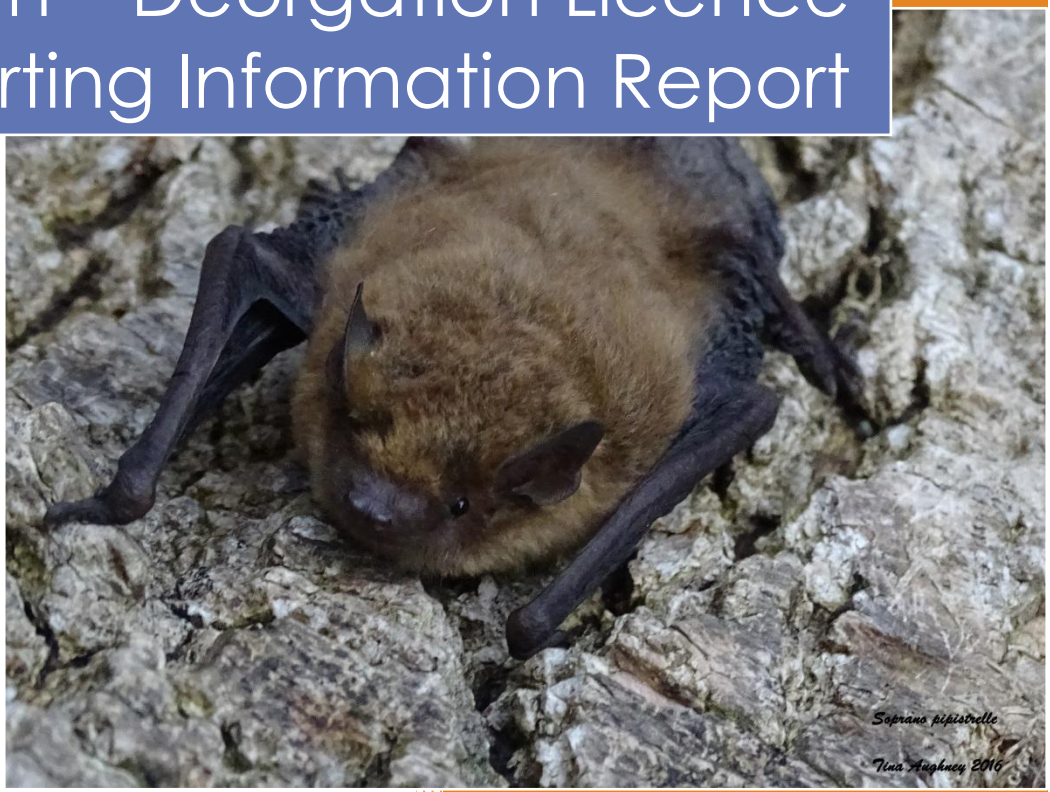
2026

Drumcree Bridge (B2346), Co. Westmeath – Deorgation Licence Supporting Information Report



Bat Eco Services Limited

Bat Eco Services Limited, Ulex House, Drumheel, Lisduff, Virginia, Co. Cavan. A82 XW62.

Licensed Bat Specialist: Dr Tina Aughney [redacted]
NPWS licence C17/2023 (Licence to handle bats, expires 23rd January 2026);
NPWS licence 014/2026 (Licence to photograph/film bats, expires 31st December 2026);
NPWS licence DER/BAT 2026-119 (Survey licence, expires 31st December 2026).

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 is completed by Dr Tina Aughney. Data collected and surveying is completed with the assistance of trained field assistants. Mr. Shaun Boyle and Ms. Eva Boyle (Field Assistants) operating under NPWS licence DER/BAT 2026-119 (Survey licence, expires 31st December 2026). Both field assistants have received in-house training to undertake all elements of bat surveying according to Collins (2023).

Client: *OPW*

Project Name & Location: Drumcree Bridge (B2346), Co. Westmeath

Report Revision History

Date of Issue	Draft Number	Issued To (process of issuing)
30th March 2026	V1	Prepared for NPWS Derogation Licence App.

Purpose

This document has been prepared as a Report for OPW & NPWS. 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 to reduce carbon footprint. Printing of reports etc. is avoided, where possible.

Record Submission Policy

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

Citation: Bat Eco Services (2026) Drumcree Bridge (B2346), Co. Westmeath. Unpublished report prepared for OPW & NPWS – Derogation Licence Supporting Information Report.

30th March 2026

To whom it may concern:

The following is a report, to meet the application guidelines, to support the application for Derogation under the European Communities (Birds and Natural Habitats) Regulations 2011-2021.

On behalf of the client, Bat Eco Services Limited are applying for a derogation to undertake works that will result in the replacement of Drumcree Bridge (B2346), Co. Westmeath with concrete culverts.

This report provides the details of the bat survey completed and the supporting information for the derogation application.

To support the Derogation Tests, the following document is also provided:

Citation: OPW (2026) Method Statement prepared by OPW.

Additional information is also provided in relation to bat surveys previously undertaken:

- Bat Eco Services Limited CV

If you require any further information, please do not hesitate to contact me.

Yours sincerely,

Dr Tina Aughney

Contents

1. Introduction

1.1 Proposed Works

The development will consist of the following:
Replacement of Drumcree Bridge with concrete culverts.

1.2 Ecological Team

In preparation for this report, surveys were undertaken in 2026. This survey was completed by Bat Eco Services Ltd by the principal bat specialist, Dr Tina Aughney.

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 is completed by Dr Tina Aughney. Data collected and surveying is generally completed with the assistance of trained field assistants: Mr. Shaun Boyle and Ms. Eva Boyle (Licenced Field Assistants). Both field assistants have received in-house training to undertake all elements of bat surveying according to Collins (2023).

2. Back Ground Information

2.1 Project Location

The proposed work area is located at Drumcree Bridge (B2346 – 53.6409,-7.1632), Co. Westmeath. The bridge is on private land but managed by OPW as part of the Boyne Arterial Drainage Scheme (Channel C1/37).

Figure 1: Location of proposed works at Drumcree Bridge, Co. Westmeath (Source: OPW Method Statement).

2.2 Proposed Works

Drumcree Bridge is in a current state of repair that requires replacement, as per OPW Method Statement. A section of the bridge has a large crack and consequently, the bridge is not safe to use. The OPW propose to replace this with concrete culverts.

Figure 1: Current condition of B2346.

Figure 2: Current condition of Drumcree Bridge, Co. Westmeath (Source: OPW Method Statement).

3. Ecological Surveys

3.1 Bat Surveys

A bat survey was completed on 23rd March 2026 according to the following documents:

- Collins, J. (Editor) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). Bat Conservation Trust, London
- 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).

Collins (2023) was the principal document used to provide guidance in relation to bat survey effort required. Marnell *et al.* (2022) is referred to for guidance in relation to survey guidance (timing and survey design), derogation licences and mitigation measures. The result of this survey is described in Section 4.

3.2 Desktop Review

3.2.1 Bat Conservation Ireland Database

Bat Conservation Ireland acts as the central depository for bat records for the Republic of Ireland. Its' bat database is comprised of >100,000 bat records. The database primarily contains bat records from the following datasets:

- Irish Bat Monitoring Programme
- BATLAS 2020 & 2010
- Ad Hoc Bat Records submitted by ecologist bat groups etc.

The Bat Conservation Ireland database was accessed on 30th March 2026 to collated bat records for a 1km radius of the proposed development site (N5538865982).

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.

A total of two geo-referenced bat records were available for the 1km search area. The number of records for each of the bat species is listed in the table below and this includes two bat detector records.

Table 1a: Bat Records (Source: Bat Conservation Ireland).

Bat species	No. of records		Bat species	No. of records	
	Roost	Detector		Roost	Detector
Common pipistrelle	0	2	Soprano pipistrelle	0	2
Nathusius' pipistrelle	0	0	Leisler's bat	0	0
Daubenton's bat	0	0	Whiskered bat	0	0
Brown long-eared bat	0	1	Natterer's bat	0	0
Pipistrelle spp	0	0	Myotis spp	0	0

3.2.2 Bat Conservation Landscape Favourability

Bat Conservation Ireland (BCIreland) produced a landscape conservation guide for Irish bat species using their database of species records collated during the 2000 – 2009 survey seasons. An analysis of the habitat and landscape associations of all bat species deemed resident in Ireland was undertaken and reported in Lundy *et al*. (2011). This model was queried on 30th March 2026.

The geographical area suitable for individual species was used to identify the core favourable areas of each species. This was produced as a GIS layer for local authorities and planners to provide a guide for the consideration of bat conservation. The island is divided into 5km squares and the landscape favourability (expressed as a percentage, the higher the value, the greater the favourability) of each 5km square for each species of bat was modelled. A caveat is attached to the model: the model is based on records held on the Bat Conservation Ireland database, while core areas have been identified, areas outside the core area should not be discounted as unimportant as bats are a landscape species and can travel many kilometres between roosts and foraging areas nightly and seasonally. This model was used as part of the desktop study for this report.

The exact percentage favourability for all species of bats recorded is presented in the table below.

Table 1b: Percentage Landscape Favourability for each 5km for Irish bat species (Lundy *et al.*, 2011).

Square No.	All bat spp.	SP	CP	Nath Pip	Leis	BLE	Daub	Natt	Whis
1	26.22%	39%	45%	25%	38%	29%	24%	35%	4%

Note: SP = soprano pipistrelle, CP = common pipistrelle, Nath Pip = Nathusius' pipistrelle, Leis = Leisler's bat, BLE = brown long-eared bat, Daub = Daubenton's bat, Natt = Natterer's bat, Whis = whiskered bat.

Figure 3a: Bat Conservation Ireland Landscape Favourability Model for 5km squares where the proposed work site is in County Westmeath (Source: Bat Conservation Ireland Landscape Model). Proposed development site is marked in Dark Blue Square.

3.3 Status of bat species recorded

The bat surveys undertaken in 2026 recorded a roost in the bridge: soprano pipistrelle (as per time stamped recordings of audio file linked with thermal imagery filming). The status of this bat species, with reference to roost record type is as follows:

Table 1c: Bat Ecological Evaluation Results for Drumcree Bridge, Co. Westmeath (Bat Eco Services results) according to referenced criteria.

Bat Species	Survey Results	Evaluation Value	Roost Evaluation
Soprano pipistrelle *Pipistrellus pygmaeus*	Day roost	Local importance - Low	Conservation Significance - Low (Marnell *et al.,* 2022) – day roost for common species.

The national status and county distribution of the three named bat species are presented below. Brown long-eared bats are less widespread than common bat species such as common pipistrelles and soprano pipistrelles and this is reflected in the distribution maps presented.

Soprano pipistrelle

- Soprano pipistrelle is an Annex IV bat species under the EU Habitats Directive. The status of this bat species is listed as Least Concern. The national soprano pipistrelle population is significantly increasing trend (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 population estimates (2023 figures) indicates that population is between 1,204,800 and 2,709,600 individuals and this this represents a 140.2% increase compared to 2012 population estimates (Roche & Langton, 2024).

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

Principal concerns for Soprano pipistrelles in Ireland that are relevant for this survey area are as follows:

- Lack of knowledge of roosts;
- Renovation or demolition of structures;
- Tree felling; and
- Increasing urbanisation (e.g. increase in lighting).

The Co. Westmeath distribution of bat records for this species of bat (Source: www.biodiversityireland.ie) is presented in Figure 3b.

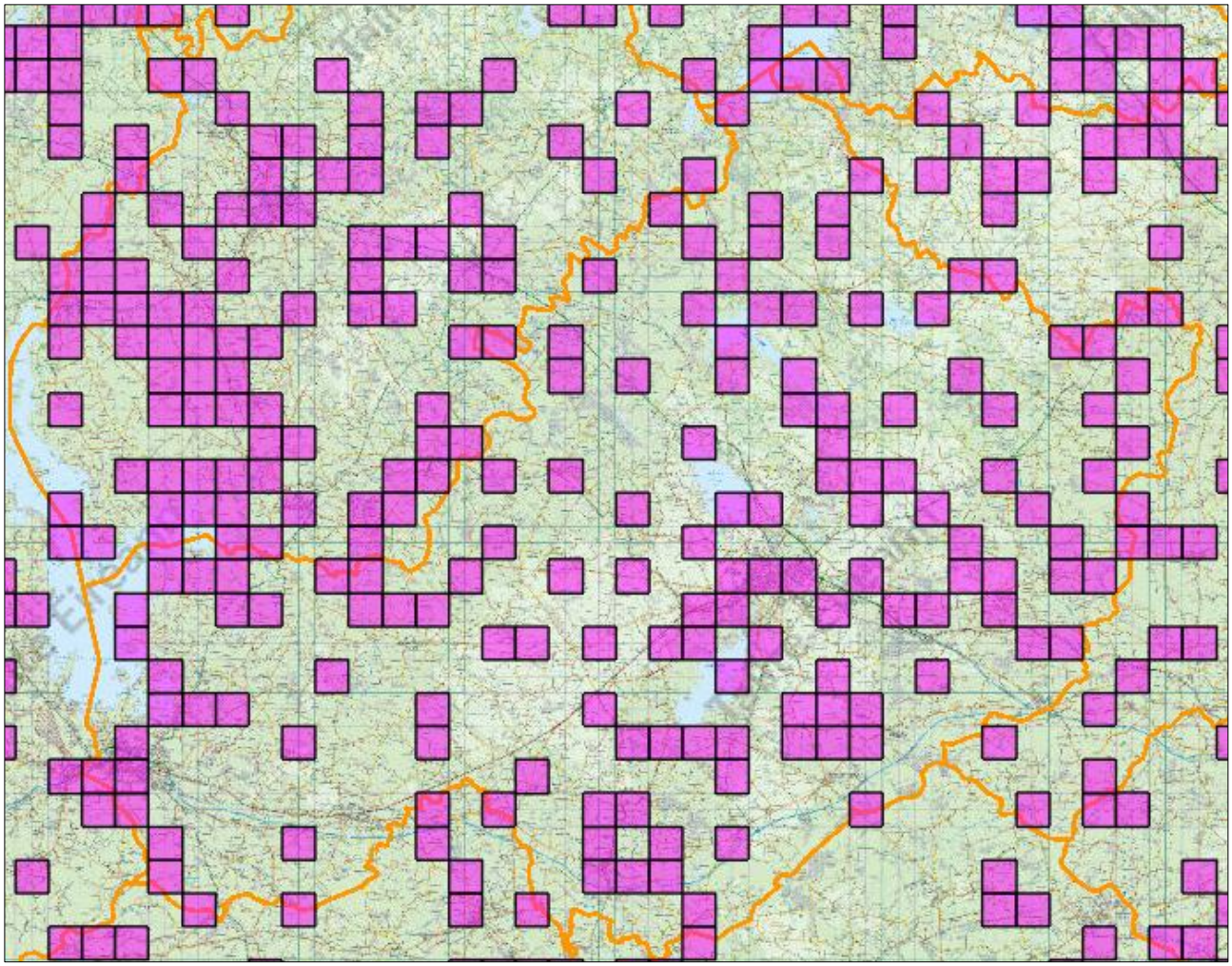


Figure 3b: Distribution of known Soprano pipistrelle bat records in Co. Westmeath.

3.4 Description of Survey Area

The proposed works area is on private agricultural land. Drumcree Bridge is located over the River Deele and the site is accessible from L1629 local road. The surrounding land are agricultural fields with treeline and hedgerow boundaries.

3.5 Survey Methodology

This supporting document is also prepared as the primary bat survey report.

The following handheld bat detector was used:

- Surveyor 1: Anabat Walkabout Full Spectrum Bat Detector

A Night Vision Aids (NVA) was used to support dusk surveys. The following NVA was used:

- FLIR Scion OTM255 thermal imaging camera
- HikMicro thermal imaging scope

The thermal imagery filming (FLIR unit) was coupled with Anabat Scout Full Spectrum Bat Detector

3.5.1 Daytime Assessment

Bridges may provide a roosting space for bats and therefore Drumcree Bridge was 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 indicates that bat usage of a crevice, for example, has occurred in the past.

Inspections were undertaken visually with the aid of a strong torch beam (LED Lenser P14.2) and endoscope (General DC5660A Wet / Dry Scope). In addition, a thermal imagery scope (HikMicro) was also used to scan the bridge for potential roosting bats. Bridge structure was assessed using a 4-point classification system designed for bridges by Billington & Norman (1997) as follows:

Table 2: 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).

The inspection was carried out on 23rd March 2026.

3.5.2 Dusk Bat Survey

A dusk survey of the bridge was completed on the 23rd March 2026 (weather conditions: full cloud cover, dry, calm, 11.5oC). A survey of the bridge was undertaken to record if there are any roosts located within the survey area.

The survey started 15 minutes prior to sunset and was undertaken for 2 hours of surveying. Survey was completed during mild and dry weather conditions. Preparation for dusk survey started approximately 60 minutes prior to sunset and the following actions were undertaken:

- Inspection of bridge to be surveyed to determine surveyor and filming locations.
- Inspection of bridge to document any visible bats or audible noises (bats are more audible prior to dusk activity).
- Positioning of filming equipment and surveyor.
- Completion of dusk survey.

All audio files recorded by full spectrum bat detectors were analysed using Wildlife Acoustics Kaleidoscope Pro and validation of bat records was completed by the principal bat surveyor prior to reporting. All filming was watched post survey, and any emerging bats were noted and compared to audio recordings also recorded by the surveyor.

3.6 Survey Results

3.6.1 Daytime Inspection

The proposed work site was inspected to determine the roost potential of Drumcree Bridge. The riverbank is steep adjacent to the bridge, the riverbed sediment is also deep and, therefore, for health and safety reasons only one-side of the bridge was accessible to inspect – section where the large crack is visible in the bridge. This large crack was deep but open to weather conditions and, therefore less suitable for roosting bats. From this end of the bridge, a small number of crevices were visible but not inspected (for reasons as stated above) and these are likely to be more suitable for roosting bats.

No bats were recorded roosting in the crevices that were accessible for examination. No bat droppings or other evidence of potential bat usage was recorded in the crevices that were accessible for examination.

The Bridge Category (Table 2), because of the dusk survey, is deemed to have a value of “3”.

The habitat along the River Deele, in the immediate vicinity of Drumcree Bridge is agricultural grassland with occasional mature trees and shrubs. The adjoining linear habitat includes hedgerows and treelines.

Plate 1a: Section of large crack in Drumcree Bridge, Co. Westmeath.

Plate 1b: Continued from Plate 1a - large crack in Drumcree Bridge, Co. Westmeath.

Plate 1c: Continued from Plates 1a & 1b - large crack in Drumcree Bridge, Co. Westmeath.

Plate 1d: Remainder view of in Drumcree Bridge, Co. Westmeath.

Plate 2: View of in Drumcree Bridge, Co. Westmeath.

Plate 3: View of in Drumcree Bridge, Co. Westmeath – Section where the large crack is located.

3.6.2 Night-time Survey

One surveyor and two NVAs were set up to survey Drumcree Bridge. A bat emerged from the bridge a 19:25 hrs while a 2nd bat was recorded swarming under the bridge arch at 19:33 hrs. This was confirmed by the thermal imagery filming (See screen shot for emerging bat). The audio files recorded on the full spectrum bat detectors confirmed that the species detected was soprano pipistrelles.

Overall, three species of bat was recorded during the survey: Leisler's bat (1 bat pass), common pipistrelle (three bat passes) and soprano pipistrelle (6 bat passes).

Figure 5a: Screenshot of thermal imagery footage recording emerging bat from bridge (Red circle, with direction of emergence).

Figure 5b: Screenshot of thermal imagery footage recording of otherwise of Drumcree Bridge, Co. Westmeath.

4. Derogation Licence Application

Evidence to support the Derogation Tests

4.1 Test 1 – Reason for Derogation

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.

OPW propose to replace the existing bridge at Drumcree Bridge with concrete culverts (5no, 1m length, 2.5m high and 2.5m wide) to match the existing bridge dimensions. This replacement is required due to the poor condition of the existing bridge. As a result of this condition, the bridge has been barriered off to prevent livestock crossing.

The proposed works will result in the demolition of existing structure which was recorded as bat roost:

- Day Roost for Soprano pipistrelle *P. pygmaeus* (2 bats):

Therefore, a Derogation is being sought to permit the demolition of this structure.

EXPLANATION:
The bridge is currently in a condition that prevents usage for the local landowner (The local landowner reported a livestock accident because of the poor condition of the bridge. Consequently, the bridge has since been barrier-off to prevent livestock crossing it (Pers. Comm. OPW)). There is a large crack (Please see Plate 1a-c and Figure 2) at one end of the bridge which has caused a collapse in the stonework of this section of the bridge. Consequently, the bridge is not safe to use.

Please see OPW Method Statement for more information.

4.2 Test 2 – Absence of Alternative Solutions

There are no other suitable alternatives to the proposed works.

Alternative Solution	Reasons for "Unsatisfactory"
Do-Nothing	This will mean that the landowner will not have access to agricultural land on the south side of the bridge location. The bridge will remain in an unsafe condition.
Temporary Patch-up work	The large crack in the bridge is not fixable with a patch-up work.

EXPLANATION:
OPW have indicated that there is no satisfactory alternative to the proposed works to provide an immediate solution to permit usage of the bridge access across the River Deale to private to agricultural land.

4.3 Test 3 – Impact of a derogation on Conservation Status

4.3.1 Summary of Bat Survey Results

The potential impacts of the proposed works on local bat populations within the project area are as follows:

Construction Phase

- Loss of a day roost due to the removal of existing bridge,

The degree of potential impact varies depending on the bat species and the type of roost recorded.

The replacement of Drumcree Bridge will result in the loss of a Day Roost for soprano pipistrelles. This is a common Irish bat species.

Bat boxes (2 units – 2F woodcrete bat boxes) will be erected on trees adjacent to the works area prior to scheduled works. This will provide alternative roosting during the works, and the type of bat box is proven to be suitable for this bat species. Bat tubes (three units) will be attached to the underside of the new culvert and the use of bat tubes has also been proven as a suitable alternative for this species of bat. Therefore, the potential impacts of the proposed works are deemed to be **Negative, Imperceptible and Temporary**.

Bat mitigation measures are required to reduce the potential impacts on local bat populations, particularly in relation to the roost loss.

4.3.2 In relation to structure proposed to be demolished

The loss of the Soprano pipistrelle Day Roost will not impact on the national population of the bat species named for the following reasons:

a) The national population of this bat species is increasing and therefore are in good conservation status.
b) Extensive bat mitigation measures will be implemented to ensure that alternative roosting is provided. In the following section, evidence of the success of such measures is presented in detail. These measures have been designed according to best practice and with reference to bat mitigation guidelines.
c) Bat Eco Services Ltd. has extensive experience in relation to the design, implementation and supervision of bat mitigation and therefore will endeavour to ensure that bats are not harmed during proposed demolition works and that monitoring of alternative roosting will be undertaken to reduce potential negative impacts of the proposed development.

5. Bat Mitigation Measures

Since the proposed development requires the demolition of structure recorded as a Day Roost, a derogation licence is required to permit the loss of the bat roost recorded:

- Soprano pipistrelle Day Roost

5.1 Mitigation Measures

Mitigation measures are required to be put in place to reduce this potential impact. The result of the bat survey determined the bat mitigation measures required.

5.1.1 NPWS Derogation Licence

Apply for a derogation licence (at least a 4-week procedure).

5.1.2 Alternative Bat Roosts

The provision of alternative bat roosts can be in the form of bat box scheme (2 units, 2F woodcrete) and fixing of bat tubes to the underside of the new culvert structure. Marnell *et al.* (2022) provides guidance in relation to appropriate mitigation for different Irish bat species and the type of roosts recorded, depending on the roost status (e.g. maternity roosts). Bat boxes are acceptable for the provision of alternative roosts for bat species proven to use. Therefore, both type of alternative measures will be applied here.

2F woodcrete bat boxes have been documented to be used by soprano pipistrelles. Bat Eco Services Limited has undertaken monitoring of bat box schemes, and this bat box design is successfully occupied by soprano pipistrelles. Please see Case Study A for more information (Appendices).

Bat tubes will be attached to the underside of the new culvert structure to provide a replacement roosting for the soprano pipistrelle Day Roost recorded. Bat Eco Services Ltd. has documented usage of bat tubes by this species of bat during routine monitoring. Please see Case Study B and Case Study C for more information (Appendices).

5.1.2.1 Bat Boxes

A bat scheme is recommended both as a conservation measure and to provide alternative roosts, particularly if there are any proposed tree felling of parkland trees. These will be erected prior to the removal of the structure.

- Summer Bat Boxes (2F Schwegler woodcrete or similar design) – 2 bat boxes will be erected on mature trees within the proposed development site.

Bat boxes will be erected prior to tree felling or tree surgery works. Some general points that will be followed include:

- Straight limb trees (or telegraph pole) with no crowding branches or other obstructions for at least 3 metres above and below position of bat box will be used.
- Diameter of tree will 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. Locations will be sheltered from prevailing winds.
- Bat boxes will be erected at a height of 4-5 metres to reduce the potential of vandalism and predation of resident bats.

- It is recommended to erect several bat boxes on one tree at an array of aspects. South facing boxes will receive the warmth of the sun, which is necessary for maternity colonies. In large bat box scheme it is generally recommended to have three bat boxes arranged at the same height facing North, South-East and South-West. This ensures a range of temperatures are available all day. If the South facing boxes become warm, bats can safely remove to the cooler North facing box.
- Locations for bat boxes will be selected to ensure that the lighting plan for the proposed site does not impact on the bat boxes.

EVIDENCE – Bat Boxes provide suitable alternative roosts

Bat Boxes are frequently used as part of bat mitigation to retain local bat populations within an area proposed to be development. The NPWS Bat 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. The bat boxes are proposed to provide alternative roosting for the day roosts recorded in Building 3 and Building 4 (i.e. brown long-eared bats, common pipistrelles and soprano pipistrelles).

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 7d: Table 7 (p 58) Reproduced from Marnell *et al.* (2022).

Two publications that provide good scientific advice in relation to the effectiveness of bat boxes are presented here. 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 Irish 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.
- Pipistrellus spp. preferred 1FF boxes as this bat box design offer 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.
- 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.

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 1 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.

The author has also erected several bat box schemes and, where possible, has completed occasional monitoring visits. One such example is a bat box scheme erected in Kileshandra, Co. Cavan and originally consisted of 8 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. During three site visits evidence of bat usage were recorded. 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 doxes 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). The remaining four bat boxes all had droppings within for *Pipistrellus* spp and Leisler's bats. An additional inspection was completed on 2/7/2022 and one of the 2F woodcrete bat boxes was occupied by >15 soprano pipistrelles while additional boxes were occupied by single soprano pipistrelles, Daubenton's bats 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.

As a result of the above results, Bat Eco Services Ltd. has since undertaken a ringing study (under licence) of three bat box schemes, including the Kileshandra BBS described above. This study was undertaken in 2025 and the three bat box schemes were investigated from July to October. Under licence (Section 32 Licence No. 004/2025), a total of 45 bats were ringed and this comprised of Daubenton's bats (*Myotis daubentonii*), soprano pipistrelles (*Pipistrellus pygmaeus*) and Leisler's bats (*Nyctalus leisleri*). Fourteen ringed bats were re-captured during subsequence bat box checks. The biometric data was recorded for all bats ringed and recaptured and this provided positive data in relation to the health of the individuals recaptured. This brief study successfully showed that the same bats will occupy bat boxes across the active season.

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 10 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).

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 development, to mitigate for the loss of potential roosts in trees.

Therefore, Schwegeler woodcrete bat boxes are recommended as a bat mitigation measure. Both McAney & Hannify (2015) and Collins *et al.* (2020) demonstrated that usage of this bat box design by bat species recorded in this survey report. This bat box is also less likely to be used by birds and 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 will be undertaken as part of the mitigation measures.

5.1.3 Demolition of Drumcree Bridge

5.1.3.1 Pre Construction Bat Survey

As this bridge was recorded as a Soprano pipistrelle Day Roost, the replacement of the structure will be supervised by a bat specialist. The steps will be undertaken to ensure that the bridge is "bat free" prior to any demolishment works. The following steps will be undertaken:

Prior to start of proposed works:

- In conjunction with OPW staff, hessian material curtains will be prepared and fixed to both sides of the bridge, during the daytime, in preparation of the exclusion of the structure for usage by bats;
- Dusk survey to determine if any bats are present. If bats are present, the survey will monitor continue to monitor bridge for bat activity to ensure that any bats roosting have emerged. Once the bat specialist has deemed that the bats have emerged, the hessian curtains will be lowered and fixed in place to prevent bats re-entering the bridge for roosting. A static bat detector coupled with a trail camera will be placed under the bridge (inside the curtain walls) to determine if there is any bat activity during the remainder of the night.
- During the following day, equipment will be checked for bat activity. The crevices of the bridge will be inspected to ensure that there are no bats present. If the bat specialist records any bats, one side of the hessian curtain will be opened and another dusk survey will be undertaken to ensure that the bridge is bat free. Once the bridge is deemed bat free, the OPW is permitted to remove the structure.

EVIDENCE FOR METHODOLOGY

Bat Eco Services Ltd. have implemented the "curtain" procedure for several bridges to-date. One example is for Claddy Bridge, Bective, Co. Meath. A derogation licence was received to permit works on the bridge (DER/BAT 2021 – 86 Amended 1/4/22).

Plate 4: Claddy Bridge, Bective, Co. Meath – preparation work prior to works.

This photograph illustrates the curtain of netting prepared prior to daytime inspection and dusk survey of the bridge. Once the bridge was deemed "bat free", the netting was put in place to prevent bats re-roosting in the structure and thereby permitting works to be undertaking without harming the bats.

The next photograph provides an illustration of the closed netting.

This successfully permitted works, without harming any bats. Crevices were retained post-works.

Plate 5: Closed netting on Claddy Bridge, Bective, Co. Meath.

It is estimated that the works will require 4 weeks to complete. Therefore, a period of licence is required for 20th April to 31st May 2026.

5.1.3.2 Bat Tubes

Once the culverts are fixed into place, the bat tubes will be fixed to the underside, under supervision by the bat specialist. The bat tubes will be fixed using four steel bands, per unit, to ensure long-term stability of the tubes.

5.1.3.3 Monitoring

Supervision by a bat specialist of the proposed works will be required throughout project to ensure that no bats are harmed during the works. This will be coupled with static surveillance and trail camera monitoring of bridge. The bat boxes will also be checked for bat usage.

5.1.3.4 Reporting

Bat Eco Services Ltd. will provide a full report on the bat mitigation measures undertaken and the monitoring results during the proposed works. A returns form will automatically be filed on completion of the works.

5.1.3.5 Future Surveys

Bat Eco Services Ltd. will undertake monitoring surveys during and post-works to determine presence of the local bat populations and the success of bat mitigation measures. Data collected will be submitted to Bat Conservation Ireland for inclusion on the Bat Database.

5.1.3.6 Evidence

Bat Eco Services Ltd. have extensive experience in the implementation of bat mitigation measures. A CV is provided as part of the supporting document to accompany this application. This CV provides information on an array of projects completed to-date. Additional information is also provided in the Appendices below.

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7. Appendices

7.1 Appendix 1 – Case Study A

Bat boxes are a suitable alternative roost for Soprano pipistrelles

Bat Eco Services Limited monitoring bat box schemes to gather evidence of the bat usage of such bat mitigation measures. The following is a result of a study presented at the 11th Irish Bat Conference (Belfast, March 2026).

Standard Oral / Poster Presentation: Poster

Title: Do the same bats regularly roost in bat boxes?

Authors: Aughney, T. & Boyle, S.

Aughney, T. Bat Eco Services Limited [redacted]

Boyle, S. Bat Eco Services Limited [redacted]

Content: Bat Box Schemes are a fundamental component of bat mitigation measures and are widely erected across Ireland. However, it is important to determine the success of such mitigation, not only in relation to species composition but also seasonal occupancy. Therefore in 2025, three bat box schemes, managed by Bat Eco Services Limited, were investigated from July to October. Under licence (Section 32 Licence No. 004/2025), a total of 45 bats were ringed and this comprised of Daubenton's bats (*Myotis daubentonii*), soprano pipistrelles (*Pipistrellus pygmaeus*) and Leisler's bats (*Nyctalus leisleri*). Fourteen ringed bats were re-captured during subsequence bat box checks. The biometric data was recorded for all bats ringed and recaptured and this provided positive data in relation to the health of the individuals recaptured. This brief study successfully showed that the same bats will occupy bat boxes across the active season. This study will continue in 2026 and it will be extended to include a total of six bat box schemes.

The poster is presented below for viewing. The results clearly document the usage of the three bat box schemes by soprano pipistrelles. Additional evidence was also report of the ringed soprano pipistrelles occupying the bat boxes during subsequent bat box inspections.

Do the same bats regularly roost in bat boxes?

Tina Aughney & Shaun Boyle, Bat Eco Services Limited [redacted]

INTRODUCTION

Bat Box Schemes are a fundamental component of bat mitigation measures and are widely erected across Ireland. However, it is important to determine the success of such mitigation, not only in relation to species composition but also seasonal occupancy. In 2025, three bat box schemes, managed by Bat Eco Services Limited, were investigated from July to October and ringing was completed under licence (Section 32 Licence No. 004/2025). These bat box schemes were selected because bats were recorded roosting in the bat boxes during follow-up monitoring.

Bat Box Scheme A – Kilnacrott, Co. Cavan

Twelve Schwegler woodcrete bat boxes were erected on mature trees in Kilnacrott, Ballyjamesduff, Co. Cavan on 7th September 2024. All bat boxes erected were inspected on 15th November 2024 and two soprano pipistrelles were recorded roosting individually in two of the bat boxes located in the woodland area (2F and 2FN designs).

Bat Box Scheme B – The Ramparts, Co. Meath

Ten Schwegler woodcrete bat boxes were erected on mature trees on 22nd April 2024 in linear woodland of The Ramparts, Navan, Co. Meath. During the first inspection of the bat boxes on the 12th September 2024 a total of 11 Leisler's bats (2 bat boxes – 1FF and 2FN) and 11 soprano pipistrelles (2 bat boxes, 2F design) were recorded roosting while a fifth bat box had evidence of *Pipistrellus* spp. bat droppings (1FF bat box).

Plate 1: Soprano pipistrelles roosting in 2F bat box. Plate 2: 2FN and 1FF bat boxes.

Bat Box Scheme C – Kileshandra, Co. Cavan

This bat box scheme was originally set up in 2012 when 8 Schwegler woodcrete bat boxes (2F and 2F with timber panel designs) were erected on mature trees. Additional bat boxes were erected from 2015 onwards (4x Chilton woodstone bat boxes, 2x Harlech woodstone bat boxes and 2x woodcrete 1FF and 2FN designs). During inspections, three bat species were recorded roosting in the bat boxes: Leisler's bats, soprano pipistrelles and Daubenton's bats, with a confirmed maternity roost for the latter bat species.

Plate 3: Daubenton's bats roosting in 2F bat box. Plate 4: Daubenton's bat dropping build-up.

METHODOLOGY

Aluminium-magnesium flanged rings (2.4mm, 2.9mm and 4.2mm) manufactured by Porzana Ltd. were purchased. Bat boxes were inspected during the daytime on various dates during mild weather conditions. Any bats roosting in the boxes was carefully extracted and placed individually into cotton bags for examination. Biometric data was collated and adult bats of suitable weight were ringed (median species-specific weight according to Roche *et al.*, 2014). Ringing was undertaken according to Chapter 6 (R Stebbings) in: Mitchell, A.J. & McLeash, A.P. (2004). All captured and ringed bats were returned to the bat box (post feeding with meal worms).

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RESULTS

A total of 45 bats were ringed, and this comprised of Daubenton's bats (x27), soprano pipistrelles (x12) and Leisler's bats (x6). Fourteen ringed bats were re-captured during subsequence bat box checks. The biometric data was recorded for all bats ringed and recaptured and this provided positive data in relation to the health of the individuals recaptured.

Bat Box Scheme A – Kilnacrott, Co. Cavan

Six bat box inspections were completed during which 9 bats were ringed (9x soprano pipistrelles). Two ringed soprano pipistrelles were recaptured. One of the bats was recaptured on two dates (ringed on 16/8/2025, recaptured on 12/9/2025 and 10/10/2025).

Bat Box Scheme B – The Ramparts, Co. Meath

Four bat box inspections were completed during which 6 bats were ringed (2x soprano pipistrelles and 4x Leisler's bat). One ringed Leisler's bats were recaptured (ringed on 24/8/2025, recaptured on 6/9/2025).

Bat Box Scheme C – Kileshandra, Co. Cavan

Three bat box inspections were completed during which 30 bats were ringed (27x Daubenton's bats, 1x soprano pipistrelle and 2x Leisler's bat). Eleven ringed Daubenton's bats were recaptured (ringed either on 28/8/2025 or 16/9/2025 and recaptured on 16/9/2025 or 5/10/2025).

Plates 5-7: Ringed bats - Leisler's bat, Soprano pipistrelle and Daubenton's bat, respectively.

All recaptured bats were weighted and inspected to ensure that the rings were not causing damage to the bat. In relation to weights, 9 of the 14 ringed bats (64%) had greater weight compared to weight on ringing date while one bat had the same weight. However, four bats had lost weight (2 males and 2 females). No damage was noted to wings on all bats recaptured.

DISCUSSION

This brief ringing study provided evidence that bats will regularly roost in bat boxes erected in their roosting range. A 31% recapture rate recorded during this short study. The results also show that bat boxes are effective bat mitigation measures. In relation to two of the four recaptured bats that lost weight, these were sexually active males, which may account for the weight loss. But this biometric parameter will be measured during inspections in 2026 and examined to determine if the additional of a ring is a negative factor for individual bats. The aim of this study is to determine the long-term occupancy of individual bats. As the 2025 study was started late in the season, the 2026 study will start in March/April.

RINGING DATABASE

Bat ringing is a long-established research technique in many European countries, but it is still relatively underused in Ireland. Therefore, this is an ideal opportunity to set up a centralised database for bat ringing in Ireland. All the data collated in this study was issued to NPWS (as part of licence returns) and to Bat Conservation Ireland and will continue to do for 2026. All data is entered into an Excel file with regards to ring numbers, species, biometrics, dates and locations. There is also an opportunity to set guidelines for data collection and to ensure that "ringing studies are only undertaken when there is a specific question to answer" (Worledge *et al.*, 2015).

2026 PLANS

This ringing study will continue in 2026 and will be extended to include six bat box schemes in Counties Cavan, Meath and Dublin. If you have attended a Bat Conservation Ireland Bat Handling Training Course and have up to-date vaccinations, you are welcome to join the bat box inspection days.

THANKS

Thanks to the Cavan Bat Group for their assistance with bat box checks at Kileshandra BBS in 2025 and commitment to 2026 inspections.

7.2 Appendix 2 – Case Study B

Bat tubes are a suitable alternative roost for Soprano pipistrelles

Oldstreet Bat House was constructed as an alternative bat roost for Common pipistrelles. Bat tubes were built into the external walls of the bat house to increase the bat biodiversity value of the structure. The following bat tubes were incorporated into the bat house:

- 9 bat tubes: front gable of the bat house
- 4 winter bat tubes: rear gable of the bat house
- 10 bat tubes: internal ground floor room of bat house

Bat Tube 1FR and 2FR - Veldshop.nl – please see illustrations of bat tubes and the construction as a façade part of the wall.

Plate A: Finished bat house with bat tubes (south facing external wall), Oldstreet Substation Bat House, Co. Galway.

Winter Batbox 2WI - Veldshop.nl – please see link for illustrations and descriptions of this type of bat box.

Plate B: Winter Bat Boxes inserted into wall (Oldstreet Substation bat House, Co. Galway).

10 units of bat tubes (1FR), were hung on the walls on the ground floor level (attached to the wall at the highest point possible).

Plate C: Bat Tubes fixed onto internal ground floor wall (Oldstreet Substation bat House, Co. Galway).

The following is a summary of the monitoring surveys completed at Oldstreet Bat House that provide extensive usage of the bat tubes by soprano pipistrelles (Highlighted in Red):

Survey Date	Daytime Inspection: Attic	Daytime Inspection: Bat Tubes	Dusk Survey: Attic	Dusk Survey: Bat Tubes	TOTAL
21/06/2024 Weather conditions: patchy cloud cover, dry, calm and 14oC	No bat droppings or bats present	Bat Tube No. 7 - Leisler's bat droppings	x4 common pipistrelles emerged from roof space	x1 common pipistrelle emerged from Bat Tube No. 7	**x5 common pipistrelles confirmed roosting in the Bat House**
11/07/2024 Weather conditions: full cloud cover, dry, light breeze and 12oC	x10 Pipistrelle bat droppings in attic space	x2 bat tubes with bat droppings - Bat Tube No. 7 and No. 9	x4 common pipistrelles emerged from roof space	0 bats	**x4 common pipistrelles confirmed roosting in the Bat House**
03/09/2024 Weather conditions: full cloud cover, dry, calm and 12oC	x7 Pipistrelle bat droppings in attic space	x3 bat tubes with bats roosting: No. 3 - x1 Leisler's bat; No. 7 x2 soprano pipistrelles & No.	x7 common pipistrelles emerged from roof space	x2 Leisler's bats and x3 soprano pipistrelles emerged from three bat tubes	**x7 common pipistrelles, x2 Leisler's bat and x3 soprano pipistrelles confirmed**

		9 x1 Leisler's bat. x5 bat tubes with bat droppings - Bat Tube No. 1, No. 2, No. 3, No. 7 and No. 9			**roosting in the Bat House**
24/06/2025 Weather conditions: full cloud cover, light breeze, dry, 13oC	>20 Pipistrelle bat droppings in attic	x3 bat tubes with bats roosting: No. 5 x1 Leisler's bat, No. 7 x1 leisler's bat, No. 9 x3 soprano pipistrelle. All front bat tubes with bat droppings. X2 rear bat tubes with bat droppings	x3 common pipistrelles recorded emerging from roof space	x2 common pipistrelle emerged from rear bat tube; x2 Leisler's bats and 3 soprano pipistrelles emerged from front bat tubes	**x5 common pipistrelles, x2 Leisler's bat and x3 soprano pipistrelles confirmed roosting in the Bat House**
16/10/2025 Weather conditions: full cloud cover, dry, calm, 14oC	x12 Pipistrelle bat droppings in attic space	x2 bat tubes with bats roosting: No. 7 x2 soprano pipistrelles, No. 9 x1 soprano pipistrelles	x10 common pipistrelles emerged from roof space	x3 soprano pipistrelles emerged from bat tubes	**x10 common pipistrelles and x3 soprano pipistrelles confirmed roosting in the Bat House**

7.3 Appendix 3 – Case Study C

Bat tubes are a suitable alternative roost for Soprano pipistrelles

Bective Bat House was constructed as an alternative bat roost for whiskered bats and brown long-eared bats. Bat tubes were built into the external walls of the bat house to increase the bat biodiversity value of the structure. The following bat tubes were incorporated into the bat house:

- 5 bat tubes: front gable of the bat house
- 4 bat tubes: rear gable of the bat house

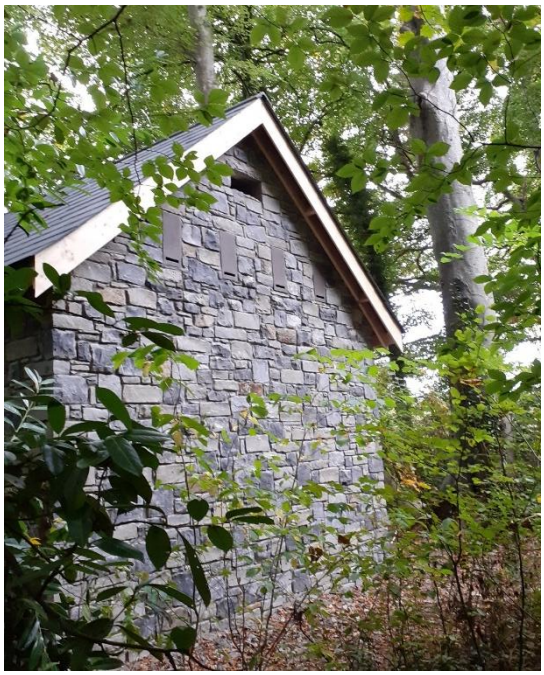

Plate D: Bat tubes in external walls of Bective Bat House.

Monitoring Dusk Survey – 22nd August 2023

- Three whiskered bats were confirmed emerging from the eaves of the bat house.
- Six brown long-eared bats were confirmed emerging: five from the eaves and one from a bat tube (rear wall of bat house).
- 10 soprano pipistrelles were recorded emerging from the bat tube located on the front wall of the bat house while one additional individual was recorded emerging from a bat tube located on the rear wall of the bat house.