



An Roinn Tithíochta,  
Rialtais Áitiúil agus Oidhreachta  
Department of Housing,  
Local Government and Heritage

# **Application for Derogation Licence**

## **Under the European Communities (Birds and Natural Habitats) Regulations 2011 – 2021**

Prepared by the Department of Housing, Local Government and Heritage

[npws.ie](http://npws.ie)

- This form is to be used by any person applying for a derogation licence under Regulation 54 or by the Minister under Regulation 54(A)
- Please ensure that you answer questions fully in order to avoid delays
- If you experience any problems filling in this form, please contact the Wildlife Licensing Unit;
- Please note – applications/reports received and licences issued under this derogation may be published on the NPWS website and/or the Department's Open Data website

Wildlife Licensing Unit,

Department of Housing, Local Government and Heritage

National Parks and Wildlife Service

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## Part A. The Applicant: Personal Details

These questions relate to the person responsible for any proposed works and who will be the **named licensee**. As the licensee you will be responsible for ensuring compliance with the licence and its conditions, even though you may employ another person to act on your behalf.

**If this application is being submitted on behalf of a third party please also complete Part B below.**

### 1. (a) Name of Applicant

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
Mr	Joseph	Mitchell
<b>(b)</b> Address Line 1	85 Strand Road	
Address Line 2	Sandymount	
Town		
County	Dublin	
Eircode	D04E2T3	
<b>(c)</b> Contact number	087 4150640	
<b>(d)</b> Email address	Mitchell.joseph@gmail.com	
<b>(e)</b> Address where works are to be carried out if different from (b) above.		
Address Line 1		
Address Line 2	Gortnamanagh East	
Town	Loughrea	
County	Galway	
Eircode		

## Part B. Details of Person Submitting Application on Behalf of Applicant/Licensee

Information relating to the person (e.g. ecologist) responsible for submitting the application on behalf of the applicant/licensee should be entered below:

### 1. (a) Name of Person/Ecologist

Title (Mr/Mrs/Miss/Ms/Dr)	Forename(s)	Surname
	Aisling	Walsh
<b>(b)</b> Company Name	Ash Ecology and Environmental Ltd	
Address Line 1	Monine	
Address Line 2	Kilfinane	
Town	Kilmallock	
County	Limerick	
Eircode		
<b>(c)</b> Contact number	089 4991181	
<b>(d)</b> Email address	info@ashecolology.ie	
<b>(e)</b> Relationship to Applicant	Contracted Ecologist of Applicant	

**Part C. The Application**

1. **Species of Animal:** Please indicate which species is affected by the proposed works:

- Bat
- Otter
- Kerry Slug
- Natterjack Toad
- Dolphin
- Whale
- Turtle
- Porpoise

1. Please detail the exact species (scientific name): [*Pipistrellus pygmaeus* , *Pipistrellus pipistrellus* , *Plecotus auratus*), *Myotis nattereri*]

\_\_\_\_\_

2. Please provide the maximum number of individuals affected\* | CP ~2, SP ~5, BLE ~2-4, NB ~7 |

\_\_\_\_\_

3. Please provide the maximum number of breeding or resting sites affected\* | 1 |

4. Please provide the maximum number of eggs to be taken\* | 0 |

\_\_\_\_\_

5. Please provide the maximum number of eggs to be destroyed\* | 0 |

\_\_\_\_\_

\*If no figures can be provided for the maximum number of individuals, breeding sites, resting places and eggs to be covered by the derogation please provide reasons why.

6. **Species of Plant:** Please indicate which species is affected by the proposed works:

- Killarney Fern
- Slender Naiad
- Marsh Saxifrage

7. If you previously received a derogation for any species of animal or plant please state licence number and confirm that you have made a return to NPWS on the numbers actually affected by that licence

DER/BAT 2020 – 46 EUROPEAN, DER/BAT 2020 – 48 EUROPEAN, DER/BAT 2021 – 89 EUROPEAN, DER/BAT 2022 – 12 EUROPEAN, DER/BAT 2023 – 23 EUROPEAN, DER/BAT 2023 – 106 EUROPEAN, DER/BAT 2023 – 135 EUROPEAN, DER/BAT 2024 -

25 EUROPEAN and DER/BAT 2024 - 130 EUROPEAN, returns made for all except 2024 licences (ongoing)
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**8. Proposed Dates for Works:** Please indicate the timeframe that you propose to carry out works. Dates set by NPWS may differ from dates proposed here.

Start	1 <sup>st</sup> October 2026	Date:
End	31 <sup>st</sup> December 2026	Date:

**9. Please tick which reason below explains How this Application Qualifies under Regulation 54(2)(A-E) of the European Communities (Birds and Natural Habitats) Regulations:**

<b>a.</b>	In the interests of protecting wild flora and fauna and conserving natural habitats	<input type="checkbox"/>
<b>b.</b>	To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property	<input type="checkbox"/>
<b>c.</b>	In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment	<input checked="" type="checkbox"/>
<b>d.</b>	For the purpose of research and education, of re-populating and re-introducing these species and for the breeding operations necessary for these purposes, including artificial propagation of plants	<input type="checkbox"/>
<b>e.</b>	To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent specified therein, which are referred to in the First Schedule	<input type="checkbox"/>

**10. Report Checklist: Please append a detailed report to support this application and ensure that it contains the following information:**

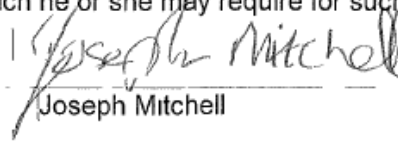
<b>11.1</b>	Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations.	<input checked="" type="checkbox"/>
<b>11.2</b>	Evidence that actions permitted by a derogation licence will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.	<input checked="" type="checkbox"/>
<b>11.3</b>	Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.	<input checked="" type="checkbox"/>
<b>11.4</b>	As much information as possible to allow a decision to be made on this application.	<input checked="" type="checkbox"/>

## Part D. Declaration

I declare that all of the foregoing particulars are, to the best of my knowledge and belief, true and correct. I understand that the deliberate killing, injuring, capturing or disturbing of protected species, or damage or destruction of their breeding sites or resting places or the deliberate taking or destroying of eggs is an offence without a licence and that it is a legal requirement to comply with the conditions of any licence I may be granted following this application. I understand that NPWS may visit to check compliance with a licence.

Please note that under Regulation 5 of the European Communities (Birds and Natural Habitats) Regulations 2011-2021 an authorised officer may enter and inspect any land or premises for the purposes of performing any of his or her functions under these Regulations or for obtaining any information which he or she may require for such purposes

**Signature of the Applicant**



**Date**

05/09/2024

**Name in BLOCK LETTERS**

Joseph Mitchell

### VACY STATEMENT

Please note that under Data Protection legislation Wildlife Licencing Unit staff may only discuss licence applications with the applicant, and not with any third party. See Privacy Statement at [www.npws.ie/licences](http://www.npws.ie/licences)

npws.ie

Department of Housing, Local Government and Heritage



An Roinn Títhíochta,  
Rialtais Áitiúil agus Oidhreacht  
Department of Housing,  
Local Government and Heritage

August  
2024

# Bat Report to Accompany Bat Derogation Licence Application



**Gortnamannagh East,  
Kilchreest,  
Co. Galway**



ASH Ecology & Environmental



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Bat Report to Accompany Bat Derogation Licence Application  
 – Gortnamannagh East, Kilchreest, Co. Galway

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## **1. INTRODUCTION**

### **1.1 Purpose of the Report**

This report has been prepared by Ash Ecology and Environmental Ltd (AEE) to accompany a bat derogation licence application for works at Gortnamannagh East, Kilchreest, Co. Galway (see Figure 1 and 2). The application is in response to planning application 24/60870, which proposes the repointing and refurbishment of existing stone sheds into a habitable dwelling (see Figure 3).

Following a letter from the National Parks and Wildlife Service (NPWS) department to Galway County Council on August 9<sup>th</sup> 2024, it was highlighted that a derogation licence is required due to the potential presence of bat roosts in buildings scheduled for demolition. The NPWS letter requested the need for comprehensive bat surveys to be carried out at appropriate times of the year to fully understand bat numbers and usage of the site.

In response to this requirement, two detailed bat surveys were conducted:

- April 28<sup>th</sup> 2024
- August 19<sup>th</sup> 2024

These surveys confirmed the presence of multiple bat species using Building 1 as a roost, including:

1. Common Pipistrelle (*Pipistrellus pipistrellus*)
2. Soprano Pipistrelle (*Pipistrellus pygmaeus*)
3. Brown Long-eared Bat (*Plecotus auritus*)
4. Natterer's Bat (*Myotis nattereri*)

The presence of these species, particularly the light-sensitive Brown Long-eared Bat and Natterer's Bat, underscores the importance of Building 1 as a roost and necessitates careful mitigation measures.

This report serves as the formal application for a Bat Derogation Licence from the Wildlife Licensing Unit, National Parks and Wildlife Service, Department of Housing, Local Government and Heritage. It provides detailed information on the bat surveys conducted, the species identified, and their use of the site. Furthermore, it outlines comprehensive mitigation measures designed to offset the impacts on the bat populations affected by the proposed works.

### **1.2 Proposed Mitigation Measures**

In response to the NPWS concerns and survey findings, we have developed a robust mitigation strategy. A key component of this strategy is the construction of a purpose-built bat shed. The NPWS letter specifically requested clarification on the "bat shed" concept, asking whether it would be for the sole use of bats or if the lower part would be used by homeowners.

To address these concerns, we propose the following for the bat shed:

The entire structure will be dedicated solely to bat use, with no portion reserved for homeowner use.

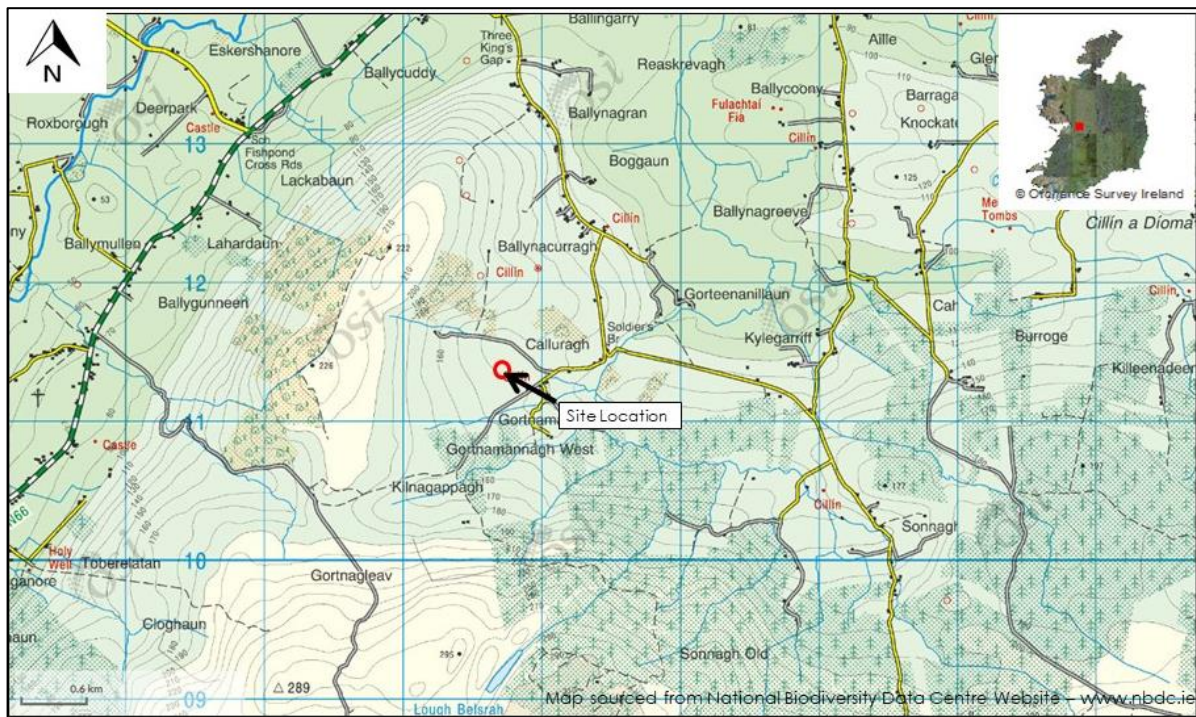
Roosting opportunities will be provided throughout the entire shed, allowing bats to access cooler locations during periods of high temperatures. This design considers the changing climate and recent high temperatures experienced.

No lighting of any kind will be installed on or in the bat shed, and no external lighting will be directed towards it.

Additional mitigation measures include:

1. Timing of works to avoid sensitive periods for bats
2. Installation of bat boxes
3. Implementation of a bat-friendly lighting scheme for the overall development

These measures are described in detail in Section 4 of this report. The proposed works will only be undertaken if this derogation licence is granted. The mitigation measures outlined in this report are to form part of the licence application.



**Figure 1** Site Location Map



## 1.2 Competency of Assessor

This report has been prepared by Ash Ecology & Environmental Ltd (AEE) whose managing director and leading ecologist is Aisling Walsh who is a full member of the Chartered Institute of Ecological & Environmental Management (CIEEM) while the company, AEE, is a Registered Practice by the CIEEM.

Aisling's qualifications include M.Sc. (Dist) in Biodiversity and Conservation (TCD) and B.Sc. (Hons) Zoology (NUIG), a Diploma in Applied Aquatic Science (GMIT) and a Certificate in Applied Biology (GMIT).

Aisling is a licenced bat ecologist (example of recent: DER/BAT 2020 – 46 EUROPEAN, DER/BAT 2020 – 48 EUROPEAN, DER/BAT 2021 – 89 EUROPEAN, DER/BAT 2022 – 12 EUROPEAN, DER/BAT 2023 – 23 EUROPEAN, DER/BAT 2023 – 106 EUROPEAN, DER/BAT 2023 – 135 EUROPEAN, DER/BAT 2024 - 25 EUROPEAN, and DER/BAT 2024 - 130 EUROPEAN) and a member of Bat Conservation Ireland and associate member of the Institute of Lighting Professionals (ILP). In addition she has completed several bat courses to continue her training and CPD e.g. a Lantra-accredited course, developed by the Bat Conservation Trust and supported by the Arboricultural Association to access bat tree roost features and a course in 'Understanding Obtrusive Light' accredited by the Institute of Lighting Professionals. Over the past 17 years Aisling has completed several hundred bat surveys providing her with more than adequate experience in the profession.

## 1.3 Bat Legislation

All bat species are protected under the Wildlife Act 1976 to 2021 which make it an offence to wilfully interfere with or destroy the breeding or resting place of these species; however, the Acts permit limited exemptions for certain kinds of situations.

Section 23 of the Wildlife Act 1976 to 2021 contains several exemptions to the protection given to the species listed for protection on Schedule 5 (e.g. for agriculture or construction). In 2005 a further amendment through the European Communities (Natural Habitats) (Amendment) Regulations 2005 (S.I. No. 378 of 2005) removed all of the exemptions provided in Section 23(7) of the Wildlife Act 1976 to 2021 insofar as they relate to Annex IV species, including all species of bats. Those 2005 Regulations were revoked in 2011 except for Regulation 2 which brings about this strengthened protection for bats (and other Annex IV species). All species of bats in Ireland are listed on Schedule 5 of the 1976 Act, and are therefore subject to the provisions of Section 23, which make it an offence to:

- Intentionally kill, injure or take a bat;
- Wilfully interfere with the breeding or resting place of a bat

The Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora ("the Habitats Directive") seeks to protect rare and vulnerable species, including all species of bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All species of bat found in Ireland are listed on Annex IV of the Directive. Member States are required to put in place a system of strict protection (as outlined in Article 12) for species listed on

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Annex IV ('European protected species'). The lesser horseshoe bat is further protected under Annex II. This Annex relates to the designation of Special Areas of Conservation (SACs). The Habitats Directive is transposed into Irish law by the European Communities (Birds & Natural Habitats Regulations) 2011 (S.I. No. 477 of 2011) ("the Habitats Regulations"). Under the Habitats Regulations (2011), all bat species are listed on the First Schedule and Regulation 51 makes it an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat particularly during the period of breeding, hibernating or migrating;
- Damage or destroy a breeding site or resting place of a bat;
- Keep, sell, transport, exchange, offer for sale or offer for exchange any bat taken in the wild.

Across Europe, bats 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 (CMS, Bonn Convention 1979) was instigated to protect migrant species across all European boundaries. EUROBATS (a daughter Agreement under CMS) is of particular relevance in relation to cooperation across international borders for the conservation of bats, many of which are known to migrate long distances. The Irish government has ratified both of these conventions as well as the EUROBATS Agreement.

#### **1.4 Derogation licences**

It is an offence, under Regulation 51 of the European Communities (Birds and Natural Habitats) Regulations, 2011 ('the 2011 Regulations') to:

- a) Deliberately capture or kill a bat in the wild;
- b) Deliberately disturb a bat particularly during the period of breeding, rearing, hibernation and migration;
- c) Damage or destroy a bat's breeding site or resting place, or;
- d) Keep, transport, sell, exchange, offer for sale or offer for exchange any bat taken in the wild, other than those taken legally before the Habitats Directive before the Habitats Directive was implemented.

A person may apply to the Minister under Regulation 54 of the 2011 Regulations for a derogation licence to carry out one or more of these prohibited activities. But, the Minister may only grant such a derogation licence if three criteria are met.

Firstly the Minister may only grant a derogation licence if it is for one of the following specified reasons listed in Regulation 54:

- a) In the interests of protecting wild fauna and flora and conserving natural habitats;
- b) To prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;
- c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or

- 
- economic nature and the beneficial consequences of primary importance for the environment;
- d) For the purpose of research and education, of repopulating and introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants, or;
  - e) To allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of bats.

Secondly, the Minister may only issue a derogation if there is no alternative to carrying out the prohibited activity. The first aim of the developer, whether from a private company or a public authority, working with professional advice, should be to entirely avoid any potential impact of a proposed development on bats and their breeding and resting places. Alternatives may involve redesigning a development so that bat roosts, and associated commuting routes and feeding areas are kept intact and that bats are not disturbed, for example by inappropriate lighting. It should be noted that the European Commission has a specific understanding of satisfactory alternative solution. "An alternative solution cannot be deemed unsatisfactory merely because it would cause greater inconvenience or compel a change in behaviour" (European Commission, 2021, page 13)<sup>1</sup>. Decisions about what solution is satisfactory must be science-based and should solve the problem of how to strictly protect the bats in light of the development.

Thirdly the Minister may only grant a derogation if it is not detrimental to the maintenance of the populations of bats at a favourable conservation status (FCS) in their natural range. There is case law from the Court of Justice of the European Union (CJEU) to back this up. One example is the Finnish Wolf Case C-674/17. The ruling establishes that the Member State must "clearly and precisely" identify in the derogation what the objectives of the derogation are. It must also establish that the derogation is capable of achieving those objectives and demonstrate that there is no satisfactory alternative. Cumulative effects of derogations must be taken into account when issuing derogations. The maximum number of all derogations must not be detrimental to the maintenance or restoration of the population at FCS. Consideration must be given to other human causes of mortality. Any risk to FCS must be ruled out by detailed conditions based on the level of population, its conservation status and its biological characteristics. The conditions must be precisely defined and they must be monitored to ensure they are implemented.

If any of these three criteria are not satisfied, the Minister cannot issue a derogation licence. It must never be assumed that a derogation licence will automatically be granted.

In summary, it is clear that a developer must first look to avoid all impacts on bats. This may mean looking at alternative solutions and redesigning the project accordingly. If this is not possible, the developer needs to check whether there are grounds to apply for a derogation licence, based on the reasons given in Regulation 54 of the Habitats Regulations. When applying for a derogation licence the developer must clearly state the reason and describe in detail all alternative solutions which were given serious consideration. Any mitigation intended to ensure

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<sup>1</sup> <https://op.europa.eu/en/publication-detail/-/publication/bbc7ace0-27e2-11ec-bd8e-01aa75ed71a1/language-en>



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that there is no impact or minimal impact on the bats must be clearly described in detail, giving examples of how it worked in other places.

If a derogation licence has been refused by the Minister, any aspect of the development for which the derogation licence was sought, must not go ahead, no matter what other permissions are in place.

A derogation licence is required when on the basis of survey information and specialist knowledge, it appears that:

- The site in question is a breeding site or resting place for bats and/or;
- The proposed activity could impact on a breeding site or resting place of a bat.

No licence is required if the proposed activity is unlikely to result in an offence. The advice given in this document (and see also Mullen et al. 2021)<sup>2</sup> should assist the proponent, or those acting on their behalf, in arriving at a decision on this matter, though it must be recognised that determining whether a particular site is used as a breeding or resting place can be problematic for such mobile animals as bats. Determining whether an activity undertaken near to a roost might impact on that roost (e.g. by removing important flight lines or foraging areas) will also require specialist assessment. Note that if the proposed activity can be timed, organised and carried out so as to avoid committing an offence then no licence is required.

Examples of works that are likely to need a licence because they may result in the destruction of a breeding or resting place and/or disturbance of bats include:

- Demolition of buildings known to be used by bats;
- Conversion of barns or other buildings known to be used by bats;
- Restoration of ruined or derelict buildings;
- Maintenance and preservation of heritage buildings;
- Introduction of artificial lighting inside a roost or near a roost entrance;
- Change of use of buildings resulting in increased ongoing disturbance;
- Removal of trees known to be used by bats;
- Significant alterations to roof voids known to be used by bats.

Examples of works that, if carefully planned, may not need a licence include:

- Works near to or at roosts (e.g. re-roofing) if carried out while bats are not present and the access points and roosting area are not affected;
- Remedial timber treatment, carried out with the correct (non-toxic to bats) chemicals while bats are not present.

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<sup>2</sup> Mullen, E., Marnell, F & Nelson, B. (2021) Strict protection of animal species. Guidance for public authorities on the application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a public authority. Unpublished Report, National Parks and Wildlife Service. Department of Housing, Local Government and Heritage, Dublin. <https://npws.ie/sites/default/files/files/article-12-guidance-final.pdf>

## 2. METHODOLOGY

### 2.1 Information Sources

A desk-based review of information sources was completed. Information contained on the websites of the National Parks and Wildlife Service (NPWS)<sup>3</sup> and the National Biodiversity Data Centre (NBDC)<sup>4</sup> was reviewed. The following publications and websites were also reviewed and consulted:

#### Bat Guidance

- Bat Conservation Trust (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines 4<sup>th</sup> edition
- Bat Conservation Trust and Institution of Lighting Professionals (2023) Guidance Note 8/23 Bats and Artificial Lighting<sup>5</sup>
- Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management (CIEEM), Ampfield.
- 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.
- Mullen, E., Marnell, F & Nelson, B. (2021) Strict protection of animal species. Guidance for public authorities on the application of Articles 12 and 16 of the EU Habitats Directive to development/works undertaken by or on behalf of a public authority. Unpublished Report, National Parks and Wildlife Service. Department of Housing, Local Government and Heritage, Dublin. <https://npws.ie/sites/default/files/files/article-12-guidance-final.pdf>
- Bat Conservation Ireland <https://www.batconservationireland.org/>
- Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals (2018)
- Bat Conservation Trust (2018) Bats and artificial lighting in the UK Bats and the Built Environment series<sup>6</sup>
- Mitchell-Jones, A.J, & McLeish, A.P. (eds). 2004., 3rd Edition Bat Workers' Manual, JNCC, Peterborough, ISBN 1 86107 558 8
- Bat Conservation Ireland (2012) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland, [www.batconservationireland.org](http://www.batconservationireland.org)<sup>7</sup>
- Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2005).
- Guidelines for the Treatment of Bats during the Construction of National Road Schemes (National Roads Authority, 2005).
- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2011).

<sup>3</sup> The National Parks and Wildlife Services map viewer <http://webgis.npws.ie/npwsviewer/>

<sup>4</sup> The National Biodiversity Data Centre [www.NBDC.ie](http://www.NBDC.ie)

<sup>5</sup> <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

<sup>6</sup> <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

<sup>7</sup> [https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-AA-Guidelines\\_Version1.pdf](https://www.batconservationireland.org/wp-content/uploads/2013/09/BCIreland-AA-Guidelines_Version1.pdf)

- 
- McAney, K & Hanniffy, R (2015) The Vincent Wildlife Trust's Irish bat box schemes
  - Bat Conservation Ireland <https://www.batconservationireland.org/>
  - Andrews H & Gardener M (2016) Bat Tree Habitat Key – Database Report 2016. AEcol, Bridgwater.
  - Aughney, T., Kelleher, C. & Mullen, D. (2008) Bat Survey Guidelines: Traditional Farm Buildings Scheme. The Heritage Council, Áras na hOidhreachta, Church Lane, Kilkenny.

## 2.2 Desk Study

### 2.2.1 Species Background

Ireland had ten known bat species until February 2013, when a single live greater horseshoe bat (*Rhinolophus ferrumequinum*) was found roosting in Co. Wexford<sup>8</sup>. On 8th June 2020, a single audio recording was confirmed in the Glendaough area, Co. Wicklow. It was found on two more occasions in the same area in early July 2020 (Bat Conservation Ireland, July 2020).

The ten species (excluding the greater horseshoe) are briefly described overleaf. For a more comprehensive overview see McAney, 2006.<sup>9</sup>

The dependence of Irish bat species on insect prey has left them vulnerable to habitat destruction, land drainage, agricultural intensification and increase use of pesticides. Also, their reliance on buildings as roosting sites has made them particularly vulnerable to renovation works and the use of timber chemical treatment. Buildings are highly important as roosting sites for bats and all Irish bat species use buildings for all roost types. Most significant in terms of roosts in houses are maternity roosts, but cellars and even attics may serve as hibernation sites for bats. Roosts within buildings can far exceed the numbers encountered in trees, bridges, caves or cliffs and roosts of over 1,000 bats have been recorded in buildings.<sup>10</sup>

#### 2.2.1.1 Family Vespertilionidae:

##### Common pipistrelle *Pipistrellus pipistrellus*

This species was only recently separated from its sibling, the soprano or brown pipistrelle *P. pygmaeus*<sup>11</sup>, which is detailed below. The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland.

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<sup>8</sup> National Biodiversity Data Centre <http://www.biodiversityireland.ie/new-bat-species-found-in-ireland/>

<sup>9</sup> McAney, K. (2006) *A Conservation Plan for Irish Vesper Bats*. Irish Wildlife Manual No.20. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

<sup>10</sup> NRA (2005) *Guidelines for the Treatment of Bats Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin

<sup>11</sup> Barratt, E. M., Deauville, R., Burland, T. M., Bruford, M. W., Jones, G., Racey, P. A., & Wayne, R. K. (1997) *DNA Answers the Call of Pipistrelle Bat Species*. *Nature* 387: 138 - 139.

### Soprano pipistrelle *Pipistrellus pygmaeus*

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle on detector. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings, but tree holes and heavy ivy are also used. Roost numbers can exceed 1,500 animals in mid-summer.

### Nathusius' pipistrelle *Pipistrellus nathusii*

Nathusius' pipistrelle is a recent addition to the Irish fauna and has mainly been recorded from the north-east of the island in Counties Antrim and Down<sup>12</sup> and also in Fermanagh, Longford and Cavan. It has also recently been recorded in Counties Cork and Kerry.<sup>13</sup> However, the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. The status of the species has not yet been determined.

### Leisler's bat *Nyctalus leisleri*

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddisflies and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and as Ireland holds the largest national population the species is considered as Near Threatened here.

### Brown long-eared bat *Plecotus auritus*

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversized ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked. It prefers to roost in old buildings.

### Natterer's bat *Myotis nattereri*

This species has a slow to medium flight, usually over trees but sometimes over water. It usually follows hedges and treelines to its feeding sites, consuming flies, moths, caddisflies and spiders. Known roosts are usually in old stone buildings but they have been found in trees and bat boxes. The Natterer's bat is one of our least studied species and further work is required to establish its status in Ireland.

### Daubenton's bat *Myotis daubentonii*

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<sup>12</sup> Richardson, P. (2000) *Distribution Atlas of Bats in Britain and Ireland 1980 - 1999*. The Bat Conservation Trust, London, England.

<sup>13</sup> Kelleher, C. (2005) *International Bat Fieldcraft Workshop, Killarney, Co. Kerry*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government.

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This bat species feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs but it can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its over-sized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees.

#### Whiskered bat *Myotis mystacinus*

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The whiskered bat is one of our least studied species and further work is required to establish its status in Ireland.

#### Brandt's bat *Myotis brandtii*

This species is known from five specimens found in Counties Wicklow (Mullen, 2007), Cavan, and Clare in 2003, a specimen in Kerry in 2005<sup>14</sup> and another in Tipperary in 2006.<sup>15</sup> No maternity roosts have yet been found. It is very similar to the whiskered bat and cannot be separated by the use of detectors. Its habits are similar to its sibling.

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<sup>14</sup> Kelleher, C. 2006a Nathusius pipistrelle *Pipistrellus nathusii* and Brandt's Bat *Myotis brandtii* - New Bat Species to Co. Kerry – *Irish Naturalists' Journal* 28: 258.

<sup>15</sup> Kelleher, C. 2006b Brandt's Bat *Myotis brandtii*, New Bat Species to Co. Tipperary. *Irish Naturalists' Journal* 28: 345.

### **2.2.1.2 Family Rhinolophidae:**

#### Lesser horseshoe bat *Rhinolophus hipposideros*

This species is the only representative of the Rhinolophidae or horseshoe bat family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. It often carries its prey to a perch to consume, leaving the remains beneath as an indication of its presence.

The echolocation call of this species is of constant frequency and, on a heterodyne bat detector, sounds like a melodious warble. The species is confined to six counties along the Atlantic seaboard: Mayo, Galway, Clare, Limerick, Kerry and Cork. The current Irish national population is estimated at 12,500 animals. This species is listed on Annex II of the EC Habitats Directive and 41 Special Areas of Conservation have been designated in Ireland for its protection. Where it occurs, it is often found roosting within farm buildings.

### **2.2.2 Previous Records & Landscape Suitability**

The National Biodiversity Data Centre (NBDC) maps landscape suitability bats based on Lundy *et al.* (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100 with 0 being least favourable and 100 most favourable for bats. On average for all bat species the highest range is between 36.44 - 58.56. The overall assessment of bat habitats for the current study area is given as '31.44', deemed 'Moderate-High' by the author.

Six species of bat have previously been recorded in the 10km<sup>2</sup> grid square M51 (accessed 28/04/2024):

- Brown Long-eared Bat (*Plecotus auritus*)
- Daubenton's Bat (*Myotis daubentonii*)
- Leisler's Bat (*Nyctalus leisleri*)
- Common Pipistrelle (*Pipistrellus pipistrellus*)
- Soprano Pipistrelle (*Pipistrellus pygmaeus*)
- Whiskered Bat (*Myotis mystacinus*)

Table 1 gives the suitability of the study area for the bat species found in the study area (based on NBDC) along with their Irish Red List Status (from Marnell *et al.*, 2019).<sup>16</sup>

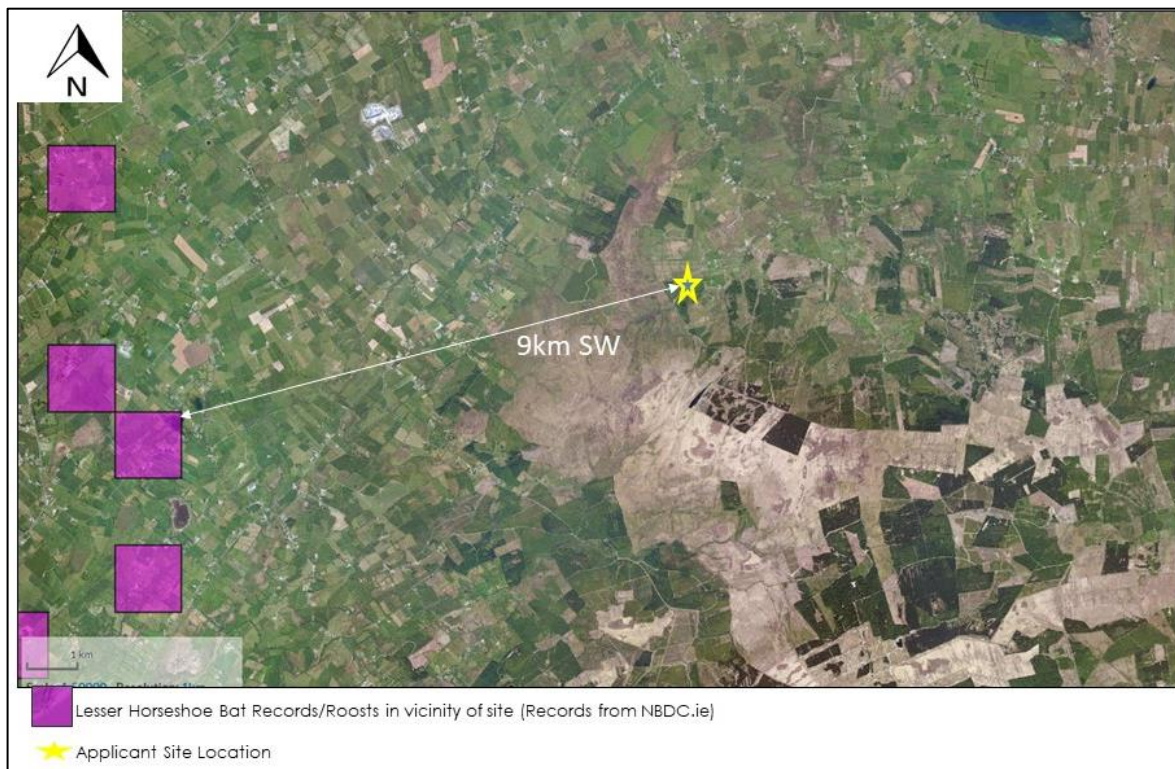
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<sup>16</sup> Marnell, F., Looney, D. & Lawton, C. (2019) Ireland Red List No. 12: Terrestrial Mammals. National Parks and Wildlife Service, Department of the Culture, Heritage and the Gaeltacht, Dublin, Ireland.

**Table 1** Suitability of the study area for the bat species found in the Kilchreest area (based on the NBDC data) with Irish Red list status indicated.

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	31.44	Least Concern
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	42	Least Concern
Brown long-eared bat	<i>Plecotus auritus</i>	41	Least Concern
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	47	Least Concern
Lesser-horseshoe bat	<i>Rhinolophus hipposideros</i>	7	Least Concern
Leisler's bat	<i>Nyctalus leisleri</i>	43	Least Concern
Whiskered bat	<i>Myotis mystacinus</i>	27	Least Concern
Daubenton's bat	<i>Myotis daubentonii</i>	31	Least Concern
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	0	Least Concern
Natterer's bat	<i>Myotis nattereri</i>	45	Least Concern

Records for Lesser Horseshoe Bat, a species under Annex II of the Habitats Directive is recorded close to the applicant site, approx. 9km southwest or further, see Figure 4. This species normally has a foraging radius range of 2.5km so is considered to be outside this zone.



**Figure 4** Lesser Horseshoe Bat Records in the Vicinity of Site

### **2.2.3 Bat Roosts**

Bats were originally cave and tree dwelling animals but many now find buildings just as suitable for their needs. Bats are social animals and most species congregate in large colonies during summer. These colonies consist mostly of females of every reproductive class, with some juvenile males from the previous year. Male bats normally roost individually or in small groups meeting up with the females in the late autumn-early winter, when it is time to mate. In summer, bats seek warm dry buildings in which they can give birth and suckle their young. In winter, they seek out places with a constant low temperature and high humidity where they can become torpid and hibernate during adverse weather conditions. However, bats do not hibernate continuously during winter and will awake and hunt during mild nights when there are insects available, and it is energetically advantageous to forage.

#### **2.2.3.1 Maternity Roosts**

Maternity roosts are the most significant roosts and they are predominantly all-female aggregations that are formed from late May onwards and remain as a relatively cohesive unit until mid to late August. Not all female bats give birth annually. These females that do bear young in a given year avail of a suitable building, tree and sometimes cave (or equivalent). The young are flightless for several weeks and hence are vulnerable to dangers such as tree felling and restoration, reinforcement or demolition of structures such as buildings and bridges.

#### **2.2.3.2 Mating Roosts**

Most bat species mate in autumn but pregnancy does not occur until the following spring. During this time males will take possession of a cavity in a building, tree, bridge, cave or mine and attract females to these sites to establish a harem. Male bats call both from a perch and in flight in much the same manner that male birds sing.

#### **2.2.3.3 Hibernation Roosts**

Bats have a high metabolic rate and in temperate countries, such as Ireland, flying insects are not available in sufficient numbers during winter to sustain bats. Therefore, bats hibernate during winter. In hibernation sites, bats are often completely inactive for several days and are extremely vulnerable to disturbance by human activities due to the time taken for them to become sufficiently active to allow escape. Hibernation may extend from November to the end of March, during which time bat activity will take place sporadically.

#### **2.2.3.4 Night Roosts**

These are roosts which are used as resting places for bats between foraging bouts. They also provide retreats for bats from predators or during inclement weather conditions. They also function as feeding perches and may be important for socialising.



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## 2.3 Bat Activity and Emergence Survey Methodology

Bat emergence surveys are typically recommended between May-September (Marnell et al. 2022) to observe bats emerging from roosts at dusk. This survey was conducted April 28<sup>th</sup> when bat activity is still expected given the favourable weather conditions (as per the BCT 2023 Guidelines - which the author applies to Ireland - *"The UK bat active period is generally considered to be between April and October inclusive, although April and October surveys are both weather dependent."*)

Both surveys were done within acceptable guidelines for general activity surveys as per BCT Guidelines 2023 which would inform on emergence, see Table 2. There are a series of stone buildings onsite, divided into 4 as per Figure 5 and 6 and see Plates Appendix A.

- 1 – Large Stone Building – for removal/demolition
- 2 & 3 – A set of two buildings joined as one overall structure – for retention and refurbishment
- 4 – Small shed – for removal/ demolition

April 28th, 2024 Survey:

A bat activity and emergence survey of the structures onsite was conducted from between 20:29 and 22:29 (sunset Kilchreest 20:59) as per 2023 Bat Conservation Trust guidelines. The survey involved monitoring the buildings onsite by continuously walking the perimeter and interiors of same for bat activity within and/or emergence. Weather conditions were optimal at the start of survey but with intermittent drizzle from 21:45 onwards. Temperatures were 10-11°C with a gentle breeze with rain towards the end of survey.

August 19th, 2024 Survey:

A follow-up bat activity and emergence survey was conducted from 20:22 to 22:52 (sunset at 20:52). The survey methodology remained consistent with the April survey, involving continuous monitoring of the buildings' perimeters and interiors. Weather conditions were 16°C, mostly dry with some drizzle towards the end, and slightly breezy.

For both surveys:

The equipment used for the bat surveys included Elekon Bat Logger M detectors. Visual observations were taken with the aid of a powerful L.E.D. torch (AP Pros-Series 220 Lumens High Performance Spotlight).

All spaces that could potentially allow bats access to the buildings were visually examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary. Cracks, crevices etc. were investigated for ingress / egress points and evidence of bat habitation, such as prey items, smearing lines, droppings, and staining. The floor, window sills, and other elevated surfaces inside the house, barn and stables were examined closely for droppings.

An unmanned Static Detector (Bat Logger M) was left in Building labelled "1" in the vicinity of bat droppings for both surveys, see Figure 5 for placement.

General bat activity in and around the buildings onsite was also recorded during both surveys.

The 2023 BCT guidelines were followed for the assessment rating<sup>17</sup> and classification which is shown as Table 3. Photos of the site taken in April and August 2024 are contained in Appendix A.

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<sup>17</sup> Bat Surveys for Professional Ecologists, Good Practice Guidelines (2016)

**Table 2** Recommended Survey Times for Survey Types described in Table 2.2. of the BCT 2023 Guidelines.

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Daytime Bat Walkover (DBW)												
PRA – structures												
Emergence survey for maternity or summer roosts <sup>b</sup>												
Emergence survey for transitional/occasional roosts <sup>b</sup>												
Re-entry surveys <sup>c</sup>												
Emergence survey for mating roosts <sup>b</sup>												
Hibernation survey – structures <sup>a</sup>												
GLTA <sup>d</sup>												
PRF inspection survey – trees												
Ground-level bat activity survey – night-time walkover surveys and automated/static												
Pre-, during and post-hibernation – automated/static bat activity survey												
Swarming survey <sup>e</sup>												
Back-tracking survey												
Trapping and radio-tagging survey <sup>f</sup>												

= 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 emergence surveys are not acceptable in Scotland.  
 = it is not acceptable to trap bats when they are heavily pregnant and have dependent pups. Mothers need to optimise foraging due to the physiological demands of pregnancy and lactation, and pups need to be regularly fed. Interrupting these activities could potentially have an impact on breeding success in the year in question. The timing of birth can vary between years – it may be as early as the end of May or as late as the start of August, therefore caution should be exercised and local information gained on birth dates before trapping activities are carried out during the summer months. Any information gained and decisions made should be kept as a record.

**a** Not including trees.  
**b** Please see Chapter 7 for recommended timings for surveys to give confidence in a negative result. For sites assessed as having low suitability, a survey should be carried out between May and August. For sites with moderate and high suitability, a proportion of the surveys should be carried out between May and August (to detect maternity roosts if present) but some of the surveys may be carried out later in the year in order to detect transitional and mating roosts. The survey season for presence/likely absence surveys is defined as May to September. Roost characterisation surveys may be appropriate in April and/or October depending on the need to characterise transitional/occasional roosts at these times.  
**c** The time that bats return to their roosts is very variable and therefore re-entry surveys are no longer recommended as a standard approach. If they are carried out the constraints should be recognised.  
**d** GLTAs can be sub-optimal in the spring, summer and autumn due to foliage obscuring parts of the tree. If all parts of the tree are visible then the survey can be carried out at any time. If parts of the tree are obscured by foliage then it is not possible to carry out a thorough survey and this limitation should be recognised and the impact on the results acknowledged. Please refer to Chapter 6 for more information.  
**e** Different species show a peak in swarming activity at different times, e.g. Daubenton's bat activity tends to peak in August whilst Natterer's bat activity tends to peak in September (Tomlinson, 2020) and therefore surveying across the swarming season is likely to be important.  
**f** Trapping and tagging in cooler conditions can make release of bats difficult, which should be a consideration if trapping is carried out in spring and autumn. Tagging of bats in April and sometimes early May should be avoided following a poor spring, if bats are in poor condition. Tagging of newly volant pups should be avoided. Tagging of bats should be avoided in October due to the risk that bats will enter hibernation with the tag still attached (bats will groom less often as they enter torpor more frequently). If a tag falls off during hibernation this could leave a bald patch if the fur has been clipped, which could have negative impacts for the hibernating bat. Please refer to Chapter 9 for more information.

**Table 3** Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of roost features within the landscape, to be applied using professional judgement (BCT Guidelines, 2023)

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

Potential suitability	Description	
High	Roosting habitats in structures	Potential flight-paths and foraging habitats
	<p>A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions<sup>b</sup> and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.</p>	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.</p> <p>Site is close to and connected to known roosts.</p>
<p><b>a</b> Negligible is defined as 'so small or unimportant as to be not worth considering, insignificant'. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).</p> <p><b>b</b> For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.</p> <p><b>c</b> Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten <i>et al.</i>, 2016 and Jansen <i>et al.</i>, 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.</p>		

## **2.4 Bat Roost Potential Tree Assessment**

No mature trees with bat roost features are to be removed due to the development. A bat tree roost assessment was therefore not required. Some small trees along roadside may be removed for sightlines but none of these were deemed to have bat roost potential. Any tree removal for sightlines should be done outside the bird nesting season (not between March 1<sup>st</sup> and August 31<sup>st</sup> of a given year).

## **2.5 Landscape Evaluation**

The ecological survey results were evaluated to determine the significance of identified features within the study area for bat habitats. The evaluation was based on an adapted importance scale that considers factors such as roosting potential, foraging areas, commuting routes, and the conservation status of bat species.

The criteria used to assess the ecological value and assign importance to the identified features for bats are as follows:

International Importance: Sites or features that support significant populations of bat species listed in Annex II of the EU Habitats Directive or are designated as Special Areas of Conservation (SACs) for bat species.

- National Importance: Sites or features that support nationally significant populations of bat species, are designated as Natural Heritage Areas (NHAs) or proposed NHAs for bat conservation, or contain maternity roosts or hibernacula of rare or threatened bat species.
- County Importance: Sites or features that support resident or regularly occurring populations of bat species listed in Annex IV of the EU Habitats Directive, provide important foraging areas or commuting routes for bats, or contain roosts of county-level significance.
- Local Importance (Higher Value): Sites or features containing suitable roosting habitats (e.g., mature trees, buildings with high potential), diverse foraging areas, or well-connected commuting routes that are likely to support a variety of bat species, including those of conservation concern.
- Local Importance (Lower Value): Sites or features with limited roosting potential, fragmented foraging areas, or commuting routes that may support common bat species but are less likely to be used by rare or threatened species.
- When evaluating the landscape for bats, it is essential to consider the specific habitat requirements of different bat species, as well as their roosting preferences and foraging behaviour. Factors such as the presence of suitable roosting sites (e.g., trees with cavities, buildings with crevices), the quality and diversity of foraging habitats (e.g., woodland edges, wetlands, species-rich grasslands), and the connectivity of commuting routes (e.g., hedgerows, treelines, rivers) should be taken into account.

By assessing the landscape features against these criteria, the overall value of the site for bats can be determined. This evaluation helps identify areas of higher ecological importance for bats and guides the development of appropriate

mitigation measures to minimize potential impacts on bat populations and their habitats.

It is important to note that while this evaluation framework is specific to bats, it should be used in conjunction with other ecological considerations and legal requirements to ensure a comprehensive assessment of the site's ecological value.

### 3. RESULTS

#### 3.1 Bat Emergence & Activity Survey

Two bat surveys were carried out: one on April 28<sup>th</sup> 2024, and a follow-up survey on August 19<sup>th</sup> 2024. The results of both surveys are summarised in Table 4. A total of 5 species were recorded across both surveys. See Figures 5 and 6 for activity survey results and the locations of buildings labelled 1 to 4.

The 4 x old stone buildings were inspected as per the methodology set out in Section 2.3 during both surveys. All accessible spaces to the surveyor that could potentially allow bats access to the structures were visually examined in detail for bats, signs of bats, or evidence of bat activity, using a torch where necessary. Cracks, crevices etc. were investigated for ingress / egress points and evidence of bat habitation, such as prey items, smearing lines, droppings, and staining. The interior of the buildings were also examined for fresh bat droppings and live sightings.

**Building 1** – Confirmed Bat Roost. In April 2024, bat droppings were identified on the top of an old insulation board which had fallen to the ground. The droppings were thought to be Brown Long-eared by visual observation and this was confirmed later in the evening with a visual and auditory confirmation (x4) by surveyor. The bat detector briefly picked up their calls but it did not officially register as they were too faint. Two windows were located either side of the pile of insulation boards and a static detector was placed here. It also recorded Common Pipistrelle (x2) and Soprano Pipistrelle (x5) calls.

In August 2024, 2 x Brown Long-eared Bats were observed flying within the building, and 7 x Natterer's Bats were recorded both visually and on the static detector placed within the building. The bats are likely to use these window exits, see Plates 16-18. The loose stonework with large crevices throughout and old roof membrane are the likely areas for these roosting bats. Barn swallow nests apparent.

**Building 2 & 3** – Part of the same overall stone structure but divided into two sheds. No bats were noted emerging or present during either the April or August surveys. While there are access points to both and crevices within the stonework, the lack of observed bat activity in both surveys has led to a revised assessment of 'Low' bat roost potential for these buildings. Barn swallow nests apparent.

**Building 4** – A smaller annex to 2&3. Open and drafty. Considered of 'Low' bat roost potential. No bat emergence observed in either survey.

Bat activity onsite was considered moderate during the April survey and was mainly along the mature treelines, however this may have been higher only for the deteriorating weather on the night and early in the bat season. The August survey

showed similar moderate activity, with perhaps lower numbers than expected. The surrounding landscape is optimal for bats with pockets of woodland, mature trees reflected in the moderate-high landscape suitability for the area.

Weather conditions for the August 19<sup>th</sup> survey were 16°C, mostly dry with some drizzle towards the end, and slightly breezy. The survey was conducted from 20:22 to 22:52 (sunset at 20:52).

Plates of 4 x buildings and the site in general are contained in Appendix A. The data with GPS points is attached as Appendix B.

**Table 4** Bat Results Summary Data – April 28<sup>th</sup> and August 19<sup>th</sup> 2024

Species Name Common	Species Name – Latin	April Activity Passes	August Activity Passes	Static in Building 1 - April 2024	Static in Building 1 - August 2024	Peak Frequency (kHz)
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	4	2	2	0	46.0
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	17	16	5	0	56.0
Leisler's Bat	<i>Nyctalus leisleri</i>	3	0	0	0	25.0
Brown Long-eared Bat	<i>Plecotus auritus</i>	0	0	~4+ (visual)	~2+ (visual)	-
Natterer's Bat	<i>Myotis nattereri</i>	0	7	0	7	~49.0

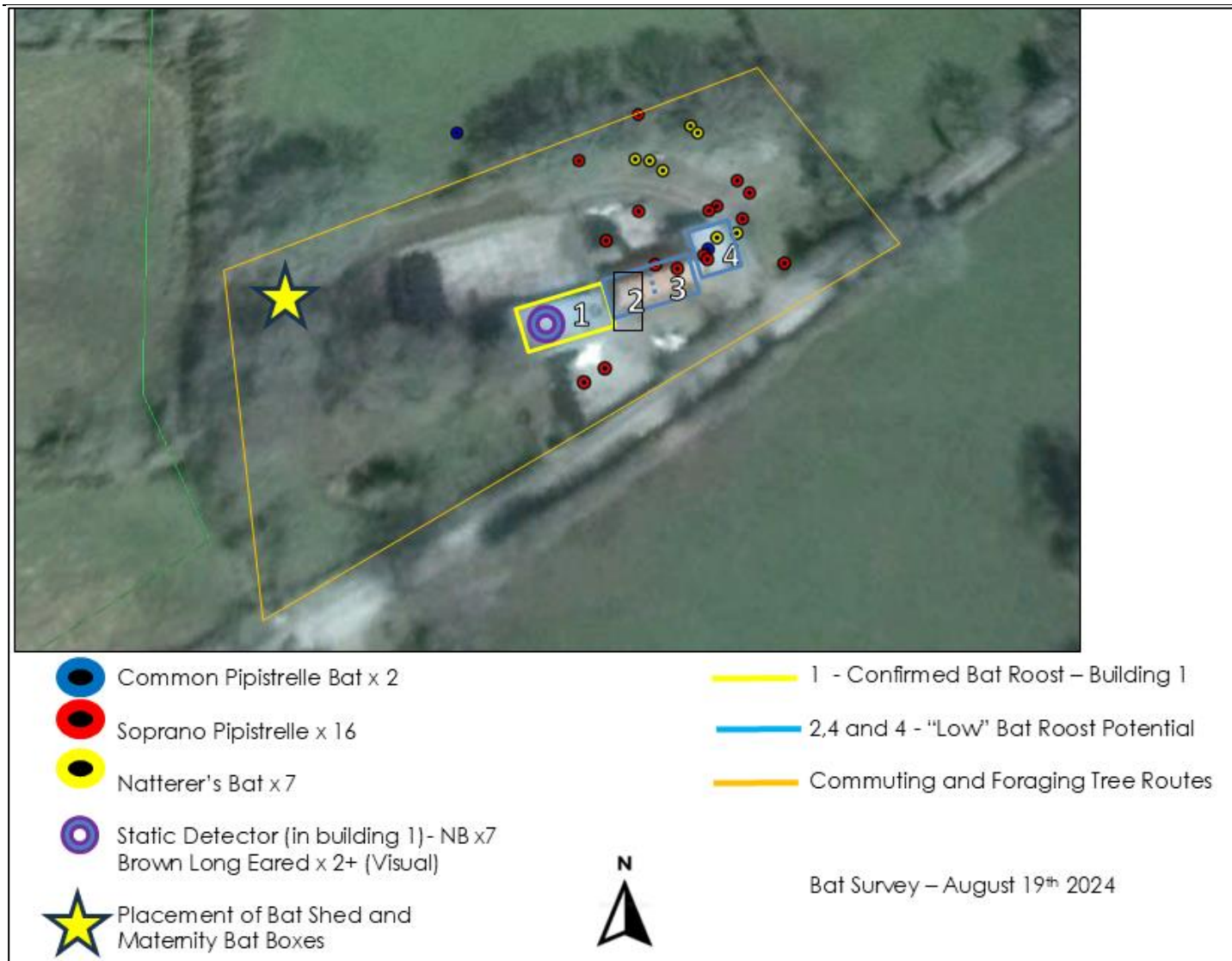
\*Brown Long-eared Bats were observed visually but not recorded on the detector due to their quiet calls.

These results confirm the importance of Building 1 as a roost for multiple bat species, including small numbers of Common Pipistrelle, Soprano Pipistrelle and Brown Long Eared in April 2024 and equally small numbers of Brown Long-eared Bat and Natterer's Bat during August 2024. The presence of all these species, albeit in small numbers, emphasises the need for careful mitigation measures during the proposed works and the requirement of this bat licence derogation licence application.





**Figure 5** Bat Activity Results –April 28<sup>th</sup> 2024



**Figure 6** Bat Activity Results –August 19<sup>th</sup> 2024

### **3.2 Bat Potential Tree Assessment**

All trees with bat roost potential are to be retained and therefore no bat tree assessment was required. Any smaller trees to be removed for sightlines should factor in the bird nesting season March 1<sup>st</sup> to August 31<sup>st</sup> of a given year.

### **3.3 Landscape Evaluation**

The broader landscape surrounding the site, consisting of agricultural lands, woodland pockets, mature trees, is considered to have high suitability for bats, with an NBDC rating of '31.44' (deemed 'Moderate-High'). The immediate surroundings provide suitable foraging areas and commuting routes, enhancing the site's value for bats.

Based on the criteria outlined in section 2.5, the landscape surrounding the site is assessed as being of County Importance for bats, considering the confirmed roost, high potential for additional roosts, and suitable habitats in the vicinity.

However, the site itself is considered to be of Local Importance (Higher Value) due to the confirmed bat roost in Building 1 and the 'Moderate' potential for roosting in Buildings 2 and 3, along with the availability of suitable roosting, foraging, and commuting habitats within the immediate surroundings.

In conclusion, while the broader landscape is of County Importance for bats, the specific site is evaluated as Local Importance (Higher Value) due to the confirmed roost and high potential for additional roosts in the on-site structures.

## **4. MITIGATION**

Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, and Natterer's Bat were found using Building 1 across the April and August 2024 surveys. A licence from the Wildlife Licensing Unit, National Parks and Wildlife Service, Department of Housing, Local Government and Heritage is required for these works. Works can only be undertaken if a licence is granted.

The following mitigation is proposed to offset impacts to bats and forms part of the measures outlined to obtain the derogation licence:

### **4.1 Bat Roost Mitigation**

To mitigate the impact of the proposed demolition and refurbishment works on the identified bat species (Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, and Natterer's Bat), a purpose-built bat shed will be constructed in the far northwest corner of the site, as shown in Figure 7. This bat shed has been redesigned in response to NPWS concerns to provide optimal conditions for all identified bat species, with particular consideration for the light-sensitive Brown Long-eared Bat and Natterer's Bat.

#### Key Features of the Redesigned Bat Shed:

- **Dedicated Bat Use:** The entire structure will be solely for bat use, with no portion reserved for human use.
- **Dimensions and Structure:**

- 3m x 2m (length x width), with a minimum height of 2.5m
- Spacious loft area extending throughout the structure
- Multiple internal chambers to allow bats to move as their needs change

#### Climate Adaptation:

- Roosting opportunities provided throughout the entire shed, including lower levels
- This design allows bats to access cooler locations during periods of high temperatures
- Ventilation options included to help regulate temperature while maintaining darkness and security

#### Bat Access:

- A dedicated access slot (approximately 5cm high x 20cm wide) oriented towards existing treelines/hedgerows
- No artificial lighting in the vicinity of the access point
- At least two bat access slates incorporated into the roof (e.g., <https://www.ukslate.com/product/bat-access-slate-natural/>)

#### Materials and Construction:

- Use of NON-breathable felt membrane for the roof to avoid issues with loose fibres
- Untreated and rough-sawn rafters to provide grip for bats
- Gap of approximately 5cm maintained between the roof and rafters

#### Internal Features:

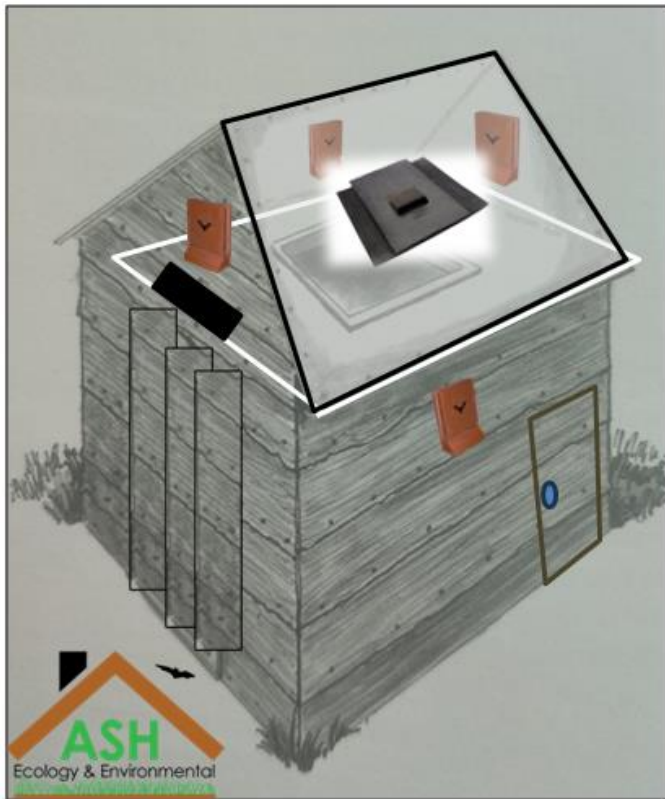
- Various bat box designs installed within the structure to cater to different species' preferences and microhabitats.
- An open hatch provided between different areas to facilitate bat movement between different areas and temperature gradients/conditions within.

#### Lighting:

- No lighting of any kind installed on or in the bat shed
- No external lighting directed towards the bat shed

Figure 7 provides a detailed illustration of the proposed updated bat shed design, incorporating all the features described above.

Appendix C contains examples of bat boxes and additional habitat creation measures for bats that will be implemented as part of this mitigation strategy.



**Proposed Bat Shed:**

1. Dimensions:
  - Minimum size: 3m x 2m (length x width)
  - Minimum height: 2.5m
  - Incorporate a spacious area throughout the entire structure
2. Bat Access:
  - Provide multiple dedicated access slots for bats to enter the structure
  - Dimensions: Approximately 5cm high x 20cm wide
  - Orient access slots towards existing treelines/hedgerows
  - Ensure no artificial lighting in the vicinity of bat access points
3. Roofing Material:
  - Use a NON-breathable felt membrane for the roof
  - Incorporate at least two bat access slates into the roof design
4. Interior Features:
  - Utilise untreated and rough-sawn rafters to support the lining and provide grip for bats
  - Maintain a gap of approximately 5cm between the roof and rafters
  - Install various bat box designs throughout the structure to cater to different species
5. Climate Adaptation:
  - Provide roosting opportunities at multiple levels, including lower areas for cooler temperatures
  - Incorporate ventilation options to help regulate temperature while maintaining darkness
6. Monitoring Access:
  - Install small door to facilitate monitoring and potential bat transportation if found during works.
7. Lighting:
  - No lighting of any kind on or in the bat shed
  - No external lighting directed towards the bat shed
8. Exterior Features:
  - Mount additional bat boxes on the exterior walls of the shed

**Figure 7** Proposed Design for Bat Shed (Updated)

In addition, the new shed roof should incorporate at least 2 of the following slates.

Bat access slates such as that shown is available:

<https://www.ukslate.com/product/bat-access-slate-natural/>



### Bat boxes

In addition to the bat shed, three generic bat boxes will be installed on suitable trees within the site to provide additional roosting opportunities for the other bat species recorded during the survey. Microclimate within a new roost is a very important factor in terms of increasing the chance of successful uptake by bats. Bat boxes should be draught-proof and made from a thermally stable material such as untreated wood, woodcrete, brick or stone. If possible, it is better to provide several internal chambers so that the bats can move around as their needs change. All boxes will have a small entry slit at the bottom (20 mm in width) with a roughened landing strip to allow the bats to crawl up into the box. The entry slit will be positioned so that accumulated bat waste can drop out the box or be pushed out as bats emerge.

One of the most important ways to optimise internal roost microclimate is to carefully locate the new roost. In general, bats seek warm spaces to help them with rearing young. For this reason, bat boxes should be located where they will receive full/partial sunlight. In the northern hemisphere this will be a southerly orientation (facing south, south-west or south-east). However, it is helpful to install bat boxes in more than one orientation to allow for a choice of roosting conditions.

The bat boxes will be positioned on the tree trunk 4m above ground to prevent disturbance from people and/or predators. Any branches obscuring the entry points of boxes will be clipped to provide a clear flightpath. Appendix C contains examples of bat boxes and habitat creation for Bats.

## **4.2 Timing of Roof Removal Works/other Disturbance**

The demolition of Building 1 and any associated disturbance works will be carried out during October/November of 2026 before the hibernation period. The dismantling of the stone walls and roof lining/roof removal will be supervised by a licensed bat ecologist to ensure that any bats present can be safely captured and transported to the new bat shed. These works will be conducted under licence, if granted.

## **4.3 Lighting for Bats**

The nine Irish resident bat species are all nocturnal. Bats hibernate during the winter, swarm during the autumn, and give birth during the summer each year. Artificial Light at Night (ALAN) may dramatically alter the natural behaviour of bats in respect to roosting, traveling, and feeding in many facets of their lifetime. Moonlight, starlight, and low-intensity twilight represent low lighting levels that bats are naturally exposed to. Any exposure to light that is higher than natural dusk and night light levels can have a negative impact on a bat behaviour.

Artificial light at night at or near roosts may impact bats in a number of ways, for example, delaying emergence time after dusk, causing abandonment of roosts when exits are lit at night and/or reducing reproductive success (e.g. Stone, 2013). Foraging areas that become lit at night may be abandoned, thus potentially increasing energetic costs for bats and reducing reproductive success at a

population level (Schofield, 2008; Stone, 2013). Potential light sensitivity of the Irish bat fauna using categories described by Rydell (2006) is shown in Table 5 below. The species using the Building 1 as a roost are Light sensitive (Brown Long Eared and Natterer's), and semi-tolerant to light (Soprano Pipistrelle and Common Pipistrelle).

**Table 5** Potential light sensitivity of the Irish Bat Species

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

The bat shed will be located in the darkest area of the site, minimizing any potential light disturbance to the Brown Long-eared Bats. The lighting design for the entire development will follow the recommendations outlined in the IPL and BCT (2023) guidelines to minimise light spill onto commuting and foraging habitats used by the local bat populations.

The IPL and BCT (2023) guidelines provides 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:

- Light spill modelling shows illuminance of <1 lux in areas of new tree planting and where trees are retained, which meets current best practice guidelines.
- Warm white (2700K or lower) LEDs should be used to minimize blue light disturbance. Light sources should lack UV and peak above 550nm.
- Luminaires should minimise upward light ratio, glare and light spill through optical control, recessing, and horizontal mounting i.e. no upward tilt.
- Motion sensors and short timer settings should be used where possible to minimise lighting duration.
- Central management systems allow flexible remote control of lighting times.
- Accessories like baffles or louvres can further reduce spill but may be less effective than modern LED optics.

In addition:

- Low height Bollard lighting along the drive and downlighters on walls.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- Outdoor Lighting for the new house, and repurposed barns will only be directed where it is needed and modest in output.

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## 5. CONCLUSION

This bat derogation licence application is submitted for proposed works at Gortnamannagh East, Kilchreest, Co. Galway. Based on comprehensive surveys conducted in April and August 2024, we have confirmed the presence of a bat roost in Building 1, with evidence of use by four bat species, albeit in small numbers:

1. Common Pipistrelle (*Pipistrellus pipistrellus*)
2. Soprano Pipistrelle (*Pipistrellus pygmaeus*)
3. Brown Long-eared Bat (*Plecotus auritus*)
4. Natterer's Bat (*Myotis nattereri*)

The presence of these species, particularly the light-sensitive Brown Long-eared Bat and Natterer's Bat, necessitates careful mitigation measures.

To address the three key criteria for granting a derogation licence:

1. The proposed works fall under the category of "imperative reasons of overriding public interest, including those of a social or economic nature," as they involve the refurbishment of existing structures for habitation.
2. The current structures require significant renovation to be habitable, and the presence of bats in Building 1 necessitates its careful dismantling. Alternative designs that preserve the existing structures intact were explored but found to be unfeasible due to their deteriorated condition.
3. The proposed mitigation measures are designed to ensure that the local bat populations are not detrimentally affected. These measures include:
  - Construction of a purpose-built bat shed, designed to accommodate all identified species and address climate change concerns.
  - Installation of additional bat boxes on suitable trees within the site.
  - Careful timing of demolition works to avoid sensitive periods for bats.
  - Implementation of a bat-friendly lighting scheme for the entire development.

These mitigation measures have been designed to provide suitable alternative roosting sites that meet the conditions of the existing roost. The bat shed, in particular, has been redesigned following NPWS feedback to ensure it provides optimal conditions for all identified bat species throughout the year.

The proposed works will be carried out under the supervision of a licensed bat ecologist, ensuring strict adherence to the conditions of this licence, if granted. All demolition and disturbance works will be timed to minimise impact on the bat populations, occurring in October/November 2026, after the maternity season but before hibernation. The surveys conducted and mitigation measures proposed aim to address the criteria for granting a derogation licence. These measures are designed to support the conservation of local bat populations in line with Irish and European legislation, while enabling the proposed development to proceed.



# APPENDICES

# APPENDIX A



**Plate 1** Site with existing sheds with hardstanding. All with Bat Roost Potential.



**Plate 2** Site with existing sheds with hardstanding. All with Bat Roost Potential.



**Plate 3** Site with existing sheds with hardstanding. All with Bat Roost Potential.



**Plate 4** Site with existing sheds with hardstanding. All with Bat Roost Potential.



**Plate 5** Site with grassland and treelines.



**Plate 6** Rear view of sheds and improved grassland and mature trees.



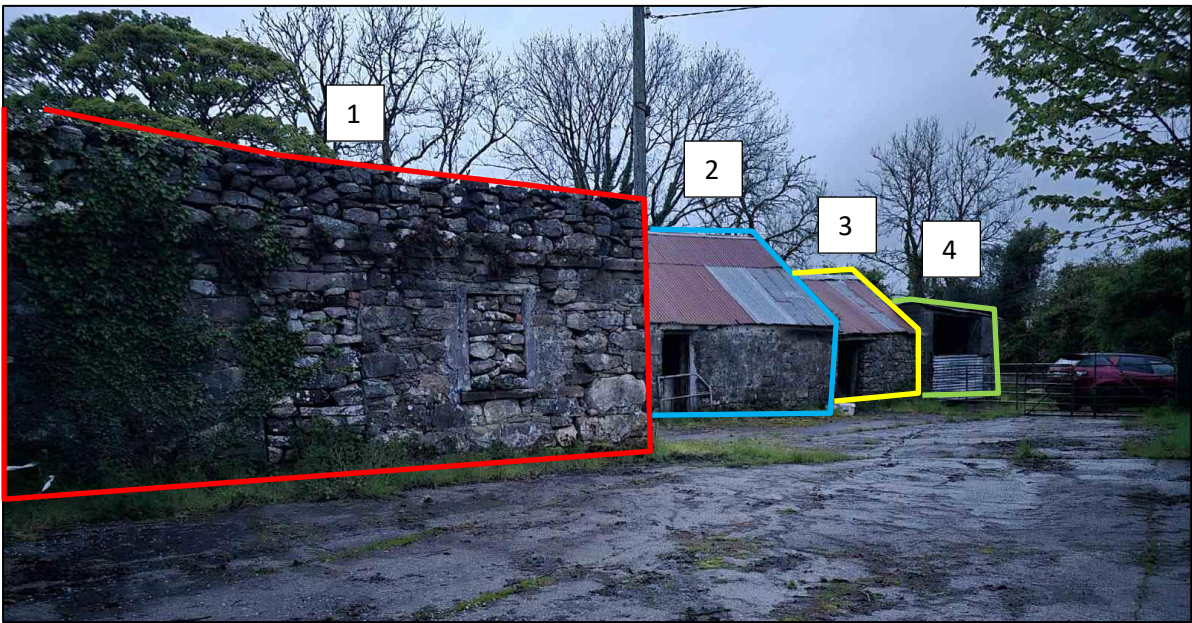
**Plate 7** Mature treelines on site boundaries to be retained and improved grassland on edges.



**Plate 8** Mature treelines on site boundaries to be retained. Area of Laurel but confined to one corner.



**Plate 9** Mature treelines on site boundaries (WL2), to be retained and improved grassland on edges (GA1).



**Plate 10** Buildings labelled 1, 2, 3 and 4.



**Plate 11** Building Labelled 1 – Confirmed Roost for three species.



**Plate 12** Building Labelled 2 – Moderate Roost Potential. Also used by nesting birds such as Barn Swallow.



**Plate 13** Building Labelled 3 – Moderate Roost Potential. Also used by nesting birds such as Barn Swallow. Access via back window when door is shut.



**Plate 14** Building Labelled 4 –Low Roost Potential. Also used by nesting birds such as Barn Swallow. Access via back windows and door. Drafty, may not be as conducive to bats.



**Plate 15** Example of Trees with Bat Roost Potential, to be retained.



**Plate 16** Example of Bat Droppings found in Building, see inside red circle. Exit point are two windows either side of insulation boards, see arrows.



**Plate 17** Exit point are two windows either side of insulation boards, see arrows. Loose rocks with large crevices are the likely roost spots. Also potentially under loose roof lining.



**Plate 18** Main Exit points - two windows to west and south side of Building 1.



**Plate 19** Building 1 – August 2024





**Plate 20** Buildings 2, 3 and 4 – August 2024



**Plate 21** Building 1 Interior with bat droppings – August 2024



**Plate 22** Building 1 Interior with bat droppings – August 2024

# APPENDIX B

Static Detector located in Building 1

28/04/2024	Classification source	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
21:20:17	Soprano Pipistrelle	3	55.6	56.8	55.2	7.2	222	11	53.1498	-8.6447
21:21:49	Common Pipistrelle	2	48.3	55.1	47.6	4.3	91	11	53.1498	-8.6447
21:30:41	Soprano Pipistrelle	1	54	58.6	51.9	7.2	0	11	53.1498	-8.6447
21:31:08	Soprano Pipistrelle	1	54.6	55.2	53.4	4.6	0	11	53.1498	-8.6447
21:36:55	Common Pipistrelle	5	47.8	52.5	46.8	5	142	11	53.1498	-8.6447
21:39:47	Soprano Pipistrelle	3	53.1	57.2	52.5	4.6	250	11	53.1498	-8.6447
21:43:42	Soprano Pipistrelle	2	52.6	53.1	51.7	4.9	92	11	53.1498	-8.6447

Bat Activity around Site

28/04/2024	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
21:00:18	Leisler's Bat	2	21.7	22.3	21.2	28.5	305	11	53.15003	-8.64484
21:02:21	Leisler's Bat	3	21.6	22.1	21.1	19.4	85	11	53.15004	-8.64479
21:20:19	Soprano Pipistrelle	14	56.8	65.5	56.1	4	87	11	53.15012	-8.64474
21:21:50	Common Pipistrelle	29	49.3	70.4	48.6	4	90	11	53.15014	-8.6447
21:23:31	Soprano Pipistrelle	5	55.7	59.8	54.2	5	132	11	53.15012	-8.64463
21:23:39	Soprano Pipistrelle	6	55.3	61.1	54.1	5	80	11	53.15012	-8.64459
21:23:43	Soprano Pipistrelle	9	55.1	63.5	54.1	3	80	11	53.15011	-8.64464
21:24:18	Soprano Pipistrelle	16	55.3	65.9	54.4	5	80	11	53.15004	-8.64463
21:24:31	Soprano Pipistrelle	10	56.1	67.8	55	4	70	11	53.15003	-8.64471

28/04/2024	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
21:26:37	Soprano Pipistrelle	12	56.8	62.6	55.8	3	80	10	53.1502	-8.64466
21:27:05	Soprano Pipistrelle	5	57.1	72.6	55.9	4.6	129	10	53.15014	-8.64467
21:30:46	Soprano Pipistrelle	4	55.4	62.9	54.7	3	69	10	53.1502	-8.64479
21:31:54	Soprano Pipistrelle	11	51.2	57.2	50.4	6	134	10	53.15031	-8.64513
21:33:07	Soprano Pipistrelle	21	55.8	68.1	54.9	4	80	10	53.15004	-8.64472
21:35:41	Common Pipistrelle	2	49.1	50.9	48.5	6.9	106	10	53.15001	-8.64485
21:35:50	Soprano Pipistrelle	7	56	60.1	55.5	4	80	10	53.14999	-8.64489
21:37:00	Common Pipistrelle	5	48.5	53.1	48	3	90	10	53.15018	-8.64472
21:41:09	Soprano Pipistrelle	7	54	58.5	53.1	5	144	10	53.15025	-8.6447
21:43:37	Soprano Pipistrelle	26	54.3	72.4	53.6	5	85	10	53.15031	-8.6447
22:02:54	Leisler's Bat	2	26.5	26.8	25.9	10.2	549	10	53.15021	-8.64504
22:13:17	Soprano Pipistrelle	8	56.3	64.4	55.7	3	144	10	53.15034	-8.64491
22:14:36	Soprano Pipistrelle	16	55.3	74.6	53.8	4	86	10	53.14995	-8.6449
22:24:39	Soprano Pipistrelle	14	54.8	67.7	54	4	83	10	53.15037	-8.64481
22:25:43	Common Pipistrelle	26	49.2	62	48.6	6	90	10	53.14999	-8.64485

August 19th	Species Text	Calls [#]	Mean Peak Frequency [kHz]	Mean Max Frequency [kHz]	Mean Min Frequency [kHz]	Mean Call Length [ms]	Mean Call Distance [ms]	Temperature [°C]	Latitude [WGS84]	Longitude [WGS84]
21:16:42	Soprano Pipistrelle	11	57.8	63.2	57.4	3	186	17	53.1502	-8.64466
21:16:52	Soprano Pipistrelle	5	56.2	67.2	55.6	4	107	17	53.15014	-8.64467
21:18:11	Soprano Pipistrelle	16	55.3	65.1	54.6	9	84	17	53.15023	-8.64459
21:18:21	Soprano Pipistrelle	39	56.9	73.7	56.2	5	80	17	53.14999	-8.64489
21:23:17	Soprano Pipistrelle	50	55.3	63.1	54.6	5	80	16	53.15015	-8.64468
21:24:06	Soprano Pipistrelle	33	57.4	78.3	56.5	4	80	16	53.15013	-8.64472
21:24:56	Soprano Pipistrelle	18	57.6	86.7	56.9	4	80	16	53.15016	-8.64485
21:26:20	Soprano Pipistrelle	31	55	72.6	54.4	5	80	16	53.15014	-8.64453
21:27:27	Soprano Pipistrelle	22	55.4	79.8	54.7	5	83	16	53.15019	-8.6446
21:28:02	Natterer's Bat	18	52.6	61.9	52	4	85	16	53.15031	-8.64468
21:28:08	Natterer's Bat	2	52.2	59.3	51.9	4.9	80	16	53.15032	-8.64469
21:28:52	Soprano Pipistrelle	24	55.8	73.7	55	5	80	16	53.15034	-8.64479
21:29:16	Soprano Pipistrelle	28	54.5	75.7	53.4	3	80	16	53.15021	-8.64465
21:29:35	Natterer's Bat	17	47.6	60.8	42.4	2	60	16	53.15017	-8.64461
21:44:10	Natterer's Bat	18	51.1	52.4	50.3	8	190	16	53.15017	-8.64465
21:44:50	Natterer's Bat	14	53.2	61.8	52.5	7	90	16	53.15026	-8.64474
21:44:56	Natterer's Bat	3	51.1	56	50.5	5.2	77	16	53.15027	-8.64477
21:44:58	Natterer's Bat	3	49.5	53.1	49.2	6.1	223	16	53.15028	-8.6448
22:13:37	Soprano Pipistrelle	25	53	71	51.5	7	90	16	53.15013	-8.64476
22:14:02	Soprano Pipistrelle	130	53.9	70.9	52.4	5	80	16	53.15025	-8.64461
22:16:25	Soprano Pipistrelle	31	53.7	68.9	51.9	5	90	16	53.1502	-8.64479
22:19:02	Soprano Pipistrelle	24	53.1	67.6	51.6	5	90	16	53.15027	-8.6449
22:35:33	Soprano Pipistrelle	24	54.3	68	52.1	4	90	16	53.15001	-8.64485
22:46:43	Common Pipistrelle	15	50.7	61.9	50.1	3	86	16	53.15015	-8.64467
22:51:39	Common Pipistrelle	7	52.2	60.3	51.6	5.1	155	16	53.15031	-8.64513

# APPENDIX C



**2F Schwegler Bat Box  
(General Purpose)**



**PRO UK Build-in  
WoodStone Bat Box**



**Maternity Bat Box**



**4m Pole Mounted Large  
Colony Bat Box**

Available on link below with fitting instructions on website

<https://www.nhbs.com/search?q=bat+boxes>



**Bat Slates -**

[https://beddoesprod  
ucts.com/products/b  
at-access-slate](https://beddoesproducts.com/products/bat-access-slate)



## SPRING TASKS

- Plant nectar-rich plants, trees and shrubs
- Build a pond or create a water feature!

## SUMMER TASKS

- Plant nectar-rich plants
- Create a compost heap to attract insects for bats, but also egg laying habitat for reptiles and shelter for amphibians

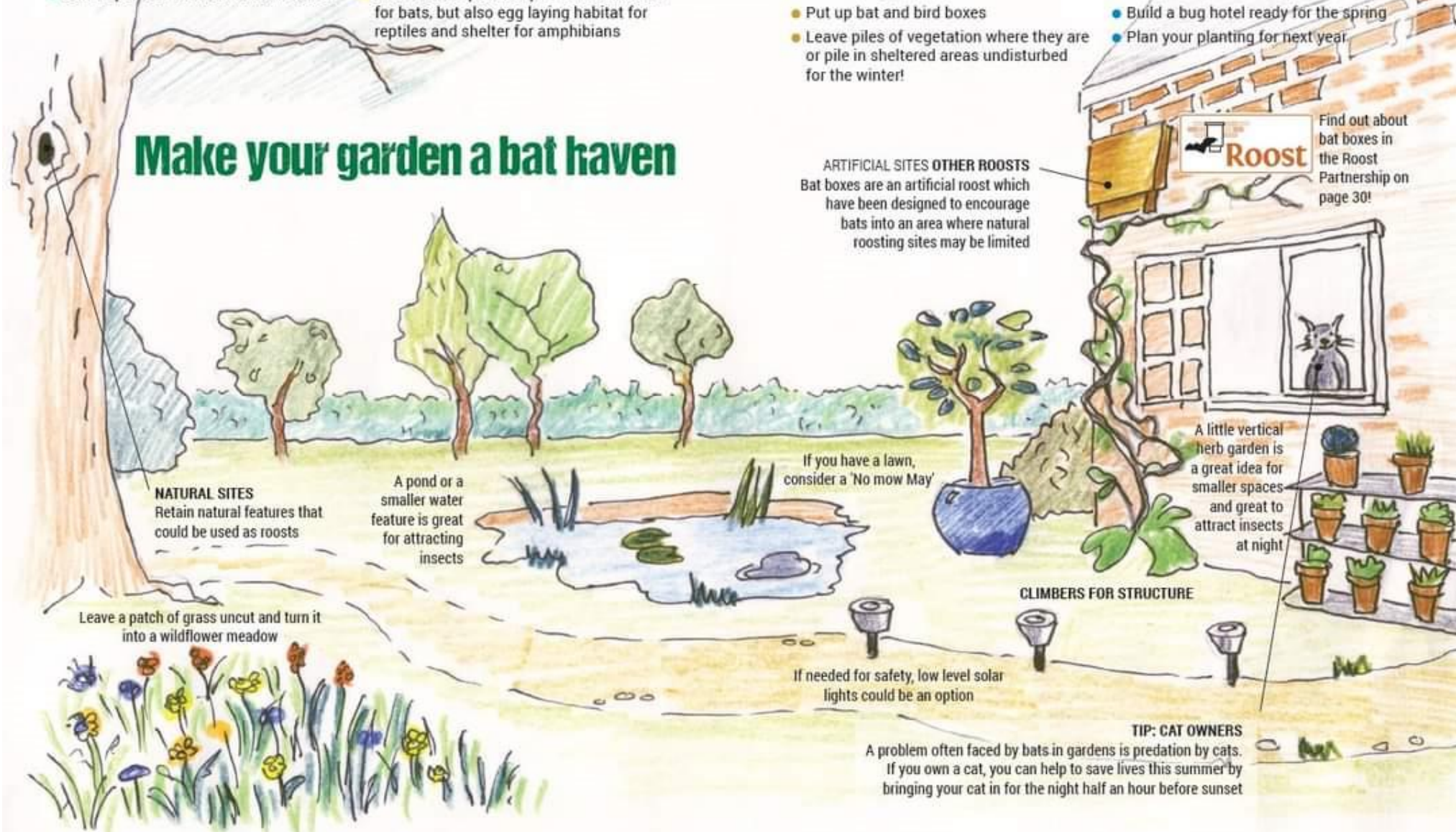
## AUTUMN TASKS

- Plant trees and shrubs including nectar and fruiting plants
- Put up bat and bird boxes
- Leave piles of vegetation where they are or pile in sheltered areas undisturbed for the winter!

## WINTER TASKS

- Leave hollow stems for overwintering insects
- Build a bug hotel ready for the spring
- Plan your planting for next year

## Make your garden a bat haven

**NATURAL SITES**

Retain natural features that could be used as roosts

Leave a patch of grass uncut and turn it into a wildflower meadow

A pond or a smaller water feature is great for attracting insects

If you have a lawn, consider a 'No mow May'

**CLIMBERS FOR STRUCTURE**

If needed for safety, low level solar lights could be an option

A little vertical herb garden is a great idea for smaller spaces and great to attract insects at night

**Roost**

**ARTIFICIAL SITES OTHER ROOSTS**  
Bat boxes are an artificial roost which have been designed to encourage bats into an area where natural roosting sites may be limited

Find out about bat boxes in the Roost Partnership on page 30!

**TIP: CAT OWNERS**

A problem often faced by bats in gardens is predation by cats. If you own a cat, you can help to save lives this summer by bringing your cat in for the night half an hour before sunset