Arklow Bank Wind Park 2

Environmental Impact Assessment Report

Volume II, Chapter 13: Offshore Bats (Revised March 2026)

sse Renewables

Revision	Date	Status	Author	Reviewed by	Approved by
1.0	30/05/2024	Final (External)	GoBe Consultants	GoBe Consultants	Sure Partners Limited
2.0	04/03/2026	Final External (Revised March 2026)	Woodrow	GoBe Consultants	Sure Partners Limited

Statement of Authority

Name	Qualifications	Relevant Experience
Jason Guile	BSc (Joint Hons) Marine Biology and Oceanography	Jason is a Principal ecologist for Woodrow Sustainable Solutions Ltd trading as APEM Ireland, part of the APEM Group. He has over 15 years' relevant industry experience in ecological assessment and has worked in both Ireland and the UK. Jason has a B.Sc. in Marine Biology and Oceanography at University of Wales, Bangor. Jason holds a lead role on numerous projects undertaken by Apem Ireland and provides technical expertise and experience for significant others. Jason's specialism is bats, having worked in this area for over 10 years. He has experience in monitoring, capture, handling, bioacoustics and impact assessment. Since moving to Ireland Jason's work has involved coordinating, surveying, analysing data, and writing technical bat reports for numerous projects including renewables, infrastructure, landfill remediation works, urban planning applications and commercial regeneration sites. Jason is currently lead author of the 'Offshore Bat' chapters for several Environmental Impact Assessments for offshore wind developments in Ireland and is considered the company technical lead for this subject. Jason is currently a committee member of Bat Conservation Ireland and Wind Energy Ireland and a representative with the Regional Wildlife Science Collaborative for Offshore Wind (RWSC) Science Plan addressing bat research and associated scientific needs in the context of offshore wind, on behalf of Apem. Jason holds licenses to survey bats from the Department of Culture Heritage and the Gaeltacht and Natural England.
Oisin O'Sullivan (Original contributor)	BSc (Hons) Ecology and Environmental Biology	Oisín O'Sullivan is an Ecologist with Woodrow, he co-authored the 2023 technical report and undertook surveys for the project. Oisín has completed a B.Sc. in Ecology and Environmental Biology at University College Cork. His final year thesis involved bat surveys of urban habitats in Cork City. His work as a graduate ecologist with Woodrow was focused on bat data analysis including bat call identification and bat roost/habitat suitability surveys. Oisín has developed a high level of proficiency with Kaleidoscope, Ecobat and BatExplorer, all of which are analysis software used to assess bat calls and activity Since joining Woodrow, Oisín's current work involves coordinating, surveying, analysing data, and writing summary bat activity reports for all onshore wind developments that Woodrow has worked on in the 2021 and 2022 survey seasons. This also involves the use of R to provide data on bat activity relative to weather conditions with the goal of informing

Name	Qualifications	Relevant Experience
		curtailment as a mitigation measure. During 2022 Woodrow began undertaking offshore bat surveys including Oisín as a technical lead on these projects. These surveys involve the long-term recording of activity on islands and headlands to record migration events. Oisín is a Qualifying member of CIEEM and holds a license to survey bat roosts from the Department of Culture Heritage and the Gaeltacht and a handling license issued by NPWS.
Patrick Power	BSc Forestry BSc (Hons) in Land Management in Forestry MSc Wildlife Biology and Conservation	Patrick Power is an Assistant Ecologist with Woodrow. He undertook surveys for the project, assisted with data analysis for this project, and co-authored the report. Patrick has completed a BSc in Forestry, BSc (Hons) in Land Management in Forestry with Waterford Institute of Technology. He is currently doing an MSc in Wildlife Biology and Conservation with Edinburgh Napier University. His work as a graduate ecologist with Woodrow is focused on bat data analysis including bat call identification and bat roost/habitat suitability surveys. Patrick has developed a high level of proficiency with Kaleidoscope and BatExplorer, the analysis software used to assess bat calls and activity. Patrick also possesses Reptile, mammal, and habitat surveying skills. Patrick is a student member of CIEEM and currently has a training licence to survey bat roosts from the Department of Culture Heritage and the Gaeltacht.

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Glossary

Term	Meaning
Arklow Bank Wind Park 1 (ABWP1)	Arklow Bank Wind Park 1 consists of seven wind turbines, offshore export cable and inter-array cables. Arklow Bank Wind Park 1 has a capacity of 25.2 MW. Arklow Bank Wind Park 1 was constructed in 2003/04 and is owned and operated by Arklow Energy Limited. It remains the first and only operational offshore wind farm in Ireland.
Arklow Bank Wind Park 2 – Offshore Infrastructure	"The Proposed Development", Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements under the existing Maritime Area Consent (MAC).
Arklow Bank Wind Park 2 (ABWP2) (the Project)	Arklow Bank Wind Park 2 (ABWP2) (The Project) is the onshore and offshore infrastructure. This EIAR is being prepared for the Offshore Infrastructure. Consents for the Onshore Grid Infrastructure (Planning Reference 310090) and Operations Maintenance Facility (Planning Reference 211316) has been granted on 26th May 2022 and 20th July 2022, respectively. • Arklow Bank Wind Park 2 Offshore Infrastructure: This includes all elements to be consented in accordance with the MAC. This is the subject of this EIAR and will be referred to as 'the Proposed Development' in the EIAR. • Arklow Bank Wind Park 2 Onshore Grid Infrastructure: This relates to the onshore grid infrastructure for which planning permission has been granted. • Arklow Bank Wind Park 2 Operations and Maintenance Facility (OMF): This includes the onshore and nearshore infrastructure at the OMF, for which planning permission has been granted. • Arklow Bank Wind Park 2 EirGrid Upgrade Works: any non-contestable grid upgrade works, consent to be sought and works to be completed by EirGrid.
Array Area	The Array Area is the area within which the Wind Turbine Generators (WTGs), the Offshore Substation Platforms (OSPs), and associated cables (export, inter- array and interconnector cabling) and foundations will be installed.
Cable Corridor and Working Area	The Cable Corridor and Working Area is the area within which export, inter-array and interconnector cabling will be installed. This area will also facilitate vessel jacking operations associated with installation of WTG structures and associated foundations within the Array Area.
Competent Authority (CA)	The authority designated as responsible for performing the duties arising from the EIA Directive as amended. For this application, the Competent Authority is An Bord Pleanála (ABP).
Environmental Impact Assessment (EIA)	An Environmental Impact Assessment (EIA) is a statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council (EIA Directive).
EirGrid	State-owned electric power Transmission System Operator (TSO) in Ireland and Transmission Asset Owner (TAO) for the Project's transmission assets.
Landfall	The area in which the offshore export cables make landfall and is the transitional area between the offshore cabling and the onshore cabling.

Term	Meaning
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact.
Permitted Maritime Usage	The construction and operation of an offshore wind farm and associated infrastructure (including decommissioning and other works required on foot of any permission for such offshore wind farm).
The Developer	Sure Partners Limited.

Acronyms

Term	Meaning
AA	Appropriate Assessment
ABP	An Bord Pleanála
ACP	An Comisiún Pleanála
ABWP1	Arklow Bank Wind Park 1
ABWP2	Arklow Bank Wind Park 2
AGL	Above Ground Level
ALAN	Artificial Lighting at Night
BCI	Bat Conservation Ireland
BCT	Bat Conservation Trust
CA	Competent Authority
CBD	Convention on Biological Diversity
CIA	Cumulative Impact Assessment
CIEEM	Chartered Institute of Ecology and Environmental Management
CIL	Commissioners of Irish Lights
cSACs	candidate Special Areas of Conservation
cSPAs	candidate Special Protection Area
CSZ	Core Sustenance Zone
DECC	Department of the Environment, Climate and Communications
DHLGH	Department of Housing, Local Government and Heritage
DMAP	Designated Maritime Area Plan
DNA	Deoxyribonucleic Acid
DoD	Department of Defence
EcIA	Ecological Impact Assessment
ECMG	East Coast Monitoring Group
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EU	European Union
EUROBATS	Agreement on the Conservation of Populations of European Bats
HAT	Highest Astronomical Tide
HWM	High-Water Mark

Term	Meaning
IAA	Irish Aviation Authority
IALA	International Organisation for Marine Aids to Navigation
IEFs	Important Ecological Features
IPS	Intermediate Periphery Structures
IRCG	Irish Coast Guard
LAT	Lowest Astronomical Tide
LBAP	Local Biodiversity Action Plan
MAC	Maritime Area Consent
MAP Act	Maritime Area Planning Act 2021 (as amended)
MPDM	Marine Planning and Development Management Bill
MSO	Marine Survey Office
NBAP	National Biodiversity Action Plan
NBDC	National Biodiversity Data Centre
NBN	National Biodiversity Network Trust
NED	Natural Environment Division
NHA	Natural Heritage Areas
NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NNPP	National Nathusius' Pipistrelle Project
NPWS	National Parks and Wildlife Service
NREL	National Renewable Energy Laboratory
OESEA4	Offshore Energy Strategic Environmental Assessment 4
OGI	Onshore Grid Infrastructure
OMF	Operational and Maintenance Facility
OREDP (I/II)	Draft Offshore Renewable Energy Development Plan (I/II)
OSP	Offshore Substation Platform
QI	Qualifying Interest
R.O.I	Republic of Ireland
RPM	Revolutions per Minute
SAC	Special Area of Conservation
SAR	Search and Rescue
SC-DMAP	South Coast Designated Maritime Area Plan

Term	Meaning
SCI	Site of Community Importance
SEA	Strategic Environmental Assessment
SEAI	Sustainability Energy Authority of Ireland
SPA	Special Protection Area
SPS	Significant Peripheral Structures
TAO	Transmission Asset Owner
TSO	Transmission System Operator
UK	United Kingdom
UV	Ultraviolet
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Units

Unit	Description
g	gram
km	kilometre
kts	knot
m	meter
MW	megawatt
m/s	meter per second
°C	degrees Celsius

13 Offshore Bats

Summary of Changes

This Chapter has been updated to reflect changes since submission of the planning application to An Bord Pleanála (ABP) (now An Coimisiún Pleanála (ACP)) in June 2024. All references to ABP, should be considered ACP throughout the document.

The changes that have been made are in response to the Request for Information (RFI) that was received and matters that have been raised therein. The Developer confirms that this Chapter has been based on up-to-date survey reports and data and that that the information submitted is relevant and appropriate at the point of submission (i.e. March 2026). In summary, the following sections of this Chapter have been amended (please note that this is non-exhaustive):

- Section 13.1 (Introduction) has been updated to identify any new or revised documentation of relevance to the amended chapter.
- Section 13.2 (Regulatory Context) has considered the latest policy and legislation of relevance to the assessment.
- Section 13.4 (Study Area) has provided clarification on the rationale for choosing the Study Area where this has been raised via the RFI, so as to clearly demonstrate the logic and spatial appropriateness for the assessment boundary.
- Section 13.5 (Methodology) has been updated to reflect appropriate and relevant data that has been published and/or gathered since the original submission was made.
- Section 13.6 (Impact Assessment Methodology) has considered the latest project design (as detailed in Volume II, Chapter 4: Description of Development (Revised March 2026)) as well as provided clarification in response to the RFI on the impacts scoped in/out where requested, so as to clearly demonstrate the logic and appropriateness of the assessment that has been undertaken.
- Section 13.8 (Assessment) represents the updated assessment which has been amended to reflect the latest information (i.e. as described above) and any updates required in line with matters raised via the RFI.
- Sections 13.9 and 13.10 (Cumulative Assessment subsections) have been updated to reflect the latest information and to align with NSIP (2024) guidance as requested via the RFI.
- Section 13.12 (Summary of Effects) has been updated to reflect the updates that have been made throughout the chapter.

In addition to those changes above, all other sections of this chapter have been adjusted to ensure consideration of the latest information as appropriate to ensure consistency and accuracy. Clarification and/or further detail has also been provided where this has been requested via the RFI, relevant figures and tables have been updated as required and it is confirmed that all cross-references have been updated throughout to ensure accuracy.

Additionally, in support of the necessary changes to the chapter, it is noted that the following updates have been made to the appendices supporting this chapter:

- New Appendices:
  - Volume III, Appendix 13.4: Offshore Bats – 2024 Survey Report (RFI March 2026) – This is a new appendix.
  - Volume III, Appendix 13.5: Offshore Bats – 2025 Survey Report (RFI March 2026) – This is a new appendix.

13.1 Introduction

13.1.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) presents the assessment of the potential impacts of the Arklow Bank Wind Park 2 (ABWP2) Offshore Infrastructure (hereafter referred to as 'the Proposed Development') on offshore bats. Specifically, this chapter considers the potential impact of the Proposed Development below the High-Water Mark (HWM) during the construction, operational and maintenance, and decommissioning phases.

13.1.1.2 This chapter draws upon information contained within Volume III, Appendix 13.1: Offshore and Headland Bat Monitoring, Volume III, Appendix 13.2: Offshore Bat Survey 2022 Technical Report, Volume III, Appendix 13.3: Offshore Bat Survey 2021 Technical Report, Volume III, Appendix 13.4: Offshore Bats – 2024 Survey Report (RFI March 2026) and Volume III, Appendix 13.5: Offshore Bats – 2025 Survey Report (RFI March 2026).

13.2 Regulatory background

13.2.1.1 Planning policy on renewable energy infrastructure is presented in Volume II, Chapter 2: Policy and Legislation (Revised March 2026). Planning policy is contained in the National Marine Planning Framework (NMPF) (Department of Housing, Local Government and Heritage (DHLGH), 2021) and the South Coast Designated Maritime Area Plan for Offshore Renewable Energy (SC-DMAP). A summary of the policy provisions relevant to offshore bats is provided in Table 13.1.

13.2.1.2 The relative position of the Irish offshore wind industry compared with that of other European countries means that there is no specific statutory guidance in Ireland on offshore bat impact assessment for offshore windfarms. Countries that do not have formal guidance for the study of offshore bats and impact assessment, use an approach based on the EUROBATS publications 'Guidelines for consideration of bats in Wind Farm projects' (revised 2014) and 'A guide to the implementation of the Agreement on the Conservation of Populations of European Bats' (Hutson *et al.*, 2019).

13.2.1.3 In addition, a number of other guidance documents specific to the consideration of bats in the onshore environment are available and have been used to inform the assessment of the potential impacts. These include an adaptation of onshore bat surveying best practice guidelines produced by Bat Conservation Ireland (BCI, 2012), Sustainability Energy Authority of Ireland (SEAI) 2017, Scottish Natural Heritage 2021 (now referred to as NatureScot) and Northern Ireland Environment Agency (NIEA) 2021 along with adaptation methodologies from EUROBATS (2014), Natural England Technical Information Note TIN051 and recent literature.

Table 13.1: Summary of regulatory background

Publisher	Name of document incl. reference	Key provisions
Statutory		
Legislation		
European Commission, 2011	European Communities (Marine Strategy Framework) Regulations 2011 (S.I. No. 249 of 2011) (as amended);	Transposes EU Directive 2008/56/EC (Marine Strategy Framework Directive) into Irish law.
European Commission, 2011	European Communities (Natural Habitats) Regulations 1997 (S.I. No 94 of 1997) (as amended), and European Union (EU) Directive 2009/147/EC (Birds Directive) European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No 477 of 2011) (as amended).	Transposes EU Directive 92/43/EEC (Habitats Directive) into Irish Law. Refer to accompanying Natura Impact Statement (NIS). The Habitats Directive also contains obligations in relation to the strict protection of Annex IV species wherever they occur, which are set out in Article 12 and Article 13 of the Directive. These obligations require each Member State to establish a system of Strict Protection for the species listed in Annex IV of the Directive. All bat species are Annex IV species within the directive. Of which only one species Lesser Horseshoe bat (Rhinolophus hipposideros), is designated under Annex II, in which a Special Area of Conservation (SAC) could be designated for it. There are 41 SACs designated for Lesser Horseshoe bat (NPWS, 2019), none of which are identified as within the ZoI of the Proposed Development.
Bern and Bonn Conventions, 1982	Conserving European Biodiversity in a Changing Climate: The Bern Convention, the EU Birds and Habitats Directives and the Adaptation of Nature to Climate Change 2011.	The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. It is an intergovernmental treaty of which Ireland is a member country. The main pieces of legislation to ensure that the provisions of the Bonn convention are applied include the Birds Directive and the Habitats Directive.
United Nations (UN) Convention on Biological Diversity (CBD), 1993	Convention on Biological Diversity.	Parties to the CBD are required to submit a National Biodiversity Action Plan (NBAP) and report annually on the status of biodiversity and measures to address and reverse loss of biodiversity.

Publisher	Name of document incl. reference	Key provisions
The Wildlife Act (1976) and amendments	Wildlife Act (1976) (as amended).	The Wildlife Act 1976 is the principal national legislation in Ireland providing for the protection of wildlife and the control of some activities. It gives protection to a wide variety of birds, animals and plants and also provides a mechanism to give statutory protection to Natural Heritage Areas (NHAs).
Planning and Development Act 2000, as amended	Planning and Development Act 2000 (as amended).	For the purposes of an application for planning permission certain protections for, and assessments of biodiversity are additionally provided for in the 2000 Act, as amended, and the Planning and Development Regulations 2001, as amended, refer below.
Planning and Development Regulations 2001, as amended	Planning and Development Regulations 2001 (as amended).	Incorporates provisions of the Habitats and Birds Directives as well as the Wildlife Acts, the Water Framework Directive, and the biodiversity provisions of the County Development Plan.
Planning and Development Act 2024	Planning and Development Act 2024.	Obligation to prepare strategy for conservation, etc., of natural and built heritage. Including objectives for the conservation, protection, management and improvement of European sites and the Natura 2000 network in accordance with the Habitats Directive and the Birds Directive (including objectives to encourage the management of the features of the landscape that are of major importance for wild flora and fauna in accordance with Article 10 of the Habitats Directive), and biodiversity in accordance with the EU Biodiversity Strategy and the National Biodiversity Plan.
Planning Policy and Development Control		
DECC, 2022	Strategic Environmental Assessment (SEA) of the Offshore Renewable Energy Development Plan (OREDP I) in Ireland: Environmental Report: https://www.gov.ie/en/publication/e13f49-offshore-renewable-energy-development-plan/ https://www.gov.ie/en/publication/71e36-offshore-renewable-energy-development-plan-ii-oredp-ii/#environmental-assessments	Contains the Appropriate Assessment (AA) screening process and Strategic Environmental Assessment (SEA) scoping report of the Maritime area associated with OREDP I. This resource has some important information on existing baseline conditions in the maritime area.

Publisher	Name of document incl. reference	Key provisions
DECC, 2024	South Coast Designated Maritime Area Plan for Offshore Renewable Energy (SC-DMAP) ttps://assets.gov.ie/static/documents/south-coast-designated-maritime-area-plan-for-offshore-renewable-energy-october-2024.pdf	Contains the AA screening process and SEA scoping report of the South Coast Maritime area associated with offshore renewable energy (ORE). This resource has some important information on existing baseline conditions in the maritime area including benthic habitats.
Non-Statutory		
Planning Policy and Development Control		
Government of Ireland, 2024	Ireland's 4th National Biodiversity Action Plan Ireland's 4th National Biodiversity Action Plan 2023–2030: d424b166-763b-4916-8eba-8afff955c5e5.pdf (assets.gov.ie)	Objective 1 - Adopt a Whole of Government, Whole of Society Approach to Biodiversity Objective 2 - Meet Urgent Conservation and Restoration Needs Objective 3 - Secure Nature's Contribution to People Objective 4 - Enhance the Evidence Base for Action on Biodiversity Objective 5 - Strengthen Ireland's Contribution to International Biodiversity Initiatives
National Marine Planning Framework, 2021	National Marine Planning Framework (NMPF), 2021: https://www.gov.ie/en/publication/a4a9a-national-marine-planning-framework/	Ireland's first comprehensive marine spatial planning framework. The NMPF brings together all marine-based human activities for the first time, outlining the Government's vision, objectives, and marine planning policies for each marine activity. Biodiversity Policy 1 Proposals incorporating features that enhance or facilitate species adaptation or migration, or natural native habitat connectivity will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority (CA), and where they contribute to the policies and objectives of this NMPF. Proposals that may have significant adverse impacts on species adaptation or migration, or on natural native habitat connectivity must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or

Publisher	Name of document incl. reference	Key provisions
		c) mitigate significant adverse impacts on species adaptation or migration, or on natural native habitat connectivity. Biodiversity Policy 4 Proposals must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant disturbance to, or displacement of, highly mobile species The assessment currently shows significant effect from collision and barotrauma to foraging species within the Array Area during the operation and maintenance phase with no proposed mitigation. This is however, based on a highly precautionary assessment approach and the fact that the baseline will significantly change when construction of the wind turbine generators (WTGs) is complete. While this is not in accordance with Policy 1(c), it is unlikely the population abundance of the species will be adversely affected due to the Proposed Development, such that the populations long-term viability is ensured. The Proposed Development is also committed to participating in the 'East Coast Monitoring Group' (ECMG), to discuss and agree potential strategic monitoring initiatives in relation to offshore bats (section 13.8.5).
DECC, 2017	National Biodiversity Action Plan 2017-2021: National Biodiversity Action Plan English.pdf (npws.ie)	Objective 1 - Mainstream biodiversity into decision-making across all sectors; Objective 2 - Strengthen the knowledge base for conservation, management and sustainable use of biodiversity; Objective 3 - Increase awareness and appreciation of biodiversity and ecosystems services; Objective 4 - Conserve and restore biodiversity and ecosystem services in the wider countryside; Objective 5 - Conserve and restore biodiversity and ecosystem services in the marine environment;

Publisher	Name of document incl. reference	Key provisions
		Objective 6 - Expand and improve management of protected areas and species; and Objective 7 - Strengthen international governance for biodiversity and ecosystem services.
Environment, Heritage and Local Government, 2008	All-Ireland Species Action Plan – Bats: https://www.npws.ie/sites/default/files/publications/pdf/2008_Bat_SAP.pdf	Maintain the populations and present range of all bat species in Ireland.
Guidelines and technical standards		
EPA, 2022	Guidelines on the Information to be Contained in Environmental Impact Assessment Reports: https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf	These Guidelines apply to the preparation of all EIARs undertaken in the State (Ireland)
Chartered Institute of Ecology and Environmental Management (CIEEM), 2018, updated 2024	Guidelines for Ecological Impact Assessment in the United Kingdom (UK) and Ireland: Terrestrial, Freshwater, Coastal and Marine. CIEEM: https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/	This presents the most relevant Environmental Impact Assessment (EIA) guidance for biodiversity assessment.
Sustainability Energy Authority of Ireland, 2017	SEAI Community Energy Resource Toolkit: The Planning Process: https://www.seai.ie/publications/Community-Toolkit-Planning-Process.pdf	Bats and birds technical reports to inform EIAR/ AA
Scottish Natural Heritage, 2021	Bats and onshore wind turbines - survey, assessment and mitigation: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation.	While not R.O.I guidance, these are the accepted guidelines for onshore wind developments within R.O.I along with the Northern Ireland guidelines. Updates best practice information for developers and planners to ensure that onshore wind energy developments post minimal risk to bats.

Publisher	Name of document incl. reference	Key provisions
Northern Ireland Environment Agency (NIEA), 2021	Guidance on Bat Surveys, Assessment and Mitigation for Onshore Wind Turbine Developments – Version 1.1 NIEA, Natural Environment Division, May 2022: https://www.daera-ni.gov.uk/publications/niea-natural-environment-division-guidance-bat-surveys-assessment-and-mitigation-onshore-wind	While not R.O.I guidance, these are the accepted guidelines for onshore wind developments within R.O.I along with the Scottish guidelines. Provides additional clarifications and outline the minimum standards which the Natural Environment Division (NED) of the NIEA expects for professional bat surveys carried out for onshore wind turbine development proposals in Northern Ireland.
EUROBATS, 2014	Guidelines for consideration of bats in windfarm projects Revision 2014: https://www.eurobats.org/sites/default/files/documents/publications/publication_series/pubseries_no6_english.pdf	While not R.O.I guidance, these are the accepted guidelines for onshore wind developments within Europe. Survey and assessment guidance for both onshore and offshore developments.
EUROBATS, 2019	A guide to the implementation of the Agreement on the Conservation of Populations of European Bats (EUROBATS). Version 2 : https://www.informea.org/sites/default/files/imported-documents/ImplementationGuideFINAL%2029_5_19_hyperlinks.pdf	Intended to help Parties to implement the EUROBATS Agreement. It provides an overview of the Agreement and reviews each of the commitments undertaken by Parties to the Agreement. As well as providing guidance to Parties, this document summarises the fundamental obligations of the Agreement and will be of value to all Range States and other interested organizations and individuals.
Bat Conservation Ireland, 2012	Wind Turbine/Wind Farm Development Bat Survey Guidelines. Version No. 2.8. December 2012: https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-Wind-Farm-Turbine-Survey-Guidelines-Version-2-8.pdf	Provide advice to the wind energy industry, ecologists, local planning authorities and other competent authorities on the survey work required to understand and assess the use by bats of an area proposed for a wind energy development
Natural England, 2014	Bats and onshore wind turbines (Interim guidance) (TIN051): Bats and onshore wind turbines (Interim guidance) - TIN051 (naturalengland.org.uk)	To help consider the potential adverse impacts to bats when assessing proposals for wind turbine development. It applies to bats and their activity in the wider countryside and does not specifically address turbines proposed near protected sites, particularly those designated due to important bat populations.

Publisher	Name of document incl. reference	Key provisions
Institute of lighting professional and Bat conservation trust, 2023	Guidance Note GN08/23 Bats and Artificial Lighting at Night: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/	To raise awareness of the impacts of artificial lighting on bats but also the potential solutions to avoid and reduce this harm

13.3 Consultation

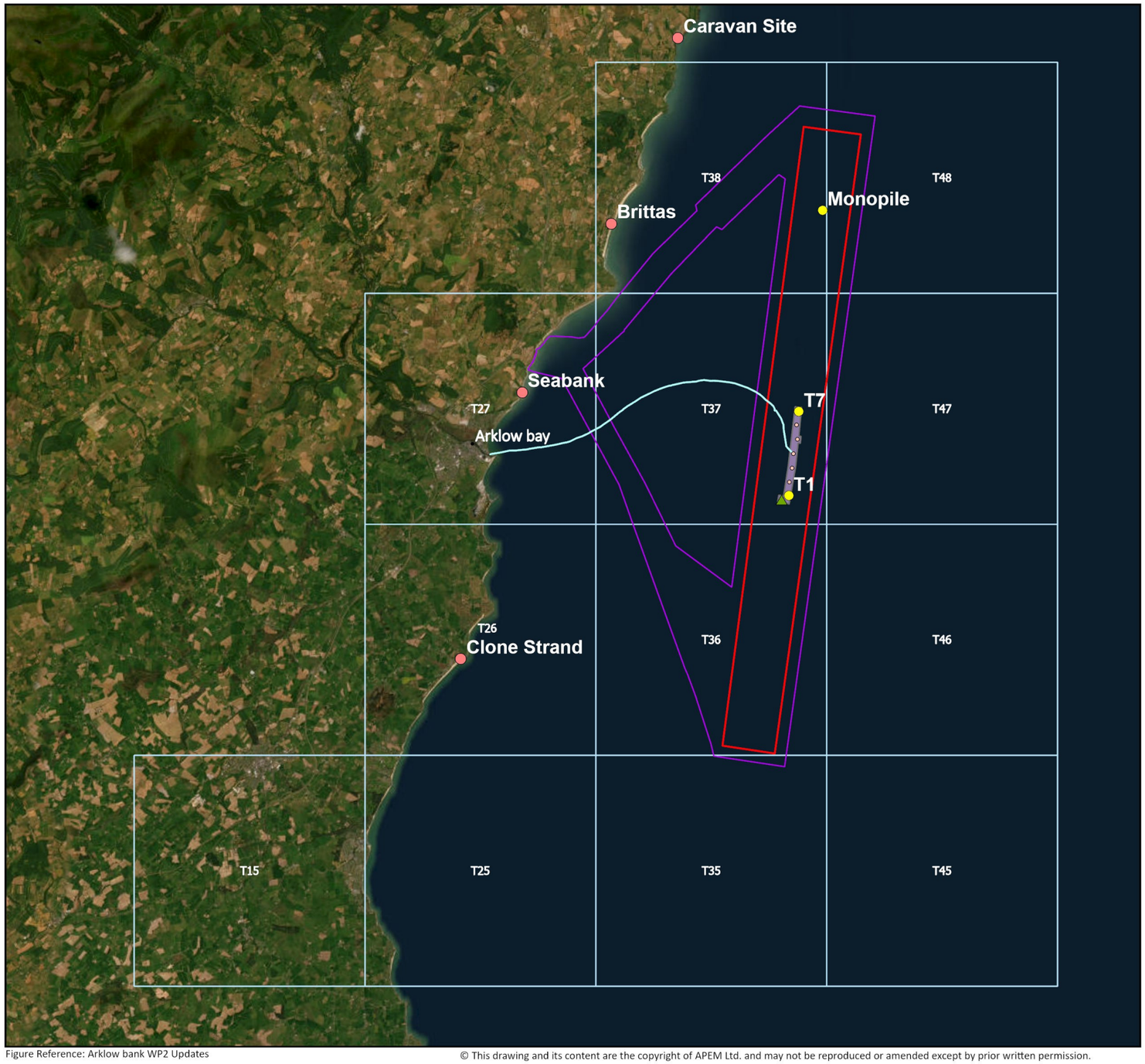
Table 13.2: Summary of consultation relating to Offshore Bats

Date	Consultation type	Consultation and key issue raised	Section where provision is addressed
29/01/2019	Introductory Meeting	National Parks and Wildlife Service (NPWS) queried if bats will be considered in the assessment and pointed out that although in Ireland most bats species do not migrate, it is thought that there may be species that do. NPWS drew attention to EUROBATS guidance and asked if there is potential to monitor bat activity using existing structures associated with Arklow Bank Wind Park 1 (ABWP1).	While surveys were not conducted within ABWP1, they were conducted offshore at a monopile location approximately 8km north of ABWP1 (within the Array Area of the Proposed Development). Refer to sections 13.4 and 13.5.2 and Figure 13.1.

13.4 Study area

13.4.1.1 Based on the findings of the literature review (section 13.5.2) and the lack of data regarding bat species in the offshore environment between Ireland and the UK, a zone of influence (ZoI) has not been defined in strict distance terms but rather a species-specific basis, taking into account species core foraging ranges (and therefore the potential for different species to range from land to forage within the proposed development area) and potential movements between land masses. Therefore, due to the size of the proposed development being approximately 27km in length (north to south along the Array Area), the study area is greater than that defined within CIEEM and NatureScot (10km) and extends from Courtown Co. Wexford (southern extent) to Magheramore Beach, Co. Wicklow (northern extent). Comprising approximately 40km of coastline that could be used as departing/ landing locations for migrating bat species traveling between Ireland and the UK that may cross the Cable Corridor and Working Area or Array Area, and by local individuals choosing to forage or commute offshore. The study area includes the Cable Corridor and Working Area, Array Area and the existing AWBP1 (Figure 13.1).

13.4.1.2 Baseline data was collected from an existing monopile structure located approximately 8 km offshore and to the east of Arklow and within the Array Area (Position:52.88544136, -005.923436330) for all years of surveying, along with monitoring at two accessible terrestrial locations within the desktop study area including the dunes of Brittas Bay (c. 7km north of the approved Landfall location) and at the tip of a headland/small cliff (c. 2 km south of the approved Landfall location) in 2023 and 2024 (Figure 13.1). A further two onshore locations were added in 2024, Clone Strand to the south (approximately 12km south of the Strand detector location) and a caravan site to the north (approximately 8.5km north of the Brittas detector location), providing a total of four onshore locations for 2024. This was then reduced back to a total of three onshore locations (Brittas, Seabank and Clone Strand) in 2025 and an additional two offshore locations at T1 and T7 of the existing ABWP1 which is located within the ABWP2 Array Area (i.e. a total of three offshore locations). Survey locations are illustrated in Figure 13.1.



Arklow Bank Wind Park 2

Study Area and Zone of Influence

Legend

- ABWP2 Array Area
- ABWP2 Cable Corridor and Working Area
- Offshore Detector Locations
- Onshore Detector Locations
- 10km Grid Squares
- ABWP1 Array Area
- ABWP1 WTG's
- ABWP1 Existing Export Cable
- ABWP1 Existing Met Mast

Notes

World Imagery: Earthstar GeographicsContains Ordnance Survey data © Crown copyright and database rights (2026). OS OpenData.

Datum: WGS84
Projection: UTM30N

Scale
Kilometers
0 30 60 120

Date	Drawn by	Checked by	Approved by
04/02/2026	LMcS	LMcS	JG

Woodrow APEM Group.,
Upper Offices,
Ballisodare Centre,
Station Road, Ballisodare,
Co Sligo, F91 PE04, Ireland.
Tel: +353 71 914 0542
Email: info@woodrow.ie

Figure Reference: Arklow bank WP2 Updates

Figure 13.1: Study area and survey locations

13.5 Methodology

13.5.1 Methodology to inform the baseline

Literature review

13.5.1.1 A desktop search was undertaken to identify any evidence/ studies or literature that would help determine if any of the nine resident bat species of Ireland could or do migrate or forage in the marine environment e.g., the Irish Sea Vagrant species have been considered with regards to their potential migration to Ireland from neighbouring countries. As there are very few studies that have been undertaken within Ireland on the subject of migration and offshore bats, the review was expanded to include all relevant evidence/ studies and literature from Europe, and North America where relevant to the resident Irish species. Refer to relevant species descriptions, in section 13.5.2.

13.5.1.2 European studies have the potential to include bat species relevant to Ireland, and observations on the behaviour of these species have the potential to be applied to the marine environment in Ireland.

13.5.1.3 Furthermore, as this is an emerging field of study, and in order to provide as wide and robust approach as possible to the assessment the literature review included the consideration of studies and papers published on the presence or absence of bats in the marine environment in North America. There is more limited overlap of bat species with those found in North America. However, there are similarities that can be drawn, considering the potential impacts of offshore wind developments on bats within the marine environment.

DESKTOP STUDIES

13.5.1.4 Information on bats within the offshore environment was collected through a detailed desktop review of existing studies and datasets. These are summarised in Table 13.3.

Table 13.3: Summary of key desktop reports and data resources

Title	Source	Year	Author
National Nathusius' Pipistrelle Project (NNPP)	Bat Conservation Trust (BCT)	2014-2023 Accessed February 2024	BCT
Telemetry network for birds and bats (MOTUS Wildlife Tracking System)	Wageningen University and Research	Ongoing Accessed February 2024 and December 2025	Wageningen University and Research
Irish Bat Monitoring Programme 2018-2021	National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland	2022 Accessed February 2024	Aughney, T., Roche, N. and Langton, S
Bat roost records	Bat Conservation Ireland	Received March 2024	
Biodiversity Maps	National Biodiversity Data Centre (NBDC)	Updated regularly Accessed February 2024	NBDC

Title	Source	Year	Author
		and December 2025	
NBN Atlas	National Biodiversity Network Trust (NBN)	Updated regularly Accessed February 2024 and December 2025	

Site specific surveys

13.5.1.5 In order to inform the EIAR, site-specific surveys were undertaken. A summary of the surveys used to inform the offshore bats impact assessment is outlined in Table 13.4 below.

Table 13.4: Site specific surveys

Data source	Date(s) of survey	Overview of survey	Survey contractor	Reference to further information
Offshore bat survey	May 2021 to November 2021	Offshore static detector survey to determine bat activity in the vicinity of the offshore monopile. First year of monitoring. Two static detectors used to collect data from approximately 12m above LAT.	Alpha Marine	Volume III, Appendix 13.3.: Offshore Bat Survey 2021 Technical Report
Offshore bat survey	March 2022 to October 2022	Offshore static detector survey to determine bat activity in the vicinity of the offshore monopile. Second consecutive year of monitoring. Two static detectors used to collect data from approximately 12m above LAT.	Alpha Marine	Volume III, Appendix 13.2: Offshore Bat Survey 2022 Technical Report
Offshore and headland bat survey	April 2023 to November 2023	Offshore static detector survey to determine bat activity in the vicinity of the offshore monopile. Third consecutive year of monitoring. Two static detectors used to collect data from approximately 12m above LAT. Headland survey of two locations to assess if bat activity events at the offshore monopile coincided with activity changes on the mainland.	Woodrow APEM Group	Volume III, Appendix 13.1: Offshore and Headland Bat Monitoring.
Offshore and headland bat survey	August 2024 to December 2024	Offshore static detector survey to determine bat activity in the Array Area. Fourth consecutive year of monitoring offshore. Two static detectors used to	Woodrow APEM Group	Volume III, Appendix 13.4: Offshore Bats – 2024 Survey

Data source	Date(s) of survey	Overview of survey	Survey contractor	Reference to further information
		collect data from approximately 12m above LAT. Headland survey of four locations to assess if bat activity events at the offshore monopile coincided with activity onshore.		Report (RFI March 2026)
Offshore and headland bat survey	May 2025 to October 2025	Offshore survey to determine bat activity in the Array area, including static detectors on the monopile and ABWP1 turbines 1 (T1) and 7 (T7) within the ABWP2 array area. Fifth consecutive year of monitoring offshore. Ten static detectors used to collect offshore data (2 at the monopile and four per turbine structure). Detectors located approximately 12m above LAT. Headland survey of three locations to assess if bat activity events at the offshore locations coincided with activity onshore.	Woodrow APEM Group	Volume III, Appendix 13.5: Offshore Bats – 2025 Survey Report (RFI March 2026)

Identification of designated sites

13.5.1.6 All designated sites within the offshore bats study area and qualifying interests that could be affected by the construction, operational and maintenance, and decommissioning phases of the Proposed Development, were identified using the three-step process described below:

- Step 1: All designated sites of international, national and local importance within the offshore bats study area were identified using a number of sources. These included the Environmental Protection Agency (EPA) and NPWS websites.
- Step 2: Information was compiled on the relevant qualifying interest for each of these sites which may make them a sensitive receptor in terms of offshore bats. For example, risk of collisions with rotating turbine blades.
- Step 3: Using the above information and expert judgement, sites were included for further consideration if:
  - A designated site directly overlaps with the Proposed Development; or
  - Sites and associated qualifying interests were located within the potential Zone of Influence (ZoI) for impacts associated with the Proposed Development. Note that, as discussed above (section 13.4) the ZoI has not been defined in strict distance terms but rather a species specific basis taking into account potential movements between land masses.

13.5.1.7 There are no designated sites within the study area which have bat species as a Qualifying Interest (QI), or feature of interest to be affected by the Proposed Development.

13.5.2 Baseline environment

Literature Review

13.5.2.1 The purpose of the literature review is to provide a focus on bats in relation to the offshore environment and the infrastructure proposed for the Proposed Development.

13.5.2.2 Since all European bat species are protected by international and national legislation (refer to section 13.2), any deliberate killing or disturbance[1] of any European Protected Species is prohibited by law.

13.5.2.3 There are nine resident species of bat in Ireland and two vagrant species that have been identified as present at least once within Ireland. These are:

- Resident
  - Common pipistrelle (Pipistrellus pipistrellus)
  - Soprano pipistrelle (*Pipistrellus pygmaeus*)
  - Nathusius' pipistrelle (*Pipistrellus nathusii*)
  - Leisler's bat (*Nyctalus leisleri*)
  - Brown long-eared bat (*Plecotus auratus*)
  - Daubenton's bat (*Myotis daubentonii*)
  - Whiskered bat (Myotis mystacinus)
  - Natterer's bat (*Myotis nattereri*)
  - Lesser horseshoe bat (*Rhinolophus hipposideros*)
- Vagrant
  - Brandt's bat (*Myotis Brandtii*)
  - Greater Horseshoe bat (*Rhinolophus ferrumequinum*)

13.5.2.4 After undertaking the review, it was identified that although several of the species found in Ireland migrate within the country, only two species have been identified as having potential for migrating offshore to neighbouring countries. Furthermore, it has also been identified that several species may not migrate but can/will forage offshore. Therefore, for the purposes of this report the literature review focussed on the two Irish species; Nathusius' pipistrelle and Leisler's bat with regards to potential migration, and the remaining seven resident species with regards to potential foraging offshore. The vagrant species have been considered with regards to their potential migration to Ireland. It should be noted that the maximum migration for each species has been identified, to determine if the Proposed Development is within a commutable distance for each of the species beyond their identified core sustenance zone (CSZ) [2].

13.5.2.5 It is not known (at the time of writing this report) what proportion of the Irish and UK Nathusius' pipistrelle and Leisler's bat populations migrate across the Irish Sea as the majority of European-based literature available on the offshore migration of bats is centred around the North Sea, however as the species do migrate across large water bodies and seas it is inferred to occur from Ireland. Therefore, using the precautionary principle, for the purposes of this report, it is assumed

[1] Under EC Guidance (C/2021/496/01), "significant disturbance" is defined by its biological impact—specifically activities reducing survival chances or reproductive success. For offshore migrating bats, this includes barrier effects (increased energetic costs of avoidance) and disorientation (attraction to light/noise) that jeopardise successful migration between seasonal habitats.

[2] A core sustenance zone (CSZ), as applied to bats, refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost.

https://cdn.bats.org.uk/uploads/pdf/Bat-Species-Core-Sustenance-Zones-and-Habitats-for-Biodiversity-Net-Gain.pdf?v=1596874016

migratory species do cross the Irish Sea. It is also not known (at the time of writing this report) what proportion of the UK vagrant species Brandt's bat and greater horseshoe bat populations migrate across the Irish Sea.

13.5.2.6 Species recorded within this literature include Nathusius' pipistrelle, noctule (*Nyctalus noctula*), northern bat (*Eptesicus nilssonii*), serotine (*Eptesicus serotinus*) and parti-coloured bat (*Vespertilio murinus*) (Boshamer and Bekker, 2008; Jonge Poerink *et al.,* 2013; Lagerveld *et al.,* 2014a, 2014b, 2015; Leopold *et al.,* 2014; Bat Conservation Trust, 2014; Lagerveld *et al.,* 2019). Some European studies do show Nathusius' pipistrelle to be the more common migratory species, with common pipistrelles and members of Nyctalus genus being much scarcer (Lagerveld *et al.,* 2018 and 2019; UK Offshore Energy Strategic Environmental Assessment 4 (OESEA4) Appendix A1a.7, 2022.

MIGRATORY AND VAGRANT SPECIES

13.5.2.7 As stated in Section 13.5.2.4 the outcome of the literature review on migratory species indicates that there are only two species with the potential to migrate within the ZoI; Nathusius' pipistrelle and Leisler's bat.

NATHUSIUS' PIPISTRELLE

13.5.2.8 The Nathusius' pipistrelle is a small migratory bat (weighing 6-10g) with a widespread distribution across Europe into western Asia. This species currently holds the world record for the longest migration distance of any bat, covering over 2,200km across Europe (Assembly, 2023) as well as movement over open waters (Alcade *et al.,* 2021). The study undertaken by Suba (2014) identified that Nathusius' pipistrelle (assuming bats are active for 7.3 hours per night) has a migration range of 30 to 120km per night which is in line with other studies including Pētersons (2004) and Hedenström (2009 and 2019) which also concluded that the species migrate on average 47km and 46km per night (range 32 to 77km per night) respectively. A recent study showed that Nathusius' exhibited high metabolic rates during migratory transit flights, even when flying at an energetically optimal speed (Troxell *et al.,* 2019). To cover the elevated energy demands of transit flights, they use a 'mixed-fuel strategy' based on oxidizing ingested insect proteins from insects caught *en route* ("aerial refuelling") and fatty acids from their body reserves (Voigt *et al.,* 2012). Although they depend on insects as an oxidative fuel for migration, they rarely engage in foraging while flying in an actual migration corridor (Voigt *et al.,* 2018). Instead, they seem to forage first at nightfall and then launch into the sky to proceed with their migration route.

13.5.2.9 In Ireland, where the winters are relatively mild, Nathusius' pipistrelle may relinquish its migratory behaviour in favour of a more sedentary lifestyle. It is possible that Ireland, which lies in a transitional region, holds resident bats, with those resident bats being supplemented during winter by the migratory individuals returning from the north-east of the species range (Petersons, 2004 and Lagerveld *et al.,* 2023).

13.5.2.10 The first confirmed Irish breeding colony of this bat was identified in May 1997 near Lough Neagh, with smaller roosts located throughout the country (non-breeding). A recent assessment undertaken by Bat Conservation Ireland through the Car-Transect Monitoring Scheme (2003-2021) has found that Nathusius' pipistrelles are widely distributed, with individuals recorded in all counties across the country, albeit in low numbers. The study also showed that Northern Ireland (Lough Neagh) had a mean encounter rate of ten times that of all other survey squares combined (refer to Figure 13.2). According to the Article 17 (2013 - 2018) Assessment the population of Nathusius' pipistrelle bat in the Republic of Ireland is estimated to be between 3,000 and 5,000 individuals. Figure 13.3 shows the distribution range of the species as of 2018.

13.5.2.11 Distribution and migration mapping for Nathusius' pipistrelle from EUROBATS in 2015 identified a possible migration route between the UK and Norway, with no known migration routes mapped

between Ireland and the UK, nor the UK and France, Netherlands or Belgium. However, the NNPP undertaken in the UK, and the Motus tracking project, have identified the long-distance movement of individual Nathusius' bats (through ringing) between the south of England and mainland Europe, including the coast of the Netherlands, Latvia and Lithuania (Bat Conservation Trust, 2019). The Motus tracking program provides the most recently available mapped migration routes between the UK and Europe, for the migration seasons of spring and autumn. Refer to Figure 13.4 and Figure 13.5 showing routes undertaken by Nathusius' pipistrelles in 2022, during spring and autumn migration periods.

13.5.2.12 Despite evidence of these migratory routes in continental Europe, little is known about the seasonal movements of Nathusius' pipistrelle in Ireland and whether, or any extent to which, Irish Nathusius' pipistrelles are migratory.

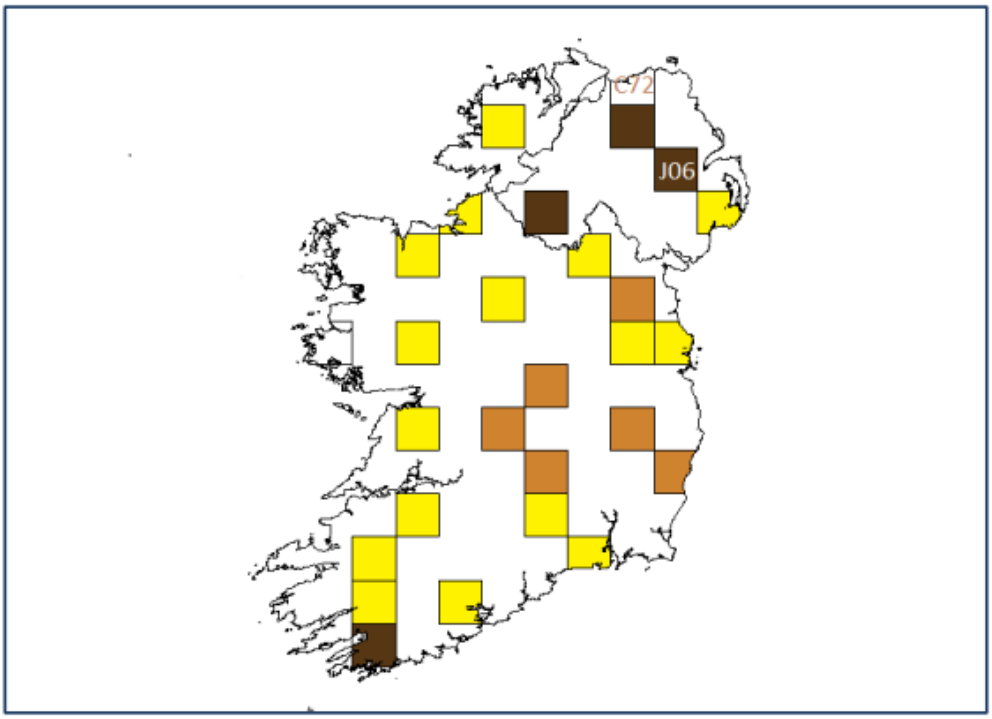


Figure 2.10 Survey squares colour coded according to mean Nathusius' pipistrelle encounter rates from Batlogger detectors (per hour) from 2019-2021. The overall average rate of Nathusius' bat encounters for all squares from 2019-2021 was 2.2hr^{-1}.

Encounter rate >0≤1.5hr^{-1}
Encounter rate >1.5≤3hr^{-1}
Encounter rate >3hr^{-1}

Figure 13.2: Nathusius' pipistrelle encounter rate
Source: Irish Bat Monitoring Programme 2018-2021. Irish Wildlife Manuals, No. 137

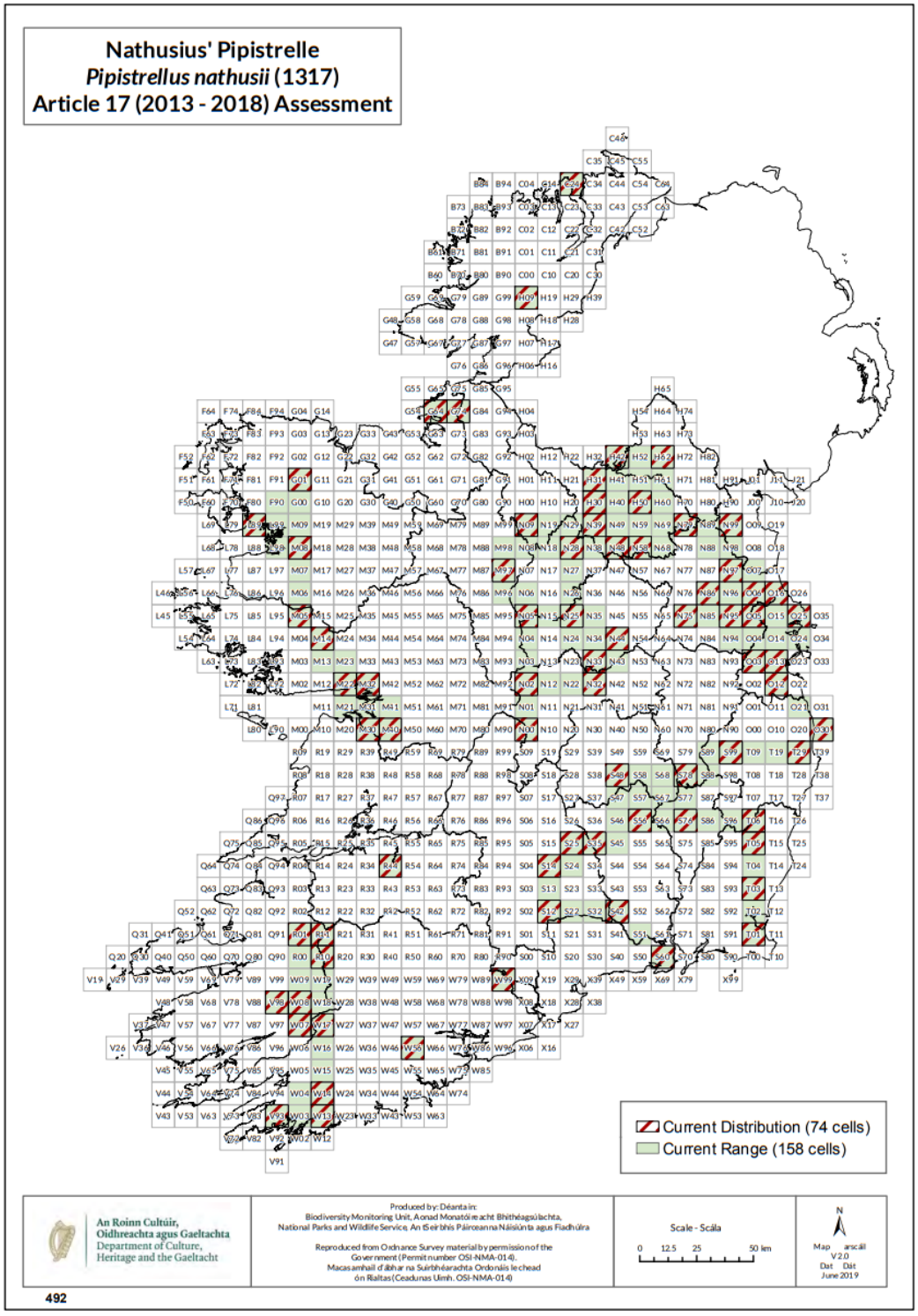


Figure 13.3: Distribution range of Nathusius' pipistrelle bats 2007-2018
Source: NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments.

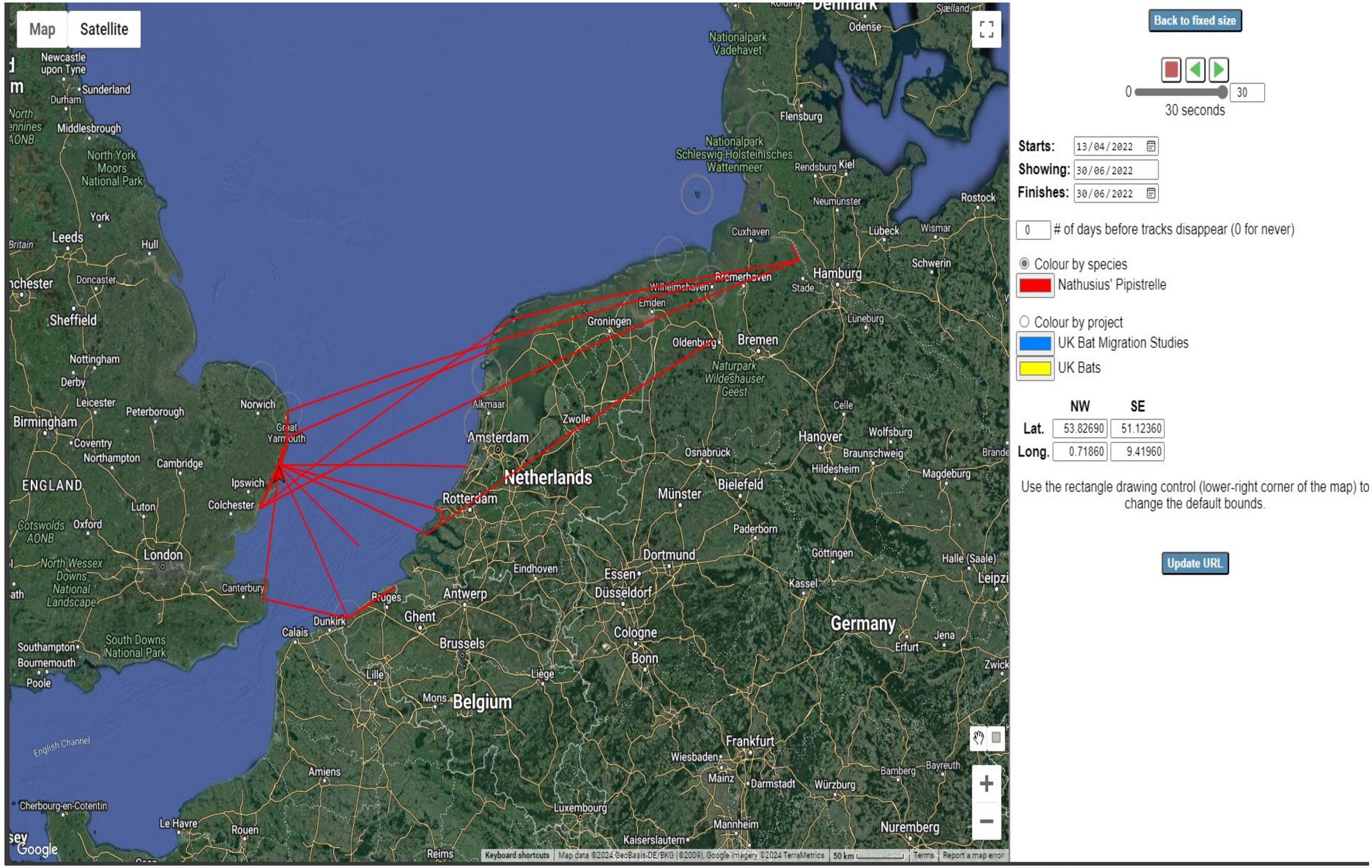
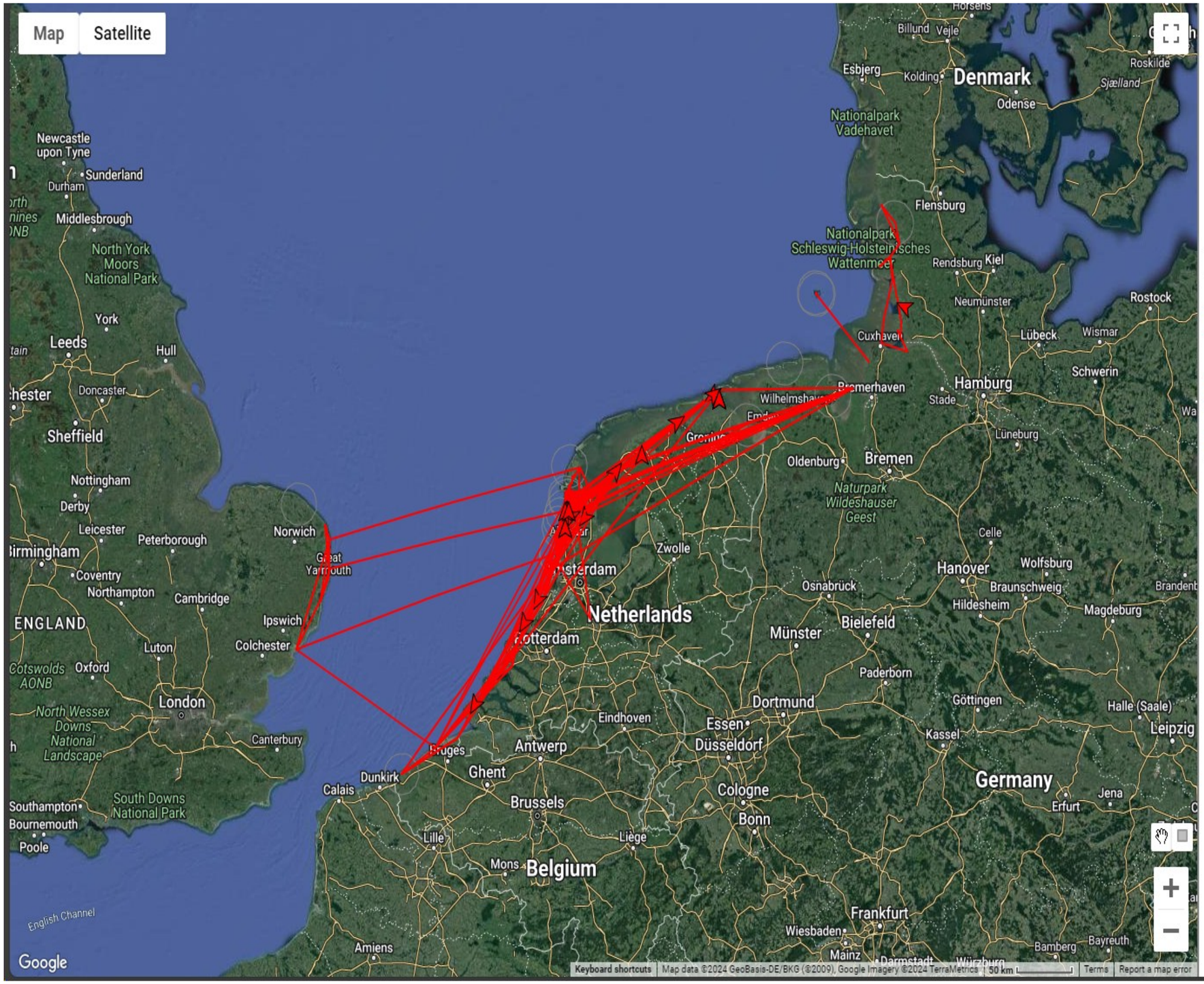


Figure 13.4: Nathusius' pipistrelle track map showing migration movements between the UK and Northern Europe between 13 April and 30 June 2022 (spring migration period)

Source: Motus Tracking Wildlife System https://motus.org/data/tracksSearch. Note the actual migratory route taken is unknown, lines are indicative based on software parameters identified in Motus.



Back to fixed size

0 — 30

16 seconds

Starts: 05/08/2022

Showing: 06/10/2022

Finishes: 30/11/2022

0 # of days before tracks disappear (0 for never)

◉ Colour by species

Nathusius' Pipistrelle

○ Colour by project

Bats - migration

UK Bat Migration Studies

Bat migration over the German North and Baltic Sea

	NW	SE
Lat.	54.72660	51.12360
Long.	1.32090	9.07570

Use the rectangle drawing control (lower-right corner of the map) to change the default bounds.

Update URL

Figure 13.5: Nathusius' pipistrelle track map showing migration movements between the UK and Northern Europe between 5 August and 30 November 2022 (autumn migration period)
Source: Motus Tracking Wildlife System https://motus.org/data/tracksSearch. Note the actual migratory route taken is unknown, lines are indicative based on software parameters identified in Motus.

LEISLER'S BAT

13.5.2.13 Leisler's bat is the biggest of the nine resident species of bats found in Ireland (12-20g) with a widespread but rare distribution in Europe, including the British Isles and Isle of Man. With Ireland being considered a European stronghold, where the species is the third most common bat (Bat Conservation Ireland). A recent assessment undertaken by Bat Conservation Ireland through the Car-Transect Monitoring Scheme (2003-2021) has found Leisler's bats to be the third most frequently encountered species during the monitoring scheme in most survey years to-date and that there is a southern bias in species distribution (refer to Figure 13.6). According to the Article 17 (2013 - 2018) Assessment the estimated population of Leisler's bat in the Republic of Ireland is estimated to be between 63,000 and 113,000 individuals. Figure 13.7 shows the distribution range of the species as of 2018.

13.5.2.14 There is much less data and literature available about the offshore migratory habits of Leisler's bat (Ahlen *et al.,* 2009, Motus tracking program accessed February 2024). While in continental Europe Leisler's bat is one of the long-distance seasonally migratory species (Giavi *et al.,* 2014), with six records of flights over 1,000km (EUROBATS, Dondini, 2012) including three over 1500km (Wohlgemuth *et al.,* 2004 and Dondini, 2012, Dechmann Lab, 2023). There are currently no available public records of this species in an Irish marine environment. However, they have been recorded offshore in Europe.

13.5.2.15 It is not known whether the Irish population migrates within or from Ireland to another country. However, it should be noted that some agencies submit that, 'Leisler's bat does not migrate from Ireland' (Vincent Wildlife trust). This is an argument further strengthened by Shiel (1999), which states, 'in Ireland, it seems Leisler remain within their summer range to hibernate', and Boston *et al.,* (2015) which compares phylogeographic relationships of Irish populations in relation to those across Europe. In contrast, Pinder (2020) highlights that Leisler's bats have colonised/re-colonised the Isle of Man since the 1990's, with population levels increasing since, demonstrating that there is a level of movement of this species in the Irish sea. Pinder (2020) does not however, state whether the assumption is that the species have re-colonised from the UK or Ireland.

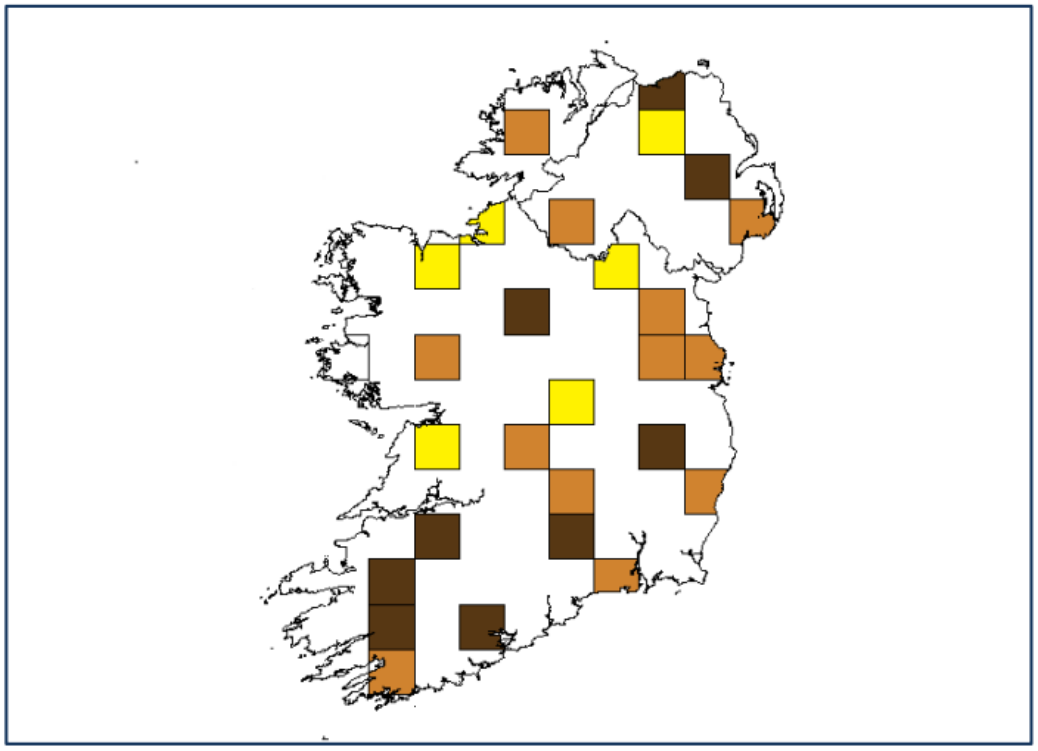


Figure 2.8 Survey squares colour coded according to mean Leisler's bat encounter rates from Batlogger detectors (per hour) from 2019-2021. The overall average rate of Leisler's bat encounters for all squares from 2019-2021 was 22.3hr^{-1}.

Encounter rate >0≤12hr^{-1}

Encounter rate >12≤24hr^{-1}

Encounter rate >24hr^{-1}

Figure 13.6: Leisler's Bat encounter rate

Source: Irish Bat Monitoring Programme 2018-2021. Irish Wildlife Manuals, No. 137

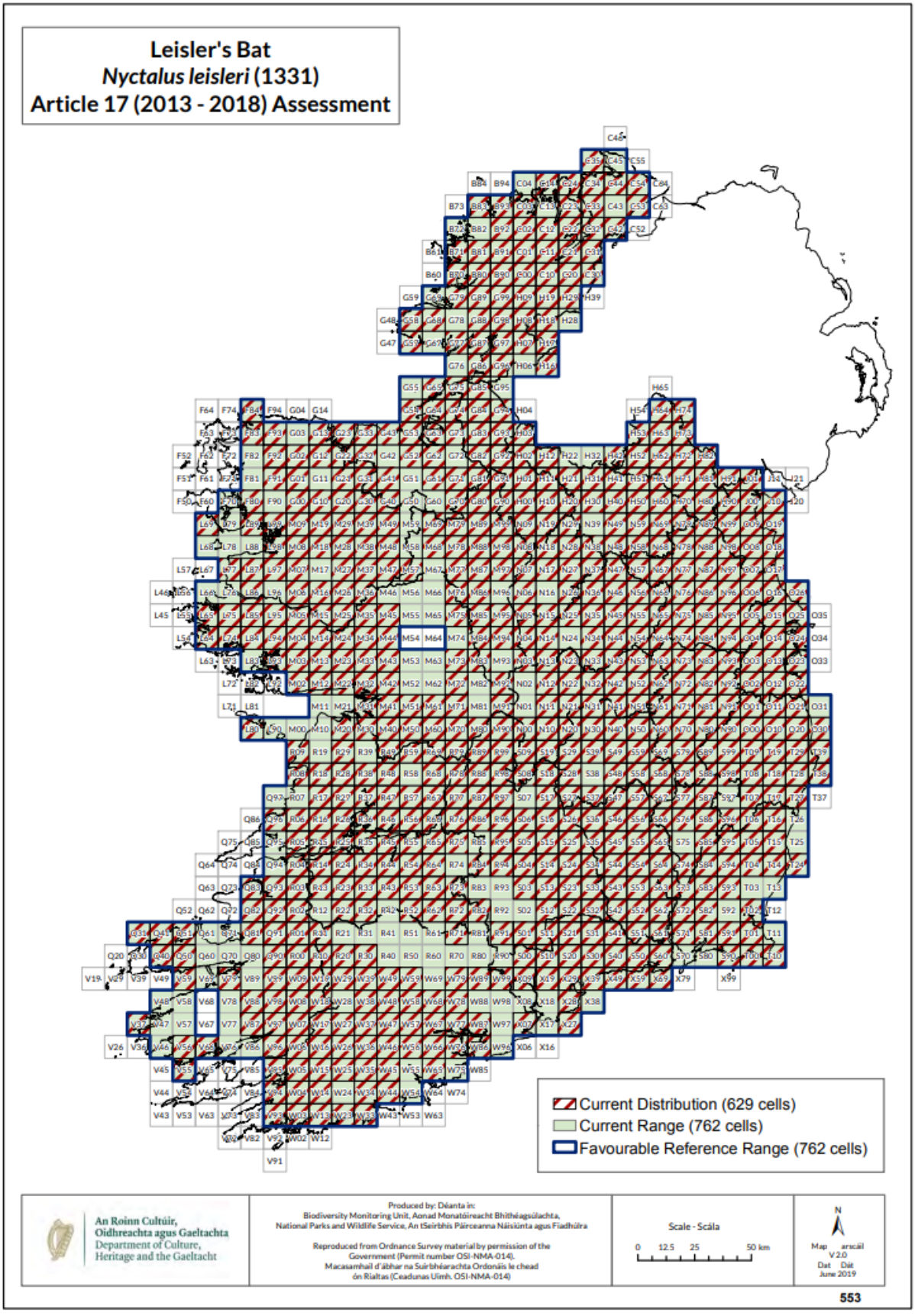


Figure 13.7: Distribution range of Leisler's bats 2007-2018
Source: NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments.

VAGRANT SPECIES

BRANDT'S BAT

13.5.2.16 A specimen of Brandt's Bat was first recorded in Ireland in 2003 when one was discovered in County Wicklow. The bat subsequently died, and its identification was determined by Deoxyribonucleic acid (DNA) analysis. This bat is known from only five specimens found to date in Co. Cavan, Clare, Kerry, Tipperary and Wicklow. However, these animals were identified by physical characteristics while being held and not genetically. As no resident population has yet been identified on the island of Ireland, the species' status remains unknown. This species is known as a regional migrant (seasonal migration of a few hundred km but also disperse or facultatively migrate over distances up to 800 km[3]) Jones *et al.,* (2009). The longest recorded migrations of this species have been up to 300 km.

GREATER HORSESHOE BAT

13.5.2.17 The greater horseshoe bat is the largest species that has been found in Ireland. In winter 2013 a single male was found hibernating in an underground site in Co. Wexford. The same individual was ringed and found in the same location the following summer. It is assumed that this individual is a vagrant from the Welsh population. The species are known as sedentary (travel short ranges between roosts (tens of km), barely disperse or migrate less than 100km). The longest recorded migrations of this species have been up to 180 km.

MIGRATION ACTIVITY

13.5.2.18 Activity at offshore locations is most frequently documented during the migration periods spring (April–May) and autumn (August–October) (Boshamer and Bekker, 2008, Motus tracking program accessed February 2024). During the autumn period there are favourable weather conditions identified for offshore migration towards the UK (Nathusius' pipistrelle only) to occur including temperature >13°C, wind speed <5 m/s, and wind direction originating from the E, NE and SE. As shown in Figure 13.4 and Figure 13.5, there is a lot of movement along the coast before moving out to sea. It is assumed that along with gathering food stores, the bats are awaiting the favourable weather conditions to travel.

13.5.2.19 It is also highlighted within the studies that the presence of tailwinds is likely to be an important determinant of offshore migration events (Hüppop and Hill, 2016; Brabant *et al.,* 2019; Brabant *et al.,* 2021, Lagerveld *et al.,* 2021). There is very little data available to identify favourable weather conditions for the spring migratory period. However, Hüppop and Hill (2016) identify presumed direction of migration as (WSW in autumn and ENE in spring (it should be noted that the platform used for the study is to the west of Heligoland, within the eastern section of the southern North Sea). There is currently no published information on the favourable weather conditions of offshore Leisler's bat migrations. Most recorded recoveries of long-distance flights lie in SW to NE directions (Rydell *et al.,* 2014).

13.5.2.20 Studies demonstrate that bats did not avoid WTGs. On the contrary, they stayed for periods hunting close to the WTGs because of the accumulation of flying insects (Ahlen *et al.,* 2007, Lagerveld *et al.,* 2017b, Boshamer and Bekker /Lutra 2008, Guest *et al.,* 2022a). The studies also indicate that more active flying insects were caught in low wind-speeds. With increasing winds, passively transported aeroplankton (such as drifting ballooning small spiders) were observed. This also coincides with weather conditions known to trigger insect migration in August-September (Chapman *et al.,* 2004, Drake and Reynolds, 2012), along with insect migration over

[3] For the purposes of the study, regional, seasonal & facultative migration are the same thing (facultative = optional migration due to weather (seasonal) conditions / food availability)

sea being associated with lunar phasing, and late summer/ early autumn migrations (Lagerveld, 2023).

13.5.2.21 The literature is currently inconclusive on the flight height at which bats migrate in the offshore environment. Some literature suggests that bats migrate at higher altitudes in favourable tailwinds (Hüppop and Hill, 2016), while others suggest much lower migration heights of <10m, assuming the use of echolocation against the surface of the water (Ahlén *et al.,* 2009; Troxell *et al.*, 2019; Brabant *et al.,* 2020). Another North Sea based study in the Thornton bank, 27km from the Belgian coast, examined the height of Nathusius' pipistrelle offshore activity. This study recorded an approximate 90% to 10% split in data between a detector mounted at 16m on a wind turbine and another at 93m. This suggests that migratory behaviour may be primarily low altitude for Nathusius' pipistrelle (Brabant *et al.,* 2019). This study does highlight the need for surveys to be undertaken at heights between the two used as this area needs further study. There is currently no published information on the potential heights of offshore Leisler's bat migrations. However, there are studies involving common noctule (close relative) identifying flight heights of 50 m (+/- 45 m above ground level (AGL)) to 295 (+/- 84 m AGL) with 1 no. individual ascending to 800 m AGL (O'Mara *et al.,* 2019). Note this study identifies that bats of the same species showed individual migratory behaviour (both within and among individuals). Therefore, a precautionary approach is taken as to whether the two species will show similarities in migration altitudes. Irish onshore studies, such as Project Icarus (NPWS, 2025) showed county-wide movements and high-altitude flights for Leisler's bats, but no movements towards the coast or offshore. The Icarus project along with results from Janssen *et al* (2021-25) showed that some foraging individuals flew up to 1000m above ground level and returned to the colony site every night.

POTENTIAL INTERACTIONS OF WIND DEVELOPMENTS WITH MIGRATING BAT SPECIES

13.5.2.22 The presence of wind turbines in a terrestrial environment is a well-established source of bat mortality with estimates of mainland European fatalities ranging between 0.6–11 bat mortalities per megawatt (MW) of energy generated, depending on the habitat present near the wind turbine (Rydell *et al.,* 2010; Korner-Nievergelt *et al.,* 2013; Arnett *et al.,* 2016). This is also shown worldwide (e.g. Barclay *et al.,* 2007, Arnett *et al.,* 2008), with mortality most commonly associated with species migrating long distances in terrestrial environments (Kunz *et al.,* 2007).

13.5.2.23 While this is the case for onshore bats, information on interactions between bats and offshore wind turbines is almost completely lacking. Although studies have been carried out at offshore turbine locations including Ahlén *et al.,* (2007) which involved monitoring of bat behaviour around offshore windfarms in the Baltic and Kattegat, where bats were observed foraging near the turbines, no mention is made of observed collisions between bats and turbines. A further study by Amichai *et al.* (2025) monitored 12 offshore wind turbines in the North Sea using systematic video surveillance. The study recorded primarily Pipistrellus spp. (common and soprano pipistrelle), with occasional detections of *Nyctalus noctula* and *Vespertilio murinus*. Bats were present while turbine blades were spinning (64% of video detections), and although altered flight paths were occasionally documented, no collisions were recorded. The authors concluded that while offshore bats interact with turbines, evidence for collision mortality remains minimal,.

13.5.2.24 Nathusius' pipistrelle are considered to be at high risk of collisions from onshore windfarms due to their occurrence in open habitats and migratory behaviour (NatureScot 2021, NIEA 2021, Brabant *et al.,* 2021, Lagerveld *et al.,* 2021, Lagerveld *et al.,* 2023), and the species has been reported among the most commonly observed fatalities under turbines at onshore windfarms in mainland Europe (Rodrigues *et al.,* 2015). Whilst the previous studies are of onshore windfarms, due to the migratory behaviour of Nathusius' pipistrelle and their known presence in the offshore environment, potential for collision must be considered during this assessment.

13.5.2.25 Leisler's bats are also considered to be at high risk of collisions from onshore windfarms due to their occurrence in open habitats and migratory behaviour (BCI accessed 2023, NatureScot 2021,

NIEA 2021) along with their known foraging height of c. 40m above ground level. Whilst the previous studies are of onshore windfarms, due to the migratory behaviour of Leisler's bats, and the short flight distance between the UK and Ireland, potential for collision must be considered during this assessment.

FORAGING SPECIES

13.5.2.26 The foraging behaviours of Nathusius' pipistrelle and Leisler's bat are described with their migratory behaviour above.

COMMON AND SOPRANO PIPISTRELLE

13.5.2.27 Common and soprano pipistrelle are Ireland's two smallest bat species and also the commonest, weighing no more than 5-6g, the weight of a 1 euro piece (BCI accessed 2023). While the two species are not known to migrate offshore, both are known as regional migrants (Jones *et al.*, 2009) and have been recorded at windfarms and coastal islands up to 10 km from the coast (Ahlén *et al.,* 2007; Boshamer and Bekker, 2008). The longest recorded migrations for common pipistrelle have been up to approximately 1,100 km, while the longest recorded migrations for soprano pipistrelle are unknown. The CSZ for common pipistrelle is 2 km while for soprano pipistrelle is 3 km (BCT 2020). According to the Article 17 (2013 - 2018) Assessment the estimated population of common pipistrelles in the Republic of Ireland is estimated to be between 1,070,000 and 2,400,000 individuals. The estimated population of soprano pipistrelles is between 500,000 and 1,200,000.

DAUBENTON'S BAT

13.5.2.28 Daubenton's Bat has a widespread distribution throughout Western Europe, including Ireland and the UK (NBDC accessed 2024, EUROBATS). This species primarily occurs close to freshwater rivers and lakes and can forage up to 10 km from roosts. While not a species known to migrate offshore, the species are known as a regional migrant (Jones *et al.,* 2009) covering a distance of up to 150 km between roosts and have been recorded at windfarms and coastal islands hunting over the sea surface up to 10 km from the coast (Ahlén *et al.,* 2007; Boshamer and Bekker, 2008). The species has also been recorded along coastlines (Lagerveld *et al.,* 2017b). The longest recorded migrations of this species have been up to 300 km. The CSZ for this species is 2 km (BCT 2020). According to the Article 17 (2013 - 2018) Assessment the estimated population of Daubenton's bats in the Republic of Ireland is estimated to be 1,580.

BROWN LONG-EARED BAT

13.5.2.29 The brown long-eared bat is one of the most common of Ireland's nine resident bat species and is found all over the country (BCI accessed 2023). The species are known as sedentary with the longest recorded migrations of this species being up to 90 km. There has only been one reported sighting of the species from North Sea platforms, while anecdotal sightings have been reported at lighthouses and light-ships in the North Sea (Boshamer and Bekker, 2008; Racey *et al.,* 2004). The species has also been recorded at Lambay Island, approximately 4km off the coast of Portraine. The CSZ for this species is 3 km (BCT 2020). According to the Article 17 (2013 - 2018) Assessment the estimated population of brown long-eared bats in the Republic of Ireland is estimated to be between 62,000 and 97,000.

WHISKERED BAT / NATTERER'S BAT

13.5.2.30 While these species are thought to be present throughout Ireland, they are two of the rarer bat species for the country. Due to the difficulty to definitively identify them to species level without capture techniques, little is known about the flight or foraging behaviour of the two species. While

whiskered are known as a regional migrant, Natterer's are sedentary (Jones *et al.,* 2009), with the longest recorded migrations for Natterer's bat up to 300 km and for Whiskered bats up to 600 km. While these species have not been recorded offshore in Europe, relatives in the *Myotis* family have been recorded as far out as 7 km in the mid-Atlantic (Biodiversity Research Institute. 2022). The CSZ for whiskered is 1 km and for Natterer's is 4 km (BCT 2020). According to the Article 17 (2013 - 2018) Assessment the estimated population of whiskered bats in the Republic of Ireland is estimated to be 270. The estimated population of Natterer's bats is 464.

LESSER HORSESHOE

13.5.2.31 The range of the lesser horseshoe bat in Ireland is, for the most part, limited to six western counties – Mayo, Galway, Clare, Limerick, Kerry and Cork, with strongholds in Kerry/west Cork and in Clare (Augney *et al.* 2022). This species considered to be largely sedentary and one that does not undertake extensive migrations (Jones *et al.,* 2009). The longest recorded migrations of this species have been up to 153 km. (Schober and Grimmberger, 1997). According to the Article 17 (2013 - 2018) Assessment the estimated population of lesser horseshoe bats in the Republic of Ireland is estimated to be between 5,000 and 7,000.

POTENTIAL INTERACTIONS OF WIND DEVELOPMENTS WITH BAT SPECIES

13.5.2.32 Bat species may be at risk from wind developments due to several 'Attraction Hypotheses (Cryan and Barclay, 2009)'. Theories include bats perceiving the WTGs as potential roosts (Cryan and Barclay, 2009), potentially increased prey base (Ahlén *et al.*, 2007, Lagerveld *et al.*, 2017b, Boshamer and Bekker / Lutra 2008, Guest *et al.*, 2022a), visual attraction (Guest *et al.*, 2022a), disorientation due to electro-magnetic fields (EMFs) or decompression (Nicholls and Racey, 2009), or attraction due to mating strategies (Arnett *et al.*, 2008; Cryan and Brown, 2007; Kunz *et al.* 2007, Cryan and Barclay 2009; Foo *et al.*, 2017; Richardson *et al.*, 2021; Guest *et al.*, 2022a, SEER 2022). Studies examining this hypothesis suggest that bats are attracted to insect populations surrounding turbines which are themselves attracted to turbines (Kunz *et al.*, 2007; Rydell *et al.*, 2010). Recent multi-sensor offshore studies have confirmed these observations, visually documenting bats actively foraging around turbine structures at sea (Lagrange *et al.*, 2025). Lagrange *et al.* (2025) conducted acoustic and thermal imaging surveys at multiple offshore windfarms in the southern North Sea to investigate bat presence and turbine interactions. The study recorded predominantly Nathusius' pipistrelle, with occasional detections of *Nyctalus noctula*. Monitoring was carried out across 10 operational turbines, and bat activity was detected primarily during low wind speed conditions at night. While bats were observed approaching rotor-swept zones and occasionally altering flight paths, no direct collisions were documented.

13.5.2.33 Given the general peak in activity and migratory behaviour in autumn within mainland Europe, there is also a trend for fatalities to increase at onshore windfarms during this period (Arnett *et al.*, 2008; Lagerveld *et al.*, 2020). Whilst many previous studies focused on onshore windfarms, current research acknowledges an evidence gap regarding migration and interactions with turbines in the marine environment (Lagrange *et al.*, 2025; Natural England, 2025). Due to the offshore development area being within a commutable distance from the mainland for all residential species, and the confirmed capacity of species like Nathusius pipistrelle and Leisler's bats to cross significant stretches of water, along with bats having been recorded offshore within the Array Area, the potential for attraction and collision has been considered during the assessment. Ongoing projects (e.g., Ireland's GREENBAT project) aim to close these evidence gaps regarding cross-sea migration specific to Irish waters but the results are not available at the time of undertaking this assessment.

EXISTING ECOLOGICAL RECORDS

13.5.2.34 Table 13.5 identifies the bat species records from the National Biodiversity Data Centre (NBDC) (accessed February 2024) for the 10 km grid squares T15, T25, T26, T27, T35, T36, T37, T38, T45, T46, T47 and T48 (refer to Figure 13.1). The records show that species have only been recorded on land and nothing recorded offshore to date. The onshore locations T15, T26, T27 and T38 all have records of Leisler's bat, while there are no records of Nathusius' pipistrelle for the study area. It should be noted that T25 (coastal grid square) has no records of bats.

13.5.2.35 Figure 13.8 shows bat species records from BCI (received March 2024) for a 10 km radius from the Seabank monitoring location.

Table 13.5: Bat species records from NBDC for the 10km grid squares T15, T25, T26, T27, T35, T36, T37, T38, T45, T46, T47 and T48 (shaded rows refer to offshore only grid square)

	Common Pipistrelle (Pipistrellus pipistrellus)	Soprano pipistrelle (*Pipistrellus pygmaeus*)	Nathusius' pipistrelle (*Pipistrellus nathusii*)	Leisler's bat (Nyctalus leisleri)	Brown long-eared bat (*Plecotus auritus*)	Daubenton's bat (*Myotis daubentonii*)	Whiskered bat (Myotis mystacinus)	Natterer's Bat (*Myotis nattereri*)
T15	✓	✓		✓	✓	✓		✓
T25								
T26	✓	✓		✓		✓		
T27	✓	✓		✓	✓	✓	✓	
T35								
T36								
T37								
T38	✓	✓		✓	✓	✓		
T45								
T46								
T47								
T48								

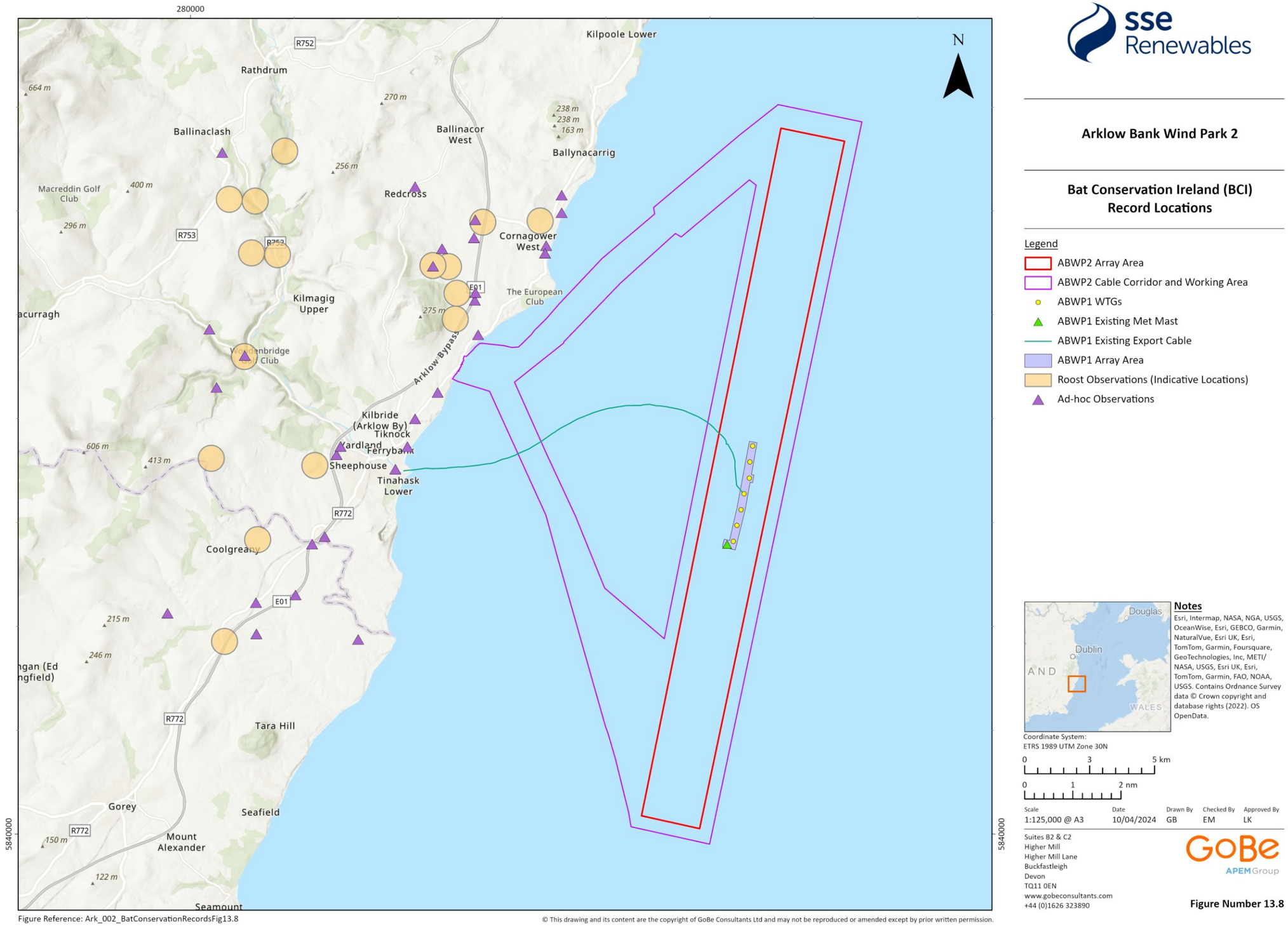


Figure 13.8: Bat Conservation Ireland roost location records

13.5.3 Summary of Site Specific Bat Monitoring Surveys

Introduction

13.5.3.1 Monitoring that has been undertaken between 2021 and 2025 demonstrates year-on-year data on bat activity within the Array Area which includes consistently low levels of bat activity offshore compared to onshore headland sites (see Volume III, Appendices 13.1–13.5). During the surveys, offshore detections averaged 0.09 passes per detector per day, whereas onshore activity averaged 148.5 passes per detector per day during the same period (2023–2025). To put this other ways, there were 1650 times less normalized detections offshore compared to onshore or offshore accounted for 0.06% of normalized detections. Normalised values (passes per detector per day) provide a robust basis for comparison by accounting for differences in detector numbers and deployment duration. Figure 13.9 illustrates the comparative trends in normalised activity between offshore and onshore sites across the five-year period. Offshore activity represents <0.1% of onshore activity recorded during the same period.

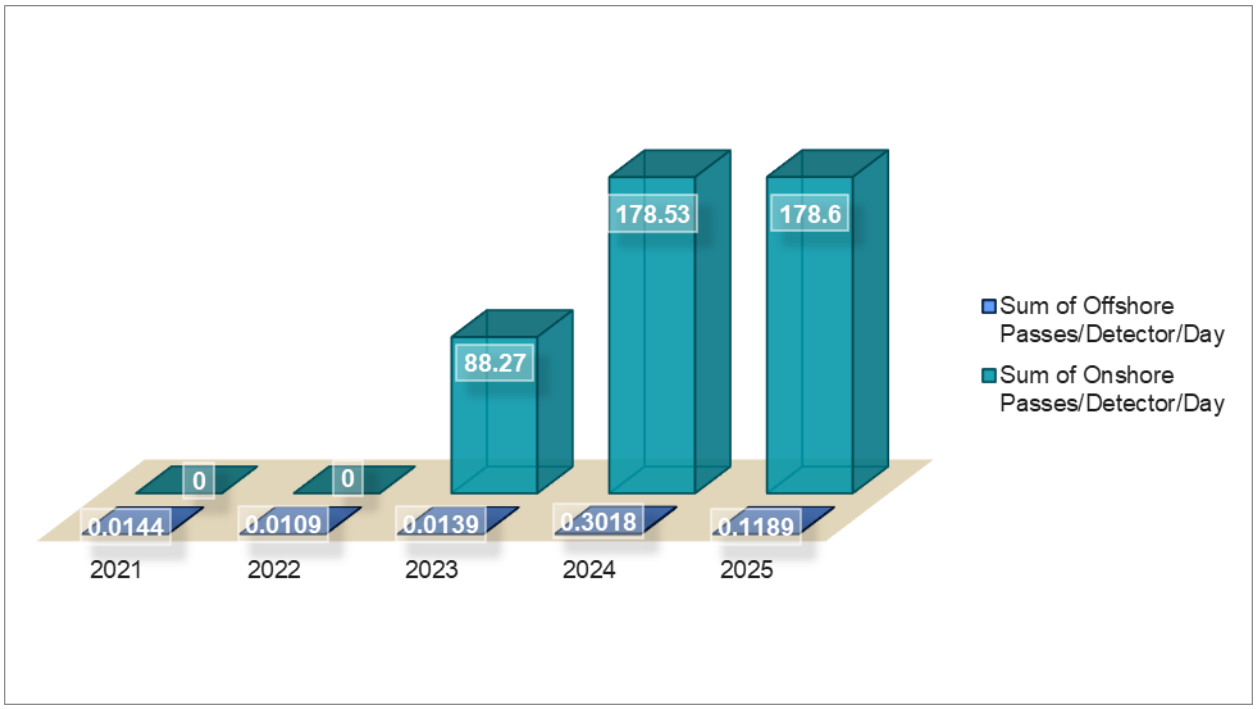


Figure 13.9: Multi-Year Offshore vs Onshore Activity (Normalised Passes per Detector per Day).

Interpretation of Activity Levels

13.5.3.2 The five-year dataset demonstrates that offshore bat activity within the Array Area is extremely low compared to onshore headland sites (Figure 13.9). This disparity indicates that the Array Area is very unlikely to represent a significant resource for bats. Headland sites consistently support high levels of activity and they are known to function as commuting corridors and foraging habitats (BCI 2024a). By comparison, offshore detections are sporadic and opportunistic, with no evidence of sustained use or regular migratory routes. Occasional offshore records, including potential dawn swarming events (during 2024) and isolated Nathusius' pipistrelle detections (2025), do not alter this interpretation. Offshore activity represents less than 0.1% of onshore activity recorded during the same period, reinforcing the conclusion that the Array Area is of negligible importance for bats relative to coastal headlands. Offshore detections were dominated by Leisler's bat, a species known for its strong flight capability and preference for open habitats

(Dietz *et al.*, 2009; Rydell *et al.*, 2014). Pipistrelle species (common and soprano) were recorded only sporadically offshore, with no more than one pass per night, indicating occasional presence rather than regular or sustained activity. Nathusius' pipistrelle was recorded offshore for the first time in 2025, with six passes detected across monopile and turbine locations during autumn months. These records coincide with the known migration period for the species but remain extremely limited in number across the entire survey period, suggesting opportunistic use rather than a regular migration or foraging route (Voigt *et al.*, 2015; Cryan & Brown, 2007). This finding aligns with European studies, which report occasional offshore movements by this species but no evidence of concentrated migratory routes (Voigt *et al.*, 2015).

13.5.3.3 Figure 13.11 presents the species composition of offshore detections, highlighting the dominance of Leisler's bat and the very low occurrence of pipistrelle species.

13.5.3.4 Seasonal peaks in offshore activity occurred in late summer and autumn, but timing varied annually and shifted later in the year throughout the years: July–August (2021–2022), June–July (2023), and September–October (2024–2025). Two dawn swarming events were recorded in 2024, with clusters of Leisler's passes occurring within one hour of sunrise, suggesting potential exploratory behaviour around the offshore structure. However, these events were isolated and do not indicate regular roosting or migration. Overall, year-on-year variation was minimal, with offshore activity remaining negligible in most years particularly when compared to onshore. The apparent spike in 2024 (0.3018 passes per detector per day) reflects a shorter deployment period combined with seasonal timing (i.e. during autumn migration), rather than a sustained increase in offshore activity. In 2025, although the total number of offshore passes increased (176), the normalised rate (0.1189) was lower than in 2024 because of a higher number of detectors (10 in 2025 compared to 2 in 2024) and longer deployment duration. This highlights the importance of interpreting normalised values rather than raw totals (Collins, 2023). Figure 13.12 illustrates the seasonal distribution of offshore detections, showing isolated peaks during autumn months. The dawn swarming observations are not shown in Figure 13.12 as they represent isolated behavioural events rather than seasonal trends.

13.5.3.5 Onshore activity was consistently high during 2023–2025, confirming the ecological importance of headland sites as commuting corridors and foraging habitats (Russ *et al.*, 2022). No onshore data were collected in 2021 and 2022; however this does not undermine the overall conclusions given the strength and consistency of later data and the availability of onshore roost data in the broader area as illustrated in Figure 13.8.

13.5.3.6 The five-year dataset represents a comprehensive and extended monitoring programme, aligning with European offshore wind studies (Voigt *et al.*, 2015; Rydell *et al.*, 2014). While there were failures across a limited number of detectors during the survey period, the missing nights would not increase the calculated passes per detector per day to a significant level based on the data collected. These results are therefore considered robust and proportionate to the scale and nature of the project in accordance with CIEEM guidance (CIEEM, 2024). Interpretation follows the precautionary principle given the limited offshore dataset across the Irish sea when compared to onshore.

Table 13.6: Normalised bat activity recorded offshore and onshore (2021–2025)

Year	Offshore Passes	Offshore Detectors	Offshore Days	Offshore Passes/Detector/Day	Onshore Passes	Onshore Detectors	Onshore Days	Onshore Passes/Detector/Day
2021	5	2	174	0.0144	0	0	0	0
2022	5	2	229	0.0109	0	0	0	0
2023	6	2	216	0.0139	38132	2	216	88.27
2024	67	2	111	0.3018	43562	4	61	178.53
2025	176	10	148	0.1189	79297	3	148	178.60

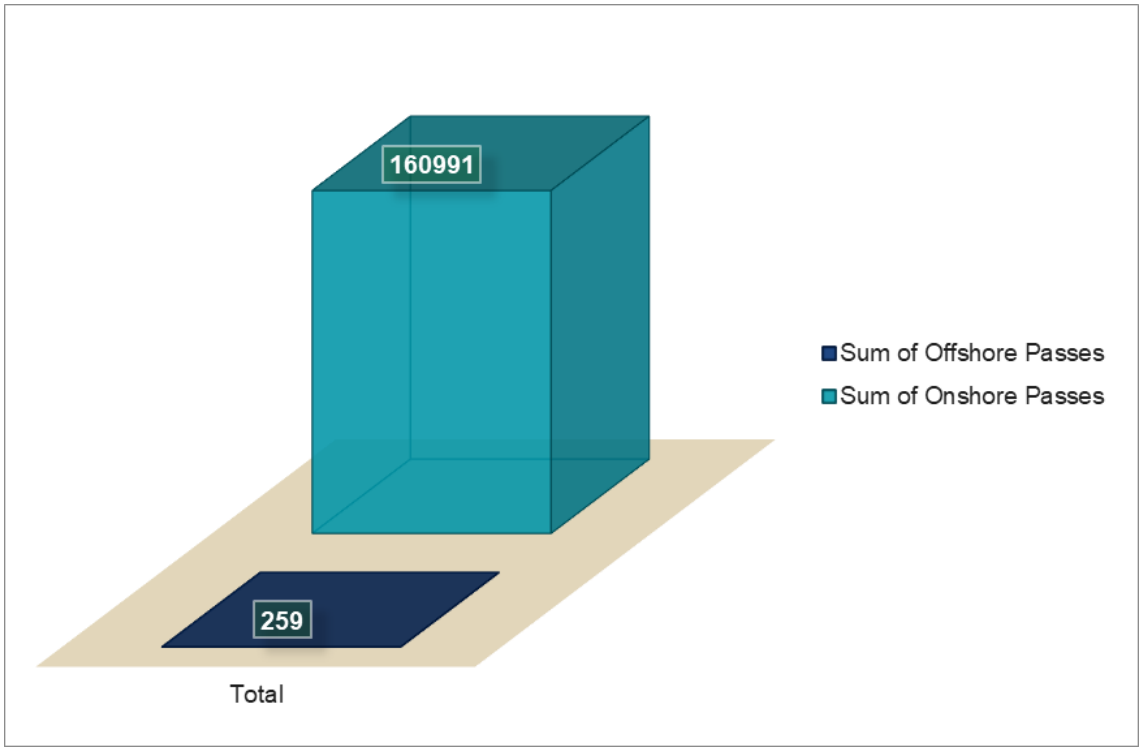


Figure 13.10: Proportional Difference in Total Passes (2023–2025).

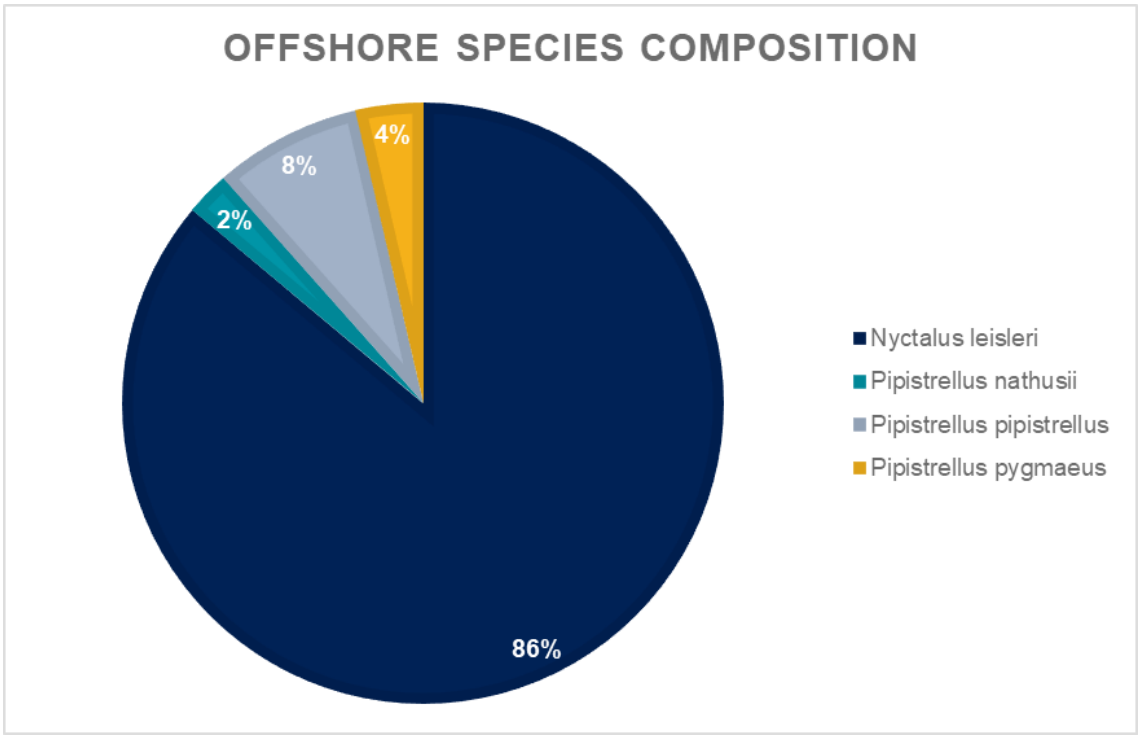


Figure 13.11: Offshore Species Composition (2021–2025).

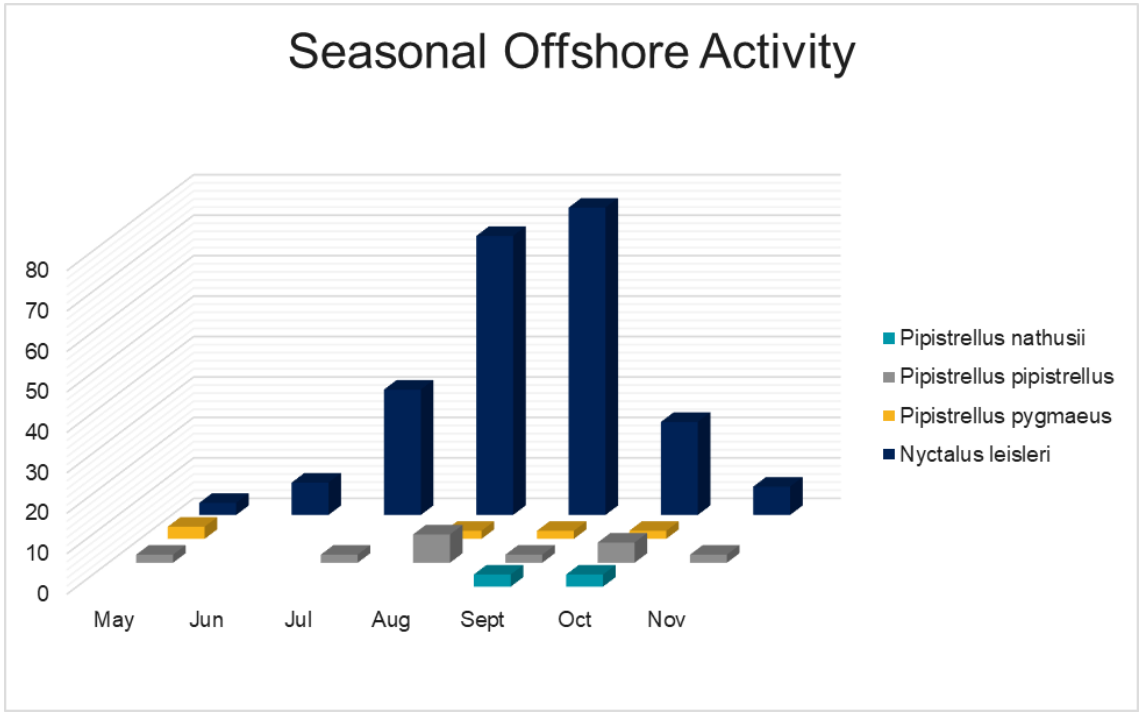


Figure 13.12: Seasonal Offshore Activity (Aggregated Across Years).

13.5.4 Data Limitations

13.5.4.1 Overall, the limitations detailed below are not considered to affect the validity or robustness of the impact assessment within this chapter. In all cases, a precautionary approach has been taken at an appropriate scale, and where appropriate mitigation measures have been included to reduce the risk of impacts on bat species to an acceptable level.

Offshore surveys

13.5.4.2 Loss of data between 11 August 2021 and 20 September 2021 for the north facing detector.

13.5.4.3 Data capture reductions were also evident for both detectors from 20 September 2021 until the collection of the equipment on the 17 November 2021.

13.5.4.4 Despite the failures it is considered that the data recorded provides an accurate representation of the bat activity for the offshore location. Furthermore, the data collected shows certain bat species are present in the offshore environment.

13.5.4.5 The detector at Clone Strand failed from deployment on 16th August (notification received next day) and was replaced with a second (Wildlife Acoustics Song Meter 4 Bat Full Spectrum (SM4BAT-FS)) detector on 22 August. Due to the nominal number of days (six days) that the unit failed, this has no impact on the data collected for the location. (refer to Volume III Appendix 13.4: Offshore Bats – 2024 Survey Report (RFI March 2026)).

13.5.4.6 In 2025, T1 west detector failed during the spring monitoring period. As all three other detectors on T1 successfully recorded throughout the spring season, this failure has no impact on the data collected for the location. The primary limitation arising from the detector failure is a reduced ability to infer flight direction from the monitoring data; however, this does not affect interpretation of overall bat activity. Similarly, T7 east detector failed on the 5 June 2025 due to a technical error. All remaining detectors on T7 recorded successfully, meaning this partial failure of a single detector has no effect on the data collected.

13.5.4.7 The southern detector at the monopile ran out of storage on the 11 June 2025 followed by the northern detector on the 28 June 2025. As a result, data collection unexpectedly ceased until the detectors were retrieved for their scheduled maintenance visit on the 22 July (41 and 24 non-recording days respectively). Recording resumed on 14 August after maintenance; the detectors were deployed with larger SD cards to prevent similar issues in subsequent deployments. This unplanned gap in data collection reduced temporal coverage at the monopile locations for this period; however, sufficient data was obtained before and after the gap to support seasonal analyses, so the overall impact on dataset robustness is minor.

13.5.4.8 A three-week period between the 22 July and 14 August 2025 was not recorded offshore while maintenance of equipment was undertaken. Detectors were re-deployed at the first available weather window after maintenance had occurred.

13.5.4.9 During the summer deployment, the west detector at T1 ceased recording on 24 September 2025 due to a technical error and never restarted. The remaining 3 detectors on turbine 1 recorded successfully, meaning there is no impact on data collection from T1. As with the spring, the primary limitation arising from the detector failure is a reduced ability to infer flight direction from the monitoring data; however, this does not affect interpretation of overall bat activity. The south detector at T7 had a technical issue with the clock battery. While the detector recorded, the dates and time were not logged and thus could not be associated with the deployment dates, so it cannot be confirmed what period was recorded. However, the recorded files were analysed, and no bat calls were identified. The remaining three detectors on T7 recorded the deployment period successfully. Refer to Volume III, Appendix 13.5: Offshore Bats – 2025 Survey Report (RFI March 2026), Figure 1 for the periods of data recording for each location in 2025.

Headland surveys

13.5.4.10 During the surveys, a detector at the Brittas location (refer to Figure 13.1) experienced interference in April 2023, which resulted in 21 nights of data loss at this location. Additionally, a card writing error affected the second detector at the Brittas location in May, causing a data loss of 40 nights.

13.5.4.11 A microphone failure occurred on the detector at the Seabank headland location, leading to a further loss of 41 nights of data in May and June 2023.

13.5.4.12 Despite the failures it is considered that the data recorded provides an accurate representation of the bat activity for the headland locations during the recording period. Furthermore, there was

no time during the recording period that both detectors failed and no data was recorded for the headland area, other than 12 days between 24 May and 06 June 2023. Refer to Figure 2 in Volume III, Appendix 13.1: Offshore and Headland Bat Monitoring for the periods of data recording for each location.

13.5.4.13 During the Spring recording period in 2025, the detector at Clone Strand failed after 17 days, therefore recording between 15 May and 1 June 2025 before ceasing operation due to equipment issues. As the remaining two onshore detectors recorded successfully and a representative portion of the spring activity period was captured within the data window, this lapse in recording data has minimal impact on the overall dataset.

13.5.4.14 The detector at Seabank failed after 24 days, ceasing operation on 14 July 2025 until maintenance was carried out on 12 August 2025. As the Bat Logger at Brittas Bay and the SM4BAT-FS at Clone Strand both recorded successfully throughout the season, these datasets provide sufficient information to support analyses of potential correlations between onshore and offshore bat activity.

13.5.5 'Do nothing' scenario

13.5.5.1 Under the 'do-nothing scenario', baseline conditions would be expected to continue to reflect very low levels of offshore bat activity, based on current survey findings and the wider evidence base on how bats interact with offshore environments. Based on five years of survey data and the wider evidence base, offshore bat activity within the Array Area is extremely low and limited to isolated detections. These data indicate that the Array Area is unlikely to function as a regular migration corridor or a significant foraging resource for bats. Occasional exploratory or weather-driven movements may occur, as documented in wider offshore bat studies, but these are expected to be rare and not indicative of sustained use. The area would also remain subject to ongoing anthropogenic activity, including commercial and recreational vessel traffic (refer to Volume III, Appendix 15.1: Navigational Risk Assessment (Revised March 2026)), as set out in Ireland's National Marine Planning Framework, which confirms continued intensive use of the Irish maritime area for navigation and other marine activities. In addition, national spatial planning policy for offshore renewable energy continues to evolve through the Designated Maritime Area Plan (DMAP) process, which identifies large areas of Ireland's marine waters for future offshore development, indicating that further plan-led activity may occur in the wider region irrespective of the Proposed Development (DMAP 2025).

13.6 Impact assessment methodology

13.6.1 Key parameters for assessment

13.6.1.1 The assessment of significance of effects has been carried out on both of the two discrete Project Design Options detailed in Volume II, Chapter 4: Description of Development (Revised March 2026). This approach has allowed for a robust and full assessment of the Proposed Development.

13.6.1.2 The two Project Design Options and parameters relevant to each potential impact are detailed in Table 13.7 and Table 13.8.

13.6.1.3 The Project Design Options identified in Table 13.7 and Table 13.8 have been assessed for their potential effects on identified receptors or receptor groups (a receptor group is defined as all bat species as they share ecological features that put them at similar risk of impacts). These scenarios are a summary of the full project parameters provided in Volume II, Chapter 4: Description of Development (Revised March 2026).

Table 13.7: Project design parameters and impacts assessed – Project Design Option 1

Potential impact	Phase			Project Design Option 1
	C	O	D	
1. Disturbance and displacement due to anthropogenic noise	✓	✓	✓	**Construction phase** • Installation of 53 Wind Turbine Generators (WTGs) and two Offshore Substation Platforms (OSPs) within the Array Area; • Maximum of one foundation installed at any one time (within any 24 hour period); • Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum of three helicopters in the Array Area at any one time; and • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** • Presence of 58 (i.e. 53 x WTG + two x OSP) monopile foundations with base diameter between 7 – 11 m for WTGs and 7-14 m for OSPs and associated scour protection; • Minimum spacing of 500 m between turbine blade tips; • A maximum of 30 vessels on site at any one time providing a maximum of 1,359 vessel return trips per annum for supporting windfarm operations comprised of crew transfer vessels, jack-up vessels, cable repair vessels and other vessels; • A maximum of 485 helicopter movements making return trips per annum for supporting windfarm operations; and • Operational phase of 36.5 years. **Decommissioning phase** • Disturbance and displacement are anticipated to be similar in nature but of lower magnitude than during the construction phase with limited noise disturbance as no piling during decommissioning.
2. Disturbance and displacement due to increased vessel activity and	✓	✓	✓	**Construction phase** • Installation of 53 Wind Turbine Generators (WTGs) and two Offshore Substation Platforms (OSPs) within the Array Area; • Maximum of one foundation installed at any one time (within any 24 hour period);

Potential impact	Phase C	Phase O	Phase D	Project Design Option 1
infrastructure presence				• Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum of three helicopters in the Array Area at any one time; and • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** • Presence of 58 (i.e. 53 x WTG + two x OSP) monopile foundations with base diameter between 7 – 11 m for WTGs and 7-14 m for OSPs and associated scour protection; • Minimum spacing of 500 m between turbine blade tips; • A maximum of 30 vessels on site at any one time providing a maximum of 1,359 vessel return trips per annum for supporting windfarm operations comprised of crew transfer vessels, jack-up vessels, cable repair vessels and other vessels; • A maximum of 485 helicopter movements making return trips per annum for supporting windfarm operations; and • Operational phase of 36.5 years. **Decommissioning phase** • Disturbance and displacement are anticipated to be similar in nature but of lower magnitude than during the construction phase with limited noise disturbance as no piling during decommissioning.
3. Disturbance and displacement due to Artificial Lighting at Night (ALAN)	✓	✓	✓	The lighting and marking of WTG and OSP structures will be defined in consultation with the Commissioners of Irish Lights (CIL), Irish Coast Guard (IRCG), the Marine Survey Office (MSO), the Irish Aviation Authority (IAA) and the Department of Defence (DoD). Aviation lighting requirements will be defined in consultation with the IAA, DoD and IRCG, including in relation to Search and Rescue (SAR) lighting requirements. Refer to Volume III, Appendix 25.6: Lighting and Marking Plan (Revised March 2026). **Construction phase** • Working areas will be marked by a buoyed construction area to alert mariners to the presence of construction activities. Temporary lighting of all structures will be applied, up until the commissioning of the operational lighting and marking scheme; • Installation of 53 Wind Turbine Generators (WTGs) and two OSPs within the Array Area;

Potential impact	Phase			Project Design Option 1
	C	O	D	
				• Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** • Significant Peripheral Structures (SPS) will exhibit synchronised flashing yellow lights of at least 5 nm nominal range; • Intermediate Periphery Structures (IPS) will exhibit synchronised flashing yellow lights of at least 2 nm nominal range; and • All lights will be exhibited at least at night and when the visibility is reduced to 2 nm or less. **Decommissioning phase** • As above for construction phase. Indirect disturbance and displacement resulting from ALAN are anticipated to be similar in nature but of lower magnitude than during the construction phase.
4. Indirect disturbance and displacement resulting from changes to prey	✓	✓	✓	**Construction phase** • Installation of 53 Wind Turbine Generators (WTGs) and two OSPs within the Array Area; • Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** • SPSs will exhibit synchronised flashing yellow lights of at least 5 nm nominal range; • Intermediate Periphery Structures (IPS) will exhibit synchronised flashing yellow lights of at least 2 nm nominal range; • All lights will be exhibited at least at night and when the visibility is reduced to 2 nm or less; **Decommissioning phase** • As above for construction phase. Indirect disturbance and displacement resulting from changes to prey are anticipated to be similar in nature but of lower magnitude than during the construction phase.

Potential impact	Phase			Project Design Option 1
	C	O	D	
5. Collision and Barotrauma	×	✓	×	**Operational and maintenance phase** • Presence of 53 wind turbines within the Array Area; • Hub height of 155 m above Lowest Astronomical Tide (LAT); • Lower blade tip height of 37 m above LAT; • Upper blade tip height of 273 m above LAT; and • Rotor diameter of 236 m. • Average rotation speed (Revolutions per minute (RPM)) 6.314 (WTG model 1a) and 5.67 (WTG model 1b)

Table 13.8: Project design parameters and impacts assessed - Project Design Option 2

Potential impact	Phase			Project Design Option 2
	C	O	D	
1. Disturbance and displacement due to anthropogenic noise	✓	✓	✓	**Construction phase** Disturbance and displacement from construction activity, including increased vessel and helicopter activity: • Installation of 47 Wind Turbine Generators (WTGs) and two OSPs within the Array Area; • Maximum of one foundation installed at Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum of three helicopters in the Array Area at any one time; and • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** Disturbance and displacement from operational and maintenance activity, including increased vessel and helicopter activity: • Presence of 49 (i.e. 47 x WTG + two x OSP) monopile foundations with base diameter between 7 – 11 m for WTGs and 7-14 m for OSPs and associated scour protection; • Minimum spacing of 500 m between turbine blade tips; • A maximum of 30 vessels on site at any one time providing a maximum of 1,359 vessel return trips per annum for supporting windfarm operations comprised of crew transfer vessels, jack-up vessels, cable repair vessels and other vessels; • A maximum of 485 helicopter movements making return trips per annum for supporting windfarm operations; and • Operational phase of 36.5 years. **Decommissioning phase** • Disturbance and displacement are anticipated to be similar in nature but of lower magnitude than during the construction phase with limited noise disturbance as no piling during decommissioning.
2. Disturbance and displacement due to increased vessel activity	✓	✓	✓	**Construction phase** Disturbance and displacement from construction activity, including increased vessel and helicopter activity: • Installation of 47 Wind Turbine Generators (WTGs) and two OSPs within the Array Area; • Maximum of one foundation installed at any one time (within any 24 hour period);

Potential impact	Phase			Project Design Option 2
	C	O	D	
and infrastructure presence				• Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum of three helicopters in the Array Area at any one time; and • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** Disturbance and displacement from operational and maintenance activity, including increased vessel and helicopter activity: • Presence of 49 (i.e. 47 x WTG + two x OSP) monopile foundations with base diameter between 7 – 11 m for WTGs and 7-14 m for OSPs and associated scour protection; • Minimum spacing of 500 m between turbine blade tips; • A maximum of 30 vessels on site at any one time providing a maximum of 1,359 vessel return trips per annum for supporting windfarm operations comprised of crew transfer vessels, jack-up vessels, cable repair vessels and other vessels; • A maximum of 485 helicopter movements making return trips per annum for supporting windfarm operations; and • Operational phase of 36.5 years. **Decommissioning phase** • Disturbance and displacement are anticipated to be similar in nature but of lower magnitude than during the construction phase with limited noise disturbance as no piling during decommissioning.
3. Disturbance and displacement due to ALAN	✓	✓	✓	The lighting and marking of WTG and OSP structures will be defined in consultation with the Commissioners of Irish Lights (CIL), Irish Coast Guard (IRCG), the Marine Survey Office (MSO), the Irish Aviation Authority (IAA) and the Department of Defence (DoD). Aviation lighting requirements will be defined in consultation with the IAA, DoD and IRCG, including in relation to Search and Rescue (SAR) lighting requirements. **Construction phase** • Working areas will be marked by a buoyed construction area to alert mariners to the presence of construction activities. Temporary lighting of all structures will be applied, up until the commissioning of the operational lighting and marking scheme;

Potential impact	Phase			Project Design Option 2
	C	O	D	
				• Installation of 47 Wind Turbine Generators (WTGs) and two OSPs within the Array Area; • Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** • SPSs will exhibit synchronised flashing yellow lights of at least 5 nm nominal range; • Intermediate Periphery Structures (IPS) will exhibit synchronised flashing yellow lights of at least 2 nm nominal range; • All lights will be exhibited at least at night and when the visibility is reduced to 2 nm or less; **Decommissioning phase** • As above for construction phase. Indirect disturbance and displacement resulting from ALAN are anticipated to be similar in nature but of lower magnitude than during the construction phase.
4. Indirect disturbance and displacement resulting from changes to prey	✓	✓	✓	**Construction phase** • Installation of 47 Wind Turbine Generators (WTGs) and two OSPs within the Array Area; • Maximum of 69 installation vessels in the Cable Corridor and Working Area at any one time (including 12 installation vessels along the offshore Cable Corridor at any one time and maximum of seven installation vessels in the vicinity of the Landfall at any one time); • Maximum construction schedule of 24 hours a day, seven days a week for a maximum construction period of four years. Within this period, OSP and WTG installation will take place over a period of 15 and 18 months respectively. **Operational and maintenance phase** • SPSs will exhibit synchronised flashing yellow lights of at least 5 nm nominal range; • Intermediate Periphery Structures (IPS) will exhibit synchronised flashing yellow lights of at least 2 nm nominal range; • All lights will be exhibited at least at night and when the visibility is reduced to 2 nm or less; **Decommissioning phase**

Potential impact	Phase			Project Design Option 2
	C	O	D	
				• As above for construction phase. Indirect disturbance and displacement resulting from changes to prey are anticipated to be similar in nature but of lower magnitude than during the construction phase.
5. Collision and Barotrauma	×	✓	×	**Operational and maintenance phase** • Presence of 47 wind turbines within the Array Area; • Hub height of 162 m above Lowest Astronomical Tide (LAT); • Lower blade tip height of 37 m above LAT; • Upper blade tip height of 287 m above LAT; and • Rotor diameter of 250 m. • Average RPM 6.19

13.6.2 Impacts scoped out of the assessment

13.6.2.1 On the basis of the baseline environment and the description of development outlined in Volume II, Chapter 4: Description of Development (Revised March 2026), a number of impacts are proposed to be scoped out of the assessment for Offshore bats. These impacts are outlined, together with a justification for scoping them out, in Table 13.9.

Table 13.9: Impacts scoped out of the assessment for Offshore Bats

Potential impact	Justification
Lesser horseshoe bats	Due to their limited range within Ireland, no SAC designated for the species and no records of the species within the NBDC or BCI records, it is extremely unlikely that lesser horseshoe bats will be present along the eastern coastline or offshore within the Array Area. This species is strongly associated with western counties of Ireland, where suitable roosting and foraging habitats occur, and there is no evidence to suggest dispersal or migration across the Irish Sea. Multi-year offshore surveys for the Proposed Development recorded no detections of lesser horseshoe bats within the Proposed Development footprint, further supporting this conclusion. On this basis, it is therefore proposed that this species is scoped out of the EIAR. This approach is consistent with CIEEM Guidelines (CIEEM, 2024) and reflects both the species' restricted distribution and survey evidence.
ALAN disturbance on resident Myotis and long-eared bats and vagrant Brandt's and greater horseshoe bats	All resident Myotis and long-eared bat species, together with the vagrant species Brandt's bat and greater horseshoe bat, are strongly light-averse and show significantly reduced activity in areas illuminated by white or amber lighting (Guidance Note GN08/23). Although roosts of Myotis and long-eared bats occur within 5 km of the coastline, these lie outside the potential light-spill zone associated with ALAN from the Array Area, Cable Corridor and Working Area. Offshore survey data for the Proposed Development also indicate no offshore foraging by these species, and records of the vagrant species are absent from the study area. Additional evidence from other Irish Phase One offshore wind EIARs supports this conclusion, as none of the projects (Dublin Array, Codling Wind Park, Oriel, Arklow Bank Phase 2) recorded offshore detections of Myotis species, long-eared bats, Brandt's bat or greater horseshoe bat (Dublin Array, 2025; Codling Wind Park, 2025; Oriel Wind Farm, 2024; Arklow Bank Phase 2, 2021). This consistent absence across all Phase One datasets provides external validation that these species do not utilise offshore environments in Ireland It is acknowledged that Daubenton's bat, a Myotis species, has occasionally been recorded offshore; however, such records are rare, associated with migration or dispersal rather than regular offshore behaviour (Lagerveld et al., 2014), and have not been observed in any Phase One data. Recent national monitoring evidence confirms ongoing inland distribution patterns (Bat Conservation Ireland, 2024; NPWS, 2024; EPA, 2024). Given (i) the absence of detections in multi-year offshore surveys for the Proposed Development, (ii) consistent absence across all Phase One offshore EIARs, and (iii) the strong light aversion of these species, the potential for attraction to ALAN is considered negligible.

Potential impact	Justification
	On this basis, resident Myotis and long-eared species, along with Brandt's bat and greater horseshoe bat, are scoped out of the assessment for this impact, consistent with CIEEM guidance (2024/2025).
Indirect disturbance and displacement resulting from changes to prey on resident Myotis and long-eared bats and vagrant Brandt's and greater horseshoe bats	As described above, Myotis and long-eared species, and the vagrant species Brandt's and greater horseshoe bat, are strongly light-averse and display significantly reduced activity under white or amber lighting (GN08/23). Disturbance or displacement related to changes in prey availability represents an indirect pathway of ALAN effects (Section 13.10.4, Impact 4). However, because these species have been scoped out of the assessment for direct ALAN interactions, and given their known avoidance of illuminated environments, any potential attraction arising from prey concentration is greatly outweighed by the deterrent effect of lighting from the Proposed Development. This conclusion is further supported by evidence from Phase One offshore wind EIARs, none of which detected these species offshore (Dublin Array, 2025; Codling Wind Park, 2025; Oriel Wind Farm, 2024; Arklow Bank Phase 2, 2021). These consistent findings confirm that these species do not utilise offshore environments in Ireland and are therefore highly unlikely to occur within the Array Area, Cable Corridor or Working Area during the lifetime of the Proposed Development. This conclusion aligns with national distribution evidence (Bat Conservation Ireland, 2024; NPWS, 2024; EPA, 2024) and multi-year survey results for the Proposed Development. On this basis, resident Myotis and long-eared species, along with Brandt's bat and greater horseshoe bat, are scoped out of the assessment for this indirect impact, consistent with CIEEM (2024/2025).
Collision and Barotrauma	As stated above, all resident Myotis and long-eared bat species, along with the vagrant species Brandt's bat and greater horseshoe bat, are strongly light-averse and show significantly reduced activity in areas illuminated with white or amber lighting (Guidance Note GN08/23). As the Proposed Development will be lit during the hours of darkness, the deterrent effect of lighting is expected to outweigh any potential attraction, including that arising from localised prey concentrations. Consequently, it is highly unlikely that these species will occur within the Array Area, Cable Corridor or Working Area during the lifetime of the Proposed Development, and there is therefore no realistic potential for impacts from collision or barotrauma. This conclusion is further supported by offshore survey results from other Irish Phase One offshore wind developments, none of which recorded offshore detections of Myotis species, long-eared bats, Brandt's bat or greater horseshoe bat (Dublin Array, 2025; Codling Wind Park, 2025; Oriel Wind Farm, 2024; Arklow Bank Phase 2, 2021). This consistent absence across all Phase One datasets provides strong external validation that these species do not utilise offshore environments in Ireland. Recent national distribution evidence (Bat Conservation Ireland, 2024; NPWS, 2024; EPA, 2024) and multi-year survey data for the

Potential impact	Justification
	Proposed Development also show no detections of these species offshore. On this basis, resident Myotis and long-eared species, along with the vagrant species Brandt's bat and greater horseshoe bat, are scoped out of the assessment for this impact. This approach is consistent with CIEEM Guidelines (CIEEM, 2024) and reflects both the available evidence and the precautionary principle applied in offshore contexts.

13.6.3 Methodology for assessing the significance of effects

Overview

13.6.3.1 The general approach for the EIAR methodology is set out in Volume II, Chapter 5: EIA Methodology (Revised March 2026). As the subject is new to Environmental Impact Assessments in Ireland, and there are many unknowns with regards to sensitivity and magnitude of effects on bat species in the offshore environment, it is determined that the CIEEM approach to impact assessment be used to establish significance of effects on offshore bats (Table 13.1). The following list provides a summary of the process for undertaking an ecological impact assessment (EcIA), as detailed in the CIEEM guidance document:

- Scoping: Determining the matters to be addressed in the EcIA, including consultation to ensure the most effective input to defining the scope;
- Establishing the baseline: Collecting information and describing the ecological conditions in the absence of the proposed project, to inform the assessment of impacts;
- Important Ecological Features: Identifying Important Ecological Features (habitats and species) that may be affected, with reference to a geographical context in which they are considered important;
- Impact assessment: An assessment of whether Important Ecological Features may be subject to potential impacts and characterisation of these impacts and their effects. Assessment of potential residual ecological impacts of the project remaining after mitigation and the significance of their effects, including cumulative effects;
- Avoidance, mitigation, compensation and enhancement: Incorporating measures to avoid, reduce and/or compensate potential ecological impacts, and the provision of ecological enhancements; and
- Monitoring: Monitoring impacts of the development and evaluation of the success of proposed mitigation, compensation, and enhancement measures.

IDENTIFYING ECOLOGICAL FEATURES WITHIN THE ZONE OF INFLUENCE (ZOI)

13.6.3.2 Information obtained during the field surveys identified ecological features which have the potential to be affected by the Proposed Development and as such, occur within the Zone of Influence (ZoI) of the Proposed Development.

13.6.3.3 The ZoI depends on the type of development taking place, its likely impacts and the presence of ecological connections which enable such impacts to affect sensitive ecological features. The ZoI may extend a great distance (several kilometres) beyond the boundaries of the Proposed Development site, due to the presence of ecological connections with an ecological feature of interest. Similarly, ecological features that have no ecological connection with the Proposed Development are not within its ZoI, regardless of their proximity to the Proposed Development, as no pathway for impacts exists.

13.6.3.4 The ZoI has been determined as the study area for the Proposed Development (section 13.4). This is due to the potential ecological connectivity of the ecological features (in this case the bat species) and the Proposed Development.

EVALUATING ECOLOGICAL FEATURES WITHIN THE ZOI

13.6.3.5 Those ecological features which occur within the ZoI such as nature conservation sites, habitats, or species of fauna, are then evaluated in geographic hierarchy of importance. The categories and criteria used for this evaluation with regards to bats species are listed in Table 13.10.

Table 13.10: Geographic frame of reference used to determine ecological value. Source: Adapted from CIEEM (2018, updated 2024) for bats only

Importance	Criteria
International Importance	'European Sites' including Special Areas of Conservation (SACs), Sites of Community Importance (SCIs), or Special Protection Areas (SPAs), candidate Special Areas of Conservation (cSACs) or candidate Special Protection Area (cSPAs). Resident or regularly occurring populations (assessed to be important at the national level) of the following: Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. World Heritage Site (Convention for the Protection of World Cultural and Natural Heritage, 1972). Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979).
National Importance	Sites, habitats, and species populations of importance in a national context. Undesignated site fulfilling the criteria for designation as an NHA, Statutory Nature Reserve, Refuge for Fauna and Flora protected under the Wildlife Act, and/or a National Park. Refuge for Fauna and Flora protected under the Wildlife Acts. Resident or regularly occurring populations (assessed to be important at the national level in Ireland) of the following: Species protected under the Wildlife Acts; and/or Species listed on the relevant Red Data list.
County / Regional Importance	Resident or regularly occurring populations (assessed to be important at the County level) of the following: • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive • Species protected under the Wildlife Acts Ireland); and/or • Species listed on the relevant Red Data list. • County important populations of species, or viable areas of semi-natural habitats, or natural heritage features identified in the National or Local Biodiversity Action Plan (LBAP), if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (Higher Value)	Locally important populations of priority species or habitats or natural heritage features identified in the LBAP, if this has been prepared. Resident or regularly occurring populations (assessed to be important at the Local level) of the following: • Species of animal and plants listed in Annex II and/or IV of the Habitats Directive • Species protected under the Wildlife Acts; and/or • Species listed on the relevant Red Data list.

Importance	Criteria
	• Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality. • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

13.6.3.6 The status of a species requiring protection at an international level does not necessarily impose an international conservation value on any single example of that species found at the site. Approaches to attributing nature conservation value to species have been previously developed for some species groups such as birds and bats. The approach to attributing nature conservation value to bat populations and foraging habitats is drawn from Wray *et al.* (2010).

SUMMARY OF IMPORTANT ECOLOGICAL FEATURES

13.6.3.7 Table 13.11 summarises Important Ecological Features (IEFs) that have been identified as at risk of potentially likely significant impacts via a source-pathway-receptor link. For the purposes of this chapter the IEFs are all bat species. Important Ecological Features are valued as local importance (higher) or above per the criteria set out in Table 13.10.

Table 13.11: Valuation of IEFs

Feature	Highest Evaluation / Importance	Important Ecological Feature?
Common pipistrelle	National	Yes
Soprano pipistrelle	National	Yes
Nathusius' pipistrelle	National	Yes
Leisler's bat	National	Yes
Brown long-eared bat	National	Yes
Daubenton's bat	National	Yes
Whiskered bat	National	Yes
Natterer's bat	National	Yes
Brandt's bat	International	Yes
Greater Horseshoe bat	International	Yes

13.6.3.8 Based on bat behaviour as outlined in the literature review, their reported occurrence offshore, and also taking into account species' sensitivity to onshore windfarms (NatureScot, 2021), species identified as being at possible risk of impact from the Proposed Development are identified in Table 13.12.

Table 13.12: Bat species identified as being at possible risk of impact from the Proposed Development, based on species ecology and distribution (adapted from Wray *et al.* (2010) using data from the Irish Bat Monitoring Programme 2018-2021)

Feature	Migration	Collision Risk from onshore windfarm	Recorded offshore in the North Sea/ Irish Sea	Risk from offshore windfarm
Common pipistrelle	Regional	High	Yes	Yes
Soprano pipistrelle	Potential Regional (Lindecke *et al.*, 2019)	High	No	Yes
Nathusius' pipistrelle	Long distance	High	Yes	Yes
Leisler's bat	Long distance	High	Yes	Yes
Brown long-eared bat	Sedentary	Low	No	No
Daubenton's bat	Regional	Low	Yes	No
Whiskered bat	Regional	Low	No	No
Natterer's bat	Sedentary	Low	No	No
Brandt's bat	Regional	Low	No	No
Greater Horseshoe bat	Sedentary	Low	No	No

13.6.4 Impact assessment criteria

13.6.4.1 When describing ecological impacts, reference is made to the following characteristics:

- Positive or negative;
- Extent
  - The extent is the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions (e.g. noise transmission under water).
- Magnitude
  - Magnitude refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- Duration
  - Duration should be defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species.
- Timing
  - The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bat breeding season.

- Frequency
  - The number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive.
- Reversibility
  - An irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects.

13.6.4.2 However, the assessment only needs to describe those characteristics relevant to understanding the ecological effect and determining the significance; and as such does not need to incorporate all stated characteristics (CIEEM, 2018; updated 2024).

SIGNIFICANCE OF EFFECT

13.6.4.3 For the purpose of EcIA, a significant effect is an effect that either supports or undermines biodiversity conservation objectives for those ecological features which have been identified as being an important feature of the site i.e., IEFs. Conservation objectives may be specific (e.g., for a designated site) or broader at a plan level (e.g., national/local nature conservation policy). As such effects can be considered significant in a wide range of geographic scales from international to local. Consequently, significant effects are qualified with reference to the appropriate geographic scale (CIEEM, 2018; updated 2024).

13.6.5 Factored-in measures

13.6.5.1 The Project Design Options set out in Volume II, Chapter 4: Description of Development (Revised March 2026) includes a number of designed-in measures and management measures (or controls) which have been factored into the Proposed Development and are committed to be delivered by the Developer as part of the Proposed Development.

13.6.5.2 These factored-in measures are standard measures applied to offshore wind development, including lighting and marking of the Proposed Development, use of ‘soft-starts’ for piling operations etc, to reduce the potential for impacts.

13.6.5.3 There are a number of factored-in measures that have been implemented through the design development process to reduce impacts on birds (refer to Volume III Chapter 12: Offshore Ornithology (Revised March 2026)) which may potentially benefit bats and are presented in Table 13.13. This includes specific number of WTGs and the increase in the minimum lower blade tip height.

13.6.5.4 These measures are integrated into the description of development and have therefore been considered in the impact assessment. These measures are considered standard industry practice for this type of development. This approach is in line with EPA guidance which states that ‘in an EIAR it may be useful to describe avoidance measures that have been integrated into the proposed proposal’ (EPA, 2022).

Table 13.13: Factored in measures

Factored in measures	Justification
Number of wind turbines of 53 for Project Design Option 1 and 47 for Project Design Option 2.	The number of wind turbines has been refined to minimise the potential collision risk impacts (see Volume II, Chapter 3: Consideration of Alternatives (Revised March 2026)).
Lower blade tip height of 37 m above LAT for Project Design Option 1 and Project Design Option 2.	Minimises potential bat collision risks for Nathusius pipistrelle bats since most activity occurs below 40m.
Rehabilitation Schedule	Sets out the proposed rehabilitation activities. This includes the dismantling of the WTGs and removal of artificial lighting, which removes all potential for impacts to bats.
The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence for Site Investigations (FS007339).	The Developer was granted a Foreshore Licence (FS007339) for Site Investigations (associated with the Proposed Development) from the Minister for Housing, Local Government and Heritage in May 2022. The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence for Site Investigations (FS007339) being carried out. As such there is no temporal overlap between the activities consented in this Foreshore Licence and the Proposed Development and there will be no potential for cumulative effects.
The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence Application for Site Surveys FS007555 (should a licence be granted) are being carried out.	The Developer submitted a Foreshore Licence Application for Site Surveys to the Minister for Housing, Local Government and Heritage in April 2023 (FS007555) and this application is pending determination. The Developer confirms and commits that it will not carry out any works in respect of the Proposed Development under the planning permission (if granted) at the same time as any activities the subject of the Foreshore Licence Application for Site Surveys FS007555 (should a licence be granted) are being carried out. As such there is no temporal overlap between the activities proposed in the Foreshore Licence Application and the Proposed Development.

13.7 Assessment of the significance of effects

13.7.1.1 The impacts of the construction, operational and maintenance and decommissioning phases of both Project Design Options forming the Proposed Development have been assessed on Offshore bats. The potential impacts arising from the construction, operational and maintenance and decommissioning phases of the Proposed Development are listed in Table 13.7 and Table 13.8, along with the project parameters against which each impact has been assessed.

13.7.1.2 A description of the potential effect on Offshore bats caused by each identified impact is provided below in section 13.8. Where an individual species (refer to Table 13.12) is not assessed the bat group e.g. migrating or foraging, as per the literature review are assessed.

13.8 Assessment of Project Design Options 1 and 2

13.8.1 Impact 1 – Direct disturbance and displacement due to anthropogenic noise

Construction phase

13.8.1.1 Anthropogenic noise associated with offshore wind construction, including noise from pile-driving and other construction activities such as vessel and helicopter use, has the potential to disturb or displace offshore bats present within the Array Area due to:

- auditory impacts; and/or
- habitat-related impacts.

13.8.1.2 Auditory impacts to offshore bats are most likely to be caused by pile-driving activities, vessel movements (in the Array Area, Cable Corridor and Working Area, and the Landfall) and helicopter movements during construction. Noise from pile driving for Project Design Option 1 would occur during the installation of 58 foundations (for WTGs and OSPs) and for Project Design Option 2 during the installation of 49 foundations (for WTGs and OSPs) at a frequency of three hours per day (average) over 75 days for Project Design Option 1 and 63 days for Project Design Option 2 and 4 days for both OSPs. The activity would be temporary and highly localised.

13.8.1.3 Noise from vessel movements will be for a total of 4,150 trips (including return) across the construction period. Noise from helicopter movements will be for a total of 294 trips (including return) across the construction period. Helicopters will be used for crew and equipment transfer during daytime hours and only used at night for emergencies. Therefore, the activity would be temporary and highly localised.

13.8.1.4 Auditory impacts to offshore bats are not expected to occur, as recent research has shown that bats may be less sensitive to temporary threshold shifts than other terrestrial mammals (Simmons *et al.,* 2016). Furthermore, based on multi-year monitoring confirming negligible offshore activity (refer to Volume III, Appendices 13.1–13.5), it is unlikely that bats will be disturbed or displaced, .

13.8.1.5 In addition, the existing baseline level of anthropogenic noise within, and directly adjacent to, the Array Area is already high due to intensive commercial and recreational vessel activity, as characterised in Volume II, Chapter 15: Shipping and Navigation (Revised March 2026) and Volume III, Appendix 15.1: Navigational Risk Assessment (Revised March 2026). This baseline includes frequent vessel transits and operational noise sources that contribute to an elevated and long-standing acoustic environment. Given this existing high-noise baseline, the incremental contribution from temporary construction activities is expected to represent only a short-duration and localised increase, further reducing the likelihood of any perceptible auditory disturbance to bats, should they be present.

13.8.1.6 Habitat-related impacts (i.e., displacement from areas used by bats) could occur in response to noise from construction activities which could cause avoidance behaviour in individual migrating and foraging bats (Schaub *et al.,* 2008, Luo *et al.,* 2015). While overall disturbance potential has been assessed as very low, given the negligible offshore activity recorded during multi-year monitoring (Volume III, Appendices 13.1-13.5), a temporary behavioural response cannot be entirely ruled out and would be limited to periods of pile-driving and construction activities between the Array Area and land. Any such avoidance, should it occur, would be short-term and not result in sustained displacement.

13.8.1.7 These impacts are unlikely to occur or be significant to migrating species or foraging species due to multi-year monitoring confirming negligible offshore activity compared to onshore sites during migration periods, spring (April–May) and autumn (August–October). Refer to Section 13.5.3 and Volume III, Appendices 13.1 to 13.5, identifying low bat activity within the offshore surveys: five recorded passes in 2021 (0.0144 passes per day per detector) and 2022 (0.0109 passes per day per detector), three in 2023 (0.0139 passes per day per detector), 67 in 2024 (0.3018 passes per day per detector) and 133 in 2025 (0.1189 passes per day per detector). Normalised rates remained extremely low (≤0.30 passes per detector per day for all years of surveys), confirming negligible offshore activity despite evidence of some seasonal peak.

13.8.1.8 There is a very low potential for disturbance and displacement impacts on offshore bats during construction due to noise beyond the existing baseline, as confirmed by negligible offshore activity recorded during five years of monitoring. In the unlikely event that any behavioural avoidance did occur, it would be temporary and limited to short periods of activity between the Array Area and land. Therefore, **no significant effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Operational and maintenance phase

13.8.1.9 The operational and maintenance activities will require a variety of different vessels including crew transfer vessels, jack-up vessels, cable repair vessels and other vessels. The maximum number of vessel return trips per annum, for supporting operation and maintenance activities, will be 1,359. Helicopters will also be used for operational and maintenance activities with a maximum of 485 return trips per annum. Helicopters will be used for crew and equipment transfer during daytime hours and only used at night for emergencies. Therefore, the activity would be temporary and highly localised.

13.8.1.10 Habitat-related impacts (i.e. potential alteration of movement patterns and foraging behaviour) could occur in response to noise from operational and maintenance activities which may lead to temporary avoidance behaviour by individual bats (Schaub *et al.,* 2008, Luo *et al.,* 2015). However, five years of offshore monitoring (as described in detail in Section 13.5.3) has demonstrated negligible bat activity within the Array Area, meaning any such behavioural response would be highly unlikely. Such behavioural responses are more likely during periods of maintenance activities, including vessel movements between the Array Area and onshore.

13.8.1.11 These impacts are considered very unlikely because operation and maintenance activities including helicopter movements, will be restricted to daylight hours with helicopter movements only being required during darkness in emergencies. Consequently, any associated activity would be temporary and highly localised. In addition, negligible offshore bat activity recorded across the five-year monitoring period (Section 13.5.2) provides strong evidence that bats are rarely present within the Array Area during times when such activities occur. Recent research suggests that bats may be less sensitive to temporary noise shifts than other terrestrial mammals (Simmons *et al.,* 2016).

13.8.1.12 Therefore, **no significant effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with Project Design Option 1.The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Decommissioning Phase

13.8.1.13 The decommissioning phase will give rise to similar impacts regarding anthropogenic noise as that of the construction phase with the exception of piling activities. However, the impacts from infrastructure presence will be a complete reverse to that of the construction phase as WTGs and OSPs will be removed as part of the decommissioning phase. As these potential impacts have been ruled out for significant effects during the construction phase and with the implementation

of the Rehabilitation Schedule (Volume III, Appendix 4.1), no significant effects would be expected to occur as a result of direct disturbance and displacement due to anthropogenic noise during decommissioning associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

PROPOSED MITIGATION

13.8.1.14 **No significant effect** has been identified, therefore no mitigation measures are required or proposed.

RESIDUAL EFFECT ASSESSMENT

13.8.1.15 No mitigation is proposed for this potential impact; therefore, the residual effect remains as **no significant effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

MONITORING

13.8.1.16 The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring, and the level of participation by individual projects, will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and evidence gathering.

13.8.2 Impact 2 – Direct disturbance and displacement due to increased vessel activity and infrastructure presence

Construction phase

13.8.2.1 The construction activities will require a total of 4,150 vessel trips (including return) across the construction period for each Project Design Option. This will include vessels during the foundation (WTG/OSP) installations, and cable installation phases, along with movement of personnel. There will be a maximum of 76 installation vessels in the Array Area at any one time (including 20 installation vessels along the Cable Corridor and Working Area at any one time, and maximum of seven installation vessels in the vicinity of the Landfall at any one time) for each Option. Refer to the Volume II, Chapter 4: Description of Development (Revised March 2026) for full list of vessel requirements.

13.8.2.2 Increased vessel activity and infrastructure presence during construction is considered unlikely to disturb or displace offshore bats given negligible offshore activity recorded during the multi-year surveys. The presence of large infrastructure is unlikely to affect migration or foraging behaviour due to extremely low offshore bat activity and absence of evidence for structured migration routes.

13.8.2.3 Although some studies have reported bats using offshore structures (e.g., Brabant *et al.*, 2019; Lagrange *et al.*, 2025), monitoring for the Proposed Development recorded negligible offshore activity despite the presence of vessels and offshore infrastructure (i.e. associated with ABWP1). This suggests that, while attraction cannot be entirely ruled out, there is currently no evidence of such behaviour occurring within the Array Area. Any potential attraction is therefore considered highly unlikely and not expected to result in a significant effect. It Refer also to Impacts 4 and 5 below.

13.8.2.4 While some potential exists for migrating bats, and opportunistic bats for roosting and foraging, to encounter large infrastructure including non-operating WTGs and the vessels used for installing the WTGs, unlike with terrestrial infrastructure, there are no landscape features that would

concentrate bats in a particular direction (Baerwald and Barclay, 2009; Cryan and Barclay, 2009; Smith and McWilliams, 2016; Kirkpatrick *et al.,* 2017; Fitch *et al.,* 2020) and thereby increase exposure to the large infrastructure. Furthermore, with the proposed spacing between structures of up to 1km, individual bats migrating over the Array Area would likely pass between large infrastructure (WTGs and installation vessels) with only slight course alterations, if any, to avoid the infrastructure or vessels (stationary or moving).

13.8.2.5 The potential for behavioural responses by offshore bats, during construction due to increased vessel activity and infrastructure presence, has been assessed as temporary, restricted in duration and localised in extent. Given multi-year monitoring confirming negligible offshore activity, any responses to these activities are expected to be negligible.

13.8.2.6 Therefore, **no significant effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Operational and maintenance phase

13.8.2.7 Project Design Option 1 will have a presence of 55 structures (53 WTGs and two OSPs) and Project Design Option 2 will have a presence of 49 structures (47 WTGs and two OSPs) for a duration of 36.5 years. For each Project Design Option, the WTGs will have a minimum spacing of 500m between turbine blade tips.

13.8.2.8 Multi-year monitoring indicates negligible offshore bat activity; therefore, the likelihood of bats (including both migrating and foraging individuals) encountering operational WTGs or OSPs, , is extremely low. Unlike with terrestrial migration routes, there are no landscape features that would concentrate bats in a particular direction and thereby increase exposure to the operational WTGs or OSPs, or to routine O&M vessel movements. Furthermore, with the proposed spacing of structures within the Array Area (for Project Design Option 1 and Project Design Option 2), individual bats migrating over the Array Area would likely pass between WTGs or OSPs with only minor course alterations, if any, to avoid WTGs or associated infrastructure.

13.8.2.9 Given the localised stature of the WTGs and OSPs, the distance between WTGs and OSPs, the negligible offshore bat activity recorded during five years of monitoring, the slower rotation speeds during optimal migration conditions and the bats' echolocation abilities and agility, it is unlikely that the presence of infrastructure or routine O&M vessel movements would significantly alter bat movement or behaviour.

13.8.2.10 Therefore, **no significant effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Decommissioning Phase

13.8.2.11 The decommissioning phase will give rise to similar impacts regarding vessel presence as that of the construction phase with the exception of piling activities. However, the impacts from infrastructure presence will be a complete reverse to that of the construction phase as WTGs and OSPs will be removed as part of the decommissioning phase. As these potential impacts have been ruled out for significant effects during the construction phase and with the implementation of the Rehabilitation Schedule (Volume III, Appendix 4.1), **no significant effects** would be expected to occur as a result of direct disturbance and displacement due to increased vessel activity and infrastructure presence during decommissioning associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

PROPOSED MITIGATION

13.8.2.12 **No significant effect** has been identified, therefore no mitigation measures are required or proposed.

RESIDUAL EFFECT ASSESSMENT

13.8.2.13 No mitigation is proposed for this potential impact. Therefore, the residual effect remains as **no significant effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

MONITORING

13.8.2.14 The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring, and the level of participation by individual projects, will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and evidence gathering.

13.8.3 Impact 3 – Disturbance and displacement due to Artificial Lighting at Night (ALAN)

Construction phase

13.8.3.1 Multi-year monitoring indicates negligible offshore activity within the Array Area despite the long-established presence of existing lighting from vessels, buoys and ABWP1. Therefore, the temporary, low-intensity navigation lighting required during construction is highly unlikely to influence bat behaviour.

13.8.3.2 While marine safety requirements necessitate temporary construction lighting that is visible to mariners (e.g. yellow FL Y 2.5s lights with a minimum 2 nm range, as per International Organisation for Marine Aids to Navigation (IALA) guidance) and buoyage marking around the construction area, these lights function as short-range navigational markers and do not operate at intensities associated with ecologically meaningful illumination or wide-area light spill. No lux-based modelling applies to construction lighting, and construction-phase lights are instead limited to flashing navigation markers with no continuous area lighting.

13.8.3.3 Current evidence (Voigt *et al.*, 2023; Hüppop *et al.*, 2019) indicates that offshore navigation lighting does not attract or displace bats. Construction lighting will be temporary, flashing, and restricted to essential safety marking, with no wider illumination or spill expected beyond the immediate structures on which each light is mounted.

13.8.3.4 Indirect disturbance and displacement resulting from changes to prey is covered in Impact 4 – Indirect disturbance and displacement resulting from changes to prey, and not repeated here. If bats were to move offshore in response to construction lighting, this could theoretically increase energy expenditure; however, survey data on existing activity in the Array Area indicate this would be highly unlikely to occur, given the extremely low offshore activity recorded across all years of monitoring and the limited nature of construction-phase lighting.

13.8.3.5 For bats, artificial lighting is also thought to increase the chances of predation by avian predators, therefore, in lit areas bats modify their behaviour, potentially in response to this threat. Predators of Nathusius' pipistrelle and other insectivorous bats include several species of owls, diurnal raptors, gulls, and crows (Speakman, 1991; Sieradzki and Mikkola, 2020). Predation risk is likely to increase with more lit areas at sea including the WTGs and OSPs and lit areas on the coast including the Landfall location (temporary for up to 3 months) since bats become more visible. It

should be noted however that the risk is much smaller within the offshore environment than onshore because nocturnal avian predators seldom forage over open water and offshore lighting levels are very low.

13.8.3.6 For several years, studies have recorded that faster-flying species can congregate around white light sources (Guidance Note GN08/23), species such as: noctule; Leisler's; and pipistrelle. This is particularly true for light sources with ultra-violet spectrum light. Other studies have identified preference of bats towards light if presented with light versus dark scenarios (Jonasson, 2025). While such effects have been documented onshore, multi-year offshore monitoring indicates negligible bat activity despite lighting on the existing offshore infrastructure within the Array area, suggesting any similar effect offshore is highly unlikely as a result of construction-phase lighting for the Proposed Development.

13.8.3.7 While vessel lighting is not as bright as offshore platform lighting apart from the spotlights needed for WTG installation (if required during night-time hours), there will be a maximum of 76 installation vessels in the Array Area, Cable Corridor and Working Area at any one time, with a maximum construction schedule of 24 hours a day, seven days a week for the duration of the construction phase of four years. Furthermore, all structures will be illuminated with temporary lighting up until the commissioning of the operational lighting.

13.8.3.8 During the 2021 to 2025 offshore surveys, common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle and Leisler's bats were recorded within the Array Area (refer to Appendices 13.1 - 13.5). The very low numbers of common and soprano pipistrelles suggest that these records likely represent isolated individuals rather than regular offshore activity. Similarly, Leisler's bats were detected outside periods typically associated with migration and in small clusters, which may indicate occasional circling behaviour rather than migration fly-through or consistent foraging use of the area. While it cannot be entirely ruled out that bats may exhibit exploratory behaviour offshore, survey data and current evidence indicate that such occurrences are rare and do not suggest a significant attraction effect or regular foraging activity within the Array Area, Cable Corridor and Working Area.

13.8.3.9 The potential for behavioural responses to artificial lighting during construction is low, and multi-year monitoring provides no evidence of significant attraction to the existing artificial lighting offshore; any such behaviour remains speculative and highly unlikely (refer to Impact 4 – Indirect disturbance and displacement resulting from changes to prey). Furthermore, if lighting is needed for emergency repairs/maintenance during the hours of darkness, the temporary use would not be expected to attract significant numbers of offshore foraging or migrating species.

13.8.3.10 It is also recognised that alternative attraction locations exist within the study area, including works at the Landfall site (although temporary for maximum of nine months) and other existing infrastructure with lighting (such as lighthouses), further reducing the likelihood of bats travelling to the Cable Corridor and Working Area and the Array Area. Also, should the bats encounter offshore vessels and infrastructure, it is assumed that bat echolocation abilities and agility will ensure they avoid the infrastructure or vessels (stationary or moving).

13.8.3.11 Therefore, in the unlikely scenario that bats interact with lighting within the Array Area, Cable Corridor and Working Area during construction .the distance is commutable and individuals would be able to return to their roosts without energy expenditure significantly compromising survival, as demonstrated by consistently negligible offshore activity across all survey years.

13.8.3.12 Based on available evidence, **no significant effects** would be expected to occur on foraging bats as a result of artificial lighting within the Cable Corridor and Working Area and Array Area during the construction phase associated with Project Option 1. The same conclusion has been reached for Project Option 2 of the Proposed Development.

13.8.3.13 While a precautionary approach has been taken, it is noted that survey data collected between 2021 and 2025 provides no evidence to suggest that the Array Area, Cable Corridor or Working

Area forms part of a regular migratory route for bats. Records of Nathusius' pipistrelle and Leisler's bat during migration windows were extremely limited and typically comprised single passes rather than cluster behaviour (refer to Appendices 13.1 - 13.5), except during potential dawn swarming events that occurred in 2024 (Volume III, Appendix 13.4: Offshore Bats – 2024 Survey Report (RFI March 2026)). No other potential migrating bats were detected during surveys. This strongly indicates that any individuals detected were isolated rather than part of a regular migration route. Furthermore, Leisler's bat is capable of sustained high-speed flight (often exceeding 40 km/h; Shiel *et al.*, 2006) and typically forages in familiar habitats onshore. Such habitats include pasture, drainage canals, lakes, conifer forest, estuary, and dunes, which are present within the Study Area. Offshore detections occurred beyond any known foraging distances reported for resident or vagrant bat species in Ireland, which is consistent with the interpretation that offshore detections represent isolated individuals rather than regular migratory or foraging use. (Voigt *et al.*, 2015; Ahlén *et al.*, 2009). Therefore, based on available evidence, no significant effects are expected to occur on migrating bats as a result of artificial lighting within the Array Area, Cable Corridor and Working Area during the construction phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Operational and maintenance phase

13.8.3.14 Multi-year monitoring indicates negligible offshore activity despite existing lighting presence (i.e. vessels, buoys and ABWP1). Therefore, any lighting associated with the operational phase is highly unlikely to influence bat behaviour. For example, bats may orient towards light of certain wavelengths during migration (Voigt *et al.*, 2018) although 5 years of surveys suggests such responses are rare at the site (Section 13.5.3) and unlikely to result in significant energy expenditure or mortality.

13.8.3.15 During the operational and maintenance phase the SPS will exhibit synchronised flashing yellow lights with a nominal range of at least 5 nm, and selected structures may also display Hazard Warning Signals with a nominal range of 2 nm, operated in low-visibility conditions as specified in the Lighting and Marking Plan (Revised March 2026) (Volume III, Appendix 25.6).. All lights will be visible from all directions and exhibited at the same height (i.e. between 6 and 30 m above highest astronomical tide (HAT) and below the arc of the lowest WTG blades) and at least at night. Aviation lighting requirements will be defined in consultation with the IAA, DoD and IRCG, including in relation to Search and Rescue (SAR) lighting requirements.

13.8.3.16 Although a 2014 study by Bennett and Hale states that bats are not attracted to aviation lighting, further studies have shown bat attraction to red light for migratory species including Nathusius' pipistrelle (Voigt 2018, ILP-GN 08/23). Conversely, several studies, most of which were conducted at wind energy facilities, reported no relationship between bat activity or mortality with the presence or absence of red light for some bat species (Guest *et al.,* 2022a). Overall, evidence remains mixed and inconclusive. However, multi-year monitoring for the Proposed Development recorded negligible offshore activity despite the presence of aviation and navigation lighting on the existing offshore infrastructure, suggesting any attraction effect is highly unlikely and not expected to give rise to significant effects (Voigt, 2018; Guest *et al.*, 2022b; Larnoy *et al.*, 2025a and b)

13.8.3.17 During the 2021 to 2025 surveys, all pipistrelle species and Leisler's bats were recorded at the offshore locations within the Array Area (refer to Appendices 13.1 - 13.5). The very low numbers of common and soprano pipistrelles suggest isolated individuals rather than regular offshore foraging. Similarly, Leisler's bats were detected outside known migration periods and occasionally in small clusters, which may indicate circling behaviour rather than sustained foraging use of the area.

13.8.3.18 While the overall effect of ALAN on bats has demonstrated variable responses across numerous species, regarding research conducted at both onshore and offshore windfarms, artificial lights

do not appear to be the primary cause of bat attraction to WTG (Voigt 2018, ILP-GN 08/23, Larnoy, *et al.*, 2025a and b). It remains unclear whether occasional offshore detections are linked to lighting, though evidence suggests such occurrences are rare and not indicative of significant attraction.

13.8.3.19 Furthermore, it is recognised that alternative attraction locations exist within the study area including lighthouses, further reducing the likelihood of bats travelling to the Array Area and that, should bats encounter offshore vessels and stationary infrastructure with lighting (i.e., the OSPs), it is assumed that bat echolocation abilities and agility will ensure they avoid stationary infrastructure and moving vessels.

13.8.3.20 While attraction cannot be entirely ruled out, multi-year monitoring indicates negligible offshore activity despite lighting presence on the existing offshore infrastructure; therefore, any interaction is expected to be rare and not expected to give rise to significant effects, with no risk of significant energy expenditure or mortality. The distance to the Array Area is commutable for species recorded offshore, allowing return to roosts without compromising survival.

13.8.3.21 Therefore, **no significant effects** would be expected to occur as a result of artificial lighting within the Array Area on foraging bats during the operational and maintenance phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

13.8.3.22 While Nathusius' pipistrelle and Leisler's bat were not recorded at the offshore survey location during the 2022 and 2023 migration periods, detections during migration windows in 2021, 2024, and 2025 suggest that potential migratory behaviour may occur, but this cannot be confirmed based on acoustic data alone, and these records should be interpreted as indicative rather than conclusive evidence of migration Both species were consistently present at headland locations in much higher numbers supporting the view that headlands serve as key resting points or navigational landmarks, while the low number of offshore detections affirm the Array Area is unlikely to be situated within a primary migration route and any interaction with lighting would be incidental and negligible..

13.8.3.23 While a precautionary approach assumes migrating species may occur within the Array Area, survey data and literature indicate that any individuals detected offshore are likely transitory and not representative of a regular migratory pathway.

13.8.3.24 Therefore, **no significant effects** would be expected to occur as a result of artificial lighting within the Array Area on migrating bats during the operational and maintenance phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Decommissioning Phase

13.8.3.25 The decommissioning phase will give rise to similar impacts regarding ALAN as that of the construction phase. However, the impacts from infrastructure presence will be a complete reverse to that of the construction phase as WTGs and OSPs will be removed as part of the decommissioning phase. As these potential impacts have been ruled out for significant effects during the construction phase and with the implementation of the Rehabilitation Schedule (Volume III, Appendix 4.1) including the removal of artificial lighting upon completion of decommissioning, **no significant effects** would be expected to occur from displacement as a result of ALAN during the decommissioning phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

PROPOSED MITIGATION

13.8.3.26 Due to the specific requirements for offshore vessels and infrastructure with regards to health and safety (H&S), aviation and navigation, all structures and vessels must be lit within the hours

of darkness and be visible to a minimum distance (as per organisation) no existing measures to reduce ALAN are applicable in the offshore environment, therefore no mitigation is proposed for ALAN.

RESIDUAL EFFECT ASSESSMENT

13.8.3.27 No mitigation is proposed for this potential impact, therefore the residual effect remains as **no significant effects** would be expected to occur as a result of ALAN associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

MONITORING

13.8.3.28 The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring, and the level of participation by individual projects, will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and evidence gathering.

13.8.4 Impact 4 – Indirect disturbance and displacement resulting from changes to prey

Construction phase

13.8.4.1 During studies undertaken at offshore locations (windfarms and platforms) in Europe and the US, (Kunz *et al.,* 2007; Rydell *et al.,* 2010, Ahlén *et al.,* 2007, Lagerveld *et al.,* 2017a, Boshamer and Bekker, 2008, Guest *et al.,* 2022a, Lagrange *et al.*, 2025), both migratory and non-migratory species have been recorded at offshore sites, with activity likely linked to prey availability rather than regular offshore foraging. Although ALAN may be associated with prey redistribution onshore (Hao *et al.*, 2023 and Charvalakis *et al.*, 2025), multi-year monitoring for the Proposed Development (Appendices 13.1–13.5) indicates negligible offshore bat activity despite lighting on the existing offshore infrastructure. Therefore, any similar effect offshore as a result of the Proposed Development is highly unlikely. If bats were to move offshore in response to prey, this could theoretically increase energy expenditure; however, current evidence and survey data indicate this is highly unlikely to occur at a scale that would result in significant effects.

13.8.4.2 The same studies also demonstrate that bats did not avoid the WTGs but stayed for periods hunting close to the WTGs because of the accumulation of flying insects. Furthermore, WTGs and OSPs are typically white or light grey in colour, which has been demonstrated to be significantly more attractive to insects during the day and one hour after sunset, compared to other colours, furthering the potential for bats to be attracted to wind turbines because of increased prey availability (Guest *et al.,* 2022a). The WTG towers and OSP for the Proposed Development will be coloured grey (refer to Volume II, Chapter 4: Description of Development (Revised March 2026)). However, multi-year monitoring for the Proposed Development recorded negligible offshore activity, indicating such behaviour is highly unlikely within the Array Area, Cable Corridor and Working Area.

13.8.4.3 During the 2021 to 2025 offshore surveys, all three pipistrelle species and Leisler's bats were recorded within the Array Area (refer to Appendices 13.1 - 13.5). Survey results indicate very low offshore activity, with occasional detections rather than any evidence of regular offshore foraging activity.

13.8.4.4 The presence of vessels and infrastructure within the Cable Corridor, Working Area and Array Area during construction may result in localised changes in prey distribution. However, multi-year monitoring (Section 13.5.3) indicates negligible offshore activity, suggesting any attraction effect would be rare and not expected to give rise to significant effects. It is also recognised that

alternative attraction locations (indirect disturbance due to ALAN) exist within the study area, including lighthouses, further reducing the likelihood of bats travelling to the offshore development area.

13.8.4.5 In the unlikely event that bats interact with offshore structures due to prey availability, the distance to the Array Area, Cable Corridor and Working Area is commutable, allowing individuals to return to roosts without energy expenditure significantly compromising survival.

13.8.4.6 Therefore, while attraction cannot be ruled out, **no significant effects** would be expected to occur to foraging bats as a result of potential changes to prey distribution associated with Project Option 1. The same conclusion has been reached for Project Option 2 of the Proposed Development.

13.8.4.7 While migratory species may occur offshore, detections of Nathusius' pipistrelle and Leisler's bat during migration windows were extremely limited and generally comprised single passes. These isolated detections, in contrast to substantially higher activity at headland locations, indicate that the Array Area, Cable Corridor and Working Area are unlikely to form part of a regular migratory route.

13.8.4.8 Literature suggests that migrating Nathusius' pipistrelle may exhibit avoidance behaviour during long-distance flights (Marggraf *et a*l., 2023), and Leisler's bats are capable of faster, higher flight (Shiel *et al.*, 2006; NPWS, 2025; Janssen, 2021a), increasing the likelihood of reaching landfall quicker and foraging in familiar habitats; however, these behaviours cannot be confirmed for individuals detected offshore.

13.8.4.9 Therefore, **no significant effects** would be expected to occur to migrating bats as a result of potential changes in prey distribution within the Array Area or the Cable Corridor and Working Area during the construction phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Operational and maintenance phase

13.8.4.10 As described in Section 13.5.2, both migratory and non-migratory bat species have been recorded at offshore locations in Europe and the US (Ahlén *et al.*, 2007; Lagerveld *et al.*, 2017b; Voigt *et al.*, 2015), with activity likely linked to wind-assisted movement rather than regular offshore foraging. There is no evidence to suggest terrestrial insects migrate offshore in significant numbers or that offshore WTGs create prey concentrations capable of attracting bats from the mainland. Multi-year monitoring at the Array Area (Section 13.5.3) supports this, confirming negligible offshore bat activity despite the presence of the existing ABWP1 WTGs; therefore, while attraction to prey cannot be ruled out, any associated energy expenditure is expected to be minimal and therefore not expected to give rise to significant effects.

13.8.4.11 Studies indicate that bats may forage near onshore WTGs where insects accumulate (Guest *et al.*, 2022b); however, this behaviour has not been confirmed for individuals detected offshore in this study during the five years of monitoring that has been undertaken.

13.8.4.12 During the 2021–2025 surveys, all three pipistrelle species and Leisler's bats were recorded within the Array Area (Appendices 13.1–13.5). While some calls in 2021 suggest possible foraging behaviour, detections overall were very low and should be interpreted as isolated occurrences rather than evidence of regular offshore foraging.

13.8.4.13 The presence of WTGs and OSPs may theoretically influence prey distribution; however, multi-year monitoring indicates negligible offshore bat activity despite the existing ABWP1, suggesting any such effect is highly unlikely and not expected to give rise to significant effects. Artificial lighting on vessels and infrastructure is expected to be less visible from the mainland, further reducing potential attraction. In the unlikely event that bats interact with offshore structures, the distance to the Array Area is commutable, allowing individuals to return to roosts without compromising survival.

13.8.4.14 Therefore, **no significant effects** are expected to occur on foraging or migrating bats as a result of potential changes to prey distribution within the Array Area during the operational and maintenance phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

Decommissioning Phase

13.8.4.15 As the decommissioning phase will give rise to similar impacts regarding ALAN as that of the construction phase but in reverse, so too will the indirect impact disturbance and displacement resulting from changes to the prey distribution.

13.8.4.16 The impacts from infrastructure presence will be a complete reverse to that of the construction phase as WTGs and OSPs will be removed as part of the decommissioning phase. As these potential impacts have been ruled out for significant effects during the construction phase and with the implementation of the Rehabilitation Schedule (Volume III, Appendix 4.1) including the removal of artificial lighting upon completion of decommissioning, **no significant effects** are expected to occur as a result of potential changes to prey distribution during the decommissioning phase associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

PROPOSED MITIGATION

13.8.4.17 There are no known mitigation measures to avoid or reduce impacts from indirect disturbance and displacement resulting from changes to prey other than the potential to change the turbines colour which is still in the infancy study stage (Long *et al.*, 2011) or controlling the Ultraviolet (UV) component of artificial lighting (Barghini & de Medeiros 2012 and Deichmann *et al.* 2021) which has not been tested at offshore windfarms to date. Consequently, as no significant effects are predicted, no mitigation is proposed.

RESIDUAL EFFECT ASSESSMENT

13.8.4.18 No mitigation is proposed for this potential impact, therefore the residual effect remains as **no significant effects** would be expected to occur as a result of indirect disturbance and displacement resulting from changes to prey associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

MONITORING

13.8.4.19 The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring, and the level of participation by individual projects, will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and evidence gathering.

13.8.5 Impact 5 – Collision and Barotrauma

Operation and maintenance phase

13.8.5.1 Bat mortality due to collision has been reported around terrestrial wind turbines worldwide, leading to the assumption that collision represents a potential impact for the offshore wind industry (SEER, 2022; Lagerveld, 2020). While the specific role of barotrauma is debated in recent mammal studies (NREL, 2012; Lawson *et al.*, 2020), this assessment considers collision and barotrauma together, as both require the same close proximity to rotating blades for an impact to occur. However, multi-year monitoring confirms negligible offshore bat activity, indicating that collision risk is extremely low.

13.8.5.2 The five-year monitoring data (Section 13.5.3 and Volume III, Appendices 13.1 - 13.5) confirms that bats have been detected offshore, but in extremely low numbers, and the Array Area is not on an established migration route. All detections are considered incidental, rather than indicative of regular offshore foraging or migration. While operational aspects such as lighting and structures could theoretically influence behaviour, multi-year monitoring indicates negligible offshore activity despite the presence of similar measures on the existing ABWP1 offshore infrastructure, and there is no evidence to suggest this would occur at a scale that increases collision risk significantly (Lintott *et al.*, 2016).

13.8.5.3 Any detections recorded offshore during the monitoring years represented only a very small fraction of activity recorded at headland locations, confirming extremely low offshore presence. Recent behavioural research (Lagrange *et al.*, 2025) demonstrates that bats exhibit high flight agility and awareness of moving blades, actively altering flight paths to avoid collision. Accordingly, interactions with WTGs are expected to be rare and are not predicted to give rise to significant effects during the operational and maintenance phase.

13.8.5.4 Offshore detections during migration windows were sporadic and incidental, and the five-year dataset indicates that the Array Area does not form part of a regular migratory route. With no landscape features offshore to concentrate migrating bats, any interactions with WTGs would be rare and not expected to give rise to significant effects.

13.8.5.5 In summary, while occasional bat presence offshore cannot be ruled out, detections are extremely low and considered incidental. Combined with high flight agility and avoidance behaviour, interactions with WTGs are expected to be rare. In line with evidence from operational offshore studies (Lagrange *et al.*, 2025; Ahlén *et al.*, 2007), any such interactions are not expected to give rise to significant effects during the operational and maintenance phase.

13.8.5.6 Therefore, **no significant effects** are expected to occur to migrating or foraging bats during the operational and maintenance phase as a result of collision and barotrauma associated with Project Design Option 1. The same conclusion has been reached for Project Design Option 2 of the Proposed Development.

PROPOSED MITIGATION

13.8.5.7 As no significant effects are predicted on foraging or migrating bats within the Array Area, no specific operational mitigation measures are proposed.

RESIDUAL EFFECT ASSESSMENT

13.8.5.8 No mitigation is proposed for this potential impact, therefore the residual effect remains as stated above.

MONITORING

13.8.5.9 The Proposed Development is committed to participating in the 'ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring, and the level of participation by individual projects, will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and evidence gathering.

13.9 Cumulative impacts assessment methodology

13.9.1 Methodology

13.9.1.1 The Cumulative Impact Assessment (CIA) takes into account the impacts associated with the Proposed Development together with other proposed and reasonably foreseeable projects, plans

and existing and permitted projects. The projects and plans selected as relevant to the CIA presented within this chapter are based upon the results of a screening exercise (see Volume III, Appendix 3.2: Cumulative Impact Assessment Screening (Revised March 2026)). Each project and plan has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon, effect-receptor pathways and the spatial/temporal scales involved.

13.9.1.2 A tiered approach to assessment has been adopted, the tiers and relevant stages of development are set out in Volume III, Appendix 3.2: Cumulative Impact Assessment Screening (Revised March 2026). This tiered approach is adopted to provide an assessment of the Proposed Development as a whole.

13.9.1.3 Although marine projects require the use of vessels and therefore present the potential for impacts from increased presence, noise and ALAN, as identified in Impacts 1,2,3 and 4, the impacts from vessels are localised, short term and unlikely to affect bat species that are migrating or foraging. Therefore, there are no cumulative pathways with the Proposed Development and other projects including cable laying, dredging operations and coastal developments which have been screened out. Refer to Volume III, Appendix 3.2: Cumulative Impact Assessment Screening (Revised March 2026) for the long list for those projects scoped out of cumulative effects with the Proposed Development.

13.9.1.4 There are also several offshore wind projects within the UK that are operational and in the planning stages, however, due to their positioning north and south of Wales and not to the west (between Wales and the Proposed Development), there is no predicted impacts from the projects to bats traveling east of the Proposed Development to Wales (shortest direct route) or vice versa. The distance to the UK offshore wind projects is also beyond the foraging distance for the resident bat species. Therefore, there are no cumulative pathways with the Proposed Development and UK offshore wind projects.

13.9.1.5 In accordance with the UK guidance on cumulative effects assessment for Nationally Significant Infrastructure Projects (Planning Inspectorate, 2024), a reasonable precautionary approach has been applied to address uncertainty regarding the future status of ABWP1. This includes the assumption of a potential temporal overlap of decommissioning activities with the Proposed Development where appropriate.

13.9.1.6 In this scenario, ABWP1 is assumed to be in the process of decommissioning at the same time as construction of the Proposed Development. While this may result in a degree of overlap and potential double counting of effects, it reflects a precautionary approach given the uncertainty surrounding the timing of decommissioning activities. This scenario is precautionary and ensures that all reasonably foreseeable circumstances are addressed and that the assessment captures all potential cumulative effects.

13.9.1.7 Due to the commitments made by the Developer in respect of the Foreshore Licence FS007339 and Foreshore Licence Application FS007555 (Table 13.13), FS007339 and FS007555 have been screened out of the cumulative impact assessment.

Table 13.14: List of other projects and plans considered within the cumulative impact assessment

Project/Plan	Status	Distance from Array Area (km)	Distance from Cable Corridor and Working Area (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
Tier 1							
Arklow Bank Wind Park 2 Onshore Grid Infrastructure (OGI) (ABWP2 OGI)	Consented	10.2	0.0	Development of the onshore grid infrastructure.	2026 to 2030	2030 to 2066	Screened in due to pathway with offshore receptors
Arklow Bank Wind Park 2 Operational and Maintenance Facility (OMF) Onshore and offshore Infrastructure (ABWP2 OMF)	Consented	11.3	4.5	Development of an OMF to support the Proposed Development, located at Arklow Port.	2026 to 2030	2030 to 2066	Screened in due to pathway with offshore receptors
Codling Wind Park	Application submitted	10.3	9.4	'Relevant Project'. Application submitted under the Maritime Area Planning (MAP) Act 2021.	2026 to 2029	2029 onwards	Potential for temporal overlap with Proposed Development construction and operational and maintenance phases.
Dublin Array	Application submitted	25.8	30.5	'Relevant Project'. Application submitted under the Maritime Area Planning (MAP) Act 2021.	2029 to 2032	2032 onwards	Potential for temporal overlap with Proposed Development construction and operational and maintenance phases.

Project/Plan	Status	Distance from Array Area (km)	Distance from Cable Corridor and Working Area (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
North Irish Sea Array	Application submitted	65	69.7	'Relevant Project'. Application submitted under the Maritime Area Planning (MAP) Act 2021.	2027 to 2030	2030 onwards	Potential for overlap with Proposed Development construction and operational and maintenance phases.
Oriel Wind Park	Application submitted	108.1	112.8	'Relevant Project'. Application submitted under the Maritime Area Planning (MAP) Act 2021.	2028 to 2030	2030 onwards	Potential for overlap with Proposed Development construction and operational and maintenance phases.
Tier 3							
Decommissioning of ABWP1	Pre-application consultation	0	0	Proposed decommissioning of the seven existing offshore wind turbines at Arklow Bank Wind Park 1 (ABWP1). For assessment purposes, a precautionary scenario is assumed whereby	Not defined – assumed to overlap with Proposed Development construction phase for assessment purposes.		Potential for overlap with Proposed Development construction and operational and maintenance phases.

Project/Plan	Status	Distance from Array Area (km)	Distance from Cable Corridor and Working Area (km)	Description of Project/Plan	Dates of Construction	Dates of Operation	Justification for screening in
				decommissioning activities overlap temporally with construction of the Proposed Development. Decommissioning methods are assumed to be similar to those set out in the ABWP2 Rehabilitation Schedule.			

13.9.1.8 Table 13.15 presents the potential impacts, development phase, and the list of projects / plans with which the two Project Design Options have been cumulatively assessed.

13.9.1.9 The Developer submitted a Foreshore Licence Application for Site Surveys (associated with the Proposed Development) to the Minister for Housing, Local Government and Heritage in April 2023 (FS007555) and this application is pending determination. The Developer confirms and commits that they will not conduct any activities the subject of the Foreshore Licence Application for Site Surveys (should a licence be granted) at the same time as any development is being carried out under this permission (if granted). As such there is no temporal overlap between the activities proposed in the Foreshore Licence Application and the Proposed Development. For this reason, FS007555 is not included within the cumulative assessment of this EIAR.

Table 13.15: Cumulative assessment impacts, phases, scenarios, and projects to be considered cumulatively

Potential cumulative impact	Phase			Projects considered cumulatively	Justification for projects considered cumulatively
	C	O	D		
Disturbance and displacement due to anthropogenic noise	✓	✓	✓	Project parameters associated with Project Design Option 1 or 2 plus the following projects: **Tier 1** • ABWP2 OGI; • ABWP2 OMF; • Codling Wind Park; • Dublin Array; • North Irish Sea Array; and • Oriel Wind Park. **Tier 3** • Decommissioning of ABWP1	Noise associated with the construction of other ABWP2 infrastructure (including the OGI and OMF), offshore windfarms (other Phase 1 projects including Codling Wind Park, Dublin Array, North Irish Sea Array and Oriel Wind Park), and the decommissioning of ABWP1.
Disturbance and displacement due to increased vessel activity and infrastructure presence	✓	✓	✓	Project parameters associated with Project Design Option 1 or 2 plus the following projects: **Tier 1** • ABWP2 OGI; • ABWP2 OMF; • Codling Wind Park; • Dublin Array; • North Irish Sea Array; and • Oriel Wind Park. **Tier 3** • D*ecommissioning of* ABWP1	Vessel and helicopter movements associated with the construction of other ABWP2 infrastructure (including the OGI and OMF), offshore windfarms (other Phase 1 projects including Codling Wind Park, Dublin Array, North Irish Sea Array and Oriel Wind Park), and the

Potential cumulative impact	Phase C	Phase O	Phase D	Projects considered cumulatively	Justification for projects considered cumulatively
					decommissioning of ABWP1.
Disturbance and displacement due to ALAN	✓	✓	✓	Project parameters associated with Project Design Option 1 or 2 plus the following projects: **Tier 1** • ABWP2 OGI; • ABWP2 OMF; • Codling Wind Park; • Dublin Array; • North Irish Sea Array; and • Oriel Wind Park. **Tier 3** • Decommissioning of ABWP1	ALAN associated with the construction of other ABWP2 infrastructure (including the OGI and OMF), offshore windfarms (other Phase 1 projects including Codling Wind Park, Dublin Array, North Irish Sea Array and Oriel Wind Park), and the decommissioning of ABWP1.
Indirect disturbance and displacement resulting from changes to prey	✓	✓	✓	Project parameters associated with Project Design Option 1 or 2 plus the following projects: **Tier 1** • ABWP2 OGI; • ABWP2 OMF; • Codling Wind Park; • Dublin Array; • North Irish Scotland Array; and • Oriel Wind Park. **Tier 3** • Decommissioning of ABWP1	Changes to prey associated with the construction of ABWP2 infrastructure (including the OGI and OMF), offshore windfarms (other Phase 1 projects including Codling Wind Park, Dublin Array, North Irish Sea Array and Oriel Wind Park), and the decommissioning of ABWP1.
Collision and Barotrauma	×	✓	×	Project parameters associated with Project Design Option 1 or 2 plus the following projects: **Tier 1** • Codling Wind Park; • Dublin Array; • North Irish Sea Array; and • Oriel Wind Park.	Operational and maintenance phases of different offshore wind projects overlap.

13.10 Cumulative impact assessment

13.10.1.1 A description of the significance of cumulative effects upon offshore bats arising from each identified impact is given below.

13.10.2 Impact 1 – Cumulative disturbance and displacement due to anthropogenic noise

SENSITIVITY OF THE RECEPTOR

13.10.2.1 The sensitivity of the receptor is as described in paragraphs 13.8.1.1 to 13.8.1.14 above and is considered to be low, given the consistently negligible offshore activity recorded across all survey years and the incidental nature of bat presence within the Array Area, Cable Corridor and Working Area throughout the construction, operational and maintenance, and decommissioning phases of the Proposed Development.

Construction phase

TIER 1

13.10.2.2 Anthropogenic noise associated with construction of the Proposed Development, together with anthropogenic noise associated with the construction of Tier 1 projects listed in Table 13.15, may contribute to cumulative disturbance and displacement due to anthropogenic noise if the periods of construction, operation or decommissioning of the different projects overlap.

13.10.2.3 While the impact is highly dependent on the extent of temporal overlap across projects, the levels of disturbance will be localised to the Cable Corridors and Working Areas for each project.

13.10.2.4 There is a significant distance between the Proposed Development and the remaining Tier 1 projects (ABWP2 OGI approximately 10km east) and Phase 1 projects (closest project is Codling Wind Park approximately 10km north), to allow for any localised disturbance to migration routes. Furthermore, recent research has shown that bats may be less sensitive to temporary noise shifts than other terrestrial mammals (Simmons *et al.,* 2016) and those foraging within the Cable Corridors and Working Areas of the individual projects will not be significantly affected.

13.10.2.5 Therefore, even if there is a complete overlap in construction of Tier 1 projects for the duration of construction of the Proposed Development, due to the distance between projects, it is unlikely that a significant effect will occur. The more likely scenario would be that any overlap that may occur will be during only comparatively short periods at each project location.

13.10.2.6 Furthermore, the Proposed Development alone was not predicted to have a significant effect based on both Project Design Options due to construction phase disturbance and displacement due to anthropogenic noise (section 13.8.1).

13.10.2.7 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with both Project Design Options and other projects.

TIER 1 + TIER 3

13.10.2.8 A precautionary scenario has been considered during the construction phase. This considers an overlap between construction of the Proposed Development and decommissioning of ABWP1.

13.10.2.9 As the ABWP1 array only comprises seven WTGs, there will be no significant increase in vessel activity for Tier 3 decommissioning stage above that described in sections 13.8 and 13.10. Vessel movements associated with Proposed Development are precautionary and therefore any

associated vessel movements for the Tier 3 decommissioning stage of ABWP1 are considered to be captured within the vessel movements already assessed for the Proposed Development.

13.10.2.10 Therefore, even if there is a complete overlap in construction and operation of Tier 1 + decommissioning of the Tier 3 projects for the duration of construction of the Proposed Development, due to the distance between Tier 1 projects and the Tier 3 projects), it is unlikely that a significant effect will occur. The more likely scenario would be that any overlap that may occur will be during only comparatively short periods at each project location.

13.10.2.11 Furthermore, the Proposed Development alone was not predicted to have a significant effect based on both Project Design Options due to construction phase disturbance and displacement due to anthropogenic noise (section 13.8.1).

13.10.2.12 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with both Project Design Options and other projects.

Operational and maintenance phase

TIER 1

13.10.2.13 Anthropogenic noise associated with the operational and maintenance of the Proposed Development, together with anthropogenic noise associated with the construction or operation and maintenance or decommissioning phase of other Phase 1 projects in the Irish Sea, may contribute to cumulative disturbance and displacement due to anthropogenic noise if the periods of construction or operation and maintenance or decommissioning of different projects overlap with operation and maintenance phase activities carried out as part of the Proposed Development.

13.10.2.14 While the impact is highly dependent on the extent of temporal overlap across projects, the levels of disturbance will be localised to vessel movements for each project. Furthermore, vessel movements will usually be restricted to daylight hours unless in emergencies, therefore, operational and maintenance activities of the Proposed Development at night would be temporary and highly localised. Although ABWP1 is surrounded by the Proposed Development the array only comprises seven WTGs. Vessel movements associated with Proposed Development are precautionary and therefore any associated vessel movements for the Tier 3 decommissioning stage of ABWP1 are considered to be captured within the vessel movements already assessed for the Proposed Development.

There is also a significant distance between the Proposed Development and the other Phase 1 projects (closest project is Codling Wind Park approximately 10km north), and no project will be using the same operation and maintenance facility as the Proposed Development, therefore, it is unlikely that vessels will be traveling between the Proposed Development and other Phase 1 projects. Also recent research has shown that bats may be less sensitive to temporary noise shifts than other terrestrial mammals (Simmons *et al.,* 2016) and those foraging within the Works Areas will not be significantly affected.

13.10.2.15 The Proposed Development alone was not predicted to have a significant effect based on both Project Design Options due to operational and maintenance phase disturbance and displacement due to anthropogenic noise (section 13.8.1).

13.10.2.16 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with both Project Design Options and other projects.

TIER 1 + TIER 3

13.10.2.17 A precautionary scenario has been considered for the operational and maintenance phase. This assumes a temporal overlap between the operational and maintenance activities of the Proposed Development and the Tier 3 decommissioning of ABWP1.

13.10.2.18 As the ABWP1 array comprises only seven WTGs, vessel activity associated with Tier 3 decommissioning will be limited and will not materially increase the overall vessel movements already assessed for the Proposed Development. Operational and maintenance-related vessel movements for the Proposed Development are precautionary in nature; therefore, any additional vessel activity associated with Tier 3 decommissioning of ABWP1 is considered to be captured within the vessel movements already assessed.

13.10.2.19 There is a significant distance between the Proposed Development and other Phase 1 projects (the closest being Codling Wind Park, approximately 10 km north). As no Phase 1 projects share an operation and maintenance facility with the Proposed Development, vessel routes will remain project-specific and spatially separated. Disturbance associated with operational and maintenance activities will therefore be geographically localised and will not combine with other projects to affect bats. Furthermore, recent research indicates that bats may be less sensitive to temporary noise shifts than other terrestrial mammals (Simmons et al., 2016), and given the negligible offshore bat activity recorded across all survey years, no significant cumulative disturbance effect is expected.

13.10.2.20 The Proposed Development alone was not predicted to have a significant effect during the operational and maintenance phase due to disturbance and displacement from anthropogenic noise (Section 13.10).

13.10.2.21 Therefore, even if there is full temporal overlap between the operational and maintenance activities of the Proposed Development and the Tier 1 and Tier 3 projects, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to anthropogenic noise associated with either Project Design Option.

Decommissioning phase

TIER 1

13.10.2.22 Any effects generated from the cumulative impact of disturbance and displacement due to anthropogenic noise during the decommissioning phase of the Proposed Development are expected to be similar, or reduced, to those generated during the construction phase, as certain activities such as piling would not be required. This is because it would generally involve a reverse of the construction phase through the removal of structures and materials installed.

13.10.2.23 Such activities have already been assessed in the cumulative construction section above and have been found to have no significant effect as a result of disturbance and displacement due to anthropogenic noise associated with both Project Design Options and other projects.

13.10.2.24 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement and displacement due to anthropogenic noise associated with both Project Design Options and other projects during the decommissioning phase of the Proposed Development.

13.10.3 Impact 2 – Cumulative disturbance and displacement due to increased vessel activity and infrastructure presence

SENSITIVITY OF THE RECEPTOR

13.10.3.1 The sensitivity of the receptor is as described in paragraphs 13.8.2.1 to 13.8.2.14 above and is considered to be **low** across the construction, operational and maintenance, and decommissioning phases of the Proposed Development.

Construction phase

TIER 1

13.10.3.2 Vessel and helicopter movements associated with construction of the Proposed Development, together with vessel and helicopter movements associated with the construction of Tier 1 projects listed in Table 13.14 , may contribute to cumulative disturbance and displacement if the periods of construction or operation and maintenance or decommissioning of different projects overlap.

13.10.3.3 While this impact is highly dependent on the extent of temporal overlap across projects disturbance will remain localised to the Cable Corridors and Working Area for each project. Unless vessels or helicopters travel directly between project areas, or all projects undertake construction simultaneously, a significant cumulative effect will occur.

13.10.3.4 As ABWP1 comprises only seven WTGs, there will be no significant increase in vessel activity for Tier 3 decommissioning stage above that described in sections 13.6 and 13.8. Vessel movements associated with Proposed Development are precautionary and therefore any associated vessel movements for the Tier 3 decommissioning stage of ABWP1 are considered to be captured within the vessel movements already assessed for the Proposed Development. The significant distance between the Proposed Development and the other Tier 1 projects (ABWP2 OGI approximately 10km east) and Phase 1 projects (closest project is Codling Wind Park approximately 10km north), means localised vessel disturbance will not spatially overlap.

13.10.3.5 Furthermore, the Proposed Development alone was not predicted to have a significant effect based on both Project Design Options due to construction phase disturbance and displacement due to increased vessel activity and infrastructure presence (Section 13.8.2)

13.10.3.6 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure associated with both Project Design Options and other projects during the construction phase.

TIER 1 + TIER 3

13.10.3.7 A precautionary scenario has been considered for the construction phase, assuming temporal overlap between construction of the Proposed Development and Tier 3 decommissioning of ABWP1.

13.10.3.8 As ABWP1 comprises only seven WTGs, any vessel activity associated with its Tier 3 decommissioning would be limited and falls within the precautionary vessel envelope already assessed for the Proposed Development.

13.10.3.1 Given the spatial separation between projects and the localised nature of disturbance from construction vessels, significant cumulative effects are unlikely, even under full temporal overlap. The more realistic scenario is that any overlap would occur only during short periods at individual project locations.

13.10.3.2 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with either Project Design Option.

Operational and maintenance phase

TIER 1

13.10.3.3 Vessel and helicopter movements associated with operation and maintenance of the Proposed Development, together with vessel and helicopter movements associated with the construction and or operation and maintenance or decommissioning phase of the other Tier 1 projects in the Irish Sea, may contribute to cumulative disturbance and displacement if the periods of construction and or operation and maintenance or decommissioning of different projects overlap.

13.10.3.4 While the impact is highly dependent on the extent of temporal overlap across projects, the levels of disturbance will be localised to vessel movements for each project. Furthermore, vessel movements will usually be restricted to daylight hours unless in emergencies, therefore, operational and maintenance activities of the Proposed Development at night would be temporary and highly localised. There is also a significant distance between the Proposed Development and the other Tier 1 projects (ABWP2 OGI approximately 10km east and Phase 1 projects closest project is Codling Wind Park approximately 10km north), and no project will be using the same operation and maintenance facility as the Proposed Development, therefore, it is unlikely that vessels will be traveling between the Proposed Development and other Phase 1 projects.

13.10.3.5 Also, the Proposed Development alone was not predicted to have a significant effect based on both Project Design Options due to operational and maintenance phase disturbance and displacement due to increased vessel activity and infrastructure presence (section 13.8.2).

13.10.3.6 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure associated with both Project Design Options and other projects during the operational and maintenance phase of the Proposed Development.

TIER 1 + TIER 3

13.10.3.7 A precautionary scenario has been considered for the operational and maintenance phase, assuming temporal overlap between O&M activities for the Proposed Development and Tier 3 decommissioning of ABWP1.

13.10.3.8 As ABWP1 comprises only seven WTGs, vessel activity associated with Tier 3 decommissioning will be limited and is encompassed within the precautionary vessel movements assessed for the Proposed Development.

13.10.3.9 Given the distance between project areas and the localised nature of vessel routes, cumulative disturbance during overlapping O&M or decommissioning activities is unlikely to combine in a way that would affect bats. Multi-year monitoring shows negligible offshore activity, further reducing the potential for cumulative effects.

13.10.3.10 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with either Project Design Option.

Decommissioning phase

TIER 1

13.10.3.11 Any effects generated from the cumulative impact of disturbance and displacement due to increased vessel activity and infrastructure presence during the decommissioning phase of the Proposed Development are expected to be similar, or reduced, to those generated during the construction phase, as certain activities such as piling would not be required. This is because it

would generally involve a reverse of the construction phase through the removal of structures and materials installed.

13.10.3.12 Such activities have already been assessed in the cumulative construction section above and have been found to have no significant effect as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with both Project Design Options and other projects.

13.10.3.13 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with both Project Design Options and other projects during the decommissioning phase of the Proposed Development.

13.10.4 Impact 3 – Cumulative disturbance and displacement due to Artificial Lighting at Night (ALAN)

SENSITIVITY OF THE RECEPTOR

13.10.4.1 The sensitivity of the receptor is as described in paragraphs 13.8.3.1 to 13.8.3.25 above and is considered to be **low** across the construction, operational and maintenance, and decommissioning phases of the Proposed Development.

Construction phase

TIER 1

13.10.4.2 Artificial lighting associated with construction of the Proposed Development, together with lighting associated with construction or operation of Tier 1 projects listed in Table 13.14, may contribute to cumulative disturbance if construction periods overlap. However, lighting associated with offshore construction is temporary, highly localised, and of low-lux intensity, and multi-year monitoring indicates negligible offshore bat activity.

13.10.4.3 While cumulative effects depend on the extent of temporal overlap across projects, disturbance from construction-related ALAN will be restricted to individual Cable Corridors and Working Areas. Even if construction periods overlap fully, the spatial separation between the Proposed Development, and Tier 1 projects means lighting fields would not combine to create significant cumulative effects.

13.10.4.4 ALAN from the other Tier 1 projects would remain localised to their own construction areas, and multi-year monitoring for the Proposed Development shows no evidence that offshore lighting attracts bats.

While vessels, WTGs and OSPs may generate localised ALAN during construction, there is no evidence that bats commute offshore to investigate lighting, and offshore detections remain extremely limited. Therefore, cumulative attraction or displacement effects are not expected.

13.10.4.5 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement of bat species via a change in prey associated with both Project Design Options and other projects during the construction phase of the Proposed Development.

TIER 1 + TIER 3

13.10.4.6 A precautionary scenario has been considered, assuming temporal overlap between construction of the Proposed Development and decommissioning of ABWP1. As ABWP1 comprises only seven WTGs, lighting associated with its decommissioning would be limited and is encompassed within the lighting envelope already assessed.

13.10.4.7 Given the spatial separation between projects and the low-lux, highly localised nature of offshore construction lighting, significant cumulative effects from ALAN are unlikely.

13.10.4.8 Therefore, **no significant cumulative effects** would be expected with Tier 1 and 3 projects as a result of ALAN during the construction phase under either Project Design Option.

Operational and maintenance phase

TIER 1

13.10.4.9 SPS and IPS lighting associated with the Proposed Development will be directional, low-lux at distance, and required for navigation and safety. Other Phase 1 projects will adopt similar lighting regimes. Multi-year monitoring indicates negligible offshore bat activity despite the presence of existing offshore lighting.

13.10.4.10 While cumulative effects depend on temporal overlap across project lifecycles, ALAN from offshore infrastructure remains highly localised and decays rapidly with distance. There is no evidence that offshore ALAN influences bat movements at a scale that would give rise to cumulative effects.

13.10.4.11 Therefore, **no significant cumulative effects** would be expected to occur as a result of ALAN with both Project Design Options and other projects during the operational and maintenance phase of the Proposed Development.

TIER 1 + TIER 3

13.10.4.12 A precautionary scenario assuming overlap between O&M of the Proposed Development and Tier 3 decommissioning of ABWP1 has been considered.

13.10.4.13 Due to the low-lux, directional nature of aviation and navigational lighting and negligible offshore bat activity, **no significant cumulative effects** are expected.

13.10.4.14 Therefore, no significant cumulative ALAN effects are predicted during the O&M phase under either Project Design Option.

Decommissioning phase

TIER 1

13.10.4.15 Any effects generated from the cumulative impact of disturbance and displacement due to ALAN during the decommissioning phase of the Proposed Development are expected to be similar, or reduced, to those generated during the construction phase. This is because it would generally involve a reverse of the construction phase through the removal of structures and materials installed.

13.10.4.16 Such activities have already been assessed in the cumulative construction section above and have been found to have **no significant cumulative effects** as a result of disturbance and displacement due to ALAN associated with both Project Design Options and other projects.

13.10.4.17 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to ALAN associated with both Project Design Options and other projects during the decommissioning phase of the Proposed Development.

13.10.5 Impact 4 – Indirect disturbance and displacement resulting from changes to prey

SENSITIVITY OF THE RECEPTOR

13.10.5.1 The sensitivity of the receptor is as described in paragraphs 13.8.4.1 to 13.8.4.19 above and is considered to be **low** across the construction, operational and maintenance, and decommissioning phases of the Proposed Development.

Construction phase

TIER 1

13.10.5.2 Construction-related infrastructure and vessels may alter prey distribution at a local scale. However, multi-year monitoring (section 13.5.3) indicates negligible bat activity within the Array Area, Cable Corridor and Working Area, and there is no evidence to suggest offshore prey densities increase to levels that would attract bats from onshore environments.

13.10.5.3 Indirect disturbance resulting from changes to prey associated with construction of the Proposed Development, together with similar effects arising from Tier 1 projects (ABWP2 OGI, OMF), may contribute to cumulative effects if project timelines overlap. However, prey-related effects remain confined to the individual construction footprints.

13.10.5.4 While this impact is highly dependent on the extent of temporal overlap across projects the levels of disturbance will be localised to the construction and working areas for each project. Even if construction or operation phases overlap fully, the spatial separation between project areas means cumulative prey-related effects are unlikely to occur.

13.10.5.5 As ABWP1 is surrounded by the Proposed Development and the array only comprises seven WTGs, the scale of potential prey redistribution associated with ABWP1 decommissioning would be small and already encompassed within the assessment for the Proposed Development.

13.10.5.6 It is also recognised the presence of vessels, WTGs and OSPs has the potential to displace bats via a change in prey distribution. Given negligible offshore bat activity and absence of evidence for offshore foraging, cumulative effects on foraging bats are unlikely. Migrating species are also more likely to pass through the area and not be distracted by the presence of prey offshore.

13.10.5.7 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement of bat species via a change in prey associated with both Project Design Options and other projects during the construction phase of the Proposed Development.

TIER 1 + TIER 3

13.10.5.8 A precautionary scenario has been considered, assuming temporal overlap between construction of the Proposed Development and decommissioning of ABWP1.

13.10.5.9 As ABWP1 comprises only seven WTGs, any changes to prey distribution associated with its decommissioning will be limited and are accounted for within the assessment envelope for the Proposed Development.

13.10.5.10 Therefore, **no significant cumulative effects** are expected during the construction phase under either Project Design Option.

Operational and maintenance phase

TIER 1

13.10.5.11 WTG or associated infrastructure and vessels during operational and maintenance may directly or indirectly contribute to increased bat activity. However, multi-year monitoring indicates negligible offshore bat activity, and there is no evidence that offshore prey redistribution influences bat movement.

13.10.5.12 The baseline assessment has identified bats present within the Array Area of the Proposed Development, thereby taking a precautionary approach the same bat species are assumed to be present within the array areas of other Phase 1 projects.

13.10.5.13 Indirect disturbance and displacement resulting from changes to prey associated with operation and maintenance of the Proposed Development, together with indirect disturbance and displacement resulting from changes to prey associated with the construction and or operation and maintenance or decommissioning phase of other Phase 1 projects in the Irish Sea, may contribute to cumulative disturbance and displacement if the periods of operation and maintenance of different projects overlap.

13.10.5.14 While the presence of WTGs and OSPs has the potential to cause attraction by bats via a change in prey distribution. Given negligible offshore activity and no evidence for offshore foraging, cumulative prey-related effects are unlikely. Furthermore, migrating species are more likely to pass through the area and not be distracted by the presence of prey offshore.

13.10.5.15 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement of bat species via a change in prey associated with both Project Design Options and other projects during the operational and maintenance phase of the Proposed Development.

TIER 1 + TIER 3

13.10.5.16 A precautionary scenario has been considered assuming temporal overlap between the O&M of the Proposed Development and decommissioning of ABWP1.

13.10.5.17 As ABWP1 comprises only seven WTGs, any Tier 3 prey-related effects will be limited and encompassed within the envelope already assessed for the Proposed Development.

13.10.5.18 Therefore, **no significant cumulative effects** are expected during the O&M phase.

Decommissioning phase

TIER 1

13.10.5.19 Any effects generated from the cumulative impact of disturbance and displacement due to change in prey during the decommissioning phase are expected to be similar, or reduced, to those generated during the construction phase. This is because it would generally involve a reverse of the construction phase through the removal of structures and materials installed.

13.10.5.20 Such activities have already been assessed in the cumulative construction section above and have been found to have no significant effect as a result of disturbance and displacement due to change in prey associated with both Project Design Options and other projects.

13.10.5.21 Therefore, **no significant cumulative effects** would be expected to occur as a result of disturbance and displacement due to change in prey associated with both Project Design Options and other projects during the decommissioning phase of the Proposed Development.

TIER 1 + TIER 3

13.10.5.22 Decommissioning-phase activities for both the Proposed Development and ABWP1 will be temporary and localised and would not introduce additional pathways for prey-related disturbance or displacement.

13.10.5.23 Therefore, **no significant cumulative effects** are expected during the decommissioning phase.

13.10.6 Impact 5 – Collision and Barotrauma

SENSITIVITY OF THE RECEPTOR

13.10.6.1 The sensitivity of the receptor is as described in paragraphs 13.8.5.1 to 13.8.5.9 above and is considered to be **low** across the construction, operational and maintenance, and decommissioning phases of the Proposed Development.

Operational and maintenance phase

TIER 1

13.10.6.2 The Proposed Development, together with other Phase 1 projects in the Irish Sea may contribute to cumulative impact collision and barotrauma, in the event the operational and maintenance phases of different projects overlap. Bats are highly mobile, therefore they can encounter offshore windfarms, and be at risk of collisions, across large areas.

13.10.6.3 While a precautionary approach is taken, acknowledging that individual bats (migrating or foraging) may occasionally occur offshore, it should be noted that given the localised stature of the WTGs, the slower rotation speeds during optimal migration conditions, the negligible offshore activity recorded across all survey years, the bats' echolocation abilities and agility, the distance between rotating WTG (minimum 500m between blade tips of the Proposed Development) and the distance between Phase 1 projects (closest project is Codling Wind Park approximately 10km north) it is unlikely that the projects would pose a cumulative collision risk to bats offshore.

13.10.6.4 The Proposed Development alone assessment considers the operational presence of ABWP1 within the baseline and recognises the potential for on-going collision and barotrauma risk during the operation and maintenance phase. As the project is surrounded by the Proposed Development, no effects of greater significance than that assessed in this chapter are predicted to occur.

13.10.6.5 Therefore, **no significant cumulative effects** would be expected to occur as a result of collision and barotrauma associated with both Project Design Options and other projects.

TIER 1 + TIER 3

13.10.6.6 A precautionary scenario has been considered assuming temporal overlap between the operational and maintenance phase of the Proposed Development and Tier 3 decommissioning of ABWP1.

13.10.6.7 As ABWP1 comprises only seven WTGs, vessel and infrastructure activity associated with decommissioning will be limited and is encompassed within the assessment envelope for the Proposed Development.

13.10.6.8 Given the negligible offshore bat activity recorded across all survey years and the spatial separation from other Phase 1 projects, **no significant cumulative effects** relating to collision or barotrauma are expected under either Project Design Option.

13.11 Transboundary effects

13.11.1.1 A screening of transboundary impacts has been carried out and has identified that there was no potential for significant transboundary effects with regard to migrating offshore bats from the Proposed Development upon the interests of other states. Foraging bat species have been ruled out for transboundary effects due to the distance between Ireland and the UK being beyond the foraging distance for the resident bat species.

13.11.1.2 The potential transboundary impacts assessed within section 13.7 are summarised below:

- Direct disturbance and displacement due to anthropogenic noise during the construction, operational and maintenance and decommissioning phases. Overall bat species are less sensitive to temporary threshold shifts than other terrestrial mammals. Therefore, no significant transboundary effects would be expected to occur as a result of offshore noise associated with the Proposed Development.
- Direct disturbance and displacement due to increased vessel activity and infrastructure presence during the construction, operational and maintenance and decommissioning phases. Overall bats' echolocation abilities and agility make it unlikely that the stationary objects or moving vessels would pose a collision risk to individuals in flight. Therefore, no significant transboundary effects would be expected to occur as a result of disturbance and displacement due to increased vessel activity and infrastructure presence associated with the Proposed Development.
- Disturbance and displacement due to Artificial Lighting at Night (ALAN) during the construction, operational and maintenance and decommissioning phases. Overall, the two migratory species are likely to avoid the Proposed Development due to optimisation strategies. Therefore, no significant transboundary effects would be expected to occur as a result of disturbance and displacement due to ALAN.
- Indirect disturbance and displacement resulting from changes to prey during the construction, operational and maintenance and decommissioning phases. Overall, the two migratory species are likely to avoid the Proposed Development due to optimisation strategies. Therefore, no significant transboundary effects would be expected to occur as a result of disturbance and displacement resulting from changes to prey.
- Collision and Barotrauma during the operational and maintenance phase. Overall, no significant transboundary effects would be expected to occur as a result of collision and barotrauma on migrating species.

13.12 Summary of effects

13.12.1.1 Information on offshore bats within the Offshore Bats study area was collected through review of available literature, other offshore windfarm assessments, European guidance, detailed analysis of the data collected during the field surveys and consultation with relevant stakeholders.

13.12.1.2 Table 13.16 presents a summary of the potential impacts for both Project Design Options, mitigation measures and residual effects in respect to offshore bats. The impacts assessed include direct disturbance and displacement due to anthropogenic noise, increased vessel activity and infrastructure presence and ALAN, along with indirect disturbance and displacement resulting from changes to prey and impacts from collision and barotrauma.

Table 13.16: Summary of potential environmental impacts, mitigation and monitoring for Project Design Option 1 and 2

Description of impact	Phase			Factored-in measures	Significance of effect	Additional measures	Residual effect	Proposed monitoring
	C	O	D					
1. Direct disturbance and displacement due to anthropogenic noise	✓	✓	✓	N/A	No significant effects	None	No significant effects	The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring and the level of participation by individual projects will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and. evidence gathering.
2. Direct disturbance and displacement due to increased vessel activity and infrastructure presence	✓	✓	✓	N/A	No significant effects	None	No significant effects	The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring and the level of participation by individual projects will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and. evidence gathering.
3. Disturbance and displacement due to ALAN	✓	✓	✓	N/A	No significant effects	None	No significant effects	The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring and the level of participation by individual projects will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and

Description of impact	Phase			Factored-in measures	Significance of effect	Additional measures	Residual effect	Proposed monitoring
	C	O	D					
								with a focus on validation and. evidence gathering.
4. Indirect disturbance and displacement resulting from changes to prey	✓	✓	✓	N/A	No significant effects	None	No significant effects	The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring and the level of participation by individual projects will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and. evidence gathering.
5. Collision and Barotrauma	×	✓	×	Lower blade tip height of 37m from LAT. Number of turbines. Rehabilitation Schedule	No significant effects	None	No significant effects	The Proposed Development is committed to participating in the ECMG, to discuss and agree potential strategic monitoring initiatives in relation to offshore bats. The need for strategic monitoring and the level of participation by individual projects will be determined by the conclusions of the EIAR process, in consultation with statutory and technical stakeholders, and with a focus on validation and. evidence gathering.

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