

# **Bat, Bird and Protected Species Survey Report**

**The Retreat, Perth Road, Little Dunkeld, Birnam  
For Mr and Mrs J. Maclean**

**Monday 18<sup>th</sup> September 2023**



## **AUTHOR**

Emma O'Shea MCIEEM, BSc, PG Dip Env Mgmt.  
Ecological Consultant, Tay Ecology Ltd

Tay Ecology Ltd, Fairway, Golf Course Road, Pitlochry, PH16 5QU  
Tel: 07747 883464; Email: [info@tayecology.co.uk](mailto:info@tayecology.co.uk); [www.tayecology.co.uk](http://www.tayecology.co.uk)

## CONTENTS

|                                       |       |
|---------------------------------------|-------|
| Executive Summary                     | 3     |
| 1. Introduction                       | 4-5   |
| 1.1 Site location                     | 4-5   |
| 1.2 Site description                  | 4-5   |
| 1.3 Proposed works                    | 4-5   |
| 2. Survey and Site Assessment         | 5-7   |
| 2.1 Objectives                        | 5     |
| 2.2 Methods                           | 5-7   |
| 3. Legislation and Policy Guidance    | 7     |
| 4. Bat Ecology                        | 7     |
| 5. Results                            | 8-11  |
| 5.1 Pre-survey data search            | 8     |
| 5.2 Field Surveys                     | 8-11  |
| 6. Assessment                         | 11-12 |
| 6.1 Constraints on survey information | 11    |
| 6.2 Discussion                        | 11-12 |
| 6.3 Potential impacts of development  | 12    |
| 6.4 Licensing                         | 12    |
| 7. Nesting Birds                      | 13    |
| 8. Other Protected Species            | 13    |
| 9. Recommendations                    | 13    |
| 10. References                        | 13    |
| 11. Appendices                        | 13-15 |

### Disclaimer

While every reasonable effort is made to ensure that the information provided in this report is accurate, Tay Ecology Limited makes no warranty as to the accuracy or completeness of material supplied. Tay Ecology Limited shall have no liability for any loss, damage, injury, claim, expense, cost, or other consequence arising as a result of use, or reliance upon any information contained in or omitted from this document.

### Copyright © 2023

The material presented in this report is confidential. This report has been prepared for the exclusive use of the property owner. The report shall not be distributed or made available to any other company or person without the knowledge and written consent of the property owner, a representative of the property owner or Tay Ecology Ltd

## EXECUTIVE SUMMARY

A preliminary bat roost assessment to assess the likelihood of bats roosting at The Retreat prior to demolition demonstrated a moderate potential for the presence of bat roosts at the site. There were no signs of bats recorded, however, potential roost locations which were identified including gaps under the roof ridge, and gaps under slates. The survey took place in favourable conditions with all areas accessible. The hibernation assessment demonstrated a low potential for hibernating bats.

Bats are a protected species, and it is an offence to intentionally, or recklessly, disturb a bat in a shelter or resting place; or to damage or destroy a breeding or resting site. All bats and their roosts are legally protected because bats return to the same places every year, a bat roost is protected even if there are no bats there. The proposed demolition would impact on any bat roosting there, therefore, following the Bat Conservation Guidelines, one emergent (dusk) and one re-entrant (dawn) survey between May to September was recommended. No further hibernation surveys are required.

The emergent dusk and re-entrant dawn surveys were carried out in August and September 2023. During the activity surveys small numbers of Common and Soprano pipistrelles were recorded commuting over the property towards the river and foraging in the garden. A maximum of three individual bats were recorded in total, including one Common pipistrelle foraging and two Soprano pipistrelles commuting overhead towards the River Tay. Bat activity was recorded intermittently with only very small amounts of foraging activity. No bats were recorded emerging from or re-entering any location of The Retreat during the surveys. The surveys took place in favourable conditions and results are accurate as to the species, numbers, and locations of bats in the area.

The proposed works will not have a detrimental impact on the bat population at the site as no bat roosts were identified, and the foraging and commuting habitats will remain intact. A bat licence is not required at this site as no bat roosts were identified roosting at the property. No further surveys are recommended at this time, and bat surveys are valid for twenty-four months. As bats are mobile creatures there is always the possibility that a bat could be found unexpectedly once building work occurs, in this eventuality appropriate action should be taken. Bat boxes installed at the site as part of works would increase the number of roosting opportunities and enhance the area for bats.

There was no evidence of common or migratory birds nesting at the building during the surveys. All wild birds and their nests, eggs and dependent young are legally protected, and it is an offence to disturb a wild bird when it is nesting. It is not anticipated that this would change, however, where demolition work commences during the nesting season (March to August inclusive) it is recommended that a breeding bird nest check is carried out prior to works taking place. Any active nest sites must be suitably protected until the chicks have fledged. It is recommended that nest boxes for species such as house martin and house sparrows are incorporated as part of works. No evidence of any other protected species was identified during the surveys.

# 1. INTRODUCTION

## 1.1 Site location

The Retreat is located on Perth Road in Birnam, Dunkeld. The site grid reference is N0 02983 42076 at an altitude of 50m above sea level. Figure 1 Site Location

## 1.2 Site description

The property is a single storey prefabricated structure with a slate roof on timber sarking. Figure 2 Aerial View

## 1.3 Proposed works

It is proposed to demolish the existing building and construct a new dwelling at the site.

Figure 1 Site Location

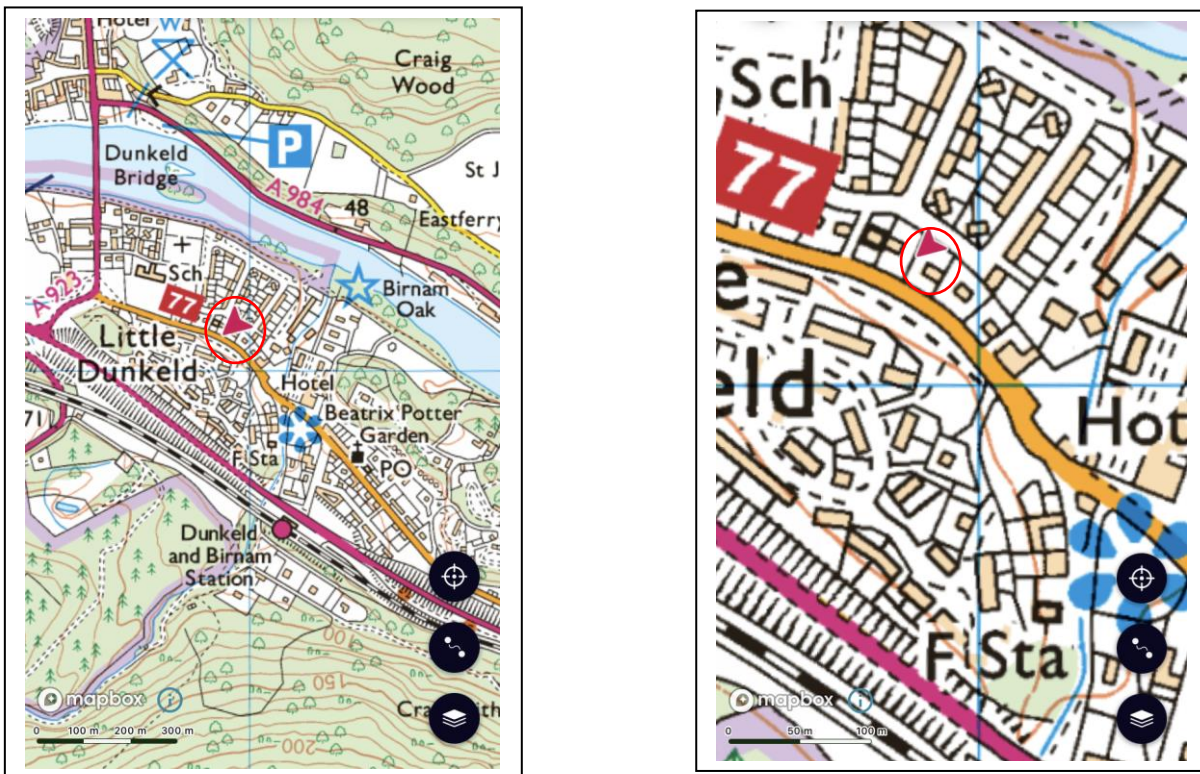
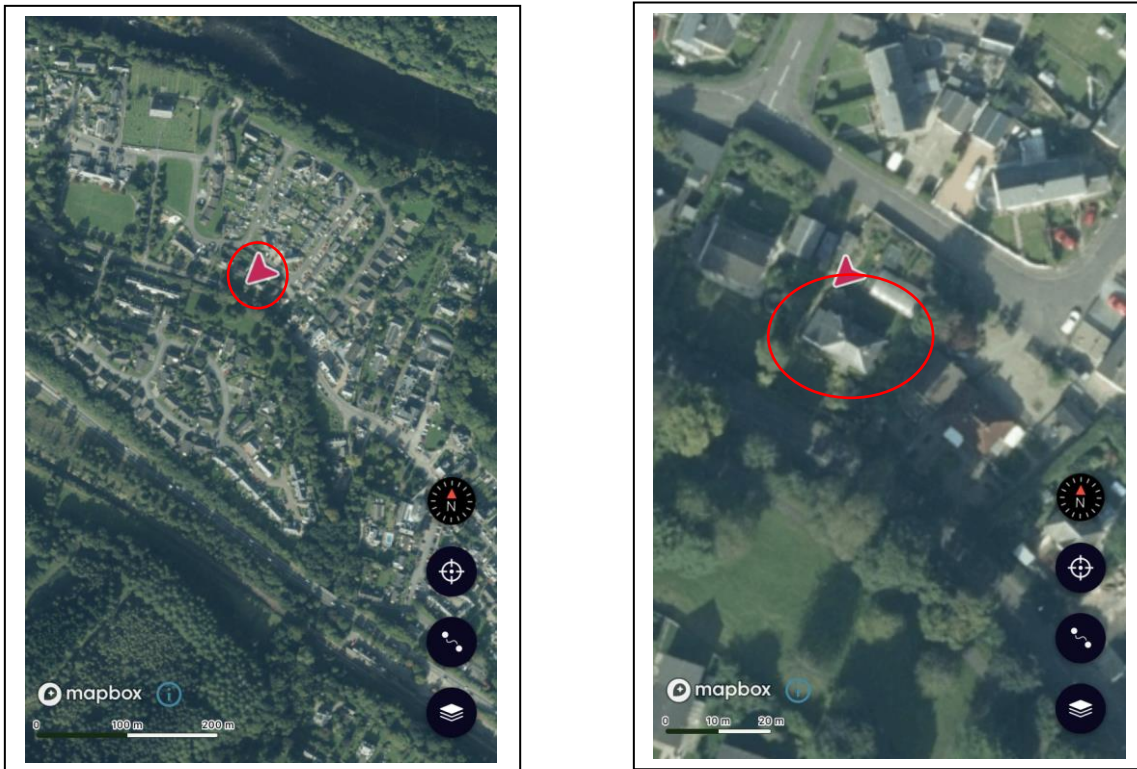


Figure 2 Aerial View



## 2. SURVEY AND SITE ASSESSMENT

### 2.1 Objectives

The survey aims to make an appraisal of the presence and/or absence of any species of bat and/or bird or other protected species which may be affected by the renovation work. The survey specifically looked for evidence of bats and their roosts, birds and their nests, and any other protected species with a preliminary roost assessment focused on a structural survey. Emergence and re-entrant bat activity surveys were then carried out to confirm the presence or absence of roosting bats.

### 2.2 Methods

#### 2.2.1 Pre-survey data search

Web-based sources of information were examined, principally the National Biodiversity Network (NBN) Gateway (<http://data.nbn.org.uk/>) where a radius of 5km from the centre of the proposed development was searched to provide suitable coverage of the area. Nature designation classifications were obtained from NatureScot Site Link (<https://sitelink.nature.scot/home>).

Other websites searched include Bat Conservation Trust (<http://www.bats.org.uk/>). Positive records for species present in the survey area can be used to inform the assessment of biodiversity on the site but the lack of records clearly cannot be taken to imply that the species in question is absent.

### 2.2.2 Survey methodology

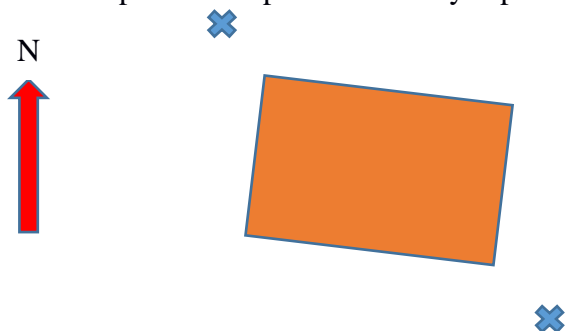
A site visit and habitat assessment were carried out after receiving information from Urban Rural Design Ltd. A bat survey was carried out incorporating an ecological appraisal, roost assessment and a hibernation survey. The property was surveyed following best practice guidelines: Good Practice Guidelines, 3rd Edition. Bat Conservation Trust (BCT), Collins, J (2016). Equipment used included a ladder, endoscope, thermal monocular, powerful torch, and binoculars.

Dusk emergence, dawn re-entrant and bat activity surveys were carried out following the format identified in the guidelines. Equipment included two Anabat Walkabout, two Anabat Express passive bat detectors and recorders, and two hand-held BatBox Duet detectors. Data was analysed using analook software. Two XA60 Canon camcorders with infra-red capability and supplementary IRLamp 7 floodlighting systems were set-up on sight together with the Hik Micro Lynx thermal monoculars which have photographic and recording functions.

### 2.2.3 Survey area

All elevations of the building.

Figure 3 Simplified site plan and surveyor positions ✕ (not to scale)



### 2.2.4 Timings, types, and weather conditions of Field Surveys

**29/08/2023** Bat roost assessment, hibernation survey, building survey – Temperature 13 degrees Celsius; wind speed 5mph; cloud cover 25%; no precipitation; good visibility.

**30/08/2023** Emergence (Dusk)/ Activity Survey – Sunset 20.16 - Time 19.55 – 21.55; temperature 13 degrees Celsius; wind speed 2mph; cloud cover 80%; no precipitation; good visibility.

**14/09/2023** Re-entrant (Dawn)/ Activity Survey – Sunrise 06.43 - Time 05.00 – 07.00; temp 9 degrees Celsius; wind speed 2mph; cloud cover 20%; no precipitation; good visibility.

### 2.2.5 Limitations

Survey data is accurate on the date that the survey took place.

### 2.2.6 Personnel

Emma O'Shea, Ecological Consultant, Tay Ecology, Bat Licence Number 200952

Emma has worked in the environmental sector for nineteen years, during which time she has gained a wealth of experience and expertise. During the last nine years she has worked as an ecological consultant for Tay Ecology with lead responsibility for development projects requiring habitat, protected species, bird, tree surveys and species licensing. Emma has been surveying for bats since 2004 and she trained for her bat licence under Neil Middleton, Echoes Ecology on the Bat Skills Development Programme. Emma has a Nature Scot bat survey licence with hibernacula, a low impact bat licence and an otter survey licence. Emma has a Postgraduate Diploma in Environmental Management from the Open University and is a full member of the Chartered Institute for Ecology and Environmental Management (MCIEEM), a member of the Arboricultural Association and Institute of Environmental Management and Assessment.

Clare Fernie, Bat Surveyor, Tay Ecology

Clare has been surveying bats since 2006 from her time working with the National Trust for Scotland. Clare has surveyed with Tay Ecology for seven years and has surveyed an extensive range of buildings across Scotland. She has trained with the Bat Conservation Trust and also advises on plants for developing wildlife friendly gardens.

Rosemary O'Shea, Bat Surveyor, Tay Ecology

Rosemary has been surveying bats since 2004 and has a wide range of experience, she has surveyed a wide range of buildings from castles in the North-east of Scotland to farm steadings in West Perthshire. Rosemary has attended several Bat Conservation Trust training courses and is passionate about conserving natural environment.

### 3. LEGISLATION AND POLICY GUIDANCE

Bats: All bats and their roosts are legally protected in Scotland by the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) - "the Habitats Regulations". A bat roost is any structure or place which a bat or group of bats use for shelter or protection, because bats return to the same places every year, a bat roost is protected even if there are no bats there. It is an offence to deliberately or recklessly: capture, injure or kill a wild bat; harass a wild bat or group of bats; disturb a wild bat in a roost (any structure or place it uses for shelter or protection); disturb a wild bat while it is rearing or otherwise caring for its young (this would be a 'maternity' roost); obstruct access to a bat roost or to otherwise deny the animal use of the roost; disturb such a wild bat in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of that species; disturb a wild bat in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or care for its young. It is also an offence to damage or destroy a breeding site or resting place of such an animal (note: this does not need to be deliberate or reckless to constitute an offence); keep, transport, sell or exchange or offer for sale or exchange any wild bat or any part or derivative of one.

### 4. BAT ECOLOGY

In this part of Scotland there are 5 species of bat generally found: Common Pipistrelle *Pipistrellus pipistrellus*; Soprano Pipistrelle *Pipistrellus pygmaeus*; Brown Long-eared *Plecotus auritus*; Daubenton's *Myotis daubentonii*; and Natterer's *Myotis nattereri*. The 2 species of pipistrelle use man-made structures to roost and can be found in both a rural and urban setting. Brown long-eared bats often roost in old buildings with large attics, preferring buildings associated with mature woodland in which they can forage. Daubenton's bats roost close to still or running bodies of water, either in trees or structures such as bridges. Natterer's bats have a similar habitat to brown long-eared bats but are less common. Female bats roost together in a colony from May until the autumn. Bats usually have one baby in June which is reliant on its mother for 2 months and will remain in the roost whilst the mother feeds. In the autumn, the colony will move from their warm summer roost, often in buildings, to a cooler winter roost which may be in trees, unheated buildings with thick stone walls, caves, and similar places. In their winter roost they become torpid as the weather cools, and they hibernate. Male bats live in smaller groups or individually in cooler roosts such as steadings or tree holes but can be found in maternity colonies in the early autumn when mating takes place. Whilst bats are hibernating, they are particularly vulnerable to disturbance. Each time they wake it uses up their energy stores and with repeated disturbance the result can be their death.

## 5. RESULTS

### 5.1 Pre-survey data search

Nature Scot Sitelink showed that the site is within the River Tay National Scenic Area and it is 150m south of the River Tay Special Area of Conservation SAC and there are no other national or international designated sites within 1km proximity.

National Biodiversity Network confirmed presence Daubenton's bat *Myotis daubentonii* (26); Natterer's bat *Myotis nattereri* (3); Common pipistrelle *Pipistrellus pipistrellus* (9); Soprano pipistrelle *Pipistrellus pygmaeus* (11); Brown Long-eared *Plecotus auritus* (17) within 5km.

Within 2km there are records for Daubenton's bat (1), Natterer's bat (1), Common pipistrelle (2), Soprano pipistrelle (4), Brown Long-eared bat (6). Within 1km there are records for Common pipistrelle (1), Soprano pipistrelle (2) and Brown Long-eared bat (2).

### 5.2 Field surveys

#### 5.2.1 Description of Habitats of potential value to bats

Around the property there is a mix of amenity grassland to the north-east and garden ground with flower beds to the south-west. There are a small number of trees in neighbouring garden ground. In the wider area are broadleaved woodland and the River Tay.

#### 5.2.2 Bat Surveys

##### 5.2.2.1 Roost assessment of structures

South-west and south-east elevations



South-west elevation



North-west and north-east elevations



North-east and south-east elevations





**Table 5.1 Description of potential roost features**

| Structure   | Descriptions of potential roost features | Evidence of bats | Areas not surveyed/why |
|-------------|--|------------------|------------------------|
| The Retreat | Gaps under roof ridge, and under slates. | None             | None                   |

Table 5.1 shows that potential roost features suitable for bats include gaps under the roof ridge and under slates. No evidence of bats was recorded.

**Potential Roost Locations**

Gaps under roof ridge



Gaps under roof ridge and under slates



**Description and assessment of suitability of features for foraging**

The gardens, trees, woodland and river are suitable for foraging.

**Description and assessment of suitability of features for commuting**

The garden ground, woodland and river have suitability for commuting.

**Description and assessment of suitability of features for roosting.**

**Table 5.2 Description, proposed works, assessment, and suitability of features for roosting,** with assessment adapted from Collins (2016, pp.35, 51, 52)

| Description | Assessment   | Suitability | Proposed Works | Implications for Proposed Works  |
|-------------|--|-------------|----------------|--|
| The Retreat | A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water. | Moderate    | Demolish       | 1 survey at dusk and 1 dawn between May – September with 14 days minimum interval between surveys. |

Table 5.1 shows that there are one or more roost sites which could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status (Collins, 2016, p.35). The habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland, or water (Collins, 2016, p.35), and 1 survey at dusk and 1 at dawn between May-September is recommended (Collins, 2016, p.52).

### 5.2.2.2 Winter hibernation assessment

**Table 5.3 Description of winter hibernation potential and evidence of bats**

| Descriptions of potential hibernation roost features     | Evidence of bats found | Areas not surveyed/ why |
|--|------------------------|-------------------------|
| Low potential limited to opportunistic bats in the roof. | None                   | n/a                     |

Table 5.3 shows that the potential hibernation roost features are low limited to opportunistic bats in the roof.

### 5.2.2.3 Emergence, Re-entrant and Activity Surveys

**30/08/2023** Emergence (Dusk)/ Activity Survey – Sunset 20.16 - Time 19.55 – 21.55

The emergence and activity survey recorded the first bat call, from a Common pipistrelle from 20.36, 20 minutes after sunset. This bat did not emerge from the property, it emerged from the neighbouring building to the south-east and was recorded foraging in the garden.

At 20.36 two Soprano pipistrelles were recorded commuting overhead above the property travelling from the south in the direction of the River Tay to the north.

A maximum of three individual bats were recorded in total, including one Common pipistrelle foraging and two Soprano pipistrelles commuting overhead towards the River Tay. Bat activity was recorded intermittently with only very small amounts of foraging activity at 20.36, 21.19 and 21.53.

There was no other species of bat recorded during the survey. No bat emerged from any elevation of The Retreat during the survey and no bat roosts were confirmed.

Roost Locations: 0 Roost Locations

**14/09/2023** Re-entrant (Dawn)/ Activity Survey – Sunrise 06.43 - Time 05.00 – 07.00

The re-entrant and dawn activity survey recorded one Common pipistrelle foraging at 05.56. A Soprano pipistrelle call was recorded at 06.03. There was very little bat activity in the vicinity of the property with 4 bat passes at 05.56, 06.03, 06.14 (S pipistrelle), 06.23 (C pipistrelle) recorded in total during the survey.

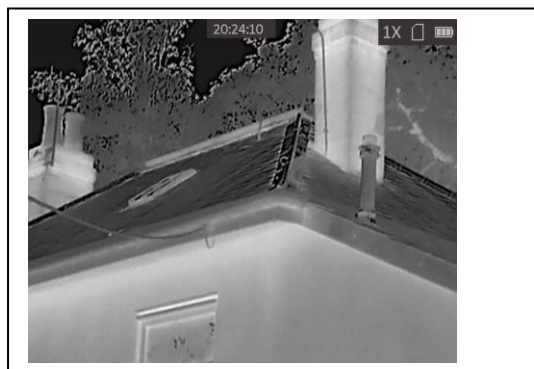
There was no other species of bat recorded during the survey. No bat re-entered any elevation of The Retreat during the survey and no roosts were confirmed at the property.

Roost Locations: 0 Roost Locations

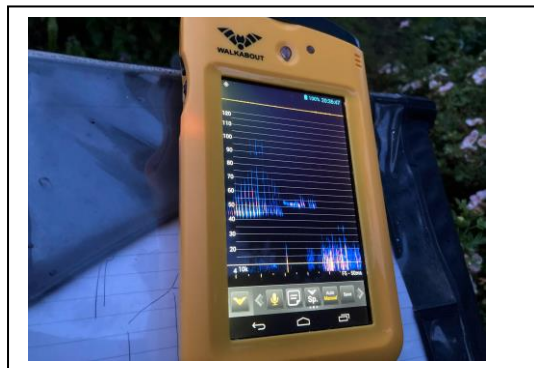
## IR camera views dusk and dawn surveys



## Thermal camera views dusk survey



## Common pipistrelle and Soprano foraging call recorded during the dusk survey at 20.36



## 6. ASSESSMENT

### 6.1 Constraints on survey information

The survey data is accurate on the dates that it was recorded.

### 6.2 Discussion

A preliminary bat roost assessment to assess the likelihood of bats roosting at The Retreat prior to demolition demonstrated a moderate potential for the presence of bat roosts at the site. There were no signs of bats recorded, however, potential roost locations which were identified including gaps

under the roof ridge, and gaps under slates. The survey took place in favourable conditions with all areas accessible. The hibernation assessment demonstrated a low potential for hibernating bats.

Bats are a protected species, and it is an offence to intentionally, or recklessly, disturb a bat in a shelter or resting place; or to damage or destroy a breeding or resting site. All bats and their roosts are legally protected because bats return to the same places every year, a bat roost is protected even if there are no bats there. The proposed demolition would impact on any bat roosting there, therefore, following the Bat Conservation Guidelines, one emergent (dusk) and one re-entrant (dawn) survey between May to September was recommended. No further hibernation surveys are required.

The emergent dusk and re-entrant dawn surveys were carried out in August and September 2023. During the activity surveys small numbers of Common and Soprano pipistrelles were recorded commuting over the property towards the river and foraging in the garden. A maximum of three individual bats were recorded in total, including one Common pipistrelle foraging and two Soprano pipistrelles commuting overhead towards the River Tay. Bat activity was recorded intermittently with only very small amounts of foraging activity. No bats were recorded emerging from or re-entering any location of The Retreat during the surveys. The surveys took place in favourable conditions and results are accurate as to the species, numbers, and locations of bats in the area.

### **6.3 Potential impacts of development**

The proposed works will not have a detrimental impact on the bat population at the site as no bat roosts were identified, and the foraging and commuting habitats will remain intact. A bat licence is not required at this site as no bat roosts were identified roosting at the property. No further surveys are recommended at this time, and bat surveys are valid for twenty-four months. As bats are mobile creatures there is always the possibility that a bat could be found unexpectedly once building work occurs, in this eventuality appropriate action should be taken. Bat boxes installed at the site as part of works would increase the number of roosting opportunities and enhance the area for bats.

### **6.4 Licensing**

Activities that may result in offences taking place can in some instances be permitted, for example roofing repairs to a house which has a bat roost. However, a strict process of licensing must be observed and followed for this to be lawful. In this case a licence from NatureScot will be required before any work can commence, and any condition imposed must be met. There is no guarantee that such a licence will be granted.

Three tests from the Conservation Regulations must be satisfied before NatureScot can grant a licence:

1. the licence relates to one of the specified purposes, including preserving public health or public safety or other imperative reasons of overriding public interest; preventing the spread of disease; preventing serious damage to the property. Supporting evidence for any assertions about the significance of the project, such as its social or economic importance will be required by the licensing authority.
2. there is no satisfactory alternative to carrying out work which will affect bats or their roosts.
3. the work will not adversely affect the local bat population.

An application for a licence will fail if these 3 tests are not met.

Tay Ecology Ltd, Fairway, Golf Course Road, Pitlochry, PH16 5QU  
Tel: 07747 883464; Email: info@tayecology.co.uk; www.tayecology.co.uk

## **7. NESTING BIRDS**

There was no evidence of common or migratory birds nesting at the building during the surveys. All wild birds and their nests, eggs and dependent young are legally protected, and it is an offence to disturb a wild bird when it is nesting. It is not anticipated that this would change, however, where demolition work commences during the nesting season (March to August inclusive) it is recommended that a breeding bird nest check is carried out prior to works taking place. In the event, that the pre-works survey discovers any nesting birds, or that after work has begun an active nest site is identified the nest site should be protected. An appropriate buffer zone depending on the species concerned and determined by a suitably experienced ecologist should be maintained and works suspended within the buffer zone until the nest is no longer active. It is recommended that nest boxes for species such as house martin, house sparrows and swifts are incorporated as part of works.

## **8. OTHER PROTECTED SPECIES**

No evidence of any other protected species was identified during the survey.

## **9. RECOMMENDATIONS and MITIGATION**

1. Bat surveys are valid for a period of twenty-four months. No further surveys are recommended at this time. A bat licence is not required at this property as no bat roosts were confirmed.
2. Contractors should be made aware of the potential for the presence of bats and what to do in the event a bat is found. There is always the possibility that bats can be found unexpectedly once building work commences. If this is the case a licensed bat ecologist and NatureScot should be contacted immediately.
3. There is potential to enhance roosting opportunities for bats by installing integrated or external wall bat boxes as part of works easterly to westerly elevations.
4. For work commencing between March to August inclusive, a breeding bird check is recommended. A range of nest-boxes are recommended to enhance biodiversity including integrated or external wall house sparrow, swift and house martin nest boxes.

## **10. REFERENCES**

Collins, J (2016) Bat Conservation Trust, Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition.

## **11.0 APPENDICES**

### **11.1 Example Bat Boxes**

- Provision of bat boxes by installing an integrated or external wall bat box as part of works.

- a. Schwelger 1FR Bat Tube

Specifications: Height 47.5cm; width 20cm; depth 12.5cm; weight: 9.8kg; Woodcrete with integrated wooden panel (NHBS, 2023a).

b. Schwelger 2FE Wall Mounted Bat Shelter

Specification: Height: 30cm; Width: 25cm; Depth: 3-5cm; Weight: 2.5kg; Woodstone (NHBS, 2023b).

## 11.2 Example Bird Boxes

- Provide nest boxes for birds, to include a range of entrance hole sizes such as 25 mm for blue and coal tits; 28 mm for great tits; 32 mm for house sparrows; 100 mm high open front for robins; 140 mm high front panel for wrens. Position of bird boxes 2-4m up trees or on buildings, utilise nearby trees for shade and tilt box slightly forward.

- Install integrated and external wall bird boxes as part of works such as a house sparrow terrace, swift box and house martin nest cups.

- Example bird boxes

a. Woodstone Seville Nest Box 28mm and 32mm

28mm hole nest boxes will be used by Tree Sparrows, Blue Tits, Coal Tits and Great Tits. 32mm hole nest boxes will be used by Great Tits, Pied Flycatchers, Tree Sparrows. Specifications: Hole Size: Oval, 28 or 32 mm; Width: 20.5cm; Height: 31cm; Length: 20cm; Weight: 6.6Kg (Garden Nature, 2023a).

b. Woodstone Barcelona Open Fronted Nest Box

Angle the box between northeast to southeast, ensuring it is not in the sun all day. Suitable Bird Type: Robin, Wren, Pied Wagtail, Spotted Flycatcher. Specifications: Width: 19 cm; Height: 24 cm; Length: 17.5 cm; Weight: 3.8 kg (Garden Nature, 2023b).

c. Schwelger 1SP Sparrow Terrace

Site 2 metres or more above ground level. Method 1: Simple, surface installation using the plugs and screws supplied. Method 2: Complete installation as a nesting block within brick or concrete walls. Specifications: Height: 240mm; Width: 430mm; Depth: 220mm; Weight: 15kg approx. (Ark Wildlife, 2023).

d. Schwelger Swift Nest Box No.18

The box can be attached by screws to walls or in an overhead position on external façades or under the roof. The chipboard panel should be placed under overhanging eaves or in a sheltered site. Specifications: Dimensions (mm): 500 x 190 x 220; Weight (kg):4.5 (Wildcare, 2023a).

e. Eco Swallow Nest Bowl

Swallows readily adopt these nest cups because they mimic the size and shape of natural swallow nests. DIMENSIONS (MM): 150 x 270 x 90; WEIGHT (KG): 0.9; SITING: A minimum distance of 1m between nest cups is suggested. To ensure the swallows have sufficient room in the nest cup and when arriving and leaving there should be at least 6cm free space above the nest cup. (Wildcare, 2023b).

f. Eco House Martin Nest Box

Artificial cup made from a moulded resin/concrete fixed to an LDPE backing plate/roof, any direction may be used, can be installed in groups to encourage colonies, no maintenance required. DIMENSIONS (MM): 130 x 270 x 100; WEIGHT (KG): 0.9; SITING: The nest should be positioned beneath the eaves at a minimum height of 2m. House martins prefer to nest on the east or north-facing walls but any direction may be used. Boxes can be installed in groups to encourage colonies to form, as the house martins are sociable birds (Wildcare, 2023c).

### 11.3 References for Bat and Bird Boxes

Ark Wildlife, 2023, "*Schwegler ISP Sparrow Terrace*" [Online]. Available at <https://www.arkwildlife.co.uk/product/schwegler-1sp-sparrow-terrace-brown> (accessed 18th September 2023)

Garden Nature, 2023a, "*Woodstone Seville Nest box*" [Online]. Available at <https://gardenature.co.uk/collections/garden-bird-boxes/products/product-woodstone-seville-nest-box> (accessed 18th September 2023)

Garden Nature, 2023b, "*Woodstone Barcelona Open Fronted Nest box*" [Online]. Available at <https://gardenature.co.uk/collections/garden-bird-boxes/products/product-woodstone-barcelona-open-nest-boxes> (accessed 18th September 2023)

NHBS, 2023a, "*1FR Schwegler Bat Tube*" [Online]. Available at <https://www.nhbs.com/1fr-schwegler-bat-tube> (accessed 18th September 2023)

NHBS, 2023b, "*2FE Schwegler Wall Mounted Bat Shelter*" [Online]. Available at <https://www.nhbs.com/beamaris-woodstone-bat-box> (accessed 18th September 2023)

Wildcare, 2023a, "*Schwegler Swift Box No.18*" [Online]. Available at <https://www.wildcare.co.uk/schwegler-swift-box-no-18.html> (accessed 18th September 2023)

Wildcare, 2023b, "*Eco Swallow Nest Bowl*" [Online]. Available at <https://www.wildcare.co.uk/10687-eco-swallow-nest-bowl.html> (accessed 18th September 2023)

Wildcare, 2023c, "*Eco House Martin Nest Box*" [Online]. Available at <https://www.wildcare.co.uk/10697-eco-house-martin-nest-nbc.html> (accessed 18th September 2023)