Tionscadal Soláthair Uisce
Water Supply Project

Environmental Impact Assessment Report (EIAR)

Volume 6 of 6: Appendices

(Appendix 8.9) Bat Surveys Report

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Uisce Éireann
Irish Water

Jacobs

TOBIN

Bat Assessment – Water Supply Project

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Bat Eco Services

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NPWS licence C17/2023 (Licence to handle bats, expires 23rd January 2026);
NPWS licence 017/2025 (Licence to photograph/film bats, expires 31st December 2025);
NPWS licence DER/BAT 2025-171 (Survey licence, expires 31st December 2025).

Statement of Authority: Dr. Aughney has worked as a Bat Specialist since 2000 and has undertaken extensive survey work for all Irish bat species including large scale development projects, road schemes, residential developments, wind farm developments and smaller projects in relation to building renovation or habitat enhancement. She was a monitoring co-ordinator and trainer for Bat Conservation Ireland for 20 years. She is a co-author of the 2014 publication *Irish Bats in the 21st Century.* This book received the 2015 CIEEM award for Information Sharing. Dr. Aughney is a contributing author for the Atlas of Mammals in Ireland 2010-2015. She is a trained bat handler, bat ringer and radio-telemetry project manager. She is a member of the Nathusius' Pipistrelle Working Group and the Cavan Bat Group.

All analysis and reporting was completed by Dr. Tina Aughney. Data was collected and surveying was completed with the assistance of trained field assistants: Mr. Shaun Boyle (Field Assistant) NPWS licence DER/BAT 2025-172 (Survey licence, expires 31st December 2025), and Ms. Eva Boyle (Field Assistant) NPWS licence DER/BAT 2025-173 (Survey licence, expires 31st December 2025). Both field assistants have received in-house training to undertake all elements of bat surveying according to Collins (2023).

Client: TOBIN

Project Name & Location: Water Supply Project - Bat Data Only

Report Revision History

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Purpose

This document has been prepared as a Report for TOBIN. Only the most up to-date report should be consulted. All previous drafts/reports are deemed redundant in relation to the named site. Bat Eco Service accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

Carbon Footprint Policy

It is the policy of Bat Eco Services to provide documentation digitally in order to reduce carbon footprint. Printing of reports etc. is avoided, where possible.

Bat Record Submission Policy

It is the policy of Bat Eco Services to submit all bat records to Bat Conservation Ireland database one year post-surveying. This is to ensure that a high level bat database is available for future desktop reviews. This action will be automatically undertaken unless otherwise requested, where there is genuine justification.

Executive Summary

Project Name & Location: Water Supply Project.

Proposed work: Bat Scope of Works 2019, 2020, 2021, 2022, 2024 & 2025 – Bat Eco Services Limited

Bat Survey Results - Summary

Bat Species	Roosts	Foraging	Commuting
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*	√	√	√
Natterer's bat *Myotis nattereri*	√	√	√
Whiskered bat *Myotis mystacinus*	√	√	√
Lesser horseshoe bat *Rhinolophus hipposideros*	√		

Bat Survey Duties Completed

Tree PBR Survey	◯	Daytime Building Inspection	◯
Static Detector Survey	◯	Daytime Bridge Inspection	◯
Dusk Bat Survey	◯	Dawn Bat Survey	◯
Walking Transect	◯	Driving Transect	◯
Trapping / Mist Netting	○	IR Camcorder filming	◯
Endoscope Inspection	◯	Other	◯
		Thermal Imagery	◯

Citation: Bat Eco Services (2025) Bat Assessment of Water Supply Project. Unpublished report prepared for TOBIN.

Contents

1. Introduction

1. Bat Eco Services was commissioned by TOBIN to co-ordinate the Bat Scope of Works 2019, 2020, 2021, 2022, 2024 and 2025. This report details the works completed in all six years. In addition, bat data gathered by TOBIN from 2016 to 2018 is included in the analysis. Bat Eco Services also undertook survey work, in 2019, for the 38kV Uprate of existing overhead lines in vicinity of Ardnacrusha – Birdhill. This data is incorporated into this report and the analysis.

1.1 Relevant Legislation & Bat Species Status in Ireland

1.1.1 Irish Statutory Provisions

2. The principal statutory provisions for the protection of animals are under the Wildlife Act 1976 (as amended) and the European Communities (Natural Habitats) Regulations 2011, as amended. See www.npws.ie/ legislation for further information.

3. The codes used for national legislation are as follows:
   - WA = Wildlife Act, 1976, Wildlife (Amendment) Act, 2000 and other relevant amendments

1.1.2 EU Legislation

4. The Habitats Directive (Council Directive 92/43/EEC) is the legislative instruments which are transposed into Irish law, *inter alia,* by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) ('the 2011' Regulations), as amended.

5. The codes used for the Habitats Directive (Council Directive 92/43/EEC) are:
   - Annex II Animal and plant species listed in Annex II
   - Annex IV Animal and plant species listed in Annex IV
   - Annex V Animal and plant species listed in Annex V

6. The main aim of the Habitats Directive is the conservation of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status. These annexes list habitats (Annex I) and species (Annexes II, IV and V) which are considered threatened in the EU territory. The listed habitats and species represent a considerable proportion of biodiversity in Ireland and the Directive itself is one of the most important pieces of legislation governing the conservation of biodiversity in Europe.

7. Under Article 11 of the Directive, each member state is obliged to undertake surveillance of the conservation status of the natural habitats and species in the Annexes and under Article 17, to report to the European Commission every six years on their status and on the implementation of the measures taken under the Directive. In April 2019, Ireland submitted the third assessment of conservation status for 59 habitats and 60 species. There are three volumes with the third listing details of the species assessed.

8. Article 12 of the Habitats Directive requires Member States to take measures for the establishment of a strict protection regime for animal species listed in Annex IV(a) of the Habitats Directive within the whole territory of Member States. Article 16 provides for derogation from these provisions under defined conditions. These provisions are implemented under Regulations 51 and 54 of the 2011 Regulations.

1.1.3 IUCN Red Lists

9. The International Union for the Conservation of Nature (IUCN) coordinates the Red Listing process at the global level, defining the categories so that they are standardised across all taxa. Red Lists are also produced at regional, national and subnational levels using the same IUCN categories (IUCN 2012, 2019). Since 2009, Red Lists have been produced for the island of Ireland by the National Parks and Wildlife Service (NPWS) and the Northern Ireland Environment Agency (NIEA) using these IUCN categories. To date, 13 Red Lists have been completed. The Red Lists are an assessment of the risk of extinction of each species and not just an assessment of their rarity. Threatened species are those species categorised as Critically Endangered, Endangered or Vulnerable (IUCN, 2019) – also commonly referred to as 'Red Listed'.

1.1.4 Irish Red List - Mammals

10. Red Lists in Ireland refer to the whole island, i.e. including Northern Ireland, and so follow the guidelines for regional assessments (IUCN, 2012, 2019). The abbreviations used are as follows:
    - RE Regionally Extinct
    - CR Critically Endangered
    - EN Endangered
    - VU Vulnerable
    - NT Near Threatened
    - DD Data Deficient
    - LC Least Concern
    - NA Not Assessed
    - NE Not Evaluated

11. There are 27 terrestrial mammal species in Ireland, which includes the nine resident bat species listed. The terrestrial mammal, according to Marnell *et al.,* (2019), list for Ireland consists of all terrestrial species native to Ireland or naturalised in Ireland before 1500. The IUCN Red List categories and criteria are used to assess that status of wildlife. This was recently completed for the terrestrial mammals of Ireland. Apart from the following two mammal species (grey wolf *Canis lupus* (regionally extinct) and black rat *Rattus rattus* (Vulnerable)), the remaining 25 species were assessed as least concern in the most recent IUCN Red List publication by NPWS (Marnell *et al*., 2019).

1.1.5 Irish Bat Species

12. All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Acts (2000 and 2010). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat *Rhinolophus hipposideros* is further listed under Annex II. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

13. Also, under existing legislation, the destruction, alteration or evacuation of a known bat roost is an offence. The most recent guidance document is 'Guidance document on the strict protection

of animal species of Community interest in the Habitats Directive (Brussels, 12.10.2021 C(2021) 7391 final'. In this document, the following is stated:

14. Regulation 51(2) of the 2011 Regulations provides –

(*'(2) Notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a licence granted by the Minister under Regulation 54, a person who in respect of the species referred to in Part 1 of the First Schedule—*

a) deliberately captures or kills any specimen of these species in the wild,
b) deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,
c) deliberately takes or destroys eggs of those species from the wild,
d) damages or destroys a breeding site or resting place of such an animal, or
e) keeps, transports, sells, exchanges, offers for sale or offers for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive,

shall be guilty of an offence.'

15. The grant of planning permission does not permit the commission of any of the above acts or render the requirement for a derogation licence unnecessary in respect of any of those acts.

16. Any works interfering with bats and especially their roosts may only be carried out under a derogation licence granted by the NPWS pursuant to Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations 2011 (which transposed the EU Habitats Directive into Irish law).

17. There are eleven recorded bat species in Ireland, nine of which are considered resident. Eight resident bat species and one of the vagrant bat species are vesper bats and all vespertilionid bats have a tragus (cartilaginous structure inside the pinna of the ear). Vesper bats are distributed throughout the island. Nathusius' pipistrelle *Pipistrellus nathusii* is a recent addition while the Brandt's bat has only been recorded once to-date (only record confirmed by DNA testing, all other records have not been genetically confirmed). The ninth resident species is the lesser horseshoe bat *Rhinolophus hipposideros*, which belongs to the Rhinolophidea and has a complex nose leaf structure on the face, distinguishing it from the vesper bats. This species' current distribution is confined to the western seaboard counties of Mayo, Galway, Clare, Limerick, Kerry and Cork. The eleventh bat species, the greater horseshoe bat, was only recorded for the first time in February 2013 in County Wexford and is therefore considered to be a vagrant species. A total of 41 Special Areas of Conservation (SACs) have been designated for the Annex II species lesser horseshoe bat (1303), of which nine have also been selected for the Annex I habitat 'Caves not open to the public' (8310).

18. Irish bat species list is presented in Table 1 along with their current status.

Table 1: Status of the Irish Bat Fauna (Marnell *et al.,* 2019)

Species: Common Name	Irish Status	European Status	Global Status
Resident Bat Species ^			
Daubenton's bat *Myotis daubentonii*	Least Concern	Least Concern	Least Concern
Whiskered bat *Myotis mystacinus*	Least Concern	Least Concern	Least Concern
Natterer's bat *Myotis nattereri*	Least Concern	Least Concern	Least Concern
Leisler's bat *Nyctalus leisleri*	Least Concern	Least Concern	Least Concern
Nathusius' pipistrelle *Pipistrellus nathusii*	Least Concern	Least Concern	Least Concern
Common pipistrelle *Pipistrellus pipistrellus*	Least Concern	Least Concern	Least Concern
Soprano pipistrelle *Pipistrellus pygmaeus*	Least Concern	Least Concern	Least Concern
Brown long-eared bat *Plecotus auritus*	Least Concern	Least Concern	Least Concern
Lesser horseshoe bat *Rhinolophus hipposideros*	Least Concern	Least Concern	Least Concern
Possible Vagrants ^			
Brandt's bat Myotis brandtii	Data deficient	Least Concern	Least Concern
Greater horseshoe bat *Rhinolophus ferrumequinum*	Data deficient	Near threatened	Near threatened

^ Roche *et al.,* 2014

1.2 Relevant Guidance Documents

19. This report draws on guidelines already available in Europe and uses the following documents:

- National Roads Authority (2006) Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes
- Collins, J. (Editor) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation Trust, London. ***This edition was used to guide surveys prior to 2024.***
- Collins, J. (Editor) (2024) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). Bat Conservation Trust, London. ***This edition was used to guide surveys undertaken in 2024 and 2025.***
- McAney, K. (2006) A conservation plan for Irish vesper bats, Irish Wildlife Manual No. 20 National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- Marnell, F., Kelleher, C. & Mullen, E. (2022) Bat mitigation guidelines for Ireland v2. Irish Wildlife Manuals, No. 134. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland (Version 1: Kelleher & Marnell, 2006).
- The status of EU protected habitats and species in Ireland: Conservation status in Ireland of habitats and species listed in the European Council Directive on the Conservation of Habitats, Flora and Fauna 92/43/EEC. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.
- Bat Conservation Trust (BCT) (2018) Bats and artificial lighting in the UK: bats and the built environment series. Guidance Note 08/2019. BCT, London.
- Guidance document on the strict protection of animal species of Community interest un the Habitats Directive (Brussels, 12.10.2021 C (2021) 7391 final.

- Environmental Protection Agency (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports.

20. Collins (2016) and Collins (2023) are the principal documents used to provide guidance in relation to bat survey effort required but the level of surveying is assessed on a case-by-case basis taking into consideration the historical bat records for the study area, presence of buildings, structures and trees potentially suitable for roosting bats and the presence of suitable bat habitats for foraging and commuting. Additional reference is made to this document in relation to determining the value of buildings, trees etc. as bat roosts. The tables referred to from this document are described in the following section and in the section on methodology.

21. While a 4th Edition of the survey guidelines was published in September 2023, this report, for accuracy, refers to Collins (2016), as this was the published version at the time surveys were undertaken. The 2024 and 2025 surveys were be guided by Collins (2023).

22. Marnell *et al.* (2022) is referred to for guidance in relation to survey guidance (timing and survey design), derogation licences and mitigation measures. Additional references are provided in the main body of text where other documents are used to provide additional survey protocols. Survey protocols deployed for this project, as a result, are a combination of a number of guidance documents and publications.

1.2.1 Bat Survey Requirements & Timing

23. With reference to Collins (2016), Collins (2023) and Marnell *et al.* (2022), the information presented in this section is used to guide the bat survey protocols for the Proposed Project. Collins (2016) provides a trigger list in relation to determining if a bat survey is required. In addition, Chapter 2 of Collins (2016) discusses that a bat survey is required when proposed activities are likely to impact on bats and their habitats. The level of surveying is to be determined by the ecologist and these are influenced by the following criteria:
    - Likelihood of bats being present;
    - Type of proposed activities;
    - Scale of proposed activities;
    - Size, nature and complexity of the site;
    - Species concerned;
    - No. of individuals.

24. Collins (2016) is a document prepared for UK bat surveys. In the UK there are 16 bat species while in Ireland there are nine bat species. As a consequence, the UK guidelines cannot be strictly applied to Ireland. This document is used as guidance along with the principal surveyors' experience in order to undertake an appropriate level of surveying to gather information on the bat usage of the Proposed Project route, with consideration to the size of the Proposed Project, land access constraints and discussions with TOBIN.

25. Collins (2016) provides an array of information, used to guide survey protocol for this project, which is presented below. It provides the following table detailing when different survey components should be undertaken (See Figure 1a).

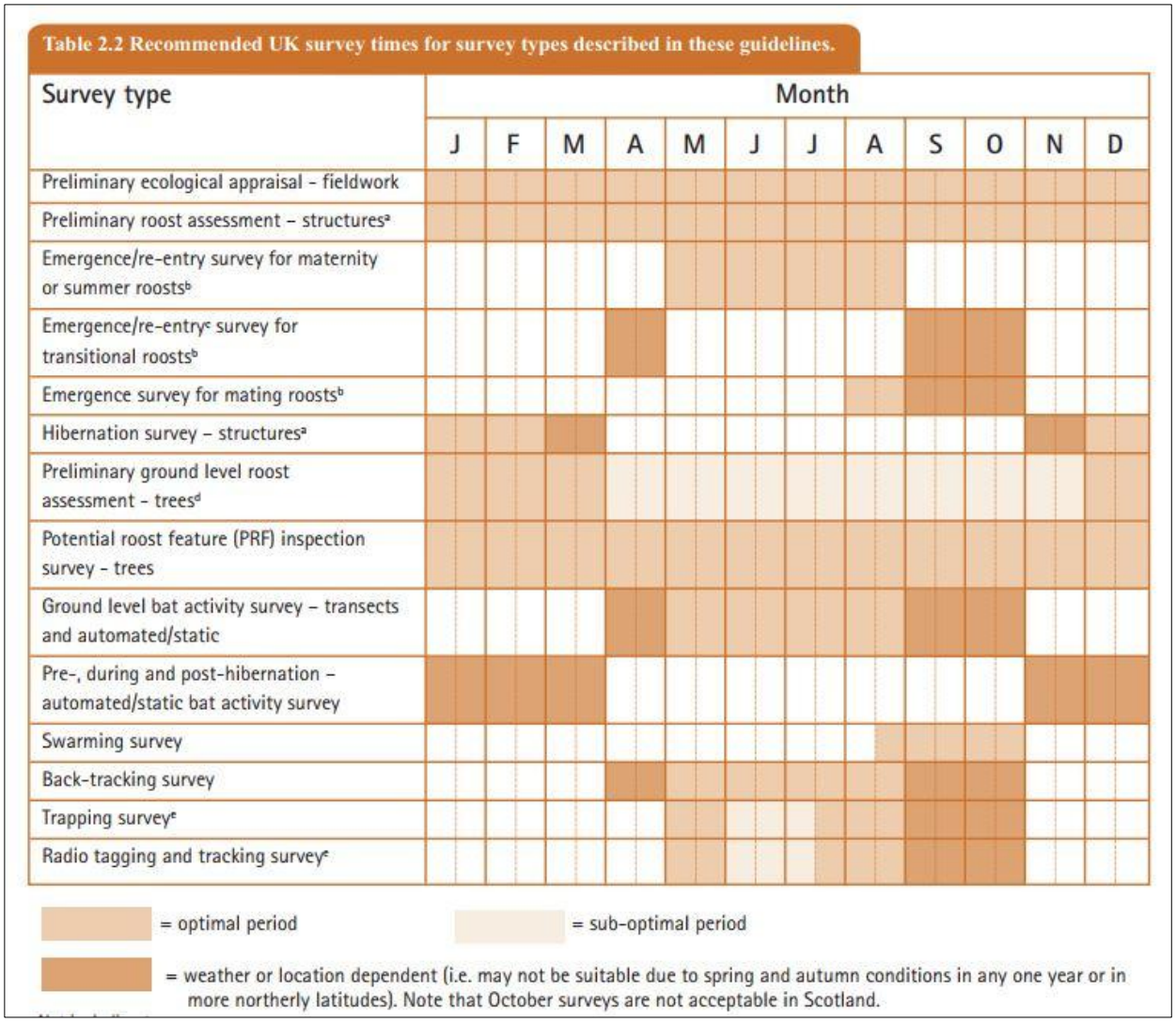


Table 2.2 Recommended UK survey times for survey types described in these guidelines.

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Preliminary ecological appraisal - fieldwork												
Preliminary roost assessment – structures[a]												
Emergence/re-entry survey for maternity or summer roosts[b]												
Emergence/re-entry[c] survey for transitional roosts[b]												
Emergence survey for mating roosts[b]												
Hibernation survey – structures[a]												
Preliminary ground level roost assessment - trees[d]												
Potential roost feature (PRF) inspection survey - trees												
Ground level bat activity survey – transects and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey												
Back-tracking survey												
Trapping survey[e]												
Radio tagging and tracking survey[e]												

= optimal period

= sub-optimal period

= weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October surveys are not acceptable in Scotland.

Figure 1a: Table 2.2 Reproduced from Collins (2016)

1.2.1.1 Buildings

26. In Marnell *et al.* (2022), Table 3 (The Applicability of Survey Methods) provides information on the type of surveys that can be undertaken according to the different seasons.

27. Marnell *et al.* (2022) states that it is more suitable to survey buildings in the summer months. The following is a summary of the principal points:
    1. The presence of a significant bat roost (invariably a maternity roost) can normally be determined on a single visit at any time of year, provided that the entire structure is accessible and that any signs of bats have not been removed by others. However, a visit during the summer or autumn has the advantage that bats may be seen or heard.
    2. Roosts used by a small number of bats, as opposed to maternity sites, can be particularly difficult to detect and may require extensive searching backed up (in summer) by bat detector surveys or emergence counts.
    3. If the entire building is not accessible or signs of bats may have been removed by others, or by the weather, bat detector or exit count methodologies may be required to back up a limited search.

Table 3. The applicability of survey methods.

Season	Roost type	Inspection	Bat detectors and emergence counts
Spring (Mar – May)	Building	Suitable (signs, perhaps bats)	Limited, weather dependent
	Trees	Difficult (best for signs before leaves appear)	Rarely useful
	Underground	Suitable (signs only)	Static detectors may be useful
Summer (June-August)	Building	Suitable (signs and bats)	Suitable
	Trees	Difficult	Limited; use sunrise survey
	Underground	Suitable (signs only)	Rarely useful
Autumn (September –November)	Building	Suitable (signs and bats)	Limited, weather dependent
	Trees	Difficult	Rather limited weather dependent; use sunrise survey?
	Underground	Suitable (signs, perhaps bats)	Static detectors may be useful
Winter (December-February)	Building	Suitable (signs, perhaps bats))	Rarely useful
	Trees	Difficult (best for signs after leaves have gone)	Rarely useful
	Underground	Suitable (signs and bats)	Static detectors may be useful

Figure 1b: Table 3 Reproduced from Marnell *et al.* (2022)

28. The following table is used as a guide to determine the level and timing of surveys for buildings/structures with reference to the surrounding habitat. Buildings are assessed during the daytime to determine their suitability as a bat roost and are described using the parameters Negligible, Low, Moderate or High suitability in view of Table 2 from Marnell *et al.* (2022). The level of suitability informs the level of surveying and timing of surveys required based on Table 7.3 of Collins, 2016 & 2023 (Note: These two tables are presented in Appendix 1 of the guidance, but a summary is provided in Table 2a below).

Table 2a: Building Bat Roost Classification System & Survey Effort (Adapted from Collins, 2016 & 2023 and Marnell *et al.*, 2022)

Suitability Category	Description (examples of criteria)	Survey Effort (Timings)
Negligible	Building has no potential as a roost site, urban setting, heavily disturbed, building material unsuitable, building in poor condition etc.	No surveys required
Low	Building has a low potential as a roost site. No evidence of bat usage (e.g. droppings)	One dusk emergence survey (Collins, 2016 – permitted dawn surveys)
Moderate	Building with some suitable voids / crevices for roosting bats. Some evidence of bat usage. Suitable foraging and commuting habitat present.	At least one survey in May to August, minimum of two dusk emergence surveys (Collins, 2016 – permitted dawn surveys)
High	Building with many features deemed suitable for roosting bats. Evidence of bat usage. Largely undisturbed setting, rural, suitable foraging and commuting habitat, suitable roof void and building material.	At least two surveys in May to August, with a minimum of three surveys (Collins, 2016 – permitted dawn surveys)

1.2.1.2 Trees

29. Marnell *et al.* (2022) recommends the following in relation to detecting roosts in trees:
    - '*The best time to carry out surveys for suitable cavities is between November and April, when the trunk and branches are not obscured by leaves. If inspection suggests that the tree has suitable cavities or roost sites, a bat detector survey at dusk or dawn during the summer may help to produce evidence of bats, though the nomadic nature of most tree-dwelling species means that the success rate is very low.*
    - *It can also be difficult to pinpoint exactly which tree a bat emerged from. A dawn survey is more likely to be productive than a dusk one as swarming bats returning to the roost are much more visible than those leaving the roost. Because tree-dwelling bats move roosts frequently, a single bat-detector survey is unlikely to provide adequate evidence of the absence of bats in trees that contain a variety of suitable roosting places.*
    - *Several dawn or dusk surveys spread over a period of several weeks from June to August will greatly increase the probability of detecting significant maternity roosts and is recommended where development proposals will involve the loss of multiple trees*'.

30. As a consequence, the Bat Tree Habitat Key (BTHK) (2018) Potential Roost Features (PRFs) list and the classification system adapted from Collins (2016 & 2023) is recommended as part of the daytime inspection of trees to determine their Potential Bat Roost (PBR) value. Details of the methodology followed is presented in Section 3.2.2.

1.2.2 Evaluation & Assessment Criteria

31. Based on the information collected during the desktop studies and bat surveys, an ecological value is assigned to each bat species recorded based on its conservation status at different geographical scales (Table 2b). For example, a site may be of national ecological value for a given species if it supports a significant proportion (e.g. 5%) of the total national population of that species.

Table 2b: The Six-Level Ecological Valuation Scheme used in the CIEEM Guidelines (2016) Ecological Value

Ecological Value	Geographical Scale of Importance
International	International or European scale
National	The Republic of Ireland or the island of Ireland scale (depending on the bat species)
Regional	Province scale: Leinster & Munster
County	County scale: Counties Dublin, Kildare, Offaly, Laois and Tipperary
Local	Proposed Project and immediate surroundings
Negligible	None, the feature is common and widespread

32. If bat roosts are recorded, their roost status is determined using Figure 20 from Marnell *et al.* (2022). This figure is presented below (Figure 1c). This figure is also used to determine the conservation significance of the roost in order to prepare appropriate bat mitigation measures.

33. Impacts on bats can arise from activities that may result in:
    - Physical disturbance of bat roosts e.g. destruction or renovation of buildings
    - Noise disturbance e.g. increased human presence, use of machinery etc.

- Lighting disturbance
- Loss of roosts e.g. destruction or renovation of buildings
- Modifications of commuting or foraging habitats
- Severance or fragmentation of commuting routes
- Loss of foraging habitats.

34. It is recognised that any development will have an impact on the receiving environment, but the significance of the impact will depend on the value of the ecological features that would be affected. Such ecological features will be those that are considered to be important and potentially affected by the Proposed Project.

35. The guidelines consulted recommend that the potential impacts of a proposed development on bats are assessed as early as possible in the design stage to determine any areas of conflicts. In particular the Table 4 (presented as Figure 1d below) and Figure 20 (presented as Figure 1c) from Marnell *et al.* (2022) are referenced during this process.

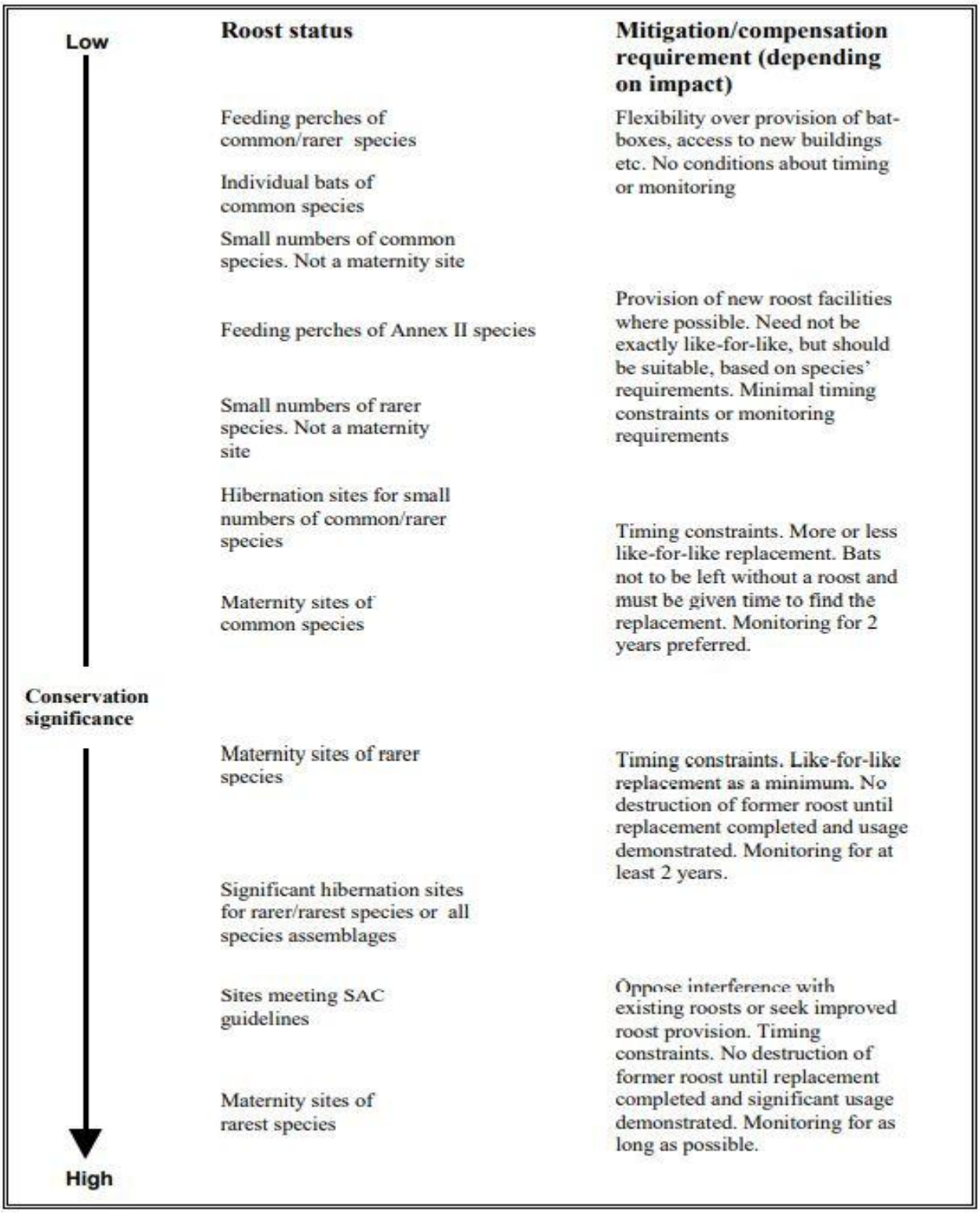


Figure 20 Guidelines for proportionate mitigation. The definition of common, rare and rarest species requires regional interpretation.

Figure 1c: Figure 20 (p 46) Reproduced from Marnell *et al.* (2022)

Table 4 The scale of main impacts at the site level on bat populations. [**NB** This is a general guide only and does not take into account species differences. Medium impacts, in particular, depend on the care with which any mitigation is designed and implemented and could range between high and low.]

Roost type	Development effect	Scale of impact		
		Low	Medium	High
Maternity	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside breeding season	✓		
	Post-development interference			✓
Major hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference			✓
Minor hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction, modification		✓	
	Modified management		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference		✓	
	Temporary destruction, then reinstatement	✓		
Mating	Destruction		✓	
	Isolation caused by fragmentation		✓	
	Partial destruction	✓		
	Modified management	✓		
	Temporary disturbance	✓		
	Post-development interference	✓		
	Temporary destruction, then reinstatement	✓		
Night roost	Destruction	✓		
	Isolation caused by fragmentation	✓		
	Partial destruction	✓		
	Modified management	✓		
	Temporary disturbance	✓		
	Post-development interference	✓		
	Temporary destruction, then reinstatement	✓		

Figure 1d: Table 4 (p 44) Reproduced from Marnell *et al.* (2022)

36. Different parameters are considered for the overall assessment of the potential impact(s) of a proposed development on local bat populations.

37. The overall impacts of the Proposed Project on local bat populations are assessed using the following criteria:
    - Impact Quality using the parameters Positive, Neutral or Negative Impact listed in Table 2c (based on EPA, 2022)

Table 2c: Criteria for Assessing Impact Quality Based on EPA (2022)

Quality of Effect	Criteria
Positive	A change which improves the quality of the environment (for example, by increasing species diversity; or the improving reproductive capacity of an ecosystem, or by removing nuisances or improving amenities).
Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem; or damaging health or property or by causing nuisance).

    - Impact Significance of potential impact parameters on specific bat species in relation to particular elements (e.g. roosting sites, foraging area and commuting routes) are assessed with reference to the following:
        - Table 4 of Marnell *et al.* (2022) (Figure 1d);
        - the known ecology and distribution of the bat species in Ireland;
        - bat survey results including type of roosts (if any recorded), pattern of bat usage of the study area, level of bat activity recorded;
        - and bat specialist experience.

    - Impact Significance of the Proposed Project on local bat populations may be determined, where applicable, using the parameters listed in Table 2d (based on EPA, 2022).

Table 2d: Criteria for Assessing Significance of Effects Based on EPA (2022)

Significance of Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics

38. The following terms will be used, where possible and applicable, when quantifying the duration of the potential effects (selected from EPA, 2022):
    - Temporary – effects lasting less than a year
    - Short-term – effects lasting 1 to 7 years
    - Medium-term – effects lasting 7 to 15 years
    - Long-term – effects lasting 15 to 60 years
    - Permanent – effects lasting over 60 years
    - Reversible – effects that can be undone, for example through remediation or restoration

1.2.3 Bat Mitigation Measures

1.2.3.1 Bat Houses

39. The NPWS Mitigation Guidelines (Marnell *et al.* 2022) provides some general guidelines in relation to the provision of alternative roosts but states that critical issues '*are the size and suitability of the final roost and the disposition of the entrances and flight paths, including the location of any exterior lighting or vegetation*'.

1.2.3.1.1 Bat Houses – Effective Mitigation Measures

40. The principal bat species that the bat houses are designed for is the lesser horseshoe bat and the design is based on that recommended by the Vincent Wildlife Trust (VWT) and tested by NPWS in County Cork. Provision is also made for other bat species in the bat houses.

41. Additional mitigation measures for the bat house include the incorporation of bat tubes in the external walls. These are to provide roosting features for Daubenton's bats. Daubenton's bats have a preference to roost in crevices which the bat tubes are designed to replicate. The author has previously used bat tubes to mitigate for the loss of crevices in natural stone bridges and the bat tubes were used by Daubenton's bats post works. Wall mounted bat boxes proposed for inside the bat house are specific for common pipistrelles which Collins *et al.* (2020) reported as the type of bat box preferred by this species.

1.2.3.2 Bats & Lighting

42. All European bat species, including Irish bat species, are nocturnal. Light levels as low as typical full moon levels, i.e. around 0.1 LUX, can alter the flight activity of bats (Voigt *et al.* 2018). Any level of artificial light above that of moonlight can mask the natural rhythms of lunar sky brightness and, thus, can disrupt patterns of foraging and mating and might, for instance, interfere with entrainment of the circadian system.

43. Artificial light pollution is an increasing global problem (Rich and Longcore, 2006) and Artificial Light At Night (ALAN) is considered a major threat to biodiversity, especially to nocturnal species. As urbanisation expands into the landscape, the degree of street lighting also expands. Its ecological impacts can have a profound effect on the behaviour of nocturnal animals including impacts on reproductive behaviours, orientation, predator-prey interaction and competition among others, depending on the taxon and ecosystem in question (Longcore and Rich, 2004). It is considered by Hölker *et al.* (2010) to be a key biodiversity threat to biodiversity conservation. In relation to bats, the potential impacts of artificial night lighting can result in habitat fragmentation (Hanski, 1998), delay in roost emergence (Downs *et al.,* 2003) and a reduction in prey items.

44. In the context of behavioural ecology, lights can work to attract or repel certain animals. Many groups of insects, including moths, lacewings, beetles, bugs, caddisflies, crane flies, midges, hoverflies and wasps, can be attracted to artificial light (Eisenbeis and Hassel 2000; Frank 1988; Kolligs 2000). Attraction depends on the spectrum of light. In the context of street lights, white (mercury vapour) lamps emit a white light that includes ultraviolet. High pressure sodium lights (yellow) emit some ultraviolet, while low pressure sodium lamps (orange) emit no ultraviolet light (e.g. Rydell 2006). As a result of the attractiveness of lights to aerial invertebrates, swarms of insects often occur in and around street lights and, particular bat species such as aerial insect predators, can exploit the swarming insects to their advantage. Such attraction can also take prey items away from dark zones where light sensitive species are foraging, thus reducing their likelihood of feeding effectively.

45. Rydell (2006) divides bats into four categories in terms of their characteristic behaviours at street lamps. The four categories are based on bat size, wing morphology and echolocation call characteristics which were highlighted by Norberg and Rayner (1987) to determine flight speed, manoeuvrability, and prey detection capabilities of bats. Rydell (2006) stated that the large, fast flying bats, which are confined to open airspace, fly high over lit areas and are rarely observed near ground level. None of these, typically large free-tailed bats (e.g. large species of the family Molossidae), are found in Ireland. The second category are the medium-sized fast flying species, including the *Nyctalus* species, which patrol the street well above the lights and can be seen occasionally as they dive for prey into the light cone. This group includes the Leisler's bat, which is found in Ireland. Rydell's third category describes the small but fast flying bats that are manoeuvrable enough to forage around light posts or under the lights and includes the small *Pipistrellus* species of the old world, three of which are found in Ireland. The fourth category includes broad-winged slow flyers, most of which are seldom or never observed at lights. Slow flying bat species may be more vulnerable to predation by diurnal birds of prey and this may restrict their exploitation of insects around artificially illuminated areas (e.g. Speakman 1991). There are also concerns that some bat species are more light sensitive and therefore actively avoid lit up areas. This is particularly relevant for lesser horseshoe bats. Therefore from this, we can categorise the suite of Irish bats species as follows (please note that the sensitivity category is the author's description):

Table 3a: Potential Light Sensitivity of the Irish Bat Fauna Using Categories Described by Rydell (2006)

Species: Common Name	Rydell Category	Sensitivity
Daubenton's bat *Myotis daubentonii*	Category 4	Light sensitive
Whiskered bat *Myotis mystacinus*	Category 4	Light sensitive
Natterer's bat *Myotis nattereri*	Category 4	Light sensitive
Leisler's bat *Nyctalus leisleri*	Category 2	Light tolerant
Nathusius' pipistrelle *Pipistrellus nathusii*	Category 3	Semi-tolerant
Common pipistrelle *Pipistrellus pipistrellus*	Category 3	Semi-tolerant
Soprano pipistrelle *Pipistrellus pygmaeus*	Category 3	Semi-tolerant
Brown long-eared bat *Plecotus auritus*	Category 4	Light sensitive
Lesser horseshoe bat *Rhinolophus hipposideros*	Category 4	Light sensitive

46. The ability of different bat species to exploit insects gathered around street lights varies greatly. Gleaning species such as *Myotis* bats rarely forage around street lights (Rydell and Racey, 1995). The ecological effects of illuminating aquatic habitats are also poorly known. Moore *et al.* (2006) found that light levels in an urban lake, subject simply to sky glow and not direct illumination from lights, reached the same order of magnitude as full moonlight.

47. All European bat species, including Irish bat species, are nocturnal. As a consequence, the scientific literature provides evidence that artificial lighting does impact on bats. The degree of impact depends on the light sensitivity of the bat species and the type of luminaire. Lesser horseshoe bats are light sensitive and therefore adversely effected by the presence of lighting in all aspects of their life strategies (e.g. foraging, commuting, drinking and roosting).

48. The potential impacts of street lighting can be summarised as follows:
    - Attracting Prey Items
      Lights can work to attract or repel certain animals. Many groups of insects can be attracted to artificial light and this attraction depends on the spectrum of light which can take prey items away from dark zones where light sensitive species are foraging, thus reducing their likelihood of feeding effectively.

    - Reducing Foraging Habitat
      The research documents that there is less bat species diversity foraging in habitats lit up by artificial lighting. Only bat species considered to be light tolerant are generally able to exploit habitats with lighting present, but overall, all bat species activity tends to be less in lit up habitats compared to non-lit up habitats.

    - Fragmenting The Landscape
      Scientific evidence shows that lighting is a barrier to the movement of light sensitive bat species, such as lesser horseshoe bats. Light sensitive bat species will actively seek dark corridors to commute along and therefore the presence of lighting in commuting habitats will restrict their movement of such species in the landscape.

    - Reducing Drinking Sites
      There is increasing evidence that drinking sites for bats is an essential component for local bat population survival and that the presence of artificial lighting at waterbodies prevents bats from availing of this resource.

49. Lighting, including street lights, come in an array of different types but for street lights they typically include High Pressure Sodium, Low Pressure Sodium, Mercury Vapour and the more modern Light Emitting Diodes (LED). An array of field-based research has been undertaken to document the potential impact of lighting on bat flight activity. LED lighting is predicted to constitute 70% of the outdoor and residential lighting markets by 2020. While the use of LEDs promotes energy and cost savings relative to traditional lighting technologies, little is known about the effects these broad-spectrum 'white' lights will have on wildlife, human health, animal welfare, and disease transmission. As a consequence, a large array of research has been undertaken recently on the potential impact of LED on bats.

50. Stone *et al.* (2012) undertook research in relation to 'Cool' LED street lights on an array of local bat species in England. Overall the presence of LED street lights had a significant negative impact on lesser horseshoe bats and *Myotis* spp. for all light treatments investigated while there

was no sign impact of light treatment type on *Pipistrellus pygmaeus* (soprano pipistrelle – a common Irish bat species) or *Nyctalus* (Leisler's bats is part of this bat family and is a common Irish bat species) /*Eptesicus* species. This research paper also documented behavioural changes for the different bat species. Lesser horseshoe bats and *Myotis* spp. did not avoid lights by flying along the other side of the hedge but altered their commuting behaviour altogether. It was concluded that LEDs can fragment commuting routes causing bats to alter their behaviour with potentially negative conservation consequences. Lesser horseshoe bat activity was significantly lower during high intensity treatment than medium, but at all treatment levels (even as low as 3.6 LUX), activity was significantly lower than unlit control (LUX level measurements were taken at 1.7m at the hedge below the light).

51. Russo *et al.* (2017) investigated the impact of LED lighting on drinking areas for bats in Italy. Drinking sites are considered to be important components for the survival of local bat populations. Drinking sites were illuminated with a portable LED outdoor light emitting (48 high-power LEDs generated a light intensity of 6480 lm (4000–4500 K) at 25°C, two peaks of relative luminous flux at 450 and 590 nm). *Plecotus auritus* (brown long-eared bat – resident in Ireland), *Pipistrellus pygmaeus* (soprano pipistrelle – resident in Ireland) and *Rhinolophus hipposideros* (lesser horseshoe bat – resident in Ireland) did not drink when troughs were illuminated.

52. Rowse *et al.* (2018) researched the impacts of LED lights (portable lights, 97W 4250K LED on 10m high poles) in England on local bat populations. Treatments were either 100% light intensity; dimmed (using pulse width modulation) at 50% or 25% light intensity; and unlit. Sites were in suburban areas along busy roads but with vegetation and tree lines adjacent. High light levels (50% & 100% light treatments) increased activity of opportunistic *Pipistrellus pipistrellus* (common pipistrelle – resident in Ireland) but reduced activity of *Myotis* species group. Conversely 25% and unlit sites had no difference from each other. The research paper concludes that dimming could be an effective strategy to mitigate ecological impacts of street lights.

53. Wakefield *et al.* (2016) stated that an important factor to be aware of in relation to LED is the direction of the light projected. Therefore, it is recommended that highly focused/shielded LEDs designed to filter out short wavelengths of light should be used as they attract relatively fewer insects. Less insects attracted to street lights means less insects leaving dark zones where light sensitive bat species primarily feed.

54. Martin *et al.* (2021) showed that LED street lights lead to a reduction in the total number of insects captured with light traps in a wide range of families. Coleoptera and Lepidoptera orders were the most sensitive groups to ecological light pollution in the study area. The paper suggested that LED was the least attractive light system for most of the affected groups both because of very little emitted short-wavelength light and because of its lower light intensity. They also concluded that reduction in insect attraction to LED could be even larger with current LED technologies emitting warmer lights, since other research showed that LED emitting 'warmer white' colour light (3000 K) involves significantly lower attraction for insects than 'colder white' LED (6000 K).

55. Wilson *et al*. (2021) investigate the impact of LED on biting insects and concluded because LED is highly malleable with regard to spectral composition, they can be tailored to decrease or increase insect catches, depending on situation. Therefore, this design control of LED could greatly assist in reducing impact of street lighting on local bat populations.

56. Stone *et al*. (2015) reviewed the impacts of ALAN on bat roosts and flight paths in order to provide recommendations in relation to street lighting. The principal recommendations were to avoid lighting places where bats are present and to ensure that there are interconnected light exclusion zones and variable light regimes with reduced intensity of light in specific areas (e.g. important foraging and commuting habitats) as responses to street lighting may vary between species. It recommends that there should be a 'light threshold'.

1.2.3.2.1 Lighting Guidelines – Effective Mitigation Measures

57. As a consequence of this extensive amount of research, there are two principal guideline documents available for best practice for effective mitigation relating to outdoor lighting.

58. EUROBATS lighting guidelines (Voight *et al.,* 2018) recommends the following:
    - ALAN should be strictly avoided, and artificial lighting should be installed only where and when necessary, coupled with the following:
        - Dynamic lighting schemes, where possible.
        - Use a minimal number of lighting points and luminaires on low positions in relation to the ground for minimising light trespass to adjacent bat habitats or into the sky.
        - Use focused light, e.g. by using LED or shielded luminaires which limit the light flux only to the required areas and prevent light trespass into adjacent bat habitats.
        - Create screens, either by erecting walls or by planting hedgerows or trees, to prevent light trespass, e.g. from illuminated roads, to surrounding bat habitats.
        - Exits of bat roosts and a buffer zone around them should be protected from direct or indirect lighting to preserve the natural circadian rhythm of bats.

59. The BCT (2023) guidelines provide a list of recommendations in relation to luminaire design, which is based on the extensive research completed to-date on the potential impact of lighting on bats, and therefore provides best practice mitigation measures. These recommendations are the basis of mitigation measures pertaining to bats listed in this report and are summarised as follows:
    a. All luminaires used will lack UV/IR elements to reduce impact.
    b. LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
    c. A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
    d. Luminaires will feature peak wavelengths higher than 550 nanometer (nm) to avoid the component of light most disturbing to bats.
    e. Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
    f. Only luminaires with an upward light ratio of 0% and with good optical control will be used.
    g. Luminaires will be mounted on the horizontal, i.e. no upward tilt.
    h. Any external security lighting will be set on motion-sensors and short (1min) timers.
    i. As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

1.2.3.3 Bat Box Schemes

60. Bat Boxes are frequently used as part of bat mitigation to retain local bat populations within an area proposed to be developed. The NPWS Mitigation Guidelines (Marnell *et al.* 2022) considers that where roosts of low conservation significance (Figure 20, Marnell *et al.* (2022)) are to be lost due to a development, bat boxes may provide an appropriate form of mitigation and the

effectiveness depends on the type of bat box provided, which should be appropriate to the bat species (Figure 1e).

Table 7 The types of bat box used by different species.

Species	Summer/ maternity	Summer/non breeding	Hibernation*	Notes
Rhinolophus hipposideros	N/A	N/A	N/A	Horseshoe bats cannot use bat boxes
Myotis daubentonii	H	H		
Myotis mystacinus	H	H		
Myotis nattereri	H	?		
Pipistrellus nathusii	H	H		
Pipistrellus pipistrellus	C	C/H	C	H are rarely used as maternity roosts.
Pipistrellus pygmaeus	C	C/H	C	
Nyctalus leisleri	H	H	H?	
Plecotus auritus	H	H		Maternity roosts

Key

* Large well-insulated hibernation boxes may be more successful

N/A -not applicable; bat boxes should not be considered as replacement roosts

H – tree hollow-type box, providing a void in which bats can cluster

C – tree crevice-type box, with 25-35mm crevices

? – few data on which to base an assessment

Figure 1e: Table 7 (p 58) Reproduced from Marnell *et al.* (2022)

1.2.3.3.1 Effectiveness of Bat Boxes as a Mitigation Measure

61. Two publications that provide good scientific advice in relation to the effectiveness of bat boxes are presented below. McAney & Hanniffy (2015) reviewed the use of bat boxes in Ireland in relation to the bat usage of the following bat box schemes: 62 Schwegler boxes of three models erected in Portumna Forest Park (Bat box scheme consisted of 30x 1FF design, 30x 2FN design and 2x 1FW design); 50 2FN boxes erected in Coole-Garryland Nature Reserve and 50 2FN boxes erected in Knockma Nature Reserve of which 40 were later transferred to Glengarriff Nature Reserve County Cork. The bat box schemes were set up in March 1999, and data was collected up to 2015. Eight of the nine resident bat species were recorded roosting in bat boxes (lesser horseshoe bats cannot use bat boxes due to their need to fly, rather than crawl, into roosts). The main summary points are as follows:
    - Leisler's, brown long-eared and *Pipistrellus* spp. were recorded in boxes at all three Galway woods, Daubenton's bat was only recorded in Garryland, Natterer's bat was only recorded in Glengarriff and whiskered/Brandt's was recorded just twice in Garryland.
    - There was a 31% chance of encountering a bat at Portumna Forest Park compared to 11.5% and 10% at Coole-Garryland Nature Reserve and Knockma Nature Reserve respectively.
    - Pipistrellus spp. preferred 1FF boxes as this bat box design offers crevice-like roosting conditions. This species group also showed a seasonal preference with more bats present later in the season (visual observations confirmed the bats were using the boxes as mating

roosts) and their numbers increased from the time that the bat box scheme was originally established.
- Brown long-eared bats preferred 2FN boxes that mimic holes in trees, the natural roosting sites for this species. This species also showed no seasonal pattern to their occurrence in the boxes. However, one aspect of 2FN boxes that this report mentions is the high occupancy by birds which can be an issue in relation to nesting material reducing the availability of bat boxes for roosting bats.
- Leisler's bat showed no preference for box model but showed a seasonal preference with more bats present later in the season.
- Aspect was not a significant factor for occupancy, but most boxes received dappled sunshine for part of the day.
- The other factor that proved significant was the length of time the boxes were in place, with occupancy rates increasing for all three species, although in the case of pipistrelles this increase appears to have stabilised. So, although the boxes were occupied very quickly, it took several years before they were regularly occupied and before clusters of bats were formed and breeding was confirmed.

62. Collins *et al.* (2020) investigated the implementation and effectiveness of bat roost mitigation, which included bat boxes, in building developments completed between 2006 and 2014 in England and Wales. The bat species studied were: common and soprano pipistrelle, brown long-eared bat and *Myotis* species, all of which are present in Ireland. A summary of the main points relating to bat boxes are as follows:
    - Bat boxes were the most frequently deployed roosting provision (i.e. alternative roosts), being installed at 64% (n = 71) of sites surveyed as a compensation or enhancement measure.
    - Box frequencies ranged from one to 41 at sites where they were installed, with an average of 6.6 boxes per site.
    - Bats, or evidence of bats, were recorded in 20% of these bat boxes.
    - Bat boxes mounted externally on buildings showed the highest occupation rate regardless of species while Common pipistrelle showed a preference for these over tree mounted boxes; the opposite was true for soprano pipistrelle.
    - The four most popular bat box models used by consultants in the study were all Schwegler woodcrete bat boxes. Bat presence was highest in the 1FF bat box design (32%, n = 53) and lowest for birds (8%). The tree-mounted 2F and wall-integrated 1FR/2FR models both demonstrated similar bat presence rates of 23% (n = 43) and 25% (n = 32) respectively. The 2FN tree-mounted model showed the lowest presence rate for bats (11%, n = 19) and the highest for birds (58%). There were also 26 timber bat boxes, none of which were used by bats.

63. The author has also erected a number of bat box schemes and, where possible, has completed occasional monitoring visits. One such example is a bat box scheme erected in Kileshandra, Co. Cavan which consists of eight Schwegler woodcrete bat boxes of various designs. The bat boxes were erected on mature trees located in a linear woodland adjacent to a river. This bat box scheme was erected in 2012 as part of mitigation for the demolishment of a large derelict building where small satellite roosts were recorded for *Pipistrellus* spp. and Daubenton's bat. Two site visits have been completed since 2012 and during these visits the bat boxes were checked for evidence of bat usage. The first site visit was on 25/8/2015 and one bat box was occupied by a single Leisler's bat while the additional seven bat boxes had evidence of bat droppings (*Pipistrellus* spp. and *Myotis* spp.). During the second site visit (27/7/2019) four bat boxes were

occupied by bats (Soprano pipistrelle x1 individual (adult male), Leisler's bat x1 individual (adult male) and two bat boxes with x16 Daubenton's bats and x10 Daubenton's bats respectively). Biometrics were recorded for 12 of the bats (which included ten of the Daubenton's bats recorded in the bat box with 16 individuals) and five of these Daubenton's bats were lactating females with the remaining five Daubenton's bats recorded as juveniles, thereby indicating that this bat box was used as a maternity roost. The remaining four bat boxes all had droppings within for *Pipistrellus* spp and Leisler's bats. This bat box scheme, while just one example, demonstrates that when bat boxes are erected in an area with good bat habitat (bat survey documented a high level of bat activity for the named bat species), a high level of occupancy of bat boxes will occur.

64. In relation to bat boxes, Marnell *et al.* (2022), a document that provides guidelines that are considered to be practical and effective based on past experience, recommends that the design life of potential bat boxes, including essential maintenance, should be about ten years, as this would be comparable with the lifespan of the tree roosts that bat boxes are designed to mimic. The guidelines continue by stating that the '*This lifespan can be achieved with good quality wooden boxes and exceeded by woodcrete bat boxes or other types of construction that ensure any softwoods are protected from the weather and attack by squirrels*' (note – this includes woodstone bat boxes).

65. In relation to the number of bat boxes recommended to be erected, Lintott & Mathews (2018) found that the greater the number of bat boxes deployed, the greater the probability of at least one of the boxes becoming occupied and that the odds of bats occupying at least one box increased by approximately 7% with each additional bat box that was deployed. Bat boxes are erected, as part of this Proposed Project, to mitigate for the loss of potential roosts in trees. Therefore, the number of bat boxes is calculated according to the number of trees with additional boxes added for greater bat conservation value.

66. Therefore, Schwegeler woodcrete bat boxes are recommended as a bat mitigation measure and the authors preference to use 1FF designs as this box is open at the bottom which reduces build-up of droppings (i.e. it is a self-cleaning bat box). Both McAney & Hannify (2015) and Collins *et al.* (2020) demonstrated the usage of this bat box design by the bat species recorded in this survey report. This bat box is also less likely to be used by birds, therefore retaining it for bat usage between monitoring visits. To increase occupancy of bat boxes by bats it is important to erect bat boxes 4m or higher (to ensure that bat boxes are out of reach from disturbance by humans and predation by other mammals) and that they should be located where bats have been documented foraging and commuting. The aspect of the bat box is not an influencing factor in relation to occupancy. These recommendations have all been included in this report.

1.2.3.4 Landscaping For Bats

67. Bats depend on the landscape for foraging, roosting and commuting. Different bat species will travel different distances, to and from their principal roosting sites, depending on their morphology, life stage and preferred foraging areas. Bats in Ireland are insect eating mammals and feed on an array of insects, whose populations are ultimately supported by vegetation. Areas of rich vegetation habitat tend to support higher abundances of insect populations and therefore a higher abundance of bats. In addition, many bat species rely on continuous linear habitats (e.g. treelines and hedgerows) to commute. As a consequence, landscaping as part of a proposed development is an important element to the goal of retaining local bat populations.

68. The BCT publication 'Landscape and Urban Design for bats and biodiversity' (Gunnell *et al.,* 2012) is a resource for planning landscape design in urban areas. This resource encourages measures to enhance existing bat foraging habitat, create water features such as ponds (drinking sites for bats and as a source of emerging insects), manage species rich grassland and planting of tall vegetation to ensure that existing treelines and hedgerows are linked. It also recommends that use of landscaping as a means to creating dark zones or dark corridors for this mammal group to fly along in lit urban areas. This is also supported by the BCT Lighting Guidelines (BCT, 2018) where landscape design can be utilised to buffer potential light spillage from developments.

69. The above guidelines have been consulted in the design of landscaping for bats as part of this Proposed Project.

1.2.3.5 Seasonality of Bat Mitigation Measures

70. The NPWS Mitigation Guidelines (Marnell *et al.* 2022) provides best practice guidance in relation to the timing of bat mitigation measures. It states that the most common and effective method of avoiding potential harm to a bat is to carry out the work at an appropriate time of the year. Figure 1f provides a summary of timings.

Table 5 Optimum season for works in different types of roosts.

Bat usage of site	Optimum period for carrying out works (some variation between species)
Maternity	1st October – 1st May
Summer (not a proven maternity site)	1st September – 1st May
Hibernation	1st May – 1st October
Mating/swarming	1st November – 1st August

Figure 1f: Table 5 (p 50) Reproduced from Marnell *et al.* (2022)

71. Timing of bat mitigation measures is relevant to the proposed tree felling of PBRs. Felling is recommended outside the principal maternity season and during mild weather conditions (to avoid cold weather that would encourage bats to hibernate). This, coupled with dusk/dawn surveys and additional daytime inspections, are best practice to ensure that tree felling is completed without causing harm to potentially roosting bats. The preferred tree felling months also avoids the bird nesting season.

1.3 Project Description

1.3.1 Site Location

72. The Proposed Project is a water supply pipeline involving the abstraction and pumping of raw water from the Lower River Shannon at Parteen Basin, treatment of the water nearby at Incha Beg, County Tipperary, and pumping of the treated water to a high point near Cloughjordan, County Tipperary. From this high point near Cloughjordan, the treated water will flow by gravity through the midlands to a termination point at Peamount, in County Dublin (within the administrative area of South Dublin County Council), where it will connect into the existing Greater Dublin Area Water Resource Zone (GDA WRZ) network.

1.3.2 Proposed Project

73. A summary of the principal elements of the Proposed Project are included in Table 3b:

Table 3b: Summary of Principal Project Infrastructure

Proposed Project Infrastructure	Outline Description of Proposed Project Infrastructure*
Permanent Infrastructure	
Raw Water Intake and Pumping Station (RWI&PS) (Infrastructure Site) County Tipperary	• The RWI&PS would be located on a permanent site of approximately 4ha on the eastern shore of Parteen Basin in the townland of Garrynatineel, County Tipperary. In addition, approximately 1ha of land would be required on a temporary basis during construction. • The RWI&PS has been designed to abstract enough raw water from the River Shannon at Parteen Basin to provide up to 300Mld of treated water by 2050. • The RWI&PS site would include a bankside Inlet Chamber, the Raw Water Pumping Station Building, two Microfiltration Buildings, an Electricity Substation and Power Distribution Building, and Dewatering Settlement Basins. The tallest building on the RWI&PS site would be the Microfiltration Buildings which would be 10.9m above finished ground level. Additionally, there would be a telemetry mast, the top of which would be 14m above finished ground level. • Power for the RWI&PS would be supplied via an underground connection to the existing Birdhill 38 kV electricity substation. • A new permanent access road from the R494 would be constructed to access the proposed RWI&PS site. This access road would be 5m in width and 670m in length. • The RWI&PS site boundary would be fenced with a stock proof fence and a 2.4m high paladin security fence 5m inside the boundary. The site would be landscaped in line with the surrounding environment to reduce its visual impact.
Raw Water Rising Mains (RWRMs) (Pipeline) County Tipperary	• The RWRMs would consist of two 1,500mm underground pipelines made from steel that would carry the raw water approximately 2km from the RWI&PS to the Water Treatment Plant (WTP) at Incha Beg, County Tipperary. The water would be pumped from the pumping station at the RWI&PS to the WTP. • Twin RWRMs have been proposed so that one RWRM can be taken out of service for cleaning and maintenance while still providing an uninterrupted flow of raw water through the other RWRM. • The RWRMs would include Line Valves, a Lay-By, Air Valves and Cathodic Protection. • A 20m wide Permanent Wayleave would provide Uisce Éireann with operational access to the RWRMs.
Water Treatment Plant (WTP) (Infrastructure Site) County Tipperary	• The WTP would be located on a permanent site of approximately 31ha at Incha Beg, County Tipperary, 2.6km north-east of the village of Birdhill, and 2km east of the proposed RWI&PS. In addition, approximately 2.5ha of land would be required on a temporary basis during construction. • The WTP would treat the raw water received from the RWI&PS via the RWRMs. Once treated, the High Lift Pumping Station (HLPS) would deliver the treated water onwards from the WTP to the Break Pressure Tank (BPT) at Knockanacree, County Tipperary, via the Treated Water Pipeline. • The WTP would comprise of a series of tanks and buildings including the Raw Water Balancing Tanks, Water Treatment Module Buildings, Sludge Dewatering Buildings, Sludge Storage Buildings, Clear Water Storage Tanks and HLPS, an Electricity Substation and Power Distribution Building, and the Control Building. The tallest building on the WTP site would be the Water Treatment Module Buildings which would be up to 15.6m above finished ground level. Additionally, there would be a telemetry mast, the top of which would be 14m above finished ground level. • There would also be a potential future water supply connection point at the junction between the permanent access road and the R445. • Power for the WTP would be supplied via an underground connection to the existing Birdhill 38 kV electricity substation. Solar panels would be placed on the roofs of the Chemical Dosing Manifold Building, the Water Treatment Module Buildings, Clear Water Storage Tanks and Sludge Storage Buildings, and at a number of locations on the ground to supplement the main power supply. • A new permanent access road from the R445 would be constructed and would be 6m in width and 640m in length. • The WTP site boundary would be fenced with a stock proof fence and a 2.4m high palisade security fence 5m inside the boundary. The site would be landscaped in line with the surrounding environment to reduce its visual impact.
Treated Water Pipeline from the WTP to the BPT (Pipeline) County Tipperary	• The Treated Water Pipeline from the WTP to the BPT would consist of a single 1,600mm underground steel pipeline which would be approximately 37km long. The water would be pumped through the Treated Water Pipeline from the WTP to the BPT by the HLPS. • The Treated Water Pipeline would include Line Valves, Washout Valves, Air Valves, Manways, Cathodic Protection and Lay-Bys. • A 20m wide Permanent Wayleave would provide Uisce Éireann with operational access to the pipeline (this Wayleave has been extended to approximately 30m at some Line Valves to provide access between the Lay-Bys and Line Valves). There would be an additional 10m wide Permanent Wayleave

Proposed Project Infrastructure	Outline Description of Proposed Project Infrastructure*
	at certain locations for operational access to smaller pipes connecting Washout Valves with permanent discharge locations.
Break Pressure Tank (BPT) (Infrastructure Site) County Tipperary	• The BPT would be located on a permanent site of approximately 7ha in the townland of Knockanacree, County Tipperary. In addition, approximately 0.8ha of land would be required on a temporary basis during construction. • The BPT would be located at the highest point of the pipeline. It marks the end of the Treated Water Pipeline from the WTP to the BPT and the start of the Treated Water Pipeline from the BPT to the Termination Point Reservoir (TPR) in the townland of Loughtown Upper, at Peamount, County Dublin. It would act as a balancing tank and would be required to manage the water pressures in the entire Treated Water Pipeline during flow changes, particularly during start-up and shut-down. • The BPT site would include the BPT and a Control Building. The BPT would be a concrete tank divided into three cells covered with an earth embankment. The BPT tanks would be 5m in height and partially buried below finished ground levels. The Control Building would be 7.2m over finished ground level. Additionally, there would be a telemetry mast, the top of which would be 14m above finished ground level. • Access to the BPT site would be via a new permanent access road from the L1064 which would be 5m wide and 794m in length. • Power for the BPT would be supplied via an underground connection from the existing overhead power line. Solar panels would be placed on the south facing side of the control building roof, on the BPT and at ground level to the south of the site to supplement the mains power supply. • The BPT site boundary would be bounded by the existing hedgerow / tree line with a 2.4m high palisade security fence around the permanent infrastructure. The site would be landscaped in line with the surrounding environment to reduce its visual impact.
Treated Water Pipeline from the BPT to the TPR (Pipeline) Counties Tipperary, Offaly, Kildare and Dublin	• The Treated Water Pipeline from the BPT to the TPR would consist of a single 1,600mm underground steel pipeline, approximately 133km long. • The water would normally travel through the pipeline by gravity; however, flows greater than approximately 165Mld would require additional pumping from the Booster Pumping Station (BPS) in the townland of Coagh Upper, County Offaly. • The Treated Water Pipeline would include Line Valves, Washout Valves, Air Valves, Manways, Cathodic Protection, Lay-Bys and potential future connection points. • A 20m wide Permanent Wayleave would provide Uisce Éireann with operational access to the pipeline (this Wayleave has been extended to approximately 30m at some Line Valves to provide access between the Lay-Bys and Line Valves). There would be an additional 10m wide Permanent Wayleave at certain locations for operational access to smaller pipes connecting Washout Valves with permanent discharge locations.
Booster Pumping Station (BPS) (Infrastructure Site) County Offaly	• The BPS would be located on a permanent site of approximately 2.6ha in the townland of Coagh Upper, County Offaly. It would be located approximately 30km downstream from the BPT. In addition, approximately 3ha of land would be required on a temporary basis during construction. • The BPS would be required when the demand for water causes the flow through the pipeline to exceed approximately 165Mld. • The BPS site would consist of a single-storey Control Building with a basement below. It would have a finished height of 7.6m above finished ground level. There would also be a separate Electricity Substation and Power Distribution Building. Additionally, there would be a telemetry mast, the top of which would be 14m above finished ground level. • Power to the BPS would be supplied from an existing 38 kV electricity substation at Birr, through cable ducting laid within the public road network. There would be ground mounted solar panels on the southern side of the BPS site to supplement the mains power supply. • The site would be accessed directly from the L3003. • The BPS site boundary would be fenced with a stock proof fence and a 2.4m high palisade security fence between 5m - 12m inside the boundary. The site itself would be landscaped in line with the surrounding environment to reduce its visual impact.
Flow Control Valve (FCV) (Infrastructure Site) County Kildare	• The FCV controls the flows in the Treated Water Pipeline from the BPT to the TPR. It would be a small permanent site of approximately 0.5ha in the townland of Commons Upper in County Kildare. In addition, approximately 0.6ha of land would be required on a temporary basis during construction. • It would consist of three 700mm diameter FCVs and three flow meters installed in parallel with the Line Valve and housed within an underground chamber. • Access to the FCV site would be directly off the L1016 Commons Road Upper. • Power supply to the FCV site would be provided from the existing low voltage network via a combination of overhead lines and buried cables. There would be ground mounted solar panels on the north-eastern side of the site to supplement the mains power supply. • Kiosks at the FCV site would house the Programmable Logic Controller, telemetry and power supply for the Line Valve. There would also be a telemetry mast, the top of which would be 14m above finished ground level.

Proposed Project Infrastructure	Outline Description of Proposed Project Infrastructure*
	• The site boundary would be fenced with a stock proof fence and a 2.4m high palisade security fence 5m inside the boundary.
Termination Point Reservoir (TPR) (Infrastructure Site) South Dublin County	• The TPR would be located on a permanent site of approximately 8.3ha adjacent to an existing treated water reservoir in the townland of Loughtown Upper, at Peamount, County Dublin (within the administrative area of South Dublin County Council) and would have capacity for 75Ml of treated water supply. In addition, approximately 1.1ha of land would be required on a temporary basis during construction. • It would be located at the downstream end of the Treated Water Pipeline from the BPT to the TPR and would be the termination point for the Proposed Project. It would be here where the Proposed Project would connect to the existing water supply network of the Greater Dublin Area Water Resource Zone (GDA WRZ). • The TPR would consist of an above-ground storage structure, associated underground Scour Water and Overflow Water tanks and a Chlorine Dosing Control Building. The TPR would be a concrete tank divided into three cells and covered with an earth embankment. The top of the TPR would be 11.2m above finished ground level. The Chlorine Dosing Control Building would be 8.4m over finished ground level. Additionally, there would be a telemetry mast, the top of which would be 14m above finished ground level. • Power for the TPR would be supplied via an underground connection to the existing electricity substation at Peamount Reservoir. There would be solar panels on top of a portion of the northern cell of the TPR to supplement the mains power supply. • A new permanent access road from the R120 would be constructed and would be 5m wide and 342m in length. • The TPR site would be bounded by the existing hedgerow to the west and existing fence to the east with a 2.4m high palisade security fence around the permanent infrastructure. The site itself would be landscaped in line with the surrounding environment to reduce its visual impact.
Proposed 38 kV Uprate Works – Power Supply to RWI&PS and WTP	
Proposed 38 kV Uprate Works Ardnacrusha – Birdhill (Power Supply) Counties Clare, Limerick and Tipperary	• The proposed 38 kV Uprate Works would be necessary to deliver adequate electrical power to the RWI&PS and WTP. • The proposed works would include the uprating of the existing Ardnacrusha – Birdhill Line and the replacement of polesets/structures with a cable along a section of the Ardnacrusha – Birdhill – Nenagh Line. • There would also be works at the existing Birdhill 38 kV electricity substation including the provision of a new 38 kV modular Gas Insulated Switchgear Modular Building, new electrical equipment and lighting, together with new fencing and associated works.
Temporary Infrastructure – Required for Construction Phase Only	
Construction Working Width Counties Tipperary, Offaly, Kildare and South Dublin	• A Construction Working Width would be temporarily required for the construction of the RWRMs and the Treated Water Pipeline, and the subsequent reinstatement of the land. • The Construction Working Width would generally be 50m in width but would be locally wider near features such as crossings, access and egress points from the public road network, Construction Compounds and Pipe Storage Depots.
Construction Compounds Counties Tipperary, Offaly, Kildare and South Dublin	• Eight Construction Compounds would be temporarily required to facilitate the works to construct the Proposed Project. Five Construction Compounds would be located along the route of the Treated Water Pipeline at the following Infrastructure Sites: RWI&PS, WTP, BPT, BPS and TPR, with an additional three Construction Compounds located at Lisgarriff (County Tipperary), Killananny (County Offaly) and Drummond (County Kildare). Construction Compounds would act as a hub for managing the works including plant/material/worker movement, general storage, administration and logistical support. • The Principal Construction Compound at the WTP would require 30ha of land during construction. • The other three Principal Construction Compounds would require land temporarily during construction ranging between approximately 12ha and 16ha. • The four Satellite Construction Compounds at the other permanent Infrastructure Sites (excluding the FCV) would require land during construction ranging between approximately 3ha and 12ha.
Pipe Storage Depots Counties Tipperary, Offaly, Kildare and South Dublin	• Nine Pipe Storage Depots would be temporarily required to supplement the Construction Compounds and would serve the installation of pipe between the WTP and the TPR. • Pipe Storage Depots would take direct delivery of the pipe for storage before onward journey to the required location along the Construction Working Width. • The Pipe Storage Depots would vary in size and require land temporarily during construction generally ranging between approximately 2ha and 7ha but with one site being larger at 11ha.

* Note all land take numbers in this table are affected by rounding to one decimal place.

1.3.3 Bat Scope of Works 2019

74. The Bat Scope of Works 2019 agreed with TOBIN was as follows:
    a) Driving Transect of local road network of the Proposed Project (Figure 2b).
    b) 26 areas identified as bat target areas by TOBIN:
        - Inspection of buildings identified by TOBIN;
        - Dusk and Dawn surveys of buildings where deemed necessary by principal surveyor;
        - Walking transects within the 26 areas (proposed routes identified by the bat specialist and determined by access available during the survey period – e.g. Figure 1b, Orange Lines);
        - Static surveillance within the 26 areas (identified by the bat specialist and determined by access available to lands proposed to be surveyed during the survey period).

1.3.4 Bat Scope of Works 2019 38kV Uprate

75. The Bat Scope of Works 2019 agreed with TOBIN was as follows:
    a) Walking transects in vicinity of existing 38kV overhead lines.
    b) Driving Transect of local road network.
    c) Static surveillance at seven locations.

1.3.5 Bat Scope of Works 2020

76. The Bat Scope of Works 2020 agreed with TOBIN was as follows:
    a) Sections not completed in 2019 and therefore carried over into 2020
        - Walking transects along T21 to T26 (walking transect per area = five walking transects)
        - Static surveillance at T21 to T26 (1 static unit per area – five statics, three nights surveillance per unit), and
        - Building surveys at T21 to T26 (six buildings = six dusk surveys).
    b) Gaps in knowledge from 2019 (due to poor weather conditions) and recommended to be re-surveyed in 2020
        - Repeating T19 walking transect (one night walking transect),
        - Surveying building 34 (one dusk survey).
    c) Static surveillance and investigation of 100m corridor of watercourses for PBRs in trees.
    d) Tree Surveys in the 26 targeted bat areas identified in 2019.
    e) Bat surveys (two surveys in areas not previously surveyed to meet Collins (2016) guidelines and one survey to update previously gathered baseline information) in the following areas (four Infrastructure Sites) to ensure that information on local bat populations is known:
        - Raw Water Intake and Pumping Station site at Parteen Basin (one survey – as it was surveyed before – therefore this was an updated survey),
        - Water Treatment Plant site at Incha Beg (two surveys),
        - Break Pressure Tank site at Cloughjordan (one survey – as it was surveyed before – therefore this was an updated survey), and
        - Termination Point Reservoir at Peamount (one survey as this site is considered to have low suitability for bats).
    f) Bat surveys (two surveys) at the proposed Booster Pumping Station.

1.3.6 Bat Scope of Works 2021

77. The Bat Scope of Works 2021 agreed with TOBIN was as follows:
    a) Survey:
        - Walking transects along T21 to T24 (walking transect per area = five walking transects)

- Static surveillance at T21 to T24 (one static unit per area – four statics, three nights surveillance per unit), and
- Building surveys at T21 to T24 (six buildings = six dusk surveys).

b) Survey:
- Termination Point Reservoir at Peamount (one survey as this site as it is considered to have low suitability for bats).
- Static surveillance (three statics, three nights surveillance per unit)
- Walking transect of site.

c) Survey:
- Walking transects along T25 to T26 (walking transect per area = two walking transects)
- Static surveillance at T25 to T26 (one static unit per area – two statics, three nights surveillance per unit), and
- Building surveys at T25 to T26 (two buildings = two dusk surveys).

d) Static surveillance in the following transects: T4, T5, T15, T16, T20 (five statics, three nights surveillance).

e) Surveying of the following locations (please note – chainage points quoted at the time of survey. These chainage areas are slightly different in relation to the Proposed Project route):
- TW Chainage Points: 10,390-10,590;
- TW Chainage Points: 11,030-12,130;
- TW Chainage Points: 10,1700.

1.3.7 Bat Scope of Works 2022

78. The Bat Scope of Works 2022 agreed with TOBIN was as follows:
- Raw Water Intake and Pumping Station site at Parteen Basin (dusk and dawn surveys),
- Cottage (Building 1) at Water Treatment Plant site at Incha Beg (one survey),
- Static surveillance and walking transects of two locations (two statics, three nights)

1.3.8 Buildings

79. All buildings that were recorded within a 200m wide survey route (75m either side of the Project Boundary at the Time of Survey) during multi-disciplinary surveys were flagged and were divided into two shapefiles – buildings within the Project Boundary at the Time of Survey or buildings outside the Project Boundary at the Time of Survey, and all were included in the 2019 survey scope. During discussion with TOBIN and the bat specialist, potential disturbance impacts on bats in buildings within the 75m buffer either side of the Project Boundary at the Time of Survey was deemed sufficient.

1.3.9 Target Areas – Survey Plans

80. The 26 bat target areas were selected by TOBIN and within each bat target area, buildings deemed potentially suitable for bat roosts were identified by TOBIN. Potential walking transects were identified by the bat specialist prior to the survey season within each of the bat target areas.

81. Surveying of bat target areas were allocated to a different survey month for 2019:
- May: Driving Transects;
- June: Bat Target Areas 1-6;
- July: Bat Target Areas 7-10;
- August: Bat Target Areas 11-16;
- September: Bat Target Areas 17-21;

- October: Bat Target Areas 22-26 (Incomplete due to poor weather conditions).

82. Surveying of bat target areas were allocated to a different survey month for 2020:
    - June: TPR at Peamount & T21-T26 surveys (Cancelled due to COVID-19);
    - July: WTP site at Incha Beg (Survey 1), Tree surveys, BPT site at Cloughjordan (Survey 1), Watercourses;
    - August: WTP site at Incha Beg (Survey 2), Tree surveys, BPT site at Cloughjordan (Survey 2), Watercourses;
    - September: T19 repeat walking transect, Building 14 dusk survey, Watercourses, Tree Surveys, RWI&PS site at Parteen Basin (Survey 1).

83. Surveying of bat target areas were allocated to a different survey month for 2021:
    - June: Bat Target Areas 21-24, Additional areas.
    - July: TPR at Peamount, Bat Target Areas 25 and 25.
    - August: Additional areas.

84. Surveying of bat target areas were allocated to June 2022:
    - June: Surveys of RWI&PS site at Parteen Basin, WTP site at Incha Beg and two additional areas in Geashill and Mount Lucas, Co. Offaly.

1.3.10 Bat Scope of Works 2024

85. Surveys in 2024 concentrated on a tree and buildings previously surveyed by TOBIN in order to update the bat roosting information of these targeted areas:
    - May: Tree survey
    - July: Building surveys
    - August: Building surveys.

1.3.11 Bat Scope of Works 2025

86. Surveys in 2025 concentrated on trees identified as PBRs in previous years, updating the survey for Building 1 and undertaking additional static surveillance:
    - May: Tree surveys, Building 1 survey and tree surveys
    - June (Week 1): Tree surveys and static surveillance
    - June (Week 2): Tree surveys, Building 1 survey and static surveillance.

1.3.12 GIS Files

87. The following GIS files, supplied by TOBIN, were used for mapping within this report:
    - RLB_Rev14;
    - TW_Chainage_Points_zip (updated file provided in 2025);
    - RW_Chainage_Points_shp.zip (updated file provided in 2025);
    - GoogleEarth Bat_Survey_2020_Scope_of_works.

88. Chainage points listed in relation to the location of buildings, walking transects etc. are those relating to:
    - TW_Chainage_Points_zip (updated file provided in 2025).

89. For QGIS mapping, a shapefile of the Proposed Project was provided.

2. Bat Survey Methodology

90. An array of survey methods were undertaken to gather data on local bat populations that are likely to be present along the length of the Proposed Project. Due to the length of this Proposed Project, it was deemed not practicable to survey the entire length. Instead, select areas that were considered to have highly suitable bat habitat were surveyed. By undertaking daytime inspections of buildings/structures, static surveillance, dusk and dawn surveys, walking transects and driving transects, this array of survey methods document the suite of bat species present within the landscape of the Proposed Project. The survey protocols undertaken for this project were designed to optimise survey time during permitted access windows to private land.

2.1 Desktop Review - Bat Conservation Ireland Database

91. Bat Conservation Ireland (BCIreland) acts as the central depository for bat records for the Republic of Ireland. Its bat database comprises more than 100,000 bat records divided into Roost, Transects and Ad Hoc Bat Records. The database primarily contains bat records from the following datasets:
    a. Irish Bat Monitoring Programme
    b. BATLAS 2020 & 2010
    c. Bat Records submitted by ecologists, bat groups etc.

92. Collins (2023) recommends that a minimum Zone of Influence, and therefore a database search, is set at 2km radius of a proposed development site. For larger bat species (which includes the Irish bat species Leisler's bat) the search area can be extended up to 10km. Therefore, the Bat Conservation Ireland database was accessed on 18th February 2025 to collate bat records for a 10km radius of Proposed Project. This was further divided into a 2km buffer radius (minimum search area) and a 5km buffer radius (search radius that includes the Core Sustenance Zones for all Irish bat species as presented in Collins (2023)).

93. An important caveat to note is that the BCIreland dataset is dependent on bat records being regularly submitted to BCIreland and/or NBDC. Therefore, the absence of information does not necessarily imply that there are no bats or bat roosts present in the search area.

2.2 Daytime Inspections

94. One purpose of daytime inspections is to determine the potential for bat roosts within the study area. Due to the transient nature of bats and their seasonal life cycle, there are a number of different types of bat roosts. Where possible, one of the objectives of the surveys is to be able to identify the types of roosts present, if any. However, the determination of the type of roost present depends on the timing of the survey and the number of bat surveys completed.

2.2.1 Building & Structure Inspection

95. Structures, buildings and other likely places that may provide a roosting space for bats were inspected during the daytime for evidence of bat usage. Evidence of bat usage is in the form of actual bats (visible or audible), bat droppings, urine staining, grease marks (oily secretions from glands present on stonework) and claw marks. In addition, the presence of bat fly pupae (bat parasite) also indicate that bat usage of a crevice, for example, has occurred in the past. Inspections are undertaken visually with the aid of a strong torch beam (LED Lenser P14.2) and endoscope (General DC5660A Wet / Dry Scope).

96. Buildings were also assessed to determine their suitability as a bat roost (please see survey dates within the results section) and described using the parameters Negligible, Low, Moderate or High suitability in view of the Table 2a presented in Section 1. The suitability of the building as a potential roost was assessed, during the daytime inspection, in relation to the construction material, state of repair and general location in the landscape.

97. The level of suitability coupled with any potential evidence of bat usage informed whether a dusk or dawn survey was completed for individual structures. Buildings that may be directly impacted by the proposed works were surveyed more than once and in multiple years to meet Collins (2016, 2023) criteria. All other buildings outside the potential direct impact of the Proposed Project (i.e. potential indirect impacts) and deemed as suitable bat roosts and/or where bat evidence was recorded, were, generally, only surveyed once in order to determine if a bat roost was present due to access constraints. As a consequence, the survey protocol for some buildings did not meet Collins (2016, 2023) recommendations. A small number of buildings were identified by TOBIN from the 2016-2018 surveys as potential roosts. Some of these were surveyed by Bat Eco Services in addition to a large number of buildings located within the Bat Target Areas (classified by TOBIN).

98. Stone structures and bridges were additionally assessed using a 4-point classification system designed for bridges by Billington & Norman (1997) as presented below. Due to the fact that bat usage of such structures can often be more transient compared to buildings and that evidence of bat usage is less likely to remain (e.g. droppings from bats roosting in an archway of a bridge over a river are likely to be washed away), this classification provided additional information in relation to daytime assessments.

Table 4a: Bridge and Stone Structure Bat Roost Classification System (Adapted from Billington & Norman (1997))

Bridge Category	Description
0	No potential (i.e. no suitable crevices for roosting bats).
1	Low potential (i.e. crevices present that may be of use to bats).
2	High potential (i.e. crevices ideal for roosting bats but no evidence of usage during inspections).
3	Roost (evidence of bats roosting either because bats are present or other evidence is recorded during inspection (e.g. bat droppings).

2.2.2 Tree Potential Bat Roost (PBRs) Inspection

99. Trees that may provide a roosting space for bats were classified using the Bat Tree Habitat Key (BTHK, 2018) and the classification system adapted from Collins (2016). The PRFs listed in this guide were used to determine the PBR value of trees.

100. Trees identified as PBRs were inspected during the daytime (please see section on results for survey dates), where possible, for evidence of bat usage. Evidence of bat usage is in the form of actual bats (visible or audible), bat droppings, urine staining, grease marks (oily secretions from glands) and claw marks. In addition, the presence of bat fly pupae (bat parasite) also indicated that bat usage of a crevice, for example, has occurred in the past.

101. Daytime inspections were undertaken of trees along the Proposed Project route within areas visited during daytime inspections of buildings/structures (i.e. where landowner access was provided) and during deployment of static units. These inspections followed the Phase 1 guidance (Collins, 2016) in order to make a list of trees within the Proposed Project site that may be suitable as roosting sites for bats. Inspections were undertaken visually, from the ground, with the aid of a strong torch beam (LED Lenser P14.2) during the daytime searching for PRFs.

Table 4b: Tree Bat Roost Category Classification System (adapted from Collins (2016))

Tree Category	Description
1 High	Trees with multiple, highly suitable features (PRFs) capable of supporting larger roosts.
2 Moderate	Trees with definite bat potential but supporting features (PRFs) suitable for use by individual bats.
3 Low	Trees have no obvious potential although the tree is of a size and age that elevated surveys may result in cracks or crevices being found or the tree supports some features (PRFs) which may have limited potential to support bats.
4 Negligible	Trees have no potential.

102. This classification system has since been updated in Collins (2023) and was used for the tree survey completed in 2024 and 2025.

2.3 Night-time Bat Detector Surveys

2.3.1 Dusk & Dawn Bat Surveys

103. Dusk emergence surveys were completed from 10-15 minutes before sunset to at least 110 minutes post sunset. The surveyors positioned themselves adjacent to the building / structure to be surveyed to determine if bats are roosting within, the location of roost(s), number of bats, bat species etc. While the start time is five minutes later than Collins (2016), it was deemed appropriate for the detection of the bat species resident in Ireland. In 2024, the survey period increased from 15 minutes before sunset to at least 110 minutes post sunset with preparation work starting one hour before sunset.

104. Dawn surveys were completed from 110 minutes before sunrise to 10-15 minutes after sunrise. Surveys are completed during mild and dry weather conditions with air temperature 8°C or greater. Collins (2016) recommends that surveys are completed close to optimal conditions of 10°C or above. However, due to the fact that Ireland tends to have more changeable weather conditions, the standard followed was deemed suitable by the principal surveyor. All bat encounters were noted during surveys.

105. The duration of surveying for both dusk and dawn meets what is recommended by Collins (2016) and it was deemed appropriate for the detection of the bat species resident in Ireland. The duration of 2024 and 2025 surveys meets Collins (2023) and it was deemed appropriate for the detection of the bat species resident in Ireland.

106. The following equipment was used over the years of bat surveys:

- Surveyor 1 (Principal surveyor): Anabat Walkabout Full Spectrum Bat Detector and Petersson D200 Heterodyne Bat Detector.
- Surveyor 2: Bat Logger M2 Spectrum Bat Detector and Wildlife Acoustics Echo Meter Touch2 Pro (Android) connected to Samsung Galaxy Tab S3 and Petersson D200 Heterodyne Bat Detector.
- Surveyor 3: Anabat Scout Full Spectrum Bat Detector and Wildlife Acoustics Echo Meter Touch (Generation 1, Apple IOS) connected to iPad 2 (32 GB storage) and Petersson D200 Heterodyne Bat Detector.
- Night Vision Aids were also used during dusk and dawn surveys. The equipment deployed included: Guide TrackIR Pro25 thermal imagery scope, a Guide TrackIR Pro19 thermal imagery scope, and Sony Camcorder with night-vision capability coupled with Dedo RedLight.

107. Walking transects were completed post Dusk Emergence Surveys. The start time varied depending on the end time of the dusk survey and travel time to the walking transect start point. As this survey type was used to gather information on the distribution of foraging and/or commuting bats within the landscape of the study area, it was deemed by the principal surveyor as acceptable. It involved the surveyor(s) walking the study area, noting the time, location and bat species encountered. Mapping of bat encounters was undertaken using QGIS and an excel file produced for mapping purposes (ITM Irish grid reference co-ordinates). Validation of bat records was completed by the principal bat surveyor prior to mapping. Walking transects were completed post dusk surveys in order to maximise the surveying availability during permitted access to private land.

108. Driving transects were undertaken for large study areas. Wildlife Acoustics Echo Meter Touch2 Pro (Android) connected to Samsung Galaxy Tab S3 was used for this survey type and was located outside on the passenger side of a vehicle. The vehicle was driven at 24 km/hr following Bat Conservation Ireland's car-based bat monitoring methodology (Aughney *et al.,* 2018). The driving transects started 40 minutes after sunset and time, location (grid reference) and bat species encountered were recorded. These recordings were mapped using QGIS and an excel file produced for mapping purposes (ITM Irish grid reference co-ordinates). Validation of bat records was completed by the principal bat surveyor prior to mapping.

2.3.2 Passive Static Bat Detector Survey

109. Passive static bat detector surveys were undertaken for Bat Target Areas, break-out areas and additional points deemed important to identify bat species utilising the areas (e.g. water crossing points). Static units were generally deployed for 3-4 nights surveillance with recordings set from 30 minutes before sunset to 30 minutes after sunset at the majority of survey sites while additional habitats outside the Proposed Project were sampled for a minimum of one night (e.g. adjacent woodlands). The length of the static surveillance was determined by the duration of landowner access provided (permission was granted from Monday to Friday in a specified week, therefore deployment of static units was undertaken on the Monday/Tuesday and collected on Friday providing a 3-4 night surveillance period).

110. In 2025, as part of the tree surveys of PBRs, static surveillance was also undertaken directly beside the identified PBRs for a minimum of one night to provide bat activity in vicinity of the tree in order to supplement night surveys undertaken.

111. A Passive Static Bat Survey involves leaving a static bat detector unit (with ultrasonic microphone) in a specific location and set to record for a specified period of time (i.e. a bat detector is left in the field, there is no observer present and bats which pass near enough to the monitoring unit are recorded and their calls are stored for analysis post surveying). The bat detector is effectively used as a bat activity data logger and the habitat type of where the bat detector is located is noted to allow interpretation of the results (e.g. Open verses Edge verses Closed habitat types – see Table 4c). Static surveillance results in a far greater sampling effort over a shorter period of time. Bat detectors with ultrasonic microphones are used as the ultrasonic calls produced by bats cannot be heard by human hearing.

112. The microphone of the unit was positioned horizontally to reduce potential damage from rain. Wildlife Acoustics Song Meter SM2, SM4 Bat FS and Mini Bat FS Platform Units and Elekin BatLogger A+ units use Real Time recording as a technique to record bat echolocation calls and using specific software, the recorded calls are identified. It is these sonograms (2-d sound pictures) that are digitally stored on the SD card (or micro SD cards depending on the model) and downloaded for analysis.

113. The recordings are analysed using Wildlife Acoustics Kaleidoscope Pro. The Auto-Id function is used for all sound files but manual verification is used to ensure the auto-id function is accurate. This is particularly important for less common bat species and cryptic bat species such as Myotis species. In addition, 'Noise' and 'Unidentified' sound files are also checked. Each sequence of bat pulses are noted as a bat pass to indicate level of bat activity for each species recorded. This is either expressed as the number of bat passes per hour or per survey night.

114. Audio files are a maximum of 15 seconds long and each audio file is taken as a bat pass for each bat species recorded within the audio file. Each bat pass does not equate to the number of individuals of bats flying in the vicinity of the recording device but is representative of bat activity levels. Some species such as the pipistrelles will continuously fly around a habitat and therefore it is likely that a series of bat passes within a similar time frame (i.e. separate audio files within a small time frame) is one individual bat. On the other hand, Leisler's bats tend to travel through an area quickly and therefore an individual sequence of echolocation calls or bat pass is more likely to be indicative of individual bats.

115. Table 4c shows the static units that were deployed during this static bat detector survey:

Table 4c: Static Bat Detectors Deployed During Static Bat Detector Surveys

Static Unit Code	Bat Detector Type	Recording Function	Microphone
SM4 Units 1 - 8	Wildlife Acoustics SongMeter 4 Bat FS	Passive Full Spectrum	SMM-U2, 4m cable
SM Mini Bat Units 1-12	Wildlife Acoustics SongMeter Mini Bat	Passive Full Spectrum	SMM-U2
SM2 Unit 5	Wildlife Acoustics SongMeter 2 Bat+	Passive Full Spectrum	SMX-U1 (connected directly to unit)
BL A & BL B	Elekon BatLogger A+	Passive Full Spectrum	FG Black microphone (1m cable)

116. Bats produce different types of echolocation calls and each bat species family have a characteristic bat echolocation call depending largely on their morphology and preferred habitat type. The different types of echolocation calls (i.e. CF or Constant Frequency call verses a FM or Frequency Modulated call) provides different types of information and therefore are used to detect prey items or for orientation in different habitat types. These are broadly defined in Table 4d.

Table 4d: Bat Habitat Types Definitions for Passive Static Bat Detector Surveys

Bat Habitat	Definition	Example
Open	Large open space require bat to produce calls that are loud and therefore will travel far in order to detect prey items in the open sky. This is typically where Leisler's bats will forage.	Grassland field
Edge	Linear habitat features where bats produce echolocation calls that allow them to detect the linear habitat and the adjacent open space of a field for example. This is typically where *Pipistrellus* species will forage.	Hedgerows and treelines
Closed	To fly within a closed habitat of a woodland (i.e. the clutter of branches and leaves), bats produce a call that provides very detailed information. This is typically where brown long-eared bats will forage.	Woodland interior
Water	This is a specific Bat Habitat Type for Daubenton's bats which produced bat echolocation calls in the same manner as a bat would produce bat echolocation calls when flying within a Closed Bat Habitat Type. Daubenton's bats typically fly 30cm above water surface and as a consequence produce echolocation calls to detect the 'Clutter' of the closeness of their flight to the water surface.	Rivers

3. Bat Survey Results

3.1 Desktop Study – BCIreland Database

117. A total of 2,001 geo-referenced bat records were available for the 10km search area. The number of records for each of the bat species is listed in Table 5a and this includes 87 roosts (some with multiple species recorded) and 1,914 bat detector records (some locations with multiple species recorded). The common pipistrelle was the most frequently recorded bat species followed by soprano pipistrelle.

118. This data was further refined to 5km and 2km and the results are presented in the additional table below. There are seven roost records within 1km of the Project Boundary at the Time of Review (which are still relevant for the Proposed Project), four of which are maternity colonies for Whiskered bats, Soprano pipistrelles and Leisler's bats (including two proposed Natural Heritage Areas for this bat species: Site Codes - 002058 and 000568), all of which are located in vicinity of Birr, Co. Offaly and between 500m to 1km from the Project Boundary at the Time of Review.

Table 5a: Bat Records within a 10km, 5km and 2km Search Area of the Project Boundary at the Time of Review (Source: Bat Conservation Ireland (BCIreland) Database)

Bat species	**No. of Records**		**Bat Species**	**No. of Records**	
10km Radius	**Roost**	**Detector**		**Roost**	**Detector**
Common pipistrelle	16	1204	Soprano pipistrelle	23	722
Nathusius' pipistrelle	0	35	Leisler's bat	23	451
Daubenton's bat	6	198	Whiskered bat	3	18
Brown long-eared bat	33	126	Natterer's bat	8	38
Pipistrellus spp.	15	83	*Myotis* spp	1	54
Lesser horseshoe bat	0	0			
Bat species	**No. of Records**		**Bat Species**	**No. of Records**	
5km Radius	**Roost**	**Detector**		**Roost**	**Detector**
Common pipistrelle	11	526	Soprano pipistrelle	11	988
Nathusius' pipistrelle	0	7	Leisler's bat	16	270
Daubenton's bat	2	97	Whiskered bat	2	11
Brown long-eared bat	14	60	Natterer's bat	4	19
Pipistrellus spp.	8	32	*Myotis* spp	0	21
Lesser horseshoe bat	0	0			
Bat species	**No. of Records**		**Bat Species**	**No. of Records**	
2km Radius	Roost	**Detector**		**Roost**	**Detector**
Common pipistrelle	4	867	Soprano pipistrelle	8	391
Nathusius' pipistrelle	0	6	Leisler's bat	9	185
Daubenton's bat	0	45	Whiskered bat	1	8
Brown long-eared bat	4	42	Natterer's bat	0	13
Pipistrellus spp.	4	12	*Myotis* spp	0	12
Lesser horseshoe bat	0	0			

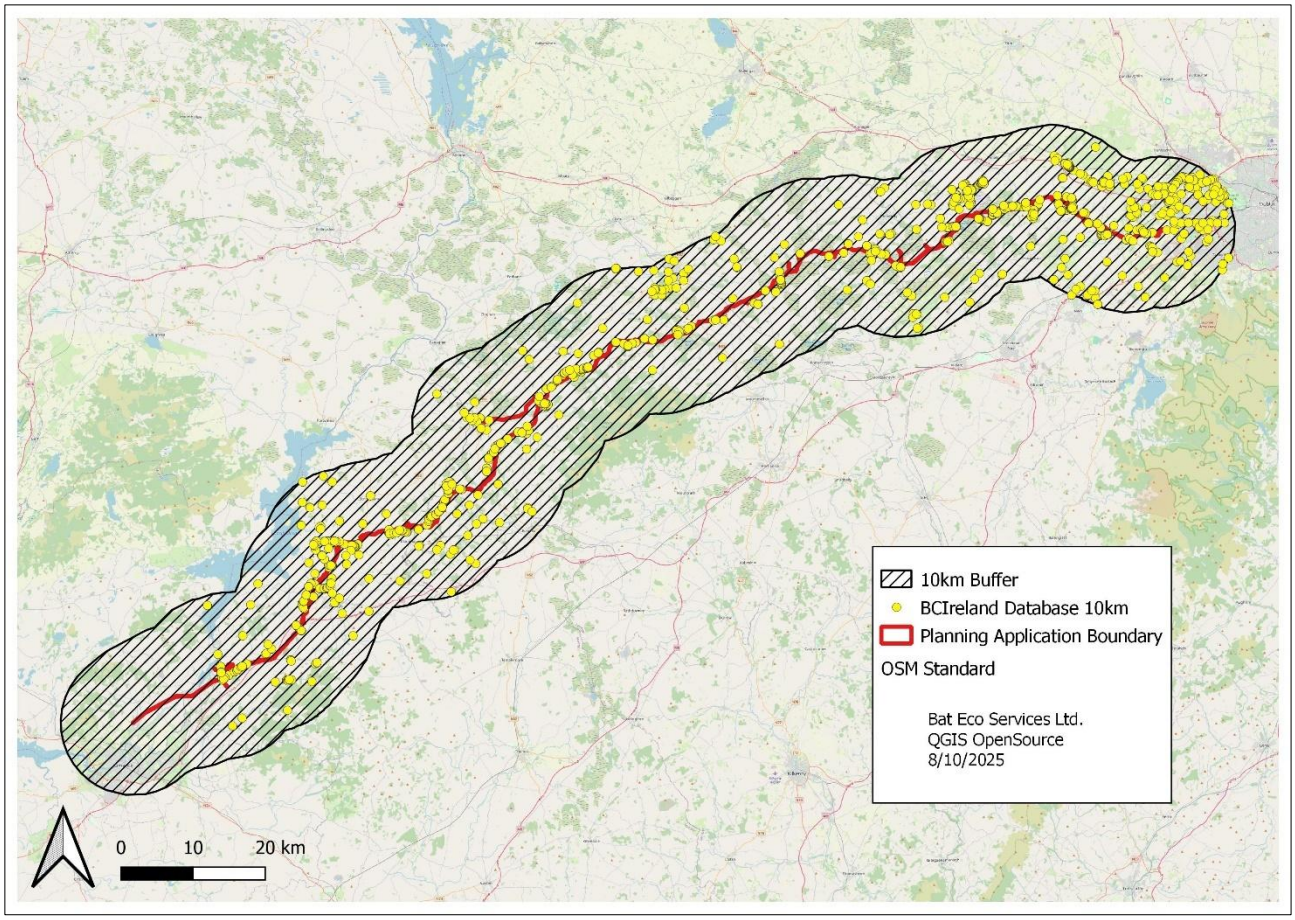


Figure 2a: BCIreland Database Bat Records for 10km Buffer of the Planning Application Boundary

3.2 Bat Survey Results 2019-2025

119. Bat Scope of Works was designed by TOBIN in April 2019 and continued in 2020, 2021, 2022, 2024 and 2025. Twenty-six areas along the Proposed Project were selected as Bat Target Areas by TOBIN (See Table 5b below) and the majority of these were surveyed in 2019. The table also lists three breakout areas that were targeted in 2020 and additional areas that were targeted in 2021 and 2022. A summary of bat data collated by TOBIN prior to Bat Eco Services involvement is presented in Section 4.

Table 5b: Bat Target Areas and Breakout Points

Bat Target Area	Name (Approximate Chainage Number)	Survey Period
1	Incha Beg, Co. Tipperary	June 2019, July & August 2020
2	Kilmastulla, Co. Tipperary	June 2019, July 2020
3	Kilnacrana, Co. Tipperary	June 2019, July 2020
4	Castlecranna, Co. Tipperary	June 2019
5	Boolagelagh, Co. Tipperary	June 2019
6	Ballyannymore, Co. Tipperary	June 2019
7	Ardcrony, Co. Tipperary	July 2019
8	Ballylusky, Co. Tipperary	July 2019
9	Killurne, Co. Tipperary	July 2019
10	Newtown, Co. Tipperary	July 2019
11	Galbally, Co. Offaly	August 2019
12	Cree, Co. Offaly	August 2019
13	Kilmaine, Co. Offaly	August 2019
14	Money, Co. Offaly	August 2019
15	Derries (Ballyboy), Co. Offaly	August 2019
16	Clonshanna, Co. Offaly	August 2019
17	Rathrobin, Co. Offaly	September 2019
18	Annaghmore, Co. Offaly	September 2019
19	Gorteen, Co. Offaly	September 2019 & September 2020
20	Finter, Co. Offaly	September 2019
21	Ballykilleen, Co. Offaly	September 2019
22	Timahoe East, Co. Kildare	June 2021
23	Newtownmoneenluggagh, Co. Kildare	June 2021
24	Baltracey, Co. Kildare	June 2021
25	Location, Co. Kildare	June 2021
26	Loughtown, Co. Dublin	June 2021
27	RWI&PS site at Parteen Basin	September 2020, June 2022
28	WTP site at Incha Beg	July & August 2020, June 2022
29	BPT site at Cloughjordan	July & August 2020
30	TPR at Peamount	July 2021
31	Additional areas in Co. Tipperary and Offaly including water crossings.	August 2020 & 2021, June 2022, May, July & August 2024

3.3 Building Surveys – Daytime Inspections

120. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while Latitude and Longitude/ITM Grid Reference co-ordinate points are also provided in the Excel file detailing survey results for mapping.

3.3.1 Building Surveys 2019 – Daytime Inspections

121. During the survey periods for June, July, August and September 2019, buildings selected by TOBIN were inspected during the daytime. A total of 35 buildings were inspected, one of which was located within the Proposed Project (Building No. 1) while the remainder were within 75m of the Project Boundary at the Time of Survey. The principal bat surveyor then selected buildings, post daytime inspection, to be surveyed by either Dusk or Dawn surveys and these results are presented separately in Section 3.2 (n=26 buildings). The results presented below are daytime inspection survey results only along with details of other surveys completed (i.e. static surveillance). No building inspections were completed in October 2019 due to poor weather conditions. As all other surveys could not be undertaken, it was therefore decided to re-organise all surveys planned for October to the following survey season.

122. The following buildings/structures were inspected in the June survey period (18th to 21st June 2019):

Table 6a: Buildings / Structures Inspection Results – June 2019

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 1 TW 0 TY32282N	Cottage - single storey, tiled roof, no roof felt, natural stone walls, ivy cover. WTP site at Incha Beg	R 72254 70635 Bat Target Area 1 Transect 1	Daytime Inspection on 19/6/2019 High suitability	Internal structure not accessible. Static unit placed within the building (2 nights recording – 19th to 21st June 2019)
Building 2 TW 600 TY11790N	Farmyard – two buildings: Corrugated haybarn Slate roof, single storey building	R 72973 70186 Bat Target Area 1 Transect 1	Daytime Inspection on 18/6/2019 Corrugated hay barn - Low Slate roof, single storey building – Moderate to High	Emergence survey completed on 18/6/2019.
Building 3 TW 900 TY16868N This building was identified as a potential roost by TOBIN (Old House, Kilmastulla)	Farmyard – three buildings: Corrugated haybarn Natural stone ruin Slate roof, 2-storey residence (unoccupied)	R 73339 70460 Bat Target Area 1 Transect 1	Daytime Inspection on 18/6/2019 Corrugated hay barn – Low Natural stone ruin – Moderate Slate roof, 2-storey residence – High	Internal inspection: bat droppings recorded within the 2-storey residence. Scatter = night roosting bats. Emergence survey completed on 18/6/2019.

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 4 TW 1800 TY32423N	Stable yard - corrugated roof stable block, concrete block walls. Roof felt in one stable only	R 74242 70639 Bat Target Area 1 Transect 2	Daytime Inspection on 18/6/2019 Stable block – Negligible	External & Internal inspection: No evidence of bat usage
Building 5 TW 2200 TY1967F	Furniture warehouse	R 74454 70871 Bat Target Area 1 Transect 2	Daytime Inspection on 18/6/2019 Large primarily corrugated iron warehouse with additional office units (small attic space associated with office) – Low	External & Internal inspection: No evidence of bat usage Emergence survey completed on 20/6/2019
Building 6 TW 2225 TY31141N	Corrugate haybarn	R 74534 70675 Bat Target Area 2 Transect 2	Daytime Inspection on 18/6/2019 Corrugate iron structure - Negligible	Internal inspection: No evidence of bat usage
Building 7 TW 5300 TY4919N	Farm yard with residence Agricultural building A – single storey slate, natural stone Residence – 2-storey, slate, concrete block Agricultural building B – tile, natural stone Corrugate haybarn	R 77396 71593 Bat Target Area 3 Transect 3	Daytime Inspection on 20/6/2019 Agricultural building A - High Residence - High Agricultural building B - Moderate Corrugate haybarn - Low	External & Internal inspection: Agricultural building A – *Pipistrellus* bat droppings (scatter). No evidence of bat usage in other buildings Emergence survey completed on 20/6/2019
Building 8 TW7800 TY32465N	Farmyard – two buildings Agri-building A: single storey, tile roof, roof felt, attic space Agri-building B: single storey, slate roof, no roof felt	R 79359 72873 Bat Target Area 4 Transect 4	Daytime Inspection on 20/6/2019 Agri-building A -High Agri-building B - Moderate	Bat droppings and insect wings recorded within Agri-building A. Emergence survey completed on 20/6/2019
Building 9 TW 17900 TY54000F	Farmyard – old farm house: slate roof, 2-storey	R 83696 81405 Bat Target Area 5 Transect 5	Daytime Inspection on 20/6/2019 High	Bat droppings and insect wings recorded within. Emergence survey completed on 20/6/2019.

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 10 TW 19500 TY10782N (This area was identified by TOBIN as having bat potential – Estate Ballyanny)	Large estate house complex – derelict condition consisting of 5 structures: Main estate house – natural stone walls, no roof, derelict. Long agricultural building – natural stone walls, roof. Shed A – natural stone walls, slate roof. Shed B – natural stone walls, slate roof. Corrugate iron barn.	R 85084 82451 Bat Target Area 6 Transect 6	Daytime Inspection on 18/6/2019 Moderate to High in relation to house and sheds. Negligible – corrugated shed Natural stone walls with large number of crevices – inspection not completed. Located adjacent to the River Nenagh.	Not all buildings accessible due to health & safety (derelict house) and locked sheds. No bat evidence recorded. Emergence survey completed on 19/6/2019.
Building 11 TW 19575 TY10782N	Cottage – natural stone, slate roof, sarking boards. Large derelict mill adjacent to building 11 (This was also identified by TOBIN as having bat roosting potential)	R 84709 82522 Bat Target Area 6 Transect 6	Daytime Inspection on 19/6/2019 High	Internal inspection not completed. Static unit placed within building for two nights recording (19th to 21st June 2019). Emergence survey completed on 19/6/2019.

123. The following buildings / structures were inspected in the July survey period (9th to 12th July 2019):

Table 6b: Buildings / Structures inspection results – July 2019

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 12 TW 27700 TY3951N	Farmyard consisting of cottage with corrugated roof, natural stone shed with partial slate roof and additional sheds with no roof.	R 89029 87778 Transect 7	Daytime inspection on 9/7/2019 Cottage: High Shed with partial roof: Moderate Other: Low	Small scatter of bat droppings in cottage. Emergence survey completed (9/7/2019).
Building 13 TW 28550 TY3957N	Farmyard –corrugated hay barns	R 89978 87811 Transect 7	Daytime inspection on 9/7/2019	No bat evidence.

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
			Corrugated hay barn – Negligible	
Building 14 (RA) TW 29900 TY2687N	Farmyard (large complex of structures) – 2-storey house with roof Corrugated hay barns	R90947 88674 Transect 8	Daytime inspection on 9/7/2019 House – Moderate Hay barns – Low	Emergence survey completed (9/7/2019).
Building 15 TW 28550 TY6552N	Stone ruins (rubble)	R 92136 88938 Transect 8	Daytime inspection on 9/7/2019 Negligible	Not internally inspected – overgrown rubble
Building 16 (RA) TW 35600 Folio - unknown	Farm yard – corrugated hay barns, adjacent to residence. Additional Building	R99721 89984 Transect 10	Daytime inspection on 10/7/2019 Low	No bat evidence. Emergence survey completed (10/7/2019).
Building 17 (TA) TW 35500 TY49434F	Farmyard – corrugated hay barns, sheds and 2-storey slate roof residence.	R96031 89573 Transect 9	Daytime inspection on 10/7/2019 Moderate	No bat evidence. Emergence survey completed (10/7/2019).
Building 18 (TA) TWA 3000 TY31219N (Identified by TOBIN as a potential roost – Newtown, Co. Offaly)	Farmyard with large array of buildings from corrugated hay barns, natural stone sheds with slate and corrugated roofs, cottage with slate roof.	S00085 90029	Daytime inspection on 10/7/2019 & 11/7/2019 Corrugate hay barns – Low Cottage – High Sheds with slate roofs – High Sheds with corrugate roof – Low to Moderate	Single Natterer's bat recorded within one shed during walking transect (10/7/2019). Emergence survey completed (11/7/2019). Brown long-eared bat droppings recorded within the same shed on 11/7/19).

124. The following buildings / structures were inspected in the August survey period (12th to 14th August 2019). One building was not accessible during this survey period (Bat Target Area 15 TW 77800, OY7850N).

Table 6c: Buildings / Structures Inspection Results – August 2019

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 19 TWA 10600 OY3053F	Farmyard of residence and modern corrugated iron haybarns and stables (timber walls).	S0436494968 Bat Target Area 11 Transect 11	Daytime Inspection 13/8/2019 Moderate	No bat evidence recorded. Emergence survey 13/8/2019
Building 20 TWA 11000 OY5114F	Corrugated iron shed with concrete block walls (adjacent to local road)	S0476195257 Bat Target Area 11 Transect 11	Daytime Inspection 13/8/2019 Negligible	No bat evidence recorded.
Building 21 TWA 11600 OY5113F	Farmyard with two corrugated iron haybarns and one natural stone ruin	S0531895046 Bat Target Area 11 Transect 11	Daytime Inspection 13/8/2019 Shed: Low to Moderate Corrugated iron haybarns: Negligible	No bat evidence recorded. Emergence survey 13/8/2019
Building 22 TWA 20200 OY276N	Farmyard with 2-storey house (slate roof, flat roof extension to rear) and single storey out buildings (slate roof and natural stone walls).	N0941601197 Bat Target Area 12 Transect 12	Daytime Inspection 13/8/2019 Single storey outbuilding: Moderate House: High	*Pipistrellus spp.* bat droppings on floor of single storey outbuilding. Emergence survey 13/8/2019
Building 23 TWA 0700 OY275N	Farmyard with residence, cattle shed, haybarn and outbuildings. Dense treeline to rear.	N0974401491 Bat Target Area 12 Transect 12	Daytime Inspection 13/8/2019 Single storey cottage: Moderate to High Shed: Moderate Haybarn: Low	Internal inspection: No bat evidence recorded. Emergence survey 13/8/2019
Building 24 TWA 24100 OY17874N	Farmyard with residence, cattle shed, haybarn and outbuildings	N1248603271 Bat Target Area 13 Transect 13	Daytime Inspection 14/8/2019 Corrugated haybarn, sheds: Low Residence: Moderate	Internal inspection: No bat evidence recorded. Emergence survey 14/8/2019

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 25 (TA) TWB 3200 OY10594N	Large stone warehouse, show room (slate roof, single storey), derelict two-storey shed (slate roof) and adjacent residence	N1602208780 Bat Target Area 14 Transect 14	Daytime Inspection 14/8/2019 2-storey shed & warehouse: High All other buildings: Low	Bat droppings below facia of showroom. Bat droppings in derelict 2-storey shed. Emergence survey 14/8/2019
Building 26 (C) TWB 5500 OY46F / OY1325N	Bungalow (slate roof), small farm yard adjacent with natural stone sheds (slate roof) and 2-storey house. Large farmyard, corrugated barns	N N1784610135 Bat Target Area 14 Transect 14	Daytime Inspection 14/8/2019 Residence – High Stone sheds – Moderate to High Corrugate barns: Low	Bat droppings below facia of bungalow. Bat droppings in stone shed. Emergence survey 14/8/2019
Building 27 OY6404N TWB 5400	Large farmyard, corrugated barns	Bat Target Area 17 Transect 17	Daytime Inspection 13/8/2019 Negligible	No bat evidence recorded.

125. The following buildings / structures were inspected in the September survey period (10th to 13th September 2019):

Table 6d: Buildings / Structures Inspection Results – September 2019

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 29 OY6601N TWB 18300	Farmyard of corrugated iron haybarns	N28033 15341 Transect 17	Daytime Inspection 10/9/2019 Low	Internal inspection: No bat evidence recorded. Emergence survey: 10/9/2019
Building 30 OY19051N TWB 18200	Farmyard of corrugated iron haybarns	N27936 15264 Transect 17	Daytime Inspection 10/9/2019 Negligible	Internal inspection: No bat evidence recorded.
Building 31 OY13496N TWB 18100	Farmyard with stone ruin and corrugated iron buildings	N27820 15490 Transect 17	Daytime Inspection 10/9/2019 Stone Ruin: Low to Moderate	Internal inspection: No bat evidence recorded. Emergence survey: 10/9/2019

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
			Hay barns: Negligible	
Building 32 Unknown folio TWB 21200	Farmyard with corrugated iron farm buildings. Second farmyard adjacent – residence (slate roof), natural stone and slate roof loft building and corrugated iron agri-buildings.	N30857 15651 Transect 18	Daytime Inspection 11/9/2019 Farmyard – Low Adjacent farmyard – Moderate to High	Internal inspection: Bat dropping in loft building. Emergence survey: 11/9/2019
Building 33 OY6325N TWB 24300	Stables and sheds: single storey structures	N33775 16592 Transect 19	Daytime Inspection 11/9/2019 Low	Internal inspection: No bat evidence recorded. Emergence survey: 11/9/2019
Building 34 PY6177N TWB 23700	Derelict cottage in middle of field – slate roof.	N33162 16364 Transect 19	Daytime Inspection 11/9/2019 High	Internal inspection: Bat droppings internally. Emergence survey: 11/9/2019
Building 35 OY6023F TWC 2650	Large complex of farm buildings and residence. One agri building has a natural stone wall with suitable crevices. Remainder corrugate haybarns	N39909 18758 Transect 20	Natural stone wall section – Moderate Corrugated haybarns: Negligible	Internal inspection: No bat evidence recorded. Emergence survey: 11/9/2019

3.3.2 Building Surveys 2020 - Daytime Inspections

126. During the survey periods for July, August and September 2020, two buildings were surveyed. The results presented below are daytime inspection survey results only along with details of other surveys completed. Building 1 was surveyed in 2019 but due to the fact that it is likely to be directly impacted by the Proposed Project route, it was surveyed again in 2020. Building 34 was also surveyed in 2019. However, this building is located outside the boundary of the Proposed Project but due to unclear results in 2019, it was deemed necessary to re-survey in 2020.

Table 6e: Buildings / Structures Inspection Results – 2020

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 1 TW 0 TY32282N	Cottage - single storey, tiled roof, no roof felt, natural stone walls, ivy cover.	R 72254 70635 Bat Target Area 1	Daytime Inspection: 6/7/2020 & 11/8/2020 High	Internal structure not accessible. Static unit placed within the building (4 nights recording – 6th to 10th July 2020)

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
	Previously surveyed in 2019	Transect 1		Emergence Surveys: 6/7/2020 & 11/8/2020
Building 34 PY6177N TWB 23700	Derelict cottage in middle of field – slate roof. Previously surveyed in 2019	N33162 16364 Transect 19	Daytime Inspection: 7/9/2020 High	Bat droppings internally. Emergence Survey: 7/9/2020

3.3.3 Building Surveys 2021 - Daytime Inspections

127. During the survey periods for June, July and August 2021, six buildings were surveyed. The results presented below are daytime inspection survey results only along with details of other surveys completed. While Building 41 was deemed to have a Negligible suitability for roosting bats, this was surveyed at dusk (emergence survey) as a precaution because they are located in Peamount Breakout Point.

Table 6f: Buildings / Structures Inspection Results – 2021

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 36 KE1450N **TWE 300**	Farmyard with a number of buildings. Daytime Inspection: 23/6/2021	N8698135069 Transect 22	No evidence recorded – Low suitability but in an area with treelines and hedgerows suitable for bats.	No bat evidence recorded. Emergence survey: 23/6/2021
Building 37 Adjacent to woodland OY9395N TWC 8900	Group Water Treatment Plant – single storey building (tile roost). Daytime Inspection: 23/6/2021	N4501321777 Not within bat target area.	No evidence recorded – Low to Moderate suitability. Located within wooded areas.	No bat evidence recorded. Emergence survey: 23/6/2021
Building 38 Adjacent to woodland OY9395N TWC 8900	Group Water Treatment Plant – single storey building (tile roost). Daytime Inspection: 23/6/2021	N4503721727 Not within bat target area.	No evidence recorded – Low to Moderate suitability. Located within wooded areas.	No bat evidence recorded. Emergence survey: 23/6/2021
Building 39 This building was identified by TOBIN as a Potential Bat Roost (Newtownmoneenluggagh) TWD 29500	Derelict cottage Daytime Inspection: 24/6/2021	N8238234816 Transect 23	No evidence recorded – Moderate suitability. Located adjacent to fields with treelines.	No bat evidence recorded. Emergence survey: 24/6/2021
Building 40	Farmyard – modern haybarns and cottage	N9075932725	No evidence recorded –	No bat evidence recorded.

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
TWE 5150	Daytime Inspection: 20/7/2021		Moderate suitability. Located adjacent to fields with treelines.	Emergence survey: 20/7/2021
Building 41 DN18378F	Buildings at Peamount breakout point. Daytime Inspection: 21/7/2021	O0117030926 Breakout point – Peamount, Co. Dublin	No structures of bat roosting value. Negligible	No bat evidence recorded. Emergence survey: 21/7/2021

3.3.4 Building Surveys 2024 – Daytime Inspections

128. During the survey periods for July and August 2024, ten buildings were surveyed. The results presented below are daytime inspection survey results only along with details of other surveys completed.

Table 6g: Buildings / Structures Inspection Results – 2024

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 12 TY3951N TW 27700	Farmyard consisting of cottage with corrugated roof, natural stone shed with partial slate roof and additional sheds with no roofs.	R 89029 87778 Transect 7	Daytime inspection on 8/7/2024 Cottage: Moderate Shed with partial roof: Moderate Other: Low	No bat evidence recorded but suitable roosting features. Emergence survey: 8/7/2024 Static surveillance (8/7/2024 to 11/7/2024)
Building 45 TY23551F TW13900	Farmyard consisting of multi-storey residence (slate roof, plaster cladding), 1.5 storey natural stone (slate roof) loft barn and modern steel tech / corrugated iron agricultural buildings	R 82224 77917	Daytime inspection on 9/7/2024 Residence: Moderate Natural stone barn: Moderate Other: Low	Small number of *Pipistrellus* bat droppings on rear windows of residence. Numerous roost features in both residence and natural stone barn. Emergence survey: 9/7/2024 Static surveillance (8/7/2024 to 11/7/2024)
Building 46 TY9123N TW 14400	Natural stone barn converted into residence in recent years (slate roof).	R 82596 78154	Daytime inspection on 9/7/2024 Low	No evidence of bat usage and no roosting features as a result of conversion. Emergence survey: 8/7/2024

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
				Static surveillance (8/7/2024 to 11/7/2024)
Building 47 TY10873N TW 20700	Derelict 2-storey farm houses with slate roof and natural stone walls.	R 85534 83268	Daytime inspection – not completed due to permission not granted to access structure. Moderate – due to condition and location in rural area	Emergence survey: 9/7/2024 – completed due to the fact that the structure was located adjacent to public road (survey from public road).
Building 48 TY10873N TWB 4100	Farmyard with unoccupied bungalow and modern corrugated iron agricultural sheds.	N 16777 09354	Daytime inspection –6/8/2024. Bungalow – Moderate Sheds - Negligible	No bat evidence recorded but suitable roosting features. Emergence survey: 6/8/2024 Static surveillance (6/8/2024 to 9/8/2024)
Building 49 OY6674F TWA 9950	Farmhouse (occupied) and modern corrugated iron agricultural sheds.	S 03970 95087	Daytime inspection – 6/8/2024. Residence – Moderate Sheds - Negligible	No bat evidence recorded but suitable roosting features. Emergence survey: 9/8/2024 Static surveillance (6/8/2024 to 9/8/2024)
Building 50 TY6551N TW 32800	Stone ruins and modern corrugate iron shed	R 93498 89142	Daytime inspection – 6/8/2024. Negligible	No bat evidence recorded.
Building 51 TY6551N TW 30350	Farmhouse (unoccupied) with slate roof and heavy vegetation growth and single storey agricultural shed with corrugate iron roof.	R 91179 89090	Daytime inspection – 6/8/2024. Farmhouse – Moderate Shed - Low	No bat evidence recorded but suitable roosting features. Emergence survey: 8/8/2024 Static surveillance (6/8/2024 to 9/8/2024)
Building 19 OY3053F TWA 10600	Residence (bungalow) and large number of modern agricultural buildings.	S0436494968 Bat Target Area 11 Transect 11	Daytime inspection – 6/8/2024. Residence – Low Agricultural sheds Shed – Varied from Negligible to Moderate	No bat evidence recorded but suitable roosting features in agricultural shed with stables. Emergence survey: 9/8/2024

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
				Static surveillance (6/8/2024 to 9/8/2024)
Building 44 TY11021A TW 34300	Residence (2-storey houses) and large number of old and modern agricultural buildings mixed together.	R 95030 89312	Daytime inspection – 6/8/2024. Residence – Moderate Agricultural sheds Shed – Varied from Negligible to Moderate to High	Some bat droppings and insect wings in numerous locations within sheds and suitable roosting features in residence and agricultural sheds. Emergence survey: 7/8/2024 Static surveillance (6/8/2024 to 9/8/2024)

3.3.5 Building Surveys 2025 – Daytime Inspections

129. During the survey periods for May and June, one building was surveyed. The results presented below are daytime inspection survey results only, along with details of other surveys completed.

Table 6h: Buildings / Structures Inspection Results – 2025

Building Code	Description	Grid Reference	Roost Suitability	Bat Survey Details
Building 1 TW 0 TY32282N	Cottage - single storey, tiled roof, no roof felt, natural stone walls, ivy cover. Previously surveyed in 2019, 2020, 2022	R 72254 70635 Bat Target Area 1 Transect 1	Daytime Inspection: 20/5/2025 & 16/6/2025 High	Internal structure not accessible. Static unit placed within the building (4 nights recording in both May and June 2025) Emergence Surveys: 20/5/2025 & 16/6/2025

3.4 Night-time Bat Detector Surveys

130. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while Latitude and Longitude/ITM Grid Reference co-ordinate points are also provided in the Excel file detailing survey results for mapping.

3.4.1 Night-time Bat Detector Surveys 2019

131. Night-time bat detector surveys completed in 2019 are as follows and Table 7a indicates which survey period each survey type was undertaken:
    - Dusk & Dawn Bat Surveys
    - Walking Transects
    - Driving Transects

- Passive Static Bat Detector Survey

132. Surveys completed in October 2019 were interrupted by poor weather conditions and therefore are deemed incomplete.

Table 7a: Details of the Night-time Bat Detector Surveys Completed in 2019
Note: * = 38kV Uprate survey only

	May	June	July	Aug	Sept	Oct
Dusk & Dawn Bat Surveys		√	√	√	√	
Walking Transects		√	√	√	√	√
Driving Transects	√	√*	√*			
Passive Static Bat Detector Surveys		√	√	√	√	√

3.4.2 Dusk & Dawn Bat Surveys 2019

133. Dusk and Dawn bat surveys were completed in June, July, August and September 2019. Surveys were not undertaken in October 2019 due to poor weather conditions and, therefore the area required to be surveyed in October 2019 was recommended to be surveyed in 2020.

134. In June, July, August and September 2019, a total of 29 buildings were surveyed by dusk or dawn surveys. A total of 14 roosts were confirmed.

3.4.2.1 June 2019

135. The following table summarises the results of the dusk and dawn bat detector surveys completed during the June 2019 surveys. Eleven buildings were inspected, nine of which were surveyed and three of these buildings were confirmed as bat roosts. The weather conditions for the dusk surveys were as follows:
    - 18th June 2019: overcast, calm, dry and 13ºC at start of survey. Air temperatures dropped to 7ºC, at which point walking transects ceased.
    - 19th June 2019: patchy cloud cover, calm, dry and 11ºC at start of survey. Rain showers occurred later in the night, at which point walking transects ceased.
    - 20th June 2019: patchy cloud cover, calm, dry and 13ºC at start of survey.

Table 7b: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 1 TW 0 Static survey: 19th to 21st June 2019	Unsure – likely to be a **Night Roost**. Static results not conclusive.	Static unit results: (no. of bat passes)* Night 2: Leis(2) CP(51) SP(32) My(1) Night 3: CP(4) SP(3)	Open windows	Ivy growth on building. Extensive hedgerow network. No lighting.
Building 2 (KD) TW 600 Dusk survey: 18th June 2019	None Bat boxes are erected on treeline approx. 30m away from survey site.	Bat species recorded foraging/commuting in area: CP & SP. First bat noted at 21:51 hrs (CP)	Not applicable	Lighting from adjacent residence. Extensive hedgerow/treeline network.

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 3 (TA) TW 900 Dusk survey: 18th June 2019	**Daytime Roost** (potential Maternity Roost) – common pipistrelle **Daytime Roost** – Natterer's bat	Common pipistrelle - >10 individuals Natterer's bat – 3 passes (potentially at least 3 individuals). Commuting/foraging: Leis, CP, SP First bat noted at 22:17 hrs (Leis)	Bats emerged from the rear / gable end of building where extensive ivy growth is present. Therefore, exact point not recorded.	No lighting Extensive hedgerow and treeline network and river valley.
Building 5 (TA) TW 2200 Dawn survey: 19th June 2019	No roost	Foraging and commuting activity recorded: SP, Leis	Not applicable	Extensive hedgerow and treeline network and river valley.
Building 7 (TA) TW 5300 Dusk survey: 20th June 2019	**Night Roost** – single CP recorded entering a crevice in stone wall of gable (long shed) during survey	SP roost located adjacent to study area >10 individuals recorded commuting down farm laneway from main road to buildings on-site.	Open doorways.	Lighting associated with residence. Treelines adjacent to farmyard. Extensive hedgerows within immediate landscape.
Building 8 (KD) TW 7800 Dusk survey: 20th June 2019	No roost	Foraging and commuting activity recorded: CP, SP, Leis First bat noted at 22:24 hrs.	Not applicable	Trees in treeline with Potential Bat Roosting potential.
Building 9 (SB) TW 17900 Emergence survey: 20th June 2019	No roost	No bats recorded roosting within building. The following bats were recorded in vicinity: CP: 49 passes Daub: 1 pass My: 1 pass Nath Pip: 3 passes	Not applicable	Lighting associated with adjacent residence. Extensive hedgerows.

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 10 (KD) TW 19500 Dusk survey: 19th June 2019	Large estate house complex – derelict condition consisting of 5 structures: Likely to be a **roost** due to the array of building and location adjacent to river.	CP x4 individuals foraging within area between buildings Whiskered bat x1 individual CP foraging around treeline Foraging/Commuting: (first bat noted at 22:26 hrs (CP) CP: 40 passes Daub: 1 pass Leis: 1 pass My: 1 pass SP: 3 passes	Plenty of potential roosting sites but none conclusively located. Large mature trees with Potential Bat Roosting features.	No lighting. River Nenagh adjacent to buildings. Extensive hedgerow and treelines in landscape.
Building 11 (TA) TW 19600 Dusk survey: 19th June 2019 Static survey: 19th to 21st June 2019	Cottage attic – highly likely a **Maternity Roost** for brown long-eared bats Adjacent mill - crevices	Cottage: Brown long-eared bats – 11 individuals counted emerging Mill: Leisler's bats >3 individuals, soprano pipistrelle >5 individuals recorded foraging / commuting. Likely to be roosting in the mill or adjacent large trees. Static unit results (no. of bat passes)* Night 2: Leis(22) CP(45) SP(56) My(1) Night 3: Leis(19) CP(26) SP(12) My(1)	Cottage: Open windows, loose slates Mill: crevices Large mature trees with Potential Bat Roosting features located to the rear of mill and along the River Nenagh.	Cottage: Ivy growth on roof, surrounded by trees. Large treelines in vicinity. No lighting. Mill: Ivy growth. Large treelines in vicinity. No lighting. Adjacent to Nenagh River

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species

3.4.2.2 July 2019

136. The following table summarises the results of the dusk and dawn bat detector surveys completed during the July 2019 surveys. Of the seven buildings requested to be checked, five buildings were further surveyed by dusk and dawn surveys and three confirmed roosts were recorded. The weather conditions for the dusk surveys were as follows:
    - 9th July 2019: patchy cloud cover, calm, dry and 16°C at start of survey. Air temperatures dropped to 13°C during walking transects with a light wind and clear sky noted.
    - 10th July 2019: overcast, breezy, dry and 13°C at start of survey.

- 20th July 2019: overcast, calm, heavy rain showers and 16°C at start of survey. Remained dry for the walking transects.

Table 7c: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 12 (TA) TW 27700 Emergence survey: 9th July 2019	House: roof space, gaps under corrugated roof **Satellite Roost**	Common pipistrelles >4 individuals Whiskered bat 1 individual Foraging: CP, Leis, SP, *Myotis*	Gaps under roof Open windows	Avenue of treelines. Extensive hedgerow network. No lighting.
Building 14 (RA) TW 29900 Emergence survey: 9th July 2019	Hay barn: **Night Roost**	Natterer's bat >3 individuals recorded light sampling within the structure. No suitable area within the for roost, so likely to be roosting nearby. Foraging: CP	Open barn	Part of a working farmyard. Extensive hedgerow/treeline network. Additional buildings located nearby.
Building 16 (TA) TW 35600 Emergence survey: 10th July 2019	No roost	No bats recorded emerging. Bat activity recorded foraging and commuting within the study area. Foraging: CP, Leis, SP, *Myotis*	Not applicable	Part of a working farmyard. Extensive hedgerow/treeline network.
Building 17 (RA) TW 35500 Emergence survey: 10th July 2019	No roost	No bats recorded emerging. Bat activity recorded foraging and commuting within the study area. Foraging: CP	Not applicable	Part of a working farmyard. Extensive hedgerow/treeline network.
Building 18 (TA) TWA 3000 Emergence survey: 11th July 2019	Shed with slate roof – **Feeding Roost** (Natt, BLE) Open hay barn – **Night Roost** (CP)	Natterer's bat Brown long-eared bat Common pipistrelles Commuting: Leis	Open doorways	Part of a working farmyard. Extensive hedgerow/treeline network. Woodland also present.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species, Natt = Natterer's bat

3.4.2.3 August 2019

137. The following table summarises the results of the dusk and dawn bat detector surveys completed during the August 2019 surveys. Of the seven buildings requested to be checked, all buildings were further surveyed by dusk and dawn surveys and six confirmed roosts were recorded. An additional building was also surveyed (i.e. Former St. Colman's Church) and this

is allocated the code number Building 28 and this was also confirmed as a roost. The weather conditions for the dusk surveys were as follows:

- 12th August 2019: patchy cloud cover, calm, dry and 12°C at start of survey.
- 13th August 2019: overcast, calm, dry with occasional showers and 14°C at start of survey.
- 14th August 2019: overcast, breezy, light rain showers and 15°C at start of survey.

Table 7d: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 19 (CM) TWA 10600 Emergence survey: 13th August 2019	No roost confirmed but likely However, Natterer's bat recorded at 21:56 hrs flying in yard (Sunset: 21:07 hrs). Therefore, likely that bat emerged from building **Satellite Roost**	No bats recorded emerging from buildings Foraging: CP, Leis, SP, Natt	Unknown Likely to be open doorways / windows	Extensive hedgerow network. No lighting.
Building 21 (JS) TWA 11600 Emergence survey: 10th July 2019	**Night Roost**: *Pipistrellus* spp. Recorded entering the haybarn @ 21:28 hrs.	Night Roost – sheltering bat Foraging: Leis	Open doorway	Extensive hedgerow network. No lighting.
Building 22 (TA) TWA 20200 Emergence survey: 13th August 2019	Roost in shed– due to presence of bat droppings Roost in house (Common pipistrelle) – **Satellite Roost (possible Maternity Roost)**	Common pipistrelle (9 individuals) emerged from roof of house. Foraging: CP, Leis	Gaps under facia board at gable end of house.	Part of a working farmyard. Extensive hedgerow/treeline network.
Building 23 (JS) TWA 20700 Emergence survey: 13th August 2019	**Night Roost:** Common pipistrelle recorded emerging and entering shed from 21:22 hrs.	Night Roost – sheltering bat Foraging: Leis, CP, Natt	Open doorway	Extensive hedgerow network. No lighting.
Building 24 (JS) TWA 24100 Emergence survey: 14th August 2019	No roost recorded	Common pipistrelle foraging in haybarns Foraging: CP, Leis	Open doorway	Extensive hedgerow network. No lighting.

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 25 (TA) TWB 3200 Emergence survey: 14th August 2019	**Satellite Roost:** Soprano pipistrelles (x3) emerged from show house.	Soprano pipistrelle (x3 individuals) Foraging: CP, SP	Exit: gap in facia & soffit at gable.	Extensive hedgerow network. Security lighting.
Building 26 (CM) TWB 5500 Emergence survey: 14th August 2019	**Maternity Roost:** roof space of residence (bungalow) **Satellite Roost**: stone shed	Soprano pipistrelle (>10 individuals) Satellite Roost (2 Natterer's bats)	Maternity Roost: gap in facia & soffit to front of bungalow. Satellite Roost: open doorway	Extensive hedgerow network. No lighting.
Building 28 (TA) Former St. Colman's Church TWA 20200 Dawn Survey: 14th August 2019	Large natural stone, slate roof church. **Multiple species roost** (three species), potential Maternity and Satellite Roosts	Natterer's bat Brown long-eared bat Soprano pipistrelle Foraging: Leis, CP	Gaps along facia and soffit boards, missing slates.	Extensive hedgerow / treeline network. Located along local road.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species, Natt = Natterer's bat

3.4.2.4 September 2019

138. The following table summarises the results of the dusk and dawn bat detector surveys completed during the August 2019 surveys. Seven buildings were inspected and surveyed and two confirmed roosts were recorded. The weather conditions for the dusk surveys were as follows:
    - 10th September 2019: full cloud cover, breezy, dry and 13°C at start of survey.
    - 11th September 2019: overcast, breezy, dry and 13°C at start of survey.
    - 12th September 2019: overcast, calm, heavy rain showers and 16°C at start of survey. Remained dry for the walking transects.

Table 7e: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 29 (SC) TWB 18300 Emergence survey: 10th September 2019	No roost	No bats recorded	Not applicable	Part of a working farmyard. Extensive hedgerow/treeline network.

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 30 (K) TWB 18200 Emergence survey: 10th September 2019	No roost	No bats recorded roosting. Foraging: CP foraging in barn (breezy night)	Not applicable	Part of a working farmyard. Extensive hedgerow/treeline network.
Building 31 (TA) TWB 18100 Emergence survey: 10th September 2019	No roost	No bats recorded emerging. Bat activity recorded foraging and commuting within the study area. Foraging: CP, Leis, Sp	Not applicable	Derelict farm buildings. Treeline to the south.
Building 32 (TA) TWB 21200 Emergence survey: 11th September 2019	**Maternity Roost** in adjacent building to farm yard. Additional soprano pipistrelle roost **(Satellite or Maternity)** in area - >9 individuals. **Night Roost** – BLE & Whis (individual bats)	Common pipistrelles (>21 individuals). Commuted down lane to farmyard being surveyed. Foraging bats: CP Leis SP	CP roost – facia & soffit of gable. Other roosts – open doorways / windows	Working farm. Extensive treelines. Security lighting present.
Building 33 (SC) TWB 24300 Emergence survey: 12th September 2019	No roost	No bats recorded roosting. Foraging: CP	Not applicable	Part of a working stable yard. Low hedgerow/treeline network.
Building 34 (K) TWB 23700 Emergence survey: 12th September 2019	No roost	No bats recorded roosting. Foraging: CP Leis	Not applicable	Suitable as a roost – may need re-surveying.
Building 35 (SB) TWBC 2650 Emergence survey: 11th September 2019	**Satellite Roost** – natural stone wall section of building	Common pipistrelle (2 individuals) Foraging: CP, Leis	Open crevices of stonework	Security lighting as part of working farmyard.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species.

3.4.3 Walking Transects 2019

139. Walking transects were undertaken post Dusk Surveys. A summary of the bat encounters recorded for each night of walking transects is presented in tables for each separate survey period. Prior to fieldwork, a provisional template for transects were mapped by TOBIN and used as a guide of walking transect routes. Deviations from the planned transects occurred due to 'Restricted Access / No Access' during the survey period.

140. The following Table 8a lists all of the transects proposed to be surveyed and 2019 and details where such surveys were completed.

Table 8a: Details of Walking Transects Completed in 2019

Trans No.	Name	Survey Details (How data was collected)	Survey Period
1	Inchabeg, Co. Tipperary	EchoMeter Touch data (KLM file)	June 2019
2	Kilmastulla, Co. Tipperary	Manual data collection (Excel file)	June 2019
3	Kilnacrana, Co. Tipperary	Manual data collection (Excel file)	June 2019
4	Castlecranna, Co. Tipperary	Manual data collection (Excel file)	June 2019
5	Boolagelagh, Co. Tipperary	EchoMeter Touch data (KLM file)	June 2019
6	Ballyannymore, Co. Tipperary	EchoMeter Touch data (KLM file)	June 2019
7	Ardcrony, Co. Tipperary	Manual data collection (Excel file)	July 2019
8	Ballylusky, Co. Tipperary	Manual data collection (Excel file)	July 2019
9	Killurne, Co. Tipperary	Manual data collection (Excel file)	July 2019
10	Newtown, Co. Tipperary	Manual data collection (Excel file)	July 2019
11	Galbally, Co. Offaly	EchoMeter Touch data (KLM file)	August 2019
12	Cree, Co. Offaly	EchoMeter Touch data (KLM file)	August 2019
13	Kilmaine, Co. Offaly	Manual data collection (Excel file)	August 2019
14	Money, Co. Offaly	Manual data collection (Excel file)	August 2019
15	Derries (Ballyboy), Co. Offaly	EchoMeter Touch data (KLM file)	August 2019
16	Clonshanna, Co. Offaly	EchoMeter Touch data (KLM file)	August 2019
17	Rathrobin, Co. Offaly	Manual data collection (Excel file)	September 2019
18	Annaghmore, Co. Offaly	EchoMeter Touch data (KLM file)	September 2019
19	Gorteen, Co. Offaly	Manual data collection (Excel file)	September 2019
20	Finter, Co. Offaly	EchoMeter Touch data (KLM file)	September 2019
21	Ballykilleen, Co. Offaly	Not surveyed due to poor weather conditions	October 2019
22	Timahoe East, Co. Kildare	EchoMeter Touch data (KLM file) – limited survey results due to poor weather condition.	October 2019
23	38kV Uprate	Manual data collection (Excel file) & EchoMeter Touch data (KLM file)	June & July 2019

3.4.3.1 June 2019

141. Walking transects were generally completed along boundaries of fields, laneways etc. in the vicinity of the buildings surveyed/inspected (Transect 1-6, Buildings 1-11). The following walking transects were completed in June 2019 and data was collated by the EchoMeter Touch Pro app. and manually entered on an excel file for mapping.

Table 8b: Results of Walking Transects Completed in June 2019

No.	Date & Time	Location	Bat species	Habitats
1	18th to 19th June 2019 23:45 hrs to 00:55 hrs (3 sessions)	Series of fields surrounding Building 1 (Session 1) Fields, laneways and roadways adjacent to Building 2 (session 2 & 3) (TW 0 to TW 550) **Transect 1**	Common pipistrelle Soprano pipistrelle *Myotis* species	Hedgerows Treelines Improved grassland
6	19th June 2019 23:45 hrs to 00:35 hrs	Fields and river valley in vicinity of Buildings 10 & 11 Offline (in vicinity of TW 19300) **Transect 6**	Common pipistrelle Soprano pipistrelle *Myotis* species	Hedgerows Treelines Scrub Improved grassland Lowland river
2 **3** **4** **5**	20th June 2019 23:45 hrs to 00:55 hrs	Three areas walked: Fields around Building 7 – **Transect 3** Fields around Building 8 – **Transect 4** Fields between TW 1600 to TW 3100 – **Transect 2** Fields around Building 9 (TW 17900) – **Transect 5**	Transect 2:CP SP Leis Transect 3: CP SP Leis Transect 4: CP SP Daub Transect 5: CP SP Leis My	Hedgerows Treelines Scrub Improved grassland

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, My = *Myotis* species

3.4.3.2 June 2019 38kV Uprate

142. Walking transects were undertaken along the local road network and, where access was permitted, along the 38kV Uprate across the landscape. The weather conditions for the surveys were:
    - 13th June 2019 (Weather conditions: light wind, overcast, dry, 14°C)
    - 14th June 2019 (Weather conditions: calm, overcast, dry, 13°C)

Table 8c: Results of Walking Transects Completed in June 2019 38kV Uprate

No.	Date & Time	Location	Bat species	Habitats
1	13th June 2019	Agricultural land along the ESB route from Ardnacrusha and moving east towards O'Briens Bridge. Additional bat records collated along the local road network between Ardnacrusha and O'Brien's Bridge (Local road network off the regional road R463).	Common pipistrelle Soprano pipistrelle Leisler's bat Brown long-eared bat *Myotis* species	Hedgerows Treelines Improved grassland Local road network
6	14th June 2019	In the area of Knockatoor, Co. Clare (local road network north of the 38kV Uprate).	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species	Hedgerows Treelines Local road network

3.4.3.3 July 2019

143. Walking transects were completed in vicinity of the building surveys/inspections. The following walking transects were completed in July 2019. All of the data collated during this survey period was manually recorded and entered into the excel file for mapping.

Table 8d: Results of Walking Transects Completed in July 2019

No.	Date & Time	Location	Bat species	Habitats
7	9th to 10th July 2019 23:55 hrs to 02:15 hrs	Series of fields surrounding Building 12 (TW 27500) **Transect 7**	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species (whiskered bat)	Improved grassland Hedgerows Treelines Water body (disused quarry)
10	10th to 11th July 2019 23:45 hrs to 01:30 hrs	Large fields with treelines, ditches, hedges and woodland edge along tracks. (TW 38200 to 40500) **Transect 10**	Common pipistrelle Soprano pipistrelle Leisler's bat Natterer's bat	Improved grassland Hedgerows Treelines Woodland
8 **9**	11th July 2019 01:40 hrs to 02:25 hrs	Series of fields around Building 15, river, church yard and local roads. (TW 30600 to 31600) **Transect 8** Series of fields within Transect 9.	Common pipistrelle Soprano pipistrelle Leisler's bat Brown long-eared bat Daubenton's bat	Improved grassland Hedgerows Lowland river Treelines

3.4.3.4 July 2019 38kV Uprate

144. Walking transects were undertaken along the local road network and, where access was permitted, along the 38kV Uprate across the landscape from O'Brien's Bridge to Birdhill, Co. Tipperary. The weather conditions for the surveys were:
    - 16th July 2019 (Weather conditions: light wind, overcast, dry, 16°C)
    - 17th July 2019 (Weather conditions: light wind, patchy cloud cover, dry, 15°C)

Table 8e: Results of Walking Transects Completed in July 2019 Along the 38kV Uprate

No.	Date & Time	Location	Bat species	Habitats
1	16th July 2019	Agricultural land along the ESB route from O'Briens Bridge to Birdhill.	Common pipistrelle Soprano pipistrelle Leisler's bat Brown long-eared bat Daubenton's bat Natterer's bat Whiskered bat *Myotis* species	Hedgerows Treelines Improved grassland Local road network
6	17th June 2019	In the area of Birdhill, Co. Tipperary (local road network north of the 38kV uprate).	Common pipistrelle Soprano pipistrelle Leisler's bat Brown long-eared bat Whiskered bat	Hedgerows Treelines Improved grassland Local road network

No.	Date & Time	Location	Bat species	Habitats

3.4.3.5 August 2019

145. Walking transects were completed in vicinity of the building surveys/inspections. The following walking transects were completed in August 2019 data was collated by the EchoMeter Touch Pro app. and manually entered on an excel file for mapping.

Table 8f: Results of Walking Transects Completed in August 2019

No.	Date & Time	Location	Bat species	Habitats
11	12th August 2019 21:53 hrs to 23:53 hrs	Transect 11 – Galbally, Co. Offaly Fields surrounding B19, B20 & B21 TW 47000 to 49200	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species	Treelines Hedgerows Agricultural fields
12	13th August 2019 22:54 hrs to 02:08 hrs	Transect 12 – Cree Fields surrounding B22, B23 TW 56000 to 57500	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species Brown long-eared bat	Treelines Hedgerows Agricultural fields Scrub
13	13th August 2019 22:00 hrs to 23:45 hrs	Transect 13 – Kilmaine, Co. Offaly Fields to the rear of B24 TW 60500 to 61500	Common pipistrelle Soprano pipistrelle Leisler's bat	Treelines Hedgerows Agricultural fields
14	13th August 2019 00:10 hrs to 02:00 hrs	Transect 14 – Money, Co. Offaly Fields TW 67800 to 70100	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species	Treelines Hedgerows Agricultural fields
15	14th August 2019 21:26 hrs to 23:01 hrs	Transect 15 – Derries, Co. Offaly Fields surrounding B27. TW 77000 to 79000	Common pipistrelle Soprano pipistrelle	Treelines Hedgerows Agricultural fields Conifer plantation
16	14th August 2019 23:44 hrs to 01:20 hrs	Transect 16 – Clonshanna, Co. Offaly Fields in selected study area. TW 79000 to 81500	Common pipistrelle Soprano pipistrelle	Treelines Hedgerows Agricultural fields Conifer plantation

3.4.3.6 September 2019

146. Walking transects were completed in vicinity of the building surveys/inspections. The following walking transects were completed in September 2019 data was collated by the EchoMeter Touch Pro app. and manually entered on an excel file for mapping.

Table 8g: Results of Walking Transects Completed in September 2019

No.	Date & Time	Location	Bat species	Habitats
17	10th September 2019 20:50 hrs to 01:52 hrs	Transect 17 – fields within accessible area. TW 81500 to 83500	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species	Treelines Hedgerows Agricultural fields
18	11th September 2019 22:00 hrs to 23:07 hrs	Transect 18 – fields within accessible area. TW 85500 to 86700	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species	Treelines Hedgerows Agricultural fields
19	12th September 2019 22:00 hrs to 00:00 hrs	Transect 19 – fields within accessible area.	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species	Treelines Hedgerows Agricultural fields
20	12th September 2019 20:32 hrs to 00:15 hrs	Transect 20 – fields within accessible area.	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* species Brown long-eared bat	Treelines Hedgerows Agricultural fields Scrub

3.4.3.7 October 2019

147. Due to poor weather conditions, only one walking transect was completed in the October survey period. During this transect, little bat activity was recorded and it was recommended that the scheduled surveys for October 2019 were repeated in 2020 in order to gather data that is more accurately reflective of the habitats presented and potential local bat populations.

Table 8h: Results of Walking Transects Completed in October 2019

No.	Date & Time	Location	Bat species	Habitats
22	20:01 hrs to 21:18 hrs 22/10/2019	Transect 22- Timahoe East Fields within Transect 22 accessible fields	Common pipistrelle Soprano pipistrelle Leisler's bat *Myotis* spp.	Conifer plantation Treelines Hedgerows Agricultural grassland Scrub

3.4.4 Driving Transect 2019

148. The length of the route for this Proposed Project was examined and twelve driving transects (these are separate to the TOBIN's 26 transects designed as part of the 2019 Bat Scope of

Works) were designed along the road network in vicinity of the Proposed Project. The location of these transects are presented in Figure 2b with Driving Transect 1 starting Co. Dublin and Driving Transect 12 finishing in Co. Tipperary.

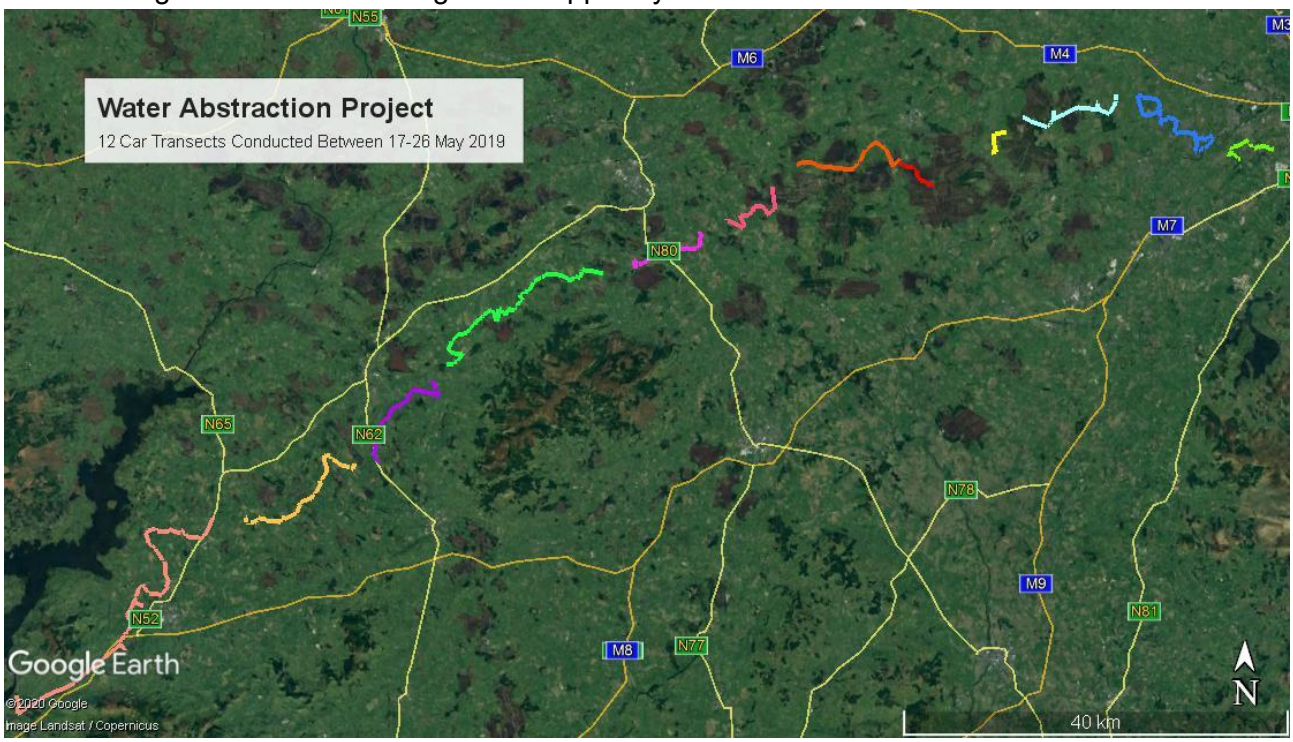


Figure 2b: Overall Aerial Photograph Depicting the Twelve Driving Transects Completed in 2019

Table 9a: Description of Driving Transects Completed in May 2019

	Location	Distance		Location	Distance
T1	Peamount, Co. Dublin	8.87 km	**T7**	Geashill, Co. Offaly	11.3 km
T2	Straffan, Co. Kildare	23 km	**T8**	Killeigh, Co. Offaly	10.6 km
T3	Ballagh Wood, Co. Kildare	16.35 km	**T9**	Kilcormac, Co. Offaly	30.18 km
T4	Springvalley, Co. Kildare	4 km	**T10**	West of Clareen, Co. Offaly	14.5 km
T5	South of Edenderry, Co. Offaly	5.18 km	**T11**	Cloughjordan, Co. Tipperary	19.3 km
T6	East of Daingean, Co. Offaly	15.5 km	**T12**	Nenagh, Co. Tipperary	45.7 km

149. The following Table 9b provides a summary of the bat encounters recorded during the driving transect surveys completed in May 2019. Six species of bat was recorded during the driving transect: common pipistrelle, soprano pipistrelle, Leisler's bat, brown long-eared bat, Nathusius' pipistrelle and *Myotis* spp. The common pipistrelle was the most frequently recorded bat species. The number of bat passes/hr and the number of bat passes/km are also calculated. This provides a means to compare the level of bat activity for each bat species along the transect routes. Driving transect 3 had the highest level of common pipistrelle bat passes/km, Driving transect 4 had the highest level of soprano pipistrelle bat passes/km, and Driving transect 1 had the highest level of Leisler's bat passes/km.

Table 9b: Results of Driving Transects Completed in May 2019

	Date		Bat species					
			CP	SP	Leis	BLE	MY	Nath Pip
			No. of bat passes					
T1	20/5/2019		5	2	7	0	0	0
	Time							
	Distance	8.87 km	0.6/km	0.2/km	0.8/km	0	0	0
T2	26/5/2019		25	5	17	1	0	0
	Time							
	Distance	23 km	1.1/km	0.2/km	0.7/km	0	0	0
T3	17/5/2019		39	7	3	0	0	0
	Time							
	Distance	16.35 km	2.4/km	0.4/km	0.2/km	0	0	0
T4	17/5/2019		8	9	0	0	1	0
	Time							
	Distance	4.0 km	2.0/km	2.3/km	0	0	0.3/km	0
T5	18/5/2019		6	3	1	0	0	5
	Time							
	Distance	5.18 km	1.2/km	0.6/km	0.2/km	0	0	1.0/km
T6	18/5/2019		10	3	1	0	0	0
	Time							
	Distance	15.5 km	0.6/km	0.2/km	0.1/km	0	0	0
T7	18/5/2019		13	5	0	0	0	0
	Time							
	Distance	11.3 km	1.2/km	0.4/km	0	0	0	0
T8	21/5/2019		6	3	0	0	0	0
	Time							
	Distance	10.6 km	0.6/km	0.3/km	0	0	0	0
T9	21/5/2019		57	12	1	0	0	0
	Time							
	Distance	30.18 km	1.9/km	0.4/km	0	0	0	0
T10	22/5/2019		21	8	1	0	0	0
	Time							
	Distance	14.5 km	1.4/km	0.6/km	0.1/km	0	0	0
T11	22/5/2019		34	17	1	0	0	0
	Time							
	Distance	19.3 km	1.8/km	0.9/km	0.1/km	0	0	0
T12	22/5/2019		70	36	14	1	1	0
	Time							
	Distance	45.7 km	1.5/km	0.8/km	0.3/km	0	0	0

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species, Nath Pip = Nathusius' pipistrelle.

3.4.5 Driving Transect 2019 38kV Uprate

150. Driven transects were undertaken along the local road network to complement the information collated by the walking transects. Two driving transects were completed: 12th June and 18th July 2019. The weather conditions for the dusk surveys were as follows:

- 12th June 2019 (Weather conditions: overcast, light winds with occasional showers and 12ºC)
- 18th July 2019 (Weather conditions: light wind, patchy cloud cover, dry, 15ºC).

151. Two bat species (common and soprano pipistrelle) were recorded on the 12th June 2019 while four bat species (common and soprano pipistrelle, Leisler's bat and *Myotis* species) were recorded on the 18th July 2019. Soprano pipistrelles was the most frequently encountered bat species.

3.4.6 Night-time Bat Detector Surveys 2020

152. Night-time bat detector surveys completed in 2020 are as follows and Table 10a indicates which survey period each survey type was undertaken:
    - Dusk & Dawn Bat Surveys
    - Walking Transects
    - Passive Static Bat Detector Survey

153. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while Latitude and Longitude co-ordinate points are also provided in the Excel file detailing survey results for mapping.

Table 10a: Details of the Night-time Bat Detector Surveys Completed in 2020

	July	Aug	Sept
Dusk Bat Surveys	√	√	√
Walking Transects	√	√	√
Driving Transects			
Passive Static Bat Detector Surveys	√	√	√

3.4.6.1 Dusk & Dawn Bat Surveys 2020

154. Dusk bat surveys were completed in July, August and September 2020. Surveys were not undertaken in June 2020 due to COVID-19 restrictions and surveying was not planned for October 2020 due to poor weather conditions that generally occurs during this month.

155. In July, August and September 2020, two buildings selected by TOBIN for surveys were surveyed by dusk bat surveys. One roost was confirmed. An additional building was identified as a roost during dusk emergence survey of Kilmastulla Bridge.

156. The following Table 10b summarises the results of the dusk bat detector surveys completed in 2020. Please consult Table 10b for a description of buildings/structures. The dusk survey of Parteen Basin identified a tree roost. The weather conditions for the dusk surveys were as follows:
    - 6th July 2020: overcast, calm, dry and 14ºC (3 surveyors).
    - 7th July 2020: overcast, calm, dry and 12ºC, rain showers later in the survey (3 surveyors).
    - 10th July 2020: overcast, calm, dry and 14ºC (2 surveyors).
    - 11th August 2020: overcast, calm, dry and 14ºC at start of survey (2 surveyors).
    - 12th August 2020: overcast, calm, dry and 15ºC at start of survey (3 surveyors).
    - 7th September 2020: overcast, breezy, slight mist and 17ºC (1 surveyor)
    - 21st September 2020: overcast, dry, calm and 14ºC (2 surveyors)

Table 10b: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 1 TW 0 Static survey: 6th to 10th July 2020 2 dusk emergence surveys (6/7/2020 & 11/8/2020)	**Night Roost**	Static unit results: (no. of bat passes) – Lesser horseshoe bat on 7/7/2020 @ 01:58 hrs. Dusk Survey 1: Leisler's bats and common pipistrelles recorded foraging. Dusk Survey 2: Leisler's bats, common pipistrelle and soprano pipistrelles recorded foraging.	Open windows	Ivy growth on building. Extensive hedgerow network. No lighting.
Building 2a Cottage adjacent to Kilmastulla Bridge Dusk emergence survey (6/7/2020) of Kilmastulla Bridge identified adjacent Roost	**Satellite Roost** R7278869685	Dusk Survey of Kilmastulla Bridge: Common pipistrelles, soprano pipistrelles and Leisler's bat recorded foraging in the area. Common pipistrelle (x3) recorded emerging from cottage	Open window – cottage recently renovated.	Adjacent to Kilmastulla River. Extensive treelines and hedgerow network. No lighting.
Bridge 1 Kilmastulla Bridge Dusk emergence survey (6/7/2020)	No roost R7276669741	Common pipistrelles, soprano pipistrelles and Leisler's bat recorded foraging in the area.	Some suitable crevices for roosting bats present	Extensive treelines and hedgerow network. No lighting.
Building 34 TWB 23700 Emergence survey: (7/9/2020)	No roost	No bats recorded roosting. Foraging: CP, Leis	Not applicable	Suitable as a roost – may need re-surveying.
Tree Category 1 PBR (21/9/2020)	**Tree Roost** R7002670149	Daytime inspection (Phase 1) Dusk Survey	Open spilt limb	Suitable as a roost. Single soprano pipistrelle emerged from tree

3.4.6.2 Walking Transects 2020

157. Walking transects were undertaken post Dusk Surveys. A summary of the bat encounters recorded for each night of walking transects is presented in tables for each separate survey period. Table 11a lists all of the transects proposed to be surveyed in 2020 and details where such surveys were completed.

Table 11a: Details of Walking Transects Completed in 2020

Trans No.	Name	Survey Details (How data was collected)	Survey Period
1	Inchabeg, Co. Tipperary	EchoMeter Touch data (KLM file) Anabat Walkabout Geo-referenced audio calls	July & August 2020
2	Kilmastulla, Co. Tipperary	EchoMeter Touch data (KLM file)	July & August 2020
3	Kilnacrana, Co. Tipperary	EchoMeter Touch data (KLM file)	July & August 2020
19	Gorteen, Co. Offaly	EchoMeter Touch data (KLM file)	September 2020
27	RWI&PS site at Parteen Basin	EchoMeter Touch data (KLM file) Anabat Walkabout Geo-referenced audio calls	September 2020
28	WTP site at Incha Beg	EchoMeter Touch data (KLM file)	July & August 2020
29	BPT site at Cloughjordan	Anabat Walkabout Geo-referenced audio calls	July & August 2020

158. Walking transects were generally completed along boundaries of fields, laneways etc. in the vicinity of the buildings surveyed/inspected. The following walking transects were completed in 2020 and data was collated for mapping.

Table 11b: Results of Walking Transects Completed in 2020

No.	Date & Time	Location	Bat species	Habitats
2	6th July 2020	Kilmastulla Bridge and local road network. Fields adjacent to Kilmastulla River. Adjacent to Bat Target Areas 2 & 3	Common pipistrelle Soprano pipistrelle Leisler's bat Whiskered bat	Hedgerows Treelines Improved grassland
28	6th July 2020	Field network of WTP site at Incha Beg	Common pipistrelle Soprano pipistrelle Leisler's bat Daubenton's bat Whiskered bat	Hedgerows Treelines Improved grassland Conifer plantation
27	7th July 2020	Parteen Weir – along towpath	Common pipistrelle Soprano pipistrelle Leisler's bat Daubenton's bat	Hedgerows Treelines Improved grassland Watercourses
29	10th July 2020	Field network of BPT site at Cloughjordan Woodland trails of Knocknacree Woodlands Local road network	Common pipistrelle Soprano pipistrelle Leisler's bat Natterer's bat *Myotis* spp.	Hedgerows Treelines Improved grassland Deciduous woodland
28	11th August 2020	Field network of WTP site at Incha Beg	Common pipistrelle Soprano pipistrelle Leisler's bat Whiskered bat Brown long-eared bat *Myotis* spp.	Hedgerows Treelines Improved grassland Conifer plantation

No.	Date & Time	Location	Bat species	Habitats
29	12th August 2020	Field network of BPT site at Cloughjordan Woodland trails of Knocknacree Woodlands Local road network	Common pipistrelle Soprano pipistrelle Leisler's bat Daubenton's bat Whiskered bat Natterer's bat Brown long-eared bat	Hedgerows Treelines Improved grassland Deciduous woodland
19	7th September 2020	Field network of Bat Target Area 19		Hedgerows Treelines Improved grassland
27	21st September 2020	Woodland of RWI&PS site at Parteen Basin River and canal waterbodies of Parteen Basin		Hedgerows Treelines Improved grassland Deciduous woodland Waterbodies

159. A total of 859 bat records were collated during the 2020 walking transects. Table 11c provides the breakdown of these records according to the bat species recorded.

Table 11c: Results of Walking Transects Completed in 2020

Bat Species	No. of Records	Bat Species	No. of Records
Common pipistrelle	338	Whiskered bat	5
Soprano pipistrelle	368	Nathusius' pipistrelle	1
Leisler's bat	112	Brown long-eared bat	3
Daubenton's bat	16	*Myotis* species	11
Natterer's bat	5	-	-

3.4.7 Night-time Bat Detector Surveys 2021

160. Night-time bat detector surveys completed in 2021 are as follows and Table 12a indicates which survey period each survey type was undertaken:
- Dusk & Dawn Bat Surveys
- Walking Transects
- Passive Static Bat Detector Survey

161. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while Latitude and Longitude co-ordinate points are also provided in the Excel file detailing survey results for mapping.

Table 12a: Details of the Night-time Bat Detector Surveys Completed in 2021

	June	July	Aug
Dusk Bat Surveys	√	√	√
Walking Transects	√	√	√
Driving Transects			
Passive Static Bat Detector Surveys	√	√	√

3.4.7.1 Dusk & Dawn Bat Surveys 2021

162. Dusk bat surveys were completed in June, July and August 2021. In June, July and August 2021, six buildings were surveyed by dusk bat surveys. Two roosts were confirmed.

163. The following table summarises the results of the dusk bat detector surveys completed in 2021. Please consult Table 12b for description of buildings/structures. The weather conditions for the dusk surveys were as follows:
    - 23rd June 2021: overcast, calm, dry and 17°C (3 surveyors).
    - 24th June 2021: overcast, calm, dry and 14°C (2 surveyors).
    - 20th July 2021: clear sky, calm, dry and 21°C (2 surveyors).
    - 21st July 2021: overcast, calm, dry and 20°C at start of survey (2 surveyors).
    - 23rd August 2021: overcast, calm, dry and 15°C (2 surveyors).
    - 24th August 2021: overcast, calm, dry and 13°C (2 surveyors).

Table 12b: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 36 KE1450N-A Dusk emergence survey (23/6/2021)	**Satellite Roost** N8698135069	Dusk Survey: common pipistrelles emerging and foraging within farmyard - >3 individuals.	Open doorways	Farmyard. Extensive hedgerow network. No lighting.
Building 37 Dusk emergence survey (23/6/2021)	Not a roost N4501321777	None recorded	Not applicable	Group Water treatment plant – located within woodland area. No lighting.
Building 38 Dusk emergence survey (23/6/2021)	Not a roost N4503721727	None recorded	Not applicable	Group Water Treatment Plant – located within woodland area. No lighting.
Building 39 Dusk emergence survey (24/6/2021)	**Satellite Roost** N8238234816	Single Leisler's bat emerged from chimney area of building.	Gap in chimney structure.	Good linear habitats. No lighting.
Building 40 Dusk emergence survey (20/7/2021)	Not a roost N9075932725	None recorded	Not applicable	Farmyard with good linear habitats. No lighting.
Building 41	Not a roost O0117030926	None recorded	Not applicable	Open area with little linear habitats. Lighting present and in adjacent grounds of hospital.

3.4.7.2 Walking Transects 2021

164. Walking transects were undertaken post Dusk Surveys. A summary of the bat encounters recorded for each night of walking transects is presented in tables for each separate survey period. The following Table 12c lists all of the transects proposed to be surveyed in 2021 and details where such surveys were completed.

Table 12c: Details of Walking Transects Completed in 2021

Trans No.	Name	Survey Details (How data was collected)	Survey Period
22	Timahoe East, Co. Kildare	M2 Bat Logger Geo-reference audio calls	June 2021
23	Newtownmoneenluggagh, Co. Kildare	Anabat Walkabout & Anabat Scout Geo-referenced audio calls	June 2021
24	Baltracey, Co. Kildare	M2 Bat Logger & Anabat Scout Geo-reference audio calls	June 2021
25	No Location, Co. Kildare	M2 Bat Logger Geo-reference audio calls	June 2021
26	Loughtown, Co. Dublin	M2 Bat Logger Geo-reference audio calls	June 2021
30	TPR at Peamount	M2 Bat Logger & Anabat Scout Geo-reference audio calls	July 2021
31	Additional areas in Co. Tipperary and Offaly	M2 Bat Logger Geo-reference audio calls	August 2021

165. Walking transects were generally completed along boundaries of fields, laneways etc. in the vicinity of the buildings surveyed/inspected. The following walking transects were completed in 2021 and data was collated for mapping.

Table 12d: Results of Walking Transects Completed in 2021

No.	Date & Time	Location	Bat species	Habitats
22, 23, 31	23/6/2021 22:30 hrs to 00:30 hrs	Timahoe East, Co. Kildare, Newtownmoneenluggagh, Co. Kildare,	Common pipistrelle Soprano pipistrelle Leisler's bat	Hedgerows Treelines Improved grassland
24, 25	24/6/2021 22:30 hrs to 00:00 hrs	Baltracey, Co. Kildare, Additional area in Co. Offaly	Common pipistrelle Soprano pipistrelle Leisler's bat	Hedgerows Treelines Improved grassland Watercourses Woodland
26	21/7/2021 22:30 hrs to 00:00 hrs	Loughtown, Co. Dublin	Common pipistrelle Soprano pipistrelle Leisler's bat	Hedgerows Treelines Improved grassland Waterbody
30	21/7/2021 21:00 hrs to 00:00 hrs	TPR at Peamount	Common pipistrelle Soprano pipistrelle Leisler's bat	Hedgerows Improved grassland

No.	Date & Time	Location	Bat species	Habitats
31	23/8/2021 21:00 hrs to 23:30 hrs	Additional areas in Co. Offaly	Common pipistrelle Soprano pipistrelle Brown long-eared bat Natterer's bat Leisler's bat	Hedgerows Treelines Improved grassland
31	24/8/2021 21:00 hrs to 00:30 hrs	Additional areas in Co. Tipperary	Common pipistrelle Soprano pipistrelle Brown long-eared bat Leisler's bat	Hedgerows Treelines Improved grassland

166. A total of 851 bat records were collated during the 2021 walking transects. The following Table 12e provides the breakdown of these records according to the bat species recorded.

Table 12e: Results of Walking Transects Completed in 2021

Bat Species	No. of Records	Bat Species	No. of Records
Common pipistrelle	398	Whiskered bat	0
Soprano pipistrelle	181	Nathusius' pipistrelle	2
Leisler's bat	257	Brown long-eared bat	7
Daubenton's bat	0	*Myotis* species	0
Natterer's bat	6	-	-

3.4.8 Night-time Bat Detector Surveys 2022

167. Night-time bat detector surveys completed in 2022 are as follows and Table 13a indicates which survey period each survey type was undertaken:
- Dusk & Dawn Bat Surveys
- Walking Transects
- Passive Static Bat Detector Survey

168. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while ITM grid reference co-ordinate points are also provided in the Excel file detailing survey results for mapping.

Table 13a: Details of the Night-time Bat Detector Surveys Completed in 2022

	June
Dusk Bat Surveys	√
Walking Transects	√
Driving Transects	
Passive Static Bat Detector Surveys	√

3.4.8.1 Dusk & Dawn Bat Surveys 2022

169. Dusk and dawn bat surveys were completed in June 2022 where one building was surveyed by dawn bat survey (Building 1, Incha Beg) and no roosts were confirmed. The woodland area in Parteen was also surveyed by dusk and dawn survey and no roosts were confirmed.

170. Table 13b summarises the results of the dusk and dawn bat detector surveys completed in 2022. Please consult Table 13b for description of building. The weather conditions for the dusk surveys were as follows:
- 20th June 2022 (dusk): clear sky, light breeze, dry and 13ºC (2 surveyors).
- 21st June 2022 (dawn): overcast, calm, light rain and 15ºC (2 surveyors).
- 24th June 2022 (dawn): clear sky, calm, dry and 14ºC (2 surveyors).
- 24th June 2022 (dusk): patchy cloud cover, calm, dry and 16ºC (2 surveyors).

Table 13b: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 1 TW 0 Static survey: 20th June to 24th June 2022 1 dawn emergence survey (24/6/2022)	**Night Roost**	Static unit results: No bat passes recorded Dawn Survey: Leisler's bats and common pipistrelles recorded foraging.	Open windows	Ivy growth on building. Extensive hedgerow network. No lighting.
Tree Category 1 PBR Dusk Survey: 20th June 2022 Dawn Survey: 21st June 2022 (Single soprano pipistrelle emerged from tree from 21/9/2020)	**Tree Roost** R7002670149 Parteen	Daytime inspection (Phase 1) Dusk & Dawn Surveys: Leisler's bats, Daubenton's bat, soprano pipistrelle and common pipistrelles recorded.	Open spilt limb	Suitable as a roost. No roost recorded during these 2022 surveys.

3.4.8.2 Walking Transects 2022

171. Walking transects were undertaken post Dusk Surveys. A summary of the bat encounters recorded for each night of walking transects is presented in tables for each separate survey period. Table 13c lists all of the transects proposed to be surveyed and 2022 and details where such surveys were completed.

Table 13c: Details of Walking Transects Completed in 2022

Trans No.	Name	Survey Details (How data was collected)	Survey Period
N/A	NW Geashill, Co. Offlay	Anabat Walkabout & M2 Bat Logger Geo-reference audio calls	June 2022
21	Mount Lucas, Co. Offaly	Anabat Walkabout & M2 Bat Logger Geo-reference audio calls	June 2022

172. Walking transects were generally completed along boundaries of fields, laneways etc. in the vicinity of the buildings surveyed/inspected. The following walking transects were completed in 2022 and data was collated for mapping.

Table 13d: Results of Walking Transects Completed in 2022

No.	Date & Time	Location	Bat species	Habitats
N/A	24th June 2022	NW Geashill, Co. Offlay	Common pipistrelle Soprano pipistrelle	Hedgerows Treelines Improved grassland Woodland
21	24th June 2022	Mount Lucas, Co. Offaly	Common pipistrelle Soprano pipistrelle Leisler's bat	Hedgerows Treelines Improved grassland Watercourses

3.4.9 Night-time Bat Detector Surveys 2024

173. Night-time bat detector surveys completed in 2024 are as follows and Table 14a indicates which survey period each survey type was undertaken:
- Dusk & Dawn Bat Surveys
- Passive Static Bat Detector Survey

174. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while Latitude and Longitude co-ordinate points are also provided in the Excel file detailing survey results for mapping.

Table 14a: Details of the Night-time Bat Detector Surveys Completed in 2024

	May	July	Aug
Dusk Bat Surveys	√	√	√
Walking Transects			
Driving Transects			
Passive Static Bat Detector Surveys		√	√

3.4.9.1 Dusk Bat Surveys 2024

175. Dusk bat surveys of buildings were completed in July and August 2024. In May 2024, one tree previously recorded as a bat roost by TOBIN was re-surveyed. In July and August 2024, nine buildings were surveyed by dusk bat surveys. Eight buildings and one tree were confirmed as roosts.

Table 14b: Buildings / Structures Survey Results (Building in BOLD = Confirmed Roost)

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
TOBIN Tree B Dusk emergence survey (16/6/2024) N 34106 16645 **(ITM 634054,716671)**	**Tree Roost –** Leisler's bat Behind dense ivy growth	Dusk Survey: x2 individuals Leisler's bats, soprano pipistrelles and common pipistrelles recorded foraging.	Dense ivy growth	Dense ivy growth on tree. Tree is located along a regional road. Hedgerows are tightly trimmed adjacent to tree but dense hedgerows and treelines across road (adjacent to river) where bats were recorded foraging. No street lighting.
Building 12 Dusk emergence survey (8/7/2024)	**Day Roost –** Common pipistrelles Natural stone agricultural shed with partial slate roof.	Dusk Survey: x2 individuals Leisler's bats, soprano pipistrelles and common pipistrelles recorded foraging.	Gaps along wall plate and roof	Tree line adjacent to farmyard and provides commuting habitat into the landscape.
Building 45 TY23551F Dusk emergence survey (9/7/2024)	**Day Roost –** Leisler's bat (eves of residence). **Satellite Roost** – Soprano pipistrelle (rear roof space of residence).	Leisler's bat (x1 individual) Soprano pipistrelle (>5 individuals) Leisler's bats, soprano pipistrelles and common pipistrelles recorded foraging.	Leisler's bat emerged from facia/soffit at gable of residence. Soprano pipistrelle emerged from main roof (exact location no pin-pointed).	Treelines and hedgerows along avenue and on boundary of farmyard. Good foraging and commuting habitat. No outdoor lighting. Some lighting associated with the farm buildings (milking parlour).
Building 46 TY9123N Dusk emergence survey (8/7/2024)	No bats recorded roosting in building.	No roosts Leisler's bats, Daubenton's bats, soprano pipistrelles and common pipistrelles recorded foraging in woodland to rear of building.	Not applicable	Small woodland to rear of building. No street lighting.
Building 47 TY10873N Dusk emergence survey (9/7/2024)	**Satellite Roost –** Leisler's bat (roof space).	Leisler's bat (x5-6 individuals) Leisler's bats, soprano pipistrelles and common pipistrelles recorded foraging.	Loose slates	Little tall vegetation in immediate vicinity of the building. No street lighting.

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 48 TY10873N Dusk emergence survey (6/8/2024)	**Satellite Roost –** Common pipistrelle (roof space).	Common pipistrelle (x7 individuals) Leisler's bats, soprano pipistrelles and common pipistrelles recorded foraging.	Emerged from dense ivy	Good linear habitat directly adjacent to building. No street lighting.
Building 49 OY6674F Dusk emergence survey (9/8/2024)	**Satellite Roost –** Common pipistrelle (residence).	Common pipistrelle (x10 individuals) Soprano pipistrelles, Leisler's bats and common pipistrelles recorded foraging.	Common pipistrelles - emerged from facia/soffit.	Open farmyard with some linear habitat features. Lighting associated with working farm yard.
Building 51 TY6551N Dusk emergence survey (9/87/2024)	**Maternity Roost** – Common pipistrelles (farmhouse) **Day Roost** – Natterer's bat (farmhouse)	Common pipistrelles (x25 individuals) Natterer's bats (x2 individuals) Soprano pipistrelles foraging.	Gables – loose slates Open windows and doors	Tall trees adjacent to property. No street lighting.
Building 19 OY3053F Dusk emergence survey (9/8/2024)	**Satellite Roost –** Common pipistrelle (stables). **Day Roost** – Soprano pipistrelle (Agri shed)	Common pipistrelle (x7 individuals) Soprano pipistrelle (x1 individual) Soprano pipistrelles and common pipistrelles recorded foraging.	Common pipistrelles - emerged from open doors of stables. Soprano pipistrelle – emerged from open gate of agri shed.	Open farmyard with some linear habitat features. Lighting associated with working farm yard.

Building Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 44 TY11021A Dusk emergence survey (7/8/2024)	**Satellite Roost –** Natterer's bats (front bay window of residence). **Day Roosts** – Natterer's bat, Brown long-eared bat * Common pipistrelle (1.5 storey natural stone and slate roof barn) **Day Roost** – Soprano pipistrelle (Agri shed) **Satellite Roost –** Natterer's bats (single storey agri-shed) **Satellite Roosts –** Common pipistrelle & brown long-eared bat	Residence – x5 Natterer's bats 1.5 Storey barn – x3 common pipistrelles, x1 Natterer's bat & x1 brown long-eared bat Agri-shed – x3 soprano pipistrelles Single storey shed – x5 Natterer's bats Agri-shed with modern bard – x7 common pipistrelles & x1 brown long-eared bat Soprano pipistrelles, Leisler's bats, Daubenton's bats, Natterer's bats, brown long-eared bats and common pipistrelles recorded foraging.	Residence – gap along plaster/wall of upper part of bay window All other exit points were open windows and doors ways.	Open farmyard with some linear habitat features. Lighting associated with working farm yard.

3.4.10 Night-time Bat Detector Surveys 2025

176. Night-time bat detector surveys completed in 2025 are as follows and Table 15a indicates which survey period each survey type was undertaken:
    - Dusk Bat Surveys
    - Passive Static Bat Detector Survey

177. TW Chainage points are listed for each building and are taken as the nearest TW Chainage point to the surveyed building. Irish grid reference points are also listed while Latitude and Longitude co-ordinate points are also provided in the Excel file detailing survey results for mapping.

Table 15a: Details of the Night-time Bat Detector Surveys Completed in 2025

	May	June Week 1	June Week 2
Dusk Bat Surveys	√	√	√
Walking Transects			
Driving Transects			
Passive Static Bat Detector Surveys		√	√

3.4.10.1 Dusk Bat Surveys 2025

178. Dusk bat surveys of trees identified as PBRs (x29 PBR locations) and one building were completed in May and June 2025. In May 2025, six PBR locations (PBRs 8, 13, 9, 10, 11 and 12) and one building (Building 1) was surveyed (access was not permitted to an additional three PBR locations – PBR 5, 6, and 7). In June (Week 1) seven PBR locations (PBRs 3, 19, 20, 22, 23, 21, 4) were surveyed while two PBRs were not surveyed. PBR 24 was damaged in a storm event and was recorded on the ground during daytime site visit while PBR 18 was not accessible due to presence of lively livestock (unsafe to enter field). In June (Week 2) one building (Building 1) and eight PBR locations (PBRs 1, 2, 15, 17, 25, 26, 27, and 28) were surveyed while two PBR locations planned to be surveyed were not fully surveyed due to no access permitted (PBR 14 and PBR 19). In addition, no access was permitted to survey PBR 16.

179. Therefore, 21 PBR locations (PBRs 1, 2, 3, 4, 8, 9, 10, 11, 12, 13, 15, 17, 19, 20, 21, 22, 23, 25, 26, 27 and 28) were fully surveyed in 2025, 2 partially surveyed (PBRs 14 & 29) and one assessed during the daytime but no longer standing (PBR 24) while four (PBRs 5, 6, 7 and 16) were not surveyed due to no permitted access one PBR (PBR 18) was not surveyed due to lively livestock.

180. The weather conditions during bat surveys were as follows:
- 20th May 2025: full cloud cover, calm, dry (but threat of rain), 12°C;
- 21st May 2025: clear sky, calm, dry, 13°C;
- 22nd May 2025: full cloud cover, calm, dry, 8°C;
- 23rd May 2025: full cloud cover, calm, dry, 11°C;
- 10th June 2025: full cloud cover, light breeze, dry, 14°C;
- 11th June 2025: full cloud cover, light breeze, dry, 16°C;
- 12th June 2025: cloud cover, light breeze, dry, 15°C;
- 16th June 2025: cloud cover, light breeze, dry, 15°C;
- 17th June 2025: clear sky, light breeze, dry, 13°C;
- 19th June 2025: clear sky, light breeze, dry, 19°C.

Table 15b: Buildings & PBR Tree Survey Results (BOLD = Confirmed Roost)

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
PBR 8 (single mature Oak tree with heavy ivy growth) Category 2 PBR Dusk emergence survey (20/5/2025) **Static surveillance**: 2 nights (20/5/2025 to 22/5/2025) ITM 576767 671452	**Tree Roost – Yes** Single Natterer's bat emerged from broken limb/dead wood. Broken limb with dead wood in upper left-hand side of tree – indicated by thermal imagery.	Dusk Survey: Single Natterer's bat emerged from broken limb/dead wood at 22:19 hrs. This was confirmed by thermal imagery and static surveillance. Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, Daubenton's bats and Natterer's bats.	Broken limb with dead wood in upper left-hand side of tree.	Dense ivy growth on tree with dead wood and broken limbs. Tree is located in a treeline/hedgerow boundary of agricultural fields in a well-connected landscape of linear habitats. No street lighting.

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
Building 1 TW 0 **Dusk Surveys: 20/5/2025 &** Static surveillance: 20th to 25th May 2025 (5 nights) & 16th to 20th June 2025 (4 nights)	**Daytime roost - Natterer's bat and brown long-eared bat** During 2nd dusk survey, a single brown long-eared (22:21 hrs) bat and a single Natterer's bat (23:11 hrs) were recorded emerging. (confirmed by static surveillance as time stamped audio files were indicative of emerging individuals)	Static unit results: May: 8 brown long-eared bat passes and 3 *Myotis* species bat passes June: 10 brown long-eared bat passes and 1 Natterer's bat pass Dusk Survey: No bats recorded emerging during dusk surveys. Leisler's bats, soprano pipistrelles and common pipistrelles recorded foraging and commuting.	Open windows	Ivy growth on building. Extensive hedgerow network. No lighting.
PBR 13 (treeline with five PBR trees) **Category 2 PBRs** Dusk emergence survey (21/5/2025) Static surveillance: 2 nights (20/5/2025 to 22/5/2025) ITM 600030 690127 (central point of treeline)	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles and Natterer's bats.	Not applicable	Treeline with the following PBRs: a) Dead hawthorn tree b) 2 ash trees with dense ivy growth in close proximity c) Mature ash tree with ivy, deadwood d) Mature multi-stemmed ash tree with tree holes and damaged limbs
PBR 9 (2 mature ash trees with heavy ivy growth) Category 3 PBRs **Dusk emergence survey (22/5/2025)** Static surveillance: 2 nights (20/5/2025 to 22/5/2025) ITM 581838 676212	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles and whiskered bat.	Not applicable	Treeline in agricultural field near regional road. No street lighting.

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
PBR 10 (single ash tree with heavy ivy growth), Category 3 PBR Dusk emergence survey (22/5/2025) Static surveillance: 2 nights (20/5/2025 to 22/5/2025) PBR 10: ITM 597213 689810	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from tree during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, brown long-eared bat and Daubenton's bat.	Not applicable	Treeline in agricultural landscape and adjacent to large woodland where there are trees with PBRs of a higher category value. No street lighting.
PBR 11 (two ash trees with heavy ivy growth), 12 (treeline with seven ash trees with heavy ivy growth) Category 3 PBRs Dusk emergence survey (23/5/2025) – 2 surveyors PBR 11: ITM 597102 689976 PBR 12: ITM (central point) 597130 689912	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, brown long-eared bat and Daubenton's bat.	Not applicable	Treeline in agricultural landscape and adjacent to large woodland where there are trees with PBRs of a higher category value. No street lighting.
PBR 3, PBR 19 Connected treeline with three mature ash trees with heavy ivy growth. Category 2 PBRs Dusk emergence survey: 10/6/2025 Static surveillance: 10/6/2025 PBR 3: ITM 639362 718945 PBR 19: ITM 639442 719036	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, brown long-eared bat and whiskered bat.	Not applicable	Treeline in agricultural landscape. No street lighting.

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
PBR 20 Mature treeline of oak, beech and sycamore. Category 1 & 2 PBRS Dusk emergence surveys: 10/6/2025 and 11/6/2025 Static surveillance: two nights (10/6/2025 to 12/6/2025) ITM 652865 728211	**Tree Roost – Yes** **Common pipistrelles and soprano pipistrelles** **In addition – Barn owl nest (with young) and Irish honeybee hive.**	Dusk Survey: two small roosts for common pipistrelles and soprano pipistrelle (<5 individuals) were recorded emerging from beech trees. Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, brown long-eared bat and Daubenton's bat.	Tree holes / damaged limbs high in the trees – assisted by thermal imagery.	Mature treeline along a local road (>29 trees, ranging from early mature to mature). Extensive PRFs in the majority of the trees. No street lighting.
PBR 22 (linear habitat of early mature alder trees with heavy ivy growth) & PBR 23 (double treeline of mature trees – 8 beech trees), Category 2 (PBR 23) & 3 (PBR 22) PBR Dusk emergence survey (11/6/2025) – two surveyors Static surveillance: two nights (10/6/2025 to 12/6/2025) PBR 22: ITM 682068 734471 **PBR 23: ITM** 682420 734563	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles and common pipistrelles.	Not applicable	PBR 22 in an agricultural landscape. PBR 23 is along the boundary of a local road. No street lighting.
PBR 21 (two alder trees with heavy ivy growth in linear habitat) Category 3 PBR Dusk emergence survey (12/6/2025) Static surveillance: two nights (10/6/2025 to 12/6/2025) ITM 659770 728256	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, brown long-eared bat and Daubenton's bat.	Not applicable	PBR 21 is located in an agricultural landscape. No street lighting.

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
PBR 4 (two mature horse chestnut trees) Category 2 PBR Dusk emergence survey (12/6/2025) Static surveillance: two nights (10/6/2025 to 12/6/2025) ITM 644922 721950	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from tree during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles and common pipistrelles.	Not applicable	PBR 4 are located in a dense treeline/linear habitat area. No street lighting.
PBR 14 & 19 (linear habitat with ash and alder trees with ivy growth) Category 2 PBRs Dusk emergence survey – none, due to lack of access. Static surveillance (located in adjacent field where access was provided): two nights (16/6/2025 to 18/6/2025) PBR 19 ITM 602460 693929 PBR 14 ITM 602419 693965	Tree Roost – Not confirmed	Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles, brown long-eared bat, Daubenton's bat and whiskered bat.	Not applicable	PBR 14 & PBR 19 are located in a dense treeline/linear habitat area along a local road. No street lighting.
PBR 1 (single mature ash tree with dead ivy roosts) Category 3 PBR Dusk emergence survey – 16/6/2025. Static surveillance (located in adjacent field where access was provided): two nights (16/6/2025 to 18/6/2025) ITM 624682 714602	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from tree during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles brown long-eared bat and Daubenton's bat.	Not applicable	PBR 1 is located in a linear habitat boundary in an agricultural field. No street lighting.

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
PBR 2 (single mature oak tree) Category 2 PBR Dusk emergence survey – 17/6/2025. Static surveillance (located in adjacent field where access was provided): two nights (16/6/2025 to 18/6/2025) ITM 626129 715681	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from tree during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles brown long-eared bat and Daubenton's bat.	Not applicable	PBR 2 is located in a linear habitat boundary in an agricultural field. This tree has suffered storm damaged with one main drunk spilt and fallen to ground. The PBR value has reduced from Category 2 to 3 No street lighting.
PBR 15 (cluster of trees with shallow spilt limbs) Category 3 PBR Dusk emergence survey (17/6/2025) Static surveillance: two nights (16/6/2025 to 18/6/2025) ITM 629486 715726	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from tree during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles brown long-eared bat and Daubenton's bat.	Not applicable	PBR 15 is comprised of a cluster of trees next to linear habitat in agricultural fields. No street lighting.
PBR 17 (three mature sycamore trees with heavy ivy growth) Category 3 PBR Dusk emergence survey (16/6/2025) Static surveillance: two nights (16/6/2025 to 18/6/2025) ITM 633492 716350	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from tree during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles, common pipistrelles brown long-eared bat, whiskered bat and Daubenton's bat.	Not applicable	PBR 17 is located in a dense treeline/linear habitat area in agricultural fields. The sycamore trees are located adjacent but outside the red line boundary of the proposed development. No street lighting.

Building / PBR Code	Roost Type & Location	Bat Species (No. of bats)	Access Points	Vegetation / Lighting arrangement
PBR 25 (mature lime tree), PBR 26 (early mature sycamore tree with heavy ivy growth), PBR 27 (mature sycamore with ivy) & PBR 28 (mature sycamore with dead ivy roosts) Category 3 PBR Dusk emergence survey (18/6/2025) – two surveyors Static surveillance: two nights (16/6/2025 to 18/6/2025) PBR 25 ITM 601544 692277 PBR 26 ITM 601549 692285 PBR 27 ITM 601675 692462 PBR 28 ITM 601735 692381	Tree Roost – No Confirmed by thermal imagery	Dusk Survey: no bats emerged from trees during dusk survey Static surveillance: Leisler's bats, soprano pipistrelles and common pipistrelles.	Not applicable	All four PBR locations are in the same field, along the boundary. PBR 25 and PBR 26 are located along the boundary of a local road. No street lighting.

3.5 Passive Static Bat Detector Survey

181. Passive static recording units were distributed along the Proposed Project to coincide with building surveys and walking transects. The static unit locations were selected by the bat specialist to represent the principal habitat feature present within the bat target areas e.g. treeline, hedgerow.

182. In 2019 additional static locations were selected along the Kilmastulla River, Birdhill, Co. Tipperary (3 locations) and within the Knockanacree Woods, Cloughjordan, Co. Tipperary (4 locations).

183. The static units were left in-situ to record for the duration of the survey period (dusk to dawn). Recordings were analysed post-surveying by the principal bat specialist.TW Chainage points are listed for each static unit and are taken as the nearest TW Chainage point to the static unit location. Irish grid reference points are also listed while ITM grid reference co-ordinate points are also provided in the Excel file detailing survey results for mapping.

3.5.1 Passive Static Bat Detector Survey 2019

3.5.1.1 June 2019

184. The following Table 16a summarises the results recorded on the static units deployed in June 2019. Four units were located within area of walking transects (1 unit per walking transect area, Transects 1, 2, 3, 6) while two additional units were placed within buildings.

Table 16a: Static Bat Detectors Deployed During Static Bat Detector Surveys in June 2019

(Night 1 = 18/6/19; Night 2 = 19/6/19 & Night 3 = 20/6/19)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 1 TW 600	Erected on ash tree along low hedgerow. Transect 1	R 73036 70274	3 nights (18th to 21st June 2019) 18 hrs	Night 1: Leis(11) CP(61) SP(23) Night 2: Leis(8) CP(44) SP(19) My(1) Night 3: Leis(4) CP(24) SP(7)
Static 2 TW 6050	Fence line / low hedgerow adjacent to motorway and railway Near Transect 3	R 78035 71714	3 nights (18th to 21st June 2019) 18 hrs	Night 1: Leis(66) CP(108) SP(35) BLE (6) Night 2: Leis(58) CP(64) SP(28) My(1) Night 3: Leis(73) CP(196 SP(79) BLE(3) My(1)
Static 3 TW 19500	Along tall hedgerow Transect 6	R 84635 82527	3 nights (18th to 21st June 2019) 18 hrs	Night 1: Leis(19) CP(69) SP(44) Night 2: Leis(32) CP(39) SP(57) Night 3: Leis(2) CP(19) SP(11)
Static 4 TW 2700	Attached to support wire for ESB pole along medium hedgerow Transect 2	R 74881 71098	3 nights (18th to 21st June 2019) 18 hrs	Night 1: Leis(36) CP(466) SP(249) My(1) Night 2: CP(11) SP(1) Night 3: Leis(12) CP(379) SP(154)
Static 5 TW 19600	Building 11 – internal space in front room (TW19300) Transect 6	R 84658 82545	2 nights (19th to 21st June 2019) 12 hrs	Night 2: Leis(22) CP(45) SP(56) My(1) Night 3: Leis(19) CP(26) SP(12) My(1)
Static 6 TW 0	Building 1 – internal space. (TW0) Transect 1	R 72254 70635	2 nights (19th to 21st June 2019) 12 hrs	Night 2: Leis(2) CP(51) SP(32) My(1) Night 3: CP(4) SP(3)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species

3.5.1.2 June 2019 38kV Uprate

185. The following Table 16b summarises the results recorded on the static units deployed in June 2019 in vicinity of the 38kV Uprate. Seven units were deployed for one night only.

Table 16b: Static Bat Detectors Deployed during Static Bat Detector Surveys in June 2019 38kV Uprate

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 79	Under ESB lines	R65022 65400	12th June 2019 (1 night)	SP (22 passes), CP (14 passes), Leis (15 passes)
Static 80	Adjacent to River Shannon	R65479 66385	12th June 2019 (1 night)	SP (157 passes), CP (153 passes), Leis (103 passes), Whis (2 passes), Daub (4 passes)
Static 81	Along River Shannon in O' Brien's Bridge	R65986 66832	12th June 2019 (1 night)	SP (336 passes), CP (104 passes), Leis (5 passes), Whis (8 passes), Daub (6 passes)
Static 82	On tree in corner of agricultural field	R59376 62560	13th June 2019 (1 night)	SP (6 passes), CP (25 passes), Leis (4 passes), Natts (1 pass)
Static 83	Along treeline in agricultural field	R59422 63190	13th June 2019 (1 night)	SP (57 passes), CP (15 passes), Leis (13 passes)
Static 84	On field margin post in grassland meadow along treeline	R60585 63522	13th June 2019 (1 night)	CP (10 passes), Leis (10 passes), BLE (4 passes), Myotis (7 passes)
Static 85	Adjacent to river in Ardnacrusha	R68368 66684	13th June 2019 (1 night)	SP (89 passes), CP (150 passes), Leis (1 pass), Natts (20 passes).

3.5.1.3 July 2019

186. The following Table 16c summarises the results recorded on the static units deployed in July 2019. Four units were located within area of walking transects (one static unit per walking transect area; Transect 7 to 10).

Table 16c: Static Bat Detectors Deployed During Static Bat Detector Surveys in July 2019

(Night 1 = 9/7/19; Night 2 = 10/7/19 & Night 3 = 11/7/19)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 7 TW 28700	Along treeline adjacent to quarry waterbody. Transect 7	R 89521 88286 TY3951N	3 nights (9th to 12th July 2019) 18 hrs	Night 1: Leis(66) CP(108) SP(35) BLE (6) Night 2: Leis(58) CP(64) SP(28) My(1) Night 3: Leis(73) CP(196) SP(79) BLE(3) My(1)
Static 8 TW 30350	Treeline Transect 8	R 91209 88912 TY6551N	2 nights (9th to 11th July 2019) 12 hrs	Night 1: Leis(54) CP(232) SP(6) My1) Night 2: Leis(70) CP(944) SP(83) My(1)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 9 TW 35000	Treeline adjacent to coppice woodland Transect 9	R 95541 89964 TY13170F	3 nights (9th to 12th July 2019) 18 hrs	No bats recorded
Static 10 TWA 3200	Mature treelines Transect 10	S00038 90289	2 nights (9th to 11th July 2019) 12 hrs	Night 1: Leis(26) CP(10) SP(16) BLE(1) My(2) Night 2: Leis(56) CP(31) SP(28)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species

3.5.1.4 August 2019

187. The following Table 16d summarises the results recorded on the static units deployed in August 2019. Four units were located within area of walking transects (one unit per walking transect area, Transects 11, 12, 13 and 14).

Table 16d: Static Bat Detectors Deployed During Static Bat Detector Surveys in August 2019

(Night 1 = 12/8/19; Night 2 = 13/8/19 & Night 3 = 14/8/19)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes)
Static 11 TWA 20300	Treeline adjacent to Building 22 Transect 12	N09477 01256 OY276N	3 nights (12th to 15th August 2019) 27 hrs	Night 1: CP(11) SP(3) Night 2: No bats Night 3: CP(2) SP(2)
Static 12 TWA 24300	Treeline leading to the rear of Building 24 Transect 13	N12634 03605 OY17874N	3 nights (12th to 15th August 2019) 27 hrs	Night 1: Leis(14) CP(11) SP(10) Night 2: Leis(6) CP(28) SP(44) Night 3: Leis(16) CP(25) SP(49)
Static 13 TWA 9700	Treeline / hedgerow east of Building 21 Transect 11	S03726 95191 OY5113F	3 nights (12th to 15th August 2019) 27 hrs	Night 1: Leis(3) CP(89) SP(403) My(9) Night 2: Leis(2) CP(119) SP(366) My(13) BLE(3) Night 3: Leis(1) CP(241) SP(170) My(10) BLE(2)
Static 14 TWB 3500	Mature treeline along roadway (east of Building 25) Transect 14	N1625209090 OY5815F	2 nights (12th to 14th August 2019) 18 hrs	Night 1: Leis(5) CP(1,506) SP(290) My(6) Night 2: Leis(8) CP(378) SP(103) BLE(3) My(6)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species

3.5.1.5 September 2019

188. The following Table 16e summarises the results recorded on the static units deployed in September 2019. Three units were located within area of walking transects (one unit per walking transect area – Transects 17, 18 and 19).

Table 16e: Static Bat Detectors Deployed During Static Bat Detector Surveys in September 2019

(Night 1 = 10/9/19; Night 2 = 11/9/19 & Night 3 = 12/9/19)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes)
Static 15 TWB 18000	On mature tree to rear of Building 31. Transect 17	N2779215555 OY13496N	3 nights (10th to 13th September 2019) 30 hrs	Night 1: CP(3) SP(11) Night 2: CP(31) SP(331) Night 3: Leis(1) CP(32) SP(375) My(1)
Static 16 TWB 20850	On mature tree along farm laneway. Transect 18	N30583 15583 OY17076N	2 nights (10th to 12th September 2019) 20 hrs	Night 1: Leis(7) CP(2,527) SP(894) BLE (2) My(25) Night 2: Leis(8) CP(378) SP(103) My(1) BLE(3)
Static 17 TWB 24700	On mature treeline adjacent to deep drain. Transect 19	N34214 16437 OY7177N	3 nights (10th to 13th September 2019) 30 hrs	Night 1: Leis(6) CP(9) SP(10) Night 2: Leis(20) CP(29) SP(75) My(1) Night 3: Leis(3) CP(3) SP(18)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species

3.5.1.6 October 2019

189. The following Table 16f summarises the results recorded on the static units deployed in October 2019. Four units were located within area of walking transects (one unit per walking transect area).

Table 16f: Static Bat Detectors Deployed During Static Bat Detector Surveys in October 2019

(Night 1 = 9/7/19; Night 2 = 10/7/19 & Night 3 = 11/7/19)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes)
Static 18 TWC 22700	Bog track, Mount Lucas Transect 21 – Ballykilleen	N55729 28380	3 nights (22/10/2019 to 25/10/2019) 39 hrs	Night 1: CP(3) SP(2) Night 2: CP(4) SP(31) Night 3: CP(42) SP(7)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes)
Static 19 TWD 2000	Farm Track Transect 21 – Ballykilleen	N59705 28408	3 nights (22/10/2019 to 25/10/2019) 39 hrs	Night 1: CP(425) SP(32) Leis(10) My(1) BLE(1) Night 2: CP(23) SP(10) Leis(2) My(1) Night 3: CP(5) SP(2) Leis(3)
Static 20 TWD 29500	Treeline Transect 23 – Newtownmountluggagh	N82315 34858	3 nights (22/10/2019 to 25/10/2019) 39 hrs	Night 1: My(1) Night 2: No bats Night 3: No bats
Static 21 TWE 300	Treeline Transect 24: Baltracey	N87002 35279	2 nights (23/10/2019 to 25/10/2019) 39 hrs	Night 2: CP(314) SP(7) Leis(2) Night 3: CP(16) SP(6)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, My = *Myotis* species

3.5.2 Passive Static Bat Detector Survey 2020

3.5.2.1 July 2020

190. The following Table 17a summarises the results recorded on the static units deployed in July 2020. Ten units were located along the Kilmastulla River, Building 1 and at various locations within the Incha Beg and Cloughjordan sites.

Table 17a: Static Bat Detectors Deployed During Static Bat Detector Surveys in July 2020

(Night 1 = 6/7/20; Night 2 = 7/7/20, Night 3 = 8/7/20, Night 4 = 9/7/20 & Night 5 = 10/7/20)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 22 TW 100	Kilmastulla Bridge, on post in garden adjacent to bridge	R7278769733	6/7/2020 to 10/7/2020 (4 nights)	Night 1: CP (67) SP (735) Leis (129) Myotis (6) Night 2: CP (33) SP (23) Leis (4) BLE (1) Whis (1) Natt (1) Night 3: CP (21) SP (24) Leis (6) Natt (1) Night 4: CP (60) SP (542) Leis (110) BLE (1) Daub (1) Natt (1) Myotis (4)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 23 TW 2200	Bridge below furniture place, static erected on tree	R7458470619	6/7/2020 to 10/7/2020 (4 nights)	Night 1: CP (14) SP (957) Leis (22) Myotis (3) Night 2: CP (9) SP (306) Leis (28) Whis (1) Myotis (4) Night 3: CP (11) SP (331) Leis (10) Daub (1) Myotis (4) Night 4: CP (14) SP (707) Leis (8) Daub (1) Whis (1) Myotis (5)
Static 24 TW 950	Bridge down to farmyard, static erected on tree	R7340070361	6/7/2020 to 10/7/2020 (4 nights)	Night 1: CP (79) SP (439) Daub (1) Myotis (345) Night 2: CP (9) SP (31) Myotis (307) Night 3: CP (3) SP (11) Whis (1) Natt (1) Myotis (144) Night 4: CP (50) SP (282) Leis (2) Natt (1) Myotis (98)
Static 25 TW 0	On tree in field adjacent to Building 1	R7210370536	6/7/2020 to 10/7/2020 (4 nights)	Night 1: CP (4) SP (3) Night 2: No passes recorded Night 3: No passes recorded Night 4: CP (25) SP (27) Daub (1)
Static 26 TWA 100	Fence post on edge of woodland, Cloughjordan	R9750089869	6/7/2020 to 10/7/2020 (4 nights)	Night 1: CP (6) Night 2: CP (7) SP (3) Leis (6) Whis (1) Night 3: CP (31) SP (7) Leis (12) BLE (1) Night 4: No passes recorded
Static 27 TW 0	Building 1 Incha Beg, Co. Tipperary	R7225470635	6/7/2020 to 10/7/2020 (4 nights)	Night 1: LHB @ 01:58 hr Night 2: No passes recorded Night 3: No passes recorded Night 4: No passes recorded
Static 28 TW 36500	Static in woodland for 1 night Knockanacree Woodland	R9675189984	10/7/20 to 11/7/2020 (1 night)	Night 5: CP (262) SP (61) Leis (2) Myotis (2)
Static 29 TW 36600	Static in woodland for one night Knockanacree Woodland	R9745189453	10/7/20 to 11/7/2020 (1 night)	Night 5: CP (104) SP (19) Leis (1) Whis (1) Myotis (10)
Static 30 TW 36400	Static in woodland for one night Knockanacree Woodland	R9712789483	10/7/20 to 11/7/2020 (1 night)	Night 5: No passes recorded
Static 31 TWA 300	Static in woodland for one night Knockanacree Woodland	R9766489706	10/7/20 to 11/7/2020 (1 night)	Night 5: CP (30) SP (4)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, Daub = Daubenton's bat, Natt = Natterer's bat, LHB = Lesser horseshoe bat, My = *Myotis* species

3.5.2.2 August 2020

191. The following Table 17b summarises the results recorded on the static units deployed in August 2020. Nine static units were deployed during this surveillance period.

Table 17b: Static Bat Detectors Deployed During Static Bat Detector Surveys in August 2020

(Night 1 = 11/8/20; Night 2 = 12/8/20 & Night 3 = 13/8/20)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 32 TWW 19400	Static beside watercourse (Nenagh River)	R8456982513	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (34) SP (742) Leis (58) BLE (3) Daub (59) *Myotis* (137) Night 2: CP (148) SP (455) Leis (109) BLE (5) Daub (92) Whis (4) *Myotis* (159) Night 3: CP (237) SP (439) Leis (99) BLE (3) Daub (46) Whis (4) Natt (1) *Myotis* (101)
Static 33 TWA 0	Woodland north of Cloughjordan Knockanacree Woodland	R9725189863	11/8/2020 to 14/8/2020 (3 nights)	Night 1:CP (151) SP (30) Leis (42) BLE (2) Daub (1) Natt (1) Night 2: CP (12) SP (29) Leis (42) BLE (2) Daub (1) Natt (1) Night 3: CP (56) SP (20) Leis (40) BLE (1) *Myotis* (1)
Static 34 TW 36600	Treelines of horse fields (Nth of Cloughjordan)	R9688490084	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (349) SP (59) Leis (46) BLE (1) Daub (1) Whis (3) Natt (2) *Myotis* (3) Night 2: CP (239) SP (37) Leis (15) Night 3: CP (1354) SP (51) Leis (5) *Myotis* (2)
Static 35 TWA 200	Woodland north of Cloughjordan Knockanacree Woodland	R9762189733	11/8/2020 to 14/8/2020 (3 nights)	Night 1: No bats recorded Night 2: No bats recorded Night 3: No bats recorded
Static 36 TW 36300	Woodland north of Cloughjordan Knockanacree Woodland	R9768789363	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (507) SP (303) Leis (3) *Myotis* (3) Night 2: CP (258) SP (541) Leis (2) BLE (1) Daub (2) *Myotis* (2) Night 3: CP (92) SP (693) BLE (2) Daub (1) Whis (1) Natt (1) *Myotis* (8)
Static 37 TW 36200	Woodland north of Cloughjordan Knockanacree Woodland	R9713889349	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (970) SP (179) Leis (31) BLE (2) *Myotis* (4) Night 2: CP (322) SP (320) Leis (24) Night 3: CP (735) SP (268) Leis (19) BLE (2) *Myotis* (5)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes/night)
Static 38 TW 0	Treelines beside Incha Beg (Building 1)	R7229170431	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (20) SP (18) Leis (43) *Myotis* (2) Night 2: CP (102) SP (69) Leis (31) BLE (4) *Myotis* (20) Night 3: CP (79) SP (48) Leis (74) Daub (1) Natt (1) *Myotis* (6)
Static 39 RW 2000	Treelines beside Incha Beg (Building 1)	R7194370431	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (447) SP (168) Leis (33) Daub (1) Natt (3) *Myotis* (2) Night 2: CP (240) SP (75) Leis (14) BLE (8) Daub (2) *Myotis* (4) Night 3: CP (117) SP (56) Leis (73) BLE (2) Daub (1) Natt (5) *Myotis* (13)
Static 40 TW 19400	Static beside watercourse (Nenagh River)	R8458682447	11/8/2020 to 14/8/2020 (3 nights)	Night 1: CP (274) SP (877) Leis (51) Daub (1) *Myotis* (9) Night 2: CP (170) SP (964) Leis (54) Daub (7) Natt (1) *Myotis* (10) Night 3: CP (1004) SP (86) Whis (1) *Myotis* (6)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, Daub = Daubenton's bat, Natt = Natterer's bat, Whis = Whiskered bat, Myotis= *Myotis* species

3.5.2.3 September 2020

192. The following Table 17c summarises the results recorded on the static units deployed in September 2020 during two surveillance periods. Eleven units were located along watercourses and within the woodlands of the Parteen Basin.

Table 17c: Static Bat Detectors Deployed During Static Bat Detector Surveys in September 2020

(Night 1 = 7/9/20; Night 2 = 8/9/20, Night 3 = 9/9/20, Night 4 = 10/9/20, Night 5 = 21/9/20)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes)
Static 41 TWA 11500	Static beside watercourse (Little Brosna River)	S0563496472	7/9/2020 to 9/9/2020 2 nights	Night 1: CP (22) SP (64) Leis (15) Daub (72) Natt (4) *Myotis* (503) Night 2: CP (12) SP (111) Leis (20) Duab (51) Natt (1) *Myotis* (476)
Static 42 TWA 25800	Static beside watercourse (Trib. Camcor River)	N1426903848	7/9/2020 to 9/9/2020 2 nights	Night 1:CP (75) SP (410) Leis (6) Daub (32) Whis (1) Natt (1) *Myotis* (35) Night 2: CP (542) Sp (242) Leis (1) BLE (1) Daub (2) Whis (2) *Myotis* (26)

Static Code	Location Description	Grid Reference	Survey Period	Bat Species (No. of passes)
Static 43 TWA 27800	Static beside watercourse (Camcor River)	N1592005756	7/9/2020 to 9/9/2020 2 nights	Night 1: CP (59) SP (559) BLE (1) Daub (1) *Myotis* (29) Night 2: CP (38) SP (344) Leis (3) Duab (2) Natt (1) *Myotis* (43)
Static 44 TWB 12600	Static beside watercourse (Silver River)	N2334613642	7/9/2020 to 11/9/2020 4 nights	Night 1: No bats recorded Night 2: CP (156) SP (1182) Leis (5) Daub (60) Whis (6) *Myotis* (56) Night 3: CP (57) SP (431) Leis (4) Daub (55) Whis (5) *Myotis* (267) Night 4: No bats recorded
Static 45 TWD 6450	Static beside watercourse (Figile River)	N6360826749	7/9/2020 to 11/9/2020 4 nights	Night 1: No bats recorded Night 2: CP (4) SP (8) Leis (9) BLE (1) Daub (4) *Myotis* (2) Night 3: CP (8) SP (9) Leis (6) Daub (7) *Myotis* (6) Night 4: No bats recorded
Static 46 TWE 13900	Static beside watercourse (Grand Canal, Hazelhatch)	N9816230217	9/9/2020 to 11/9/2020 2 nights	Night 1: CP (196) SP (1792) Leis (38) Daub (7) *Myotis* (10) Night 2: CP (37) SP (1803) Leis (4) Daub (11) *Myotis* (11)
Static 47 TWD 15050	Static beside watercourse (Grand Canal, Clane)	N7081729437	9/9/2020 to 11/9/2020 2 nights	Night 1: CP (30) SP (141) Leis (32) BLE (3) Daub (32) Natt (1) *Myotis* (6) Night 2: CP (333) SP (566) Leis (5) BLE (3) Daub (32) *Myotis* (3)
Static 48 TWE 9600	Static beside watercourse River Liffey, Celbridge)	N9395930283	9/9/2020 to 11/9/2020 2 nights	Night 1: CP (48) SP (458) Leis (27) BLE (10) Daub (54) Nath Pip (3) *Myotis* (6) Night 2: CP (164) SP (636) Leis (12) BLE (2) Daub (29) *Myotis* (8)
Static 49 RW50	On tree adjacent to river Parteen Basin	R7001170154	21/9/20 to 22/9/20 1 night	Night 1: CP (65) SP (499) Leis (3) Daub (233) *Myotis* (12)
Static 50 RW50	Inside woodland Parteen Basin	R7013870192	21/9/20 to 22/9/20 1 night	Night 1: Daub (6) Natt (1) *Myotis* (3)
Static 51 RW75	Inside woodland Parteen Basin	R7012670067	21/9/20 to 22/9/20 1 night	Night 1: CP (121) SP (292) Leis (2) BLE (6)

* No. of bat passes recorded on static units does not equate to number of bats. It is a measure of activity levels.

Note: CP = common pipistrelle, SP = soprano pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, Daub = Daubenton's bat, Natt = Natterer's bat, Whis = Whiskered bat, Myotis= *Myotis* species

3.5.3 Passive Static Bat Detector Survey 2021

3.5.3.1 June 2021

193. The following Table 18a summarises the results recorded on the static units deployed in June 2021.

Table 18a: Static Bat Detectors Deployed During Static Bat Detector Surveys in June 2021

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 52 TWC 8900	Geashill, Co. Offaly (Woodland adj to Grp. Water Scheme)	644955, 721780	22/6/2021 to 25/6/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat
Static 53 TWD 1850	Ballykilleen, Co. Offaly	659375, 728264	22/6/2021 to 25/6/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat
Static 54 TWD 24000	Timahoe East, Co. Kildare	677383, 733507	22/6/2021 to 25/6/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Myotis spp. & brown long-eared bat
Static 55 TWD 29300	Newtownmoneenluggagh, Co. Kildare – Treeline	682161, 734656	22/6/2021 to 25/6/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubtenton's bat, Myotis spp. & brown long-eared bat
Static 56 TWE 300	Baltracey, Co. Kildare – Treeline	682161, 734656	22/6/2021 to 25/6/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Myotis spp. & brown long-eared bat

3.5.3.2 July 2021

194. The following Table 18b summarises the results recorded on the static units deployed in July 2021.

Table 18b: Static Bat Detectors Deployed During Static Bat Detector Surveys in July 2021

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 57 TWE 17500	Loughtown, Co. Dublin	699805, 730561	20/7/2021 to 23/7/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat
Static 58 TWE 14700	Loughtown, Co. Dublin	698831, 730473	20/7/2021 to 23/7/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Myotis spp. & brown long-eared bat
Static 59 TWE 17500	TPR at Peamount	700961, 730798	20/7/2021 to 23/7/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 60 TWE 17500	Newtownmoneenluggagh, Co. Kildare – Treeline	701098, 730817	20/7/2021 to 23/7/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat
Static 61 TWE 5000	Newtownmoneenluggagh, Co. Kildare – Treeline	690406, 732589	20/7/2021 to 23/7/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Myotis spp. & brown long-eared bat

3.5.3.3 August 2021

195. The following Table 18c summarises the results recorded on the static units deployed in August 2021.

Table 18c: Static Bat Detectors Deployed During Static Bat Detector Surveys in August 2021

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 62 TWB 1500	Killeigh, Co. Offaly	638526, 718474	23/8/2021 to 28/8/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Natterer's bat. & brown long-eared bat
Static 63 TWB 14900	Gortour, Co. Offaly	625047, 714993	23/8/2021 to 27/8/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Nathusius' pipistrelle, Natterer's bat, Daubenton's bat, Myotis spp. & brown long-eared bat
Static 64 TW 18300	Ballycommon, Co. Tipperary	583637, 681734	23/8/2021 to 27/8/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Nathusius' pipistrelle, Natterer's bat, Daubenton's bat, Myotis spp. & brown long-eared bat
Static 65 TW 11200	Carrigatogher, Co. Tipperary	581313, 675638	23/8/2021 to 27/8/2021	Soprano pipistrelle, common pipistrelle, Leisler's bat, Nathusius' pipistrelle, Natterer's bat, Daubenton's bat, Myotis spp. & brown long-eared bat

3.5.4 Passive Static Bat Detector Survey 2022

3.5.4.1 June 2022

196. The following Table 18d summarises the results recorded on the static units deployed in June 2022.

Table 18d: Static Bat Detectors Deployed During Static Bat Detector Surveys in June 2022

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 66 RW 0	Parteen, Co. Tipperary (adjacent to river)	569967, 670203	20/6/2022 to 21/6/2022	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat & brown long-eared bat

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 67 RW 0	Parteen, Co. Tipperary (inside woodland)	570010, 670240	20/6/2022 to 21/6/2022	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Myotis spp. & whiskered bat
Static 68 TWC 17800	Mount Lucas, Co. Offaly	650913, 727378	21/6/2022 to 24/6/2022	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat & brown long-eared bat
Static 69 TWC 7300	NW Geashill, Co. Offaly	643611, 721005	21/6/2022 to 24/6/2022	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat

3.5.5 Passive Static Bat Detector Survey 2024

3.5.5.1 July & August 2024

197. The following Table 18e summarises the results recorded on the static units deployed in July and August 2024.

Table 18e: Static Bat Detectors Deployed During Static Bat Detector Surveys in July and August 2024

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 70 TW 27650	On Beech tree along laneway to Building 12 Nenagh, Co. Tipperary	R 88980 87699	8th July to 11th July 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat & Daubenton's bat
Static 71 TW 27650	On tree in woodland avenue of Building 45 Nenagh, Co. Tipperary	R 82418 77905	8th July to 11th July 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Myotis spp. & whiskered bat
Static 72 TW 14450	On oak tree located in woodland to rear of Building 46 Nenagh, Co. Tipperary	R 82670 78167	8th July to 11th July 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Natterer's bat, whiskered bat & brown long-eared bat
Static 73 TWB 4050	On tree adjacent to Building 48 Birr, Co. Offaly	N 16777 09354	6th August to 9th August 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat
Static 74 TW 10700	On tree in front garden of Building 19 Birr, Co. Offaly	S 04411 95036	6th August to 9th August 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat & brown long-eared bat
Static 75 TW 32800	On tree adjacent to Building 50 Ardcroney, Nenagh, Co. Tipperary	R 93503 89154	6th August to 9th August 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Myotis spp. & Natterer's bat

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 76 TW 30300	On tree adjacent to Building 51 Nenagh, Co. Tipperary	R 91167 89104	6th August to 9th August 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, brown long-eared bat & Natterer's bat
Static 77 TWA 10000	On tree adjacent to Building 49 Birr, Co. Offaly	S 04056 95100	6th August to 9th August 2024 (3 nights)	Common pipistrelle & Leisler's bat
Static 78 TW 34300	On tree adjacent to residence of Building 44 Cloughjordan, Co. Tipperary	R 95041 89292	6th August to 9th August 2024 (3 nights)	Soprano pipistrelle, common pipistrelle, Leisler's bat, Daubenton's bat, Natterer's bat & brown long-eared bat

3.5.6 Passive Static Bat Detector Survey 2025

3.5.6.1 June 2025

198. The following Table 19 summarises the results recorded on the static units deployed in June 2025. A total of seven locations were surveyed to fill in gaps in bat distribution records along the entire Proposed Project.

Table 19: Static Bat Detectors Deployed During Static Bat Detector Surveys in June 2025

Static Code	Location Description	Grid Reference	Survey Period	Bat Species
Static 86 TW	Cutover bog	ITM 674324 733189	10th to 15th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat
Static 87 TW	Linear habitat and cutover bog	ITM 659751 728233	10th to 15th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat & Daubenton's bat
Static 88 TW	Scrub and woodland edge	ITM 647940 724130	10th to 15th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat & Natterer's bat
Static 89 TW	Linear habitat and cutover bog	ITM 647919 724182	10th to 15th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat & Daubenton's bat
Static 90 TW	Linear habitat in agricultural landscape	ITM 620250 711338	16th to 20th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat, brown long-eared bat & Daubenton's bat
Static 91 TW	Linear habitat in agricultural landscape	ITM 613289 706737	16th to 20th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat & brown long-eared bat
Static 92 TW	Scrub and woodland edge	ITM 608548 697737	16th to 20th June 2025	Soprano pipistrelle, common pipistrelle, Leisler's bat & Natterer's bat

3.5.7 Tree Surveys

199. Daytime inspection of mature trees located within study areas were undertaken over the course of the survey seasons in 2020 and 2021. Each tree has been geo-referenced and entered into an excel file. Trees deemed suitable as PBRs in 2020 were identified at the following locations:
    - Water Treatment Plant site at Incha Beg
    - Break Pressure Tank site at Cloughjordan
    - T19 Bat Target Area
    - Raw Water Intake and Pumping Station site at Parteen Basin
    - Watercourses
        - Kilmastulla Bridge (Kilmastulla River)
        - River Liffey crossing point
        - Silver River crossing point
        - Camcor River Tributary crossing point
        - Little Brosna River crossing point
        - Nenagh River crossing point

200. No trees identified as PBRs were recorded at the following watercourses:
    - Grand Canal crossing points
    - Figile River crossing point
    - Camcor River crossing point

201. Trees deemed suitable as PBRs in 2021 were identified at the following locations:
    - Bat Target Areas
    - Additional areas surveyed in Co. Offaly

202. No trees identified as PBRs were recorded at the following watercourses:
    - Additional areas surveyed in Co. Tipperary
    - Termination Point Reservoir at Peamount, Co. Dublin
    - Bat Target Areas 21, 22, 23, 24, 26

203. Data collated by both Bat Eco Services and TOBIN were mapped and queried in relation to the Proposed Project route. In summary, trees (individual trees, six treelines and one tree cluster) were identified as having a PBR potential within the Project Boundary at the Time of Survey (which aligns with the Proposed Project) at 29 separate geo-referenced locations. The locations of these are presented on the map below and in Table 20a.

204. In 2025, where access was permitted, PBR trees were resurveyed by dusk survey and static surveillance. The details of these surveys are presented in Section 3.4.10.1. In summary, 21 PBR locations were fully surveyed, 2 PBRs were surveyed by static surveillance only (access was not permitted), one PBR locations was not surveyed due to storm damage (PBR 24) and one was not surveyed due to lively livestock (PBR 18) while no access was permitted for four PBR locations. As a consequence, Table 20a has been updated to reflect this.

205. As a result of the 2025 surveys of PBR trees, the PBR value for 12 locations were downgraded from Category 2 (Moderate PBR value) to Category 3 (Low PBR value) while bat roosts were confirmed at two PBR locations (PBR 8 (Natterer's bat roost – single bat) and PBR 20 (two trees recorded as bat roosts for soprano pipistrelle and common pipistrelle, respectively). These results have been added to Table 20a while Figure 3a presents the location of PBRs and all confirmed tree roosts.

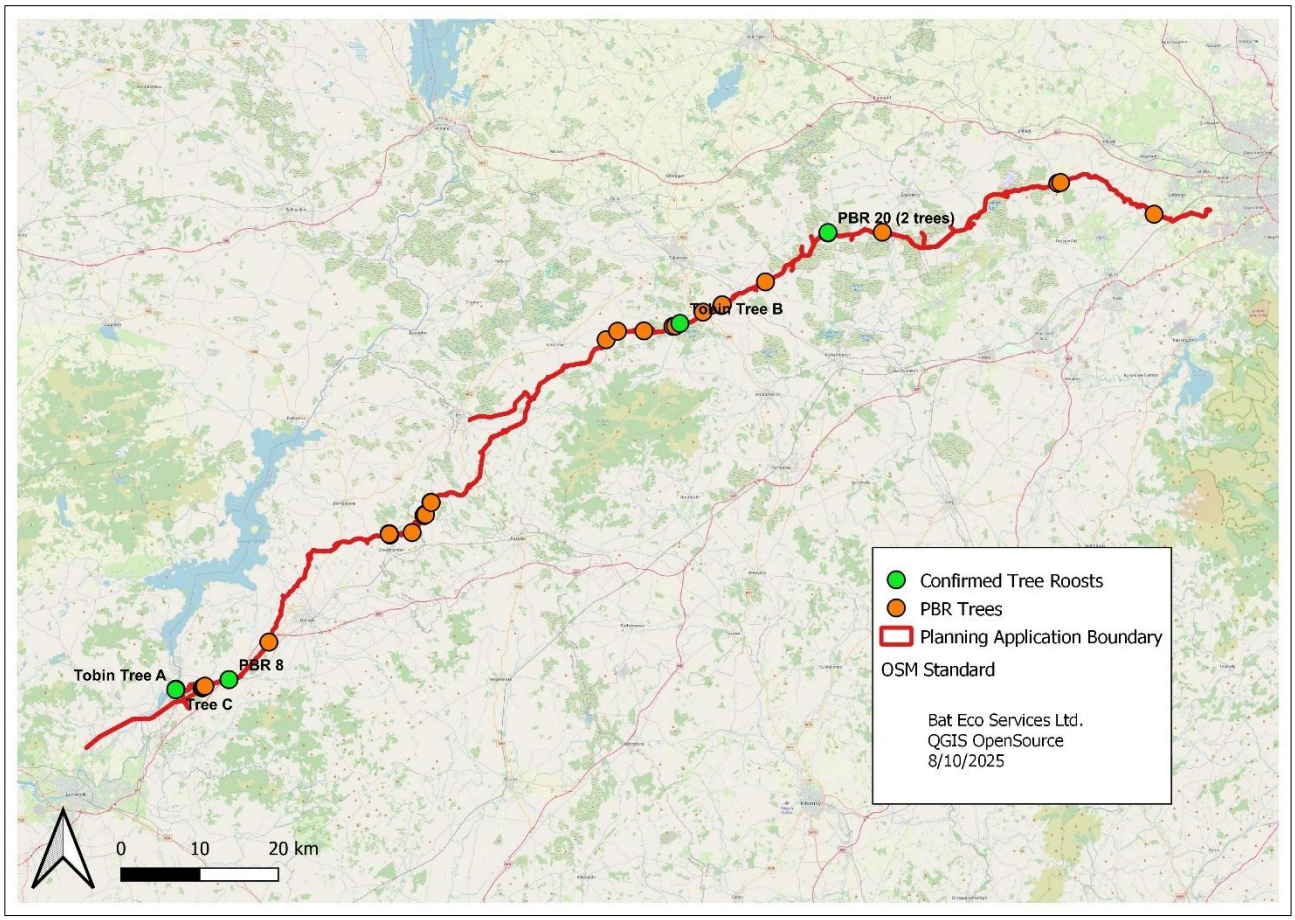


Figure 3a: Location of Tree PBRs and Confirmed Tree roosts along the Planning Application Boundary

Table 20a: Tree Potential Bat Roosts (PBRs) Within Sections of Proposed Route Surveyed. Updated with Information from 2025 Surveys. High = Category 1, Moderate = Category 2 & Low = Category 3

No.	Tree Species	PRFs	PBR Value	County	Location
1	Ash (x1)	Heavy ivy growth	Low	Offaly	In hedgerow of agricultural land (sth of Mountbolus)
2	Oak (x1)	Heavy ivy growth	Moderate	Offaly	In hedgerow of agricultural land (sth of Mountbolus)
3	Ash (x1)	Heavy ivy growth, tree holes	Moderate	Offaly	Dense treeline of agricultural land (East of Killeigh)
4	Woodland x2 Horse chestnut	Heavy ivy growth, tree holes, dead wood	High & Moderate	Offaly	Woodland area (Nth of Geashill)
5	Willow	Heavy ivy growth, tree holes	Moderate	Tipperary	Along bank of Kilmastulla River
6	x3 Trees (cluster)	Heavy ivy growth, tree holes	Moderate	Tipperary	Linear woodland adjacent to Kilmastulla River
7	Treeline - x7	Heavy ivy growth, tree holes	Moderate	Tipperary	Linear woodland adjacent to Kilmastulla River
8	Oak (x1)	Heavy ivy growth, broken limbs	**Tree Roost (Natterer's bat)**	Tipperary	In hedgerow of agricultural land (nth of M7)
9	Ash (x2)	Heavy ivy growth, tree holes	Low	Tipperary	In hedgerow of agricultural land (sth of M7)
10	Ash (x1)	Heavy ivy growth	Low	Tipperary	In woodland nth of Knocknacree Wood
11	Ash (x2)	Heavy ivy growth	Low	Tipperary	In hedgerow of agricultural land (nth Knocknacree Wood)

No.	Tree Species	PRFs	PBR Value	County	Location
12	Treeline (x7 ash)	Heavy ivy growth	Low	Tipperary	In treeline of agricultural land (nth Knocknacree Wood)
13	Trees (x5) - treeline	Heavy ivy growth	Moderate	Tipperary	In hedgerow of agricultural land adj. to forestry (SE of R491)
14	Treeline (Ash and alder)	Heavy ivy growth	Moderate	Tipperary	Linear woodland adjacent to L4018 (west of Cangort Bog)
15	Tree	Heavy ivy growth	Low	Offaly	In hedgerow of agricultural land (east of R421)
16	Tree	Heavy ivy growth	Moderate	Offaly	In hedgerow of agricultural land (NW of Monettia Bog)
17	Sycamore x3	Heavy ivy growth, tree holes	Low	Offaly	In hedgerow of agricultural land (NW of Monettia Bog)
18	Tree	Heavy ivy growth	Moderate	Offaly	In hedgerow of agricultural land (SE of Killeigh)
19	Ash (x2)	Heavy ivy growth, tree holes, dead wood	Moderate	Offaly	Dense treeline of agricultural land (East of Killeigh)
20	Treeline (x29 trees) Beech, oak and sycamore	Heavy ivy growth, tree holes, dead wood	**2 x Tree Roosts** High & Moderate	Offaly	Dense treeline of agricultural land and local road (East of Daingean)
21	Alder (x2)	Heavy ivy growth	Moderate	Offaly	In hedgerow of agricultural land (south of Ballyfree Cross Roads)
22	Alder x2	Heavy ivy growth, tree holes	Low	Kildare	Treeline in agricultural land (Nth of Donadea Forest Park)
23	Treeline (Beech – x8)	Heavy ivy growth, tree holes, dead wood	Moderate	Kildare	Treeline in agricultural land (Nth of Donadea Forest Park)
24	Tree – no longer present	Heavy ivy growth, tree holes, dead wood	Not applicable	Kildare	On bank of River Liffey – this tree was on the ground (2025 surveys) due to storm damage
25	Tree	Tobin Information	Low	Offaly	In hedgerow of agricultural land (nth of L4022, Brooke's Cross Roads)
26	Tree	Tobin Information	Low	Offaly	In hedgerow of agricultural land (nth of L4022, Brooke's Cross Roads)
27	Tree	Tobin Information	Low	Offaly	In hedgerow of agricultural land (nth of L4022, Brooke's Cross Roads)
28	Tree	Tobin Information	Low	Offaly	In hedgerow of agricultural land (nth of L4022, Brooke's Cross Roads)
29	Oaks - Treeline	Heavy ivy growth, tree holes, dead wood	High & Moderate	Tipperary	Linear woodland adjacent to L4018 (west of Cangort Bog)

Figure 3b: Example of Location of Tree PBRs along the Planning Application Boundary

3.6 Summary of 2019, 2020, 2021, 2022, 2024 and 2025 Results

206. Fifty buildings (or set of buildings) were inspected and/or surveyed by Bat Eco Services. One additional building surveyed by TOBIN, only, is mentioned but it is not included in Table 20b or summary statistics below (See paragraph below for explanation). Twenty-six (excluding TOBIN building i.e. Building 43) of these buildings (please note: some buildings had multiple bat species present) were recorded as bat roosts for the following bat species:
    a. common pipistrelle (n=15 roosts),
    b. Natterer's bat (n=9 roosts),
    c. lesser horseshoe bat (n=1 roost),
    d. soprano pipistrelle (n=6 roosts),
    e. brown long-eared bat (n=6 roosts),
    f. whiskered bat (n=2 roosts) and
    g. Leisler's bat (n=4 roosts).

207. Six tree roosts were also confirmed: soprano pipistrelles in Parteen Woodland (Tree C, surveyed by Bat Eco Services in 2020), Daubenton's bat in Parteen Woodland (TOBIN Tree A, surveyed in 2021 by TOBIN only) and Leisler's bat in tree in Co. Offaly (TOBIN Tree B, originally surveyed by TOBIN in 2018, resurveyed by Bat Eco Services in 2024). The Daubenton's tree roost is not located within the boundary of the Proposed Project. As a result of the 2025 surveys of PBR trees, bat roosts were confirmed at two PBR locations (PBR 8 (Natterer's bat roost – single bat) and PBR 20 (two trees recorded as bat roosts for soprano pipistrelle and common pipistrelle, respectively).

208. Table 20b presents a list of all the buildings surveyed by Bat Eco Services along with additional information including survey year and location in relation to the Project Boundary at the Time of Survey. Some buildings surveyed by TOBIN prior to 2019 were resurveyed by Bat Eco Services, where access was permitted (Buildings 44 & 45, surveyed in 2024). One building, confirmed as a bat roost by TOBIN (permission was not granted to resurvey by Bat Eco Services in 2024) is included in map and table as it was surveyed by TOBIN in 2021 and therefore within the survey years 2019 to 2025 (Building 42).

209. A building surveyed by TOBIN (Building 43) is not included in Table 20b as it was surveyed prior to 2019 and is located >1km from Proposed Project and therefore not resurveyed by Bat Eco Services.

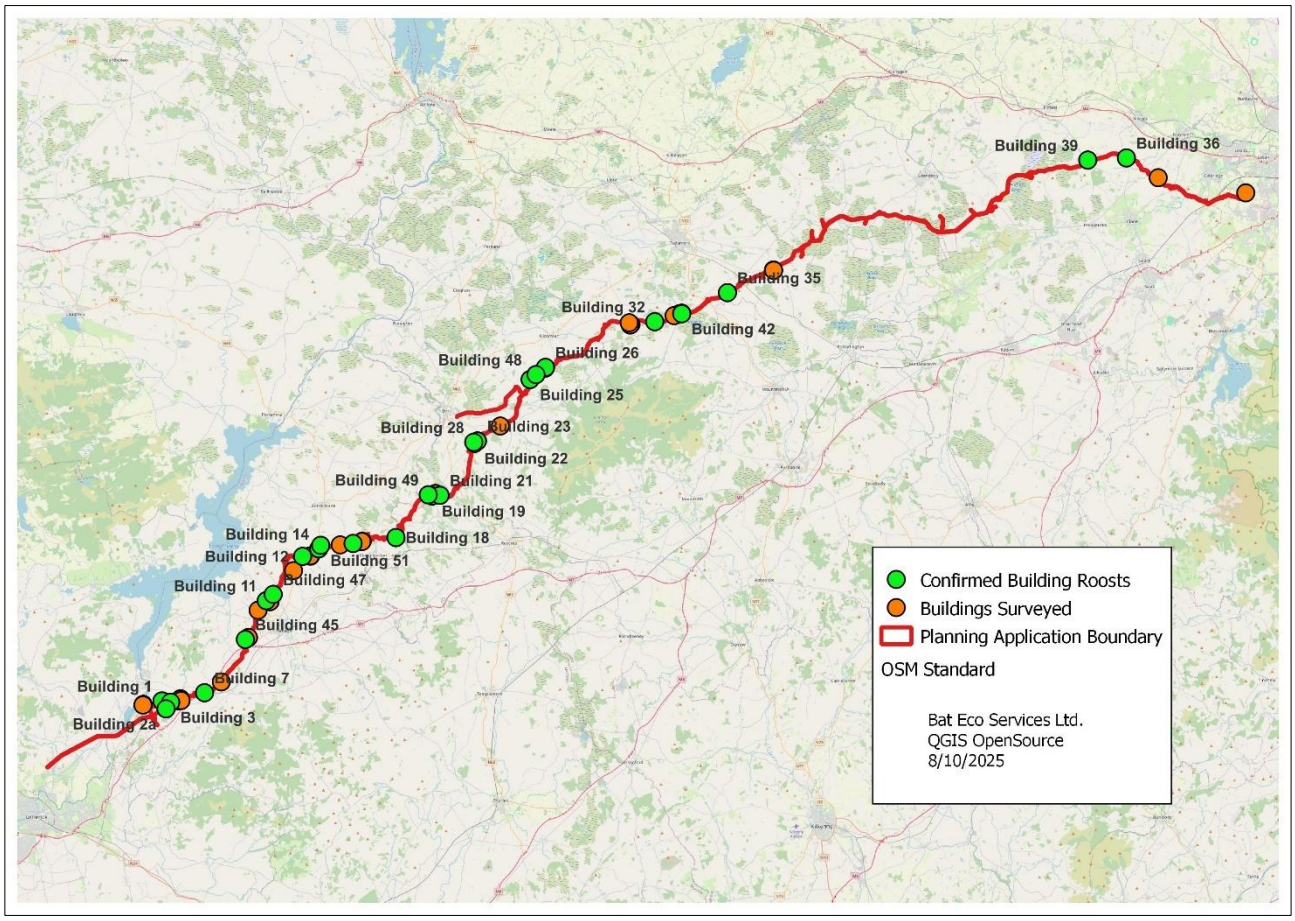


Figure 3c: Location of Buildings Surveyed and Bat Roosts Recorded in Buildings Only (Labels) During 2019-2025 Bat Surveys Along the Planning Application Boundary

Table 20b: Summary of Buildings Surveyed by Bat Eco Services in 2019, 2020, 2021, 2022, 2024 and 2025, Daytime and Night-Time Survey Results

Building Number (No. of buildings)	Value	2019	2020	2021	2022	2024	2025	Bat Species	Roost Type	Location (Distance (m) from Proposed Project
Building 1	High	Dusk survey	2 dusk surveys		1 dawn survey		2 dusk surveys	Lesser horseshoe bat, brown long-eared bat, Natterer's bat	Night Roost (lesser horseshoe bat) & daytime roosts (brown long-eared bat and Natterer's bat)	Within
Building 2 (x2)	Moderate to High	Dusk survey								90m
Building 2a	High		Dusk survey					Common pipistrelle	Satellite Roost	125m
Building 3 (x3)	Low, Moderate, High	Dusk survey						Common pipistrelle, Natterer's bat	Potential Maternity Roost (common pipistrelle), daytime roost (Natterer's)	40m
Building 4	Negligible									70m
Building 5	Low	Dawn survey								90m
Building 6	Negligible									36m
Building 7 (x4)	Low, Moderate, High	Dusk survey						Common pipistrelle	Night Roost	73m
Building 8 (x2)	Moderate, High	Dusk survey								109m
Building 9	High	Dusk survey								33m
Building 10 (x5)	Low, Moderate to High	Dusk survey								326m
Building 11	High	Dusk survey						Brown long-eared bat	Maternity Roost	15m
Building 12 (x3)	Low, Moderate	Dusk survey				Dusk Survey		Common pipistrelle, Whiskered bat	Satellite Toost (both species)	31m
Building 13	Negligible									100m
Building 14 (x2)	Low, Moderate	Dusk survey						Natterer's bat	Night Roost	100m
Building 15	Negligible									37m
Building 16	Low	Dusk survey								44m

Building Number (No. of buildings)	Value	2019	2020	2021	2022	2024	2025	Bat Species	Roost Type	Location (Distance (m) from Proposed Project
Building 17	Moderate	Dusk survey								105m
Building 18 (x4)	Low, Low to Moderate	Dusk survey						Natterer's bat, brown long-eared bat, common pipistrelle	Feeding Roost (Natterer's bat), Night Roost (brown long-eared and common pipistrelle)	35m
Building 19 (x5)	Negligible, Low, Moderate	Dusk survey				Dusk Survey		Natterer's bat, common pipistrelle, soprano pipistrelle	Satellite Roost (Natterer's bat & common pipistrelle), Day Roost (soprano pipistrelle)	100m
Building 20	Negligible									40m
Building 21 (x3)	Negligible, Low to Moderate	Dusk survey						Pipistrellus spp.	Night Roost	85m
Building 22 (x2)	Moderate, High	Dusk survey						Common pipistrelle	Satellite Roost	100m
Building 23 (x3)	Low, Moderate, Moderate to High	Dusk survey						Common pipistrelle	Night Roost	53m
Building 24 (x4)	Low, Moderate	Dusk survey								60m
Building 25 (x4)	Low, High	Dusk survey						Soprano pipistrelle	Satellite Roost	125m
Building 26 (x4)	Low, Moderate to High	Dusk survey						Soprano pipistrelle, Natterer's bat	Maternity Roost (soprano pipistrelles) and Satellite Roost (Natterer's bat)	127m
Building 27	Negligible									60m
Building 28	High	Dawn survey						Natterer's bat, brown long-eared bat, soprano pipistrelle	Unknown, likely to be Maternity and Satellite Roosts present.	255m
Building 29	Low	Dusk survey								282m
Building 30	Negligible	Dusk survey								335m
Building 31 (x2)	Negligible, Low to Moderate	Dusk survey								113m

Building Number (No. of buildings)	Value	2019	2020	2021	2022	2024	2025	Bat Species	Roost Type	Location (Distance (m) from Proposed Project
Building 32 (x2)	Low, Moderate to High	Dusk survey						Common pipistrelle, Whiskered bat, brown long-eared bat	Night Roost (whiskered bat and brown long-eared bat). Maternity Roost (common pipistrelle) in adjacent building.	10m
Building 33	Low	Dusk survey								68m
Building 34	High	Dusk survey	Dusk survey							43m
Building 35 (x2)	Negligible, Moderate	Dusk survey						Common pipistrelle	Satellite Roost	25m
Building 36	Low			Dusk survey				Common pipistrelle	Satellite Roost	135m
Building 37	Low to Moderate			Dusk survey						126m
Building 38	Low to Moderate			Dusk survey						180m
Building 39	Moderate			Dusk survey				Leisler's bat	Satellite Roost	254m
Building 40	Moderate			Dusk survey						124m
Building 41	Negligible			Dusk survey						Within
Building 42	Not specified (surveyed by TOBIN)			Dusk survey				Leisler's bat	Roost type not specified by TOBIN	15m
Building 44 (>5)	Negligible, Moderate, High					Dusk survey		Natterer's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat	Satellite Roosts (Natterer's bat, common pipistrelle, brown long-eared bat) Day Roosts (Natterer's bat, common pipistrelle, soprano pipistrelle, brown long-eared bat)	120m
Building 45 (x5)	Negligible, Low, Moderate					Dusk survey		Soprano pipistrelle, Leisler's bat	Satellite Roost (soprano pipistrelle)	228m

Building Number (No. of buildings)	Value	2019	2020	2021	2022	2024	2025	Bat Species	Roost Type	Location (Distance (m) from Proposed Project
									Day Roost (Leisler's bat)	
Building 46	Low					Dusk survey				158m
Building 47	Moderate					Dusk survey		Leisler's bat	Satellite Roost	Within
Building 48 (x2)	Negligible, Moderate					Dusk survey		Common pipistrelle	Satellite Roost	73m
Building 49 (x2)	Negligible, Moderate					Dusk survey		Common pipistrelle	Satellite Roost	186m
Building 50	Negligible					Daytime inspection only				158m
Building 51 (x2)	Low, Moderate					Dusk survey		Common pipistrelle, Natterer's bat	Maternity Roost (Common pipistrelle) Day Roost (Natterer's bat)	142m

Note: 'red line' refers to the Project Boundary at the Time of Survey.

210. A total of nine bat species were recorded during the 2019, 2020, 2021, 2022, 2024 and 2025 bat surveys and a total of 4,673 bat encounters records were collated (i.e. discrete geo-reference locations) by the array of bat surveys undertaken: dusk and dawn surveys, static surveillance (n=92 locations), walking transects and driving transects. Common pipistrelles (n= 2,077 bat encounters, 44.3%) were the most frequently recorded bat species, soprano pipistrelle (n= 1,461 bat encounters, 31.1%) was the second most frequently encountered bat species followed by Leisler's bats (746 bat encounters, 15.9%). Bat encounters for these three bat species were recorded in all areas surveyed. These three bat species are considered to be the three most common bat species in Ireland (Roche *et al*., 2014). The location of bat encounters for the remaining bat species recorded tended to associate with habitats particular for the bat species recorded (e.g. brown long-eared bats tended to be recorded along woodland or treeline habitats and Daubenton's bats on watercourses).

211. A series of overview maps are presented below to depict the location of the bat encounters for each individual bat species presented in Table 20c.

Table 20c: Summary of Bat Encounters Recorded by Bat Surveys Completed in 2019, 2020, 2021, 2022, 2024 and 2025

Species	No. of bat encounters
Common pipistrelle	2,074
Soprano pipistrelle	1,456
Leisler's bat	745
Brown long-eared bat	98
Lesser horseshoe bat	1
Nathusius' pipistrelle	13
Daubenton's bat	92
Natterer's bat	71
Whiskered bat	41
***Myotis* species**	82

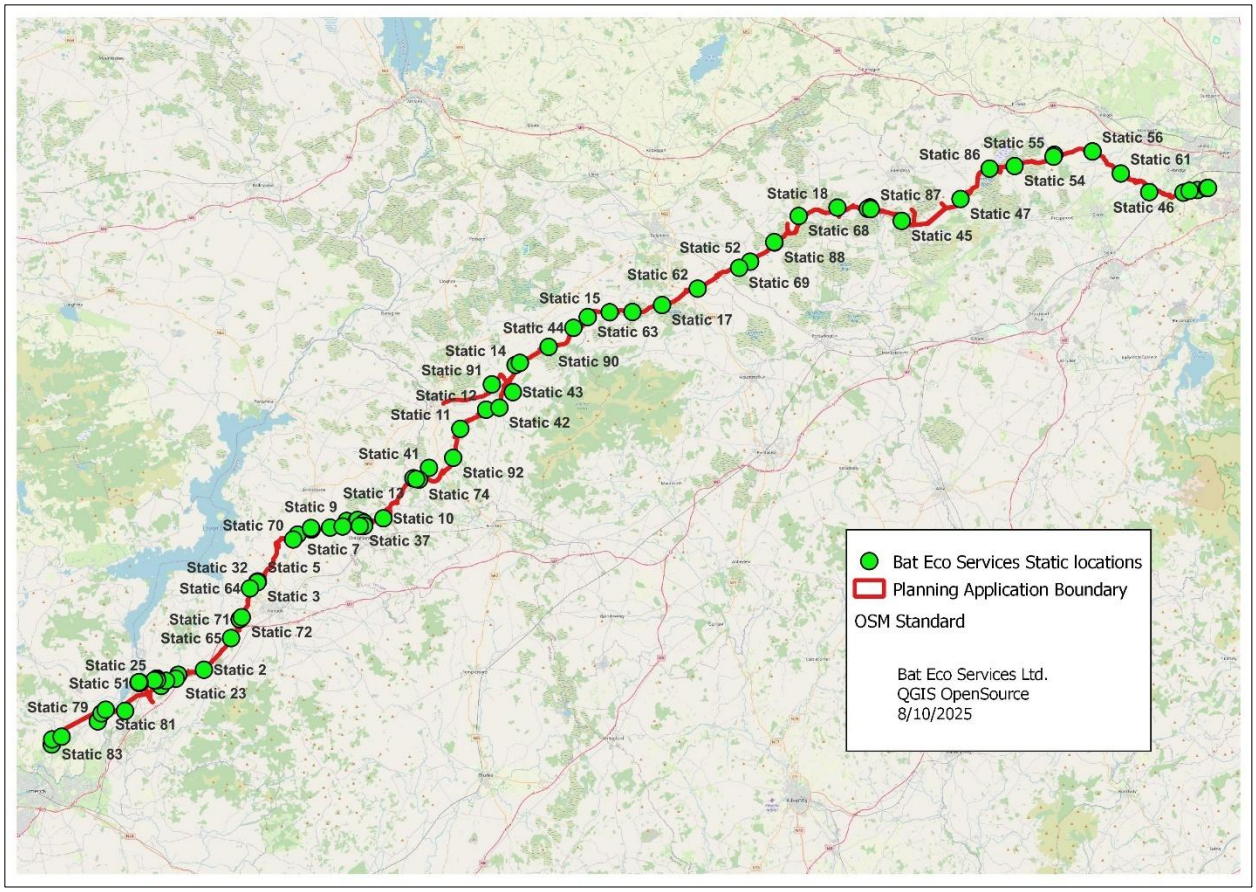


Figure 3d: Location of Static Units Deployed During the 2019-2025 Survey Period Along the Planning Application Boundary

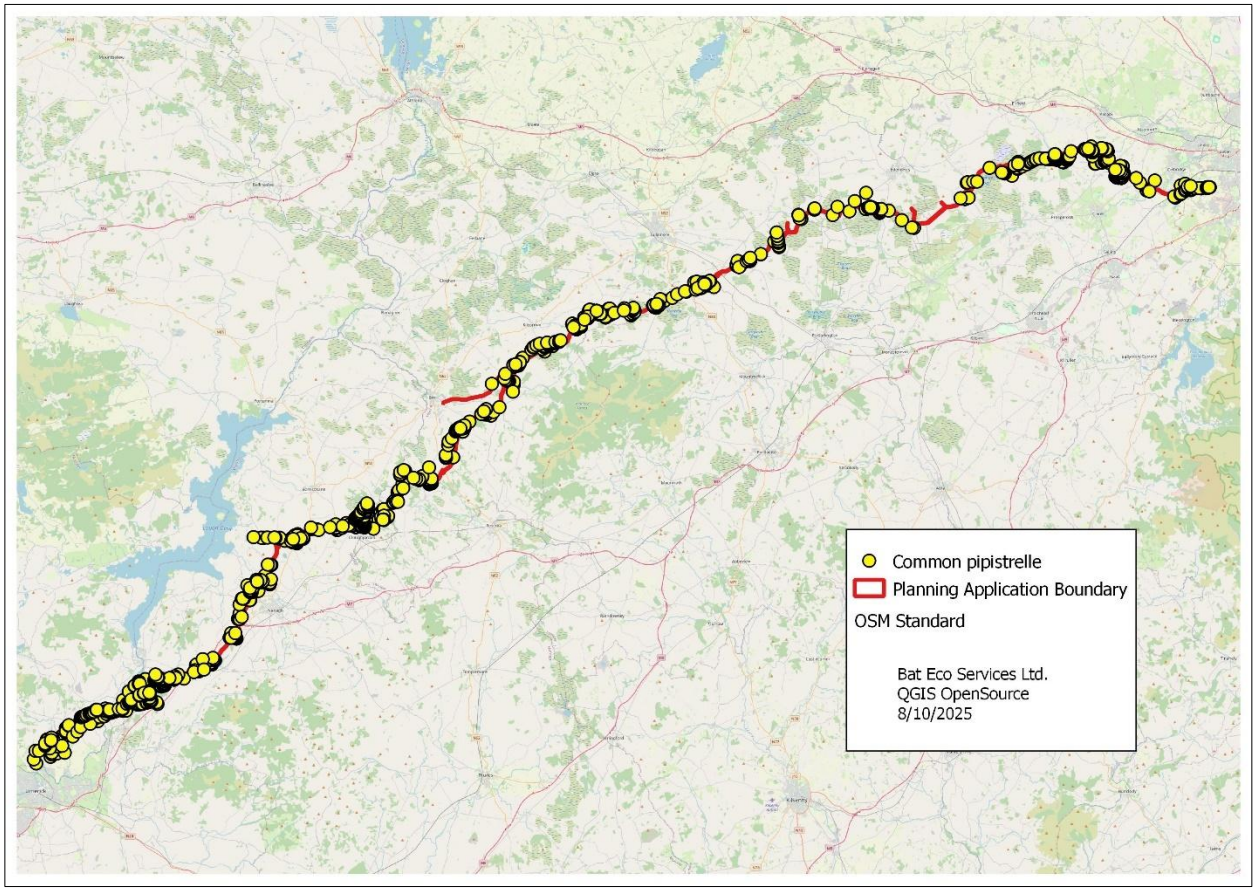


Figure 3e: Common Pipistrelle Bat Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

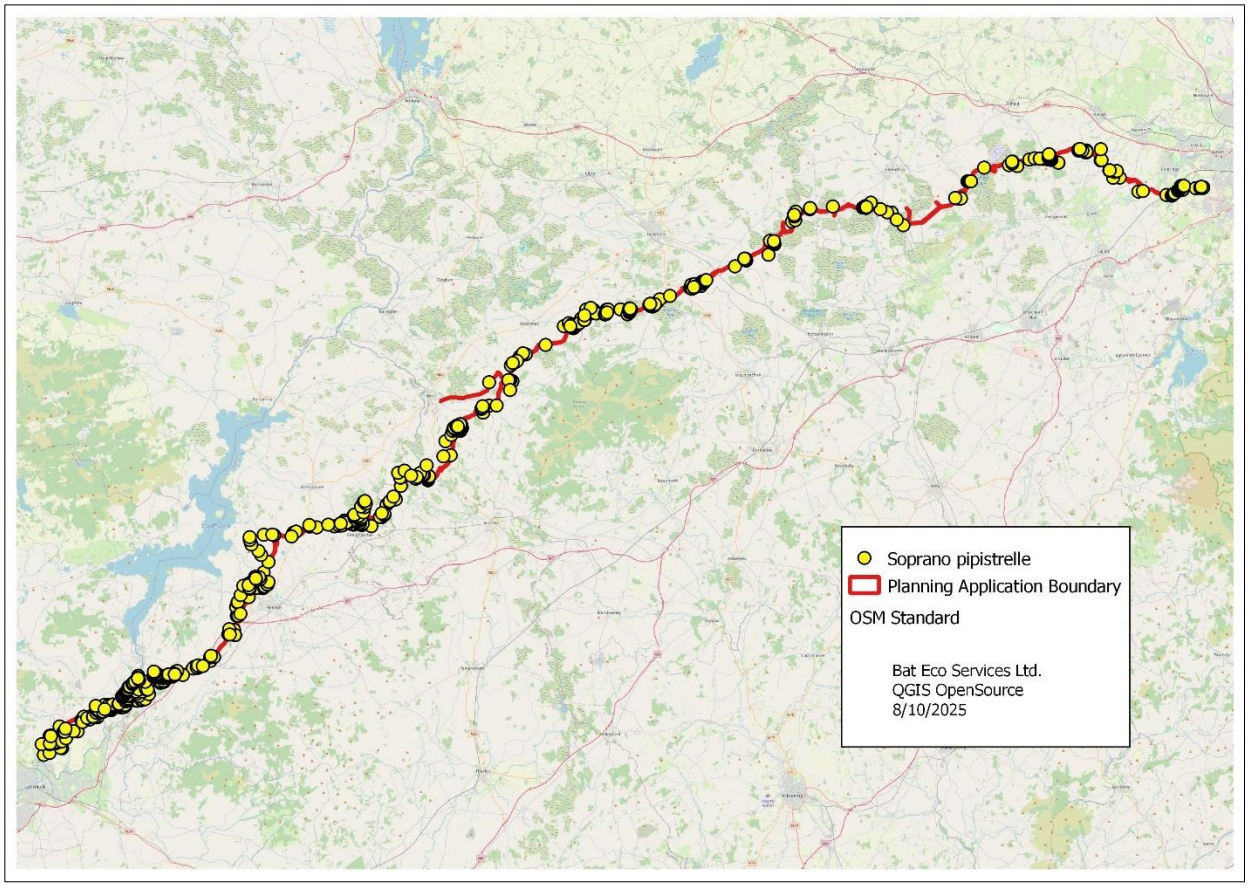


Figure 3f: Soprano Pipistrelle Bat Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

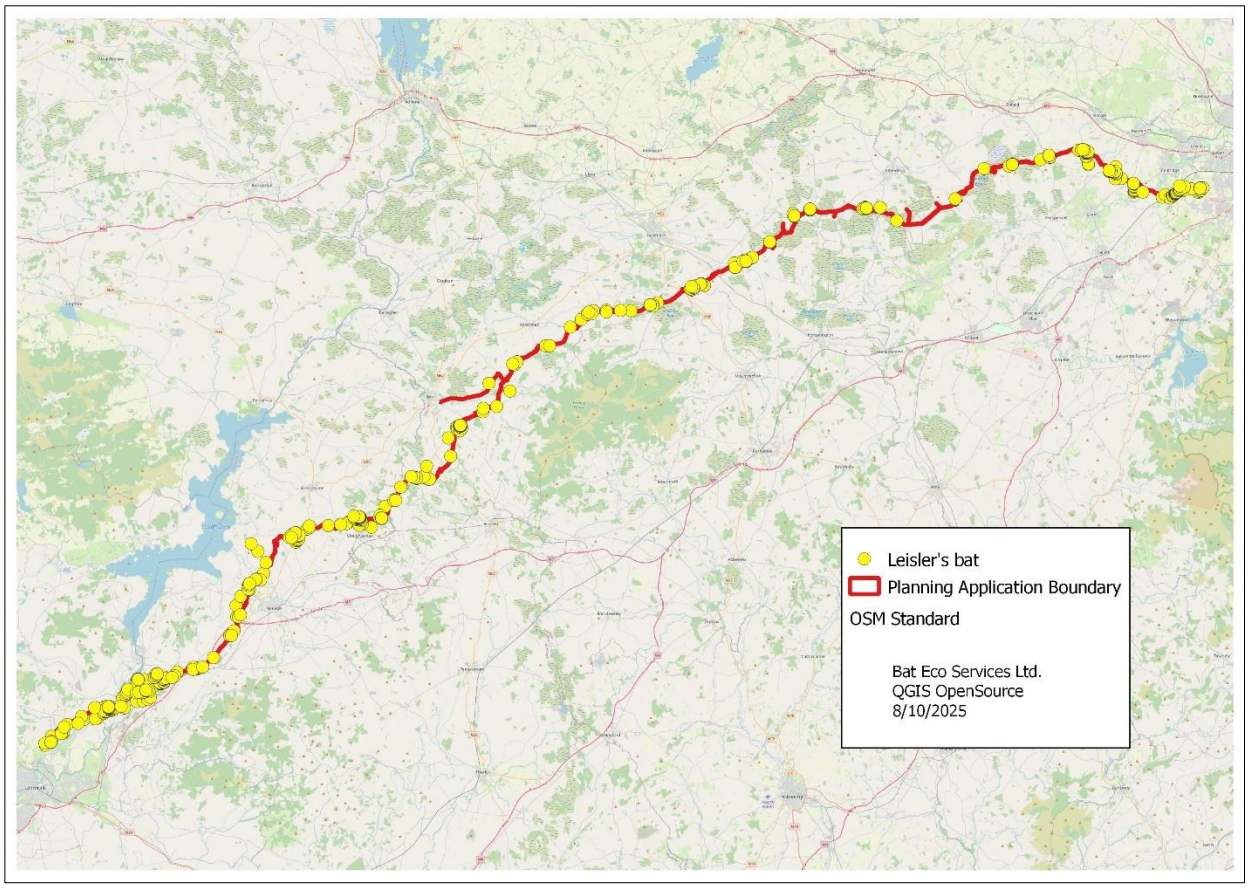


Figure 3g: Leisler's Bat Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

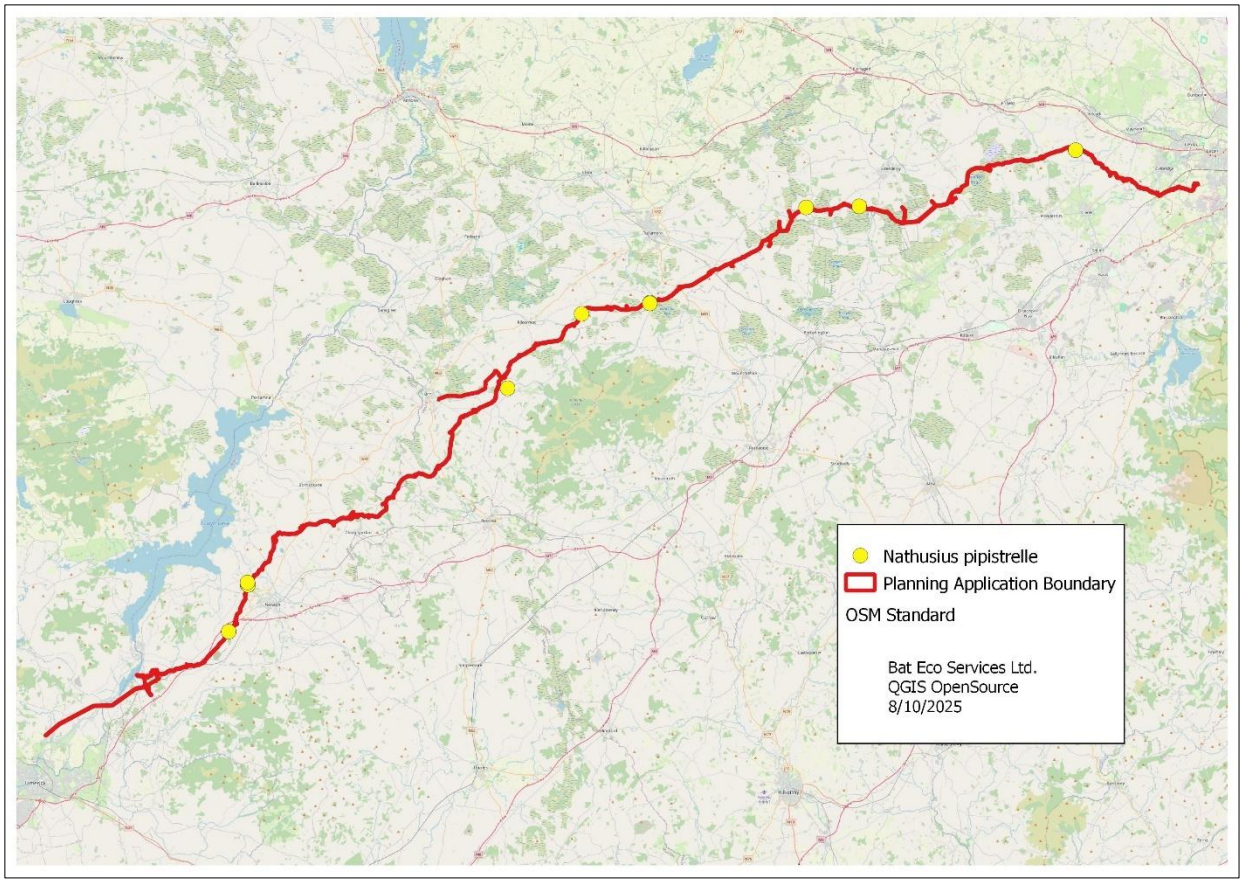


Figure 3h: Nathusius' Pipistrelle Bat Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

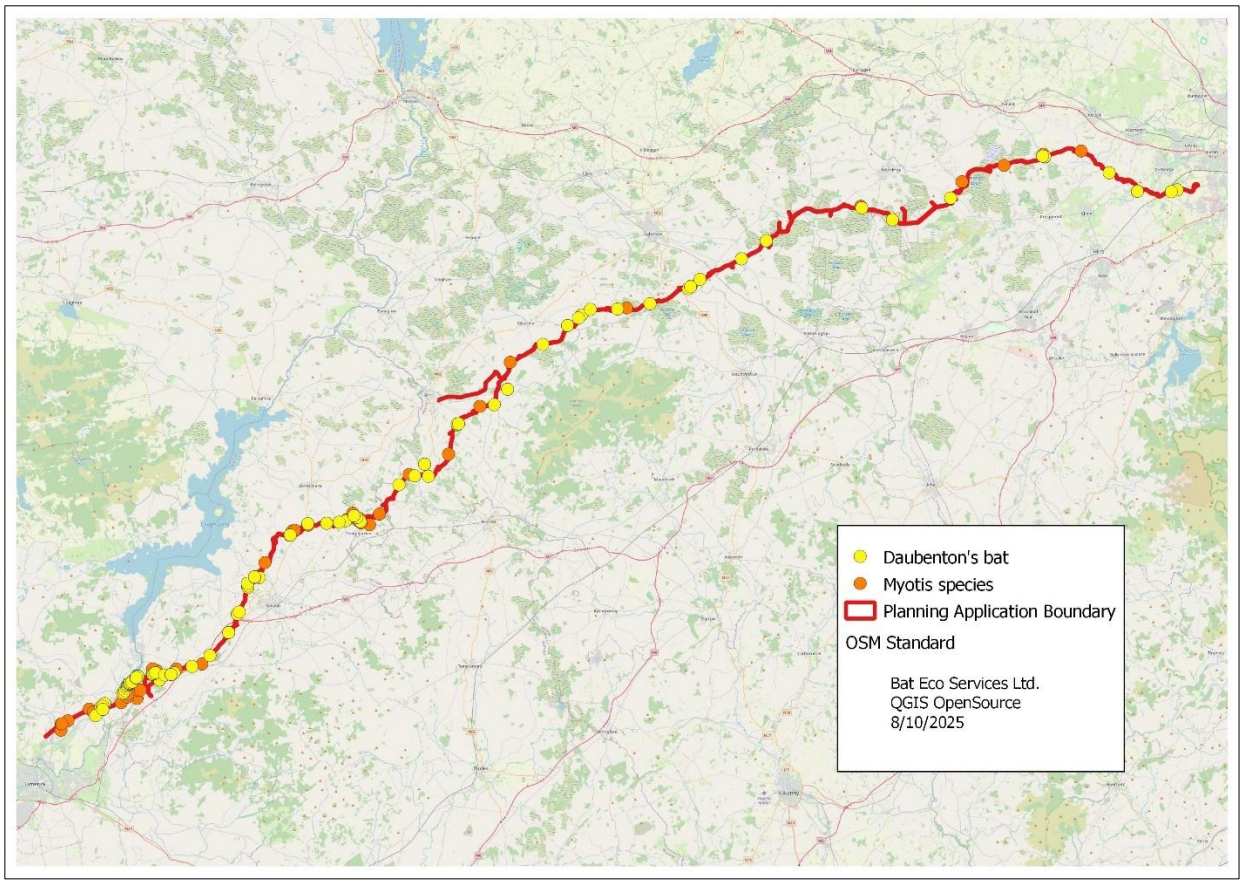


Figure 3i: Daubenton's Bat and *Myotis* species Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

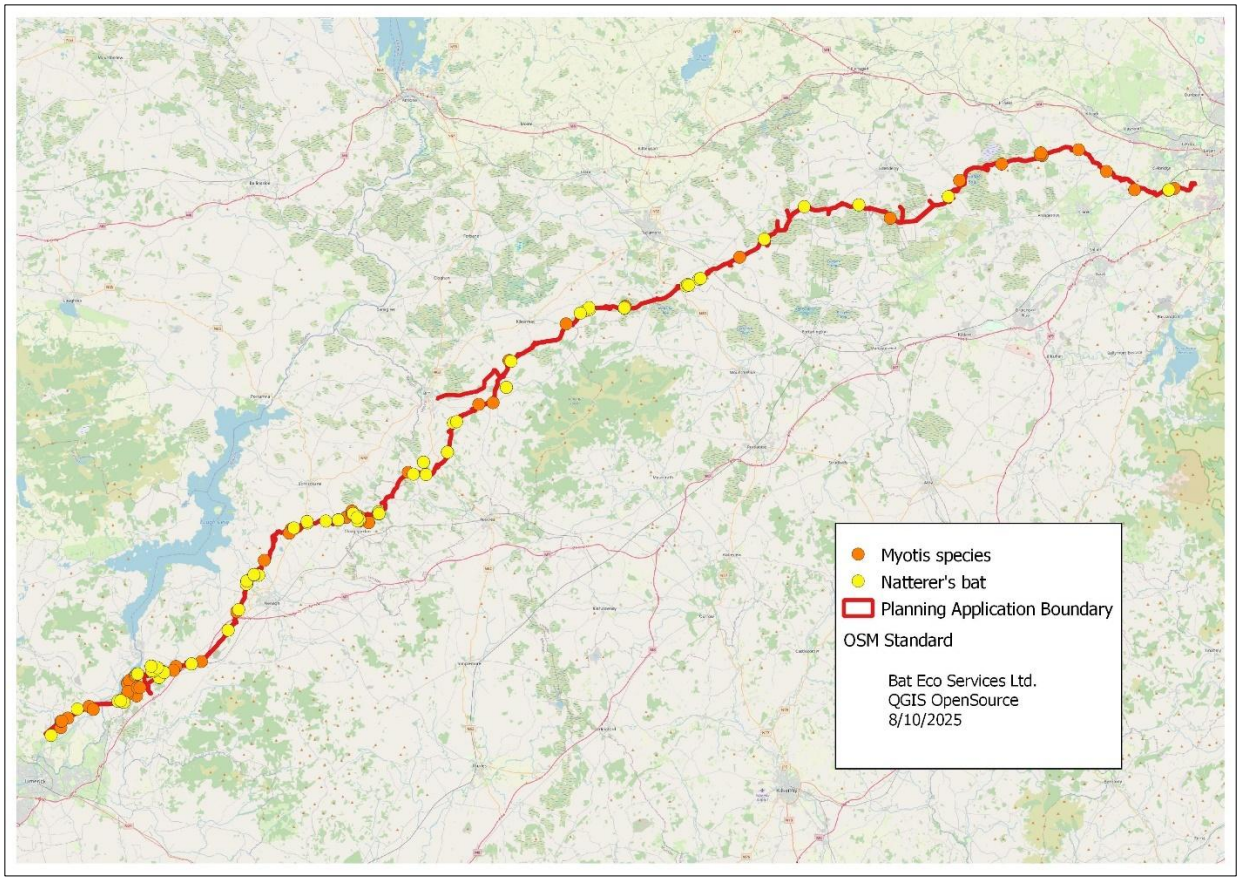


Figure 3j: Natterer's Bat and *Myotis* species Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

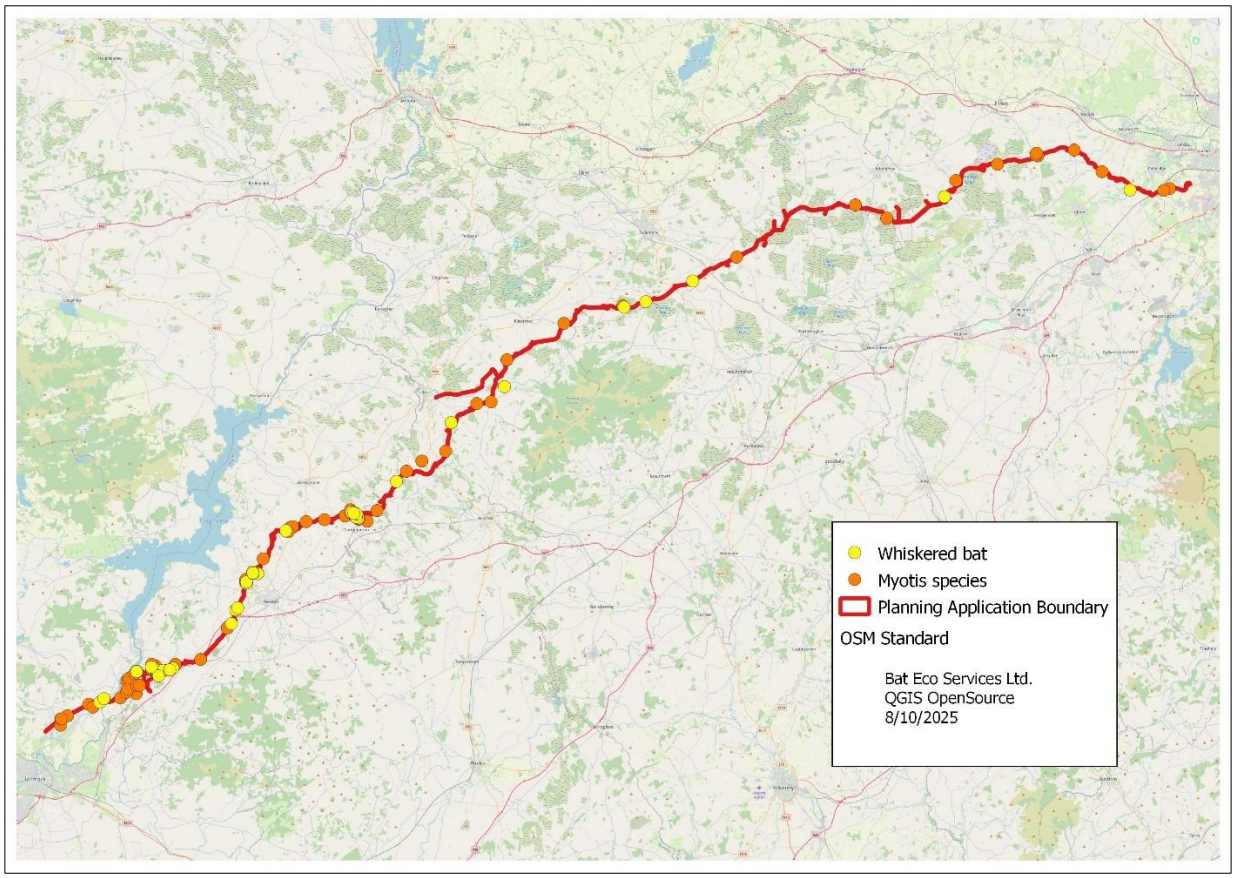


Figure 3k: Whiskered Bat and *Myotis* species Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

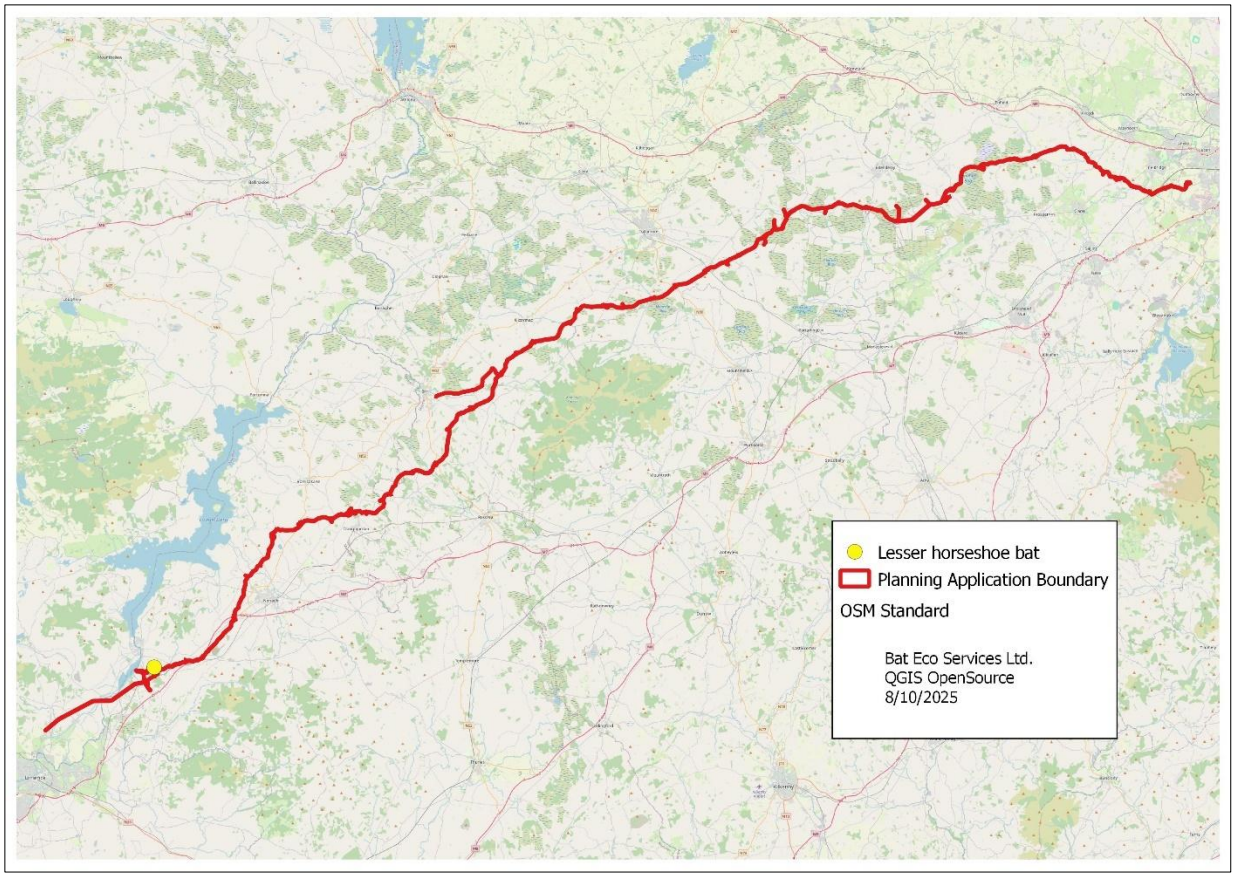


Figure 3l: Lesser Horseshoe Bat Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

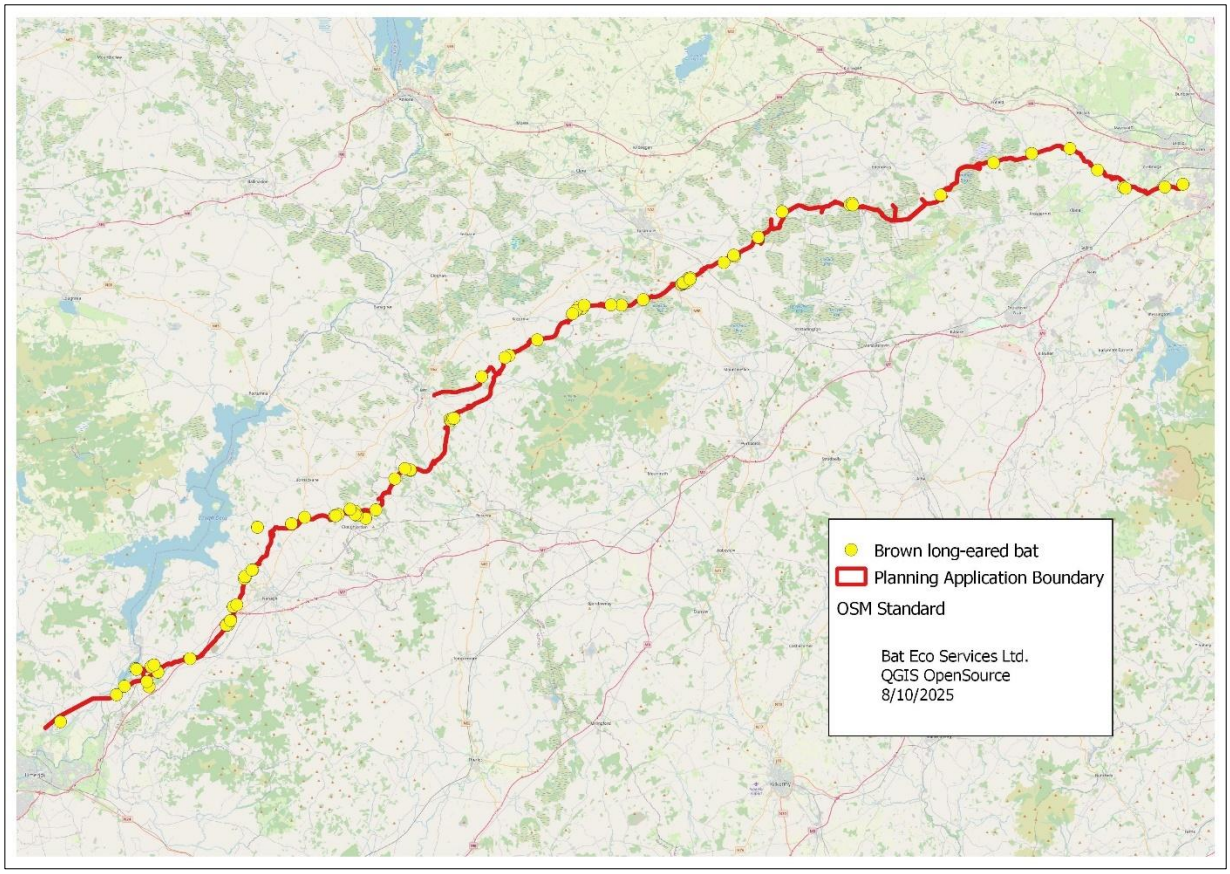


Figure 3m: Brown Long-Eared Bat Encounters Recorded in 2019-2025 Bat Surveys Along the Planning Application Boundary

3.6.1 Survey Assessment & Constraints

212. The following assessment has been completed in relation to Survey Constraints:

Table 21a: 2019 Survey Constraint Assessment Results

Category	Discussion
Timing of surveys	Driving Transect – May 2019 and for 38kV Uprate in June and July 2019 Walking Transects – June, July, August, September 2019 and for 38kV Uprate in June and July 2019 Limited walking transects were undertaken in October 2019, but due to poor weather conditions, the results are not deemed suitable to represent the study area for the survey period. Dusk & Dawn Surveys – June, July, August and September 2019 Static Surveillance – June, July, August, September 2019. For 38kV Uprate, two nights of surveillance completed only. Limited static surveillance was undertaken in October 2019, but due to poor weather conditions, the results are not deemed suitable to represent the study area for the survey period.
Weather conditions	Variable weather conditions were recorded during the summer surveys. May, June, July, August and September weather conditions were generally favourable for bat surveys. October surveys were greatly reduced due to poor weather conditions. Therefore, the full scope of bat surveys to be undertaken in October 2019 was not completed.
Survey effort	Driving Transect – all 12 transects required to be undertaken as part of 2019 Scope of Works were completed. For 38kV Uprate in June and July 2019, Scope of Works was completed. Walking Transects, building inspections and Dusk & Dawn surveys were proposed to be undertaken within 26 areas identified as Bat Areas by TOBIN. The survey schedule was spread across the months of June, July, August, September and October. For 38kV Uprate in June and July 2019, Scope of Works was completed. Walking Transects – 21 of the 26 walking transects required to be undertaken as part of 2019 Scope of Works were completed. Walking transects for Areas 22 to 26 were not undertaken to a satisfactory level due to poor weather conditions in October. 35 buildings were inspected during the daytime and 26 of these were surveyed at Dusk or Dawn. Buildings located within Areas 22 to 26 were not surveyed due to poor weather conditions in October. Static Surveillance – 21 of the 26 locations to be surveyed as part of the 2019 Scope of Works were completed using static surveillance. Locations to be surveyed in Areas 22 to 26 were not surveyed to a satisfactory level in October due to poor weather conditions. For 38kV Uprate, limited static surveillance completed.
Equipment	All in good working order

Table 21b: 2020 Survey Constraint Assessment Results

Category	Discussion
Timing of surveys	No surveying was undertaken in June 2020 due to COVID-19. - 6th to 10th July Water Treatment Plant site at Incha Beg (Survey 1), Tree surveys, BPT site at Cloughjordan (Survey 1), Watercourses Static Surveillance. - 11th to 14th August Water Treatment Plant site at Incha Beg (Survey 2), Tree surveys, BPT site at Cloughjordan (Survey 2), Watercourse Static Surveillance. - 7th to 11th September & 21st to 22nd September T19 repeat walking transect, Building 34 repeat dusk survey, Watercourse Static Surveillance, Tree Surveys, RWI&PS site at Parteen Basin (Survey 1).
Weather conditions	Variable weather conditions were recorded during the summer surveys. June, July, August and September weather conditions were generally favourable for bat surveys.
Survey effort	Dusk Surveys: Building 1 (2 dusk surveys), Building 34 (1 dusk survey), Kilmastulla Bridge Walking Transects: WTP site at Incha Beg (3 walking transects), BPT site at Cloughjordan (3 walking transects), T19 (1 walking transect) and Parteen Basin (2 walking transects). Static Surveillance: 30 static locations, 10 in July, 9 in August and 11 in September. A total of 79 nights of recordings (632 hours). Please note that planned surveys for June 2020 were cancelled due to COVID-19.
Equipment	All in good working order

Table 21c: 2021 Survey Constraint Assessment Results

Category	Discussion
Timing of surveys	June (22nd to 25th June 2021) Bat Target Areas 21, 22, 23 and 24 and additional area in Co. Offaly. July (20th to 23rd July 2021) TPR at Peamount, Bat Target Area 25 and 26. August (23rd to 27th August 2021) Static surveillance and walking transects of four locations (Co. Offaly and Co. Tipperary). All building surveys were completed in the preferred summer months of May to August.
Weather conditions	Variable weather conditions were recorded during the summer surveys. June, July and August weather conditions were generally favourable for bat surveys.

Category	Discussion
Survey effort	Dusk Surveys: Buildings x6. Walking Transects: Bat Target Areas 21-26, TPR at Peamount. Static Surveillance: 14 locations (June: 5 statics; July: 5 statics & August: 4 statics).
Equipment	All in good working order

Table 21d: 2022 Survey Constraint Assessment Results

Category	Discussion
Timing of surveys	June (20th to 25th June 2022) Parteen, Incha Beg, and additional areas in Co. Offaly. All building surveys were completed in the preferred summer months of May to August.
Weather conditions	Variable weather conditions were recorded during the summer surveys. June weather conditions were generally favourable for bat surveys.
Survey effort	Dusk Surveys: Building x1. Walking Transects: Additional areas in Co. Offaly Static Surveillance: 4 locations (June: 4 statics).
Equipment	All in good working order

Table 21e: 2024 Survey Constraint Assessment Results

Category	Discussion
Timing of surveys	16th June 2024 (Dusk survey – Tree) 8th to 11th July 2024 (Dusk surveys and static surveillance - Buildings) 6th to 9th August 2024 (Dusk survey and static surveillance - Buildings) All surveys were completed in the preferred summer months of May to August.
Weather conditions	Good weather conditions were recorded during the surveys.
Survey effort	Daytime Inspection: Buildings x10, Tree x1 Dusk Surveys: Buildings x9, Tree x1. Static Surveillance: Nine locations (July: three statics, August: six statics).
Equipment	All in good working order

Table 21f: 2025 Survey Constraint Assessment Results

Category	Discussion
Timing of surveys	20th to 25th May 2025 (Dusk surveys) 9th to 13th June 2025 (Dusk surveys and static surveillance) 16th to 20th June 2025 (Dusk survey and static surveillance - Buildings) All surveys were completed in the preferred summer months of May to August.
Weather conditions	Good weather conditions were recorded during the surveys.
Survey effort	Daytime Inspection: 1 building, Tree PBR x21 Dusk Surveys: Building x1, Tree PBR x21. Static Surveillance: 7 locations.
Equipment	All in good working order

4. Bat Data – Analysis

4.1 Summary of All Bat Data

213. Bat survey data was collated by TOBIN in 2016, 2017 and 2018. Bat Eco Services collated data on behalf of TOBIN in 2019, 2020, 2021, 2022, 2024 and 2025. For analysis, all of the data collected from 2016 to 2025 has been collated into an Excel file for analysis.

214. Twenty-six buildings were recorded as bat roosts for the following bat species:
    a. common pipistrelle (n=15 roosts),
    b. Natterer's bat (n=9 roosts),
    c. lesser horseshoe bat (n=1 roost),
    d. soprano pipistrelle (n=6 roosts),
    e. brown long-eared bat (n=6 roosts),
    f. whiskered bat (n=2 roosts) and
    g. Leisler's bat (n=4 roosts).

(Please note some buildings have multiple bat species recorded). An additional building (Building 43 – Natterer's bat) was also recorded as a bat roost but this is located 1km from the Proposed Project and not resurveyed by Bat Eco Services in 2019 to 2025. However, it is included in the CSZ analysis. Therefore 27 buildings were recorded as bat roosts.

215. Six tree roosts were confirmed, two for soprano pipistrelles (Tree C & PBR 20), one for Daubenton's bat (Tree A), one for Natterer's bat (PBR 8) and one for common pipistrelle (PBR 20, second tree in treeline). Tree A is located outside the Proposed Project. The sixth tree roost was recorded by TOBIN (re-confirmed by Bat Eco Services in 2024) for Leisler's bats which is also located outside of the Proposed Project.

216. One hundred and four static locations (Note: some locations were sampled multiple times) were sampled with data collated for 146 surveillance periods (5,318 hrs) and recording a total of 186,561 bat passes.

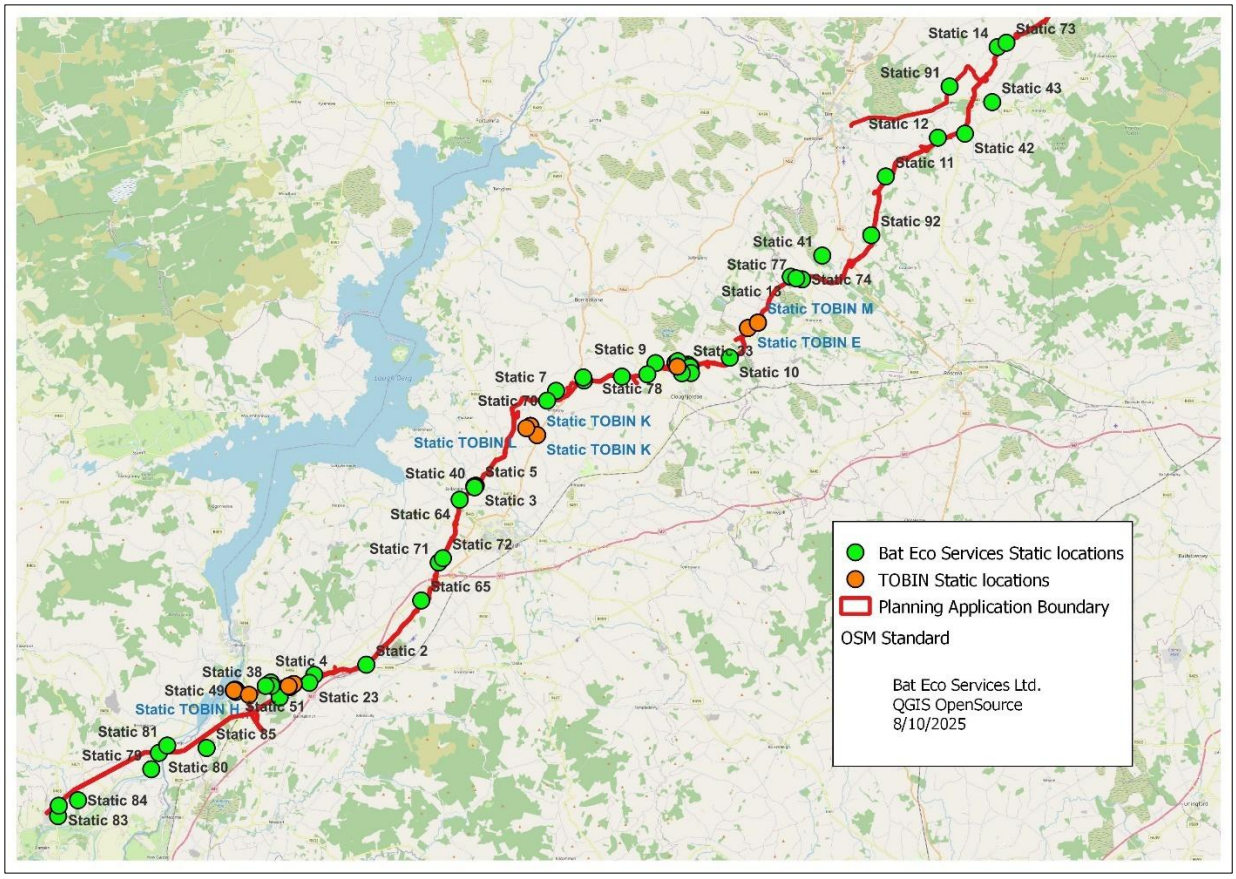


Figure 4a: Location of Static Unit Locations Deployed (2016-2025) Along the Planning Application Boundary

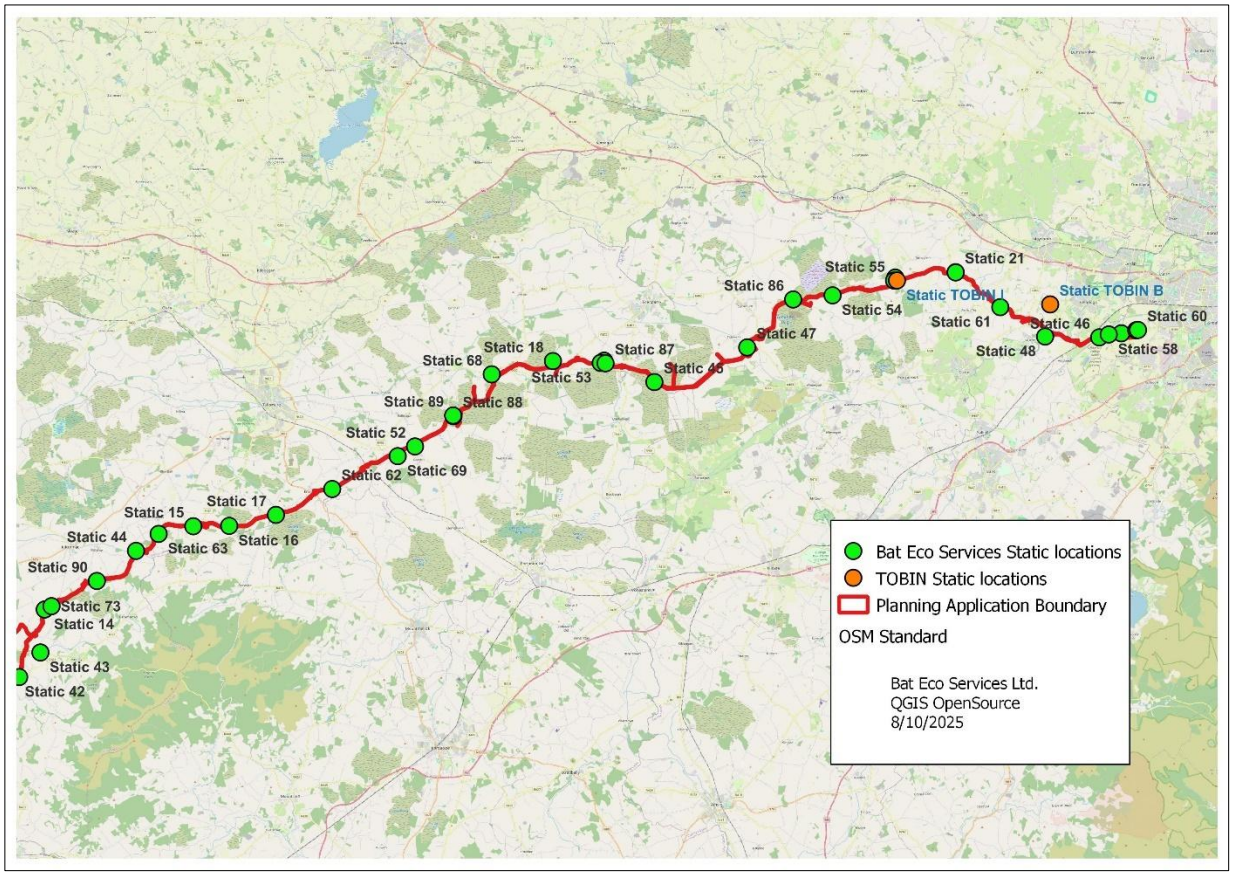


Figure 4b: Location of Static Unit Locations Deployed (2016-2025) Along the Planning Application Boundary

217. All nine resident bat species were recorded during the static surveillance. Soprano pipistrelle was the most frequently recorded bat species and represented 50% of the total number of bat passes and was recorded during 133 (91.1%) of the static surveillance periods. The following Table 22a summarises the results. For full details in relation to locations and results please see the Annexes.

Table 22a: Summary of Bat Passes Recorded Static Surveillance Completed in 2016-2025

Species	No. of bat passes	% of bat passes	No. of static units	% of static units
Soprano pipistrelle	93,230	50.0	133	91.1
Common pipistrelle	64,949	34.8	131	89.7
Leisler's bat	19,021	10.2	130	89.0
Brown long-eared bat	547	0.3	73	50.0
Daubenton's bat	1,432	0.8	52	35.6
Whiskered bat	237	0.1	35	24.0
Natterer's bat	406	0.2	57	39.0
***Myotis* species**	5,584	3.0	75	51.4
Lesser horseshoe bat	1	0	1	0.7
Nathusius' pipistrelle	62	0	17	11.6
***Pipistrellus* species**	1,092	0.6	22	15.1

218. All nine resident bat species were recorded during all of the bat surveys and a total of 5,567 bat encounter records were collated (i.e. discrete geo-reference locations) by the array of bat surveys undertaken: dusk and dawn surveys, static surveillance (n=104 points, 146 surveillance periods), walking transects and driving transects. Common pipistrelle (n=2,388 bat encounters, 42.9%) was the most frequently recorded bat species, soprano pipistrelle (n=1,732 bat encounters, 31.1%) was the second most frequently encountered bat species followed by Leisler's bats (863 bat encounters, 15.5%). Bat encounters for these three bat species were recorded in all areas surveyed. These three bat species are considered to the be the three most common bat species in Ireland (Roche *et al.*, 2014). The location of bat encounters for the remaining bat species recorded tended to be associated with habitats particular for the bat species recorded (e.g. brown long-eared bats tended to be recorded along woodland or treeline habitats and Daubenton's bats on watercourses).

Table 22b: Summary of Bat Encounters Recorded by Bat Surveys Completed in 2016-2025

Species	No. of bat encounters
Brown long-eared bat	130
Common pipistrelle	2,388
Daubenton's bat	137
Leisler's bat	863
***Myotis* species**	104
Nathusius' pipistrelle	27
Natterer's bat	102
Soprano pipistrelle	1,732
Whiskered bat	66
Lesser horseshoe bat	1

Species	No. of bat encounters
***Pipistrellus* species**	17

4.2 Passive Static Unit Analysis

219. A total of 146 static surveillance periods were completed during 2016-2025 at 104 discrete geo-referenced locations. As a general guide, activity level is determined as follows: Low = <10 bat passes/hr; Medium = >10 - <50 bat passes/hr; High = >50 bat passes/hr. For this analysis, all of the *Myotis* species data was combined but due to the low level of brown long-eared bats and Nathusius' pipistrelle bat passes, these two species were not included in the analysis. A low level of bat activity was recorded at all static locations for these two species but their presence is noteworthy, regardless of the activity level. In relation to brown long-eared bats this is because the echolocation call of this species is quiet and therefore the bats are required to be flying within 5m of the microphone to be recorded. In relation to Nathusius' pipistrelle, the population and distribution of this species is still not fully understood. This analysis was undertaken to provide a key to important bat activity areas located within the study area using the four most common bat species and/or family group.
NOTE: The behaviour of bats during commuting and foraging greatly influences the level of bat passes recorded on static units. The number of bat passes do not equate to the number of bats flying past the static unit. Pipistrellus species tended to foraging as they commute and therefore are regularly observed flying up and down a treeline or hedgerow before moving on in the landscape. Leisler's bats fly high in the sky and therefore can be observed flying fast through the landscape, occasionally foraging over treetops as they commute. As a consequence, Pipistrellus species bat activity tends to result in a higher number of bat passes recorded on static units compared to Leisler's bats. In relation to other bat species recorded, as they tend to be less common in the landscape compared to common pipistrelles, soprano pipistrelles and Leisler's bats, their recorded presence is notable. Exceptions to this would include Daubenton's bats on a waterway or a static located adjacent to a known bat roost.

4.2.1 Soprano pipistrelle

220. Soprano pipistrelle was the most frequently recorded bat species on the static units and represented 50% of the total number of bat passes and was recorded on 133 (91.1%) of the static surveillance periods. Fifteen of the 146 surveillance periods recorded, on average, a high level of bat activity for this bat species. This represents 11 discrete locations, five of which were statics located at river crossings, one located on a woodland edge adjacent to a riverbank, and the remaining five located within woodlands. Medium levels of bat activity were recorded during 30 surveillance periods at 25 discrete points.

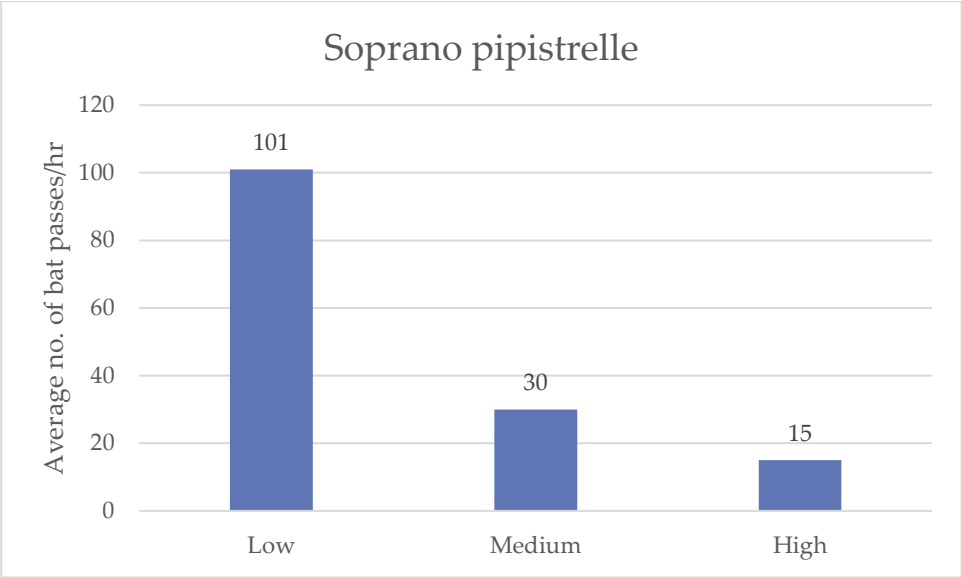


Figure 5a: Bat Activity Level of 146 Surveillance Periods for Soprano Pipistrelles (2016-2025)

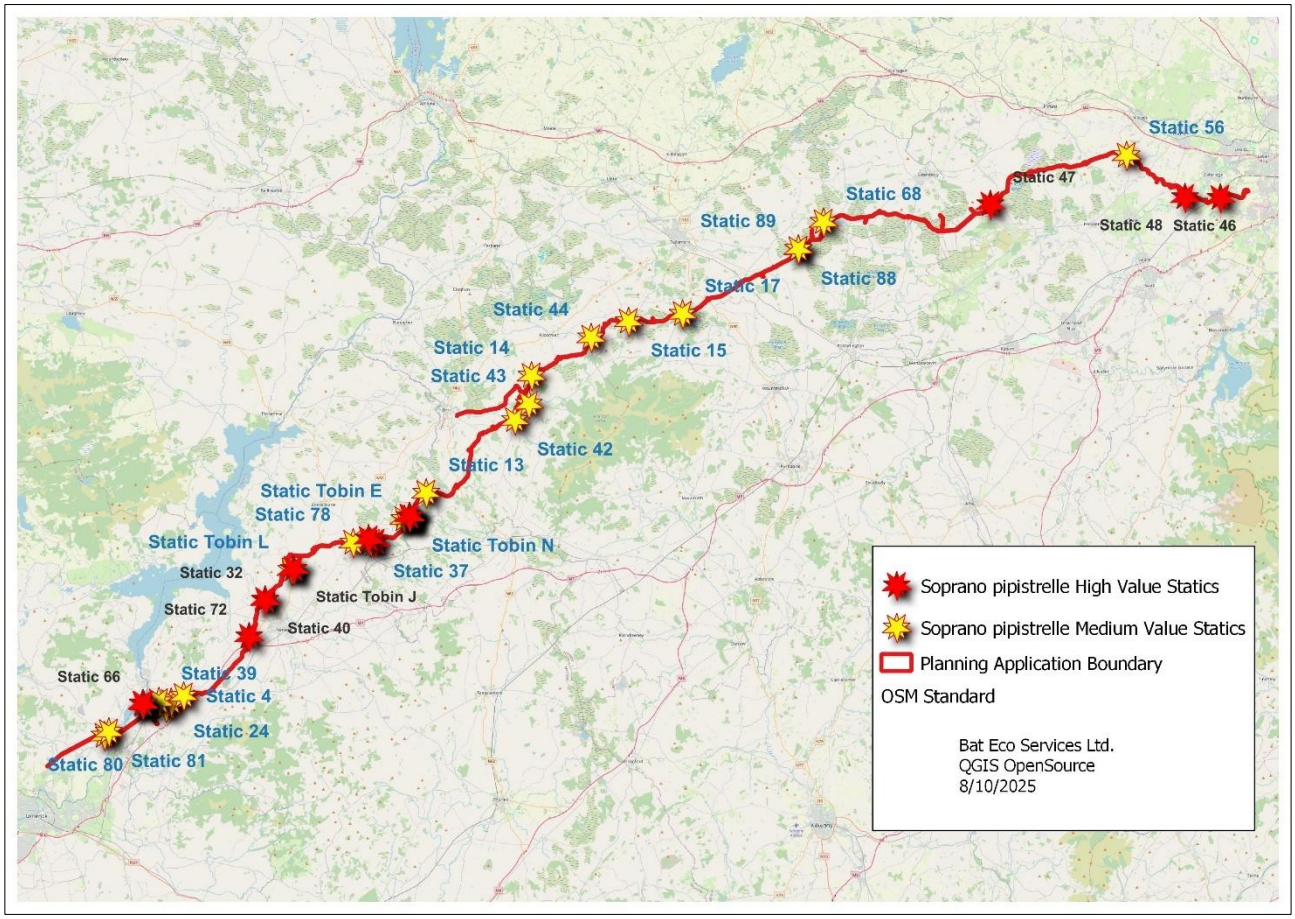


Figure 5b: Location of High and Medium Bat Activity Level Static Units (2016-2025) along the Planning Application Boundary: Soprano Pipistrelle

4.2.2 Common pipistrelle

221. Common pipistrelle was the second most frequently recorded bat species and represented 34.8% of the total number of bat passes and was recorded during 131 (89.7%) of the static surveillance periods. Twelve of the 146 surveillance periods recorded, on average, a high level

of bat activity for this bat species (ten discrete points in farmland and remaining two locations in woodland). Medium levels of bat activity were recorded during 37 surveillance periods at 30 discrete points.

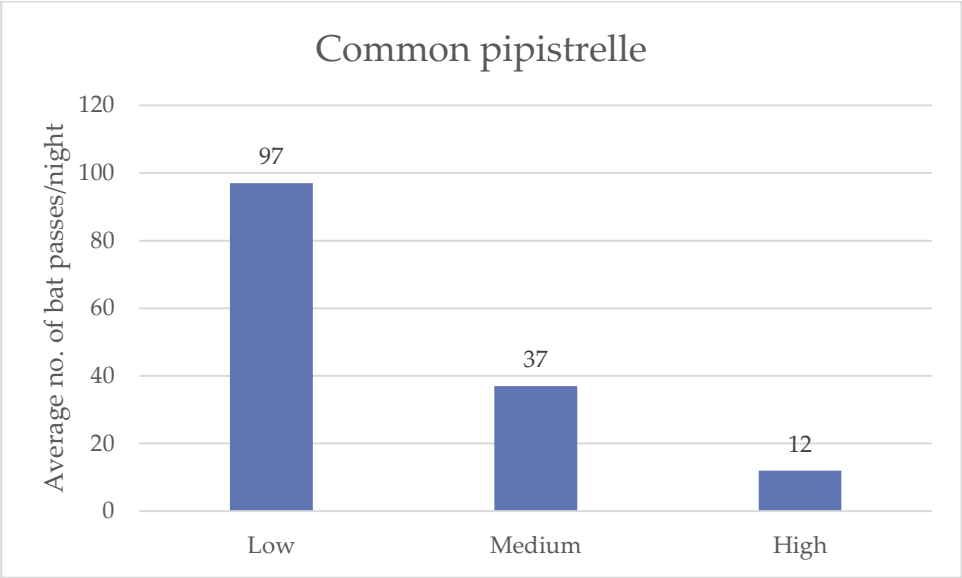


Figure 5c: Bat Activity Level of 146 Surveillance Periods for Common Pipistrelles (2016-2025)

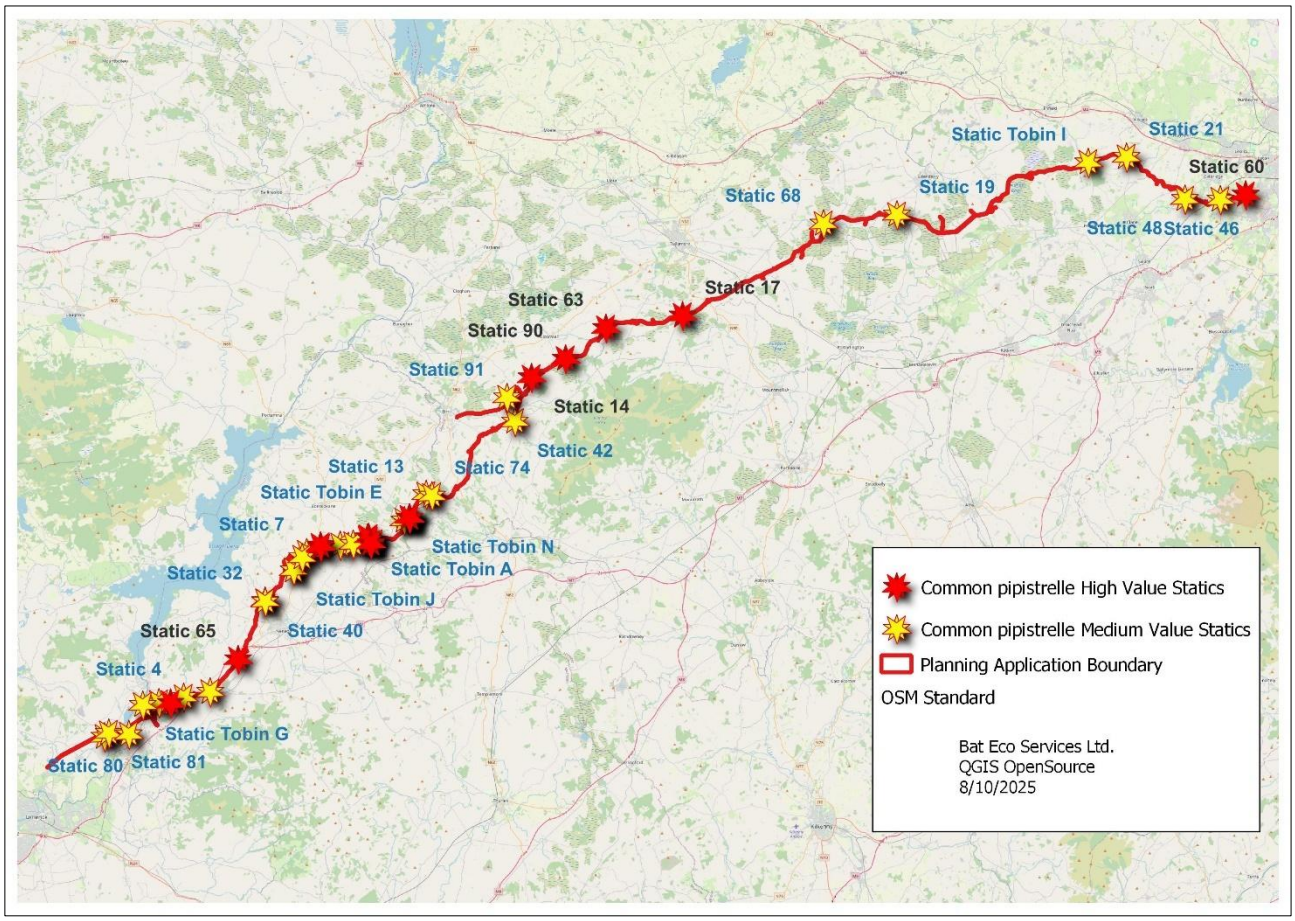


Figure 5d: Location of High and Medium Bat Activity Level Static Units (2016-2025) Along the Planning Application Boundary: Common Pipistrelle

4.2.3 Leisler's bat

222. Leisler's bats were recorded during 130 (89%) of the static surveillance periods and a total of 19,201 (10.3% of total number of bat passes) bat passes were recorded. Two of the 146 surveillance periods recorded, on average, a high level of bat activity for this bat species (two discrete locations: woodland (TOBIN Static K) and river crossing (TOBIN Static E)). Medium levels of bat activity were recorded during seven surveillance periods at six discrete points.

4.2.4 Myotis species

223. *Myotis* species were recorded during 103 (70.5%) of the static surveillance periods and a total of 7,668 (4.1% of total number of bat passes) bat passes were recorded. Two of the 146 surveillance periods recorded, on average, a high level of bat activity for this bat species (two discrete locations: river crossings (Statics 41 and 42)). Medium levels of bat activity were recorded during five surveillance periods at five discrete points, four of which were river crossings and the remaining one within a woodland.

4.3 Core Sustenance Zones

224. Analysis of bat data collated since 2016 was undertaken using the Species Core Sustenance Zones (CSZ) as reported in Collins (2016). This has been developed for each bat species and refers to the area surrounding a bat roost within which habitat availability and quality will have significant influence on the resilience and conservation status of the bat roost. With reference to development, the CSZ is used to indicate, as stated on the BCT website, the following:
    - The area surrounding a communal roost within which development work may impact the commuting and foraging habitat of bats using that roost.
    - The area within which it may be necessary to ensure no net reduction in the quality and availability of foraging habitat for the colony.

225. The CSZ values for Irish bat species are as follows:
    - Lesser horseshoe bat: 2km radius
    - Daubenton's bat: 2km radius
    - Whiskered bat: 1km radius
    - Natterer's bat: 4km radius
    - Leisler's bat: 3km radius
    - Common pipistrelle: 3km radius
    - Soprano pipistrelle: 3km radius
    - Nathusius' pipistrelle: 3km radius
    - Brown long-eared bat: 3 km radius

226. While the CSZ was primarily designed in relation to roosting sites, for this Proposed Project, it is proposed to use the CSZ to determine the potential impact of the Proposed Project on local bat populations where the following applies:
    a) Roosts recorded in buildings (n=26 roosts);
    b) Roosts recorded in trees (n=3 roosts)
    c) PBR trees confirmed as bat roosts in 2025 (n=2 PBR locations)
    d) Trees deemed as PBRs and not confirmed as tree roosts (n=26 locations);
    e) High Levels of bat activity recorded for soprano pipistrelles, common pipistrelles, Leisler's bats and *Myotis* species through static surveillance (n=230 static locations).

227. Different values of buffers zones are applied to the data presented in Table 22c and 22d in correspondence to the CSZ values presented above. Where there are two or more species

recorded, the highest buffer zone value is applied. All PBR trees, not confirmed as roosts in 2025, have been allocated a 3km CSZ values to represent that CSV value for the majority of Irish bat species.

- Yellow = 2km buffer (n = 3 locations);
- Blue = 3km buffer (n = 75 locations);
- Green = 4km buffer (n= 11 locations).

228. The results of the application of the different buffer zones are presented in Figure 6. It is recommended that minimum removal of bat habitats along the Proposed Project is undertaken. It is also recommended that the amount of potential bat habitat (linear habitats, woodland, scribe, forestry etc.) proposed to be removed to facilitate the construction of the proposed works should be calculated within each buffer. This will indicate the amount of compensatory habitat required as part of mitigation.

Table 22c: Confirmed Roosts in Buildings and Trees, and Tree PBRs (Colour Coded According to CSZ Zones). Note: Building 43 is Included in CSZ Analysis

Description	ITM Easting	ITM Northing	Bat Species 1	Bat Species 2	Bat Species 3 & 4
Building 1	572211	670676	Lesser horseshoe bat	Natterer's bat	Brown long-eared bat
Building 2a	572741	669715	Common pipistrelle		
Building 3	573233	670504	Common pipistrelle	Natterer's bat	
Building 7	577301	671672	Common pipistrelle		
Building 11	584612	682583	Brown long-eared bat		
Building 12	589161	688193	Common pipistrelle	Whiskered bat	
Building 14	590838	688769	Natterer's bat		
Building 18	600036	690065	Natterer's bat	Brown long-eared bat	Common pipistrelle
Building 19	604314	695003	Natterer's bat	Common pipistrelle	Soprano pipistrelle
Building 21	605267	695081	Pipistrellus spp.		
Building 22	609365	701231	Common pipistrelle		
Building 23	609692	701525	Common pipistrelle		
Building 25	615969	708812	Soprano pipistrelle		
Building 26	617806	710183	Soprano pipistrelle	Natterer's bat	
Building 28	609289	701376	Natterer's bat	Brown long-eared bat	Soprano pipistrelle
Building 32	630801	715682	Common pipistrelle	Whiskered bat	Brown long-eared bat
Building 35	639851	718788	Common pipistrelle		
Building 36	686924	735093	Common pipistrelle		
Building 39	682326	734840	Leisler's bat		
Building 42	634052	716598	Leisler's bat		
Building 43	587904	686114	Natterer's bat		
Building 44	594985	689336	Natterer's bat	Brown long-eared bat	Soprano & Common pipistrelles
Building 45	582384	677954	Soprano pipistrelle	Leisler's bat	
TOBIN Tree A	570002	670162	Daubenton's bat		
Tree C	570024	670240	Soprano pipistrelle		
Building 47	585486	683297	Leisler's bat		
Building 48	616727	709381	Common pipistrelle		
Building 49	603921	695115	Common pipistrelle		
Building 51	591131	689119	Natterer's bat	Common pipistrelle	
Tree B	634054	716671	Leisler's bat		
PBR 1	624682	714602	Potential Bat Roost		
PBR 2	626129	715681	Potential Bat Roost		
PBR 3	639362	718945	Potential Bat Roost		
PBR 4	644841	722017	Potential Bat Roost		
PBR 5	573367	670410	Potential Bat Roost		
PBR 6	573520	670495	Potential Bat Roost		
PBR 7	573706	670619	Potential Bat Roost		
PBR 8	576767	671452	Natterer's bat		

Description	ITM Easting	ITM Northing	Bat Species 1	Bat Species 2	Bat Species 3 & 4
PBR 9	581838	676212	Potential Bat Roost		
PBR 10	597201	689846	Potential Bat Roost		
PBR 11	597119	689990	Potential Bat Roost		
PBR 12	597130	689912	Potential Bat Roost		
PBR 13	600027	690122	Potential Bat Roost		
PBR 14	602419	693965	Potential Bat Roost		
PBR 15	629486	715726	Potential Bat Roost		
PBR 16	633170	716299	Potential Bat Roost		
PBR 17	633492	716350	Potential Bat Roost		
PBR 18	637000	718101	Potential Bat Roost		
PBR 19	639442	719036	Potential Bat Roost		
PBR 20	652855	728156	Common pipistrelle	Soprano pipistrelle	
PBR 21	659770	728256	Potential Bat Roost		
PBR 22	682024	734417	Potential Bat Roost		
PBR 23	682411	734594	Potential Bat Roost		
PBR 25	601544	692277	Potential Bat Roost		
PBR 26	601549	692285	Potential Bat Roost		
PBR 27	601675	692462	Potential Bat Roost		
PBR 28	601735	692381	Potential Bat Roost		
PBR 29	602460	693929	Potential Bat Roost		

Note: PBR 24 is deleted from table as it is no longer present due to storm damage

Table 22d: Static Units with a High Bat Activity Level Recorded by Bat Surveys Completed in 2016-2025 (Colour Coded According to CSZ Zones)

Static No.	ITM Easting	ITM Northing	County	Species
Static 14	616199	709122	Offaly	Common pipistrelle
Static 17	634157	716468	Offaly	Common pipistrelle
Static 32	584523	682551	Tipperary	Soprano pipistrelle
Static 34	596835	690120	Tipperary	Common pipistrelle
Static 36	597638	689400	Tipperary	Soprano pipistrelle
Static 37	597089	689386	Tipperary	Common pipistrelle
Static 40	584540	682485	Tipperary	Soprano pipistrelle
Static 41	605583	696507	Offaly	Myotis species
Static 42	614217	703881	Offaly	Myotis species
Static 46	698091	730244	Dublin	Soprano pipistrelle
Static 47	670752	729465	Kildare	Soprano pipistrelle
Static 48	693889	730310	Kildare	Soprano pipistrelle
Static 60	701098	730817	Dublin	Common pipistrelle
Static 63	625047	714993	Offaly	Common pipistrelle
Static 65	581313	675638	Tipperary	Common pipistrelle
Static 8	591161	688949	Tipperary	Common pipistrelle
Static 66	569967	670203	Tipperary	Soprano pipistrelle
Static 72	582622	678197	Tipperary	Soprano pipistrelle
Static 76	591119	689133	Tipperary	Common pipistrelle
Static 90	620250	711338	Offaly	Common pipistrelle
Static TOBIN A	596819	689788	Tipperary	Soprano pipistrelle
Static TOBIN C	573286	670461	Tipperary	Common pipistrelle
Static TOBIN E	601084	692121	Offaly	Leisler's bat
Static TOBIN G	569982	670203	Tipperary	Soprano pipistrelle
Static TOBIN J	587918	686199	Tipperary	Soprano pipistrelle

Static No.	ITM Easting	ITM Northing	County	Species
Static TOBIN K	588323	685645	Tipperary	Leisler's bat
Static TOBIN N	601688	692448	Offaly	Common pipistrelle
Static TOBIN N	601688	692448	Offaly	Soprano pipistrelle

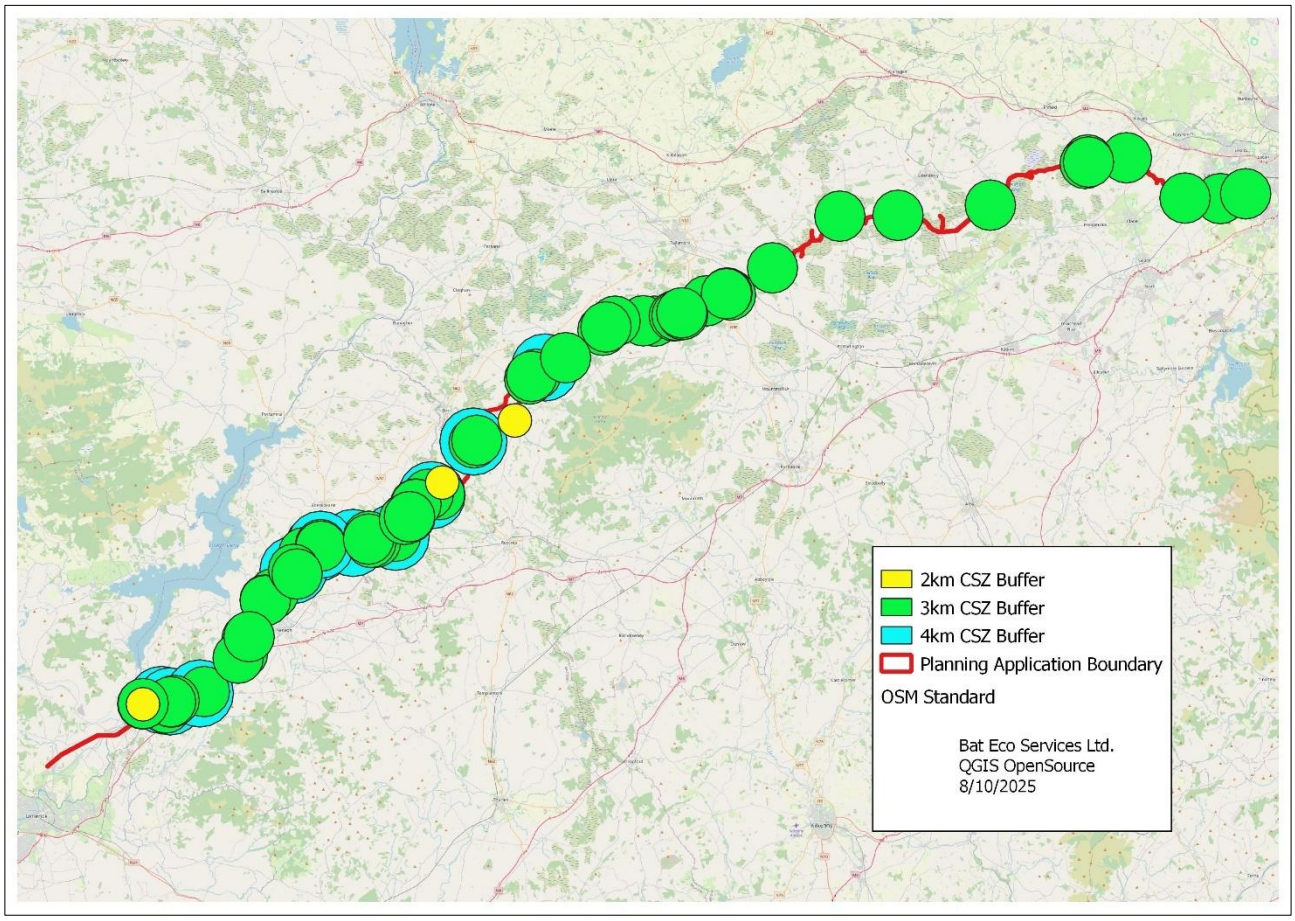


Figure 6: CSZ Buffers along the Planning Application Boundary

4.4 Core Sustenance Zone Linear Habitats

229. TOBIN provided a GIS file for each of the three Core Sustenance Zones (CSZ) (2km, 3km and 4km) with all of the 'Linear Habitats' presented within the Proposed Project. This was examined and 'Linear Habitats' deemed important for commuting and foraging bats were extracted and these include the treelines, hedgerows, scrub and stonewall categories. The total length of linear habitat present within each zone was calculated and presented in Table 22e. There is an overlap between the zones and therefore the total figure represents the actual total length of linear habitats within the CSZs combined as one zone. A total of 564,937m is located within the combined CSZs of the Proposed Project and therefore the length of linear habitat with potential to be impacted as a result of proposed works.

Table 22e: Total Length of 'Bat' Linear Habitats within CSZs (Colour Coded According to CSZ Zones)

CSZ Zone	Stonewalls	Hedgerows	Treelines	Scrub	Total
2 Km	0m	26,646m	19,276m	0m	45,922m
3 km	1,181m	316,819m	214,207m	582m	532,789m
4 km	718m	175,210m	83,033m	582m	142,923m

CSZ Zone	Stonewalls	Hedgerows	Treelines	Scrub	Total
Total within All Three Buffers	1,181m	339,338m	223,836m	582m	564,937m
% of Total	82%	87%	78%	60%	83%
Total within Red line Boundary	1,436m	389,087m	285,916m	964m	677,403m

5. Bat Ecological Evaluation

5.1 Bat Species Recorded & Sensitivity

230. All nine bat species resident in Ireland were recorded during the array of bat surveys completed between 2016 to 2025.

231. Three of the bat species recorded were common pipistrelle, Leisler's bat and soprano pipistrelle and these are the three most common bat species in Ireland (Roche *et al*., 2014). The most up to-date distribution maps produced by Bat Conservation Ireland (please see appendices and Aughney *et al.*, (2022) for more details) provides further evidence to support this.

232. Common pipistrelle (n= 2,388 bat encounters, 44.9%) was the most frequently recorded bat species while it was the second most frequently recorded species during static surveillance (64,949 bat passes collated during 131 surveillance periods). A total of 16 roosts (15 buildings and one tree) were recorded for this bat species. Common pipistrelle is an Annex IV bat species under the EU Habitats Directive. The Irish status of this bat species is listed as Least Concern. The national common pipistrelle population is considered to be significantly increasing (Aughney *et al.,* 2022). The modelled Core Area for common pipistrelle is a relatively large area that covers much of the island of Ireland (56,485km^2). The Bat Conservation Ireland Irish Landscape Model indicated that the common pipistrelle selects areas with broadleaf woodland, riparian habitats and low density urbanization (<30%) (Roche *et al.,* 2014). The most recent population estimate for this bat species is 1,872,500 to 4,229,800 individuals in the Republic of Ireland (Roche & Langton, 2024). This represents an increase compared to the 2007-2012 reporting period.

233. The overall trend for the national population of common pipistrelle in Article 17 reporting (NPWS, 2019) is as follows:
- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Improving

234. Soprano pipistrelle (n= 1,732 bat encounters, 31.1%) was the second most frequently encountered bat species while it was the most frequently recorded bat species during static surveillance (93,230 bat passes during 133 surveillance periods). A total of eight roosts were recorded for this bat species, six in buildings and two tree roosts. Soprano pipistrelle is an Annex IV bat species under the EU Habitats Directive. The Irish status of this bat species is listed as Least Concern. The national soprano pipistrelle population is considered to be significantly increasing (Aughney *et al.,* 2022). The modelled Core Area for soprano pipistrelle is a relatively large area that covers much of the island of Ireland (62,020km^2). The Bat Conservation Ireland Irish Landscape Model indicated that the soprano pipistrelle selects areas with broadleaf woodland, riparian habitats and low density urbanisation (Roche *et al.,* 2014). The most recent population estimate for this bat species is 1,204,800 to 2,709,600 individuals in the Republic of Ireland (Roche & Langton, 2024). This represents an increase compared to the 2007-2012 reporting period.

235. The overall trend for the national population of soprano pipistrelle in Article 17 reporting (NPWS, 2019) is as follows:

- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Improving

236. Leisler's bats (863 bat encounters, 15.5%) was the third most frequently recorded bat species. It was the third most frequently recorded bat species during static surveillance (19,021 bat passes recorded from 130 surveillance periods) and a total of five roosts were recorded. These results are consistent with general bat species distribution records report by Bat Conservation Ireland for these three common Irish bat species (Roche *et al.,* 2014). The modelled Core Area for Leisler's bats is a relatively large area that covers much of the island of Ireland (52,820km^2). The Bat Conservation Ireland Irish Landscape Model indicated that the Leisler's bat habitat preference has been difficult to define in Ireland. Habitat modelling for Ireland shows an association with riparian habitats and woodlands (Roche *et al.,* 2014). The landscape model emphasised that this is a species that cannot be defined by habitats preference at a local scale compared to other Irish bat species but that it is a landscape species and has a habitat preference at a scale of 20.5km. The most recent population estimate for this bat species is 112,800 to 202,300 individuals (Roche & Langton, 2024). This represents an increase compared to the 2007-2012 reporting period.

237. The overall trend for the national population of common pipistrelle in Article 17 reporting (NPWS, 2019) is as follows:
    - Range = Favourable
    - Population = Favourable
    - Habitat for species = Favourable
    - Overall Assessment of Conservation Status = Favourable
      Overall trend in Conservation Status = Improving

238. Daubenton's bat, Natterer's bat and brown long-eared bats are less common bat species but are widely distributed across the country. The bat survey results for the Proposed Project are consistent with general bat species distribution records report by Bat Conservation Ireland. Daubenton's bat was frequently recorded along waterways surveys and along treelines and woodland connected to waterways. It is an Annex IV bat species under the EU Habitats Directive. The Irish status of this bat species is listed as Least Concern. The national Daubenton's bat population is considered to be stable (Aughney *et al.,* 2022). The modelled Core Area for Daubenton's bat is (41,285 km^2) reflecting the distribution of sizeable river catchments. The Irish Landscape Model indicated that the Daubenton's bat habitat preference is for areas with broadleaf woodland, riparian habitats and low density urbanisation (Roche *et al.,* 2014). The most recent population estimate for this bat species is 55,200 to 76,500 individuals in the Republic of Ireland (Roche & Langton, 2024). This represents a slight but not significant decline compared to the 2007-2012 reporting period.

239. The overall trend for the national population of Daubenton's bat in Article 17 reporting (NPWS, 2019) is as follows:
    - Range = Favourable
    - Population = Favourable
    - Habitat for species = Favourable
    - Overall Assessment of Conservation Status = Favourable

- Overall trend in Conservation Status = Stable

240. Natterer's bat is less frequently encountered compared to Daubenton's bats. It is Natterer's bat is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The modelled Core Area for Natterer's bat is a relatively large area that covers much of the island of Ireland (52,864km^2). The Bat Conservation Ireland Irish Landscape Model indicated that the Natterer's bat selects areas with broadleaf woodland, riparian habitats and areas with larger scale provision of mixed forest (Roche *et al.,* 2014). There are no recent population estimates for this species of bat.

241. The overall trend for the national population of Natterer's bat in Article 17 reporting (NPWS, 2019) is as follows:
- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Stable

242. Brown long-eared bat is typically associated with woodland and dense treelines and as a consequence it was generally recorded along this habitat features during this survey. Brown long-eared bat is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The national brown long-eared bat population is considered to be stable (Aughney *et al.,* 2022). The modelled Core Area for brown long-eared bat is a relatively large area that covers much of the island of Ireland (49,929 km^2). The Bat Conservation Ireland Irish Landscape Model indicated that the brown long-eared bat habitat preference is for areas with broadleaf woodland and riparian habitats on a small scale of 0.5km emphasising the importance of local landscape features for this species (Roche *et al.,* 2014). The most recent population estimate for this bat species is 65,200 to 102,000 individuals (Roche & Langton, 2024). The most recent population estimate for this bat species is 65,200 to 201,000 individuals in the Republic of Ireland (Roche & Langton, 2024). This represents a slight but not significant increase compared to the 2007-2012 reporting period.

243. The overall trend for the national population of brown long-eared bat in Article 17 reporting (NPWS, 2019) is as follows:
- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Stable

244. Whiskered bat is a less common bat species with a more restricted distribution. The majority of the whiskered bat records noted during surveys are concentrated in Counties Tipperary and Offaly which provides additional distribution records for this bat species for the national distribution. Whiskered bat is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The modelled Core Area for whiskered bats is a relatively small area (29,222 km2) compared to the other two resident *Myotis* bat species. The range is restricted to southern and eastern areas of Ireland. The Irish Landscape Model indicated that the whiskered bat habitat preference is for areas of woodland cover, small areas

of pasture, urban and scrub habitat (Roche *et al.,* 2014). There are no recent population estimates for this species of bat.

245. The overall trend for the national population of Whiskered bat in Article 17 reporting (NPWS, 2019) is as follows:
- Range = Favourable
- Population = Favourable
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Favourable
- Overall trend in Conservation Status = Improving

246. Nathusius' pipistrelle was the 2nd most infrequently encountered bat species during the surveys and no roosts were recorded. This is to be expected as it is a new species to Ireland. Nathusius' pipistrelle is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The modelled Core Area for Nathusius' pipistrelle is a relatively restricted area (13,543km^2) and these areas are primarily associated with large water bodies such as Lough Neagh and the Lough Erne complex. The Bat Conservation Ireland Irish Landscape Model indicated that the Nathusius' pipistrelle habitat preference is large waterbodies (Roche *et al.,* 2014). But due to the paucity of information on this species, the knowledge of this species preference in Ireland is limited, any records recorded for this species is important. The most recent population estimate for this bat species is 4,100 to 6,900 individuals in the Republic of Ireland (Roche & Langton, 2024).

247. The overall trend for the national population of Nathusius' pipistrelle in Article 17 reporting (NPWS, 2019) is as follows:
- Range = Unknown
- Population = Unknown
- Habitat for species = Favourable
- Overall Assessment of Conservation Status = Unknown
- Overall trend in Conservation Status = Not applicable

248. Lesser horseshoe bat was only recorded once during the array of surveys and this was located north-west of Birdhill. This species' territory is the six western seaboard counties which does not include County Tipperary. However, the location is approximately 2km from County Clare which is a commutable distance for this species of bat. A previous lesser horseshoe bat record was recorded in Ballina, Co. Tipperary and this was a male individual rescued by the NPWS regional staff (pers. comm. Dr Áine Lynch). Lesser horseshoe bat is an Annex II bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The national lesser horseshoe bat population is considered to be stable with a steady annual increase (Aughney *et al.,* 2022). The modelled Core Area for lesser horseshoe bats is a relatively small area is restricted to the counties on the western seaboard (5,993km^2) but with two distinct areas highlighted: one in Kerry/west Cork and the second in Clare/Galway. The Irish Landscape Model indicated that the lesser horseshoe bat habitat preference is for areas with broadleaf woodland and riparian habitats (Roche *et al.,* 2014). Roche (2024) estimated the population is currently 14,975 individuals (Summer 2023), a cumulative increase of 17.09% from 2017 to 2023.

249. The overall trend for the national population of lesser horseshoe bat in Article 17 reporting (NPWS, 2019) is as follows:
- Range = Inadequate

- Population = Favourable
- Habitat for species = Inadequate
- Overall Assessment of Conservation Status = Inadequate
- Overall trend in Conservation Status = Deteriorating

Table 23a: Bat Ecological Evaluation Results for Each Bat Species Recorded

Bat Species	Survey Results	Evaluation Value
Whiskered bat	Roosts (x2) Foraging habitat Commuting routes	County Importance – County Tipperary & Offaly
Brown long-eared bat	Roosts (x6) Foraging habitat Commuting routes	Local Importance (higher value) – County Tipperary & Offaly
Natterer's bat	Roosts (x10)* Tree Roost (x1) Foraging habitat Commuting routes	Local Importance (higher value) – County Tipperary & Offaly
Leisler's bat	Roosts (x4) Tree Roost (x1) Foraging habitat Commuting routes	Local Importance (higher value) – County Kildare & Offaly
Soprano pipistrelle	Roosts (x6) Tree Roost (x2) Foraging habitat Commuting routes	Local Importance (higher value) – County Tipperary & Offaly
Common pipistrelle	Roosts (x15) Tree Roosts (x1) Foraging habitat Commuting routes	Local Importance (higher value) – County Tipperary, Kildare & Offaly
Daubenton's bat	Tree Roost (x1) Foraging habitat Commuting routes	Local Importance (higher value) – County Tipperary
Nathusius' pipistrelle	Foraging habitat Commuting routes	Local Importance (higher value) – County Tipperary, Kildare & Offaly
Lesser horseshoe bat	Night Roost (x1) Foraging habitat Commuting routes	Local importance (higher value) – Building 1 and immediate surroundings, County Tipperary

*Building 43 is included here

5.2 Bat Roosts - Buildings

250. A total of 27 bat roosts, in buildings (including TOBIN Building 43 – please see note in Table 23b), were recorded, many with multiple bat species. One of the primary potential impacts of the Proposed Project is removal of linear habitats. Therefore, Table 23b provides details of the principal potential impacts of the Proposed Project and the potential level of effect. In preparation of this, Core Sustenance Zones for each of the roosts was prepared and examined to determine the potential impacts of the Proposed Project on individual roost sites.

Table 23b: Confirmed Roosts Recorded by Bat Surveys Completed in 2016-2025 (Colour Coded According to CSZ Zones)

Description	Bat Species	Location	Potential Impacts	Level of Effect
Building 1	Lesser horseshoe bat, Natterer's bat, brown long-eared bat	Inside Proposed Project	Removal of structure and therefore loss of roost. Loss of foraging and commuting habitat. However, in relation to lesser horseshoe bat, this location is outside the principal territory for species of bat. Building is located approx. 2km from Co. Clare. The immediate landscape leading to the River Shannon to the north of the Proposed Project comprises a good network of linear habitats that will provide foraging and commuting habitat in a rural setting and therefore little outdoor street lighting. The removal of the structure will also result in the loss of a daytime roost for Natterer's bat and brown long-eared bat. However, these two species are not Annex II species and their distribution is more widespread. But both species are woodland specialists and therefore depend on linear habitats for commuting and foraging.	Slight Negative Effect
Building 2a	Common pipistrelle	Outside Proposed Project	Loss of foraging and commuting habitat. However, the Proposed Project is north of the building while good bat habitats are located to the south (river, woodland, forestry edge) and east (woodland, linear habitats and scrub). Therefore, there is foraging and commuting habitat in vicinity of the roost.	Slight Negative Effect
Building 3	Common pipistrelle, Natterer's bat	Outside Proposed Project	Proposed Project between building and principal foraging habitat of Kilmastulla River. However, a tributary of the river runs north of the Proposed Project and therefore provides foraging and commuting habitat for local bat populations roosting in this building.	Slight Negative Effect

Description	Bat Species	Location	Potential Impacts	Level of Effect
Building 7	Common pipistrelle	Outside Proposed Project	Proposed Project is south of building as well as an array of good foraging and commuting habitat (woodland, scrub, river and linear habitats). However, there is also good bat foraging habitat is located north of building in a well-connected landscape with linear habitats.	Slight Negative Effect
Building 11	Brown long-eared bat	Outside Proposed Project	Proposed Project is east of the building. The Nenagh River and extensive mature treelines are located in this area as well as additional suitable buildings. Therefore, there is linear habitats available for this species of bat to commute and forage.	Slight Negative Effect
Building 12	Common pipistrelle, Whiskered bat	Outside Proposed Project	Proposed Project is located south of the building. Suitable bat foraging and commuting habitat is located in vicinity of the building to the north of the Proposed Project.	Slight Negative Effect
Building 14	Natterer's bat	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. The landscape in the immediate vicinity of the building consists of large agricultural fields. However, there is suitable foraging and commuting habitats on either side of the Proposed Project route.	Slight Negative Effect
Building 18	Natterer's bat, brown long-eared bat, common pipistrelle	Outside Proposed Project	Proposed Project is located adjacent to the building. Suitable bat foraging and commuting habitat is located in vicinity of the building with large tracts of woodland and forestry near-by. This is a building with three bat species roosting, two of which are associated with woodland habitat.	Slight Negative Effect
Building 19	Natterer's bat, soprano pipistrelle & common pipistrelle	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. There is suitable foraging and commuting habitats on either side of the Proposed Project route. The agricultural landscape is highly connected with a large number of small fields with linear habitats connected to woodland, forestry and scrub.	Slight Negative Effect

Description	Bat Species	Location	Potential Impacts	Level of Effect
Building 21	Pipistrellus spp.	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. There is suitable foraging and commuting habitats on either side of the Proposed Project route. The agricultural landscape is highly connected with a large number of small fields with linear habitats connected to woodland, forestry and scrub.	Imperceptible Negative Effect
Building 22	Common pipistrelle	Outside Proposed Project	Proposed Project is located south of the building. The majority of suitable bat foraging is primarily located south of the Proposed Project. The agricultural landscape is highly connected with a large number of small fields with linear habitats. There are two other roosts located adjacent to this structure (B23, B28).	Slight Negative Effect
Building 23	Common pipistrelle	Outside Proposed Project	Proposed Project is located south of the building. The majority of suitable bat foraging is primarily located south of the Proposed Project. The agricultural landscape is highly connected with a large number of small fields with linear habitats. There are two other roosts located adjacent to this structure (B28, B22).	Slight Negative Effect
Building 25	Soprano pipistrelle	Outside Proposed Project	Proposed Project is located south of the building. The majority of suitable bat foraging is primarily located south of the Proposed Project. The agricultural landscape is highly connected with a large number of small fields with linear habitats and connects to woodland/scrub located to the west of the building.	Slight Negative Effect
Building 26	Soprano pipistrelle, Natterer's bat	Outside Proposed Project	Proposed Project is located south of the building. The majority of suitable bat foraging is primarily located south of the Proposed Project. The agricultural landscape is highly connected with a large number of small fields with linear habitats and connects to woodland/scrub located to the west of the building.	Slight Negative Effect

Description	Bat Species	Location	Potential Impacts	Level of Effect
Building 28	Natterer's bat, brown long-eared bat, soprano pipistrelle	Outside Proposed Project	Proposed Project is located south of the building. The majority of suitable bat foraging is primarily located south of the Proposed Project. The agricultural landscape is highly connected with a large number of small fields with linear habitats. There are two other roosts located adjacent to this structure (B23, B22).	Slight-Moderate Negative Effect
Building 32	Common pipistrelle, Whiskered bat, brown long-eared bat	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route (i.e. to the north). There is suitable foraging and commuting habitats on either side of the Proposed Project route. However, the linear habitats connect the building directly to good foraging habitat to the north of the Proposed Project.	Slight Negative Effect
Building 35	Common pipistrelle	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. There is suitable foraging and commuting habitats on either side of the Proposed Project route. To the north of the Proposed Project, where the building is located, there are dense treelines that provide good habitat connectivity for local bat populations.	Imperceptible Negative Effect
Building 36	Common pipistrelle	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. There is suitable foraging and commuting habitats on either side of the Proposed Project route.	Slight Negative Effect
Building 39	Leisler's bat	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route (i.e. to the north). There is suitable foraging and commuting habitats on either side of the Proposed Project route. There are larger areas of scrub and woodland to the south of the Proposed Project.	Slight Negative Effect
Building 42	Leisler's bat	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route (i.e. to the north). There are suitable foraging and commuting habitats on either side of the Proposed Project route. However, the linear habitats connect the building directly to good foraging habitat to the north of the Proposed Project.	Slight Negative Effect

Description	Bat Species	Location	Potential Impacts	Level of Effect
Building 43	Natterer's bat	Outside Proposed Project	While this structure is located >1km east of the Proposed Project, it is included in the analysis for CSZ due to the fact that the CSZ buffer overlaps the Proposed Project and there is suitable foraging and commuting habitat adjacent to the structure.	Imperceptible Negative Effect
Building 44	Common pipistrelle, brown long-eared bat, Natterer's bat & soprano pipistrelle	Outside Proposed Project	The building is located adjacent to the Proposed Project route. There are suitable foraging and commuting habitats on either side of the Proposed Project route with large areas of woodland present to the south and east of the Proposed Project where the building is located.	Slight Negative Effect
Building 45	Soprano pipistrelle, Leisler's bat & brown long-eared bat	Outside Proposed Project	The building is located adjacent to the Proposed Project route. There are suitable foraging and commuting habitats on the western side of the Proposed Project where the structure is located. Therefore, there is foraging and commuting habitat available for local bat populations.	Imperceptible Negative Effect
TOBIN Tree A	Daubenton's bat	Outside Proposed Project	This tree is located within a woodland along the shores of the Parteen Basin, adjacent to the Proposed Project. Extensive linear habitats will remain in the immediate landscape.	Imperceptible Negative Effect
Tree C	Soprano pipistrelle	Inside Proposed Project	Tree felling will result in the loss of this roost. This tree is located within a woodland along the shores of the River Shannon. Small area of woodland is proposed to be felled adjacent to it while extensive linear habitats will remain in the immediate landscape.	Slight Negative Effect
Building 47	Leisler's bat	Inside Proposed Project	This building is located within the Project Boundary at the Time of Survey. However, this building will remain as the works proposed within this area relate to pole-sets, which will not impact on the bat roost within the building.	Imperceptible Negative Effect

Description	Bat Species	Location	Potential Impacts	Level of Effect
Building 48	Common pipistrelle	Outside Proposed Project	Proposed Project is located south of the building. The majority of suitable bat foraging is primarily located south of the Proposed Project. The agricultural landscape is highly connected with a large number of small fields with linear habitats and connects to woodland/scrub located to the west of the building.	Imperceptible Negative Effect
Building 49	Common pipistrelle	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. There are suitable foraging and commuting habitats on either side of the Proposed Project route. The agricultural landscape is highly connected with a large number of small fields with linear habitats connected to woodland, forestry and scrub.	Imperceptible Negative Effect
Building 51	Common pipistrelle & Natterer's bat	Outside Proposed Project	The building is located directly adjacent to the Proposed Project route. The landscape in the immediate vicinity of the building consists of large agricultural fields. However, there is suitable foraging and commuting habitats on either side of the Proposed Project route.	Imperceptible Negative Effect
TOBIN Tree B	Leisler's bat	Outside Proposed Project	The tree is located in a treeline directly adjacent to the Proposed Project route (i.e. to the north). There are suitable foraging and commuting habitats on either side of the Proposed Project route. However, the linear habitats connect the tree directly to good foraging habitat (river and treelines) to the north of the Proposed Project.	Imperceptible Negative Effect
PBR 8	Natterer's bat	Inside Proposed Project	This tree is located in a linear habitat within the Proposed Project. This is a suitable foraging and commuting habitat. A single Natterer's bat was recorded roosting in the tree. There are suitable buildings located directly north and east of the tree connected to suitable foraging area that may provide additional roosting locations for this species of bat.	Slight Negative Effect

Description	Bat Species	Location	Potential Impacts	Level of Effect
PBR 20	Common pipistrelle & Soprano pipistrelle	Inside Proposed Project	This PBR represents a mature treeline along a local road. The majority of the trees have PRFs suitable for roosting bats. Two trees were recorded as roosts for two species of bat (small satellite roosts). However, a number of additional individuals were noted commuting from buildings adjacent to the treeline and therefore the satellite roosts recorded are likely to be supported by building roosts nearby.	Slight Negative Effect

251. In addition, a total of 26 locations (PBR locations consists of individual trees, one cluster and six treelines) were identified as having a PBR potential within the Proposed Project route, the majority of which are Category 2 PBRs (Moderate Value). (Please Note: PBR 24 is no longer included in analysis as it was lost due to storm damage).

5.3 Bat Foraging Habitat & Commuting Routes

252. The Proposed Project will require removal of a large number of linear habitat features along the entire route. A total of 564,937m is located within the combined CSZs of the Proposed Project and these areas are considered to be important for local bat populations.

6. Impact Assessment & Mitigation

253. The Proposed Project works would result in the following:
    - Loss of night roost, day roosts and satellite roosts as a result of the removal of Building 1 and tree removal in Parteen Woodland and at two additional locations (Construction Impacts).
    - Extensive removal of linear habitats, a large proportion of which are location within CSZs considered to be important for local bat populations (Construction Impacts). This will increase fragmentation of the wider landscape located along the Proposed Project.
    - A small increase in human activity (noise and light levels) (Construction Impacts).
    - An additional 27 individual trees, six treelines and one cluster were identified as having a PBR potential within the Proposed Project, the majority of which are Category 2 PBRs. However, considering the length of the Proposed Project, the route avoids many mature trees.

Table 24: Bat Roost Results and the Impact of the Proposed Project

Bat Species	Roosts	Potential Impact
Lesser horseshoe bat, Natterer's bat & brown long-eared bat	Building 1 – Incha Beg	Loss of Night & Day Roosts
Soprano pipistrelle	Tree Roost – Parteen Wood	Loss of Day Roost
Natterer's bat	Tree Roost (PBR 8)	Loss of Day Roost
Common pipistrelle	Tree Roost (beech tree) (PBR 20 – treeline with 29 trees)	Loss of small Satellite Roost
Soprano pipistrelle	Tree Roost (beech tree) (PBR 20 – treeline with 29 trees)	Loss of small Satellite Roost

254. It is anticipated that the Construction Phase of the principal elements of the Proposed Project will extend over 24 months. Therefore, the potential impacts are examined in relation to this time frame.

255. Roost loss during construction works, as a result of demolition of Building 1, will result in the night roost loss for lesser horseshoe bat and day roost loss for Natterer's bat and brown long-eared bat and these are assessed as **Permanent Slight Negative Effect at a local level.**

256. Temporary habitat loss (potential roosting/foraging/commuting habitat) effects on all bat species are assessed as having an overall **Medium-term Moderate Negative Effect at a regional level** due to the length of the Proposed Project.

257. Permanent habitat loss (potential roosting/foraging/commuting habitat) effects on all bat species are assessed as having an overall **Permanent Moderate Negative Effect at a local level**.

258. Roost loss of PBRs on all bat species are assessed a **Permanent Slight Negative Effect at a local level.**

259. Disturbance and/or displacement effects on all bat species during the Construction Phase are assessed as **Short-term Moderate Negative Effect at a county level** with reference to the time frame of the Proposed Project**.**

260. Disturbance and/or displacement effects on all bat species during the Operational Phase are assessed as **Permanent Slight to Moderate Negative Effect at a local level.**

261. Overall the Proposed Project is likely to have a **Medium-term Moderate Negative Effect at a county level** on local bat populations.

6.1 Bat Mitigation Measures

262. In order to reduce the potential negative impact of the Proposed Project on local bat populations, the following mitigation measures are recommended to be fully implemented. The Bat Mitigation Guidelines (Marnell *et al.*, 2022) are the principal guidance in relation to bat mitigation in Ireland. The mitigation requirements recommend specific provisions depending on the type of roost and bat species recorded roosting.

263. According to Figure 20 of Marnell *et al.* (2022) the roost in Building 1 (lesser horseshoe bat Night-time roost and Natterer's bat/brown long-eared bat Daytime roosts) and PBR 8 (Natterer's bat Daytime roost) would have a status of 'Small numbers of rarer species. Not a maternity site'. Conservation Significance is deemed at a Medium Level.

264. This dictates the following is required:
    - Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements. Minimal timing constraints or monitoring required.

265. The assessment for proportionate mitigation is less for the soprano pipistrelle bats and common pipistrelles because they are common bat species. Therefore, the provision of an alternative roost for lesser horseshoe bats will be the priority, but with consideration for all other bat species recorded roosting in Building 1 (Natterer's bat and brown long-eared bat) and Tree C (soprano pipistrelle). This will be in the form of a bat house. Bat boxes will be erected as alternative roosts for PBR 8 and PBR 20 (common pipistrelle and soprano pipistrelle roosts).

266. The locations of the building roost (Building 1) and tree roost (Tree C) in question are in Incha Beg and Parteen Woodland, respectively. It is recommended that a bat house is constructed at a location where the structure will be protected from construction works and where landscaping can be undertaken around the bat house and to provide additional linear habitat features to connect the planting to existing linear habitats in the immediate area. A single bat house will be design principally for lesser horseshoe bats but will also consist of bat tubes that will provide alternative roosting for Natterer's bats, brown long-eared bats and soprano pipistrelles.

267. The bat house will be located adjacent to the WTP. This will provide direct access, for roosting bats, to preferred commuting and foraging habitat and therefore meets the recommendations above.

6.1.1 Alternative Bat Roost

Step 1

268. An NPWS Derogation Licence is required, and this should be applied for using this bat survey report as part of the application.

Step 2

269. One bat house (alternative bat roost) is required to be constructed prior to the removal of Building 1 and tree removal of the tree roost recorded in Parteen Wood. It is recommended that this is constructed one year prior to tree felling and building removal.

270. Marnell *et. al. (*2022) and Schofield (2008 & 2025) are used to design alternative bat roosting structures for lesser horseshoe bats with roosting provisions for soprano pipistrelles. Additional communications made with NPWS and VWT in relation to newly designed day roost for lesser horseshoe bats (*pers comm* Declan O' Donnell, NPWS and Dr. Kate McAney, VWT) was also taken into consideration in relation to alternative structures. In addition, VWT constructed six Lesser horseshoe bat Daytime Roosts as The Mulkear EIP Project. Bat Eco Services undertook the design and supervision of a similar design for Clare Co. Co. as part of bat mitigation work.

271. The alternative roost design will also include roosting for Natterer's bat, brown long-eared bat and soprano pipistrelle. These will be in the form of bat tubes inserted into the external walls of the bat house. Such bat tubes have been successfully used by the soprano pipistrelles in mitigation work undertaken by Bat Eco Services and considered suitable for *Myotis* species and brown long-eared bat. The design of the internal loft space of the bat house is also considered suitable for the three named bat species, and such have been recorded in other bat house designed specifically for lesser horseshoe bats (Aughney *et al.,* 2022).

272. The following principles will be followed:
- Located as close to the existing roosts as possible.
- The location of the alternative roost should be close to existing flight lines and foraging habitat to increase its success.
- The design should take into consideration the requirements of the species concerned.
- The alternative roost should be designed to provide suitable thermal regimes.
- Opportunities should be taken to provide a variety of roosting opportunities and thermal regimes so as to maximise the value of the structure for bats.
  This will be completed in relation to the ecological requirements for soprano pipistrelles.

273. The alternative roost plans are presented in Figure 7a & 7b.

274. Components of structure:
- Overall dimensions of the bat house are an internal floor space of 3m x 3m constructed from concrete block, rendered externally with plaster (the internal walls are left un-plastered). The external height of the bat house is 3.8m at the highest point to facilitate 1.8m standing room in both ground floor and loft space. These dimensions are slightly different to the VWT Bat Tower in order to increase the height in the loft space and the overall volume of the structure to make it more suitable for lesser horseshoe bats and does not overheat in potential heat waves (as per recommendation by VWT).

- A-roof (as per architects' recommendations). This A-roof is instead of the sloping roof that the VWT Bat Tower has. (This change to a A-roof is considered better for lesser horseshoe bats.)
- Two bat entrances required, both at 1.7m height to allow access into the ground floor space and the bats fly up into the loft through the open access in the loft floor. One bat entrance is installed on a gable-side with the second on the rear wall (facing the linear habitats of existing boundary). Landscaping will be required adjacent to the entrances to connect to the linear habitats nearby. This will be undertaken in consultation with the landscape team.
- The loft floor is constructed to ensure that there is an internal height of 1.8m for both the ground floor and loft floor and allowing 20cm joists/marine ply of the loft floor. Insulation board shall be inserted between the loft floor joists (i.e. underside of loft floor) and lined with a plywood sheeting above and below joists. Then chicken wire is fixed to the plywood on the underside of the loft floor (i.e. the ceiling of the ground floor) to provide a grip for lesser horseshoe bats to hang from in the ground floor room.
- Natural slate roof only.
- 1F bitumous felt (N.B. *No Modern Breathable Felt*)
- Internal loft floor with loft floor opening of 50cm x 50cm (to allow bats to fly from post box entrances into the loft space internally). This loft floor opening is positioned in the centre of the floor. This opening does not have a trap door.
- Internal wall – solid concrete block wall not plastered.
- External wall – solid concrete block with external walls sand and cement rendered.
- Facia and soffit with downpipe.
- Four bat tubes to be built into the external wall (tallest section – north-facing wall). Bat tubes are the approx. size of a solid concrete block.
- Half (size) steel entrance door with lock.
- Bat entrances can both be fitted on the north-facing wall and on the east-facing gable wall at 1.7m height (shown on north-facing wall in figure). It is recommended that the VWT predator proof entrance is installed (constructed on demand from a company in Limerick – See Plate 5-1) for this entrance point as it is slightly lower to ground level. This bat entrance has been designed to be predator proof.
- Foundation to engineers' specifications.

275. Internally, the following is recommended:
- The floor of the building is to be a layer of crushed stone (two or three inches down) (minimum amount of concrete is recommended in order to reduce the negative impact of this material on the thermal conditions of the building) with an upper layer of 804 Clause (crushed) stone.
- A partition box will be required to be constructed (marine ply) around the entrance point to reduce light penetrating the loft space. This should be open at the bottom of the box so the bats can enter the box and fly down. The box should be at least 75cm^2.

276. Additional roosting:
- Internal walls

Hang two units of Integrated Woodstone Bat Boxes on the wall along the wall plate of the ground floor section, as high as possible.

NB: it is important that the bat specialist is consulted during this process to ensure that works are completed correctly and that the location of the bat roost is appropriate.

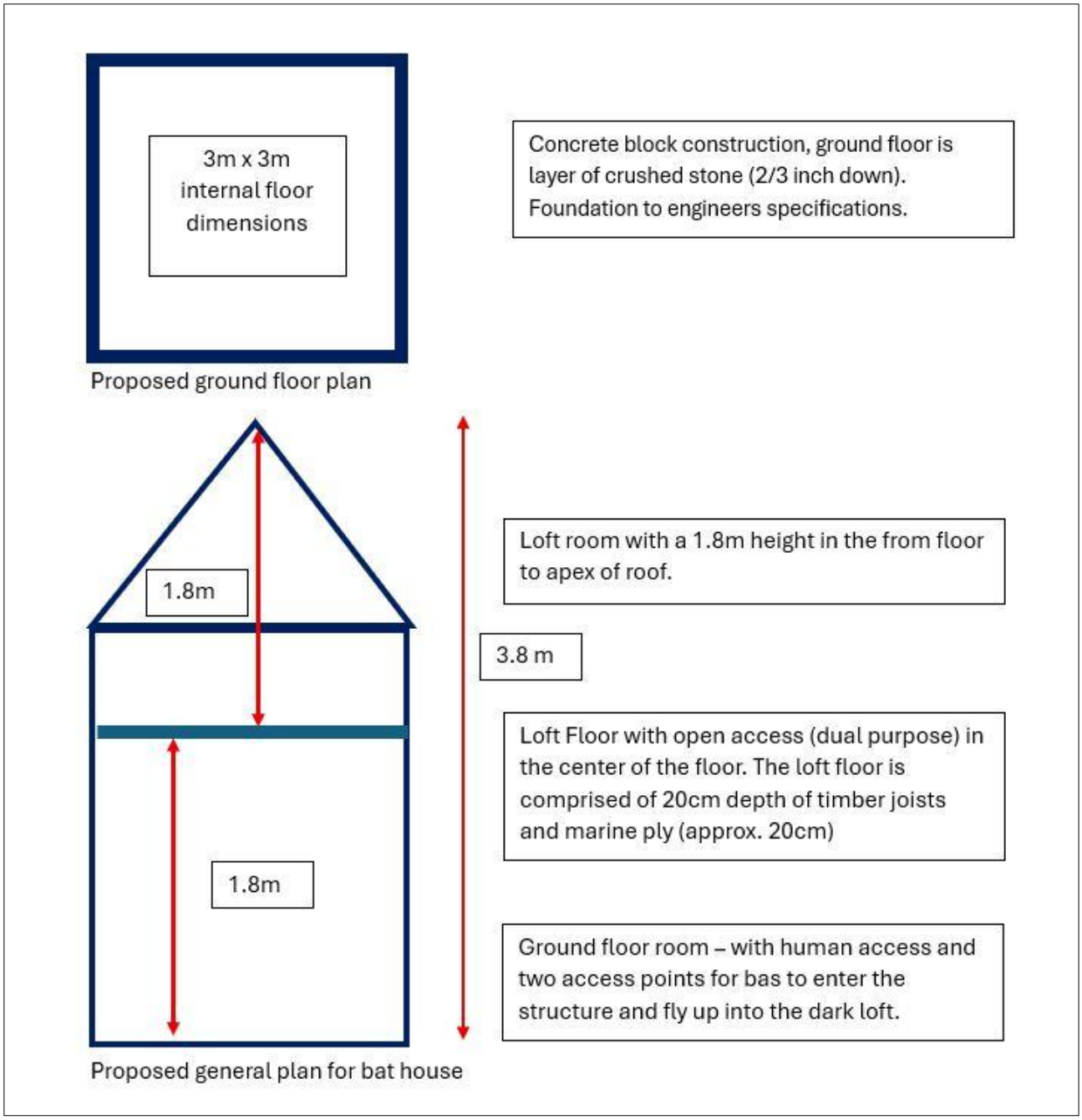
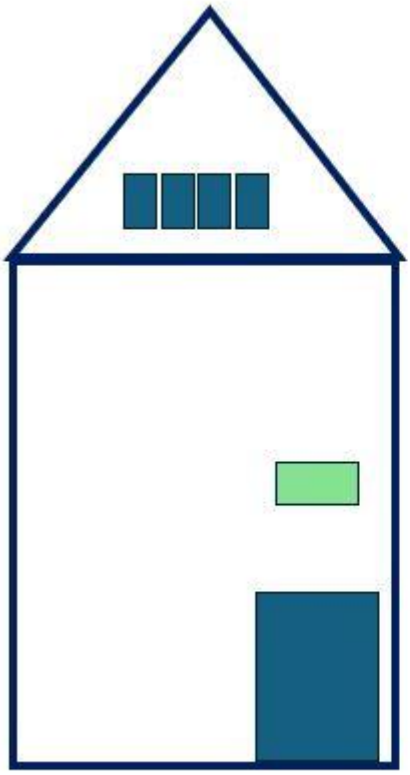
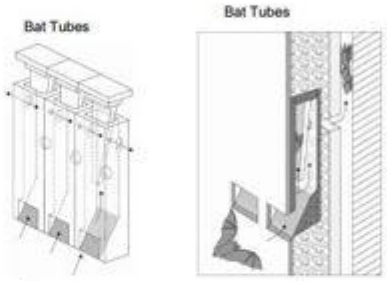


Figure 7a: Drawing of Proposed Alternative Bat House (Not Drawn to Scale)

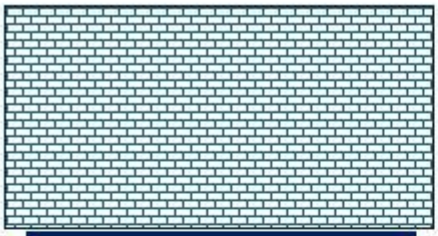


Four bat tubes built into the external fabric of the wall – at highest point and on both gables.



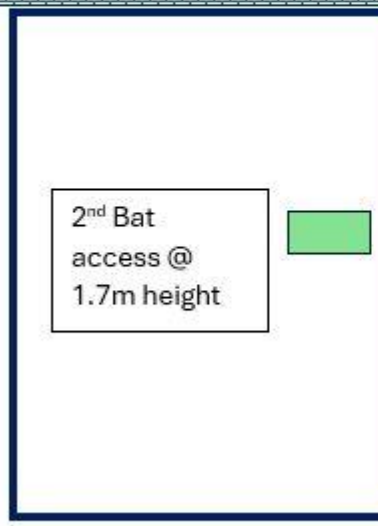
Half door entrance for human access (steel door). Only one gable end will have a bat access and human access. 2nd gable will only feature the bat tubes.

Side view – Gable (External)



Natural slate roof, traditional style rafters to ensure an open loft space.

Bat house to be located to ensure that there is as much solar gain on the slate roof to heat up the internal loft space



2nd Bat access @ 1.7m height

Bat access is using the VWT Predator Proof entrance. Two entrances needed – one on the elevation facing the linear habitat and the 2nd on the one of the gables.

Back view (bat entrance facing the linear habitats)

Figure 7b: Additional Drawing of Proposed Alternative Bat House (Not Drawn to Scale)

277. The bat house will be located in a section of land set aside for biodiversity measures to the north-east of where Building 1 is located, adjacent to the WTP. The bat house will be located in the top corner of the field, adjacent to the existing linear habitat, in order to allow new planting to be undertaken around the bat house and link with the existing linear habitats. As this field is sloping towards the topmost corner of the field, it will be important to locate the bat house and new planting in a position that wet ground will not cause management issues in the future.

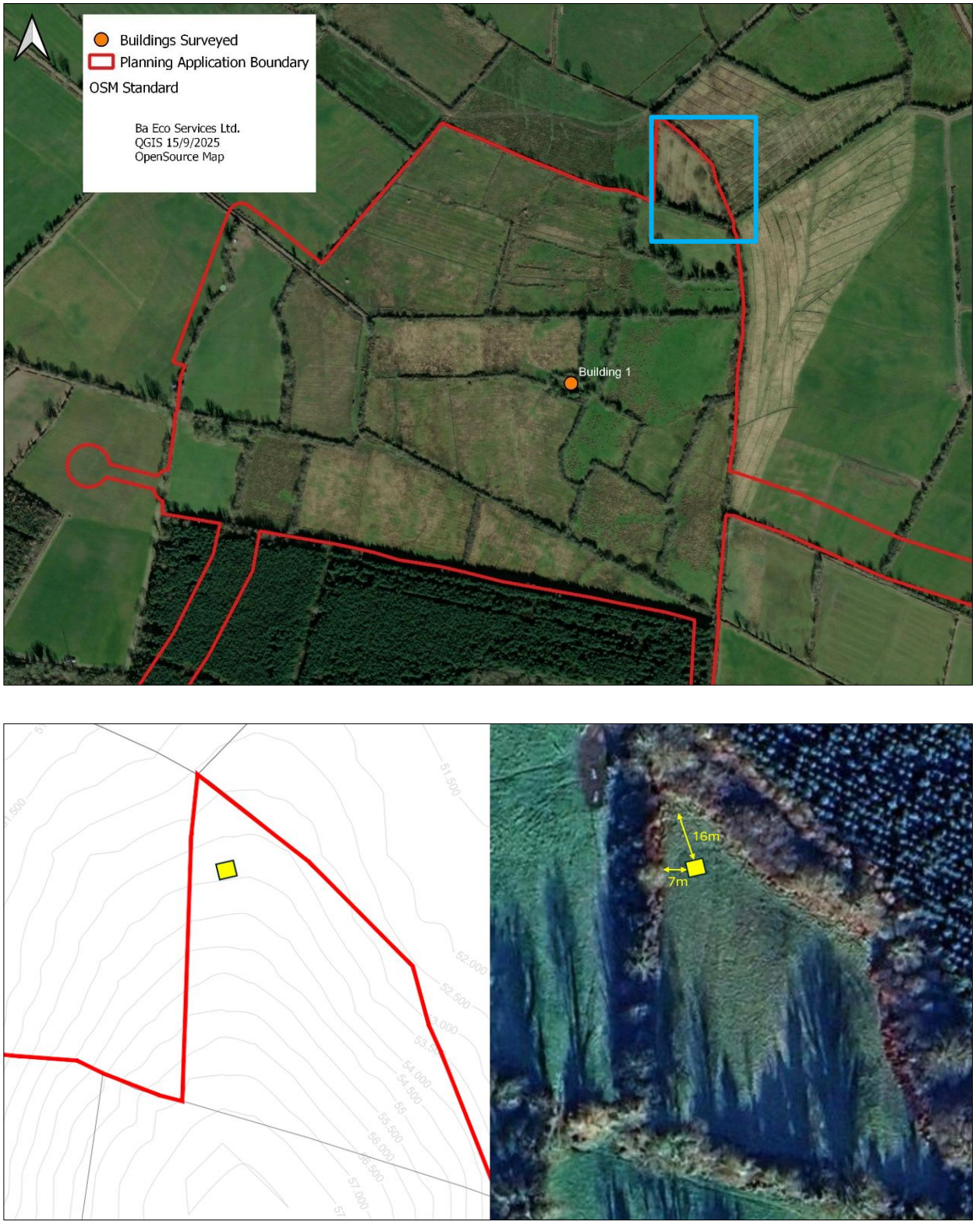


Figure 7c & d: Location of Proposed Alternative Bat House (Yellow Rectangle)

278. Landscaping components: A native hedgerow will be planted around the boundary of the bat house, 5m from the external wall of the bat house. This will be a double row planted hedgerow of hawthorn and alder whips. Whips of alder will provide a fast-growing hedge that will be approximately 1.5m within 1-2 growing seasons. This should be planted as follows (keep repeating until entire linear boundary is planted):

- 6x 60cm hawthorn whips – planted 45cm apart but in double row, staggered
- 1x alder 90cm whip – planted 60cm from hawthorn whips
- 6x 60cm hawthorn whips – planted 45cm apart but in double row, staggered
- 1x alder 90cm whip – planted 60cm from hawthorn whips
- 6x 60cm hawthorn whips – planted 45cm apart but in double row, staggered

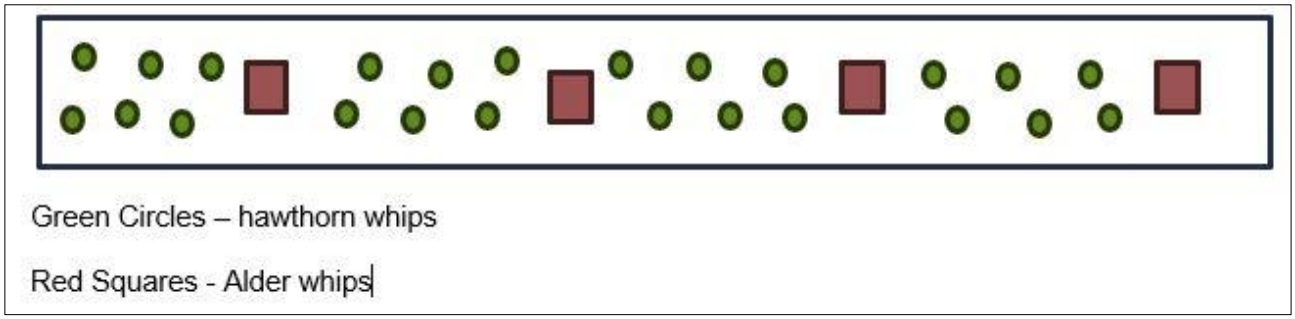


Figure 7e: Drawing of Recommended Planting for Proposed Alternative Bat House

Plate 1a: VWT Lesser Horseshoe Bat Daytime Roost (Photo: VWT, Ireland).

The following is some examples of Pine Marten proofing undertaken at other lesser horseshoe roosts.

Plate 1b: Garryland Lodge Roost, Garryland Nature Reserve, Gort, Co. Galway – please note the lead sheet around the windowsill to reduce Pine Marten entering the structure.

Plate 1c: Ballykilty Bat House, Co. Clare – please note the lead sheet below the entrance point to reduce Pine Marten entering the structure.

6.1.2 Lighting During Construction Phase & Operation Phase

279. During the construction and operational phase of the Proposed Project, it is proposed that lighting within the construction zone is turned off outside daytime working hours.

280. Lighting used to facilitate works will meet the Bat Guidelines in relation to specifications, which are as follows:
    a. All luminaires used will lack UV/IR elements to reduce impact.
    b. LED luminaires will be used due to the fact that they are highly directional, lower intensity, good colour rendition and dimming capability.
    c. A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum). This Kelvin level is required to be reduced to 2200 in lesser horseshoe bat zones (i.e. the 2km CSZ around Building 1).
    d. Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
    e. Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
    f. Only luminaires with an upward light ratio of 0% and with good optical control will be used.
    g. Luminaires will be mounted on the horizontal, i.e. no upward tilt.
    h. Any external security lighting will be set on motion-sensors and short (1min) timers.
    i. As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.
    j. The positioning of outdoor lighting will be directed away from any adjacent linear habitats (hedgerows, treelines, rivers, woodland edge etc.) to ensure that there is no light spill onto such habitats.

281. All retained habitats, trees and hedgerows are protected during the Construction Phase from damage.

6.1.3 Existing Roosts Outside the Proposed Project

282. Roosts located directly adjacent to the Proposed Project will be protected during construction. No lighting or heavy machinery will be in operation adjacent to the roost(s). Tall linear vegetation immediately adjacent to the roost(s) will be protected to ensure that there is commuting and foraging habitat within 50m of the roost(s).

6.1.4 Landscaping

283. It is recommended that hedgerow planting is undertaken to re-connect the landscape in vicinity of the Proposed Project. These hedgerows should be planted with native shrub and tree species. This is essential due to the extensive loss of linear habitat along the proposed route and due to the extensive severance of linear habitats within the landscape. In areas where the removal of linear habitats may impact on the flight lines of local bat populations, temporary screens may be required to provide an alternative commuting paths until new planting is sufficient in height. This will be particularly important in areas where outdoor lighting is required to facilitate works (especially along rivers and other water bodies) in order to prevent such lighting spilling on dark commuting zones. In addition, temporary screens may be required within the 2km CSZ for lesser horseshoe bat, as this species is particularly sensitive to the loss of linear habitats in the landscape as it relies on such to navigate from the roost to its preferred foraging area.

284. Additional planting will be required adjacent to the bat entrance to the Bat House to screen from agricultural activity and to provide shelter and bat commuting habitat immediately adjacent to the structure and to ensure that it is connected to the adjacent woodland and treelines. This is described above.

6.1.5 Demolition

285. Work Plan is required to ensure that there are no bats present during the demolition works. This will be undertaken in discussion with the contractor and formulated for the NPWS Derogation Licence application. This Work Plan will be also undertaken in consultation with NPWS.

286. But it will include the following general guidelines in relation to the demolishment of Building 1:
    - Static surveillance will be undertaken to determine that no bats are present prior to proposed works.
    - The removal of the roof will be undertaken in stages under supervision by the bat specialist.
    - Any crevices or suitable roosting sites within the walls of the stables will be checked by a bat specialist using a torch and endoscope.
    - Ivy on the external walls of the courtyard should be removed in the autumn months and left on the ground for 24 hrs to allow any residing bats to exit safely.
    - Once the structure is deemed bat free and no longer suitable as a bat roosting site, renovations works may proceed.
    - This can only be undertaken if the NPWS Derogation Licence has been received.

6.1.6 Bat Box Scheme

287. The total number of bat boxes required to mitigate for general conservation of local bat populations:
    - 50 summer bat boxes (Schwegler Woodcrete 1FF, 2F (with or without timber compartment), 2FN bat boxes – source www.veldshop.nl) to be erected. These are to mitigate for PBRs proposed to be felled as well as general bat conservation measures. The location of these will be within CSZs where suitable mature trees are available to erect bat boxes on. Bat boxes will be erected six months prior to any tree felling. It is important that the locations of the bat boxes are spread out across to the Proposed Project while bat boxes will be required in vicinity of the location of PBR 8 (two bat boxes, where possible) and PBR 20 (four bat boxes, where possible). Please note that multiple bat boxes will be erected at the chosen locations to ensure that a total of 50 bat boxes are in place.

288. Bat boxes will be sited carefully and will be undertaken by a bat specialist. Bat boxes will be erected prior to construction works. The bat specialist will erect the bat boxes with assistance from the contractor. Some general points that will be followed include:
    - Straight limb trees (or telegraph pole) with no crowding branches or other obstructions for at least 1m above and below the position of the bat box.
    - Diameter of tree should be wide and strong enough to hold the required number of boxes.
    - Locate bat boxes in areas where bats are known to forage or adjacent to suitable foraging areas (i.e. Core Sustenance Zones). Locations should be sheltered from prevailing winds.
    - Bat boxes should be erected at a height of 4m to 5m to reduce the potential of vandalism and predation of resident bats.

- Locations for bat boxes should be selected to ensure that the lighting plan for the proposed site does not impact on the bat boxes. Therefore, the bat boxes are to be erected on mature trees located in the field adjacent to the proposed bat roost.
- If there is a paucity of suitable mature trees, then telegraph poles, erected purposely for bat boxes will be required. Such telegraph poles should be a minimum of 6m high to allow for 1m of the pole being buried in the ground and bat boxes erected at 4m level off the ground (i.e. the bottom of the box is 4m off the ground).

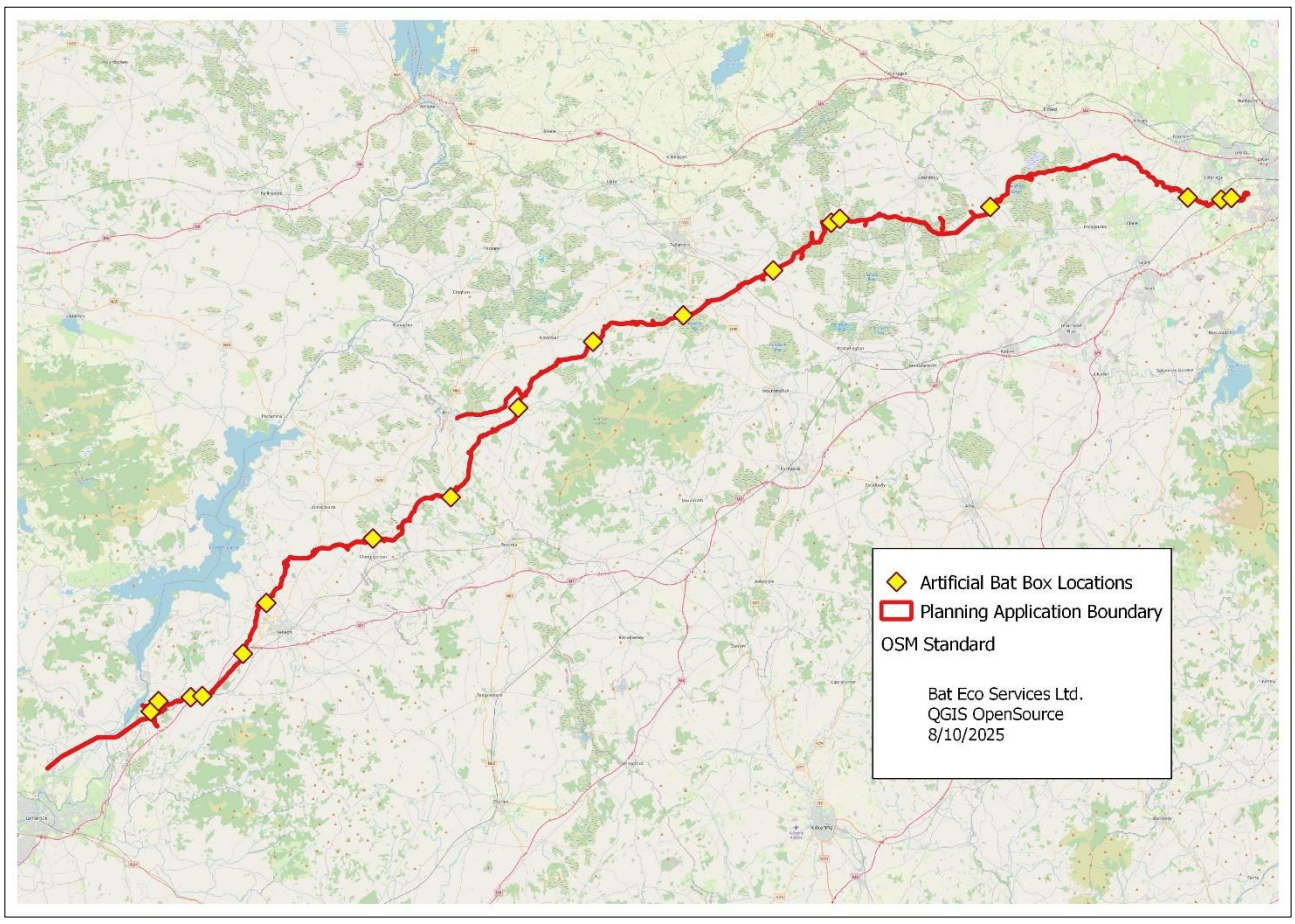


Figure 7f: Bat Box Locations Along the Planning Application Boundary

6.1.7 Trees

289. In relation to PBR 8 and PBR 20, the three trees recorded as bat roosts will require a derogation licence to be in place prior to felling as well as the erection of bat boxes. The trees will be resurveyed (dusk survey coupled with night-vision aids) to determine if bats are present at the time of felling. Trees proposed to be removed should be felled on mild days during the autumn months of September, October or November or Spring months of February and March (felling during the spring or autumn months avoids the periods when the bats are most active). Trees with roosting features (dead wood, tree holes etc.) should be checked prior to felling. It is recommended that they are physically checked (using an endoscope and high-power torch) or a dusk/dawn surveys are completed to determine if bats are roosting within. A tree felling plan will be required in consultation with the tree contractors.

290. In relation to trees proposed to be felled and identified as PBRs, these should be resurveyed in consultation with the tree contractors. The following is recommended:

i) Erection of an alternative roosting sites (i.e. bat boxes) are required to be erected prior to the removal of trees. These are recommended to be erected six months prior to tree felling to allow local bat populations to become aware of them prior to removal of the trees. Depending on the bat species present or the importance of the PBR value of the tree, a minimum of one bat box per tree is recommended with up to three bat boxes per tree required. Bat boxes should be erected, on suitable mature trees, within the CSZ radius of the bat species found to be using the tree or the bat species known to be active in the area of the PBR tree proposed to be felled. A bat box scheme of 50 bat boxes has been recommended in Section 6.1.6 and the locations of these bat boxes will represent the Proposed Project. However, if the trees proposed to be felled are located outside the CSZ with bat boxes, then additional bat boxes will be required.

ii) Trees identified as a PBR and proposed to be felled should be re-surveyed. This should be undertaken at least one month prior to tree felling in order to propose a tree felling plan in conjunction with tree contractors. Surveying should entail a daytime ground assessment of the tree, endoscope (plus high-powered torch) examination of roosting features, dusk surveys (coupled with Night Vison Aids) to determine what species are active in the immediate vicinity of the tree and to document if bats are roosting within.

iii) Trees proposed to be removed should be felled on mild days during the autumn months of September, October or November or Spring months of February and March (felling during the spring or autumn months avoids the periods when the bats are most active).

iv) An assessment of trees according to their PBR value determines the methodology of felling. Trees with PBR Category 1 are highly suitable for roosting bats and require more intensive procedures prior to felling. The trees identified within the study area are PBR Category 1, 2, and 3. The procedure to fell these is as follows:

   (a) Category 1: Trees with roosting features (dead wood, tree holes etc.) should be checked prior to felling. It is recommended that they are physically checked (using an endoscope and high-power torch) or a dusk/dawn surveys are completed to determine if bats are roosting within. A tree felling plan will be required in consultation with the tree surgeons. A bat box scheme will need to be erected prior to felling and in consultation with the bat specialist. Any trees showing crevices, hollows, *etc.*, should be removed while a bat specialist is present to deal with any bats found. Such animals should be retained in a box until dusk and released on-site. Large mature trees will be felled carefully, essentially by gradual dismantling by tree surgeons, under supervision of a bat specialist. Care will be taken when removing branches as removal of loads may cause cracks or crevices to close, crushing any animals within.

   (b) Category 2: Any ivy-covered trees which require felling will be left to lie for 24 hours after cutting to allow any bats beneath the cover to escape.

   (c) Category 3: Any ivy-covered trees which require felling will be left to lie for 24 hours after cutting to allow any bats beneath the cover to escape.

6.1.8 Monitoring

291. Monitoring is recommended post-construction works. This monitoring should involve the following aspects:

- Monitoring of the bat house within one year of construction and for a minimum of three years post construction. Register bat house with Bat Conservation Ireland.
- Inspection of bat boxes within one year of erection of bat box scheme/rocket box. Register bat box scheme with Bat Conservation Ireland. This should be undertaken for a minimum of two years.

- A full summer bat survey is recommended post-works, over a period of five years to monitor any other bat mitigation measures.

7. Survey Conclusions

292. All nine bat species resident in Ireland were recorded during the array of bat surveys completed in 2016 to 2025.

293. Three of the bat species recorded were common pipistrelle, Leisler's bat and soprano pipistrelle and these are the three most common bat species in Ireland (Roche *et al.,* 2014). The most up to-date distribution maps produced by Bat Conservation Ireland (please see appendices and Aughney *et al*., (2022) for more details) provides further evidence to support this.

294. Common pipistrelle was the most frequently recorded bat species. A total of 15 roosts were recorded for this bat species. Soprano pipistrelle was the second most frequently encountered bat species. A total of six roosts were recorded for this bat species. Leisler's bat was the third most frequently recorded bat species and a total of four roosts were recorded. These results are consistent with general bat species distribution records report by Bat Conservation Ireland.

295. Daubenton's bat, Natterer's bat and brown long-eared bats are less common bat species but are widely distributed across the country. The bat survey results for the Proposed Project are consistent with general bat species distribution records report by Bat Conservation Ireland.

296. Whiskered bat is a less common bat species with a more restricted distribution. The majority of the whiskered bat records noted during this project are concentrated in Counties Tipperary and Offaly which provides additional distribution records for this bat species for the national distribution.

297. Lesser horseshoe bat was only recorded once during the array of surveys and this was located north-west of Birdhill. This species' territory is the six western seaboard counties which does not include County Tipperary. However, the location is approximately 2km from County Clare which is a commutable distance for this species of bat.

298. The Proposed Project works would result in the following:
    - Loss of night roost and day roosts as a result of the removal of Building 1 and tree removal in Parteen Woodland (Construction Impacts).
    - Loss of three additional tree roosts (Natterer's daytime roost and small satellite roosts for common pipistrelle and soprano pipistrelle).
    - Extensive removal of linear habitats, a large proportion of which are location within CSZs considered to be important for local bat populations (Construction Impacts). This will increase fragmentation of the wider landscape located along the Proposed Project route.
    - A small increase in human activity (noise and light levels) (Construction Impacts).
    - A total of 26 PBR locations (individual trees, six treelines and one clusters) were identified as having a PBR potential within the Proposed Project route, the majority of which are Category 2 PBRs. However considering the length of the Proposed Project route, the route avoids many mature trees in vicinity of the route.

299. Overall, the Proposed Project is likely to have a **Medium-term Moderate Negative Effect** on local bat populations at a county level.

300. Bat mitigation measures are provided in relation to alternative bat roots, bat boxes, timing and tree felling procedures, landscape and compensatory habitat and monitoring. If these are strictly implemented, then the Proposed Project is likely to have a **Medium-term Slight to Moderate Negative Effect** on local bat populations at a county level.

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9. Annex

9.1 Static Surveillance Locations

The following table provides the location of the static unit points 2016-2025.

Table 9.1: Location of the Static Unit Points Surveyed in 2016-2025

Static No.	ITM Easting	ITM Northing	County	Location
Static 1	572992	670315	Tipperary	Inchabeg, Co. Tipperary - Hedgerow
Static 2	577990	671754	Tipperary	Kilnacrana, Co. Tipperary - Treeline
Static 3	584589	682565	Tipperary	Ballyannymore, Co. Tipperary - Hedgerow
Static 4	574837	671139	Tipperary	Inchabeg, Co. Tipperary - Hedgerow
Static 5	584612	682583	Tipperary	Ballyannymore, Co. Tipperary - B11
Static 6	572211	670676	Tipperary	Water Treatment Plant site at Incha Beg - B1
Static 7	589474	688323	Tipperary	Ardcrony, Co. Tipperary - Treeline adjacent to quarry pond
Static 8	591161	688949	Tipperary	Ballylusky, Co. Tipperary - Treeline
Static 9	595493	690000	Tipperary	Killurne, Co. Tipperary - Treeline beside coppice wood
Static 10	599989	690325	Tipperary	Newtown, Co. Tipperary Treeline
Static 11	609426	701290	Offaly	Cree, Co. Offaly - Treeline adjacent to B22
Static 12	612582	703638	Offaly	Kilmaine, Co. Offaly - Treeline to rear of B24
Static 13	603676	695226	Offaly	Galbally, Co. Offaly - Treeline east of B21
Static 14	616199	709122	Offaly	Money, Co. Offaly - Tree (local road) near B25
Static 15	627737	715586	Offaly	Rathrobin, Co. Offaly - to rear of B31
Static 16	630527	715614	Offaly	Annaghmore, Co. Offaly - Mature tree along farm laneway
Static 17	634157	716468	Offaly	Gorteen, Co. Offaly - Treeline along ditch
Static 18	655668	728408	Offaly	Ballykilleen, Co. Offaly - Bog track (Mount Lucas)
Static 19	659643	728436	Offaly	Ballykilleen, Co. Offaly - Farm track
Static 20	682248	734884	Kildare	Newtownmoneenluggagh, Co. Kildare - Treeline
Static 21	686934	735305	Kildare	Baltracey, Co. Kildare - Treeline
Static 22	572743	669774	Tipperary	Kilmastulla River - Kilmastulla Bridge, on post in garden adj to bridge
Static 23	574540	670660	Tipperary	Kilmastulla River - Bridge below furniture factory, on tree
Static 24	573356	670402	Tipperary	Roran River (Tributary of Kilmastulla R.) - bridge down to farmyard
Static 25	572060	670577	Tipperary	Water Treatment Plant site at Incha Beg - On tree in field adjacent to B1
Static 26	597451	689905	Tipperary	Fence post on edge of Knocknacree woodland
Static 27	572211	670676	Tipperary	Water Treatment Plant site at Incha Beg - inside B1
Static 28	596702	690020	Tipperary	Knocknacree woodland - Static in woodland
Static 29	597402	689490	Tipperary	Knocknacree woodland - Static in woodland
Static 30	597078	689520	Tipperary	Knocknacree woodland - Static in woodland
Static 31	597615	689742	Tipperary	Knocknacree woodland - Static in woodland
Static 32	584523	682551	Tipperary	Static beside watercourse - Nenagh River (Ballycommon)
Static 33	597202	689899	Tipperary	Knocknacree woodland
Static 34	596835	690120	Tipperary	Treelines of horse fields (Nth of Cloughjordan)
Static 35	597572	689769	Tipperary	Knocknacree woodland
Static 36	597638	689400	Tipperary	Knocknacree woodland
Static 37	597089	689386	Tipperary	Knocknacree woodland
Static 38	572248	670472	Tipperary	Water Treatment Plant site at Incha Beg - Treeline
Static 39	571900	670472	Tipperary	Water Treatment Plant site at Incha Beg - Treeline
Static 40	584540	682485	Tipperary	Static beside watercourse (Nenagh River)
Static 41	605583	696507	Offaly	Static beside watercourse (Little Brosna River)
Static 42	614217	703881	Offaly	Static beside watercourse (Trib. Camcor River)
Static 43	615867	705789	Offaly	Static beside watercourse (Camcor River)
Static 44	623292	713673	Offaly	Static beside watercourse (Silver River)
Static 45	663545	726777	Offaly	Static beside watercourse (Figile River)
Static 46	698091	730244	Dublin	Static beside watercourse (Grand Canal, Hazelhatch)
Static 47	670752	729465	Kildare	Static beside watercourse (Grand Canal, Clane)
Static 48	693889	730310	Kildare	Static beside watercourse River Liffey, Celbridge)
Static 49	569968	670195	Clare	Parteen Wood - On tree adjacent to river
Static 50	570095	670233	Clare	Parteen Wood - Inside woodland
Static 51	570083	670108	Clare	Parteen Wood - Inside woodland

Static No.	ITM Easting	ITM Northing	County	Location
Static 52	644955	721780	Offaly	Geashill, Co. Offaly (Woodland adj to Grp. Water Scheme)
Static 53	659375	728264	Offaly	Ballykilleen, Co. Offaly
Static 54	677383	733507	Kildare	Timahoe East, Co. Kildare
Static 55	682161	734656	Kildare	Newtownmoneenluggagh, Co. Kildare - Treeline
Static 56	686940	735287	Kildare	Baltracey, Co. Kildare - Treeline
Static 57	699805	730561	Dublin	Loughtown, Co. Dublin
Static 58	698831	730473	Dublin	Loughtown, Co. Dublin
Static 59	700961	730798	Dublin	Termination Point Reservoir at Peamount
Static 60	701098	730817	Dublin	Termination Point Reservoir at Peamount
Static 61	690406	732589	Kildare	Baltraheen, Co. Kildare
Static 62	638526	718474	Offaly	Killeigh, Co. Offaly
Static 63	625047	714993	Offaly	Gortour, Co. Offaly
Static 64	583637	681734	Tipperary	Ballycommon, Co. Tipperary
Static 65	581313	675638	Tipperary	Carrigatogher, Co. Tipperary
Static 66	569967	670203	Tipperary	Parteen, Co. Tipperary
Static 67	570010	670240	Tipperary	Parteen, Co. Tipperary
Static 69	643611	721025	Offaly	Mount Lucas, Co. Offaly
Static 68	650913	727378	Offaly	Geashill, Co. Offaly
Static 70	588932	687728	Tipperary	Building 12 (TOBIN 2020 No. 8 Building)
Static 71	582370	677935	Tipperary	Building 45 (TOBIN Building D)
Static 72	582622	678197	Tipperary	Building 46 (TOBIN 2020 No. 6 Building)
Static 73	616727	709381	Offaly	Building 48 (TOBIN 2020 No. 13 Building)
Static 74	604362	695064	Offaly	Building 19 (TOBIN 2020 No. 9 Building AB)
Static 75	593455	689183	Tipperary	Building 50 (TOBIN 2022 Building No. 6)
Static 76	591119	689133	Tipperary	Building 51 (TOBIN 2022 Building No. 7)
Static 77	604007	695128	Offaly	Building 49 (TOBIN 2020 No. 9 Building JB)
Static 78	594992	689321	Tipperary	Building 44 (TOBIN Building C)
Static 79	564975	665431	Clare	2019 38kV Uprate - Under ESB lines
Static 80	565432	666416	Clare	2019 38kV Uprate - Adjacent to River Shannon
Static 81	565939	666862	Clare	2019 38kV Uprate - Along River Shannon in O' Brien's Bridge
Static 82	559330	662591	Clare	2019 38kV Uprate - On tree in corner of agricultural field
Static 83	559376	663221	Clare	2019 38kV Uprate - Along treeline in agricultural field
Static 84	560539	663553	Clare	2019 38kV Uprate - On field margin post in grassland meadow along treeline
Static 85	568321	666715	Tipperary	2019 38kV Uprate - Adjacent to river in Ardnacrusha
Static TOBIN G	569982	670203	Tipperary	Parteen Wood
Static TOBIN H	570885	669932	Tipperary	Knockadromin
Static TOBIN I	682383	734661	Kildare	Newtownmoneenluggagh
Static TOBIN B	694280	732803	Kildare	Killeenlea
Static TOBIN D	573593	670588	Tipperary	Kilmastulla (River)
Static TOBIN C	573286	670461	Tipperary	Kilmastulla (House)
Static TOBIN J	587918	686199	Tipperary	Ashley Park (Back Ditch)
Static TOBIN K	588323	685645	Tipperary	Ashley Park (Gate Lodge)
Static TOBIN L	587667	686064	Tipperary	Ashley Park (House Near Lake)
Static TOBIN E	601084	692121	Offaly	Cangort (River Crossing)
Static TOBIN N	601688	692448	Offaly	Cangort (Woodland)
Static TOBIN A	596819	689788	Tipperary	Cloughjordan (Knocknacree Woods)
Static 86	674324	733189	Kildare	Cutover bog
Static 87	659751	728233	Kildare	Linear habitat and cutover bog
Static 88	647940	724130	Offaly	Scrub and woodland edge
Static 89	647919	724182	Offaly	Linear habitat and cutover bog
Static 90	620250	711338	Offaly	Linear habitat in agricultural landscape
Static 91	613289	706737	Offaly	Linear habitat in agricultural landscape
Static 92	608548	697737	Offaly	Scrub and woodland edge

9.2 Static Surveillance Results

The following table provides the results of all static surveillance completed during 2016-2025.

Table 9.2: Summary of Total Number of Bat Passes Recorded For Each Bat Species During Static Surveillance Completed in 2016-2025

SP = soprano pipistrelle, CP =common pipistrelle, Leis = Leisler's bat, BLE = Daubenton's bat, Whis = whiskered bat, Natt = Natterer's bat, My = *Myotis* species, LHB = lesser horseshoe bat, NathP = Nathusius' pipistrelle, Pip spp = *Pipistrellus* species.

No.	Survey Dates	SP	CP	Leis	BLE	Daub	Whis	Natt	My	LHB	NathP	Pip spp
Static 1	18/06/2019 to 21/6/2019	49	129	23	0	0	0	0	1	0	0	0
Static 2	18/06/2019 to 21/6/2019	142	368	197	9	0	0	0	2	0	0	0
Static 3	18/06/2019 to 21/6/2019	112	127	53	0	0	0	0	0	0	0	0
Static 4	18/06/2019 to 21/6/2019	404	856	48	0	0	0	0	0	0	0	0
Static 5	19/06/2019 to 21/6/2019	68	71	41	0	0	0	0	2	0	0	0
Static 6	19/06/2019 to 21/6/2019	35	55	2	0	0	0	0	1	0	0	0
Static 7	09/07/2019 to 12/7/2019	142	368	197	9	0	0	1	2	0	0	0
Static 8	09/07/2019 to 12/7/2019	89	1176	124	0	0	0	1	2	0	0	0
Static 9	09/07/2019 to 12/7/2019	0	0	0	0	0	0	0	0	0	0	0
Static 10	09/07/2019 to 12/7/2019	44	41	82	1	0	0	1	2	0	0	0
Static 11	12/08/2019 to 15/8/2019	5	13	0	0	0	0	0	0	0	0	0
Static 12	12/08/2019 to 15/8/2019	112	64	36	0	0	0	0	0	0	0	0
Static 13	12/08/2019 to 15/8/2019	939	449	6	5	0	0	0	32	0	0	0
Static 14	12/08/2019 to 15/8/2019	393	1884	13	3	0	0	0	7	0	0	0
Static 15	10/09/2019 to 13/9/2019	717	66	1	0	0	0	0	1	0	0	0
Static 16	10/09/2019 to 13/9/2019	103	41	29	0	0	0	0	1	0	0	0
Static 17	10/09/2019 to 13/9/2019	997	2905	15	5	0	0	0	26	0	0	0
Static 18	22/10/2019 25/10/2019	40	49	0	0	0	0	0	0	0	0	0
Static 19	22/10/2019 25/10/2019	44	453	15	1	0	0	1	2	0	0	0
Static 20	22/10/2019 25/10/2019	0	0	0	0	0	0	0	1	0	0	0
Static 21	22/10/2019 25/10/2019	13	330	2	0	0	0	0	0	0	0	0
Static 22	6/7/2020 to 10/7/2020	1324	181	249	2	**1**	1	3	10	0	0	0
Static 23	6/7/2020 to 10/7/2020	2301	48	68	0	2	2	0	16	0	0	0
Static 24	6/7/2020 to 10/7/2020	763	141	2	0	0	2	2	894	0	0	0
Static 25	6/7/2020 to 10/7/2020	30	29	0	0	1	0	0	0	0	0	0
Static 26	6/7/2020 to 11/7/2020	10	44	18	1	0	1	0	0	0	0	0
Static 27	6/7/2020 to 11/7/2020	0	0	0	0	0	0	0	0	1	0	0
Static 28	10/7/20 to 11/7/2020	61	262	2	0	0	0	0	2	0	0	0
Static 29	10/7/20 to 11/7/2020	19	105	1	0	0	1	0	10	0	0	0
Static 30	10/7/20 to 11/7/2020	0	0	0	0	0	0	0	0	0	0	0

No.	Survey Dates	SP	CP	Leis	BLE	Daub	Whis	Natt	My	LHB	NathP	Pip spp
Static 31	10/7/20 to 11/7/2020	4	30	0	0	0	0	0	0	0	0	0
Static 32	11/8/2020 to 14/8/2020	1636	419	266	11	197	8	1	397	0	0	0
Static 33	11/8/2020 to 14/8/2020	79	219	105	4	1	0	1	2	0	0	0
Static 34	11/8/2020 to 14/8/2020	147	1942	66	1	1	3	2	5	0	0	0
Static 35	11/8/2020 to 14/8/2020	0	0	0	0	0	0	0	0	0	0	0
Static 36	11/8/2020 to 14/8/2020	1537	87	5	3	3	1	1	13	0	0	0
Static 37	11/8/2020 to 14/8/2020	767	2027	74	4	0	0	0	9	0	0	0
Static 38	11/8/2020 to 14/8/2020	135	201	148	4	1	0	1	28	0	0	0
Static 39	11/8/2020 to 14/8/2020	299	804	120	10	4	0	8	40	0	0	0
Static 40	11/8/2020 to 14/8/2020	2845	937	101	0	8	1	1	25	0	0	0
Static 41	7/9/2020 to 9/9/2020	175	34	35	0	123	0	5	979	0	0	0
Static 42	7/9/2020 to 9/9/2020	652	617	7	1	264	0	10	1979	0	0	0
Static 43	7/9/2020 to 9/9/2020	903	97	3	0	34	3	1	61	0	0	0
Static 44	7/9/2020 to 11/9/2020	1613	213	9	0	132	6	3	131	0	0	0
Static 45	7/9/2020 to 11/9/2020	17	12	15	1	3	1	1	72	0	0	0
Static 46	9/9/2020 to 11/9/2020	3945	301	112	0	89	3	2	158	0	3	0
Static 47	9/9/2020 to 11/9/2020	2011	1597	51	8	61	11	0	323	0	0	0
Static 48	9/9/2020 to 11/9/2020	2900	406	45	12	11	0	0	8	0	0	0
Static 49	21/9/2020 to 22/9/2020	499	65	3	0	233	0	0	12	0	0	0
Static 50	21/9/2020 to 22/9/2020	0	0	0	0	6	0	1	3	0	0	0
Static 51	21/9/2020 to 22/9/2020	292	121	2	6	0	0	0	0	0	0	0
Static 52	22/06/2021 to 25/6/21	19	174	150	6	0	0	0	0	0	0	0
Static 53	22/06/2021 to 25/6/21	4	9	45	1	0	0	0	0	0	0	0
Static 54	22/06/2021 to 25/6/21	6	18	27	1	0	0	0	1	0	0	0
Static 55	22/06/2021 to 25/6/21	102	40	162	3	2	0	0	1	0	0	0
Static 56	23/06/2021 to 25/6/21	645	14	130	9	0	0	0	9	0	0	0
Static 57	20/07/2021 to 22/7/21	0	0	0	0	0	0	0	0	0	0	0
Static 58	20/07/2021 to 23/7/21	92	118	379	4	2	0	0	2	0	0	0
Static 59	20/07/2021 to 23/7/21	76	167	89	0	0	0	0	0	0	0	0
Static 60	20/07/2021 to 23/7/21	236	1302	298	7	0	0	0	0	0	0	0
Static 61	20/07/2021 to 23/7/21	25	161	293	5	2	0	0	2	0	0	0
Static 62	23/08/2021 to 27/8/21	159	226	42	5	3	0	5	0	0	0	0
Static 63	23/08/2021 to 27/8/21	295	1612	35	71	12	0	5	7	0	2	0
Static 64	23/08/2021 to 27/8/21	263	293	42	14	9	0	4	3	0	3	0
Static 65	23/08/2021 to 27/8/21	211	2197	100	23	26	0	13	3	0	3	0
Static 66	20/06/2022 to 21/6/2022	411	23	31	1	59	0	0	0	0	0	0
Static 67	20/06/2022 to 21/6/2022	150	33	6	0	8	2	0	7	0	0	0

No.	Survey Dates	SP	CP	Leis	BLE	Daub	Whis	Natt	My	LHB	NathP	Pip spp
Static 68	21/06/2022 to 24/6/2022	939	1009	47	6	0	0	0	0	0	0	0
Static 69	21/06/2022 to 24/6/2022	20	37	32	2	0	0	0	0	0	0	0
Static 70	8th to 11th July 2024	177	1026	34	0	1	0	0	0	0	0	0
Static 71	8th to 11th July 2024	126	215	43	0	1	1	0	5	0	0	0
Static 72	8th to 11th July 2024	1542	155	196	30	6	2	1	0	0	0	0
Static 73	6th to 9th August 2024	22	121	42	5	0	0	0	0	0	0	0
Static 74	6th to 9th August 2024	62	830	30	11	3	0	0	0	0	0	2
Static 75	6th to 9th August 2024	46	571	8	0	2	0	2	30	0	0	1
Static 76	6th to 9th August 2024	86	2189	58	2	2	0	8	0	0	0	1
Static 77	6th to 9th August 2024	0	6	3	0	0	0	0	0	0	0	0
Static 78	6th to 9th August 2024	452	438	108	6	4	0	9	0	0	0	1
Static 79	12th June 2019	22	14	15	0	0	0	0	0	0	0	0
Static 80	12th June 2019	157	153	103	0	4	2	0	0	0	0	0
Static 81	12th June 2019	336	104	5	0	6	8	0	0	0	0	0
Static 82	13th June 2019	6	25	4	0	0	0	1	0	0	0	0
Static 83	13th June 2019	57	15	13	0	0	0	0	0	0	0	0
Static 84	13th June 2019	0	10	10	4	0	0	0	7	0	0	0
Static 85	13th June 2019	89	150	1	0	0	0	20	0	0	0	0
Static TOBIN G	15/6/2016 to 22/6/2016	169	8	144	1	0	0	4	0	0	0	0
Static TOBIN G	4/8/2016 to 9/8/2016	3075	161	92	2	0	0	13	0	0	0	0
Static TOBIN G	26/09/2016 to 30/9/2016	25	8	30	0	1	0	0	0	0	0	0
Static TOBIN G	25/04/2017 to 2/5/2017	29	8	216	0	0	0	0	1	0	0	1
Static TOBIN G	22/05/2017 to 28/5/2017	34	33	1035	0	0	0	0	0	0	0	15
Static TOBIN G	12/06/2017 to 19/6/2017	3	0	65	0	0	0	0	0	0	0	0
Static TOBIN G	04/07/2017 to 17/7/2017	138	80	214	3	0	0	0	1	0	0	0
Static TOBIN G	11/06/2018 to 18/6/2017	34	12	25	0	0	0	0	0	0	0	28
Static TOBIN G	09/07/2018 to 16/7/2018	10685	1647	683	3	16	0	3	63	0	3	725
Static TOBIN G	13/08/2018 to 20/8/2018	607	22	61	3	0	0	0	1	0	1	24
Static TOBIN G	10/09/2018 to 17/9/2018	36	1	18	0	0	0	0	0	0	0	2
Static TOBIN G	08/10/2018 to 15/10/2018	3	0	15	0	0	0	0	0	0	0	5
Static TOBIN H	29/6/2016 to 4/7/2016	10	27	44	0	0	0	0	0	0	0	0
Static TOBIN I	28/6/2016 to 6/7/2016	232	840	83	0	0	2	7	0	0	1	0
Static TOBIN B	5/7/2016 to 12/7/2016	12	27	42	0	0	0	0	0	0	0	0
Static TOBIN D	12/7/2016 to 20/7/2017	590	281	186	17	0	0	1	2	0	6	0
Static TOBIN D	6/9/2016 to 12/9/2016	1	0	9	0	0	0	0	0	0	0	0
Static TOBIN D	26/9/2016 to 30/9/2016	0	0	1	0	0	0	0	0	0	0	0
Static TOBIN D	25/5/2016 to 2/5/2016	24	119	85	5	1	8	2	2	0	3	18
Static TOBIN C	4/8/2016 to 9/8/2016	394	3467	99	6	20	78	26	31	0	0	0
Static TOBIN J	20/07/2016 to 28/7/2016	6712	921	157	4	2	6	28	1	0	0	0
Static TOBIN J	12/08/2016 to 18/8/2016	6923	940	261	13	11	8	62	0	0	0	0

No.	Survey Dates	SP	CP	Leis	BLE	Daub	Whis	Natt	My	LHB	NathP	Pip spp
Static TOBIN J	16/09/2016 to 24/9/2016	617	240	21	4	0	0	8	0	0	0	0
Static TOBIN J	05/10/2016 to 10/10/2016	96	9	9	1	0	0	0	0	0	0	0
Static TOBIN K	20/07/2016 to 28/7/2016	373	73	3049	9	8	4	7	1	0	0	0
Static TOBIN K	16/09/2016 to 24/9/2016	408	6	872	48	0	2	1	1	0	4	0
Static TOBIN K	05/10/2016 to 10/10/2016	389	0	133	0	0	0	0	0	0	3	0
Static TOBIN L	12/08/2016 to 18/8/2016	1198	65	199	5	11	3	3	6	0	0	0
Static TOBIN E	28/07/2016 to 3/8/2016	1559	537	3276	21	9	2	6	2	0	18	0
Static TOBIN E	19/09/2016 to 23/9/2016	147	121	175	1	0	0	1	0	0	2	0
Static TOBIN E	10/10/2016 to 16/10/2016	70	26	27	3	0	0	0	0	0	2	0
Static TOBIN N	28/07/2016 to 3/8/2016	1028	160	194	4	2	12	6	0	0	0	0
Static TOBIN N	19/09/2016 to 23/9/2016	586	239	29	2	0	0	5	0	0	1	0
Static TOBIN N	10/10/2016 to 16/10/2016	625	235	27	2	0	0	7	0	0	2	0
Static TOBIN N	29/05/2017 to 6/6/2017	3738	3550	419	0	5	5	30	2	0	0	99
Static TOBIN N	17/07/2017 to 28/7/2017	2119	1338	307	3	5	9	40	5	0	0	109
Static TOBIN N	09/08/2017 to 15/8/2017	0	0	0	0	0	0	0	0	0	0	0
Static TOBIN N	04/09/2017 to 11/9/2017	55	3	0	0	0	0	1	0	0	0	0
Static TOBIN N	16/04/2018 to 23/4/2018	17	40	0	0	0	0	0	0	0	5	6
Static TOBIN N	15/05/2018 to 23/5/2018	1332	124	9	0	0	0	0	1	0	0	21
Static TOBIN N	16/07/2018 to 23/7/2018	3048	1978	532	17	0	0	0	39	0	0	4
Static TOBIN N	17/09/2018 to 24/9/2018	1648	801	26	0	0	0	0	1	0	0	0
Static TOBIN N	15/10/2018 to 22/10/2018	1641	783	26	1	0	0	0	41	0	0	0
Static TOBIN A	29/05/2017 to 6/6/2017	201	636	115	0	0	12	5	1	0	0	2
Static TOBIN A	17/07/2017 to 28/7/2017	738	2741	245	5	1	21	12	1	0	0	11
Static TOBIN A	09/08/2017 to 15/8/2017	224	1070	66	0	1	4	3	3	0	0	14
Static TOBIN A	04/09/2017 to 11/9/2017	113	263	12	0	0	2	2	0	0	0	0
Static TOBIN A	16/04/2018 to 23/4/2018	2910	2050	41	1	0	0	0	10	0	0	0
Static TOBIN A	15/05/2018 to 23/5/2018	0	0	0	0	0	0	0	0	0	0	0
Static TOBIN A	11/06/2018 to 18/6/2018	0	0	0	0	0	0	0	0	0	0	0
Static TOBIN A	16/07/2018 to 23/7/2018	324	2058	212	0	0	0	0	1	0	0	0
Static TOBIN A	20/08/2018 to 27/8/2018	216	267	85	15	0	0	0	19	0	0	1
Static TOBIN A	17/09/2018 to 24/9/2018	254	196	5	0	0	0	0	0	0	0	0
Static TOBIN A	08/10/2018 to 15/10/2018	177	126	6	0	0	0	0	0	0	0	2
Static 86	10th to 15th June 2025	15	8	46	0	0	0	0	0	0	0	0
Static 87	10th to 15th June 2025	1	13	36	0	1	0	0	0	0	0	0
Static 88	10th to 15th June 2025	423	159	56	5	0	0	0	8	0	0	0
Static 89	10th to 15th June 2025	406	111	89	12	8	0	6	0	0	0	0
Static 90	16th to 20th June 2025	279	1814	65	13	3	0	0	0	0	0	0

No.	Survey Dates	SP	CP	Leis	BLE	Daub	Whis	Natt	My	LHB	NathP	Pip spp
Static 91	16th to 20th June 2025	178	641	11	1	0	0	0	0	0	0	0
Static 92	16th to 20th June 2025	96	27	64	0	0	0	2	4	0	0	0
					547	**1432**	**237**	**406**	**5584**	**1**	**62**	**1092**

9.3 Static Surveillance Analysis

Value was calculated by dividing Total Passes by Hrs of surveillance completed. This was used to determine the Bat Activity Level according to the table below.

Low = <10 bat passes/hr
Medium = >10 - <50
High = >50 bat passes/hr

9.3.1 Soprano pipistrelles

Table 9.3: Soprano Pipistrelle Bat Activity Level for Each Static Unit Deployed During Static Surveillance Completed in 2016-2025

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 1	572992	670315	Tipperary	49	21	2.3	Low
Static 2	577990	671754	Tipperary	142	21	6.8	Low
Static 3	584589	682565	Tipperary	112	21	5.3	Low
Static 4	574837	671139	Tipperary	404	21	19.2	Medium
Static 5	584612	682583	Tipperary	68	14	4.9	Low
Static 6	572211	670676	Tipperary	35	14	2.5	Low
Static 7	589474	688323	Tipperary	142	24	5.9	Low
Static 8	591161	688949	Tipperary	89	16	5.6	Low
Static 9	595493	690000	Tipperary	0	24	0.0	Low
Static 10	599989	690325	Tipperary	44	16	2.8	Low
Static 11	609426	701290	Offaly	5	27	0.2	Low
Static 12	612582	703638	Offaly	112	27	4.1	Low
Static 13	603676	695226	Offaly	939	27	34.8	Medium
Static 14	616199	709122	Offaly	393	27	14.6	Medium
Static 15	627737	715586	Offaly	717	30	23.9	Medium
Static 16	630527	715614	Offaly	103	30	3.4	Low
Static 17	634157	716468	Offaly	997	30	33.2	Medium
Static 18	655668	728408	Offaly	40	33	1.2	Low
Static 19	659643	728436	Offaly	44	33	1.3	Low
Static 20	682248	734884	Kildare	0	33	0.0	Low
Static 21	686934	735305	Kildare	13	33	0.4	Low
Static 22	572743	669774	Tipperary	1324	32	41.4	Medium
Static 23	574540	670660	Tipperary	2301	32	71.9	Low
Static 24	573356	670402	Tipperary	763	32	23.8	Medium
Static 25	572060	670577	Tipperary	30	32	0.9	Low
Static 26	597451	689905	Tipperary	10	40	0.3	Low
Static 27	572211	670676	Tipperary	0	32	0.0	Low
Static 28	596702	690020	Tipperary	61	8	7.6	Low
Static 29	597402	689490	Tipperary	19	8	2.4	Low
Static 30	597078	689520	Tipperary	0	8	0.0	Low
Static 31	597615	689742	Tipperary	4	8	0.5	Low
Static 32	584523	682551	Tipperary	1636	27	60.6	High
Static 33	597202	689899	Tipperary	79	27	2.9	Low
Static 34	596835	690120	Tipperary	147	27	5.4	Low
Static 35	597572	689769	Tipperary	0	27	0.0	Low
Static 36	597638	689400	Tipperary	1537	27	56.9	High
Static 37	597089	689386	Tipperary	767	27	28.4	Medium

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 38	572248	670472	Tipperary	135	27	5.0	Low
Static 39	571900	670472	Tipperary	299	27	11.1	Medium
Static 40	584540	682485	Tipperary	2845	27	105.4	High
Static 41	605583	696507	Offaly	175	20	8.8	Low
Static 42	614217	703881	Offaly	652	20	32.6	Medium
Static 43	615867	705789	Offaly	903	20	45.2	Medium
Static 44	623292	713673	Offaly	1613	40	40.3	Medium
Static 45	663545	726777	Offaly	17	40	0.4	Low
Static 46	698091	730244	Dublin	3945	20	197.3	High
Static 47	670752	729465	Kildare	2011	20	100.6	High
Static 48	693889	730310	Kildare	2900	20	145.0	High
Static 49	569968	670195	Clare	499	20	25.0	Medium
Static 50	570095	670233	Clare	0	20	0.0	Low
Static 51	570083	670108	Clare	292	20	14.6	Medium
Static 52	644955	721780	Offaly	19	21	0.9	Low
Static 53	659375	728264	Offaly	4	21	0.2	Low
Static 54	677383	733507	Kildare	6	21	0.3	Low
Static 55	682161	734656	Kildare	102	21	4.9	Low
Static 56	686940	735287	Kildare	645	14	46.1	Medium
Static 57	699805	730561	Dublin	0	16	0.0	Low
Static 58	698831	730473	Dublin	92	24	3.8	Low
Static 59	700961	730798	Dublin	76	24	3.2	Low
Static 60	701098	730817	Dublin	236	24	9.8	Low
Static 61	690406	732589	Kildare	25	24	1.0	Low
Static 62	638526	718474	Offaly	159	32	5.0	Low
Static 63	625047	714993	Offaly	295	32	9.2	Low
Static 64	583637	681734	Tipperary	263	32	8.2	Low
Static 65	581313	675638	Tipperary	211	32	6.6	Low
Static 66	569967	670203	Tipperary	411	7	58.7	High
Static 67	570010	670240	Tipperary	150	7	21.4	Medium
Static 68	650913	727378	Offaly	939	21	44.7	Medium
Static 69	643611	721025	Offaly	20	21	1.0	Low
Static 70	588932	687728	Tipperary	177	24	7.4	Low
Static 71	582370	677935	Tipperary	126	24	5.3	Low
Static 72	582622	678197	Tipperary	1542	24	64.3	High
Static 73	616727	709381	Offaly	22	27	0.8	Low
Static 74	604362	695064	Offaly	62	27	2.3	Low
Static 75	593455	689183	Tipperary	46	27	1.7	Low
Static 76	591119	689133	Tipperary	86	27	3.2	Low
Static 77	604007	695128	Offaly	0	27	0.0	Low
Static 78	594992	689321	Tipperary	452	27	16.7	Medium
Static 79	564975	665431	Clare	22	9	2.4	Low
Static 80	565432	666416	Clare	157	9	17.4	Medium
Static 81	565939	666862	Clare	336	9	37.3	Medium
Static 82	559330	662591	Clare	6	9	0.7	Low
Static 83	559376	663221	Clare	57	9	6.3	Low
Static 84	560539	663553	Clare	0	9	0.0	Low
Static TOBIN G	569982	670203	Tipperary	169	49	3.4	Low
Static TOBIN G	569982	670203	Tipperary	3075	45	68.3	High
Static TOBIN G	569982	670203	Tipperary	25	40	0.6	Low
Static TOBIN G	569982	670203	Tipperary	29	56	0.5	Low
Static TOBIN G	569982	670203	Tipperary	34	42	0.8	Low
Static TOBIN G	569982	670203	Tipperary	3	49	0.1	Low
Static TOBIN G	569982	670203	Tipperary	138	104	1.3	Low
Static TOBIN G	569982	670203	Tipperary	34	49	0.7	Low
Static TOBIN G	569982	670203	Tipperary	10685	56	190.8	High
Static TOBIN G	569982	670203	Tipperary	607	63	9.6	Low
Static TOBIN G	569982	670203	Tipperary	36	70	0.5	Low
Static TOBIN G	569982	670203	Tipperary	3	77	0.0	Low
Static TOBIN H	570885	669932	Tipperary	10	35	0.3	Low

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static TOBIN I	682383	734661	Kildare	232	56	4.1	Low
Static TOBIN B	694280	732803	Kildare	12	56	0.2	Low
Static TOBIN D	573593	670588	Tipperary	590	64	9.2	Low
Static TOBIN D	573593	670588	Tipperary	1	60	0.0	Low
Static TOBIN D	573593	670588	Tipperary	0	40	0.0	Low
Static TOBIN D	573593	670588	Tipperary	24	49	0.5	Low
Static TOBIN C	573286	670461	Tipperary	394	45	8.8	Low
Static TOBIN J	587918	686199	Tipperary	6712	56	119.9	High
Static TOBIN J	587918	686199	Tipperary	6923	54	128.2	High
Static TOBIN J	587918	686199	Tipperary	617	80	7.7	Low
Static TOBIN J	587918	686199	Tipperary	96	55	1.7	Low
Static TOBIN K	588323	685645	Tipperary	373	40	9.3	Low
Static TOBIN K	588323	685645	Tipperary	408	80	5.1	Low
Static TOBIN K	588323	685645	Tipperary	389	55	7.1	Low
Static TOBIN L	587667	686064	Tipperary	1198	63	19.0	Medium
Static TOBIN E	601084	692121	Offaly	1559	48	32.5	Medium
Static TOBIN E	601084	692121	Offaly	147	40	3.7	Low
Static TOBIN E	601084	692121	Offaly	70	66	1.1	Low
Static TOBIN N	601688	692448	Offaly	1028	56	18.4	Medium
Static TOBIN N	601688	692448	Offaly	586	40	14.7	Medium
Static TOBIN N	601688	692448	Offaly	625	66	9.5	Low
Static TOBIN N	601688	692448	Offaly	3738	54	69.2	High
Static TOBIN N	601688	692448	Offaly	2119	88	24.1	Medium
Static TOBIN N	601688	692448	Offaly	0	54	0.0	Low
Static TOBIN N	601688	692448	Offaly	55	70	0.8	Low
Static TOBIN N	601688	692448	Offaly	17	56	0.3	Low
Static TOBIN N	601688	692448	Offaly	1332	56	23.8	Medium
Static TOBIN N	601688	692448	Offaly	3048	56	54.4	High
Static TOBIN N	601688	692448	Offaly	1648	70	23.5	Medium
Static TOBIN N	601688	692448	Offaly	1641	77	21.3	Medium
Static TOBIN A	596819	689788	Tipperary	201	56	3.6	Low
Static TOBIN A	596819	689788	Tipperary	738	88	8.4	Low
Static TOBIN A	596819	689788	Tipperary	224	48	4.7	Low
Static TOBIN A	596819	689788	Tipperary	113	70	1.6	Low
Static TOBIN A	596819	689788	Tipperary	2910	56	52.0	High
Static TOBIN A	596819	689788	Tipperary	0	56	0.0	Low
Static TOBIN A	596819	689788	Tipperary	0	49	0.0	Low
Static TOBIN A	596819	689788	Tipperary	324	56	5.8	Low
Static TOBIN A	596819	689788	Tipperary	216	63	3.4	Low
Static TOBIN A	596819	689788	Tipperary	254	70	3.6	Low
Static TOBIN A	596819	689788	Tipperary	177	77	2.3	Low
Static 86	674324	733189	Kildare	15	28	0.5	Low
Static 87	659751	728233	Kildare	1	28	0.0	Low
Static 88	647940	724130	Offaly	423	28	15.1	Medium
Static 89	647919	724182	Offaly	406	28	14.5	Medium
Static 90	620250	711338	Offaly	279	28	10.0	Low
Static 91	613289	706737	Offaly	178	28	6.4	Low
Static 92	608548	697737	Offaly	96	28	3.4	Low
				93230			

9.3.2 Common pipistrelles

Table 9.4: Common Pipistrelle Bat Activity Level for Each Static Unit Deployed During Static Surveillance Completed in 2016-2025

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 1	572992	670315	Tipperary	129	21	6.1	Low
Static 2	577990	671754	Tipperary	368	21	17.5	Medium
Static 3	584589	682565	Tipperary	127	21	6.0	Low
Static 4	574837	671139	Tipperary	856	21	40.8	Medium

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 5	584612	682583	Tipperary	71	14	5.1	Low
Static 6	572211	670676	Tipperary	55	14	3.9	Low
Static 7	589474	688323	Tipperary	368	24	15.3	Medium
Static 8	591161	688949	Tipperary	1176	16	73.5	High
Static 9	595493	690000	Tipperary	0	24	0.0	Low
Static 10	599989	690325	Tipperary	41	16	2.6	Low
Static 11	609426	701290	Offaly	13	27	0.5	Low
Static 12	612582	703638	Offaly	64	27	2.4	Low
Static 13	603676	695226	Offaly	449	27	16.6	Medium
Static 14	616199	709122	Offaly	1884	27	69.8	High
Static 15	627737	715586	Offaly	66	30	2.2	Low
Static 16	630527	715614	Offaly	41	30	1.4	Low
Static 17	634157	716468	Offaly	2905	30	96.8	High
Static 18	655668	728408	Offaly	49	33	1.5	Low
Static 19	659643	728436	Offaly	453	33	13.7	Medium
Static 20	682248	734884	Kildare	0	33	0.0	Low
Static 21	686934	735305	Kildare	330	33	10.0	Medium
Static 22	572743	669774	Tipperary	181	32	5.7	Low
Static 23	574540	670660	Tipperary	48	32	1.5	Low
Static 24	573356	670402	Tipperary	141	32	4.4	Low
Static 25	572060	670577	Tipperary	29	32	0.9	Low
Static 26	597451	689905	Tipperary	44	40	1.1	Low
Static 27	572211	670676	Tipperary	0	32	0.0	Low
Static 28	596702	690020	Tipperary	262	8	32.8	Medium
Static 29	597402	689490	Tipperary	105	8	13.1	Medium
Static 30	597078	689520	Tipperary	0	8	0.0	Low
Static 31	597615	689742	Tipperary	30	8	3.8	Low
Static 32	584523	682551	Tipperary	419	27	15.5	Medium
Static 33	597202	689899	Tipperary	219	27	8.1	Low
Static 34	596835	690120	Tipperary	1942	27	71.9	High
Static 35	597572	689769	Tipperary	0	27	0.0	Low
Static 36	597638	689400	Tipperary	87	27	3.2	Low
Static 37	597089	689386	Tipperary	2027	27	75.1	High
Static 38	572248	670472	Tipperary	201	27	7.4	Low
Static 39	571900	670472	Tipperary	804	27	29.8	Medium
Static 40	584540	682485	Tipperary	937	27	34.7	Medium
Static 41	605583	696507	Offaly	34	20	1.7	Low
Static 42	614217	703881	Offaly	617	20	30.9	Medium
Static 43	615867	705789	Offaly	97	20	4.9	Low
Static 44	623292	713673	Offaly	213	40	5.3	Low
Static 45	663545	726777	Offaly	12	40	0.3	Low
Static 46	698091	730244	Dublin	301	20	15.1	Medium
Static 47	670752	729465	Kildare	1597	20	79.9	Low
Static 48	693889	730310	Kildare	406	20	20.3	Medium
Static 49	569968	670195	Clare	65	20	3.3	Low
Static 50	570095	670233	Clare	0	20	0.0	Low
Static 51	570083	670108	Clare	121	20	6.1	Low
Static 52	644955	721780	Offaly	174	21	8.3	Low
Static 53	659375	728264	Offaly	9	21	0.4	Low
Static 54	677383	733507	Kildare	18	21	0.9	Low
Static 55	682161	734656	Kildare	40	21	1.9	Low
Static 56	686940	735287	Kildare	14	14	1.0	Low
Static 57	699805	730561	Dublin	0	16	0.0	Low
Static 58	698831	730473	Dublin	118	24	4.9	Low
Static 59	700961	730798	Dublin	167	24	7.0	Low
Static 60	701098	730817	Dublin	1302	24	54.3	High
Static 61	690406	732589	Kildare	161	24	6.7	Low
Static 62	638526	718474	Offaly	226	32	7.1	Low
Static 63	625047	714993	Offaly	1612	32	50.4	High
Static 64	583637	681734	Tipperary	293	32	9.2	Low

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 65	581313	675638	Tipperary	2197	32	68.7	High
Static 66	569967	670203	Tipperary	23	7	3.3	Low
Static 67	570010	670240	Tipperary	33	7	4.7	Low
Static 68	650913	727378	Offaly	1009	21	48.0	Medium
Static 69	643611	721025	Offaly	37	21	1.8	Low
Static 70	588932	687728	Tipperary	215	24	9.0	Low
Static 71	582370	677935	Tipperary	155	24	6.5	Low
Static 72	582622	678197	Tipperary	121	27	4.5	Low
Static 73	616727	709381	Offaly	830	27	30.7	Medium
Static 74	604362	695064	Offaly	571	27	21.1	Medium
Static 75	593455	689183	Tipperary	2189	27	81.1	High
Static 76	591119	689133	Tipperary	6	27	0.2	Low
Static 77	604007	695128	Offaly	438	27	16.2	Medium
Static 78	594992	689321	Tipperary	14	9	1.6	Low
Static 79	564975	665431	Clare	153	9	17.0	Medium
Static 80	565432	666416	Clare	104	9	11.6	Medium
Static 81	565939	666862	Clare	25	9	2.8	Low
Static 82	559330	662591	Clare	15	9	1.7	Low
Static 83	559376	663221	Clare	10	9	1.1	Low
Static 84	560539	663553	Clare	150	9	16.7	Medium
Static 85	568321	666715	Tipperary	215	24	9.0	Low
Static TOBIN G	569982	670203	Tipperary	8	49	0.2	Low
Static TOBIN G	569982	670203	Tipperary	161	45	3.6	Low
Static TOBIN G	569982	670203	Tipperary	8	40	0.2	Low
Static TOBIN G	569982	670203	Tipperary	8	56	0.1	Low
Static TOBIN G	569982	670203	Tipperary	33	42	0.8	Low
Static TOBIN G	569982	670203	Tipperary	0	49	0.0	Low
Static TOBIN G	569982	670203	Tipperary	80	104	0.8	Low
Static TOBIN G	569982	670203	Tipperary	12	49	0.2	Low
Static TOBIN G	569982	670203	Tipperary	1647	56	29.4	Medium
Static TOBIN G	569982	670203	Tipperary	22	63	0.3	Low
Static TOBIN G	569982	670203	Tipperary	1	70	0.0	Low
Static TOBIN G	569982	670203	Tipperary	0	77	0.0	Low
Static TOBIN H	570885	669932	Tipperary	27	35	0.8	Low
Static TOBIN I	682383	734661	Kildare	840	56	15.0	Medium
Static TOBIN B	694280	732803	Kildare	27	56	0.5	Low
Static TOBIN D	573593	670588	Tipperary	281	64	4.4	Low
Static TOBIN D	573593	670588	Tipperary	0	60	0.0	Low
Static TOBIN D	573593	670588	Tipperary	0	40	0.0	Low
Static TOBIN D	573593	670588	Tipperary	119	49	2.4	Low
Static TOBIN C	573286	670461	Tipperary	3467	45	77.0	High
Static TOBIN J	587918	686199	Tipperary	921	56	16.4	Medium
Static TOBIN J	587918	686199	Tipperary	940	54	17.4	Medium
Static TOBIN J	587918	686199	Tipperary	240	80	3.0	Low
Static TOBIN J	587918	686199	Tipperary	9	55	0.2	Low
Static TOBIN K	588323	685645	Tipperary	73	40	1.8	Low
Static TOBIN K	588323	685645	Tipperary	6	80	0.1	Low
Static TOBIN K	588323	685645	Tipperary	0	55	0.0	Low
Static TOBIN L	587667	686064	Tipperary	65	63	1.0	Low
Static TOBIN E	601084	692121	Offaly	537	48	11.2	Medium
Static TOBIN E	601084	692121	Offaly	121	40	3.0	Low
Static TOBIN E	601084	692121	Offaly	26	66	0.4	Low
Static TOBIN N	601688	692448	Offaly	160	56	2.9	Low
Static TOBIN N	601688	692448	Offaly	239	40	6.0	Low
Static TOBIN N	601688	692448	Offaly	235	66	3.6	Low
Static TOBIN N	601688	692448	Offaly	3550	54	65.7	High
Static TOBIN N	601688	692448	Offaly	1338	88	15.2	Medium
Static TOBIN N	601688	692448	Offaly	0	54	0.0	Low
Static TOBIN N	601688	692448	Offaly	3	70	0.0	Low
Static TOBIN N	601688	692448	Offaly	40	56	0.7	Low

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static TOBIN N	601688	692448	Offaly	124	56	2.2	Low
Static TOBIN N	601688	692448	Offaly	1978	56	35.3	Medium
Static TOBIN N	601688	692448	Offaly	801	70	11.4	Medium
Static TOBIN N	601688	692448	Offaly	783	77	10.2	Medium
Static TOBIN A	596819	689788	Tipperary	636	56	11.4	Medium
Static TOBIN A	596819	689788	Tipperary	2741	88	31.1	Medium
Static TOBIN A	596819	689788	Tipperary	1070	48	22.3	Medium
Static TOBIN A	596819	689788	Tipperary	263	70	3.8	Low
Static TOBIN A	596819	689788	Tipperary	2050	56	36.6	Medium
Static TOBIN A	596819	689788	Tipperary	0	56	0.0	Low
Static TOBIN A	596819	689788	Tipperary	0	49	0.0	Low
Static TOBIN A	596819	689788	Tipperary	2058	56	36.8	Medium
Static TOBIN A	596819	689788	Tipperary	267	63	4.2	Low
Static TOBIN A	596819	689788	Tipperary	196	70	2.8	Low
Static TOBIN A	596819	689788	Tipperary	126	77	1.6	Low
Static 86	674324	733189	Kildare	8	28	0.3	Low
Static 87	659751	728233	Kildare	13	28	0.5	Low
Static 88	647940	724130	Offaly	159	28	5.7	Low
Static 89	647919	724182	Offaly	111	28	4.0	Low
Static 90	620250	711338	Offaly	1814	28	64.8	High
Static 91	613289	706737	Offaly	641	28	22.9	Medium
Static 92	608548	697737	Offaly	27	28	1.0	Low
				64949			

9.3.3 Leisler's bats

Table 9.5: Leisler's Bat Activity Level for Each Static Unit Deployed During Static Surveillance Completed in 2016-2025

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 1	572992	670315	Tipperary	23	21	1.1	Low
Static 2	577990	671754	Tipperary	197	21	9.4	Low
Static 3	584589	682565	Tipperary	53	21	2.5	Low
Static 4	574837	671139	Tipperary	48	21	2.3	Low
Static 5	584612	682583	Tipperary	41	14	2.9	Low
Static 6	572211	670676	Tipperary	2	14	0.1	Low
Static 7	589474	688323	Tipperary	197	24	8.2	Low
Static 8	591161	688949	Tipperary	124	16	7.8	Low
Static 9	595493	690000	Tipperary	0	24	0.0	Low
Static 10	599989	690325	Tipperary	82	16	5.1	Low
Static 11	609426	701290	Offaly	0	27	0.0	Low
Static 12	612582	703638	Offaly	36	27	1.3	Low
Static 13	603676	695226	Offaly	6	27	0.2	Low
Static 14	616199	709122	Offaly	13	27	0.5	Low
Static 15	627737	715586	Offaly	1	30	0.0	Low
Static 16	630527	715614	Offaly	29	30	1.0	Low
Static 17	634157	716468	Offaly	15	30	0.5	Low
Static 18	655668	728408	Offaly	0	33	0.0	Low
Static 19	659643	728436	Offaly	15	33	0.5	Low
Static 20	682248	734884	Kildare	0	33	0.0	Low
Static 21	686934	735305	Kildare	2	33	0.1	Low
Static 22	572743	669774	Tipperary	249	32	7.8	Low
Static 23	574540	670660	Tipperary	68	32	2.1	Low
Static 24	573356	670402	Tipperary	2	32	0.1	Low
Static 25	572060	670577	Tipperary	0	32	0.0	Low
Static 26	597451	689905	Tipperary	18	40	0.5	Low
Static 27	572211	670676	Tipperary	0	32	0.0	Low
Static 28	596702	690020	Tipperary	2	8	0.3	Low
Static 29	597402	689490	Tipperary	1	8	0.1	Low
Static 30	597078	689520	Tipperary	0	8	0.0	Low

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 31	597615	689742	Tipperary	0	8	0.0	Low
Static 32	584523	682551	Tipperary	266	27	9.9	Low
Static 33	597202	689899	Tipperary	105	27	3.9	Low
Static 34	596835	690120	Tipperary	66	27	2.4	Low
Static 35	597572	689769	Tipperary	0	27	0.0	Low
Static 36	597638	689400	Tipperary	5	27	0.2	Low
Static 37	597089	689386	Tipperary	74	27	2.7	Low
Static 38	572248	670472	Tipperary	148	27	5.5	Low
Static 39	571900	670472	Tipperary	120	27	4.4	Low
Static 40	584540	682485	Tipperary	101	27	3.7	Low
Static 41	605583	696507	Offaly	35	20	1.8	Low
Static 42	614217	703881	Offaly	7	20	0.4	Low
Static 43	615867	705789	Offaly	3	20	0.2	Low
Static 44	623292	713673	Offaly	9	40	0.2	Low
Static 45	663545	726777	Offaly	15	40	0.4	Low
Static 46	698091	730244	Dublin	112	20	5.6	Low
Static 47	670752	729465	Kildare	51	20	2.6	Low
Static 48	693889	730310	Kildare	45	20	2.3	Low
Static 49	569968	670195	Clare	3	20	0.2	Low
Static 50	570095	670233	Clare	0	20	0.0	Low
Static 51	570083	670108	Clare	2	20	0.1	Low
Static 52	644955	721780	Offaly	150	21	7.1	Low
Static 53	659375	728264	Offaly	45	21	2.1	Low
Static 54	677383	733507	Kildare	27	21	1.3	Low
Static 55	682161	734656	Kildare	162	21	7.7	Low
Static 56	686940	735287	Kildare	130	14	9.3	Low
Static 57	699805	730561	Dublin	0	16	0.0	Low
Static 58	698831	730473	Dublin	379	24	15.8	Medium
Static 59	700961	730798	Dublin	89	24	3.7	Low
Static 60	701098	730817	Dublin	298	24	12.4	Medium
Static 61	690406	732589	Kildare	293	24	12.2	Medium
Static 62	638526	718474	Offaly	42	32	1.3	Low
Static 63	625047	714993	Offaly	35	32	1.1	Low
Static 64	583637	681734	Tipperary	42	32	1.3	Low
Static 65	581313	675638	Tipperary	100	32	3.1	Low
Static 66	569967	670203	Tipperary	31	7	4.4	Low
Static 67	570010	670240	Tipperary	6	7	0.9	Low
Static 68	650913	727378	Offaly	32	21	1.5	Low
Static 69	643611	721025	Offaly	47	21	2.2	Low
Static 70	588932	687728	Tipperary	34	24	1.4	Low
Static 71	582370	677935	Tipperary	43	24	1.8	Low
Static 72	582622	678197	Tipperary	196	24	8.2	Low
Static 73	616727	709381	Offaly	42	27	1.6	Low
Static 74	604362	695064	Offaly	30	27	1.1	Low
Static 75	593455	689183	Tipperary	8	27	0.3	Low
Static 76	591119	689133	Tipperary	58	27	2.1	Low
Static 77	604007	695128	Offaly	3	27	0.1	Low
Static 78	594992	689321	Tipperary	108	27	4.0	Low
Static 79	564975	665431	Clare	15	9	1.7	Low
Static 80	565432	666416	Clare	103	9	11.4	Medium
Static 81	565939	666862	Clare	5	9	0.6	Low
Static 82	559330	662591	Clare	4	9	0.4	Low
Static 83	559376	663221	Clare	13	9	1.4	Low
Static 84	560539	663553	Clare	10	9	1.1	Low
Static 85	568321	666715	Tipperary	1	9	0.1	Low
Static TOBIN G	569982	670203	Tipperary	144	49	2.9	Low
Static TOBIN G	569982	670203	Tipperary	92	45	2.0	Low
Static TOBIN G	569982	670203	Tipperary	30	40	0.8	Low
Static TOBIN G	569982	670203	Tipperary	216	56	3.9	Low
Static TOBIN G	569982	670203	Tipperary	1035	42	24.6	Medium

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static TOBIN G	569982	670203	Tipperary	65	49	1.3	Low
Static TOBIN G	569982	670203	Tipperary	214	104	2.1	Low
Static TOBIN G	569982	670203	Tipperary	25	49	0.5	Low
Static TOBIN G	569982	670203	Tipperary	683	56	12.2	Medium
Static TOBIN G	569982	670203	Tipperary	61	63	1.0	Low
Static TOBIN G	569982	670203	Tipperary	18	70	0.3	Low
Static TOBIN G	569982	670203	Tipperary	15	77	0.2	Low
Static TOBIN H	570885	669932	Tipperary	44	35	1.3	Low
Static TOBIN I	682383	734661	Kildare	83	56	1.5	Low
Static TOBIN B	694280	732803	Kildare	42	56	0.8	Low
Static TOBIN D	573593	670588	Tipperary	186	64	2.9	Low
Static TOBIN D	573593	670588	Tipperary	9	60	0.2	Low
Static TOBIN D	573593	670588	Tipperary	1	40	0.0	Low
Static TOBIN D	573593	670588	Tipperary	85	49	1.7	Low
Static TOBIN C	573286	670461	Tipperary	99	45	2.2	Low
Static TOBIN J	587918	686199	Tipperary	157	56	2.8	Low
Static TOBIN J	587918	686199	Tipperary	261	54	4.8	Low
Static TOBIN J	587918	686199	Tipperary	21	80	0.3	Low
Static TOBIN J	587918	686199	Tipperary	9	55	0.2	Low
Static TOBIN K	588323	685645	Tipperary	3049	40	76.2	High
Static TOBIN K	588323	685645	Tipperary	872	80	10.9	Medium
Static TOBIN K	588323	685645	Tipperary	133	55	2.4	Low
Static TOBIN L	587667	686064	Tipperary	199	63	3.2	Low
Static TOBIN E	601084	692121	Offaly	3276	48	68.3	High
Static TOBIN E	601084	692121	Offaly	175	40	4.4	Low
Static TOBIN E	601084	692121	Offaly	27	66	0.4	Low
Static TOBIN N	601688	692448	Offaly	194	56	3.5	Low
Static TOBIN N	601688	692448	Offaly	29	40	0.7	Low
Static TOBIN N	601688	692448	Offaly	27	66	0.4	Low
Static TOBIN N	601688	692448	Offaly	419	54	7.8	Low
Static TOBIN N	601688	692448	Offaly	307	88	3.5	Low
Static TOBIN N	601688	692448	Offaly	0	54	0.0	Low
Static TOBIN N	601688	692448	Offaly	0	70	0.0	Low
Static TOBIN N	601688	692448	Offaly	0	56	0.0	Low
Static TOBIN N	601688	692448	Offaly	9	56	0.2	Low
Static TOBIN N	601688	692448	Offaly	532	56	9.5	Low
Static TOBIN N	601688	692448	Offaly	26	70	0.4	Low
Static TOBIN N	601688	692448	Offaly	26	77	0.3	Low
Static TOBIN A	596819	689788	Tipperary	115	56	2.1	Low
Static TOBIN A	596819	689788	Tipperary	245	88	2.8	Low
Static TOBIN A	596819	689788	Tipperary	66	48	1.4	Low
Static TOBIN A	596819	689788	Tipperary	12	70	0.2	Low
Static TOBIN A	596819	689788	Tipperary	41	56	0.7	Low
Static TOBIN A	596819	689788	Tipperary	0	56	0.0	Low
Static TOBIN A	596819	689788	Tipperary	0	49	0.0	Low
Static TOBIN A	596819	689788	Tipperary	212	56	3.8	Low
Static TOBIN A	596819	689788	Tipperary	85	63	1.3	Low
Static TOBIN A	596819	689788	Tipperary	5	70	0.1	Low
Static TOBIN A	596819	689788	Tipperary	6	77	0.1	Low
Static 86	674324	733189	Kildare	46	28	1.6	Low
Static 87	659751	728233	Kildare	36	28	1.3	Low
Static 88	647940	724130	Offaly	56	28	2.0	Low
Static 89	647919	724182	Offaly	89	28	3.2	Low
Static 90	620250	711338	Offaly	65	28	2.3	Low
Static 91	613289	706737	Offaly	11	28	0.4	Low
Static 92	608548	697737	Offaly	64	28	2.3	Low
				19021			

9.3.4 Myotis species

Table 9.6: *Myotis* Species Bat Activity Level for Each Static Unit Deployed During Static Surveillance Completed in 2016-2025

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 1	572992	670315	Tipperary	1	21	0.0	Low
Static 2	577990	671754	Tipperary	2	21	0.1	Low
Static 3	584589	682565	Tipperary	0	21	0.0	Low
Static 4	574837	671139	Tipperary	0	21	0.0	Low
Static 5	584612	682583	Tipperary	2	14	0.1	Low
Static 6	572211	670676	Tipperary	1	14	0.1	Low
Static 7	589474	688323	Tipperary	3	24	0.1	Low
Static 8	591161	688949	Tipperary	3	16	0.2	Low
Static 9	595493	690000	Tipperary	0	24	0.0	Low
Static 10	599989	690325	Tipperary	3	16	0.2	Low
Static 11	609426	701290	Offaly	0	27	0.0	Low
Static 12	612582	703638	Offaly	0	27	0.0	Low
Static 13	603676	695226	Offaly	32	27	1.2	Low
Static 14	616199	709122	Offaly	7	27	0.3	Low
Static 15	627737	715586	Offaly	1	30	0.0	Low
Static 16	630527	715614	Offaly	1	30	0.0	Low
Static 17	634157	716468	Offaly	26	30	0.9	Low
Static 18	655668	728408	Offaly	0	33	0.0	Low
Static 19	659643	728436	Offaly	3	33	0.1	Low
Static 20	682248	734884	Kildare	1	33	0.0	Low
Static 21	686934	735305	Kildare	0	33	0.0	Low
Static 22	572743	669774	Tipperary	**15**	32	0.5	Low
Static 23	574540	670660	Tipperary	20	32	0.6	Low
Static 24	573356	670402	Tipperary	898	32	28.1	Medium
Static 25	572060	670577	Tipperary	1	32	0.0	Low
Static 26	597451	689905	Tipperary	1	40	0.0	Low
Static 27	572211	670676	Tipperary	0	32	0.0	Low
Static 28	596702	690020	Tipperary	2	8	0.3	Low
Static 29	597402	689490	Tipperary	11	8	1.4	Low
Static 30	597078	689520	Tipperary	0	8	0.0	Low
Static 31	597615	689742	Tipperary	0	8	0.0	Low
Static 32	584523	682551	Tipperary	603	27	22.3	Medium
Static 33	597202	689899	Tipperary	4	27	0.1	Low
Static 34	596835	690120	Tipperary	11	27	0.4	Low
Static 35	597572	689769	Tipperary	0	27	0.0	Low
Static 36	597638	689400	Tipperary	18	27	0.7	Low
Static 37	597089	689386	Tipperary	9	27	0.3	Low
Static 38	572248	670472	Tipperary	30	27	1.1	Low
Static 39	571900	670472	Tipperary	52	27	1.9	Low
Static 40	584540	682485	Tipperary	35	27	1.3	Low
Static 41	605583	696507	Offaly	1107	20	55.4	High
Static 42	614217	703881	Offaly	2253	20	112.7	High
Static 43	615867	705789	Offaly	99	20	5.0	Low
Static 44	623292	713673	Offaly	272	40	6.8	Low
Static 45	663545	726777	Offaly	77	40	1.9	Low
Static 46	698091	730244	Dublin	252	20	12.6	Medium
Static 47	670752	729465	Kildare	395	20	19.8	Medium
Static 48	693889	730310	Kildare	19	20	1.0	Low
Static 49	569968	670195	Clare	245	20	12.3	Medium
Static 50	570095	670233	Clare	10	20	0.5	Low
Static 51	570083	670108	Clare	0	20	0.0	Low
Static 52	644955	721780	Offaly	0	21	0.0	Low
Static 53	659375	728264	Offaly	0	21	0.0	Low
Static 54	677383	733507	Kildare	1	21	0.0	Low
Static 55	682161	734656	Kildare	3	21	0.1	Low

Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static 56	686940	735287	Kildare	9	14	0.6	Low
Static 57	699805	730561	Dublin	0	16	0.0	Low
Static 58	698831	730473	Dublin	4	24	0.2	Low
Static 59	700961	730798	Dublin	0	24	0.0	Low
Static 60	701098	730817	Dublin	0	24	0.0	Low
Static 61	690406	732589	Kildare	4	24	0.2	Low
Static 62	638526	718474	Offaly	8	32	0.3	Low
Static 63	625047	714993	Offaly	24	32	0.8	Low
Static 64	583637	681734	Tipperary	16	32	0.5	Low
Static 65	581313	675638	Tipperary	42	32	1.3	Low
Static 66	569967	670203	Tipperary	59	7	8.4	Low
Static 67	570010	670240	Tipperary	17	7	2.4	Low
Static 68	650913	727378	Offaly	0	21	0.0	Low
Static 69	643611	721025	Offaly	0	21	0.0	Low
Static 70	588932	687728	Tipperary	1	24	0.0	Low
Static 71	582370	677935	Tipperary	7	24	0.3	Low
Static 72	582622	678197	Tipperary	9	24	0.4	Low
Static 73	616727	709381	Offaly	0	27	0.0	Low
Static 74	604362	695064	Offaly	3	27	0.1	Low
Static 75	593455	689183	Tipperary	43	27	1.6	Low
Static 76	591119	689133	Tipperary	10	27	0.4	Low
Static 77	604007	695128	Offaly	0	27	0.0	Low
Static 78	594992	689321	Tipperary	13	27	0.5	Low
Static 79	564975	665431	Clare	0	9	0.0	Low
Static 80	565432	666416	Clare	6	9	0.7	Low
Static 81	565939	666862	Clare	14	9	1.6	Low
Static 82	559330	662591	Clare	1	9	0.1	Low
Static 83	559376	663221	Clare	0	9	0.0	Low
Static 84	560539	663553	Clare	7	9	0.8	Low
Static 85	568321	666715	Tipperary	20	9	2.2	Low
Static TOBIN G	569982	670203	Tipperary	4	49	0.1	Low
Static TOBIN G	569982	670203	Tipperary	13	45	0.3	Low
Static TOBIN G	569982	670203	Tipperary	1	40	0.0	Low
Static TOBIN G	569982	670203	Tipperary	1	56	0.0	Low
Static TOBIN G	569982	670203	Tipperary	0	42	0.0	Low
Static TOBIN G	569982	670203	Tipperary	0	49	0.0	Low
Static TOBIN G	569982	670203	Tipperary	1	104	0.0	Low
Static TOBIN G	569982	670203	Tipperary	0	49	0.0	Low
Static TOBIN G	569982	670203	Tipperary	82	56	1.5	Low
Static TOBIN G	569982	670203	Tipperary	1	63	0.0	Low
Static TOBIN G	569982	670203	Tipperary	0	70	0.0	Low
Static TOBIN G	569982	670203	Tipperary	0	77	0.0	Low
Static TOBIN H	570885	669932	Tipperary	0	35	0.0	Low
Static TOBIN I	682383	734661	Kildare	9	56	0.2	Low
Static TOBIN B	694280	732803	Kildare	0	56	0.0	Low
Static TOBIN D	573593	670588	Tipperary	3	64	0.0	Low
Static TOBIN D	573593	670588	Tipperary	0	60	0.0	Low
Static TOBIN D	573593	670588	Tipperary	0	40	0.0	Low
Static TOBIN D	573593	670588	Tipperary	13	49	0.3	Low
Static TOBIN C	573286	670461	Tipperary	155	45	3.4	Low
Static TOBIN J	587918	686199	Tipperary	37	56	0.7	Low
Static TOBIN J	587918	686199	Tipperary	81	54	1.5	Low
Static TOBIN J	587918	686199	Tipperary	8	80	0.1	Low
Static TOBIN J	587918	686199	Tipperary	0	55	0.0	Low
Static TOBIN K	588323	685645	Tipperary	20	40	0.5	Low
Static TOBIN K	588323	685645	Tipperary	4	80	0.1	Low
Static TOBIN K	588323	685645	Tipperary	0	55	0.0	Low
Static TOBIN L	587667	686064	Tipperary	23	63	0.4	Low
Static TOBIN E	601084	692121	Offaly	19	48	0.4	Low
Static TOBIN E	601084	692121	Offaly	1	40	0.0	Low

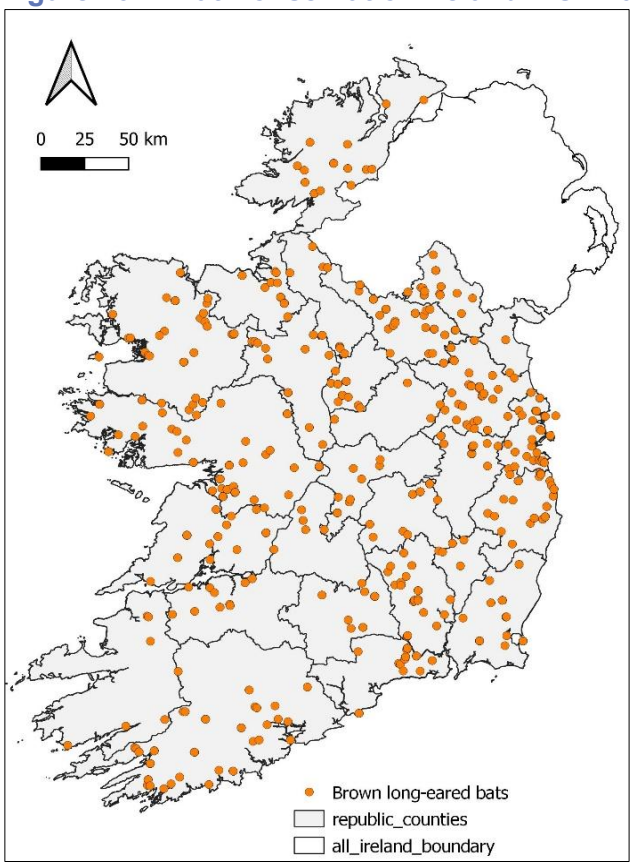
Static No.	ITM Easting	ITM Northing	County	Total Passes	Hrs	Value	Level
Static TOBIN E	601084	692121	Offaly	0	66	0.0	Low
Static TOBIN N	601688	692448	Offaly	20	56	0.4	Low
Static TOBIN N	601688	692448	Offaly	5	40	0.1	Low
Static TOBIN N	601688	692448	Offaly	7	66	0.1	Low
Static TOBIN N	601688	692448	Offaly	42	54	0.8	Low
Static TOBIN N	601688	692448	Offaly	59	88	0.7	Low
Static TOBIN N	601688	692448	Offaly	0	54	0.0	Low
Static TOBIN N	601688	692448	Offaly	1	70	0.0	Low
Static TOBIN N	601688	692448	Offaly	0	56	0.0	Low
Static TOBIN N	601688	692448	Offaly	1	56	0.0	Low
Static TOBIN N	601688	692448	Offaly	39	56	0.7	Low
Static TOBIN N	601688	692448	Offaly	1	70	0.0	Low
Static TOBIN N	601688	692448	Offaly	41	77	0.5	Low
Static TOBIN A	596819	689788	Tipperary	18	56	0.3	Low
Static TOBIN A	596819	689788	Tipperary	35	88	0.4	Low
Static TOBIN A	596819	689788	Tipperary	11	48	0.2	Low
Static TOBIN A	596819	689788	Tipperary	4	70	0.1	Low
Static TOBIN A	596819	689788	Tipperary	10	56	0.2	Low
Static TOBIN A	596819	689788	Tipperary	0	56	0.0	Low
Static TOBIN A	596819	689788	Tipperary	0	49	0.0	Low
Static TOBIN A	596819	689788	Tipperary	1	56	0.0	Low
Static TOBIN A	596819	689788	Tipperary	19	63	0.3	Low
Static TOBIN A	596819	689788	Tipperary	0	70	0.0	Low
Static TOBIN A	596819	689788	Tipperary	0	77	0.0	Low
Static 86	674324	733189	Kildare	0	28	0.0	Low
Static 87	659751	728233	Kildare	1	28	0.0	Low
Static 88	647940	724130	Offaly	8	28	0.3	Low
Static 89	647919	724182	Offaly	14	28	0.5	Low
Static 90	620250	711338	Offaly	3	28	0.1	Low
Static 91	613289	706737	Offaly	0	28	0.0	Low
Static 92	608548	697737	Offaly	6	28	0.2	Low
				7668			

9.4 Bat Species

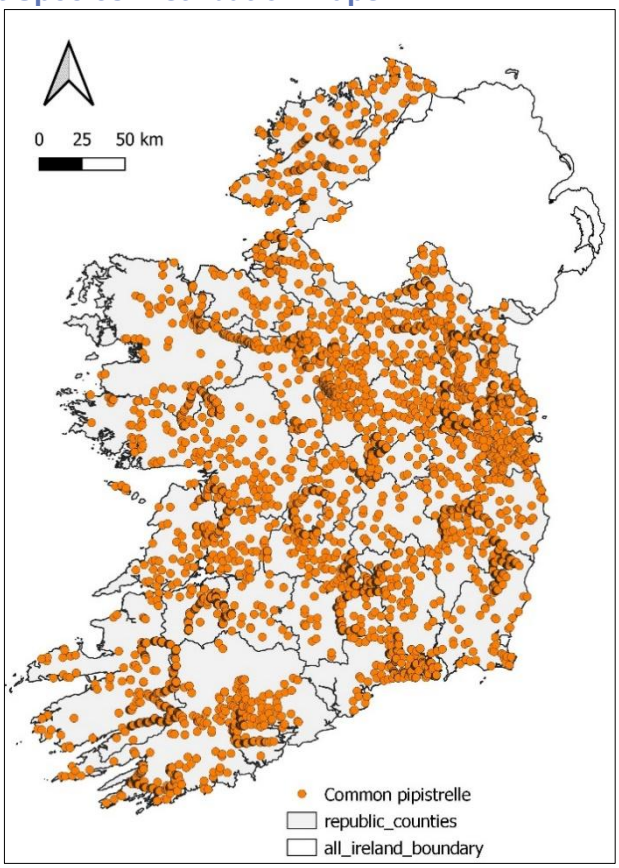
9.4.1 Bat Conservation Ireland Database 2010-2021

The Irish Bat Monitoring Programme report (Aughney *et al.*, 2022) produced bat distribution maps for each of the bat species resident in Ireland. These are presented below.

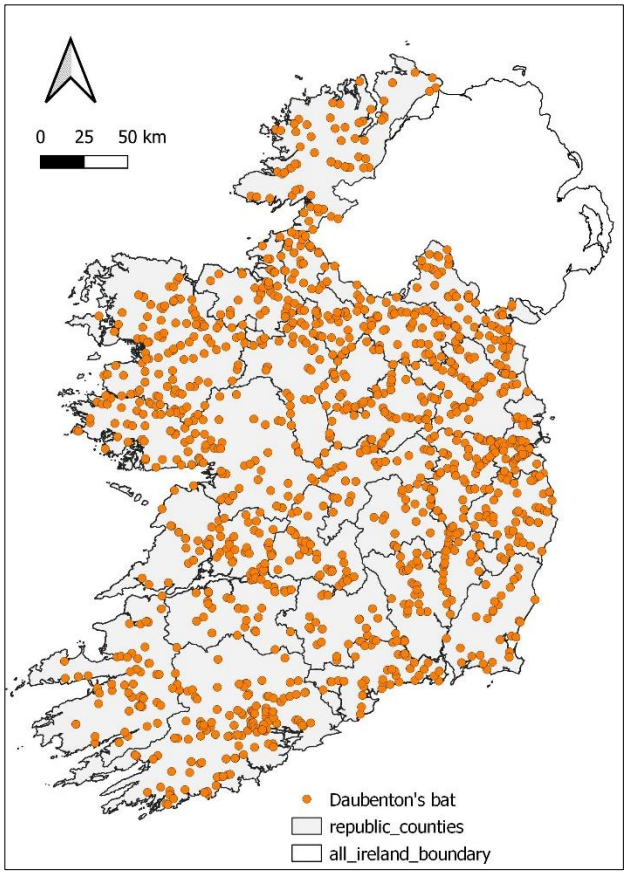
Figure 10.1: Bat Conservation Ireland Irish Bat Species Distribution Maps



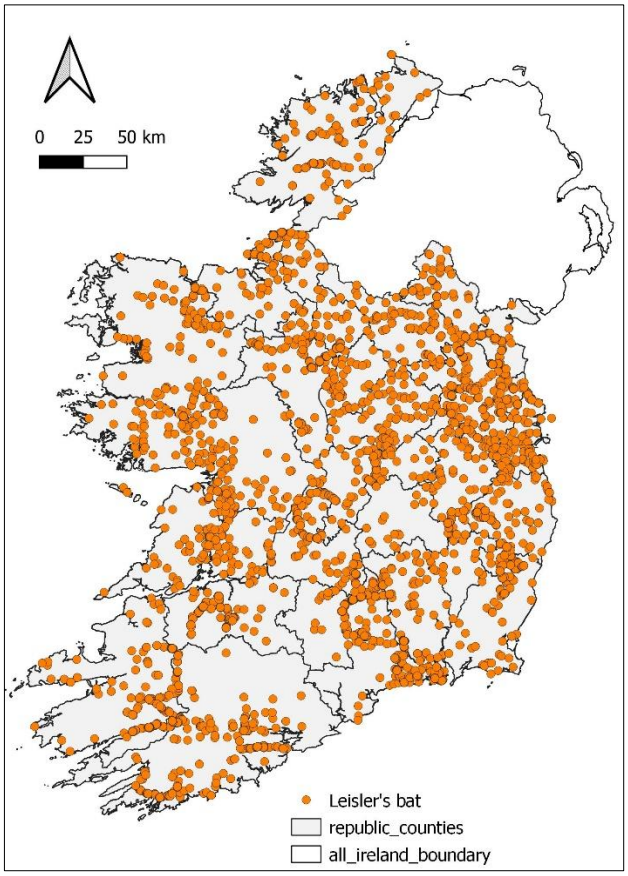
Brown long-eared bat



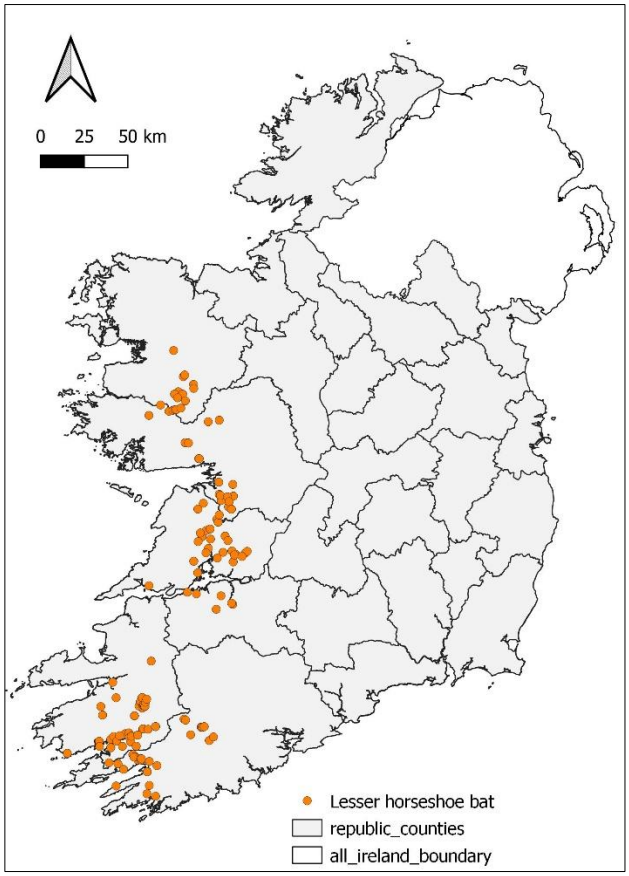
Common pipistrelle



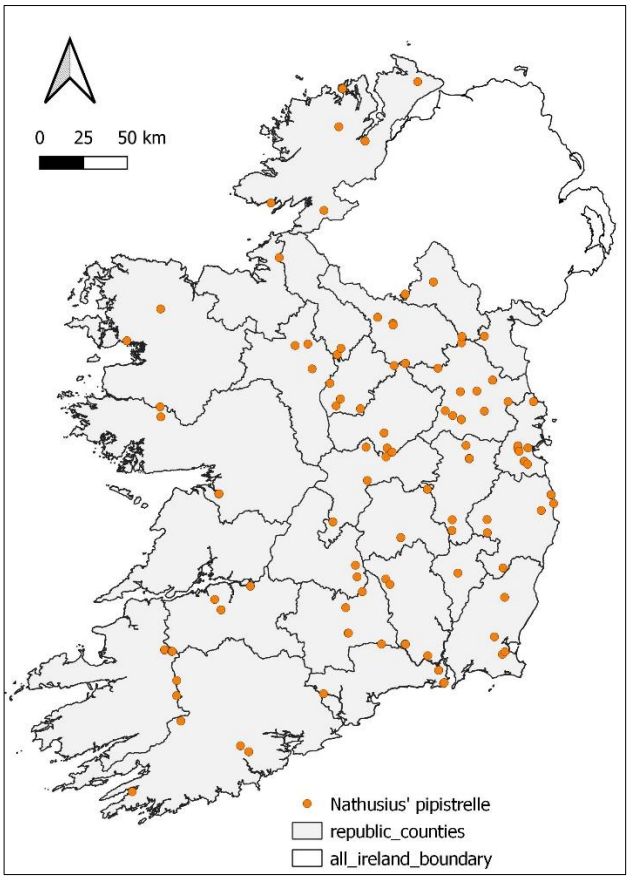
Daubenton's bat



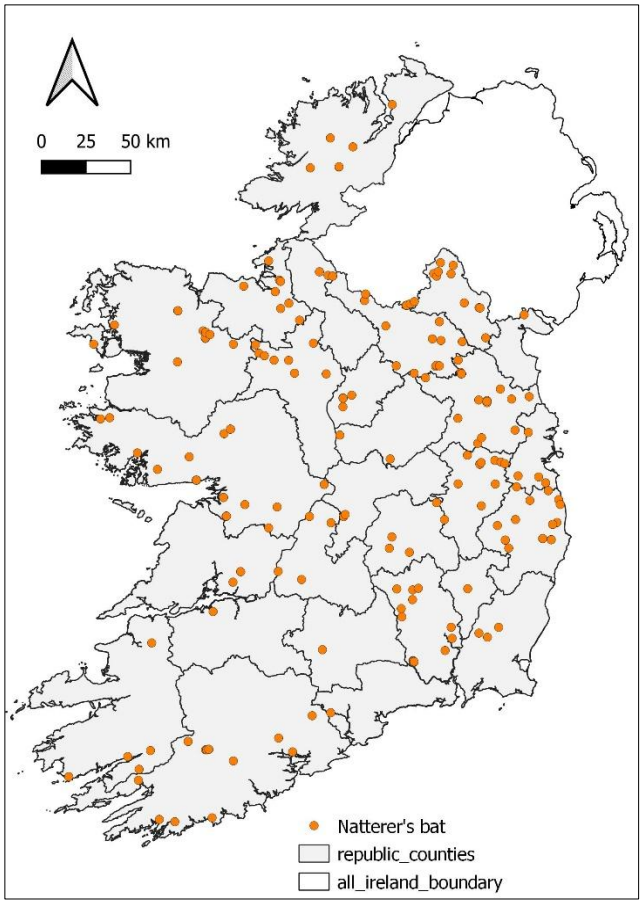
Leisler's bat



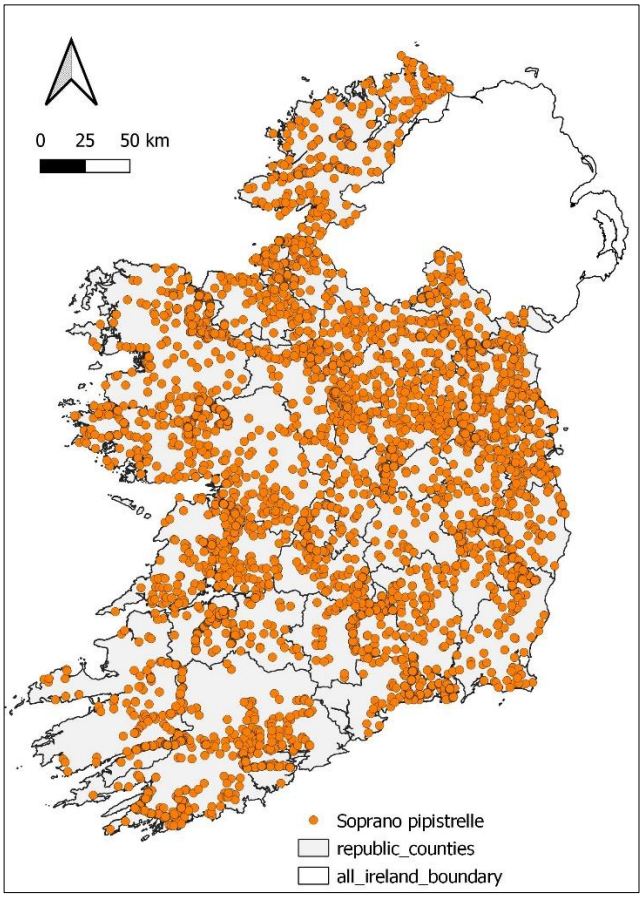
Lesser horseshoe bat



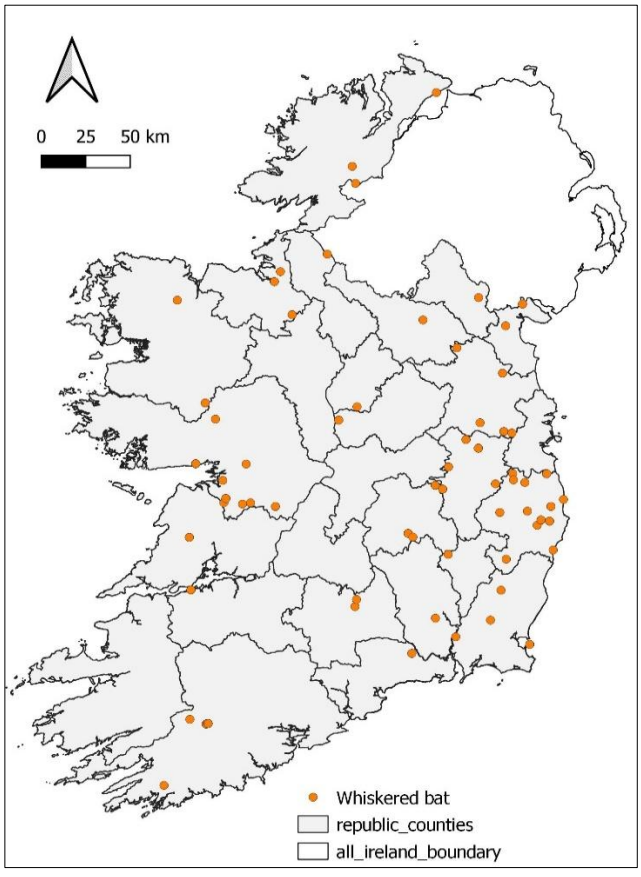
Nathusius' pipistrelle



Natterer's bat



Soprano pipistrelle



Whiskered bat