

Bat Roost Characterisation and Mitigation Report

Of the land at

Old Apple Farm, Barrow Hill, Barrow,
Suffolk

Carried out for:

Modece

Prepared by:

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CONTENTS

EXECUTIVE SUMMARY	2
1 INTRODUCTION AND BACKGROUND	3
2 LEGISLATIVE CONTEXT AND PLANNING POLICY	4
3 PREVIOUS SURVEY RESULTS AND BACKGROUND	5
4 METHODS	7
5 LIMITATIONS AND CAVEATS	8
6 SURVEY RESULTS	8
7 CONCLUSION AND RECOMMENDATIONS	9
8 REFERENCES	11
APPENDIX I – SITE MAPS	12
APPENDIX II – SURVEY RESULTS	17

Executive Summary

Abrehart Ecology was commissioned by Modece to conduct a bat survey as part of a Protected Species Assessment of the land at Old Apple Barn, Barrow Hill, Bury Saint Edmunds, IP29 5AA (central grid reference TL 76555 63285; Fig. 1; hereafter referred to as the Site).

Due to the potential roost features identified during the initial Preliminary Ecological Appraisal, bat surveys were required to inform assessment of the potential impact of the proposals on them, and the degree of mitigation required to offset any impacts to roosting bats. Four surveys were carried out in the 2023 survey season.

During the 2023 survey period the Site was found to have low levels of bat activity, with foraging and commuting by a total of four species. One common pipistrelle emerged from the east facing side of the barn under a timber board.

The proposals comprising are likely to disturb and destroy potential bat roosts within the Site; therefore, an application for a low impact bat class license (CL21) will be required.

1 Introduction and background

1.1 Purpose and brief

- 1.1.1 Bat (emergence/return to roost) surveys of the threshing barn on Old Apple Farm were undertaken on behalf of Modece on the 4th of May, 8th of June, 28th of June, and 8th of August 2023 of the land at Old Apple Farm, Barrow, Suffolk.
- 1.1.2 The surveys were required to form an assessment of the ecological impacts that works on the Site may have on bat populations in the area.

1.2 Description of Site and Local Area

- 1.2.1 The survey area is located on Old Apple Farm, Barrow Hill in the centre of Barrow, Bury St Edmunds, Suffolk. The proposed construction zone is approximately 0.1 hectares and consisted predominantly of a threshing barn; the surrounding habitat was amenity grassland, shrubs, a pond, and scattered trees. The amenity grassland, ornamental shrubs and raised vegetable beds were maintained as part of a residential garden.
- 1.2.2 The barn was an old threshing barn with a timber frame and metal corrugated roofing; there had been multiple modifications over the years. There was multiple exposed beams and timber weather boarding. The timbers were rough with lots of gaps in the old frame joins. On all aspects of the barn there were holes, damaged boards, and gaps. In addition to the potential roosting features noted there were scattered bat droppings found within the Site and butterfly wings on the floor, which could indicate it being used as a brown long eared feeding perch. The walls were brick based with some areas of damage, and timber weatherboarding above the brick with some missing sections and holes. To the north of the barn was an open cart lodge.
- 1.2.3 Habitats surrounding the Site are the town of Barrow, beyond this are arable fields, with tree lines and hedgerows, with the occasional patch of woodland (see Figure 1).

1.3 The proposed development

- 1.1 The survey was required to inform a planning application at the Site for the change of use and renovation and extension of an old threshing barn construction within the grounds of an existing dwelling.

2 Legislative Context and Planning Policy

2.1.1 All bat species and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2010 (as amended). Under this legislation it is an offence to intentionally or recklessly:

- Capture, injure or kill a bat;
- Disturb a bat;
- Destroy or obstruct access to a bat roost.

2.1.2 The National Planning Policy Framework (NPPF) 2021 places responsibility on Local Planning Authorities (LPAs) to aim to conserve and enhance biodiversity in and around developments. Section 40 of the NERC Act requires every public body to “have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”. Biodiversity, as covered by the Section 40 duty, is not confined to habitats and species of principal importance but refers to all species and habitats. However, the expectation is that public bodies would refer to the Section 41 list (of species and habitats) through compliance with the Section 40 duty.

3 Previous Survey Results and Background

3.1.1 The data search returned records of barbastelle (*Barbastella barbastellus*), common pipistrelle (*Pipistrellus pipistrellus*), and unknown bat species. The closest record was of a 'bat' in 2005 420m south-west of the Site, the most recent record was of common pipistrelle 1.4 km north of the Site in 2021. The barbastelle was recorded in 2002 2km north of the Site.

3.2 Previous surveys

Preliminary ecological appraisal (PEA) – December 2022

3.2.1 A PEA, including a desk study and preliminary roost assessment, was undertaken by Abrehart Ecology Ltd on the 1st of December 2022 (Abrehart Ecology Ltd., 2022).

3.2.2 A Preliminary Ecological Appraisal was carried out by Alister Killingsworth BSc (Hons) MSc ACIEEM (Natural England Great Crested Newt Class Survey Licence WML-CL08, Natural England Bat Class Survey Licence WML-CL17) on the 1st of December 2022 in accordance with standard best practice methodology for Phase 1 Habitat Surveys set out by the JNCC (JNCC 2010). Weather conditions during the survey were 90% cloud cover, a light/gentle breeze (Beaufort Scale 1), a temperature of 5°C, and good visibility. The Site was traversed slowly by the surveyor, mapping habitats, and making notes on dominant flora and fauna. The survey was extended to identify the presence of invasive species and included an assessment of the potential for the habitats in and around the Site to support protected species.

3.2.3 The barn was an old threshing barn with a timber frame and metal corrugated roofing; there had been multiple modifications over the years. There was multiple exposed beams and timber weather boarding. The timbers were rough with lots of gaps in the old frame joints. On all aspects of the barn there were holes, damaged boards, and gaps. In addition to the potential roosting features noted there were scattered bat droppings found within the Site and butterfly wings on the floor, which could indicate it being used as a brown long eared feeding perch. The walls were brick based with some areas of damage, and timber weatherboarding above the brick with some missing sections and holes. To the north of the barn was an open cart lodge.

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Location

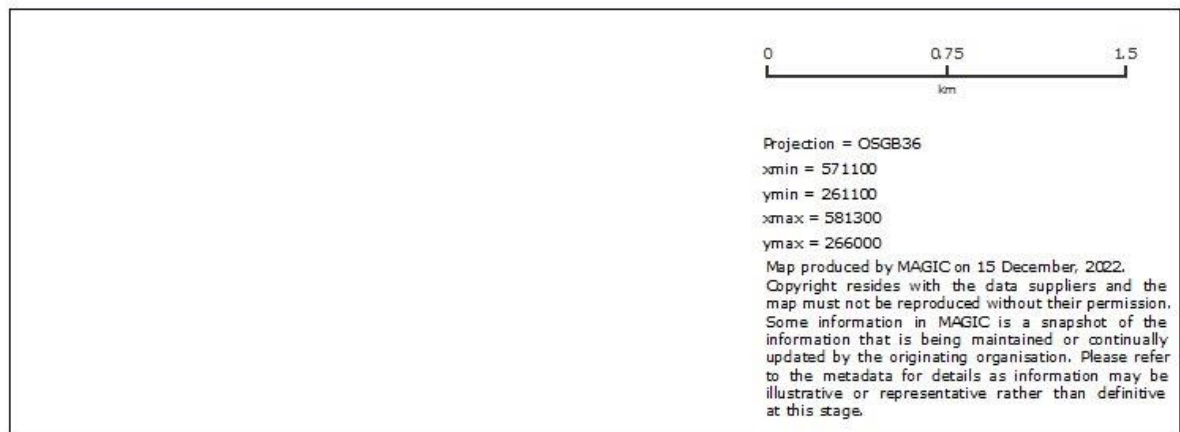
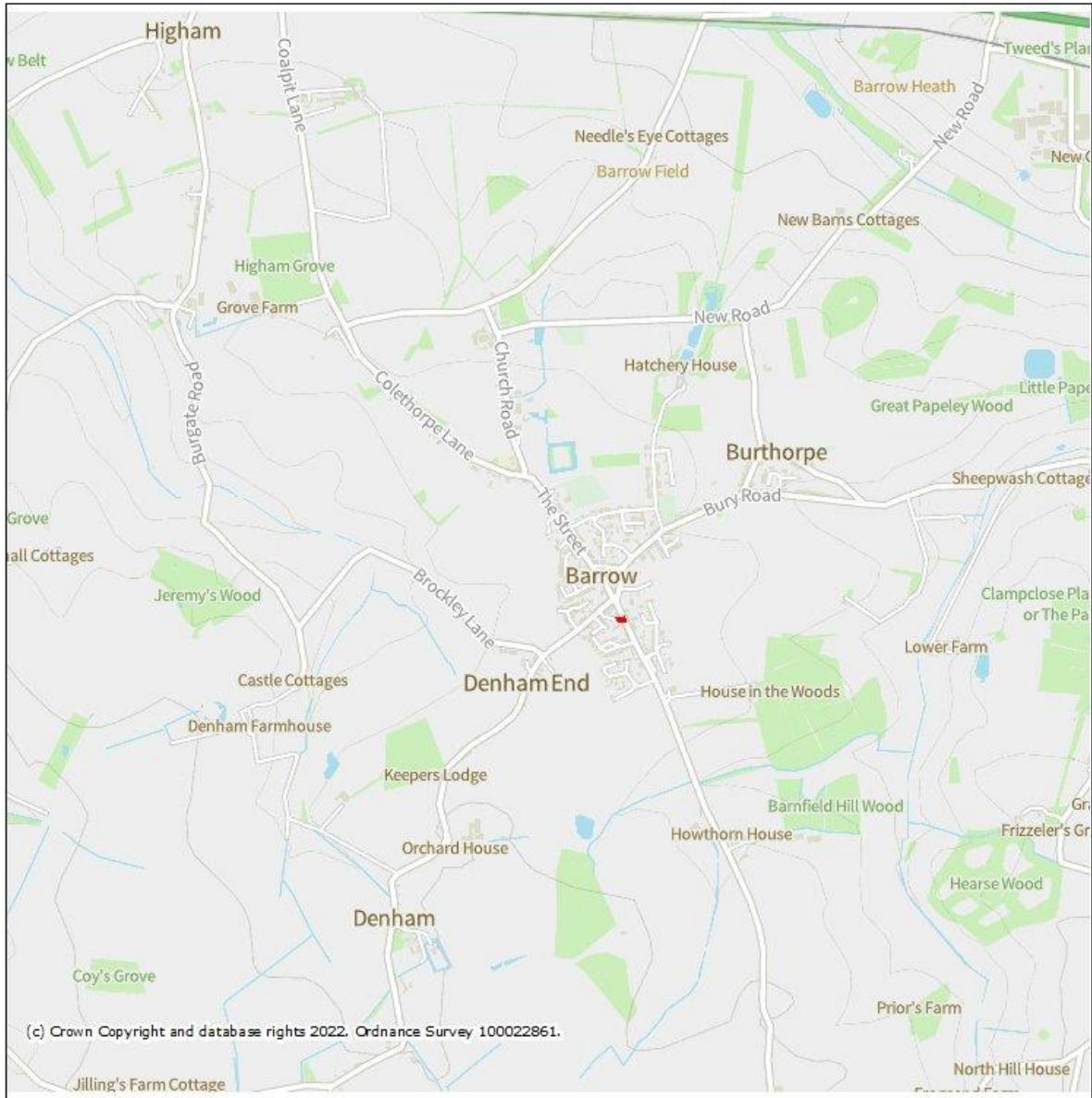


Figure 1. Site location.

4 Methods

4.1 Presence/Likely Absence and Roost Characterisation

Overview

- 4.1.1 The surveys were carried out according to good practice guidelines (Collins, 2016).
- 4.1.2 All surveys were undertaken using infra-red (IR) cameras and static detectors based on the Interim Guidance Note on the use of night vision aids for bat emergence surveys (BCT, 2022).

Personnel

- 4.1.3 Surveyor details of each of the surveys is detailed in Table 1 below.

Table 1. Personnel Details

Roost Characterisation Surveys	
Date	Surveyors Present
4 th May 2023	Alister Killingsworth and Sorrel Kiamil
8 th June 2023	Alister Killingsworth and Sorrel Kiamil
28 th June 2023	Alister Killingsworth and Thomas Jordan
8 th August 2023	Alister Killingsworth

Equipment

- 4.1.4 Two IR cameras (Canon XA60 with high intensity infra-red LED lights) were used (three cameras used on surveys three and four). This was used in conjunction with Anabat bat detectors which were positioned on the south and west faces of the barn. The site was also watched by two experienced ecologists to cover the entire survey area.

Equipment deployment and monitoring

- 4.1.5 The IR cameras were placed in a position which covered a large portion of the site (location in appendix), to view potential roost features, to observe any emerging bats, in conjunction with visual monitoring by experienced ecologists.
- 4.1.6 The cameras were periodically checked throughout the survey to ensure the cameras were operational.

Analysis of footage and static detectors

- 4.1.7 The infra-red camera footage was reviewed after the survey to record emergence of any bats surveyed. Emergence was cross-checked using the Anabat bat detector recordings to confirm species identification.

Bat call analysis

- 4.1.8 The sound recordings from the Anabat bat detectors were analysed in Kaleidoscope to record bat species and calling at time of emergence. This is cross-checked with IR footage providing an accurate species ID and emergence time.

5 Limitations and Caveats

5.1.1 There were no limitations to the survey.

6 Survey Results

Emergence / Return to Roost Surveys 2023

6.1.1 Surveyor locations during each survey are shown in Appendix I

6.1.2 Field survey data and post survey sound analysis of bat echolocation calls recorded on detectors are shown in Appendix II.

6.1.3 No bats were recorded emerging from the barn using the IR cameras and infra-red LED lights. One bat was recorded emerging from surveyor position on the 08/06/2023.

04/05/2023 – Dusk Survey (Sunrise: 20:25)

6.1.4 Surveyors recorded two species, common pipistrelle and Daubenton's.

6.1.5 Surveyors did not record any bats emerging from the barn.

6.1.6 Overall activity was low around surveyor positions.

08/06/2023 – Dusk Survey (Sunset 21:16)

6.1.7 Surveyors recorded one species of bat, common pipistrelle.

6.1.8 Surveyors recorded **a single common pipistrelle emerge** from the eastern aspect of the barn from under the timber cladding.

6.1.9 Overall activity was low around surveyor positions.

28/06/2023 – Dusk Survey (Sunset 21:23)

6.1.10 Surveyors recorded four species of bat: common and soprano pipistrelle, noctule, and serotine.

6.1.11 Surveyors did not record any bats emerging from the barn.

6.1.12 Overall activity was moderate, around surveyor positions.

08/08/2023 – Dawn Survey (Sunrise 05:29)

6.1.13 The surveyor recorded two species of bat during the survey: common pipistrelle and noctule.

6.1.14 Surveyors did not record any bats returning to roost within the barn and none were seen using the IR cameras. Any bats seen were noted to fly away from the barn.

6.1.15 Overall activity was low around surveyor positions, with only three recorded bat passes.

7 Conclusion and recommendations

- 7.1.1 During the 2023 survey period the Site was found to have low levels of bat activity, with foraging and commuting by a total of four species. One common pipistrelle was observed emerging from the east facing side of the barn under a timber board.
- 7.1.2 The proposals comprising are likely to disturb and destroy potential bat roosts within the Site. Therefore, an application for a low impact bat class license (CL21) will be required.
- 7.1.3 Sensitive lighting will be implemented to prevent disturbance to nocturnal animals, particularly bats which were recorded using the orchard, boundary tree lines, and yard area.
- 7.1.4 The addition of bat roost features, such as access tiles, ridge access, or bat boxes (both external and integral) will retain and increase roosting opportunities for bats in the local area. This may be a condition of the licence, and any information provided for that would supersede the details below; however, this provides an indication of possible features and planting schemes that would benefit bats.
- 7.1.5 Should bat access be encouraged within roof or beneath tiles then it is recommended that bituminous roofing felt is used. Breathable Roofing Membranes (BRMs) can create an entanglement threat to bats.
- 7.1.6 Below are example images of enhancement features. Boxes should be sited at least 3m from ground level and be clear of obstructions – allowing for a clear flight path to the box entrance i.e., not obscured by tree limbs or foliage. All features shown below do not require maintenance as the design encourages droppings to fall out of the bricks or access features. Bat roosts are protected from disturbance and so should be left undisturbed once installed – unless maintenance/remedial works are carried out by a suitably licenced ecologist at correct times of year – this should be discussed with an ecologist prior to being undertaken.



- 7.1.7 New planting – in the form of bushes, shrubs, and trees – would provide opportunity to increase foraging and sheltering potential for a range of wildlife, including birds, invertebrates, and mammals. Any planting should be of local provenance and of native species.
- 7.1.8 Trees and shrubs can provide year-round habitat for wildlife; the dense canopy formed by shrub beds offer protection from predators and foraging opportunities for butterflies, birds, and mammals; and trees provide additional nesting and foraging for birds – including resident and migratory bird species.

8 References

Literature

Abrehart Ecology Ltd (2022). Preliminary Ecological Assessment of Barrow Hill, Barrow carried out on behalf of Modece Architects.

Dietz, C. & Kiefer, A. (2016) *Bats of Britain and Europe*, Bloomsbury Publishing, ISBN 978-1-4729-2202-1

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd ed). The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.

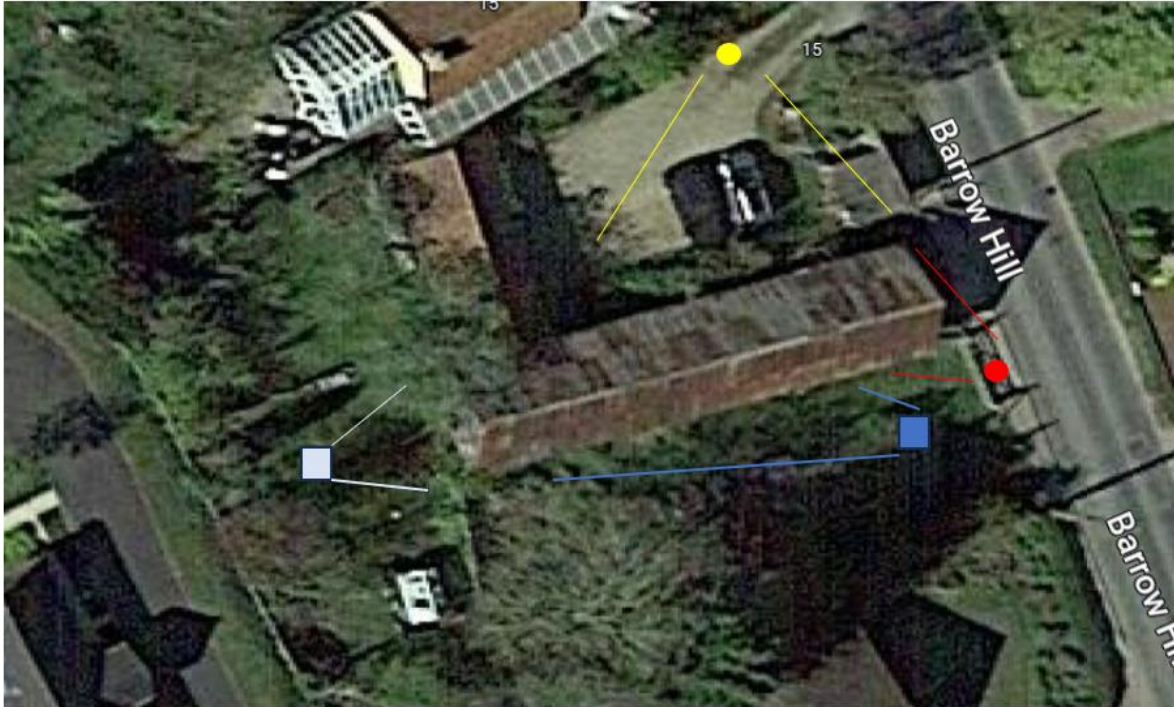
Michell-Jones, A.J. (2004) *Bat Mitigation Guidelines*, English Nature, ISBN 1 85716 781 3

Appendix I – Site Maps



Point	Surveyor/-camera
04/05/2023	
● (Yellow)	SK
● (Red)	AK
■ (Blue)	Static 5 and camera 1
■ (Light Blue)	Static 6 and camera 2

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Point	Surveyor/-camera
08/06/2023	
●	SK
●	AK
■	Static-4-and-camera-2
■	Static-3-and-camera-1



Point	Surveyor/-camera
28/06/2023	
●	TJ
●	AK
■	Camera 1 and static 4
■	Camera 3 and static 6
■	Camera 4



Point	Surveyor / camera
08/08/2023	
●	AK
■	Camera 1 and static 7
■	Camera 2 and static 3
■	Camera 3 and static 5



Bat emergence: 08/06/2023 – Common pipistrelle at 21:43

Appendix II – Survey Results

Surveyor: AK			
Time	Species	# Bats	Activity
20:07	-	-	SURVEY START
20:50	<i>Pipistrellus pipistrellus</i>	1	Commuting (did not emerge from observed features). Flew west to east between surveyor and building.
20:59	<i>Pipistrellus pipistrellus</i>	1	Commuting (did not emerge from observed features). Single pass over.
22:27		-	SURVEY END

Surveyor Results – 04/05/2023 Dusk Survey (Sunset 20:25)

Surveyor: SK			
Time	Species	# Bats	Activity
20:07	-	-	SURVEY START
20:38	<i>Pipistrellus pipistrellus</i>	1	Pass over. Heard not seen.
20:59	<i>Pipistrellus pipistrellus</i>	1	Foraging over driveway (Southwest to southeast).
21:18	<i>Pipistrellus pipistrellus</i>	1	Pass over barn from Southwest
21:19	<i>Pipistrellus pipistrellus</i>	1	Pass over barn from Southwest
21:22	<i>Pipistrellus pipistrellus</i>	1	Heard not seen.
21:26	<i>Myotis daubentonii</i>	1	Heard not seen.
21:30	<i>Pipistrellus pipistrellus</i>	2	Heard not seen.
21:43	<i>Pipistrellus pipistrellus</i>	1	Heard not seen.
22:27	-	-	SURVEY END

DCS

Surveyor: AK			
Time	Species	# Bats	Activity
20:56	-	-	SURVEY START
21:43	<i>Pipistrellus pipistrellus</i>	1	Emergence. From eastern end of building then flew across road.
21:46	<i>Pipistrellus pipistrellus</i>	1	Foraging/commuting with social calls.
21:50	<i>Pipistrellus pipistrellus</i>	1	Foraging/commuting from behind surveyor and along barn.
21:59	<i>Pipistrellus pipistrellus</i>	1	Commuting, flew from behind surveyor across road.
22:09	<i>Pipistrellus pipistrellus</i>	1	Foraging, distant and quiet calls.
22:13	<i>Pipistrellus pipistrellus</i>	1	Foraging, from across road, flew along side of barn and then several foraging passes.
22:46	-	-	SURVEY END

Surveyor Results – 08/06/2023 (Sunset 21:16)

Surveyor: SK			
Time	Species	# Bats	Activity
20:56	-	-	SURVEY START
22:00	<i>Chiropter sp.</i>	1	Single pass, seen not heard. Travelling away from barn.
22:05	<i>Pipistrellus pipistrellus</i>	1	HNS.
22:16	<i>Pipistrellus pipistrellus</i>	1	Pass, HNS
22:18	<i>Pipistrellus pipistrellus</i>	1	Pass, along the roadside from north to south.
22:20	<i>Pipistrellus pipistrellus</i>	1	Heard not seen, faint pass.
22:28	<i>Pipistrellus pipistrellus</i>	1	Pass, flew over driveway, east to west.
22:38	<i>Pipistrellus pipistrellus</i>	1	Pass, flew over barn corner.
22:46	-	-	SURVEY END

Surveyor: TJ			
Time	Species	# Bats	Activity
21:03	-	-	SURVEY START
21:28	<i>Pipistrellus pipistrellus</i>	1	Commuting South – North over barn
21:34	<i>Pipistrellus pipistrellus</i>	1	Forage from south and loop over barn and then back
21:51	<i>Pipistrellus pipistrellus</i>	1	Forage north – south over barn
22:00	<i>Pipistrellus pipistrellus</i>	1	Foraging over drive way
22:02	<i>Pipistrellus pipistrellus</i>	1	Foraging over drive way
22:08	<i>Pipistrellus pipistrellus</i>	2	Commute from E-W over barn
22:11	<i>Pipistrellus pipistrellus</i>	1	Foraging east to west over barn
22:34	<i>Pipistrellus pygmaeus</i>	1	HNS and social
22:40	<i>Nyctalus noctula</i>	1	HNS
22:42	<i>Pipistrellus pipistrellus</i>	1	HNS
22:53	-	-	SURVEY END

Surveyor Results – 28/06/2023 (Sunset 21:23)

Surveyor: AK			
Time	Species	# Bats	Activity
21:03	-	-	SURVEY START
21:28	<i>Pipistrellus pipistrellus</i>	1	HNS- single pass – check cameras
21:30	<i>Pipistrellus pipistrellus</i>	1	Commuting from behind surveyor across road.
21:32	<i>Pipistrellus pipistrellus</i>	1	Commuting behind surveyor
21:32	<i>Pipistrellus pipistrellus</i>	1	Around barn and north
21:33	<i>Pipistrellus pipistrellus</i>	1	Commuting from behind surveyor across road.
21:34	<i>Pipistrellus pipistrellus</i>	1	HNS – 2 short passes
21:48	<i>Pipistrellus pipistrellus</i>	1	HNS – short pass
21:55	<i>Pipistrellus pipistrellus</i>	1	HNS – short pass
22:00	<i>Pipistrellus pipistrellus</i>	1	Passed building 2 passes
22:02	<i>Pipistrellus pipistrellus</i>	1	Passed building 2 passes

22:03 22:04	-	<i>Pipistrellus pipistrellus</i>	1	From behind surveyor into garden
22:04		<i>Serotine ?</i>	1	HNS single pass
22:06		<i>Pipistrellus pipistrellus</i>	1	Foraging, single pass around barn and across road (Occasional passes by single bats common pip)
22:40		<i>Nyctalus noctula</i>	1	HNS
22:53		-	-	SURVEY END

Surveyor Results – 08/08/2023 (Sunrise 05:29)

Surveyor: AK			
Time	Species	# Bats	Activity
04:00	-	-	SURVEY START
04:59	<i>Pipistrellus pipistrellus</i>	1	Foraging – around roof of barn. Last seen flying to south (footage checked and bat flies away from building).
05:11	<i>Pipistrellus pipistrellus</i>	1	HNS – single distant pass.
05:23	<i>Nyctalus noctula</i>	1	Commuting over site.
05:45	-	-	SURVEY END

Bat analysis

04/05/2023

Recorder	Data
Static 5	Thirty common pipistrelle passes were recorded the first at 20:42. Eighteen of the passes were recorded between 21:31 and 21:56 which was the final call.
Static 6	The first pass was of common pipistrelle at 20:40 with 45 passes until 21:40, another 22 passes were recorded until the final pass at 21:55. One Daubenton's pass was recorded at 21:26.
SK – EMT Pro	Nine common pipistrelle passes were recorded between 20:37 and 21:56.
AK – EMT Pro	Two common pipistrelle passes at 20:50 and 20:59.

08/06/2023

Recorder	Data
Static 3	Seventy six passes of common pipistrelle were recorded, the first pass was at 21:39, with 49 passes between 21:39-22:00 and a final pass at 22:39. One serotine pass was recorded at 22:15.
Static 6	Eleven passes of common pipistrelle were recorded, the first pass was at 21:43 and the final pass at 22:29.
SK – EMT Pro	Four common pipistrelle passes at 22:05, 22:16, 22:22 and 22:38.
AK – EMT Pro	Fifteen passes of common pipistrelle were recorded, the first pass was at 21:43 and the final pass at 22:38. The majority of these passes were recorded between 22:08-22:24.

28/06/2023

Recorder	Data
Static 4	No bat recordings.
Static 6	Ninety eight passes of common pipistrelle were recorded, the first pass was at 21:28 with eighty three passes being recorded between 21:28-22:00. With the final pass at 22:53.

	Two serotine passes were recorded at 22:19 and 22:31.
TJ – EMT Pro	<p>Twenty three passes of common pipistrelle were recorded, the first pass was at 21:28, with the majority of calls between 22:31 -23:00 and the last call at 22:59.</p> <p>Two soprano pipistrelle passes were recorded at 22:33 and 22:52 and one noctule at 22:39.</p>
AK – EMT Pro	<p>Forty-eight passes of common pipistrelle were recorded, the first pass was at 21:30, with regular passes throughout the evening with the final pass at 22:58.</p> <p>One soprano pipistrelle pass was recorded at 22:55. One Noctule pass was recorded at 22:39. One serotine pass was recorded at 22:04.</p>