

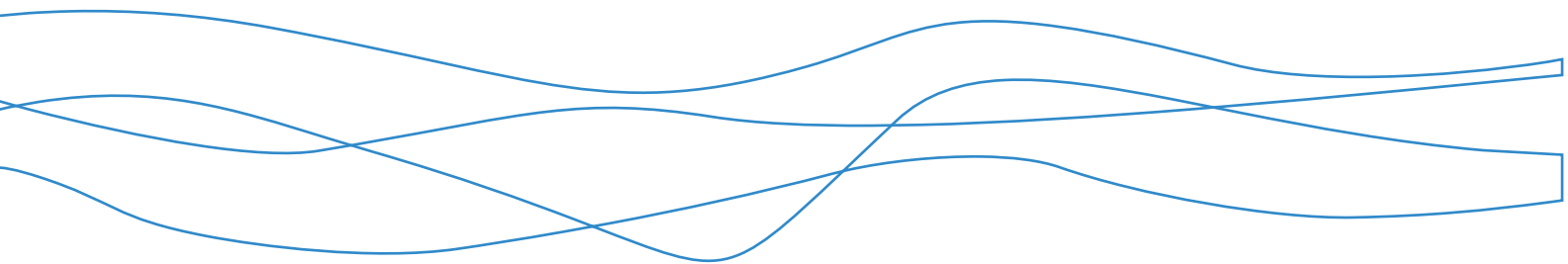


THISTLE WIND
PARTNERS

Ayre Offshore Wind Farm Offshore EIA Report

Volume 2, Chapter 12: Offshore Bats

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Contents

| | |
|---|----------|
| 12 Offshore Bats | 1 |
| 12.1 Introduction | 1 |
| 12.2 Offshore Bats Study Area | 1 |
| 12.3 Legislative and Policy Context | 3 |
| 12.4 Consultation | 3 |
| 12.5 Data Sources | 6 |
| 12.6 Baseline Environment | 6 |
| 12.7 Key Parameters for Assessment | 8 |
| 12.8 Methodology for Assessment of Effects | 10 |
| 12.9 Embedded Mitigation | 13 |
| 12.10 Assessment of Significance | 14 |
| 12.11 Inter-Related Effects | 15 |
| 12.12 Cumulative Effects Assessment | 16 |
| 12.13 Proposed Monitoring | 22 |
| 12.14 Transboundary Effects | 22 |
| 12.15 Summary of Impacts, Mitigation, Likely Significant Environmental Effects and Monitoring | 22 |
| 12.16 References | 25 |

List of Tables

| | |
|---|----|
| Table 12.1: Summary of Key Legislation Relevant to Offshore Bats | 3 |
| Table 12.2: Summary of Key Policy Provisions Relevant to Offshore Bats | 3 |
| Table 12.3: Summary of Key Consultation Issues Raised During Consultation Activities Undertaken for the Proposed Development Relevant to Offshore Bats | 4 |
| Table 12.4: IEFs Within the Proposed Development Offshore Bats Study Area | 8 |
| Table 12.5: Maximum Design Scenario Considered for Each Potential Impact as Part of the Assessment of Likely Significant Environmental Effects on Offshore Bats | 9 |
| Table 12.6: Descriptions of Categories Related to EIA Impacts | 10 |
| Table 12.7: Definition of Terms relating to Magnitude of Impact | 11 |
| Table 12.8: Definition of Terms Relating to the Sensitivity of the Receptor | 11 |
| Table 12.9: Matrix Used for the Assessment of the Significance of the Effect | 12 |
| Table 12.10: Definition of Significance | 13 |
| Table 12.11: Embedded Mitigation Adopted as Part of the Proposed Development | 13 |
| Table 12.12: List of Other Projects Considered within the CEA for Offshore Bats | 18 |
| Table 12.13: Maximum Design Scenario Considered for Each Impact as part of the Assessment of Likely Significant Cumulative Effects on Offshore Bats | 21 |
| Table 12.14 Summary of Assessment of Significance for Collision Risk | 24 |
| Table 12.15 Summary of Cumulative Assessment of Significance of Collision Risk | 24 |

List of Figures

| | |
|--|---|
| Figure 12.1 Offshore Bats Study Area and Zone of Influence | 2 |
|--|---|

Glossary

| Defined Term | Definition |
|--|--|
| Annex II | Species of community interest whose conservation requires the designation of Special Areas of Conservation (SACs) under 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) | Ayre Offshore Wind Farm Limited (AOWFL). |
| Array Area | The Array Area is the area in which the Offshore Generation Assets will be located. |
| Ayre Offshore Wind Farm Limited (AOWFL) | A Special-Purpose Vehicle (SPV) (legal entity) for the purpose of developing the Project. AOWFL 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. |
| Collision | The effect by which a bird/bat may be impacted by direct collision. Birds passing through an offshore wind farm are at risk of colliding with the Wind Turbines (moving and stationary parts). |
| 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 IEMA 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) | Assessment of the potential likely significant effects of the Proposed Development on the physical, biological, and human environment during construction, Operations 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: <ul style="list-style-type: none"> • 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. |
| Additional Mitigation | Also referred to as secondary mitigation which is defined by 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). |
| 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. |
| Likely Significant Effect (LSE) | An effect that has the potential to occur as a result of the Proposed Development as determined by the AA. |
| 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. An Offshore EIA will be submitted to support the Offshore Application for the Proposed Development. |
| 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 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, 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. |
| Scottish Offshore Waters | The area between the seaward boundary of Scottish Territorial Waters and the seaward boundary of the Scottish part of the EEZ. |
| 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) | The Joint Venture (JV) of DEME Group, Qair, and Aspiravi as the energy companies that have partnered to develop the Proposed Development. |
| Wind Turbines | Structures comprising of a tubular tower, rotor blades, and a nacelle which houses the Wind Turbine generator. |

Acronyms

| Acronym | Definition |
|--------------|--|
| AoS | Areas of Search |
| AOWFL | Ayre 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 |

| Acronym | Definition |
|---------|--|
| JNCC | Joint Nature Conservation Committee |
| LAT | Lowest Astronomical Tide |
| LSE | Likely Significant Effects |
| 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 |
| OWF | Offshore Wind Farm |
| PAC | Pre-Application Consultation |
| SAC | Special Area of Conservation |
| 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 study area has been defined as the United Kingdom (UK), the North Sea and a corridor between northern Scotland 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. This area is defined in Figure 12.1.

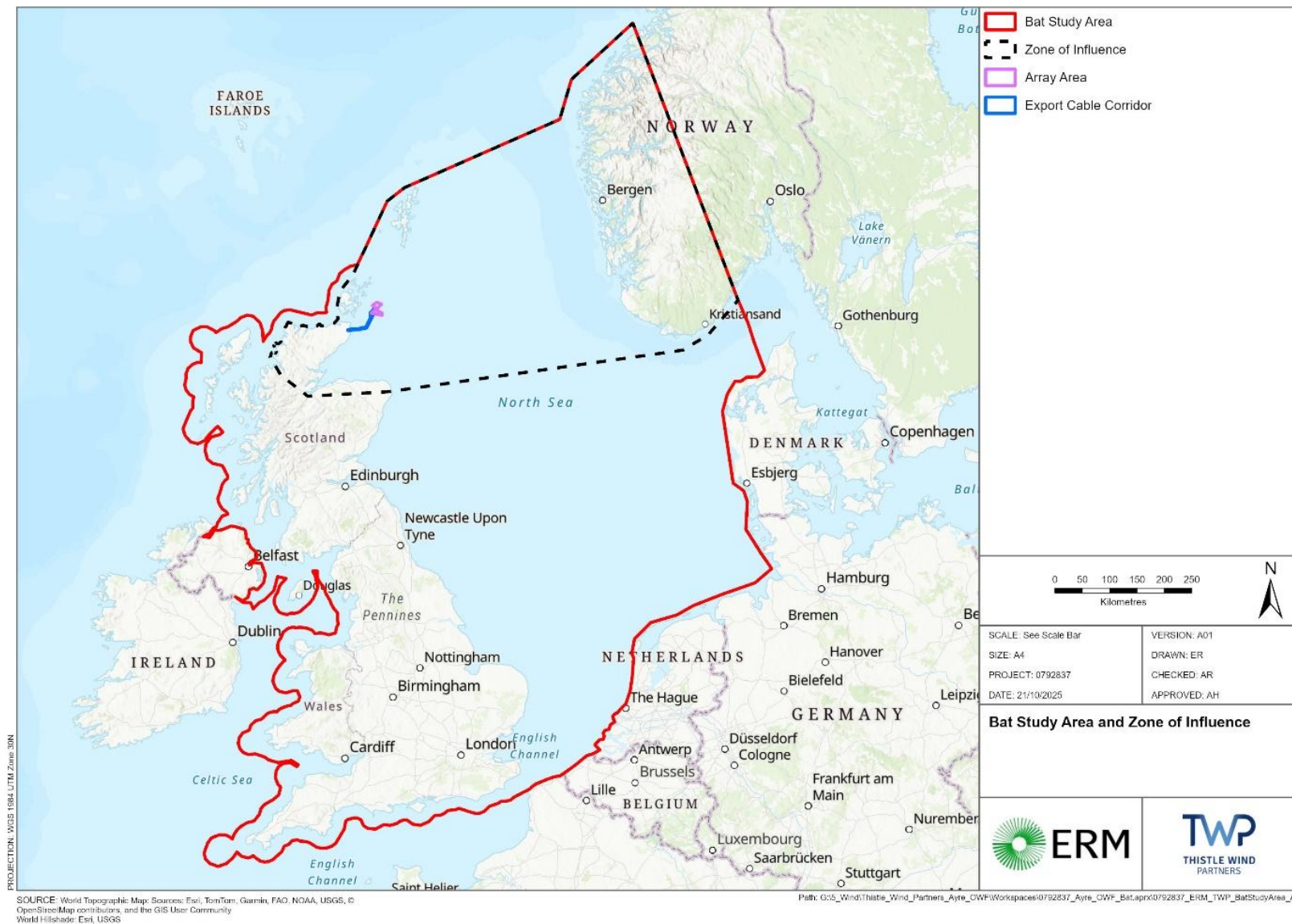


Figure 12.1 Offshore Bats Study Area and Zone of Influence

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 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. |
| 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 5.1: Pre-Application Consultation Report and Volume 3, Technical Appendix 5.2: Consultation Responses.

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 |
|----------------------|--|---|--|
| 30 April 2024 | Marine Directorate – Licensing Operations Team (MD-LOT) 2024 Ayre Offshore Wind Farm Post Scoping Opinion (MD-LOT, 2024) | <ul style="list-style-type: none"> In advice issued on 30 April 2024, it was recommended that Nathusius' pipistrelle bats be included in the EIA for the Offshore Project. The Applicant later proposed (on 2 August 2024) to exclude the species from the EIA, arguing low likelihood of significant effects. NatureScot disagreed and maintained that the bats should be considered in the EIA Report. Evidence of offshore bat activity, provided by NatureScot, includes: <ul style="list-style-type: none"> Photographs from Beatrice Offshore Wind Farm (OWF) showing bat migration, which is over 60 km away from the Ayre OWF site. A dead bat was recorded at Neart na Gaoithe OWF, which is nearly 300 km away from the Ayre OWF site. Additional sightings at oil and gas platforms in Scottish offshore waters which are over 50 km away from the Array Area. These sightings are likely underestimates, as they were incidental and not from active monitoring. While the authority notes the Applicant's disagreement, they support the suggestion for a strategic approach to better understand bat migration. They are open to further discussions with the Applicant and other developers about funding and collaboration with Scottish Marine Energy Research (ScotMER). | In response to the consultation a literature review was conducted on the status on <i>Nathusius' pipistrelle</i> status and migration within the UK and North Sea (presented within Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review). This has been used to inform the baseline and conduct an impact assessment on the collision risk of <i>Nathusius' pipistrelle</i> from the Proposed Development. |

| Date | Consultee and Type of Consultation | Summary of Issue(s) Raised | Response to Issue Raised and/or where Considered in this Chapter |
|-------------|--|---|---|
| 14 May 2025 | NatureScot review of the literature review requested in the post Scoping Report consultation | <ul style="list-style-type: none"> NatureScot referenced a pending Natural England report on bat migration and OWF, led by the Bat Conservation Trust (BCT) and the University of West England, with findings presented at BCT's 2024 conference. They advised reviewing and incorporating the findings from the RPS literature review and the EIA into the report once it is published. They noted that Russ <i>et al.</i> (2001) cited around 29 records of Nathusius pipistrelle in north-east Scotland, Shetland, and Orkney, but the Northeast Scotland Bat Group had more records, which were shared with North East Scotland Biological Records Centre (NESBReC) and BCT. Previously, there was no evidence of residency in the far north, but data from the Ayre Onshore EIA baseline recorded Nathusius pipistrelle in Sinclair's Bay in June/July 2024, suggesting a small resident population. NatureScot queried a possible error in Technical Appendix 12.1: Offshore Bats Literature and Data Review, Section 4.1.22, which mentioned exhausted bats showing an east coast bias - they suggested this may have meant the west coast, given the inference of migration from the west. They also corrected the literature on Leisler's bat, which was previously thought absent from northern Scotland, noting a breeding roost was confirmed in Aberdeenshire in 2021. Overall, NatureScot was satisfied with the literature review and saw no need for a meeting unless specific queries arose. They agreed that Nathusius pipistrelle should be considered in the Offshore EIA Report, supported a qualitative assessment, and recommended including mitigation or monitoring at a strategic level. | <p>NatureScot requested a literature review of the local records, neighbouring offshore windfarm and literature sources of Nathusius' pipistrelle to inform the impact assessment.</p> <p>This chapter provides the assessment of likely significant effects on offshore bat receptors.</p> |

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, Scopus, and Google Scholar;
- Data requests to external agencies, such as the National Biodiversity Network (NBN); and

12.5.2 Offshore bat species, specifically *Nathusius' pipistrelle*, as it is the only migrating bats, has been reviewed and analysed to inform this offshore bats baseline. In addition, consultation with NatureScot has been undertaken to aid the collection of baseline information. *Nathusius' pipistrelle* is the only species to migrate in Northern Scotland, the literature review searched for any records of other migratory species such as *Nyctalus* species, which revealed that there were none.

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, as agreed with NatureScot.

Desktop Survey

12.5.4 A screening of the migration corridor (the area between *Nathusius' pipistrelle* records in north-east Scotland, Orkney and Shetland and the southwest coast of Norway) records from the Array Area was conducted as part of the baseline survey investigation. Local authority data was requested; however it was not available for the desk study. Where data was available, there were limited to no recordings of *Nathusius' pipistrelle* within the survey area. This reflects what was found in the literature review discussed in Section 12.6.

12.6 Baseline Environment

Overview of Baseline Environment

12.6.1 The literature review of the current status of the *Nathusius' pipistrelle* is presented in Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review, which concluded the following:

12.6.2 *Nathusius' pipistrelle* is increasingly being recorded in the UK, possibly due to a westward expansion in its range. Sightings are scattered across the UK, with most from southern England. Evidence suggests that *Nathusius' pipistrelle* undertakes long-distance migrations, crossing large water bodies like the North Sea, with numbers peaking in autumn and spring.

12.6.3 Records from northern Scotland, including Shetland and Orkney, show terrestrial occurrences of *Nathusius' pipistrelle*. These could be speculated to be related to migratory observations. Observations on offshore infrastructure and oil platforms further support the migratory behaviour of this species. The presence of records on offshore infrastructure is suggestive of *Nathusius' pipistrelle* migration; however, it cannot be definitively ruled out that they are

migratory records. Only one confirmed record of Nathusius' pipistrelle has been recorded on NBN in 2010 (NBN, 2025). The data suggests that Nathusius' pipistrelle migrates from Scandinavia to avoid harsh winters and overwinters in the British Isles. The records from remote areas like Shetland and Orkney suggests that these regions may support overwintering or migratory populations. Studies from the southern North Sea provide contextual evidence of Nathusius' pipistrelle migrating between England and the Dutch and Belgian coasts, and the distances they travel.

- 12.6.4 Overall, the evidence suggests that Nathusius' pipistrelle are present in northern Scotland during the autumn and spring due to peaks in records during the migration season. They move to and from their breeding grounds in the mainland UK with the closest confirmed maternity roost being located in north-east England. However, it should be noted that insufficient data is available to ascertain the exact route of this migration across the northern North Sea, and where bats might make landfall along the Scottish coastline.

Designated Sites

- 12.6.5 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

- 12.6.6 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).
- 12.6.7 Table 12.4 lists all of the IEFs within the Offshore Bats Study Area (see Figure 12.1). The main habitats identified throughout the Offshore Bats Study Area comprise species of interest.

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

- 12.6.8 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.
- 12.6.9 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

- 12.6.10 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 | x | ✓ | x | O&M Phase Wind Turbines for the 15 MW Wind Turbine layout: <ul style="list-style-type: none"> operational lifetime up to 30 years. up to 67 floating Wind Turbines mounted on a Tension Leg Platform (TLP); maximum rotor diameter 236 m, chord width 6.5 m, hub height 148 m above Lowest Astronomical Tide (LAT), minimum blade clearance 30 m above LAT (tidal offset 1.68 m, 26.64 m above HAT), upper blade tip height 266 m above LAT; Wind Turbine spacing minimum 1,086 m; and maximum rotor speed of 8.4 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. The TLP constitutes the largest collision risk, because it does not move up and down with the tides, reducing the air gap during high tides. |

* 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. This was due to the results of the consultation with NatureScot as Offshore bats were scoped out in the initial screening assessment.

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 6: 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 30 m above Lowest Astronomical Tide (LAT), and a minimum rotor diameter, accounting for pitch and roll as per Marine Guidance Note (MGN) 654. | 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 bats receptors caused by each identified impact is given below:

IMPACT 1 – COLLISION RISK DUE TO COLLISION WITH ROTOR BLADES

O&M Phase

- 12.10.2 Bats migrating within the Array Area are likely to be at risk of accidental mortality or injury during flight due to direct impact with turbine blades during the O&M phase. This risk does not apply to the construction or decommissioning phases as the turbines will not be in operation and therefore there is no collision risk for commuting bats. There is limited evidence regarding the specific impacts of wind farms on bats in the UK, primarily due to a lack of comprehensive data. Therefore, the impact is assessed on a precautionary basis.
- 12.10.3 The Nathusius' pipistrelle is the only bat in northern Scotland that migrates. There are some recordings of Nathusius' pipistrelle around Orkney and Shetland; however, the migration is only a bi-annual event as the species will not be out at sea any other time of the year (Hedenström, 2009). A study by Ahlén *et al.* (2007) suggested that bats commuting across water flew at a height of less than 10 m above the surface of the water, due to the weather conditions and the ease of navigation. It seems unlikely that bats would increase their flight height over a migration. Studies including Suba (2014) and Troxell *et al.* (2019) suggest that the average flight height for Nathusius' pipistrelle over water is between 7.8 m and 11.5 m, suggesting that they are likely to fly below the minimum rotor height of 30 m above LAT in the Proposed Development design.

Magnitude of impact

- 12.10.4 Nathusius' pipistrelle are infrequently recorded around the northern parts of Scotland, the majority of the records being during the migratory seasons (spring and autumn) (NBN, 2025). The closest recorded maternity to roost is in north-east England. While the absence of records and observations may suggest limited use of the migration route, it remains unclear whether this reflects a true lack of bat presence or simply insufficient monitoring. It is possible that low population numbers, rather than a complete absence, account for the limited data. On a precautionary basis, it is therefore considered that the route may still function as a temporary pathway for migrating bats, albeit used infrequently or by a small number of individuals. The Proposed Development is therefore considered to be a low risk to migrating bats.
- 12.10.5 The addition of the Proposed Development will constitute a direct, long-term continuous impact to any migratory Nathusius' pipistrelle using the migratory pathway (see Figure 12.1). However, due to the wide extent of the migratory pathways available, the Wind Turbines will only cover a small portion of the of the available migratory habitat and bats are unlikely to fly at the height of the rotor swept area. Once the Proposed Development's O&M lifespan (up to 30

years) is complete, the Proposed Development will be decommissioned thus reversing the impact of collision.

- 12.10.6 The impact is predicted to be of local spatial extent, long-term duration, continuous, and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude of impact is therefore considered to be low.

Sensitivity of the receptor

- 12.10.7 Nathusius's pipistrelle is of low vulnerability to collision risk due to its flight height during migration being lower (<10 m) than that of the rotor-swept area. It is very unlikely that it will collide with a rotor blade. Considering the collision risk results in mortality and/or injury, the recoverability is considered to be low.
- 12.10.8 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

- 12.10.9 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, assessed as **Minor** due to the lack of records of the Nathusius' pipistrelle within the Study Area, making the risk of a direct very unlikely. **Minor** is not significant in EIA terms.

Additional mitigation and residual effect

- 12.10.10 No Additional Mitigation is considered necessary because the likely effect in the absence of 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 Chapter 21: 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 including the Orkney and Shetland Islands and the southwest coast of Norway as the migratory corridor for bat receptors (see Figure 12.1), specifically Nathusius's pipistrelle, based on baseline analysis and precautionary assumptions. The Zoi encompasses areas between Shetland, Aberdeenshire, and the south-east coast of Norway, reflecting the migratory corridor most likely to be

used by this species. 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.

- 12.12.5 The specific projects scoped into the CEA for offshore bats, are outlined in Table 12.12.
- 12.12.6 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 pose 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 (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 | | | | | | |
| Aspen OWF | Application | 146.45 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2028 – 2031 | 2031 – 2066 | Project construction, O&M and decommissioning phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Beatrice OWF | Operational | 58.57 | Current offshore windfarm with operational turbines in the Moray Firth, just south of Wick. | N/A | Until 2044 | Project O&M phase overlaps with Proposed Development O&M phase. |
| Buchan OWF | Application | 53.11 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2028 – 2030 | 2030 – unknown | Project construction, O&M and decommissioning phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Moray East OWF | Operational | 67.72 | Current offshore windfarm with operational turbines in the Moray Firth, just south of Wick. | NA | Until 2068* | Project O&M phase overlaps with Proposed Development O&M phase. |
| Moray West OWF | Operational | 82.82 | Current offshore windfarm with operational turbines in the Moray Firth, just south of Wick. | Until 2024 | 2025 – 2068* | Project O&M phase overlaps with Proposed Development O&M phase. |
| Caledonia OWF | Application | 48.30 | Proposed offshore windfarm with operational turbines in the Moray Firth, just south of Wick. | 2028 – 2031 | 2032 – 2068* | Project O&M phase overlaps with Proposed Development O&M phase. |
| Green Volt OWF | Consented | 117.82 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2025 – 2029 | 2030 – 2065 | Project construction, O&M and decommissioning phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Salamander OWF | Consented | 133.49 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2028 – 2032 | 2033 – 2068* | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Hywind OWF | Operational | 144.92 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | NA | Until 2042 | Project O&M and decommissioning phases overlap with Proposed Development construction, and O&M phases. |

| Project | Status | Distance from Proposed Development (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 |
|-----------------------|-------------|---|---|---|--|---|
| Muir Mhor OWF | Application | 161.99 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2030 – 2033 | 2034 – 2068* | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Aberdeen OWF | Operational | 167.62 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | N/A | Until 2043 | Project O&M and decommissioning phases overlap with Proposed Development construction, and O&M phases. |
| Kincardine OWF | Operational | 191.64 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | NA | Until 2046 | Project O&M and decommissioning phases overlap with Proposed Development construction, and O&M phases. |
| Cenos OWF | Application | 263.23 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2030 – 2034 | 2035 – 2068* | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Tier 3 | | | | | | |
| Stromar OWF | Scoping | 14.01 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2026 – 2032 | 2033 – 2058 | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Broadshore OWF | Scoping | 58.93 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2028 – 2029 | 2029 – 2068 | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Campion OWF | Scoping | 179.69 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2027 – 2034 | 2035 – 2068 | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |
| Maraam OWF | Scoping | 92.06 | Proposed offshore windfarm. Located south of the Proposed Development off the east coast of Scotland. | 2026 – 2029 | 2029 – 2054 | Project construction and O&M phases overlap with Proposed Development construction, O&M and decommissioning phases. |

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

Maximum Design Scenario

- 12.12.7 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 collision with rotor blades | x | ✓ | x | <p>MDS as described for the Proposed Development (Table 12.5) assessed cumulatively with the following projects:</p> <p><u>Tier 1</u></p> <p>Excluded from assessment</p> <p><u>Tier 2</u></p> <p>All tier 2 projects listed in Table 12.12 are considered for cumulative assessment.</p> <p><u>Tier 3</u></p> <p>All tier 3 projects listed in Table 12.12 are considered for cumulative assessment.</p> <p><u>Tier 4</u></p> <ul style="list-style-type: none"> Excluded from assessment. | <p><u>Tier 1</u></p> <p>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.</p> <p><u>Tier 2</u></p> <p>There is potential for a cumulative effect from O&M activities and so a CEA is required.</p> <p><u>Tier 3</u></p> <p>There is potential for a cumulative effect from O&M activities and so a CEA is required.</p> <p><u>Tier 4</u></p> <p>Excluded from assessment as there are no applicable projects within the impact pathway.</p> |

* 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

- 12.12.8 While it is acknowledged that species such as Nathusius' pipistrelle are capable of long-distance migration, including across the North Sea.. The available evidence suggests that offshore bat activity, is extremely low in the region surrounding the Proposed Development.
- 12.12.9 A review of other offshore wind projects within the zone of influence has been undertaken. This review confirms that the majority of these developments also feature turbine blade tip heights exceeding 10 m above LAT, which significantly reduces the likelihood of overlap in the vertical activity range of offshore bats. The minority of the OWFs which have heights lower than 10m are still unlikely to be a collision risk to migrating bats as they are likely to only fly a few metres above the sea surface (Ahlén *et al.*, 2007). Furthermore, the limited presence of maternity roosts and sparse records of Nathusius' pipistrelle in northern Scotland and surrounding waters, as identified in the literature review (Volume 3, Technical Appendix 12.1: Offshore Bats Literature and Data Review), further supports the conclusion that cumulative collision risk is unlikely to be greater than the assessment of the project alone and therefore cumulative effects to be not significant.
- 12.12.10 Therefore, while the potential for long-distance bat movement is recognised, the combination of spatial separation, turbine design parameters, and low baseline bat activity supports the conclusion that cumulative effects are not likely 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

| Impact | Species | Embedded Mitigation | Magnitude of Impact | Sensitivity of Receptor | Significance of Effect | Proposed Monitoring | Additional Mitigation |
|---|------------------------|---|---------------------|-------------------------|------------------------|---------------------|-----------------------|
| O&M Phase | | | | | | | |
| Collision Risk with turbine blades | Nathusius' pipistrelle | Setting a minimum blade tip height of 30 m above LAT, and a minimum rotor diameter. | Low | High | Minor | N/A | None |

Table 12.15 Summary of Cumulative Assessment of Significance of Collision Risk

| Impact | Species | Cumulative Effects Assessment Tier | Magnitude of Impact | Sensitivity of Receptor | Significance of Effect | Proposed Monitoring | Additional Mitigation |
|---|------------------------|------------------------------------|---------------------|-------------------------|------------------------|---------------------|-----------------------|
| O&M Phase | | | | | | | |
| Collision Risk with turbine blades | Nathusius' pipistrelle | Tiers 2 & 3 | Low | High | Minor | N/A | None |

12.16 References

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