Bowdun Offshore Wind Farm, Offshore EIA Report

Volume 2, Chapter 12: Offshore Bats

TWP-BOW-ERM-CON-RPT-00005 | April 2026

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Glossary

Defined Term	Definition
Additional Mitigation	Also referred to as secondary mitigation which is defined by The Institute of Sustainability and Environmental Professionals (ISEP) (formerly Institute of Environmental Management and Assessment (IEMA)) as: 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 (sic).
Annex II	Species of community interest whose conservation requires the designation of Special Areas of Conservation (SACs) as identified in Annex II of the Habitats Directive (Council Directive 92/43/EEC).
Annex IV	Species of community interest in need of strict protection under the Habitats Directive (Council Directive 92/43/EEC).
Applicant (the)	Bowdun Offshore Wind Farm Limited (BOWFL).
Array Area	The Array Area is the area in which the Offshore Generation Assets will be located.
Bowdun Offshore Wind Farm Limited (BOWFL)	A Special-Purpose Vehicle (SPV) (legal entity) for the purpose of developing the Project. BOWFL will be the Applicant for the Offshore Application.
Barrier effects	The effect by which a bird/bat has to make longer transits between a breeding or roosting location to an area of foraging. An Offshore Wind Farm (OWF) could act as a barrier in which a species has to fly around to reach the other side, some species are unlikely to travel through or over.
Cumulative Effects	The effects of the Proposed Development assessed together with effects from one or more different projects on the same receptor/resource.
Effect	Term used to express the consequence of an impact i.e. the result of change or changes on specific environmental resources or receptors. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity of the receptor or resource in accordance with defined significance criteria.
Embedded Mitigation	Measures that are adopted as part of the Proposed Development and therefore assessed within the EIA. The proposed approach for the EIA for the Proposed Development is that Embedded Mitigation includes both primary mitigation and tertiary mitigation. These are defined by the ISEP as follows: Primary: 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. Tertiary: Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.
Environmental Impact Assessment (EIA)	Process for the assessment of likely significant environmental effects of a project on the physical, biological and human environment during construction, Operation and Maintenance (O&M) and decommissioning.

Defined Term	Definition
Environmental Impact Assessment Regulations (EIA Regulations)	Terminology used in this Offshore EIA Report to refer to three sets of regulations: • The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017; • The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017; and • The Marine Works (Environmental Impact Assessment) Regulations 2007.
European Sites	This term recognises Special Protection Areas (SPAs) and SACs which protect species and habitats shared across Europe and were originally designated under European legislation.
Habitats Regulations	A term that refers to the collective legislation that translates the Habitats Directive into specific legal obligations in Scotland, namely: the Conservation (Natural Habitats, &c.) Regulations 1994; the Conservation of Habitats and Species Regulations 2017; and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (in each case as amended).
Impact	A change caused by an action that occurs during a project's lifetime.
Inter-Related effects	The potential effects of multiple impacts from the construction, O&M and decommissioning of the Project, affecting one receptor.
Maximum Design Scenario (MDS)	The scenario within the design envelope likely to result in the greatest impact on a particular topic receptor, and therefore the one that should be assessed for that topic receptor.
Offshore Environmental Impact Assessment (EIA) Report (hereafter, 'Offshore EIA Report')	Document prepared to report the findings of the EIA for the Proposed Development and produced in accordance with the EIA Regulations. The Offshore EIA Report will be submitted to support the Offshore Application for the Proposed Development and to comply with EIA Regulations.
Offshore Infrastructure	All of the Offshore Infrastructure associated with the Proposed Development that is located seaward of MHWS, comprising the Offshore Generation Assets and the Offshore Transmission Assets.
Operation and Maintenance (O&M)	The phase of the Proposed Development following completion of construction. This phase of development includes routine inspections, repairs and replacement of infrastructure and equipment (including Interconnector Cables and IACs), Scour Protection replenishment or replacement, major component replacement, painting and/or other coating works, removal of marine growth, replacement of access ladders and geophysical surveys.
Project Design Envelope (PDE)	A description of the range of possible elements that make up the design options for the Proposed Development under consideration when the exact engineering parameters are not yet known.
Proposed Development	Term used to define the Offshore Infrastructure associated with the Project seaward of MHWS for which consent is being sought. Further details of the parameters are included in Volume 1, Chapter 3: Project Description.

Defined Term	Definition
Scoping Opinion	A document produced by MD-LOT which is issued in response to submission and review of the Offshore Scoping Report. The Scoping Opinion is supported with feedback and advice from consultees, which details what is expected to be included in the Offshore EIA Report and what can be scoped out of the EIA process.
Significance	Effect factor that is determined by the magnitude of impact along with the sensitivity of the receptor.
Site Boundary	The boundary within which all elements of the Proposed Development will be located. The Site Boundary comprises the Array Area and Export Cable Corridor which ends at MHWS. This area may be refined through future site selection work, with details presented in the Offshore EIA Report.
Study Area	For each environmental topic, the baseline environment will be characterised, and the potential environmental impacts will be described within a topic-specific study area. Specific study areas are defined for each topic and are based on the maximum spatial extent across which potential impacts of the Project may be experienced by the relevant receptors (i.e. Zone of Influence).
Thistle Wind Partners (TWP)	Company established for the development of the Project.
Wind Turbines	Structures comprising of a tubular tower, rotor blades, and a nacelle which houses the Wind Turbine generator.

Acronyms

Acronym	Definition
BOWFL	Bowdun Offshore Wind Farm Limited
BAP	Biodiversity Action Plan
BCT	Bat Conservation Trust
BOWL	Beatrice Offshore Wind Farm Ltd.
CEA	Cumulative Effects Assessment
CIEEM	Chartered Institute for Ecology and Environmental Management
CMS	Construction Method Statement
EIA	Ecological Impact Assessment
EMP	Environmental Management Plan
EPS	European Protected Species
ERM	Environmental Resource Management
ES	Environmental Statement
EU	European Union
FCS	Favourable Conservation Status
IEF	Important Ecological Feature
HAT	Highest Astronomical Tide
HBRG	Highlands Biological Record Centre
JNCC	Joint Nature Conservation Committee

Acronym	Definition
LAT	Lowest Astronomical Tide
LTM	Long Term Mooring
MD	Ministry of Defence
MDS	Mobility Data Specification
MW	Mega Watt
NBN	National Biodiversity Network
NESBReC	North East Scotland Biological Records Centre
NPF	National Planning Framework
NPF4	National Planning Framework 4
OM	Operations and Maintenance
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OWIARC	Orkney Wildlife Information and Records Centre
OWF	Offshore Wind Farm
PAC	Pre-Application Consultation
SAC	Special Area of Conservation
SBRC	Shetland Biological Records Centre
SBL	Scottish Biodiversity List
SNH	Scottish National Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
THC	The Highlands Council
TLP	Tension Leg Platform
TWP	Thistle Wind Partners Limited
UK	United Kingdom
ZoI	Zone of Influence

Table of Units

Units	Definition
GW	GigaWatt
km	Kilometre
m	Metre
MW	MegaWatt

12 Offshore Bats

12.1 Introduction

12.1.1 This chapter of the Offshore Environmental Impact Assessment (EIA) Report, prepared by ERM, presents the assessment of the significant effects on offshore bats, specifically Nathusius' pipistrelle *Pipistrellus nathusii*, that may potentially occur as a result of the Proposed Development during the Operations and Maintenance (O&M) phase.

12.1.2 The assessment presented was informed by the following technical appendix:

- Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review.

12.2 Offshore Bats Study Area

12.2.1 As discussed in Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review, the Area of Search was defined as the United Kingdom (UK), the North Sea and a corridor between northern Scotland, Denmark and Norway (Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review) as this is likely to be the migratory pathway of the receptors likely to be impacted by the Proposed Development. For the EIA, the assessment focuses on the North Sea and the migratory corridor between northern Scotland and Denmark (hereafter referred to as the 'Study Area'), as migrating bats within this area may interact with the Proposed Development. This Study Area is presented in Figure 12.1.

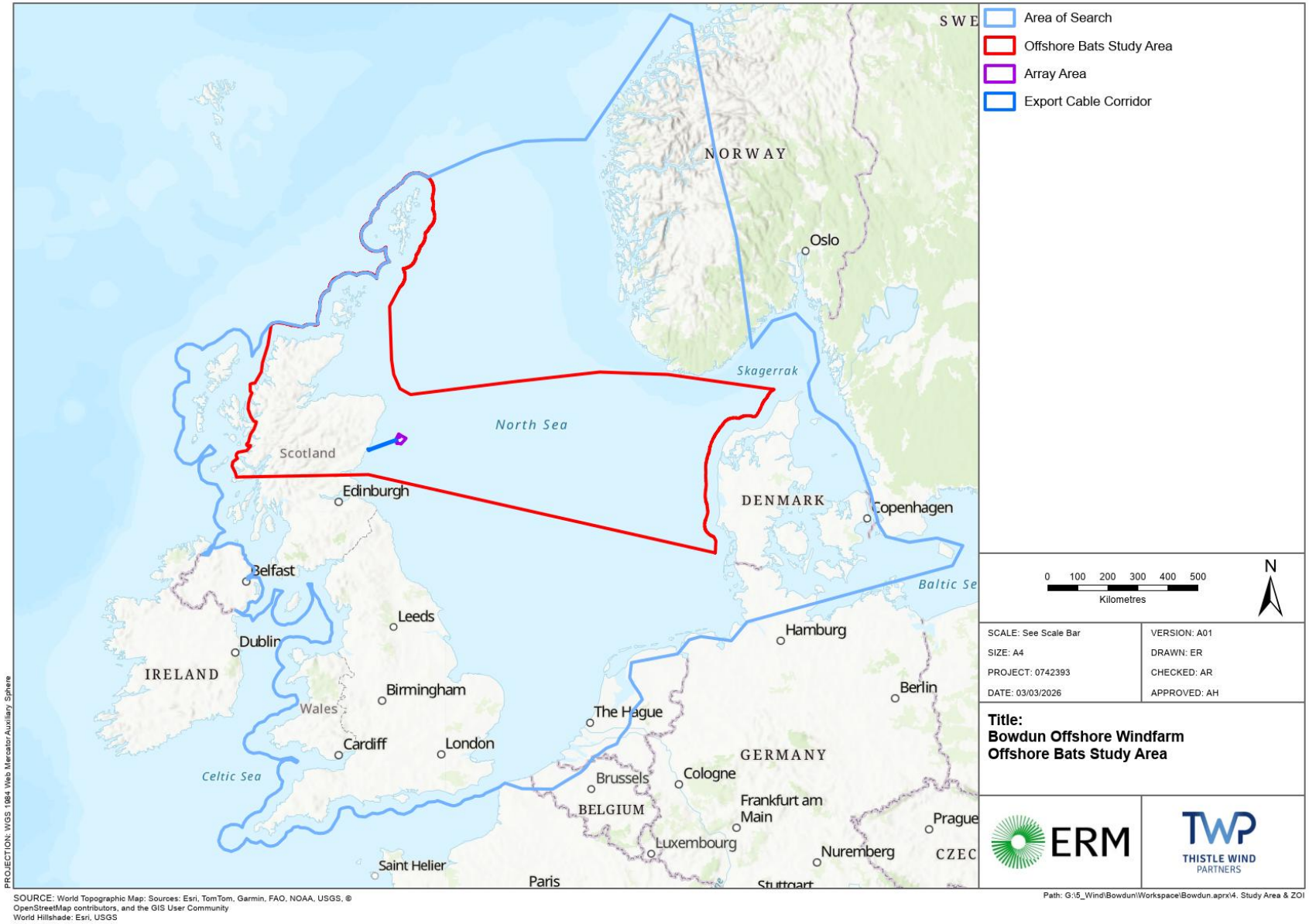

Figure 12.1 Offshore Bats Study Area

12.3 Legislative and Policy Context

12.3.1 The overarching policy and legislation applicable to the Proposed Development is presented in Volume 1, Chapter 2: Policy and Legislation. Policy and legislation specific to offshore bats is contained in the Habitats Regulations. A summary of the legislative provisions relevant to offshore bats are provided in Table 12.1 below, with other relevant policy provisions set out in Table 12.2.

Table 12.1: Summary of Key Legislation Relevant to Offshore Bats

Legislation	How and Where Considered in the EIA Report
The Habitats Regulations: **The Conservation of Offshore Marine Habitats and Species Regulations 2017** **Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)**	Likely significant environmental effects on bat features of European sites are considered from an EIA perspective within this Offshore EIA Report.
Wildlife and Countryside Act 1981 (as amended)	The primary legislation protecting animals, plants and certain habitats in the UK, including bats, their roosts and with some species their habitat. This Offshore EIA Report demonstrates that the Proposed Development will comply with the Act and provides information to public bodies and office holders to enable them to fulfil their obligations under the Act.

Table 12.2: Summary of Key Policy Provisions Relevant to Offshore Bats

Policy	Summary of Purpose
Bonn Convention 1979 (Convention on the Conservation of Migratory Species of Wild Animals):	Key global policy that focuses on species that cross international borders, including many bat species.
EUROBATS Agreement	An agreement within the framework of the Bonn Convention, specifically for the conservation of European bat species.
Agreement on the conservation of bats in Europe 1999	An agreement to protect the 13 – 14 bat species in Denmark based on the conservation aims for bats in Europe.
Scotland's National Planning Framework 4 (NPF4)	This is the dedicated biodiversity policy within NPF4, which is Scotland's statutory spatial planning strategy adopted in February 2023.

12.4 Consultation

12.4.1 The approach to consultation for the Proposed Development is set out in Volume 1, Chapter 5: Consultation and Engagement. A summary of the issues raised during consultation activities undertaken to date specific to offshore bats is presented in Table 12.3, together with how these issues have been considered in the production of this assessment. Further detail is presented within Volume 1, Chapter 5: Consultation and Engagement, Volume 3, Technical Appendix 5.2: Pre-Application Consultation Report and Volume 3, Technical Appendix 5.1: Consultation Logs.

Table 12.3: Summary of Key Consultation Issues Raised During Consultation Activities Undertaken for the Proposed Development Relevant to Offshore Bats

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or where Considered in this Chapter
04/07/2024	Nature Scot Scoping Consultation	'*Bats – in our post Scoping Workshop advice (issued 04 July 2024) we advised that Nathusius' pipistrelle bats should be considered under EIA for the Offshore Project. We noted that there is currently very little knowledge of bat migration in Scotland, however, recent evidence has shown Nathusius' pipistrelle bats flying through on migration. Further to this, there have also been additional sightings at oil and gas platforms in Scottish waters. It is likely that these sightings are an underestimate as they are incidental, rather than from active monitoring. We are aware of research proposals reviewing Nathusius' pipistrelle migration, which do migrate across the North Sea from the Baltic region.*'	Nathusius' pipistrelle bats, alongside other migratory species, have been considered within the Offshore EIA Report with assessment of significant effects reported within this chapter.

12.5 Data Sources

12.5.1 The information sources used in the literature review (Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review) are extensive and include:

- Bibliographic databases with peer-reviewed scientific papers, including but not limited to: ScienceDirect, Scorpus, and Google Scholar;
- Data requests to external agencies, such as the Northeast Scotland Biological Records Centre (NESBRSeC), Highlands Biological Record Centre (HBRC), Orkney Wildlife Information and Records Centre (OWIARC), Shetland Biological Records Centre (SBRC) and Denmark's National Species Portal, and Danmarks Miljøportal (The Danish Environmental Portal).

12.5.2 The records reviewed from all the sources identified two species: Nathusius' pipistrelle and Leisler's bat. From the evidence of the literature review, Nathusius' pipistrelle was the only species identified which may interact with the Proposed Development. Nathusius' pipistrelle literature has been reviewed and analysed to inform this offshore bats baseline.

Site-Specific Surveys

12.5.3 No site-specific surveys have been undertaken to inform the EIA for offshore bats, as the assessment undertaken is qualitative.

Desktop Survey

12.5.4 A screening of the migration corridor (the area between Nathusius' pipistrelle records in Aberdeenshire, Highlands, Orkney and Shetland and the east coast of Denmark) observation records was conducted as part of the literature review.

12.6 Baseline Environment

Overview of Baseline Environment

12.6.1 The baseline for migratory bats within the Offshore Bats Area of Search is summarised in Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review. Records from biological recording centres (NESBReC, HBRG, SBRC and OWIARC) show that Nathusius' pipistrelle is the most frequently encountered migratory species in Scotland, with particularly high detections in north-eastern Scotland, where Aberdeenshire consistently reported the frequent observations. These records include detector data, live encounters and casualties, with annual peaks in 2017 and 2021 demonstrating strong and recurring presence. Moderate but stable numbers of Nathusius' pipistrelle were also recorded in the Highlands, Aberdeenshire, Orkney and Shetland, indicating regular but lower-density occurrence across the northern isles.

12.6.2 In contrast, Leisler's bat *Nyctalus leisleri* and parti-coloured bat *Vespertilio murinus* appear only sporadically, with Leisler's bat concentrated mainly in the east of Scotland and parti-coloured bat largely confined to occasional individuals found in Orkney and Shetland. Leisler's bat was considered for further investigation within the literature review to inform the baseline assessment. Parti-coloured bat is more commonly recorded in eastern

Denmark but is rare in Scotland and shows little indication of migratory connectivity between the two regions. A single record of Kuhl's pipistrelle *P. kuhlii* (transported to Scotland in a shipping container) was excluded from further consideration.

12.6.3 Danish datasets (Naturbasen and the Danish Environmental Portal) further reinforce the significance of Nathusius' pipistrelle to this assessment: sightings are widespread across Denmark from 2005 to 2025, with marked increases since 2015 and clear seasonal peaks during summer and early autumn. These patterns align with the species' known long-distance migratory behaviour, which includes established trans-North Sea movement between the Baltic region and the British Isles.

12.6.4 Offshore evidence is particularly important for defining the baseline, as Nathusius' pipistrelle have been repeatedly recorded on North Sea oil and gas installations, on ferries up to ~106 km offshore, and at Offshore Wind Farms (OWF) in Danish waters up to 80 km from land, confirming their ability to cross large marine expanses and their potential to pass through the Proposed Development during spring and autumn migrations.

12.6.5 By comparison, Leisler's bat shows very limited Danish presence and minimal offshore detections, with available evidence suggesting that this species typically follows coastal routes rather than undertaking regular trans-North Sea crossings. Due to the overall scarcity of offshore monitoring and the opportunistic nature of most bat records, the literature is inherently constrained, with large gaps in data coverage, particularly in the central North Sea corridor that directly links northern Scotland with Denmark and potential interactions with the Array Area. Nevertheless, the combined evidence consistently identifies Nathusius' pipistrelle as the only species with proven potential within the literature review to interact with the Proposed Development, justifying its inclusion in the Offshore EIA.

Designated Sites

12.6.6 A screening of designated sites in the vicinity of the Proposed Development has been undertaken and has identified that there were no designated sites relevant to offshore bats.

Important Ecological Features

12.6.7 Important Ecological Features (IEFs) for the purposes of offshore bats have been identified using best practice guidelines (CIEEM, 2019). The potential impacts of the Proposed Development which have been scoped into the assessment (see Section 12.10) have been assessed against the IEFs to determine whether or not they are likely to have a significant effect. Therefore, the IEFs assessed are those that are considered to be important and potentially impacted by the Proposed Development. Importance may be assigned due to quality or extent of habitats, habitat or species rarity or the extent to which they are threatened (CIEEM, 2019). For a species or habitats to be considered IEFs, they must have a specific biodiversity importance recognised through international or national legislation or through local, regional, or national conservation plans (e.g. Annex I habitats under the Habitats Directive, OSPAR,

National Biodiversity Plan or the Marine Strategy Framework Directive, Scottish Priority Marine Features (PMFs) and the Scottish Biodiversity list (SBL)).

12.6.8 Table 12.4 lists all of the IEFs within the Offshore Bats Study Area. The main habitats identified throughout the Offshore Bats Study Area comprise species of interest (See Figure 12.1).

Table 12.4: IEFs Within the Proposed Development Offshore Bats Study Area

IEF	Description and Representative Biotopes	Protection Status	Conservation Interest	Importance Within the Offshore Study Area
Nathusius' Pipistrelle	Migratory bat (Spring and Autumn visitors) which is vulnerable within Scotland.	Representative of Annex IV species and under the Wildlife and Countryside Act 1981.	Annex IV species of interest outside of an SAC or registered maternity roost.	National

Future Baseline Scenario

12.6.9 The EIA Regulations require that *'a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge'* is included within the Offshore EIA Report.

12.6.10 If the Proposed Development does not come forward, an assessment of the 'without development' future baseline conditions has also been carried out and is described within this section.

Data Limitations and Assumptions

12.6.11 As discussed within Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review, the limitations for offshore bats have become apparent due to the scarcity of research. The limited evidence available may constrain the ability to draw a comprehensive conclusion on the migratory routes undertaken by Nathusius' pipistrelle. Therefore, this chapter has been written as a precautionary approach, assuming potential impacts and including the species in the assessment despite limited evidence.

12.7 Key Parameters for Assessment

Maximum Design Scenario

12.7.1 The Maximum Design Scenario (MDS) identified in Table 12.5 are those parameters expected to have the potential to result in the greatest effect on an identified receptor or receptor group. Any other development scenario within the Project Design Envelope (PDE), will result in the same, or less, level of environmental impact. The scenario has been selected from the details provided in Volume 1, Chapter 3: Project Description.

Table 12.5: Maximum Design Scenario Considered for Each Potential Impact as Part of the Assessment of Likely Significant Environmental Effects on Offshore Bats

Potential Impact	Phase*			Maximum Design Scenario	Justification
	C	O	D		
Collision risk due to collision with rotor blades	×	✓	×	**O&M Phase** Wind Turbines for the 15 MW Wind Turbine layout: • Operational lifetime up to 30 years; • Up to 67 Wind Turbines on fixed foundations; • Maximum rotor diameter 236 m, chord width 6.5 m, hub height 151 m above Lowest Astronomical Tide (LAT), minimum blade clearance 33.12 m above LAT (29.28 m above HAT), upper blade height 269.12 m above LAT; • Wind Turbine spacing minimum 1,038 m; • Maximum rotor speed of 8.4 rpm, average of 7.1 rpm.	**O&M Phase** The potential for collision risk was derived from a sensitivity analysis using Wind Turbine parameters including rotor diameter, chord width, rotor speed and minimum blade clearance above LAT. The parameters associated with the highest number of Wind Turbines (15 MW) represents the MDS because it will result in the greatest potential for collision risk. This is a combined effect of Wind Turbine number and higher rotation speed.

* Proposed Development Phase refers to construction (C), O&M (O) and decommissioning (D).

Impacts Scoped Out of the Assessment

12.7.2 As collision risk is the only impact being considered in this report, there are no further impacts to be scoped out.

12.8 Methodology for Assessment of Effects

Overview

12.8.1 The offshore bats assessment of effects has followed the methodology set out in Volume 1, Chapter 4: EIA Methodology. Specific to the offshore bats assessment, the following guidance documents have also been considered:

- Guidelines for consideration of bats in wind farm projects (Rodrigues *et al.* 2015);
- Wildlife and Wind Farms - Conflicts and Solutions, Volume 3 and 4. (Perrow, M. 2019);
- Valuing Bats in Ecological Impact Assessment (Wray *et al.* 2010).

Criteria for Assessment

Table 12.6: Descriptions of Categories Related to EIA Impacts

Impact Categories	Description
Direct or Indirect	Direct impacts occur at the same time as an action and occur within the same area, as opposed to indirect impacts which still result from an action but arise later or in a different area.
Adverse or Beneficial	Adverse impacts have an adverse effect on the environment while beneficial impacts have a beneficial effect on the environment.
Reversible or Irreversible	Reversible impacts are temporary, with natural recovery possible, unlike irreversible impacts, where natural recovery is not possible.
Cumulative	Impacts that arise from a combination of the Proposed Development and other projects.
Transboundary	When an impact has an effect on an area that falls within the boundary of another European Economic Area (EEA).
Inter-related	The potential effects of multiple impacts from the construction, O&M and decommissioning of the Proposed Development, affecting one receptor.

12.8.2 When determining the significance of effects, a process is used which involves defining the magnitude of the potential impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of the receptors. The terms used to define magnitude and sensitivity are based on those which are described in further detail in Volume 1, Chapter 4: EIA Methodology.

12.8.3 The criteria for defining magnitude in this chapter are outlined in Table 12.7. Each assessment considered the spatial extent, duration, frequency and

reversibility of impact when determining magnitude which are outlined within the magnitude section of each impact assessment (e.g. a duration of hours or days would be considered for most receptors to be of short-term duration, which is likely to result in a low magnitude of impact).

Table 12.7: Definition of Terms relating to Magnitude of Impact

Magnitude of Impact	Definition
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (Adverse)
	Large scale or major improvement or resource quality; extensive restoration or enhancement; major improvement of attribute quality (Beneficial)
Medium	Loss of resource, but not adversely affecting integrity of resource; partial loss of/damage to key characteristics, features or elements (Adverse)
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (Beneficial)
Low	Some measurable change in attributes, quality or vulnerability, minor loss or, or alteration to, one (maybe more) key characteristics, features or elements (Adverse)
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (Beneficial)
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (Adverse)
	Very minor benefit to, or positive addition of one or more characteristics, features or elements (Beneficial)

12.8.4 The criteria for defining sensitivity in this chapter are outlined in Table 12.8.

Table 12.8: Definition of Terms Relating to the Sensitivity of the Receptor

Sensitivity	Definition
Very High	Very high importance and rarity, international receptor with no potential or very limited potential for recovery
High	High importance and rarity, international and / or national receptor and limited potential for recovery
Medium	High or medium importance and rarity, regional receptor, and potential for recovery
Low	Low or medium importance and rarity, local receptor and high potential for recovery
Negligible	Very low importance and rarity, local receptor and very high potential for recovery

12.8.5 The magnitude of the impact and the sensitivity of the receptor are combined when determining the significance of the effect upon offshore bats. The particular method employed for this assessment is presented in Table 12.9 and Table 12.10.

12.8.6 Where a range is suggested for the significance of effect, for example, minor to moderate, it is possible that this may span the significance threshold. The technical specialist's professional judgement will be applied to determine which outcome defines the most likely effect, which takes in to account the sensitivity of the receptor and the magnitude of impact. Where professional judgement is applied to quantify final significance from a range, the assessment will set out the factors that result in the final assessment of significance. These factors may include the likelihood that an effect will occur, data certainty and relevant information about the wider environmental context.

12.8.7 The EIA Regulations require the identification and reporting of likely significant environmental effects. For the purposes of this assessment:

- a level of moderate or more will be considered a 'significant' effect in terms of the EIA Regulations; and
- a level of minor or less will be considered 'not significant' in terms of the EIA Regulations.

Table 12.9: Matrix Used for the Assessment of the Significance of the Effect

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	**Low**	**Medium**	**High**
Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible or Minor	Minor	Moderate	Moderate or Major
High	Minor	Minor or Moderate	Moderate or Major	Major
Very High	Minor	Moderate or Major	Major	Major

Table 12.10: Definition of Significance

Impact	Justification
Negligible	No effects or those that are beneath levels of perception, within normal bounds of variation, or within the margin of forecasting error.
Minor	These beneficial or adverse effects are generally, but not exclusively, raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the Proposed Development.
Moderate	These beneficial or adverse effects have the potential to be important and may influence the decision-making process. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse or beneficial effect on a particular resource or receptor.
Major	These beneficial or adverse effects are very important and are likely to be material in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national, or regional importance. However, a major change in a site or feature of local importance may also enter this category.

12.9 Embedded Mitigation

12.9.1 As part of the Proposed Development design process, Embedded Mitigation measures have been proposed to reduce the potential for impacts on offshore bats (see Table 12.11). The Embedded Mitigation is considered at every stage of the Proposed Development through design and best practice, and as there is a commitment to implementing the measure, this has been considered in the assessment presented in the Assessment of Significance (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). The Embedded Mitigation measure is considered standard industry practice for this type of development.

Table 12.11: Embedded Mitigation Adopted as Part of the Proposed Development

ID*	Embedded Mitigation Adopted as Part of the Proposed Development	Justification
21	Wind Turbine design to have a minimum lower blade tip height of 33.12 m above Lowest Astronomical Tide (LAT).	As Nathusius' pipistrelle tend to fly low, close to the sea surface, an increased minimum blade tip height above LAT and rotor diameter clearance leads to a reduction in predicted collision mortality.

*see Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments

12.10 Assessment of Significance

12.10.1 Table 12.5 summarises the potential effects arising from the O&M of the Proposed Development, as well as the MDS against which each impact has been assessed. An assessment of the likely significance of the effects of the Proposed Development on the offshore bat receptor caused by the collision risk impact is given below:

IMPACT 1 – COLLISION RISK DUE TO COLLISION WITH ROTOR BLADES

O&M Phase

12.10.2 As summarised in Section 12.6, Nathusius' pipistrelle is the only species considered for the impact assessment. Pipistrelles migrating across the North Sea into the Array Area are at risk of collision with the turbine blades, resulting in injury or accidental death. This is only applicable during the O&M phase as the Wind Turbines will not be in operation during the construction and decommissioning phases. The impact of OWFs in the North Sea is limited due to a lack of studies. This impact assessment is conducted on a precautionary basis, considering the worst-case scenario of collision with the turbine blades.

12.10.3 Nathusius' pipistrelle migrate biannually from the UK to northern Scandinavia and the Wadden Region. There is a known migratory route between northern Scotland and south-west Norway (Hedenström, 2009; Hooker *et al.*, 2025) however, as discussed in Section 12.6, this route does not interact with the Proposed Development. Records have recorded Nathusius' pipistrelle in the North Sea between Aberdeenshire and Denmark, suggesting a possible migratory corridor (Hooker *et al.*, 2025) which could overlap with the Proposed Development.

12.10.4 Bats migrating directly across the water are at higher risk of collision in the Array Area. Bats commuting across the water find ease of navigation and tolerance for weather fluctuations by flying at a height of less than 10 m above the surface (Ahlén *et al.,* 2007). The highest record of migrating bats through an Array Area was at around 25 m in the Netherlands (Brabant *et al.,* 2019). The minimum height of the rotor blade above LAT is set at 33.12 m which is still above highest record. Literature evidence suggests that Nathusius' pipistrelle migrates at an average flight height of 7.8 m to 11.5 m above the surface of the water (Šuba, 2014; Troxell *et al.*, 2019). Any bats migrating through the rotor swept area within the Array Area are unlikely to interact with the Wind Turbines and the risk of collision is low due to the minimum rotor blade height being over 20 m higher that the average migrating flight height of Nathusius' pipistrelle.

Magnitude of impact

12.10.5 As discussed in Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review, Nathusius' pipistrelle have populations in Aberdeenshire and across northern Scotland to Orkney and Shetland. Any bats migrating north to Norway would not encounter the Proposed Development as it is not directly in the migratory path. The closest maternity roost recorded is 250 km south of the Proposed Development. The records of Nathusius' pipistrelle does not determine direct migratory routes between Aberdeenshire and Denmark where bats may interact with the Array Area and given the lack of offshore records it is difficult to determine a definite route. This suggested route is also the furthest point between Scotland and mainland Europe, some bats may take easier paths following the land north or south across the water for shorter and more energy efficient migratory routes. However, Nathusius' pipistrelle is known to migrate over 2,000 km in a single trip (Voigt *et al.,* 2023), suggesting that the 650 km distance between Scotland and Denmark is feasible.

12.10.6 It is likely there are only a small number of bats infrequently using the migratory corridor between Scotland and Denmark. On a precautionary basis, it is therefore considered that the route may still function as a temporary pathway for migrating bats, albeit used seldomly or by a small number of individuals. The Proposed Development is therefore considered to be a low risk to migrating bats.

12.10.7 The Proposed Development would result in a direct, long-term and continuous impact on any migratory Nathusius' pipistrelle using the migratory pathway. However, given the broad extent of available migration routes, the Array Area would occupy only a small proportion of suitable migratory habitat, and bats are unlikely to fly within the rotor-swept height. Following the completion of the Proposed Development's O&M phase (up to 30 years), decommissioning would remove the collision risk entirely.

12.10.8 The impact is assessed as local in spatial extent, long-term in duration, continuous, and highly reversible. As the effect acts directly on the receptor, the overall magnitude of impact is considered low.

Sensitivity of the receptor

12.10.9 Nathusius's pipistrelle has a low vulnerability to collision risk due to its migration flight height being lower (<10 m) than that of the rotor-swept area. It is highly unlikely that it will collide with a rotor blade. Given that collision risk can lead to mortality and/or injury, the recoverability is assessed as low.

12.10.10 The Nathusius' pipistrelle is deemed to be of low vulnerability; however, as the recoverability is considered low, the sensitivity of the receptor is therefore considered to be high.

Significance of the effect

12.10.11 Overall, the magnitude of the impact is deemed to be low and the sensitivity of the receptor is considered to be high. The likely effect will therefore be of 'minor or moderate' adverse significance. It was assessed as **Minor** adverse significance due to the lack of evidence of the Nathusius' pipistrelle migratory

pathway between Aberdeenshire and Denmark within the Offshore Bats Study Area, making the risk of collision very unlikely. **Minor** adverse is not significant in EIA terms.

Additional mitigation and residual effect

12.10.12 No Additional Mitigation is considered necessary because the likely effect in the absence of Additional Mitigation is not significant in EIA terms.

12.11 Inter-Related Effects

12.11.1 A description of the likely inter-related effects arising from the Proposed Development on offshore bats is provided in Volume 2, Chapter 23: Inter-Related Effects.

12.11.2 For offshore bats the following potential impacts have been considered within the inter-related assessment:

- Collision risk

12.11.3 There are no roosts in or around the Site Boundary. Therefore, there are no Inter-Related Effects (project lifetime effects) that are predicted to arise during the construction, O&M, and decommissioning phases of the Proposed Development and also no Inter-Related Effects (receptor-led effects) that are predicted to arise for offshore bat receptors.

12.12 Cumulative Effects Assessment

Methodology

12.12.1 The Cumulative Effects Assessment (CEA) assesses the impact and likely significant effect associated with the Proposed Development together with other relevant projects and activities. Cumulative effects are defined as the effect of the Proposed Development in combination with the effects from a number of different projects, on the same receptor or resource. Further details on CEA methodology are provided in Volume 1, Chapter 4: EIA Methodology.

12.12.2 The projects selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see Volume 3, Technical Appendix 4.4: Cumulative Effects Screening Matrix). Volume 3, Technical Appendix 4.4: Cumulative Effects Screening Matrix provides further information in relation to other projects and how this information is obtained and applied to the assessment. Each project has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

12.12.3 In undertaking the CEA for the Proposed Development, it is important to bear in mind that other projects under consideration will have differing potential for proceeding to an operational stage and hence a differing potential to ultimately contribute to a cumulative impact alongside the Proposed Development. Therefore, a tiered approach has been adopted. This provides a framework for placing relative weight upon the potential for each project to be included in the CEA to ultimately be realised, based upon the project's current stage of maturity and certainty in the projects' parameters. The tiered approach which will be utilised within the Proposed Development CEA employs the following tiers:

- **Tier 1:** The onshore elements of the Project;
- **Tier 2:** Projects that have an application submitted, are consented, under construction or operational to the extent not already captured with the baseline;
- **Tier 3:** Projects which have submitted a scoping report and/or have received a scoping opinion; and
- **Tier 4:** Reasonably foreseeable projects including those with Crown Estate Scotland option or lease agreements.

12.12.4 Projects were only considered within the defined Zone of Influence (ZoI) between the north-east of Scotland and the eastern coast of Denmark as the migratory corridor for bat receptors (shown as the Study Area within Figure 12.1), specifically Nathusius's pipistrelle, based on baseline analysis and precautionary assumptions. The ZoI also encompasses areas between Shetland, Orkney, Caithness, Aberdeenshire and Denmark reflecting the migratory corridor most likely to be used by this species. The literature review described a migratory route to Norway from Shetland and Orkney. Any bats migrating north-east will not interact with the Proposed Development as it does not fall in the trajectory of northern Scotland to Norway flight path.

12.12.5 The ZoI has been refined to exclude projects outside this corridor, as they are unlikely to contribute to cumulative effects. This approach aligns with the methodology used in Volume 2, Chapter 11: Offshore Ornithology, ensuring consistency in assessing migratory impacts.

12.12.6 The specific projects scoped into the CEA for offshore bats, are outlined in Table 12.12.

12.12.7 Tier 2 and Tier 3 projects are considered in the CEA for this topic. Tier 1 projects are not considered in the CEA as no elements of the onshore development poses a collision risk to offshore bats. Tier 4 projects are not considered in the CEA as they are predominantly 'proposed' or only identified in development plans and so have reduced data available for detailed quantitative analysis and may not actually be taken forwards.

Table 12.12: List of Other Projects Considered within the CEA for Offshore Bats

Project	Status	Distance from Proposed Development to the Array Area (km)	Description of Project	Dates of Construction (If Applicable) Proposed Development: 2027 – 2034	Dates of Operation (If Applicable) Proposed Development: 2035 - 2065	Overlap with the Proposed Development
Tier 1						
There were no Tier 1 projects in the CEA long list brought forwards to the CEA offshore bats due to no elements of the onshore aspect which poses a collision risk to offshore bats.						
Tier 2						
Aberdeen OWF	Operational	38.60	Aberdeen Offshore Wind Farm consists of up to 11 turbines at a capacity of 96.8 MW.	N/A	2018-2043	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Kincardine OWF	Operational	20.14	Kincardine Offshore Wind Farm is consented for up to 7 wind turbines with 6 currently operational. Capacity of 50 MW.	N/A	2021-2046	Project O&M phase overlaps with Proposed Development construction, and O&M phases.
Ossian	Application submitted but not yet determined	25.36	The Ossian Floating Wind project is proposed for up to 265 floating wind turbines with a capacity of 3,600 MW. Operational lifetime 35 years. Additional information submitted to MD-LOT October 2025.	2029-early 2030s	Early 2030s – 2073	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Seagreen (comprising Alpha and Bravo) OWF	Operational	27.87	Seagreen 1 Offshore Wind Farm consists of up to 114 wind turbines at a capacity of 1,075 MW. Seagreen was consented with permission to install 150 wind turbines. The remaining 36 wind turbines are consented but not yet constructed (Seagreen 1A project).	N/A	2023–2048	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Seagreen 1A OWF	Consented	36.30	Seagreen 1A is made up of the 36 remaining wind turbines consented as part of the Seagreen 1 Offshore Wind Farm. Seagreen 1A submitted a variation in consent to allow construction to take place between 2029 and 2032.	2026-2032	Early 2030s-2060s	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Hywind Scotland OWF	Operational	44.43	Floating offshore wind farm with 5 wind turbines and 30 MW installed capacity. The wind farm started operating in 2017 with a design life of 20 years. Decommissioning is planned to be undertaken during Q2/Q3 2038	N/A	2017–early 2030s	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Berwick Bank	Consented	46.53	Berwick Bank Offshore Wind Farm is proposed for up to 307 wind turbines with a capacity of up to 4,100 MW.	2028–2031	2031–2065	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Muir Mhor OWF	Application submitted but not yet determined	52.51	Muir Mhòr Offshore Wind Farm is proposed for up to 67 wind turbine at a capacity of 798 MW. Additional information submitted to MD-LOT October 2025.	2030-2033	2034-2068*	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Inch Cape OWF		56.04	Inch Cape Offshore Wind Farm is consented for up to 72 wind turbines with a capacity of 1,100 MW.	2023–2030	Early 2030s–2060s	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Salamander OWF	Consented	58.69	Salamander Offshore Wind Farm is proposed for up to 100 MW.	2028-2032	2033-2068*	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Aspen OWF	Application submitted but	88.37	Floating offshore wind farm proposed for up to 1,000 MW and up to 72 wind turbines.	2027-2031	2032-2057	Project construction and O&M phases overlap with Proposed Development

Project	Status	Distance from Proposed Development to the Array Area (km)	Description of Project	Dates of Construction (If Applicable) Proposed Development: 2027 – 2034	Dates of Operation (If Applicable) Proposed Development: 2035 - 2065	Overlap with the Proposed Development
	not yet determined					construction, O&M and decommissioning phases.
Caledonia OWF South	Application submitted but not yet determined	99.24	The Caledonia South Offshore Export Corridor runs south to the landfall site at Stake Ness. Up to two export cables with maximum voltage of 275 kV and stretching up to 150 km.	2028 - 2030	2030 – 2055*	Project construction and O&M phases overlap with Proposed Development construction and O&M phases.
Caledonia OWF North	Application submitted but not yet determined	99.24	The Caledonia North Offshore Export Corridor runs south through the Caledonia Site (North and South) to the landfall site at Stake Ness. Up to two export cables with maximum voltage of 275 kV and stretching up to 180 km.	2028 - 2030	2030 – 2055*	Project construction and O&M phases overlap with Proposed Development construction and O&M phases.
Moray East OWF	Operational	138.55	Moray East Offshore Wind Farm consists of up to 100 wind turbines at a capacity of 950 MW.	N/A	2022-2047*	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Moray West OWF	Operational	143.99	Moray West Offshore Wind Farm is consented for up to 60 wind turbines at a capacity of 882 MW.	N/A	2025-2055*	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Cenos OWF	Application submitted but not yet determined	149.39	Proposed for up to 1,350 MW with up to 95 floating wind turbines.	2030 – 2034	2035 – 2068*	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Beatrice OWF	Operational	153.88	Beatrice Offshore Wind Farm consists of 84 wind turbines at a capacity of 588 MW.	N/A	2019-2044	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Ayre OWF	Application submitted but not yet determined	192.87	Up to 1,000 MW with proposed up to 67 wind turbines.	2030-2034	2034-2064	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Pentland Floating OWF	Consented	228.04	Pentland floating Offshore Wind Farm is consented for up to 6 wind turbines with a capacity of 100 MW. Up to two export cables making landfall at the Dounreay coast.	2027-2030	2030–2060s	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Sandbank OWF	Operational	531.69	Sandbank consists of up to 72 wind turbines at a capacity of 288 MW.	N/A	2017–2040s	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Thor OWF	Under construction	532.46	Thor Offshore Wind Farm is proposed for up to 72 wind turbines at a capacity of 1,000 MW.Consented offshore windfarm under construction, located off the west coast of Denmark.	2024–2027	2027–2057	Project construction and O&M phases overlap with Proposed Development construction and O&M phases.
DanTysk OWF	Operational	555.32	DanTysk consists of up to 80 wind turbines at a capacity of 288 MW.	N/A	2014-Late 2030s	Project O&M phase overlaps with Proposed Development O&M phase.
Horns Rev III OWF	Operational	557.68	The Horns Rev III Offshore Wind Farm consists of up to 49 wind turbines at a capacity of 407 MW.	N/A	2019–Late 2040s	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Horns Rev II OWF	Operational	562.60	The Horns Rev II Offshore Wind Farm consists of up to 91 wind turbines at a capacity of 209.3 MW.	N/A	2009–2030s	Project O&M phase overlaps with Proposed Development construction and O&M phases.

Project	Status	Distance from Proposed Development to the Array Area (km)	Description of Project	Dates of Construction (If Applicable) Proposed Development: 2027 – 2034	Dates of Operation (If Applicable) Proposed Development: 2035 - 2065	Overlap with the Proposed Development
Vesterhav Nord OWF	Operational	563.25	The Vesterhav Nord is consented for up to 20 wind turbines with a capacity of up to 176 MW.	N/A	2023–2048	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Vesterhav Syd OWF	Operational	569.57	The Vesterhav Syd is consented for up to 21 wind turbines with a capacity of up to 168 MW.	N/A	2023–2048	Project O&M phase overlaps with Proposed Development construction and O&M phases.
Nissum Bredning Vind	Operational	576.10	Nissum Bredning Offshore Wind Farm consists of up to 4 wind turbines at a capacity of 28 MW.	N/A	2018–2040s	Project O&M phase overlaps with Proposed Development construction and O&M phase.
Horns Rev I OWF	Operational	580.94	Horns Rev I Offshore Wind Farm consists of up to 80 wind turbines at a capacity of 160 MW.	N/A	2002-Late 2020s	Project O&M phase overlaps with Proposed Development construction phase.
Butendiek OWF	Operational	597.52	Butendiek consists of up to 80 wind turbines at a capacity of 288 MW.	N/A	2015-Late 2030s	Project O&M phase overlaps with Proposed Development O&M phase.
Tier 3						
Bellrock OWF	Pre-Application	62.24	Bellrock Offshore Wind Farm is proposed for a capacity of 1,800 MW with between 42 and 80 wind turbines.	Early 2030s	Early-mid 2030s-2060s	Project construction and O&M phases are expected to overlap with Proposed Development construction, O&M and decommissioning phases.
Morven North OWF	Pre-Application	10.03	Morven North Offshore Wind Array Project is proposed for up to 96 wind turbines at a capacity of 1,500 MW. Application of relevant consents and licences expected in 2026 with decision in 2027	2027-2028	2030-2060	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Morven South OWF	Pre-Application	43.61	Morven South Offshore Wind Array Project is proposed for up to 95 wind turbines at a capacity of 1,500 MW. Application of relevant consents and licences expected in 2026 with decision in 2027	2027-2028	2030-2060	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Broadshore OWF	Pre-Application	120.09	The Broadshore Offshore Wind Farm is proposed for a capacity of 900 MW with between 32 and 60 wind turbines.	2028 - 2029	2029 - 2068	Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases.
Scaraben OWF	Pre-Application	125.19	Proposed between 3 and 6 wind turbines with a capacity of up to 99.5 MW.	Late 2020s	Early 2030s	Project construction and O&M phases are expected to overlap with Proposed Development construction, O&M and decommissioning phases.
Stromar OWF	Pre-Application	153.38	Stromar is a proposed floating offshore wind farm for up to 1,500 MW capacity. Scoping Opinion issued April 2024.	2026-2032	2033-2058	Project construction and O&M phases are expected to overlap with Proposed Development construction, O&M and decommissioning phases.
Tier 4						
Cedar	Pre-Planning	104.26	Cedar Offshore Wind Farm is proposed for up to 1,008 MW. Anticipating 50+ years of operations.	TBD	TBD	Limited available data, too early to assess.
Judy	Pre-Planning	212.25	Harbour Energy INTOG site is proposed for up to 15 MW.	TBD	TBD	Limited available data, too early to assess.

* Project Phase refers to construction (C), operation and maintenance (O) and decommissioning (D).

Maximum Design Scenario

12.12.8 The MDS identified in Table 12.13 have been selected as those having the potential to result in the greatest impact on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the details provided in Volume 1, Chapter 3: Project Description as well as the information available on other projects (see Volume 3, Technical Appendix 4.4: Cumulative Effects Assessment – Screening), to inform a MDS. Any other development scenario within the PDE, will result in in the same, or less, level of environmental impact.

Table 12.13: Maximum Design Scenario Considered for Each Impact as part of the Assessment of Likely Significant Cumulative Effects on Offshore Bats

Potential Cumulative Effect	Phase*			Maximum Design Scenario	Justification
	C	O	D		
Collision risk due to colliding with the rotor blades	×	✓	×	MDS as described for the Proposed Development (Table 12.5) assessed cumulatively with the following projects: Tier 1 Excluded from assessment Tier 2 All Tier 2 projects listed in Table 12.12 are considered for cumulative assessment. Tier 3 All Tier 3 projects listed in Table 12.12 are considered for cumulative assessment. Tier 4 Excluded from assessment.	Tier 1 The onshore elements of the Project are excluded as collision risk is not applicable due to the lack of any structure that would cause damage or harm to offshore bats. Tier 2 There is potential for a cumulative effect from O&M activities and so a CEA is required. Tier 3 There is potential for a cumulative effect from O&M activities and so a CEA is required. Tier 4 Excluded from assessment as there are no applicable projects within the impact pathway.

* Project Phase refers to construction (C), operation and maintenance (O) and decommissioning (D).

IMPACT 1 – COLLISION RISK DUE TO COLLISION WITH ROTOR BLADES

Tiers 2 & 3

12.12.9 Nathusius' pipistrelle are known to migrate over 2,000 km between their summer and winter habitats including across the North Sea (Voigt *et al*., 2023). The exact migratory pathways across the central North Sea are understudied. The available evidence suggests that offshore bat activity, is extremely low in the region surrounding the Proposed Development.

12.12.10 Offshore wind farms within the wider ZoI have turbine blade tip heights positioned higher than 10 m above LAT. This design characteristic substantially lowers the potential for bats migrating offshore to encounter turbine blades within their typical flight height range. For the small number of projects with blade tip heights below 10 m, the risk of collision remains low, as migrating bats are generally expected to travel a few metres above sea level (Ahlén *et al*., 2007). In addition, the combination of the lack of maternity roosts and the limited number of Nathusius' pipistrelle records in northern Scotland as described in Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review, reinforce the conclusion that cumulative collision risk is unlikely to be greater than the assessment of the project alone, and that cumulative effects are therefore not significant.

12.12.11 Accordingly, although the potential for long-distance bat movements is acknowledged, the combination of spatial separation between projects, turbine design parameters, and low baseline bat activity supports the conclusion that cumulative effects are unlikely to be significant and can be scoped out of further assessment.

12.13 Proposed Monitoring

12.13.1 No project-specific monitoring measures are proposed, given that no significant impacts are predicted from the Proposed Development alone or cumulatively with other plans and projects. However, the Applicant will engage and contribute to relevant regional and strategic monitoring, where appropriate to do so for the Proposed Development, giving due consideration to the Scottish Marine Energy Research (ScotMER) programme (or any successor programme formed to facilitate these research interests), or any developer lead regional groups.

12.14 Transboundary Effects

12.14.1 A screening of transboundary effects has been carried out (see Volume 3, Technical Appendix 4.5: Transboundary Effects Screening) and has identified that there were no likely significant transboundary effects with regard to offshore bats from the Proposed Development upon the interests of European Economic Area states.

12.15 Summary of Impacts, Mitigation, Likely Significant Environmental Effects and Monitoring

12.15.1 Information on Nathusius' pipistrelle within the Offshore Bats Study Area was collected through the literature and data review (Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review).

12.15.2 Table 12.14 presents a summary of the potential impacts, Embedded Mitigation measures and the conclusion of likely significant environmental effects in EIA terms in respect to offshore bats. The impacts assessed include:

- Collision risk

12.15.3 Overall, it is concluded that there will be no likely significant effects on offshore bats arising from the Proposed Development during O&M.

12.15.4 Table 12.15 presents a summary of the cumulative effects assessment of the potential impacts and the conclusion of likely significant environmental effects on offshore bats in EIA terms. The cumulative effect assessed is:

- Collision risk

12.15.5 Overall, it is concluded that there will be no likely significant cumulative effects from the Proposed Development alongside other projects/plans.

12.15.6 No likely significant transboundary effects have been identified in regard to effects of the Proposed Development.

Table 12.14 Summary of Assessment of Significance for Collision Risk

Description of Impact	Species	Embedded Mitigation ID	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Additional Mitigation	Significance Residual Effect	Proposed Monitoring
O&M Phase								
Impact 1: Collision Risk with turbine blades	Nathusius' pipistrelle	21	Low	High	Minor adverse	None required.	Minor adverse	None

Table 12.15 Summary of Cumulative Assessment of Significance of Collision Risk

Description of Impact	Species	CEA Tier	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Additional Mitigation	Significance Residual Effect	Additional Mitigation
O&M Phase								
Collision Risk with turbine blades	Nathusius' pipistrelle	Tier 2 and Tier 3	Low	High	Minor adverse	None required.	Minor adverse	None

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