



Nevis Eco Services
Ecological Consultancy

Bat Emergence Surveys

**Agricultural Building At
Gorsty Hill Farm, Gorsty Hill, Tean,
Staffordshire ST10 4EL**
(Planning Reference SMD/2023/0185)



September 2023

Quality Assurance

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Executive Summary

(Note: it is important to read the whole report, rather than relying solely on the information in this summary).

Introduction

Nevis Eco Services was commissioned by Mr Stevenson to undertake dusk bat emergence surveys at Gorsty Hill Farm, Tean, to provide information to be submitted as part of a planning application for replacement of an agricultural building (Planning Reference: SMD/2023/0185). These emergence surveys are supplementary to a Preliminary Roost Assessment (PRA) carried out on the 23rd of March 2023 by Nevis Eco Services (Eileen Robley), which found no evidence of bat use, but concluded that the building had moderate potential for bat use. The surveys and report aim to assess the likely presence/absence and any potential impacts on this protected species group.

Key Findings and Recommendations

Bats

- Three dusk emergence surveys were carried out, each utilising four surveyors with bat detectors, and eight infrared cameras.
- Low numbers of common bat species were recorded in the vicinity of the building, with the majority being common pipistrelle, foraging around the building and particularly over the cattle yard to the south.
- On the second survey, five common pipistrelles were observed emerging from the southern end of the building. No bats emerged from the building on the other two surveys.
- Given the low numbers of a common species, the roost is considered to be a day roost, and of value in a site context.
- Since emergence was only observed on one of the three surveys, it is likely that this is not the only roost used by these bats.
- The proposals are to demolish and replace the building, and so this roost will be lost, hence a mitigation licence from Natural England will be required.
- By way of mitigation, compensation and enhancement, demolition works should take place during the winter (October to March), when bats are unlikely to be present. At least three integrated bat boxes should be installed in/on the new building, including one in a similar location to the current roost.
- Any external lighting installed as part of the proposed development should be designed to minimise its effect on bats using bat boxes and the wider site:
 - Any exterior lights should be less than 3 m above the ground and fitted with hoods to direct the light below the horizontal plane, at an angle of less than seventy degrees from vertical.
 - Lights should not be fixed to, or directed at bat boxes, gables, or eaves.
 - Any lighting shall be Passive Infrared (PIR) triggered.

Incidental Note on Wild Birds

- During all three emergence surveys, swallows were observed flying in and out of the building, with active nests present inside.

1 Introduction

The client, Mr Stevenson proposes to replace a brick-built former dairy building at Gorsty Hill Farm, Tean, Staffordshire, (National Grid Reference SK 01454 40822).

Nevis Eco Services (Eileen Robley) carried out Selected Protected Species Surveys, including a Preliminary Roost Assessment (PRA) of the former dairy, on 23/03/2023. The conclusions of this PRA in relation to bats can be summarised as:

- No bats or evidence of bats were found at the time of survey, but parts of the building could not be adequately inspected, particularly the corn and hay lofts due to unsafe floors, and endoscope inspection of all of the roofs internally was not possible due to the height and complex structure of the roofs;
- The building is considered to have moderate potential for use by bats, hence further surveys are required to establish presence or likely absence.;
- At least two emergence/re-entry surveys will be required, utilising infra-red cameras to ensure that all aspects of the complex roof structure can be visualised.
- In the event that bats are found to be using the building, additional survey may be required to characterise the roost(s), and a mitigation licence from Natural England is likely to be required;
- Any external lighting installed as part of the development should be designed to minimise its effect on bats using the bat boxes and the wider site, in accordance with guidance issued by the Bat Conservation Trust and Institute of Lighting Professionals (2023)³;
- Mitigation and/or enhancement with respect to bats will be dependent on the findings of the presence/absence surveys. If no bat roosts are found by additional survey, in keeping with local and national policies, the potential for the site to support bat roost sites in the future should be enhanced by the erection of at least two bat boxes, in a suitable location on the new building, or on buildings in the control of the applicant.

Nevis Eco Services was commissioned by Mr Stevenson to undertake bat activity surveys, in order to assess likely presence/absence and any potential impact on this species group. The aim of this report is to provide details of the method, results, and conclusions of these surveys, for submission as part of the planning application (Planning Reference SMD/2023/0185).

2 General Site Description

The location of the building subject to survey and its immediate surrounds is shown on Map One below.

The building subject to survey, comprises a brick-built former dairy, which lies on an approximately north-east to south-west axis. In the immediate vicinity, it has attached single-storey, block-built 'lean-to' cattle sheds to the west and south, and is surrounded by agricultural fields, with the farmhouse and further agricultural buildings to the west.

3 Survey Methodology

3.1 Method

3.1.1 Bats

Initially, two dusk emergence surveys were carried out to determine whether the building supported roosting bats. However, since five common pipistrelles were observed emerging from an area on the south-eastern elevation during the second survey, a third dusk

emergence survey was added to allow characterisation of the roost. The emergence surveys were undertaken by four surveyors, using Echometer Touch 2 Pro and Echometer Touch 2 bat detectors, for each dusk survey. The surveys were led by Eileen Robley, with a combination of Alex Wren, Sky Mileto, Matthew Morris, Maria Darlington, Wes Harris, and Robert Mileto, on 20th of May 2023, 17th of June 2023, and 10th August 2023. See Map A1 for surveyor and camera locations. The emergence surveys were undertaken essentially as per Collins (2016)³.

According to the Bat Conservation Trust's Guidance Note on the use of night vision aids (NVAs) for bat emergence surveys (2022)¹, NVAs should be *".....used on all emergence surveys, with justification required in consultant's reports as to why they have not been used, if this is the case"*. The guidance note also supports *".....transition away from the standard use of dawn surveys, particularly as a method for presence/absence surveys, in favour of dusk surveys supported by NVAs"*. As a result, for this site, three dusk emergence surveys were carried out, each using eight infra-red cameras. rather than two emergence and one re-entry surveys.

Footage from the infrared cameras was subsequently reviewed, using a PC. Bat detector recordings were analysed using the Echometer Touch 2's own software on Galaxy Tab S3 tablets and using Kaleidoscope Pro software on a PC as required. The review and analysis were carried out by Eileen Robley.

3.2 Constraints to survey

Due to the complex roof structure of the building, and attached 'lean-to' cattle sheds, it was not possible for all areas of the roof to be observed by surveyors at ground level during the dusk emergence surveys. This was particularly the case with the western elevation of the building and was mitigated by the use of infra-red cameras, placed on lighting rigs which were able to be raised up high enough (at least 2m), to cover all sections of roof. See Map A1 for camera locations.

3.3 Surveyor Details

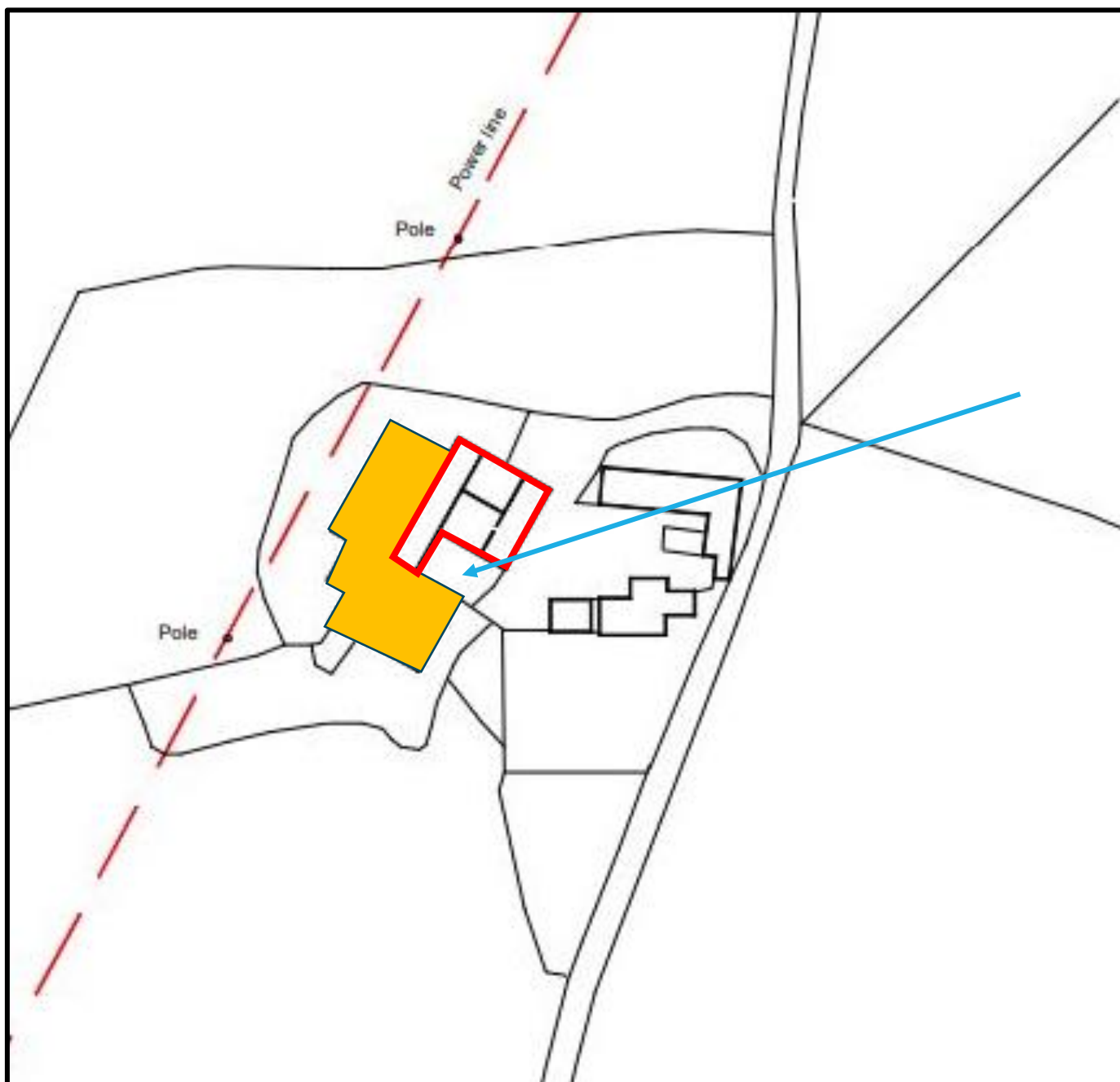
The lead surveyor and report author (Eileen Robley of Nevis Eco Services):

- Is a Qualifying Member of the Chartered Institute of Ecology and Environmental Management (CIEEM);
- Has been a self-employed ecological consultant for five years;
- Has carried out surveys and assessments of habitats and protected species including many Preliminary Roost Assessments and bat emergence and re-entry surveys;
- Undertakes bat surveys as an accredited agent under the Natural England class licence (CL18) to which Robert Mileto of Eco Tech is registered.

Robert Mileto has carried out surveys and assessments of habitats and protected species, including Preliminary Roost Assessments and bat emergence and re-entry surveys for over 30 years, and is currently registered under the Natural England Class Licence WML-CL18 (Licence number 2018-34449-CLS-CLS).

Other surveyors are suitably trained and experienced in bat emergence and re-entry surveys, having carried out many such surveys during the last two survey seasons.

Map One: General location of the building subject to survey (in red), and its immediate surrounds. The area in orange shows the 'lean-to' cattle sheds attached to the building, and the cattle yard is arrowed in blue.



4 Results

4.1 Emergence Surveys

All three emergence surveys showed small numbers of common bat species recorded foraging and commuting around the site, with the majority being common pipistrelle, foraging around the building, particularly over the cattle yard to the south. During the second survey five common pipistrelles emerged from the southern end of the building, behind the cattle yard. These all emerged from close to a vertical crack in the brickwork of the building: three emerged from the roof overhang above the crack; the other two may have also emerged from the roof overhang but may have emerged from the crack itself. No bats were observed emerging from the building on the other two surveys, although on occasion, common pipistrelles did enter the building and then leave almost immediately afterwards, appearing to be in pursuit of prey.

During the third dusk survey, a possible brown long-eared bat was observed flying north of the building at 21:07 by Robert Mileto, who was not certain of species, but did not believe that it emerged from the building. This bat was briefly visible on camera: it did not emerge from the building, rather it appeared to fly in from the north, by the road. Because it was only visible on camera very briefly, it was not possible to identify species, but review of the camera footage and detector recording and sonogram, suggests that brown long-eared bat is the most likely, despite it only being about 20 minutes after sunset.

For detailed results of the emergence surveys, see Appendix One.

4.2 Incidental Note on Nesting Wild Birds

During all three emergence surveys, swallows were observed flying in and out of the doorway on the eastern elevation of the building, with active nests present inside.

4.3 Photos



Photo 1 – shows the eastern elevation of the building.



Photo 2 – shows the eastern and part of the northern elevations of the building.

Photos (cont.)



Photo 3 – shows part of the northern elevation of the building.



Photo 4 – shows part of the northern elevation of the building, including the 'lean-to' log store, which common pipistrelles were seen flying in and out of, in pursuit of prey.

Photos (cont.)



Photo 5 – shows the cattle yard and part of the south-western elevation of the building. The vertical crack and roof overhang where common pipistrelles were seen to emerge, are arrowed in red and orange respectively.

5 Outline Legislative Background

5.1 Bats

All species of bats found in the wild in the UK, together with their breeding sites and resting places are fully protected by law: they are European Protected Species. The government advice regarding legislation pertaining to bats can be found online at the UK Government website⁷.

Therein, the law is summarised as follows:

“You’re breaking the law if you do certain things including:

- *deliberately capture, injure or kill bats*
- *damage or destroy a breeding or resting place*
- *obstruct access to their resting or sheltering places*
- *possess, sell, control or transport live or dead bats, or parts of them*
- *intentionally or recklessly disturb a bat while it’s in a structure or place of shelter or protection*

Either or both of the following could happen if you’re found guilty of any offences:

- *you could be sent to prison for up to 6 months*
- *you could get an unlimited fine”*

6 Conclusions

6.1 Bats

Five common pipistrelles emerged from the southern end of the building, behind the cattle yard, on the second survey. No bats were observed emerging from the building during the other two surveys. The roost is therefore considered to be a non-breeding day roost, used by a small number of common pipistrelles. However, given that bats were only observed emerging from the roost on one dusk survey out of the three conducted, this is unlikely to be the only roost used by these bats. According to Table 3.2 of the UK Bat Mitigation Guidelines (Reason and Wray, 2023)⁶, such a roost of a small number of widespread species is of value in a site context.

Habitats in the vicinity of the building, including fields, hedgerows, trees, and the waterbodies in the disused quarry to the west, provide commuting and foraging opportunities for a range of bat species. However, these will be unaffected by the proposed replacement of the former dairy, and connectivity to wider habitats will not be impacted.

6.2 Mitigation, Compensation and Enhancement

Since the proposed replacement of the building will result in the loss of this day roost, a bat mitigation licence from Natural England will be required. The mitigation hierarchy will be employed, however Natural England will licence the precise methodology which is likely to be as follows:

- **Mitigation** – to avoid disturbance or injury to bats using the roost, the building will be demolished during the winter (i.e., between October and March), when the bats are unlikely to be using the roost. The demolition will be conducted in a slow, controlled manner, as the client plans to reuse many of the building materials in the construction of the new building.
- **Compensation** – at least three integrated bat boxes should be incorporated into the structure of the new building. One of these should be placed in a similar geographical location on the building as the current roost, i.e., at the building’s southern end, facing east or south-east, with a clear flight path to and from the box. Ideally, these bat boxes should be in place before bats are likely to return to the roost in spring. According to

Table 5.1 of the UK Bat Mitigation Guidelines (Reason and Wray, 2023)⁶, the scale of compensation for loss of a roost such as this should be '*Flexible (in terms of timing and type)*'. It is considered that the provision of at least three bat boxes provides more than sufficient compensation.

- **Enhancement** – incorporating at least three bat boxes, rather than just one to replace the roost, will enhance roosting opportunities for bats in/on the building.

Jones and Rydell (1994)⁵ suggested that artificial lighting increases the chances of avian predation of bats, and therefore bats may modify their behaviour, including emerging later, in response to this threat, leading to reduced time available for foraging. Illuminating a bat roost can cause disturbance and may lead to roost abandonment or bat entombment. Illuminating foraging and commuting routes may pose barriers to movement and lead to bat colonies being cut off from foraging areas.

Any external lighting installed as part of the development should therefore be designed to minimise its effect on bats using bat boxes and the wider site, in accordance with guidance issued by the Institute of Lighting Professionals and the Bat Conservation Trust (2023)⁴:

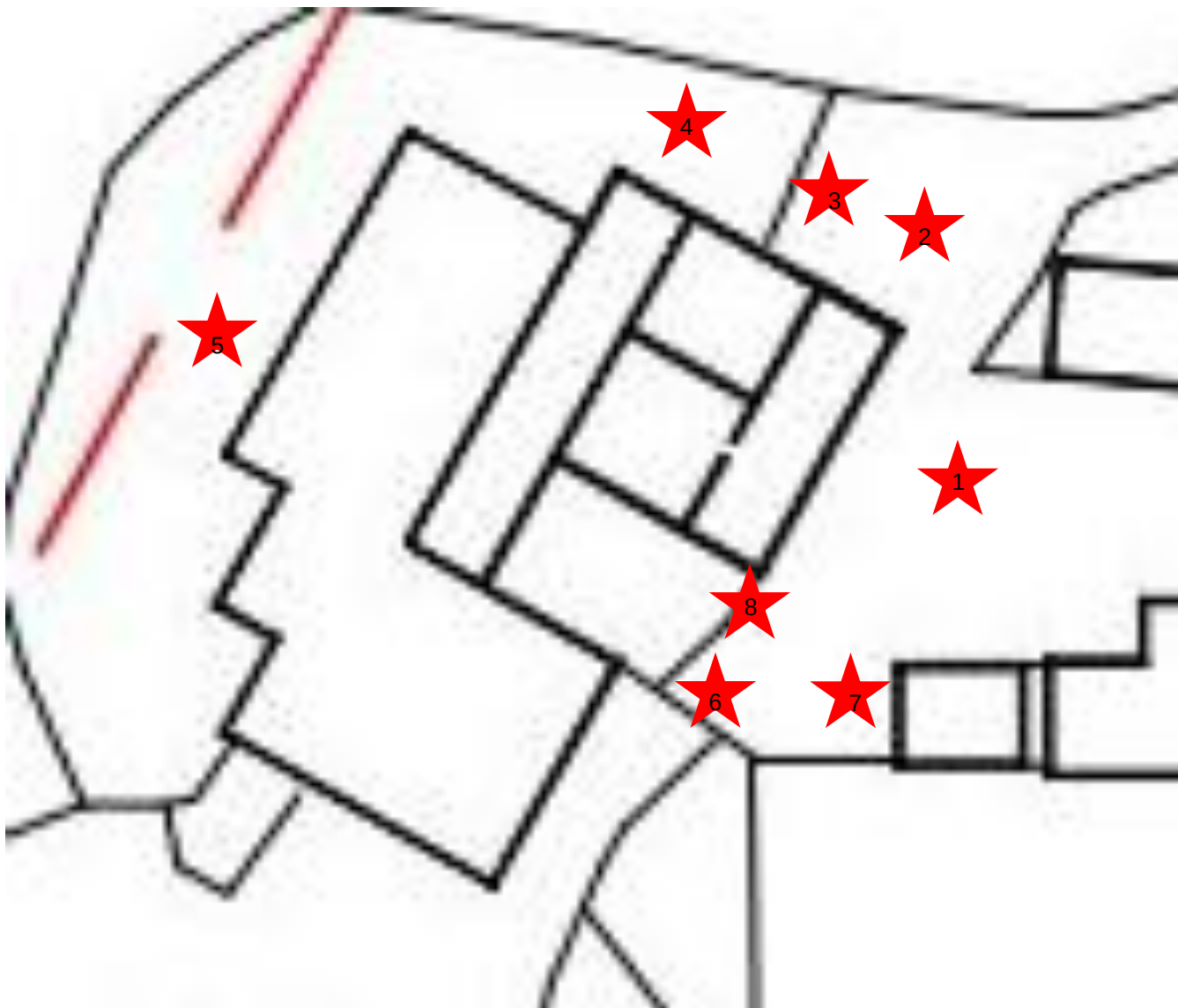
- Any exterior lights should be less than 3 m from the ground and fitted with hoods to direct the light below the horizontal plane, at an angle of less than seventy degrees from vertical.
- Lights should not be fixed to, or directed at bat boxes, gables, or eaves.
- Any lighting shall be Passive Infrared (PIR) triggered.

7 References

1. Bat Conservation Trust (2022). Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys. Available online: <https://cdn.bats.org.uk/uploads/pdf/Interim-guidance-note-on-NVAs-May-2022-FINAL.pdf?v=1653399882> (Last accessed September 2023).
2. Chartered Institute of Ecology and Environmental Management (2019). Advice Note On The Lifespan Of Ecological Reports & Surveys. Available online: <https://cieem.net/resource/advice-note-on-the-lifespan-of-ecological-reports-and-surveys/> (Last accessed September 2023).
3. Collins, J. (ed.), 2016: Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
4. Institution of Lighting Professionals (2023). Guidance Note 08/23: Bats And Artificial Lighting At Night. Available online: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/> (Last accessed September 2023).
5. Jones, G., & Rydell, J. (1994). Foraging Strategy and Predation Risk as Factors Influencing Emergence Time in Echolocating Bats. *Philosophical Transactions: Biological Sciences*, 346(1318), 445–455. Available online: <http://www.jstor.org/stable/55997> (Last accessed September 2023).
6. 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, Ampfield. Available online: <https://cieem.net/wp-content/uploads/2023/09/Bat-Mitigation-Guidelines-2023.pdf> (Last accessed September 2023).
7. UK Government (2015). Bats: Protection and Licences. Available online: <https://www.gov.uk/guidance/bats-protection-surveys-and-licences> (Last accessed September 2023)

Appendix One: Details and Results of Emergence Surveys.

Map A1: Surveyor and Camera Positions



Details of Infra-red Camera Equipment Used

- 7 x Sannce 1080P CCTV bullet cameras, model number DE41/81NA-Camera with 80.7 degrees angle of view, each mounted with 2 IR lamps on a lighting stand with adjustable height from 1.2 to 2.5m
- 2 x 96 LED IR lamps (850nm IR illumination) for each camera
- 2 x 4-channel DVR each with 1Tb internal HDD and built-in 10.1" monitor
- Maximum monitor resolution: 1920 x 1080
- Refresh rate: 30 fps
- Equipment powered by 23 x Talentcell powerpacks (1 for each camera, lamp and DVR): a combination of model numbers YB1203000 and PB240A1.
- 1 x Nightfox Whisker IR night vision binoculars, with 1x to 10x optical magnification, 57° field of view, focusable 850nm IR, 30fps video recording rate, recording to 256Gb SD card, mounted on a tripod with adjustable height from 0.3 to 1.7m

Photos

Example set-ups of the IR cameras with IR lamps, and the Nightfox Whisker



Photo A1 – shows an example of camera/lights set up (camera at position 6).



Photo A2 – shows the Nightfox Whisker set up (at position 8).

Sample screenshots from the IR cameras at the darkest part of the surveys, to show level of illumination and field of view.



Photo A3 – screenshot from the camera at position 2.

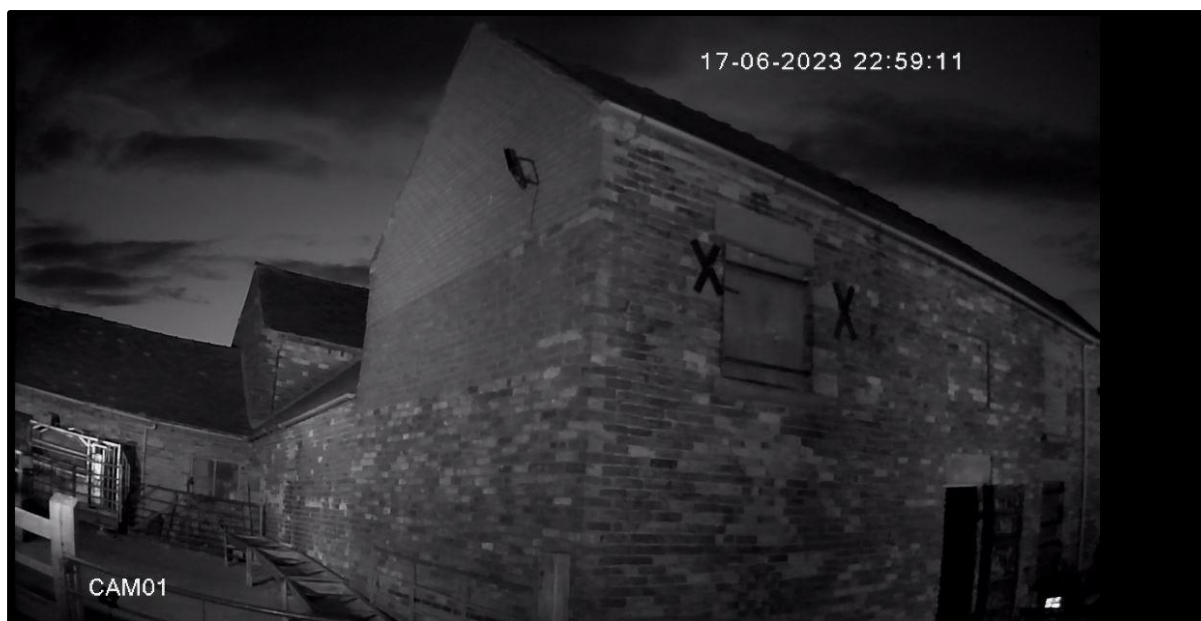


Photo A4 – screenshot from the camera at position 6.



Photo A5 – screenshot from the Nightfox Whisker at position 8.

Dusk survey 20/05/2023

Sunset 21:07
 Start time 20:47
 End time 22:37
 Temp at start of survey: 15.4°C
 Temp at end of survey: 12.8°C
 Wind speed: Occasional northerly breeze, maximum 3kph.
 Cloud cover (%): 100% at the start of the survey; less than 10% at the end.
 Precipitation: None.

Surveyor MM: Position 1; Tablet 2, Echometer Touch 2

Time	Species	Comments
21:29	Soprano pipistrelle	Heard not seen, commuting.
21:30	Common pipistrelle	Commuting at roof height, close to the building, from south to north.
21:34	Noctule	Heard not seen.
21:34	Common pipistrelle	Flew from the east, over the cattle yard to the south.
21:35 to 21:39	Common pipistrelle	Foraging over the farmyard and the cattle yard to the south, multiple passes. 3 bats visible at any one time.
21:41	Common pipistrelle	Foraging over the farmyard and the cattle yard to the south, multiple passes. 2 or 3 bats visible at any one time.
21:44	Noctule	Heard not seen.
21:44 to 21:52	Common pipistrelle	Foraging over the farmyard and the cattle yard to the south, multiple passes. 2 or 3 bats visible at any one time.
21:54 to 22:00	Common pipistrelle	Foraging over the farmyard and the cattle yard to the south, multiple passes. 3 or 4 bats visible at any one time.
22:03 to 22:37	Common pipistrelle	Between 1 and 6 bats visible at any one time, foraging over the farmyard and the cattle yard to the south, multiple passes.
22:33	Brown long-eared bat	Heard not seen (very brief echolocation).

Surveyor SM: Position 3; Tablet 3, Echometer Touch 2

Time	Species	Comments
21:29	Soprano pipistrelle	Commuting from the east, around the end of the building, continued overhead towards the road.
21:30	Common pipistrelle	Heard not seen, foraging, multiple passes.
21:33	Common pipistrelle	Foraging overhead, including in and out of the doorway at the top of the stairs. Not an emergence originally.
21:34	Noctule	Heard not seen.
21:36	Common pipistrelle	Foraging overhead, including in and out of the doorway at the top of the stairs. Not an emergence originally.
21:38 to 21:40	Common pipistrelle	Foraging around the building, including in and out of the lower door. Not an emergence.
21:44 to 21:50	Common pipistrelle	Foraging around the building,
21:45	Noctule	Heard not seen.
21:55	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:03 to 22:08	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:12	Soprano pipistrelle	Flew from behind observer, overhead and continued south-east around the building.
22:13	Common pipistrelle	Heard not seen, foraging.
22:19	Common pipistrelle	Heard not seen, foraging.
22:21	Common pipistrelle	Heard not seen, foraging, 3 passes.
22:23 to 22:24	Soprano pipistrelle	Heard not seen, foraging and social calls.
22:29	Common pipistrelle	Heard not seen, foraging.
22:32 to 22:37	Common pipistrelle	Heard not seen, foraging, multiple passes.

Surveyor AW: Position 4; Echometer Touch 2 Pro

Time	Species	Comments
21:29 to 21:31	Common pipistrelle	Foraging around the building and overhead. At 21:31, flew in through the open side of the log store, and straight back out again.
21:34	Noctule	Heard not seen.
21:37 to 21:50	Common pipistrelle	At least two bats foraging around the building and over the field to the north, multiple passes. Mostly between 1 and 3m above ground, but at 21:41. One flew very low (less than 30cm above ground), from south to north, between observer and the building.
21:44	Noctule	Heard not seen, foraging.
22:01	Common pipistrelle	Heard not seen, foraging.
22:03	Common pipistrelle	Heard not seen, foraging.
22:11	Noctule	Heard not seen.
22:13	Common pipistrelle	Heard not seen, foraging, 2 passes.
22:23	Soprano pipistrelle	Heard not seen, foraging, 3 passes. Possibly foraging over the field/quarry edge to the north, bat briefly visible.
22:25	Common pipistrelle	Heard not seen.
22:30	Myotis – likely whiskered	Heard not seen.
22:31	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:34	Common pipistrelle	Heard not seen, foraging.
22:37	Common pipistrelle	Heard not seen, foraging.

Surveyor ER: Position 7; Tablet 1, Echometer Touch 2 Pro

Time	Species	Comments
21:34	Noctule	Heard not seen.
21:35 to 21:40	Common pipistrelle	3 bats flew in from the field to the south, then foraging over the cattle yard and the farmyard, at approx. 1.5 to 3m above ground, multiple passes. Flew off over the cattle shed to the south-west.
21:41 to 22:01	Common pipistrelle	2 bats flew in from the west, over the cattle shed, then foraging over the cattle yard, approx. 1.5 to 2m above ground, multiple passes. Flew off to the east.
22:04	Common pipistrelle	Heard not seen, foraging.
22:05	Common pipistrelle	Flew in from the farmyard to the north, then foraging over the cattle yard and above the cattle shed to the south.
22:06 to 22:25	Common pipistrelle	Up to 4 or 5 bats visible at any one time, foraging over the cattle yard and farmyard.
22:11	Noctule	Heard not seen.
22:12	Soprano pipistrelle	Heard not seen, foraging.
22:13 to 22:20	Common pipistrelle	2 bats flew over the building from the north-west, foraging over the cattle yard, multiple passes, approx. 1 to 2.5m above ground, then flew off to the south.
22:29 to 22:32	Common pipistrelle	Flew in from the field to the south/south-east, foraging over the cattle yard, then flew off to the north.
22:33	Common pipistrelle	Heard not seen, foraging.
22:36	Common pipistrelle	Flew in from the east, foraging over the yard, multiple passes, approx. 1.5 to 2.5m above ground.
22:37	Common pipistrelle	Heard not seen, foraging.

Infra-red cameras placed at positions 1 to 8 recorded commuting and feeding common pipistrelles as above, around the building, with some bats appearing to chase prey into the doorways of the building and fly out again immediately/very shortly afterwards. No actual emergence was observed, i.e., no suggestion that a roost is present.

Dusk survey 17/06/2023

Sunset 21:36
Start time 21:06
End time 23:06
Temp at start of survey: 22.5°C
Temp at end of survey: 18.4°C
Wind speed: Occasional breeze, 5kph, northerly
Cloud cover (%): 70% (high cloud)
Precipitation: None

Surveyor MD: Position 1; Tablet 3, Echometer Touch 2

Time	Species	Comments
21:56	Noctule	Heard not seen.
22:06	Common pipistrelle	Heard not seen, commuting.
22:09	Common pipistrelle	Heard not seen, foraging.
22:13	Common pipistrelle	Flew in from the south, in through the front door of the building, and then back out, continued north.
22:15	Common pipistrelle	Flew from the south, near the cattle yard, continued north, commuting.
22:19	Common pipistrelle x2	Flew from near the cattle yard to the south, continued east, over the farmhouse.
22:28	Common pipistrelle	Heard not seen, foraging.
22:30	Common pipistrelle	Heard not seen, foraging.
22:31	Common pipistrelle	Foraging around the northern end of the building, then over the farmyard, continued south.
22:34	Common pipistrelle	Heard not seen (brief, faint echolocation).
22:39 to 22:40	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:44	Common pipistrelle	Heard not seen, foraging, 5 passes.
22:58	Common pipistrelle	Heard not seen, brief echolocation.
23:02	Common pipistrelle	Heard not seen, foraging.

Surveyor WH: Position 3; Tablet 2, Echometer Touch 2

Time	Species	Comments
21:55	Common pipistrelle	Heard not seen (very faint, brief echolocation recorded).
21:56	Noctule	Heard not seen.
22:06	Common pipistrelle	Foraging over the field to the west.
22:12	Common pipistrelle	Briefly flew into the lower doorway then back out, foraging.
22:19 to 22:20	Common pipistrelle	Flew in from the field to the west, circled overhead, then flew south, foraging.
22:27	Common pipistrelle	Heard not seen, foraging.
22:29 to 22:31	Common pipistrelle	Flew in from the north-west, foraging over and around the building, multiple passes, then continued north around the building.
22:34	Common pipistrelle	Flew in from the north-west, foraging, continued south.
22:39 to 22:42	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:44	Common pipistrelle	Foraging over the field to the west.
22:45 to 22:48	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:57 to 22:58	Common pipistrelle	Heard not seen, foraging, two passes.
23:02	Common pipistrelle	Heard not seen (very brief, faint echolocation recorded)
23:04	Common pipistrelle	Heard not seen, foraging.

Surveyor AW: Position 4; Tablet 4, Echometer Touch 2 Pro

Time	Species	Comments
21:48	Common pipistrelle	Heard not seen, foraging (brief, faint echolocation recorded).
21:57	Noctule	Heard not seen.

21:59 to 22:03	Common pipistrelle	Heard not seen, foraging (quite faint echolocations recorded), multiple passes.
22:09 to 22:10	Common pipistrelle	Heard not seen, foraging, multiple passes
22:11 to 22:12	Common pipistrelle	Flew in from the field to the south, foraging around the open side of the log store, briefly into the log store, then out again. Continued circling around between the building and the observer, then flew off south.
22:19	Common pipistrelle	Flew from the north, between the observer and the building, continued south, over the cattle sheds, foraging.
22:19	Myotis – likely Natterer's	Heard not seen.
22:20	Common pipistrelle	Heard not seen, two passes, possibly two bats, foraging and social calls.
22:27	Common pipistrelle	Heard not seen, foraging.
22:29	Common pipistrelle	Foraging over the field to the west.
22:34	Common pipistrelle	Flew in from the north, foraging, continued south between observer and the building.
22:39 to 22:42	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:43	Myotis – possibly Natterer's	Heard not seen, foraging.
22:48	Common pipistrelle	Foraging over the field to the west and south.
22:50	Common pipistrelle	Heard not seen, foraging.
22:58	Common pipistrelle	Heard not seen, foraging, 3 passes.
23:02	Common pipistrelle	Heard not seen, foraging.
23:04	Common pipistrelle	Heard not seen, foraging.

Surveyor ER: Position 7; Tablet 1, Echometer Touch 2 Pro

Time	Species	Comments
21:57	Noctule	Heard not seen.
22:06 to 22:09	Common pipistrelle	Likely emergence from under the roof overhang behind the cattle yard. Circled over the cattle yard, foraging, then flew off south.
22:09	Common pipistrelle	Emerged, probably from the roof overhang behind the cattle yard. Flew off to the south, over the cattle shed, approx. 3.5m above ground.
22:13	Noctule	Heard not seen, two passes.
22:13	Common pipistrelle	Flew in from the south, foraged over the cattle yard, then flew north in front of the building, and in through the front door.
22:15	Pipistrelle	Appeared to emerge from the vertical crack/gap in the brick wall behind the cattle yard, although could have been from the roof overhang above. Flew off to the south approx. 4m above ground. No echolocation recorded.
22:17	Common pipistrelle	Emerged from near the crack/gable wall/roof edge behind the cattle yard and flew off east. Difficult to identify exact point of emergence due to contrast of a dark wall/roof against a well-lit sky but did not appear to have flown in over or around the building.
22:18	Common pipistrelle	Likely emergence from the crack/gap, or the roof overhang above, behind the cattle yard, flew off east overhead, approx. 3m above ground.
22:19	Common pipistrelle	Two bats flew in from the east, foraging over the cattle yard, flew off north, in front of the building, approx. 2m above ground.
22:20	Common pipistrelle	Heard not seen, social calls.
22:29	Common pipistrelle	Heard not seen, foraging.
22:30	Common pipistrelle	Heard not seen, foraging, three passes.
22:39 to 22:45	Common pipistrelle	Two or three bats foraging over the cattle yard and farmyard.
22:59	Common pipistrelle	Heard not seen, foraging.
23:02	Common pipistrelle	Foraging over the cattle yard and field to the south.

Infra-red cameras placed at positions 1 to 8 recorded the five emergences as observed by ER, from the area around the vertical crack/gap, and the adjacent roof overhang; and the foraging common pipistrelles as above, around the building.

Dusk survey 10/08/2023

Sunset 20:45
 Start time 20:15
 End time 22:15
 Temp at start of survey: 21.3°C
 Temp at end of survey: 18.7°C
 Wind speed: Occasional south-easterly breeze, up to 7kph at start, gusting up to 15kph south/south-westerly at the end of the survey.
 Cloud cover (%): 20% at start, 85% at end of survey
 Precipitation: None

Surveyor RM: Position 1; Tablet 3, Echometer Touch 2 Pro

Time	Species	Comments
21:03	Common pipistrelle	Flew in from the east, and over the roof of the building
21:07	Possible brown long-eared bat	Flew in from the north or west, around the end of the building, then circled back to the west. Looked larger than a pipistrelle, but only very short, faint echolocation. Early for a BLE though.
21:11	Common pipistrelle	Heard not seen, foraging.
21:15	Noctule	Heard not seen
21:19 to 21:20	Common pipistrelle	Flew in from the east, foraged over the farmyard, and continued west over the roof of the building. 4 passes.
21:23	Common pipistrelle	Foraging to the north of the building and over the farmyard.
21:24	Common pipistrelle	Foraging to the south of the building, around the cattle yard.
21:24	Noctule	Heard not seen, 2 passes.
21:27 to 21:37	Common pipistrelle	Foraging over the farmyard, multiple passes.
21:36	Daubenton's myotis	Heard not seen (faint echolocation recorded).
21:39	Daubenton's myotis	Heard not seen.
21:41 to 22:03	Common pipistrelle	Heard not seen, foraging.
22:01	Noctule	Heard not seen, 2 passes.
22:04	Common pipistrelle	Heard not seen, foraging.
22:07	Noctule	Heard not seen.
22:10 to 22:14	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:13	Noctule	Heard not seen.

Surveyor MM: Position 3; Tablet 4, Echometer Touch 2

Time	Species	Comments
20:58	Noctule	Heard not seen, 2 passes.
20:59	Common pipistrelle	Heard not seen.
21:02	Common pipistrelle	Heard not seen, foraging.
21:08	Common pipistrelle	Flew in from the north, foraging around the lower doorway, including briefly flying inside, then back out and flew off to the north.
21:12 to 21:17	Common pipistrelle	Heard not seen, foraging, multiple passes.
21:18	Common pipistrelle	Flew around the southern end of the building, then foraging, briefly flew into the lower doorway, then out again, continued north.
21:19 to 21:22	Common pipistrelle	Heard not seen, foraging, multiple passes.
21:20	Common pipistrelle	Flew in from north of the building, continued south-east over the roof.
21:23 to 21:32	Common pipistrelle	Heard not seen, foraging, multiple passes.
21:33	Common pipistrelle	Flew in from north of the building, continued south-east over the roof.
21:33 to 21:35	Common pipistrelle	Heard not seen, foraging.
21:35	Common pipistrelle	Flew over the dairy roof from the east, foraging overhead and around the building, flew east around the northern end of the building.
21:36 to 22:16	Common pipistrelle	Heard not seen, foraging, multiple passes.
22:05	Noctule	Heard not seen.
22:12 to 22:13	Noctule	Heard not seen, 3 passes.

Surveyor SM: Position 4; Tablet 2, Echometer Touch 2

Time	Species	Comments
20:57	Noctule	Heard not seen.
20:57 to 21:10	Common pipistrelle	Flew in from the field to the north-west, foraging around the building, including in and out of the open side of the log store, before flying off to the west.
21:12	Common pipistrelle	Heard not seen.
21:14	Noctule	Heard not seen.
21:15 to 21:34	Common pipistrelle	Between 2 and 4 bats visible at any one time, foraging around the building, near the open side of the log store, and the cattle shed to the south, multiple passes.
21:28	Noctule	Heard not seen.
21:35 to 21:42	Common pipistrelle	Heard not seen, foraging.
21:41	Noctule	Heard not seen.
21:44 to 22:13	Common pipistrelle	Heard not seen, foraging.
22:05	Noctule	Heard not seen.
22:12	Noctule	Heard not seen.

Surveyor ER: Position 7; Tablet 1, Echometer Touch 2 Pro

Time	Species	Comments
21:04	Common pipistrelle	Flew in from the east, beyond the farmhouse, over the farmyard, and over the old dairy, continuing west.
21:12	Common pipistrelle	Heard not seen, foraging.
21:15	Noctule	Heard not seen.
21:19 to 21:20	Common pipistrelle	Flew in from the field to the south-west, overhead approx. 1.75m, continued north towards the farmyard, foraging.
21:20	Common pipistrelle	Flew over the dairy roof from the north, then foraging over the cattle yard, approx. 1.5m above ground, then continued west over the roof of the southern end of the dairy.
21:25	Noctule	Heard not seen, foraging, 2 passes.
21:29 to 21:33	Common pipistrelle	Two bats flew in from the field to the south, then foraging over the cattle yard, approx. 1.5 to 2m above ground, multiple passes, then flew off to the south.
21:36	Common pipistrelle	Heard not seen, foraging.
21:42 to 21:53	Common pipistrelle	Foraging over the field to the south, and the cattle sheds, then over the cattle yard, then flew back south over the cattle sheds.
21:57	Common pipistrelle	Heard not seen, foraging.
21:59 to 22:03	Common pipistrelle	Foraging over the cattle sheds to the south and the cattle yard, multiple passes, then flew off south-west over the cattle sheds.
22:02	Noctule	Heard not seen.
22:04 to 22:06	Common pipistrelle	Flew in from the south-west, over the cattle sheds, foraging over the cattle yard, and then flew back south.
22:07	Noctule	Heard not seen, 2 passes.
22:10 to 22:15	Common pipistrelle	3 bats foraging over the field and cattle sheds to the south.
22:14	Noctule	Heard not seen.

Infra-red cameras placed at positions 1 to 8 recorded commuting and foraging common pipistrelles as above, around the building, with some bats appearing to pursue prey into the doorways of the building and fly out again immediately/very shortly afterwards. No actual emergence was observed, i.e., no suggestion that a roost is present. The potential brown long-eared bat, observed by RM north of the building at 21:07, was briefly visible on camera: it did not emerge from the building, rather it appeared to fly in from the north, by the road. Because it was only visible on camera very briefly, it was not possible to identify species, but review of the camera footage and detector recording and sonogram, suggests that brown long-eared bat is the most likely, despite it only being about 20 minutes after sunset.

Summary of the three activity surveys: small numbers of common bat species were recorded around the site, with the majority being foraging common pipistrelle, and five common pipistrelles were confirmed to have emerged from the southern end of the building, behind the cattle yard, on the second survey. No bats were observed emerging from the building on the other two surveys, although on occasion, common pipistrelles did enter the building and then leave almost immediately afterwards, appearing to be in pursuit of prey. The roost is therefore considered to be a day roost, with a small number of common pipistrelles, which is not used every day.