of the legislative and policy framework of relevance to the Project. This has been used to directly inform the scope of the EIA by taking account of specific requirements to assess and address likely impacts on a range of sensitive receptors and to consider relevant environmental issues. In doing so, the EIA will respond to the EIA Regulations and provide objective assessment evidence which should also help to address relevant policy requirements. Drawing upon this evidence, the need for the Project and its accordance with relevant policies will then be considered separately in other documentation prepared in support of consenting applications for the Project. **Section 3.5** provides national planning policies and guidance of relevance, **Section 3.6** provides marine planning policies of relevance, and **Section 3.7** provides the key guidance of relevance. Appendix 3A provides a detailed review of planning policies and guidance of relevance, whilst identifying the policy tests of relevance to technical chapters of the EIA Report.

National planning policies and legislation

- 3.4.2 below outlines the national planning policy framework for consenting under the Town and Country Planning (Scotland) Act 1997 (TCPA Scotland). Although this Project does not comprise development, as defined by TCPA Scotland, the policies identified in would be relevant context with regards to both consents made under s.36 of the Electricity Act and marine licence applications made under the 2009 Act.
- 3.4.3 **Appendix 3A** provides a detailed summary of individual policies of relevance which have informed the proposed approach to this EIA and the scope of assessment.

Title	Summary
National Planning Framework 4 (NPF4), 2023	NPF4 was adopted by the Scottish Government on 13 February 2023 (Scottish, Government 2023). NPF4 provides the spatial strategy for Scotland to 2045 and takes account of the target of net zero emissions by 2045 set by the Scottish Government. It forms part of the statutory Development Plan for determination of planning applications made under the TCPA Scotland. Policy 1 of NPF4 encourages, promotes and facilitates development that addresses the global climate emergency and nature crisis. Policy 1 requires, when considering all development proposals, that significant weight is given to the global climate and nature crises. Beyond this policy, the NPF4 also provides a range of other policy test, requirements and expectations for all developments. NPF4 provides a strong framework for the deployment of renewable energy developments and identifies the need for strategic scale renewable energy

Table 3.4.1 National planning policies and guidance summary

Title	Summary
	developments, including offshore wind. The Project is classified as a National Development within NPF4 as "Strategic Renewable Electricity and Transmission Infrastructure". This recognises that the <i>"additional electricity generation from renewables and electricity transmission is fundamental to achieving a net zero economy."</i> There is a preference for developments which meet the Scottish Government's aims for net zero emissions by 2045, and halting biodiversity loss by 2030 / restoring and regenerating biodiversity by 2045. Projects which evidence low and zero-carbon design and expansion of renewable energy generation will therefore be encouraged. NPF4 designates certain types of projects as National Developments on the basis that they are needed to implement the national spatial strategy. This establishes the needs case for such projects. All 50 Megawatt (MW)+ onshore and offshore renewable electricity generating projects and associated grid connections are designated as National Developments.
Equality, Opportunity, Community: Programme for Government 2024- 2025	This Programme for Government defines the response to the challenges ahead, and the better tomorrow the Scottish Government want to secure. It details that Scotland's journey to net zero requires and investment in a strong economy. The development of renewable energy is noted to help to respond to the climate crisis. The programme discusses how the Scottish Government will help businesses and investors realise the opportunity of creating good, well-paid jobs in sectors such as offshore wind. The programme also states that the Scottish Government wish to enhance Scotland as a world-leading destination for offshore wind investment, including updating guidance to help with offshore wind consenting processes.
Programme for Government 2024- 2025: Serving Scotland	This Programme for Government 2024-2025 seeks to build upon the actions taken to address challenges identified in the Programme for Government 2023-2024. The 2024-2025 Programme seeks to continue to expand and support the offshore wind sector with Scotland, identifying it as important to the economy of the country and important for meeting its climate action goals. The Scottish Government plans to invest £500 million over five years in offshore wind.
The Environment Strategy for Scotland 2020, and Progress Report 2022	 This Strategy has a 2045 vision, whereby, restoring nature and ending Scotland's contribution to climate change, Scotland will be transformed for the better, therefore helping to secure the wellbeing of Scottish people and the planet. The contribution of the Environment Strategy vision and outcomes will contribute to National Outcomes and the UN Sustainable Development Goals. The outcomes that are relevant to the Project, include: <i>"we play our full role in tacking the global climate emergency and limiting temperature rise to 1.5°C;</i> Scotland's nature is protected and restored with flourishing biodiversity and clean and healthy air, water seas and soils; and our thriving sustainable economy conserves and grows our natural assets" (Scottish Government, 2020d). In March 2024, the third annual progress report to Parliament on the development of the environmental policy strategy, which Scottish Ministers are required to publish under section 47 of the Continuity Act, was provided.
Scottish Biodiversity Strategy to 2045, (2024)	The original strategy 'Scotland's Biodiversity: It's in Your Hands' was published in 2004. In 2013, it was supplemented by the '2020 Challenge for Scotland's Biodiversity'. The two documents constitute the Scottish Biodiversity Strategy. In December 2020 the 'Scottish Biodiversity Strategy Post-2020: A Statement of Intent was published. This paved the way for a new, ambitious 25-year strategy which will be published at the end of 2022 (Scottish Government, 2020e). This new strategy will supersede the 2020 Challenge strategy. The Scottish

Title	Summary	
	Biodiversity Strategy and Delivery Plan was amended on 27 November 2024 and is supported by the Scottish biodiversity delivery plan 2024-2030. The new Scottish strategy sets out a clear ambition for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045. This Strategy identifies the following six objectives which have shaped the development of actions to deliver our high-level goals, continuing progress towards our aim of halting the loss of biodiversity and being nature positive by 2030.	
Biodiversity: delivery plan 2024 to 2030	 The Scottish biodiversity delivery plan 2024-2030 was published on 27 November 2024 and forms the first in a series of rolling delivery plans and sets out the compelling evidence of long-standing global and Scottish biodiversity loss. The Strategy identifies six priority actions which are described under the following objectives: Accelerate ecosystem restoration and regeneration; Protect nature on land and at sea, across and beyond protected areas; Embed Nature Positive farming, fishing and forestry; Protect and support the recovery of vulnerable and important species and habitats; Invest in nature; and Take action on the indirect drivers of biodiversity loss. 	
Nature Conservation (Scotland) Act 2004	Public bodies in Scotland have a duty to further the conservation of biodiversity under the Nature Conservation (Scotland) Act 2004.	

3.5 Marine planning policies and guidance

3.5.1 A marine licence will be required to undertake prescribed marine licensable activities for the Project, in which two separate but related marine licence applications are sought. The Scottish Ministers are the decision maker for marine licence applications, which must be determined primarily in accordance with appropriate statutory requirements, marine planning policies and guidance. These are also relevant considerations in the determination of applications made under S.36 of the Electricity Act 1989. **Table 3.5.1** below provides a summary of the UK and Scottish marine policies of relevance to the Project and the EIA, supported by a detailed review in **Appendix 3A** to inform the proposed scope of assessment.

Table 3.5.1 National marine policy summary

Title	Summary
UK Marine Policy Statement (MPS) 2011	The MPS adopted 2011 is 'the framework for preparing Marine Plans and taking decisions affecting the marine environment '(Department for Environment, Food & Rural Affairs (Defra), 2011). It will contribute to the achievement of sustainable development in the United Kingdom marine area'. The document was adopted for the purposes of section 44 of the Marine and Coastal Access Act 2009 and will support the formulation of Marine Plans. Appendix 3A: Planning Policy Framework provides a summary of the relevance of the UK MPS.
Scottish National Marine Plan (NMP) 2015	Adopted in March 2015 (Scottish Government, 2015), this Plan sets out strategic policies for the sustainable development of Scotland's marine resources out to 200 nm. It provides a framework for managing all development in or affecting Scotland's marine areas, both territorial (up to 12 nm) and offshore waters (12-200 nm). It is required to be compatible with the UK MPS and existing marine plans across the UK.

Title	Summary
	This Plan adopts the approach of stipulating a set of General Policies (Chapter 4), which apply across all development and use of the marine environment. These General Policies are intended to represent the parameters against which the sustainability of development and other use is considered. They also intend to ensure this is undertaken in a manner that is sensitive to the protection and enhancement of the environment, the needs of other users and the long-term health of the resource. Appendix 3A provides a summary of the policies relevant to this Project. The Scottish Government's Programme for Government 2022-23 (2022) confirmed plans to develop a replacement National Marine Plan 2. This is expected to play a key role in the consenting of ScotWind offshore wind projects, but the preparation timescale and process have not yet been confirmed. The National Marine Plan 2 Planning Position Statement was published in November 2024 for consultation. The Draft National Marine Plan 2 is expected to be published in late 2025, with final adoption of National Marine Plan 2 being scheduled for Summer 2027.
Offshore Wind Policy Statement 2020	The Statement sets out ambitions for the future of offshore wind in Scotland and is the context for Marine Directorate's Sectoral Marine Plan for Offshore Wind. The Statement, which was prepared in line with the 2017 Energy Strategy and pre-dates the announcement of ScotWind leasing results (where an exceedance of 10GW of capacity was awarded), confirms the Scottish Government's support for offshore wind deployment and set an ambition for 11GW deployment by 2030. The Statement (Scottish Government, 2020c) sets out further ambitions to capitalise on offshore wind development and the role this technology could play in meeting the commitment of net zero by 2045.
Sectoral Marine Plan for Offshore Wind Energy 2020	Published in October 2020, the Sectoral Marine Plan – Offshore Wind Energy identifies sustainable options for the future development of commercial scale offshore wind energy in Scotland, including deep water wind technologies and covers Scottish inshore and offshore waters (Scottish Government, 2020a). The plan identified a suite of Plan Options (POs) to underpin Crown Estate Scotland's ScotWind leasing round. The spatial strategy aims to " <i>minimise the potential adverse effects on other marine users, economic sectors and the environment resulting from further commercial-scale offshore wind development</i> " and " <i>maximise opportunities for economic development, investment and employment in Scotland, by identifying new opportunities for commercial scale offshore wind development, including deeper water wind technologies.</i> " The CampionWind Offshore Wind Farm Array Area Project is located in Plan Option E2. As a result of multiple projects being awarded agreements for leases by CES within Plan Option E2, this Project has now been assigned Plan Option reference E2b, as identified in the SMP for Offshore Wind. Plan Options including E2 were subject to testing, refinement and area reduction through SEA, HRA and plan development processes. The SEA identified relevant characteristics of Plan Option E2 and identified the risks to be addressed, such as potential for significant socio-economic cost impacts from development within Plan Option E2 associated with the loss of fishing grounds and the potential for impacts to bird species (Scottish Government, 2020a).

3.6 Guidance on EIA for offshore wind projects

3.6.1 The EIA will be undertaken in line with relevant legislation and policy and specifically in accordance with the requirements of the EIA Regulations. In addition, the EIA will take into consideration a range of up-to-date key guidance documents. The list below of key guidance documents provides a general overview of important documents that will help to inform the EIA process which include (but are not limited to):

- Environmental Impact Assessment Guide to: Shaping Quality Development (IEMA, 2015);
- Delivering Proportionate EIA. A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (IEMA, 2017);
- Environmental Impact Assessment Handbook. Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland (Scottish Natural Heritage and Historic Environment Scotland, 2018);
- Guidance for Applicants on Using the Design Envelope for Applications under Section 36 of the Electricity Act 1989 (Scottish Government, 2022a);
- Planning Circular 1/2017: Environmental Impact Assessment regulations (Scottish Government, 2017b);
- Offshore Wind Farms: Guidance Note for Environmental Impact Assessment in Respect of Food and Environment Protection Act 1985 and Coast Protection Act 1949 Requirements (Version 2) (Centre for Environment, Fisheries and Aquaculture Science (CEFAS), 2004);
- Decommissioning of Offshore Renewable Energy Installations in Scottish Waters or in the Scottish Part of the Renewable Energy Zone (Scottish Government, 2022b) under the Energy Act 2004: Guidance Notes for industry in Scotland;
- Marine licensing and consenting: offshore renewable energy projects (Scottish Government, 2018); and
- Marine Licensing and Consenting: Offshore Renewable Energy Projects (January 2025).
- 3.6.2 The list will be continually reviewed and updated throughout the EIA process, up to submission of the EIA Report. Each individual environmental topic also refers to relevant topic-specific guidance in Chapter 5 of this Scoping Report, where appropriate.
- 3.6.3 A full list of relevant legislation and guidance considered as part of the EIA process will be provided in the EIA Report.

3.7 Other legislative consenting requirements

Habitats Regulations Appraisal (HRA)

- 3.7.1 The Habitats Directive (Directive 92/43/ECC) (The European Commission, 1992), and the Wild Birds Directive (Directive 2009/147/EC) (The European Commission, 2009) were transposed into law by the Conservation of Offshore Marine Habitats and Species Regulations 2017 ('Offshore Marine Regulations') (beyond 12 nm); the Conservation of Habitats and Species Regulations 2017 (of relevance to consents under Section 36 of the Electricity Act 1989); the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001; and the Wildlife and Countryside Act 1981.
- 3.7.2 The Habitats Regulations set out the stages of the Habitats Regulations Appraisal (HRA) process required to assess the potential impacts of a proposed project on European Sites (Special Areas of Conservation (SAC), Special Protection Areas (SPA), candidate SACs (cSAC) and SPAs (cSPA) and Ramsar Sites). If the project is not directly connected with or necessary to site management for nature conservation of the European Site and, either alone or in-combination with other projects or plans, is likely to have a significant effect on

the qualifying interests of a European Site, the relevant decision-making authority (or competent authority) must carry out an Appropriate Assessment (AA).

- 3.7.3 In accordance with The Conservation of Habitats and Species (Amendment) (EU Exit) (Scotland) (Amendment etc.) Regulations 2019 (the EU Exit Regulations), EU Exit guidance issued by the Scottish Government the term "European Site", "European marine site" and "European offshore marine site", have been retained, as have SAC and SPA been retained to refer to sites protected in European Member States, Scotland and the rest of the UK. These sites now form part of the National Site Network, on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs and SPAs, as well as any new SACs and SPAs designated under there Regulations. Scottish Government policy affords the same level of protection to proposed SACs and SPAs which have been approved by Scottish Ministers for formal consultation and the effects of these sites should be appraised.
- 3.7.4 Any references to Natura 2000 in the EU Exit Regulations and in new guidance refers to the National Site Network. The term "Designated sites" and new National Site Network includes SACs, cSAC, possible SACs (pSAC), SPAs, cSPAs, potential SPAs (pSPAs), Sites of Community Important (SCI), listed and proposed Ramsar Sites and sites identified or required as compensatory measures for adverse effects on any of these sites.
- 3.7.5 In accordance with HRA Regulations, an HRA is being undertaken for the Project. The HRA documentation will be coordinated with the EIA but reported separately to ensure compliance with all relevant statutory requirements guidance and best practice. Scottish Ministers, as the competent authority, must determine whether the Project will adversely affect the integrity of any relevant marine or terrestrial European Site.

3.8 Marine Protected Areas (MPAs)

- 3.8.1 There are currently over 200 Marine Protected Areas (MPAs) for nature conservation purposes in Scottish waters, covering approximately 108,000 km². Whilst many of these MPAs are aligned with existing SACs, SPAs, Ramsar sites or Sites of Special Scientific Interest (SSSIs), a number have been designated directly under MPA legislation, through the Marine (Scotland) Act 2010, and the UK Marine and Coastal Access Act 2009, for inshore and offshore waters, respectively.
- 3.8.2 The EIA will assess the potential for impacts on MPAs, informed by engagement with Scottish Ministers, as the competent authority and any other relevant information deemed appropriate.

Marine Strategy Framework Directive (MSFD)

- 3.8.3 The Marine Strategy Framework Directive 2008/56/EC (MSFD) (The European Commission, 2008) of the European Parliament and of the Council 17 June 2008, establishing a framework for community action in the field of marine environmental policy (the MSFD), was adopted in 2008, with the overall aim of protecting the marine environment across Europe. The MSFD is transposed for the whole of the UK by the Marine Strategy Regulations 2010. The UK has made amendment to the Marine Strategy Regulations 2010 (SI 2010 1627), under the Marine Environment (Amendment) (EU Exit) Regulations 2018, which transpose the requirement into domestic law, so that MSFD can continue to be effective now the UK is no longer part of the EU.
- 3.8.4 Marine Directorate, as the competent authority, will carry out the assessment to determine whether the Project has the potential to influence Good Environmental Status (GES) of the UK's marine water.

Decommissioning

- 3.8.5 Sections 105 to 114 of the Energy Act 2004 (as amended) contain statutory requirements in relation to the decommissioning of Offshore Renewable Energy Installations (OREI) and their related electricity lines. Under the terms of the Energy Act, Scottish Ministers may require a person who is responsible for these installations or lines in Scottish territorial waters (0 12 nm) or in a Scottish part of an REZ (12 200 nm) to prepare (and carry out) a costed decommissioning programme for submission to and approval by Scottish Ministers (Scottish Government, 2022a).
- 3.8.6 Responsibilities and powers associated with decommissioning for OREI within Scottish territorial waters or in a Scottish part of an REZ transferred from the Secretary of State to Scottish Ministers in 2017. Before this the BEIS was responsible for requiring decommissioning programmes (BEIS, 2019). Marine Directorate are seeking to establish robust policies and procedures covering decommissioning and the Guidance Note for Decommissioning of Offshore Renewable Energy Installation in Scottish Waters or in the Scottish Part of the Renewable Energy Zone under the Energy Act 2004 (as amended) (Scottish Government, 2022b) was finalised in August 2022.
- 3.8.7 Scottish Ministers have the power to determine specific approaches to decommissioning, including stipulating the form, timing and size of financial securities required. The expected content of a decommissioning programme includes decommissioning standards, financial security, residual liability and industrial cooperation and collaboration.
- 3.8.8 Section 5 of the Guidance Note states that "an indication of the decommissioning proposals should be included as part of the statutory consenting or licensing process so that the feasibility of removing the infrastructure can be assessed as part of the application process" (Scottish Government, 2022b).
- 3.8.9 The decommissioning requirements in Scotland relate to the area between the MLWS mark and the seaward limits of the territorial waters and the Scottish part of the REZ. Therefore, the Scottish guidance for decommissioning is applicable for the Project and will be followed. Further detail will be progressed as part of the design process and provided in the decommissioning plan.

3.9 Other consents and licences

Table 3.9.1 Table 3.9.1 provides and indicative list of the other consents and licences that may be required for the Project.

Licence/permit/consent	Regulatory body	Consent requirements
Marine Licence or Exemptions	MD-LOT	For carrying out site investigations, buoy deployment and surveys.
European Protected Species (EPS) licences (under the Conservation (Natural Habitats, &c.) Regulations 1994; Conservation of Habitats and Species Regulations 2017; and The Conservation of Offshore Marine Habitats and Species Regulations 2017	NatureScot / MD-LOT	For carrying out activities that could result in the disturbance of EPS, such as site investigation, buoy deployment and surveys, or disturbance identified as part of the EIA.

Table 3.9.1 Other consents and licences that may be required

Licence/permit/consent	Regulatory body	Consent requirements
Protected Species licences (under the Wildlife and Countryside Act 1981 (as amended) (for example for basking shark, grey seal); and Wildlife and Natural Environment (Scotland) Act 2011)	NatureScot / MD-LOT	For carrying out site investigations, buoy deployment and surveys, or where disturbance is identified as part of the EIA.
Safety Zone applications (under the Energy Act 2004 (as amended))	MD-LOT	To be established for any phase of an offshore renewable energy project but are normally applied for the construction or aspects of operations and maintenance phases.
Decommissioning Programmes (Sections 105 to 114 under the Energy Act 2004 (as amended))	MD-LOT	Decommissioning Programme will be required prior to construction.
Marine works licence	CES	For carrying out survey works in the offshore export cable corridor.

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4. Approach to Scoping and EIA

4.1 Introduction

- 4.1.1 This Chapter describes the principles of Environmental Impact Assessment (EIA) and the approach being taken to identify and evaluate likely significant effects of the Project on the environment. The approach to Scoping is outlined, along with the broad principles relating to the establishment of baseline conditions, embedded environmental measures, and the methodology for the assessment of effects that will be adopted for the EIA. This Chapter also sets out the proposed stakeholder consultation and engagement that will be undertaken as part of the EIA process. The proposed temporal, spatial, and technical scope of the environmental assessments are also described, along with an overview of the proposed methodologies for Cumulative Effects Assessment (CEA).
- 4.1.2 Due to the Transmission Infrastructure (transmission related offshore export cable corridor and onshore infrastructure (i.e., landfall, cable corridor and substation)) being scoped and consented separately, the EIA will incorporate a two-step impact assessment of the resulting likely significant environmental effects:
 - **The Project alone** this will assess construction, operation and maintenance (O&M) and decommissioning of the Project activities only; and
 - **the Project and Transmission Infrastructure combined appraisal** this will assess construction, O&M and decommissioning of the Project activities in combination with Transmission Infrastructure activities (commensurate to the level of detail available at the time) ensuring the whole project is considered.

EIA Scoping

- 4.1.3 Effective Scoping enables agreement to be reached on the aspects and methodologies to be taken forward and reported in much greater detail in the EIA Report. The Scoping Report refines the scope of the assessment to focus on the key issues. It also provides an opportunity for early interaction with stakeholders, strengthening the assessment evidence base and allowing active participation of interested parties in project development and decision-making. This can in turn improve project design, environmental performance, and social acceptability.
- 4.1.4 For the purposes of the EIA Report and this Scoping Report, the term 'impacts' is used to describe the changes that could arise as a result of the Project (for example, changes in water and sediment quality) and the term 'effects' are the consequences of those potential changes (for example, habitat is changed by an alteration in the water and sediment quality).
- 4.1.5 Schedule 4 of the Electricity Works Environmental Impact Assessment Scotland Regulations 2017 and Schedule 3 of the Marine Works (EIA) Regulations 2007 (as amended 2017) states that the description of the likely significant effects should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, mediumterm and long-term, permanent and temporary, beneficial and adverse effects of the development.
- 4.1.6 The EIA Report will consider all of these types of effects in the environmental aspects outlined in **Chapter 5: Environmental Aspects**.
- 4.1.7 Whilst some terms are self-explanatory, a definition of effects has been provided to confirm how these terms will be applied throughout the EIA process:

- Indirect and secondary effects: effects that are not caused immediately by the Project but arise as a consequence of it. An example would be where indirect employment is created as suppliers increase their activities and hire new workers to provide the additional goods and services required by the Project.
- **Transboundary effects**: effects caused by the Project that would affect the environment in adjacent European Economic Area Member State(s) (EEA State(s)).
- Inter-related effects: effects resulting from two or more Project impacts acting together, to result in a new or changed effect on a single receptor.
- **Cumulative effects**: effects resulting from the combined impacts of the Project with other projects / plans on the same single receptor.
- **In-combination effects**: effects resulting from the combined impacts of the Project with other projects / plans on European Sites within the national site network. These will be presented separately within Habitats Regulations Assessment (HRA) documentation via a separate submission.
- 4.1.8 Under the EIA Regulations, once a request for a Scoping Opinion has been issued to the Scottish Ministers for consideration, they are required to consult with the consultation bodies (as defined under Regulation 12(4) of the Electricity Works (EIA) (Scotland) Regulations 2017, and paragraph 5(1) and Schedule 4 of the Marine Works (EIA) Regulations 2007 (as amended 2017)).
- 4.1.9 The Scoping Opinion of the Scottish Ministers is being sought on the following:
 - the environmental aspects that should be assessed within the EIA Report;
 - the likely significant effects of the construction; O&M; and decommissioning of the Project;
 - the in-combination likely significant effects of the Project and Transmission Infrastructure from construction, O&M, and decommissioning;
 - those effects that are not likely to be significant and can be scoped out of the EIA Report;
 - the approach to defining the study areas for each environmental aspect;
 - the data that has been gathered and will be gathered to support the assessments;
 - the assessment methods that will be used to determine likely significant effects;
 - the approach to determining the environmental measures that could be incorporated into the Project to avoid, reduce, or compensate for significant effects; and
 - the approach to the assessment of cumulative, inter-related, and transboundary effects.
- 4.1.10 Ongoing dialogue will be held between the Applicant and Marine Directorate Licensing Operations Team (MD-LOT) (on behalf of the Scottish Ministers) and stakeholders with regards to the scope of the assessment, and with a view to reaching agreement over the scope. Future changes in the design of the Project or new environmental information will also be subject to discussion over any consequent changes to the scope of the assessment.

Consultation process

Introduction

4.1.11 This Scoping Report has been prepared to support a request for a Scoping Opinion in relation to the Project from MD-LOT and stakeholders. In advance of formal submission of the EIA Report, both statutory and non-statutory consultation and engagement will be carried out to give any stakeholders and members of the public with an interest in the Project the opportunity to feedback on all aspects of the Project and to inform the scope of studies, surveys and assessments being undertaken. This will be delivered in accordance with relevant legislation, guidance, and best practice and will build on the feedback to be provided by consultees in the Scoping Opinion and further define the scope of studies, surveys and assessments, as required.

Previous stakeholder engagement

- 4.1.12 The Applicant has strong existing relationships with a wide variety of stakeholders. Prior to Crown Estate Scotland (CES) awarding the Applicant an Option to Lease agreement to develop the Project within the E2b Option Agreement Area, a stakeholder mapping exercise was undertaken to support early stakeholder engagement. Stakeholders were identified who could contribute to the site selection process, inform supply chain planning and help shape project concept development. Where appropriate, key stakeholders were engaged to ensure robust definition and development of a project concept. Feedback from this early engagement fed into site selection, development of the understanding of potential constraints, and identification of challenges, as well as opportunities.
- 4.1.13 Since award of the Option to Lease Agreement, key stakeholders have been engaged to provide an introduction to the Project, establish contacts and channels of engagement, and to begin sharing data and information that will help in the undertaking of assessments for the delivery of the Scoping Report and the design of the Project.
- 4.1.14 EIA Scoping Workshops for the Project were held on 07 November 2024 and 15 January 2025. The workshops were attended by representatives from MD-LOT, Marine Directorate Science, Evidence, Digital and Data (MD-SEDD), NatureScot, the Royal Society for the Protection of Birds (RSPB), and commercial fisheries stakeholders (Scottish Fishermen's Federation and the Scottish White Fish Producers Association Ltd). The Project's consenting approach was outlined during the workshop and the Applicant stated that this would be further developed during post-Scoping consultation. Following the Scoping Workshops, stakeholders provided feedback on the Project and assessment approaches. This, along with the Applicant's response to this feedback, is presented in the relevant environmental sections of this Scoping Report (see **Sections 5.1** to **5.11**). In addition to this, the Applicant held a meeting with the Maritime and Coastguard Agency (MCA) on 11 March 2025 to introduce the Project and discuss potential survey requirements for the shipping and navigation assessment.

Pre-application consultation

4.1.15 The various consultation requirements and associated guidance that are relevant under the applicable consenting regimes for the Project are detailed below in **Table 4.1.1**.

Table 4.1.1 Le	gislative /	regulations	requirements
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Legislation / regulations	Statutory requirement for consultation
Electricity Act 1989, s.36 consent	No statutory requirements for consultation.
	Expectation to follow the pre-application consultation principles and undertake consultation with the public, hosting at least two consultation events held at least 14 days apart. The publication of a notice at least seven days before holding a public event.
Marine and Coastal	No statutory requirements for consultation.
AUUU33 AU 2003	The Project will be undertaking pre-application consultation as expected by the Electricity Act 1989, and s.36 consent (detailed above).

- 4.1.16 The Applicant will track all stakeholder feedback from Project set up, throughout development and into execution. Throughout the consenting process and into the post-consent period it is important to ensure that issues specified in the Scoping Opinion, and comments raised subsequently by consultees, are adequately addressed and logged so that there is an audit trail of how each stakeholder issue has been considered in the development of the Project. MD-LOT advises that applicants set out, at the point of submission, how the EIA Scoping comments have been addressed in the EIA Report, and included for consideration in the post-consent period as required. Any future changes to statutory requirements for consultation will be followed as required.
- 4.1.17 When appropriate information is available to progress the Transmission Infrastructure (the future project application, as described in **Chapter 2: Project Description**, **Section 2.3**), public consultation will be carried out as required. under the Marine (Scotland) Act 2010. The Applicant will endeavour to carry out future consultation for this Project and the future project application at the together in order to give consultees a full understanding of the CampionWind project.

4.2 Approach to the EIA process

Overview

- 4.2.1 An EIA is a process for identifying the likely significant environmental effects of a Project (beneficial and adverse) to inform the decision-making process for development consent. The EIA process will culminate in the provision of an EIA Report, written in accordance with the planning legislation set out in **Section 3.4**, **Chapter 3: Legislative and Policy Context**. The EIA Report will describe the likely significant effects associated with the Project during its construction, O&M, and decommissioning phases.
- 4.2.2 The current Scoping phase involves a process to identify anticipated content of the EIA Report and the various methodologies that will be used for the assessment. These have been discussed with key stakeholders, including during the EIA Scoping Workshops and written consultation as outlined in **paragraph 4.1.2**, prior to Scoping submission.
- 4.2.3 The content of the EIA Report and various assessment methodologies have also been based on recognised good practice and guidelines specific to each environmental topic or discipline as set out in **Chapter 5** of this Scoping Report.
- 4.2.4 The assessment phase of the EIA process comes next, which involves the assessment of effects, statutory stakeholder consultation, and the production of the EIA Report.

4.2.5 In practice, the approaches to EIA (i.e. the way in which the assessment is conducted) and the assessment criteria applied across different environmental and socio-economic aspects vary. The term 'aspects' refers to the individual environmental topics or disciplines that are considered in the EIA. **Chapter 5** of this Scoping Report outlines the proposed approaches to the environmental aspects that will be addressed in the EIA Report.

Design evolution process

- 4.2.6 The EIA process aims to be systematic, analytical, impartial, consultative and iterative allowing opportunities for environmental concerns to be addressed in the design and evolution of the Project. Typically, throughout the evolution of the design, a number of design iterations take place in response to environmental constraints identified during the EIA process prior to the final design being submitted for approval. This iterative design process is a fundamental element of the EIA and the Project and will be informed by feedback from key stakeholders, including that received through the Scoping Opinion.
- 4.2.7 The iterative design process is underway and will continue up until submission of the EIA Report. Statutory and non-statutory engagement is ongoing and is integral to the provision of opportunities for stakeholders to provide feedback and to understand and influence the design as it progresses.
- 4.2.8 The iterative design process also integrates the advice and experience of the environmental subject matter experts that undertake the Scoping and assessments for the EIA in regular liaison with the Project's engineering team. This ensures that design evolution is informed by a Project-wide understanding of environmental sensitivities such that the mitigation hierarchy is adhered to throughout the Project's development.
- 4.2.9 From the outset the environment has been central to the design of the Project, and this is demonstrated through the development of embedded environmental measures presented within this Scoping Report. With this approach to design, the Applicant is seeking to achieve a sustainable and environmentally appropriate design. This design will meet operational requirements whilst limiting and mitigating the environmental effects of the Project as far as is practical.
- 4.2.10 The EIA will be developed in line with current decommissioning policies in place (outlined in **Chapter 3**). The necessary approach at the time of decommissioning will depend on the relevant regulations and guidance in place at that future time. The Project will engage with MD-LOT at an appropriate time to ensure that any future policy developments are accounted for in decommissioning strategy decisions. The current information regarding the Project's approach to decommissioning is included within **Chapter 2** (**paragraph 2.3.49**). Further detail will be progressed as part of the design evolution process and provided in the decommissioning plan, provided to support the application submission.
- 4.2.11 The design and activities undertaken to date and covering future construction, O&M and decommissioning is described in **Chapter 2**. As outlined, this process includes a combination of stakeholder engagement, EIA surveys, and other technical studies to define the Scoping Boundary, and in the future the Application Boundary. The characteristics of the Scoping Boundary are described in **Chapter 2**.

Proportionate EIA

- 4.2.12 Scoping is intended to inform a proportional and robust approach to assessment through initial evaluation and reporting of identified likely significant effects in a Scoping Report.
- 4.2.13 In accordance with guidance and legislation, this Scoping Report seeks to ensure that the EIA and resultant EIA Report are robust and focused to help inform the decision-making

process. This means that where appropriate, this Scoping Report seeks to scope out environmental aspects and specific matters under an aspect from further assessment with suitable justification and evidence provided. This will focus the assessment on key likely significant effects and ensure the EIA for the Project is proportionate in accordance with Planning Advice Note (PAN) 1/2013 (Scottish Government, 2013) and Institute of Environmental Management and Assessment's (IEMA) Delivering Proportionate EIA guidance document (IEMA, 2017). As such, this Scoping Report aims to focus the scope of the proposed assessments on material issues to ensure the EIA is appropriate and proportionate, where more certainty in relation to information exists.

- 4.2.14 Potential for impacts and likely significant effects of the Project and Transmission Infrastructure in-combination will also be assessed within the EIA (in line with the level of detail available at the time).
- 4.2.15 The following key tools/approaches have been adopted at the Scoping stage for the Project, to assist in the delivery of proportionate EIA:
 - use of existing evidence base; and
 - inclusion of embedded environmental measures (informed by the site selection exercise, and good and standard practices).

Evidence base

- 4.2.16 Where available, the existing evidence base has been collated, supplemented and drawn upon for the purposes of this Scoping Report to help inform the scope of the forthcoming environmental assessments. Further details are provided in **Chapter 5** for each of the relevant individual environmental aspects. These data and information have been utilised to:
 - inform the understanding of current and future baseline environment;
 - scope out matters from further consideration in the EIA where appropriate and justifiable; and
 - scope in matters for further assessment as part of the EIA.
- 4.2.17 The existing evidence base will continue to be expanded as the EIA progresses and as further data collection and environmental survey and modelling work is carried out. The evidence base will be regularly discussed with relevant stakeholders to ensure that it is appropriate.

Environmental measures

- 4.2.18 As part of the Scoping process, to enable refinement of the likely significant effects of the Project to be taken forward and assessed as part of the EIA, early stage environmental measures have been implemented as part of the Project and will be embedded into the design.
- 4.2.19 These include a range of environmental measures covering proposed avoidance measures that have been informed by the ongoing site selection and refinement exercise (see **Section 2.4, Chapter 2**), and good practice measures identified with reference to legislative requirements. Best practice design commitments have also been included that are considered to be sectoral practices and procedures for major infrastructure projects, and in particular offshore wind farm development.
- 4.2.20 These measures have been used to inform the scope of the individual assessments and are set out in each environmental aspect section in **Chapter 5**.

Design envelope

4.2.21 The EIA for the Project will adopt a parameter-based design envelope approach. The provision of a design envelope is intended to identify key parameters to enable the EIA to be carried out whilst retaining sufficient flexibility to accommodate further refinement during detailed design. The design envelope approach is widely used and accepted for major infrastructure projects in United Kingdom (UK), including for recent applications for offshore wind farms. The approach is recognised by Marine Directorate - Scottish Government and the Energy Consents Unit in their guidance on how the design envelope assessment approach may be applied in the context of applications received for generating stations under s.36 of the Electricity Act 1989 (Scottish Government, 2022a). This states:

"in some instances, the nature of the proposed development and evolving technology mean that some aspects of the final project are yet to be settled in precise detail at the time that the application is submitted (such as the precise location of certain types of infrastructure, the foundation type, the size of certain structures or the turbine model). Where that is the case and some details are still the be finalised, the design envelope approach can be employed for such applications to enable a degree of flexibility and address these uncertainties. Through the design envelope approach, the application can set out parameters for the proposal including the maximum extents of the proposal and can assess on that basis what the likely worst case effects of the proposal may be. The detailed design of the project can then vary within this 'envelope' to ensure that the project as-constructed has been properly assessed'.

- 4.2.22 There is also UK guidance for the design envelope approach, including within the UK National Policy Statement for Energy (EN-1) (Department for Energy Security and Net Zero (DESNZ), 2024a), UK National Policy Statement for Renewable Energy Infrastructure (EN-3) (DESNZ, 2024b), and in the Planning Inspectorate's Advice Note Nine: Rochdale Envelope (Planning Inspectorate, 2018). These guides closely align with the Marine Directorate Scottish Government and the Energy Consents Unit guidance.
- 4.2.23 The assessment will consider a maximum design scenario whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the consent and licence applications. This will enable a meaningful and comprehensive assessment of the Project on a reasonable worst-case scenario basis, whilst maintaining flexibility for refinements to the design as it continues to evolve. The reasonable worst-case scenario defined for any given parameter may vary by environmental aspect, depending on how the parameter can be expected to interact with the receptor being considered. The use of this approach has been adopted for this Scoping Report and will also enable the subsequent EIA Report to be based on a description of the location, design, and size of the Project that is suitable to allow a comprehensive assessment of its likely significant environmental effects.
- 4.2.24 The description of the Project will be refined as the Project continues to evolve through the key subsequent stages of the design and EIA process including in the EIA Report that will accompany the consents and licences.

Technical, spatial, and temporal scope

Technical scope

- 4.2.25 The technical scope of assessment for each environmental aspect is detailed in **Chapter** of this Scoping Report.
- 4.2.26 The environmental receptors to be considered in more detail within this Scoping Report are:

- Chapter 5.1: Marine geology, oceanography and physical processes;
- Chapter 5.2: Marine water and sediment quality;
- Chapter 5.3: Underwater noise and vibration;
- Chapter 5.4: Electromagnetic fields;
- Chapter 5.5: Benthic, epibenthic and shellfish;
- Chapter 5.6: Marine mammals;
- Chapter 5.7: Offshore ornithology;
- Chapter 5.8: Fish ecology;
- Chapter 5.9: Commercial fisheries;
- Chapter 5.10: Shipping and navigation; and
- Chapter 5.11: Marine Archaeology and cultural heritage.
- 4.2.27 The environmental receptors set out in **Table 4.2.1** below are not considered to require a more detailed assessment within this Scoping Report and will therefore not be considered in dedicated Sections. Commensurate detail for the scoping in / out of these receptors in the Project EIA Report is provided in **Table 4.2.1**.
- 4.2.28 Justification is provided for the individual approach and scoping of matters to be considered in the assessment for each environmental aspect. The technical scope also details the approach to baseline data collection and assessment methodologies.

Table 4.2.1	Environmental receptors not	considered in further	detail within this Sco	ping Report
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Торіс	Justification	Informatio	
Environmental Receptors Scoped In			
Military and civil aviation and telecommunications	The potential impact of the Project on the future baseline and likely significant effects on elements of aviation and telecommunications of relevance will be considered in a standalone military and civil aviation and telecommunications chapter presented in the EIA Report for the Project. It will assess the potential effects, both beneficial and adverse ,arising from the development of the Project (as presented in Chapter 2). The assessment will include consideration of civil airports operations, the types and operational coverage of aviation radar over the Array, impact on civil aviation agencies, Search and Rescue offshore helicopter operations and the Ministry of Defence (MOD) aviation operations including military aviation radar systems.	Relevant e Section 36	
	The study area for the military and civil aviation and interference assessment will be defined in relation to the maximum operating ranges of any applicable radar systems relevant in the area including civil, military and national air traffic services. This will be identified and agreed in consultation with stakeholders. This assessment will be informed by engagement and discussion with various stakeholders such as the MOD, Civil Aviation Authority (CAA), and National Air Traffic Services (En Route) (NERL) in addition to helicopter operations and telecommunication bodies		
	It is therefore proposed that military and civil aviation and telecommunications is scoped in for further assessment and will be the subject of a separate standalone environmental aspect chapter in the EIA Report for the Project application.		
Socio-economic	The Project is located entirely offshore, however the majority of the socio-economic effects related to construction activities are likely to be experienced onshore. The potential socio-economic impact of the Project on the future baseline (i.e. the theoretical situation that would exist in the absence of the Project) and likely significant effects will be considered in a standalone Socio-economic chapter presented in the EIA Report for the CampionWind Array Area application. It will assess the potential effects, both beneficial and adverse arising from the development of the Project (as presented in Chapter 2). The socio-economic study area for the assessment of effects on employment and economy will be defined in line with the guidance on identification of 'local areas' for offshore developments published by the Scottish Government (Scottish Government, 2022b). The socio-economic study area will be defined when more information on the ports that may be used during the construction and operation is known.	Relevant e Section 36	
	It is therefore proposed that socio-economics is scoped in for further assessment and will be the subject of a separate standalone environmental aspect chapter in the EIA Report for the Project application.		
Infrastructure and other marine users	The potential impact of the Project on the future baseline and likely significant effects on elements of infrastructure and other marine users will be considered in a standalone Infrastructure and other marine users chapter presented in the EIA Report for the Project application. It will assess the potential effects, both beneficial and adverse arising from the development of the Project (as presented in Chapter 2). This infrastructure and other marine users assessment will consider all other infrastructure, users and utilities which have not been included in other aspects sections such as subsea cables and utilities, dredging or offshore disposal sites, other marine energy projects and oil and gas infrastructure. A buffer of 10 nm has been proposed around the Scoping Boundary to consider the wider area around the Project and consider the movement of other mobile marine users. This is consistent with the buffer used by the shipping and navigation assessment. The study area will be reviewed and amended in response to such matters as refinement of the offshore components, the identification of additional impact pathways and in response where appropriate to feedback from consultation.	Relevant e Section 36	
	It is therefore proposed that infrastructure and other marine users is scoped in for further assessment and will be the subject of a separate standalone environmental aspect chapter in the EIA Report for the Project application.		
Climate change	Schedule 4 of the Electricity Works (EIA) (Scotland) Regulations 2017 requires the environmental assessment to identify, describe and assess the potential impact of the Project on climatic receptors and the potential for net emissions benefits. Climate change assessments are often presented for greenhouse gas assessments and climate change resilience assessments.	Relevant e Constructic and conditi licence.	
	The potential impact of the Project on the future baseline and likely significant effects on climate change will be considered in a standalone climate change chapter presented in the EIA Report for the Project. It will assess the potential effects, both beneficial and adverse arising from the development of the Project (as presented in Chapter 2). The assessment will include a Greenhouse gas (GHG) assessment as well as a Climate resilience assessment.	Additionally environment the influent 5 1: Marin	
	GHG assessments provide information on the potential impacts of the proposed development on emissions released during the project's lifetime. Owing to the nature of GHG emissions, they affect the same receptor, the global atmosphere. As such, the study area of the GHG assessment is not geographically defined (IEMA, 2022). The GHG assessment will consider the direct and indirect emissions arising from the Scoping Boundary over all phases of development.	processes	

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on secured (if required)

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embedded measures are to be secured in the 6 Consent and marine licence.

embedded measures are to be secured in the ion Environmental Management Plan (CEMP) tions on the Section 36 Consent and marine

ly, and where appropriate, relevant ental aspects, as part of the EIA, will assess nce of climate change, for example **Section ne geology, oceanography and physical s** considers changes to coastal morphology.

Торіс	Justification	Informatio
	Climate resilience assessments focus on potential impacts of future trends in climate change (i.e. rise in sea level) on the vulnerability and resilience of the proposed development throughout the project lifecycle. The study area for the Climate resilience assessment will be defined by the Scoping Boundary. The assessment will include the Climate Vulnerability Assessment which evaluates the vulnerability of the identified receptors to climate change across the Project lifetime. The vulnerability of the receptors will depend on the sensitivity and exposure of the receptors to climate trends identified within the future baseline. It is therefore proposed that climate change is scoped in of any further assessment for the Project and will not be the subject of a standalone chapter in the EIA Report for the Project application.	
Environmental Recep	tors Scoped Out	
Major accidents and disasters	Schedule 4 of the Electricity Works (EIA) (Scotland) Regulations 2017 outlines that the EIA should identify, describe and assess the vulnerability of the Project to major accidents and/or disasters. A 'major accident' is an event (such as a major marine vessel accident e.g. 'MV Braer' tanker running aground off the Shetland Isles in 1993) that threatens immediate or delayed serious environmental effects to human health, welfare and / or the environment. A 'disaster' is a man-made / external hazard (e.g. an act of terrorism) or a natural hazard (e.g. earthquake) with the potential to cause an event or situation that meets the definition of a major accident (IEMA, 2020). The Project will comply with the Health and Safety at Work etc. Act 1974 and all regulations made thereunder. The Health and Safety at Work etc. Act 1974 and supporting regulations require that a suitable risk assessment is undertaken for all workplace activities, and that any residual risks must be reduced to 'As Low As Reasonably Practicable' (i.e. the ALARP principle). The provisions of the Health and Safety at Work etc. Act (as amended) are applied to work activities beyond the 12 nm territorial sea limit and include energy structures and related structures, such as wind farms. The construction of the Project will be undertaken in compliance with the Construction (Design and Management) Regulations 2015, which make specific requirements for the client, designers and construction contractors to reduce the risk of accidents to ALARP. The Project will also comply to the Health & Safety Executive's regulatory expectation for emergency response arrangements for the offshore renewable energy industry (Health & Safety Executive, 2019) and RenewableUK's guidance Offshore Wind and Marine Energy Health and Safety (RenewableUK, 2014). It is therefore proposed that major accidents and/or disasters is scoped out of any further assessment and will not be the subject of a separate standalone environmental aspect chapter in the EIA Report for the Project	Relevant e CEMP, \ conditions Licence ar Where app part of the arising from vulnerability will be emp
Waste	Schedule 4 of the Electricity Works (EIA) (Scotland) Regulations 2017 outlines that the EIA should describe effects from the disposal and recovery of waste. The Project will adopt best practice construction and management techniques to ensure waste is minimised as far as possible and that the storage, transport, and eventual disposal of waste has no significant environmental effects. The management and collection of waste arisings will be carried out under the requirements of the Scottish waste regulatory regime. It is therefore proposed that waste is scoped out of any further assessment and will not be the subject of a standalone chapter in the EIA Report for the Project application.	Relevant e CEMP and marine lice described and any e addressed and assoc
Seascape, landscape, and visual assessment (SLVIA)	Schedule 3 of the Electricity Works (EIA) (Scotland) Regulations 2017) outlines that 'landscape' needs to be taken into consideration in the EIA. Guidance published by Scottish Natural Heritage (SNH, 2017) suggests that wind farm projects that are 150 m in overall height should use a 45 km study area radius. Typically, a radius of 50 km has been adopted for offshore developments with wind turbines around 200 m to blade tip (e.g. Neart na Gaoithe). White et al., 2019 suggested that a very approximate ratio of 1:133 between wind turbine height and distance at which low magnitude of impact might be detected to understand the potential visual effects of wind turbines. The proposed maximum blade tip height for this Project is 350 m above Low Astronomical Tide (LAT), this would indicate a SLVIA study area radius of at least 46.5 km. Marine Directorate - Scottish Government have recently been advised by stakeholders to consider study areas greater than 50 km for projects with maximum heights of wind turbines over 300 m, with study areas of up to 70 km (RWE Renewables, 2022). The closest distance to shore from the Scoping Boundary (presented in Figure 1.1: Scoping Boundary, Appendix 1A) is 93.2 km. Atmospheric visibility is expected to be limited across a distance of approximately 80 km, therefore actual visibility of the Project is likely to be minimal. Due to this distance and elevation, it is expected that there will be limited visibility of the Project from the closest points along the coastline and there are no onshore locations where more extensive views of the Project would be possible.	Relevant through c marine lice

on secured (if required)

embedded measures are to be secured in the Vessel Management Plan (VMP), and s on the Section 36 Consent and Marine nd marine licence.

propriate, relevant environmental aspects, as e EIA, will assess the likely risks either to/or om the Project in relation to potential areas of ity and the associated control measures which aployed to address these.

embedded measures are to be secured in the ad conditions on the Section 36 Consent and cence. Any waste related development will be I in the project description of the EIA Report effects relating to such development will be d as part of the relevant environmental aspects ciated strategies.

embedded measures are to be secured conditions on the Section 36 Consent and ence.

CampionWind Offshore Wind Farm Array Area Environmental Impact Assessment - Scoping Report Chapter 4: Approach to Scoping and EIA

Торіс	Justification	Informatio
	Recent Scoping Reports for offshore wind farm applications focused on the array area elements only in the east of Scotland have considered this 70 km radius for the purpose of SLVIA scoping (Ossian Offshore Wind Farm Limited, 2023). Due to the distance between the project and the coast, Scottish Ministers and stakeholders agreed that no adverse impacts were likely and the SLVIA aspect was scoping out from further assessment.	
	Aviation lighting would be mounted on wind turbine hubs. The wind turbine hubs are expected to be below the horizon line so no lighting would be visible from locations along the coastline. Aviation lighting is not required to be visible at distances of 80 km. CAA guidance states that, in conditions of good visibility, the intensity of aviation lighting can be reduced to 10% of the maximum value (CAA, 2016). Even in good visibility it is unexpected that views of the Array would be possible, but at these times the intensity of lighting would be substantively reduced. It is therefore unlikely that aviation lighting would be visible to sensitive visual receptors.	
	It is therefore proposed that SLVIA is scoped out of any further assessment and will not be the subject of a standalone chapter in the EIA Report for the Project application.	
Offshore air quality	Schedule 3 of the Electricity Works (EIA) (Scotland) Regulations 2017 outlines that 'air' needs to be taken into consideration in the EIA. Relevant air quality pollutant concentrations should only be compared to air quality objectives where there is representative exposure. There are no offshore human receptors in the vicinity of the Scoping Boundary (presented in Figure 1.1: Scoping Boundary, Appendix 1A) which are sensitive to air quality, and marine based ecological receptors are unlikely to be sensitive to air pollution impacts (UK Centre for Ecology and Hydrology, 2024). The only source of offshore air quality emissions are likely to be from the offshore marine vessels and helicopter movements during the construction, O&M, and decommissioning stages which are expected to be at a small, localised scale.	Relevant e CEMP, VN and marine
	The International Maritime Organisation has enacted regulations to reduce vessel emissions under Annex V1 "Regulations for the prevention of air pollution from ships" of International Convention for the Prevention of Pollution from Ships (International Maritime Organisation, 2023). These include the global 0.5% limit on the sulphur content of marine fuels as well as two tiers of control for NOx emissions which are determined by the ship's construction date and the engine-rated speed. Annex VI also sets out tighter emission limits for Emission Control Areas, such as the North Sea; therefore, SO2 and NOx emissions from vessels associated with the WDA have the potential to have tighter restrictions, depending on the ports within the UK and worldwide from which vessels originate.	
	The VMP will outline the vessel construction, O&M, and decommissioning approached for the Project. It will ensure compliance with relevant national and international air quality standards and legislation. The number of project-related vessels active on site would be limited in comparison with the number of vessels active regionally and would contribute a small amount of emissions to air relative to the current baseline.	
	It is therefore proposed that offshore air quality is scoped out of any further assessment for the Project and will not be the subject of a standalone chapter in the EIA Report for the Project application.	
	Further to this, the Project will include embedded mitigation to minimise potential air quality impacts through the adherence to a CEMP and VMP.	
Offshore airborne noise and vibration	Schedule 3 of the Electricity Works (EIA) (Scotland) Regulations 2017 outlines that 'noise and vibration' needs to be taken into consideration in the EIA. Several potential noise and vibration effects on receptors have been identified, which may occur during the construction, O&M, and decommissioning stages of the Project such as piling activities. However, there are minimal receptors that are within the vicinity of the Project. Commercial vessels will maintain a minimum distance to pass construction activities. These vessels are transient in nature and therefore will only be in the vicinity of construction activities for a limited period of time. Any potential airborne noise impact from construction activities on commercial vessels is considered to be negligible.	Relevant e CEMP, VN and marine
	The movement of wind turbine blades is expected to result in low levels of airborne noise during operation, which considering the distance to the nearest onshore human receptors or transient marine users are considered to not have potential to cause an impact.	
	It is therefore proposed that offshore airborne noise and vibration is scoped out of any further assessment for the Project and will not be the subject of a standalone chapter in the EIA Report for the Project application.	
Human health	Schedule 3 of the Electricity Works (EIA) (Scotland) Regulations 2017 outlines that 'human health' needs to be taken into consideration in the EIA. The potential effects on human health have been considered within the environmental aspects above for offshore air quality and airborne noise and vibration. Due to the distance between the Project and onshore human receptors and proposed project embedded measures, it is considered that the Project does not have potential to cause an impact to human health receptors.	Relevant e CEMP and marine lice relevant er assess the
	It is therefore proposed that human health is scoped out of any further assessment for the Project and will not be the subject of a standalone chapter in the EIA Report for the Project application.	example S quality co

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on secured (if required)

embedded measures are to be secured in the MP, and conditions on the Section 36 Consent ne licence.

embedded measures are to be secured in the MP, and conditions on the Section 36 Consent ne licence.

embedded measures are to be secured in the ad conditions on the Section 36 Consent and cence. Additionally, and where appropriate, environmental aspects, as part of the EIA, will he potential for human health impacts, for **Section 5.2: Marine water and sediment** considers seabed sediment quality.

Magnitude of change

Spatial scope

- 4.2.29 The geographical context within which the Project is located is shown in **Figure 1.1: Scoping Boundary, Appendix 1A**. The spatial scope for each aspect assessment will depend on the nature of the potential effects and the location of features that could be affected. The study area relevant to each environmental aspect is described in the aspect sections within **Chapter 2**. where appropriate. The spatial scope of the technical assessments will therefore take account of:
 - the physical or developable area of the Project;
 - the nature of the baseline environment; and
 - the manner and extent to which environmental effects may occur within the developable area or beyond its boundaries.
- 4.2.30 The methodology for setting the aspect-specific study area will then be applied to the final location of the components and supporting infrastructure. The study area for any given aspect may need to be refined in consultation with relevant consultees to ensure they still adequately reflect the area of potential influence for likely significant environmental effects.

Temporal scope

- 4.2.31 The temporal scope refers to the time periods over which impacts and effects may be experienced by sensitive receptors and this will be defined further for each aspect in discussion with relevant consultees. The EIA will assess effects during the construction, O&M and where appropriate, decommissioning phases of the Project.
- 4.2.32 Environmental effects will be compared to the situation prevailing before the Project commences development (the current baseline) and will also take into consideration the projected future baseline where possible. For example, predictable changes such as climate change, or changes that can be expected based on reasonable assumptions and modelling calculations, will be taken into account. Each environmental aspect chapter of the EIA Report will define the baseline (current and future where possible) against which the environmental effects of the Project will be assessed. The baseline conditions to be assessed for each environmental aspect are outlined in **Chapter 5: Environmental Aspects** of this Scoping Report.

Assessment of effects and determining significance

- 4.2.33 The general methodological framework that will be applied in order to assess effects on environmental receptors and features, and used to determine the significance of their effects in the EIA Report is outlined in **Plate 4.2.1**. The assessments will broadly consider the magnitude of impacts and the value or sensitivity of receptors and features that could be affected in order to classify the significance of effects. As described in **Section 4.1**, the EIA will assess the effects in two steps by considering the source, pathway and receptors for:
 - the Project; and
 - the Project and Transmission Infrastructure (commensurate to the level of detail available at the time).
- 4.2.34 This approach will enable potential interactions between the Project and Transmission Infrastructure to be identified and appraised within both EIA Reports (commensurate to the level of detail on the Transmission Infrastructure known at the time, in the case of the Project EIA Report). As CampionWind is awaiting identification of its grid connection point and associated Transmission Infrastructure, the topics in this Project Scoping Report will focus on the Project alone. When the Transmission Infrastructure is known, and consent progressed, its Scoping and EIA Reports will include the assessment outcomes of the Project's consents.
- 4.2.35 In practice, the approaches and criteria applied across different environmental aspects could vary. Therefore, professional judgment in the application of standards mandated by professional bodies (for example the Chartered Institute of Ecology and Environmental Management (CIEEM) or the Chartered Institute for Archaeologists (CIfA) is applied. Where this is the case, further detail and justification will be provided. The environmental aspect sections in **Chapter 5**, provide greater detail on the approaches to the assessment that will be addressed in the EIA Report.

Plate 4.2.1 Approach to EIA



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ow	Very low	
derate entially ificant	Minor (Not significant)	
inor gnificant)	Minor (Not significant)	
inor gnificant)	Negligible (Not significant)	
ligible gnificant)	Negligible (Not significant)	

Receptor (or feature) sensitivity or value

- 4.2.36 The sensitivity or value of a receptor (or 'feature' when referring to ecological receptors) is largely a product of its societal importance, as informed by legislation and policy, and as qualified by professional judgement. For example, higher value receptors, biodiversity or the marine archaeology may be defined as being of international or national importance; lower value receptors may be designated as being sensitive or important at a local level.
- 4.2.37 The use of a receptor also plays a part in its classification. For example, when considering visual amenity, a receptor that is residential in nature may be valued more than a place of work as the environmental quality of the residential receptor is more likely to be an important part of that receptor's use.
- 4.2.38 **Table 4.2.2** sets out the generic guidelines for the assessment of sensitivity and value of a receptor or feature. Guidelines specific to each aspect are provided in each aspect section within **Chapter 5** of this Scoping Report.

Value or sensitivity	Guidelines
High	Value: Feature or receptor possesses key characteristics that contribute significantly to the distinctiveness, rarity, and character of the site or receptor (for example designated features of international or national importance). Sensitivity: Feature or receptor has a very low capacity to accommodate the proposed change.
Medium	Value: Feature or receptor possesses key characteristics that contribute significantly to the distinctiveness and character of the site or feature (for example designated features of regional importance). Sensitivity: Feature or receptor has a low capacity to accommodate the proposed change.
Low	Value: Feature or receptor possesses characteristics which are locally significant. Feature or receptor which is either not designated or is designated at a local or district level. Sensitivity: Feature or receptor has some tolerance to accommodate the proposed change.
Very low	Value: Feature or receptor characteristics do not make a significant contribution to local distinctiveness and not designated. Sensitivity: Feature or receptor is generally tolerant and can accommodate the proposed change.

Table 4.2.2 Generic guidelines for the assessment of sensitivity or value

Magnitude of change

- 4.2.39 The magnitude of change affecting a receptor that would result from the Project will be identified on a scale from minor alterations or change, up to major changes or the total or substantial loss of the receptor. For certain aspects, the magnitude of change would be related to guidance on levels of acceptability (for example, for noise), and is therefore based on numerical parameters. For others it will be a matter of professional judgement to determine the magnitude of change, using descriptive terminology.
- 4.2.40 **Table 4.2.3** sets out the generic criteria of the assessment of the magnitude of change.

Magnitude	Guidelines
High	Large scale changes over the whole development area and potentially beyond to key characteristics or features of the particular environmental aspect's character or distinctiveness.
Medium	Medium scale changes over the majority of the development area and potentially beyond to key characteristics or features of the particular environmental aspect's character or distinctiveness.
Low	Noticeable but small-scale changes over part of the development area and potentially beyond to key characteristics or features of the particular environmental aspect's character or distinctiveness.
Very low	Noticeable but very small-scale change or barely discernible changes over a small part of the development area and potentially beyond, to key characteristics or features of the particular environmental aspect's character or distinctiveness.

Table 4.2.3 Generic criteria for the assessment of magnitude

Environmental measures and residual effects

- 4.2.41 For each environmental aspect, the EIA process will systematically identify impacts and effects and take into consideration environmental measures that the Project will adopt. These environmental measures include both avoidance, best practice and design commitments. The IEMA Guide to Shaping Quality Development (IEMA, 2015) provides guidance on three categories of environmental measures: primary, secondary or tertiary measures:
 - **Primary** "these are modifications to the location or design of the development made during the pre-application phase that are an inherent part of the Project and do not require additional action to be taken". These are referred to as 'design measures';
 - Secondary "actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent or through inclusion in the EIA Report". These are referred to as 'additional measures'; and
 - **Tertiary** "actions that would occur with or without input from the EIA process. These include actions that will be taken to meet legislative requirements, or those considered to be standard practice and used to manage commonly occurring environmental effects". These are referred to as 'good practice measures'.
- 4.2.42 Opportunities for design measures will be identified throughout the evolution of the design and implementation strategy for the Project and the EIA process. This allows potential significant adverse environmental effects to be fed back into the design process, to verify whether they can be avoided or otherwise mitigated in accordance with the hierarchy. In addition, relevant and proportionate opportunities for environmental enhancement and good practice measures will be identified where appropriate, in accordance with applicable statutory, policy and guidance requirements (see **Chapter 3**). These design measures and good practice measures will be included within the Project plans and drawings and thus are integrated into the overall design strategy as embedded environmental measures.
- 4.2.43 Environmental measures will be subject to ongoing review to ensure that the Project can be adaptive to changes or unexpected outcomes. The EIA Report will report on the anticipated effects of the Project following the implementation of environmental measures, known as 'residual effects'. A clear statement will be made as to whether the likely residual effects are

significant or not significant in EIA terms. Residual effects may be beneficial as well as adverse.

- 4.2.44 During the construction phase, adherence to a CEMP or equivalent will occur and the CEMP will contain a range of environmental and health and safety considerations. An outline CEMP will be appended to the EIA Report.
- 4.2.45 Environmental measures will be recorded in a Commitments Register to enable them to be secured (where required) and implemented. Opportunities will be provided for stakeholders to provide feedback on the commitments as part of the planned stakeholder engagement exercises. The Commitments Register will be provided alongside the EIA Report.
- 4.2.46 The environmental measures will be secured through adherence to the design envelope and s.36 conditions, as appropriate.

Cumulative effects assessment

- 4.2.47 A CEA will be carried out for the Project which will examine the result from the combined impacts of the Project, Transmission Infrastructure (commensurate with the level of detail available at the time of carrying out that assessment) and other projects / plans on the same single receptor. These will be assessed in the EIA Report, which is currently planned to follow the same approach as the Scoping Report, as a single document covering the Project.
- 4.2.48 In- combination effects are similar but relate specifically to European Sites for the purposes of HRA. These are effects resulting from the combined impacts of the Project with other projects / plans on European Sites and will be presented separately within the HRA documentation.
- 4.2.49 Schedule 4 of the Electricity Works (EIA) (Scotland) Regulations 2017 requires that cumulative effects of the development should be described in the EIA Report. Planning Circular 1/2017 (Scottish Government, 2017) PAN 1/2013 (Scottish Government, 2013) also set out this requirement. There is currently no specific Scottish guidance on the methodological framework for assessing cumulative effects in general. PAN 1/2013 acknowledges that:

"assessment methods for cumulative impacts and interactions vary" and that it is a "matter of professional judgement to ensure the relevant projects and activities – and their environmental effects – are identified, taking into account the circumstances of the individual proposal and its location".

- 4.2.50 As such, the approach to the CEA will be informed by several guidance documents including: the Planning Inspectorate's Advice Note Seventeen (Planning Inspectorate, 2024a); and the RenewableUK and the Natural Environment Research Council (NERC) published guidelines (RenewableUK, 2013) on the undertaking of CEA and the Marine Directorate Scottish Government guidance on offshore wind, wave and tidal energy applications, which provides guidance on the types of projects to include in a CEA (Scottish Government, 2018).
- 4.2.51 The Applicant is aware that MD-LOT and NatureScot are currently producing a Cumulative Effects Framework (CEF) that will focus on CEA in Scotland (UK Centre for Ecology and Hydrology, 2022), and the CEF may be drawn upon in the EIA Report, if available.
- 4.2.52 In accordance with the above guidance documents, other developments that are deemed likely to go ahead or are going ahead, and for which sufficient information is available, should be taken forward for consideration. For the purposes of the CEA, the types of other developments that are proposed for consideration include:

- projects that are already constructed;
- projects that are under construction;
- projects that have planning permission, energy consent, or marine licences;
- projects for which planning, energy consent, or marine licence applications have been submitted to the relevant authority;
- projects that are reasonably foreseeable (e.g. projects identified in development plans, projects in other plans and programmes as may be relevant, offshore renewable energy projects that have a Crown Estate Agreement for lease, offshore renewable energy projects that have been scoped); and
- the infrastructure elements of the CampionWind Offshore Wind Farm not included within this application (i.e. offshore or onshore infrastructure outside of the Scoping Boundary) within the CEA.
- 4.2.53 As detailed in **paragraph 4.1.14**, the Applicant hosted EIA Scoping workshops for the Project on 07 November 2024 and 15 January 2025. The CEA approach was outlined during the workshop and the Applicant stated that this would be further developed during post-Scoping consultation. Feedback received on the CEA for environmental aspects is presented in technical sections of this Scoping Report (see **Section 5.1** to **5.11**).
- 4.2.54 The CEA will focus on other developments in proximity to the Project that may have effects on the same receptors. Generally, only other developments where an EIA is required are considered appropriate for inclusion in the CEA. This is because these developments are most likely to result in effects of a magnitude sufficient to lead to likely significant effects either on their own or in combination with the Project, and they are also most likely to have sufficient information in order to undertake a meaningful assessment.
- 4.2.55 The CEA methodology will be generally divided into a screening stage and an assessment stage. The CEA screening approach will follow the RenewableUK (2013) accepted guidance, which is specific to the marine elements of an offshore wind farm, addressing the need to consider mobile wide-ranging species (foraging species, migratory routes etc). The approach will also consider the Planning Inspectorate's Advice Note Seventeen (Planning Inspectorate, 2024a).
- 4.2.56 In line with standard practice and as part of ongoing regular quarterly meetings, the Applicant will engage with the Marine Directorate Scottish Government to identify which:

"plans/ projects/ on-going activities should be included in the in-combination element of the cumulative effects assessment".

4.2.57 Detailed methodologies, including the Zones of Influence for each environmental aspect, will be developed in consultation with MD-LOT as part of post-Scoping consultation. These will draw upon the anticipated new guidance from MD-LOT and NatureScot, when available. However, the general staged process that will be followed for the CEA is set out in **Plate 4.2.2**.

Plate 4.2.2 General CEA process



- 4.2.59 A list of other developments for CEA will be developed and shared with MD-LOT for agreement in order to inform the EIA Report, taking into account the anticipated new guidance from MD-LOT and NatureScot. It is anticipated that the CEA will consider all other relevant project, plans, and activities that are publicly available six months prior to submission of the application.
- 4.2.60 Where potential cumulative environmental effects have been identified, these will be considered further in the relevant environmental aspect assessments in the EIA Report.
- 4.2.61 In this Scoping Report, for each aspect, potential impacts of the Project that may contribute to cumulative effects on receptors are set out in **Chapter 5**.

Inter-related effects

4.2.62 Regulation 4(2) of the Electricity Works (EIA) (Scotland) Regulations 2017, Regulation 5(2) of the Marine Works (EIA) Regulations 2007 (as amended 2017) require that the EIA consider the interaction of environmental effects associated with the Project. The likely significant effects of multiple impacts from the Project and Transmission Infrastructure

(commensurate with the level of detail available at the time of carrying out that assessment) on one receptor will be identified and assessed in the EIA Report. For example, noise and air quality impacts together could have a greater effect on a receptor than each impact considered separately.

- 4.2.63 Inter-related effects could potentially arise in one of two ways. The first type of inter-related effects are lifetime effects, where multiple phases of the Proposed Development interact to create a potentially more significant effect on a receptor than in one phase alone. The second type of inter-related effects are receptor-led effects. Receptor-led effects are where effects from different environmental aspects combine spatially and temporally on a receptor. These effects may be short-term, temporary, transient, or longer-term.
- 4.2.64 In the majority of cases, inter-related effects will be inherently considered within each aspect chapter of the EIA Report. For example, the combined impact of foraging habitat loss and underwater noise disturbance on marine mammals would be considered in the marine mammals chapter.
- 4.2.65 Where the Project may result in combined effects on any one receptor that may collectively cause a greater effect (such as the combined effects of foraging habitat loss and underwater noise disturbance on marine mammals), this will be presented and assessed within a standalone chapter in the EIA Report.
- 4.2.66 Environmental aspects that have common receptors will be identified and considered holistically as to whether the aspect effects on any common receptors are likely to combine. The aspect assessments will:
 - identify the common receptor(s) from the individual aspect assessments;
 - identify impacts that each common receptor(s) may experience;
 - screen receptors, discounting those where there is no potential for inter-related effects, no spatial or temporal overlap of aspect impacts or where aspect impacts are identified as 'negligible' in core topic assessments; and
 - assess inter-related effects for the construction, O&M and decommissioning phases, where appropriate.
- 4.2.67 The inter-related effects assessment will only consider the effects from this Project, with effects from other projects considered within the CEA.

Transboundary effects

- 4.2.68 Transboundary effects may occur when impacts from a development within one EEA States affects the environment of another EEA State(s).
- 4.2.69 The United Nations Economic Commission for Europe Convention on EIA in a Transboundary Context (adopted in 1991 as the 'Espoo Convention') was negotiated to enhance the cooperation between EEA States in assessing environmental effects. The Espoo Convention has been transposed into Scottish EIA law by way of Regulation 29 of the Electricity Works (EIA) (Scotland) Regulations 2017, and Regulation 30 of the Marine Works (EIA) Regulations 2007 (as amended 2017). These Regulations set out the processes for consultation and notification. In the event that a project is considered to cause significant transboundary effects, the Electricity Works and Marine Works Regulations require Scottish Ministers to engage with the affected EEA State and invite them to participate in consultation.
- 4.2.70 Following the exit of the UK from the European Union (EU) in December 2020, the UK is no longer an EU Member State. However, for the purposes of assessing potential transboundary effects, the approach outlined above has been followed for the Project.

- 4.2.71 The assessment of potential transboundary effects and, determination of their significance draws on the use of zones of influence (ZOI) for key categories of effect. In the absence of specific Scottish guidance, the proposed approach to transboundary assessment has drawn on guidance provided in Planning Inspectorate's Advice Note Twelve: Transboundary Impacts and Process (Planning Inspectorate, 2024b). This includes consideration of the transboundary screening process, which outlines key aspects of the Project to consider from an international perspective, including:
 - characteristics of the Project;
 - characteristics of the Project and Transmission Infrastructure (commensurate with the level of detail available at the time of carrying out that assessment);
 - location of the Project, including proximity to relevant EEA States;
 - environmental context / importance, for example any EEA protected areas which may be affected by the Project;
 - potential pathways of effect;
 - the extent of potential effects;
 - the scale of the potential effect, to consider magnitude, probability, duration, frequency, and recoverability; and
 - cumulative impacts.
- 4.2.72 Where applicable, consideration of transboundary effects will follow the standard approach to EIA, as outlined within **Plate 4.2.1**, with regards to magnitude, significance etc. The assessment will be presented within each aspect chapter of the EIA Report where relevant. A Transboundary Screening Matrix that summarises the potential for transboundary effects to occur in relation to the offshore aspects associated with the Array Area infrastructure are provided in **Appendix 4A: Transboundary Screening Matrix**.

Related environmental assessments

Overview

4.2.73 The EIA process is not a standalone assessment with regards to the consenting of the Project. In addition, assessments are required under additional legislation, which will be captured within the consent and marine licence applications for the Project. These are described within **Section 3.6, Chapter 3**. For consistency of approach, these assessments will draw on the established evidence base, i.e. the results of site-specific surveys studies, and any third-party data and/or information collected to support the Project.

Habitats Regulations Appraisal

- 4.2.74 Habitats Regulations Appraisals (HRA), as described within **Section 3.6, Chapter 3**, considers the potential for Likely Significant Effects to arise as a result of a plan or project, which may affect the integrity of the national site network and their associated qualifying features, and can involve up to four stages:
 - Stage 1: Screening: This stage identifies the likely impacts upon a national site network of a project or plan, either alone or 'in combination' with other projects or plans and considers whether these impacts are likely to be significant.
 - Stage 2: Appropriate Assessment: Where there are likely significant impacts, this stage considers the impacts of the plan or project on the integrity of the relevant national site network sites, either alone or 'in combination' with other projects or plans, with respect

to the sites' structure and function and their conservation objectives. Where there are adverse impacts, it also includes an assessment of the potential mitigation for those impacts.

- Stage 3: Assessment of Alternative Solutions: Where adverse impacts (on the integrity of the site) are predicted, this stage examines (whether or not there are) alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the national site network.
- Stage 4: Assessment Where No Alternative Solutions Exist and Where Adverse Impacts Remain: This stage assesses compensatory measures where it is deemed that the project or plan should proceed for imperative reasons of overriding public interest (IROPI).
- 4.2.75 An HRA is required for the Project, therefore, the Project will provide the Scottish Government with HRA reports, providing the necessary information to undertake all required stages of the HRA.
- 4.2.76 As Stage 2 of the HRA requires the findings of the EIA process to enable full assessment, the full HRA reporting will be submitted alongside the EIA Report for the Project. A Screening report, addressing Stage 1, has been submitted to accompany the Scoping Report.

Marine Strategy Framework Directive

- 4.2.77 There is no formal guidance or approach to completing a Marine Strategy Framework Directive (MSFD) assessment for a project. As outlined within **Section 3.6, Chapter 3**, the goal of the MSFD is for an EU Member State's marine waters to reach and/or maintain Good Environmental Status (GES), through adaption of a series of measures, monitored through key indicators, under 11 high level descriptors. Previously as a member of the European Union (EU),, UK was required to collaborate with other Member States in the north east Atlantic, to monitor, assess, and report progress towards GES, and to implement measures to achieve to maintain GES targets. The existing UK-wide framework has been maintained to allow for consistent marine environmental monitoring and standards across the UK. The UK will also continue to develop its marine strategy with other countries in the north east Atlantic, through the OSPAR Convention. In the future, guidance may be updated and/or new guidance may be produced, for example to replace guidance by the European Commission. However, in the shorter term existing guidance continues to apply and should still be used.
- 4.2.78 The approach to MSFD assessment to be applied to the Project is therefore qualitative and narrative-based, drawing on the findings of the EIA, as applicable to the descriptors, with the objective of the assessment being to determine whether the Project has the potential to influence the UK's ability to achieve or maintain GES within its waters. Each of the 11 descriptors are broadly associated with an aspect addressed within the EIA. For example, consideration of potential effects on biodiversity relates to Descriptors 1 (Biodiversity), 2 (Non-indigenous species), 4 (Food web structures), and 11 (Energy and noise).
- 4.2.79 The MSFD assessment will outline the following:
 - MSFD Descriptor;
 - MSFD Descriptor definitions of GES for the relevant MSFD water body;
 - potential effects of the Project, as identified within the EIA, that could relate to MSFD Descriptors;
 - signposting to the relevant chapters of the EIA Report; and

- a narrative-based assessment of whether these potential effects have the capacity to influence the water body's ability to achieve / maintain GES, taking into account the current status of the water body in relation to the Descriptor.
- 4.2.80 With the MSFD assessment requiring the outputs of the EIA to be completed, the assessment will be submitted alongside the EIA Report for the Project.

Marine Protected Areas assessment

- 4.2.81 The Marine Protected Area (MPA) assessment process comprises three steps:
 - Step 1: Initial Screening: Is the activity capable of affecting the protected features of a Nature Conservation MPA?
 - Step 2: Initial Screening: Is the activity capable of affecting, other than insignificantly, the protected features of a Nature Conservation MPA?
 - Step 3: Main Assessment: Is there a significant risk of hindering the achievement of the conservation objectives of a Nature Conservation MPA?
- 4.2.82 With the MPA assessment requiring the outputs of the EIA to be completed, the assessment will be submitted alongside the EIA Report for the Project. The MPA Step 1 screening is provided in **Appendix 4B: Nature Conservation Marine Protected Area Assessment**.

European Protected Species risk assessments

- 4.2.83 Under the Conservation (Natural Habitats & Conservation) Regulations 1994 and the Offshore Marine Regulations 2017, it is an offence to:
 - deliberately capture, injure or kill a European Protected Species (EPS) (including all cetaceans);
 - deliberately disturb an EPS; or
 - damage or destroy a breeding site or resting place of an EPS.
- 4.2.84 Disturbance is defined as an activity that impairs the ability of the EPS to survive, breed, rear/nurture their young, to migrate, or an activity that significantly affects the local distribution or abundance of the species.
- 4.2.85 As described in **Chapter 3**, EPS licence applications may be needed for the Project where activities are proposed that could result in the disturbance of EPS, such as site investigation, or buoy deployment and surveys.
- 4.2.86 If the risk of injury or significant disturbance cannot be reduced to negligible levels with mitigation, then an EPS licence is required. An EPS licence can only be granted subject to the following three tests being met (NatureScot, 2024):
 - Test 1: must be a licensable purpose for which licences can be granted. The reason for the licence must relate to one of several purposes specified in Regulation 44(2) of the Conservation (Natural Habitats &c.) Regulations 1994 (as amended);
 - Test 2: There must be no satisfactory alternative; and
 - Test 3: The proposed action must not be detrimental to maintaining the species at 'favourable conservation status'. In considering this test, NatureScot and MD-LOT will take into account any possible impacts of development proposals on the favourable conservation status of the relevant species in its native range.

- 4.2.87 The Project is responsible for providing risk assessments and supporting information to NatureScot and MD-LOT in order to facilitate their decision-making in relation to an EPS licence application.
- 4.2.88 The Project will engage with NatureScot and MD-LOT in the event that EPS licence applications are required.

4.3 Structure of the Environmental Impact Assessment

4.3.1 At this stage it is anticipated that the EIA Report will comprise the following structure set out in Table 4.3.1. This is based on a single EIA Report for the Project (as described in Chapter 2). The overall structure will include the offshore aspects and aspects that cover the whole project.

Volume/chapter	Content		
Volume 1	Non-Technical Summary		
Volume 2	Environmental Impact Assessment Report		
Chapter 1	Introduction		
Chapter 2	Legislative and Policy Context		
Chapter 3	The Project		
Chapter 4	Site Selection and Alternatives		
Chapter 5	Approach to EIA		
Chapter 6	 Environmental aspects, including: Marine geology, oceanography, and physical processes; Marine water and sediment quality; Underwater noise and vibration; Electromagnetic fields; Benthic, epibenthic, and shellfish ecology; Marine mammals; Offshore ornithology; Fish ecology; Commercial fisheries; Shipping and navigation; Marine archaeology; Military and civil aviation and telecommunications; Socio-economic; Infrastructure and other marine users; Climate Change; and □ Inter-related effects. 		
Chapter 7	Summary and Conclusions		
Volume 3	EIA Report Figures		
Volume 4	EIA Report Appendices		
Volume 5	Confidential EIA Report Appendices		

Table 4.3.1 Draft structure of the EIA Report

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5. Environmental Aspects

5.1 Marine geology, oceanography, and physical processes

Introduction

- 5.1.1 The marine geology, oceanography, and physical processes assessment will consider the potential likely significant effects on marine physical process receptors that may arise from the construction, operation and maintenance (O&M), and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the likely significant effects to be considered, and how these likely significant effects will be assessed for the purpose of the EIA Report.
 - Marine geology, oceanography, and physical processes is a collective term for the following:
 - water levels;
 - currents;
 - waves (and winds);
 - sediments and geology (including seabed sediment distribution and sediment transport);
 - seabed geomorphology; and
 - coastal geomorphology.
- 5.1.2 Marine geology, oceanography, and physical processes interface with other aspects. For instance, the mobilisation of sediment during project construction activities may result in the creation of suspended sediment plumes. The subsequent settling of material to the bed from such plumes may result in smothering of sensitive benthic habitats which are considered in **Section 5.5: Benthic, epibenthic and shellfish ecology**. This marine geology, oceanography and physical processes section should therefore be considered alongside these other sections, namely:
 - Section 4.2: Infrastructure and other marine users: This Section describes pathways of effect from marine processes physical parameters on infrastructure and other marine users.
 - Section 4.2: Climate Change: The interference with climate resilience with marine geology, oceanography and physical processes is captured in the In-Combination Climate Impacts assessment.
 - Section 5.2: Marine water and sediment quality: As a principal potential source of changes in water quality will be sediment mobilisation and as the magnitude and extent of effects of such mobilisation and of any water discharges on marine water quality will depend on physical processes, the information from this Section will inform the marine water quality assessment.
 - Section 5.5: Benthic, epibenthic and shellfish ecology: Changes to marine geology, oceanography and physical processes have the potential to affect potentially sensitive benthic, epibenthic and shellfish ecology receptor species and habitats. The information from this Section will inform the benthic, epibenthic and shellfish ecology assessment.

- Section 5.6: Marine mammals: Marine mammal receptor species are potentially sensitive to changes in physical processes, therefore information from this Section will inform the marine mammal assessment.
- Section 5.7: Offshore ornithology: There are potential pathways of effect from marine processes physical parameters on potentially sensitive marine ornithological receptor species, therefore information from this Section will inform the offshore ornithology assessment.
- Section 5.8: Fish ecology: Changes to marine geology, oceanography and physical processes have the potential to directly or indirectly impact fish features due to the reliance on physical processes during certain stages of their lifecycle. Therefore, the information from this assessment will be used to inform the fish ecology section.
- Section 5.9: Commercial fisheries: Changes to marine geology, oceanography and physical processes may affect potentially sensitive commercial fisheries receptor species, therefore information from this Section will inform the commercial fisheries assessment.
- Section 5.10: Shipping and navigation: This Section describes pathways of effect from marine processes, oceanography and physical processes physical parameters on potentially sensitive shipping and navigation receptors.
- Section 5.11: Marine archaeology and cultural heritage: This Section describes pathways of effect from marine geology, oceanography and physical processes physical parameters on potentially sensitive marine archaeology and cultural heritage receptors. Due to the potential for altered marine processes to affect marine archaeological remains, this Section will be used to inform the marine archaeology and cultural heritage assessment.
- 5.1.3 The interlinkages between these aspects and marine geology, oceanography and physical processes are considered within the respective aspect sections.

Legislation and policy context

- 5.1.4 This Section identifies the relevant legislative and policy context which has informed the scope of the marine geology, oceanography, and physical processes assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual international, national, and marine policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.1.5 In order to provide a robust evidence base, **Table 5.1.1** below presents a summary of legislation and policies relevant for the marine geology, oceanography and physical processes assessment for which this Section seeks to demonstrate compliance. This Section takes account of specific requirements to assess and address likely impacts on receptors and relevant environmental issues. **Table 5.1.1** does not quote the policies in full but rather states the relevance to this Section.

Table 5.1.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment		
Legislation			
The Conservation (Natural Habitats, &c.) Regulations (1994) (and amendments)	• Defines the species, habitats and types of sites that receive legal protection and described the protection that is afforded.		
National Policy			
Approved National Planning Framework 4 (NPF4) 2023	• A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A: Planning Policy Framework . Revised policies of relevance to this area of technical assessment are:		
	Policy 1: Lackling the Climate and Nature Crisis.		
National Policy Statements (NPS) (EN-1 and EN-3)	• The UK NPSs form part of both the energy and planning policy frameworks applicable to the consenting of the Project. As detailed in Appendix 3A: Planning Policy Framework , policy coverage within the NPSs regarding UK reserved matters is of particular importance (Department for Energy and Net Zero (DESNZ) 2024a and b).		
Marine Policy			
Sectoral Marine Plan - Offshore Wind Energy (2020)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. Section 4.1 lists a range of potential negative impacts identified through plan-level SEA, HRA and SEIA which require further consideration through project level assessments, including the following of relevance to the marine geology, oceanography and physical processes scoping assessment and EIA: "loss of/damage to marine and coastal habitats; effects on subsea geology, sediments and coastal processes arising from changes in hydrodynamics and existing wave regimes; and effects on landscape and coastal characters and visual receptors". 		
Scottish National Marine Plan (2015) - GEN 9 - Natural Heritage - GEN 21 - Cumulative Impacts - CABLES 2	 GEN 9 requires development to comply with legal requirements for protected areas; not to result in significant impact on the national status of Priority Marine Features (PMFs) (which includes geodiversity features); and to protect, and, where appropriate, enhance the health of the marine area. GEN 21 requires for cumulative impacts affecting the ecosystem to be addressed. CABLES 2 requires the following to be taken into account when reaching decisions regarding cable development: cables should be 		

suitably routed to provide sufficient requirements for installation an

Relevant legislation and policy	Relevance to the assessment		
	cable protection; new cables should implement methods to minimise impacts on the environment, seabed and other users; where burial is demonstrated not to be feasible, cables may be suitably protected; and the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.		
UK Marine Policy Statement (2011)	 Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses. Requires that the use of the marine environment benefits society as a whole, contributing to resilient and cohesive communities that can adapt to coastal erosion and flood risk, as well as contributing to physical and mental wellbeing; Requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all. States that offshore wind farm fixed bottom foundation designs are likely to influence hydrodynamics and consequent sediment movement. 		

Technical guidance

5.1.6 Technical guidance that has been used to define the assessment is set out in **Table 5.1.2**.

Guidance reference	Relevance to the assessment
Offshore Windfarms: Guidance note for Environmental Impact Assessment in Respect of FEPA and CPA requirements (CEFAS, 2004)	This guidance provides scientific guidance to those involved with the gathering, interpretation and presentation of data within an EIA. The marine physical process parameters which require assessment are set out and divided into direct and indirect impacts, with guidance also given regarding the key parameters which need documenting in the marine processes baseline. Recommendations for mitigation and monitoring are also set out. The baseline description which will be produced as part of the EIA will comply with the above guidance, whilst the assessment will also take into consideration the full range of marine physical processes parameters set out in CEFAS (2004).
Guidelines in the use of metocean data through the lifecycle of a marine renewables' development (CIRIA, 2008)	This guide has been developed to identify and recommend on the uses of metocean data through the life cycle of a marine renewable energy development. It includes a review of metocean data types, data sources and identifies the importance of good data management. This guidance will be used to help assess the adequacy of metocean data used to inform the assessment.
Coastal Process Modelling for Offshore Wind farm Environmental Impact Assessment: Best Practice Guide	This report provides an update to existing best practice guidance on the application and use of numerical models to predict the potential impact from offshore wind farms on coastal processes. As such, it provides guidance on the scoping and design stages of the coastal processes part of an EIA, as well as on the requirements for numerical modelling, and how to assess the extent and guality of a numerical modelling work proposed and undertaken. This guidance

Table 5.1.2 Relevant technical guidance

Guidance reference	Relevance to the assessment
(ABPmer & HR Wallingford 2009)	will be used to inform set-up, calibration and validation of the numerical wave model which will be developed to assess the potential blockage of waves associated with floating platforms.
Guidelines for Data Acquisition to Support Marine Environmental Assessments of Offshore Renewable Energy Projects (CEFAS, 2012)	These guidelines assist in the design, review and implementation of environmental data collection and analytical activities associated with all stages of offshore renewable energy developments. There is a specific section covering 'physical and sedimentary process studies', setting out guidance on data acquisition and adequacy, survey design and impact assessment techniques (including modelling). The scope of the Project specific geophysical and oceanographic surveys are consistent with this guidance. They will allow for the collection of suitable data to underpin robust analysis of sediment transport processes within the study area.
Review of Environmental data associated with post- consent monitoring of licence conditions of offshore wind farms (OWF) (Marine Management Organisation, 2014)	This report reviews the results and findings from monitoring programs conducted to fulfil statutory obligations placed on developers of OWFs in UK waters through consent conditions. It details how to conduct an evaluation of post-consent monitoring data and develop a set of recommendations to enhance future monitoring efforts, ensuring data collection focuses on areas with the greatest risks and uncertainties.
Environmental impact assessment for offshore renewable energy projects (British Standards Institute, 2015)	Provides a summary of marine physical process impact pathways, potential assessment methods and tools. Also provides guidance on the development of impact assessment matrices. The potential impact assessment pathways identified in this guidance are all considered later in this document, within the likely significant effects section.
Guidance on Best Practice for Marine and Coastal Physical Processes Baseline Survey and Monitoring Requirements to Inform EIA of Major Development Projects (Brooks <i>et al.</i> , 2018)	This report offers guidance on baseline survey and monitoring requirements for EIAs related to marine, coastal, and estuarine physical processes in major development projects. This has been accomplished by reviewing existing published guidance pertinent to physical processes in EIA studies, analysing project examples (encompassing both planned and operational developments), and drawing on the authors' experience gained from involvement in large-scale marine projects. For the major developments outlined, pathways for change and potential impacts have been determined for each stage of development (construction, O&M, and decommissioning). Efforts have been made to qualitatively assess the potential magnitude of these changes and identify the development types and stages where they are likely to be most significant.

Study area

5.1.7 The study area for the marine geology, oceanography, and physical processes assessment is defined in **Figure 5.1.1: Marine geology, oceanography and physical processes study area** in **Appendix 1A**. It includes the Scoping Boundary and the wider marine area surrounding the Project. The study area has been informed by expert judgement, based on an understanding of region-scale marine geology, oceanography, and physical processes, in particular that of the prevailing wave direction, tidal excursion distances, and sediment transport pathways. **Figure 5.1.1** in **Appendix 1A** also includes a spring tidal excursion ellipse buffer around the Scoping Boundary. This range within Campion is approximately uniform which is expected due to the offshore nature of the site and distance to the shore. The tidal ellipse buffer is represented by the approximate distance over which water is advected during one spring flood or ebb tide and represents the likely maximum extent of potential sediment plume impacts, this is incorporated into the Study Area.

- 5.1.8 The study area lies close to a number of nationally and internationally designated nature conservation sites, some of which are designated on the basis of the geological and geomorphological features contained within them. These include the Turbot Bank (approximately 30 km west of the site) and East of Gannet and Montrose Fields Marine Protected Areas (approximately 30 km east of the site), both designated in part for the geodiversity features they contain.
- 5.1.9 The study area will be reviewed and amended in response to such matters as refinement of the offshore components, the identification of additional impact pathways and in response where appropriate to feedback from consultation.

Consultation

5.1.10 This Section has been informed by engagement and discussion with various stakeholders, including an online workshop with Marine Directorate Licensing Operations Team (MD-LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), and NatureScot and Royal Society for the Protection of Birds (RSPB), Scottish Fishermen's Federation (SFF) and the Scottish White Fish Producers Association Ltd (SWFPA) on 07 November 2024. Table 5.1.3 provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this Scoping Report.

Consultee	Comments and considerations Ho		How t	this is accounted for	
MD-LOT MD-SEDD, NatureScot	An offshore EIA Scoping Workshop was held on 07 November 2024. During the workshop, the approach to the marine geology, oceanography and physical processes assessment was discussed. Following the Scoping Workshop, feedback on the marine geology, oceanography and physical processes assessment was received by MD-SEDI and NatureScot. Both MD-SEDD and NatureScot broadly agreed with the overall proposed approach, further feedback received is provided below:		I.	Seabed and hydrodynamics will be monitored using bathymetric surveys and sediment sampling to assess changes to the seabed or sediment transport. Construction and Post- Development monitoring plans will be developed as part of the EIA to outline the requirements.	
	I.	NatureScot outlined that they would expect monitoring of impacts through the pre-post construction stages of the Project;	II.	Additional data sources have been considered in the Data Sources section below.	
	II. III.	NatureScot and MD-SEDD shared additional data sources that may be of benefit to the assessment.	III.	The proposed assessment has scoped in stratification and incorporated feedback for	
		MD-SEDD agreed that potential operational impacts on stratification should be scoped into the EIA. MD-SEDD		this assessment.	

Table 5.1.3 Consultation

Consultee Comments and considerations

How this is accounted for

provided further advice on the stratification assessment.

Assessment methodology

Introduction

- 5.1.11 The Project-wide approach to the assessment methodology is set out in **Chapter 4: Approach to Scoping and EIA.** However, whilst this has informed the approach that has been used in this marine geology, oceanography, and physical processes section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the marine geology, oceanography, and physical processes assessment.
- 5.1.12 In most cases, marine geology, oceanography, and physical processes are not themselves receptors. They are instead, pathways that have the potential to indirectly impact other environmental receptor groups. Accordingly, whilst potential changes assessed and reported in the marine geology, oceanography, and physical processes section may not themselves be significant, they may have potential to cause significant impacts to the receptors identified by other EIA aspects, notably those identified within the water quality and benthic, epibenthic and shellfish ecology sections.
- 5.1.13 Whilst physical processes can largely be considered as pathways, a small number of features have been identified as potentially sensitive physical processes receptors. These are:
 - the coast; and
 - seabed areas contained within designated baseline conditions.

Baseline conditions

5.1.14 A desk-based review of literature to support this Scoping Report highlighted data sources that provide coverage across the Study Area.

Data sources

5.1.15 The data sources that have been used to inform this Section of the Scoping Report are presented in **Table 5.1.4**.

Table 5.1.4 Key sources of marine geology, oceanography, and physical processes data

Source	Date of data	Summary	Coverage of study area
ABPmer Renewables Atlas (2008 and 2017)	Accessed 2025	Mean Spring Tidal Range and tidal currents/. (Available at: <u>https://www.renewables-</u> atlas.info/).	Full coverage of the study area.
ABPmer SEASTATES (2025)	1979 to 2025	Modelled hindcast wave and hydrodynamic data from across the study area. (Available at: <u>https://www.seastates.net/</u>).	Full coverage of the study area.
Marine Directorate Data Portal (Marine Directorate, 2025)	Accessed 2025	Data layers of bathymetry, ocean climate, waves, sea level, seabed geology, surface and subtidal sediments. (Available at: <u>https://marine.gov.scot</u>).	Partial coverage of the study area.
National Tide and Sea Level Facility (2025)	Accessed 2025	Tidal water levels from point locations within the study area. (Available at: <u>https://www.ntslf.org</u>).	Partial coverage of the study area.
British Oceanographic Data Centre (2025)	Accessed 2025	Hydrodynamic data (inc. current speed & direction) from point locations within the study area. (Available at: <u>https://www.bodc.ac.uk/</u>).	Partial coverage of the study area.
CEFAS WaveNet data (2025)	Accessed 2025	Wave records from point locations within the study area. (Available at: <u>https://www.cefas.co.uk/cefas-data-hub/wavenet/</u>).	Partial coverage of the study area.
Hydrodynamic and wave data from the Marine Renewables Atlas	2008	Modelled hindcast wave and hydrodynamic data from across the study area (Available at: ABPmer (2017)).	Full coverage of the study area.
British Geological Survey (BGS) offshore geoindex (2022a)	Accessed 2025	Seabed sediment maps (based on Folk classification) and borehole records from point locations within the study area. (Available at: https://www.bgs.ac.uk/GeoIndex/offshore.htm).	Full coverage of the study area.
Strategic Environmental Assessment Data Portal (BGS, 2022b)	Accessed 2025	Seabed mapping data collected on behalf of the Department of Trade and Industry (DTI) to support Strategic Environmental Assessment in Project Area 5. (Available at: https://webapps.bgs.ac.uk/data/sea/app/search).	Partial coverage of the study area.
United Kingdom Hydrographic Office (UKHO, 2021)	Accessed 2025	Bathymetric data for the study area in the form of multibeam and single beam data, as well as Admiralty Charts. (Available at: https://www.gov.uk/guidance/the-ukho-archive).	Full coverage of the study area.
Suspended Sediment Climatologies around the UK	2016	Monthly and seasonal Suspended Particulate Matter maps for the study area. (Available at: CEFAS (2016)).	Full coverage of the study area.

Source	Date of data	Summary	Coverage of study area
Scottish Coastal Observatory (2022)	Accessed 2025	Monitoring data collected as part of the Scottish Coastal Observatory, covering a range of marine environmental variables including temperature and salinity. (Available at: <u>https://marine.gov.scot/data/scottish-coastal- observatory-data</u>).	Partial coverage of the study area.
Scottish Environment Protection Agency (2022)	Accessed 2025	A range of datasets related to the environment including flood risk management. (Available at: <u>https://www.sepa.org.uk/</u>).	Partial coverage of the study area.
Scottish Remote Sensing Portal (2025)	Accessed 2025	LiDAR datasets to inform past coastal change. (Available at: https://remotesensingdata.gov.scot/).	Partial coverage of the study area.
Campion Wind Limited	Accessed 2025	Metocean data: Surface and Seabed Temperature, Salinity/conductivity	Partial coverage of the study area.

Current baseline

Bathymetry

5.1.16 The bathymetry within the study area is highly variable, with large-scale morphological seabed features interrupting the general increase in depth with distance offshore (**Figure 5.1.2**). Water depths within the Scoping Boundary are typically in the range of 65 to 82 m below Lowest Astronomical Tide (LAT), with the shallowest water depths located in the north eastern portion as well as the south eastern portion of the Scoping Boundary. The deepest water depths are located in the central areas.

Hydrodynamic regime

- 5.1.17 The Scoping Boundary is in a region characterised by semi-diurnal tides, although tidal range in the open North Sea is relatively weak. Mean Spring peak flow within the Scoping Boundary is approximately 0.51 m/s (ABPmer, 2017).
- 5.1.18 The speeds and directions of currents near the bed (which are important for bedload sediment transport) are influenced by the interactions of tidal currents and currents generated from swell- and wind-driven currents with the seabed topography. Waves generate wave-orbital currents: these currents are non-directional but in stormy conditions may be an order of magnitude higher than the directional peak tidal currents (Holmes et al., 2004). This is likely to be important within the study area because the orbital currents from waves will mobilise the seabed sediments in relatively deep water where tidal currents otherwise could not do so.
- 5.1.19 The circulatory regime surrounding the Scottish coastline is significantly modulated by both local meteorological forcing and the broader oceanic circulation of the adjacent North Atlantic. As depicted in **Plate 5.1.1** the ingress of Atlantic Water, represented by white arrows, interacts with the coastal circulation, indicated by green arrows, to define the prevailing hydrographic patterns.



Plate 5.1.1 Circulation around Scotland (Scottish Government, 2018)

- 5.1.20 The steep gradient of the continental slope acts as a critical boundary, delineating the open ocean and shelf sea systems. The complex mixing processes occurring at this interface exert a profound influence on the hydrographic properties of Scottish waters. The primary pathways for North Atlantic Water entry into the North Sea are through the straits between Orkney and Shetland, around the north-eastern periphery of Shetland, and via the Norwegian Trench.
- 5.1.21 Along the Scottish east coast, the confluence of these North Atlantic Water incursions within the northern North Sea, coupled with the influence of the Scottish Coastal Current, a northward advection originating from the western shelf, establishes the nearshore hydrodynamic conditions. The non-tidal circulation is typically weaker than tidal current and could be in the range 15-30 cm/s. When considering the net transport of water around Scotland, the contribution of tidal currents is relatively minor, as their predominantly oscillatory nature results in limited net displacement (Scottish Government, 2018).

Wave climate

5.1.22 The offshore significant wave height to the east of Scotland is typically 2 – 3 m in winter and 1 – 1.5 m in summer and come from a larger variety of directions, with more waves coming from the north during the summer (Scottish Government, 2018). Seasonal variation, as derived from the Geosat, ERS-1, ERS-2, TOPEX/Poseidon and Jason altimeter data from 1985 onwards for an area east of Aberdeen, is around 1.5 m (min 1.3 m, max 2.8 m) (Department of Energy and Climate Change (DECC), 2016). According to the UK renewable

energy atlas (ABPmer, 2017), the mean annual significant wave height within the Scoping Boundary is 2.1 m. See **Plate 5.1.2**.

Plate 5.1.2 Rose plot of significant wave height and direction (left) and wind speed and direction (right) for a nominal location within the Scoping Boundary (Source: ABPmer, 2017)



Extreme water levels

5.1.23 The east coast of Scotland is susceptible to tidal surges generated by storms. However, these surges are generally less severe compared to those experienced in regions further south. This disparity is attributed to the progressive amplification of surges as they travel southward. A notable illustration of this phenomenon is the 1953 storm surge, the most significant recorded in the past century. During this event, Aberdeen and Leith registered surge levels of 0.60 m and 0.83 m, respectively. In contrast, surge levels reached 2.97 m in Kings Lynn, southern England, and 3.36 m in the Netherlands.

Wind conditions

5.1.24 The prevailing winds are from the south-west and north-north-east. South and south-easterly winds may become established for as long as several weeks if an anticyclone develops over Europe (UKHO, 2013). The frequency of gales exceeding force 7 (14 m/s) in winter could be 20 – 30 %. Wind strengths in winter are typically in the range of Beaufort scale 4-6 (6-11 m/s) with higher winds of force 8 - 12 (17 – 32 m/s) being much less frequent. Winds of force 5 (8 m/s) and greater are recorded 60 – 65 % of the time in winter and 22 – 27 % of the time in summer (DECC, 2016). In April and July, winds are highly variable and there is a greater incidence of north-westerly winds. The European Offshore Wind Deployment Centre (EOWDC) reported a long-term annual average wind speed of 8.7 m/s at 90 m height, with a predominant southerly wind (EOWDC, 2021). According to the UK renewable energy atlas (ABPmer, 2017), the mean annual wind speed within the Scoping Boundary at 10 m and 100 m height is 7.9 m/s and 10.17 m/s, respectively. See **Plate 5.1.2**, **Plate 5.1.3** and **Plate 5.1.4**.







Plate 5.1.4 Annual mean significant wave height (Source: ABPmer, 2008)

Stratification and frontal systems

5.1.25 Stratification is a term used to describe when two distinct layers occupy the vertical water column in the sea; the near-surface layer being less dense than the near-bed one. This can be due to differences in temperature (warm layer overlying a cooler layer), salinity (fresh water overlying saltier water), or both (Marine Directorate, 2022a). A 'front' is an area separating two distinct water masses with different densities. A pronounced tidal front (the Buchan front) is found in a transitional zone off Buchan and the Aberdeenshire coast, where shallow coastal water meets deeper, seasonally stratified North Sea water (Edwards & John, 1996). See **Plate 5.1.5**.

Plate 5.1.5 Regions of dominant stratification in the North Sea 1958 - 2008 (DECC, 2016)



Geology and sediments

5.1.26 The geological structure of the underlying bedrock in this region is characterised by a complex pattern of down-faulted basins separated by platforms (relatively uplifted areas). The uplifted platforms formed approximately 420 million years ago and underlie the modern coastline and nearshore parts of the study area. The Mesozoic basins found further offshore

formed more recently during faulting, approximately 142 to 250 million years ago (Holmes et al., 2004). The modern-day seabed configuration reflects the combination of this large-scale geological structure and burial by younger sediments, in particular those deposited during the Quaternary period in response to the growth and decay of Pleistocene ice sheets and associated changes in relative sea level.

- 5.1.27 Seabed sediments across the study area are highly variable, with coarse (sand and gravels) and fine (muddy) grained sediments present. The distribution broadly reflects spatial variation in current speeds, with coarser material encountered closer to the coast (where current speeds are high) and finer material found further offshore, including within the Scoping Boundary (where current speeds are much lower). Close to the shore, the very high current speeds have scoured the seabed, leaving exposed areas of bedrock in places (Gafeira et al., 2010).
- 5.1.28 A lack of major river sediment input and the resistance of most of the shorelines to erosion, has resulted in only minor amounts of clastic sediment (rock) input from the coastal areas to offshore areas over the last 10,000 years. This, coupled with strong tidal and non-tidal currents, has provided favourable environments for the proliferation of calcareous seabed biota meaning in places the biogenic carbonate content of the sand fraction in seabed sediments may comprise up to 50 % (Holmes et al., 2004).

Geomorphology and sediment transport

- 5.1.29 A range of active and relict (i.e. historic / no longer active) bedforms and geomorphological features are present within the study area, reflecting contemporary seabed processes and past glacial and geological activity. Sand wave fields are present in the south of the study area (BGS, 1984). Given the tidal current characteristics in this region, it is understood that these features have the potential to be mobile although this will be investigated further, through consideration of the Project-specific geophysical survey data. Pockmarks shallow seabed hollows originating from the release of shallow gas or fluids at the sediment/water interface are also known to be present in the study area, including within the offshore export cable corridor and in waters immediately adjacent to the Scoping Boundary (Judd, 2001).
- 5.1.30 Bedload sediment transport is largely to the south in central / northern areas of the study area and to the north in southern parts of the study area. These region-scale patterns are driven by tidal asymmetry and result in the development of a bed load convergence zone off the coast of Peterhead, characterised by net long term sediment accretion. Wave driven transport dominates offshore, where tidal currents are weaker.

Designated sites

- 5.1.31 There are several nationally and internationally designated sites within proximity of the study area (**Figure 5.1.1** in **Appendix 1A**). There are sites for which geological and geomorphological characteristics are a key reason for their designation such as Turbot Bank Marine Protected Area (MPA) and East of Gannet and Montrose Fields MPA. The Turbot Bank MPA is situated within an area of sandy sediment which acts as a habitat for sandeels which support the local ecosystem. The direction of the sediment flow is fortunately in the northern to southern planes limiting the potential impact to the sandeels from the construction of the Project. The East of Gannet and Montrose Fields MPA provides suitable habitat for the ocean quahog and many types of worm and mollusc which is an important food source for fish.
- 5.1.32 Due to the distance of these designated sites to the Scoping Boundary (approximately 30 km) and location outside of the study area which has been informed by the tidal excursion (see **paragraph 5.1.9**), it is concluded that these are no designated sites with the potential to be impacted by the Project.

Future baseline

- 5.1.33 The baseline is expected to evolve in response to natural variation (for example, the lunar nodal cycle, North Atlantic Oscillation etc), wider changes in climate expected over the lifetime (but in the absence) of the Project, and anthropogenic management of the coast. These are discussed below.
- 5.1.34 mean sea level in the marine geology, oceanography, and physical processes study area is likely to rise slightly over the lifetime of the Project. This change is generally accepted to include contributions from global eustatic changes in mean sea level and because of regionally varying vertical (isostatic) adjustments of the land;
- 5.1.35 information on the rate and magnitude of anticipated relative sea level change during the 21st Century is available from UKCP18 (Palmer et al., 2018). It is predicted that by 2060, relative sea level could have risen by approximately 0.3 m above present day (2025) levels (Representative Concentration Pathway (RCP) 8.5; 95th percentile)
- 5.1.36 a rise in sea level would potentially allow larger waves, and therefore more wave energy, within the Scoping Boundary.
- 5.1.37 UKCP18 also includes projections of changes to storm surge magnitude in the future as a result of climate change. However, it is found that UKCP18 projections of change in extreme coastal water levels are dominated by the increases in mean sea level with only a minor (less than 10 %) additional contribution due to atmospheric storminess changes over the 21st Century (Palmer et al., 2018).
- 5.1.38 modification of the wave regime may also occur in response to changing patterns of atmospheric circulation, although this is associated with much uncertainty (Palmer et al., 2018).

Basis for scoping assessment

- 5.1.39 The marine geology, oceanography, and physical processes Scoping assessment is based on key project design details set out in **Chapter 2: Project Description**:
 - the construction and decommissioning techniques for wind turbine generator (WTG) and infrastructure including cable burial, the floating WTG station keeping system and fixed WTG foundations - since these will determine the rate/volume of material that may enter into suspension, forming sediment plumes;
 - the location, number, type, size and spacing of the floating WTGs units and potential use of fixed WTG units since this will determine the extent to which waves and currents are interrupted as they pass through the array; and
 - impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life; and
 - the location, footprint, height and extent of any cable protection measures since this will determine the extent to which waves and currents are interrupted as they pass over the structures.
- 5.1.40 The source-pathway-receptor linkage between Project infrastructure and / or activities and the receptor groups for this aspect are described in **Table 5.1.6**.
- 5.1.41 The Approved NPF4 2023 introduced requirements, which will be taken account of in the EIA and associated consenting documents.

Embedded environmental measures

- 5.1.42 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts on marine geology, oceanography, and physical processes (see **Table 5.1.5**). These will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.1.43 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the Scoping assessment.

Table 5.1.5 Relevant marine geology, oceanography, and physical processes embedded environmental measures

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 (Energy Act 2004 (as amended)) and marine licence conditions.
M-003	A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase.	s.36 conditions, marine licence conditions and CEMP.
M-012	Scour Protection Management Plan will be developed. It will include details of the need, type, quantity, location(s) and installation methods for scour protection.	s.36 conditions and marine licence conditions.
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be undertaken to enable informed judgements about burial depth. This should maximise the chance of array cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. The array cables will typically be buried at a target burial depth between 1-2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.	s.36 conditions and marine licence conditions.

Likely significant effects

5.1.44 In line with the EIA Regulations (as described in **Chapter 3: Legislation and Policy Context**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.

- 5.1.45 The likely significant effects on marine geology, oceanography, and physical processes are summarised in **Table 5.1.6**. The Scoping assessment is based on a combination of the Project at the Scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for marine geology, oceanography, and physical processes effects, and professional judgement. The approach to this assessment is set out in **Chapter 4: Approach to Scoping and EIA**.
- 5.1.46 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.

Table 5.1.6 Likely significant marine geology, oceanography, and physical processes effects

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements			
Construction								
Potential changes to suspended sediment concentrations, bed levels and sediment type	N/A	No likely significant effect to marine geology, oceanography, and physical process receptors but potential pathway of effect for other aspects.	Scoped in. Quantitative assessment.	Marine ecological receptors; effects assessed in other sections.	Seabed sediment and shallow geophysical data.			
Potential impacts to seabed morphology	N/A	Significant effects to marine geology, oceanography, and physical process receptors not expected but assessed in accordance with best practice approach to assessment of marine physical processes.	Scoped in. Assessed as a semi- quantitative desktop exercise.	Designated areas of seabed.	Multibeam bathymetry data.			
Operation and Maintenance								
Potential changes to the tidal regime	N/A	No likely significant effect to marine geology, oceanography, and physical process receptors but potential pathway of effect for other aspects.	Scoped in. Assessed using semi- quantitative desk-based analysis.	N/A	N/A			

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Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Potential changes to the wave regime	N/A	No likely significant effect to marine geology, oceanography, and physical process receptors but potential pathway of effect for other aspects.	Scoped in. Assessed using numerical modelling.	N/A	N/A
Potential changes to the sediment transport regime	N/A	No likely significant effect to marine geology, oceanography, and physical process receptors but potential pathway of effect for other aspects.	Scoped in. Assessed using semi- quantitative desk-based analysis.	N/A	N/A
Potential impacts to seabed morphology	N/A	Significant effects to marine geology, oceanography, and physical process receptors not expected but assessed in accordance with best practice approach to assessment of marine physical processes	Scoped in. Desk based analysis, drawing on baseline understanding and results of assessment looking at change to the tide, wave and sediment transport regimes.	Designated areas of seabed.	N/A
Potential impacts to seasonal stratification due to the presence of infrastructure	N/A	Significant effects to the strength and duration of seasonal stratification not expected but assessed in accordance with best practice approach to assessment	Scoped in. Desk based analysis, drawing on baseline understanding and results of assessment looking at change to the tide, wave	Marine ecological receptors; effects assessed in other sections	N/A
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Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
		of marine physical processes	and sediment transport regimes.		
Potential impacts to coastal morphology	N/A	Significant effects to marine geology, oceanography, and physical process receptors not expected but assessed in accordance with best practice approach to assessment of marine physical processes.	Scoped in. Desk based analysis, drawing on baseline understanding and results of assessment looking at change to the tide, wave and sediment transport regimes.	The coast.	N/A
Scour	M-012	No likely significant effect to marine geology, oceanography, and physical process receptors but potential pathway of effect for other aspects.	Scoped in. Assessed quantitatively using empirical equations.	Marine ecological receptors; effects assessed in other sections.	Seabed sediment and shallow geophysical data
Decommissioning					
Potential changes to suspended sediment concentrations, bed levels and sediment type	M-002	No likely significant effect to marine geology, oceanography, and physical process receptors but potential pathway of effect for other aspects.	Scoped in. It is expected that decommissioning activities will result in a lesser rate of sediment disturbance than that already considered in relation to the construction phase.	Marine ecological receptors; effects assessed in other sections.	Seabed sediment and shallow geophysical data

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CampionWind Offshore Wind Farm Array Area Environmental Impact Assessment - Scoping Report Chapter 5.1: Marine geology, oceanography, and physical processes

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Potential impacts to seabed morphology	N/A	Significant effects to marine geology, oceanography, and physical process receptors not expected but assessed in accordance with best practice approach to assessment of marine physical processes.	Scoped in. (Assessed as a semi- quantitative desktop exercise).	Designated areas of seabed.	Multibeam bathymetry data

5.1.47 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for marine geology, oceanography and physical processes.

Impacts proposed to be scoped out of assessment

5.1.48 Based on the baseline environment information currently available and the Project (outlined in **Chapter 2: Project Description**), no impacts (to physical processes receptors) or pathways have been scoped out at this stage. This is principally due to the potential for pathway changes to impact on other aspect receptors and the requirement for informing those assessments.

Cumulative effects

- 5.1.49 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing, due to the spatial scope of the Project and associated assessments.
- 5.1.50 Cumulative effects on marine geology, oceanography, and physical processes resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4: Approach to Scoping and EIA** and considering the other developments that have been screened in as part of the Cumulative Effects Assessment screening exercise.
- 5.1.51 The following impacts from the Project have the potential to act cumulatively with impacts from other developments to contribute to cumulative effects:
- 5.1.52 During O&M, potential interaction with other proposed offshore wind farms in the North Sea, resulting in cumulative changes to waves. These could potentially result in morphological impacts to identified receptor groups including the coast and designated areas of seabed.

Transboundary effects

5.1.53 The potential effects from construction, O&M, and decommissioning on marine geology, oceanography and physical processes receptors are considered in **Appendix 4A**: Transboundary Screening Matrix. Due to the localised and small-scale nature of the impacts on marine geology, oceanography and physical processes, no significant transboundary impacts have been identified in relation to marine geology, oceanography, and physical processes. Predicted impacts effects upon receptors are considered likely to be limited to the Project footprint for direct effects and one tidal excursion for indirect effects such as sediment transport and deposition. It is, therefore, proposed that transboundary marine geology, oceanography and physical processes impacts are scoped out from further consideration within the EIA Report.

Proposed approach to the EIA Report

5.1.54 Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in **Chapter 4: Approach to Scoping and EIA**.

5.1.55 Likely significant effects will be described, and the assessment will include consideration of potential significant cumulative effects as appropriate, as set out in **Chapter 4: Approach to Scoping and EIA**.

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5.2 Marine water and sediment quality

Introduction

- 5.2.1 The marine water and sediment quality assessment will consider the potential likely significant effects on marine water and sediment quality that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in Chapter 2: Project Description. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the potential likely significant effects to be considered on water quality targets, and changes in water quality as a pathway to effects on other receptors to be considered within the EIA, and how these will be assessed for the purpose of the EIA Report.
- 5.2.2 Marine water and sediment quality interfaces with other aspects. For instance, changes in marine water quality will be influenced by the physical characteristics of the marine area and by sediment quality and together are a principal pathway by which effects on other receptors may be exerted. This marine water and sediment quality section should therefore be considered alongside these other sections, namely:
 - Section 4.2: Climate change: The interference with climate change with marine water and sediment quality is captured in the In-Combination Climate Impacts (ICCI) assessment.
 - Section 5.1: Marine geology, oceanography and physical processes: As changes in water quality can occur due to sediment mobilisation and water discharges, the physical processes assessment will inform this marine water quality assessment.
 - Section 5.5: Benthic, epibenthic and shellfish ecology: Changes in marine water and sediment quality have the potential to result in adverse effects on the benthic ecology through toxicity and other mechanisms. While assessment against established water quality and sediment quality standards, designed to be protective of biota, is included in this water and sediment quality section, further specific assessment of effects of changes in water quality, particularly where no environmental quality standard (EQS) is available, may also be included in the benthic ecology section.
 - Section 5.6: Marine mammals: Marine mammal receptor species are sensitive to accidental pollution, increased concentration of suspended solids and the leaching of toxins. The marine water and sediment quality section will inform the marine mammal section.
 - Section 5.8: Fish ecology: As described in relation to Section 5.5, while assessment against EQS is included in the marine water and sediment quality section, further assessment of effects of specific water quality changes may need to be addressed in the fish ecology section; and
 - Appendix 4B: Nature Conservation Marine Protected Areas (MPA) assessment: The MPA assessment will need to take account of any water quality changes that may affect relevant designated, MPAs and will therefore need to take account of the conclusions of this section.

Legislation and policy context

5.2.3 This Section identifies the relevant legislation and policy context which has informed the scope of the marine water and sediment quality assessment. Further information on policies

relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual international, national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.

5.2.4 In order to provide a robust evidence base, **Table 5.2.1** below presents a summary of legislation and policies relevant for the marine water and sediment quality assessment for which this Section takes account of specific requirements to assess and address likely impacts on receptors and relevant environmental issues. This table does not quote the policies in full but rather states the relevance to this Section.

Relevant legislation and policy	Relevance to the assessment
Legislation	
International: Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Commission, 1992)	 The OSPAR Convention is implemented through OSPAR's North-East Atlantic Environment Strategy 2030. Contained within the OSPAR Convention are a series of annexes relevant to the marine water and sediment quality assessment: Annex I: Prevention and elimination of pollution from land-based sources;
	 Annex II: Prevention and elimination of pollution from dumping or incineration;
	 Annex III: Prevention and elimination of pollution from offshore sources;
	 Annex IV: Assessment of the quality of the marine environment.
	Following the UK's exit from the EU, the OSPAR Convention is not legally binding for the UK. Scotland has been at the forefront of the development of marine spatial planning and decisions that affect the marine environment. It is anticipated that the important and relevant international obligations will be transposed into national legislation.
International: EC Directive (2000/60/EC) establishing a framework for Community action in the field of water policy (Water Framework Directive (WFD) (The European Commission 2000) International: EC Directive 2008/105/EC on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC,	 Sets out a legislative framework for the protection of surface waters, including rivers, lakes, transitional waters and coastal waters, extending to 3 nautical miles (nm) from the shore in Scotland (12 nm for chemical status). Requires classification of water bodies, definition of objectives and implementation of programmes of measures to prevent deterioration and achieve good status. Implemented through preparation of a River Basin Management Plan (RBMP) for the Scotland River Basin District (RBD).

Table 5.2.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment
amending Directive 2000/60/EC (EQS Directive) (The European Commission 2008a)	• As this assessment is concerned solely with the Scoping Boundary, which is located 100 km offshore, there is no potential for significant effects on quality status elements contributing to the classification of coastal water bodies.
International: EC Directive (2008/56/EC) establishing a framework for Community action in the field of marine environmental policy (Marine Strategy Framework Directive) (The European Commission 2008b) National: Marine Strategy Regulations 2010 National: Marine Environment (Amendment) (EU Exit) Regulations 2018	 Paragraph 3.8.8 in Chapter 3: Legislative and Policy context sets outs the legislative framework for MSFD. The Marine Strategy Regulations 2010 translated the requirements of the EU's Marine Strategy Framework Directive into UK legislation and required the UK to achieve or maintain Good Environmental Status (GES) in the marine environment by 2030. Eleven qualitative descriptors are detailed, which describe the environment when GES is achieved. Descriptors relevant to this technical assessment include: Descriptor D8 – Concentrations of contaminants; and Descriptor D9 – Contaminants in fish and other seafood. The targets used to assess progress for contaminants are: concentrations of contaminants measured in water, sediment or marine biota comply with appropriate threshold values; biological or ecological effects on sea life due to contaminants are below thresholds agreed by OSPAR; occurrence and extent of significant acute pollution events are minimised; and the adverse effects of significant acute pollution events on the health of species composition and relative abundance) are minimised and, where possible, eliminated. GES for descriptor D8 (contaminants) is currently 'achieved' in UK seas. regulatory levels and a risk assessment.
National Marine Policy	
UK Marine Policy Statement (2011)	Requires assessment of impacts on targets, indicators or measures aimed at achieving GES under the Marine Strategy Framework Directive (MSFD). (Scottish Government, 2011a)
Scotland's National Marine Plan (2015) - GEN 12 Water Quality and Resources	 Sets out the plan for Scottish inshore waters (out to 12 nm) and offshore waters (12 to 200 nm). It applies to the exercise of both reserved and devolved functions. Applicable policies regarding water quality include: GEN 12 – Water Quality and Resources: Developments and activities should not result in a deterioration of the

Relevant legislation and policy	Relevance to the assessment
	quality of waters to which the Water Framework Directive, Marine Strategy Framework Directive or other related Directives apply.
Sectoral Marine Plan – Offshore Wind Energy (2020)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. Section 4.1 of the Sectoral Marine Plan (2020) lists a range of potential negative impacts identified through plan-level SEA, HRA, and SEIA which require further consideration through project level assessments, including: effects from pollution releases on species and habitats; and effects on water quality.
Approved National Planning Framework 4 (NPF4) 2023	 A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A: Planning Policy Framework. Policy of relevance to this area of technical assessment include: Policy 1: Tackling the climate and nature crisis

Technical guidance

5.2.5 Technical guidance that has been used to define the assessment is set out in **Table 5.2.2**.

Table 5.2.2 Relevant technical guidance

Guidance reference	Relevance to the assessment	
Canadian Sediment Quality Guidelines for the Protection of Aquatic Life: Protocol 1995 (Canadian Council of Ministers of the Environment, 1995); Introduction – updated 2001 (Canadian Council of Ministers of the Environment, 2001); Summary Tables – updated 2002 (Canadian Council of Ministers of the Environment, 2002)	There are no established EQS for marine sediment quality in the UK and the Canadian Guidelines are widely used as a substitute, being one of the few sets of such guidelines available that covers protection of aquatic life in the marine environment. They define interim sediment quality guideline (ISQG) values and a probable effects level (PEL) for a wide range of chemical parameters in marine sediments.	
RenewableUK and NERC guidelines on Cumulative Impact Assessment Guidelines – Guiding Principles for Cumulative Impact Assessment in	As discussed in Section 4.2 Chapter 4 , RenewableUK and NERC provides guidance on how to conduct a cumulative effects assessment (CEA) and recommend that the spatial scales for individual receptors and the spatial extent of	

Guidance reference	Relevance to the assessment	
Offshore Wind Farms (RenewableUK, 2013)	environmental changes can be identified in line with the source-pathway-receptor model. The guidance will be followed in undertaking the CEA for marine water and sediment quality.	
Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy project (Judd, 2012)	This report provides guidelines for data acquisition to support marine environmental assessments for offshore renewable energy projects. This guidance has been incorporated into the marine wate and sediment quality scoping assessment on acquiring data for the study area.	

Study area

- 5.2.6 The study area for the marine water and sediment quality assessment is defined as the Scoping Boundary together with a buffer zone extending one spring tidal excursion outside this boundary, as shown in **Figure 5.2.1: Marine water and sediment quality study area** in **Appendix 1A**. The buffer zone has been informed by the tidal excursion extent to encompass the area over which suspended sediments may travel following disturbance as a result of the Project's activities, extending 5.5 km around the Scoping Boundary.
- 5.2.7 The study area will be reviewed and amended in response to such matters as refinement of the Project components, the identification of additional impact pathways and in response to feedback from consultation.

Consultation

5.2.8 This Section has been informed by engagement and discussion with various stakeholders, including an online workshop with Marine Directorate - Licensing Operations Team, (MD-LOT), Marine Directorate - Science, Evidence, Data and Digital (MD-SEDD), NatureScot, Royal Society for the Protection of Birds (RSPB), Scottish Fishermen's Federation (SFF) and the Scottish White Fish Producers Association Ltd (SWFPA) on 07 November 2024. Table 5.2.3 provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this Scoping Report.

Consultee	Comments and considerations	How this is accounted for
MD-LOT, MD-SEDD, and NatureScot	During the workshop, the approach to the marine water and sediment quality assessment was discussed. Following the Scoping Workshop, feedback on the marine water and sediment quality assessment was received by MD-SEDD and NatureScot. Both MD-SEDD and NatureScot broadly agreed with the overall proposed approach, further feedback received is provided below: IV. NatureScot outlined that they would expect monitoring of impacts	I. Seabed and hydrodynamics will be monitored using bathymetric surveys and sediment sampling to assess changes to the seabed or sediment transport. Construction and Post-Development monitoring plans will be developed as part of the EIA to outline the requirements.

Table 5.2.3 Consultation

Consultee	Comments and considerations			How this is accounted for		
	V.	through the pre- and post- construction stages of the Project; NatureScot and MD-SEDD shared	11.	Additional data sources have been considered in the Data Sources section below.		
	additional data sources that may be of benefit to the assessment.		III.	The proposed assessment has scoped in stratification and incorporated feedback for this		
VI. MD-S opera shoul SEDE stratif		MD-SEDD agreed that potential operational impacts on stratification should be scoped into the EIA. MD- SEDD provided further advice on the stratification assessment.		assessment.		

Assessment methodology

Introduction

5.2.9 The Project-wide approach to the assessment methodology is set out in **Chapter 4: Approach to Scoping and EIA**. However, while this has informed the approach that has been used in this Marine water and sediment quality section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the marine water and sediment quality assessment.

Desk Based review

- 5.2.10 A desk-based review of existing marine water and sediment quality data will be undertaken, focusing on sourcing data that have been collected within or in close proximity to the study area. These data will be supplemented with information on water and sediment quality in the wider Scottish Marine Regions and Offshore Marine Regions where available (see **Figure 5.2.2: Scottish marine regions** in **Appendix 1A**).
- 5.2.11 A range of data from a variety of sources will be reviewed to inform the environmental assessment. A list of the data sources to support this Scoping Report and to be used in the final assessment has been highlighted in **Table 5.2.6**. It should be noted that there is very limited coverage in or near to the Scoping Boundary for marine water quality, but this will be supplemented by site-specific survey data.

Site-specific surveys

5.2.12 To supplement and complement the existing data sources, further information will be collected from within the Scoping Boundary through site-specific marine water and sediment quality surveys and survey data will be available to inform the EIA Report. Sediments will be analysed for granulometric characteristics (particle size analysis) and for contaminants that may be of concern if mobilised into the water column by Project activities.

Approach

5.2.13 To enable the potential impact of the Project to be assessed, the baseline water and sediment quality will be described.

- 5.2.14 Potential impacts on marine water and sediment quality that may occur as a result of the planned construction, O&M, and decommissioning of the Project will then be identified, paying particular attention to parameters relevant to compliance with MSFD descriptors (8) and (9) (see **Table 5.2.1**).
- 5.2.15 In the event that the Project is predicted to have a direct impact on compliance with water or sediment environmental quality standards these will be assessed in the marine water and sediment quality section of the EIA Report. Where there is potential for changes in water or sediment quality to affect other receptors, links will be made with other sections, as described in **paragraphs 5.2.1** to **5.2.4**. Where appropriate, measures will be proposed to mitigate the impacts.
- 5.2.16 Cumulative impacts will be assessed by taking into consideration any other relevant developments, proposed or existing, that are in the vicinity of the Project and which have the potential to affect the same features.

Assessment of effects and determining significance

5.2.17 Scales for the sensitivity/value of existing water and sediment quality characteristics and for the magnitude of impact specific to marine water and sediment quality are provided in the following sections.

Sensitivity/Value

- 5.2.18 The sensitivity of a feature is dependent upon its adaptability (the degree to which a feature can avoid or adapt to an effect), tolerance (the ability of a feature to absorb stress or disturbance without changing character) and recoverability (the temporal scale and extent to which a feature will recover following an effect).
- 5.2.19 In addition, for some assessments the 'value' of a feature may also require consideration in the assessment where relevant, for instance if a feature is designated or has an economic value.
- 5.2.20 The sensitivity and value are combined, using expert judgement as required, to provide a score for use in the significance assessment matrix in **Plate 4.2.2** in **Chapter 4: Approach to Scoping and EIA**. The definitions of sensitivity/value levels for marine water and sediment quality, using a four-point scale, and example definitions of the sensitivity/value levels are provided in **Table 5.2.4**.

Table 5.2.4 Definitions of sensitivity/value levels for marine water and sediment quality

Value	Definition
High	MSFD sea area surface water body (or part thereof) with overall Good Environmental Status. Water or sediment quality conditions supporting a nature conservation site that is part of the national site network (Special Protection Areas and Special Areas of Conservation) or Ramsar sites, where water and/or sediment quality is an important factor in maintaining the site's conservation objectives.

Medium MSFD sea area surface water body (or part thereof) with overall Good Environmental Status

Water or sediment quality conditions supporting a Marine Protected Area that is not part of the national site network, where water and/or sediment quality is an important factor in maintaining the site's conservation objectives.

Low MSFD sea area surface water body (or part thereof) not meeting Good Environmental Status

Water or sediment quality conditions supporting a site with a local conservation interest (for example rare species), where water and/or sediment quality is an important factor in maintaining the site's conservation objectives.

- **Very low** Sea area with no identified features of conservation interest dependent on water or sediment quality.
- 5.2.21 It should be noted that high value and high sensitivity are not necessarily linked within a particular impact. Where these differ, professional judgement is used to define the sensitivity/value score.

Magnitude

5.2.22 Definitions of the magnitude levels for marine water and sediment quality are given in **Table 5.2.5**.

Table 5.2.5 Definitions of magnitude of effect for marine water and sediment quality

Value	Definition
High	Wide spatial extent with large magnitude compared to the natural variability and with a continuous signal extending into the long-term.
	Long-term or permanent and irreversible breaches of objectives for water quality, which leads to a downgrading of MSFD status in the local area.
	Large, long-term and permanent change to parameters defining chemical status and/or change to physico-chemical elements supporting the biological elements, which leads to a downgrading of MSFD status in the local area.
Medium	Regional spatial extent with moderate magnitude compared to the natural variability, frequently occurring in the short- or medium-term.
	Local spatial extent with moderate magnitude compared to natural variability, occurring frequently over a long-term timescale.
	Measurable long-term change in water quality that uses much of the available headroom to the objective; or medium-term and reversible breaches of objectives, which do not actually lead to a downgrading of MSFD status in the local area.
	Measurable long-term change to parameters defining chemical status and/or change to physico- chemical elements supporting the biological elements, which does not actually lead to a downgrading of MSFD status in the local area.

Low Local or regional spatial extent with low magnitude, frequently occurring over a short or medium timescale.

Measurable change in water quality, but with significant headroom still available in terms of meeting objectives; or short-term and reversible breaches of objectives and no change to MSFD status in the local area.

Measurable change to parameters defining chemical status and/or change to physico-chemical elements supporting the biological elements, which does not actually lead to a downgrading of MSFD status in the local area.

Very low Local spatial extent, with magnitude comparable to natural variability, occurring infrequently over a short or medium timescale.

No measurable change in water quality, and no breach of objectives, and no change to MSFD status in the local area.

No measurable change to parameters defining chemical status and/or change to physicochemical elements supporting the biological elements, and no change to MSFD status in the local area.

Effect significance

5.2.23 Following the identification of sensitivity/value and the magnitude of the impact, it is possible to determine the significance of the effect. The matrix provided in **Plate 4.2.2** in **Chapter 4: Approach to Scoping and EIA** is used as a framework to aid in determination of significance in the impact assessment. Significance of indirect effects of changes in water or sediment quality on other receptors will be assessed under the sections dealing with those other receptors.

Baseline conditions

Data Sources

5.2.24 A desk-based review of literature to support this Scoping Report highlighted data sources that provide coverage across large parts of the Project's marine water and sediment quality study area, and the wider region. The list of desk-based sources is provided in **Table 5.2.6**.

Source	Date	Summary	Coverage of study area	
Scotland's Marine Atlas (Scottish Government, 2011b)	Accessed 2025	Contains data collected to support development of Scotland's National Marine Plan. The " <i>Clean and safe</i> " assessment chapter includes data on contaminants in water, sediment and biota for the Moray Firth and North East SMRs and the Fladen and Moray Firth Offshore Marine Region (OMR). https://www.gov.scot/publications/scotlands-marine-atlas- information-national-marine-plan/	Complete coverage study area.	of
Marine Directorate NMPi (2022)	Accessed 2025	Publicly available mapping showing monitoring points, administrative areas etc. https://marinescotland.atkinsgeospatial.com/nmpi/	Complete coverage study area.	of
Campion Wind Limited	Accessed 2025	Metocean data: Surface and Seabed Temperature, Salinity/conductivity	Partial coverage of th study area.	ne
Scoping an Offshore Wind Sustained Observation Programme (OW- SOP) (Scottish Government, 2024)	Accessed 2025	This project recommends approaches to assess the potential impact of offshore wind farms on physical processes to provide recommendations for designing a programme of sustained observations of physical and biogeochemical water column processes.	Complete coverage study area.	of

Table 5.2.6 Key sources of marine water and sediment quality data

Current baseline

- 5.2.25 The data sources and literature presented in **Table 5.2.6** provided the foundation for understanding the marine water and sediment quality baseline. This baseline understanding will be further refined upon completion of the project-specific site surveys (e.g., sediment and water column sampling) and will be updated in subsequent phases of the EIA process.
- 5.2.26 No WFD water bodies are present within or close to the study area and, as a result, WFD criteria are not included in the baseline environmental assessment.

Marine water quality

- 5.2.27 A metocean campaign has been undertaken to understand the baseline environment of the Scoping Boundary. This campaign recorded temperature (°C) and conductivity (mS/cm) at the sea surface and seabed. Sea surface temperature and conductivity, and seabed conductivity were recorded between September 2022 to September 2023, whilst seabed temperatures were recorded between September 2022 and September 2024 (this campaign was extended due to instrument malfunctions resulting in data recording errors, the extension of the survey campaign allowed for a complete year of measurements to be recorded).
- 5.2.28 As shown in **Table 5.2.7**, the mean monthly surface water temperature within the Scoping Boundary ranged from 7.3 °C in March to 15.7 °C in August, and the seabed temperature ranged from 6.9 °C in March to 10.0 °C in October. The annual average surface water

temperature for the Scoping Boundary was 11.4 °C, and the annual average seabed temperature was 6.9 °C, presented in **Plate 5.2.1**. This shows clearly that thermal stratification occurs in this part of the North Sea during summer. This is consistent with DECC data shown in **Plate 5.1.1** in **Chapter 5: Marine Geology, Oceanography and Physical Processes**.

5.2.29 As shown in **Table 5.2.7**, the mean monthly surface conductivity within the Scoping Boundary ranged from 35.4 mS/cm in March to 43.3 mS/cm in August, and the seabed conductivity from 35.2 mS/cm in March and April to 39.9 mS/cm in August. The annual average surface conductivity for the Scoping Boundary is 39.3 mS/cm, and the annual average seabed conductivity was 37.6 mS/cm, presented in **Plate 5.2.2**.

Table 5.2.7 Mean monthly surface water and seabed temperature and surface and seabed frame conductivity for CampionWind Scoping Boundary

Month	Mean Surface Water Temperature (ºC)	Mean Seabed Temperature (ºC)	Mean Surface Conductivity (mS/cm)	Mean Seabed Frame Conductivity (mS/cm)*
January	8.9	7.4	36.9	36.8
February	7.9	7.1	36.0	35.9
March	7.3	6.9	35.4	35.2
April	7.8	7.1	35.8	35.2
Мау	9.7	7.6	37.6	-
June	14.8	7.8	42.5	-
July	15.5	8.1	42.9	-
August	15.7	8.7	43.3	-
September	15.0	9.9	42.7	38.1
October	12.5	10.0	40.4	39.9
November	11.7	9.8	39.6	39.6
December	10.2	8.9	38.3	38.2

* Instrument stopped recording between April to September 2023 for the seabed conductivity. Date recorded during 2024 campaign is being analysed and will be used to inform the EIA Report.





Plate 5.2.2 Mean monthly surface water and seabed conductivities (mS/cm) from the Scoping Boundary



5.2.30 Details on sediment characterisation, transport, and suspended sediment concentrations (SSCs) will be included in **Chapter 5.1: Marine Geology, Oceanography and Physical Processes**.

Seabed sediment quality

- 5.2.31 A detailed description of the seabed substrate will be provided in **Chapter 5.1: Marine Geology, Oceanography and Physical Processes**, where its composition, structure, and spatial distribution will be thoroughly analysed.
- 5.2.32 Potential sources of contamination near oil and gas platforms include routine operational discharges such as produced water, oil, and drilling chemicals, which may release hydrocarbons and toxic substances into the marine environment. Accidental spills, such as pipeline ruptures or equipment failures, also pose significant contamination risks. Additionally, atmospheric emissions like volatile organic compounds (VOCs) and particulate matter can degrade air and water quality. The deterioration of platform infrastructure over time can lead to the release of metals and other materials. Monitoring these sources is essential for assessing environmental risks and ensuring the protection of the surrounding marine ecosystem.

- 5.2.33 Site specific sediment surveys have been conducted but results were not yet available at the time of writing this Scoping Report.
- 5.2.34 There is no sediment contaminant data in Scotland's Marine Atlas within the Long Fortes offshore marine region near to the Scoping Boundary. Data from the Fladen and Moray Firth offshore marine region to the north shows concentrations of zinc, cadmium and mercury in seabed sediments are all below the Canadian ISQG level, while concentrations of copper and lead are expressed as less than a concentration slightly above the ISQG in each case.
- 5.2.35 Publicly available data from surveys undertaken for other offshore wind farms in the same offshore marine region will also be examined to ascertain whether these provide relevant additional sediment analysis data. Any such information will be collated and used to augment data from site-specific surveys.

Designated sites

5.2.36 For this Scoping Report, a desk-based review has been undertaken to identify designated sites with relevance to marine water and sediment quality assessment. No designated sites were recorded within the study area. The nearest designated site to the study area is located 13.6 km from its boundary. As a result, no likely significant impacts are anticipated on designated sites and therefore this receptor (designated sites) has been scoped out of the assessment and are not discussed further in the context of this Chapter.

Future baseline

5.2.37 On the basis of available evidence, in the absence of the Project, any future baseline for marine water and sediment quality over the lifetime of the Project is unlikely to be markedly different from the current baseline in terms of compliance with water quality standards. Therefore, it is considered appropriate to use the current baseline for the purpose of this assessment.

Basis for scoping assessment

- 5.2.38 The marine water and sediment quality scoping assessment is based on the following key design details, which are also set out in **Chapter 2: Project Description**. In particular the assessment will need to take account of:
 - the proposed wind turbine generator (WTG) floating station keeping systems and fixed WTG structures and the method of installation, cable burial and protection techniques and installation and scour protection techniques for any fixed platforms (as these have the potential to affect the mobilisation of sediments during construction and decommissioning, potential for loss of drilling muds, and potential for leaching of substances during operation);
 - the nature of the materials to be placed in the sea, including the characteristics of any coatings (as these may affect the potential for leaching of toxic substances into the water during operation);
 - materials carried aboard vessels or used in the floating or fixed WTGs (which could cause pollution as a result of accidental spillage);
 - sewage discharges from any accommodation platforms (during their period of use); and
 - impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life; and

- 5.2.39 The source-pathway-receptor linkage between Project infrastructure and / or activities and the receptor groups for this aspect are described in **Table 5.2.9**.
- 5.2.40 The Approved NPF4 2023 introduced new requirements, which will be taken into account in the EIA and associated consenting documents (see **Table 5.2.1**).

Embedded environmental measures

- 5.2.41 As part of the Project design process, a number of embedded environmental measures are proposed to reduce the potential for adverse impacts on marine water and sediment quality (see **Table 5.2.8**). These will evolve over the development process as the EIA progresses and in response to consultation responses. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.2.42 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in this Scoping assessment.

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 (Energy Act 2004 (as amended)), s.36 conditions, and marine licence conditions.
M-003	 A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. Other measures that that feed into the CEMP include: M-028: MPCP; M-043: Offshore micro-siting; and M-04460: Minimise turbidity; 	CEMP, S.36 conditions and marine licence conditions.
M-008	Development of and adherence to a Project Environmental Monitoring Programme (PEMP), which will set out commitments to environmental monitoring in pre-, during and post-construction phases of the Project.	s.36 conditions and marine licence conditions.
M-028	A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to the Project. The MPCP will also include relevant key emergency contact details.	s.36 conditions and marine licence conditions.

Table 5.2.8 Marine Water and Sediment Quality embedded environmental measures

ID	Environmental measure proposed	How the environmental measures will be secured
M-036	Ensure that any material to be deposited in the sea (metal components, rock for armour, concrete mattresses) does not contain toxic materials that could leach into the sea water and result in toxic effects.	S.36 conditions and marine licence conditions.
M-043	Apply micro-siting to proposed offshore Project infrastructure such as cables (trenched or ploughed in), or WTG anchor structures, to minimise mobilisation of contaminants from any areas of significantly contaminated sediment detected during pre- construction surveys.	S.36 conditions and marine licence conditions.
M-044	Minimise turbidity in the water column caused by sediment mobilisation during construction by selection of best practice construction methods.	S.36 conditions, marine licence conditions and CEMP
M-045	Ensure sewage discharges from any accommodation platform provided will comply with the provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL) and, additionally, will be appropriately treated, and disinfected if required, to ensure no adverse effect on compliance with bacteriological quality standards at any nearby designated coastal bathing waters.	S.36 conditions and marine licence conditions.

Likely significant effects

- 5.2.43 In line with the EIA Regulations (as described in **Chapter 3: Legislation and Policy Context**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-feature pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.2.44 The likely significant effects on marine water and sediment quality, as well as anticipated changes in marine water and sediment quality that may provide a pathway to likely significant effects on other receptors are summarised in **Table 5.2.9**. The scoping assessment is based on a combination of the Project design at the Scoping stage, embedded environmental measures, understanding of the baseline conditions, the evidence base for effects on marine water and sediment quality, and professional judgement. The approach to this assessment is set out in **Chapter 4: Approach to Scoping and EIA**.
- 5.2.45 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.

Table 5.2.9 Likely significant marine water and sediment quality effects

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Accidental pollution events (Construction, O&M, and Decommissioning	M-028, M-003, M-002	Pollution of water and sediment through accidental release of pollutants or chemicals from vessels or WTGs, which could affect local water and sediment quality. No likely significant effect as MPCP are to be place and mitigation measures implemented quickly.	Scoped out: See rationale in section below paragraph 5.2.47 to 5.2.49.	N/A	N/A
Mobilisation of contaminants contained in seabed sediment during construction operations to install anchorages and cables, resulting in changes in water quality (Construction)	M-043, M-003	Potential adverse effects on water quality compliance with MSFD descriptors. Potential changes in water quality that may affect marine biota. Potential changes in sediment quality by resettlement of contaminated mobilised sediment that may affect marine biota.	Scoped in: Assessment will be based on sediment transport analysis that will be undertaken as part of the assessment in Chapter 5.1: Marine geology, oceanography and physical processes and on results of analysis of seabed sediment samples for contaminants. If no contaminated sediments are identified, this impact and potential effects can be scoped out at a later stage.	Water quality. Sediment quality. Marine ecology (fish and benthos) (indirect effects).	Sediment survey - particle size analysis. Sediment survey - contaminants baseline analysis. Water quality baseline survey and analysis.
Disturbance of seabed sediment by installation of anchor systems or burying cables, leading to turbidity (resulting	M-044, M-003	Potential adverse effects on water quality compliance with MSFD.	Scoped in : Assessment will be based on sediment transport modelling that will be undertaken as part of the assessment in Chapter 5.1 :	Water quality. Marine ecology (fish and benthos) (indirect effects).	Sediment survey - particle size analysis. Water quality baseline survey

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
from increased concentrations of total suspended solids (TSS)) in the water column (Construction)		Potential changes in water quality that may affect pelagic marine biota. Potential smothering of benthic biota on resettlement.	Marine geology, oceanography and physical processes.	Amenity users of the sea.	and analysis (suspended solids).
Disturbance to water temperature stratification regime due to use of catenary anchorage systems for floating WTG (O&M)	M-008	Potential adverse effects on water quality compliance with MSFD descriptors. Potential changes in water quality that may affect pelagic marine biota.	Scoped in: Assessment will be based on hydrodynamic assessment that will be undertaken as part of the assessment in Chapter 5.1: Marine geology, oceanography and physical processes.	Water quality. Marine ecology (fish and benthos) (indirect effects). Amenity users of the sea.	Water quality baseline survey and analysis (suspended solids).
Deposit of material into the sea resulting in leaching of toxicants into the sea water and/or sediment (Construction, O&M, Decommissioning)	M-036	Potential adverse effects on water quality compliance with MSFD descriptors. Potential local adverse effects on sediment quality. Potential changes in water and sediment quality that may affect marine biota.	Scoped in: Included in assessment until precise characteristics of materials to be placed in the sea and any coatings are known. Provided that the selected materials do not contain leachable toxicants, this potential impact can rapidly be determined to be not significant.	Water quality. Sediment quality. Marine ecology (fish and benthos) (indirect effects).	
Any accommodation platform will have a requirement to dispose of sewage, most likely to sea via a treatment plant (Construction, O&M, and	M-045, M-002	Treated sewage discharges could affect potentially affect bathing water compliance with bacteriological standards.	Scoped out: See rationale in section below paragraph 5.2.47 to 5.2.49.	N/A	N/A

5.2.46 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach to that described in Chapter 4. In the EIA, a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and/or potential for additive effects on marine water and sediment quality.

Impacts proposed to be scoped out of assessment

- 5.2.47 A number of potential effects is proposed to be scoped out from further assessment, resulting from a conclusion of no potential for significant effect. These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and the professional judgment on the potential for impact from such projects more widely. The conclusions follow (in a site-based context) existing best practice. Each potentially scoped out effect is considered in turn below.
- 5.2.48 Accidental pollution events are not considered to result in a significant effect on compliance with MSFD water quality objectives or sediment guideline standards. The magnitude of an accidental spill will be limited by the size of chemical or oil inventory on construction vessels. In addition, release of hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment. The likelihood of an incident will be reduced by implementation of PEMP (embedded measure M-008) and MPCP (embedded environmental measure M-028), which will be approved by the relevant stakeholders and secured through s.36 conditions, marine licence conditions and included in the CEMP (embedded environmental measure M-003). Therefore, accidental pollution events is proposed to be **scoped out**.
- 5.2.49 An accommodation platform is included in the project description as an option and such a platform may generate a discharge of treated sewage (an alternative is to tanker it ashore). However, to have any useful purpose the platform would need to be located close to or in the Scoping Boundary, probably over 100 km from the nearest coastal bathing water. With the small population involved and the very great distance, taking into account typical die-off rates of bacteria in the sea and the fact that the main tidal flow around the Scoping Boundary runs in a north-south direction parallel to the shore rather than towards the shore, significant effects on bacteriological compliance at the bathing waters are extremely unlikely if not totally unrealistic. Therefore, accommodation platforms sewage disposal is proposed to be **scoped out**.

Cumulative effects

- 5.2.50 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing, due to the spatial scope of the Project and associated assessments.
- 5.2.51 Cumulative effects on marine water and sediment quality resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4: Approach to Scoping and EIA** and considering the other developments that have been screened in as part of the CEA screening exercise.
- 5.2.52 The principal potential for cumulative effects is in relation to sediment mobilisation from concurrent construction activities relating to different projects. It is likely that it would be possible to avoid such adverse cumulative effects by cooperation on timing of specific construction activities.

5.2.53 Long-term effects on water and sediment quality, such as the effect of treated sewage discharges from any accommodation platform, are likely to be very localised and it is not anticipated that they will lead to significant cumulative effects.

Transboundary effects

5.2.54 The potential effects from construction, O&M and decommissioning on marine water and sediment quality are considered in **Appendix 4A: Transboundary Screening Matrix**. Due to the localised and small-scale nature of the expected impacts on marine water and sediment quality, significant transboundary impacts are considered to be unlikely. It is, therefore, proposed that transboundary impacts on water and sediment quality are scoped out from further consideration within the EIA Report.

Proposed approach to the EIA Report

- 5.2.55 The impact assessment methodology will be based on that described in the above Section 'Assessment methodology' and **Chapter 4: Approach to Scoping and EIA**, aligned with relevant guidance documents, evidence from other offshore wind farms, and expert opinion. The following Section provides further context, including consultation and engagement that will be undertaken further to inform the assessment.
- 5.2.56 Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in **Chapter 4: Approach to Scoping and EIA**. Key consultees of relevance to marine water and sediment quality include MD-LOT and MD-SEDD. Consultee responses will be addressed, and the scope of the assessment will be modified accordingly in the EIA Report.
- 5.2.57 The marine water and sediment quality study area (Figure 5.2.1 in Appendix 1A) was informed by tidal excursion (see Chapter 5.1: Marine geology, oceanography and physical processes), to reflect the furthest distance disturbed sediments are likely to travel. This study area will be reviewed and amended in response to such matters as refinement of the offshore components, identification of additional impact pathway, and in response to feedback from consultation where appropriate. Additionally, information from site-specific modelling, and information from Chapter 5.1: Marine geology, oceanography and physical processes will also inform the final study area.
- 5.2.58 The baseline will be established through the compilation of both desk-based studies and sitespecific field surveys. The key data sources to be utilised to inform the baseline and assessment are listed in **Table 5.2.6**. Site-specific surveys will help fill data gaps that currently exist across the Project's marine water and sediment quality study area.
- 5.2.59 The likely significant effects on marine water and sediment quality from the precautionary approach scenarios will be described and assessed. The assessment of potential changes in marine water and sediment quality will take into account the magnitude and duration of the change, its reversibility and the timing and frequency of the activity. The quantification of changes will feed into the assessment of effects on other receptors as described earlier. Where it is possible directly to assess the significance of effects on marine water and sediment quality against MSFD objectives, this assessment will take account of the magnitude of the effect and the sensitivity/value of the water and sediment body.

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Introduction

- 5.3.1 The underwater noise and vibration assessment will consider the potential likely significant effects on relevant sensitive receptors that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in Chapter 2: Project Description. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions within the Scoping Boundary (as defined in Chapter 1: Introduction), the datasets to be used to inform the EIA, the potential likely significant effects to be considered, and how these will be assessed for the purpose of the an EIA Report. The significance of these effects will be determined in the receptor-specific assessments.
- 5.3.2 Underwater noise interfaces with other aspects and as such, should be considered alongside these; namely:
 - Section 4.2: Infrastructure and other marine users: The Section describes pathways of effect from noise sources on other transient marine users;
 - Section 5.6: Marine mammals: This Section describes pathways of effect from noise sources on pertinent sensitive marine mammal receptor species, therefore information from the underwater noise assessment will inform the marine mammals' assessment;
 - Section 5.5: Benthic, epibenthic, and shellfish ecology: Changes to underwater noise and vibration have the potential to directly and indirectly impact shellfish features principally through displacement, barrier effects, or potentially could be lethal to shellfish species. Therefore, information from this assessment will be used to inform the shellfish ecology assessment;
 - Section 5.8: Fish ecology: Changes to underwater noise and vibration have the potential to directly and indirectly impact fish features principally through displacement, barrier effects or potentially could be lethal to fish species. Therefore, information from this assessment will be used to inform the fish ecology assessment; and
 - Section 5.9: Commercial fisheries: This Section describes pathways of effect from noise sources on pertinent sensitive commercial fisheries receptor species, therefore information from this Section will be used in the commercial fisheries' assessment.
- 5.3.3 This Section considers the potential offshore underwater noise and vibration effects on receptors seaward of Highest Astronomical Tide (HAT). Any cumulative impact of offshore noise on receptors above Lowest Astronomical Tide (LAT) or vice versa will also be considered.

Legislation and policy context

5.3.4 This Section identifies the relevant legislative and policy context which has informed the scope of the underwater noise and vibration assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of international, national, and marine planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.

5.3.5 In order to provide a robust evidence base, **Table 5.3.1** below, presents a summary of legislation and policies of relevance for the underwater noise and vibration assessment. This Section takes account of specific requirements to assess and address likely impacts on receptors and relevant environmental issues. This table does not quote the policies in full but rather states the relevance to this Section.

Table 5.3.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment
Legislation	
European Union (EU) Marine Strategy Framework Directive (MSFD) (Directive 2008/56/EC) Marine Strategy Regulations 2010 Marine Environment (Amendment) (EU Exit) Regulations 2018	 Paragraph 3.8.7 in Chapter 3 sets out the legislative framework for MSFD. MSFD sets out measures for Good Environmental Status (GES) in the marine environment. Descriptors relevant to this technical assessment include: Descriptor 11: Energy including underwater noise.
National Policy	
Approved National Planning Framework 4 (NPF4) 2023	A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A: Planning Policy Framework . Revised policies of relevance to this area of technical assessment are: Policy 1: Tackling climate and nature crisis.
National Policy Statement (NPS) EN- 3 2024	• Builds on the previous NPS EN-3 (2011) and states that renewable energy infrastructure should discuss any proposed noisy activities with the relevant statutory bodies and utilise the relevant guidance in undertaking assessments. This infrastructure should utilise good practice measures and mitigation for noisy activities such as piling, explosive use, and geophysical surveys where noise levels above anticipated thresholds are likely to be experienced.
Marine Policy	
UK Marine Policy Statement (2011)	 Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine users. Requires use of the marine environment and its resources to maximise sustainable activity, prosperity, and opportunities for all.
Scottish National Marine Plan 2015 - GEN 13: Noise	 GEN 13 requires that development and subsequent operation in the marine environment should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.

Relevant legislation and policy	Relevance to the assessment
Sectoral Marine Plan – Offshore Wind (2020)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. Identifies potential impacts on marine mammal receptors and migratory fish species as key risk factors for projects within the East region

Technical guidance

5.3.6 Technical guidance that has been used to define the assessment is set out in **Table 5.3.2** below.

Table 5.3.2 Relevant technical guidance

Guidance reference	Relevance to the assessment
Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall <i>et al</i> ., 2019)	Southall <i>et al.</i> , 2019 provides sound exposure criteria to predict the onset of auditory effects in marine mammals. Estimate audiograms, weighting functions ('M-weighting') and underwater noise exposure criteria for temporary and permanent auditory effects of noise are presented for six species groupings, including all marine mammal species, and will be considered within the underwater noise modelling.
Sound Exposure Guidelines for Fishes and Sea Turtles (Popper <i>et al.</i> , 2014)	Popper <i>et al.</i> , 2014 provides sound exposure guidelines for fish. The guidelines categorise species by the way they detect different sound sources and their corresponding characteristics. The resultant sound exposure guidelines will be considered within the underwater noise modelling.
How loud is underwater noise from operating offshore wind turbines? (Tougaard <i>et al.</i> , 2020)	The underwater noise emissions from operational turbines will be predicted using the methodology proposed by Tougaard <i>et</i> <i>al.</i> , 2020, noting that Tougaard <i>et al.</i> , 2020 is based on fixed foundation designs. This methodology concerns noise from the operational stage of the development only. The Applicant notes that this is a research paper to be considered when undertaking the assessment and does not provide technical guidance.
Characterisation of underwater operational noise of two types of floating offshore wind turbines (Risch <i>et al.</i> , 2023)	This paper gives outcomes of a project collecting acoustic data from two floating offshore wind farms in Scottish waters. It shows that operational noise from floating offshore wind farms is comparable to fixed-bottom operational noise, and will help to inform the assessment of operational noise. The Applicant notes that this is a research paper to be considered when undertaking the assessment and does not provide technical guidance.
Guidelines for Minimising the Risk of Injury to Marine Mammals from	The Joint Nature Conservation Committee (JNCC) guidelines for geophysical surveys outline a protocol for the mitigation of potential underwater noise impacts due to geophysical surveys.

Guidance reference	Relevance to the assessment
Geophysical Surveys (Seismic Survey Guidelines) (JNCC, 2017)	
Guidelines for Minimising the Risk of Injury to Marine Mammals from Unexploded Ordnance Clearance in the Marine Environment (JNCC, 2025a)	The JNCC guidelines outline measures to minimise potential injury and disturbance from the use of explosives from activities such as harbour construction, wellhead or platform decommissioning and unexploded ordinance clearance.
Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise (JNCC, 2010)	The JNCC guidelines for piling outline a protocol for the mitigation of potential underwater noise impacts arising from pile driving during the construction of an offshore windfarm.
JNCC, Natural England and Cefas position on the use of quieter piling methods and noise abatement systems when installing offshore wind turbine foundations (JNCC, 2025b)	Joint statement from the statutory advisors over the growing effects of unabated pile driving noise on marine protected species and to review the scientific evidence and regulatory process relevant to offshore windfarm construction.
Reducing marine noise (Defra, 2025) Impacts of underwater noise from offshore wind - ME5610 (Defra, 2022) Management of underwater noise from offshore wind - ME5611 (Defra, 2023)	A series of reports on underwater noise that have contributed to improving the understanding of the impacts and management of underwater noise from offshore wind as part of the Offshore Wind Enabling Actions Programme (OWEAP). They are related and published together, covering the impacts and management of underwater noise relating to offshore wind.
Marine Information Network / Marine Evidence-Based Sensitivity Assessments approach to sensitivity (Tyler-Walters <i>et al.,</i> 2023)	The Marine Evidence-Based Sensitivity Assessments (MarESA) methodology provides a systematic process to compile and assess the best available scientific evidence to determine each sensitivity assessment.

Study area

- 5.3.7 The study area for the underwater noise assessment is defined by the sensitive receptors identified within each of the aspect sections as noted in **paragraph 5.3.2**.
- 5.3.8 The study area will be reviewed and amended in response to such matters following refinement of the Project components, the identification of additional impact pathways and, in response to feedback from consultation where appropriate.

Consultation

5.3.9 This Section has been informed by engagement and discussion with various stakeholders, including Marine Directorate – Licensing Operations Team (MD LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), NatureScot, Royal Society for the Protection of Birds (RSPB), Scottish Fishermen's Federation (SFF), and the Scottish White Fish Producers Association Ltd (SWFPA). EIA Scoping Workshops were held on 07 November 2024 and 15 January 2025. During the technical break-out sessions the Applicant outlined the intended approach to aspect assessments noted in **paragraph 5.3.2** and how the underwater noise assessment would be incorporated. No specific queries or feedback

relating to the underwater noise assessment from stakeholders have been raised at or following the EIA Scoping Workshops.

Assessment methodology

Introduction

- 5.3.10 Underwater noise and vibration are effect pathways to receptors associated with the chapters as listed in **paragraph 5.3.2**. The outputs of the underwater noise and vibration modelling will then inform their respective assessments. On this basis, the underwater noise and vibration assessment will be included as a technical report appended to the EIA Report rather than as a specific chapter. The technical report will include an assessment of the level of underwater noise and vibration generated from the Project.
- 5.3.11 The Project-wide approach to the assessment methodology is set out **in Chapter 4: Approach to Scoping and EIA**. However, whilst this has informed the approach that has been used in this Section, it is necessary to set out how this methodology will be applied to address the specific needs of the underwater noise assessment.

Desk-based review

5.3.12 A desk-based review will be undertaken of existing publicly available literature and studies of the impact of underwater noise and vibration on marine mammal, fish, and invertebrate species, and the criteria for estimating the impact quantitatively or qualitatively, to be agreed with the Statutory Nature Conservation Bodies (SNCBs). Experience from existing and consented offshore wind farm developments in Scotland will be drawn on to inform the underwater noise and vibration assessment and modelling strategy for the Project.

Approach

- 5.3.13 Offshore construction activity, particularly piling activities from the installation of the mooring system anchor points on the sea floor or from the installation of fixed foundations for infrastructure (i.e. offshore substation, accommodation platform and fixed WTGs (if required) will generate noise and vibration that may have a potential impact on sensitive receptors. Additionally, noise from geophysical site investigation activities, clearance of Unexploded Ordnance (UXO), and the operational functionality of floating offshore wind turbines (including 'snapping' noise from the mooring system cabling), may have an impact. An underwater noise assessment, including noise propagation modelling, will therefore be required.
- 5.3.14 It is anticipated that this assessment will include the following:
 - estimation of source level noise for impact piling operations of the Project based on engineering input in respect of pile diameters, seabed composition, and attendant hammer energy requirements;
 - estimation of source noise levels of turbine operational noise, including both the low frequency noise associated with the moving mechanical parts in the nacelle, and the transient noise characteristics associated with the anchor cables;
 - estimation of source noise levels of geophysical activities and geotechnical site investigation activities. Activities that have potential to generate underwater noise include multi-beam echosounder, sidescan sonar, single beam echosounder, sub-bottom profilers, drilling of boreholes, cone penetration tests, vibrocore/piston cores.

- estimation of source noise levels of UXO clearance activities (if required), including the potential use of different techniques, including high order detonation and low order deflagration;
- noise propagation modelling to estimate potential impact ranges for injury to marine mammals and fish as a result of piling during construction, operational turbine noise, and operational noise associated with noise emission characteristics of the anchor cables;
- noise propagation modelling to estimate potential impact ranges for behavioural effects to marine mammals and fish as a result of piling during construction, and the operational noise emissions;
- operational noise predictions of the turbine array as a whole, in addition to considering each turbine individually; and
- consideration of underwater noise effects associated with the decommissioning phase of the Project.
- 5.3.15 The impacts of underwater noise associated with the Project will be identified within the relevant aspect chapters of the EIA Report, following consultation with SNCBs. Discussion and agreement of the worst case spatial and temporal project parameters will be included. The impact criteria will be based on relevant published injury and behavioural thresholds for marine mammals, and fish which will be agreed in advance with the SNCBs. These thresholds will be derived from the most recent publications of relevance, which are Southall *et al.*, (2019) for marine mammal receptors and Popper *et al.*, (2014) for fishes (unless further evidence is published in the interim).

Baseline conditions

- 5.3.16 The baseline conditions, including future baseline conditions, and basis for the assessment of underwater noise and vibration will be detailed within the relevant aspects sections that consider impacts on receptors potentially sensitive to underwater noise emissions. In particular, this will relate to the following:
 - Section 4.2: Infrastructure and other marine users;
 - Section 5.6: Marine mammals;
 - Section 5.5: Benthic, epibenthic, and shellfish ecology;
 - Section 5.8: Fish ecology; and
 - Section 5.9: Commercial fisheries.

Embedded environmental measures

5.3.17 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts on underwater noise (see **Table 5.3.3**). These will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

ID	Environmental measure proposed	How the environmental measures will be secured
M-001	Development of and adherence to an agreed Marine Mammal Mitigation Protocol (MMMP). This will subsequently mitigate potential impacts from underwater noise on marine mammals through good or standard practice actions in order to meet legislative requirements. These will evolve over the development process as the EIA processes and in response to consultation.	Design evolution, s.36 conditions, and marine licence conditions.
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 (Energy Act 2004 (as mended)), s.36 conditions, and marine licences conditions.
M-003	 A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. Other measures that that feed into the CEMP include: M-004: Construction noise and vibration; M-005: Risk Assessment Method Statement; M-006: CEMP to include measures to minimise emissions. The CEMP will be the securing mechanism for many measures. 	S.36 conditions, marine licence conditions and CEMP.
M-009	Use of 'low order' techniques such as deflagration for UXO disposal, where possible and required.	s.36 conditions and marine licence conditions.
M-010	UXO Management Plan to mitigate any potential for UXO within the offshore construction area and also disposal once encountered.	s.36 conditions and marine licence conditions.
M-011	Development and adherence to a piling strategy for all relevant infrastructure, including WTGs, fixed wind turbine generator(s), accommodation platform(s) and other offshore substation(s) or platform(s). It will detail the method of pile installation and associated underwater noise (UWN) levels. It will describe any mitigation measures to be implemented (e.g. soft start and ramp up measures, use of acoustic deterrent devices) prior to and during pile installation to manage the effect of UWN.	s.36 conditions and marine licence conditions.

Table 5.3.3 Underwater noise and vibration embedded environmental measures

5.3.18 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered at Scoping.

Likely significant effects

- 5.3.19 In line with the EIA Regulations (as described in **Chapter 3: Legislation and Policy Context**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-receptor pathway will not lead to a significant impact with regards to the EIA Regulations, the pathway is scoped out from assessment.
- 5.3.20 The likely significant effects of underwater noise to each relevant receptor are summarised in the aspect tables as listed below:
 - Section 4.2: Infrastructure and other marine users;
 - Section 5.5: Benthic, epibenthic, and shellfish ecology Table 5.5.10;
 - Section 5.6: Marine mammals Table 5.6.11;
 - Section 5.8 Fish ecology Table 5.8.15; and
 - Section 5.9: Commercial fisheries Table 5.9.9.
- 5.3.21 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for underwater noise.
- 5.3.22 Whilst the above tables provide the relevant receptors and subsequent interface with the relevant section topics, the EIA Report will include a standalone technical report for the underwater noise assessment as an appendix.

Cumulative effects

- 5.3.23 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.3.24 Other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4: Approach to Scoping and EIA** and considering the other developments that have been screened in as part of the Cumulative Effects Assessment (CEA) screening exercise.
- 5.3.25 Further details on each aspect of CEA, including impacts relevant to underwater noise and vibration can be found in the following sections:
 - Section 4.2: Infrastructure and other marine users;
 - Section 5.6: Marine mammals;
 - Section 5.5: Benthic, epibenthic, and shellfish ecology;
 - Section 5.8: Fish ecology; and
 - Section 5.9: Commercial fisheries.
Transboundary effects

5.3.26 The potential effects from construction, O&M and decommissioning on noise sensitive receptors (such as marine mammals and fish) can be found in **Appendix 4A: Transboundary Screening Matrix**.

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5.4 Electromagnetic fields

Introduction

- 5.4.1 The electromagnetic fields (EMF) assessment will consider the potential likely significant effects from EMF that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in Chapter 2: Project Description. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), the datasets to be used to inform the EIA, the likely significant effects to be considered, and how these likely significant effects will be assessed for the purpose of an EIA Report.
- 5.4.2 Electrical array cables can be a source of EMF emissions, and exposure to EMF can result in behavioural and/or ecological changes to various biological receptors. EMF emissions are a result of electricity flowing through a cable which produces an electrical field and a magnetic field. EMF can endure at a distance from the source, but the strength of this emission is dependent on the surrounding material (Tethys, 2019). The earth has its own levels of EMF from its geomagnetic field, which are considered the background levels (25-65 microtesla) for the purposes of assessment. Any EMF values above these values around the cables are likely to result in an effect (Hutchison et al., 2020).
- 5.4.3 Cable armour, the grounded screen and the high voltage conductor of a cable prevents the electrical field escaping beyond the cable; however, it does not prevent the magnetic fields radiating into the adjacent environment. Induced electrical fields can occur through movement around a cable within the magnetic field. Both magnetic fields and induced electrical fields are reduced with distance from the source cable. EMF emissions are likely to result in an impact zone around cables associated with the Project infrastructure, but this is likely to be localised around the cables (Normandeau et al., 2011).
- 5.4.4 EMF interfaces with other aspects and as such, should be considered alongside these, namely:
 - Section 5.5: Benthic, epibenthic, and shellfish ecology: There is potential for EMF emissions to affect benthic, epibenthic, and shellfish ecology due to the presence of marine cable infrastructure within the seabed. These cables have the potential to emit EMF to and effect benthic, epibenthic, and shellfish ecology. Therefore, the EMF section will be used to inform the benthic, epibenthic and shellfish ecology section;
 - Section 5.6: Marine mammals: There is potential for EMF emissions to affect marine mammals as they use the marine environment as part of their lifecycle. Therefore the EMF section will be used to inform the marine mammal assessment;
 - Section 5.7: Offshore ornithology: Seabirds use the offshore environment to hunt for prey, therefore there is potential for EMF emissions to affect offshore ornithology. Therefore, the EMF section will be used to inform the offshore ornithology assessment;
 - Section 5.8: Fish ecology: EMF emissions from the Project have the potential to affect fish receptors. EMF is emitted from cables and could potentially cause behavioural changes or create a barrier effect to fish species. Therefore, the information from this assessment will be used to inform the fish ecology assessment; and
 - Section 5.9: Commercial fisheries: There is potential for EMF emissions to affect commercial fisheries as behavioural changes to fish may occur as a result of EMF. Therefore, the information from this Section will inform the commercial fisheries assessment.

Legislation and policy context

- 5.4.5 This Section identifies the relevant legislation and policy context which has informed the scope of the EMF assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual international, national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.4.6 In order to provide a robust evidence base, **Table 5.4.1** below presents a summary of legislation and policies of relevance to the EMF assessment for which this Section takes account of specific requirements to assess and address likely impacts on receptors and relevant environmental issues. This table does not quote the policies in full but rather states the relevance to this Section.

Relevant legislation and policy	Relevance to the assessment
Legislation	
None applicable.	
National Policy	
Approved National Planning Framework 4 (NPF4) 2023	 A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A: Planning Policy Framework. Revised policies of relevance to this area of technical assessment are: Policy 1: Tackling the climate and nature crises National Developments: 3. Strategic Renewable Electricity Generation and Transmission Infrastructure
 National Policy Statement (NPS) EN- 3 2024 Paragraph 2.8.149 Paragraphs 2.8.246 to 2.8.248 	 Sets out that there is the for potential EMF effects associated with the energy transmission infrastructure in the water column during the operation phase of developments. States that use of armoured cables and cable burial increases the physical distance between the EMF intensity and sensitive species. However the effectiveness of this mitigation will vary depending on the geology of the seabed along with a consideration to benthic habitats required. States that for floating wind, cable may hang freely in the water column and so potentially require alternative monitoring and mitigation.
Marine Policy	
UK Marine Policy Statement (2011)	 Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses.

Table 5.4.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment
	 Requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all.
Scottish National Marine Plan (2015) - CABLES 1 - CABLES 2	• CABLES 1 requires cable and network owners to provide evidence that the development and activity minimise impacts, where possible, on the environment and appropriate and proportionate environmental consideration and risk assessments should be provided which may include cable protection measures and mitigation plans.
	 CABLES 2 requires the following to be taken into account when reaching decision regarding cable development:
	 cables should be suitably routed to provide sufficient requirements for installation and cable protection;
	new cables should implement methods to minimise impacts on the environment, seabed and other users;
	cables should be buried to maximise protection where there are safety or seabed stability risks and to reduce conflict with other marine users and to protect the assets and infrastructure;
	where burial is demonstrated not to be feasible, cables may be suitably protected; and
	consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.
Sectoral Marine Plan for Offshore Wind (2020)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development.:
	 Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment.

Study area

- 5.4.7 The study area for this assessment is defined by the sensitive receptor within each of the aspect sections identified in **paragraph 5.4.4**; individual sections should be referred to for receptor-specific detail.
- 5.4.8 The study area will be reviewed and amended in response to such matters as refinement of the array area components, the identification of additional impact pathways and in response where appropriate to feedback from consultation.

Consultation

5.4.9 This Section has been informed by engagement and discussion with various stakeholders, including Marine Directorate - Licensing Operations Team (MD LOT), Marine Directorate - Science, Evidence, Data and Digital (MD-SEDD), NatureScot, Royal Society for the Protection of Birds (RSPB), Scottish Fishermen's Federation (SFF), and the Scottish White Fish Producers Association Ltd (SWFPA). EIA Scoping Workshops were held on 07 November 2024 and 15 January 2025. During the technical break-out sessions the Applicant outlined the intended approach to aspect assessments noted in **paragraph 5.4.4** and how the EMF assessment will be incorporated. No specific queries or feedback relating to the EMF assessment from stakeholders have been raised at or following the EIA Scoping Workshops.

Assessment methodology

Introduction

- 5.4.10 The EMF assessment will be included as an appended technical report to the EIA Report rather than a specific aspect chapter. The technical report will include an assessment of the EMF emissions generated by the Project, which will then be considered by other receptor-specific assessments as required.
- 5.4.11 The Project-wide approach to the assessment methodology is set out in Chapter 4: Approach to Scoping and EIA. However, whilst this has informed the approach that has been used in this EMF section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of this assessment.

Desk-based review

5.4.12 A desk-based review of existing information and current literature on EMF will be undertaken, notably including any information on the type of cables and associated EMF emissions, drawing on existing project applications and data from construction monitoring. These data will be reviewed and used, where applicable, to inform the EMF assessment.

Approach

- 5.4.13 The EMF assessment will detail the approach to calculating the EMF emissions from the Project. As part of this approach the EMF emissions will be placed into broad emission categories based on the EMF field that is likely to be associated with the various cable configurations seen across the Project, which will include:
 - any buried cables / cables that have rock protection as emissions are likely to be reduced the further away from the source of emissions;
 - cables that are surface-laid (on the seabed);
 - cables within the water column; and
 - cable crossings, as locations where cables cross over each other can amplify EMF emissions.

Baseline conditions

5.4.14 A desk-based review of literature to support this Scoping Report highlighted the following data sources, which provide coverage across large parts of the Project's EMF study area,

and wider region. The list of desk-based sources is provided in Appendix 5.4A: Key sources of EMF data.

5.4.15 The baseline conditions of EMF will be detailed within the relevant aspects sections that consider impacts on receptors potentially sensitive to EMF emissions. In particular, this will relate to the receptors notes in **paragraph 5.4.4**.

Embedded environmental measures

- 5.4.16 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts from EMF (see **Table 5.4.2**). These will evolve over the development process as the EIA progresses and in response to consultation, being fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that will be undertaken to meet existing legislation requirements.
- 5.4.17 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the scoping assessment.

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under Sections 105 and 114 (Energy Act 2004 (as amended)), s.36 consent conditions, and marine licence conditions.
M-003	A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. The CEMP will be the securing mechanism for many measures.	S.36 conditions, marine licence conditions and CEMP.
M-014	Burial of the cable where possible and / or use of external cable protection such as concrete mattresses or rock berms.	S.36 conditions and marine licence conditions.
M-012	A Scour Protection Management Plan will be developed. It will include details of the need, type, quantity, location(s) and installation methods for scour protection.	S.36 conditions and marine licence conditions.
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be undertaken to enable informed judgements about burial depth. This should maximise the chance of array cables remaining buried whilst limiting the amount of sediment disturbance to that which is	S.36 conditions and marine licence conditions.

Table 5.4.2 Relevant EMF embedded environmental measures

ID Environmental measure proposed

How the environmental measures will be secured

necessary. The array cables will typically be buried at a target burial depth between 1-2 m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.

Likely significant effects

- 5.4.18 In line with the EIA Regulations (as described in **Chapter 3**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.4.19 The likely significant effects from EMF are summarised in **Table 5.4.3**. The scoping assessment is based on a combination of the Project at the scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for EMF effects to various receptors, and professional judgement. The approach to this assessment is set out in **Chapter 4**.
- 5.4.20 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Offshore EMF exposure from cables within the marine environment (Operation / Maintenance)	M-012, M-013, M-014, M-003, M-002.	Potential for likely significant effect through EMF emissions from array cables and may subsequently impact biodiversity and commercial fisheries within the area.	Scoped in : The effect of EMF to receptors may result in behavioural or ecological changes, however the magnitude of these effects will be dependent on the receptor and exposure time. The presence and extent of effects will be informed through a desk-based review and site-specific survey data. The area of disturbance will be defined using a precautionary approach. The sensitivity of receptors to potential EMF impacts will be determined through available literature and expert knowledge based on the receptors resilience and resistance to impacts.	Benthic and shellfish ecology; Fish ecology; Marine mammals; and Commercial fisheries.	N/A

Table 5.4.3 Likely significant EMF effects

5.4.21 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for EMF.

Cumulative effects

- 5.4.22 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.4.23 Other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4** and considering the other developments that have been screened in as part of the Cumulative Effects Assessment screening exercise.
- 5.4.24 The following impacts from Project have the potential to act cumulatively with impacts from other developments to contribute to cumulative effects:
 - cable crossings any project that has cables that cross over the Project cables may
 result in cumulative EMF emissions due to amplification of the EMF waves. This can
 result in a larger potential field of impact.

Transboundary effects

5.4.25 The potential effects from EMF during construction, operation (including maintenance) and decommissioning on receptors are considered in **Appendix 4A: Transboundary Screening Matrix**. No significant transboundary impacts in EMF are predicted due to the localised and small-scale nature of the impact.

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5.5 Benthic, epibenthic and shellfish ecology

Introduction

- 5.5.1 This Section of the Scoping Report will consider the potential likely significant effects on benthic ecology that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. Benthic ecology encompasses infauna and epifauna (including shellfish) features. This section of the Scoping Report describes the methodology to be used to inform the Environmental Impact Assessment (EIA), the potentially likely significant effects to be considered, and how these will be assessed for the purpose of the EIA Report.
- 5.5.2 This Section should be read in conjunction with the project description provided in **Chapter 2: Project Description**, along with the relevant parts of the following chapters / sections and their subsequent appendices:
 - Section 4.2: Climate change; The interference with climate resilience with benthic, epibenthic and shellfish ecology will be captured in the In-Combination Climate Impacts (ICCI) assessment.
 - Section 5.1: Marine geology, oceanography and physical processes: Changes to marine geology, oceanography and physical processes have the potential to affect sensitive benthic, epibenthic and shellfish ecology receptor features and habitats. The information from this assessment will be used to inform the benthic, epibenthic and shellfish ecology assessment.
 - Section 5.2: Marine water and sediment quality: Changes in marine water and sediment quality have the potential to result in adverse effects on benthic, epibenthic and shellfish biota through toxicity and other mechanisms. The assessment against established water and sediment quality standards, design to be protective of biota is included in the marine and sediment quality section, further specific assessment of effects of changes in water quality, particularly where no environmental quality standard (EQS) is available will be included in this technical assessment.
 - Section 5.3: Underwater noise and vibration: Underwater noise and vibration have the potential to impact benthic, epibenthic and shellfish biota principally through displacement, barrier effects or potentially injury. Therefore, information from this assessment will be used to inform this technical assessment.
 - Section 5.4: Electromagnetic fields (EMF); There is potential for EMF emissions to affect benthic, epibenthic and shellfish ecology due to the presence of marine cable infrastructure within the seabed. These cables have the potential to emit EMF to and effect benthic, epibenthic and shellfish ecology receptors. Therefore, the EMF section will be used to inform this technical assessment.
 - Section 5.6: Marine mammals: The marine mammal receptor species are sensitive to possible changes on prey resource and habitats. Therefore, the benthic, epibenthic and shellfish ecology section will inform the marine mammal assessment.
 - Section 5.7: Offshore ornithology: The seabird receptor species are sensitive to possible changes on prey resource and habitats. Therefore, the benthic, epibenthic and shellfish ecology section will inform the offshore ornithology assessment.

- Section 5.8: Fish ecology: The benthic, epibenthic and shellfish ecology aspect includes species that live within the epibenthos and use the benthic environment as part of their life cycle and therefore there is a degree of overlap between these aspects. Some species may also rely on benthic species as part of their diet. Therefore, the information from this Section will be used to inform this technical assessment;
- Section 5.9: Commercial fisheries: The commercial fisheries section includes commercially important species and fisheries data and there is an overlap between these sections. Information and data from this assessment will be used to inform the benthic, epibenthic and shellfish ecology assessment as commercial fisheries has the potential to directly and indirectly impact benthic, epibenthic and shellfish ecology. and
- Appendix 4B: Nature Conservation Marine Protected Areas (MPA) assessment: The Nature Conservation MPA assessment will include MPAs that relate to protected benthic, epibenthic and shellfish ecology features and therefore must be considered together.

Legislation and policy context

- 5.5.3 This Section identifies the relevant legislative and policy context which has informed the scope of the benthic, epibenthic and shellfish ecology assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3**. which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Chapter.
- 5.5.4 In order to provide a robust evidence base, this Chapter is supported by **Appendix 5.5A** which presents a summary of legislation and policies relevant for the benthic, epibenthic and shellfish ecology assessment. This table does not quote the policies in full but rather states the relevance to this Chapter.

Principles for Cumulative Impact

Technical guidance

5.5.5 Technical guidance that has been used to define the assessment is set out in **Table 5.5.1**.

Table 5.5.1 Relevant technical guidance

Guidance reference	Relevance to the assessment
OSPAR, Guidance on Environmental Considerations for Offshore Wind Farm Development (OSPAR Commission, 2008)	The purpose of the OSPAR guidance note is to assist developers in the identification and consideration of some of the issues associated with determining the environmental effects of offshore wind farm developments for consideration in the benthic, epibenthic and shellfish ecology scoping assessment and EIA.
A Review of Assessment Methodologies for Offshore Wind Farms (Collaborative Offshore Wind Research into The Environment (COWRIE)) METH-08- 08 (Maclean <i>et al.</i> , 2009)	This report discusses the potential of high-definition cameras; reviews boat-based and aerial survey methodologies, reviews methodologies for analysing data; and recommends methodologies for analysing data.
SNH Guidance on Survey and Monitoring in Relation to Marine Renewables Deployments in Scotland (Saunders <i>et al.</i> , 2011)	Volume 5 of this guidance discusses benthic species and habitats of potential concern when considering potential impacts of wave and tidal devices. The guidance is relevant to the benthic , epibenthic and shellfish ecology assessment as it described potential impacts that may be similar to offshore wind farm impacts.
Sectoral Marine Plan (SMP): Regional Local Guidance (Scottish Government, 2020)	Sets out regional spatial baseline data for the Scottish National Marine Plan (SNMP) for offshore wind energy and describes information used in the planning and assessment process. The regional local guidance has been considered in the benthic, epibenthic and shellfish ecology scoping assessment by giving a regional context of the area around Plan Option E2, where the Option Agreement Area (OAA) site for this Project is located.
Joint Nature Conservation Committee (JNCC) Monitoring Guidance for Marine Benthic Habitats (Noble James <i>et al.</i> , 2018)	Guidance combines established ecological theory and protocols with JNCC advice and recommendations on benthic monitoring, by means of a step-wise framework that details key stages in the development of a monitoring plan.
Scottish Natural Heritage (SNH) Identification of Priority marine Features (PMF) (Howson <i>et al.</i> , 2012)	The SNH report described the process that was developed and used to identify a list of priority marine habitat and species of marine nature conservation importance for which it would be appropriate to use. The guidance sets out a PMF checklist to identify the PMFs which may be impacted, how the PMF may be impacted; the magnitude of change and significance. This guidance will be incorporated into the benthic, epibenthic and shellfish ecology scoping assessment and EIA.
Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects (Judd, 2012)	This report provides guidelines for data acquisition to support marine environmental assessments for offshore renewable energy projects. This guidance has been incorporated into the scoping assessment on acquiring data for the Study Area.
RenewableUK and NERC guidelines on Cumulative Impact Assessment Guidelines – Guiding	RenewableUK and NERC provides guidance on how to conduct a Cumulative Effects Assessment (CEA) and recommended that the spatial scales for individual receptors and the spatial extent of

Guidance reference	Relevance to the assessment
Assessment in Offshore Wind Farms (RenewableUK, 2013)	environmental changes can be identified in line with the source- pathway-receptor model.
Marine Directorate, Consenting and Licensing Guidance: For Offshore Wind, Wave and Tidal Energy Applications (Scottish Government, 2018)	Marine Directorate's consenting and licensing manual provides guidance on applying for s.36 consents and marine licenses for offshore renewables. The Guidance states an EIA must take account of the OSPAR List of Threatened and/or Declining Species and Habitats. Designated sites should be fully considered including; Special Areas of Conservation (SACs), Special Protection Areas (SPAs); Sites of Community Importance (SCIs); Candidate SACs (cSACs); Potential SPAs (pSPAs) and Potential SACs (pSACs). The guidance states under Section 83 of the Marine (Scotland) Act 2010/Section 126 of the Marine and Coastal Access Act 2009, Public Authorities are required to consider whether a project is capable of affecting (other than insignificantly) protected features in a Marine Protected Area (MPA).
Chartered Institute for Ecology and Environmental Management (CIEEM), Guidelines for Ecological Impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018)	Marine ecology methods apply an Ecological Impact Assessment (EcIA) based approach to assess the potential effects of the Project on ecological features for consideration in the EIA methodology to be used for the benthic, epibenthic and shellfish ecology assessment.
Marine Evidence based Sensitivity Assessment (MarESA) (Tyler- Walters <i>et al.</i> , 2023)	Sensitivity assessments determine the resistance (or tolerance) of a feature to a pressure and the ability to recover following the cessation of the pressure, termed resilience. Resistance and resilience descriptors are informed by the MarESA approach for benthic features and highly mobile species. This guidance will be incorporated into the EIA, assessing the sensitivities of biotopes within the Study Area.
Natural Resources Wales (NRW), Guidance of undertaking benthic marine habitat surveys and monitoring (NRW, 2019)	The Welsh guidance is referred to in the absence of specific Scottish guidance. NRW's report sets out guidance on methods and approaches for survey and monitoring of benthic marine habitats where such work is required to support environmental and ecological impact assessments for developments.
Marine Directorate's Feature Activity Sensitivity Tool (FeAST) (Marine Directorate, 2022)	FeAST is a web-based application that allows users to investigate the sensitivity of marine features in Scotland's seas, to pressures arising from human activities. This guidance will be incorporated into the EIA, assessing the sensitivities of biotopes within the Study Area.
NatureScot advice on Marine non- native species (NatureScot, 2022)	Provides guidance on identification of non-native species; and preventing introduction, including Marine Biosecurity Planning guidance. This guidance will be incorporated into the technical assessment and embedded environmental measures.
Marine Licensing and Consenting: Offshore Renewable Energy Projects (Scottish Government 2025)	Provides guidance on applying for licences and consents for marine renewable energy projects within Scottish offshore waters $(12 - 200 \text{ nautical miles (nm)})$.

- 5.5.6 The Study Area for the benthic, epibenthic and shellfish ecology assessment is defined as the Scoping Boundary together with the secondary impact Zone of Influence (ZoI), as shown in **Figure 5.5.1: Benthic, epibenthic and shellfish ecology study area** in **Appendix 1A**. The secondary impact ZoI has been informed by the tidal excursion extent and coastal processes. The secondary impact ZoI buffer, therefore, encompasses the area over which suspended sediments may travel following disturbance as a result of the Project's activities. After an initial review of the ABPmer Renewables Atlas, the tidal excursion in the area appears to be 5 km in a north to south direction. However, as a precautionary approach for this initial Scoping section, the secondary impact ZoI has been detailed as 15 km around the Scoping Boundary.
- 5.5.7 The Study Area will be reviewed and amended in response to such matters as refinement of the Project components, the identification of additional impact pathways, modelling and in response where appropriate to feedback from consultation.

Consultation

5.5.8 This Section has been informed by engagement and discussion with various stakeholders, including an online workshop with Marine Directorate, (MD-LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), NatureScot, Royal Society for the Protection of Birds (RSPB), Scottish Fishermen's Federation (SFF) and the Scottish White Fish Producers Association Ltd (SWFPA) on 07 November 2024. **Table 5.5.2** provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this Scoping Report.

Consultee	Comments and considerations	How this is accounted for
MD-LOT, MD- SEDD, and NatureScot	An offshore EIA Scoping workshop was held on 07 November 2024. During the workshop, the approach to the benthic ecology scoping assessment was discussed. During the workshop, it was recommended that Invasive Non-Native Species (INNS) and habitat alteration should be scoped in at this stage. No further feedback was provided with relevance to the benthic, epibenthic and shellfish ecology chapter.	Potential impacts from INNS and habitat alteration have been scoped in within the Likely Significant Effects section.

Table 5.5.2 Consultation

Assessment methodology

Introduction

5.5.9 The project-wide approach to the assessment methodology is set out in Chapter 4: Approach to Scoping and EIA. However, whilst this has informed the approach that has been used in this Section on benthic, epibenthic and shellfish ecology, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the benthic, epibenthic and shellfish ecology assessment.

Desk-based review

- 5.5.10 A desk-based review of existing benthic, epibenthic and shellfish ecology data will be undertaken, focusing on sourcing data that have been collected within or in close proximity to the Study Area for the benthic ecology, epibenthic and shellfish assessment. This data will be supplemented with information on the benthic, epibenthic and shellfish ecology of the wider region, where available.
- 5.5.11 A range of data from a variety of sources will be reviewed to inform the environmental assessment. A list of the data sources to support this Scoping Report and to be used in the final assessment have been highlighted in **Table**. It should be noted that there is desk study data available across the Study Area for benthic ecology, epibenthic and shellfish, but this will be supplemented by site-specific survey data where necessary.

Site-specific surveys

- 5.5.12 To date, no site-specific surveys have been undertaken and consequently, this section only utilises desk-based information. Further site-specific benthic, epibenthic and shellfish ecology surveys will be proposed to complement this data post EIA Scoping.
- 5.5.13 Epibenthic habitats will be sampled via a combination of targeted benthic infauna grab sampling and drop-down video (DDV) surveys, with particular focus on any habitats of conservation interest. Sediment samples will also be collected for contaminants and particle size analysis (PSA).
- 5.5.14 The area of habitat disturbance will be defined using a precautionary approach. The sensitivity of habitat types to the impact will be determined through available literature and expert knowledge, based on the habitats' resilience and resistance to impacts.

Approach

- 5.5.15 To enable the potential impact of the Project to be assessed, a description of the existing benthic communities, focusing particularly on any areas or features of conservation interest, will be provided. Potential impacts that may occur on the benthic, epibenthic and shellfish ecology as a result of the planned construction, O&M, and decommissioning of the Project will then be identified. The sensitivities of the communities present to the types of impact expected from wind farm construction, O&M, and decommissioning will be assessed. Where necessary, measures will be proposed to mitigate the impacts.
- 5.5.16 In the event that the Project has a direct impact on any sites that are designated for conservation at the national site network level (SAC or SPA) or international level (Ramsar), as a result of qualifying habitats or species they support, then the requisite information will be provided alongside the EIA Report to assist the Competent Authority to carry out an Appropriate Assessment (AA).
- 5.5.17 Cumulative impacts will be assessed where there is spatial and temporal overlap with other developments, as outlined in **Chapter 4: Approach to Scoping and EIA**. This includes taking into consideration any other relevant developments, proposed or existing, that are in the vicinity of the Project, and which have the potential to affect the same features.

Assessment of effects and determining significance

5.1.1 The sensitivity and value of the features and the magnitude of impact specific to benthic, epibenthic and shellfish ecology are provided in the following sections. This assessment is also conducted with reference to Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018).

Sensitivity

- 5.5.18 Four-point scales (high, medium, low or negligible) for the sensitivities of habitats, benthic, epibenthic and shellfish ecology have been developed. These scales have been developed with reference to the Marine Life Information Network (MarLIN) (MARLIN, 2022) MarESA (Tyler-Walters, 2023). The scales for resistance and resilience are provided in **Table 5.5.3**, the matrix of sensitivity scores is provided in **Plate 4.2.1** in **Chapter 4: Approach to Scoping and EIA**. Marine Directorate's FeAST has also been used in assessment of sensitivity of MPA protected features (Marine Directorate, 2022). FeAST has developed a sensitivity matrix of marine habitats and species to pressures taking place in the marine environment.
- 5.5.19 The sensitivity of a feature is dependent upon its adaptability (the degree to which a feature can avoid or adapt to an effect), tolerance (the ability of a feature to absorb stress or disturbance without changing character), and recoverability (the temporal scale and extent to which a feature will recover following an effect). In locations where several sensitivity levels are given for features against a potential impact, professional judgement will be used and justified for the assessment.

Resistance	Definition
High	No significant effects on the physiochemical character of habitat and no effect on population viability of key/characterising species but may affect feeding, respiration and reproduction rates.
Medium	Some mortality of species (can be significant where these are not keystone structural/ functional and characterising species) without change habitats relates to the loss <25% of the species or habitat component.
Low	Significant mortality of key and characterising species with some effects on the physiochemical character of habitat. A significant decline/reduction relates to the loss of 25-75% of the extent, density or abundance of the selected species or habitat component, e.g., loss of 25-75% of the substratum.
None	Key functional, structural, characterising species severely decline and / or physiochemical parameters are also affected e.g., removal of habitats, causing a change in habitat types. A severe decline / reduction relates to the loss of 75% of the extent, density or abundance of the selected species or habitat component, e.g., loss of 75% substratum (where this can be sensibly applied).

Table 5.5.3 Assessment scale for resistance (tolerance) to a defined intensity of pressure

Resilience	Definition
High	Full recovery within two years.
Medium	Full recovery within 2 – 10 years.
Low	Full recovery within 10 – 25 years.
Very Low	Negligible or prolonged recovery possible, at least 25 years to recover structure and function.

Table 5.5.4 Assessment scale for resilience (recovery)

Value

5.5.20 For some assessments, the 'value' of a feature may also require consideration in the assessment where relevant – for instance if a feature is designated for its conservation importance or has an economic value. The definitions of value levels have been developed using a four-point scale and example definitions of the value levels are provided in **Table 5.5.5**.

Table 5.5.5 Definitions of value levels for benthic ecology

Value	Definition
High	<u>Nationally important</u> / rare with limited potential for offsetting/compensations. Habitats and species protected under international law (e.g., qualifying features of a MPA listed site) and habitats and species that are qualifying features of sites comprising the national sites network.
Medium	<u>Regionally important</u> / rare with limited potential for offsetting/compensation. Habitats or species protected under national law but not within a national site network site. UK Biodiversity Action Plan (BAP) priority habitats and species. Species/habitats that may be rare of threatened in the UK.
Low	Locally important / rare; regional UK BAP priority habitats. Habitats or species that provide prey items for other species of conservation value.
Negligible	Habitats and species that are not protected under conservation legislation and are not considered to be particularly important or rare.

5.5.21 It should be noted that high value and high sensitivity are not necessarily linked within a particular impact. A feature could be of high value (e.g., an Annex I habitat within a National Site Network (NSN) site) but have a low or negligible physical/ecological sensitivity to an effect – it is important not to inflate impact significance just because a feature is 'valued'. This is where the narrative behind the assessment is important; the value can be used where relevant as a modifier for the sensitivity assigned to the feature.

Magnitude

- 5.5.22 Example definitions of the magnitude levels for a generic feature are given in **Table 4.2.3** in **Chapter 4: Approach to Scoping and EIA**.
- 5.5.23 In sections where several magnitude values are given for features against a potential impact, professional judgement will be used and justified for the assessment.

Effect significance

- 5.5.24 Following the identification of feature value and sensitivity, and the magnitude of the impact, it is possible to determine the significance of the effect. The matrix provided in **Plate 4.2.1** in **Chapter 4: Approach to Scoping and EIA** (and the definitions of sensitivity, value described above and magnitude in **Table 4.2.3** in **Chapter 4: Approach to Scoping and EIA**) is used as a framework to aid in determination of the impact assessment.
- 5.5.25 Where possible, assessment of the magnitude of the impact on benthic ecology is based upon quantitative criteria, together with the use of professional judgement and expert interpretation to establish the extent to which an impact is significant.

Baseline conditions

5.5.26 A desk-based review of literature to support this Scoping Report highlighted data sources that provide coverage across large parts of the Project's habitats, benthic, epibenthic and shellfish ecology Study Area, and the wider region.

Data sources

5.5.27 The data sources that have been used to inform this Section of the Scoping Report are presented in **Table 5.5.6**.

Source	Date	Summary	Coverage of study area
North Sea habitats by European Marine Observation and Data Network (EMODnet, 2025)	2019	EMODnet broad-scale seabed habitat map for Europe of physical habitats is a predictive habitat map that covers the seabed of a large area of European waters including the North Sea. Habitats are described in the European Nature Information System (EUNIS) and MSFD predominant habitat classifications and predicted based on a number of physical parameters.	Full coverage of Study Area
EUSeaMap, 2021	2021	EUNIS Level 4 model, detailing biological zone and substrate.	Full coverage of Study Area
Biologically informed habitat map (Cooper <i>et</i> <i>al</i> ., 2019)	Samples have been collected over a period of 48 years from 1969 to 2015, although the vast majority (96%)	A biologically informed habitat map (available online: https://besjournals.onlinelibrary.wiley.com/doi/10. 1111/1365-2664.13381) produced using all Regional Seabed Monitoring Plan (RSMP) data.	Full coverage of Study Area

Table 5.5.6 Key sources of benthic ecology data

CampionWind Offshore Wind Farm Array Area Environmental Impact Assessment – Scoping Report Section 5.5 Benthic, epibenthic and shellfish ecology

Source	Date	Summary	Coverage of study area
	were acquired since 2000.		
SAC designation documents by JNCC (JNCC, 2024)	Accessed 2025	SAC designation documents and site management plans.	Full coverage of Study Area
Natura 2000 standard data form by JNCC (JNCC, 2022)	Accessed 2025	Natura 2000 standard data forms published by the JNCC.	Full coverage of Study Area
North Sea benthic data held by MarLIN	Accessed 2025	North Sea benthic data (available online: <u>https://www.marlin/ac.uk/</u>).	Regional context of the North Sea
North Sea benthic habitats held by Multi-Agency Geographic Information for the Countryside (MAGIC)	Accessed 2025	Online geographical information system that provides data from the natural environment from across government (Available online: https://magic.defra.gov.uk/magicmap.aspx).	Full coverage of the Study Area
Geodatabase of marine features adjacent to Scotland (GeMs) – Scottish Priority Marine Features (PMF) (NatureScot, 2025c)	Accessed 2025	Known locations of PMF.	Full coverage of Study Area
Marine Protected Areas by NatureScot (NatureScot, 2025b)	Assessed 2025	Marine Protected Area Reports from NatureScot (available online: <u>https://www.nature.scot/professional-</u> <u>advice/protected-areas-and-species/protected-</u> <u>areas/marine-protected-areas-mpas</u>).	Full coverage of the Study Area
Priority Marine Habitats by NatureScot and JNCC (NatureScot, 2025c)	Accessed 2025	Priority marine habitats information from NatureScot and JNCC (available online: <u>Priority</u> <u>Marine Features in Scotland's seas - The List</u> <u>NatureScot</u>).	Full coverage of the Study Area
North Sea habitats (Marine Directorate, 2025d)	Accessed 2025	NatureScot Habitat Map of Scotland (HabMoS) will publish all available habitat data and manage a programme to survey those areas for new information (available online: https://marinescotland.atkinsgeospatial.com/nmpi /default.aspx?layers=958).	Full coverage of the Study Area

Source	Date	Summary	Coverage of study area
International Council for the Exploration of the Seas (ICES) data and reports (ICES, 2023)	Accessed 2025	Data will be extracted for all ICES Statistical Rectangles within the Study Area.	Full coverage of the Study Area
Scottish Government (2023) Developing essential fish habitat maps: report	Accessed 2025	Maps defining areas of the sea essential to fish and shellfish for spawning, breeding, feeding or growth to maturity. The report and subsequent maps reviewed 29 species and multiple life stages of marine fish and shellfish of relevance to offshore wind development areas.	Full coverage of the Study Area
Distribution of spawning and nursery grounds defined by Coull et al. (1998) and Ellis et al. (2012)	Accessed 2025	Widely used dataset identifying the known spawning and nursery grounds of multiple fish and shellfish species in UK and surrounding waters.	Full coverage of the Study Area
Fishing data collection, coverage, processing and revisions (Marine Management Organisation (MMO), 2021)	Accessed 2025	IFISH database with landing statistics data for UK registered vessels for 2016 to 2020.	Full coverage of the Study Area
UK sea fisheries annual statistics reports (MMO), 2022)	Accessed 2025	Information on landings of the UK fishing fleet, and the status of commercial fish and shellfish stocks.	Full coverage of the Study Area
Muir Mhor OWF Environmental Impact Assessment Report 2024 Chapter 9: Benthic, Subtidal and Intertidal Ecology	2024	The Muir Mhor Offshore Wind Farm Array Area overlaps with the current Project's Study Area for benthic (infauna and epifauna) and shellfish ecology. This section utilises information from the site-specific surveys undertaken for the Muir Mhor OWF, to inform the current baseline.	Partial coverage of the Study Area

Current baseline

Subtidal Sediments

5.5.28 Broadscale regional habitat mapping to EUNIS Level 4, detailing biological zone and substrate from 2019 (EUSeaMap, 2021), indicates that the habitats across the Study Area are predominantly characterised primarily by A5.27: Deep circalittoral sand followed by A5.15 Deep circalittoral coarse sediment and small sparse areas of A5.45: Deep circalittoral mixed sediments and A5.37 Deep circalittoral mud (see **Figure 5.5.2 Seabed Substrate** in **Appendix 1A**). Similar substrates are also found outside of the Study Area.

5.5.29 As described in Paragraph 5.5.6, the benthic ecology Study Area have been demonstrated to primarily comprise of sand and coarse sediment with sparse areas of mixed sediments. A description of each biotope is presented in **Table 5.5.7**.

Table 5.5.7EUNIS habitat types and description within the benthic ecology StudyArea

EUNIS Habitat Type	EUNIS Code	EUNIS Habitat Description	Location
Deep Circalittoral Sand	A5.27	Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats, however, they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms.	Study Area (including Scoping Boundary and 15 km precautionary Zol).
Deep Circalittoral Coarse Sediment	A5.15	Offshore (deep) circalittoral habitats with coarse sands and gravel or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little quantitative data available. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore mixed sediments, and in some areas settlement of horse mussel <i>Modiolus modiolus</i> larvae may occur and consequently these habitats may occasionally have large numbers of juvenile horse mussel. In areas where the mussels reach maturity, their byssus threads bind the sediment together, increasing stability and allowing an increased deposition of silt leading to the development of the biotope A5.622 (<i>Modiolus modiolus</i> beds on open coast circalittoral mixed sediment).	Study Area (including Scoping Boundary and 15 km precautionary Zol).
Deep Circalittoral Mixed Sediments	A5.45	Offshore (deep) circalittoral habitats with slightly muddy mixed gravelly sand and stones or shell. This habitat may cover large areas of the offshore continental shelf although there is relatively little data available. Such habitats are often highly diverse with a high number of infaunal polychaete and bivalve species. Animal communities in this habitat are closely related to offshore gravels and coarse sands. In some areas populations of the horse mussel <i>Modiolus modiolus</i> may develop in these habitats (see A5.622 (<i>Modiolus modiolus</i> beds on open coast circalittoral mixed sediment)).	Study Area (located outside the Scoping Boundary but within the 15 km precautionary Zol).

EUNIS Habitat Type	EUNIS Code	EUNIS Habitat Description	Location
Deep Circalittoral Mud	A4.37	In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50- 70 m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as <i>Thyasira</i> spp., echinoderms and foraminifera	Study Area (located outside of the Scoping Boundary but within the 15 km precautionary Zol).

5.5.30 The benthic biotopes from Cooper *et al.*, 2019 are presented in **Figure 5.5.3** in **Appendix 1A**. This biological-based seabed map utilises a comprehensive dataset of macrofaunal data for UK shelf waters. This large dataset was created by integrating empirical data acquired from both government and non-governmental sector (e.g. marine aggregates, offshore wind, oil and gas) monitoring efforts and therefore is a valuable resource. This demonstrates that the macrofaunal assemblages across the Project's benthic ecology Study Area were characterised by the following groups (see **Table 5.5.8** below). The families recorded are relatively similar across the habitats with the main differentiator being substrate type. The majority of the Study Area is dominated by the habitat 'D2b', followed by 'D2a' and a sparse area of 'D2c'.

Table 5.5.8 Biological characteristics of the macrofaunal assemblages relevant tothe Project (Cooper et al., 2019)

Cluster	Characteristic taxa
D2b	Represented by a faunal assemblage that was characterised by the polychaetes Spionidae, Glyceridae, Terebellidae, Capitellidae, Phyllodocidae and the Lophotrochozoa phylum Nemertea. This group is likely to be located within deep water, muddy sands.
D2a	Represented by a faunal assemblage that was characterised by the polychaetes Spionidae, Glyceridae, Terebellidae, Capitellidae, Phyllodocidae and the Lophotrochozoa phylum Nemertea. This group is likely to be located on a variety of sandy substrates.
D2c	Represented by a faunal assemblage that was characterised by polychaetes includes Nephtyidae, Spionidae and Opheliidae. All of which are typically found in sand and muddy sands.

- 5.5.31 The Muir Mhor OWF Array Area overlaps with the western region of the Study Area Boundary. The biotopes identified from the site-specific survey data for the Muir Mhor OWF:
 - Offshore circalittoral sand (SS.SSa / EUNIS code MD5);
 - Faunal communities of Atlantic circalittoral sand (SS.SSA.CMuSa / EUNIS code MC521);
 - Echinocyamus pusillus, Ophelia borealis and Abra prismatica in circalittoral fine sand (SS.SSa.CFiSa.EpusOborApri/ EUNIS code MC5211);
 - Circalittoral coarse sediment (SS.SCS/ EUNIS code MC3);

- Faunal communities in Atlantic offshore circalittoral coarse sediment (SS.SCS.OCS/ EUNIS code MD321);
- *Glycera lapidum*, *Thyasira spp.* and *Amythasides macroglossus* in offshore gravelly sand (SS.SCS.OCS.GlapThyAmy/ EUNIS code MD3211);
- Faunal communities in Atlantic offshore circalittoral coarse sediment (coarser variant) (SS.SCS.OCS/ EUNIS code MD321);
- *Glycera lapidum*, *Thyasira spp*. and *Amythasides macroglossus* in offshore gravelly sand (coarser variant) (SS.SCS.OCS.GlapThyAmy/ EUNIS code: MD3211);
- Circalittoral mixed sediment (SS.SMx/ EUNIS code: MC4);
- Faunal communities in Atlantic offshore circalittoral mixed sediment (SS.SMx.OMx/ EUNIS code: MD421); and
- Polychaete-rich deep Venus community in circalittoral mixed sediment (SS.SMx.OMx.PoVen/ EUNIS code: MD4211).

Species and habitats of conservation importance

- 5.5.32 No site-specific surveys have been undertaken to date, however the habitats and species of conservation importance which may be present within the Study Area and also outside of the Study Area are detailed within Figure 5.5.4 Habitats and species of conservation importance in Appendix 1A. Those with the potential to be encountered in the Scoping Boundary are the OSPAR habitat 'Sea-pen and burrowing megafauna communities' which were recorded on the northern perimeter of the Study Area boundary.
- 5.5.33 Habitats and species of conservation importance which have been recorded within the vicinity of the Project, however, are located outside of the Study Area boundary are:
 - PMF species Ocean quahog Arctica islandica located approximately 20.7 km to the east of the Study Area boundary;
 - PMF habitat 'Offshore subtidal sands and gravels' located approximately 14 km to the west of the Study Area boundary;
 - PMF habitat 'Burrowed mud' located approximately 2.7 km to the north of the Study Area boundary; and
 - PMF species 'Fan mussel Atrina fragilis' located approximately 31.1 km to the northwest of the Study Area boundary.
- 5.5.34 During site-specific surveys for the Muir Mhor OWF Array Area, grab samples identified the presence of the polychaete *Sabellaria spinulosa*. However, the stony reef assessment only determined 19 occurrences of 'Low reef' and no occurrences of 'Medium reef' in the Muir Mhor OWF Array Area. It was subsequently concluded, the presence of *Sabellaria spinulosa* was not indicative of an Annex I habitat and thus, there was no valid justification to warrant Annex I protection within the Array Area.
- 5.5.35 A single ocean quahog was identified from a grab sample taken from the Muir Mhor Array Area during the site-specific surveys. During the DDV survey for Muir Mhor, small burrows were observed in low numbers, with low numbers of the phosphorescent sea pen *Photobacterium phosphorea*. However, it was concluded that due to the sparse nature of these features, they did not represent the OSPAR habitat; Sea pen and burrowing megafauna communities.

Shellfish

- 5.5.36 Detailed information on species of commercial importance is provided in **Section 5.9**: **Commercial fisheries** which identifies Nephrops as one of key commercial species in the region. Landings within the region by UK vessels in 2021 were dominated by shellfish. Specifically, landings were dominated in both quantity (tonnage) and value by Nephrops and king scallop. Other notable shellfish landings in the region included brown crab (MMO, 2022).
- 5.5.37 The Study Area is located within ICES Rectangles 44E9, 43E9, 44F0, 43F0, 42E9, and 42F0. Norway lobster was one of the top five commercial fish and shellfish species across the ICES Rectangles.
- 5.5.38 Nephrops spawning and nursery grounds of undetermined intensity overlap with the Scoping Boundary (Coull *et al.*, 1998), see **Figure 5.5.2, Appendix 1A**.
- 5.5.39 Shellfish species recorded within the Muir Mhor OWF Array Area during the benthic surveys included; hermit crabs *Pagurus sp.* and queen scallop *Aequipecten opercularis*.

Designated Sites

- 5.5.40 For this Scoping Report, a desk-based review has been undertaken to identify designated sites with relevance to benthic, epibenthic and shellfish ecology assessment. No designated sites were recorded within the Study Area. The following designated sites are considered the nearest to the Study Area, specifically:
 - East of Gannet and Montrose Fields MPA located 14.5 km from the Study Area; and
 - Turbot Bank MPA located 13.4 km from the Study Area,
- 5.5.41 **Figure 5.5.5: Designated Sites surrounding the Study Area** in **Appendix 1A** demonstrates the Study Area within the context of these designated sites. As a result, no likely significant impacts are anticipated on designated sites and therefore this receptor has been scoped out of the assessment and are not discussed further in the context of this chapter.

Future baseline

- 5.5.42 In the absence of the Project, the future benthic, epibenthic and shellfish ecology and environment in the Study Area is likely to experience changes associated with natural variation, climate change and non-climatic factors. Studies have demonstrated that long-term changes are likely to result from a combination of climatic (e.g. rising sea temperatures, ocean acidification) and non-climatic factors (e.g. changes in fishing patterns and contamination), which may affect the responses of benthos to climate change. The nature of this response will likely be dependent on species' life-history traits.
- 5.5.43 Given the anticipated lifetime of the Project, species populations or ranges may alter due to climate change. Studies have shown that with rising sea temperatures, species will move out of the North Sea or into deeper water. Similarly, the ICES status report on climate change shows that species from the south will move into the North Sea, resulting in more biodiversity in the region. It is unlikely that these changes will occur over the course of the Project installations.

Basis for scoping assessment

5.5.44 The benthic, epibenthic and shellfish ecology scoping assessment is based on the following key assumptions, which are also set out in **Chapter 2: Project Description**:

- impacts will be assessed for all phases of the Project;
- impacts associated with floating, and if required, fixed design WTGs will be undertaken;
- an assessment will be undertaken of O&M impacts associated with the presence of array cables causing anthropogenic EMF;
- impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life; and
- impacts associated with the introduction of structures and subsequent recolonisation.
- 5.5.45 The source-pathway-receptor linkage between Project infrastructure and / or activities and the receptor groups for this aspect are descripted in **Table 5.5.10**.
- 5.5.46 The Approved NPF4 2023 introduces new requirements and responds to the global climate and nature crisis (Policy 1). These requirements, along with others will be taken into account within the EIA and associated consenting documents.

Embedded environmental measures

- 5.5.47 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for adverse impacts on habitats, benthic, epibenthic and shellfish ecology (see **Table 5.5.9**). These will evolve over the development process as the EIA progresses and in response to consultation responses, feeding iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.5.48 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the Scoping assessment.

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 (Energy Act 2004), s.36 conditions, and marine licence conditions.
M-003	A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. Other measures that that feed into the CEMP include: • M-004: Construction noise and vibration;	s.36 conditions, marine licence conditions, and CEMP

Table 5.5.9 Relevant benthic ecology embedded environmental measures

M-005: Risk Assessment Method Statement;

ID	Environmental measure proposed	How the environmental measures will be secured
	 M-006: CEMP to include measures to minimise emissions. 	
	The CEMP will be the securing mechanism for many measures.	
M-008	Development of and adherence to a Project Environmental Monitoring Programme (PEMP), which will set out commitments to environmental monitoring in pre-, during and post- construction phases of the Project.	s.36 conditions and marine licence conditions
M-012	Scour Protection Management Plan will be developed. It will include details of the need, type, quantity, location(s) and installation methods for scour protection.	s.36 conditions and marine licence conditions
M-028	A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to the Project. The MPCP will also include relevant key emergency contact details.	s.36 conditions and marine licence conditions
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be undertaken to enable informed judgements about burial depth. This should maximise the chance of cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. The array cables will typically be buried at a target burial depth between 1-2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.	s.36 conditions and marine licence conditions
M-033	Avoidance of key sensitive habitats, where known, through pre- construction surveys and micro-siting of proposed offshore Project infrastructure.	s.36 conditions and marine licence conditions
M-034	The mitigation and control of invasive species measures will be incorporated into a PEMP.	s.36 conditions and marine licence conditions
M-035	Nature Inclusive Design (NID) will be considered such as eco- friendly scour protection, artificial reefs and bio-enhancing turbine foundations.	s.36 conditions and marine licence conditions

Likely significant effects

- 5.5.49 In line with the EIA Regulations (as described in **Chapter 3: Legislation and Policy Context**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-feature pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.5.50 The likely significant effects on habitats, benthic, epibenthic and shellfish ecology are summarised in **Table 5.5.10**. The scoping assessment is based on a combination of the Project at the Scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for benthic (infauna and epifauna) and

shellfish ecological effects, and professional judgement. The approach to this assessment is set out in **Chapter 4: Approach to Scoping and EIA**.

5.5.51 The early identification of likely significant effects is used as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore no longer to be considered, is presented after **Table 5.5.10**, supported by an evidence base.

Table 5.5.10 Likely significant benthic ecology effects

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data baseline requirements
Temporary disturbance of seabed habitat (Construction, O&M and Decommissioning)	M-002, M-035	Potential for likely significant effect to benthic, epibenthic and shellfish ecology resources through temporary, direct habitat loss and disturbance during the construction and decommissioning phases. During the O&M phase, activities involving the inspection and maintenance of array cables and the movement of mooring system are likely to result in disturbance of seabed sediments to a lesser extent when compared to the construction / decommissioning phases.	Scoped in:	Benthic, epibenthic and shellfish ecology	New site-specific data for benthic, epibenthic and shellfish ecology features.
Temporary increase in suspended sediment and subsequent deposition (Construction, O&M and Decommissioning)	M-002, M- 035	Potential for likely significant effect through increases in suspended sediments and subsequent sediment deposition leading to smothering of sensitive benthic, epibenthic and shellfish habitats and species during the construction and decommissioning phases. During the O&M phase, activities involving the inspection and maintenance of array cables and the movement of mooring system are likely to result in increased suspended sediments and deposition to a lesser extent when compared to the construction / decommissioning phases.	Scoped in	Benthic, epibenthic and shellfish ecology	New site-specific survey data for benthic, epibenthic) and shellfish ecology features.
Direct and indirect seabed disturbances leading to the release of sediment	M-008, M-013	Potential for likely significant effect through release of sediment bound contaminants into the water column during the construction and decommissioning phases. During the O&M	Scoped in	Benthic, epibenthic and shellfish ecology	The assessment will be informed by the findings of site-specific sediment contaminant analyses.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data baseline requirements
contaminants (Construction, O&M and Decommissioning)		phase, activities involving the inspection and maintenance of array cables and the movement of mooring system are likely to result in increased sediment contaminant release to a lesser extent when compared to the construction / decommissioning phases.			
Long-term habitat loss (O&M)	M-013, M-033, M- 035	Following the construction of the Project, there is potential for long-term habitat loss or alteration of habitats directly associated with the presence of the turbine footprint (including mooring system, scour protection) and in-field array cable protection.	Scoped in.	Benthic, epibenthic and shellfish ecology	New site-specific survey data for benthic, epibenthic and shellfish ecology features.
Increased risk of introduction or spread of marine INNS (Construction and Decommissioning)	M-028, M-008, M-034, M-002	Potential for likely significant effect through increased vessel movements during construction and decommissioning and may subsequently impact the biodiversity and benthic, epibenthic and shellfish ecology of the area.	Scoped in	Benthic, epibenthic and shellfish ecology	N/A
Colonisation of hard structures (O&M)	M-012	Potential for likely significant effect through an increase in local biodiversity and alterations to benthic, epibenthic and shellfish ecology from introduction of new habitat in the form of project infrastructure, including external cable protection.	Scoped in	Benthic, epibenthic and shellfish ecology	N/A
EMF generated by array cables (O&M)	M-013	Potential for likely significant effect through EMF sources as a result of suspended array cables. Radiation from in-field cables may lead to impacts upon benthic, epibenthic) and shellfish ecology.	Scoped in	Benthic, epibenthic and shellfish ecology	New site-specific survey data for benthic, epibenthic and shellfish ecology features.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data baseline requirements
					Baseline to be further developed from existing sources.
Heat impacts from array cables (O&M)	M-013	Potential for likely significant effect through behavioural changes.	Scoped in	Benthic, epibenthic and shellfish ecology	New site-specific survey data for benthic, epibenthic and shellfish ecology features and a qualitative assessment.
Underwater noise and vibration (construction, O&M, Decommissioning)	M-033	Potential for likely significant effect on shellfish through mortality, injury and behavioural changes in sensitive receptor.	Scoped in	Shellfish	Further data from site specific survey data and underwater noise assessment.
Accidental pollution events (Construction, O&M, and Decommissioning)	M-028, M-008, M-034, M-002	No likely significant effect. Pollution of water and sediment through accidental release of pollutants or chemicals from vessels, which could affect benthic (infauna and epifauna) and shellfish ecology throughout the Project area accessed by vessels.	Scoped out: See rationale in the section below (Paragraph 5.5.54).	N/A	N/A
Potential impacts on the East of Gannet and Montrose Fields MPA and Turbot Bank MPA	N/A	No likely significant effect. Potential impacts to the MPAs are unlikely as these are located outside of the Study Area.	Scoped out: See rationale in the section below (Paragraph 5.5.55).	N/A	N/A

5.5.52 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in Chapter 4. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for the benthic, epibenthic and shellfish ecology assessment.

Impacts proposed to be scoped out of assessment

- 5.5.53 Two potential effects have been proposed to be scoped out from further assessment, resulting from a conclusion of no likely significant effect. This conclusion has been made based on the knowledge of the baseline environment, the nature of planned works, and the professional judgement on the potential for impact from such projects more widely. The conclusion follows (in a site-based context) existing best practice. Each scoped out effect is considered in turn below.
- There is a risk of pollution being accidently released during the construction, O&M, 5.5.54 and decommissioning phases from sources including vessels and equipment. However, accidental pollution events are not considered to result in a significant effect on benthic, epibenthic and shellfish ecology features. The magnitude of an accidental spill will be limited by the volume of chemical or oil inventory on vessels. In addition, release of hydrocarbons would be subject to rapid dilution, weathering and dispersion and would be unlikely to persist in the marine environment. The likelihood of an incident will be reduced as all vessels on the Project will be required to comply with strict environmental controls with the implementation of PEMP and MPCP, which will be approved by the relevant stakeholders and secured through s.36 conditions and the CEMP. These plans include planning for accidental spills, address all potential contaminant release and include key emergency contact details. It will also set out industry good practice and OSPAR and International Convention for the Prevention of Pollution from Ships (MARPOL) guidelines for preventing pollution at sea. Due to the implementation of control measures and small quantities of hydocarbons and chemicals, it is proposed to **scope out** this impact out of further consideration within the EIA.
- 5.5.55 It is not anticipated that there will be likely significant impacts upon the **East of Gannet and Montrose Fields MPA and Turbot Bank MPA during all phases of the Project**. These MPA's are located outside of the Study Area. As a result, these MPAs are considered a sufficient distance from the Project and therefore unlikely to be significantly affected by the Project. Therefore, it is proposed to **scope out** this impact out of further consideration within the EIA.

Cumulative effects

- 5.5.56 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.5.57 Cumulative effects on benthic, epibenthic and shellfish ecology resulting from the effects of the Project and Transmission Infrastructure (commensurate with the level of detail available at the time of carrying out that assessment) and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4: Approach to Scoping and EIA** and considering the other developments that have been screened in as part of the CEA screening exercise.
- 5.5.58 The following impacts from the Project and Transmission Infrastructure have the potential to act cumulatively with impacts from other developments to contribute to cumulative effects.
- 5.5.59 With regards to cumulative effects from offshore wind projects it should be noted that although there would be an aggregated direct and permanent loss of habitat during the

operational phase of the wind farm it is anticipated that, given the locality of the predicted impacts, cumulative impacts during construction, O&M, and decommissioning phases would not be considered significant.

- At this stage, impacts likely to be scoped into the cumulative effects assessment include:
- temporary increase in suspended sediment concentrations and sediment deposition, during the construction phase;
- long-term habitat loss / change from the presence of turbine infrastructure, scour protection and cable protection;
- noise and vibration impacts upon epifauna (shellfish); and
- changes to seabed habitats arising from effects on coastal processes, including scour effects, changes in the sediment transport and wave regimes, resulting in potential effects on benthic communities.

Transboundary effects

5.5.60 The potential effects from construction, O&M, and decommissioning on benthic, epibenthic and shellfish ecology receptors are considered in Appendix 4A: Transboundary Screening Matrix. Due to the localised and small-scale nature of the impacts on benthic, epibenthic and shellfish ecology, significant transboundary impacts are considered to be unlikely. It is, therefore, proposed that transboundary benthic impacts are scoped out from further consideration within the EIA Report.

Proposed approach to the EIA Report

- 5.5.61 The impact assessment methodology will be based on that described in the above section 'Assessment methodology' and Chapter 4: Approach to Scoping and EIA, aligned with the key guidance documents produced on impact assessment of ecological receptors (CIEEM, 2018), evidence from other offshore wind farms, and expert opinion. The following section provides further context, including consultation and engagement that will be undertaken to further inform the assessment.
- 5.5.62 Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in Chapter 4: Approach to Scoping and EIA. Key consultees of relevance to the benthic ecology chapter include NatureScot, MD-LOT, Marine Directorate Science (MDS), and Scottish Environment Protection Agency (SEPA). Consultee responses will be addressed, and the scope of the assessment will be modified accordingly in the EIA Report where possible.
- 5.5.63 The benthic, epibenthic and shellfish ecology Study Area (Figure 5.5.1 in Appendix 1A) was informed by tidal excursion (see Section 5.1: Marine geology, oceanography and physical processes), to reflect the furthest distance disturbed sediments could potentially travel. This Study Area will be reviewed and amended in response to such matters as refinement of the offshore components, identification of additional impact pathway, and in response to feedback from consultation where appropriate. Additionally, further information from the following assessments will also inform the final Study Area:
 - Section 5.1 Marine geology, oceanography and physical processes;
 - Section 5.3 Underwater Noise and Vibration; and
 - Section 5.4 EMF.

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- 5.5.64 The baseline will be established through the compilation of both desk-based studies and sitespecific field surveys. The key data sources to be utilised to inform the baseline and assessment are listed in **Table 5.5.6**. Site-specific surveys will help address data gaps that currently exist across the Project's benthic, epibenthic and shellfish ecology Study Area. Surveys will identify the extent and distribution of key habitat types and receptors, with a focus on any species or habitats of conservation importance, that might exist across the area of interest. The proposed survey methodology will undergo consultation with key stakeholders in due course.
- 5.5.65 The likely significant effects on benthic, epibenthic and shellfish ecology features from the precautionary approach scenarios will be described and assessed. The assessment of potential impacts on benthic, epibenthic and shellfish ecology features will consider the magnitude and duration of the impact, the reversibility of the impact and the timing and frequency of the activity. The sensitivity of features will also be considered as part of the impact assessment. The sensitivity assessment of the species will consider the current status of the species, and its importance (locally, regionally, nationally, or internationally). The assessment will also include the consideration of potential significance of cumulative effects as appropriate, as set out in **Section 4.2** in **Chapter 4: Approach to Scoping and EIA**

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5.6 Marine mammals

Introduction

- 5.6.1 The marine mammals assessment will consider the potential likely significant effects on marine mammal receptors that may arise from the construction, operation and maintenance (O&M), and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**.
- 5.6.2 This Section of the Scoping Report describes the methodology to be used within the marine mammals Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the potential likely significant effects to be considered, and how these will be assessed for the purpose of the EIA Report. Marine mammals considered within this Scoping Report include cetaceans (whales, dolphins and porpoises) and seals (pinnipeds).
- 5.6.3 This marine mammal section interfaces with other technical aspects and, as such, should be considered alongside these, namely:
 - Section 4.2: Climate change: The interference of climate resilience with marine mammals is captured in the In-Combination Climate Impacts (ICCI) assessment.
 - Section 5.1: Marine geology, oceanography and physical processes: Marine mammal receptor species are potentially sensitive to changes in physical processes, therefore information from that section will inform the marine mammal assessment.
 - Section 5.2: Marine water and sediment quality: Marine mammal receptor species and their prey are sensitive to accidental pollution, increased concentration of suspended solids and the leaching of toxins. The marine water and sediment quality section will therefore inform the marine mammal assessment.
 - Section 5.3: Underwater noise and vibration: The underwater noise and vibration section describes pathways of effect from noise sources on pertinent marine mammal receptor species groups; therefore, information from the underwater noise assessment will inform the marine mammal assessment.
 - Section 5.5: Benthic, epibenthic and shellfish ecology: The marine mammal receptor species are sensitive to possible effects on prey resource and habitat. Therefore, the benthic, epibenthic, and shellfish ecology section will inform the marine mammal assessment.
 - Section 5.6: Fish ecology: Marine mammals considered within the EIA will include species that rely on fish species as part of their diet and therefore impacts to fish could potentially indirectly affect marine mammals. The information from the fish ecology section will inform the marine mammal assessment.
 - Section 5.9: Commercial fisheries: Some marine mammals rely on species targeted for commercial fishing, such as whiting and cod, and therefore impacts to commercially targeted fish species could potentially indirectly affect marine mammals. The information from the commercial fisheries section will inform the marine mammal assessment.

Legislation and policy context

- 5.6.4 This Section identifies the relevant legislative and policy context which has informed the scope of the marine mammal assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context**, which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework**, which provides a detailed summary of individual, national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.6.5 In order to provide a robust evidence base, **Table 5.6.1** below presents a summary of legislation and policies relevant for the marine mammal assessment. This Section takes account of these specific requirements to assess and address likely impacts on receptors and relevant environmental issues. This table does not quote the policies in full but rather states the relevance of these to this Section.

Relevant legislation and policy	Relevance to the assessment		
Legislation			
European Commission Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora 1992 The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017 (referred to as the 'Habitats Regulations') The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019.	 All cetaceans in Northern European waters are listed under Annex IV of the EU Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) as European protected species (EPS) of community interest and in need of strict protection. The Habitats Directive additionally lists the harbour porpoise <i>Phocoena phocoena</i>, bottlenose dolphin <i>Tursiops truncatus</i>, harbour seal <i>Phoca vitulina</i>, and grey seal <i>Halichoerus</i> <i>grypus</i> under Annex II, as species of community interest, whose conservation requires the designation of special areas of conservation (SACs). EU marine environmental legislation is transposed into Scottish law to ensure relevant protection measures remain in effect in Scotland post-Brexit. The Habitats Regulations make it an offence to kill, injure or disturb any EPS. Disturbance occurs where an act is likely to have an ecologically significant adverse effect on a significant number of animals, affecting the local distribution or abundance of the species. The four-stage process of determining the absence of adverse effects on European sites under the Habitats Regulations is known as a Habitat Regulations Appraisal (HRA). Stage 1 of this process is known as HRA Screening. This will be provided separately to the Scoping Report. 		
EU Directive 2008/56/EC – Marine Strategy Framework Directive Marine Strategy Regulations 2010 Marine Environment (Amendment) (EU Exit) Regulations 2018	 Paragraph 3.8.8 in Chapter 3 sets out the legislative framework for the MSFD. The MSFD sets out measures for Good Environmental Status (GES) in the marine environment. Descriptors relevant to this technical assessment include: Descriptor 11 – Underwater noise The Marine Strategy Regulations translate the requirements of the EU Marine Strategy Framework Directive into UK legislation and require the UK to achieve or maintain GES in the marine 		

Table 5.6.1 Relevant legislation and policy

environment.

Relevant legislation and policy	Relevance to the assessment			
The Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention') (United Nations 1979)	• Requires the conservation of migratory species and their habitats by providing strict protection for endangered migratory species (Appendix I of the Convention) and lists migratory species which would benefit from multilateral agreements for conservation and management (Appendix II of the Convention). There are 44 cetacean species and six pinniped species listed under Appendix I of the Bonn Convention.			
The Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') (Council of Europe, 1979)	• Aims to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention). There are 30 species of cetacean listed under Annex II of the Bern Convention (strictly protected fauna), including harbour porpoise, bottlenose dolphin, common dolphin <i>Delphinus delphis</i> , Risso's dolphin <i>Grampus griseus</i> , white-beaked dolphin <i>Lagenorhynchus albirostris</i> and minke whale <i>Balaenoptera acutorostrata</i> . All other cetacean species, as well as both grey and harbour seals, are listed under Annex III of the Bern Convention (protected fauna).			
Marine (Scotland) Act 2010	• Provides a framework to balance competing demands on Scotland's marine environment. While protecting Scotland's seas, it also promotes economic investment and growth in sectors such as marine renewable energy. The Act also provides improved protection for seals from intentional or reckless harassment, and includes designated haul-out sites under Scottish legislation.			
The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 (as amended)	• The revised plan to implement seal haul-out and breeding sites in Scotland. A total of 194 sites were designated through this Act in 2014, with an additional site at the Ythan Estuary acknowledged in 2017.			
The European Biodiversity Strategy to 2030 (European Commission 2021)	 Contains specific actions and commitments, such as transforming at least 30% of Europe's land and sea into effectively managed protected areas. The actions include restoring marine ecosystems and international ocean governance along with strict protection of existing Natura 2000 areas. While this European strategy is no longer legally binding, Natura 2000 sites were brought into what is now referred to in the UK as the 'National Site Network'. 			
The Aichi Biodiversity Targets (United Nations, 1992)	 The United Nations' (UN) Convention on Biological Diversity, including the 'Aichi' biodiversity targets, has five strategic goals: Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use; Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services; and, 			

Relevant legislation and policy	Relevance to the assessment			
	• Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.			
The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) (1992)	 The OSPAR Convention will be implemented through OSPAR's North-East Atlantic Environment Strategy 2030. Contained within the OSPAR Convention are a series of Annexes which deal with the following specific areas: Annex I: Prevention and elimination of pollution from landbased sources; Annex II: Prevention and elimination of pollution by dumping or incineration; Annex III: Prevention and elimination of pollution from offshore sources; Annex IV: Assessment of the quality of the marine environment; and Annex V: On the protection and conservation of the ecosystems and biological diversity of the maritime area. 			
National Policy				
Approved National Planning Framework 4 (NPF4) (2023a)	 A full review of the relevance of the Approved NPF4 2023a for this EIA is provided in Appendix 3A. Policy of relevance to this area of technical assessment include: Policy 1: Tackling the Climate and Nature Crisis. 			
The Scottish Biodiversity Strategy (Scottish Government, 2020a)	• This policy outlines Scottish Government's plans for conserving current and future biodiversity. As of the most recent report, 57% of marine mammal species commonly occurring in Scottish waters are deemed in favourable condition.			
The UK Post-2010 Biodiversity Framework and the Scottish Biodiversity Strategy: Revised Implementation Plan (2018-2020) (Joint Nature Conservation Committee (JNCC), 2018)	• The UK BAP identifies priority species that are the most threatened and require conservation. UK BAP priority species include the cetacean and seal species present in UK waters. This list of priority species is still used to inform statutory lists of priority species in the UK			
Marine Policy				
UK Marine Policy Statement 2011 (Department for Environment, Food & Rural Affairs (Defra), 2011)	 Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses. Requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all. Biodiversity to be protected, conserved, and where appropriate recovered and loss halted. Healthy marine and coastal habitats can occur across their natural range and able to support strong, biodiverse biological communities and the functioning of healthy, resilient and adaptable marine ecosystems. The oceans to have viable populations of representative, rare, vulnerable, and valued species. 			

Relevant legislation and policy

Relevance to the assessment

Scotland's National Marine Plan (2015)

- GEN 9 Natural Heritage
- GEN 13 Noise
- GEN 21 Cumulative Impacts
- CABLES 1
- CABLES 2

GEN 9 requirement for development to comply with legal requirements for protected areas and protected species; not to result in significant impact on the national status of Priority Marine Features; and protect and, where appropriate, enhance the health of the marine area.

- GEN 13 requirement for development to avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects.
- GEN 21 Proposals should enable coexistence with other development sectors and activities and requirement for cumulative impacts affecting the ecosystem to be addressed.
- CABLES 1 requirement for cable and network owners to provide evidence that the development and activity minimise impacts, where possible, on the environment and appropriate and proportionate environmental consideration and risk assessments should be provided which may include cable protection measures and mitigation plans.
- CABLES 2 requires the following to be taken into account when reaching decision regarding cable development:
 - cables should be suitably routed to provide sufficient requirements for installation and cable protection;
 - new cables should implement methods to minimise impacts on the environment, seabed and other users;
 - cables should be buried to maximise protection where there are safety or seabed stability risks and to reduce conflict with other marine users and to protect the assets and infrastructure;
 - where burial is demonstrated not to be feasible, cables may be suitably protected; and
 - consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.

The National Marine Plan 2 Planning Position Statement was published in November 2024 for consultation. The Draft National Marine Plan 2 is expected to be published in late 2025, with final adoption of National Marine Plan 2 being scheduled for Summer 2027.

Sectoral Marine Plan – Offshore Wind (Scottish Government, 2020b)

- Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development.
- Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment.
- Section 4.1 lists a range of potential negative impacts identified through plan-level SEA, HRA and SEIA which require further consideration through project level assessments, including:
 - "loss of / damage to marine and coastal habitats;
 - effects from pollution releases on species and habitats;
 - issues relating to navigational safety, aviation and collision risk;

Relevant legislation and policy	Relevance to the assessment		
	 effects arising from noise, vibration, light, dust and shadow flicker; effects on water quality; and effects on ecological status." 		
Scottish Priority Marine Features (Scottish Natural Heritage (SNH), 2016)	The term Priority Marine Features relates to habitats and species in Scotland deemed to be conservation priorities. All marine mammal species recorded in and surrounding the Project are listed in this policy.		

Technical guidance

5.6.6 Technical guidance that has been used to define the assessment is set out in **Table 5.6.2** below.

Table 5.6.2 Relevant technical guidance

Guidance reference	Relevance to the assessment	
The protection of Marine European Protected Species from injury and disturbance: Guidance for Inshore Waters (July 2020 Version) (Marine Directorate, 2020)	This advice and guidance relates to regulations prohibiting the deliberate and reckless capture, injury, killing, and disturbance of marine European protected species (EPS), which include all cetacean species. Although seals are not EPS, the mitigation measures outlined can also be applied to reduce the risk of impacts to seals (and other marine species).	
JNCC guidelines for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010)	This set of mitigation measures offers guidance on reducing risk of injury to marine mammals during pile driving. If followed, risk of injury is likely to be negligible. The guidelines are split by survey planning, mitigation, and reporting, to increase ease of use.	
JNCC guidelines for minimising the risk of disturbance and injury to marine mammals whilst using explosives (JNCC, 2025a)	This is a set of mitigation measures to reduce risk of injury to marine mammals during detonation of unexploded ordnance and the use of other explosives. If followed, risk of injury is likely to be negligible. The guidelines are split by survey planning, mitigation, and reporting, to increase ease of use. This document has been updated from the 2010 guidance.	
JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys (JNCC, 2017)	This is a set of mitigation measures to reduce risk of injury to marine mammals during geophysical surveys. If followed, risk of injury is likely to be negligible.	
Guidance on the Offence of Harassment at Seal Haul-Out Sites (Marine Directorate, 2014)	Section 117 of Marine Scotland Act 2010 makes it an offence to intentionally harass seals at Haul-Out sites. The document provides guidance as to what this may entail and advises on what appropriate actions should be taken if harassment is reported. This guidance assists with the licensing process in relation to harassment and provides advice on how to behave responsibly around Haul-Out sites.	
Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations	This peer-reviewed publication is commonly used in assessments to provide information on function hearing groups of marine mammals. The authors present values at which underwater noise levels can cause a temporary threshold shift (TTS) in hearing, meaning hearing is	

Guidance reference	Relevance to the assessment
for Residual Hearing Effects (Southall <i>et al</i> ., 2019)	temporarily affected, or a permanent threshold shift (PTS) in hearing, meaning hearing is affected permanently. These values are typically used in conjunction with underwater noise modelling to assess the effect on species at the individual and population level.
Scottish Marine Wildlife Watching Code (SNH, 2017)	These guidelines provide advice for leisure and commercial activities associated with wildlife watching. They include information detailing activities likely to disturb wildlife, how to safely approach them and how to view with minimum disturbance. This code provides guidance for marine users to reduce the disturbance on marine life, including marine mammals.
Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Ecology and Environmental Management (CIEEM), 2024)	This document provides guidelines for carrying out ecological EIA reporting in the UK including baseline and impact assessment sections.
Marine environment: unexploded ordnance clearance Joint Position Statement (United Kingdom (UK) Government, 2025)	This joint statement sets out the collective position of the UK government, devolved governments and associated bodies on the use of low noise methods of clearing UXOs within the UK marine environment, in relation to commercial marine developments.

Study area

- 5.6.7 For the purposes of assessment, two study areas have been identified. The first is a localised area, encompassing the Scoping Boundary plus a 60 km buffer (Figure 5.6.1: Study area for marine mammal assessment in Appendix 1A). The study area referred to elsewhere in this Scoping Report relates to this area. The second is a regional study area, to be determined by species ecology and geographic ranges presented in the Inter-Agency Marine Mammal Working Group (IAMMWG) (2015), the regional study area is, therefore, species-specific. This approach to defining the study areas has been developed through consultation with stakeholders at the Scoping Workshop (Table 5.6.3).
- 5.6.8 The 60 km boundary for the localised study area was chosen based on an estimate of maximum likely geographical impact ranges, i.e. zone of influence (ZoI), from underwater noise (the widest ranging impact pathway), to allow initial analysis of species abundance. The area fits largely within a single SCANS-III/SCANS-IV survey block, and a single seal management area. Abundance estimates from these areas and, where relevant, neighbouring areas, are presented within this Scoping Report.
- 5.6.9 Cetaceans are a wide-ranging group, with individuals often forming parts of larger biological populations, extending from UK to European waters, and to the High Seas. Management Units (MUs) were created by the IAMMWG for the seven most common cetacean species in UK waters, to provide an indication of spatial scales at which impacts of plans and projects should be assessed (IAMMWG, 2015; 2023). The MUs are based upon understanding of populations but also consider their sub-division into smaller units, as influenced by political boundaries and the management of human activities. The impact assessment will consider the UK portion of each species MU to provide abundance and density estimates. A qualitative approach will be taken for those species for which no MU has been created.
- 5.6.10 For harbour *Phoca vitulina* and grey *Halichoerus grypus* seals, the impact assessment will consider seal management areas (SMAs), which are based on expert knowledge and opinion

5.6.11 The study area will be reviewed and may be amended in response to design changes and/or feedback from consultation.

Consultation

5.6.12 This Section has been informed by engagement and discussion with various stakeholders, including an online workshop with Marine Directorate – Licensing Operations Team (MD-LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), NatureScot, on 07 November 2024. Table 5.6.3 provides a summary of relevant consultation to date, along with a response to identify how the matter is dealt with in this report.

Consultee **Comments and considerations** How this is accounted for MD-LOT and During the Scoping Workshop, the approach to the marine The responses and provided mammals assessment was discussed and the Applicant submitted NatureScot advice the following questions for stakeholder feedback: following the Scoping Are there any other particular additional data sources you Workshop will inform the approach to the think should be included? EIA. Do you agree with the proposed approach to the • assessment? Do you agree with the list of impacts which are proposed to be scoped out from further assessment? Do you have any additional specific requirements for the • underwater noise modelling and assessment? Following the Scoping Workshop, feedback from NatureScot was received regarding the marine mammal assessment. A summary of this feedback is provided below: Confirmation of receptor list but noted that Risso's dolphin and humpback whale should be included, in addition to any further species that are present in DAS. Data sources to be included are Hague et al., 2020, Carter et al., 2022, Waggitt et al., 2020 and Scotland's Marine Mapping tool (NMPi). Operational noise should be scoped in and Risch et al., 2023 should be reviewed. Other construction noise and secondary entanglement should also be scoped in. Where DAS and SCANS data are both available, the more precautionary estimate should be adopted. Dose-response curves should be adopted in the underwater noise assessment for disturbance from pile driving for seals and cetaceans. Graham et al., 2017 and 2019 are recommended for cetaceans, and for seals, Whyte et al., (2020). Broadly happy with the level of information presented, noting that it is very high level at this stage, and unable to provide further comments until more detail is given.

Table 5.6.3 Consultation

Assessment methodology

Introduction

- 5.6.13 The Project-wide approach to the assessment methodology is set out in **Chapter 4:** Approach to Scoping and EIA; however, whilst this has informed the approach that has been used in this marine mammal section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the marine mammal assessment.
- 5.6.14 In some instances, the Project will retain flexibility in terms of the options for methods and approaches to be applied during the construction phase. Where this is the case, for each combination of effect and receptor, the assessment will be based on a precautionary worst-case scenario and where this approach is taken it will be clearly indicated in the EIA Report together with a definition of the worst-case scenario for the specific assessment.

Baseline characterisation

- 5.6.15 Baseline data are collected to better understand the potential impacts and effects identified in scoping.
- 5.6.16 Available literature and data are assessed to identify marine mammal species distributions, abundances, and designated sites that may be affected by the Project.
- 5.6.17 Species identified from the literature likely to occur in the area, whether resident, semiresident, vagrant or migratory, will be highlighted. The most frequently occurring species will be carried forward to assessment, whereas species rarely recorded have been noted but not carried forward. For regularly occurring species, the distribution and abundance are considered: for example, how they use the area spatially and temporally and if the area is ecologically important (e.g. if there is any evidence of it being a feeding, breeding or calving/pupping site).

Assessment methodology

- 5.6.18 This Scoping Report sets out the potential environmental effects associated with the Project and identifies those proposed to be scoped into or out of the EIA process. The EIA scoping assessment considers value, sensitivity and likelihood of significance of the impacts to marine mammals. It includes embedded mitigation, such as those measures built into the Project design and implementation of best practices.
- 5.6.19 All offshore infrastructure, including foundations, cables, and offshore substation platforms will form part of the assessment (set out in **Chapter 2**). The EIA Report will assess the potential impacts of construction, O&M, and decommissioning activities based on experience and best practice; however, further consents or licences will be applied for, if required.
- 5.6.20 Impacts resulting from the Project may have an adverse, beneficial, or no effect on marine mammals. The process of identifying and assessing effects will involve consideration of all types of effect.

Sensitivity

5.6.21 The sensitivity of marine mammals to potential impacts will be determined based on evidence of responses to stimuli and professional judgement. The assessment will be based on species' ecology and behaviour, using the criteria set out in **Table 5.6.4**. Professional judgement will be applied to take account of information available on the responses of marine mammals to various stimuli (e.g. underwater noise, where such data exist) and whether their

ecology makes them vulnerable to potential impacts. A description is provided in **Table 5.6.4** of how the sensitivity of the receptor species will be assessed.

Table 5.6.4 Definition of level of sensitivity for marine mammal receptors

Value	Description
High	The species has very limited tolerance to sources of disturbance such as noise, prey disturbance and vessel movements
Medium	The species has limited tolerance to sources of disturbance such as noise, prey disturbance and vessel movements
Low	The species has some tolerance to sources of disturbance such as noise, prey disturbance and vessel movements
Negligible	The species is generally tolerant to sources of disturbance such as noise, prey disturbance and vessel movements

Magnitude

- 5.6.22 Impacts on marine mammals will be assessed in terms of their magnitude. Magnitude refers to the scale or duration of an impact and will be determined on a quantitative basis, where possible. This may relate to the area of habitat lost to the development footprint in the case of a habitat feature or predicted loss of individuals in the case of a marine mammal population. Magnitude is assessed within four levels, as detailed in **Table 5.6.5**.
- 5.6.23 For certain species of marine mammal, magnitude of change will be based on guidelines such as the 'Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise' (JNCC, 2010). There is also a matter of professional judgement, using peer-review publications, research, and descriptive terminology to determine the magnitude of change.

Table 5.6.5 Definition of level of magnitude for marine mammal receptors

Magnitude	Definition
High	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that is predicted to irreversibly alter the population in the short-to-long term and to alter the long-term viability of the population and/or the integrity of the protected site. Recovery to baseline levels from that change predicted to be achieved in the long term (i.e. more than five years) following cessation of the Project activity.
Medium	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that occurs in the short and long term, but which is not predicted to alter the long-term viability of the population and/or the integrity of the protected site. Recovery to baseline levels from that change predicted to be achieved in the medium term (i.e. no more than five years) following cessation of the Project activity.
Low	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that is sufficiently small-scale or of short duration to cause no long-term harm to the feature/population. Recovery to baseline

Magnitude	Definition
	levels from that change predicted to be achieved in the short term (i.e. no more than one year) following cessation of the Project activity.
Negligible	Very slight change from the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site. Recovery to baseline levels from that change predicted to be rapid (i.e. no more than circa six months) following cessation of the Project activity.

Effect significance

5.6.24 For the purposes of assessment, and in line with common practice, only those effects that are of moderate or major significance will be assessed as significant or potentially significant in EIA terms. The significance of an effect is determined by considering the overall importance (defined here as the overall sensitivity) of the receptor and the magnitude of the impact using a matrix-based approach, provided in **Plate 4.2.2** in **Chapter 4**. The overall significance of an effect will be determined using the matrix below and professional judgment (**Table 5.6.6**).

		Magnitude of change			
		High	Medium	Low	Very Low
Ņ	High	Major (significant)	Major (significant)	Moderate (potentially significant)	Minor (not significant)
Value/Sensitivit	Medium	Major (significant)	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)
	Low	Moderate (potentially significant)	Minor (not significant)	Minor (not significant)	Negligible (not significant)
	Very Low	Moderate (not significant)	Minor (not significant)	Negligible (not significant)	Negligible (not significant)

Table 5.6.6 Matrix to guide determination of effect significance

Environmental measures and residual effects

- 5.6.25 For each environmental aspect, the EIA process will systematically identify impacts and effects and take into consideration environmental measures that the Project will adopt. These embedded measures include avoidance, best practice and design commitments. For any effects considered to be of moderate or major significance, additional mitigation/enhancement measures (beyond embedded measures) are proposed to further reduce the significance of effect.
- 5.6.26 Residual effects on marine ecological receptors (i.e. effects following implementation of specific mitigation measures) are then identified and their significance determined.

Baseline conditions

Data sources

- 5.6.27 An initial desk-based literature review has identified key data sources (**Table 5.6.7**) that have been used to inform the Scoping Report; these include Project-specific survey data. It must be noted that this is not an exhaustive list to which the assessment will be restricted; where new, relevant data are published, these would be incorporated into the EIA assessment.
- 5.6.28 Key sources used in completing the cetacean baseline characterisation include the most recent Small Cetaceans in European Atlantic waters and the North Sea (SCANS) survey which was conducted in 2022 (SCANS-IV), the latest Inter-Agency Marine Mammal Working Group (IAMMWG) report, and site-specific digital aerial surveys (DAS) (APEM, 2024; Gilles *et al.*, 2023; Hammond *et al.*, 2021; IAMMWG, 2023; Lacey *et al.*, 2022). For seals, at-sea distribution has been modelled based on telemetry, aerial survey, and colony count data throughout the British Isles (SCOS, 2022; 2023; Carter *et al.*, 2022; 2025).

Source	Date	Summary	Coverage of study area
Project-specific digital aerial surveys (DAS) of seabirds and marine mammals (APEM, 2024)	2023 - 2024	As part of the site characterisation process, the Applicant is undertaking two years of DAS for birds and marine mammals within the Scoping Boundary plus a 6 km buffer. The DAS commenced in October 2023 and the first year of data has been reviewed to inform this baseline section. The second year of DAS is currently ongoing and will be used to inform the EIA Report.	Full coverage of study area.
Atlas of cetacean distribution in north-west European waters (Reid <i>et al.,</i> 2003)	Accessed 2025	This Atlas provides an account of the distribution of all 28 cetacean species that are known to have occurred in the waters off north-west Europe, at the time of publication.	Full coverage of study area.
Modelled density surfaces of cetaceans in European Atlantic waters in summer 2016 from the SCANS-III aerial and shipboard surveys (Lacey <i>et al.</i> , 2022)	Accessed 2025	The report describes the density surface modelling for those cetacean species for which sufficient data were obtained during SCANS-III surveys across the North-East Atlantic. Species included the harbour porpoise <i>Phocoena Phocoena</i> , bottlenose dolphin <i>Tursiops truncatus</i> , white-beaked dolphin <i>Lagenorhynchus albirostris</i> , short-beaked common dolphin <i>Delphinus delphis</i> , striped dolphin <i>Stenella coeruleoalba</i> , long-finned pilot whale <i>Globicephala melas</i> , all beaked whale species combined Ziphiidae, minke whale <i>Balaenoptera acutorostrata</i> and fin whale <i>Balaenoptera physalus</i> .	Full coverage of study area.
Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys (Gilles <i>et al.</i> , 2023)	Accessed 2025	This report summarises design-based estimates of abundance for those cetacean species for which sufficient data were obtained during SCANS-IV: harbour porpoise; bottlenose dolphin; Risso's dolphin; white-beaked dolphin; Atlantic white-sided dolphin <i>L. acutus</i> ; short-beaked common dolphin; striped dolphin; long-finned pilot whale; beaked whales (all species); fin whale; and minke whale.	Full coverage of study area.
Revised Phase III data analysis of joint cetacean protocol data resources (Paxton <i>et al.,</i> 2016)	Accessed 2025	This report collates and provides information on the abundance and distribution of cetacean species in the UK.	Full coverage of study area.
Strandings data from Scottish Marine Animal Stranding Scheme (SMASS) (Brownlow <i>et</i> <i>al.</i> , 2020) and SMASS	Accessed 2025	Stranding records and post-mortem information for marine fauna across Scotland. The map of strandings provides information on marine mammal strandings around Scotland, where data are uploaded twice per year (available online: <u>https://strandings.org/map/</u>).	Partial coverage of study area.

Table 5.6.7 Key sources to inform baseline for marine mammals

Source Date		Summary	Coverage of study area
strandings mapper (SMASS, 2025).			
Marine Mammal Management Units (MUs) in UK waters (IAMMWG, 2023)	Accessed 2025	This report details abundance estimates for species and their MUs for the seven most common cetacean species in UK waters.	Full coverage of study area.
Scientific Advice on Matters Related to the Management of Seal Populations (SCOS 2022; 2023)	Accessed 2025	The Special Committee on Seals (SCOS) provides scientific advice to government on matters relating to the management of UK seal populations. There have been numerous reports collated that identify any conservation and management issues, including ecology, behaviour, population trends and estimates, important areas and the statuses of both grey and harbour seals in the UK.	Full coverage of study area.
Updated habitat-based at-sea distribution maps for harbour and grey seals in Scotland (Carter <i>et al.,</i> 2022; 2025)	Accessed 2025	These reports provide estimates of at-sea distribution for both grey and harbour seals from Haul-Outs in the British Isles. The predictions are based on regional models of habitat preference.	Full coverage of study area.
Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters (Hague <i>et al.</i> , 2020)	Accessed 2025	This report collates and provides information on the abundance and distribution of marine mammal species in the Scottish Northern North Sea region and Scottish Atlantic waters, with a focus on what were the draft plan option (DPO) sites identified in the Draft Sectoral Marine Plan for Offshore Wind Energy for Scotland.	Full coverage of study area.
Surveys of harbour (common) and grey seals in Orkney, the north coast of Scotland, the Moray Firth and the Firth of Tay in August (Sharples <i>et al.</i> , 2012)	Accessed 2025	This report describes the findings of harbour seal aerial surveys conducted in/on Orkney, the north coast of Scotland, the Moray Firth and the Firth of Tay carried out in August 2012.	Partial coverage of study area.
Photo-identification surveys of east coast of Scotland bottlenose dolphin population (Arso Civil <i>et al.,</i> 2019, 2021)	Accessed 2025	SMRU and University of Aberdeen's survey data used to estimate abundance and movement of bottlenose dolphin across the east coast of Scotland.	Partial coverage of study area.

Source	Date	Summary	Coverage study area	of
East Coast Marine Mammal Acoustic Study (ECOMMAS) (Scottish Government, 2019)	Accessed 2025	The ECOMMAS project, a Scottish Government funded project, used click detectors (C-PODs), at 30 locations off the east coast of Scotland, to detect echolocation clicks. At 10 of these locations, a broadband acoustic recorder was also deployed, to record ambient noise levels, as well as other animal vocalisations. Data have been used in numerous outputs, including peer-reviewed publications and Environmental Impact Assessments for major infrastructure projects on the east coast of Scotland (available online: https://marine.gov.scot/information/east-coast-marine-mammal-acoustic-study-ecommas).	Partial coverage study area.	of
Moray Firth Regional Advisory Group (MFRAG) meeting notes and marine mammal monitoring (Scottish Government, 2023b)	Accessed 2025	These reports and notes highlight key information on marine mammal species in the region, in relation to ongoing research, surveys, and works. Attendees include: MD-LOT, MSS, NatureScot, JNCC, Whale and Dolphin Conservation (WDC), University of Aberdeen, and relevant developers (available online: <u>https://marine.gov.scot/ml/moray-firth-regional-advisory-group-mfrag</u>).	Partial coverage study area.	of
Forth and Tay Regional Advisory Group (FTRAG) meeting notes and marine mammal monitoring (Scottish Government, 2023c)	Accessed 2025	These reports and notes highlight key information on marine mammal species in the region, in relation to ongoing research, surveys, and works. Attendees include: MD-LOT, MSS, NatureScot, JNCC, WDC, and relevant developers (available online: <u>https://marine.gov.scot/ml/forth-tay-regional-advisory-group-ftrag</u>).	Partial coverage study area.	of
Moray Firth to Humber Estuary Important Marine Mammal Area (IUCN-MMPATF, 2024)	Accessed 2025	This fact sheet reports on the Moray Firth to Humber Estuary IMMA which is one of 33 new areas identified as important to marine mammals. The IMMA encompasses the coastal waters of Scotland and England between Helmsdale and the Humber estuary. (available online: <u>https://www.marinemammalhabitat.org/factsheets/moray-firth-to-humber-estuary-imma/</u>).		
Visual mapping tools used to interpret data and protected site information (JNCC, 2025b; Marine Directorate, 2024)	Accessed 2025	Information on designated sites, offshore habitats, distribution and abundance estimates for seals and cetaceans and other marine information (available online: <u>https://mapper.mpa.jncc.gov.uk/</u> and <u>https://marinescotland.atkinsgeospatial.com/nmpi/</u>	Full covera of study area	ige a.

Current baseline

- 5.6.29 The following Section presents the baseline review of the current environment and population trends of cetaceans and pinnipeds known to occur within the study area and wider MU context. Key features requiring consideration within the EIA are:
 - marine mammal species which occur regularly within the study area; and
 - protected sites where marine mammals are a designated feature(s) (e.g. SACs and MPAs) and, where relevant, connectivity between the study area and the designated site; and Haul-Out dependence (seals) during breeding and moulting periods.

Cetaceans

- All cetaceans (dolphins, porpoises, and whales) are protected under UK law and are 5.6.30 European Protected Species (EPS; see Table 5.6.1 for further legislation details) which makes it an offence to carry out any activity causing disturbance, harassment, injury, or mortality. A wide variety of cetaceans are present in Scottish waters, with 17 species occurring within the northern North Sea (Reid et al., 2003; Hague et al., 2020; Gilles et al., 2023; Paxton et al., 2016). The most frequently observed species include harbour porpoise, bottlenose dolphin, white-beaked dolphin, common minke whale, Risso's dolphin, and humpback whale (Reid et al., 2003; Hague et al., 2020). Using current data and information sources, species have been noted which may be present within the marine mammal study area. The latest SCANS surveys were conducted over the summer of 2022, with the marine mammal study area overlapping with SCANS-IV survey block NS-D (Gilles et al., 2023). Modelled surface density estimates are not currently available for the SCANS-IV surveys; however, they are presented within Lacey et al., (2022) for SCANS-III surveys, which were carried out during the summer of 2016 (Hammond et al., 2021). Should the modelled surface density estimates become available they will be used to inform the EIA. Precautionary density estimates from SCANS surveys and digital aerial surveys will be used to calculate sitespecific densities for the Project for all cetacean species, excluding bottlenose dolphin within the Moray Firth SAC, for which the most recent localised studies will be used (Arso Civil et *al.,* 2021).
- 5.6.31 Harbour porpoise is a species of least conservation concern on the IUCN red list and has an unknown overall conservation status due to insufficient data to establish a trend for the population size or potential future prospects for the population (Braulik *et al.*, 2023; JNCC, 2019a). Harbour porpoise are the most regularly occurring cetacean species in UK waters, and are present along the east coast of Scotland (Gilles *et al.*, 2023; Hague *et al.*, 2020). This is reflected in the relevant SCANS-III and IV blocks abundance and density estimates for the species which is presented within **Table 5.6.8** (**Figure 5.6.3**: **Harbour porpoise abundance data including SCANS-III blocks (Lacey et al., 2022)** in **Appendix 1A**). There are no protected sites within or with connectivity to the study area, for which harbour porpoise are a designated feature.
- 5.6.32 Bottlenose dolphin is a species of least conservation concern on the IUCN red list and has an unknown overall conservation status due to a lack of data on population trends, habitat availability and future prospects (Wells *et al.*, 2019; JNCC, 2019b). Bottlenose dolphin regularly occur along the east coast of Scotland, with a notable population occurring yearround along the east coast, with a range that spans from the north-east of Scotland to northeast England (Cheney *et al.*, 2024; Thompson *et al.*, 2011). Bottlenose dolphins were recorded in Block R of the SCANS-III surveys, and were not recorded within SCANS-IV block NS-D. The density surface map shows their site usage (Figure 5.6.4: Bottlenose dolphin abundance data including SCANS-III blocks (Lacey et al., 2022) in Appendix 1A) (Table

April 2025

5.6.8). The Moray Firth SAC is designated for the population and has an estimated number of 224 individuals (IAMMWG 2023; Figure 5.6.2: Protected sites with marine mammal features including the CampionWind Scoping Boundary in Appendix 1A). The SAC extends from Helmsdale in the north to Lossiemouth in the south and is approximately 130 km distance from the study area. The number of dolphins using the SAC shows interannual variability, with the latest mark-recapture photo analysis carried out in 2022 indicated that 94 individuals used the SAC, which was a 4.9% decrease from the estimated 122 in 2017 (Cheney *et al.*, 2024). Over time the range of these dolphins has increased, with some individuals travelling further out into the Moray Firth, south along the coastline to the Firth of Forth and further afield into coastal waters off the north-east of England (Arso Civil *et al.*, 2021).

- 5.6.33 White-beaked dolphin is a species of least conservation concern on the IUCN red list and has an unknown overall conservation status due to insufficient data to establish a trend for the population size or potential future prospects for the population (Kiszka and Braulik, 2018a,; Kiszka and Braulik 2018b; JNCC, 2019c). White-beaked dolphin are one of the most abundant cetacean species in Scottish shelf waters and are commonly found throughout the North Sea (Canning *et al.*, 2008). They are present year-round with seasonal sightings peaking in June and October (Reid *et al.*, 2003; Weir *et al.*, 2007). White-beaked dolphin were recorded within block R of the SCANS-III surveys and NS-D of the SCANS-IV surveys (Table 5.6.8) and the density surface map shows their site usage (Figure 5.6.5: White-beaked dolphin abundance data including SCANS-III blocks (Lacey et al., 2022) in Appendix 1A). There are no protected sites within or with connectivity to the study area, for which white-beaked dolphins are a designated feature.
- 5.6.34 Risso's dolphin is a species of least conservation concern on the IUCN red list and has an unknown overall conservation status due to insufficient data to establish a trend for the population size or potential future prospects for the population (Kizka and Braulik, 2018a; JNCC, 2019d). Risso's dolphin are present year-round within Scottish waters with seasonal sightings peaking between July and September. They typically inhabit continental shelf and slope habitats (Hague *et al.*, 2020; Hodgins *et al.*, 2024; Reid *et al.*, 2004). Risso's dolphin were not recorded within relevant blocks for the SCANS-III or SCANS-IV surveys (Table 5.6.8). No density surface maps are available for the species (Hammond *et al.*, 2021; Gilles *et al.*, 2023; Lacey *et al.*, 2022). There are no protected sites within or with connectivity to the study area, for which Risso's dolphin are a designated feature.
- 5.6.35 Minke whale is a species of least conservation concern on the IUCN red list and has an unknown overall conservation status due to insufficient data to establish a trend for the population size or potential future prospects for the population (Cooke, 2018a; Cooke, 2018b; JNCC, 2019e). Minke whales are the most common baleen whale in UK waters and have a year-round distribution with peaks between April and October (Robinson *et al.*, 2007). Minke whales are included as a protected feature in the Southern Trench Marine Protected Area (MPA), highlighting their seasonal use of areas in the outer Moray Firth, which is approximately 11 km from the study area (Figure 5.6.2 in Appendix 1A). Minke whales were recorded within SCANS-III block R and SCANS-IV block NS-D (Table 5.6.8) and the density surface map shows their site usage (Figure 5.6.6: Minke whale abundance data including SCANS-III blocks (Lacey *et al.*, 2022) in Appendix 1A).
- 5.6.36 Humpback whale is a species of least conservation concern on the IUCN red list, which states the species has an increasing global population trend (Cooke, 2018a; Cooke 2018b). In UK waters, humpback whales have an unknown overall conservation status due to a lack of data on population trends, habitat availability and future prospects (JNCC, 2019f). Humpback whales are present in Scottish waters year-round in low numbers, with an increase in presence during the spring. Humpback whales were not recorded within relevant blocks for the SCANS-III or SCANS-IV surveys (**Table 5.6.8**). No density surface maps are available for the species (Hammond *et al.*, 2021; Gilles *et al.*, 2023; Lacey *et al.*, 2022). There are no

protected sites within or with connectivity to the study area, for which humpback whales are a designated feature.

5.6.37 Other species occasionally or rarely recorded in the region include short-beaked common dolphin *Delphinus delphis*, killer whale *Orcinus orca*, fin whale *Balaenoptera physalus*, sei whale *Balaenoptera borealis*, striped dolphin *Stenella coeruleoalba*, long-finned pilot whale *Globicephala melas*, and beaked whale species *Mesoplodon* spp. (Hague *et al.*, 2020; Reid *et al.*, 2003).

Table 5.6.8 Cetacean abundance estimates including the confidence interval (CI) and coefficient of variance (CV). Sources: IAMMWG, 2022; Hammond *et al.*, 2021; APEM, 2024. Where a '-' is shown, this indicates there are no records of the species in the block

Common Name	Latin Name	APEM, 2024	Hammond <i>et al.</i> 2021	Gilles e <i>t al</i> . 2023	IAMMWG 2023
		Scoping Boundary plus 6 km digital aerial survey buffer	Block R	Block NS-D	Management Unit (UK portion)
Species kno	wn to occur withi	n the study area			
Harbour porpoise	Phocoena phocoena	619 (95% Cl=460-795)	38,646 (95% CI=20,584- 66,524)	38,577 (95% CI= 18,017- 76,361)	North Sea Management Unit (MU): 159,632 (95% CI= 127,442 -199,954)
Bottlenose dolphin	Tursiops truncatus	-	1,924 (95% CI=0-5,048)	8,199 (95% Cl= 3,595-15,158)	Coastal East Scotland MU: 224 (95% CI=214- 234) Greater North Sea MU: 1,885 (95% CI=476- 7,461)
White- beaked dolphin	Lagenorhynchus albirostris	100 (95% Cl=17-218)	15,694 (95% CI=3,022- 33,340)	5,149 (95% CI= 961- 10,586)	Celtic and Greater North Seas MU: 34,025 (95% CI=20,026 – 57,807)
Risso's dolphin	Grampus griseus	-	-	75 (95% Cl=2- 259).	Celtic and Greater North Seas MU: 8,687 (95% CI=2,810 – 26,852)
Minke whale	Balaenoptera acutorostrata	17 (95% Cl=2-43)	2,498 (95% CI=604- 6,791)	2,702 (95% CI= 547- 7,357)	Celtic and Greater North Seas MU: 10,288 (95% CI=6,210 – 17,042)
Humpback whale	Megaptera novaeangliae	-	-	-	-
Species occ	asionally recorded	d in the region			

Common Name	Latin Name	APEM, 2024	Hammond e <i>t al.</i> 2021	Gilles <i>et al</i> . 2023	IAMMWG 2023
		Scoping Boundary plus 6 km digital aerial survey buffer	Block R	Block NS-D	Management Unit (UK portion)
Short- beaked common dolphin	Delphinus delphis	-	-	949 (95% CI= 32- 2,990)	Celtic and Greater North Seas MU: 57,417 (95% CI=30,850 – 106,863)
Atlantic white- sided dolphin	Lagenorhynchus acutus	-	644 (95% Cl=0-2,069)	-	Celtic and Greater North Seas MU: 12,293 (95% CI=3,891 – 38,841)
Fin whale	Balaenoptera physalus	-	-	57 (95% CI=10- 332)	-

Seals

- 5.6.38 Scotland is a globally important region for the two seal species which are found in UK waters, the harbour seal and grey seal (Carter *et al.*, 2025). The Conservation (Natural Habitats, &c.) Regulations 2019 transpose the EU Habitats Directive, which lists, within Annex II, species of community interest, whose conservation requires the designation of SACs. Both harbour seal and grey seal are Annex II species. There are several SACs on the east coast of Scotland that have seals as designated interest features. These have been designated, in part, due to being important and/or established Haul-Out and breeding sites. Given the distances seals travel, it is possible that there is connectivity between SACs and the study area (Carter *et al.*, 2022).
- 5.6.39 Haul-Out sites are also designated via Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 intended to offer additional protection. They are designed to protect seals from intentional or reckless harassment within the designated Haul-Out Site, such as at the Ythan River Mouth Haul-Out within the East Scotland SMA, which was designated under the Protection of Seals (Designation of Haul-Out Sites) (Scotland) Amendment Order 2017.
- 5.6.40 Both species have been recorded along the east coast of Scotland, with grey seals more common within the study area. The study area is largely contained by the East Scotland SMA, with neighbouring SMAs including the Moray Firth, and North Coast and Orkney.
- Harbour seals are listed as a species of least conservation concern on the IUCN red list and 5.6.41 have an 'unfavourable – inadequate' conservation status in the UK given that the short-term trend is unknown and the current population is below the favourable reference range (JNCC, 2019g; Lowry, 2016). The total Scottish populations are estimated at 36,600 harbour seals to the nearest hundred, which makes up approximately 85% of the UK harbour seal population (SCOS, 2023). Recent count data from the North Coast and Orkney SMA show the lowest number of harbour seals counted to date, with census counts indicating an 85% lower number compared to the highest count in 1997 (SCOS, 2023). Within the Moray Firth SMA, the population appears to be stable despite the 2021 count being 32% lower than the previous one in 2019, with counts totalling 690 and 1,077 respectively (SCOS, 2023). The East Scotland SMA Haul-Out count has also decreased by 24% from 323 in 2019 to 262 in 2021 (SCOS, 2023). There are no designated seal Haul-Out Sites for harbour seals within the study area, but twenty-three designated sites fall within the North Coast and Orkney SMA, seven fall within the Moray Firth SMA, and two fall within the East Scotland SMA. SACs for harbour seals include Firth of Tay and Eden Estuary (East Scotland SMA), Dornoch Firth and Morrich More (Moray Firth SMA), and Sanday SAC (North Coast and Orkney SMA). Harbour seals generally have few long-range movements between Haul-Out Sites and foraging ranges vary, with some harbour seals foraging in nearby, inshore waters and others foraging >100 km from their nearest Haul-Out Sites (SCOS, 2023). Harbour seal at-sea distribution (relative density) from Haul-Out t Sites is presented within Figure 5.6.7: Harbour seal telemetry data (Carter et al., 2022) in Appendix 1A). Harbour seals are particularly vulnerable to disturbance during the breeding season, between June and July, and in the moulting season, during August.
- 5.6.42 Grey seals are listed as a species of least conservation concern on the IUCN red list and have an increasing population trend (Bowen, 2016). In the UK, grey seals have been assessed as having a 'favourable' conservation status and the overall trend was assessed as 'improving' (JNCC, 2019h). The total Scottish population as of the start of the 2022 breeding season is estimated at 162,000, which makes up approximately 80% of the UK grey seal population (SCOS, 2023). Grey seal pup-production estimates based on 2019 estimates were approximately 54,050 in Scotland, with numbers showing a continual increase since the 1960s (SCOS, 2023).

5.6.43 Pup production within the Moray Firth and East Scotland SMAs is increasing and has been stable within the North Coast and Orkney SMA since around 2000 (SCOS, 2023). Grey seal populations within SACs show varying stability, with potential declines within the Faray & Holm of Faray SAC and Isle of May SAC. The Fast Castle colony within the Berwickshire and North Northumberland Coast SAC is showing rapidly increasing pup production (SCOS, 2023). There are no SACs for grey seals within Moray Firth SMA, but there are seven designated Haul-Out Sites. Thirty-three designated Haul-Out Sites fall within the North Coast and Orkney SMA, and six fall within the East Scotland SMA. The Ythan River Mouth designated Haul-Out Site, located within the East Scotland SMA, is situated approximately 46 km west of the marine mammal study area. This site is the most recently designated site for grey seals and was afforded protection in 2017. Grey seals forage in the open sea generally remaining within 100 km of Haul-Out Sites, however can travel hundreds of kilometres offshore to forage (SCOS, 2023). Grey seal at-sea distribution (relative density) from Haul-Out Sites is presented within Figure 5.6.8: Grey seal telemetry data (Carter et al., 2020, 2022) in Appendix 1A). Grey seals have been shown to travel to forage in areas near to and within the study area (Russell et al., 2017). They are most vulnerable to disturbance when hauled out, particularly during their moult, between December and April, and during the breeding season, between August and December (SCOS, 2023).

Table 5.6.9 Count data within relevant Seal Management Areas (SMAs) and Special Areas of Conservation (SACs) and DAS abundance estimates for grey and harbour seals, and pup production estimates for grey seals. Sources: Morris *et al.*, 2021; SCOS, 2021; 2022; APEM, 2024

Common Name (Latin name)	Abundance estimates within Scoping Boundary plus 6 km digital aerial survey buffer**	Seal Management Area (SMA) counts	Special Area of Conservation (SAC) counts	Special Area of Conservation (SAC) pup production
Harbour (common) seal (<i>Phoca</i>	-	North Coast and Orkney: 1,405 (2016-2019)	Sanday SAC: 77 (2019)	-
vitulina)		Moray Firth: 690 (2021)	Dornoch Firth and Morrich More SAC: 62 (2019)	-
		East Scotland: 262 (2021)	Firth of Tay and Eden Estuary SAC: 41 (2021)	-
Grey seal (Halichoerus	42 (95% CI=8-84)	North Coast and Orkney: 8,599 (2016-2019)	Faray and Holm of Faray SAC: 228 (2019)	Faray and Holm of Faray SAC: 2186 (2019)
grypusj		Moray Firth: 1,856 (2021)		
		East Scotland: 2,712 (2021)	Isle of May SAC: 97 (2021) Firth of Tay and Eden Estuary SAC*: 686 (2019) Berwickshire and North Northumberland Coast SAC (within Scotland): 71 (2018)	Isle of May SAC: 1885 (2019) Berwickshire and North Northumberland Coast SAC (within Scotland): 4499 (2019)

*A count is presented but it should be noted that grey seal is not a protected feature of this SAC.

**Seals which could not be identified to species level were recorded within the survey area, which produced a maximum abundance estimate of 25 (95% CI=3-59).

Future baseline

- 5.6.44 Construction of the Project is anticipated to take in the region of eight to twelve years, with the lease agreement allowing the Project to remain operational for up to 60 years. Risks associated with the construction and operation of this Project are included in **Table 5.6.11**. As the Project has several phases over many years, the future baseline of marine mammals will be considered. The future baseline represents changes likely to occur at the Site in the absence of the Project or in the period before development commences.
- 5.6.45 There are a number of proposed developments and those under construction on the east coast of Scotland and further offshore, which have the potential to influence the marine mammal baseline, both individually and cumulatively. Additionally, it is assumed that marine mammal populations will follow regional and national trends, even in the absence of significant local impacts from such developments. Natural population fluctuations occurring between now and the commencement of the Project are unlikely to be quantifiable. Change can result from climatic factors, such as sea temperature changes and subsequent impacts on species' ranges, but these tend to show a long-term trend. Other natural phenomena, such as morbillivirus infection (Barrett *et al.* 1993; Duignan *et al.* 2014), may have a more immediate effect but are less predictable. Anthropogenic activity, such as increasing vessel traffic, could be an additional stressor; therefore, baseline conditions are likely to exhibit some degree of change over time, irrespective of the Project's activities.

Basis for scoping assessment

- 5.6.46 The marine mammal scoping assessment is based on the following key assumptions, which are also set out in **Chapter 2**:
 - impacts from all phases of the Project;
 - impacts from changes / loss of prey resource / habitat from all phases of the Project;
 - impacts from underwater noise associated with site investigation works, e.g. geophysical surveys;
 - impacts from clearance of unexploded ordnance (UXO);
 - impacts from construction-related underwater noise e.g. pile-driving, rock placement or trenching;
 - impacts from underwater noise of operational floating and/or fixed wind turbine generator (WTG) units and associated mooring lines;
 - impacts from the presence of array cables and mooring lines potentially posing a risk of entanglement;
 - the maintenance of the above infrastructure during operation; and
 - Impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life. The source-pathwayreceptor linkage between Project infrastructure and / or activities and the receptor groups for this aspect are described in Table 5.6.11.
- 5.6.47 The NPF4 2023a introduced requirements which will be taken account of in the EIA and associated consenting documents.

Embedded environmental measures

- 5.6.48 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts on marine mammals (see **Table 5.6.10**). These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.6.49 As there is a commitment to implementing these environmental measures, and to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in this scoping assessment.
- 5.6.50 The requirement for other embedded environmental measures and additional mitigation methods will be considered as the EIA progresses. This approach will take into consideration outputs from work undertaken for this Project (e.g. underwater noise propagation modelling) and through the outputs and findings from the development of other floating offshore wind farms, for example. An important aspect of this process will be engagement with, and incorporation of, the responses from statutory consultees and other relevant stakeholders.

Table 5.6.10 RelevantTemplateTechnicalChapterembeddedenvironmentalmeasures

ID	Environmental measure proposed	How the environmental measures will be secured
M-001	Development of and adherence to an agreed Marine Mammal Mitigation Protocol (MMMP). This will subsequently mitigate potential impacts from underwater noise on marine mammals through good or standard practice actions in order to meet legislative requirements. The MMMP will evolve during the development phase and as the EIA progresses and in response to consultation.	s.36 conditions and marine licence conditions.
M-002	The development of and adherence to, a decommissioning programme.	Required under sections 105 and 114 (Energy Act, 2004 (as amended)), s.36 conditions, and marine licence conditions.
M-003	 A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. Other measures that that feed into the CEMP include: M-004: Construction noise and vibration; M-005: Risk Assessment Method Statement; M-006: CEMP to include measures to minimise emissions. 	s.36 conditions, marine licence conditions and CEMP.
M-009	Use of 'low order' techniques such as deflagration for UXO disposal, where possible and required.	Required under the Habitat Regulations, s.36 conditions, and marine licence conditions.
M-010	UXO Management Plan to mitigate any potential for UXO within the offshore construction area and also disposal once encountered.	s.36 conditions and marine licence conditions.
M-011	Development and adherence to a piling strategy for all relevant infrastructure, including WTGs, fixed accommodation platform(s), and other offshore substation(s) or platform(s). It will detail the method of pile installation and associated underwater noise (UWN) levels. It will describe any mitigation measures to be implemented (e.g. soft start and ramp up measures, use of acoustic deterrent devices) prior to and during pile installation to manage the effect of UWN.	s.36 conditions and marine licence conditions.

ID	Environmental measure proposed	How the environmental measures will be secured
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be undertaken to enable informed judgements about burial depth. This should maximise the chance of array cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. The array cables will typically be buried at a target burial depth between 1-2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.	s.36 conditions and marine licence conditions.
M-014	Burial of the cable where possible and/or use of external cable protection such as concrete mattresses or rock berms.	s.36 conditions and marine licence conditions.
M-028	A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to the Project. The MPCP will also include relevant key emergency contact details.	s.36 conditions and marine licence conditions.
M-030	Development of and adherence to a Vessel Management Plan (VMP), which will confirm the types and numbers of vessels that will be engaged on the Project, and consider vessel coordination including indicative transit route planning.	s.36 conditions and marine licence condition.

Likely significant effects

- 5.6.51 In line with the EIA Regulations (as described in **Chapter 3**), the EIA for the Project will assess those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant effect. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.6.52 The potentially significant effects on marine mammals are summarised in **Table 5.6.11**. The scoping assessment has been based on a combination of the Project at the Scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for marine operational effects on marine mammals, and professional judgement. The approach to this assessment is set out in **Chapter 4**.
- 5.6.53 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
Increased underwater noise and vibration e.g. piling, operational turbines and other noise-producing activities (pre-construction, construction, O&M, and decommissioning)	M-003, M-011	Habitat displacement, disturbance and/or physical injury may occur as a result of increased underwater noise. Noisy activities such as pile driving can cause TTS/PTS or disturbance. This can result in displacement from breeding and foraging sites in addition to reduced ability to communicate, forage, and/or navigate (Southall <i>et al.</i> , 2019). There is also potential for physical injury or death (Thompson <i>et al.</i> , 2020). Other noise sources include geophysical surveys, UXO clearance, vessel movements, rock placement and trenching.	Scoped in.	Cetaceans and seals	 Further data to be collected to support assessment: Predicted underwater noise levels for construction period; Habitat models, density and abundance estimates, and available desk-based review of species distribution and use.
Increased above- water (airborne) noise during installation and decommissioning (pre-construction, construction and decommissioning)	M-003, M-011	Above-water (airborne) noise has the potential to cause disturbance and habitat displacement for seals hauling out at coastal sites nearby.	Scoped out: see rationale below in paragraphs 5.6.56 and 5.6.57).	Seals	N/A
Indirect effects of underwater noise, electromagnetic fields (EMF) and heat on marine mammal prey species (construction and decommissioning)	M-003, M-011	Potential change to prey availability and distribution and impacts to habitats of prey species resulting from increased noise and the effects of EMF and heat. This may negatively affect foraging efficiency and have energetic impacts to marine mammals. Fish species sensitive to noise and typical prey for marine mammals include cod, herring, sprat, and whiting.	Scoped in.	Cetaceans and seals	Further data to be collected to support assessment: • Habitat models, density and abundance estimates, and available desk- based review of

Table 5.6.11 Potentially significant effects on marine mammals

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
	·				species distribution and use.
Increased vessel presence and traffic (construction, O&M, and decommissioning)	M-030, M-001	Local disturbance from vessel presence and increased noise can influence surface behaviour, avoidance behaviour, and disrupt foraging (Pirotta <i>et al.</i> , 2015). Increased vessel presence and movements can result in collision, particularly for large whales, which may cause injury or death (Maxwell <i>et al.</i> , 2022). Construction works will follow relevant industry guidance to minimise the risks of injury; these measures outlined within the MMMP which forms part of the CEMP. The anticipated vessel movement required to support the O&M phase of the Project is expected to be limited and only required to for preventive and corrective maintenance activities (Chapter 2). Due to this, it is not expected that the O&M vessel movements will differ from the existing shipping and navigation baseline (see Section 5.10: Shipping and navigation) and so it is proposed to scope this out from further assessment in the EIA Report.	Scoped in for construction and decommissioning. Scoped out for O&: see Section 5.10: Shipping and navigation.	Cetaceans and seals	 Further data to be collected to support assessment: Desk-based review of available literature on effects of increased vessel traffic on marine mammals.
Presence of offshore wind farm structures (O&M)	M-033, M-003, M-009, M-010	The presence of the WTGs and associated infrastructure has the potential to alter habitats and cause displacement or barrier effects. There is a possibility for changes in prey availability due to the addition of marine structures which can create an artificial reef which could affect foraging opportunities for marine mammals (Ounanian <i>et al.</i> , 2020; Todd <i>et al.</i> , 2016). Physical presence of offshore structures may impede movement such as impacting migratory corridors between breeding and feeding areas, resulting in	Scoped in.	Cetaceans and seals	Further data to be collected to support assessment: • Refer to Sections 5.5: Benthic, epibenthic, and shellfish ecology and 5.8: Fish ecology for wider environmental use currently and future outlook;

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
		increased swimming distances and energetic impacts to marine mammals, particularly large migratory species. The Project's scope of work primarily features floating offshore wind farm structures, with potential for additional fixed turbines, which could create a barrier effect reducing prey opportunities. Fixed structures could have the opposite effect providing a surface for fauna to colonize. Colonisation and area use would need to be monitored to determine how this Project would impact species distribution.			 Desk-based review of available literature to inform baseline information (e.g. Fernandez Betelu <i>et al.</i>, 2022); Habitat models of species distribution and use; and Implement monitoring measures to quantify how the Project affects the marine environment.
Entanglement in lines and cables e.g. mooring lines and inter-array cables. (O&M)	M-001, M-030	Mooring lines and array cables, particularly associated with floating WTGs have the potential to pose an entanglement risk to marine mammals, particularly large whales. Mooring lines will be maintained and taught with no ability to form loops, however the likelihood and effects are relatively unknown and therefore this impact will be Scoped In to the EIA. Direct impacts include animals themselves become entangled in lines or cables leading to drowning, impaired foraging ability, starvation and infection. Indirect impacts include marine debris, such as ghost fishing nets, becoming entangled in lines or cables which the animal entangles in, leading to asphyxiation and death (Maxwell <i>et al.,</i> 2022).	Scoped in.	Cetaceans and seals, particularly large whales	 Further data to be collected to support assessment: Desk-based review of available literature on effects of floating offshore wind farm on marine mammals; Monitor for updates from Hywind and Fortune Supergen projects; Implement monitoring measures to assess risk of entanglement.
Disturbance of habitat from sea floor attachments, e.g. anchors	M-033, M-003	Sea floor attachments can cause scouring and resuspension of sediment, causing secondary impacts such decreased water quality or increased turbidity. This may impact foraging success and/or disturb	Scopedout:seerationalebelowinparagraphs5.6.57and5.6.59	Cetaceans and seals	N/A

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
(construction, O&M, and decommissioning)		benthic habitats and species, including those which marine mammals prey upon (Maxwell <i>et al.</i> , 2022). Effects related to the installation and decommissioning activities are unlikely to remain over time with settlement out of the water column expected to occur within four or five tidal cycles (Hitchcock and Bell, 2004). Marine mammals regularly utilise areas of high turbidity with limited evidence of negative impacts (Au <i>et al.</i> , 2000); therefore, this impact will not be included in the EIA.			
Accidental release of chemical pollution (construction, O&M, and decommissioning)	M-028, M-003	Re-suspension of contaminants from sediment, release of anti-fouling substances, and vessel/WTG related pollution including increased traffic, oil and fluid spill, and accidental collision (Bailey <i>et al.</i> , 2014; Maxwell <i>et al.</i> , 2022) may occur intermittently throughout the lifetime of the Project. Small spills in a tidal environment mean the area surrounding the Project will likely show a high dispersal rate and therefore will have a limited interaction with marine mammals.	Scoped out: see rationale below in paragraphs 5.6.60 and 5.6.61.	Cetaceans and seals	N/A
Electromagnetic fields (EMF) and heat (O&M)	M-013, M-014	Cables emit EMF; the highest forces will be associated with high-voltage export cables, which are not include within this assessment. There is limited evidence regarding the sensitivity of cetaceans and no evidence for seal sensitivity to EMF or heat. Indirect impacts on marine mammal prey species will be considered under the following impact: indirect effects of underwater noise, EMF and heat on marine mammal prey species.	Scoped out: see rationale below in paragraphs 5.6.62 to 5.6.64.	Cetaceans and seals	N/A
Unexploded ordnance (UXO)	M-009, M-010	Clearance of UXO through detonation or deflagration will produce underwater noise, which could result in	Scoped in.	Cetaceans and seals	N/A

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data requirements	baseline
(construction)		direct trauma, auditory damage causing TTS/PTS, disturbance resulting in behavioural change, or mortality (Benda-Beckmann <i>et al.</i> , 2015). Appropriate mitigation guidelines to limit injury are advised within Table 5.6.10 .				

5.6.54 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects on marine mammals.

Impacts proposed to be scoped out of assessment

5.6.55 This scoping assessment concluded no likely significant effects from several Project activities. These are therefore proposed to be scoped out from further assessment in the EIA. These conclusions have been made based on knowledge of the baseline environment, the nature of planned works and evidence from research and/or monitoring projects. The conclusions follow (in a site-based context) existing best practice. Each of the potential effects that have been proposed to be **scoped out** is outlined in **Table 5.6.11**, with further evidence and justification provided below.

Increased above-water (airborne) noise

- 5.6.56 During the construction and installation phase of the Project, whilst the majority of the potentially significant effects of noise will be transmitted through the underwater environment, some noise will also be transmitted above water. This noise has the potential, in some circumstances, to cause disturbance to seals hauled out on land.
- 5.6.57 During this scoping exercise, no seal Haul-Out Sites were identified within the marine mammal study area. The closest designated Haul-Out Site, the mouth of the Ythan River, is approximately 106 km away from the Scoping Boundary and 46 km from the study area. The works associated with the construction, O&M and decommissioning of the Project are unlikely to cause a harassment event to seals hauled out at this site. Therefore, this potential impact is proposed to be **scoped out**.

Disturbance of habitat from sea floor attachments, e.g. anchors

- 5.6.58 Anchoring is an integral part of the overall mooring system and there is a wide spectrum of anchoring and mooring solutions that could be used. These include drag embedment anchors, driven piles, suction anchors, drilled and grouted piles, and gravity-based anchors. The proportion of the anchor itself that interacts with the seabed is smaller than the size of the anchor, and any disturbance is short-lived, during installation.
- 5.6.59 In a recent literature review, it was noted that more research needs to be undertaken in scouring and liquefication of habitats from these types of anchor points (Sumer *et al.*, 2021). However, whilst increased sedimentation, scouring, and liquefication may indirectly impact marine mammals by affecting their prey, the activity of installation is short-lived and localised. Consequently, this potential effect is proposed to be **scoped out**.

Chemical pollution

5.6.60 Re-suspension of contaminants from sediment, release of anti-fouling substances, and vessel/WTG related pollution including increased traffic, oil and fluid spill, and accidental collision (Bailey *et al.*, 2014; Maxwell *et al.*, 2022) may occur intermittently throughout the lifetime of the Project. All vessels will be compliant to the International Convention for the Prevention of Pollution from Ships. Throughout this Project, there will be development and adherence to an CEMP, which is to include a MPCP and development and adherence to a VMP. To reduce the risk at decommissioning, a decommissioning programme will be developed and adhered to.

5.6.61 The addition of chemical pollution may impact marine mammals directly and indirectly, by affecting their prey. The introduction of chemical pollution is likely to be short-lived and localised and with the correct control measures adopted throughout the life cycle of the Project, the risk is further mitigated. Consequently, this potential effect is proposed to be **scoped out**.

Electromagnetic Fields

- 5.6.62 Cables emit EMF; the highest forces will be associated with high-voltage offshore export cables, which are not included within this assessment (**Chapter 4**).
- 5.6.63 There is no evidence that seals can detect or respond to EMF; however, some cetacean species have been shown to respond to the Earth's magnetic field (see Normandeau *et al.*, 2011 for a review). Potential direct impacts on cetaceans remain widely unknown (Gill, 2016; Gill and Desender, 2020). Due to the limited available information regarding marine mammal receptors and their response to EMF emitted by array cables, this impact pathway is proposed to be **scoped out** of the assessment.
- 5.6.64 Potential secondary impacts from disturbance to prey species such as migratory diadromous fishes (Maxwell *et al.*, 2022), will be captured in the fish assessment. Any such effects will then be considered alongside secondary effects of underwater noise and other impacts on fish.

Cumulative effects

- 5.6.65 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing, due to the spatial scope of the Project and associated assessments.
- 5.6.66 Cumulative effects on marine mammals resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4** and considering the other developments that have been screened in as part of the Cumulative Effects Assessment (CEA) screening exercise. As the EIA progresses, it will take into account any new information, such as the JNCC guidance on cumulative effects assessments to support marine plan development, which was released in July 2024 (Willsteed, Collin and Koehler, 2024). The cumulative effects baseline will be considered in relation to other relevant projects in the region and will be taken from when baseline data were collected, unless otherwise outlined by the new guidance and/or in consultation with statutory stakeholders.
- 5.6.67 The cumulative effects of the Project and other offshore wind farms consented, in construction and operational, located off the north and east coast of Scotland will be considered. With respect to underwater noise, this will primarily occur during the construction period when pile driving may be necessary for the anchoring and fixed structure points. The timing of construction will need to be considered in relation to other relevant developments (e.g. offshore wind farm construction, major harbour developments) and activities (e.g. seismic surveys) occurring within the region, and in relation to protected areas for marine mammals (e.g. SACs) and related to the species' relevant management units (cetaceans) and management areas (seals), where practical.
- 5.6.68 Should the CEA guidance mentioned above be available at the time of assessment, it will be used for the cumulative effects assessment. The CEA incorporates the iPCoD model.
Transboundary effects

- 5.6.69 The potential effects from construction, O&M, and decommissioning on marine mammals are considered in **Appendix 4A: Transboundary Screening Matrix**. There is potential for transboundary effects upon marine mammals during the construction, O&M, and decommissioning of the Project. Although the Project is situated within Scottish waters, marine mammals are typically highly mobile, with large foraging ranges and/or may migrate over large distances for key life-history events (e.g. breeding and calving/pupping). In the UK, cetacean populations are managed using management units (MU; IAMMWG, 2023) which, for some species are large geographic areas that cross into other territorial waters. An example of this is the North Sea MU, which is applicable to harbour porpoise and spans territorial waters of the UK, Norway, Denmark, Germany, the Netherlands, Belgium, and France. Therefore, depending on the significance of the effects identified in the Project assessment (e.g. underwater noise modelling) and the CEA, transboundary effects may require assessment.
- 5.6.70 Following the exit of the UK from the European Union in December 2020, the UK is no longer an EU Member State; however, for the purposes of assessing potential transboundary effects, the approach outlined in **Chapter 4** will be followed for the Project.
- 5.6.71 The assessment of potential transboundary effects and determination of their significance will draw on the use of ZoI for key categories of effect.

Proposed approach to the EIA Report

- 5.6.72 Assessment of impacts on marine mammals will utilise both Project-specific and publicly available data, which will be consulted upon during the EIA reporting phase. Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in **Chapter 4**.
- 5.6.73 Key consultees for the marine mammal impact assessment include MD-SEDD, MD-LOT, and NatureScot. The project has already welcomed consultation with each of these consultees, with regards to the marine mammal assessment.
- 5.6.74 The Project has been conducting monthly site-specific DAS since October 2023 to inform the baseline at-sea distribution and abundance of marine mammals and birds. The second year of the DAS is currently in progress and expected to be completed in October 2025.
- 5.6.75 Where possible and/or required, population consequences of disturbance (PCoD) modelling will be undertaken to consider potential impacts of disturbance on five key marine mammal species: bottlenose dolphin; harbour porpoise; minke whale; and harbour and grey seals. Due to the absence of demographic data required for other species that are common to the region (e.g. white-beaked dolphins, white-sided dolphins, and Risso's dolphins), it is not possible to quantitatively assess PCoD. Therefore, for these species, assessment would be carried out qualitatively.
- 5.6.76 Likely significant effects identified above that have not been scoped out (**Table 5.6.11**) will be assessed, and will include consideration of potential cumulative effects, where appropriate (following the methodology outlined in **Chapter 4**). The CEA will be used at this stage, should it be available in time.
- 5.6.77 Direct and indirect impacts are to be assessed, where direct impacts include those caused specifically by interactions between marine mammals and Project activity, such as underwater noise (e.g. pile driving and UXO clearance) or entanglement with mooring lines. Indirect impacts are those created through an impact pathway, such as habitat loss and disturbance, which could affect foraging or breeding opportunities. Assessments will be based on a precautionary worst-case scenario.

- 5.6.78 Impacts from underwater noise are an important consideration for marine mammals. Underwater noise propagation models will be developed to predict the extent and magnitude of noise levels at the Project site for UXO clearance, installation works, O&M noise, and during decommissioning. The latest literature on noise exposure criteria for marine mammals (Southall *et al.*, 2019) will be used to determine where thresholds for auditory injury (permanent threshold shift; PTS) are surpassed. The risk of injury will be based on both the cumulative sound exposure level (SEL_{cum}) and peak sound pressure level (peak SPL). The SEL_{cum} criterion predicts frequency-weighted received sound levels across a 24-hour period and the peak SPL criterion uses unweighted sound levels, typically used to assess impulsive noise sources such as impact pile driving and UXO clearance. Noise propagation model outputs can be compared with marine mammal density estimates to predict the number of marine mammals likely to be disturbed, and the number in which PTS onset occurs (both instantaneously and cumulatively).
- 5.6.79 A Habitats Regulations Appraisal (HRA) process will run in parallel with the EIA. During this process, the proximity of European sites that have marine mammal species as designated interest features will be considered in relation to the localised and regional study areas. Where possible and / or relevant, connectivity between relevant designated European sites and the study areas (and any potential impacts predicted to extend out with) will be considered. For example, bottlenose dolphins are a designated feature of the Moray Firth SAC, and individuals from this protected population are known to use areas outwith the boundary of the SAC and are regularly recorded further south in the Forth and Tay SAC (Arso Civil *et al.*, 2021). Consequently, developments in the Forth and Tay have assessed potential impacts on the Moray Firth SAC. Where European sites are identified, the HRA will assess if there are potential likely significant effects and assess the impact on the integrity of the given site and the relevant designated feature.

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5.7 Offshore ornithology

Introduction

- 5.7.1 The offshore ornithology assessment will consider the potentially significant effects⁹ on bird species that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the potentially significant effects to be considered, and how these will be assessed for the purpose of the EIA Report.
- 5.7.2 Offshore ornithology interfaces with other aspects as birds rely on and interact with other habitats and species, therefore this Section should be considered alongside other sections, namely:
 - Section 4.2: Climate change: The interference with climate resilience with offshore ornithology is captured in the In-Combination Climate Impacts (ICCI) assessment.
 - Section 5.1: Marine geology, oceanography and physical processes: There are
 potential pathways of effect from marine processes' physical parameters on potentially
 sensitive marine ornithological receptor species, therefore information from the marine
 geology, oceanography and physical processes section will inform the offshore
 ornithology assessment.
 - Section 5.4: Electromagnetic fields (EMF): Seabirds use the offshore environment to hunt for prey, therefore there is potential for EMF emissions to affect offshore ornithology. The EMF section will inform the offshore ornithology assessment.
 - Section 5.5: Benthic, epibenthic and shellfish ecology: Seabird receptor species are sensitive to possible changes in their prey resource and habitats. Therefore, the benthic, epibenthic, and shellfish ecology section will inform the offshore ornithology assessment.
 - Section 5.8: Fish ecology: Some bird species rely on fish species as part of their diet and therefore impacts to fish could also potentially impact offshore ornithology. The information from the fish ecology section will inform the offshore ornithology assessment.
- 5.7.3 Intertidal ornithology refers to coastal species that are present between Low Astronomical Tide (LAT) and High Astronomical Tide (HAT) and are therefore out of scope of EIA as the Project (as described in **Chapter 2**) relates to the Array Area only.
- 5.7.4 It is proposed that consideration of non-seabird species, which have the potential to collide with turbines while undertaking migration, is addressed under Habitats Regulations Appraisal (HRA). The majority of these migratory populations will comprise individuals which are a qualifying interest of at least one Special Protection Area (SPA) estuarine, coastal or terrestrial within the UK site network. To avoid duplication of information between documents, it is proposed that collision risk of migratory species be addressed once within

⁹ Other technical chapters use 'likely significant effects' and 'potential likely significant effects to accord with the EIA Regulations 2017. Within the offshore ornithology section the term 'potentially significant effects' is used as it accords with CIEEM guidance to describe effects that have the potential to be significant prior to their assessment (i.e. until the end of the 'scope of the assessment'), and the term 'likely significant effects', only once assessment has determined that they would indeed be significant. This is not to be confused with Likely Significant Effects (LSEs) when used in the context of the Habitats Regulations Appraisal. For further information on the Project's approach to HRA, see **Chapter I.**

the HRA, rather than duplicated under EIA. Therefore, migratory bird species are presented within the HRA Screening Report, along with the associated long list of SPAs for consideration.

5.7.5 The assessment of collision risk to migratory species will be conducted qualitatively using information presented in Woodward *et al.*, (2023), following NatureScot advice provided to the Project as part of the Scoping Workshop feedback received on 27 February 2025 (see **paragraph 5.7.12**). It is understood that an updated migratory Collision Risk Model (mCRM) is currently in development and may be requested for project alone and cumulative / incombination project assessments.

Legislation and policy context

- 5.7.6 This Section identifies the relevant legislation and policy context which has informed the scope of the offshore ornithology assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** and **Appendix 3A: Planning Policy Framework** which provides a detailed summary of the international, national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.7.7 In order to provide a robust evidence base, **Table 5.7.1** presents a summary of legislation and policies relevant for the offshore ornithology assessment. This table does not quote the policies in full but rather states the relevance to this Section.

Table 5.7.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment		
Legislation			
International: European Commission Directive 2009/147/EC (codified version of 79/409/EC) on the Conservation of Wild Birds (the 'Birds Directive') (2009)	• The Birds Directive aims to protect all of the wild bird species naturally occurring in the European Union and stipulates that Member States must designate SPAs for the survival of species listed under Annex 1 of the Directive and all migratory bird species. The potential for effects on birds protected under the Birds Directive will be considered throughout the assessments in the EIA Report.		
International: EC Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (known as the 'Habitats Directive') (1992)	• The Habitats Directive ensures the conservation of a wide range of rare, threatened, or endemic animal and plant species within Europe. Among other things, the Directive stipulates the procedures for the protection of SPAs and sets out the steps which must be taken in order to assess the impact of any proposed development. The Directive is implemented in Scotland by The Habitats Regulations (2019) and the Offshore Regulations (2017). The potential for effects on bird habitats protected under the Habitats Directive will be considered throughout the assessments in the EIA Report.		
National: The Conservation (Natura Habitats, &C.) (EU Exit) (Scotland) (Amendment) Regulations (the 'Habitat Regulations') (2019)	• The Habitats Regulations cover the requirements for protecting sites that are internationally important for threatened habitats and species. The Regulations also provide a legal framework for species requiring strict protection. The potential for effects on bird habitats protected under the Habitats Regulations will be considered throughout the assessments in the EIA Report.		
	• Following the UK's exit from the EU, the implementation of the European Habitats Directive and European Birds Directive has changed. Post-Brexit, the UK has its own framework for protecting habitats and wildlife. The EU directives have been integrated into UK law through domestic legislation, and the UK government is responsible for enforcing and further developing policies for habitat and species protection post-Brexit. The changes reflect a shift to a UK-specific legal framework while maintaining the objectives of the original EU Directives.		
National: The Conservation of Offshore Marine Habitats and Species Regulations (2017); and National: Conservation of Habitat and Species Regulations 2017 (as amended);	 Together these pieces of legislation transpose the requirements of the EC Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive) into UK legislation. The legislation aims to conserve natural habitats and wild flora and fauna by protecting sites that are internationally important for threatened habitats and species (European 		

Relevant legislation and policy	Relevance to the assessment	
	sites) and provides a legal framework for species requiring strict protection, known as European Protected Species (EPS).	
	• The Offshore Regulations implement the species protection requirements of the Habitats and Birds Directives offshore (more than 12 nautical miles (nm) from the coast). The potential for effects on offshore bird habitats protected under the Offshore Regulations will be considered throughout the assessments in the EIA Report.	
National: The Marine Environment (EU Exit) (Scotland) (Amendment) Regulations (2019)	• The four-stage process of determining the absence of adverse effects on European sites under the Habitats Directives/Regulations is known as a Habitat Regulations Appraisal (HRA). Stage 1 of this process is known as HRA Screening. This will be provided separately to this Scoping Report.	
International: Ramsar Convention on Wetlands of International Importance (1971)	• The Ramsar Convention commits Contracting Parties to "wise use of all wetlands through local and national actions and international cooperation". Parties agree to work towards wise use of wetlands, designate suitable wetlands for the Wetlands of International Importance and ensure their effective management, and cooperate internationally on transboundary wetlands. The potential for effects on wetland birds and their habitats protected under the Ramsar Convention will be considered throughout the assessments in the EIA Report.	
International: The Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention') (1979)	• The Convention stipulates that Contracting Parties collaborate to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral Agreements for the conservation and management of migratory species which require or would benefit from international co-operation (listed in Appendix II of the Convention), and by undertaking co-operative research activities. The potential for effects on migratory bird species protected under the Bonn Convention will be considered throughout the assessments in the EIA Report.	
International: The Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') (1979)	• The principal aims of the Convention are to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase co-operation between contracting parties, and to regulate the exploitation of migratory species listed in Appendix III of the Convention. The potential for effects on birds and their habitats protected under the Bern Convention will be considered throughout the assessments in the EIA Report.	

Relevant legislation and policy	Relevance to the assessment		
National: The Wildlife and Countryside Act (as amended) (1981)	• The Wildlife and Countryside Act 1981 was enacted to implement the Birds Directive and Bern Convention in Britain, supplemented by the Nature Conservation (Scotland) Act (2004). Among other things, the Wildlife and Countryside Act 1981 provides protection to all birds, with increased protection afforded to those listed under Schedule 1 of the Act. The potential for effects on birds protected under the Act will be considered throughout the assessments in the EIA Report.		
National: Nature Conservation (Scotland) Act (2004)	• The Act introduces a requirement that public bodies in Scotland have a duty to further the conservation of biodiversity and sets out a series of measures that are designed to conserve biodiversity and to protect and enhance the biological and geological natural heritage of Scotland. The potential for effects on birds and their habitats protected under the Act will be considered throughout the assessments in the EIA Report, with the scope influenced by elements of the Act contained within Parts 1-3. Part 1 stipulates that the presence of biodiversity is understood and assessed appropriately, which is provided via the EIA baseline. Part 2 stipulates the designation and conservation of Sites of Special Scientific Interest (SSSIs) within Scotland. Part 3 addresses the protection of wildlife, and the assessment required under the Habitat Regulations (2019). These are considered within the scope of the assessments.		
National: Marine and Coastal Access Act (2009)	• Creates a new legislative and management framework for the marine environment in Scotland. Amongst other things, the Act introduces a duty to protect and enhance the marine environment and includes measures to improve marine nature and historic conservation with new powers to protect and manage areas of importance for marine wildlife and habitats. The potential for effects on birds and their habitats protected under the Act will be considered throughout the assessments in the EIA Report.		
National: UK Biodiversity Framework (2024)	• The Framework demonstrates how the work of the four countries (England, Northern Ireland, Scotland and Wales) and the UK will implement the Kuming-Montreal Global Biodiversity Framework (GBF) most effectively at a UK scale. As a key initial activity, the four countries have developed and published the UK's National Biodiversity Strategy and Action Plan, summarising how the countries of the UK will deliver/implement the GBF.		
National: Scottish Biodiversity Strategy to 2045	• The Strategy prioritises the required work to meet Scottish biodiversity targets under the UK Biodiversity Framework.		
National Policy			

Relevant legislation and policy	Relevance to the assessment	
Approved National Planning Framework 4 (NPF4) (2023)	 A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A: Planning Policy Framework. Policies of relevance to this area of technical assessment inlcude: Policy 1: Tackling the Climate and Nature Crisis 	
Marine Policy		
UK Marine Policy Statement (2011):	 Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses. Requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all. Requirements for biodiversity to be protected, conserved and where appropriate recovered and loss halted; Requirements for healthy marine and coastal habitats can occur across their natural range and are able to support strong, biodiverse biological communities and the functioning of healthy, resilient and adaptable marine ecosystems; and the oceans to have viable populations of representative, rare, vulnerable and valued species. 	
 Scottish National Marine Plan 2015 GEN 1 General planning principle GEN 4 Co-existence GEN 9 Natural heritage CABLES 1 CABLES 2 	 GEN 1 supports sustainable developments which provide economic benefit to Scottish communities and social benefits will be favoured GEN 4 emphasises the need for co-existence between development sectors and activities and requires cumulative impacts to be addressed. GEN 9 sets a requirement for development to comply with the legal requirements for protected areas and protected species; not to result in significant impact on the national status of Priority Marine Features; and protect and, where appropriate, enhance the health of the marine area. CABLES 1 sets a requirement for cable and network owners to provide evidence that the development and activity minimise impacts, where possible, on the environment and appropriate and proportionate environmental consideration and risk assessments should be provided which may include cable protection measures and mitigation plans. CABLES 2 sets a requirement for the following to be taken into account when reaching decisions regarding cable development: cables should be suitably routed to provide sufficient requirements for installation and cable protection; new cables should implement methods to minimise impacts on the environment, seabed and other users; cables should be buried to maximise protection where there are safety or seabed stability risks and to reduce conflict with other marine users and to protect the assets and infrastructure; 	

Relevant legislation and policy	Relevance to the assessment		
	 where burial is demonstrated not to be feasible, cables may be suitably protected; 		
	 consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required. 		
Sectoral Marine Plan - Offshore Wind Energy (2020); and Sectoral Marine Plan – Roadmap of Actions (2022)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. Section 4.1 lists a range of potential negative impacts identified through plan-level SEA, HRA and SEIA which require further consideration through project level assessments, including: "loss of/damage to marine and coastal habitats; effects from pollution releases on species and habitats; 		
	 effects on water quality; and 		
	 effects on ecological status". 		
	In December 2022 the Scottish Government published the Sectoral Marine Plan: Roadmap of Actions (2022) which details the actions required to improve the understanding of the potential implications of ScotWind sites on seabirds as identified by the Sectoral Marine Plan (2020).		

Technical guidance

5.7.8 Technical guidance that has been used to define the assessment is set out in **Table 5.7.2** below.

Table	5.7.2	Relevant	technical	guidance
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Guidance reference	Relevance to the assessment
Band (2012)	The original guidance on use of CRM to estimate bird collisions for offshore wind farm developments. This guidance will be referenced in respect of CRM principles and practice, and it underpins all later methodological developments.
Caneco and Humphries (2022)	Stochastic Collision Risk Model (sCRM) and ShinyApp to run models.
CIEEM (2018)	Guidelines on the approach to EIA recommending that the conservation values of receptors are considered. This guidance will be considered when assessing potential impacts at the EIA scale.

Guidance reference	Relevance to the assessment
Furness <i>et al.,</i> (2013)	Analysis of seabird sensitivity to offshore wind farm developments. This publication will be considered to inform species sensitivities to potential impacts from offshore wind farms.
Furness (2015)	Provides Biologically Defined Minimum Population Scales (BDMPS) used to define non-breeding season populations.
JNCC <i>et al.,</i> (2022)	Joint SNCB advice note on undertaking displacement assessment. Used to consider the risk that seabirds will be displaced from an operational offshore wind farm development and to estimate the mortality rates that may arise as a result. This guidance will be considered in conjunction with NatureScot (2023f) when undertaking displacement analysis.
JNCC <i>et al.</i> , (2024)	Guidance on the bird biometric and other relevant input parameters to be used when undertaking collision risk modelling (CRM).
NatureScot (2020)	Guidance on the effect of aviation lighting on ornithological receptors at wind turbine generators (WTGs), communication towers, and other structures. This guidance will be considered in relation to lighting effects on ornithology receptors.
NatureScot (2023a)	Guidance Note 2 addressing baseline characterisation surveys and reporting.
NatureScot (2023b)	Guidance Note 3 addressing connectivity to breeding colonies for marine birds. Primarily of relevance to HRA.
NatureScot (2023c)	Guidance Note 4 addressing screening for marine Special Protection Areas (SPAs) and also non-breeding season matters. Primarily of relevance to HRA.
NatureScot (2023d)	Guidance Note 5 providing recommendations for marine bird population estimates.
NatureScot (2023e)	Guidance Note 6: on potential impact pathways of offshore wind farms on marine birds.
NatureScot (2023f)	Guidance Note 8 providing advice on the assessment of distributional responses of marine birds in relation to offshore wind developments (i.e., displacement and barrier effects).
NatureScot (2023g)	Guidance Note 9 on seasonal periods for ornithological receptors in the Scottish marine environment, which references NatureScot (2020a). This guidance informs the definition of seasonality for the key species in assessment.
NatureScot (2023h)	Guidance Note 10 (which currently references NatureScot (2018)) and provides interim guidance on apportioning impacts from marine renewable developments to breeding seabird populations in SPAs. Primarily of relevance to HRA.
NatureScot (2023i)	Guidance Note 11 providing recommendations for seabird Population Viability Analysis (PVA).
NatureScot (2025a)	Guidance Note 1 which introduces the NatureScot suite of marine ornithological guidance for offshore wind impact assessment.

Guidance reference	Relevance to the assessment
NatureScot (2025b)	Guidance Note 7 which gives advice on assessing collision risk.
McGregor <i>et al.,</i> (2018)	Original development of the sCRM and ShinyApp.
Searle <i>et al</i> ., (2014; 2018)	Guidance on use of SeabORD for seabird displacement modelling. This guidance will be considered if SeabORD is considered appropriate / possible to model for this Project.
Searle <i>et al.,</i> (2019)	Guidance relating to use of the PVA tool commissioned by Natural England (the NE PVA tool).

Study area

- 5.7.9 The study area for the offshore ornithology assessment is derived from the Scoping Boundary, covering an area of 860 km² (see **Section 2.3, Chapter 2**).
- 5.7.10 The offshore ornithology study area comprises the offshore Scoping Boundary plus a 6 km buffer, shown in **Figure 5.7.1**, **Appendix 1A**. For the purposes of the assessment of potential adverse impacts on ornithology receptors, data were collected through site-specific Digital Aerial Surveys (DAS) within the offshore ornithology study area. A 6 km buffer around the Scoping Boundary was used, in line with SNCB guidance (NatureScot, 2023a) for offshore ornithology baseline characterisation, as the Project is significantly further than 10 km away from a SPA designated for red-throated divers.
- 5.7.11 The offshore ornithology study area will provide appropriate ornithological context for the Project. The approach to the DAS was shared with NatureScot to ensure suitability for the purpose of defining the baseline for offshore ornithology within the Scoping Boundary and 6 km buffer. These data will also provide an appropriate scale of data for a robust pre-and post-construction comparison of seabird abundance and distribution along a gradient outward from the Project and to allow this to be monitored, if necessary.

Consultation

5.7.12 This Section has been informed by engagement and discussion with the relevant stakeholders, including a Scoping Workshop with Marine Directorate, (MD-LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), NatureScot and the Royal Society for the Protection of Birds (RSPB), on 15 January 2025. **Table 5.7.3** provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this Scoping Report.

Consultee	Comments and considerations	How this i section of	s accounted for and relevant this report
NatureScot	During the workshop, the approach to the offshore ornithology assessment was discussed. Following the Scoping Workshop, the Applicant provided a technical note, dated 30 January 2025, to provide further detail on the key points discussed in the	I. II.	See paragraphs 5.7.30 to 5.7.32 (baseline characterisation) and paragraph 5.7.4 (migratory waterbirds); See paragraph 5.7.69;

Consultee	Comments and considerations	How this is accounted for and relevant section of this report
	Scoping Workshop and the questions posed to stakeholders by the Applicant. Written feedback on the technical note was received from NatureScot on the questions posed, response dated 27 February 2025. A summary of the feedback relevant to the EIA offshore ornithology assessment is provided below (relevant points raised on the HRA offshore ornithology assessment are included within the HRA Screening Report): I. Baseline characterisation, including how to undertake assessment of migratory birds; II. Assessment of regional populations within EIA; III. Approach to PVA; IV. Impact pathways; V. Seasonal definitions; VI. Approach to displacement; VII. Approach to connectivity and apportioning; VIII. In-combination / cumulative assessment; and IX. Consideration of Highly Pathogenic Avian Influenza (HPAI)	 III. See paragraphs 5.7.84 to 5.7.88; IV. See paragraph 5.7.73; V. See paragraph 5.7.66; VI. See Table 5.7.10; VII. See paragraphs 5.7.69 to 5.7.71; VIII. See paragraphs 5.7.51 to 5.7.58; IX. NatureScot agreed with the Applicant's approach outlined in the Scoping Workshop and written consultation documentation.
Royal Society for the Protection of Birds (RSPB) Scotland	 I. RSPB noted that existing tracking data and ongoing tagging studies should be considered when assessing potential impacts caused by artificial lighting. II. RSPB encouraged discussion with NatureScot in relation to Northern gannet <i>Morus bassanus;</i> hereafter 'gannet' macro-avoidance. 	 I. Artificial lighting considered within Table 5.7.10. II. Gannet macro-avoidance discussed in paragraph 5.7.84.

Assessment methodology

Introduction

- 5.7.13 The Project-wide approach to the assessment methodology is set out in **Chapter 4: Approach to Scoping and EIA**. However, whilst this has informed the approach that has been used in this offshore ornithology section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the offshore ornithology assessment.
- 5.7.14 A 'source-pathway-receptor' model is proposed to identify any likely impacts on offshore ornithology receptors resulting from the proposed construction, O&M and decommissioning of the offshore infrastructure. The parameters of this model are defined as follows:

•

- **Pathway** the means by which the effect of the activity could impact the receptor e.g. for the example above, re-suspended sediment could settle and smother immobile benthic species, causing a reduction in prey availability.
- **Receptor** the element of the receiving environment that is impacted e.g. for the above example, seabirds which are unable to forage effectively due to a reduction in benthic prey availability.

Evaluation of potential receptors

5.7.15 The proposed assessment process will involve identifying Valued Ornithological Receptors (VORs). These receptors and their conservation value will be determined by the criteria defined in **Table 5.7.4**. These criteria are intended as a guide and are not definitive.

Value	Definition
High	A species for which individuals at risk can be clearly connected to a particular SPA or is found in numbers of international importance within the offshore ornithology study area during a particular season.
Medium	A species for which individuals at risk are probably drawn from particular SPA populations or found in numbers of national importance within the offshore ornithology study area during a particular season, although other colonies (both SPA and non-SPA) may also contribute to individuals observed in the offshore ornithology study area.
Low	A species for which it is not possible to attribute to particular SPAs and may be found in regionally or locally important numbers during specific seasons within the offshore ornithology study area.
Negligible	All other species that are widespread and common and which are not present in locally important (or greater) numbers and which are of low conservation concern (e.g. UK BoCC5 Green List species; Stanbury <i>et al.</i> , 2021).

Table 5.7.4 Definition of conservation value levels for ornithological receptors

5.7.16 The assessment of potential receptors will consider the importance of the Project's offshore ornithology study area for the bird species under consideration. In accordance with CIEEM (2018) guidelines the focus of assessments will be on "*significant effects rather than all ecological effects*". To illustrate the rationale of this approach, whilst a VOR could be considered of high conservation importance using the criteria in **Table 5.7.4**, the importance of the Project study area to this species may be considered limited if only a low number of sightings are recorded within the study area in the baseline surveys. As such, while the conservation value of the species is considered, the number of individuals of that species using the Project study area, and the nature and level of this use, is also considered. An assessment is then made of the importance of the Project study area to the species in question.

Characterising potential impacts

- 5.7.17 The sensitivity of the offshore ornithology receptors to potential impacts will be determined subjectively based on species' ecology and behaviour, using the criteria set out in **Table 5.7.5**. Judgement will take account of information available on the responses of VORs to various stimuli (e.g. predators, noise and visual disturbance, existing offshore wind farms where such data exist) and whether a VOR's ecology makes it vulnerable to potential impacts (e.g. species that typically fly at heights that overlap with the rotor-swept area are considered to be more sensitive to collision risk with the moving blades of WTGs than species that fly much higher or lower than the rotor-swept area that avoid collision risk).
- 5.7.18 A description is provided in **Table 5.7.5** of how sensitivity is intended to be assessed for the impact of disturbance by human activities, but the general approach can be applied to any impact. The sensitivity of each VOR to each potential impact will be clearly described in the EIA.

Table 5.7.5 Definition of level of sensitivity for ornithological receptors

Value	Definition
High	VOR has very limited tolerance to sources of disturbance such as noise, light, vessel movements and the sight of people.
Medium	VOR has limited tolerance to sources of disturbance such as noise, light, vessel movements and the sight of people.
Low	VOR has some tolerance to sources of disturbance such as noise, light, vessel movements and the sight of people.
Negligible	VOR is generally tolerant to sources of disturbance such as noise, light, vessel movements and the sight of people.

- 5.7.19 Sensitivity can differ between similar species, between different populations of the same species, between different individuals within a population and also differ in the same individual at different times. Thus, the behavioural responses of offshore VORs are likely to vary with both the nature and context of the stimulus and the experience of the individual bird. Sensitivity also depends on the activity of the bird.
- 5.7.20 In addition, individual birds of the same species will differ in their tolerance depending on the level of human disturbance that they regularly experience in a particular area and have become habituated to (e.g. individuals that forage within close proximity to an area with high human activity levels are likely to have a greater tolerance to disturbance than those that occupy remote locations with little or no human presence).
- 5.7.21 Consideration of the level of sensitivity with regards to individual VORs will be one of the core components of the assessment of potential impacts and their effects.
- 5.7.22 In addition, each receptor's conservation value will also be considered using reasoned judgement when determining their overall sensitivity to any potential impact or effect. For example, herring gull could be listed as a qualifying feature of an SPA and is a red listed species of conservation concern across the UK in BoCC5 (Stanbury *et al.*, 2021), but not judged to be sensitive to anthropogenic disturbance given its propensity to forage successfully on active landfill sites, utilise development structures including WTGs to perch on and to breed within urban environments on industrial and residential buildings roof tops.

Such reasoned judgement is an important part of the overall narrative used to determine potential impact significance and will be used, where relevant, as a mechanism for modifying the sensitivity of an effect assigned to a specific VOR.

5.7.23 The use of expert judgement (CIEEM, 2018), alongside the conservation value (**Table 5.7.4**) and sensitivity (**Table 5.7.5**) of a VOR will be used to determine their overall sensitivity in the assessment.

Magnitude

5.7.24 Impacts on VORs will be judged in terms of their magnitude. Magnitude refers to the scale of an impact and will be determined on a quantitative basis where possible. This may relate to the area of habitat lost to the development footprint in the case of a habitat feature or predicted loss of individuals in the case of a population of a species of bird. Magnitude is assessed within four levels, as detailed in **Table 5.7.6**.

Table 5.7.6Definition of level of potential magnitude of change for ornithologicalreceptors

Magnitude	Definition
High	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that is predicted to irreversibly alter the population in the short to long-term and to alter the long-term viability of the population and/ or the integrity of the protected site. Recovery to baseline levels from that change predicted to be achieved in the long-term (i.e. more than five years) following cessation of the development activity.
Medium	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that occurs in the short and long-term, but which is not predicted to alter the long-term viability of the population and/ or the integrity of the protected site. Recovery to baseline levels from that change predicted to be achieved in the medium-term (i.e. no more than five years) following cessation of the development activity.
Low	A change in the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site that is sufficiently small-scale or of short duration to cause no long-term harm to the feature/ population. Recovery to baseline levels from that change predicted to be achieved in the short-term (i.e. no more than one year) following cessation of the development activity.
Negligible	Very slight change from the size or extent of distribution of the relevant biogeographic population or the population that is the interest feature of a specific protected site. Recovery to baseline levels from that change predicted to be rapid (i.e. no more than circa six months) following cessation of the development activity.

5.7.25 Knowledge of how rapidly the population or performance of a species is likely to recover following loss or disturbance (e.g. by individuals being recruited from other populations elsewhere) will also be used to assess impact magnitude, where such information is available.

Impact Significance

- 5.7.26 The CIEEM guidelines (2018) use only two categories to classify effects: "significant" or "not significant". The significance of an effect is determined by considering the overall importance (defined here as the overall sensitivity) of the receptor and the magnitude of the impact using a matrix-based approach provided in **Plate 4.2.1** in **Chapter 4**. Where possible, assessment of the magnitude of the impact on offshore ornithology is based upon quantitative criteria, together with applying professional judgement as to whether the integrity of the feature will be affected.
- 5.7.27 Effects are more likely to be considered significant where they affect ornithological features of higher overall sensitivity or where the magnitude of the impact is high. Effects not considered to be significant would be those where the integrity of the feature is not threatened, effects on features of lower overall sensitivity, or where the magnitude of the impact is low.

Baseline conditions

5.7.28 This Section establishes the baseline environment in terms of offshore ornithology for the purpose of identifying impacts which should be scoped into the EIA Report.

Data sources

5.7.29 As is standard for offshore wind farms, a two-year programme of monthly Digital Aerial Surveys (DAS) of the Scoping Boundary and a 6 km buffer began in October 2023 and is due to complete in September 2025. Surveys of offshore birds are being carried out monthly using industry standard methods to provide baseline data for the offshore ornithology assessment. These data will be used in conjunction with published guidance, research and other relevant data as presented in **Table 5.7.7**. Any relevant new guidance or information which becomes available during the EIA process will also be included, if timely to the EIA Report submission deadline.

Table 5.7.7 Key sources of offshore ornithology data and relevant research

Sources and dates	Summary
Project-specific digital aerial surveys (DAS) of seabirds and marine mammals (APEM, 2024)	As part of the site characterisation process, the Applicant is undertaking two years of DAS for birds and marine mammals within the Scoping Boundary plus a 6 km buffer. The DAS commenced in October 2023 and the first year of data has been reviewed to inform this baseline section. The second year of DAS is currently ongoing and will be used to inform the EIA Report.
Bradbury <i>et al.,</i> 2014; Furness <i>et al</i> ., 2013; Furness and Wade 2012; Garthe and Hüppop 2004; Wade <i>et al</i> ., 2016;	Guidance and research on sensitivity of birds to offshore wind farms.
Dierschke <i>et al</i> ., 2016; Masden <i>et al</i> ., 2009; Speakman <i>et al</i> ., 2009.	Guidance and research on marine bird distributional responses (displacement / barrier effects) in relation to offshore wind farms.
Bowgen and Cook 2018; Cook <i>et al</i> ., 2014; Johnston <i>et al</i> ., 2014a, 2014b; Pavat <i>et al.,</i> 2023; Skov <i>et al</i> ., 2018;	Guidance and research underpinning CRM approaches for offshore wind and associated input parameters for marine bird species.
Buckingham <i>et al.</i> , 2022 and 2023; Cleasby <i>et al.</i> , 2020; Vattenfall, 2023; Waggitt <i>et al.</i> , 2020; Wakefield <i>et al.</i> , 2017; Woodward <i>et al.</i> , 2019.	Seabird tracking studies which help inform the current understanding of marine bird foraging ranges and distribution at sea.
Burnell <i>et al.</i> , 2023; Horswill and Robinson 2015; JNCC seabird monitoring programme database; designated site citations / departmental briefs / conservation advice from the websites of SNCBs; Mitchell <i>et al.</i> , 2004	Bird population estimates - <i>Seabirds Count</i> and <i>Seabirds 2000</i> - as underpinned by SMP colony counts. Plus, the associated demographic data for these populations, as collated by Horswill and Robinson 2015 (with an update currently under preparation.)
Relevant documents from marine licence applications for other offshore wind farms in UK offshore waters (in particular Scottish and English East Coast Waters), and Transboundary offshore wind farms.	Information and data for cumulative and in combination assessments.
Relevant ecological studies for species included in EIA (peer reviewed scientific papers and 'grey' literature).	 Includes Woodward <i>et al.</i>, 2023 collating available knowledge on migratory waterbirds.

Sources and dates	Summary					
	post-construction monitoring studies, e.g. Moray Firth Regional Advisory Group <u>https://marine.gov.scot/ml/moray-firthregional-</u> <u>advisory-group-mfrag</u>					
	 Kincardine offshore wind farm bird collision study (KOWL, 2019) 					
	 Offshore Renewables Joint Industry Programme (ORJIP) collision avoidance study (Skov <i>et al.</i>, 2018) 					
	 East Coast of Scotland regional DAS (APEM 2022a). 					
Published documents relating to Scottish Government plans for offshore wind energy (Scottish Government 2020)	Relevant strategy and policy documents.					

Current baseline

- 5.7.30 This Section presents an overview of the existing environment and key bird species likely to be present within the Study Area. This is based on species recorded to date during baseline surveys (detailed below), EIAs for offshore wind farms in close proximity to the Project, the location, and reasons for designation of nearby SPAs in the North Sea and other sources, as cited.
- 5.7.31 The Scoping Boundary is situated in the North Sea, between 93.2 132.9 km offshore (at its nearest and farthest points from shore respectively) east of the Aberdeenshire coastline. The North Sea is important for seabirds throughout the year, providing foraging grounds for seabirds breeding in adjoining coastal areas during the breeding season, from colonies further afield in the non-breeding season, and for sub-adult birds (pre-breeding age) throughout the year. Overall, at least 19 seabird species breed on coastal areas around the North Sea, including large populations of gannet, black-legged kittiwake *Rissa tridactyla;* hereafter 'kittiwake', common guillemot *Uria aalge;* hereafter 'guillemot' and razorbill *Alca torda* (ICES, 2021).
- 5.7.32 At the time of writing, results from site-specific baseline surveys are available for 12 surveys for the period October 2023 to September 2024. Survey data were analysed to provide density and abundance estimates within the Scoping Boundary plus 6 km buffer, to provide an initial insight into the species present. The raw number of observations from DAS of the Scoping Boundary plus 6 km buffer are presented in **Table 5.7.8**.

Table 5.7.8 Raw counts of individuals recorded within the Scoping Boundary from first year DAS (Oct 2023 – Sep 2024)

Species*	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Total
Kittiwake	14	3	2	7	9	22	14	10	144	125	3	0	353
Lesser black-backed gull <i>Larus</i> fuscus	0	0	0	0	0	0	0	0	0	0	1	0	1
Great black-backed gull <i>Larus</i> marinus	1	3	5	1	9	0	1	0	0	0	1	1	22
Common gull Larus canus	0	0	0	0	0	0	0	0	0	4	5	0	9
Large gull species	0	0	0	0	0	0	0	0	0	0	1	0	1
Gull species	0	0	0	0	0	0	0	0	0	0	2	0	2
Arctic tern Sterna paradisaea	0	0	0	0	0	0	0	1	3	22	0	0	26
'Common tern Sterna hirundo	0	0	0	0	0	0	0	0	0	2	0	0	2
Great skua Stercorarius skua	1	0	0	0	0	0	0	0	0	0	0	0	1
Guillemot**	165	88	28	30	13	25	178	63	116	153	19	35	913
Razorbill**	72	5	0	8	3	5	6	0	25	72	1	9	206
Guillemot / razorbill	95	29	12	51	20	10	32	4	15	23	5	15	311
Puffin Fratercula arctica	17	9	5	0	0	4	80	4	59	141	129	93	541
Unidentified auk species	14	8	13	0	5	7	3	0	0	7	19	16	92
Red-throated diver Gavia stellata	0	0	0	0	0	0	2	0	0	0	0	1	3
European storm petrel <i>Hydrobat</i> es <i>pelagicus</i>	0	0	0	0	0	0	-	0	9	0	0	0	9

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Species*	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Total
Storm petrel species <i>Hydrobates spp.</i>	0	0	0	0	0	0	0	0	0	4	0	0	4
Fulmar <i>Fulmaris glacialis</i>	59	65	72	16	27	76	15	5	106	624	53	126	1,244
Fulmar / gull species	2	2	1	0	2	0	0	0	1	2	1	1	12
Manx shearwater (Puffinus puffinus)	1	0	0	0	0	0	0	0	0	0	0	0	1
Auk / shearwater species	0	0	0	0	0	0	0	0	11	1	0	0	12
Gannet	25	0	2	3	2	14	109	83	136	149	23	18	564

during Additionally, 14 'unidentified bird recorded DAS. * records of species' were the first year of ** Guillemot and razorbill counts relate to birds identified to species level and do not yet include any apportioned numbers of non-ID birds. The number of non-ID birds recorded during DAS is presented within the species group 'Unidentified auk species'. Availability bias correction factors will also be applied to estimates of density and abundance for guillemot, razorbill, puffin and any other relevant species following completion of two full years of DAS.

- 5.7.33 Based on the first year of DAS results (**Table 5.7.8**) and taking into consideration the criteria for identification of VORs in **paragraph 5.7.16**, the key species identified as likely requiring assessment are as follows:
 - kittiwake;
 - guillemot;
 - razorbill;
 - puffin;
 - gannet; and
 - fulmar (qualitative assessment for barrier effects only).
- 5.7.34 It should be noted that the species listed above may be subject to change following the completion of the remaining site-specific DAS, as further evidence emerges on the potential effects of offshore wind farm developments. Further changes may arise following completion of the second year of DAS (currently in progress) and stakeholder consultation.
- 5.7.35 To provide some context to the first year DAS results for the Project, **Table 5.7.9** details the raw observations of the top six most abundant bird species from complete DAS programmes of other offshore windfarm projects in the near vicinity of the Project. These include:
 - Muir Mhòr Offshore Wind Farm (April 2021 March 2023);
 - Green Volt Offshore Wind Farm (May 2020 April 2022); and
 - Salamander Offshore Wind Farm (March 2021 February 2023).

Species	The Project	Muir Mhòr	Salamander	Green Volt
Fulmar	1,244	2,469	304	3,459
Guillemot	913	11,619	1,806	17,036
Gannet	564	808	172	635
Puffin	541	1,064	115	268
Kittiwake	353	2,498	238	643
Razorbill	206	543	2,157	388
Total	3,821	19,001	4,792	22,429

Table 5.7.9 Top six most abundant bird species from the Project's interim DASresults and complete DAS results from three nearby offshore windfarms.

5.7.36 The same top six species were consistent across all offshore windfarms reviewed, with the ranking of each species also being consistent across all sites, apart from at Green Volt Offshore Wind Farm where razorbill were more abundant than puffin. Whilst the Project is due to complete its DAS programme in September 2025, the interim DAS results are broadly in-keeping with species observed at Muir Mhòr Offshore Wind Farm (also located in the E2 Plan Option Area) and other offshore windfarms in the northern North Sea.

Future baseline

- 5.7.37 The baseline description above reflects the Project's understanding of the current state of the existing environment. In the absence of significant local impacts, it is likely that the populations of bird species present will evolve in accordance with regional and national trends. Construction of the Project is anticipated to take in the region of eight to twelve years with the lease agreement allowing the Project to remain operational for up to 60 years, following first commission, which is the maximum permitted under the terms of the lease. Therefore, there exists the potential for the baseline to evolve between the time of assessment and point of impact. Outside of short-term or seasonal fluctuations, changes to the baseline in relation to offshore ornithology usually occur over an extended period. Based on current information regarding reasonably foreseeable events over the next two years, the baseline is not anticipated to have fundamentally changed from its current state at the point in time when impacts occur.
- 5.7.38 Should the Project be developed or not, changes in populations are likely to result from climatic factors (such as temperature change and subsequent impacts on species' ranges) and other natural phenomena (such as the recent avian influenza epidemic), or anthropogenic activities such as changes in fishing activities indirectly affecting marine bird communities. Baseline conditions are therefore not static and are likely to exhibit some degree of change over time, with or without the Project in place.

Basis for scoping assessment

- 5.7.39 The offshore ornithology scoping assessment is based on the parameters set out in **Chapter 2**.
- 5.7.40 The source-pathway-receptor linkage between Project infrastructure and / or activities and the receptor groups for this aspect are described in **Table 5.7.11**.
- 5.7.41 The Approved NPF4 2023 introduced requirements which will be taken account of in the EIA and associated consenting documents.

Embedded environmental measures

- 5.7.42 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts on offshore ornithology (see **Table 5.7.10**). The environmental measures proposed are relevant to ornithological features as well as prey resources. These will evolve over the development process as the EIA progresses and in response to consultation and will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.7.43 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the scoping assessment.

Table 5.7.10 Relevant offshore ornithology embedded environmental measures

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and

ID Environmental measure proposed How the environmental measures will be secured 114 (Energy Act 2004 (as amended)), s.36 conditions, and marine licence conditions. M-003 A Construction Environmental Management Plan (CEMP) to be implemented by s.36 conditions, the contractor. The contractor will ensure that the relevant environmental marine licence measures within the CEMP and health and safety procedures are implemented. conditions and A CEMP will identify the project management structure roles and responsibilities CEMP. with regard to managing and reporting on the environmental impact of the construction phase. Other measures that that feed into the CEMP include: M-004: Construction noise and vibration; M-005: Risk Assessment Method Statement: M-006: CEMP to include measures to minimise emissions. The CEMP will be the securing mechanism for many measures. M-008 s.36 conditions Development of and adherence to a Project Environmental Monitoring Programme (PEMP), which will set out commitments to environmental and marine monitoring in pre-, during and post-construction phases of the Project. licence conditions. There will be a minimum blade tip clearance of at least 22m above LAT. M-022 s.36 conditions and marine licence conditions. M-027 Development of and adherence to a Lighting and Marking Plan (LMP). The LMP s.36 conditions will confirm compliance with legal requirements with regards to shipping, and marine navigation and aviation marking and lighting. licence conditions. M-028 A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will s.36 conditions outline procedures to protect personnel working and to safeguard the marine and marine environment and mitigation measures in the event of an accidental pollution licence event arising from offshore operations relating to the Project. The MPCP will also conditions. include relevant key emergency contact details. M-030 Development of and adherence to a Vessel Management Plan (VMP), which will s.36 conditions confirm the types and numbers of vessels that will be engaged on the Project, and marine and consider vessel coordination including indicative transit route planning. licence conditions. M-037 Development of and adherence to an agreed Marine Mammal Mitigation s.36 conditions Protocol (MMMP). This will subsequently mitigate potential impacts from and marine underwater noise on marine mammals and fish through good or standard licence practice actions in order to meet legislative requirements. The MMMP will evolve conditions.

during the development phase and as the EIA progresses and in response to

consultation.

Likely significant effects

- 5.7.44 In line with the EIA Regulations (as described in **Chapter 3** the EIA for the Project will consider those impacts where there is a risk of a potentially significant effect only. The following Section draws on NatureScot guidance and industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.7.45 The potential impacts on offshore ornithology are summarised in **Table 5.7.11**. The scoping assessment is based on a combination of the Project at the Scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for offshore ornithology effects, and professional judgement. The approach to this assessment is set out in **Chapter 4**.
- 5.7.46 The early identification of potentially significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.
- 5.7.47 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach to that described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for offshore ornithology.

Source: Activity	Embedded measures	Potential impact	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
Direct temporary habitat loss / disturbance (All phases)	M-037, M-030, M-008, M-003, M-002	Construction, O&M, and decommissioning activities such as increased vessel activity and underwater noise may result in temporary direct disturbance or displacement of birds from important feeding and roosting areas, including due to direct habitat loss. These effects are, however, expected to be temporary in nature.	Scoped in. Qualitative assessment within EIA Report.	Offshore ornithological receptors.	Ongoing DAS and data analysis will further inform the assessment of this impact, supported by Section 5.5: Benthic, epibenthic and shellfish ecology, and Section 5.8 Fish ecology.
Indirect effects on prey species (All phases)	N/A	Impacts may result from underwater noise during construction or the generation of suspended sediments that may alter the distribution, physiology or behaviour of bird prey species and thereby have an indirect effect. These mechanisms could potentially result in less prey being available in the area adjacent to active construction works to foraging seabirds. There is also evidence that fish and mobile invertebrates may be attracted to the operational area (Kerckhof <i>et al.</i> , 2010; EMU Ltd., 2008; Krone <i>et al.</i> , 2013; Linley <i>et al.</i> , 2008 and Wilhelmsson <i>et al.</i> , 2006) and so beneficial impacts may occur.	Scoped in.	Offshore ornithological receptors.	Review of the data and impact assessments for benthic and shellfish ecology and fish and shellfish will be conducted within the context of the potential impacts on offshore ornithology.
Distributional responses (All phases)	M-022	The presence of WTGs (gradually increasing from zero to the full array during the construction phase, full array during the O&M phase, then vice versa during the decommissioning phase) has the potential to lead to distributional	Scoped in . Quantitative assessment within EIA Report during O&M phase.	Offshore ornithological receptors.	Ongoing DAS will further inform the assessment of this impact.

Source: Activity	Embedded measures	Potential impact	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
		responses through displacement and barrier effects. This effectively reduces the potential for ornithological receptors to be present in proximity to, and within, the Scoping Boundary and increasing the potential for longer flight paths and higher energy expenditure.	Qualitative assessment within EIA Report during construction and decommissioning phases.		Qualitative assessment will be informed by the wider available literature.
Collision risk (O&M)	M-022	There is a risk of birds in flight colliding with rotating WTG blades. The susceptibility of species to collision risk depends upon physiological and behavioral characteristics of the species.	Scoped in . Quantitative assessment using deterministic and stochastic model frameworks. Results presented in EIA Report.	Offshore ornithological receptors.	Ongoing DAS will further inform the assessment of this impact.
Entanglement (All phases)	N/A	Derelict/lost fishing gear could entangle in mooring lines, known as primary entanglement. There is potential for diving seabirds to become entangled in such items, defined as 'secondary' entanglement. Only secondary entanglement will be Scoped in for further assessment.	Scoped in Secondary entanglement will be considered qualitatively within the EIA Report. Primary entanglement is Scoped out, with rationale presented in paragraph 5.7.50.	Offshore ornithological receptors – diving bird species.	N/A
Unexploded Ordinance (UXO) clearance (Construction)	M-037	There is a risk of injury or mortality to diving birds due to the clearance of UXO within the Scoping Boundary. There may be associated impacts to prey distribution and availability which will be considered within indirect effects to prey species.	Scoped in Qualitative assessment to be presented in EIA Report.	Offshore ornithological receptors.	N/A
Artificial lighting (O&M)	M-028	There is potential for at-risk species such as puffin, petrels and shearwaters to be attracted to artificially lit structures offshore, which will be considered within the assessment.	Scoped in. Qualitative assessment provided within EIA Report.	Offshore ornithological receptors – puffin, petrel	N/A

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Source: Activity	Empedded measures		Proposed approach to assessment (scoped in or scoped out)	Receptor	requirements
				and shearwater species.	
Combined displacement and collision risk (All phases)	M-030, M-022	Some species such as gannet and kittiwake are susceptible to both collision and distributional responses. Where this applies, impacts will be considered additive and assessed quantitatively together.	Scoped in. Quantitative assessment provided within the EIA Report.	Offshore ornithological receptors – gannet and kittiwake	Further inform the assessment of this impact.
Accidental release of pollutants (All phases)	M-028, M-008	Negligible potential direct and indirect impacts. Accidental release of pollutants may impact marine birds through accidental spills from vessels or other equipment. Spills are likely to be small scale and will be dispersed quickly, meaning only a limited possibility of interaction with birds.	Scoped out See paragraph 5.7.51.	Offshore ornithological receptors.	N/A
Underwater noise (Construction)	M-003	Negligible potential direct impact.	Scoped out. See rationale in paragraph 5.7.49.	Offshore ornithological receptors.	N/A

Impacts proposed to be scoped out of assessment

5.7.48 A number of potential effects have been proposed to be scoped out from further assessment, due to the conclusion of negligible chance of a potentially significant adverse effect. These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and the evidence available on the potential for impact from projects more widely. The conclusions follow (in a site-based context) existing best practice. Each potentially scoped out effect is considered in turn below.

Underwater noise during construction

5.7.49 There is potential for diving birds (e.g. guillemot and gannet) to be present in the vicinity of the Project when noisy activities are occurring during construction (e.g. pile driving). It is likely birds will be aware of construction activities when they are not diving and may have been temporarily displaced. Although some species (e.g. cormorant) may be better adapted to hear underwater than other species, it is assumed that most diving birds do not have the same capacity to hear underwater as aquatic animals, as they are primarily adapted for aerial environments. It should also be noted that any piling activities will be short in duration. Additionally, embedded mitigation, including Marine Mammal Observers (MMOs) will be deployed during construction to facilitate shutdown / cessation of such activities in the presence of marine mammals. MMOs will be aware of rafting birds if they are present so existing mitigation could be applied here (i.e., M-037 MMMP). Therefore, underwater noise during construction is proposed to be **scoped out** of impact assessment.

Primary entanglement

5.7.50 Primary entanglement (direct entanglement with mooring lines or array cables etc.) is proposed to be **scoped out** as the nature of the mooring lines in terms of tension, rigidity, and cable diameter preclude the possibility of forming any entangling loops.

Accidental release of pollutants

5.7.51 Accidental release of pollutants may impact ornithological receptors through accidental spills from vessels or other equipment. Spills are likely to be small scale and will be dispersed quickly, leading to limited interaction with ornithological receptors. The risk and impact of any pollutant release will be monitored and reduced through the Marine Pollution Contingency Plan (MPCP) (M-028), so that any accidental release is strictly controlled, and procedures implemented to minimise potential for impact. Therefore, accidental release of pollutants is proposed to be **scoped out** of impact assessment.

Cumulative effects

- 5.7.52 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.7.53 The cumulative effects on offshore ornithology resulting from the effects of the Project, Transmission Infrastructure and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4**. The cumulative assessment will consider other developments that have been screened in as part of the Cumulative Effects Assessment screening exercise in addition to the Project.
- 5.7.54 The following impacts from the Project have the potential to act cumulatively with impacts from other offshore wind developments, to contribute to cumulative effects and are proposed to be assed quantitatively:
 - distributional responses during O&M;
 - collision risk during O&M; and
 - the combined impact of distributional responses and collision risk during O&M.
- 5.7.55 Following NatureScot advice received after the Scoping Workshop, cumulative effects with other developments will also be considered during construction and decommissioning. This assessment will be performed qualitatively.
- 5.7.56 The assessment of cumulative effects will be undertaken on a seasonal basis. For the breeding season where a significant proportion of the population will be restricted to movements within foraging range of their associated colony, projects will be scoped in for cumulative effects assessment based on species specific mean max plus 1SD foraging range from the Project (Woodward *et al.*, 2019).
- 5.7.57 In the non-breeding season where species may migrate and disperse significant distances away from their natal colony and wider mixing of different colonies occurs, other offshore wind projects will be scoped in for cumulative assessment based on location within the regional BDMPS areas described in Furness (2015) or its relevant update if this is issued within the timeframe for Campion project assessments.
- 5.7.58 It is possible that the CEF tool, developed for Marine Directorate, may be available to quantitatively assess the cumulative effect of the Project and other offshore wind projects within the breeding and non-breeding season. If available, then the CEF will preferentially be used during assessment. If the CEF is not available in a reasonable timescale, following NatureScot advice received following the Scoping Workshop, the Project will utilise the most up to date iteration of the cumulative baseline seabird mortality which has been produced for the North East and East Ornithology Group (NEEOG).

Transboundary effects

5.7.59 The potential effects from construction, O&M and decommissioning on offshore ornithology receptors are considered in **Appendix 4A: Transboundary Screening Matrix**. Project alone and cumulative impact assessments may affect offshore bird populations located outside UK territorial waters, giving the potential for transboundary impacts. The area of search for transboundary offshore wind farms is likely to be the North Sea. Transboundary offshore wind farms will be screened for the potential to impact on the same bird populations as are present within the offshore ornithology study area. If transboundary sites are screened in, impacts will be assessed as per the other cumulative impacts.

Proposed approach to the EIA Report

- 5.7.60 The offshore ornithology EIA Chapter will be supported by the following technical annexes:
 - Offshore Ornithology Baseline Technical Report;
 - Distributional Responses Technical Annex;
 - Collision Risk Modelling Technical Annex; and
 - Population Viability Analysis Technical Annex (should this be required).

- 5.7.61 Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in **Chapter 4**.
- 5.7.62 Following the EIA Scoping Workshop held on 15 January 2025, and NatureScot's written feedback, the forthcoming sections contain questions posed to the consultees to further refine assessment. The Applicant has included additional questions to aid in addressing the remaining areas of uncertainty via Scoping Opinion responses from stakeholders.

Baseline characterisation

- 5.7.63 The ornithology baseline technical report will present the following information:
 - the methods and results of the site-specific DAS used to characterise the baseline for offshore ornithology;
 - the results of any other data used to support or characterise the baseline for offshore ornithology including site-specific survey data;
 - the method for estimating density and abundance for all species recorded within the offshore site-specific surveys;
 - the method for assigning unidentified species groups within the offshore DAS data;
 - presentation of the monthly design-based density and abundance estimates for the Scoping Boundary, Scoping Boundary plus 2 km buffer, and Scoping Boundary plus 6 km buffer both pre- and post-apportionment of unidentified species group and correction for availability bias to allow for assessment of distributional responses following SNCB guidance (JNCC *et al.*, 2022);
 - presentation of sex and age ratios recorded from the site-specific DAS; and
 - species accounts for the most abundant / key species which will include graphical presentation of the distribution within the offshore survey area by season and consideration of likely connectivity and site usage using available data such as flight direction.
- 5.7.64 For deriving density and abundance estimates for the Scoping Boundary plus 6 km buffer using the offshore site-specific survey data, the Project proposes to use design-based methods rather than Marine Renewables Strategic environmental assessment (MRSea) models. DAS data collected over Year 1 suggest that for many species raw count observations will be too low to get reliable estimates of density and abundance from using MRSea. Additionally, the location of the Project means that the environmental covariates commonly used for MRSea, bathymetry and distance to shore, have little to add to explain any variation in the distribution of seabirds over the study area. This is due to the relatively deep and uniform depth of water (77 m) over within the offshore ornithology study area and the distance to land of over 75 km, at which distance effects become minimal. Environmental data that may have additional explanatory benefit to the modelling, such as prey distribution, are currently not available at the spatial and temporal scales required. It is believed that density and abundance estimates derived through design-based approaches will not differ significantly from those estimated using MRSea.
- 5.7.65 In relation to the above proposed approach the Project would welcome responses to the following questions:
 - Do consultees agree that the data sources as listed in the baseline characterisation section are sufficient to appropriately characterise the baseline environment for

offshore ornithology? If consultees would require further data sources, please can these be stated in your response.

• Do consultees agree that abundance estimation for offshore ornithology receptors using MRSea is not required for the Project?

Biological seasons

- 5.7.66 The Applicant acknowledges NatureScot's advice regarding the use of seasonal definitions in their advice following the Scoping Workshop. The breeding and non-breeding seasons will be defined using the definitions in NatureScot (2020a). These seasons, summarised in **Table 5.7.12**, are defined as follows:
 - Breeding season: birds strongly associated with a nest site, including nesting, egg laying and provisioning young, and;
 - Non-breeding season: birds are more widely dispersed, no longer strongly associated with colonies. This period subsumes the short "pre-breeding" seasons defined separately in NatureScot (2020a).
- 5.7.67 Information contained within BDMPS (Furness, 2015) is critical for non-breeding season apportioning. For kittiwake, razorbill, fulmar and gannet, Furness (2015) identifies autumn and spring passage and winter periods within the non-breeding season. Apportioning weightings will therefore be derived for each of these periods. The weightings from the apportioning will be applied to mortality estimates for these species in Furness (2015) seasons which will be foreshortened when they overlap with NatureScot breeding season definitions to avoid overestimating seasonal mortality estimates.
- 5.7.68 Following NatureScot advice received after the Scoping Workshop, further discussion on whether to include August data in the breeding or non-breeding season for the assessment of distributional responses for auks will occur once the Year 2 DAS has been completed. The Applicant will also consider post-breeding dispersal movements, elevated disturbance vulnerability and the composition of breeding adults vs non-breeding adults during this period.

Table 5.7.12 Proposed seasons for all species based on NatureScot (2020a), non-breeding seasons for kittiwake, razorbill, fulmar, and gannet adapted from Furness (2015)

Species	Breeding	Autumn migration	Spring migration	Winter	Non-breeding
Kittiwake	Mid-April to August	September to December	January to mid-April	-	-
Guillemot	April to mid-August	-	-	-	Mid-August to March
Razorbill	April to mid-August	Mid-August to October	January to March	November to December	-
Puffin	April to mid-August	-	-	-	Mid-August to March
Fulmar	April to mid-September	Mid-September to October	December to March	November	
Gannet	Mid-March to September	October to November	December to mid-March	-	-

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Reference populations

- 5.7.69 As requested by NatureScot in their response to the technical note, (response dated 27 February 2024) the EIA will consider predicted impacts on species-specific regional populations with connectivity to the Project.
- 5.7.70 Regional breeding populations will be comprised of birds from designated and nondesignated breeding colonies located within foraging range following NatureScot guidance (NatureScot 2023b, 2023c). The process of identifying colony connectivity with an offshore windfarm site during the breeding season is well understood and clearly set out in the guidance.
- 5.7.71 However, NatureScot guidance is not explicit on treatment of population structure with regard to regional populations (or for regional PVA). In particular advice is sought on defining the non-breeding component of regional populations defined for EIA in the breeding season. There are a number of different methods being proposed in this regard by different environmental consultancies and so the Applicant seeks NatureScot's confirmation of preferred approach, and/or a submitted project example to refer to, which sets this out.
- 5.7.72 Likewise, the Applicant seeks the necessary detail on NatureScot's preferred method(s) to address non-breeding season impacts under EIA for each species, whether these are separately assessed against the relevant BDMPS populations, or apportioned back to the regional breeding populations (in which case further advice is requested of an example for calculating the required apportioning weightings).

Distributional responses

- 5.7.73 This impact pathway will be considered following the NatureScot (2023f) guidance note. Distributional responses will be assessed using the matrix approach as recommended in the SNCB (JNCC *et al.*, 2022) and NatureScot (2023f) guidance for the species applicable seasons. Each seasonal assessment will be made against a Mean Seasonal Peak (MSP) abundance estimate of the Scoping Boundary plus 2 km buffer estimated from all birds recorded within this area, derived from site-specific DAS data. The inclusion of flying birds within displacement assessments will allow for any potential barrier effects from the Project to be accounted for.
- 5.7.74 In addition to following the SNCB guidance notes, the Applicant will undertake two displacement assessments, one following NatureScot recommended guidance and one using alternative data presented in the wider literature (Scenario A, Scenario B), as set out in the consultation technical note shared with stakeholders following the Scoping Workshop).
- 5.7.75 The Applicant notes NatureScot's encouragement to conduct SeabORD (Searle *et al.*, 2018) modelling, and their openness to further discussion.

Collision risk modelling

- 5.7.76 NatureScot Guidance Note 7 (NatureScot, 2025b) provides advice on collision risk modelling (CRM) which will be adopted in conjunction with the joint SNCB guidance (JNCC *et al.*, 2024). Following the guidance, modelling will be conducted using the sCRM Shiny app (Caneco and Humphries, 2022), adopting the recommended avoidance rates from SNCB guidance (JNCC *et al.*, 2024, based on Ozsanlev-Harris *et al.*, 2023). Both stochastic and deterministic approaches will be conducted.
- 5.7.77 Option 2 will be used for both approaches (Basic, using generic flight height data from Johnston *et al.*, (2014a; 2014b)). Mortality estimates for the worst-case and most-likely

scenarios (WCS, MLS) will be derived and presented per species and per month, season (breeding/non-breeding) and annually.

- 5.7.78 As noted in the consultation technical note shared with stakeholders following the Scoping Workshop, additional CRM using Applicant-led rates will be undertaken and presented separately. It is proposed that the flight speed will be derived from Skov *et al.*, (2018) and nocturnal activity factors based upon MacArthur Green, APEM and Royal HaskoningDHV (2015) data, however, the approach may be updated depending on any further studies or methodological refinements are available at the time the assessment is undertaken. Flying seabird densities for collision risk modelling will be derived from the site-specific DAS data. An SD value will be calculated using maximum (max), minimum (min), and selected percentiles from a distribution of mean density estimate.
- 5.7.79 The Applicant is aware that NatureScot only require the outputs from Option 2 of the Basic Band model be presented. Flight height data derived from the aerial surveys will be provided. However, owing to the technical difficulties in estimating flight height from aerial imagery, it is anticipated that insufficient flight height data will be available to derive robust flight height estimates to make Band Option 1 or 4 feasible for assessment.
- **5.7.80** As gannet and kittiwake have been scoped in for assessment of both displacement and collision risk, it is likely that there may be overestimation of predicted impacts on the species when the two impacts are combined, as a bird which is displaced would not be at risk of collision and vice versa. As such, the Project intends to undertake additional modelling with alternative flight speed and nocturnal activity input data. Results will be presented following SNCB guidance and the alternative approach using the below inputs and as presented in **Table 5.7.13**:
 - Flight speed:
 - Scenario A: NatureScot (2025b) flight speeds as derived from Pennycuick (1997) and Alerstam et al., (2007)
 - Scenario B: flight speeds derived from the more recent study by Skov et al., (2018)
 - Nocturnal activity:
 - Scenario A: NatureScot (2025b) nocturnal activity factor as derived from Garthe and Huppop (2004)
 - Scenario B: nocturnal activity factor based on those in Furness et al., (2018), Masden (2015), and Skov et al., (2018)

Parameter	Species	Deterministic		Stochastic	
		Α	В	Α	В
Flight speed	Kittiwake	13.1	8.71	13.1 ± 0.40	8.71 ± 3.16
(11/5)	Gannet	14.9	13.33	14.9 ± 0.00	13.33 ± 4.24
Nocturnal activity	Kittiwake	40	12	40.0 ± 0.12	12.00 ± 0.00
factor	Gannet	14	2	14.0 ± 0.10	2.00 ± 0.00

Table 5.7.13 Gannet and kittiwake collision risk input parameters

- 5.7.81 Within CRM, avoidance of turbines is accounted for through the use of species-specific avoidance rates, informed by JNCC *et al.*, (2024). Macro-avoidance is defined as "*bird avoidance responses to the presence of the wind farm occurring beyond the wind farm perimeter, considered to result in a redistribution of birds*" (Skov *et al.*, 2018). For gannet, evidence suggests that the species may exhibit higher macro-avoidance compared to other species, although this is likely to vary with location and other factors such as season (Pavat *et al.*, 2023).
- 5.7.82 If no account for macro-avoidance is made then it may lead to an over-estimation of final mortality estimates from collision, therefore it is proposed to apply a macro-avoidance correction of 70% during the non-breeding season for gannet. This is the midpoint of the range of macro-avoidance responses for the non-breeding season as reported by APEM (2022b) who undertook a literature review of gannet macro-avoidance, and within the range reported by Pavat *et al.*, (2023) (61% 100%), and is recommended by NatureScot (NatureScot, 2025b).
- 5.7.83 NatureScot guidance (NatureScot, 2025b) advises that there are insufficient data available for Scottish sites to apply this correction during the breeding season, so the correction will only be applied during the non-breeding season. The correction will be applied to site-specific density estimates of flying birds prior to data being put through the sCRM Tool (Caneco and Humphries, 2022).

Population viability analysis

- 5.7.84 Population Viability Analysis (PVA) will be undertaken, only when the level of predicted impacts exceeds agreed impact thresholds, to further predict population consequences of such predicted impacts for the Project alone and / or cumulatively with other plans and projects. It is proposed that the NE PVA tool (Searle *et al.*, 2019) will be used, where required. Within the NE PVA Tool, demographic rates are adopted from Horswill and Robinson (2015), but as there is an update currently under preparation, the most up-to-date agreed parameters will be used.
- 5.7.85 The Applicant's recommendation that the baseline is not forward projected, relates to advice provided by JNCC for PVA. Impacts should be assessed directly against the population most closely contemporaneous with the at-sea survey work (DAS programme) because this is recording the at sea activity of the birds from the population as it was at that time (i.e., the size of population). If the baseline is forward projected then it will overestimate or underestimate the population consequence, to unknown, albeit likely small, degree. Also, the

baseline should not be forward-projected for cumulative PVA due to the current limitations with the tool, albeit these may be addressed in future.

- 5.7.86 Requirement for PVA will be determined by whether predicted windfarm impacts increase baseline mortality rates by 0.02 percent points of the regional population, for both project alone and cumulative impacts. Additionally, for cumulative impacts, a secondary threshold of whether the Project alone contributes mortality meeting or exceeding 0.2 of a bird will be used to determine the need for PVA. The selection of appropriate demographic rates for use in the NE PVA tool will be determined through the consultation process.
- 5.7.87 NatureScot advised the scenarios presented in **Table 5.7.14** with regards to PVA thresholds.

Table 5.7.14 Scenarios for PVA thresholds as presented in advice from NatureScot to the Project received following the Scoping Workshop

Project alone percentage point decrease in adult survival rate	Cumulative percentage point decrease in adult survival rate	Project alone estimated mortality (birds per annum)	Project alone PVA required?	In-combination PVA required?
<0.02	<0.02	Any	No	No
<0.02	≥0.02	<0.2	No	No
<0.02	≥0.02	≥0.2	No	Yes
≥0.02	≥0.02	≥0.2	Yes	Yes

5.7.88 PVA requirements and reference population sizes for each species, will be based on the best available information at the time of undertaking the assessment and will be subject to consultation with key stakeholders.

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5.8 Fish ecology

Introduction

- 5.8.1 The fish ecology assessment will consider the potential likely significant effects on fish that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the potentially significant effects to be considered, those scoped out and how these will be assessed for the purpose of the EIA Report.
- 5.8.2 Fish ecology interfaces with other aspects which are being assessed and should be considered alongside the following sections:
 - Section 4.2: Climate Change: The interference with climate resilience with fish ecology is captured in the In-Combination Climate Impacts (ICCI) assessment.
 - Section 5.1: Marine geology, oceanography and physical processes: Changes to marine geology, oceanography and physical processes have the potential to directly or indirectly impact fish due to the reliance on physical processes during certain stages of their lifecycle. Therefore, the information from this assessment will inform the fish ecology assessment.
 - Section 5.2: Marine water and sediment quality: While assessment against environmental quality standard (EQS) is included in the marine water and sediment quality section, further assessment of effects of specific water quality changes may need to be addressed in the fish ecology section.
 - Section 5.3: Underwater noise and vibration: Underwater noise and vibration have the potential to impact fish principally through displacement, potentially injury, or mortality. Therefore, information from this assessment will inform the fish ecology assessment.
 - Section 5.4: Electromagnetic fields (EMF): EMF emissions from the Project have the potential to affect fish receptors. EMF is emitted from cables and could potentially cause behavioural changes or create a barrier effect to fish species. Therefore, information from this assessment will inform the fish ecology assessment.
 - Section 5.5: Benthic, epibenthic and shellfish ecology: The benthic ecology aspect includes species that live within the epibenthos and use the benthic environment as part of their life cycle and therefore there is a degree of overlap between these aspects. Some species may also rely on benthos as part of their diet. Therefore, information from this Section will inform the fish ecology assessment.
 - Section 5.6: Marine mammals: Marine mammals considered within the EIA will include some species that rely on fish as part of their diet and therefore impacts to fish could indirectly affect marine mammals. The information from the fish ecology section will inform the marine mammals assessment.
 - Section 5.7: Offshore ornithology: Several species of seabird are piscivorous and therefore there is an interrelationship between impacts to predators and potential prey.

The information from the fish ecology section will inform the offshore ornithology assessment.

- Section 5.9: Commercial fisheries: The commercial fisheries section includes commercially important species and fisheries data and there is an overlap between these sections. Information and data from this assessment will inform the fish ecology assessment as commercial fisheries has the potential to directly and indirectly impact fish ecology.
- Appendix 4A: Nature Conservation Marine Protected Areas (MPA) assessment: The MPA assessment will include MPAs that relate to protected fish ecology features and therefore must be considered together.

Legislation and policy context

- 5.8.3 This Section identifies the relevant legislation and policy context which has informed the scope of the fish ecology assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual international, national, and marine planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.8.4 In order to provide a robust evidence base, **Table 5.8.1** below presents a summary of legislation and policies relevant to the fish ecology assessment. This Section takes account of specific requirements to assess and address likely impacts on receptors and relevant environmental issues. This table does not quote the policies in full but rather states the relevance to this Section.

	Table 5.8.1	Relevant	legislation	and	policy	/
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Relevant legislation and policy	Relevance to the assessment		
Legislation			
International: EC Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora	The directive sets out the conservation objectives for listed Annex II species. The regulations enact this into UK law.		
National: Conservation (Natural Habitats, &c) Regulations 1994 (as amended) National: Conservation of Habitat and Species Regulations 2017 (as amended); National: Conservation of Habitats and Species (Amendment (Scotland) (EU Exit) Regulations 2019; and National: Conservation of Offshore Marine Habitats and Species Regulations 2017	 Together these pieces of legislation transpose the requirements of the EC Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive) into UK legislation. The legislation aims to conserve natural habitats and wild flora and fauna by protecting sites that are internationally important for threatened habitats and species (European sites) and provides a legal framework for species requiring strict protection, known as European Protected Species (EPS). The Conservation of Offshore Marine Habitats and Species Regulations 2017 ensures the protection of marine habitats and species in the UK's Exclusive 		

Relevant legislation and policy	Relevance to the assessment
	shelf. It establishes Marine Protected Areas (MPAs), including Special Areas of Conservation (SACs), and provides rules for assessing and mitigating impacts from offshore developments.
Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003	• Sets out the key governing legislation for Scotland's district salmon fishery boards, offers a good practice for fishing the species and gives protection to juvenile and spawning salmon.
Electricity Act 1989 (Schedule 9)	 Sets out the requirements for the Preservation of amenity and fisheries in Scotland.
The Convention on the Conservation of Migratory Species of Wild Animals (the 'Bonn Convention')	• Requires the conservation of migratory species and their habitats by providing strict protection for endangered migratory species (Appendix I of the Convention) and lists migratory species which would benefit from multilateral agreements for conservation and management (Appendix II of the Convention).
The Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention')	 Aims to ensure conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention).
International: Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR) 1992 Strategy of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic 2030	 The OSPAR Convention contains a series of annexes, some of which are relevant to this fish ecology assessment: Annex III: Prevention and elimination of pollution from offshore sources; Annex V: On the protection and conservation of the ecosystems and biological diversity of the maritime area. The OSPAR Strategy for the Protection and Conservation for Ecosystems and Biological Diversity foresees that the OSPAR Commission will identify species and habitats in need of protection. The OSPAR list of threatened and/or declining species and habitats has been developed to meet this commitment. Continued implementation of the convention through to 2030 is set out in The North-East Atlantic Environment Strategy (NEAES) adopted on 01 October 2021.
Convention on Biological diversity post-2020 global biodiversity framework	 Sets out the 2050 goals with 2030 milestones, which aim to reduce threats to biodiversity by 2030. Specific target relevant to fish ecology are: Target 1: ensuring that all land and sea areas globally are under integrated biodiversity-inclusive spatial planning addressing landand sea-use change; Target 2: ensuring that at least 20% of degraded freshwater, marine and terrestrial ecosystems are under restoration, focusing on priority ecosystems; Target 3: ensuring that at least 30% globally of land areas and of sea areas, especially areas of particular importance for

Relevant legislation and policy	Relevance to the assessment
	 biodiversity, are conserved through effectively and equitably manage, and integrated into wider landscapes and seascapes; Target 4: ensuring active management actions to enable the recovery and conservation of species; Target 6: managing the pathways for the introduction of invasive and non-native species (INNS), preventing or reducing their rate of introduction and establishment by at least 50%, and control or eradicate INNS to eliminate or reduce their impacts, focusing on priority species and priority sites; and Target 8: minimising the impact of climate change on biodiversity, contribute to mitigation and adaptation through ecosystem-based approach, contributing at least 10GtCO2 per year to global mitigation and adaptation effects, and ensure that all mitigation and adaptation efforts avoid adverse impacts on biodiversity.
International: Marine Strategy Framework Directive (MSFD) (2008/56/EC) National: Marine Strategy Regulations 2010 National: Marine Environment (Amendment) (EU Exit) Regulations 2018	 Paragraph 3.8.8 in Chapter 3 sets out the legislative framework for MSFD. MSFD sets out measures for Good Environmental Status (GES) in the marine environment. Descriptors relevant to this technical assessment include: Descriptor 1 – Biological diversity Descriptor 2 – Non-indigenous species; Descriptor 4 – Elements of marine food web Descriptor 6 – Sea floor integrity Descriptor 7 – Alteration of hydrographical conditions Descriptor 8 – Contaminants Descriptor 10 – Marine litter.
National: Marine and Coastal Access Act 2009 National Policy	Relevant marine plan(s) and MPA(s) will be considered in the fish ecology assessment. In conjunction with the EIA, an MPA assessment would be completed. (see Appendix 4B: Nature Conservation Marine Protected Area Assessment)
Approved National Planning Framework 4 (NPF4) (2023)	A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A: Planning Policy Framework . Policy of relevance to this area of technical assessment include: • Policy 1: Tackling the climate and nature crisis.
Marine Policy	

UK Marine Policy Statement (2011) •

Sets out requirements for biodiversity to be protected, conserved and where appropriate recovered and loss halted.

Relevant legislation and policy	Relevance to the assessment
	 Requirements for healthy marine and coastal habitats can occur across their natural range and are able to support strong biodiverse biological communities and the functioning of healthy, resilient and adaptable marine ecosystems. Requirements for the oceans to have viable populations of representative, rare, vulnerable and valued species.
Scottish National Marine Plan (2015) GEN 9 – Natural Heritage GEN 10 – Invasive Non-Native Species GEN 13 – Noise GEN 21 – Cumulative Impacts WILD FISH 1 FISHERIES 1 FISHERIES 2 FISHERIES 3 CABLES 2	 GEN 9 requires development: to comply with legal requirements for protected areas and protected species; not result in significant impact on the national status of Priority Marine Features (PMFs); and protect, and, where appropriate, enhance the health of the marine area. GEN 10 supports opportunities to reduce the introduction of invasive non-native species to a minimum or proactively improve the practice of existing activity should be taken when decisions are being made. Codes of practice for INNS should be complied with. GEN 13 states that development should avoid significant adverse effects of man-made noise and vibration, especially on species sensitive to such effects. GEN 21 requires for cumulative impacts affect the ecosystem to be addressed. WILD FISH 1 notes a requirement to assess the impact of development on diadromous fish species and where evidence of impacts on salmon and other diadromous species is inconclusive, it states that mitigation should be adopted where possible and information on the impact on diadromous species from monitoring should be used. FISHERIES 1, FISHERIES 2 and FISHERIES 3 include a requirement to take account of the EU's Common Fisheries Policy, Habitats Directive, Birds Directive and MSFD. Developments and activities should take account of the potential impacts on: fish stocks and resultant fishing opportunities; fishing grounds, commercially fished grounds; and displacement of fish stocks, the socioeconomic costs to fishers and their communities and other marine users. CABLES 2 requires the following to be taken into account when reaching decision regarding cable development: cables should be suitably routed to provide sufficient requirements for installation and cable protection; new cables should implement methods to minimise impacts on th

seabed and other users; and

Relevant legislation and policy	Relevance to the assessment
	where burial is demonstrated not to be feasible, cables may be suitably protected; and consideration of the need to reinstate the seabed, undertake post-lay surveys and monitoring and carry out remedial action where required.
Sectoral Marine Plan – Offshore Wind (2020)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. Section 4.1 lists a range of potential adverse impacts identified through plan-level SEA, HRA and SEIA which require further consideration through project level assessments, including: "loss of / damage to marine and coastal habitats; effects from pollution releases on species and habitats; effects from the introduction and spread of Invasive Non Native Species; and effects on ecological status".

Technical guidance

5.8.5 Technical guidance that has been used to define the assessment is set out in **Table 5.8.2** below. Additional guidance may be applicable during the EIA process, and this will be referred to as appropriate in the EIA Report.

Guidance reference	Relevance to the assessment
Joint Nature Conservation Committee (JNCC) Monitoring Guidance for Marine Benthic Habitats (Noble-James <i>et al.</i> , 2018)	Guidance combines established ecological theory and protocols with JNCC advice and recommendations on benthic monitoring, by means of a step-wise framework which details key stages in the development of a monitoring plan.
Scottish Natural Heritage (SNH) Identification of Priority Marine Features (Howson <i>et al.</i> , 2012)	The SNH report describes the process used to identify a list of priority marine habitats and species of conservation importance. The guidance sets out a PMF checklist to identify: the PMFs which may be impacted; how the PMF may be impacted; the magnitude of change and the significance. This guidance will be incorporated into the fish ecology EIA.
A Review of Assessment Methodologies for Offshore Wind Farms (Collaborative Offshore Wind Research into The Environment (COWRIE))	This report discusses the potential of high-definition cameras; reviews boat-based and aerial survey methodologies; reviews methodologies for analysing data; and recommends methodologies for analysing data. Methodologies described within the review will be considered and, as appropriate, drawn upon within the fish ecology EIA.

Table 5.8.2 Relevant technical guidance

Guidance reference	Relevance to the assessment
METH-08-08 (Maclean <i>et al</i> ., 2009)	
British Standards Institute (BSI) EIA for Offshore Renewable Energy Projects (BSI, 2015)	The BSI guide provides an overview on undertaking EIAs for offshore renewable projects. This guidance has been used to identify relevant effects to be considered and assessed for fish within the EIA.
Marine Directorate, Consenting and Licencing Guidance: For Offshore Wind, Wave and Tidal Energy Applications (Scottish Government, 2018)	Marine Directorate's consenting and licencing manual provides guidance on applying for s.36 consents and marine licences for offshore renewables. The Guidance states an EIA must take account of the OSPAR List of threatened and/or declining species and habitats. Designated sites should be fully considered including, SACs; SPA; SCIs; cSACs; pSPAs and pSACs. The Guidance states a network of Nature Conservation MPAs have been designated in Scottish waters under the Marine and Coastal Access Act 2009, protecting habitats and species. Under section 126 of the Marine and Coastal Access Act 2009 Public Authorities are required to consider whether a project is capable of affecting (other than insignificantly) a protected feature in an MPA. Protected habitats, species and sites will be considered within the fish ecology EIA, taking the guidance on effects and their assessment into account.
Marine Evidence based Sensitivity Assessment (MarESA) (Tyler-Walters <i>et al.</i> , 2023)	Sensitivity assessments determine the resistance (or tolerance) of a feature to a pressure and the ability to recover following the cessation of the pressure, termed resilience. Resistance and resilience descriptors are informed by the MarESA approach for benthic features and highly mobile species. This guidance will be incorporated into the fish ecology EIA assessment, assessing the sensitivities of biotopes within the study area.
Marine Directorate's Feature Activity Sensitivity Tool (FeAST) (Marine Directorate, 2022)	FeAST is a web-based application which allows users to investigate the sensitivity of marine features in Scotland's seas, to pressures arising from human activities. This guidance will be incorporated into the fish ecology EIA assessment, assessing the sensitivities of biotopes within the study area.
NatureScot advice on marine non-native species (NatureScot, 2022)	Provides guidance on identification of non-native species; and preventing introduction, including Marine Biosecurity Planning guidance. This guidance will be incorporated into the fish ecology assessment and embedded environmental measures, in particular in relation to the potential spread of INNS.
Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy project (Judd, 2012)	This report provides guidelines for data acquisition to support marine environmental assessments for offshore renewable energy projects. This guidance has been incorporated into the fish ecology scoping assessment on acquiring data for the study area.
OSPAR, Guidance on Environmental Considerations for Offshore Wind Farm Development (OSPAR Commission, 2008)	The purpose of the OSPAR guidance note is to assist developers in the identification and consideration of some of the issues associated with determining the environmental effects of offshore wind farm developments for consideration in the fish ecology scoping assessment and EIA.

Guidance reference	Relevance to the assessment
Guidelines for Ecological Impact Assessment in the United Kingdom (UK) and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2022)	These Guidelines have been produced to promote good practice in Ecological Impact Assessment relating to terrestrial, freshwater, coastal and marine environments in the (UK) and Ireland.
Sound exposure guidelines for fishes and sea turtles: A technical Report (Popper <i>et</i> <i>al.</i> , 2014)	Peer reviewed guidelines providing directions and recommendations for setting underwater noise impact criteria (including injury and behavioural criteria) for fish, based on their anatomy and available information on hearing thresholds.
Strategic Review of Offshore Wind Farm Monitoring Data Associated with Food and Environmental Protection Act (FEPA) Licence Conditions: Fish (Report No. ME1117). Report by Cefas (Walker <i>et al.</i> , 2009)	This report considers the FEPA licence conditions relating to fish for nine offshore windfarms the fish surveys undertaken under the FEPA licence. It draws conclusions as to which license conditions have been successfully applied, those that might no longer be necessary, and how data collection could be improved.
Offshore Wind Marine Environmental Assessments: Best practice advice for evidence and data standards. Phase 1 (Parker <i>et al.</i> , 2022)	Sets out Natural England's expectations for pre-application baseline data for designated nature conservation and landscape receptors to support offshore wind applications. Whilst led by Natural England, the findings remain relevant to the Project.

Study area

- 5.8.6 The study area for the fish ecology assessment is defined as the Scoping Boundary together with ZOIs relating to various types of impact. Figure 5.8.1: Fish ecology study area in Appendix 1A identifies the study area as the Scoping Boundary with a ZOI buffer based on the tidal excursion, coastal processes and potential spread of underwater noise.
- 5.8.7 The initial ZOI buffer encompasses the area over which suspended sediments may travel following disturbance as a result of the Project's activities, extending 15 km around the Scoping Boundary. A precautionary approach of 15 km has been used for the tidal excursions, as the Atlas of UK Marine Renewable Energy Resources found a mean tidal excursion in the vicinity of the Project of approximately 5 km (ABPmer, 2008). For some species the study area may be greater than 15 km, due to their mobile nature. Species that have large ranges will be assessed accordingly. Species that spend part of their lifecycle in both the aquatic and marine environments will be considered in this assessment.
- 5.8.8 It is also acknowledged that a larger ZOI will apply to potential impacts of underwater noise. It is not possible to accurately quantify this at this stage, but it will as a minimum cover the area within which a temporary injury or behavioural effect to fish might occur due to noise. At this stage an indicative distance of 50 km from the Scoping Boundary has been assumed (see **Figure 5.8.1, Appendix 1A**).
- 5.8.9 The study area will be reviewed and amended in response to such matters as refinement of the Project components, the identification of additional impact pathways and in response, where appropriate, to feedback from consultation.

Consultation

5.8.10 This Section has been informed by engagement and discussion with various stakeholders, including an online workshop with Marine Directorate, (MD-LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), NatureScot, Royal Society for the Protection of Birds (RSPB), Scottish Fishermen's Federation (SFF) and the Scottish White Fish Producers Association Ltd (SWFPA) on 07 November 2024. **Table 5.8.3** provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this report.

Table 5.8.3 Consultation

Consultee	Comments and considerations	How this is accounted for
NatureScot	 ScotMer publications that could be considered at this stage of the Project: Diadromous fish in the context of offshore wind Genetic stock of Atlantic Salmon NatureScot agreed that primary entanglement could be scoped out but recommended that secondary entanglement be scoped in at this stage of the Project. NatureScot outlined that although the risk of secondary entanglement is low there is uncertainty due to the small number of large-scale offshore windfarms to analyse, it would be better to precautionarily scope this into the EIA. 	The ScotMer publications highlighted will be reviewed as part of the fish ecology assessment. Secondary entanglement will be scoped in for assessment as part of the fish ecology assessment.
	NatureScot explained that the impact of oil and gas networks on entanglement is not monitored and so there is not enough data at the moment. NatureScot explained that the oil and gas platforms are protected by a 500 m exclusion zones for fisherman and so they would not expect secondary entanglement to take place, suggested this may not be the case for proposed offshore wind developments.	Potential impacts from INNS and habitat alteration have been scoped in for assessment as part of the fish ecology assessment.
	Recommend scoping in habitat alteration and invasive non-native species (INNS) at this stage of the Project as it is uncertain as to how effective the mitigation methods are and so the risks need to be assessed. NatureScot commented on the cumulative assessment and explained that cumulative effects do not need to be spatially overlapping and could also include impacts that could affect a population or	The cumulative effects assessment of the fish ecology EIA will consider potential impacts that may not be spatially overlapping but have the potential to affect the same receptor.
	species outside of the ZOI, even if the direct impacts are not overlapping.	
SWFPA	Highlighted significant amount of boulder displacement that typically takes place for offshore wind infrastructure. Questioned whether impact of this displacement on the seabed environment is captured anywhere in the scope.	Boulder displacement will be scoped in for assessment as part of the fish ecology assessment under habitat loss and disturbance.

Consultee	Comments and considerations	How this is accounted for
SFF	SFF queried if herring spawning had been found in the Scoping Boundary. SFF noted recent ICES advice relating to spawning sites in the North Sea and will circulate this with the wider team. There is pelagic interest within the Scoping Boundary for herring spawning areas. Suggested that Scottish Fisherman's Federation (SFF) could share the data undertaken for their member vessels regarding herring spawning areas.	Herring spawning data provided by SFF and recent ICES advice relating to spawning sites in the North Sea will be reviewed as part of the fish ecology assessment.

Assessment methodology

Introduction

5.8.11 The Project-wide approach to the assessment methodology is set out in **Chapter 4**: **Approach to Scoping and EIA**. However, whilst this has informed the approach that has been used in this fish ecology section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the fish ecology assessment.

Establishing the Baseline

- 5.8.12 Given that fish are highly mobile and range widely, it is not feasible to carry out specific site surveys to identify fish species occurrence in the study area. Rather, a desk top study will be carried out using multiple publicly available data sources, many of which provide large-scale coverage of fish species distribution within the North Sea.
- 5.8.13 The desk-based review will focus on sourcing data that have been collected within or in close proximity to the study area for the fish ecology assessment, including but not limited to:
 - peer-reviewed scientific literature;
 - grey literature;
 - landings data, reported by Marine Directorate at an International Council for Exploration of the Seas (ICES) rectangle level;
 - previous relevant EIAs and related reports; and
 - citizen science sources (e.g. Basking Shark Watch).
- 5.8.14 A list of the data sources to support this Scoping Report and to be used in the final assessment have been highlighted in **Table 5.8.8**.

The Assessment Process

5.8.15 To enable the potential impact of the Project to be assessed, a description of the existing fish communities, focusing particularly on any areas or features of conservation interest, will be produced.

- 5.8.16 Potential impacts that may occur directly to fish receptors and indirectly through impacts to physical, chemical and biological environment as a result of the planned construction, O&M and decommissioning will then be identified. The sensitivities of the communities present to the types of impact expected from offshore infrastructure during all phases of development will be evaluated in order to determine the residual environmental effects. Where necessary, mitigation measures will be proposed.
- 5.8.17 In the event that the Project has a direct impact on any designated conservation sites, as a result of qualifying habitats or species that they support, then the requisite information will be provided alongside the EIA to assist the Competent Authority to carry out an Appropriate Assessment (AA).
- 5.8.18 Cumulative impacts will be assessed by taking into consideration any other relevant developments, proposed or existing, that are in the vicinity of the development zone, and which have the potential to affect the same features.

Assessment Criteria

5.8.19 The sensitivity and value of the features and the magnitude of impact specific to fish ecology are provided in the following sections. This assessment is also conducted with reference to Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2022).

Sensitivity

- 5.8.20 The sensitivity of a feature is dependent upon its adaptability (the degree to which a feature can avoid or adapt to a change), tolerance (the ability of a feature to absorb stress or disturbance without changing character) and recoverability (the temporal scale and extent to which a feature will recover following an effect).
- 5.8.21 Scales for the sensitivities of fish species and habitats have been developed using a fourpoint scale (high, medium, low or negligible). These scales have been developed with reference to the Marine Life Information Network (MarLIN) MarESA (Tyler-Walters, 2023). The scales for resistance and resilience are provided in **Table 5.8.4** and **Table 5.8.5** and the matrix of sensitivity scores is provided in **Table 5.8.6**.
- 5.8.22 FeAST (the Feature Activity Sensitivity Tool developed by Marine Directorate, Nature Scot and the Joint Nature Conservation Committee (JNCC)) has also been used in assessment of fish species of conservation value.

Table 5.8.4 Assessment scale for resistance (tolerance) to a defined intensity of pressure

Resistance	Definition
High	No significant effects on the physicochemical character of habitat and no effect on population viability of key / characterising species but may affect feeding, respiration and reproduction rates.
Medium	Some mortality of species (can be significant where these are not keystone structural / functional and characterising species) without change to habitats relates to the loss <25% of the species or habitat component.

Resistance	Definition
Low	Significant mortality of key and characterising species with some effects on the physicochemical character of habitat. A significant decline / reduction relates to the loss of 25-75% of the extent, density or abundance of the selected species or habitat component, e.g. loss of 25-75% of the substratum.
None	Key functional, structural, characterising species severely decline and / or physicochemical parameters are also affected e.g. removal of habitats, causing a change in habitat types. A severe decline / reduction relates to the loss of 75% of the extent, density or abundance of the selected species or habitat component, e.g. loss of 75% substratum (where this can be sensibly applied).

Table 5.8.5 A	ssessment scale	for resilience	(recovery)
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Resilience	Definition
High	Full recovery back to baseline levels within 2 years.
Medium	Full recovery back to baseline levels within 2-10 years.
Low	Full recovery back to baseline levels within 10-25 years.
Very low	Negligible or prolonged recovery possible, at least 25 years to recover structure and function.

Table 5.8.6 Definitions of sensitivity levels for fish ecology

	Resistance						
Resilience	None	Low	Medium	High			
Very low	High	High	Medium	Low			
Low	High	High	Medium	Low			
Medium	Medium	Medium	Medium	Low			
High	Medium	Medium	Low	Negligible			

5.8.23 In sections where several sensitivity levels are given for features against a potential impact, professional judgement will be used for the assessment.

Value

5.8.24 In addition, the 'value' of the receptor may need to be factored into the assessment, for example where a species provides a key ecological service or is of conservation importance. The definitions of value levels have been developed using a four-point scale and example definitions are provided in **Table 5.8.7**.

Table 5.8.7 Definitions of fish ecology value

Value	Definition
High	Nationally important / rare with limited potential for offsetting / compensation. Habitats and species protected under international law (e.g. Annex I habitats within a SAC boundary).
Medium	<u>Regionally important</u> / rare with limited potential for offsetting / compensating. Habitats protected under national law (e.g. Annex I habitats not within an SAC boundary). UK Biodiversity Action Plan (BAP) priority habitats and species). Species / habitats that may be rare or threatened in the UK.
Low	Locally important / rare; regional UK BAP priority habitats. Habitats or species that provide prey items for other species of conservation value.
Negligible	Habitats and species which are not protected under conservation legislation and are not considered to be particularly important or rare.

5.8.25 It should be noted that high value and high sensitivity are not necessarily linked within a particular impact. A feature could be of high value (e.g. an Annex II species) but have a low or negligible physical / ecological sensitivity to an effect – it is important not to inflate impact / significance just because a feature is 'valued'. This is where the narrative behind the assessment is important; the value can be used where relevant as a modifier for the sensitivity assigned to the feature.

Magnitude

- 5.8.26 Example definitions of the magnitude levels for a generic feature are given in **Table 4.2.2** in **Chapter 4**.
- 5.8.27 In sections where several magnitudes are given for features against a potential impact, professional judgement will be used and justified for the assessment.

Impact significance

- 5.8.28 Following the identification of a features value, sensitivity and magnitude of the impact, it is possible to determine the significance of the effect. The matrix provided in **Plate 4.2.2** in **Chapter 4** (and the definitions of sensitivity, value, and magnitude) in **Table 4.3** in **Chapter 4** is used as a framework to aid in determination of the impact assessment.
- 5.8.29 Where possible, the impact on fish ecology is based upon quantitative accepted criteria, together with the use of value judgement and expert interpretation to establish to what an extent an effect is significant.

Baseline conditions

Data sources

5.8.30 A desk-based review of literature to support this Scoping Report highlighted the following data sources, which provide coverage across large parts of the Project's fish ecology study area and the wider region. The list of desk-based sources is provided in **Table 5.8.8**.

Source	Date	Summary	Coverage of study area
Marine Directorate Information for fisheries sensitivity maps, spawning and nursery grounds	Accessed 2025	Marine Directorate Information has a range of species-specific information as well as downloadable data in the form of Geographical Information System (GIS) layers. The information covers the UK and includes the Project area (available online: <u>https://marine.gov.scot/information/fisheries-</u> <u>sensitivity-maps</u>).	Full coverage of the study area.
Marine Information Network (MarLIN)	Accessed 2025	North Sea fish data (available online: <u>https://www.marlin.ac.uk/</u>).	Full coverage of the study area.
North Sea habitats by European Marine Observation and Data Network (EMODnet)	Accessed 2025	EMODnet broad-scale seabed habitat map for Europe of physical habitats (available online: https://www.emodnet- seabedhabitats.eu/access-data/launch-map- viewer/) is a predictive habitat map which covers the seabed of a large area of European waters including the North Sea. Habitats are described in the European Nature Information System (EUNIS) and MSFD predominant habitat classifications and predicted based on a number of physical parameters. Associated confidence maps are also available which give a break down confidence in predicted habitats into high, medium, and low.	Full coverage of the study area.
Ocean Biodiversity Information System	Accessed 2025	Has a range of different species from various sources. It includes the original data sets, which can be downloaded as layers for various species. It has a global coverage, but some areas do have less data points than others (available online <u>https://mapper.obis.org/</u>).	Partial coverage of the study area.
ICES data and reports	Accessed 2025	ICES has data from fish trawl surveys and catch data, which provide an understanding of the species found throughout the North Sea (available online: <u>https://www.ices.dk/data/data- portals/Pages/default.aspx</u>).	Full coverage of the study area.
SAC designation documents by JNCC	Accessed 2025	SAC designation documents and site management plans (available online: <u>https://jncc.gov.uk/our-work/special-areas-of-conservation-overview/</u>).	Designated site- specific data.
Natura 2000 standard data form by JNCC	Accessed 2025	Nature 2000 standard data forms published by the JNCC.	Designated site- specific data.

Table 5.8.8 Key sources of fish ecology data

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Source	Date	Summary	Coverage of study area
Distribution of spawning and nursery grounds defined by Coull <i>et al.,</i> (1998) and Ellis et al., (2012)	Accessed 2025	Widely used dataset identifying the known spawning and nursery grounds of multiple fish species in UK and surrounding waters.	Full coverage of the study area
North Sea fish data held by MarLIN	Accessed 2025	North sea benthic data (available online: <u>https://www.marlin.ac.uk/</u>).	Partial coverage of the study area.
North Sea benthic habitats held by Multi-Agency Geographic Information for the Countryside (MAGIC)	Accessed 2025	Online geographical information system which provides data on the natural environment and conservation designations from across government (available online: <u>https://magic.defra.gov.uk/magicmap.aspx</u>).	Full coverage of the study area.
Marine Protected Areas by NatureScot	Accessed 2025	Marine Protected Area Reports from NatureScot (available online: https://www.nature.scot/professional- advice/protected-areas-and- species/protected-areas/marine-protected- areas-mpas).	Partial coverage to study area.
North East Scotland Biological Records Centre (NESBReC)	Accessed 2025	Provides data on fish species and observations/ records of different species from the area (available online: <u>https://nesbrec.org.uk/</u>).	Partial coverage of the study area.
Priority Marine Habitats by NatureScot and JNCC	Accessed 2025	Priority marine habitats information from NatureScot and JNCC (available online: <u>https://www.nature.scot/doc/priority-marine-features-scotlands-seas-habitats</u>).	Partial coverage of the study area.
North Sea habitats held by NatureScot	Accessed 2025	NatureScot Habitat Map of Scotland (HabMoS) will publish all available habitat data and manage a programme to survey those areas for new information (available online: <u>https://marinescotland.atkinsgeospatial.com/n</u> <u>mpi/default.aspx?layers=958</u>).	Full coverage of the study area.
UK sea fisheries annual statistics reports (Marine Management Organisation (MMO), 2024)	Accessed 2025	Information on landings of the UK fishing fleet, and the status of commercial fish stocks.	Full coverage of the Study Area

Current baseline

- 5.8.31 The study area is located in the North Sea, which is known to have variable seabed conditions. The main EUNIS habitats found offshore within the Project area consist of deep circalittoral coarse sediment and deep circalittoral sand with the wider study area dominated by those habitats but with additional portions of deep circalittoral mud and deep circalittoral mixed sediments present (EUSeaMap, 2023). Such soft substrates in the North Sea support a diverse fish community, comprising species that either burrow in the substrate or feeds on the infauna, such as flatfish, dragonets, gurnards and gobies.
- 5.8.32 Closer to the shore (outside of the study area) there is an increasing prevalence of harder substrates, which support a different assemblage of fish species including those that habitually shelter in crevices and among stones, as well as those that grows on epibionts rather than feeding on infaunal benthos, including wrasses, bullrout and blennies.
- 5.8.33 The Greater North Sea area is inhabited by approximately 230 fish species (OSPAR, 2013). For the purpose of this scoping assessment fish have been placed into the following broad receptor groups based on their ecology:
 - pelagic;
 - demersal;
 - elasmobranchs; and
 - migratory fish.
- 5.8.34 It should be noted that shellfish species are assessed in **Chapter 5.5: Benthic, epibenthic and shellfish ecology** and are therefore not included within this Section.

Pelagic fish species

- 5.8.35 Pelagic fish are species that spend the majority of their life cycle within the water column. Most pelagic species are highly mobile and will move depending on food availability as well as exhibiting seasonal migratory patterns. Their distribution is therefore significantly influenced by hydrographic conditions, for example they may congregate at fronts where food is more abundant. Hydrographic factors are also important for the dispersal of eggs and larvae of many species. Some pelagic species such as Atlantic herring *Clupea harengus* are, however, benthic spawners and have specific habitat requirements for egg laying, which may mean that they are sensitive to habitat loss.
- 5.8.36 Key pelagic species found within the region include commercially important species such as Atlantic herring and Atlantic mackerel *Scomber scombrus* (the most important UK species by value) as well as ecologically important species including European sprat *Sprattus sprattus*, which are a key prey species for larger fish, marine mammals, and birds. Other pelagic species that are likely to occur within the area (based on MarLIN data) and are listed as a Scottish Priority Marine Feature (PMF), in Annex II of the Bern Convention or as a UK Post-2010 Biodiversity Framework species are listed below (Coull *et al.*, 1998; Paramor *et al.*, 2009; Ellis *et al.*, 2012):
 - Atlantic bluefin tuna *Thunnus thynnus*;
 - Atlantic herring;
 - Atlantic mackerel;
 - blue whiting *Micromesistius poutassou*;

- European sprat; and
- horse mackerel *Trachurus trachurus*.

Pelagic fish spawning and nursery grounds

- 5.8.37 Pelagic fish spawning data indicate that Atlantic herring, Atlantic mackerel, and European sprat spawn within the fish ecology study area, and with Atlantic herring and European sprat spawning within eastern area of the Scoping Boundary, whereas Atlantic mackerel and blue whiting are not shown to spawn within the Scoping Boundary (see **Figure 5.8.2: Spawning and nursing grounds** in **Appendix 1A**).
- 5.8.38 For example, Atlantic herring play an important role in the North Sea food web as they are food resource for many species. Atlantic herring have defined spawning areas and based on their spawning times they have been divided into sub-populations. The sub-population off the coast of northeast Scotland is known as the Buchan population and spawn around September/October. Atlantic herring is known to deposit adhesive eggs to a variety of substrates in high energy and/or structurally complex environments, between depths of 1-250m (Frost & Diele, 2022).
- 5.8.39 Nursery grounds for Atlantic mackerel, Atlantic herring, blue whiting, and European sprat exist within the fish ecology study area, with nursing grounds present across all of the Scoping Boundary for Atlantic mackerel, Atlantic herring, and blue whiting and across the eastern area of the Scoping Boundary (see **Figure 5.8.2: Spawning and nursing grounds** in **Appendix 1A**).
- 5.8.40 **Table 5.8.9** shows a summary of the spawning and nursery for pelagic fish and whether they overlap with the fish ecology study area, and level of protection (Coull *et al.*, 1998; Ellis *et al.*, 2012; MarLIN, 2022).

Species	Overlap wit ecology study	with the fish study area		-	PMF	sity	
	Spawning Ground	Nursery Ground	UK BAP species	IUCN Rec List	Scottish	Scottish Biodivers List	OSPAR
Atlantic bluefin tuna	-	-	Y	Least concern	Ν	N	Y
Atlantic Herring	Y	Y	Y	Least concern	Y	Ν	Ν
Atlantic mackerel	Y	Y	Y	Ν	Y	Ν	Ν
Blue whiting	Ν	Y	Y	Ν	Ν	Ν	Ν
European sprat	Y	Y	Ν	Ν	Ν	Ν	Ν
Horse mackerel	Ν	Ν	Y	Ν	Y	N	Ν

Table 5.8.9 North Sea pelagic species fish of conservation importance (Coull *et al.*, 1998; Ellis *et al.*, 2012; MarLIN, 2022)

Demersal fish species

- 5.8.41 Demersal fish are species which spend the majority of their time on or near the seabed and tend to be bottom feeders. This group includes some of the UK's most commercially important species such as Atlantic cod *Gadus morhua*, haddock *Melanogrammus aeglefinus* and European plaice *Pleuronectes platessa*. Demersal fish distribution is principally determined by hydrography and sediment type (abiotic factors), but interspecific competition and predator-prey interactions are also important for this group (biotic factors).
- 5.8.42 Demersal fish species that are likely to occur within the area and are listed as a Scottish PMF, in Annex II of the Bern Convention or as a UK Post-2010 Biodiversity Framework species are listed below (Coull *et al.*, 1998; Paramor *et al.*, 2009; Ellis *et al.*, 2012):
 - Atlantic cod;
 - haddock;
 - saithe Pollachius virens;
 - whiting *Merlangius merlangus*.
 - European hake Merluccius merluccius;
 - ling Molva molva;
 - Norway pout *Trisopterus esmarkii*;
 - Atlantic halibut Hippoglossus hippoglossus;
 - Greenland halibut Reinhardtius hippoglossoides;
 - European plaice;
 - lemon sole *Microstomus kitt*;
 - common sole Solea solea;
 - common goby Pomatoschitus microps;
 - sand goby *Pomatoschitus minutus*;
 - sandeel Ammodytes spp.; and
 - anglerfish / sea monkfish Lophius piscatorius.

Demersal fish spawning and nursery grounds

- 5.8.43 Demersal fish spawning data indicate that Atlantic cod, whiting, Norway pout, European plaice, lemon sole, and sandeel spawn within the fish ecology study area, and with Atlantic cod, whiting, Norway pout, lemon sole and sandeel spawning within the Scoping Boundary, whereas ling, European hake, anglerfish, haddock, saithe, and common sole are not shown to spawn within the Scoping Boundary (see **Figure 5.8.2: Spawning and nursing grounds in Appendix 1A**).
- 5.8.44 Nursery grounds for Atlantic cod, haddock, whiting, European hake, ling, European plaice, lemon sole, sandeel, Norway pout, and anglerfish exist within the fish ecology study area, with nursing grounds present across all of the Scoping Boundary whereas saithe, and common sole are not shown to spawn within the Scoping Boundary (see **Figure 5.8.2**:

Spawning and nursing grounds in Appendix 1A). Figure 5.8.3: Predicted presence of buried lesser sandeels in Appendix 1A shows spawning and nursery grounds for sandeel.

- 5.8.45 Sandeel play a key role in the North Sea food web and many species rely on them as a source of food. Sandeel are particularly vulnerable as they require a specific substratum (mainly consisting of medium to coarse sand and low silt) for their habitat requirements (Holland *et al.*, 2005). Sandeel spend autumn and winter months lying dormant in the sediment, apart from a brief emergence to spawn. During the spring and summer months they are more active, moving between the seabed and water column diurnally. Sandeel that have settled are rarely found at depths greater than 30 m (Jensen *et al.*, 2011, Greenstreet *et al.*, 2010, Rowley, 2008). Due to sandeels' ecological importance and habitat preferences they are vulnerable to disturbance through direct habitat loss or indirect changes to the seabed (Coull *et al.*,1998).
- 5.8.46 **Table 5.8.10** shows a summary of the spawning and nursery for demersal fish and whether they overlap with the fish ecology study area, and level of protection (Coull *et al.,* 1998; Ellis *et al.,* 2012; MarLIN, 2022).

Table 5.8.10 Demersal fish species listed above, and the level of protection under national and international legislation (Coull *et al.*, 1998; Ellis *et al.*, 2012; MarLIN, 2022)

Species	Overlap with the fish ecology study area		UK BAP IUCN Red List species	Scottish PMF	Scottish Biodiversity	OSPAR	Bern Convention	
	Spawning Ground	Nursery Ground				List		
Atlantic cod	Y	Y	Y	Vulnerable	Y	Y	Y	N
Haddock	Ν	Y	Ν	Vulnerable	Ν	Ν	Ν	Ν
Saithe	Ν	Ν	Ν	Ν	Y	Ν	Ν	Ν
Whiting	Y	Y	Y	Ν	Y	Y	Ν	Ν
European hake	Ν	Y	Y	Ν	Ν	Y	Ν	Ν
Ling	Ν	Y	Υ	Ν	Y	Y	Ν	Ν
Norway pout	Y	Y	Ν	Ν	Y	Y	Ν	Ν
Atlantic halibut*	-	-	Y	Endangered	Y	Ν	Ν	Ν
Greenland halibut*	-	-	Y	Ν	Y	Ν	Ν	Ν
European plaice	Y	Y	Y	Ν	Ν	Y	Ν	Ν

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Species	Overlap with the fish ecology study area		UK BAP species	IUCN Red List	Scottish PMF	Scottish Biodiversity	OSPAR	Bern Convention
	Spawning Ground	Nursery Ground				List		
Lemon sole	Y	Y	Ν	Ν	Ν	Ν	Ν	Ν
Common sole	Ν	Ν	Y	Ν	Ν	Ν	Ν	Ν
Common goby*	-	-	Ν	Least Concern	Ν	Ν	Ν	Y
Sand goby*	-	-	Ν	Ν	Y	Ν	Ν	Y
Sandeel	Y	Y	Y	Ν	Y	Y	Ν	Ν
Anglerfish	Ν	Y	Y	Ν	Y	Ν	Ν	Ν

* species that are not included within the Coull et al., 1998 or Ellis et al., 2012 dataset. Presence of spawning / nursery grounds for these species within the fish ecology study area investigate during the assessment stage and incorporated into the baseline. Therefore, these species' overlap with the fish ecology study area in **Table .10** are denoted by '-'.

Elasmobranchs

- 5.8.47 The elasmobranchs comprise sharks, skates and rays. Thirty species are found in Scottish waters, the majority of which occur in the North Sea. They are a highly diverse group with diverse life histories. Some species are highly migratory (e.g. basking shark *Cetorhinus maximus*), whereas others can have high site fidelity. They also vary significantly even in the way that they breed and can be either oviparous (egg-laying), ovoviviparous (live young with a yolk sac) or viviparous (live young with maternal nutrition).
- 5.8.48 They generally exhibit slow growth, late maturity and low reproductivity which makes them vulnerable to man-made disturbance. They are particularly vulnerable to overfishing as they have a low population recovery rate. Some smaller species such as the small spotted catshark or lesser spotted dogfish *Scyliorhinus canicula* can mature as early as 6 years old. Larger, longer-lived species such as the common skate (*Dipturus batis*) do not mature until around 15 years old. Low fecundity can mean that each female produces fewer than 50 young per year (or sometimes every two years). The young are often fully developed and immediately start to forage but by the same token become instantly susceptible to capture as bycatch in trawl nets and dredge gear.
- 5.8.49 Elasmobranchs are therefore considered a sensitive receptor group, and many species are protected under international and national legislation. The principal elasmobranch species that are likely to occur within the area (included but not limited to) are listed below (Coull *et al.*, 1998; Paramor *et al.*, 2009; Ellis *et al.*, 2012):
 - basking shark;
 - blue shark *Prionace glauca*;
 - gulper shark Centrophorus granulosus;
 - kitefin shark Dalatias licha;
 - leafscale gulper shark Centrophorus squamosus;
 - porbeagle shark Lamna nasus;
 - tope shark Galeorhinus galeus;
 - Portuguese dogfish Centroscymnus coelolepis;
 - common skate;
 - spurdog Squalus acanthias;
 - small spotted catshark;
 - angel shark Squatina squatina;
 - flapper skate *Dipturus intermedius*;
 - blue skate Dipturus flossada;
 - sandy ray Leucoraja circularis;
 - spotted ray Raja montagui; and
 - thornback ray Raja clavata.
5.8.50 Basking sharks are usually found off the west coast of Scotland but there have been some observations off the east coast. Basking sharks are listed as endangered by the IUCN Red List and are a PMF in Scotland (Witt *et al.*, 2012). The Hywind (2015) project did not observe any basking sharks during their Hywind European Seabirds at Sea (ESAS) surveys, and they report no recent records of basking sharks within the area (Hywind, 2015). Satellite tracking on basking sharks revealed that of 70 basking sharks tagged, none of them used the area of the east coast of Scotland (Doherty *et al.*, 2017).

Elasmobranch spawning and nursery grounds

5.8.51 Nursery grounds overlap with the study area for spurdog, tope shark, common skate and spotted ray (Coull *et al.*, 1998; Ellis *et al.*, 2012). **Table 5.8.11** shows a summary of elasmobranch species and level of protection (Coull *et al.*, 1998; Ellis *et al.*, 2012; MarLIN, 2022).

Table 5.8.11 Elasmobranch species listed above, and the level of protection under national and international legislation (Coull et al., 1998; Ellis et al., 2012; MarLIN, 2022)

Common name	Overlap with the fish ecology study area		BAP	ked List	sh PMF	th ersity	٣	ildlife & 'yside 81	ntion	ntion
	Spawning Ground	Nursery Ground	UK specie	IUCN	Scottis	Scottis Biodiv List	OSPAF	The W Countr Act 19	Berne Conve	Bonn Conve
Basking shark*	-	-	Y	Vulnerable	Y	Y	Y	Y	Y	Y
Blue shark*	-	-	Y	Near threatened	Ν	Ν	Ν	Ν	Ν	Ν
Gulper shark*	-	-	Y	Endangered	Ν	Ν	Y	Ν	Ν	Ν
Kitefin shark*	-	-	Y	Ν	Ν	Ν	Ν	Ν	Ν	Ν
Leafscale gulper shark*	-	-	Y	Endangered	Y	Ν	Y	Ν	Ν	Ν
Porbeagle shark*	-	-	Y	Vulnerable	Y	Ν	Y	Ν	Ν	Ν
Tope shark	Ν	Y	Y	Critically endangered	Ν	Ν	Ν	Ν	Ν	Ν
Portuguese dogfish*	-	-	Y	Near threatened	Y	Ν	Y	Ν	Ν	Ν
Spurdog	Ν	Y	Y	Vulnerable	Y	Ν	Y	Ν	Ν	Ν

Thornback ray

Ν

Common name	Overlap with the fish ecology study area			ted List	ih PMF	th ersity	~	ildlife & 'yside 81	ntion	ntion
	Spawning Ground	Nursery Ground	UK specie	IUCN	Scottis	Scottis Biodiv List	OSPAI	The W Counti Act 19	Berne Conve	Bonn Conve
Angel shark*	-	-	Y	Critically endangered	Ν	Ν	Y	Y	N	Ν
Common skate**	Ν	Y	Y	Critically endangered	Y	Y	Y	Y	Ν	Ν
Sandy Ray*	-	-	Y	Endangered	Y	Ν	Ν	Ν	Ν	Ν
Spotted ray	Ν	Y	Ν	Least concern	Ν	Ν	Y	Ν	Ν	Ν

* species that are not included within the Coull *et al.*, 1998 or Ellis *et al.*, 2012 dataset. Presence of spawning / nursery grounds for these species within the fish ecology study area investigate during the assessment stage and incorporated into the baseline. Therefore, these species' overlap with the fish ecology study area in **Table .11** are denoted by '-'. **includes the flapper skate and blue skate species.

Near threatened

Υ

Ν

Υ

Ν

Ν

Ν

Ν

Ν

Migratory fish

- 5.8.52 Migratory (diadromous) fish are fish that spend part of their life history in both freshwater and sea water, migrating between the two. Some species are anadromous, which means they spend the majority of their adult lives at sea and then migrate back to freshwater to reproduce. Lamprey species, Atlantic salmon *Salmo salar* and sea trout *S.trutta* are anadromous. European eels *Anguilla Anguilla* are catadromous fish, migrating to the sea to spawn and the elvers entering estuaries and migrating upriver. In the study area, the general movement of salmon when at sea is in a northerly direction, and salmon continue up the north Aberdeenshire coast (Malcolm et al., 2010).
- 5.8.53 The Scottish east coast features an important network of rivers that support migratory species. The River Dee (designated as a Special Area of Conservation) is an important river for Atlantic salmon. However, the distance of the Project offshore means there is very limited scope to interact with fish entering and exiting river mouths, so the scoping of migratory fish primarily relates to interactions of migratory fish with the Project. It is understood that salmon may be present in the fish ecology study area (Malcolm *et al.*, 2010). The migratory species considered likely to be present within the fish ecology study area are:
 - Atlantic salmon;
 - Sea trout;
 - European eel;
 - River lamprey Lampetra fluviatilis; and
 - Sea lamprey Petromyzon marinus.
- 5.8.54 **Table 5.8.12** outlines the migratory fish listed above, and the level of protection under national and international legislation (Coull *et al.,* 1998; Ellis *et al.,* 2012; MarLIN, 2022).

Table 5.8.12 Migratory fish listed above, and the level of protection under national and international legislation (Coull et al., 1998; Ellis et al., 2012; MarLIN, 2022)

Species	UK BAP species	IUCN Red List	Scottish PMF	Scottish Biodiversity List	OSPAR	Wildlife & Countryside Act 1981	Bern Convention	Bonn Convention
Atlantic salmon	Y	Least concern	Y	Y	Y	Y (freshwater only)	Ν	Ν
Sea trout	Y	Least concern	Y	Y	Ν	Ν	Ν	Ν
European eel	Y	Critically endangered	Y	Υ	Y	Ν	Ν	Υ
River lamprey	Y	Least concern	Y	Ν	Ν	Υ	Ν	Ν
Sea lamprey	Y	Least concern	Y	Ν	Ν	Ν	Ν	Ν

Designated sites

5.8.55 A review has been undertaken for this Scoping Report to identify designated sites in the study area which are with fish features of interest or key supporting habitats. These are listed in **Table 5.8.13** and presented in **Figure 5.8.4: Designated sites of relevance to fish** in **Appendix 1A**.

Table 5.8.13 Marine nature conservation designations with relevance to fish ecology

Site	Location relative to Scoping Boundary	Features or description
Southern Trench MPA	Approximately 70 km east of the Scoping Boundary.	The Southern Trench MPA is located off the Aberdeenshire coast and is designated to protect marine mammals (minke whales), burrowed mud, fronts and shelf deeps. The Scoping Boundary does not pass through the MPA (see Figure 5.8.4 in Appendix 1A). The Southern Trench MPA is a 250m deep trench that runs parallel to the coastline. The dynamic mixing zone of warm and cold waters attracts shoals of Atlantic herring, Atlantic mackerel and Atlantic cod to the area, with the soft sands providing abundant habitat for sandeels (NatureScot, 2020). The burrowed mud habitat (EUNIS code: A5.361) PMF present in the Southern Trench MPA is characterised by the presence of Norway lobster, crabs, seapens and anemones. The burrowed mud habitat is in favourable condition but is listed by OSPAR as a threatened and declining habitat. Burrowed mud habitats are highly sensitive to physical disturbance; disturbances to water flow, wave, exposure; and siltation. The conservation objectives of the site for burrowed mud include: <i>"Conserve the diversity, abundance and distribution of typical species associated within the burrowed mud (including Nephrops norvegicus, Pennatula phosphorea, Virgularia mirabilis."</i>
Turbot Bank MPA	Approximately 29 km west of the Scoping Boundary.	 Turbot Bank is designated for the protection of sandeels, which play an important role in the wider North Sea ecosystem, providing a vital source of food for larger fish, seabirds and marine mammals. Turbot Bank has the potential to act as a source of young sandeels for maintaining and restocking surrounding areas. The Conservation Objectives for the Turbot Bank MPA are: "so far as already in favorable condition, remain in such condition; and so far as not already in favorable condition, be brough into such condition, and remain in such condition. With respect to the sandeels, this means that the quality and quantity of its habitat and the composition of its population are such that they ensure that the population is maintained in numbers which enable it to thrive. Any temporary reduction of numbers is to be disregarded if the population of sandeels is thriving and sufficiently resilient to enable its recovery from such reduction. Any alteration to that feature brought about entirely by natural processes is to be disregarded" (JNCC, 2018).
East of Gannet and	Approximately 30km east of the Scoping Boundary.	The East of Gannet and Montrose Fields MPA lies to the west of the scoping boundary within a relatively shallow sediment plain. About half the seabed within the MPA is dominated by sands and

Site	Location relative to Scoping Boundary	Features or description
Montrose Fields MPA		 gravels, which are the preferred habitat of the ocean quahog (<i>Artica islandica</i>). Many types of worm and mollusc live buried in the mud and provide an important food source for fish. The Conservation Objectives for the East of Gannet and Montrose Fields MPA are: "so far as already in favorable condition, remain in such condition; and so far as not already in favorable condition, be brough into such condition, and remain in such condition." (JNCC, 2024)

Future baseline

- 5.8.56 Determining future baseline draws upon information about the likely future use and management of the Project site in the absence of development, known population trends (for species), climate change and any other proposed developments (consented or otherwise) that may act cumulatively with the Project to affect fish ecology features.
- 5.8.57 While it is not possible to predict the extent of future changes with any degree of certainty, it is clear that regardless of the Project, any future baseline is likely to be different from the current baseline. This is predominantly due to:
 - changes in the range of fish species as a result of climate change, with warmer water species extending their range northward and boreal species retreating further; and
 - changes in the population of key species relating to probable changes in fisheries management/practice and marine nature conservation measures over the coming decades.
- 5.8.58 This theme will be further developed in the EIA Report, with consideration of published information on the recent and likely future changes in the distribution of North Sea fish species.

Basis for scoping assessment

- 5.8.59 The fish ecology scoping assessment is based on the key assumptions that are also set out in **Chapter 2**:
 - impacts will be assessed for all phases of the Project.
 - impacts associated with installation of floating, and if required, fixed design wind turbine generators (WTGs) will be undertaken.
 - an assessment will be undertaken of impacts associated with EMF from operational array cables.
 - impacts associated with the introduction and long term presence of physical structures into the environment will be assessed.

- impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life.
- The source-pathway-receptor linkage between Project infrastructure and / or activities and 5.8.60 the receptor groups for this aspect are described in Table 5.8.15.
- The Approved NPF4 2023 introduced requirements, which will be taken account of in the EIA 5.8.61 and associated consenting documents.

Embedded environmental measures

- As part of the Project design process, a number of embedded measures are proposed to 5.8.62 reduce the potential for impacts on fish ecology (see Table 5.8.14). These will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- As there is a commitment to implementing these environmental measures, and to various 5.8.63 standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the scoping assessment.

ID	Environmental measure proposed	How the environmental measures will be secured
M-012	A Scour Protection Management Plan will be developed. It will include details of the need, type, quantity, location(s) and installation methods for scour protection.	s.36 conditions and marine licence conditions.
M-001	Development of and adherence to an agreed Marine Mammal Mitigation Protocol (MMMP). This will subsequently mitigate	Design evolution, s.36 conditions and marine

Table 5.8.14 Relevant fish ecology embedded environmental measures

	Mitigation Protocol (MMMP). This will subsequently mitigate potential impacts from underwater noise on marine mammals through good or standard practice actions in order to meet legislative requirements. These will evolve over the development process as the EIA processes and in response to consultation.	conditions and marine licence conditions.
M-028	A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to the Project. The MPCP will also include relevant key emergency contact details.	s.36 conditions and marine licence conditions.
M-008	Development of and adherence to a Project Environmental Monitoring Programme (PEMP), which will set out commitments to environmental monitoring in pre-, during and post- construction phases of the Project.	s.36 conditions and marine licence conditions.
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be	s.36 conditions and marine

undertaken to enable informed judgements about burial depth. licence conditions. This should maximise the chance of cables remaining buried whilst limiting the amount of sediment disturbance to that which

ID	Environmental measure proposed	How the environmental measures will be secured
	is necessary. The array cables will typically be buried at a target burial depth between 1-2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.	
M-033	Avoidance of key sensitive habitats, where known, through pre- construction surveys and micro-siting of proposed Project infrastructure.	s.36 conditions and marine licence conditions.
M-003	A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. The CEMP will be the securing mechanism for many measures.	s.36 conditions, marine licence conditions and CEMP.
M-036	Ensure that any material to be deposited in the sea (metal components, rock for armour, concrete mattresses) does not contain toxic material that could leach into the sea water and result in toxic effects.	s.36 conditions, marine licence conditions and CEMP.
M-034	The mitigation and control of invasive species measures will be incorporated not a PEMP.	s.36 conditions and marine licence conditions.
M-011	Development and adherence to a piling strategy for all relevant infrastructure, including WTGs, fixed accommodation platform(s) and other offshore substation(s) or platform(s). It will detail the method of pile installation and associated underwater noise (UWN) levels. It will describe any mitigation measures to be implemented (e.g. soft stat and ramp up measures, use of acoustic deterrent devices) prior to and during pile installation to manage the effect of UWN.	Piling strategy is required under s.36 conditions and marine licence conditions.
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 (Energy Act, 2004 (as amended)), s.36 conditions, and marine licence conditions.
M-009	Use of 'low order' techniques such as deflagration for UXO disposal, where possible and required.	Required under the Habitats Regulations and marine licence conditions.
M-035	Nature Inclusive Design (NID) will be considered such as eco- friendly scour protection, artificial reefs and bio-enhancing turbine foundations.	s.36 conditions and marine licence conditions

Likely significant effects

5.8.64 In line with the EIA Regulations (as described in **Chapter 3**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-receptor

pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.

- 5.8.65 The likely significant effects on fish ecology are summarised in **Table 5.8.15**. The scoping assessment is based on a combination of the Project definition at the scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for fish ecological effects, and professional judgement. The approach to this assessment is set out in **Chapter 4**.
- 5.8.66 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not, and distinguishes between the level of assessment proposed for significant effects 'scoped in' as simple or detailed. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.
- 5.8.67 Where activities and impact are scoped in or scoped out, this scoping outcome applies to all receptor groups within fish ecology (e.g. pelagic, demersal, elasmobranch, and migratory fish), unless otherwise specified.

Table 5.8.15 Likely significant effects on fish

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data/ baseline requirements
Habitat loss and / or disturbance (Construction, O&M, and Decommissioning)	M-013 M-033	Potential effect on feeding and spawning patterns through temporary / permanent, direct habitat loss and disturbance.	Scoped in	Fish ecology	Site-specific survey for benthic, epibenthic ecology features.
Underwater noise and vibration including UXO clearance / boulder clearance (Construction and Decommissioning)	M-001	Potential for likely significant effect to occur through mortality, injury, behavioural changes and auditory masking in sensitive receptor.	Scoped in	Fish ecology	Baseline to be further developed from existing sources. Additional data for assessment derived from underwater noise modelling.
Underwater noise and vibration (O&M)	M-001	Potential for likely significant effect to occur predominantly through behavioural changes.	Scoped in	Fish ecology	Baseline to be further developed from existing sources. Additional data from underwater noise modelling.
Increased hard substrate and structural complexity due to the presence of WTGs, including floating (platforms and station keeping system) and fixed designs, scour	M-012	Potential for likely significant effect to occur through change of substrate or sensitive habitat and associated ecological shifts.	Scoped in	Fish ecology	Baseline to be further developed from existing sources. To be additionally informed by benthic survey results.

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Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data/ baseline requirements
protection and cable protection (O&M)					
Potential for reduced fishing within the Scoping Boundary (Construction, O&M, and Decommissioning)	n/a	There is potential for a change in abundance of fish species due to potentially reduced fishing effort within the Scoping Boundary.	Scoped in	Fish ecology	Baseline to be further developed from existing sources. Additional data from commercial fisheries assessment.
Electromagnetic field (EMF) impacts from cables (O&M)	M-013	Potential for likely significant effect to occur through behavioural changes.	Scoped in	Fish ecology	Baseline to be further developed from existing sources.
Heat impacts from cables (O&M)	M-013	Potential for likely significant effect to occur through behavioural changes, as well as secondary impacts due to changes in prey ecology.	Scoped in	Fish ecology	Baseline to be further developed from existing sources.
Accidental pollution impacts (Construction, O&M, and Decommissioning)	M-028	No likely significant effect.	Scoped out. See rationale in section below paragraph 5.8.70.	Fish ecology	N/A
Direct and indirect seabed disturbance leading to the release of sediment contaminants	N/A	Potential for likely significant effect to occur through contamination resulting in ecological or behavioural changes in sensitive receptor.	Scoped in	Fish ecology	Site specific data from sediment samples collected from the study area.

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Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data/ baseline requirements
(Construction, O&M, and Decommissioning)					
Collision or primary entanglement risk (Construction, and Decommissioning)	M-001	Potential for species to collide with infrastructure or equipment attaching the anchor to the floating turbine. There is also an increased risk of collision due to an increase in vessels due to the Project.	Scoped out: See rationale in section below paragraph 5.8.72.	Fish ecology	N/A
Collision risk (O&M)	M-001	Potential for species to become entangled with cables or equipment attaching the anchor to the floating turbine.	Scoped out: See rationale in section below paragraph 5.8.71.	Fish ecology	N/A
Primary and secondary entanglement risk (O&M)	n/a	Potential for fish to be affected by discarded fishing gear etc snagged on offshore structures.	Primaryentanglement:Scoped out:See rationale insectionbelowparagraph5.8.72.Secondaryentanglement:Scoped in	Fish ecology	N/A.
Changes in water quality (Construction and Decommissioning)	M-036	Potential for likely significant effect resulting from construction activity which could cause changes in water quality.	Scoped in	Fish ecology	Site specific data from sediment samples collected from the study area.
Potential impact on designated sites (Construction, O&M,	M-012	Potential for likely significant effect to occur on designated sites listed in Table 5.8.13 of relevance to fish.	Scoped in	Fish ecology	Baseline to be further developed from existing sources. Assessment to be further informed by results

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Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Feature	Further data/ baseline requirements
and Decommissioning)					of underwater noise modelling and benthic survey data
Colonisation of hard substrates by invasive non-native species (INNS) (O&M)	M-028, M-002, M-002	Potential for likely significant effect to occur resulting from increased hard structures allowing INNS to colonise the structures, with possible ecological implications for fish community.	Scoped in	Fish ecology	Assessment to be further informed by benthic survey data

5.8.68 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects on fish ecology.

Impacts proposed to be scoped out of assessment

- 5.8.69 A number of potential impacts are proposed to be scoped out from further assessment, due to the lack of a credible pathway or potential for a likely significant effect to occur. These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and the professional judgement on the potential for impact from such projects more widely. Each scoped out effect is considered in turn below.
- 5.8.70 Accidental pollution has been proposed to be scoped out from further assessment based on the conclusion of no potential for likely significant effects to occur. Such events are amenable to likely significant mitigation through the implementation of standard good practice measures to minimise the risk of any such occurrence. The likelihood of an incident will be reduced by implementation of Project PEMP and MPCP (embedded environmental measures M-028 and M-034), which will be approved by the relevant stakeholders and secured through s.36 conditions, marine licence conditions, and the CEMP. In the event of a spill, standard response and cleanup measures will provide further mitigation. The magnitude of an accidental spill will be limited by the size of chemical or oil inventory on construction vessels. Small quantities of fuel that cannot be contained or recovered will disperse and weather naturally and would not pose a significant risk to the marine environment.
- 5.8.71 **Collision risk** has been proposed to be **scoped out** from further assessment based on the conclusion of no potential for likely significant effects to occur. This risk relates primarily to basking sharks due to their size and feeding behaviour. The risk is readily amenable to mitigation through standard good practice, including the use of observers on vessels during construction. Additionally, there have been no records of basking shark collision as a result of cables or midwater chains. This is likely to be the type of equipment used in this Project and therefore the risk of this impact is considered low. Furthermore, the risk is further reduced by the relative scarcity of basking sharks in this part of the North Sea.
- 5.8.72 **Primary entanglement** has been proposed to be **scoped out** from further assessment based on the conclusion of no potential for likely significant effects to occur. The sensitivity of fish to potential impacts has been determined through available literature and expert knowledge, based on the species resilience and resistance to impacts. Cables or chains associated with the WTGs will not form loops that could potentially result in entanglement. There have been some records of basking sharks being entangled in ropes from stationary gear (Benjamins *et al.*, 2014), but no records of relating to cables or midwater chains which is likely to be the type of equipment used in this Project. Therefore, the risk of this impact is considered low, and further reduced by the relative scarcity of basking sharks in this part of the North Sea.

Cumulative effects

- 5.8.73 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing, due to the spatial scope of the Project and associated assessments.
- 5.8.74 Cumulative effects on fish ecology resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out

in **Chapter 4** and considering the other developments that have been screened in as part of the CEA screening exercise.

- 5.8.75 At this stage, impacts to fish ecology likely to be scoped into the cumulative effects assessment include:
 - changes to supporting habitats due to direct loss, introduction of hard substrata (WTGs, scour protection etc.) and alterations to hydrodynamic/sediment transport regime;
 - colonisation of the WTGs and scour protection and cable protection may affect benthic ecology and biodiversity;
 - changes to seabed habitats arising from effects on coastal processes, including scour effects and changes in the sediment transport and wave regimes resulting in potential effects on benthic communities;
 - long range impacts of construction and decommissioning noise;
 - increase in EMF and heat emissions associated with cables; and
 - impacts to other designated sites and features during the construction; O&M; and decommissioning phases.

Transboundary effects

5.8.76 The potential for transboundary effects is limited. Notwithstanding that some fish can migrate over large geographic areas, there are no predicted effects that either extend over jurisdictional boundaries or are likely to affect migratory fish at the population level. Transboundary effects on fish ecology are considered in **Appendix 4A: Transboundary Screening Matrix** and are therefore scoped out of further assessment.

Proposed approach to the EIA Report

- 5.8.77 The potential for likely significant effects to occur will be described, and the assessment will include consideration of potential significant cumulative effects as appropriate, as set out in **Chapter 4**.
- 5.8.78 Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in **Chapter 4**. Key consultees relevant to the fish ecology assessment include MD-LOT, Marine Directorate Science, MD-SEDD, NatureScot, SEPA, SFF and SWFPA.
- 5.8.79 Consultee responses with regard to fish ecology will be addressed and the scope of the assessment modified accordingly in the EIA Report.

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5.9 Commercial fisheries

Introduction

- 5.9.1 The commercial fisheries assessment will consider the potential likely significant effects on commercial fisheries that may arise from the construction, operation and maintenance (O&M) and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the potential likely significant effects to be considered, and how these will be assessed for the purpose of the EIA Report.
- 5.9.2 Commercial fisheries interfaces with other EIA aspects and, as such, should be considered alongside these, namely:
 - Section 4.2: Climate Change: Potential effects on the fishing sector and fishing communities will impact the socio-economics assessment. Therefore, information from the commercial fisheries assessment will inform the socio-economic assessment.
 - Sections 5.1: Marine geology, oceanography and physical processes: Changes to marine physical processes may potentially impact sensitive commercial fisheries receptor species; therefore information from that Section will inform the commercial fisheries assessment.
 - Section 5.3: Underwater noise and vibration: The underwater noise and vibration section describes potential impacts from noise and vibration sources on pertinent sensitive commercial fisheries receptor species, therefore, information from that Section will inform the commercial fisheries assessment.
 - Section 5.4 Electromagnetic: There is potential for EMF emissions to have effects on commercial fisheries as behavioural changes on pertinent sensitive commercial fisheries receptor species may occur as a result of EMF. Therefore, information from that Section will inform the commercial fisheries assessment.
 - Sections 5.5: Benthic, epibenthic and shellfish: The commercial fisheries section includes commercially important species and fisheries data. Information and data from the commercial fisheries Section inform the shellfish ecology assessment, as commercial fisheries have the potential to directly and indirectly impact shellfish ecology.
 - Section 5.6: Marine mammals: Some marine mammals rely on species targeted for commercial fishing, such as whiting, cod, sandeel and salmon, and therefore impacts to commercially targeted fish species could potentially indirectly affect marine mammals. The information from the commercial fisheries section will inform the marine mammal assessment.
 - Section 5.8 Fish Ecology: The commercial fisheries section includes commercially important species and fisheries data. Information and data from the commercial fisheries Section will inform the fish ecology assessment, as commercial fisheries have the potential to directly and indirectly impact fish ecology.
 - Section 5.10: Shipping and navigation: Potential shipping and navigation impacts may cause interference or risk to commercial fishing vessels transiting and actively fishing. Therefore, the shipping and navigation assessment will inform the commercial fisheries assessment.

5.9.3 This Section considers commercial fisheries activity, which is understood as fishing activity legally undertaken where the wild catch is sold for taxable profit. Potential impacts of the Project on charter angling, defined as fishing for marine species where the purpose is recreation and not sale or trade, are included within **Section 4.2**.

Legislation and policy context

- 5.9.4 This Section identifies the relevant legislative and policy context which has informed the scope of the commercial fisheries assessment. Further information on, and status of, policies relevant to the EIA is set out in **Chapter 3**. **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.9.5 In order to provide a robust evidence base **Table 5.9.1** below presents a summary of legislation and policies relevant for the commercial fisheries assessment. This Section takes account of specific requirements to assess and address likely impacts on receptors and relevant environmental issues. This table does not quote the policies in full but rather states their relevance to this Section.

Relevant legislation and policy	Relevance to the assessment	
Legislation		
International: EC Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora International: EC Directive (2009/147/EC) on the Conservation of Wild Birds	 Defines the species and types of sites that receive protection. Describes the protection that is afforded, specifically with respect to birds. 	
Electricity Act 1989 (Schedule 9)	• Sets out the requirements for the Preservation of amenity and fisheries in Scotland.	
Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003	• Sets out the key governing legislation for Scotland's district salmon fishery boards, offers a good practice for fishing the species and gives protection to juvenile and spawning salmon.	
Marine and Coastal Access Act (2009)	• States that Public Authorities are required to consider whether a project is capable of affecting a protected feature in a Marine Protected Area (MPA).	
Aquaculture and Fisheries (Scotland) Act 2013	 Provides a framework for managing and regulating aquaculture and fisheries in Scotland's waters. 	
National: Conservation of Offshore Marine Habitats and Species Regulations (2017)	• Defines the species, habitats and types of sites that receive legal protection and describes the protection that is afforded.	
National Policy		

Table 5.9.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment	
Approved National Planning Framework 4 (NPF4) (2023)	A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A – Planning Policy Framework . Policy of relevance to this area of technical assessment include: Policy 1: Tackling the climate and nature crises.	
Scottish Biodiversity Strategy to 2045 (2024) • Policy 6.2.1 • Policy 6.2.3	 The new Scottish strategy sets out a clear ambition for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045. Section 2.1 of the strategy seeks to embed nature-friendly farming, fishing and forestry, indicating that areas under agriculture, fisheries and aquaculture, and forestry must be managed more sustainably, in particular through the conservation and sustainable use of biodiversity, increasing the productivity and resilience of these production systems. Section 2.1 of the strategy also sets to Recover and protect vulnerable and important species. 	
Marine Policy		
UK Marine Policy Statement (2011)	 Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses. Requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all. Demonstrates support for the fishing sector, including with regard to displacement: "seeking solutions such as co-location of activity wherever possible". Stipulates that the process of marine planning should "enable the co-existence of compatible activities wherever possible" and supports the reduction of real and potential conflict as well as maximising compatibility and encouraging co-existence of activities. 	
Scotland's National Marine Plan (2015) FISHERIES 1 FISHERIES 2 FISHERIES 3 CABLES 1 CABLE 2	 FISHERIES 1 emphasises safeguarding of fishing opportunities wherever possible, protecting fish stocks and supports conflict resolution. FISHERIES 2 highlights consideration of the potential effect of displacement on: fish stocks; the wider environment; use of fuel; and socio-economic costs to fishers. FISHERIES 3 stipulates a requirement for a Fisheries Mitigation, Monitoring and Communication Plan (previously known as the Fisheries Management and Mitigation Strategy) to be prepared involving full engagement with local fishing interests (and other interests as appropriate). CABLES 1 emphasises achieving successful seabed user co-existence. CABLES 2 highlights the need to reduce risks to all seabed users. 	

Relevant legislation and policy	Relevance to the assessment	
	adoption of National Marine Plan 2 being scheduled for Summer 2027.	
Sectoral Marine Plan – Offshore Wind Energy (2020)	 Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. 	

Technical guidance

5.9.6 Technical guidance that has been used to define the assessment is set out in **Table 5.9.2**.

Guidance reference	Relevance to the assessment
Advice and Guidance - Marine Licensing and Consenting - Offshore Renewable Energy Projects – Mitigation and Monitoring Plans (Scottish Government, 2025)	The Fisheries Mitigation, Monitoring and Communication Plan describes the mitigation, monitoring and communication that will be put in place by a licensee or consent holder to avoid or minimise the adverse effects of a project on commercial fisheries.
Good Practice Guidance for assessing fisheries displacement by other licensed marine activities (Xodus, 2022)	Provides guidance on the methodology for assessing fisheries displacement caused due to other licensed marine activities, which is applicable to the assessment of likely significant effects for the Project.
Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (United Kingdom Fisheries Economic Network (UKFEN) and Seafish, 2012)	Provides guidance on methodology for assessing the importance of specific marine areas to the commercial fishing industry, including valuation of sites, which is applicable to the assessment of likely significant effects for the Project.
Fisheries Liaison with Offshore Wind and Wet Renewables group (FLOWW) Recommendations for Fisheries Liaison: Best Practice guidance for offshore renewable developers (FLOWW, 2015)	Provides guidance on engagement, consultation and liaison with the commercial fishing industry, which is applicable to consultation on and the development of embedded environmental measures for the Project.
FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015)	Provides guidance on when disruption payments and community funds are applicable and how they are calculated, which is applicable to the assessment of likely significant effects for the Project.
Damage to Gear Compensation Claim Forms (Marine Directorate, 2021a)	Provides a standard form for fishing vessel owners deploying static or mobile gear to complete in the instance of damage or loss of fishing gear, loss of fishing time, or damage to vessel by suspected offshore renewable activity, which is applicable to the development of embedded environmental measures and

Table 5.9.2 Relevant technical guidance

Guidance reference	Relevance to the assessment
	the assessment of likely significant effects for the Project.
Guidance on completing Damage to Gear Compensation Claim Forms (Marine Directorate, 2021b)	Provides guidance on making a claim for compensation for damage or loss of fishing gear, loss of fishing time, or damage to vessel by suspected offshore renewable activity, which is applicable to the development of embedded environmental measures and the assessment of likely significant effects for the Project.
Marine Directorate, Marine environment: licensing and consenting requirements online guidance (Marine Directorate, 2018)	Marine Directorate's consenting and licencing manual provides guidance on applying for s.36 consents and marine licences for offshore renewables. Section 4.8 of the manual provides information for applicants undertaking Fishing Impact Assessments.
Options and opportunities for marine fisheries mitigation associated with wind farms (Blyth-Skyrme, 2010a)	Provides potential mitigation approaches for commercial fisheries, which is applicable to the development of embedded environmental measures and the assessment of likely significant effects for the Project.
Developing guidance on fisheries Cumulative Impact Assessment for wind farm developers (Blyth-Skyrme, 2010b)	Provides guidance on cumulative effects specific to commercial fisheries and will be taken into consideration in the assessment of cumulative effects for the Project.
Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms (RenewableUK, 2013)	Provides guidance on cumulative effects for offshore wind farms and will be taken into consideration in the assessment of cumulative effects for the Project.
Fishing and Submarine Cables - Working Together (International Cable Protection Committee, 2009)	Provides guidance to fishermen in avoiding catching submarine cables and provides information on what to do should gear become snagged and is applicable to the assessment of likely significant effects and development of embedded environmental measures for the Project.
Marine Licensing and Consenting: Offshore Renewable Energy Projects (Scottish Government 2025)	Provides guidance on applying for licences and consents for marine renewable energy projects within Scottish offshore waters (12 – 200 nautical miles (nm).

Study area

- 5.9.7 The Scoping Boundary is located within the International Council for the Exploration of the Sea (ICES) Division 4b (Central North Sea) statistical area; within United Kingdom (UK) Exclusive Economic Zone (EEZ) waters; and outside of the 12 nm limit boundary. For the purpose of recording fisheries landings, ICES Division 4b is divided into statistical rectangles which are consistent across all Member States operating in the North Sea.
- 5.9.8 The Scoping Boundary is located within ICES rectangles 43E9 and 43F0 (see **Figure 5.9.1: Commercial fisheries study area** in **Appendix 1A**). It should be noted that the Scoping Boundary occupies only a portion of these ICES rectangles, as follows:
 - 19.9% of the Scoping Boundary falls within 43E9 representing 5.1% (171.2 km² of the 43E9 rectangle);

- 80.1% of the Scoping Boundary falls within 43F0 representing 20.5% (688.7 km² of the 43F0 rectangle).
- 5.9.9 The commercial fisheries study area has been defined with respect to the ICES statistical rectangles within which the Scoping Boundary is located 43E9 and 43F0. The Applicant, as part of the ongoing stakeholder engagement with the commercial fisheries consultees, has considered to increase the study area to incorporate a larger local study area that includes further two ICES rectangles, located north of the Scoping Boundary 44E9 and 44F0, thus covering four ICES rectangles, as shown in **Figure 5.9.1: Commercial fisheries study area** in **Appendix 1A**.
- 5.9.10 The study area will be reviewed and amended in response to such matters as design refinements and the identification of additional impact pathways and, where appropriate, in response to feedback from consultation.

Consultation

5.9.11 This Section has been informed by engagement and discussion with all relevant stakeholders, including an online workshop with Marine Directorate Licensing Operations Team (MD-LOT), Marine Directorate – Science, Evidence, Data and Digital (MD-SEDD), NatureScot, Scottish Fishermen's Federation (SFF) and the Scottish White Fish Producers Association Ltd (SWFPA) on 07 November 2024. **Table 5.9.3** provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this Scoping Report.

Consultee	Comments and considerations	How this is accounted for	
MD-LOT and MD SEDD, NatureScot, SFF and SWFPA	An EIA Scoping workshop was held on 07 November 2024. During a technical break- out session, the following questions were raised and discussed in relation to commercial fisheries:		
MD SEDD	MD SEDD asked whether the Project Team have considered the local and regional study areas for the EIA. Suggested a larger zone for the local study area that would cover two further neighbouring ICES rectangles 44E9 and 44F0) that would allow for the consideration of wider impact on fisheries for both cumulative and transboundary effects. The importance of the regional study area was further highlighted with regards to displacement effects on fish.	As a result of the Scoping Workshop stakeholder engagement, the study area for commercial fisheries has been widened to include the additional ICES rectangles 44E9 and 44F0.	
	MD SEDD recommended to include an overview of the fishing activities in any future scoping workshops.	The Project Team acknowledges the recommendation from MD SEDD and has incorporated this feedback into our planning process.	
	MD SEDD advised on a data gap between 12 m to 15 m vessels, acknowledging that data collected from REM (Remote	MD SEDD agreed to confirm whether 12-15 m vessel data for 2023 and 2024 would be available upon request.	

Table 5.9.3 Consultation

Consultee	Comments and considerations	How this is accounted for
	electronic monitoring) is still being rolled out and thus not available. The Project team asked whether anonymized vessel data for 2023 and 2024 would be available upon request.	·
SWFPA	SWFPA supported the position to further extend the study area suggested by MD SEDD, highlighting that the study area borders with the two abovementioned ICES rectangles and that there is potential for impact in those areas. SWFPA highlighted that a new data source will be emerging called FisMadim that will map out all fishing activity around the coast.	FisMadim data sets were not available at the time of drafting the Scoping Report, should this become available prior to application submission the Applicant will review the data source and incorporate into the assessment where suitable.
	SWFPA disagreed with the assessment that the displacement effect is expected to be localised and short-term. They suggested that floating offshore wind farms could create permanent exclusion zones for certain types of fishing and requested this be included in the fisheries displacement assessment.	The Project Team acknowledges the concerns raised by SWFPA and has agreed to amend the wording used for fisheries displacement, and to consider permanent exclusion zones in the fisheries displacement assessment in the Scoping Report.
	SWFPA explained that scoping workshops, project design changes, and stakeholder engagement can move fairly quickly for offshore wind projects and recommended progressing at a slower pace to ensure nothing is lost. They clarified that this recommendation is not project-specific but applies to the entire industry.	The Project Team acknowledges the concerns raised by SWFPA and advises that the Project is still in the preparation phase of the Scoping Report. The Project Team will ensure frequent conversations with stakeholders to guarantee that these discussions inform the Project as required.

Assessment methodology

5.9.12 The Project-wide approach to the assessment methodology is set out in **Chapter 4**. However, whilst this has informed the approach that has been used in this commercial fisheries section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the commercial fisheries assessment.

Methodology for establishing baseline conditions

Desk-based analysis

- 5.9.13 Landings statistics for UK registered vessels were obtained from the Marine Management Organisation (MMO) and analysed via Excel.
- 5.9.14 Vessel Monitoring System (VMS) collated by MMO and ICES and Automatic Identification System (AIS) available from the European Maritime Safety Agency (EMSA) have been analysed for 2019–2023 using ArcMap and ArcGIS Pro.

5.9.15 The spatial and/or temporal limitations of any data sources or datasets relied upon for the assessment will be specified in the EIA.

Site-specific surveys

- 5.9.16 No site-specific surveys have been undertaken to inform this commercial fisheries assessment at the scoping stage.
- 5.9.17 Shipping and navigation surveys and baseline data review will capture activity of fishing vessels and will inform the EIA see **Table 5.10.4** in **Section 5.10: Shipping and navigation**.

Impact assessment methodology

5.9.18 Definitions specific to commercial fisheries in relation to assessing the sensitivity of the receptor and magnitude of an impact are provided in **Table 5.9.4** and **Table 5.9.5** respectively. Receptors when used as a general term may apply to fishing fleets, fishing grounds, or the fishing industry in a wider sense.

Value	Definition
High	Receptor is highly vulnerable to impacts that may arise from the Project and recoverability is long term or not possible.
	And/or: No alternative fishing grounds are available.
Medium	Receptor is somewhat vulnerable to impacts that may arise from the Project and has moderate levels of recoverability.
	And/or: Moderate levels of alternative fishing grounds are available and/or fishing fleet has moderate operational range.
Low	Receptor is not generally vulnerable to impacts that may arise from the Project and/or has high recoverability.
	And/or: High levels of alternative fishing grounds are available and/or fishing fleet has large to extensive operational range; fishing fleet is adaptive and resilient to change.
Negligible	Receptor is not vulnerable to impacts that may arise from the Project and/or has high recoverability.
	And/or: Extensive alternative fishing grounds available and/or fishing fleet is highly adaptive and resilient to change.

Table 5.9.4 Definitions of sensitivity levels for commercial fisheries

Value	Criteria (adverse)	Criteria (beneficial)
High	 Impact is of long-term duration (e.g., greater than 12 years duration) and/or is of extended physical extent; And: Impact is expected to result in one or more of the following: Substantial loss of target fish or shellfish biological resource (e.g., loss of substantial proportion of resource within project area); and Substantial loss of ability to carry on fishing activities (e.g., substantial proportion of effort within project area). 	 Impact is expected to result in one or more of the following: Large scale or major improvement of resource quality, measurable against biomass reference points; or Extensive restoration or enhancement of habitats supporting commercial fisheries resources.
Medium	 Impact is of medium-term duration (e.g., less than 12 years) and/or is of moderate physical extent; And: Impact is expected to result in one or more of the following: Partial loss of target fish or shellfish biological resource (e.g., moderate loss of resource within project area); and Partial loss of ability to carry on fishing activities (e.g., moderate reduction of fishing effort within project area). 	 Impact is expected to result in one or more of the following: Moderate improvement of resource quality; or Moderate restoration or enhancement of habitats supporting commercial fisheries resources.
Low	 Impact is of short-term duration (e.g., less than 5 years) and/or is of limited physical extent; And: Impact is expected to result in one or more of the following: Minor loss of target fish or shellfish biological resource (e.g., minor loss of resource within project area); and Minor loss of ability to carry on fishing activities (e.g., minor reduction of fishing effort within project area). 	 Impact is expected to result in one or more of the following: Minor benefit to or minor improvement of resource quality; or Minor restoration or enhancement of habitats supporting commercial fisheries resources.
Negligible	Impact is expected to be undetectable compa	ared to pre-Project baseline conditions.

Table 5.9.5 Definitions of magnitude levels for commercial fisheries

Effect significance

5.9.19 Following the identification of a receptor's value and sensitivity, and the magnitude of the impact, it is possible to determine the significance of the impact using professional judgement. The matrix provided in **Plate 4.2.1** in **Chapter 4** (and the definitions of sensitivity

and magnitude in **Table 5.9.4** and **Table 5.9.5**) is used as a framework to aid in determination of the impact assessment.

5.9.20 The definitions of impact significance to be used with the impact significance matrix are provided in **Table 5.9.6**.

Table 5.9.6 Impact significance definitions

Value	Definition
Major	Very large or large change in feature 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 feature condition, which are likely to be important considerations of a local level.
Minor	Small change in feature condition, which may be raised as local issues but are unlikely to be important in the decision-making process.
Negligible	No discernible change in feature condition.
No change	No impact, therefore, no change in feature condition.

Baseline conditions

Data sources

5.9.21 The data sources that have been used to inform this commercial fisheries section of the Scoping Report are presented within **Table 5.9.7**.

Table 5.9.7 Key sources of commercial fisheries data

Source	Date / period of data coverage	Summary	Coverage of study area
Marine Management Organisation (MMO)	2019 – 2023	UK annual fisheries landings statistics.	Full coverage of the study area.
ММО	2019 – 2023	UK Vessel Monitoring System (VMS) data.	Full coverage of the study area.
Scientific, Technical and Economic Committee for Fisheries (STECF)	2019 – 2023	EU annual fisheries landings statistics.	Full coverage of the study area.
ICES	2019 – 2023	EU VMS data.	Full coverage of the study area.

Source	Date / period of data coverage	Summary	Coverage of study area
Marine Directorate NMPi	2013-2023	Fisheries datasets available from the Marine Directorate MAPS NMPi, including ScotMap data.	Full coverage of the study area.
ICES and Marine Directorate	2019-2023	Key species stock assessments.	Full coverage of the study area.
Scottish Government Sectoral Marine Plan	2020	Description of regional commercial fisheries activity.	Full coverage of the study area.
European Maritime Safety Agency (EMSA)	2019-2023	Fishing vessel route density for vessels with AIS.	Full coverage of the study area.

- 5.9.22 It should be noted that the quantitative datasets identified in **Table 5.9.7** may not capture all commercial fisheries activity in the commercial fisheries study area. For instance, the VMS datasets only cover vessels ≥12 m (ICES data) or ≥15 m (MMO data) in length. Note that UK vessels ≥12 m in length have VMS on board, however, to date, the MMO provides amalgamated VMS datasets for ≥15 m vessels only. It should also be noted that during the stakeholder consultation, Marine Directorate acknowledged a data gap between 12 m to 15 m vessels, as data collected from REM (Remote electronic monitoring) is still being rolled out and thus not freely available.
- 5.9.23 However, in addition to VMS data, other published data does provide a useful insight into commercial fisheries activity e.g. EMSA fishing route density mapping. Consultation with fisheries stakeholders and industry is expected to further inform assessment in the EIA.
- 5.9.24 Consultation with representatives of fishermen's associations and organisations will be undertaken to seek to corroborate the findings of desk-based baseline data analysis and to provide insight into specific fishing grounds and activity of any vessels active in the area. Consultation will also be important to inform gear specifications for vessels active in the area, which will allow a full understanding of how different vessels and different gear configurations may be affected.
- 5.9.25 Variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and are the principal reason for considering up to five years of key baseline data. Given the time periods considered in this scoping exercise (i.e., 2019 to 2023), existing baseline data may to some extent capture potential changes in commercial fisheries activity resulting from the COVID-19 pandemic, which is understood to have temporarily affected market demand and supply chains. However, changes in fishing patterns resulting from the withdrawal of the UK from the EU would be expected in future data sets, which include data for 2021 onwards. Long term environmental and climatic changes may be expected to be detectable within the five-year time series but may benefit from longer-term analysis depending on the target species. Inclusion of such longer-term analysis will be informed by stakeholder consultation.

Current baseline

5.9.26 Landings by UK-registered vessels from the commercial fisheries study area (ICES rectangles 43E9, 43F0, 44E9, and 44F0) had an annual average landings value of approximately £49.7 million across the years 2019 to 2023 (MMO, 2023), with average landings values peaking at £63.1 million in 2023, but falling in 2020 to £50.8 million (likely due to a combination of COVID-19 restrictions and the UK's EU-exit). Over the same time

period, the annual average weight of landings from the study area was approximately 33,577 tonnes, peaking at approximately 42,376 tonnes in 2023.

- 5.9.27 Landings from the two ICES rectangles 43E9 and 43F0, which overlap the Scoping Boundary (19.9% overlap with 43E9, and 80.1% overlap with 43F0), accounted for approximately 28% and 5.9% respectively of the total value of landings from the commercial fisheries study area. Therefore a large proportion of the Scoping Boundary area that falls within 43F0 has relatively low landing values by UK vessels.
- 5.9.28 First sales value from the commercial fisheries study area was dominated by mackerel, accounting for 30.5% of the total landings value and 39% of the landed weight; followed by nephrops accounting for 11.75 % of the total landings value, and herring by 15.5% of the landed weight (based on data from MMO, 2023)
- 5.9.29 Landed weight was dominated by the demersal trawls sector, accounting for 53% of the landed weight (primary catch area 44E9), followed by the pelagic sector with 41% of the landed weight (primary catch area 43E9). Demersal trawl sector dominated by 76% of the value (primary catch area 44F0), followed by the pelagic sector that accounted for 18% of the value (primary catch area 43E9). An important demersal fishery is targeted in the study area, accounting for 76% of the value and 53% of the landed weight.
- 5.9.30 Scottish vessels were responsible for the majority (over 78%) of landings' weight, with landings also being made by vessels registered in England (17%) and to a much lesser extent vessels registered in Northern Ireland (4.5%). The main landing ports within the Scoping Boundary include (but are not limited to) Fraserburgh and Peterhead, which are two of the most important commercial fisheries landing ports in Scotland.
- **5.9.31 Plate 5.9.1** and **Plate 5.9.2** show the top 15 species landed from the commercial fisheries study area by value and weight respectively, from 2019 to 2023 (MMO, 2023).
- 5.9.32 **Plate 5.9.3** shows the landed value over the same period from the commercial fisheries study area by ICES rectangle and gear type. The key species landed are mackerel, nephrops (also known as Norway lobster), monkfish, edible crab, scallops, lobster, whelks, as well as a range of mixed demersal whitefish species, such as cod, whiting, haddock and saithe.





Plate 5.9.2 Top fifteen species by weight (tonnes) from 2019 to 2023 landed from the Commercial Fisheries study area (Source: MMO, 2023)





Plate 5.9.3 Landed value from 2019 to 2023 from the commercial fisheries study area by ICES rectangle and gear type (Source: MMO, 2023)

- 5.9.33 First sales value of nephrops landings have increased since 2019 and over the period of 2019 to 2023, with an annual average landed value of £80 million (based on 2019-2023 data), and a peak of £122 million in 2022. Landed values of mackerel have remained relatively the same across the time period, with five-year averages of £209k and 181k tonnes landed annually from the study area, with a slight drop in 2020; such patterns in landings by ICES rectangles are typical for pelagic species that swim in fast moving shoals and may not be specifically linked to areas or habitat when caught in the water column. Landings of cod and haddock from the study area have generally remained the same over the time series, peaking in annual landed value in 2020 at £59.2 million for cod, and in 2023 at £44.3 million for haddock respectively. Landings of crabs and scallops have increased over the time series, with an average annual landed value £43.6 million and 21.8k tonnes for scallops, although landings dropped in 2020 for both species.
- 5.9.34 Landing statistics indicate that the majority of landings by value are made by vessels over 15 m in length for the local study area, based on data provided by the MMO (MMO, 2023). Given the offshore nature of the study area, smaller vessels are less likely to operate there, which is reflected in the data. Almost all of the landings by demersal trawl, dredge, demersal seine, and pelagic seine are by vessels >15 m in length. This analysis underscores the significance of larger vessels in the commercial fisheries study area, highlighting their substantial contribution to the overall landings value and the reliance on these vessels for offshore fishing activities.
- 5.9.35 Landings of the species detailed above vary seasonally. Landing trends per month will be analysed within the EIA for individual species at both an ICES rectangle level, and by port of landing to identify which fleet and fishery operate at specific times of the year.
- 5.9.36 EU landings data indicates the potential for occasional activity by Danish, Dutch and Belgian fishing vessels. Activity by Norwegian demersal trawlers targeting whitefish may also occur in the region.
- 5.9.37 Other spatial data analysed to inform this report includes:
 - Figure 5.9.2: Fishing vessel route density, Appendix 1A mapping indicating medium levels of activity by fishing vessels (including both steaming and active fishing) within

ICES rectangles 44E9, and relatively little activity in the other three rectangles, with almost no activity in 43F0.

- 5.9.38 Further time series will be analysed within the EIA Report for the above data sources, including presentation of data for all gear types and MMO VMS data.
- 5.9.39 In summary, based on the data gathered to inform this scoping exercise, the key fleets operating across the study area include (in no particular order):
 - demersal trawl fleet targeting nephrops, haddock, squid, monkfish, whiting and other mixed demersal species;
 - demersal seine fleet targeting whitefish species;
 - pelagic trawl fleet targeting mackerel; and
 - scallop dredging fleet targeting scallops.

Future baseline

- 5.9.40 Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. These include the following:
 - market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, including the Coronavirus (COVID-19) pandemic;
 - market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;
 - stock abundance: fluctuation in the harvestable biomass in response to changes due to stock status, which is affected by recruitment, natural disturbances (e.g. due to storms, sea temperature etc.), changes in fishing pressure, amongst other factors, leading to changes in where, when and how much biomass is landed;
 - fisheries management: including new management for specific species where overexploitation has been identified, or changes in Total Allowable Catches leading to the relocation of effort, and/or an overall increase/decrease of effort and catches from specific areas;
 - environmental management: including the potential restriction of certain fisheries within protected areas;
 - improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g. by moving from beam trawl to demersal seine; this can lead to changes in gear configuration which may affect access ability, as well as reduced fishery footprint due to improved catching efficiency; and
 - sustainability: with seafood buyers more frequently requesting certification of the sustainably of fish and shellfish products, such as the Marine Stewardship Council certification, the industry is adapting to improve fisheries management and wider environmental impacts.
- 5.9.41 The variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and form the principal reason for considering up to five years of key baseline data. Given the time periods assessed, the future baseline scenario would typically be reflected within the current baseline assessment undertaken.
Basis for scoping assessment

- 5.9.42 The commercial fisheries scoping assessment is based on the following key assumptions which are also set out in **Chapter 2**:
 - impacts from all of the phases for a floating wind farm. The array will consist of wind turbine generators (WTGs), including fixed floating units (platforms and station keeping system);
 - impacts from a maximum mooring footprint per structure;
 - impacts from offshore substation(s), installed on jacket pin piles, jacket with caissons
 or gravity base with rock berm/rock bag scour protection;
 - impacts from array cables will be buried typically 1-2 m, subject to Cable Burial Risk Assessment (CBRA);
 - impacts from maintenance activities that will be undertaken for both preventative and corrective maintenance requirements;
 - impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life.
- 5.9.43 Given that the assumed mooring footprint of turbines will, for the purposes of an EIA reasonable worst-case scenario, take up the entirety of the Scoping Boundary, the scoping assessment assumes that:
 - it is assumed that commercial fishing activity will not resume within the portion of the Scoping Boundary containing floating WTGs during the O&M phase of the Project, including both mobile and static gears;
 - it is assumed that commercial fishing activity can resume within the portion of the Scoping Boundary that may contain fixed WTGs during the O&M phase of the project;
 - this assumption will be re-assessed at the point of the EIA to account for any changes in the project description and/or position of stakeholders; and
 - while the assumption is that fishing will not resume within the portion of the Scoping Boundary containing floating WTGs, it remains unclear whether there is a legal means to exclude fishing, and furthermore, whether certain mooring designs will allow access. Therefore when assessing the snagging risk, it is assumed that fishing may occur within the Scoping Boundary.

Embedded environmental measures

- 5.9.44 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts on commercial fisheries (**Table 5.9.8Table**). These will evolve over the assessment process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislative requirements.
- 5.9.45 As there is a commitment to implementing these measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the scoping assessment.

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under Sections 105 and 114 (Energy Act 2004 (as amended)) and Marine Licence consent conditions.
M-003	A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. The CEMP will be the securing mechanism for many measures.	s.36 conditions, marine licence conditions and CEMP.
M-008	Development of and adherence to a Project Environmental Monitoring Programme (PEMP), which will set out commitments to environmental monitoring in pre-, during and post-construction phases of the Project.	s.36 conditions and marine licence conditions.
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be undertaken to enable informed judgements about burial depth. This should maximise the chance of cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. The array cables will typically be buried at a target burial depth between 1-2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.	s.36 conditions and marine licence conditions.
M-019	Advance warning and accurate location details of construction, O&M and decommissioning operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners and Kingfisher Bulletins.	s.36 conditions and marine licence conditions.
M-020	Application for and use of Safety Zones of up to 500m during construction, maintenance and decommissioning phases. Where appropriate, guard vessels will also be used to ensure adherence with Safety Zones or advisory passing distances, as defined by risk assessment, to mitigate any impact which poses a risk to surface navigation during construction, maintenance and decommissioning phases. Such impacts may include partially installed structures or cables, extinguished navigation lights or other unmarked hazards.	Application will be made under Section 95 and Schedule 16 of the Energy Act 2004 (as amended) and The Electricity (Offshore Generating Stations) (Safety Zones) (Applications Procedures and Control of Access) Regulations 2007.
M-027	Development of and adherence to a Lighting and Marking Plan (LMP). The LMP will confirm compliance with legal requirements with regards to shipping, navigation and aviation marking and lighting.	s.36 conditions and marine licence conditions.
M-029	Development of and adherence to a Navigational Safety Plan (NSP). The NSP will describe measures put in place by the Project related to navigational safety, including information on Safety Zones, charting, construction buoyage, temporary lighting and	s.36 conditions and marine licence conditions.

Table 5.9.837 Relevant commercial fisheries embedded environmental measures

ID	Environmental measure proposed	How the environmental measures will be secured
	marking, and means of notification of Project activity to other sea users (e.g., via Notice to Mariners).	
M-038	Development of and adherence to a Fisheries Mitigation, Monitoring and Communication Plan. The Plan describes the mitigation, monitoring and communication that will be put in place by a licensee or consent holder to avoid or minimise the adverse effects of a project on commercial fisheries through construction and O&M phases of the Project and detail any mitigation measures to be put in place to limit effects on commercial fisheries activity. This will include the mitigation which will be put in place to avoid or minimise the adverse impacts on commercial fisheries; confirmation of any monitoring of commercial fisheries will be carried out and the purpose of any monitoring; how the licensee will communicate with commercial fisheries stakeholders; and a summary of the stakeholder engagement that was carried out in relation to the Fisheries Mitigation, Monitoring and Communication Plan.	s.36 conditions and marine licence conditions.
M-037	Development of and adherence to a Cable Plan (CaP). The CaP will confirm planned cable routing, burial and any additional protection and will set out methods for post-installation cable monitoring. Where practicable, cable burial will be the preferred means of cable protection. Cable burial will be informed by the cable burial risk assessment and detailed within the CaP.	s.36 conditions and marine licence conditions.
M-039	Any objects dropped on the seabed during works associated with the Project will be reported and objects will be recovered where they pose a hazard to other marine users and where recovery is possible.	s.36 conditions and marine licence conditions.
M-040	Participation in any fisheries working group to assist with liaison between the Project and the fishing community.	s.36 conditions and marine licence conditions.
M-041	Adherence to best practice guidance with regards to fisheries liaison and procedures in the event of interactions between the Project and fishing activities (e.g., FLOWW, 2014; 2015).	s.36 conditions and marine licence conditions.
M-042	Appointment of a Company Fisheries Liaison Officer (CFLO). The CFLO will support ongoing liaison and ensure clear communication between the Project and commercial fisheries.	s.36 conditions and marine licence conditions.

Likely significant effects

- 5.9.46 In line with the EIA Regulations (as described in **Chapter 3**), the EIA for the Project will assess those impacts where there is a likely significant effect only. This Section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant effect. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.9.47 The likely significant effects on commercial fisheries are summarised in **Table 5.9.10**. The scoping assessment is based on a combination of the Project at the scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage,

the evidence base for commercial fisheries effects, and professional judgement. The approach to this assessment is set out in **Chapter 5.9**.

5.9.48 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not, and distinguishes between the level of assessment proposed for significant effects 'scoped in' as simple or detailed. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
Reduction in access to, or exclusion from, established fishing grounds (Construction, O&M, and Decommissioning)	M-037, M-019, M-020, M-027, M-029, M-038, M-008, M-039, M-040, M-041, M-042	Project activities, together with the physical presence of infrastructure, have potential to create loss of fishing opportunities. This effect is expected to be localised, and long-term; furthermore, the operational range of relevant fleets will not typically be limited to the Project.	Scoped in.	Demersal otter trawl fleets targeting: nephrops; whitefish; and squid; Dredge fleet targeting scallop; Potting fleet targeting crab species and lobster; Pelagic fleet targeting mackerel; and Gears using hooks targeting mackerel.	Data requests for further data to be submitted and analysed to support assessment. Data from navigational surveys will be considered.
Displacement of fishing activity leading to gear conflict and increased fishing pressure on adjacent grounds (Construction, O&M, and Decommissioning)	M-019, M-008, M-038, M-040, M-041, M-042	Any reduced access to fishing grounds creates the potential for displacement of fishing activity. This effect is expected to be long- term and localised, noting that the operational range of relevant fleets will not typically be limited to the Project.	Scoped in.	As above.	Data requests for further data to be submitted and analysed to support assessment.
Disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity	M-008	Project activities may lead to disturbance of commercially important fish and shellfish resources and therefore displace or disrupt a range of fishing activity. It will be assumed that commercial fisheries will be	Scoped in.	As above.	Information from the fish ecology, benthic epibenthic and shellfish ecology assessment will inform this assessment.

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Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
(Construction, O&M, and Decommissioning)		affected as a result of any loss of resources.			
Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity (Construction, O&M, and Decommissioning)	M-019, M-029, M-038, M-041, M-042	Movement of vessels associated with the Project adding to the existing volume of marine traffic in the area, may lead to interference of fishing activity.	Scoped in.	As above.	Information from the shipping and navigation assessment will inform this assessment.
Additional steaming to alternative fishing grounds for vessels that would otherwise fish within the Project (Construction, O&M, and Decommissioning)	M-019, M-029, M-038, M-041, M-042	A reduction in access to fishing grounds may require additional steaming to alternative grounds. Given the high volumes of commercial fishing traffic in the inshore area, across two of the busiest fishing ports in Scotland, it is anticipated that deviations may lead to additional steaming time.	Scoped in.	As above.	Information from the shipping and navigation assessment will inform this assessment.
Physical presence of infrastructure and potential exposure of that infrastructure leading to gear snagging (for	M-038 M-029, M-019, M-020, M-027, M-029, , M-039, M- 041, M-042	Standard industry practice and protocol (e.g., seabed infrastructure will be buried and/or marked on nautical charts) will minimise the risk of gear snagging, but it remains likely to be an area of industry concern.	Scoped in.	As above.	No further data requirements.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor	Further data baseline requirements
floating and fixed WTG design) (Construction, O&M, and Decommissioning)		Safety aspects associated with this impact, including damage to property and vessel stability, will be considered within the Shipping and Navigation impact assessment.			

Impacts proposed to be scoped out of assessment

5.9.50 All likely significant effects identified will be considered at further stages of the assessment as more detail regarding the design becomes available and greater levels of baseline data are collected and analysed. **No matters or aspects are being scoped out** at this stage, but may be subject to project refinement and ongoing stakeholder engagement.

Cumulative effects

- 5.9.51 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.9.52 Cumulative effects on commercial fisheries resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter I** and considering the other developments that have been screened in as part of the Cumulative Effects Assessment (CEA) screening exercise.
- 5.9.53 For commercial fisheries, the following impacts from Project have the potential to act cumulatively with impacts from other developments to contribute to cumulative effects:
 - reduction in access to, or exclusion from established fishing grounds;
 - displacement leading to gear conflict and increased fishing pressure on adjacent grounds; and
 - disturbance of commercially important fish and shellfish resources leading to displacement or disruption of fishing activity.

Transboundary effects

5.9.54 The potential transboundary effects from construction, O&M and decommissioning are considered in **Appendix 4A: Transboundary Screening Matrix**. Transboundary impacts will be considered based on any potential displacement of fishing activity into the Norwegian EEZ, which is expected to be highly unlikely based on data reviewed within this Scoping Report.

Proposed approach to the EIA Report

- 5.9.55 Detailed analysis of existing baseline datasets along with consideration of the future baseline will be undertaken within the offshore part of the EIA to characterise long-term (i.e., over several years) patterns in commercial fisheries activity across the study area and predict potential impacts upon future commercial fishing activities. Data sources include those set out within **Table 5.9.7**.
- 5.9.56 Consultation with the commercial fishing industry will be undertaken in order to ground-truth available baseline data and gain further understanding of commercial fisheries activity in the study area. Analysis of data and the results of consultation will provide an extended baseline characterisation of the study area, which will underpin and inform the impact assessment.

- 5.9.57 Consultation will be held with relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA, as set out in **Chapter 4**.
- 5.9.58 No site-specific surveys are proposed to inform the commercial fisheries EIA chapter, although data and surveys collated for the fish ecology assessment, benthic, epibenthic and shellfish ecology assessment and shipping and navigation assessments will also inform the commercial fisheries assessment.
- 5.9.59 Likely significant effects will be described, and the assessment will include consideration of potential likely significant cumulative effects, as set out in **Chapter 4**.

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5.10 Shipping and navigation

Introduction

- 5.10.1 The shipping and navigation assessment will consider the potential likely significant effects on vessel traffic that may arise from the construction, operation and maintenance (O&M), and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions, the datasets to be used to inform the EIA, the potential likely significant effects to be considered, and how these will be assessed for the purpose of the EIA Report.
- 5.10.2 Shipping and navigation interfaces with other aspects and as such, should be considered alongside these, namely:
 - Section 4.2: Infrastructure and other marine users: Potential shipping and navigation
 impacts may cause interference or risk to infrastructure and other marine users, for
 example, oil and gas infrastructure and existing or future vessel access. Therefore, the
 shipping and navigation assessment will inform the infrastructure and other marine
 users assessment;
 - Section 5.1: Marine geology, oceanography and physical processes: This Section describes pathways of effect from marine processes physical parameters on potentially sensitive shipping and navigation receptors; and
 - Section 5.9: Commercial fisheries: Potential shipping and navigation impacts may cause interference or risk to commercial fishing vessels transiting and actively fishing. Therefore, the shipping and navigation assessment will inform the commercial fisheries assessment.
- 5.10.3 It is noted that the shipping and navigation assessment will assess impacts associated with navigational safety only and not on vessels engaged in fishing (see Section 5.9: Commercial fisheries).

Legislation and policy context

- 5.10.4 This Section identifies the relevant legislative and policy context which has informed the scope of the shipping and navigation assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual national, and marine planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- **5.10.5** In order to provide a robust evidence base, **Table 5.10.1** below presents a summary of legislation and policies relevant to the shipping and navigation assessment. This Section takes account of these specific requirements in order to assess and address likely impacts on receptors and relevant environmental issues does not quote the policies in full but rather states the relevance to this Section.

Table 5.10.1 Relevant legislation and policy

Relevant Legislation and Policy	Relevance to the assessment
Legislation	
United Nations Law of the Sea (UNCLOS) 1982 Article 60 (7) (United Nations (UN), 1982)	UNCLOS will be considered as part of the EIA Report Chapter. Regard is given to internationally recognised sea lanes (main commercial routes) which will be considered a key element of the shipping and navigation baseline.
International Regulations for the Prevention of Collisions (COLREGS) (International Organisation (IMO), 1972/77)	The COLREGs will be considered fully throughout the EIA Report Chapter.
International Regulations for the Safety of Life at Sea (SOLAS) (IMO, 1974)	SOLAS will be considered fully throughout the EIA Report Chapter.
National Policy	
United Kingdom (UK) Marine Policy Statement (Defra, 2011) - Paragraph 3.4.7	The ports and shipping section of the UK Marine Policy Statement will be considered fully throughout the EIA Report chapter. Regard will be given to the displacement of existing main commercial routes and subsequent increases in collision risk as part of the impact assessment.
Scotland'sNationalMarinePlan(Scottish Government, 2015)Transport 1Transport 2-Transport 3-Transport 6	All marine planning policies for shipping, ports, harbours and ferries will be considered fully throughout the EIA Report Chapter. Regard is given to the displacement of main commercial routes and other marine activities such as anchoring activity.
Sectoral Marine Plan (SMP) for Offshore Wind Energy (Scottish Government, 2020)	The SMP for Offshore Wind Energy identifies sustainable areas for the future development of commercial scale offshore wind energy in Scotland, including a spatial strategy to inform the seabed leasing process for the purposes of offshore wind energy.

Technical guidance

5.10.6 Technical guidance that has been used to define the assessment is set out in **Table 5.10.2**.

Table 5.10.2 Relevant technical guidance

Guidance reference	Relevance to the assessment					
Maritime Coastguard Agency (MCA) Marine Guidance Note (MGN) 654 (MCA, 2021) and its annexes	 The primary guidance used to inform the shipping and naviga assessment and the Navigational Risk Assessment (NRA). Sout what developers must include and assess within an NRA an offshore wind farm. Compliance with MGN 654 will demonstrated via completion of the MGN 654 checklist which be included as an appendix to the NRA. 					
IMO guidelines for Formal Safety Assessment (FSA) (IMO, 2018)	Standard marine methodology for undertaking safety assessments for shipping and navigation users.					

Guidance reference	Relevance to the assessment
International Association of Lighthouse Authorities (IALA) Recommendation R139 (2021a); Guidance G1162 on the Marking of Man-Made Offshore Structures (IALA, 2021b), and G1185 Enhancing the safety and efficiency of navigation around offshore renewable energy installation (IALA, 2024)	Sets out international guidance on the lighting and marking of man-made offshore structures. This guidance is then used by the relevant General Lighthouse Authority to establish lights and marks.
The Royal Yachting Association (RYA)'s Position on Offshore Energy Developments: Paper 1 - Wind Energy (RYA, 2019)	Sets out the RYA position on offshore wind farms including expected minimum standard and mitigations for consideration.
MCA and Health and Safety Executive (HSE) Regulatory Expectations on Moorings for Floating Wind and Marine Devices (MCA and HSE, 2017)	Provide essential considerations for the mooring systems and how they should be considered in proportion to the potential risks to develop a safe and sustainable development.

Study area

- 5.10.7 The study area for the shipping and navigation assessment is defined as a 10 nautical mile (nm) buffer of the Scoping Boundary, as shown in **Appendix 1A, Figure 5.10.1: Shipping and navigation study area** (hereafter referred to as the shipping and navigation study area). This is an industry standard buffer used for shipping and navigation assessment as it captures relevant routeing in the area that may be affected while still remaining site specific to the wind turbine generators (WTGs), offshore substations, and array cables located within the Scoping Boundary.
- 5.10.8 The shipping and navigation study area may be reviewed and amended in response to such matters as refinement of the offshore components, the identification of additional impact pathways and in response, where appropriate, to feedback from consultation.
- 5.10.9 Where appropriate, features outside of the shipping and navigation study area such as navigational features, other future offshore developments, and international ports will be considered in the NRA.

Consultation

- 5.10.10 This Section has been informed by engagement and discussion with various stakeholders. **Table 5.10.3** provides a summary of consultation to date, along with a response to identify how the matter is dealt with in this report.
- 5.10.11 The anticipated consultation plan post scoping is set out within paragraph 5.10.46.

April 2025

Consultee	Comments and considerations	How this is accounted for
Maritime and Coastguard Agency (MCA)	Introductory meeting 11 March 2025, key discussion points included overview of the Project, consenting strategy, and vessel traffic survey approach.	As per paragraph 5.10.47 appropriate vessel traffic methodology has been agreed with the MCA.
	The Applicant and MCA discussed the potential for undertaking an extended summer vessel traffic survey and assessment of long- term Automatic Identification System (AIS) data in lieu of separate summer and winter surveys as a suitable approach for the Project.	

Assessment methodology

Introduction

- 5.10.12 The Project-wide approach to the assessment methodology is set out in **Chapter 4: Approach to Scoping and EIA**. However, whilst this has informed the general approach that has been used in this Section the primary guidance on assessment of shipping and navigation risk is provided by the MCA.
- 5.10.13 As required under the MCA Methodology (Annex 1 to MGN 654) (MCA, 2021), and in line with international marine risk assessment standards, it is proposed that the IMO FSA (IMO, 2018) approach will be applied for impact assessment. The FSA methodology is centred on risk control and assesses each impact in terms of its frequency of occurrence and severity of consequence in order that its significance can be determined as "broadly acceptable", "tolerable", or "unacceptable" via a risk matrix as shown in **Table 5.10.4**. Any impact assessed as "unacceptable" will require additional mitigation measures implemented beyond those considered embedded to reduce the impact to within "tolerable" or "broadly acceptable" parameters.

Table 5.10.4 IMO FSA risk matrix

		Severity					
		Negligible	Minor	Moderate	Serious	Major	
	Negligible	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	
-	Extremely Unlikely	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	
-requen	Remote	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	
Icy	Reasonably Probable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	Unacceptable	
	Frequent	Tolerable	Tolerable	Unacceptable	Unacceptable	Unacceptable	

- 5.10.14 Severity and frequency will be determined via the NRA findings which will be based on various factors including:
 - quantitative modelling (via Anatec's CollRisk software);
 - output of the baseline assessment including vessel traffic surveys;
 - consideration of embedded environmental measures in place;
 - lessons learnt from other offshore wind farms;
 - levels of stakeholder concern; and
 - outputs of consultation.

Baseline conditions

5.10.15 This Section establishes the baseline environment in terms of navigational features, vessel traffic, and maritime incidents for the purpose of identifying impacts which should be scoped into the EIA Report.

Data sources

5.10.16 The data sources that have been used to inform this Section of the Scoping Report are presented in **Table 5.10.5**. It is noted that AIS data is not comprehensive for recreational vessels and fishing vessels less than 15 metres (m) in length or vessels under 300 gross tonnes. Further assessment of these vessel types is therefore required as part of the NRA and as per MGN 654.

Source	Date	Summary	Coverage of study area
Summer vessel traffic data	16-29 July 2024	14 days of Vessel traffic data (Automatic Identification System (AIS)), collected by Anatec Limited via terrestrial receivers for a variety of purposes (i.e. not Project- specific), was used to align with MCA guidance.	Full coverage of the study area.
Winter vessel traffic data	04-17 December 2024	As above.	Full coverage of the study area.
United Kingdom Hydrographic Office (UKHO) Admiralty Charts	2024	Charts 273 – North Sea Offshore Charts Sheet 7, 278 – North Sea Offshore Charts Sheet 5, and 1409 – Buckie to Arbroath.	Full coverage of the study area.
Admiralty Sailing Directions North Sea (West) Pilot, 12th Edition NP54 (UKHO, 2021)	2021	Pilot book detailing navigational features in the region.	Full coverage of the study area.
Marine Accident Investigation Branch (MAIB) Incident Data (MAIB, 2023)	2014 - 2023	The most up to date incident data available provided by the MAIB. Post 2023 data is expected to be available for use in the EIA Report.	Full coverage of the study area.
Royal National Lifeboat Institution (RNLI) Incident Data	2014 - 2023	The most up to date incident data provided by the RNLI. Post 2023 data is expected to be available for use in the EIA Report.	Full coverage of the study area.

Table 5.10.5 Key sources of shipping and navigation data

Current baseline

Navigational features

- 5.10.17 Appendix 1A, Figure 5.10.2: Navigational features in proximity to the Scoping Boundary presents the navigational features charted within the vicinity of the Scoping Boundary.
- 5.10.18 There are various oil and gas installations located to the west of the Scoping Boundary; this includes the Kittiwake field with its surface platform 6.5 nm from the Scoping Boundary. Teal & Guillemot field, Triton field, and Gannet field are also located west with the former two having Floating, Production, Storage and Offloading (FPSO) installations. Consequently, there are many pipelines, manifolds and wells located in the vicinity; the closest to the Scoping Boundary at 1.5 nm to the north is the gas pipeline between the Fulmar Oil Field and St Fergus Gas Terminal (Rattray Bay). A total of seven wells are located within the shipping and navigation study area.
- 5.10.19 The CampionWind Floating Light Detection and Ranging (FLiDAR) buoys were located within the Scoping Boundary as illustrated **Appendix 1A, Figure 5.10.2**. This was deployed by the Applicant to gather meteorological and oceanographic data in September 2022 and was

recalled in October 2024 however the UKHO charts have not been updated to reflect this change at the time of writing.

5.10.20 A total of 11 charted wrecks and three obstructions are located within the shipping and navigation study area with two wrecks located within the Scoping Boundary itself. Charted wrecks are deemed to be the only wrecks that could impact navigational safety. The closest port to the Scoping Boundary is Peterhead Port at approximately 50 nm to the west.

Marine traffic

- 5.10.21 This Section identifies the vessel traffic baseline based on preliminary assessment of 28 days of vessel traffic data as required by MGN 654. This comprises of 14 days of AIS data collected during the 16 to 29 July 2024 and 14 days of AIS data collected during the 04 to 17 December 2024. Vessels deemed as temporary traffic have been removed on the basis that these are neither representative of the baseline, nor likely to feature in a future case scenario.
- 5.10.22 Appendix 1A, Figure 5.10.3: AIS vessel traffic data by vessel type (28 days, 2024) presents the 28 days of AIS data, colour-coded by vessel type within the shipping and navigation study area.
- 5.10.23 The majority of the traffic within the shipping and navigation study area was recorded during the summer period; an average of 24 unique vessels were recorded per day when compared to an average of 12 unique vessels per day during the winter period. This was observed to be primarily associated with a decrease in commercial vessels and fishing vessel activity during the winter period, as well as the presence of passenger vessels (cruise liners) and recreational vessels in summer not being recorded in winter, which is expected given they are seasonal in nature and the distance from shore of the Scoping Boundary offshore.
- 5.10.24 For vessels intersecting the Scoping Boundary, an average of nine unique vessels were recorded per day during the summer period, or 38% of all summer vessel traffic recorded, and an average of three unique vessels were recorded per day during the winter period, or 25% of all winter vessel traffic recorded.
- 5.10.25 The most common vessel type within the shipping and navigation study area was oil and gas vessels which accounted for 60% of all vessels recorded across the combined data periods (54% of all vessels recorded in the summer data period and 72% of all vessels recorded in the winter data period). Of all oil and gas vessels recorded across the combined data periods, 32% intersected the Scoping Boundary.
- 5.10.26 Oil and gas vessels were observed commonly undertaking northeast/southwest transits within the north of the shipping and navigation study area; particularly between Aberdeen and the Forties Oil field and to the Kittiwake Oil Field situated within the northeast of the shipping and navigation study area. Other oil and gas vessels were undertaking east/west transits in the south of the shipping and navigation study area primarily between Aberdeen and the cluster of oil fields to the immediate east of the shipping and navigation study area.
- 5.10.27 Fishing vessels were also observed mainly in the northwest of the shipping and navigation study area with many vessels likely engaged in active fishing behaviour (as opposed to being on transit) with several transits recorded across the Scoping Boundary. A total of 40% of all fishing vessels recorded across the combined data periods intersected the Scoping Boundary.
- 5.10.28 A Roll-On/Roll-Off cargo route was recorded between Risivika and Aberdeen in the northwest of the shipping and navigation study area, approximately 5 nm from the Scoping Boundary.
- 5.10.29 Passenger vessels, consisting of cruise liners and large yachts, and recreational vessels were seasonal and only recorded in the summer data period within the shipping and navigation study area, with several vessels transiting across the Scoping Boundary.

Maritime incidents

- 5.10.30 The marine incident data assessed indicates incident rates within the shipping and navigation study area are generally low. Based on the analysis of information reported within the RNLI incident data, there were no incidents recorded within the shipping and navigation study area over the ten-year period assessed (2014 2023).
- 5.10.31 Based on the analysis of information reported within the MAIB incident data (MAIB, 2023), there were four incidents recorded within the shipping and navigation study area over the same ten-year period, with one recorded within the Scoping Boundary itself. This was an accident to person on board a fishing trawler in 2014.

Future baseline

5.10.32 Future changes in shipping depend on a variety of complex factors such as energy requirements, government policies, trading patterns and vessel design and as such are difficult to predict. The NRA will therefore consider a conservative increase which will be discussed with the relevant stakeholders. It should be considered that levels of oil and gas activity are likely to increase, noting the ongoing decommissioning of various North Sea fields.

Basis for scoping assessment

- 5.10.33 The shipping and navigation scoping assessment is based on the following key assumptions, which are also set out in **Chapter 2**:
 - impacts from all phases of the Project for an offshore wind farm, such as vessel displacement;
 - impacts from the WTG floating unit, such as allision risk;
 - impacts from the presence of the WTG station keeping unit, such as, increase in under keel and anchor and fishing gear interaction;
 - impacts from the presence of the floating unit in O&M, such as loss of station;
 - impacts from the presence of fixed foundation infrastructure such as WTGs, accommodation platforms and offshore substations (including those housing reactive compensation equipment if required);
 - impacts from the presence of fixed foundation WTGs if incorporated into the Project design, and
 - impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life.

Embedded environmental measures

5.10.34 As part of the Project design process, a number of embedded environmental measures are proposed to reduce the potential for impacts on shipping and navigation (see **Table 5.10.6**). These will evolve over the development process as the EIA progresses and in response to consultation. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.

5.10.35 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the scoping assessment.

Table 5. 10.0 Nelevalli Shipping and havigation embedded environmental measures	Table 5.10.6 Relevant ship	pping and navigation	embedded environmer	ntal measures
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ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 of the Energy Act 2004 (as amended), s36 conditions and Marine Licence conditions.
M-008	Development of and adherence to a Project Environmental Monitoring Programme (PEMP), which will set out commitments to environmental monitoring in pre-, during and post-construction Project phases.	s.36 conditions and Marine Licence conditions.
M-013	A detailed Cable Burial Risk Assessment (CBRA) will be undertaken to enable informed judgements about burial depth. This should maximise the chance of array cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. The array cables will typically be buried at a target burial depth between 1-2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA.	s.36 conditions and Marine Licence conditions.
M-019	Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners and Kingfisher Bulletins.	s.36 conditions and Marine Licence conditions.
M-020	Application for and use of Safety Zones of up to 500 m around surface piercing infrastructure during construction, maintenance, operation and decommissioning phases where a supporting safety case is presented. Any application for safety zones will include methodologies for ensuring adherence with safety zones used to mitigate any impact which poses a risk to surface navigation during construction, maintenance, operation and decommissioning phases. Such impacts may include partially installed structures or cables, extinguished navigation lights, floating technology or other unmarked hazards.	Application will be made under Section 95 and Schedule 16 of the Energy Act 2004 (as amended) and The Electricity (Offshore Generating Stations) (Safety Zones) (Applications Procedures and Control of Access) Regulations 2007
M-021	Appropriate marking of the Project on Admiralty and aeronautical charts. This will include provision of the positions and heights of structures to the UKHO, Civil Aviation Authority, Ministry of Defence and Defence Geographic Centre.	s.36 conditions and Marine Licence conditions.
M-022	Blade clearance of at least 22 m above Lowest Astronomical Tide (LAT).	s.36 conditions and Marine Licence conditions.

Environmental measure proposed

ID

		measures will be secured
M-023	Compliance with MCA MGN 654 (MCA, 2021) and its annexes where applicable. MGN 654 include the completion of a Search and Rescue Checklist.	s.36 conditions and Marine Licence conditions.
M-024	Compliance with regulatory expectations on moorings for floating wind and marine devices (HSE and MCA, 2017).	s.36 conditions and Marine Licence conditions.
M-025	Development of and adherence to a Development Specification and Layout Plan (DSLP), which will confirm the Project's layout and design parameters.	s.36 conditions and Marine Licence conditions.
M-026	Appointment of a Company Fisheries Liaison Officer (CFLO). The CFLO will support ongoing liaison and ensure clear communication between the Project and commercial fisheries.	s.36 conditions and Marine Licence conditions.
M-027	Development of and adherence to a Lighting and Marking Plan (LMP). The LMP will confirm compliance with legal requirements with regards to shipping, navigation and aviation marking and lighting.	s.36 conditions and Marine Licence conditions.
M-028	A Marine Pollution Contingency Plan (MPCP) will be developed. This MPCP will outline procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to the Project. The MPCP will also include relevant key emergency contact details.	s.36 conditions and Marine Licence conditions.
M-029	Development of and adherence to a Navigation Safety Plan (NSP). The NSP will describe measures put in place by the Project related to navigational safety; this includes information on Safety Zones, charting, construction buoyage, temporary lighting and marking, and means of notification of Project activity to other sea users (e.g., via Notice to Mariners).	s.36 conditions and Marine Licence conditions.
M-030	Development of and adherence to a Vessel Management Plan (VMP), which will confirm the types and numbers of vessels that will be engaged on the Project, and summarise vessel coordination function including indicative transit route planning.	s.36 conditions and Marine Licence conditions.
M-031	Marine navigation marking and lighting of the Project, as described in the LMP, will be defined in agreement with Northern Lighthouse Board and in line with IALA Recommendation G1162 (IALA, 2021b).	s.36 conditions and Marine Licence conditions.
M-032	The construction area will be buoyed, as described in the NSP. Buoyage will be defined in consultation with the Northern Lighthouse Board.	s.36 conditions and Marine Licence conditions.

How the environmental

Likely significant effects

- 5.10.36 In line with the EIA Regulations (as described in **Chapter 3: Legislation and Policy Context**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-feature pathway will not lead to a significant impact with regards to the EIA Regulations the pathway is proposed to be scoped out from further assessment.
- 5.10.37 The likely significant effects on shipping and navigation are summarised in **Table 5.10.7**. The scoping assessment is based on a combination of the Project definition at the scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for shipping and navigation effects (see data sources in **Table 5.10.7** as determined on a preliminary basis via the baseline assessment), professional judgement, and the requirements of MGN 654. The approach to this assessment is set out in **Chapter 4: Approach to Scoping and EIA**.
- 5.10.38 It is noted that the NRA will be in line with MCA required terminology, however a clear explanation between the two glossaries will be included within the shipping and navigation chapter of the EIA Report.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Increased vessel to vessel collision risk resulting from displacement (third party to third party) during all Project phases	M-002, M-019, M-020, M-021, M-023, M-025, M-026, M-027, M-029, M-030, M-031	Potential significant effect. AIS and non-AIS traffic will need to be considered, and quantitative modelling undertaken to assess the risk.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.
Increased vessel to vessel collision risk resulting from displacement (third party to Project vessel) during all Project phases	M-002, M-008, M-019, M-020, M-021, M-023, M-025, M-026, M-027, M-028, M-029, M-030, M-031, M-032	Potential significant effect. AIS and non-AIS traffic will need to be considered, and quantitative modelling undertaken to assess the risk.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.
The presence of partially constructed, operational, and decommissioning surface structures will create new allision risk to vessels	M-002, M-008, M-019, M-020, M-021, M-022, M-023, M-025, M-026, M-027, M-029, M-031, M-032	Potential significant effect. AIS and non-AIS traffic will need to be considered and quantitative modelling undertaken to assess the risk.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.
Reduced access to local ports and harbours during all Project phases	M-002, M-008, M-019, M-026, M-028, M-029, M-030	Potential significant effect. AIS and non-AIS traffic will need to be considered and	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
		quantitative modelling undertaken to assess the risk.			Consultation required including hazard workshop.
Reduction of under keel clearance as a result of subsea infrastructure during operation	M-008, M-013, M-019, M-021, M-023, M-024, M-026, M-028, M-029	Potential significant effect.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.
Anchor and fishing gear interaction with subsea cables during operation	M-008, M-013, M-019, M-021, M-023, M-026, M-028, M-029	Potential significant effect. AIS and non-AIS traffic will need to be considered.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.
Anchor and fishing gear interaction with mooring lines during operation	M-008, M-013, M-019, M-021, M-023, M-026, M-028, M-029	Potential significant AIS and non-AIS traffic will need to be considered.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop. Consultation with fisheries community through the Fisheries Liaison Officer
Loss of station during operation (i.e., failure of mooring lines)	M-008, M-019, M-021, M-022, M-024, M-026, M-027, M-029, M-030, M-031	Potential significant effect.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Interference with navigation, communications, and position-fixing equipment during operation (includes potential effects of electromagnetic interference)	M-013, M-021, M-025, M-027, M-031	Potential significant effect.	Scoped in	All vessels	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.
Reduction of Search and Rescue (SAR) capability during operation due to presence surface infrastructure	M-008, M-021, M-023, M-024, M-025, M-027, M-028, M-029, M-030, M-031	Potential significant effect. There may be an increase in incident rates associated with the Project which may lead to a reduction in SAR resource capability. The layout of structures may also impact SAR resource	Scoped in	All vessels including emergency response resources.	Additional data for NRA stage, including vessel traffic surveys compliant with MGN 654. Consultation required including hazard workshop.

access in the area.

5.10.39 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for Shipping and navigation.

Impacts proposed to be scoped out of assessment

5.10.40 All likely significant effects identified will be considered at further stages of the assessment along with more detail regarding the design as it becomes available, and greater levels of baseline data are collected and analysed. No matters or aspects are being scoped out at this stage in line with MGN 654 (MCA, 2021).

Cumulative effects

- 5.10.41 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.10.42 Cumulative effects on shipping and navigation resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4: Approach to Scoping and EIA** and considering the other developments that have been screened in as part of the Cumulative Effects Assessment screening exercise.
- 5.10.43 An overview of the Scoping Boundary in proximity to neighbouring cumulative developments is illustrated in **Appendix 1A, Figure 5.10.4: General cumulative overview**.
- 5.10.44 All impacts identified on an in-isolation basis will be considered within the assessment for the potential for cumulative effects. In terms of cumulative projects to be included, other developments within a 50 nm radius of the Scoping Boundary will be screened in or out of the cumulative assessment based on a number of factors, including:
 - status of cumulative development;
 - data confidence level;
 - proximity to cumulative developments; and
 - location relative to routeing passing the Scoping Boundary.

Transboundary effects

5.10.45 A screening of transboundary impacts has been carried out and the potential effects from construction, O&M, and decommissioning on shipping and navigation receptors are considered in **Appendix 4A: Transboundary Screening Matrix**. Transboundary effects associated with vessels transiting to/from outside of the UK including transboundary ports will be considered within the in-isolation assessment, and cumulatively with the presence of other offshore developments and activities within the cumulative assessment.

Proposed approach to the EIA Report

5.10.46 Consultation will be held with relevant statutory and non-statutory organisations as necessary as set out in **Chapter 4: Approach to Scoping and EIA**. Specifically for shipping and navigation, the NRA process will be informed via consultation with key relevant stakeholders. This is expected to include:

- dedicated key stakeholder meetings (e.g., MCA, Northern Lighthouse Board, RYA Scotland, and the Chamber of Shipping);
- Regular Operator outreach (i.e., consultation with regular users of the area);
- a hazard workshop with local stakeholders;
- liaison via FLO where appropriate; and
- other consultation as directed by the NRA process.
- 5.10.47 As per MGN 654 (MCA, 2021), the NRA will include vessel traffic survey data that accounts for seasonal variation and non-AIS traffic. The proposed methodology for vessel traffic survey data surveys has been agreed with the MCA. This will include one three-week summer survey in addition to analysis of 12 months of AIS data (including winter months) and vessel monitoring system data.
- 5.10.48 Likely significant effects will be described, and the assessment will include consideration of potential significant cumulative effects as appropriate, as set out in **Chapter 4: Approach to Scoping and EIA**. It is noted that as per the assessment methodology section above, the NRA will apply the FSA as required under MGN 654.

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5.11 Marine archaeology and cultural heritage

Introduction

- 5.11.1 The marine archaeology and cultural heritage assessment will consider the potential likely significant effects on offshore cultural heritage assets that may arise from the construction, operation and maintenance (O&M), and decommissioning of the Offshore Wind Farm Array Area (the 'Project') as described in **Chapter 2: Project Description**. This Section of the Scoping Report describes the methodology to be used within the Environmental Impact Assessment (EIA), an overview of the baseline conditions within the Scoping Boundary (as defined in **Chapter 1: Introduction**), the datasets to be used to inform the EIA, the likely significant effects to be considered within the EIA, and how these likely significant effects will be assessed for the purpose of an EIA.
- 5.11.2 Marine archaeology and cultural heritage interfaces with other aspects and as such, should be considered alongside **Section 5.1**: **Marine geology, oceanography and physical processes. Section 5.1** describes pathways of effect from marine processes physical parameters on potentially sensitive marine archaeology and cultural heritage receptors. Due to the potential for altered marine processes to affect marine archaeological remains, the marine geology, oceanography and physical processes section will be used to inform the marine archaeology and cultural heritage assessment.

Legislation and policy context

- 5.11.3 This Section identifies the relevant legislative and policy context which has informed the scope of the marine archaeology and cultural heritage assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 3: Legislative and Policy Context** which provides an overview of the relevant legislative and policy context for the Project. **Chapter 3: Legislative and Policy Context** is supported by **Appendix 3A: Planning Policy Framework** which provides a detailed summary of individual national, marine and local planning policies of relevance to this EIA. **Chapter 3** and **Appendix 3A** should be read in conjunction with this Section.
- 5.11.4 In order to provide an objective evidence base, **Table 5.11.1** below, presents a summary of legislation and policies relevant to the marine archaeology and cultural heritage assessment. This table does not quote the policies in full but rather states the relevance to this <u>Section</u>.

Relevant legislation and policy	Relevance to the assessment
Legislation	
Marine (Scotland) Act (2010)	The Act provides a framework to help balance competing demands on Scotland's seas. It introduces a duty to protect and enhance the marine environment and includes measures to help boost economic investment and growth in areas such as marine renewables.
Merchant Shipping Act (1995)	The Receiver of Wreck administers is responsible for processing incoming reports of wreck and cargo. The Project has the potential to impact items associated with wrecks, which fall within the definition of 'wreck'.
The Protection of Military Remains Act (1986)	Provides protection for the wreckage of military aircraft and certain military wrecks. Designations can be either as a Controlled Site or Protected Place where access may be permitted but any operations that may disturb the site are illegal unless licenced by the Ministry of Defence. All military aircraft are automatically protected under this legislation; however, vessels must be designated individually.
Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017	Regulations applying to EIA projects offshore from 12 nautical miles (nm) to 200 nm.
National Policy	
National Planning Framework 4 (NPF4) 2023	A full review of the relevance of the Approved NPF4 2023 for this EIA is provided in Appendix 3A Planning Policy Framework. Policies of relevance to this area of technical assessment are: • Policy 1: Tackling the Climate and Nature Crisis;
	and
	• Policy 7: Historic Assets and Places.
Historic Environment Policy for Scotland (HEPS) (2019)	The document is designed to support and enable good decision- making about changes to the historic environment. HEPS sets out a series of principles and policies for the recognition, care and sustainable management of the historic environment which have informed development of the proposed scope and methodology of the assessment.
Marine Policy	
UK Marine Policy Statement (MPS) (2011)	Sets out high-level objectives for the marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses. Requires use of the marine environment and its resources to maximise sustainable activity, prosperity and opportunities for all. Requires use of marine environment recognises the protection and management needs of marine cultural heritage according to its significance.

Table 5.11.1 Relevant legislation and policy

Relevant legislation and policy	Relevance to the assessment
Scotland National Marine Plan (NMP) (2015)	GEN 6 Historic environment states the development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance. The draft NMP2 is expected to be published in 2025 and adopted in 2027. Relevant sections of the NMP2 will be followed for the marine archaeology and cultural heritage assessment.
Sectoral Marine Plan - Offshore Wind Energy (2020)	Confirms Plan Options for ScotWind leasing (including E2) and provides a spatial strategy for offshore wind development. Highlights the need for this strategy to minimise the potential adverse effect on other marine users, economic sectors and the environment. It comments on the value of the historic environment to Scotland, noting existing protections and providing links to further information on designated and non-designated heritage assets.

Technical guidance

5.11.5 Technical guidance that has been used to define the assessment is set out in **Table 5.11.2**.

Guidance reference	Relevance to the assessment
Historic Environment Guidance for the Offshore Renewable Energy Sector (Wessex Archaeology Ltd 2007)	A generic guidance note on the survey, appraisal and monitoring of the historic environment during the development of offshore renewable energy projects in the UK. The guidance is applicable to the marine environment and the coastal environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by offshore renewable energy developments.
Guidance for Assessment of Cumulative Impacts on the Historic Environment from Offshore Renewable Energy (Oxford Archaeology 2008)	A guidance note on the assessment the cumulative effects on the historic environment during the development of offshore renewable energy projects in the UK. The guidance is applicable to the marine environment and the coastal environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by offshore renewable energy developments.
Code of Practice for Seabed Development (JNAPC and The Crown Estate 2006)	The code provides guidance to developers on risk management and legislative implications of developing within the marine environment in the UK. It also outlines the responsibility of developers in protecting the UK's marine heritage.
Guidance for Offshore Geotechnical Investigations and Historic Environment Analysis: guidance for the renewable energy sector (Gribble and Leather 2011)	A guidance note on the aims of offshore geotechnical investigations and the resulting analysis undertaken during the development of offshore renewable energy projects in the UK. The guidance is applicable to the marine environment and the coastal environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by offshore renewable energy developments.

Table 5.11.2 Relevant technical guidance

Guidance reference	Relevance to the assessment
Protocol for Archaeological Discoveries: Offshore Renewables Projects (The Crown Estate 2014)	A guidance note on the necessary methodology of the Protocol for Archaeological Discoveries undertaken during marine projects in the UK. The guidance is applicable to the marine environment and the coastal environment adjacent to any development, encompassing the inter-tidal area, coastal margin and those areas further inland likely to be affected by marine developments.
Chartered Institute for Archaeologists' Standard and Guidance for Historic Environment Desk-Based Assessments and code of conduct (CIfA 2020a) and consultancy advice (CIfA 2020b))	Generic guidance notes on the assessment of the historic environment during the development projects in the UK. The Code of Conduct guides the practices and standards for archaeological assessment both onshore and offshore.
Archaeological Written Schemes of Investigation for Offshore Wind Farm Projects Offshore Renewables Projects (The Crown Estate 2021)	Guidance on the range of archaeological methodologies that may be required as part of the initial investigation stages or the mitigation phase of offshore projects.
Scottish Archaeological Research Framework – Marine and Maritime (ScARF 2025)	An overview of the research questions that inform archaeological investigation within Scottish territorial waters.
Managing Change in the Historic Environment: Setting (Historic Environment Scotland (HES) 2016)	Guidance note regarding the understanding and assessment of impacts to the setting of designated and undesignated heritage sites.
Management Guidelines for military aviation sites (Historic England 2016)	Guidance regarding the management and understanding of sites that include military aviation remains.
Principles of Cultural Heritage Impact Assessment (IEMA <i>et al,</i> 2021)	Guidance regarding the understanding and assessment of impacts to cultural heritage assets.
Our Past, Our Future: Historic Environment Strategy for Scotland (HES 2023)	Strategy informing planning activities and decisions that impact the Scottish historic environment.

Study area

- 5.11.6 Initial data gathering to support the development of the Scoping Report has been undertaken for the marine area within the Scoping Boundary, shown in **Appendix 1A**, **Figure 5.11.1 Marine heritage assets**.
- 5.11.7 Data for a study area, defined as a 10-kilometre (km) buffer from the Scoping Boundary, will be reviewed and amended for the EIA in response to such matters as refinement of the offshore components, the identification of additional impact pathways and in response where appropriate to feedback from stakeholder engagement and statutory consultation. The 10 km buffer Study Area was determined to allow for full characterisation of the Scoping Boundary and account for the potential for inaccuracies in the known heritage asset locations.

Consultation

- 5.11.8 No formal pre-scoping consultation has been undertaken with regard to the scope of assessment required for the marine cultural heritage assessment. Comments on this Scoping Report will be considered in the preparation of the EIA Report.
- 5.11.9 For the preparation of the EIA Report, the marine cultural heritage and archaeology assessment would require consultation with the archaeological advisor to the Local Planning Authority (LPA) at Aberdeenshire County Council. Where necessary, Historic Environment Scotland will be consulted. Discussions would focus on study areas, methodology, key constraints, and any other information which may not be available through the Historic Environment Record (HER).

Assessment methodology

Introduction

- 5.11.10 The Project-wide approach to the assessment methodology is set out in **Chapter 4**: **Approach to Scoping and EIA**. However, whilst this has informed the approach that has been used in this marine archaeology and cultural heritage section, it is necessary to set out how this methodology will be applied, and adapted as appropriate, to address the specific needs of the marine archaeology and cultural heritage assessment.
- 5.11.11 The methodology for establishing a detailed historic environment baseline is provided below, together with the methodology for assessing the significance of effects. To establish a detailed baseline, appropriate and proportionate assessments and surveys will be carried out following refinement of the offshore project components. These are expected to include:
 - a desk-based review of data within the study area, using sources detailed in Table 5.11.6 and paragraph 5.11.24, as well as relevant readily available contextual studies, desk and field studies, geological and geotechnical data;
 - geophysical survey data from the site-specific site investigations to be undertaken in during the environmental assessment stage of the application; and
 - cross-referencing with other workstreams where appropriate to ensure an integrated approach to assessment.

Assessment of effects and determining significance

- 5.11.12 The sensitivity or value of a receptor is largely a product of its importance, as informed by legislation and policy, and as qualified by professional judgement. The rationale contained within **Table 5.11.3** is based on information provided within Historic Environment Policy for Scotland (HES 2019). Note that the categorisation of the relative importance of those assets that are of less than national importance generally relies on the professional judgement of the marine archaeology and cultural heritage EIA team.
- 5.11.13 **Table 5.11.3** sets out the generic guidelines for the assessment of sensitivity and value of a receptor or feature.

able 5.11.3 Generic guidelines for the assessment of sensitivity or value		
Value or Sensitivity	Guidelines	
Very High	This category contains heritage assets that will be considered to be of international importance either for historic associations or their informative potential. This category includes heritage assets designated as World Heritage Sites and those of equivalent value.	
High	This category contains heritage assets that will be considered to be of national importance either for historic associations or their informative potential. This category includes heritage assets designated as scheduled monuments, protected military remains or Historic Marine Protected Areas and those of equivalent value, or palaeoenvironment remains that are either very well-preserved or particularly important for understanding specific periods.	
Medium	Heritage assets of regional importance for historic associations or their informative potential. This category includes well-preserved live wrecks that are not suitable for designation, or paleoenvironmental remains that are typical of a region.	
Low	Non-designated heritage assets of local importance for historic associations or their informative potential may include marine debris or less well-preserved marine material, or generally representative archaeological material or feature types.	
Very Low	These include those features that are recorded but no longer extant, which are suggestive of further activity but not of intrinsic value (e.g. records of losses	

auidelines for the assessment of sensitivity or value Table 5.11.3 G

5.11.14 The magnitude of change affecting a receptor that will result from the Project will be identified on a scale from minor alterations of change, up to major changes or the total or substantial loss of the receptor. In this case the magnitude of change is a matter of professional judgement to determine the magnitude of change, using descriptive terminology.

without identified wreck sites, some 'dead' wrecks, isolated finds of debris).

5.11.15 **Table 5.11.4** sets out the generic criteria of the assessment of the magnitude of change.

Table 5.11.4 Generic criteria for the assessment of magnitude

Magnitude	Criteria (Adverse)	Criteria (Beneficial)	
High	Total or substantial change to an asset. Loss or disturbance of defining features of the asset.	Large-scale increase in understanding and preservation of a heritage asset beyond the scale of any disturbance.	
Medium	Partial alteration of an asset. Very limited disturbance to key features of the asset or loss of minor features.	Benefits to understanding or preservation of a heritage asset not requiring disturbance.	
Low	Minor alteration of an asset. Limited disturbance of minor features.	Minor benefits to understanding or preservation not requiring disturbance of a heritage asset.	
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Very Low	Very limited alteration of minor features of an asset.	Minor alteration of elements of an asset, which are sensitive but do not contribute discernibly to sustainable use and/or management.	

5.11.16 **Table 5.11.5** has been prepared to guide the assessment of whether effects on the historic environment for the purposes of EIA are to be considered significant or not. The classification of the effect is judged on the relationship of the magnitude of impact to the assessed heritage significance of the resource. A magnitude of effect of Moderate or higher is deemed as Significant in EIA terms.

Receptor Value	ptor Magnitude of Change			
_	High	Medium	Low	Very Low
Very High	Very Large (Significant)	Very Large or Large (Significant)	Large or Moderate (Significant)	Slight (Not Significant)
High	Very Large or Large (Significant)	Large or Moderate (Significant)	Moderate (Significant) or Slight (Not Significant)	Slight (Not Significant)
Medium	Large or Moderate (Significant)	Moderate (Significant)	Slight (Not Significant)	Slight or Neutral (Not Significant)
Low	Moderate (Significant) or Slight (Not Significant)	Slight (Not Significant)	Slight or Neutral (Not Significant)	Slight or Neutral (Not Significant)
Very Low	Slight (Not Significant)	Slight or Neutral (Not Significant)	Slight or Neutral (Not Significant)	Neutral (Not Significant)

Table 5.11.5 Significance Assessment Matrix

5.11.17 All assessments will be presented as narrative discussions, setting out the significance of the relevant heritage asset(s), and where appropriate contribution of their settings to significance, providing a description of the anticipated change and setting out the magnitude of change in line with the definitions set out in **Table 5.11.5**.

Baseline conditions

5.11.18 This Section establishes the baseline environment in terms of marine archaeology and cultural heritage for the purpose of identifying impacts which should be scoped into the EIA Report. Where there is uncertainty, the impacts have been scoped into the assessment.

Data sources

5.11.19 Data sources used to support development of this Scoping Report are set out at **Table 5.11.6**. Additional data sources, including the Aberdeenshire HER will be consulted during the development of the EIA baseline as set out at **paragraph 5.11.24** below.

Table 5.11.6 Sources of marine archaeology and cultural heritage data used to inform the Scoping Assessment

Source	Date	Summary	Coverage of study area
Historic Marine Protected Areas (HMPA) (Historic Environment Scotland (HES) 2025)	2022	There is a record for each HMPA. Each HMPA record contains a map, detailed information about the marine historic asset(s), preservation objectives and summary operational advice.	100%
United Kingdom Hydrographic Office (UKHO) Wrecks and Obstructions data (UKHO, 2025)	2025	An extensive data set containing over 94,000 charted, uncharted, live and dead wrecks and obstructions from around the world.	100%
Canmore Maritime (HES 2025)	2025	Identifies recorded wrecks and losses in Scottish waters from a number of sources.	100%

Current baseline

- 5.11.20 Records from the initial data searches within the Scoping Boundary and associated Study Area are plotted in **Figure 5.11.1, Appendix 1A**.
- 5.11.21 Marine archaeological and cultural heritage receptors can be attributed to four main categories of sites or features:
 - submerged prehistoric landscapes resulting from changes to sea-level and eventual stabilisation of sea-level at or near present levels. Such landscapes may contain highly significant evidence of prehistoric human occupation and/or environmental change;
 - archaeological remains of watercraft deposited when such vessels sank while at sea; and
 - remains of aircraft crash sites, either coherent assemblages or scattered material usually the result of Second World War (WWII) military conflict, but also numerous passenger casualties, particularly during the peak of seaplane activity during the interwar period. Also includes aircraft, airships and other dirigibles dating to the First World War (WWI) though these rarely survive in the archaeological record.
- 5.11.22 There are no HMPAs located within the Scoping Boundary and associated Study Area. There are 17 recorded Wrecks and Obstacles recorded within the Study Area identified as part of the desk study, including one, the Gudrun Bjoerg (Wreck Id 72802, Canmore Id 324424), a modern fishing vessel sunk in 2008, located on the western edge of the Scoping Boundary (can be seen on **Figure 5.11.1, Appendix 1A**).

- 5.11.23 Recent archaeological work in the North Sea area has highlighted the survival of relict terrestrial landscapes that were inundated at the end of the last glacial period, approximately 8,500 years before present day. This survival has not been recorded as far north as the Scoping Boundary and Study Area, and the specific geological conditions that apply further south where such remains are recorded are not present in the Scoping Boundary. Consequently, it is not considered likely that there will be extensive survival of any buried landscapes.
- 5.11.24 The potential for the presence of archaeological and paleoenvironmental remains will be considered within a marine archaeology desk-based assessment and through the archaeological analysis of marine geophysical survey data for the Scoping Boundary (to be undertaken during the environmental assessment stage). The following sources will be consulted for the desk-based assessment:
 - Historic Environment Scotland Spatial Datasets;
 - UKHO wrecks and obstructions data;
 - Canmore/Canmore Maritime;
 - Aberdeenshire HER;
 - The Wreck Site online database (Wreck Site 2025);
 - Shipwreck Index of the British Isles: Scotland (Larn and Larn 1998); and
 - other cartographic, archival, and documentary sources.

Future baseline

- 5.11.25 No significant changes are expected to the current baseline in the absence of further marine development. There is potential for limited deterioration, disturbance, or movement of archaeological remains as a result of marine processes causing sediment movements and deterioration of anthropogenic material.
- 5.11.26 Marine archaeology is under threat from warming waters caused by climate change. Warming waters result in the northward migration of invasive species, which may include the blacktip shipworm *Lyrodus pedicellatus*, among other species, which is considered to be a major threat to wooden wrecks and other wooden structures within the marine environment. Ocean acidification, caused by higher levels of atmospheric carbon dioxide being dissolved into and carried by seawater making it more acidic, will have a detrimental effect on the metal parts of shipwrecks, including the hulls of iron and steel vessels. It is not anticipated that these would affect the distribution or preservation of potential archaeological remains sufficiently to affect the EIA.

Basis for scoping assessment

- 5.11.27 The marine archaeology and cultural heritage scoping assessment is based on the following key assumption, which is also set out in **Chapter 2**:
 - impacts from the installation of the wind turbine generators (WTGs); WTG floating design units (and the potential for WTG fixed design units to be used); WTG platforms and station keeping system; offshore substation(s), and accommodation platform(s), such as disturbance of marine archaeological remains or deposits of geoarchaeological interest;

- impacts from the installation of array cables, such as disturbance of marine archaeological remains or deposits of geoarchaeological interest;
- impacts from the presence of hard cable protection, such as change to marine processes;
- Impacts from scouring, sediment erosion and impact on buried remains from the catenary effects of mooring cables, caused by wave action and tidal cycles; and
- impacts associated with decommissioning will be described to the degree possible, noting that this will necessarily be indicative, as it is likely that both technology and the regulatory regime will have evolved by the end of the Project's life.
- 5.11.28 The source-pathway-receptor linkage between Project infrastructure and / or activities and the receptor groups for this aspect are described in **Table 5.11.8**.

Embedded environmental measures

- 5.11.29 As part of the Project design process, a number of embedded measures are proposed to reduce the potential for impacts on marine archaeology and cultural heritage (see **Table 5.11.8**) response to consultation. They will be fed iteratively into the assessment process. These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements.
- 5.11.30 As there is a commitment to implementing these environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and have, therefore, been considered in the Scoping assessment.

Table 5.11.7 Relevant marine archaeology and cultural heritage embedded environmental measures

ID	Environmental measure proposed	How the environmental measures will be secured
M-002	The development of and adherence to a decommissioning programme.	Required under sections 105 and 114 (Energy Act 2004).
M-003	 A Construction Environmental Management Plan (CEMP) to be implemented by the contractor. The contractor will ensure that the relevant environmental measures within the CEMP and health and safety procedures are implemented. A CEMP will identify the project management structure roles and responsibilities with regard to managing and reporting on the environmental impact of the construction phase. Other measures that that feed into the CEMP include: M-004: Construction noise and vibration; M-005: Risk Assessment Method Statement; M-006: CEMP to include measures to minimise emissions. 	s.36 conditions.

The CEMP will be the securing mechanism for many measures.

ID	Environmental measure proposed	How the environmental
		measures will be secured
M-015	Archaeological and paleoenvironmental mitigation will entail an agreed programme of archaeological recording and dissemination set out as a Project Design, including a Protocol for Archaeological Discoveries (PAD), and providing for review of any additional geophysical and geotechnical survey, to mitigate any significant adverse effects during construction.	s.36 conditions, Marine Licence conditions
M-016	Sensitive sites will be avoided by the temporary and permanent offshore footprint through the implementation of Archaeological Exclusion Zones around identified cultural heritage assets.	s.36 conditions, Marine Licence conditions.
M-017	Loss or disturbance of possible submerged historic landscape elements arising from altered seabed conditions (e.g. scour) will be mitigated, as far as possible, through sensitive design.	Construction Environmental Management Plan (CEMP).
M-018	Loss or disturbance of possible submerged historic landscape elements arising from works will be mitigated, as far as possible, through selection of appropriate working methods.	CEMP.

Likely significant effects

- 5.11.31 In line with the EIA Regulations (as described in **Chapter 3: Legislation and Policy Context**), the EIA for the Project will consider those impacts where there is a risk of a likely significant effect only. The following Section draws on industry experience and expertise to identify those effect-receptor pathways that may potentially lead to a significant impact. Where experience and available evidence indicates an effect-receptor pathway will not lead to a significant impact, the pathway is scoped out from assessment.
- 5.11.32 The likely significant effects on the marine historic environment are summarised in **Table 5.11.8.** The Scoping assessment is based on a combination of the Project definition at the Scoping stage, embedded environmental measures, understanding of the baseline conditions at this stage, the evidence base for marine archaeology, and cultural heritage effects, and professional judgment. The approach to this assessment is set out in **Chapter 4: Approach to Scoping and EIA**.
- 5.11.33 The early identification of likely significant effects is used here as a tool aimed at delivering a proportionate approach to the EIA. In doing so, it sets out a high-level assessment of all potential effects, significant or not. The basis for scoping out certain effects, and therefore to no longer be considered, is presented after the table, supported by the evidence base.

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
Construction of offshore infrastructure	M-015, M-016, M-003	Likely significant effect. Potential disturbance of wrecks or recovery of cultural material during intrusive operations on the seabed.	Scoped in.	Non-designated wrecks, crash sites or other cultural material.	Desk-based assessment, geophysical survey data.
	M-017, M-018, M-003	Likely significant effect. Potential permanent loss or disturbance of paleoenvironmental and archaeological remains during construction.	Scoped in.	Non-designated deposits of geoarchaeological / paleoenvironmental interest.	Desk-based assessment, geophysical survey, vibrocoring and borehole data where available.
	Not applicable	No change to setting of terrestrial heritage assets arising from visibility of offshore infrastructure during construction is anticipated as a result of the distance of visible infrastructure from the shore.	Scoped out. Please refer to paragraph 5.11.36 for rationale.	Designated heritage assets.	Not applicable.
Operation / Maintenance of the Project	M-015, M-016	Likely significant effect. Potential harm from disturbance to wrecks in close proximity to the site arising from maintenance of the array or cables.	Scoped in.	Designated and non- designated wrecks, crash sites or other cultural material.	Desk-based assessment, geophysical survey data.
	M-015, M-016	Likely significant effect. Potential harm from disturbance to wrecks in close proximity to the site arising from altered sea-bed conditions, e.g. scour or differential deposition of sediments.	Scoped in.	Designated and non- designated wrecks, crash sites or other cultural material.	Desk-based assessment, geophysical survey data.

Table 5.11.8 Likely significant marine archaeology and cultural heritage effects

Activity and impact	Embedded measures	Effect	Proposed approach to assessment (scoped in or scoped out)	Receptor (users)	Further data baseline requirements
	M-015, M-016, M-017, M-018	Likely significant effect. Potential harm from scouring, sediment erosion and impact on buried remains from the catenary effects of mooring cables, caused by wave action and tidal cycles.	Scoped in.	Designated and non- designated wrecks, crash sites or other cultural material.	Desk-based assessment, geophysical survey data.
Decommissioning of offshore infrastructure	M-002	Effect during decommissioning would be limited to areas already affected during construction or operation / maintenance with no potential for significant adverse effect arising through additional disturbance. Mitigation may be required for minor effects.	Scoped out. Please refer to paragraph 5.11.37 for rationale.	Designated and non- designated wrecks, crash sites or other cultural material.	Desk-based assessment, geophysical survey data.

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5.11.34 Potential interactions between the Project and Transmission Infrastructure will be considered, taking a similar approach as described in **Chapter 4**. In the EIA, a combined appraisal of the Project and Transmission Infrastructure (if required) will be undertaken to consider potential interactions between impacts and / or potential for additive effects for Marine archaeology and cultural heritage.

Impacts proposed to be scoped out of assessment

- 5.11.35 A number of potential effects are proposed to be scoped out from further assessment resulting from a conclusion of no likely significant effect. These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and professional judgement on the potential for impact from projects more widely. The conclusions follow (in a site-based context) existing best practice. Each scoped out effect is considered in turn below.
- 5.11.36 Potential effects arising from visibility of offshore infrastructure during construction and O&M of the Project on onshore designated heritage assets have been scoped out of further assessment. The closest designated heritage assets are listed buildings in Peterhead 93.5 km to the west of the Scoping Boundary. It is considered that there would be limited to no visibility between the designated assets and the Project and therefore any effects to the value of the designated assets through changes in their setting would not be significant.
- 5.11.37 Potential effects arising from the decommissioning of the Project have been scoped out from further assessment. In effect, any disturbance arising during this phase of the Project will present only minor effects on archaeological remains and/or geoarchaeological deposits that have previously been disturbed and mitigated during the construction or O&M phases. It is possible that best practice mitigation measures, such as a PAD or Project Design, will be required to ensure that any additional disturbance can be more fully mitigated.
- 5.11.38 All likely significant effects identified will be considered at further stages of the assessment as more detail regarding the design becomes available and greater levels of baseline data are collected and analysed.

Cumulative effects

- 5.11.39 There is potential for cumulative effects (intra-relationships and inter-relationships) to arise in which other projects or plans could act collectively with the Project and Transmission Infrastructure which require assessing due to spatial scope and associated assessments.
- 5.11.40 Cumulative effects on marine archaeology and cultural heritage resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4**.

Transboundary effects

5.11.41 No transboundary impacts have been identified due to the relatively localised nature of the potential effects; this is summarised in **Appendix 4A: Transboundary Screening Matrix**.

Proposed approach to the EIA Report

5.11.42 Consultation will be held with relevant statutory and non-statutory organisations as necessary as set out in **Chapter 4**.

- 5.11.43 Disturbance of archaeological remains is likely to occur during construction phase activity. Likely significant effects will be described, and the assessment will include consideration of potential significant cumulative effects as appropriate, as set out in **Chapter 4**.
- 5.11.44 The spatial scope for assessment during construction will be defined by the study area as described above and refined through consultation with key stakeholders.
- 5.11.45 Consultation will be held with the relevant statutory and non-statutory organisations as necessary and stakeholder feedback will inform the EIA. Consultees are expected to comprise HES and Aberdeenshire Council.
 - Consultation will be held with Aberdeenshire Council in respect of:
 - archaeological baseline data from the Aberdeenshire HER;
 - potential effects on archaeological remains; and
 - potential effects on palaeolandscape receptors.
- 5.11.46 Where wrecks or crash sites are identified that may constitute Protected Military Remains, consultation will be undertaken with the Ministry of Defence to ensure that all statutory requirements can be met.
- 5.11.47 Archaeological remains and deposits of geoarchaeological interest within the construction footprint and within any additional area anticipated to be affected by scour or other changed depositional processes will be assessed.
- 5.11.48 Likely significant effects will be described, and the assessment will include consideration of potential significant cumulative effects as appropriate, as set out in **Chapter 4**.

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6. Summary and next steps

6.1 Introduction

- 6.1.1 The information included in this Scoping Report is provided to support the Applicant's request for a Scoping Opinion from Marine Directorate Licencing Operations Team (MD-LOT).
- 6.1.2 The main aspects of the offshore environment likely to be significantly affected by the construction, operation and maintenance, and decommissioning of Offshore Wind Farm Array Area ('the Project') have been identified. For each of the identified aspects, the Scoping Report has identified the extent of relevant environmental studies to be undertaken as part of an Environmental Impact Assessment (EIA). The EIA Report will outline the full EIA process and is likely to be submitted alongside applications for: Section 36 Consent under the Electricity Act 1989,and associated Marine licences under the Marine and Coastal Access Act 2009 for the offshore infrastructure.

6.2 **Scope of Assessment**

- 6.2.1 Likely significant effects of the Project have been identified according to each EIA aspect. For some of these, further data collection and an assessment will be required in order to determine the significance of the effects. These have been proposed to be scoped-in and an appropriate level of assessment proposed (see **Table 6.2.1**).
- 6.2.2 For other potential effects it is proposed that they be scoped the EIA (i.e. no further data collection or assessment is proposed). These conclusions have been made based on the knowledge of the baseline environment, the nature of planned works and the available evidence on the potential for impact from such projects more widely (see **Table 6.2.1**).
- 6.2.3 Cumulative effects resulting from the effects of the Project and other developments will be assessed in accordance with the guidance and methodologies set out in **Chapter 4: Approach to Scoping and EIA**. In this Scoping Report, for each aspect, potential impacts of the Project that may contribute to cumulative effects on resources. Receptors are set out in **Chapter 5: Environmental Aspects** and **Appendix 4A** presents a **Transboundary Screening Matrix** for the Project.

Aspect	Summary of proposed scoping approach
Marine geology, oceanography and physical processes	Scoped in for further assessment
Marine water and sediment quality	Scoped in for further assessment
Underwater noise and vibration	Scoped in for further assessment
Electromagnetic fields	Scoped in for further assessment
Benthic, epibenthic and shellfish ecology	Scoped in for further assessment

Table 6.2.1 Summary of proposed scope of technical assessment of the EIA

Aspect	Summary of proposed scoping approach
Marine mammals	Scoped in for further assessment
Offshore ornithology	Scoped in for further assessment
Fish ecology	Scoped in for further assessment
Commercial fisheries	Scoped in for further assessment
Shipping and navigation	Scoped in for further assessment
Marine archaeology and cultural heritage	Scoped in for further assessment
Military and civil aviation and telecommunications	Scoped in for further assessment
Socio-economics	Scoped in for further assessment
Infrastructure and other marine users	Scoped in for further assessment
Climate change	Scoped in for further assessment
Major accidents and disasters	Scoped out of further assessment
Waste	Scoped out of further assessment
Seascape, landscape and visual assessment	Scoped out of further assessment
Offshore air quality	Scoped out of further assessment
Offshore airborne noise and vibration	Scoped out of further assessment
Human health	Scoped out of further assessment

