Morecambe Offshore Windfarm: Generation Assets

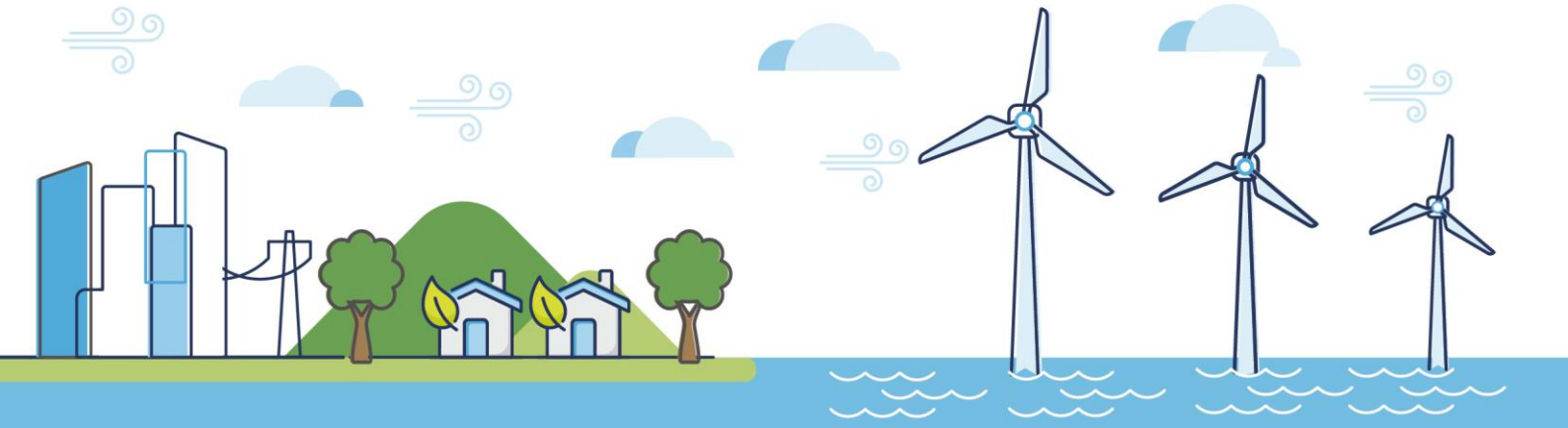
Examination Documents

Volume 9

Technical Note on the Assessment of Offshore Impacts on Bats over the Irish Sea

Document Reference: 9.48

Rev 01



Document History

Doc No	MOR001-FLO-CON-ENV-TEC-0021	**Rev**	01
Alt Doc No	PC1165-RHD-EX-XX-TN-Z-0011		
Document Status	Approved for Use	**Doc Date**	18 February 2025
PINS Doc Ref	9.48	**APFP Ref**	n/a

Rev	Date	Doc Status	Originator	Reviewer	Approver	Modifications
01	18 February 2025	Approved for Use	Royal HaskoningDHV	Morecambe Offshore Windfarm Ltd	Morecambe Offshore Windfarm Ltd	n/a

Contents

Glossary of Acronyms

BCT	Bat Conservation Trust
HRA	Habitats Regulations Assessment
NNPP	National Nathusius' Pipistrelle Project
NPWS	National Parks and Wildlife Service
UK	United Kingdom
EU	European Union
WTGs	Wind Turbine Generators
DBEIS	The Department for Business, Energy and Industrial Strategy
NERC	Natural Environment and Rural Communities Act 2006
SAC	Special Area of Conservation
DCO	Development Consent Order
NISA	North Irish Sea Array
EIAR	Environmental Impact Assessment Report
EOWDC	European Offshore Wind Deployment Centre
AREG	Aberdeen Renewable Energy Group

Glossary of Unit Terms

°C	Degrees Celsius
m	Metres

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1 Introduction

1.1 Purpose of this document

1. This document presents an update to the Habitats Regulations Assessment (HRA) Screening Report (REP3-006) submitted as part of the assessment of the Morecambe Offshore Windfarm Generation Assets on ecological receptors.

2. This has been undertaken at the request of Natural England, who in their comments on Examining Authority's Written Questions (ExQ1) (PD-011), highlighted that there is a potential impact pathway, contrary to conclusions drawn in the HRA Screening Report (REP3-006), between certain bat species known to move between the island of Ireland and the UK mainland and offshore wind turbine generators (WTGs) (1HRA3). Natural England state that it is therefore not possible to screen out impacts to bats altogether, as the extent of these movements are not well understood. In particular, bat species such as Nathusius' pipistrelle *Pipistrellus nathusii*, common noctule *Nyctalus noctula* and Leisler's bat *Nyctalus leisleri* are known to undertake such offshore movements (DBEIS, 2022).

3. The extent to which Nathusius' pipistrelle, common noctule, and Leisler's bats resident on the island of Ireland and the UK mainland migrate across the Irish Sea is currently unknown, however, all of these species are known to migrate over large water bodies and will therefore be the focus of this document.

4. With a growing number of offshore wind projects being proposed within the Irish Sea, it is becoming apparent that the impacts of offshore WTGs and migratory bats need to be investigated further to ensure project and cumulative impacts are avoided.

5. In order to address Natural England's query, this document:

   - Presents the baseline information for bats crossing the Irish Sea, based on a review of available evidence;
   - Identifies the potential impacts on migratory bats and assesses the expected magnitude of effect.

6. No European sites are considered in relation to migratory bats because the species for which sites are designated in the UK are considered to be sedentary. The three migratory species focused on in this document are not listed as species under Annex II of the Habitat Directive and therefore do not require consideration within the HRA.

2 Baseline Information

2.1 Migratory bats and the Irish Sea

7. Currently, there is no data or published literature evidencing migratory bats across the Irish Sea. In the absence of such information, this report has utilised evidence of migratory bats over the North Sea to inform a general background on migratory bats.

8. Most of the existing literature on migratory bats over the North Sea focuses Nathusius' pipistrelles and conclude that the migratory corridors are closely associated with coastlines, and change depending on environmental conditions (DBEIS, 2022; Voigt *et al*., 2023). The focus on Nathusius' pipistrelles is reflected in offshore observations of species in the North Sea, as the species accounts for upwards of 76% of observations (out of a total 34 bats observed) at offshore platforms (Boshamer and Bekker, 2008).

9. Passive acoustic monitoring of Nathusius' pipistrelles in the Netherlands found that migratory movements over the North Sea last longer than one night, with day roosting taking place in offshore structures, including offshore wind WTGs (Lagerveld *et al*., 2023). Such data relating to migratory movements across the Irish Sea does not currently exist.

10. Adult male bats are typically sedentary during the spring and autumn migration periods, moving more within their local area. Female bats (adult and juvenile) and juvenile male bats are significantly more likely to undertake migratory flights to their wintering sites (Lagerveld *et al*., 2023).

11. Literature has documented the use of tailwinds by migratory common noctules and Nathusius' pipistrelle, this has not however been observed in Leisler's bat (Dechmann *et al*., 2017; Lagerveld *et al*., 2021 & 2024).

12. Other environmental variables that could potentially affect offshore migratory bat activity include:

    - Temperature, as bats will not start their migration in temperatures below 7-8°C (Voigt *et al*., 2012);
    - Cloud cover (Royal HaskoningDHV, 2024);
    - Moonphase and moonlight (Lagerveld *et al*., 2023); and
    - Precipitation (Voigt et al., 2012).

13. Overall, existing literature highlights clear data gaps in bat migration and how this interacts with offshore wind farms (BCT, 2025a). Without the underpinning baseline knowledge on the scale of bat migration and movement over the Irish Sea, it is difficult to accurately and proportionally assess impacts on bats offshore. In addition, existing literature suggests the milder weather on the

island of Ireland has resulted in Nathusius' pipistrelle to not exhibit migratory behaviours in favour of a more sedentary lifestyle (Russ *et al*., 2001).

2.1.1 Existing data sources

2.1.1.1 Habitats Directive Article 17 Reports

14. Under the EU Directive on the Conservation of Habitats, Flora and Fauna (92/43/EEC) (herein the 'Habitats Directive'), an Article 17 Report is a comprehensive assessment that EU Member States must submit to the European Commission every six years. This report evaluates the conservation status of habitats and species of Community interest, as listed in the Habitat Directive's annexes. The core of the report includes:

    - **Conservation Status Assessments**: Evaluations of the status and trends of species populations and habitats, considering factors like range, area, structure, functions, and future prospects;
    - **Pressures and Threats**: Information on the main pressures and threats impacting these habitats and species; and
    - **Conservation Measures**: Details on the impact of the Natura 2000 network and other conservation measures.

15. The Republic of Ireland's National Parks and Wildlife Service's (NPWS) latest Article 17 Report was written in 2019 and does not include information in regard to common noctules, however, does present information for both Nathusius' pipistrelle and Leisler's bat.

2.1.1.2 Irish Bat Monitoring Programme 2018-2021

16. The Irish Bat Monitoring Programme (Aughney, Roche and Langton, 2022) details onshore data collected via four separate schemes under the management of Bat Conservation Ireland. The data summarised in the report was collected using a variety of methods, namely:

    - Full spectrum bat detectors over driven transects;
    - Heterodyne detectors over walked transects;
    - Dusk emergence surveys of roosting structures;
    - Internal surveys of roosting structures during daylight hours; and
    - Infrared thermal cameras.

17. The Irish Bat Monitoring Programme did not collect data in regard to common noctules, however, did collect data for both Nathusius' pipistrelle and Leisler's bat.

2.1.1.3 Telemetry data – Motus Wildlife Tracking System

18. The Motus Wildlife Tracking System (2023) (herein referred to as 'Motus') is a project ran by Birds Canada in collaboration with a wide network of

organisations and researchers, providing a platform for radio telemetry data from multiple contributing stations across the globe for small flying organisms, including bats. Currently 2,058 Motus receiver stations are active across 34 countries, allowing the tracked migration paths of individuals fitted with radio transmitters on a global scale, including in the Irish Sea and the west coast of the UK mainland.

19. Three Motus receiver stations are currently active on the Isle of Man, which would potentially capture the flight paths of bat species over the Irish Sea.

20. However, the Motus project does not have any telemetry data recorded for both Leisler's and common noctule bats in the UK mainland and the island of Ireland.

2.1.1.4 National Nathusius' Pipistrelle Project

21. The National Nathusius' Pipistrelle Project (NNPP) was carried out by the Bat Conservation Trust (BCT) from 2014 – 2023, and aimed to determine the migratory origins of Nathusius' pipistrelles in Great Britain (BCT, 2023).

2.1.2 Bat Species

2.1.2.1 Nathusius' pipistrelle

22. All bats and their roosts are protected in the UK under the provisions of the Wildlife & Countryside Act 1981 (as amended) and the Wildlife (Northern Ireland) Order 1985 (as amended). Nathusius' pipistrelles are not afforded any additional protection or notability above this. As Nathusius' pipistrelles are not an Annex II species, they are not a qualifying feature for designated Special Areas of Conservation (SACs) and do not require consideration in HRA.

23. Approximately 40,000 individual (model bandwidth of 100 – 1,000,000) Nathusius' pipistrelles are predicted to breed in central and eastern Europe between May - July, before migrating over the North Sea to southern and western Europe overwinter, including the Netherlands, Belgium, France and the UK (Limpens *et al*., 2017; Mitchell-Jones *et al*., 1999; Russ *et al*., 2001). Russ *et al*. (2001) also cite Nathusius' pipistrelle migrations in a south easterly direction from Scandinavia to avoid harsh winter conditions, which often also involves coastal or offshore flightpaths. The number of migratory individuals between the island of Ireland and the UK is currently not known nor evidenced in scientific literature. Moreover, Nathusius' pipistrelles are sparsely found throughout the British Isles.

24. The latest Article 17 report (NPWS, 2019) estimates the population of Nathusius' pipistrelle in the Republic of Ireland to be 3,000 – 5,000 individuals. This population range is however based mainly on expert opinion with very limited data.

25. The island of Ireland's location has been described as being in a 'transitional region' for migratory bats, meaning it is suitable for siting wintering, breeding and resident Nathusius' pipistrelles. The first Irish breeding colony of Nathusius' pipistrelle was recorded in May 1997, near Lough Neagh (Russ, O'Neill and Montgomery, 1998). Since this initial discovery, more breeding colonies of the species have been found across Northern Ireland in close proximity to Loughs Neagh and Erne. Migratory individuals returning from the north-east of the species' range supplementing the resident bats during the winter (Russ *et al*., 2000).

26. Nathusius' pipistrelles were infrequently encountered during the Irish Bat Monitoring Programme (Aughney, Roche and Langton, 2022), resulting in substantial uncertainty as to any trends for the species. No conclusions were drawn regarding the species' occurrence and proximity to the coastline of the Irish Sea, or the general distribution of the species across the island of Ireland.

27. No detections of any bat species were recorded at the Motus Stations on the Isle of Man, situated in the Irish Sea. Motus has, however, recorded Nathusius' pipistrelle migrating between the east coast of the UK mainland, over the southern extents of the North Sea, to mainland Europe.

28. The following potential migration pathways carried out by individual Nathusius' pipistrelles were recorded to and from Great Britain in the NNPP dataset:

- Blagdon, North Somerset to the Netherlands;
- Latvia to Rye, East Sussex;
- Lithuania to Oare, Kent;
- Lithuania to Stodmarsh, Kent;
- Latvia to Hillingdon, London;
- Latvia to Maldon, Essex;
- Latvia to Feltham, London;
- Rye, East Sussex to Belgium;
- Druridge Bay, Northumberland to Poland; and
- Hounslow, London to Russia.

29. None of the migratory Nathusius' pipistrelles recoded in the NNPP dataset interacted with the Irish Sea.

2.1.3 Common noctule

30. As stated above, all bats and their roosts are protected in the UK under the provisions of the Wildlife & Countryside Act 1981 (as amended) and the Wildlife (Northern Ireland) Order 1985 (as amended). Additionally, common noctule bats are listed as a Section 41 Species of Principle Importance in England under the Natural Environment and Rural Communities (NERC) Act 2006. As common noctules are not an Annex II species, they are not a

qualifying feature for designated SACs and do not require consideration in HRA.

31. Common noctules are known to fly over long distances to their feeding sites and have been recorded at offshore WTGs in Sweden (Ahlén et al., 2007) and offshore platforms in the North Sea (Boshammer and Bekker, 2008).

32. It is worth noting that common noctule bats are absent from the island of Ireland, nevertheless, are widespread throughout England (BCT, 2025b). Their absence from the island of Ireland indicates that their migration over the Irish sea is unlikely.

2.1.4 Leisler's bat

33. As stated above, all bats and their roosts are protected in the UK under the provisions of the Wildlife & Countryside Act 1981 (as amended) and the Wildlife (Northern Ireland) Order 1985 (as amended). Leisler's bats are not afforded any additional protection or notability above this. As Leisler's bats are not an Annex II species, they are not a qualifying feature for designated SACs and do not require consideration in HRA.

34. Long distance migration undertaken by Leisler's bats in northwestern Europe generally occurs in a south-westerly direction, with individuals recorded migrating between the Iberia Penisula and Germany (Hutterer *et al*. 2005; Ohlendorf *et al*., 2001; Steffen et al. 2007). Other European migratory routes undertaken by individuals have been identified between Italy and Poland, as well as France and the Czech Republic (Dondini *et al.,* 2012; Tájekand and Tájková 2020). Leisler's bats have not been recorded at offshore platforms in the North Sea, but have been recorded on islands bordering the North Sea off the northern coast of the Netherlands and Germany, including Texel, Memmert and Heligoland (Boshammer and Bekker, 2008). Such long distance migrations have not been recorded in the Irish population of Leisler's bat, as they have instead been found to remain within the same home range during summer and hibernation periods (Shiel, Shiel and Fairley, 1999). Leisler's bats are found throughout the British Isles, except the northern reaches of Scotland. Whilst considered near threatened in the UK mainland, the island of Ireland is thought to be a stronghold for the species.

35. The latest Article 17 report (NPWS, 2019) estimates the population of Leisler's bat in the Republic of Ireland to be 63,000 – 113,000 individuals. This population range is however based mainly on extrapolation from a limited amount of data.

36. Leisler's bats were the third most encountered species during the Irish Bat Monitoring Programme (Aughney, Roche and Langton, 2022), and it was found Leisler's bats had a slight southern bias in their abundance, with higher

occurrence rates recorded in the south and east of Ireland. No conclusions were drawn regarding the species' occurrence and proximity to the coastline of the Irish Sea; however this would align with the species' slight preference for the south and east of Ireland.

2.2 Consideration of migratory bats by other offshore wind farms projects in the UK

37. The topic of migratory bats is relatively new in planning and therefore has only been considered by a small number of more recent UK offshore wind farm applications.

38. North Falls Offshore Wind Farm, as part of their Environmental Statement submission, were requested to include consideration of operational impacts of WTGs on Migratory Nathusius' pipistrelles in the southern North Sea (North Fall Offshore Wind Farm Ltd., 2024). North Falls Offshore Wind Farm concluded that no significant effects are likely to occur, due the migratory numbers to the UK mainland being very low.

39. Additionally, in Five Estuaries Offshore Wind Farm's application Development Consent Order (DCO), the Examining Authority (ExA) questioned Natural England on the potential effect of migratory Nathusius' pipistrelles from WTGs. Five Estuaries Offshore Wind Farm's response and position is that contributing to increasing the limited evidence base through monitoring is a proportionate response to the minimal scale of any potential effect (Five Estuaries Wind Farm Ltd., 2025).

40. The North Irish Sea Array (NISA) Offshore Wind Farm presented a chapter assessing the potential impacts on offshore bat movements as part of their Environmental Impact Assessment Report (EIAR). The NISA Offshore Wind Farm's EIAR concluded that no significant effects are likely to occur on migratory bats (Ove Arup & Partners Ireland Ltd.,2024).

41. Migratory bats were considered within the Environmental Statement of the European Offshore Wind Deployment Centre (EOWDC), however no likely significant effects were identified due to the location, Aberdeen Bay, being outside of known migration corridors and flyways (Vattenfall, Technip and AREG, 2011).

3 Potential impacts and magnitude

3.1 Potential pathways of impact during construction and operation

42. No potential pathways of impact on migratory bats are considered to occur during both the construction and decommissioning phases of the Project.

3.2 Potential pathways of impact during operation

3.2.1 Collisions and mortality

43. There is a risk that migratory bats could physically collide with offshore WTGs, however the degree of risk and likelihood of occurrence is improbable. Migratory offshore Nathusius' pipistrelles have been observed flying at 1-3m over the sea, with deviation from this low altitude being observed when hunting (Ahlén *et al*., 2007). Therefore, Nathusius' pipistrelle flight heights are generally lower than the Project's WTGs rotor swept zone which is 25m above Highest Astronomical Tide. Flight heights of common noctule are more variable, but have been found to be <10m over the Baltic Sea (Ahlén *et al*., 2009), also lower than the Project's WTGs rotor swept zone.

44. Currently there is not a reliable nor practical method for modelling bat collision risk with offshore WTGs. A workshop was held in Utrecht Netherlands to discuss Nathusius' pipistrelle and their associated collision risk with offshore wind farms in the North Sea, which highlighted the following key knowledge gaps hindering the development of reliable collision modelling (Royal HaskoningDHV, 2024):

- **Population**: The population size of offshore migrating and foraging bats is unknown. There is also currently no concise definition as to what encompasses the '*flyway'* population that can be used as the '*reference population'* in impact assessments.
- **Migration**: The exact conditions under which the bats start their migration are widely unknown, as well the percentage of bats out of the overall population that migrate. It is also not known how many bats migrate without the use of echolocation calls, and therefore would not be recorded on acoustic monitoring devices.
- **WTGs**: It is uncertain what WTG design is best to limit bat collisions offshore, and no specific research has been conducted into bat flight height at offshore WTGs.
- **Spatial patterns**: Due to the overall lack of research data, it is uncertain whether there are areas that can be proven to support higher bat densities, or higher collision risks.

- **Monitoring**: The number of collision victims is very hard to determine as affected bats would fall into the water. By focussing monitoring efforts at offshore structures used as resting opportunities, it is likely that the data collected would not be representative of the wider bat population. For example, bats that don't utilise these locations and/or fly at higher altitude will not be recorded.

45. Recent findings indicate that most bat mortalities at offshore wind farms are due to barotrauma, not direct collisions with the WTGs. Barotrauma occurs when bats experience rapid changes in air pressure near the moving blades of WTGs, causing damage to air filled internal organs, such as the lungs (Baerwald *et al*., 2008).

3.2.2 Congregations around offshore WTGs

46. Studies monitoring migratory bats at offshore wind farms in the North Sea have noted that bats gather around the WTGs to feed on clusters of flying insects or to find shelter (Ahlén *et al*., 2007; Ahlén *et al*., 2009; Hüppop and Hill, 2016). There have also been sightings of Nathusius' pipistrelles roosting in the nacelles of these offshore WTGs (Laegerveld *et al*., 2014; Ahlén *et al*., 2009). The extent to which bats use offshore structures as refuges in the Irish Sea is unclear, and there is no evidence that migratory flights to access such structures currently exist.

3.3 Screening of impacts

47. The potential for likely significant effects is assessed as low, as a result of the following:

- There is no evidence of and no known migratory routes between the island of Ireland and the UK over the Irish Sea, including within the Project's array area;
- If any migratory bats are present, they are likely opportunistic individuals and any mortalities relating to offshore WTGs would not occur at a number significant enough to impact the conservation status of Nathusius' pipistrelle, common noctule or Leisler's bat species; and
- Offshore WTGs and structures have been opportunistically used for foraging and by migratory bats for refuge, however, this is unlikely over the Irish Sea due to its shorter crossing distance and respective ease of access to preferred terrestrial roosting and foraging areas for bats.

48. As a result, the Project maintains its position that bats can be excluded from the HRA Screening Report (REP3-006) and impact assessment, as none of the migratory species identified are qualifying features of any relevant SAC.

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