Manogate Ltd

BALLYFASY WIND FARM

Bat Assessment Report

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. UK0030787.3807

OUR REF. NO. UK0030787.3807_01

DATE: OCTOBER 2025

WSP

Town Centre House
Dublin Road
Naas
Co Kildare

WSP.com

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	First Draft	Second Draft		
Date	October 2025	November 2025		
Prepared by	D. Corral	A. Hayden		
Signature				
Checked by	N. Murray	T. Peterson		
Signature				
Authorised by	Luis Iemma	Luis Iemma		
Signature				
Project number	UK0030787.3807	UK0030787.3807		
Report number	V1	V2		
File reference	Sharepoint	Sharepoint		

CONTENTS

1 INTRODUCTION 1

1.1 PROJECT BACKGROUND 1
1.2 PURPOSE OF THIS REPORT 1
1.3 LEGISLATION AND POLICY 1
LOCAL PLANNING POLICY 2
1.4 BATS – DISTRIBUTION AND STATUS 3
1.5 PROJECT TEAM 4

2 METHODS 5

2.1 SCOPE 5
ZONE OF INFLUENCE 5
2.2 STUDY AREA 5
2.3 DESK STUDY 6
2.4 CONSULTATION 6
2.5 ASSESSMENT APPROACH 7
IMPORTANT ECOLOGICAL FEATURES 7
MAGNITUDE OF IMPACTS 10
SIGNIFICANCE OF EFFECTS 10
2.6 FIELD SURVEYS 12
OVERVIEW 12
ECOBAT 13
POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE 13
POTENTIAL COLLISION RISK 13
LIMITATIONS 15

3 RESULTS 17

3.1 DESK STUDY 17

3.2 FIELD SURVEYS 17
3.3 IMPORTANT ECOLOGICAL FEATURES 23
4 IMPACT ASSESSMENT AND MITIGATION 24
4.1 DO-NOTHING EFFECT 24
4.2 POTENTIAL EFFECTS 24
CONSTRUCTION 24
OPERATION 26
4.3 MITIGATION 28
CONSTRUCTION 28
OPERATION 29
4.4 DECOMMISSIONING 30
4.5 CUMULATIVE 30
4.6 RESIDUAL IMPACTS 32
5 APPENDIX 1 – DETAILED METHODS 34
5.1 FIELD SURVEYS 34
SITE FORAGING, COMMUTING AND ROOSTING SUITABILITY 34
BAT ACTIVITY 35
AUTOMATED DETECTOR ANALYSIS 37
GROUND LEVEL TREE ASSESSMENT 38
AERIAL/CLOSE INSPECTION 38
PRA 38
DUSK EMERGENCE 39
6 APPENDIX 2 – DETAILED RESULTS 41
6.1 DESK STUDY 41
6.2 BAT ACTIVITY 42
AUTOMATED STATIC DETECTOR SURVEY 42
PRA 45
GLTA 47

DUSK EMERGENCE 47
AERIAL/CLOSE INSPECTION 47
ROOST DETAILS 48
6.3 **POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE** **51**
7 **APPENDIX 3 – FIGURES** **54**
FIGURE 1: BAT SURVEY AREA **55**
FIGURE 2: BAT STATIC DETECTOR LOCATIONS IN SURVEY AREA **56**
FIGURE 3: PASSES BY EACH BAT SPECIES AT EACH STATIC DETECTOR **57**
FIGURE 4: BAT TREE SURVEY RESULTS **58**
FIGURE 5: DUSK EMERGENCE BAT SURVEY **59**

TABLES

Table 2-1 - Variable Definitions for Buffer Zone Formula 5

Table 2-2 – Ecological Valuation Scaling 7

Table 2-3 – Bat Survey Methods – Summary 12

Table 2-4 – Level of Potential Vulnerability of Population of British Bat Species Adapted to Species Present in Ireland 14

Table 2-5 – Stage 1 – Initial Site Risk Assessment 15

Table 2-6 – Stage 2 – Overall Risk Assessment 15

Table 3-1 – Summary of Calls Recorded Within S-SET for Each Turbine Location 19

Table 3-2 – Leisler's Bat Median and Highest Activity Risk Score 21

Table 3-3 – Nathusius' Pipistrelle Median and Highest Activity Risk Score 22

Table 4-1 – Assessment of Potential Effects on Bats During Construction 24

Table 4-2 – Assessment of Potential Effects on Bats During Operation 26

Table 4-3 – Mitigation of Potential Effects on Bat During Construction 28

Table 4-4 – Mitigation of Potential Effects on Bat During Operation 29

Table 4-5 – Potential Cumulative Effects from Surrounding Wind Farm Developments and Proposed Developments 31

Table 5-1 – Commuting and Foraging Habitat Suitability Criteria 34

Table 5-2 – Automated Detector Settings 35

Table 5-3 – Deployment periods for detectors 37

Table 5-4 - Kaleidoscope Pro 5.7.0 Auto Identification Parameters 37

Table 5-5 – GLTA Assessment Criteria 38

Table 5-6 – Tree PRF Categorisation 38

Table 6-1 – Desk Study Results 41

Table 6-2 – Total bat passes per species 42

Table 6-3 – EcoBat Results for all Static Detectors for *Myotis sp.*, *Nyctalus leisleri*, *Pipistrelle sp.*, and *Nathusius's pipistrelle* 43

Table 6-4 – EcoBat Results for all Static Detectors for *Pipistrellus pipistrellus*, *Pipistrellus pygmaeus*, and *Plecotus auritus* 44

Table 6-5 – Details of the buildings present within the PRA and GLTA Survey Area 45

Table 6-6 – Details of Aerial/Close Inspection Survey 47

Table 6-7 – Roost locations identified within the PRA and GLTA Survey Area 49

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. WSP Ltd has prepared this bat assessment report on behalf of Manogate Ltd (the Applicant) who intend to apply to An Coimisiún Pleanála for planning permission to construct the proposed Ballyfasy Wind Farm project in County Kilkenny. An Environmental Impact Assessment Report (EIAR) Biodiversity Chapter (Chapter 6) has been prepared which covers other nature conservation interests including sites, habitats, and species (other than bats).

1.1.2. Full details of the proposed wind farm and of the proposed grid connection option (GCO) and proposed turbine delivery route (TDR) are provided in Chapter 1 (Introduction) and Chapter 2 (Description of the proposed wind farm) of the EIAR. In summary, the proposed wind farm will consist of ten turbines, new and modified site entrances and access routes, two temporary construction compounds, five clear span bridges, meteorological mast, two borrow pits, drainage and sediment control systems, onsite 110 kilovolt (kV) electrical substation, and associated works including ancillary forestry felling and landscaping.

1.1.3. The proposed wind farm site is located in the southern portion of County Kilkenny between the villages of Listerlin to the northeast, Mullinavat to the west, Glenmore to the southeast, and Slieverue to the south. The proposed wind farm site is spread across the townlands of Ballywairy, Bishopsmountain, Knockbrack, Ballymartin, and Ballyfasy Upper, Co. Kilkenny. Lands surrounding the site boundary comprise areas of forestry as well as agricultural lands. The location and extent of the proposed wind farm is presented as in the EIAR (**Figure 1-1, Chapter 1 of EIAR**).

1.2 PURPOSE OF THIS REPORT

1.2.1. This report aims to:

- set out the baseline data collection and assessment methods used;
- describe the baseline conditions in relation to bats;
- assess the potential for significant effects on bats and bat populations as a result of the proposed wind farm;
- identify the embedded mitigation measures and site-specific mitigation and compensation measures needed to comply with legislation and address potentially significant effects on bats and how these will/could be delivered;
- assess the significance of residual effects;
- identify any enhancement measures relevant to the proposed wind farm and how these will/could be delivered; and
- set out requirements for post-construction monitoring.

1.3 LEGISLATION AND POLICY

1.3.1. The following legislation is relevant to this report:

- the Habitats Directive 92/43/EEC;
- European Communities (Birds and Natural Habitats) Regulations 2011 – 2021 (S.I. No. 293 of 2021);
- the EIA Directive 2011/92/EU, as amended by Directive 2014/52/EU; and

- Wildlife Acts 1976 to 2023 (as amended), herein referred to as the Wildlife Act.

1.3.2. Under the Wildlife Act it is an offence to intentionally disturb, injure or kill and bat or disturb its resting place. Any work on a roost must be undertaken in line with advice of the National Parks and Wildlife Service.

1.3.3. In addition to domestic legislation, the lesser horseshoe bat *Rhinolophus hipposideros* is also protected through its inclusion in Annex II of the EU Habitats Directive (92/43/EEC) (as transposed by the Birds and Natural Habitats Regulations). As such, Special Areas of Conservation (SACs) have been designated to provide further protection of important areas for lesser horseshoe bats. All other species of bats are listed in Annex IV of the same Directive, and the EU requires that they are strictly protected and their 'favourable conservation status' must be maintained. For all bats it is an offence to disturb, injure or kill bats or disturb or destroy their roosts.

1.3.4. The relevant legislation is provided in more detail in the EIAR **Appendix 6-1**.

LOCAL PLANNING POLICY

1.3.5. Detailed information regarding policy, planning and the development context is provided in the EIAR **Chapter 4**. Details relating to this report have been drawn out below.

1.3.6. The relevant local planning policies have been extracted from the Kilkenny City and County Development Plan 2021 - 2027 (Volume 1 County, Chapter 9: Heritage, Culture and the Arts)[1]. These policies are concerned with the protection and/or enhancement the ecology of County Kilkenny. In broad terms these objectives and policies aim to ensure correct measures are put in place to identify and protect natural heritage and important environmental features within Kilkenny County.

1.3.7. Section 9.2.1.5 (page 127) of the Kilkenny City and County Development Plan 2021 -2027: "*The Planning Authority will consult with the National Parks and Wildlife Service… and (b) take account of any licensing requirements, when undertaking, or approving development which is likely to affect plant, animal or bird species protected by national or European legislation*."

1.3.8. "*The Council will also protect and, where possible, enhance the plant and animal species and their habitats that have been identified under European legislation (Habitats and Birds Directive) and protected under national Legislation (European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011), Wildlife Acts 1976-2010 and the Flora Protection Order (SI94 of 1999)*."

1.3.9. "…*Development management requirements: Ensure that an ecological impact assessment is carried out, by suitably qualified professional(s), for any proposed wind farm likely to have a significant impact on rare and threatened species including those species protected by law and their habitats [which includes bats]. Ensure appropriate avoidance and mitigation measures are incorporated into development proposals as part of any ecological impact assessment*…"

[1] Available online at: https://www.kilkennycoco.ie/eng/services/planning/development-plans/city-and-county-development-plan/vol1-master-ccdp-2-11-2021.pdf

1.3.10. "…*Development Management Requirements: To protect and where possible enhance wildlife habitats and landscape features which act as ecological corridors/networks and stepping stones, such as river corridors, hedgerows and road verges, and to minimise the loss of habitats and features of the wider countryside (such as ponds, wetlands, trees) which are not within designated sites. To ensure that appropriate mitigation and/or compensation measures to conserve biodiversity, landscape character and green infrastructure networks are required in developments where habitats are at risk or lost as part of a development…*"

1.4 BATS – DISTRIBUTION AND STATUS

1.4.1. Nine species of bats have been confirmed to reside in Ireland[2]. These are:

- 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*); and
- Lesser horseshoe bat (*Rhinolophus hipposideros*).

1.4.2. On the Red List for Ireland[3], all bat species found within the country are considered to be of least concern[4]. With the exception of the lesser horseshoe bat, which is typically restricted to the west coast of Ireland, whiskered bat which although widespread has a localised distribution, and Nathusius' pipistrelle which is restricted to only having known breeding roosts in Northern Ireland[5] however, most bat species are widely distributed across the Republic, with a slight bias in numbers toward the south where temperatures are milder. Populations of some bats are considered to be stable/increasing (Daubenton's bat, Leisler's bat, brown long-eared bat, lesser horseshoe bat, common pipistrelle and soprano pipistrelle), while some species populations are considered unknown with unknown trends related to insufficient data (whiskered bat, Natterer's bat and, Nathusius' pipistrelle).

1.4.3. Within County Kilkenny, eight of the nine bat species of Ireland have been recorded, with only Lesser horseshoe bat being considered absent from the county[6].

[2] Bat Conservation Ireland (undated). Species data. Available online at: https://www.batconservationireland.org/irish-bats/species (accessed September 2025).
[3] F. Marnell, D. Looney, C. Lawton (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and Gaeltacht, Dublin, Ireland.
[4] Leisler's bat status improved within the country to least concern and are considered widespread.
[5] N. Roche, S. Langton (2024) Population Estimates, Trends and Background Information for Six Irish Bat Species. Article 17 Reporting 2018-2023: Supporting Document.
[6] T. Aughney, N. Roche (2020) BATLAS 2020 – County Kilkenny

1.5 PROJECT TEAM

1.5.1. This report was prepared by Declan Corral, BSc Applied Bioscience and Zoology, who has over six years' experience in ecological consultancy, voluntary work, and research in relation to bats. Declan's role in the project draws on his expertise in bat ecology, survey design, data management, and interpretation. He has considerable experience advising on impact assessment and mitigation for renewable energy projects, including wind farm developments across the UK and Ireland. The chapter was reviewed by Dr. Luis Gustavo Iemma, a Chartered Ecologist (CEcol) with extensive experience in ecology and environmental science. Luis holds a BSc, MSc, and PhD in Ecology and is a full member and Chartered Ecologist with Chartered Institute of Ecology and Environmental Management (CIEEM). His expertise spans environmental regulations, ecological assessment methodologies, and protected species surveys—including bats, otters, badgers, birds, amphibians, and hedgehogs.

2 METHODS

2.1 SCOPE

ZONE OF INFLUENCE

2.1.1. CIEEM Guidelines for Ecological Impact Assessment (2018)[7] state that the 'zone of influence' (ZoI) for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed wind farm and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. The ZoI will vary for different ecological features depending on their sensitivity to an environmental change. It may therefore be appropriate to identify different zones of influence for different features. The features affected could include habitats, species, and ecosystems and the processes on which they depend.

2.1.2. The ZoI of the proposed wind farm in relation to bats was identified by means of a desktop appraisal and review of existing ecological reports made available. It was then used to scope field surveys (see **Paragraph 2.2.2**). The ZoI was calculated using the equation provided in the NatureScot guidance[16] for bats and onshore wind farms (see variable definitions in **Table 2-1**):

$$b = \sqrt{(50 + bl)^2 - (hh - fh)^2}$$

Table 2-1 - Variable Definitions for Buffer Zone Formula

Variable	Definition	Value
bl	Blade length	180m
hh	Hub height	105.5m
fh	Feature height	30m
b	Buffer distance	217.26m

2.1.3. The ZoI was then extended to 250m on a precautionary basis considering the ecological features of importance identified within the proposed wind farm site and within the surrounding in light of the potential impacts of various activities associated with construction, operation and decommissioning of the proposed wind farm as well as the potential for in-combination effects.

2.2 STUDY AREA

2.2.1. A desk study was undertaken to collate publicly available information on the ecological baseline of the proposed landholding and surrounding area up to a distance of 4km (the 'desk study area'). This

[7] CIEEM (2018) Guidelines for Ecological impact Assessment in the UK and Ireland Terrestrial, Freshwater, Coastal and Marine. Version 1.3. https://cieem.net/wp-content/uploads/2018/08/EcIA-Guidelines-v1.3-Sept-2024.pdf.

distance is based on the core sustenance zones (CSZ)[8] for the bat species known to occur in Ireland (see **Section 1.4**) and refers to the area around a key roost site within which habitat availability and quality will have a significant influence on the conservation status of the colony using the roost.

2.2.2. Field surveys were conducted within the 250m ZoI surrounding the turbine locations (as defined in **Section 2.1**) and 30m[17] surrounding all other associated infrastructure of the project (hereafter "Preliminary Roost Assessment (PRA) and Ground Level Tree Assessment (GLTA) Survey Area") as shown in **Appendix 3: Figure 1**.

2.3 DESK STUDY

2.3.1. The following sources were reviewed as part of the desk study:

- National Biodiversity Database Centre (NBDC)[9] to identify the presence, or otherwise, of bat records occurring within the desk study area;
- a review of the online Bat Conservation Ireland (BCI) 'Batlas'[10] to identify the presence, or otherwise, of bat records occurring within the desk study area;
- National Parks and Wildlife Service (NPWS) online database[11] to identify the presence, or otherwise, of protected nature conservation areas specifically designated for bats (i.e. SACs, Natural Heritage Areas [NHAs] etc.) that have been designated for their role in supporting/sustaining populations of bat species;
- a review of Site-specific Conservation Objectives (SSCO) mapping[12], published by the NPWS, for SACs; and
- Bat Landscape Project GIS mapping[13] was reviewed to identify the landscape suitability for bats species in the desk study area.

2.4 CONSULTATION

2.4.1. Various state agencies and environmental Non-Governmental Organisations (NGOs) were contacted as part of the consultation for the proposed wind farm in 2023, 2024 and 2025 as set out in **EIAR Chapter 1**. Two were relevant to this report and these were:

- BCI; and

[8] BCT (2020) Core Sustenance Zones and habitat of importance for designing Biodiversity Net Gain for bats. Bat Conservation Trust, London. https://cdn.bats.org.uk/uploads/images/Bat-Species-Core-Sustenance-Zones-and-Habitats-for-Biodiversity-Net-Gain.pdf?v=1596873761.
[9] Available online at: https://maps.biodiversityireland.ie/Map
[10] Available online at: https://www.batconservationireland.org/what-we-do/monitoring-distribution-projects/batlas
[11] Available online at: https://www.npws.ie/maps-and-data/habitat-and-species-data
[12] Available online at: https://www.npws.ie/maps-and-data/designated-site-data/ssco-data
[13] The bat landscape project was a collaboration between Bat Conservation Ireland, the Centre for Irish Bat Research and the Northern Ireland Environment Agency (NIEA) that sought to examine the relative importance of landscape and habitat associations for bat species across Ireland from key species databases. The GIS map enables the user to view a habitat suitability index hosted by the NDBC, available online at: https://maps.biodiversityireland.ie/Map. Accessed 01.08.2025.

- Development Applications Unit of the NPWS.

2.4.2. No response was received from BCI, and the NPWS did not have any relevant ecological concerns.

2.5 ASSESSMENT APPROACH

2.5.1. The significance of potential effects has been evaluated using a systematic approach, based upon identification of the importance/value of receptors and their sensitivity to the proposed wind farm activity, together with the predicted magnitude of the impact.

IMPORTANT ECOLOGICAL FEATURES

2.5.2. For each effect, the assessment identifies ecological features sensitive to that effect and implements a systematic approach to understanding the impact pathways and the level of impacts on given receptors. To establish the value of important ecological features, regard was made to the ecological valuation examples set out in the NRA guidelines (NRA, 2009)[14], using an importance scale ranging from international, national, county, local importance (high value), and local importance (low value) as detailed below in **Table 2-2**:

Table 2-2 – Ecological Valuation Scaling

Survey Type	Survey Summary

International Importance	• 'European Site' including:
	  ○ Special Area of Conservation (SAC)
	  ○ Site of Community Importance (SCI)
	  ○ Special Protection Area (SPA)
	  ○ Proposed Special Area of Conservation
	  ○ Proposed Special Protection Area (pSPA)
	• Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive)
	• Features essential to maintaining the coherence of the Natura 2000 Network
	• Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive
	• Resident or regularly occurring populations (assessed to be important at the national level) of the following:
	  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive
	  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive

[14] NRA (2009) Guidelines for Assessment of Ecological Impacts of National Road Schemes, National Roads Authority (NRA), https://www.tii.ie/media/kzldoawo/guidelines-for-assessment-of-ecological-impacts-of-national-road-schemes.pdf.

Survey Type	Survey Summary

	• Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat, 1971)
	• World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972)
	• Biosphere Reserve (UNESCO Man & The Biosphere Programme)
	• Site hosting significant species populations under:
	  ○ The Bonn Convention (Convention on Migratory Species of Wild Animals, 1979)
	  ○ The Bern Convention (Convention on European Wildlife and Natural Habitats, 1979)
	• Biogenetic Reserve under Council of Europe
	• European Diploma Site under Council of Europe
	• Salmonid water designated pursuant to European Communities Quality Salmonid Waters Regulations, 1988

National Importance	• Site designated or proposed as a Natural Heritage Area (NHA)
	• Statutory Nature Reserve
	• Refuge for Fauna and Flora protected under the Wildlife Acts
	• National Park
	• Undesignated site fulfilling the criteria for designation as:
	  ○ Natural Heritage Area (NHA)
	  ○ Statutory Nature Reserve
	  ○ Refuge for Fauna and Flora protected under the Wildlife Act
	  ○ National Park
	• Resident or regularly occurring populations (assessed to be important at the national level) of the following:
	  ○ Species protected under the Wildlife Acts
	  ○ Species listed on the relevant Red Data list
	• Site containing ‘viable areas’ of the habitat types listed in Annex I of the Habitats Directive

County Importance	• Area of Special Amenity
	• Area subject to a Tree Preservation Order
	• Area of High Amenity, or equivalent, designated under the County Development Plan
	• Resident or regularly occurring populations (assessed to be important at the County level) of the following:
	  ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive
	  ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive

Survey Type	Survey Summary
	○ Species protected under the Wildlife Acts ○ Species listed on the relevant Red Data list • Site containing areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance • 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 (BAP), 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 Local Biodiversity Action Plan (BAP), if this has been prepared • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: ○ Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive ○ Species of animal and plants listed in Annex II and/or IV of the Habitats Directive ○ Species protected under the Wildlife Acts ○ Species listed on the relevant Red Data list • 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
Local Importance (lower value)	• Sites containing small areas of semi-natural habitat that are of some local importance for wildlife • Sites or features containing non-native species that are of some importance in maintaining habitat links

2.5.3. Those ecological features identified as being of high local importance or greater, are carried forward in the ecological evaluation as Important Ecological Features (IEFs) when considering the potential for significant effects, as outlined in the NRA (2009)[14].

2.5.4. The ecological receptors tolerance, recoverability and population vulnerability was also considered when establishing the sensitivity. As this report is focused on bats and the proposed wind farm this was considered utilising the UK Bat Mitigation Guidelines (Reason, 2023)[22] taking into account the

highest element of importance for each bat species present (species, roost type, supporting features).

MAGNITUDE OF IMPACTS

2.5.5. The impact assessment process (CIEEM, 2018)[7] involves the following steps:

- identifying and characterising potential impacts;
- incorporating measures to avoid and mitigate (reduce) these impacts;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects (if required); and
- identifying opportunities for ecological enhancement.

2.5.6. When describing impacts, reference has been made to the following characteristics[7], as appropriate:

- positive or negative;
- extent;
- magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

2.5.7. Duration is defined as followed regarding impacts[15]:

- momentary effects (lasting seconds to minutes);
- brief effects (lasting less than a day);
- temporary effects (lasting less than a year);
- short-term effects (lasting one to seven years);
- medium-term effects (lasting seven to fifteen years);
- long-term effects (lasting fifteen to sixty years); and
- permanent effects (lasting over sixty years).

SIGNIFICANCE OF EFFECTS

2.5.8. In determining the significance of effects, reference was made primarily to CIEEM (2018)[7] guidelines and Environmental Protection Agency (EPA) EIAR guidelines (2022)[15]. These documents set out best practice for assessing ecological impacts in Ireland and the UK, requiring that significance is evaluated based on effects on ecological integrity or conservation status, regardless of the geographical level at which these would be relevant. CIEEM guidance provides a structured approach to identifying Important Ecological Features and determining significance through professional judgment, while EPA guidance ensures compliance with statutory requirements for Environmental Impact Assessment Reports. The NRA (2009)[14] guidance has been used only for

[15] EPA (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency (EPA), ISBN 978-1-80009-005-7, https://www.epa.ie/publications/monitoring--assessment/assessment/EIAR_Guidelines_2022_Web.pdf.

ecological valuation examples, as directed by project requirements, to provide additional context for assigning value to habitats and species. Together, these guidelines ensure that the assessment is robust, transparent, and consistent with both professional standards and regulatory expectations.

Integrity

2.5.9. The term integrity should be regarded as the "*coherence of ecological structure and function, across the entirety of a site, that enables it to sustain all of the ecological resources for which it has been valued"* and "*impacts resulting in adverse changes to those ecological structures and functions would be considered to be significant"* (NRA, 2009)[14].

Conservation Status

2.5.10. The definitions for conservation status given in the EU Habitats Directive 92/43/EEC, in relation to habitats and species, are also used in the CIEEM (2018)[7] and NRA (2009)[14] guidance:

- for natural habitats, conservation status means the sum of the influences acting on the natural habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species, at the appropriate geographical scale; and
- for species, conservation status means the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations, at the appropriate geographical scale.

2.5.11. An impact on the conservation status of a habitat or species is considered to be significant if it will result in a change in conservation status.

2.5.12. In summary, according to the NRA (2009)[14] and CIEEM guidelines (2018)[7], if it is determined that the integrity and/or conservation status of an ecological feature will be impacted on, then the level of significance of that impact is related to the geographical scale at which the impact will occur (i.e., local, county, national, international).

2.5.13. In some cases, an impact may not be significant at the geographic scale at which the ecological feature has been valued but may be significant at a lower geographical level. For example, a particular impact may not be considered likely to have a negative effect on the overall conservation status of a species which is considered to be internationally important. However, an impact may occur at a local level on this internationally important species. In this case, the impact on an internationally important species is considered to be significant at only a local, rather than international level.

2.6 FIELD SURVEYS

OVERVIEW

2.6.1. Detailed bat field survey methods are provided in **Section 5.1** and the techniques are summarised in **Table 2-3**.

Table 2-3 – Bat Survey Methods – Summary

Survey Type	Survey Summary	Survey Area and Survey Dates	Guidelines Followed
Habitat Suitability Assessment	Daytime walkover identifying potential suitability of features on site for foraging and commuting.	Proposed wind farm area. July 16 and 17 2025	NatureScot (2021)[16] Collins, 2023[17]
Potential Roost Assessment (PRA)	Detailed search of buildings/structures for features (gaps in mortar, slipped tiles) which may be suitable for bat roosting. Buildings/structures categorised according to their potential to support roosts, the conservation value of roost resource and the need for further survey.	250m buffer surrounding the turbine locations and 30m surrounding all other associated infrastructure of the proposed wind farm (hereafter "PRA and GLTA Survey Area") as shown in **Appendix 3: Figure 1.** July 16 and 17 2025	Collins, 2023[17]
Ground Level Tree Assessment (GLTA)	Detailed assessment of tree features from the ground for Potential Roost Features (PRF i.e. splits, cracks, woodpecker holes etc) which may be suitable for bat roosting. Trees categorised according to their potential to support roosts, the conservation value of roost resource and the need for further survey.		
Dusk Emergence Surveys	Determined by the results of the PRA. Surveyors and Night Vision Aids (NVA) deployed at two buildings to determine presence/likely absence of roosting bats. Limitations for this survey are detailed in **Paragraph 152.6.9**.	Building 1 (B1) and Building 2 (B2) as shown in **Appendix 3: Figure 1** September 11 2025	Collins, 2023[17]

[16] Available online at: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation

[17] Collins. J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition). The Bat Conservation Trust London.

Survey Type	Survey Summary	Survey Area and Survey Dates	Guidelines Followed
Aerial/Close Inspection Surveys	Determined by the results of GLTA. Two trees subject to climb and inspect surveys.	Sixteen trees identified during the GLTA as shown in **Appendix 3: Figure 4.** July 16 and 17 and September 9 2025.	Collins, 2023[17]
Automated Detector Surveys – Spring	Ten detectors deployed at ground level at proposed turbine locations for minimum of 14 nights per season.	May 6 to 15 2025	NatureScot (2021)[16] hereafter the "NatureScot, 2021 guidance"
Automated Detector Surveys – Summer		July 1 to 11 2025	
Automated Detector Surveys – Autumn		August 19 to 29 2025	

ECOBAT

2.6.2. The data gathered was processed using the online tool 'EcoBat' which is hosted and developed by the Mammal Society[18]. The data input reveals a percentile score and categorised level of bat activity, and the results can be interpreted at the local scale and site scale. Activity level is split into six categories on EcoBat which are 'Low', Low/mod', 'Mod', 'Mod/high', 'High' and 'Exceptional'.

2.6.3. The data set range used for the percentile analysis reference was selected to records within region which for this Site is "Republic of Ireland". The surrounding habitats of each turbine were described using the Fossitt (2002)[19] classifications.

POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE

2.6.4. To identify potential roosts within the proposed wind farm site, call data and peaks in bat activity was compared to the standard roost emergence times (Russ, 2012)[20]. The location of detectors was then compared with aerial maps, the PRA and the GLTA to identify potentially suitable roosting habitat such as mature trees/woodlands and buildings within or close to the proposed wind farm. The closer to the expected roost emergence time a given bat pass was recorded, the closer to a roost the detector is assumed to be.

POTENTIAL COLLISION RISK

2.6.5. A collision risk assessment for bats has been carried out within this report using the data from the recording period adapting the steps outlined in the NatureScot 2021 guidance. Estimating the vulnerability of bat populations to wind farms is based on the following factors:

[18] Lintott, P.R., Richardson, S.M., Hosken, D.J., Fensome, S.A. & Mathews, F. (2016) Ecological impact assessments fail to reduce risk of bat casualties at windfarms Current Biology 26, R1119–R1136
[19] J. Fossitt (2000) A Guide to Habitats in Ireland. Heritage Council.
[20] J. Russ (2012) British Bat Calls. A Guide to Species Identification. Pelagic Publishing. Exeter.

- relative abundance and collision risk of bat species;
- the project size and habitat suitability within the Site; and
- bat activity levels recorded at the Site.

2.6.6. **Table 2-4** (NatureScot, 2021, adapted from Wray *et al*., 2010)[16] below shows the potential vulnerability of bat populations in Scotland based on the collision risk (inferred by a number of factors including habitat preference, flight speed, foraging techniques, and echolocation characteristics) and relative abundance. Species which may be expected to be present within the Site have been highlighted with an asterisk (*).

Table 2-4 – Level of Potential Vulnerability of Population of British Bat Species Adapted to Species Present in Ireland

Relative Abundance	Collision Risk		
	Low	Medium	High
Common species			Soprano pipistrelle* Common pipistrelle*
Rarer species	Brown long-eared bat* Daubenton's bat* Natterer's bat*		
Rarest species	Whiskered bat		Noctule bat Nathusius' pipistrelle

2.6.7. The level of potential vulnerability identified in **Table 2-4** is then considered alongside scheme details and bat activity recorded at the Site. This requires a two-stage process. **Table 2-5** provides an indication of the potential 'Site Risk' based on evaluation of overall Site habitat suitability and the size of the development (Stage 1). An overall assessment of risk can then be made by assessing the results of

2.6.8. **Table 2-6** against the EcoBat median and highest level of activity outlier scores for high collision risk bat species as shown in **Table 2-2.**

Table 2-5 – Stage 1 – Initial Site Risk Assessment

Site Risk Level (1-5)	Project Size Small	Project Size Medium	Project Size Large
Habitat Risk Low	1	2	3
Habitat Risk Moderate	2	3	4
Habitat Risk High	3	4	5

Table 2-6 – Stage 2 – Overall Risk Assessment

Site Risk Level (Table 2-5)	Ecobat Activity: Nil	Ecobat Activity: Low	Ecobat Activity: Low/Mod	Ecobat Activity: Moderate	Ecobat Activity: Mod/High	Ecobat Activity: High/ Exceptional
Lowest (1)	0	1	2	3	4	5
Low (2)	0	2	4	6	6	10
Med (3)	0	3	6	9	12	15
High (4)	0	4	8	12	15	18
Highest (5)	0	5	10	15	20	25

LIMITATIONS

2.6.9. Due to access restrictions, surveyors were only granted permission to undertake aerial/close inspections and dusk emergence surveys in mid-September missing the peak of the active bat season and limiting the number of surveys to one per feature. For aerial/close inspections this is not considered a significant limitation as the trees identified to be lost for the proposed wind farm were all PRF-I (see **Table 5-6** for definition) meaning one inspection is sufficient and pre-construction surveys are proposed. For the dusk emergence survey this limitation is considered significant as it cannot be determined how bats utilise these buildings across the active season and rule out the absence of roosting bats.

2.6.10. Cattle were often present in fields where surveys were to take place. This resulted in the relocation of one of the static detectors between seasons. Bullocks were present at the proposed location for Turbine 8 during both the summer and autumn automated detector surveys. This posed a risk to the safety of surveyors and success of the survey at this location. After surveyors could not safely deploy the detector for the summer deployment, it was relocated to the hedgerow to the west of the turbine location (approximately 102m). Additional measures were taken to ensure the safety of surveys for the autumn deployment. However, to limit livestock access to the detector during the autumn data collection, the detector was relocated to a tree along the south hedgerow,

approximately 74m east of the turbine location. This limitation was not considered significant in regard to the data collected as the detector was moved to similar habitat as the original deployment point and was not at too great a distance from the proposed turbine location.

2.6.11. Some species such as brown long-eared bats emit very faint echolocation and therefore, may not be registered during recording periods if not within 5m of the recording device. However, professional judgement and interpretation of surrounding habitat and suitability for different species groups can be used to determine likely species present within the Site.

2.6.12. If vegetation removal is to be undertaken over 18 months beyond the September 2025 GLTA an update GLTA will be undertaken by a suitably qualified ecologist. This survey will identify the need for further surveys for bats, confirming that previously identified tree features are present as well as identifying new PRFs that may have formed in the interim.

3 RESULTS

3.1 DESK STUDY

3.1.1. There are no records of bat species within 4km of the proposed wind farm within the last 10 years, with historic records of five bat species noted during the desk study. There are no areas designated of importance for bats within 4km of the proposed wind farm.

3.1.2. The Bat Landscape Project demonstrates that the proposed wind farm area is generally considered suitable for all bats species recorded within Ireland with the exception of Nathusius' pipistrelle and lesser horseshoe bat. However, Nathusius' pipistrelle was recorded during surveys (see **Table 3-1**)

3.1.3. Full details of the desk study results are shown in **Section 6.1**.

3.2 FIELD SURVEYS

3.2.1. Detailed field survey results can be found in **Appendix 2.**

HABITAT SUITABILITY

3.2.2. The proposed wind farm area was determined to be of moderate suitability[17] for foraging and commuting bats due to the presence of linear features such as hedgerows and tree lines as well as suitable foraging habitat such as scrub and woodland edge associated with the coniferous plantation.

PRA

3.2.3. Two buildings (B1 and B2) are present within PRA and GLTA Survey Area found at approximately 240m and 220m respectively southeast of Turbine 10. These buildings are stone ruins of a historic farmhouse assessed as having moderate suitability[17] to support bats during the active season and during the hibernation season. Full details of the PRA results are shown in **Section 6.2**.

3.2.4. A single bat dropping was found within a gap in the stonework of an external wall of B2 on 10 September 2025. The location of this roost location is shown in **Appendix 3: Figure 5** with further details relating to the roost in **Section 6.2.**

GLTA

3.2.5. Sixteen trees that contain PRFs were identified during the GLTA within the PRA and GLTA Survey Area. Full results of the GLTA are shown in **Section 6.2**.

3.2.6. If vegetation removal is to be undertaken over 18 months after the September 2025 GLTA it is best practice for the GLTA to be updated by a suitably qualified ecologist. This survey will identify the need for further surveys for bats, confirming that previously identified tree features are present as well as identifying new PRFs that may have formed in the interim.

AERIAL/CLOSE INSPECTION

3.2.7. Sixteen trees were subject to a single aerial/close inspection using torch and endoscope. Three trees were found to contain PRF-M, eleven trees with PRF-I features[17], and the remaining trees were determined as not suitable. Full results of the aerial/close inspection survey are shown in **Appendix 2**.

DUSK EMERGENCE

3.2.8. B1 and B2 had a single dusk emergence survey undertaken on 11 September 2025. No bats were recorded emerging or re-entering the buildings during the survey undertaken. Foraging and commuting activity of soprano pipistrelle, common pipistrelle, Leisler's bat, *Myotis* species and brown long-eared bat were recorded during the dusk emergence survey effort adjacent to the buildings survey. Full details of the dusk emergence survey are shown **Section 6.2**

ECOBAT

3.2.9. Over the whole survey period across all the detectors, the total number of bat passes recorded was 52,100. Six species (or genera in difficult to identify species) were recorded during the study period: Leisler's bat, Nathusius's pipistrelle, common pipistrelle, soprano pipistrelle, brown long-eared bat, *Pipistrellus* species, and *Myotis* species. **Appendix 3: Figure 3** shows the total bat passes per species at each detector location across the Site during the effort as well as the range of activity at each location.

The total number of passes by each species is shown in **Table 3-2**, along with the proportion of the total number of passes each species made up. The Bat Pass per Night (BPpN) of each species at each detector is shown in **Appendix 3: Table 7-3 and Table 7-4** as well as the habitat the detector was situated. The median and maximum activity levels of each species at each detector is described.

POTENTIAL ROOSTS WITHIN OR CLOSE TO THE PROPOSED WIND FARM SITE

3.2.10. Within the PRA and GLTA Survey Area there are two structures (B1 and B2) as well as fifteen trees identified through further survey as suitable for supporting roosting bats (**Section 6.3**). A confirmed roost of an unknown bat species was identified within a cavity in the stonework of B2. Within the ZoI of the proposed wind farm, potential roosting habitat is present in the number of residential and buildings associated with surrounding farms as well as mature trees and woodlands.

3.2.11. To determine the likelihood of potential roosts being present within or close to the proposed wind farm, peaks in bat activity were compared to species specific emergence times (S-SET)[21]. **Plate 6-1 (Appendix 2)** shows the hours and minutes after sunset in which each species was first recorded as well as the number of calls within the S-SET. A summary of these findings for each turbine location with species recorded within/before the S-SET is provided below in **Table 3-1:**

[21] H. Andrews (2022) Bat Roosts in Trees. A Guide to Identification and Assessment for Tree-Care and Ecology Professionals. Pelagic Publishing. Exeter.

Table 3-1 – Summary of Calls Recorded Within S-SET for Each Turbine Location

Turbine No.	Species	No. of Calls within/before S-SET
1	Leisler's bat	22
	Common pipistrelle	3
	Myotis species	2
2	Leisler's bat	11
	Common pipistrelle	24
	Soprano pipistrelle	11
	Myotis species	13
3	Leisler's bat	1
	Soprano pipistrelle	1
	Common pipistrelle	2
	Myotis species	1
	Brown long-eared bat	1
4	Leisler's bat	1
	Soprano pipistrelle	4
	Common pipistrelle	30
	Myotis species	6
	Brown long-eared bat	1
5	Leisler's bat	2
	Soprano pipistrelle	2
	Common pipistrelle	16
	Myotis species	1
	Brown long-eared bat	10
6	Leisler's bat	4
	Common pipistrelle	6
7	Leisler's bat	2
	Common pipistrelle	3

Turbine No.	Species	No. of Calls within/before S-SET
8	Leisler's bat	2
	Soprano pipistrelle	8
	Common pipistrelle	36
	Myotis species	1
	Brown long-eared bat	1
9	Leisler's bat	2
10	Leisler's bat	2
	Soprano pipistrelle	14
	Common pipistrelle	92
	Nathusius' pipistrelle	1
	Myotis species	30
	Brown long-eared bat	2

POTENTIAL COLLISION RISK

3.2.12. The following high collision risk species were recorded during the survey work undertaken:

- Leisler's bat;
- Common pipistrelle;
- Soprano pipistrelle; and
- Nathusius' pipistrelle.

3.2.13. The proposed wind farm area has been evaluated as providing moderate suitability[17] to support foraging and commuting bats as well as potential roosting habitat within the proposed wind farm area and wider ZoI.

3.2.14. The proposed wind farm is for ten turbines with a minimum height of 170m and a maximum height of 180m, falling within the large project size category[16].

3.2.15. Based on evaluation of habitats and the size of the development (Stage 1 of the assessment) the proposed wind farm is considered to have a site risk level of **4** ("**high site risk"**) following **Table 2-5**.

3.2.16. Bat activity levels for high-risk species were recorded (**Table 6-2** with common pipistrelle accounting for the majority of the calls (27,174 calls, 52.2%) followed by Leisler's bat (15,556 calls, 29.9%), soprano pipistrelle (7,282 calls, 14%) and Nathusius' pipistrelle (511 calls, 1%).

Leisler's Bat

3.2.17. Activity of Leisler's bat recorded was categorised by EcoBat per median activity levels as "low" with highest levels of activity recorded within "high". The proposed wind farm as a whole has been assessed per median levels of activity as having a risk score of **4 ("Low")** with highest activity results recorded for Leisler's bat scoring **18 ("High")**.

3.2.18. Turbines; T1, T2, T3, T5, T8, T9 and T10 all recorded median activity levels of "low" with varying highest levels of activity. Turbines; T4, T6 and T7 had median activity levels of "low/moderate" with highest activity levels considered "high". A breakdown of each turbines risk score for Leisler's bat per median and highest activity levels is shown in **Table 3-2** below:

Table 3-2 – Leisler's Bat Median and Highest Activity Risk Score

Turbine	Median Activity Risk Score	Highest Activity Risk Score
T1	4 ("Low")	8 ("Medium")
T2	4 ("Low")	18 ("High")
T3	4 ("Low")	8 ("Medium")
T4	8 ("Medium")	18 ("High")
T5	4 ("Low")	18 ("High")
T6	8 ("Medium")	18 ("High")
T7	8 ("Medium")	18 ("High")
T8	4 ("Low")	8 ("Medium")

Turbine	Median Activity Risk Score	Highest Activity Risk Score
T9	4 (“Low”)	8 (“Medium”)
T10	4 (“Low”)	12 (“Medium”)

Common pipistrelle

3.2.19. Common pipistrelle activity recorded within the proposed wind farm was categorised by EcoBat per median levels of activity as “low” with a maximum level of activity at “moderate”. This was consistent across all of the detector locations across the proposed wind farm. For common pipistrelle the proposed wind farm has been evaluated per median levels of activity for this species as having a risk score of **4 (“Low”).** Based on the highest activity results recorded for this species during the survey effort scores **12 (“Medium”).**

Soprano pipistrelle

3.2.20. Soprano pipistrelle activity for the proposed wind farm as a whole was categorised as “low” for median activity levels and “moderate” for highest activity levels per EcoBat. All locations returned with a median activity level of “low” with all detectors with the exception of T6 (which returned a highest activity level of “moderate”) were categorised as “low/ moderate” for highest activity levels. For soprano pipistrelles the proposed wind farm has been evaluated per median levels of activity for this species as having a risk score of **4 (“Low”).** Based on the highest activity results recorded for this species during the survey effort scores **8 (“Medium”)** with the exception of T6 which scores **12 (“Medium”).**

Nathusius’ pipistrelle

3.2.21. Nathusius’ pipistrelle activity recorded within the proposed wind farm was categorised by EcoBat per median levels of activity as “low/moderate” with a maximum level of activity of “high”. Activity levels for this species varied across the turbine locations a breakdown of each of the locations scores per median and highest activity levels is shown below in **Table 3-3:**

Table 3-3 – Nathusius’ Pipistrelle Median and Highest Activity Risk Score

Turbine	Median Activity Risk Score	Highest Activity Risk Score
T1	4 (“Low”)	12 (“Medium”)
T2	8 (“Medium”)	8 (“Medium”)
T3	8 (“Medium”)	12 (“Medium”)
T4	15 (“High”)	18 (“High”)
T5	8 (“Medium”)	12 (“Medium”)
T6	8 (“Medium”)	18 (“High”)
T7	8 (“Medium”)	12 (“Medium”)

Turbine	Median Activity Risk Score	Highest Activity Risk Score
T8	4 (“Low”)	4 (“Low”)
T9	4 (“Low”)	8 (“Medium”)
T10	8 (“Medium”)	12 (“Medium”)

3.3 IMPORTANT ECOLOGICAL FEATURES

3.3.1. Bat species are all legally protected under the Habitats Directive as detailed in **Section 1.3**. All bat species found in Ireland are categorised of least concern however there is a lack of knowledge of a number of species population size and trends (see **Section 1.4**). Bat surveys on the proposed wind farm site have identified at least six species of bats including Leisler’s, common pipistrelle, soprano pipistrelle, Nathusius’ pipistrelle, brown long-eared bats, and *Myotis* bats.

3.3.2. A single confirmed roost of an unknown bat species was identified during the surveys undertaken within B2. The discovery of a single dropping suggests that the roost is likely used by a low number or individual bats. No further roosts were identified during the surveys undertaken across the Site. Suitable roosting sites were identified during the PRA and GLTA with potential to support maternity roosts of bats or hibernating bats during the winter months. Further suitable roosting sites are likely present within the wider ZoI including farm buildings and further woodland blocks to support roosts of conservation significance for moderate to large numbers of bats as indicated by the bat activity recorded on Site (**Section 2.6**).

3.3.3. Both trees and structures were recorded within the PRA and GLTA suitable to support maternity colonies of species recorded on Site, due to limitations encountered (see **Section 2.6**) during the dusk emergence survey and aerial/close inspections these cannot be ruled out.

3.3.4. As per the UK Bat Mitigation Guidelines (Reason, 2023[22]), the overall importance of an IEF should reflect the highest element of importance within the feature, whether species, roost type, or supporting habitat. This approach complements the CIEEM (2018)[7] EcIA Guidelines and EPA EIAR Guidelines (2022) referenced in the methods section, ensuring consistency across the assessment. These guidelines collectively provide a framework for determining ecological value and significance based on professional judgment and statutory requirements. Given the limitations noted above, and considering bat activity levels and species recorded, the bat assemblage is assessed as being of County importance. This conclusion is notably influenced by the high activity levels of Leisler’s bat and the presence of Nathusius’ pipistrelle, which, although recorded within County Kilkenny, has not been confirmed as roosting locally and is considered rare.

[22] P. F. Reason., S. Wray. (2023) UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

4 IMPACT ASSESSMENT AND MITIGATION

4.1 DO-NOTHING EFFECT

4.1.1. If the proposed wind farm were not to proceed, the majority of the lands within the site would continue to be managed as commercial forestry and grazing land. Timber harvesting and replanting of the conifer plantation forestry would also continue. Scrub and grassland may have succeeded if felled woodland were not replanted, or if grazing were to cease on adjacent agricultural fields; and tree lines and hedgerows would be anticipated to remain, provided dead/storm damaged trees were allowed to regrow; and land use would not be anticipated to alter significantly.

4.1.2. In the absence of the proposed wind farm it is anticipated that the bat activity recorded during the survey effort would remain the same and bats would continue to utilise this area for foraging and commuting.

4.2 POTENTIAL EFFECTS

4.2.1. In accordance with best practice wind farm guidance[16] wind farms can affect bats in the following ways:

- collision mortality, barotrauma and other injuries;
- loss or damage (including effects of lighting) to commuting and foraging habitat;
- loss of, or damage to, roosts; and
- displacement of individuals or populations (due to wind farm construction or because bats avoid the wind farm area).

CONSTRUCTION

4.2.2. Considering each of the potential risks posed to bats by wind farms and the understanding of how bats utilise the proposed wind farm and survey areas, a prediction of the potential effects during the construction phase of the proposed wind farm have been assessed below in **Table 4-1:**

Table 4-1 – Assessment of Potential Effects on Bats During Construction

Description of Effect	**Loss or damage to commuting and foraging habitat** Construction of the proposed wind farm will result in both temporary and permanent habitat loss of habitats of value for foraging and commuting bats. Vegetation clearance, which will include tree felling, is required to facilitate the proposed wind farm. This includes woodlands, lines of tree, hedgerow, and wet grassland. Survey results show these habitats are being utilised by bat species local to the proposed wind farm for foraging and commuting. Bat buffers will be required (as per **Section 2.6**) around turbine locations. These will result in additional felling which will result in further hedgerow and tree line removal which bats may utilise for foraging and commuting. These bat buffers will also lead to felling in areas of commercial forestry which if used by bats are limited to the woodland edge as opposed to the interior of these woodland blocks due to them being dense and un-thinned preventing bats from accessing the interior. Conversely, due to keyholing required to accommodate Turbine 1, 2, 3, and 4, there will be an increase woodland edge which can be used by commuting and foraging bats.

	Loss of, or damage to, roosts Tree felling required to facilitate the proposed wind farm and bat buffer around turbines will result in a loss of suitable roosting habitat with six PRF-I containing trees to be lost and trees with potential in the future to develop roosting features also to be felled. Although no roosts have been identified within the six PRF-I trees to be lost, bats are transient in nature and utilise a number of roosting sites across the year[21, 23]. The roost identified in B2 will not be directly impacted by the proposed wind farm and is considered to be used by individual bats as opposed to a larger colony of bats such as a maternity roost. Therefore, this roost is not considered further in this section. **Displacement of individuals or populations (due to construction)** Activities associated with construction have the potential to disturb/dissuade bats from foraging within surrounding habitats to be retained works undertaken at night and/or around dusk and dawn when bats are active. This displacement could occur via general work activities increasing the noise level from the baseline and if artificial light used during construction is allowed to overspill onto habitats to be retained surrounding the proposed wind farm such as woodland edge, treelines and hedgerows.
Assessment of Significance Prior to Mitigation	**Loss or damage to commuting and foraging habitat** The permanent loss of commuting and foraging habitat will have long-term negative significant effects on the local bat population with a loss in habitats of value for foraging and commuting bats including scrub, treelines and hedgerows. However, given that suitable foraging and commuting habitats will be gained in areas of keyholing, retained throughout works where possible, and are present within the ZoI, these negative impacts are not considered significant beyond local level. **Loss of, or damage to, roosts** In the absence of mitigation/pre-fell inspections of these trees, there is the potential for loss or damage of PRF-I's that may or may not be in use. This negative effect is considered long-term and will impact individual bats based on features being classed as PRF-I. It is not considered significant to the local bat population as no roosts or suitable features were identified as supportive of a significant (maternity colony) population at county level. **Displacement of individuals or populations (due to construction)** The construction works have the potential to negatively impact local bat populations short-term which utilise the habitats within, and immediately adjacent to, the proposed wind farm area for foraging and commuting. Notably species such as brown long-eared bat and Myotis species which are negatively impacted by artificial lighting and noise[22,23]. The loss of scrub and species diverse woodland edge habitat during the construction will result in reduced clutter habitat types preferred by gleaning bat

[23] C. C. Voigt, C. Azam, J. Dekker, J. Ferguson, M. Fritze, S. Gazaryan, F. Holker, G. Jones, N. Leader, D. Lewanzik, H. J. G. A. Limpens, F. Mathwes, J. Rydell, H. Schofield, K. Spoelstra, M. Zagmajster (2020) Guidelines for consideration of bats in lighting projects. EUROBATS Publication Series No. 8.

	species such as brown long-eared bat and Natterer's bat in favour of open habitat specialist including pipistrelle species and Leisler's bat both of which are of high collision risk with turbines. In the absence of mitigation this would result in a medium-term (assuming natural regrowth occurs) negative impact at local level[7, 14] in the bat species assemblage. However, this impact is considered to not be significant due to the presence of further clutter habitat in the immediate area of the proposed wind farm.

OPERATION

4.2.3. For each of these risk to bats posed by wind farms noted and our understanding of how bats utilise the proposed wind farm and survey areas, a prediction of the potential effects during the operational phase of the proposed wind farm have been assessed below in **Table 4-2**:

Table 4-2 – Assessment of Potential Effects on Bats During Operation

Description of Effect	**Collision mortality, barotrauma and other injuries** The following high collision risk species were recorded during the surveys undertaken: • Leisler's bat • Common pipistrelle • Soprano pipistrelle • Nathusius' pipistrelle Median levels of activity for these species across the proposed wind farm as a whole was considered low with the exception of Nathusius' pipistrelle which was low/moderate. With peaks in activity considered to be medium for both common and soprano pipistrelle and high for Leisler's bat and Nathusius' pipistrelle. Based on median activity levels, the proposed wind farm wide collision risks for all high-risk species is considered low with the exception of Nathusius' pipistrelle which is considered medium risk based on median activity levels for the proposed wind farm. Based on peaks in activity for these species, the risk level varies per species and turbine location. However, common pipistrelle and soprano pipistrelle have medium risk and Leisler's bat, and Nathusius' pipistrelle have high risk levels. Some turbine locations scored higher median and peak activity levels for Leisler's bat and Nathusius' pipistrelle (T2, T4, T5, T6, T7). In addition to high collision risk species, low collision risk species were also recorded: • Myotis species • Brown long-eared bat Activity of Myotis species on site had a median activity level considered low with some detectors (T1 and T10) recording low/moderate activity levels and T10 recording moderate/high. With the exception of T10 peaks of activity tended to remain within moderate activity levels with T10 being considered high. Brown long-eared bat activity across the Site was more varied ranging in median activity levels from low/moderate to moderate/high with peak activity levels considered high.

	Displacement of individuals or populations (due to operation) Wind farms have been shown to create avoidance behaviour in the utilisation of habitats for foraging and commuting bats during operation both in the immediate area of the wind farm up to 1km surrounding. With significantly affected species including those identified during the survey effort (Leisler's bat, common pipistrelle, brown long-eared bat and Myotis species)[24,25]. Operational lighting in the absence of mitigation has the potential to further displace bats via artificial light at night over spilling into habitats to be retained.
Assessment of Significance Prior to Mitigation	**Collision mortality, barotrauma and other injuries** In the absence of appropriate mitigation, it is likely that operation of the proposed wind farm will result in a long-term (accounting for the lifespan of a wind farm) negative effect on high collision risk species due to the levels of activity recorded, notably Leisler's bat and Nathusius' pipistrelle. This effect is considered of **county significance** due to the levels of activity recorded, the presence of calls of rarer high collision risk species (Nathusius' pipistrelle) and the increase in woodland edge habitat as a result of keyholing. This effect would be continuous throughout the entire operation of the proposed wind farm until its decommissioning where the effect is reversible and will reside until the bat populations recover and re-establish to baseline conditions. This risk is reduced but not absent for low collision risk species who would likely still be negatively affected during the proposed wind farm operation. For low collision risk species, this effect is also considered long-term throughout the proposed wind farm operation, however, at a local level for these species due to their lesser risk of collision impact. **Displacement of individuals or populations (due to operation)** It is anticipated that displacement of individuals and populations of bats local to the proposed wind farm will occur during the operational phase with a reduction in bat activity within the proposed wind farm area and immediate surrounding habitats (up to 1km). This will have a negative long-term impact on bats during the proposed wind farms operational phase at a local level and not considered significant beyond this (County – National - International). Due to availability of further suitable habitats for bats within the wider area (>1km from the proposed wind farm) and no significant roosts being identified within the PRA and GLTA Survey Area.

[24] K. Barre., I. Le Viol., Y. Bas., R. Julliard., C. Kerbiriou (2018) Estimating Habitat Loss Due to Wind Turbine Avoidance by Bats: Implications for European Siting Guidance. Biological Conservation, 2018, 226, pp. 205-214

[25] A. Tolvanen, H. Routavaara, M. Jokikokko, P. Rana (2023) How Far Are Birds, Bats, and Terrestrial Mammals Displaced from Onshore Wind Power Development? - A Systematic Review. Biological Conservation

4.3 MITIGATION

4.3.1. Mitigation, further survey and monitoring is proposed and included within the design of the proposed wind farm for bats at both construction and operational phases. With the effects of the risks at both phases and their significance have been reassessed based on the implementation of the mitigation.

4.3.2. A 100m “bat buffer” is included within the proposed wind farm design which includes a felling of any tall vegetation within a 100m buffer from the turbine blade tip per (NatureScot, 2021). This will include continuous management to prevent spread of adjacent woodlands as well as maintenance of habitats within the buffer to manage the vegetation here.

CONSTRUCTION

4.3.3. For each of these risks to bats posed by wind farms noted and our understanding of how bats utilise the proposed wind farm mitigation measures have been proposed below (**Table 4-3**) with an updated assessment of the effects of the proposed wind farm during construction on bat populations post application of this mitigation.

Table 4-3 – Mitigation of Potential Effects on Bat During Construction

Mitigation Description	**Loss or damage to commuting and foraging habitat** Where possible trees, scrub and hedgerows will be retained, notably in areas adjacent to access tracks and other associated infrastructure of the proposed wind farm with the exception of those within the bat buffer around turbines (see **Section 2.6**). Compensatory hedgerows and mixed broadleaf woodland will be provided at the compound/deposition areas (see **Figure 6-12** of the EIAR) which will compensate for some of the commuting and foraging habitat loss. **Loss of, or damage to, roosts** As no significant effects due to loss of, or damage to, roosts are predicted for bats at a local geographical scale, no mitigation is required. **Displacement of individuals or populations (due to construction)** As no significant effects due displacement are predicted for bats at a local geographical scale, no mitigation is required.
Assessment of Significance Post Implementation of Mitigation	**Loss or damage to commuting and foraging habitat** The implementation of the above mitigation would result in the proposed wind farms construction works resulting in long-term effects on individual bats, with no significant effects predicted at a local geographic scale. **Loss of, or damage to, roosts** No mitigation required, as such no further assessment required. **Displacement of individuals or populations (due to construction)** No mitigation required, as such no further assessment required.

OPERATION

4.3.4. For each of these risk to bats posed by wind farms noted and our understanding of how bats utilise the proposed wind farm mitigation measures have been proposed below (**Table 4-4**) with an updated assessment of the effects of the proposed wind farm during operation on bat populations post application of this mitigation.

Table 4-4 – Mitigation of Potential Effects on Bat During Operation

Mitigation Description	**Collision mortality, barotrauma and other injuries** Bat buffers are included within the proposed wind farm design as a 100m "bat buffer" which includes a felling of any tall vegetation within a 100m buffer from the turbine hub. This will include continuous management to prevent spread of adjacent woodlands as well as maintenance of habitats within the buffer to manage the vegetation here. "Feathering" will be implemented across the proposed wind farm which reduces the rotation speeds below 2rpm while idling. Curtailment will be implemented at turbines that have demonstrated "High" collision risks (T2, T4, T5, T6, T7, T8). This will be designed for each of the aforementioned turbines utilising bat activity data recorded, temporal data and weather data: • Wind speed in m/s • Time after sunset • Month of the year • Temperature • Precipitation Operational bat monitoring will be undertaken for a minimum of three years from the first year of operation. This will aim to determine the effectiveness of the curtailment program and an adaptive mitigation strategy through the wind farm's operation. Monitoring will include bat activity monitoring following the methodology used during automated detector survey efforts as described in **Section 2.6**. In addition to this carcass searches will be used to measure the success of the curtailment and mitigation in place. These will be undertaken following best practice guidance as outlined in NatureScot (2021)[16] utilising suitably trained and experienced canine assisted carcass search teams. **Displacement of individuals or populations (due to operation)** A suitably qualified ecologist will review the operational lighting plan that will be designed sensitive to the surrounding landscape to prevent overspill into adjacent habitats of value to foraging and commuting bats to be retained. No mitigation is required for the displacement of bats within 1km of the turbines proposed.
Assessment of Significance Post Implementation of Mitigation	**Collision mortality, barotrauma and other injuries** Provided mitigation measures listed above are implemented and effective the anticipated effects of the proposed wind farm through operation will result in a "worst case" long-term negative effect on the local bat populations due to likelihood of incidental bat deaths related to collision mortality, barotrauma and other turbine related injuries. This is considered to be a long-term negative effect of local significance for high collision risk species and long-term negative effect of no local significance for individual bats of low collision risk species.

	Displacement of individuals or populations (due to operation) It is anticipated that displacement of individuals and populations of bats local to the proposed wind farm will occur during the operational phase with a reduction in bat activity within the proposed wind farm area and immediate surrounding habitats (up to 1km). This will have a negative long-term effect of local significance on bats during the proposed wind farms operational phase.

4.4 DECOMMISSIONING

4.4.1. Decommissioning activities will be of a similar nature to those during construction with the exception of loss of/damage to roost/habitat provided the footprint of works remains similar to that of construction in which case this risk is negated. During the decommissioning works the effect on bat populations will not be significant.

4.4.2. Provided the decommissioning does not result in repowering, this would have a positive effect on the local bat population regardless of mitigation imposed during the operational stage. In the absence of repowering, bats may recolonise areas rendered unsafe/suitable for foraging and commuting by the wind farm and the occurrence of bat collision with turbines would be removed having a significant positive effect on the bat population.

4.4.3. Should repowering be proposed further survey and assessment should be undertaken to determine the significance of repowering on bat populations.

4.5 CUMULATIVE

4.5.1. Consideration has been given as to whether bats are likely to be subject to cumulative effects as a result of the proposed wind farm in combination with other developments.

4.5.2. Significant effects may not occur when considering the proposed wind farm in isolation, but when potentially significant effects are considered in combination with nearby existing or proposed developments, significant cumulative effects may arise during each phase of the development.

4.5.3. In the following section, the potential cumulative effects of the Proposed wind farm and other wind farm (and non-wind farm related) developments in planning within a 10km search area are considered.

4.5.4. As such, three wind farms have been considered within this cumulative impact assessment: Ballymartin Wind farm, Rahora Wind Farm, and Castlebanny Wind Farm. **Table 4-5** presents a summary of the predicted effects of these proposed developments.

Table 4-5 – Potential Cumulative Effects from Surrounding Wind Farm Developments and Proposed Developments

Site	Stage	Distance from Proposed Wind Farm	Impacts to Bats
Ballymartin Wind Farm[26]	Consented (Operational)	0.8km north	Seven turbine wind farm operational. Surveys undertaken did not include acoustic bat detector surveys and assessment based on the assumption that widespread and abundant species of bat would be present as well as some less common species. Ballymartin Wind Farm was assessed as holding low value for mammals (including bats) and of local importance with wind farm having a "minor negative impact" on mammals (including bats).
Rahora Wind Farm	Consented (Operational)	2km northeast	No information available
Castlebanny Wind Farm	Awaiting Consent	5.5km north	The EIAR identified local scale negative impacts for the 4 species of bats (common pipistrelle, soprano pipistrelle, Leisler's bat and Nathusius' pipistrelle) identified on Site. Though ruled that the residual impacts were not significant[27].

4.5.5. Ballymartin Wind Farm (7 turbine wind farm with 82m tip height turbines commissioned in phases between 2011-2013), located 0.8km north of the proposed wind farm, is within the CSZ of all bat species relevant to the proposed wind farm. As this development was commissioned in the absence of recording bat activity levels here it is not possible to determine what species were present here or the activity levels. However, considering the relatively similar habitats present here to the proposed wind farm and their proximity, it can be assumed that bat assemblage and activity levels are similar to those recorded within the PRA and GLTA survey area. As such, there is potential for cumulative effects of loss or damage to commuting, foraging, and roosting habitat as well as mortality and displacement of individual bats. Using this precautionary approach of "worst effects" it is considered that the cumulative impacts associated with Ballymartin Wind Farm and the proposed wind farm on bats would result in long-term negative effects to the local bat population.

4.5.6. Rahora Wind Farm (five turbine wind farm with 56m tip height turbines commissioned in 2009) is located 2km northeast from the proposed wind farm. No bat activity assessment was undertaken for Rahora Wind Farm. Due to the distance (2km) of Rahora Wind Farm from the proposed wind farm which is within the CSZ for many of the species recorded during the surveys undertaken for the proposed wind farm it is considered that bat species utilising the proposed wind farm area could theoretically also forage/commute between these wind farms. It is considered that the cumulative

[26] RPS (2010) Ballymartin Windfarm Environmental Report (ER). Rev. F01 Available: https://www.eib.org/files/pipeline/20090748_eis1_en.pdf
[27] Tobin (2021) Castlebanny Windfarm Ecological Impact Assessment Report. Chapter 6 – Biodiversity.

impacts associated with Rahora Wind Farm and the proposed wind farm on bats would result in long-term negative effects to the local bat population due to loss or damage to commuting, foraging, and roosting habitat as well as mortality and displacement of individual bats.

4.5.7. Castlebanny Wind Farm (21 turbine wind farm with 185m tip height turbines not yet commissioned), located 5.5km north of the proposed wind farm, is outside of the CSZ of all species recorded within the Site. However, species such as Leisler's bat have been recorded in Ireland foraging more than 13km from their roost locations[28] and, although it is currently not known if the population of Nathusius' pipistrelle is part of the larger migratory population found in continental Europe, this species has been recorded covering distances of 103km per night when migrating[29]. Because of this, it is considered that individuals of these species utilising both areas within these wind farms could be subject to the cumulative long-term negative effects of loss or damage to commuting, foraging, and roosting habitat as well as mortality and displacement of individual bats.

4.6 RESIDUAL IMPACTS

4.6.1. The residual impacts of construction of the proposed wind farm post implementation of the mitigation measures discussed in **Section 4.3** are considered to have a **long-term negative effect which will be significant for individual bats, but not the local bat population**.

4.6.2. Operational residual impacts post implementation of mitigation would result in a **long-term negative impact on bat populations of significance at a local geographic scale**. The implementation of the mitigation reduces the likelihood of collision between bats and turbines, however, does not remove the risk completely. It is anticipated that small numbers to individual bats would continue to be lost via collision mortality, barotrauma and other injuries relating to the wind farm which may directly impact local bat populations. In addition, the reduction of bat activity anticipated within the habitats surrounding the proposed wind farm cannot be mitigated for meaning throughout the entire operational period bat assemblages local to the proposed wind farm would be altered which could result in some species becoming more dominant than others.

[28] Shiel. C. B., Shiel. R. E., Fairley. J. S. (2001) Seasonal Changes in the Foraging Behaviour of Leisler's Bats (*Nyctalus leisleri)* in Ireland as revealed by radio-telemetry. Journal of Zoology Vol. 249 (3).
[29] Bach. P., Voigt. C. C., Gottsche. M., Bach. L., Brust. V., Hill. R., Huppop. Ommo., Lagerveld. S., Schmaljohann. H., Seebens-Hoyer. A. (2022) Offshore and Coastline Migration of Radio-tagged Nathusius' pipistrelles. Wiley

APPENDIX 1 – DETAILED METHODS

5 APPENDIX 1 – DETAILED METHODS

5.1 FIELD SURVEYS

SITE FORAGING, COMMUTING AND ROOSTING SUITABILITY

5.1.1. The Site and landscape features contained within the Site were assessed by an experience bat ecologist in August 2025 for suitability to support foraging, roosting and commuting bats, the results of which are detailed in **Table 5-1**. This review categorised the overall suitability of the Site for bats following Bat Conservation Trust (BCT) guidelines (Collins, 2023[17]), as none, negligible, low, moderate or high suitability (see **Table 2-3**).

Table 5-1 – Commuting and Foraging Habitat Suitability Criteria

Suitability	Habitat Suitability Criteria	Roosting Suitability Criteria
None	No habitat features on site likely to be used by any commuting or foraging bats at any time of year (i.e. no habitats that provide continuous lines of shade/protection of flight lines or generate/shelter insect populations available to foraging bats).	No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices, suitable shelter at all ground/underground levels).
Negligible	No obvious habitat features on site likely to be used as flight paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
Low	Habitat that could be used by a small number of bats as flight paths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitats. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and /or suitable surround habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site but could be used by individual hibernating bats).
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for flight paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.	A structure with one or more potential roost sites that could be use by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation

Suitability	Habitat Suitability Criteria	Roosting Suitability Criteria
		status, which is establish after presence is confirmed).
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roost, e.g. maternity or class cool/stable hibernation site.

BAT ACTIVITY

Automated detector survey

5.1.2. At sites where the proposed turbine locations are known, automated detectors should be placed to provide a representative sample of bat activity at, or close to these points. Detectors should be placed at all known turbine locations at wind farms containing less than ten proposed turbines. Where developments have more than ten turbines, detectors should be placed within the developable area at ten potential turbine locations plus a third of additional potential turbine sites up to a maximum of 40 detectors for the largest developments.

5.1.3. At the time of planning the bat surveys, up to ten turbines were being considered for the proposed wind farm. Following standard recommendations specified in NatureScot 2021 guidance, automated detectors (Wildlife Acoustics Song Meter Mini 2) were deployed at each of the ten turbine locations.

5.1.4. Detectors were deployed above ground-level by attaching to 2m stakes. Each detector was setup with eight AA batteries and a 64 gigabyte (GB) Secure Digital (SD) memory card. Recording settings used are detailed in **Table 5-2**.

Table 5-2 – Automated Detector Settings

Recording Range	30 Minutes Before Sunset to 30 Minutes After Sunrise
Trigger Frequency Range	16 kHz to 250 kHz
Minimum Event	4 milliseconds
Max File Length	15 seconds

5.1.5. Detectors were deployed on Site in 2025 during three seasons defined in the NatureScot, 2021 guidance:

- Spring (April to May): 06/05/2025 - 15/05/2025;

- Summer (June to mid-August): 01/07/2025 - 11/07/2025; and
- Autumn (Mid-August to October): 19/08/2025 - 29/08/2025.

5.1.6. The guidance recommends a minimum of ten consecutive nights of data collection per season. The data collection periods are listed in **Table 5-3** below.

5.1.7. Bat calls registered by the automated detectors were recorded for later analysis using specialist computer software; further details of analysis are provided in **5.1.11** to **5.1.18** below.

Table 5-3 – Deployment periods for detectors

Survey Season	Survey Dates	Detector	Habitat Type (Fossitt)
Spring 2025	06/05/2025 – 15/05/2025	T1	WS1 – Scrub/WD4 – Conifer plantation
		T2	WD4 – Conifer plantation
Summer 2025	01/07/2025 – 11/07/2025	T3	GS4 – Wet Grassland
		T4	WD4 – Conifer plantation
Autumn 2025	19/08/2025 – 29/08/2025	T5	GA1 – Improved Agricultural Grassland
		T6	GA1 – Improved Agricultural Grassland
		T7	GA1 – Improved Agricultural Grassland
		T8	GA1 – Improved Agricultural Grassland
		T9	GA1 – Improved Agricultural Grassland
		T10	GA1 – Improved Agricultural Grassland

AUTOMATED DETECTOR ANALYSIS

5.1.8. The recordings of bat echolocation calls collected during the automated detector surveys were analysed using specialist computer software (Wildlife Acoustics Kaleidoscope Pro 5.7.0). All files were analysed using the built-in auto-identification software. The analysis of each of these files enables identification/confirmation of species or species group based on call parameters, and the relative activity of different species of bats by counting the minimum number of bats recorded within discrete sound files.

5.1.9. It should be recognised that a series of separate sound files may represent a series of different bats passing within the range of an automated detector, or a smaller number of bats repeatedly triggering the detector (e.g., bats making repeated foraging passes within the range of a detector).

5.1.10. During the auto-identification process an analysis parameter was applied to filter out noise files. The settings used during the filter process are detailed in **Table 5-4**. All files outside these parameters were labelled as noise during the auto-identification process. Ten percent of these were manually checked to ensure no bat activity was missed.

Table 5-4 - Kaleidoscope Pro 5.7.0 Auto Identification Parameters

Signal of Interest	Range/Value
Kilohertz	8 - 120kHz
Milliseconds	2 – 500ms
Minimum number of pulses	2

5.1.11. All remaining sound files were classified to species level by the auto-identification system. Files were attributed with a specific species identification or classified as ‘NoID’ where the call parameters could not be identified by the software.

5.1.12. Following the auto-identification process, all 'NoID' calls were manually checked to assign a species identification. 10% of *Pipistrellus* species (sp.) calls were manually checked to verify the auto-identification, and 100% of species calls excluding *Pipistrellus* were manually checked. If the percentage checks returned a greater than 10% error rate all sound files in that session were checked manually.

GROUND LEVEL TREE ASSESSMENT

5.1.13. Trees within the PRA and GLTA Survey Area were subject to a GLTA between 15 – 17 July 2025 following the BCT guidelines[17]. Trees were categorised based on these guidelines as None, FAR or PRF (see **Table 5-5**). The GLTA was undertaken by experienced bat ecologists. During this survey the requirement for further survey was also noted (dusk emergence survey, aerial/close inspection and ground inspection). Trees found and categorised as FAR or PRF were then tagged for ease of location during further surveys efforts. Further trees present within the PRA and GLTA Survey Area assessed None, were not recorded during the survey effort.

Table 5-5 – GLTA Assessment Criteria

Suitability	Description
None	No PRFs in tree or highly unlikely to contain PRFs
FAR	Further assessment required to establish if PRFs are present in the tree
PRF	A tree with at least one PRF

AERIAL/CLOSE INSPECTION

5.1.14. A total of 16 trees were subject to aerial/close inspections by a team of certified tree climbers. Surveyors used ropes to undertake aerial PRA to catalogue what PRFs are present (if present) on trees recorded during the GLTA. Where present, PRFs were inspected using torches and endoscopes and were categorised following **Table 5-6**.

Table 5-6 – Tree PRF Categorisation

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony
Confirmed Roost	PRF is a confirmed roost either via field signs of bat(s) or bat(s) present

PRA

5.1.15. A visual inspection of the exterior and interior of structures within the PRA and GLTA Survey Area was completed using binoculars and a high-powered torch to search for PRFs in July 2025. Where PRFs were noted, their location and a brief description of their character was recorded on a proforma. Each PRF was visually inspected for evidence indicating use of roosting bats such as droppings, urine staining and scratch marks/characteristic staining (from fur oils).

5.1.16. Structures were then categorised by its suitability to support roosts in line with the descriptions as shown in **Table 5-1**.

5.1.17. Based on the character of the PRFs and the surrounding habitat features, the suitability for different types of bat roosts was also considered. For the purpose of this PRA, the roost types were grouped as follows:

- Summer/Maternity (breeding roost);
- Transitional (to include transitional, mating, satellite, night and day roosts); and
- Hibernation.

DUSK EMERGENCE

5.1.18. Activity surveys consisting of dusk emergence surveys were undertaken on 11 September 2025 on the two buildings (B1 and B2). All surveys were designed by a licensed bat surveyor and undertaken by experienced ecologist.

5.1.19. Dusk emergence surveys commenced 15 minutes before sunset and concluded 90 minutes after sunset. During the survey, surveyors noted any features used by the bats to roost internally and externally of building. Incidental records of bat activity within the vicinity of the surveyors were also summarised. Additionally, two Night Vision Aid (NVA) infra-red cameras were used in conjunction with audio recorders (Batlogger M2) allowing for post-survey analysis to assess whether any emergences were missed during the survey and identify bat species. Calls were analysed using Kaleidoscope software. The surveys commenced at 19:50 and ended at 21:25. The surveyor location of each SQE/NVA can be found within **Appendix 3: Figure 5**.

APPENDIX 2 – DETAILED RESULTS

6 APPENDIX 2 – DETAILED RESULTS

6.1 DESK STUDY

Table 6-1 – Desk Study Results

Data Source	Date of Search	Outcome
NBDC	30/07/2025	Five single records were found, none of which from within the last 10 years. Species found were: • Brown long-eared bat • Common pipistrelle • Leisler's bat • Natterer's bat • Soprano pipistrelle
Bat Conservation Ireland Batlas	30/07/2025	No records within 4km of proposed wind farm.
NPWS Online Database	30/07/2025	Leisler's Bat Database Available. No data within 4km of the proposed wind farm. No protected areas near the site, and in the wider area are designated for bat species.
Site-Specific Conservation Objectives (SSCO) Mapping, Published by the NPWS	01/08/2025	Only data for bats within this dataset is for lesser horseshoe bats focussed to the west of Ireland with no data is present near the proposed wind farm.
Bat Landscape Project	01/08/2025	Species Results are as follows per the suitability index (0 (least suitable) –100 (most suitable)): Brown Long-eared Bats – western portion of proposed wind farm 39-49, eastern portion of proposed wind farm 29-38 Common pipistrelle – 39-47 for the entirety of the proposed wind farm Soprano pipistrelle – northwestern portion of proposed wind farm 18-30 and the remainder 31-38 Nathusius' pipistrelle – 0- 15 Lesser horseshoe bat – 0-4 Leisler's bat – the northwestern portion of proposed wind farm is 19-29 and with the remainder 30-37 Daubenton's bat – 13-21 Whiskered bat – 21-31 class Natterer's bat – 27-36

6.2 BAT ACTIVITY

AUTOMATED STATIC DETECTOR SURVEY

6.2.1. Static detectors were deployed within the Site for a minimum of ten nights across three seasons (spring, summer and autumn). This amounted to 59 nights of deployment per location (ten nights in spring, 11 nights in summer and 11 nights in autumn). The location of the detectors is shown in **Appendix 3: Figure 2.**

6.2.2. Over the whole survey period across all the detectors, the total number of bat passes was 52,100 (see **Table 6-2**). Seven species (or genera in difficult to identify species) were recorded during the study period: Leisler's bat, Nathusius's pipistrelle, common pipistrelle, soprano pipistrelle, Brown long-eared bat, *Pipistrellus* species, and *Myotis* species. **Appendix 3: Figure 3** shows the total bat passes per species at each detector location across the Site during the effort as well as the range of activity at each location.

Table 6-2 – Total bat passes per species

Species	Passes (No.)	Percentage of total (%)
Myotis sp.	704	1.4
Leisler's bat	15,556	29.9
Pipistrelle sp.	525	1.0
Nathusius's pipistrelle	511	1.0
Common pipistrelle	27,174	52.2
Soprano pipistrelle	7,282	14.0
Brown long-eared bat	348	0.7
Total	52,100	100

6.2.3. The BPpN of each species at each detector is shown in **Table 6-3** and **Table 6-4**, as well as the habitat the detector was in. The median and maximum activity levels of each species at each detector is described.

Table 6-3 – EcoBat Results for all Static Detectors for *Myotis sp.*, *Nyctalus leisleri*, *Pipistrelle sp.*, and *Nathusius's pipistrelle*

		Myotis sp.			*Nyctalus leisleri*			*Pipistrelle sp.*			*Nathusius's pipistrelle*		
Detector	Habitat Type	Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max	Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max	Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max	Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max
T1	WS1 – Scrub / WD4 – Conifer plantation	2.47	Low	Low	24.75	Low	Low/Mod	0.91	Low/Mod	Moderate	1.31	Low	Moderate
T2	WD4 – Conifer plantation	2.34	Low	Low	44.91	Low	Mod/High	1.38	Low/Mod	Moderate	0.47	Low/Mod	Low/Mod
T3	GS4 – Wet Grassland	1.66	Low	Low	41.34	Low	Low/Mod	0.63	Low	Low/Mod	1.19	Low/Mod	Moderate
T4	WD4 – Conifer plantation	0.94	Low	Low	97.91	Low/Mod	High	0.63	Low	Low/Mod	5.25	Mod/High	Mod/High
T5	GA1 – Improved Agricultural Grassland	1.88	Low	Low	60.91	Low	High	1.69	Low/Mod	Moderate	0.97	Low/Mod	Moderate
T6	GA1 – Improved Agricultural Grassland	0.56	Low	Low	79.56	Low/Mod	High	5.50	Low/Mod	High	3.16	Low/Mod	Moderate
T7	GA1 – Improved Agricultural Grassland	0.81	Low	Low	67.84	Low/Mod	High	2.47	Low/Mod	Mod/High	1.38	Low	Moderate
T8	GA1 – Improved Agricultural Grassland	1.19	Low	Low	20.16	Low	Low/Mod	0.94	Low/Mod	Moderate	0.31	Low	Low
T9	GA1 – Improved Agricultural Grassland	0.84	Low	Low	21.41	Low	Low/Mod	0.91	Low/Mod	Moderate	0.41	Low	Low/Mod
T10	GA1 – Improved Agricultural Grassland	9.31	Low	Moderate	27.34	Low	Moderate	1.38	Low/Mod	Moderate	1.53	Low/Mod	Moderate

Table 6-4 – EcoBat Results for all Static Detectors for *Pipistrellus pipistrellus*, *Pipistrellus pygmaeus*, and *Plecotus auritus*

Detector	Habitat Type	*Pipistrellus pipistrellus*			*Pipistrellus pygmaeus*			*Plecotus auritus*		
		Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max	Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max	Bat passes per night	Activity level Ecobat Median	Activity level EcoBat Max
T1	WS1 – Scrub / WD4 – Conifer plantation	77.56	Low	Low	9.56	Low	Low	0.88	Low	Low
T2	WD4 – Conifer plantation	31.44	Low	Low	13.47	Low	Low	2.91	Low	Low
T3	GS4 – Wet Grassland	25.34	Low	Low	13.25	Low	Low	0.97	Low	Low
T4	WD4 – Conifer plantation	76.69	Low	Low	6.09	Low	Low	1.06	Low	Low
T5	GA1 – Improved Agricultural Grassland	136.13	Low	Low	26.66	Low	Low	1.44	Low	Moderate
T6	GA1 – Improved Agricultural Grassland	216.13	Low	Low/Mod	103.25	Low	Low	2.22	Low	Low
T7	GA1 – Improved Agricultural Grassland	28.78	Low	Low	12.50	Low	Low	0.19	Low	Low
T8	GA1 – Improved Agricultural Grassland	104.41	Low	Low/Mod	13.44	Low	Mod/High	0.53	Low	Low
T9	GA1 – Improved Agricultural Grassland	67.59	Low	Low	7.78	Low	Low	0.22	Low	Low
T10	GA1 – Improved Agricultural Grassland	85.13	Low	Low	21.56	Low	Low	0.47	Low/Mod	Moderate

6.2.4. Two buildings are present within the PRA and GLTA Survey Area; these are detailed below in **Table 6-5:**

Table 6-5 – Details of the buildings present within the PRA and GLTA Survey Area

Building Ref	Description	Active Season Suitability	Hibernation Suitability	Image
B1	Dilapidated stone ruin of outbuilding of farmhouse no roof present however remains of stone walls partially covered with vegetation. PRFs are present across the walls within gaps in the stonework.	Moderate	Moderate	

Building Ref	Description	Active Season Suitability	Hibernation Suitability	Image
B2	Dilapidated stone ruin of farmhouse no roof present however remains of stone walls partially covered with vegetation. PRFs are present across the walls within gaps in the stonework.	Moderate	Moderate	

GLTA

6.2.5. A total of sixteen trees were identified as PRF containing trees within the PRA and GLTA Survey Area. These include ash (*Fraxinus excelsior*), birch species (*Betula spp.*), willow species (*Salix spp.*), hawthorn (*Crataegus monogyna*), and elder (*Sambucus nigra*).

DUSK EMERGENCE

6.2.6. No bats were recorded emerging or re-entering the buildings during the dusk emergence surveys. Foraging and commuting activity of soprano pipistrelle, common pipistrelle, Leisler's bat, *Myotis* species. and brown long-eared bat were recorded during the dusk emergence survey effort adjacent to the buildings survey.

6.2.7. Bats were recorded foraging within the internal space of B2 accessing this via the space where the window used to be however no bats were recorded entering any PRFs.

AERIAL/CLOSE INSPECTION

6.2.8. A total of sixteen trees were subject to aerial (close) inspection. This resulted in three trees being identified as containing PRF-M features and eleven as PRF-I, with the remainder of the trees being assessed as not suitable to support roosting bats. Further details are provided in **Table 6-6** below:

Table 6-6 – Details of Aerial/Close Inspection Survey

Tree No.	Tree Species	Suitability	Feature Description	Proximity to Proposed Wind Farm
0001	Hawthorn	PRF-I	Forming tear out east (1m) - PRF-I	To be felled as part of "bat buffer"
0002	Birch species	PRF-I	Hazard beam 3m – PRF-I	To be felled as part of "bat buffer"
0003	Willow species	PRF-I	Hazard beam 2m – PRF-I	To be felled as part of "bat buffer"
0004	Willow species	PRF-I	Hazard beam 1m – PRF-I	To be felled as part of "bat buffer"
0005	Ash	PRF-I	Dead ash with cankers and decay hollows throughout main stem and limbs (0.5-2m) - PRF-I	To be felled as part of "bat buffer"
0006	Ash	PRF-I	Tear out north behind ivy at (0.5m) - PRF-I	Within 195m of T1
0007	Willow species	PRF-I	Tear out southwest (1m) - PRF-I	Within 255m of T1
0008	Willow species	PRF-I	Forming tear out 0.5m with decay hollow (0.5m) - PRF-I	Within 255m of T1

Tree No.	Tree Species	Suitability	Feature Description	Proximity to Proposed Wind Farm
0010	Ash	PRF-M	Basal cavity east and west both PRF-M	Within 250m of T1
0013	Scot's pine	None	Fully inspected no features present	Within 240m of T10
0014	Beech	PRF-M	Tear out west (0.5m) - PRF-M	Within 210m of T10
0015	Scot's pine	PRF-I	Tear out west (0.5m) - PRF-I	Within 210m of T10
0016	Beech	PRF-M	Tear out east 3-5m – PRF-M Woodpecker hole 5m south – PRF-I	Within 205m of T10
0017	Elder	PRF-I	Snapped limb with decay hollow (2m) north – PRF-I	Within 190m of T5
0019	Hawthorn	PRF-I	Decay hollow east (1m) and south (0.5m) both PRF-I	Within 250m of T8
NOTAG	Hawthorn -	NONE	Fluting – north (1.5m)	Within 231m of T8

ROOST DETAILS

6.2.9. A single roost was identified within the PRA and GLTA Survey Area during the survey efforts. A single bat dropping was identified within a gap in the stonework on the external wall on the southeast corner of B2. The location of the roost is shown in **Appendix 3: Figure 5** and images of the roost are shown before in **Table 6-7**:

Table 6-7 – Roost locations identified within the PRA and GLTA Survey Area

Caption	Image
Image 1: Roost location (R1) on the southeast corner of B2 (circled red)	
Image 2: Roost access point (R1) circled red	

Caption	Image
Image 3: Bat dropping within R1	

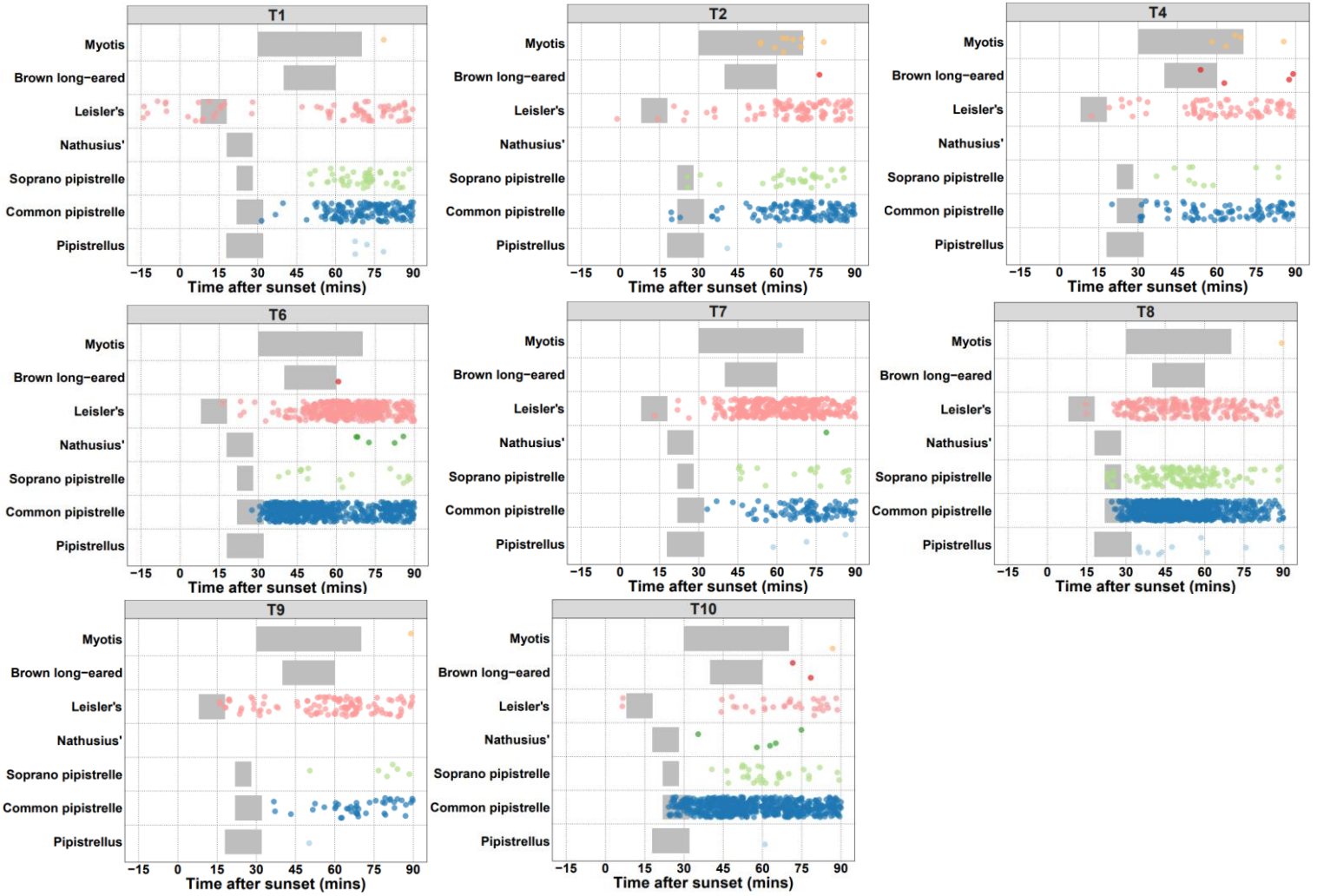
6.3 POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE

6.3.1. To determine the likelihood of potential roosts being present within or close to the Site, peaks in bat activity were compared to Species-Specific Emergence Times (S-SET) (Russ, 2012[20]; Andrews, 2022[21]). **Plate 6-1** below summarises the hours and minutes after sunset in which each species was first recorded as well as the number of calls within the S-SET. Where the coloured dots (representing bat activity for a given species) overlap with the grey band (which refers to the expected emergence times for that species) it is likely that roosts may be nearby.

6.3.2. Around all but one detector (T3) there was overlap between bat activity for at least one of five species (*Myotis* sp., brown long-eared, Leisler's, soprano pipistrelle, common pipistrelle) and their expected emergence times for that species.

6.3.3. Based on these results, it is possible that roosts for colonies or individual bats are within/proximal to the Site of five species: *Myotis* sp. (T2, T4), brown long-eared bats (T4, T5, T6), Leisler's bats (T1, T2, T4, T5, T6, T7, T8, T9, T10), soprano pipistrelle (T2, T8), common pipistrelle (T1, T2, T4, T5, T6, T7, T8, T10).

Plate 6-1 – Time from 15 minutes before to 90 minutes after sunset. S-SET are grey bars with points referring to bat passes within each range



APPENDIX 3 – FIGURES

7 APPENDIX 3 – FIGURES

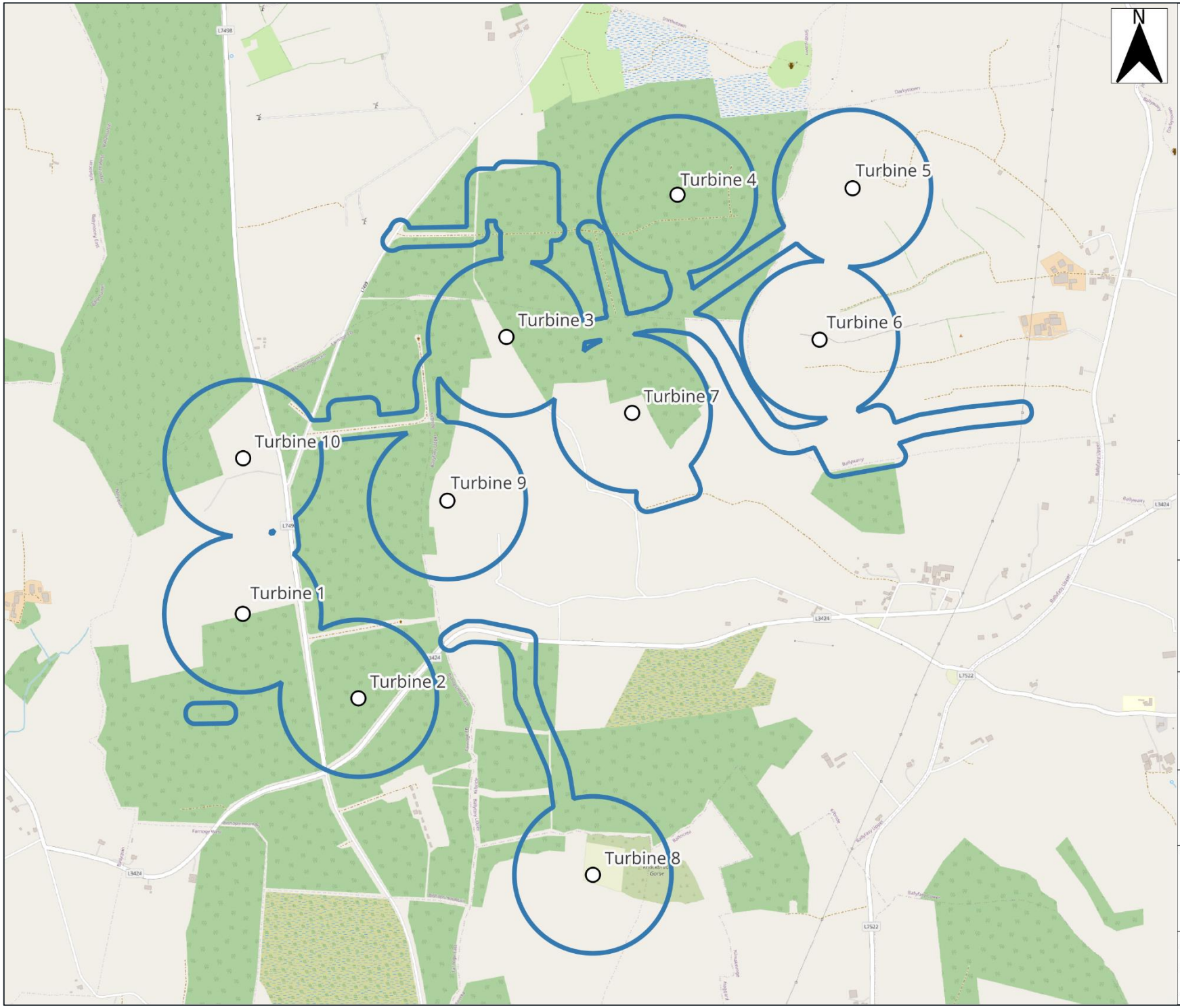
FIGURE 1: BAT SURVEY AREA

FIGURE 2: BAT STATIC DETECTOR LOCATIONS IN SURVEY AREA

FIGURE 3: PASSES BY EACH BAT SPECIES AT EACH STATIC DETECTOR

FIGURE 4: BAT TREE SURVEY RESULTS

FIGURE 5: DUSK EMERGENCE BAT SURVEY



Legend

- Bat Survey Area
- Turbine Locations

OpenStreet Map
IRENET95 / Irish Transverse Mercator

0 250 500

Meters

Client:

Manogate Ltd.

Project:

Ballyfasy Wind Farm

Title:

Figure 1: Bat Survey Area

1:15,177

Drawn: ROH

Checked: DC

Approved: LGI 06/11/2025

Legend

- Bat Survey Area
- Bat Static Locations

OpenStreet Map
IRENET95 / Irish Transverse Mercator

0 250 500

Meters

Client:

Manorgate Ltd.

Project:

Ballyfasy Wind Farm

Title:

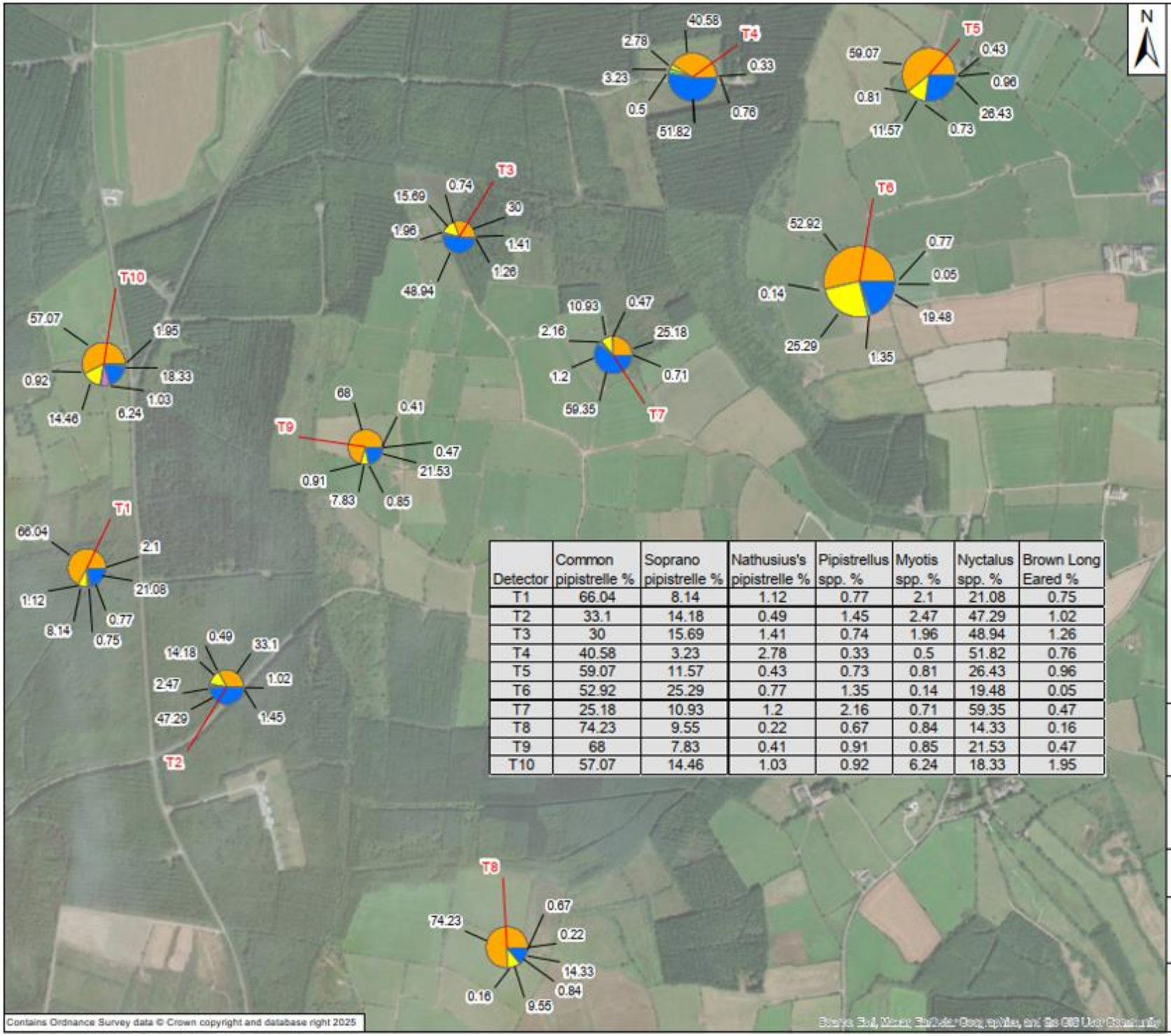
Figure 2: Bat Static Detector Locations in Survey Area

1:15,000

Drawn: ROH

Checked: DC

Approved: LGI 06/11/2025



Detector	Common pipistrelle %	Soprano pipistrelle %	Nathusius's pipistrelle %	Pipistrellus spp. %	Myotis spp. %	Nyctalus spp. %	Brown Long Eared %
T1	66.04	8.14	1.12	0.77	2.1	21.08	0.75
T2	33.1	14.18	0.49	1.45	2.47	47.29	1.02
T3	30	15.69	1.41	0.74	1.96	48.94	1.26
T4	40.58	3.23	2.78	0.33	0.5	51.82	0.76
T5	59.07	11.57	0.43	0.73	0.81	26.43	0.96
T6	52.92	25.29	0.77	1.35	0.14	19.48	0.05
T7	25.18	10.93	1.2	2.16	0.71	59.35	0.47
T8	74.23	9.55	0.22	0.67	0.84	14.33	0.16
T9	68	7.83	0.41	0.91	0.85	21.53	0.47
T10	57.07	14.46	1.03	0.92	6.24	18.33	1.95

wsp

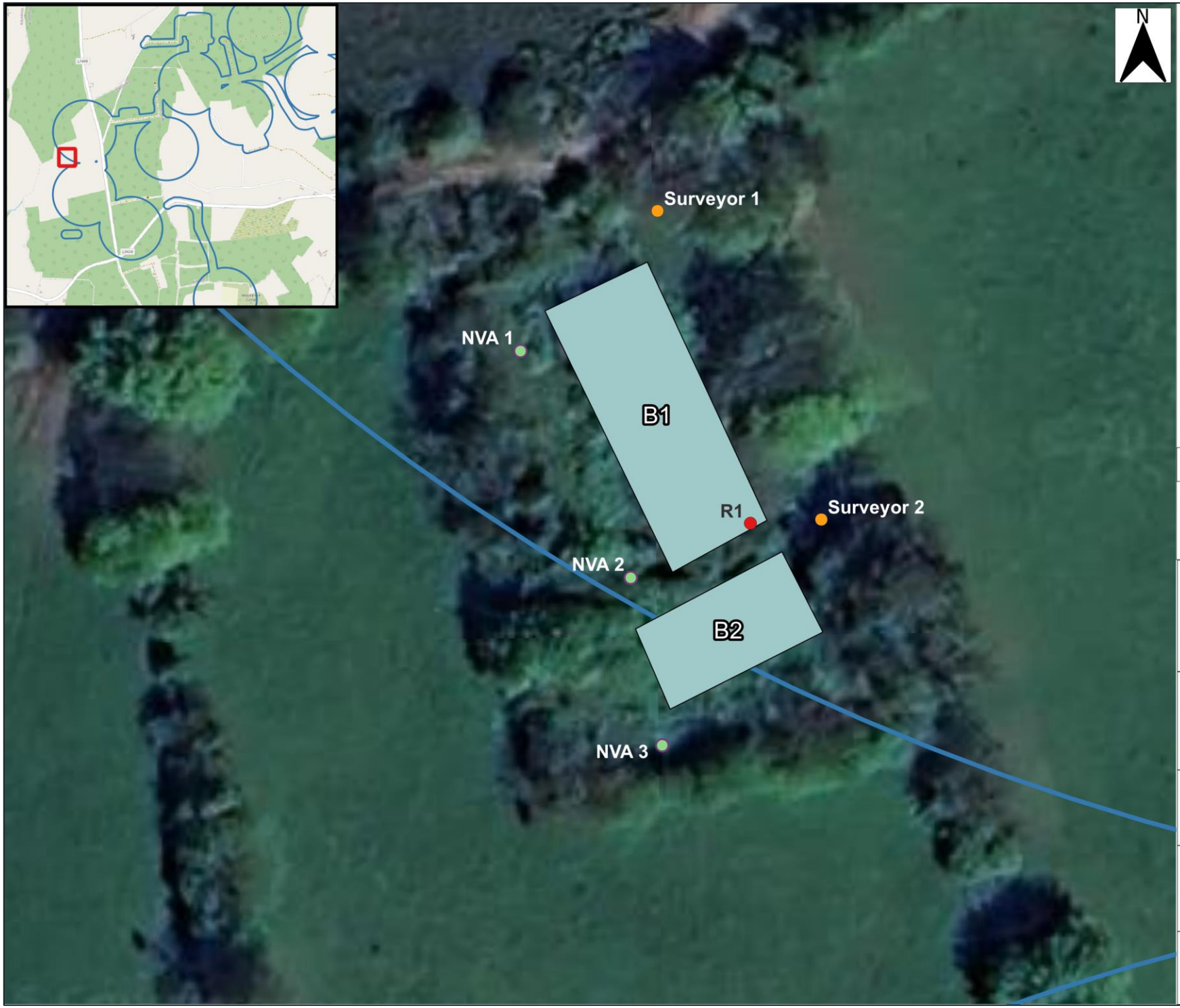
Client
Manogate Ltd.

Project
Ballyfasy Wind Farm

Title
Figure 3: Passes by each bat species at Each Static Detector

Drawing No: Layers
Date: 10/16/2025
Scale: 9,000 @ A3
Drawn: MT
Checked: R O'H
Approved: LGI


N
TBR
TBR
TBR
To Be Removed
(TBR)
Legend
Bat Survey Area
GLTA & Aerial/Close Inspection
None
PRF-I
PRF-M
PRF/FAR
OpenStreet Map
IRENET95 / Irish Transverse Mercator
0
250
500
Meters
wsp
Client:
Manogate Ltd.
Project:
Ballyfasy Wind Farm
Title:
Figure 4: Bat Tree Survey Results
1:13,500
Drawn: ROH
Checked: DC
Approved: LGI
11/11/2025



Legend

- Surveyed Buildings
- NVA Locations
- Surveyor Locations
- Roost Location

OpenStreet Map
IRENET95 / Irish Transverse Mercator

0 10 20

Meters

Client:

Manogate Ltd.

Project:

Ballyfasy Wind Farm

Title:

Figure 5: Dusk Emergence Bat Survey

1:500

Drawn: ROH

Checked: DC

Approved: LGI 06/11/2025

Town Centre House
Dublin Road
Naas
Co Kildare

wsp.com