



Cenos Offshore Windfarm Limited



# Cenos EIA

## Appendix 17 - Marine Mammal Cumulative Effects Assessment Screening

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Aberdeen

5th Floor Capitol Building  
429-431 Union Street . Aberdeen  
AB11 6DA . UK

[www.xodusgroup.com](http://www.xodusgroup.com)



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## ACRONYMS

ACRONYM	DEFINITION
CCS	Carbon Capture and Storage
CEA	Cumulative Effects Assessment
CNS	Central North Sea
CNSE	Central North Sea Electrification
CNSFTC	Central North Sea Fibre Telecommunications Company Limited
EDR	Effective Deterrence Ranges
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIC	Energy Industries Council
EICC	Export/Import Cable Corridor
EMEC	European Marine Energy Centre
FTU	Floating Turbine Unit
IAC	Inter-Array Cable
INTOG	Innovation and Targeted Oil & Gas
iPCoD	Interim Population Consequences of Disturbance
JNCC	Joint Nature Conservation Committee
km	Kilometre
LF	Low Frequency
MMO	Marine Management Organisation
MMOs	Marine Mammal Observers
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
OSCP	Offshore Substation Converter Platform
PINS	Planning Inspectorate
PTS	Permanent Threshold Shift
RIAA	Report to Inform Appropriate Assessment
TTS	Temporary Threshold Shift
UK	United Kingdom
WTG	Wind Turbine Generator
ZoI	Zone of Influence

## GLOSSARY

TERM	DEFINITION
<b>2023 Scoping Opinion</b>	Scoping Opinion received in June 2023, superseded by the 2024 Scoping Opinion.
<b>2023 Scoping Report</b>	Environmental Impact Assessment (EIA) Scoping Report submitted in 2023, superseded by the 2024 Scoping Report.
<b>2024 Scoping Opinion</b>	Scoping Opinion received in September 2024, superseding the 2023 Scoping Opinion.
<b>2024 Scoping Report</b>	EIA Scoping Report submitted in April 2024, superseding the 2023 Scoping Report.
<b>Area of Opportunity</b>	The area in which the limits of electricity transmission via High Voltage Alternating Current (HVAC) cables can reach oil and gas assets for decarbonisation. This area is based on assets within a 100 kilometre (km) radius of the Array Area.
<b>Array Area</b>	The area within which the Wind Turbine Generators (WTGs), floating substructures, moorings and anchors, Offshore Substation Converter Platforms (OSCPs) and Inter-Array Cables (IAC) will be present.
<b>Cenos Offshore Windfarm ('the Project')</b>	'The Project' is the term used to describe Cenos Offshore Windfarm. The Project is a floating offshore windfarm located in the North Sea, with a generating capacity of up to 1,350 Megawatts (MW). The Project which defines the Red Line Boundary (RLB) for the Section 36 Consent and Marine Licence Applications (MLA), includes all offshore components seaward of Mean High Water Springs (MHWS) (WTGs, OSCP, cables, floating substructures moorings and anchors and all other associated infrastructure). The Project is the focus of this Environmental Impact Assessment Report (EIAR).
<b>Cenos Offshore Windfarm Ltd. (The Applicant)</b>	The Applicant for the Section 36 Consent and associated Marine Licences.
<b>Cumulative Assessment</b>	The consideration of potential impacts that could occur cumulatively with other relevant projects, plans, and activities that could result in a cumulative effect on receptors.
<b>Developer</b>	Cenos Offshore Windfarm Ltd., a Joint Venture between Flotation Energy and Vårgrønn As (Vårgrønn).

TERM	DEFINITION
<b>Environmental Impact Assessment (EIA)</b>	The statutory process of evaluating the likely significant environmental effects of a proposed project or development. Assessment of the potential impact of the proposed Project on the physical, biological and human environment during construction, operation and maintenance and decommissioning.
<b>Environmental Impact Assessment Regulations</b>	This term is used to refer to the Environmental Impact Assessment Regulations which are of relevance to the Project. This includes the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended); and the Marine Works (Environmental Impact Assessment) Regulations 2007.
<b>Environmental Impact Assessment Report</b>	A report documenting the findings of the EIA for the Project in accordance with relevant EIA Regulations.
<b>Export/Import Cable</b>	High voltage cable used to export/import power between the OSCPs and Landfall.
<b>Export/Import Cable Bundle (EICB)</b>	Comprising two Export/Import Cables and one fibre-optic cable bundled in a single trench.
<b>Export/Import Cable Corridor (EICC)</b>	The area within which the Export/Import Cable Route will be planned and the Export/Import Cable will be laid, from the perimeter of the Array Area to MHWS.
<b>Export/Import Cable Route</b>	The area within the Export/Import Export Corridor (EICC) within which the Export/Import Cable Bundle (EICB) is laid, from the perimeter of the Array Area to MHWS.
<b>Floating Turbine Unit (FTU)</b>	The equipment associated with electricity generation comprising the WTG, the floating substructure which supports the WTG, mooring system and the dynamic section of the IAC.
<b>Flotation Energy</b>	Joint venture partner in Cenos Offshore Windfarm Ltd.
<b>Habitats Regulations</b>	The Habitats Directive (Directive 92/43/ECC) and the Wild Birds Directive (Directive 2009/147/EC) were transposed into Scottish Law by the Conservation (Natural Habitats &c) Regulations 1994 ('Habitats Regulations') (up to 12 NM); 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);

TERM	DEFINITION
	<p>the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001; and the Wildlife and Countryside Act 1981. 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, Special Protection Areas, candidate SACs and SPAs and Ramsar Sites).</p>
<p><b>Habitats Regulations Appraisal</b></p>	<p>The assessment of the impacts of implementing a plan or policy on a European Site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the site.</p>
<p><b>High Voltage Alternating Current (HVAC)</b></p>	<p>Refers to high voltage electricity in Alternating Current (AC) form which is produced by the WTGs and flows through the IAC system to the OSCPs. HVAC may also be used for onward power transmission from the OSCPs to assets or to shore over shorter distances.</p>
<p><b>High Voltage Direct Current (HVDC)</b></p>	<p>Refers to high voltage electricity in Direct Current (DC) form which is converted from HVAC to HVDC at the OSCPs and transmitted to shore over longer distances.</p>
<p><b>Horizontal Directional Drilling (HDD)</b></p>	<p>An engineering technique for laying cables that avoids open trenches by drilling between two locations beneath the ground's surface.</p>
<p><b>Innovation and Targeted Oil &amp; Gas (INTOG)</b></p>	<p>In November 2022, the Crown Estate Scotland (CES) announced the Innovation and Targeted Oil &amp; Gas (INTOG) Leasing Round, to help enable this sector-wide commitment to decarbonisation. INTOG allowed developers to apply for seabed rights to develop offshore windfarms for the purpose of providing low carbon electricity to power oil and gas installations and help to decarbonise the sector. Cenoss is an INTOG project and in November 2023 secured an Exclusivity Agreement as part of the INTOG leasing round.</p>
<p><b>Inter-Array Cable (IAC)</b></p>	<p>The cables which connect the WTGs to the OSCPs. WTGs may be connected with IACs into a hub or in series as a 'string' or a 'loop' such that power from the connected WTGs is gathered to the OSCPs via a single cable.</p>
<p><b>Joint Venture</b></p>	<p>The commercial partnership between Flotation Energy and Vårgrønn, the shareholders which hold the Exclusivity Agreement with CES to develop the Cenoss site as an INTOG project.</p>

TERM	DEFINITION
<b>Landfall</b>	The area where the Export/Import Cable from the Array Area will be brought ashore. The interface between the offshore and onshore environments.
<b>Marine Licence</b>	Licence required for certain activities in the marine environment and granted under the Marine and Coastal Access Act 2009 and/or the Marine (Scotland) Act 2010.
<b>Marine Protected Area (MPA)</b>	Marine sites protected at the national level under the Marine (Scotland) Act 2010 out to 12 NM, and the Marine and Coastal Access Act 2009 between 12-200 NM. In Scotland MPAs are areas of sea and seabed defined so as to protect habitats, wildlife, geology, underseas landforms, historic shipwrecks and to demonstrate sustainable management of the sea.
<b>Marine Protected Area (MPA) Assessment</b>	A three-step process for determining whether there is a significant risk that a proposed development could hinder the achievement of the conservation objectives of an MPA.
<b>Mean High Water Springs (MHWS)</b>	The height of Mean High Water Springs is the average throughout the year, of two successive high waters, during a 24-hour period in each month when the range of the tide is at its greatest.
<b>Mean Low Water Springs (MLWS)</b>	The height of Mean Low Water Springs is the average throughout a year of the heights of two successive low waters during periods of 24 hours (approximately once a fortnight).
<b>Mitigation Measures</b>	<p>Measures considered within the topic-specific chapters in order to avoid impacts or reduce them to acceptable levels.</p> <ul style="list-style-type: none"> <li>• Primary mitigation - measures that are an inherent part of the design of the Project which reduce or avoid the likelihood or magnitude of an adverse environmental effect, including location or design;</li> <li>• Secondary mitigation – additional measures implemented to further reduce environmental effects to ‘not significant’ levels (where appropriate) and do not form part of the fundamental design of the Project; and</li> <li>• Tertiary mitigation – measures that are implemented in accordance with industry standard practice or to meet legislative requirements and are independent of the EIA (i.e. they would be implemented regardless of the findings of the EIA).</li> </ul>
	Primary and tertiary mitigation are referred to as embedded mitigation. Secondary mitigation is referred to as additional mitigation.



TERM	DEFINITION
<b>Mooring System</b>	Comprising the mooring lines and anchors, the mooring system connects the floating substructure to the seabed, provides station-keeping capability for the floating substructure and contributes to the stability of the floating substructure and WTG.
<b>Nature Conservation Marine Protected Area (NCMPA)</b>	MPA designated by Scottish Ministers in the interests of nature conservation under the Marine (Scotland) Act 2010.
<b>Offshore Substation Converter Platforms (OSCPs)</b>	An offshore platform on a fixed jacket substructure, containing electrical equipment to aggregate the power from the WTGs and convert power between HVAC and HVDC for export/import via the Export/Import Cable to/from the shore. The OSCP's will also act as power distribution stations for the Oil & Gas platforms.
<b>Onward Development</b>	Transmission projects which are anticipated to be brought forward for development by 3 <sup>rd</sup> party oil and gas operators to enable electrification of assets via electricity generated by the Project. All Onward Development will subject to separate marine licensing and permitting requirements.
<b>Onward Development Area</b>	The area within which oil and gas assets would have the potential to be electrified by the Project.
<b>Onward Development Connections</b>	Oil and gas assets located in the waters surrounding the Array Area will be electrified via transmission infrastructure which will connect to the Project's OSCP's. These transmission cables are referred to as Onward Development Connections.
<b>Project Area</b>	The area that encompasses both the Array Area and EICC.
<b>Project Design Envelope</b>	A description of the range of possible elements that make up the Project design options under consideration and that are assessed as part of the EIA for the Project.
<b>Study Area</b>	Receptor specific area where potential impacts from the Project could occur.
<b>Transboundary Assessment</b>	The consideration of impacts from the Project which have the potential to have a significant effect on another European Economic Area (EEA) state's environment. Where there is a potential for a transboundary effect, as a result of the Project, these are assessed within the relevant EIA chapter.

TERM	DEFINITION
<b>Transmission Infrastructure</b>	The infrastructure responsible for moving electricity from generating stations to substations, load areas, assets and the electrical grid, comprising the OSCPs, and associated substructure, and the Export/Import Cable.
<b>Vårgrønn As (Vårgrønn)</b>	Joint venture partner in Cenoss Offshore Windfarm Ltd.
<b>Wind Turbine Generator (WTG)</b>	The equipment associated with electricity generation from available wind resource, comprising the surface components located above the supporting substructure (e.g., tower, nacelle, hub, blades, and any necessary power transformation equipment, generators, and switchgears).
<b>Worst-Case Scenario</b>	The worst-case scenario based on the Project Design Envelope which varies by receptor and/or impact pathway identified.

## APPENDIX 17 MARINE MAMMALS CUMULATIVE EFFECTS ASSESSMENT SCREENING

### 17.1 Introduction

Cenos Offshore Windfarm ('the Project') was awarded an Exclusivity Agreement under the Innovation and Targeted Oil & Gas (INTOG) Leasing Round in 2022. The Project is entirely located within the area INTOG 'E-a' and aims to supply the United Kingdom (UK) Grid with electricity and additionally play a role in the decarbonisation of the UK oil and gas industry by delivery of electrical power to offshore oil and gas installations. The Project is a floating offshore windfarm, located 200 kilometres (km) offshore east of Aberdeen, in the Central North Sea (CNS).

The Project will comprise of up to 95 Floating Turbine Units (FTUs), each consisting of a Wind Turbine Generator (WTG) and a floating substructure, which will be anchored to the seabed to ensure station-keeping within the Array Area. Dynamic and static portions of Inter-Array Cables (IACs) will also be required within the ~333 km<sup>2</sup> Array Area. Included in the transmission assets, are the Offshore Substation Converter Platforms (OSCPs) and the Export/Import Cable. The IACs will connect to the OSCP's to transmit power from the WTGs to the OSCP's. The location of the Project is shown in Figure 1-1 of Environmental Impact Assessment Report (EIAR) Vol. 2, Chapter 1: Introduction.

To assist the assessment of cumulative and in-combination impacts in the EIAR and the **Report to inform Appropriate Assessment** (RIAA) for Marine Mammals, a review of reliable, publicly available information relating to existing and forthcoming plans, projects (developments) and activities (including oil and gas, cables, and renewables, amongst others) that could have potential to interact with the Project has been undertaken.

Given the speculative nature of plans, projects (developments) and activities not within the public domain, which cannot be assessed with certainty, the Cumulative Effects Assessment (CEA) process focusses exclusively on 'reasonably foreseeable' plans, projects (developments) and activities. This is in line with the terminology used in the Scottish Government (2018) Marine Scotland Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications. This approach ensures a robust and reliable assessment, supported by publicly available data, thereby providing a clear and defensible basis for evaluating cumulative and in-combination effects.

This document describes the review process throughout Section 17.2. The relevance of this process and the developments/activities which ultimately contribute to the Marine Mammals Cumulative Effects Assessment (CEA) is detailed in Section 17.2.3. A separate document been prepared to inform the CEA for all other receptors except Ornithology (EIAR Vol. 4, Appendix 31: Cumulative Effects Assessment Methodology) the approach to CEA for ornithology is described in EIAR Vol. 3, Chapter 12: Ornithology.

## 17.2 Screening Methodology

### 17.2.1 Overview

A CEA is a legislative requirement under the Environmental Impact Assessment (EIA) Regulations. The EIA Directive (Annex IV, Article 5e) states *“A description of the likely significant effects of the project on the environment resulting from: [...] the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources”*.

A CEA provides consideration of the potential significant effects on the same receptor or resource as defined in the EIA Regulations, arising from the Project alone and cumulatively with other relevant plans, projects (developments) and activities.

To support undertaking the CEA, it is necessary to first identify those reasonably foreseeable plans, projects (developments) and activities within the public domain with which the Project may interact and have the potential to result in a potential cumulative effect. A staged approach was undertaken to identify relevant plans, projects (developments) and activities for consideration within the EIA (Section 17.2). This approach aims to be systematic and transparent. First, a ‘long list’ of cumulative plans, projects (developments) and activities was compiled using publicly accessible databases. This list, which included various types of plans, projects (developments) or activities, was refined based on feedback received through stakeholder engagement for Marine Mammals in relation to screening distances (Section 17.2.2). The long list was centred around the proposed Project construction timeline (from 2030 to 2035),  $\pm 1$  year either side to capture any uncertainty in other plans, projects (developments) or activity schedules. The Marine Mammals CEA has only considered plans, projects (developments) and activities which are within the public domain at time of writing.

The long list was then reduced to a ‘short list’ by taking potential marine mammal impact pathways (e.g. underwater noise) into account through various ‘screening tests’. Where plans, projects (developments) and activities identified in the long list pass these screening tests, they have been included within the short list of plans, projects (developments) or activities (Section 17.2.3).

### 17.2.2 Step 1: Compilation of Cumulative Long List

The first step of the Marine Mammals CEA was to define the Zone of Influence (Zoi) for marine mammal receptors. The Project has determined that 200 km from the Array Area would allow for an appropriate assessment of any potential impacts to marine mammal receptors. This distance was determined through calculating the maximum distance estimated for Temporary Threshold Shift (TTS) as determined through the underwater noise modelling (**EIAR Vol. 4, Appendix 15: Underwater Noise Modelling Report**). The underwater noise modelling supported in determining the maximum range at which the Project could overlap spatially from impact piling activities with a project (development) conducting simultaneous piling operations. This was discussed with NatureScot (2<sup>nd</sup> October 2024) who agreed with the proposed approach and therefore any projects (developments) or activities which lie outwith the range have been excluded from further consideration (Section 17.3.1).

### 17.2.2.1 Types of Plans, Projects (developments) and Activities Considered

Plans, projects (developments) or activities within 200 km of the Array Area, and within the public domain, which are part of the following industries were identified as being of relevance to the Marine Mammal CEA:

- Aggregate, dredging and disposal;
- Cables and pipelines;
- Ports and harbours;
- Offshore energy;
- Oil and gas developments; and
- Carbon Capture and Storage (CCS).

Activities associated with these industries are considered to have the potential to act cumulatively with those of the Project. Other INTOG and ScotWind offshore wind developments, amongst other leasing round developments, have been considered where there is sufficient publicly available information to conduct a meaningful assessment of cumulative effects. Where sufficient detail is not available, it may not be possible to conduct a meaningful assessment of effects and, therefore, these plans, projects (developments) and activities are not considered within the Marine Mammal CEA. This justification was used during the short-listing process to refine the list (see Section 17.2.3).

A range of data sources were investigated to identify as many plans, projects (developments) or activities as possible including, but not limited to, government websites (specifically the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED)<sup>1</sup>, the Marine Directorate, Marine Projects webpage<sup>2</sup>, the Planning Inspectorate (PINS) planning portal<sup>3</sup>, the Marine Management Organisation (MMO) public register<sup>4</sup>, the EMODnet human activities database<sup>5</sup>, the Energy Industries Council (EIC) Data Stream portal<sup>6</sup>, and the 4C Offshore database<sup>7</sup>.

In addition, the short list of plans, projects (developments) and activities was provided to NatureScot for comment and agreement on the 14<sup>th</sup> October 2024 (Section 17.3.2)

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<sup>1</sup> <https://www.gov.uk/government>

<sup>2</sup> <https://marine.gov.scot/marine-projects>

<sup>3</sup> <https://national-infrastructure-consenting.planninginspectorate.gov.uk>

<sup>4</sup> <https://marinelicensing.marinemanagement.org.uk>

<sup>5</sup> <https://emodnet.ec.europa.eu/en/human-activities>

<sup>6</sup> <https://eicdatastream.the-eic.com>

<sup>7</sup> <https://www.4coffshore.com>

### 17.2.2.2 Development Phases Considered

Plans, projects (developments) or activities which are within the following phases of development phases are included for consideration within the cumulative long list (Section 17.2.2 and Table 17-1):

- **Pre-Application (Early Development):** plans, projects (developments) and activities which are in the early phases of conception within the public domain (e.g. tender/bidding stage/screening) and are yet to commence scoping;
- **Pre-Application (Scoping):** plans, projects (developments) and activities which have undertaken scoping but are yet to submit an application;
- **Application:** plans, projects (developments) and activities which have submitted an application but are yet to receive consent;
- **Consented:** plans, projects (developments) and activities which have received consent and/or are in the pre-construction phase;
- **Under Construction:** plans, projects (developments) and activities which are being constructed at the time of writing; and
- **Operational:** plans, projects (developments) and activities which are active/operational (please note, operational developments are generally not considered within the cumulative effects assessment and are usually part of the baseline; developments within this category have only been considered where additional development works are planned).

Any plans, projects (developments) or activities in early planning phases prior to scoping are unlikely to have sufficient information available in the public domain to conduct a full assessment of cumulative effects. Furthermore, consent pathways within other European countries can look different and this is reflected in the level of information available in the public domain. Confidence in the available data is also lower earlier in the planning process. However, even 'pre-application' plans or projects (developments) can be reasonably foreseeable and therefore are included within the long list. Short-listing takes into consideration the level of available information, which is explained further in Section 17.2.3, and determines the extent to which these plans, projects (developments) or activities are considered within the Marine Mammal CEA.

It is recognised that the consenting process for a plan, project (development) or activity is continuous and hence the below timescales for the inclusion of a plan or project (development) within the marine mammal cumulative assessment have been utilised:

- Quantitative assessment of plans, projects (developments) and activities that requested a Scoping Opinion up to four months prior to the Project Application submission;
- Qualitative assessment of plans, projects (developments) and activities that requested a Scoping Opinion up to three months prior to the Project Application submission; and
- Acknowledgement of plans, projects (developments) and activities that requested a Scoping Opinion up to two months prior to the Project Application submission.

Table 17-1 Cumulative long list of plans, projects (developments) and activities located within 200 km of the Array Area

PROJECT	COUNTRY	TYPE OF INDUSTRY	STATUS	CONSTRUCTION/ DECOMMISSIONING START DATE	OPERATIONAL LIFE <sup>8</sup>	DISTANCE TO ARRAY (km)
<b>Central North Sea Electrification (CNSE) Project</b>	United Kingdom	Cables	Pre-Application (Scoping)	2027	20 years	0
<b>North Sea Link</b>	United Kingdom	Cables	Operational	2021	Unknown	3.9
<b>Culzean Floating Offshore Wind Turbine Pilot Project</b>	United Kingdom	Offshore Wind	Consented	2025	10 years	16.7
<b>TAMPNET JU-CUL</b>	United Kingdom	Cables	Operational	Unknown	Unknown	18.9
<b>Cedar (North Sea Renewables Grid (NSRG))</b>	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	29.3
<b>TAMPNET Central North Sea Fibre Telecommunications Company (CNSFTC)</b>	United Kingdom	Cables	Operational	1999	Unknown	37.3
<b>Judy Electrification</b>	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	53.3
<b>CampionWind</b>	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	56.7
<b>Beech (NSRG)</b>	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	57.9

<sup>8</sup> The operational life of developments has been provided in years (e.g. 20 years), however oil and gas assets have been provided as a year to show the date of completion of the decommissioning works (e.g. 2028).

PROJECT	COUNTRY	TYPE OF INDUSTRY	STATUS	CONSTRUCTION/ DECOMMISSIONING START DATE	OPERATIONAL LIFE <sup>8</sup>	DISTANCE TO ARRAY (km)
<b>Bellrock Offshore Wind</b>	United Kingdom	Offshore Wind	Pre-Application (Scoping)	2030	Unknown	59.6
<b>Floating Offshore Wind Farm Harbour Energy</b>	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	66.6
<b>Fulmar &amp; Auk North Topsides, Subsea Facilities and Pipelines</b>	United Kingdom	Oil and Gas (Decommissioning)	Consented	2019	2033	68.2
<b>Ossian Offshore Wind Farm</b>	United Kingdom	Offshore Wind	Application	2031	35 years	89
<b>Caledonia Offshore Wind Farm</b>	United Kingdom	Oil and Gas (Decommissioning)	Consented	2020	35 years	92.2
<b>Aspen (NSRG)</b>	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	97.2
<b>CS012</b>	United Kingdom	CCS	Pre-Application (Early Development)	2023	Unknown	99.1
<b>Muir Mhòr Offshore Wind Farm</b>	United Kingdom	Offshore Wind	Application	2030	35 years	102.7
<b>CS011</b>	United Kingdom	CCS	Pre-Application (Early Development)	2023	Unknown	110.6
<b>EXL007</b>	Norway	CCS	Pre-Application (Early Development)	2023	Unknown	111.2
<b>Morven Offshore Wind Array Project</b>	United Kingdom	Offshore Wind	Pre-Application (Scoping)	2029	Unknown	120.8
<b>Acorn (Scottish Cluster)</b>	United Kingdom	CCS	Pre-Application (Early Development)	Unknown	Unknown	121.7



PROJECT	COUNTRY	TYPE OF INDUSTRY	STATUS	CONSTRUCTION/ DECOMMISSIONING START DATE	OPERATIONAL LIFE <sup>8</sup>	DISTANCE TO ARRAY (km)
Green Volt Offshore Wind Farm	United Kingdom	Offshore Wind	Consented	2025	50 years	127.9
MarramWind	United Kingdom	Offshore Wind	Pre-Application (Scoping)	2025	35 years	134.8
Flora Offshore Wind Farm	United Kingdom	Offshore Wind	Pre-Application (Early Development)	Unknown	25 years	137.4
Trees Decommissioning (Birch, Larch & Sycamore)	United Kingdom	Oil and Gas (Decommissioning)	Application	2021	2030	142.5
Bowdun Offshore Wind Farm	United Kingdom	Offshore Wind	Pre-Application (Scoping)	2029	Unknown	145.1
Salamander Offshore Wind Farm	United Kingdom	Offshore Wind	Application	2029	35 years	149.9
Equinor ASA	Norway	CCS	Pre-Application (Early Development)	2024	Unknown	156.3
Hywind Scotland Pilot Park (Hywind)	United Kingdom	Offshore Wind	Operational	2017	20 years	156.4
Eastern Green Link 3	United Kingdom	Cable	Pre-Application (Scoping)	2028	Unknown	163.5
EN19	Germany	Offshore Wind	Pre-Application (Early Development)	Unknown	Unknown	164.3
Eastern Green Link 2	United Kingdom	Cable	Consented	2024	Unknown	164.7
ForthWind Demonstration Project	United Kingdom	Offshore Wind	Consented	2024	25 years	165.4

PROJECT	COUNTRY	TYPE OF INDUSTRY	STATUS	CONSTRUCTION/ DECOMMISSIONING START DATE	OPERATIONAL LIFE <sup>8</sup>	DISTANCE TO ARRAY (km)
<b>Brae Alpha, Brae Bravo, Central Brae, West Brae and Sedgwick</b>	United Kingdom	Oil and Gas (Decommissioning)	Consented	2018	2029	167
<b>C2023/02 (TotalEnergies)</b>	Denmark	CCS	Pre-Application (Early Development)	2023	Unknown	171.7
<b>Seagreen Alpha and Bravo Offshore Wind Farms</b>	United Kingdom	Offshore Wind	Operational	2023	25 years	173.8
<b>Berwick Bank Wind Farm</b>	United Kingdom	Offshore Wind	Application	2027	35 years	173.9
<b>C2023/03</b>	Denmark	CCS	Pre-Application (Early Development)	2023	Unknown	178.7
<b>Peterhead</b>	United Kingdom	Disposal	Operational	n/a	Unknown	179.9
<b>North Buchan Ness</b>	United Kingdom	Disposal	Operational	n/a	Unknown	180.2
<b>Kincardine Offshore Wind Farm</b>	United Kingdom	Offshore Wind	Operational	2021	25 years	181.9
<b>Port of Leith</b>	United Kingdom	Ports and Harbours	Application	Unknown	Unknown	183.9
<b>C2023/01 (INEOS and Wintershall)</b>	Denmark	CCS	Pre-Application (Early Development)	2023	Unknown	185.3
<b>European Marine Energy Centre (EMEC) Billia Croo</b>	United Kingdom	Wave	Operational	Unknown	20 years	185.7
<b>Buchan Offshore Wind</b>	United Kingdom	Offshore Wind	Pre-Application (Scoping)	2028	Unknown	186.3

PROJECT	COUNTRY	TYPE OF INDUSTRY	STATUS	CONSTRUCTION/ DECOMMISSIONING START DATE	OPERATIONAL LIFE <sup>8</sup>	DISTANCE TO ARRAY (km)
Peterhead Smith Quay Extension	United Kingdom	Ports and Harbours	Pre-Application (Early Development)	2026	Unknown	187.7
Peterhead Harbour	United Kingdom	Disposal	Operational	n/a	Unknown	187.7
EMEC Fall of Warness	United Kingdom	Tidal	Operational	2020	17 years	188.3
Seagreen 1A Offshore Wind Farm	United Kingdom	Offshore Wind	Consented	2023	25 years	188.4
European Offshore Wind Deployment Centre (EOWDC) Aberdeen Bay	United Kingdom	Offshore Wind	Operational	2018	25 years	190.2
Aberdeen	United Kingdom	Disposal	Operational	n/a	Unknown	192.7
Fraserburgh	United Kingdom	Disposal	Operational	n/a	Unknown	193.8

### 17.2.3 Step 2: Compilation of Cumulative Short List

Further information was gathered on each of the plans, projects (developments) or activities within the cumulative long list to understand the activities, timescales and nature of the other plans, projects (developments) or activities to review against the Project's proposed programme of activities. This additional information was reviewed to determine the potential channels for cumulative effect, taking into consideration potential impact pathways and/or the potential for spatial or temporal overlap of impacts with Project activities.

Plans, projects (developments) or activities were screened in or out for inclusion within the Marine Mammal CEA according to the following criteria:

- Screened out: included as part of the topic baseline (e.g. operational developments);
- Screened out: insufficient data / detail to conduct an assessment;
- Screened out: no temporal overlap<sup>9</sup>;
- Screened out: no spatial overlap with the 200 km Zol;
- Screened out: no pathway for impact on receptor; and
- Screened in: potential for cumulative effects.

Where cumulative effects are only expected to arise during the construction phase, only those plans, projects (developments) or activities with an overlapping construction period  $\pm$  one year either side of the proposed construction timeline were screened into the short list in order to fully account for underwater noise impacts.

In addition to the above, although many plans, projects (developments) or activities are yet to be constructed (at the time of writing), those which will have completed construction by 2030 were assumed to be operational by the time of the Project's construction. Therefore, they were screened out on the basis of being included as part of the topic baseline. This was contingent on information about plans, projects (developments) or activity timelines being available.

Data confidence has also been considered when screening plans, projects (developments) and activities. Data confidence was given as low/medium/high. Low confidence was applied to plans, projects (developments) or activities at pre-application or application stage. Medium confidence was attributed to plans, projects (developments) or activities which had achieved consent. High data confidence was reserved for plans, projects (developments) or activities which were under construction (or are operational, if applicable to the topic). Disposal sites are an exception to this; despite being operational, they are marked as 'Low' owing to uncertainty over frequency of use.

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<sup>9</sup> Temporal overlap considers developments which overlap in time plus or minus a maximum of two years either side of the construction timeline

### 17.2.3.1 Plans, Projects (developments) and Activities Screened Out

In line with Step 2: Compilation of Cumulative Short List (Section 17.2.3), it was determined that the following types of plans or projects (developments) would not provide impact pathways for cumulative effects and were therefore screened out:

- Decommissioning activities - Typically these activities will involve short-term blasting as a worst-case scenario and any impacts will be temporary and not result in cumulative effects;
- Plans, projects (developments) and activities outwith the construction period of the Project – Any plan, project (development) or activity which does not overlap with the construction programme of the Project will not have a temporal overlap as the piling activities will not occur cumulatively and is therefore considered to have no cumulative effects pathway. A margin of  $\pm$  one year on the Project's construction programme was included to screen in plans, projects (developments) and activities which, while they may not directly overlap, there could be cumulative effects in consecutive years (as discussed with NatureScot see Section 17.3.1);
- Wave and tidal developments – the construction of wave and tidal developments will be highly unlikely to disturb and/or injure marine mammals from underwater noise. This is due to the construction of these devices typically opting for alternative methods to piling for installing the foundations to the seabed such as drilled pin piles;
- CCS – It is noted that there is a lack of publicly available information associated with these types of plans, projects (developments) or activities. As stated in Section 17.2.3 these types of plans, projects (developments) and activities will not be considered further; and
- Aggregate/disposal sites – The potential impact pathways from these sites would require significant impacts across multiple trophic levels and due to the nature of these sites it is highly unlikely to result in a significant impact to marine mammals and will not result in cumulative effects.

### 17.2.3.2 Plans, Projects (developments) and Activities Screened in

The plan, projects (developments) or activities which were screened into the Marine Mammals cumulative short list required potential impact pathways to be present; they include:

- Direct impacts - Impacts from underwater noise; and
- Indirect impacts - Impacts on prey species resulting in impacts to food availability and foraging.

## 17.2.4 Summary of Screening

Plans, projects (developments) or activities which have been screened in through Step 1 (Section 17.2.2) and Step 2 (Section 17.2.3) are detailed in Table 17-2 with details on the potential cumulative effect pathways for each plan, project (development) or activity .

Table 17-2 Marine Mammals CEA developments

DEVELOPMENT	TYPE	STATUS	LOCATION	DISTANCE TO ARRAY AREA <sup>10</sup>	DIRECT OR INDIRECT IMPACTS	RATIONALE FOR INCLUSION
<b>Berwick Bank Wind Farm</b> (SSE Renewables, 2024)	Offshore Wind	Application	UK	173.9	Direct and Indirect	This project (development) overlaps with the ZOI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species</b> .
<b>Bellrock Offshore Wind</b> (Bellrock, 2024)	Offshore Wind	Pre-Application (Scoping)	UK	59.6	Direct and Indirect	This project (development) overlaps with the ZOI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species</b> .
<b>Bowdun Offshore Wind Farm</b> (Thistle Wind Partners, 2024)	Offshore Wind	Pre-Application (Scoping)	UK	145.1	Direct and Indirect	This project (development) overlaps with the ZOI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species</b> .
<b>Buchan Offshore Wind</b> (Buchan WindFarm, 2024)	Offshore Wind	Pre-Application (Scoping)	UK	186.3	Direct and Indirect	This project (development) overlaps with the ZOI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species</b> .
<b>Eastern Green Link 3</b>	Interconnector	Pre-Application (Scoping)	UK	163.5	Indirect	This project (development) overlaps with the ZOI and has a construction timeline that coincides with the Project

<sup>10</sup> The distance provided is from the relevant development to the closest point of the Array Area at sea distance.

DEVELOPMENT	TYPE	STATUS	LOCATION	DISTANCE TO ARRAY AREA <sup>10</sup>	DIRECT OR INDIRECT IMPACTS	RATIONALE FOR INCLUSION
(National Grid Electricity Transmission, 2024)						construction, meaning there is the potential for cumulative effects to prey species.
MarramWind (MarramWind, 2024)	Offshore Wind	Pre-Application (Scoping)	UK	134.8	Direct and Indirect	This project (development) overlaps with the ZoI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species.</b>
Morven Offshore Wind Array Project	Offshore Wind	Pre-Application (Scoping)	UK	120.8	Direct and Indirect	This project (development) overlaps with the ZoI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species.</b>
Muir Mhòr Offshore Wind Farm (Muir Mhòr, 2023)	Offshore Wind	Application	UK	102.7	Direct and Indirect	This project (development) overlaps with the ZoI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species.</b>
Ossian Offshore Wind Farm (Ossian, 2024)	Offshore Wind	Application	UK	89.0	Direct and Indirect	This project (development) overlaps with the ZoI and has a construction timeline that coincides with the Project construction, meaning there is the potential for cumulative effects from <b>underwater noise emissions and impacts to prey species.</b>

## 17.3 Consultation

### 17.3.1 NatureScot Meeting

The approach to CEA for marine mammals was discussed in detail with NatureScot on 2<sup>nd</sup> October 2024, and in email correspondence following the meeting.

The following elements of the CEA were discussed with feedback described below:

- *Zol*: A 100 km project Study Area for direct effects and a 200 km Zol for cumulative effects. This was based on the TTS SEL<sub>cum</sub> range for low frequency (LF) cetaceans (where the 200 km Zol was two times the TTS SEL<sub>cum</sub> range for LF cetaceans). NatureScot indicated that they were content with the approach to define the Zol (email, 14<sup>th</sup> October 2024);
- *Identification of piling parameters for projects where information was not yet available*. Two options were proposed: (1) the use of a 'proxy project' to determine number of animals experiencing disturbance due to piling; or (2) the use of the Effective Deterrence Ranges (EDR) from Joint Nature Conservation Committee (JNCC) (2020) to estimate the numbers of animals that would be disturbed by either monopiling or pin/anchor piling. NatureScot indicated (email, 14<sup>th</sup> October 2024) that while they welcomed the suggestion of a 'proxy project' approach, they considered the EDR approach to be more consistent and repeatable across different projects, and advised that the EDR method should be used to determine numbers of animals disturbed for projects in the cumulative assessment where project-specific assessment data were not available;
- *Residual disturbance in Interim Population Consequences of Disturbance (iPCoD) modelling*: It was proposed that a range of 'residual disturbance' values would be presented in the iPCoD modelling for the Project-alone assessment, to account for recent scientific evidence suggesting that cetacean disturbance during marine construction does not persist for a long time following cessation of activity (Thompson *et al.*, 2013; Fernandez-Betelu *et al.*, 2024). NatureScot agreed with this approach but for CEA, they advised using the 'default' 1-day residual disturbance used in other project CEAs, in the interests of consistency; and
- *Inclusion of permanent threshold shift (PTS) in iPCoD modelling*: NatureScot advised by email (4<sup>th</sup> November 2024) that the inclusion of PTS in iPCoD modelling would not be necessary, as this would be consistent with what other developers had done. This assumes that PTS is mitigated through the implementation of measures such as activation of acoustic deterrent devices and Marine Mammal Observers (MMOs). As a result, the CEA only includes estimated numbers of animals experiencing disturbance, and no estimate of PTS.

### 17.3.2 NatureScot Advice on iPCoD Scenario

In addition to the meeting with NatureScot, further communication occurred in relation to the plans, projects (developments) or activities for iPCoD modelling and the cumulative short list. NatureScot confirmed they were content and that the list of plans, projects (developments) or activities is appropriate and meets agreed criteria.





## 17.4 Conclusion

Figure 17-1 details the overlapping construction phases between the Project and the plans, projects (developments) or activities screened in for further assessment within the Marine Mammals CEA. Where publicly available information was available further details on the piling of the developments screened in were collected for assessment for use in the (iPCoD) modelling. These details are provided in Table 17-3. Following the screening steps outlined in Section 17.2 a total of nine plans, projects (developments) or activities were considered to have a potential for cumulative effects with the Project (Table 17-2). It should be noted that there were no international plans, projects (developments) or activities which were considered to have cumulative effects with the Project and therefore cumulative transboundary impacts have been scoped out.

Table 17-3 Piling parameters of plans, projects (developments) or activities screened in for further assessment

DEVELOPMENT	DISTANCE FROM ARRAY	TYPE OF TURBINE	MAX NO TURBINES	MAX HAMMER ENERGY	FIXED		FLOATING	
					Max legs per foundation	Max piles per leg	Max anchors per foundation	Max piles per foundation
Berwick Bank Wind Farm	173.9	Fixed	307	4000	4	2		
Bellrock Offshore Wind	59.6	Both	80	3000 (Floating) 4000 (Jacket)	4	2	12	
Bowdun Offshore Wind Farm	145.1	Both	67	"6000 (Monopile) 4500 (Jacket/Floating)	4	1	6	9
Buchan Offshore Wind Farm	186.3	Floating	70	Not available	Not available	Not available	Not available	Not available
MarramWind	134.8	Both	225	Not available	Not available	Not available	Not available	Not available
Morven Offshore Wind Array Project	120.8	Fixed	191	7500 (Monopile)	Not available	Not available	Not available	Not available
Muir Mhòr Offshore Wind Farm	102.7	Floating	67	Not available	Not available	Not available	12	Not available
Ossian Offshore Wind Farm	89.0	Floating	270	3000	Not available	Not available	9	9

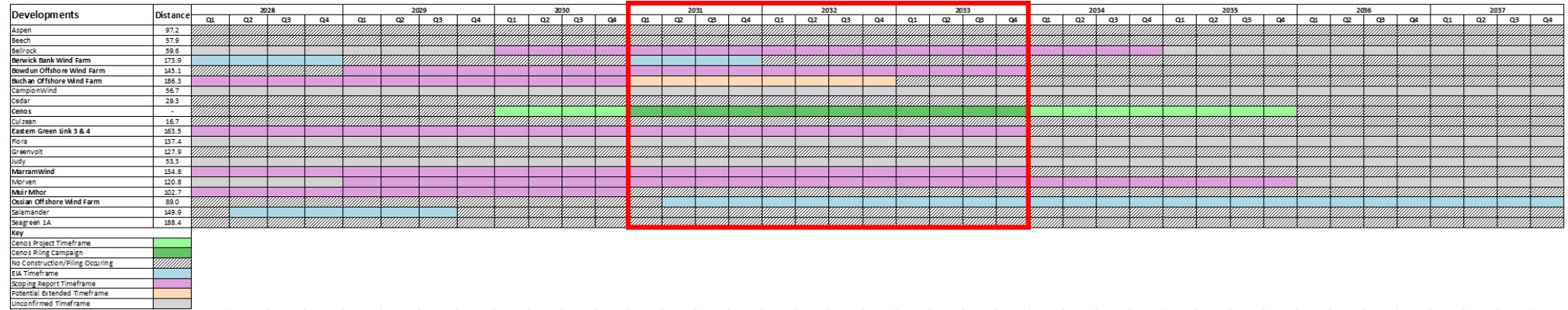


Figure 17-1 Cenoss Marine Mammals Cumulative Project Timeframe

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