

Bat Emergence and Re-Entry Survey

Survey Site

**The Old Vicarage, Wilsford, Pewsey,
Wiltshire
SN9 6HB**

Client

Virginia and Niel Bisset

Report Date

19/07/2026

Project

This report is prepared to inform a planning application for the proposal described as a single-storey extension to the main dwelling and the conversion/remodelling of the garage.

This report is supplementary to the Preliminary Roost Assessment report completed by Arbtech Consulting Ltd (2026).

BERS survey methodology and legislation can be found in the Appendices of this report.

Bethany Swain, BSc (Hons)

Consultant Ecologist

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Survey Author & Designer

Survey design and oversight were provided by Consultant Ecologist Bethany Swain BSc (Hons) and BCT competency level 2, (Accredited on Natalie’s Natural England Bat License No. Details Available Upon Request) at BCT Level 3 competence.

Executive Summary

This report is an addendum to and must be read in conjunction with the Preliminary Roost Assessment completed by Arbtech Consulting Limited (2026) for the same site address. This table may include further work you will need to commission (if any) to obtain planning permission or comply with legislation for other consent. All clients are expected to read and understand this section, or to contact the consultant for advice.

Three roosts were identified within B2 during the course of this survey as well as an additional roost within B1. The requirements arising from the findings can be found in Table 1.

Table 1: Requirements arising as a result of this survey.

Requirement	Details
Bat Licence	A Bat Licence is required to legally permit the works. This requirement exists independently of the planning system, and is required whether planning permission is needed or not, and whether this is listed as a condition of planning or not. If the licence is not submitted by 09/10/2026 a material changes check will be required. If the licence is not submitted by 01/05/2027 updated dusk surveys may be required. The licence can be applied for once planning permission has been granted (where required), and within 3 months of the start of works. Any pre-commencement wildlife related planning conditions that require sign off from the council will need to be discharged prior to licence submission.
Wildlife Sensitive Lighting Strategy	A low impact lighting strategy will be adopted for the site during and post-development.

Report Validity

This report is valid for up to 18 months for the purposes of planning/LBC applications. For the purposes of bat licensing, the report is considered 'up to date' and suitable for licence application until the start of the following bat activity season. After those timeframes, some level of updated surveys will be required. The level of survey effort will depend on the specific circumstances of the site.

Site Context and Background

Background

A Preliminary Roost Assessment (PRA) was completed by Arbtech Consulting in April 2026. As a result of the assessment B1 and B2 have been classified as a confirmed roost owing to the presence of ~100 bat droppings within the loft void 1 of 2 within B1, and ~40 bat droppings within the single loft space of B2. The droppings were sent for DNA analysis and were returned as brown long eared within B1 (loft void 1), and brown long eared and serotine within B2. Given the limited impacts to bats owing to the proposed works (single storey conversion), further surveys on B1 were considered disproportionate. A minimum of three bat emergence/re-entry surveys were recommended on B2, during the active bat season (May – September) to characterise the bat roosts within the building.

Context

Number of buildings on site

2

Number of buildings surveyed

1

Reason for omitting buildings

B1 is located ~7.5m south of B2. The proposed works involve a single storey extension onto B1 which could result in the disturbance to the confirmed roost. Given the absence of suitable roosting features at the proposed area of works and limited impacts through disturbance, further surveys on B1 were considered disproportionate. A European Protected Species licence will be required to lawfully undertake the proposed works to B2. Appropriate mitigation measures will be implemented to ensure the confirmed roost within B1 is protected and any impacts are appropriately managed during construction.

Site Inspection

An updated internal inspection was completed prior to the second emergence survey by Keira Horman (Accredited Agent on Natural England Bat Licence Number:2025-85589-CL18-BAT) on the 18th June 2026. The loft space was assessed for any material changes since the previous inspection, with no alterations to the structure, access points, or suitability for roosting bats identified. The conclusions of the original PRA (Arbtech, April 2026) are therefore considered to remain valid. Notably, a similar number of droppings were identified scattered within the loft space, indicating recurring use. Size and morphology of the droppings appeared similar to as previously identified during the PRA. Additionally, two torn Peacock butterfly wings were identified within the northeastern corner of the first floor/void of B2. Due to the absence of significant cobwebbing and torn appearance these are likely associated with feeding as opposed to Araneae, although evidence of feeding is considered new.



Figure 1a: Loft void of B2 taken from the northeastern corner.



Figure 1b: Scattered butterfly wings in the northwestern corner of B2's loft void.

Proposed Works

Proposed Development

Current use of building(s)

B1: Residential
B2: Garage.

Proposed use of building(s)

B1: Residential.
B2: Residential.

Structural changes to building(s)

B1: Single storey extension
B2: N/A.

Cosmetic/repair work

B1: N/A.
B2: Conversion.

Type of permission required

Other

Proposed Plan

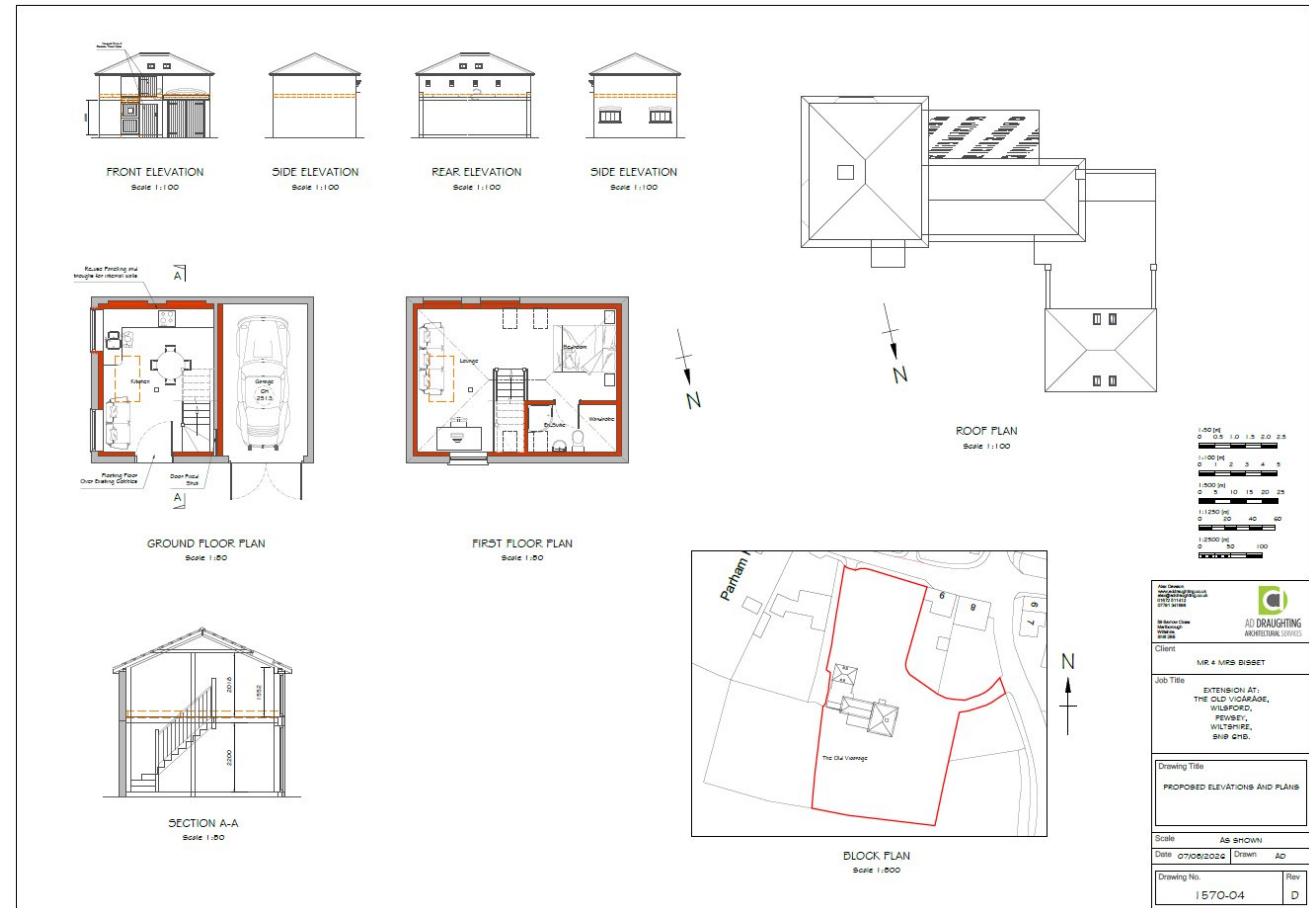


Figure 2: The proposed plans

Surveyors and Equipment

Surveyors

Table 2: Details of the surveyors involved in each of the surveys

Name	BERS Experience	Bat Licence	BCT Competency
James Jordan	2 years	N/A	Level 1
Kiera Horman	2 years	N/A	Level 2
Michael Tennick	4 years	N/A	Level 1
Dominic Griffith	1 years	N/A	Level 1

Equipment

Table 3: Details of the equipment used in each of the visits

Category	Equipment	Count		
		Visit 1	Visit 2	Visit 3
Night Vision Aid	Nightfox Whisker	3	3	3
Additional illumination	Nightfox XB5 PRO	3	2	3
Bat detector	Titley Chorus Static Bat Detector	1	1	-
Bat detector	Wildlife Acoustics Echo Meter Touch 2	2	2	3
Two-way radio	BAOFENG FV-880E two-way radio (or similar)	1	1	2
Bat detector	Magenta Electronics Bat 4	-	1	-

Surveyor Positions

Positions

Details of each surveyor position for each visit

A diagram of the positions on site can be found in Appendix 1 along with the position images.

Table 4: The surveyor positions and the surveyors associated with them on each visit. The initials LS indicate the lead surveyor for the site visit

Position	Elevation	Visit 1	Visit 2	Visit 3
B2-1	Northern (semi-manned)	James Jordan	Kiera Horman (LS)	Kiera Horman (LS)
B2-2	Eastern	Kiera Horman (LS)	Kiera Horman (LS)	Kiera Horman (LS)
B2-3	Southern	James Jordan	Michael Tennick	Dominic Griffith

Survey Visit Details and Limitations

Visit 1 28/05/2026			Visit 2 18/06/2026			Visit 3 09/07/2026			Limitations There are no limitations associated with this survey.
Start time	Sunset	End time	Start time	Sunset	End time	Start time	Sunset	End time	
20:58	21:13	23:13	21:11	21:26	23:11	21:10	21:25	22:55	
Start Conditions			Start Conditions			Start Conditions			
Temperature(°C): 18.2			Temperature(°C): 19.3			Temperature(°C): 27.0			
Relative humidity (%): 77.0			Relative humidity (%): 77.0			Relative humidity (%): 47.0			
Wind (km/h): 9.9			Wind (km/h): 9.6			Wind (km/h): 9.8			
End Conditions			End Conditions			End Conditions			
Temperature(°C): 16.9			Temperature(°C): 16.3			Temperature(°C): 21.7			
Relative humidity (%): 77.0			Relative humidity (%): 82.0			Relative humidity (%): 65.0			
Wind (km/h): 9.3			Wind (km/h): 6.4			Wind (km/h): 3.7			
Rain			Rain			Rain			
None			None			None			
Buildings surveyed			Buildings surveyed			Buildings surveyed			
1			1			1			
Trees surveyed			Trees surveyed			Trees surveyed			
N/A			N/A			N/A			

Emergence Results

Findings

Summary of all recorded emergences

Emergences were recorded for building B2. Two distinct species were recorded emerging; Common pipistrelle and Serotine.

Full details of emergences, including times and species, can be found in Appendix 8.

Table 5: Number of emergences by species and visit for all buildings

			Number of Emergences			
Roost	Roost Location	Species	Visit 1	Visit 2	Visit 3	Total
1 - B2	Southwestern corner of B2.	Common pipistrelle	1	1	1	3
2 - B2	Loft/void of B2	Serotine	-	-	1	1

Roosts and Impacts

Findings & Impacts

Reports on the roosts identified

Table 6: The roosts identified during this survey

Roost	Location	Access Point	Type	Species	Count	Impact Level	Impact Scale
1 - B2	Southwestern corner of B2.	Gap under bargeboard/missing brick.	Day roost	Common pipistrelle	1	Damaged	Site
2 - B2	Loft/void of B2	Gap between timber door and frame on the northern elevation of B2	Day roost	Serotine	1	Destruction	Site
3 - B2	B2 void/first floor	-	Transitiona l/occasion al roost	Brown long-eared bat	-	Destruction	Site

Roost 3 (B2): The roost has been characterised by droppings only (~40no.) which were found scattered on the floor and walls of the first floor/void of B2. Owing to the number of droppings found it is likely a single individual. Owing to the absence of emergences or re-entries, number of droppings which were also identified as serotine, the roost is likely used occasionally. The presence of a low number of torn feeding remains (peacock butterfly wings) which are typically hunted by this species, indicates occasional (recent) foraging. This roost will be destroyed when the void is converted into living spaces as part of the works.

Roost 1 (B2): The roost has been characterised by a single emergence each survey (3no. total) from a gap under the lifted/missing brick. This feature was identified within the original PRA (April, 2026). No evidence of bats was identified in association with the roost. It is noted that during a bout of foraging during the first survey, an individual briefly rested on the wall top before continue to foraging around the site indicating consistent use of the roost in line with the roost type. No external works are proposed. However, this roost will be damaged when the building is converted as this will involve sealing the internal walls and roof space to facilitate new living areas.

Roost 2 (B2): The roost has been characterised by a single emergence from a gap between the timber door and door frame on the northern elevation of B2, as well as droppings (~40no.) which were found scattered on the floor and walls of the first floor/void of B2. As identified during the original PRA, the timber door leads directly into the first floor/void area where all evidence has been identified. Owing to the low number of droppings and emergences identified, the roost is likely limited to a single individual and used on an occasional basis. Serotine bats utilise roosting habitats that provide a combination of crevices and open void spaces. Suitable internal crevice features within B2 void were identified in the form of a crevice under lifted timber above where bat droppings were identified on the internal wall, as well as dark corners at the ridge line behind the ridge beam which indicate likely

Roosts and Impacts (continued)

roosting locations. The roost is unlikely to be connected to the presence of feeding remains as the Serotine was confirmed exiting the building, and due to the lack of brown long eared emergences. This roost will be destroyed when the void is converted into living spaces as part of the works.

Images of roosts 1, 2 and 3 are shown in figures 3a, 3b and 3c below.



Figure 3a: Roost 1 (B2) - Common pipistrelle day roost (red)



Figure 3b: Roost 2 (B2) - Serotine day roost, access point (red)



Figure 3c: Roost 3 (B2) - Brown long eared feeding roost (occasional)

General Observations & Impacts

Findings & Impacts

Summary of all other observations and impacts

Key Foraging Areas

Foraging activity was dominated by common pipistrelle. This species was consistently observed throughout each survey foraging around all immediate elevations of the building, as well as foraging within the surrounding garden spaces and mature tree particular to the north and west. Other foraging species include brown long eared however this was observed briefly on a single occasion.

Key Commuting Paths

Commuting activity was also dominated by common pipistrelle. This species was consistently observed throughout each survey commuting throughout all axis of the site including within close proximity to the all elevations of the building with the south in particular. Commuting activity was high, with no stand out habitat/areas. Other commuting species include Myotis sp. however this was observed briefly on a single occasion west to east along the southern elevation of B2.

Impacts on Foraging / Commuting Bats

The proposed development will not result in the removal of any habitats which could be used by foraging or commuting bats. However, the proposed development will include the use of lighting which could spill on to bat roosting, foraging or commuting habitat and deter bats from using these areas.

Hibernation suitability

B1 and B2 offer limited suitable hibernation habitat for bats, in the form of in the form of gaps under roof tiles, loft spaces, and gaps at the soffits. These features are unlikely to maintains stable temperatures and humidity suitable for hibernating bats, and roof tiles cannot be sufficiently surveyed. As both buildings are considered low risk, no further surveys required.

Other Observations and Impacts

As well as the conversion of B2 into living spaces, the proposed development also comprises a single storey conversion onto B1. During the PRA (Arbtech, April 2026), B1 was assessed as a confirmed roost due to the presence of ~100 bat droppings which were identified as brown long eared via DNA analysis. This is the same species assessed to be occasionally feeding within B2 whereby no emergences or re-entries were seen despite an extended survey effort (2 hours after sunset). Buildings within proximity, can provide functionality between roosts, therefore it is likely the roosts form part of the same roosting resource. Owing to the low number of droppings within each building, they are likely utilised by an individual/low number of bats. Although it is noted that the roost within B1 has not undergone full characterisation surveys, this species has consistently been recorded on site.

General Observations & Impacts Continued

Findings & Impacts

Summary of all other observations and impacts

Owing to the absence of suitable roosting features identified on/within the proposed area of the single storey extension, no direct impacts to bat roosts are anticipated. However, the proposed development could disturb any bats present in the building during the works due to noise, vibration, or lighting. Due to the likely functionality both buildings (B1 and B2) by an individual/low number of the same species (brown long eared bat), as well as an absence of full characterisation across the site as a whole, both B1 and B2 will be incorporated into subsequent mitigation measures.

Requirements & Enhancements

Requirements

Bat Licence

A European Protected Species Licence (EPSL) is required to legally permit the works. This requirement exists independently of the planning system, and is required whether planning permission is needed or not, and whether this is listed as a condition of planning or not.

If the licence is not submitted by 09/10/2026 a material changes check will be required.

If the licence is not submitted by 01/05/2027 updated dusk surveys may be required.

The licence can be applied for once planning permission has been granted (where required), and within 3 months of the start of works. Any pre-commencement wildlife related planning conditions that require sign off from the council will need to be discharged prior to licence submission.

DNA

The droppings collected during the PRA/internal inspection have been analysed and confirmed as brown long eared bat within B1 and brown long eared bat and serotine within B2. Please see Appendix 2 for full results.

BRD

Requirements & Enhancements

Requirements Continued

BRD Continued

Local bat records have been obtained. No records were identified at the site. The following species are found to be present within a 2km radius of the site: common pipistrelle, soprano pipistrelle, pipistrelle sp., noctule, serotine, Daubenton's bat, whiskered bat, brown long-eared bat, long-eared bat sp., and Myotis sp. The most recent records are dated 24 October 2019 and comprise common pipistrelle, pipistrelle sp. and long-eared bat sp. The dataset does not contain information on roost status or maternity colonies.

Please refer to Appendix 3 for summary of local records.

Mitigation

The licence application will detail any mitigation and compensation measures that will be required for the proposed development to comply with the standing advice and will be designed to reduce any impacts to an acceptably low level so as to maintain (or enhance) the Favourable Conservation Status (FCS) of the local bat population. The EPSL will include (but not be limited to) the following measures:

- The named ecologist will need to visit the site prior to preparation of the licence documents.
- The installation of bat boxes and/or replacement roosts appropriate for the species and roost types present prior to works commencing to form a receptor site for any bats found during the works. Boxes may be installed on buildings or trees or can be pole mounted but must be in an undisturbed location and will need to be maintained in this location post-development. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light.
- Timing restrictions are required for maternity and hibernation roosts.
- The provision of a toolbox talk to contractors, by the Named Ecologist or an Accredited Agent, to inform them of the presence of bat roosts prior to the start of works.
- A pre-commencement inspection of any roost features by the Named Ecologist or an Accredited Agent using a torch and an endoscope (this may be via ladders, scaffolding or a mobile elevated platform).
- Soft demolition of bat roosts by hand under supervision of the named ecologist or accredited agent. The ecologist will move any bats found to the receptor site by gloved hand. If bats are found during periods of adverse weather conditions, these must be left undisturbed until weather conditions become more favourable to move bats to the receptor site.
- Roost replacement appropriate for the species and roost types present will be required on site.
- Post-development monitoring may be required dependent upon species present and roost replacement type.

Requirements & Enhancements

Requirements Continued

Mitigation Continued

The EPSL will only include the bat species, numbers and roost types listed above. EPSLs do not allow for the disturbance of hibernating bats. Therefore, if any bats are found during the hibernation period or if any unexpected bat species or roost types are identified works must cease and advice must be sought from the Named Ecologist regarding the possible requirement for timing restrictions for works, the completion of further bat surveys or a modification to the EPSL. If full specifications of mitigation and compensation measures are required for planning determination, these can be provided in a separate standalone document prepared by a suitably experienced ecologist for the species and roost types present.

Wildlife Sensitive Lighting Strategy

Foraging and commuting bats could be impacted by additional lighting on site which can affect resources for the local population. Due to the presence of consistent foraging and commuting activity on site, a wildlife sensitive lighting strategy will be adopted within the proposed development during and post-development. This should be designed in accordance with Guidance Note GN08/23 Bats and Artificial Lighting at Night (Institution of Lighting Professionals, 2023). Parameters include avoiding light spill onto key habitats or features used by bats for roosting, foraging, or commuting.

A low impact lighting strategy will be adopted for the site during and post-development, and this should be designed in accordance with Guidance Note GN08/23 Bats and Artificial Lighting at Night (Institution of Lighting Professionals, 2023). Parameters can be found on the Bat Conservation Trust website: <https://www.bats.org.uk/news/2023/08/bats-and-artificial-lighting-at-night-ilp-guidance-note-update-released>

Enhancements

The creation of additional habitat for bats is recommended in line with the local authorities' duty to request enhancements under the NPPF (2024).

Bat Boxes

The installation of two bat boxes at the site will provide additional roosting habitat for bats. The bat boxes will be integrated within the new build extension. Bat boxes should be positioned 3-5m above ground level (at the eaves of buildings), facing in a south or south-westerly direction, with a clear flight path to and from the entrance, away from and unlit by artificial light, and not above any windows. The bat boxes will be a specification suitable for crevice dwelling species.

Requirements & Enhancements

Enhancements Continued

Cavity Bat Box

To enhance opportunities for void dwelling bats, a cavity bat box can be installed at the site. This can be erected onto B1, B2 or onto a retained tree along the boundary.

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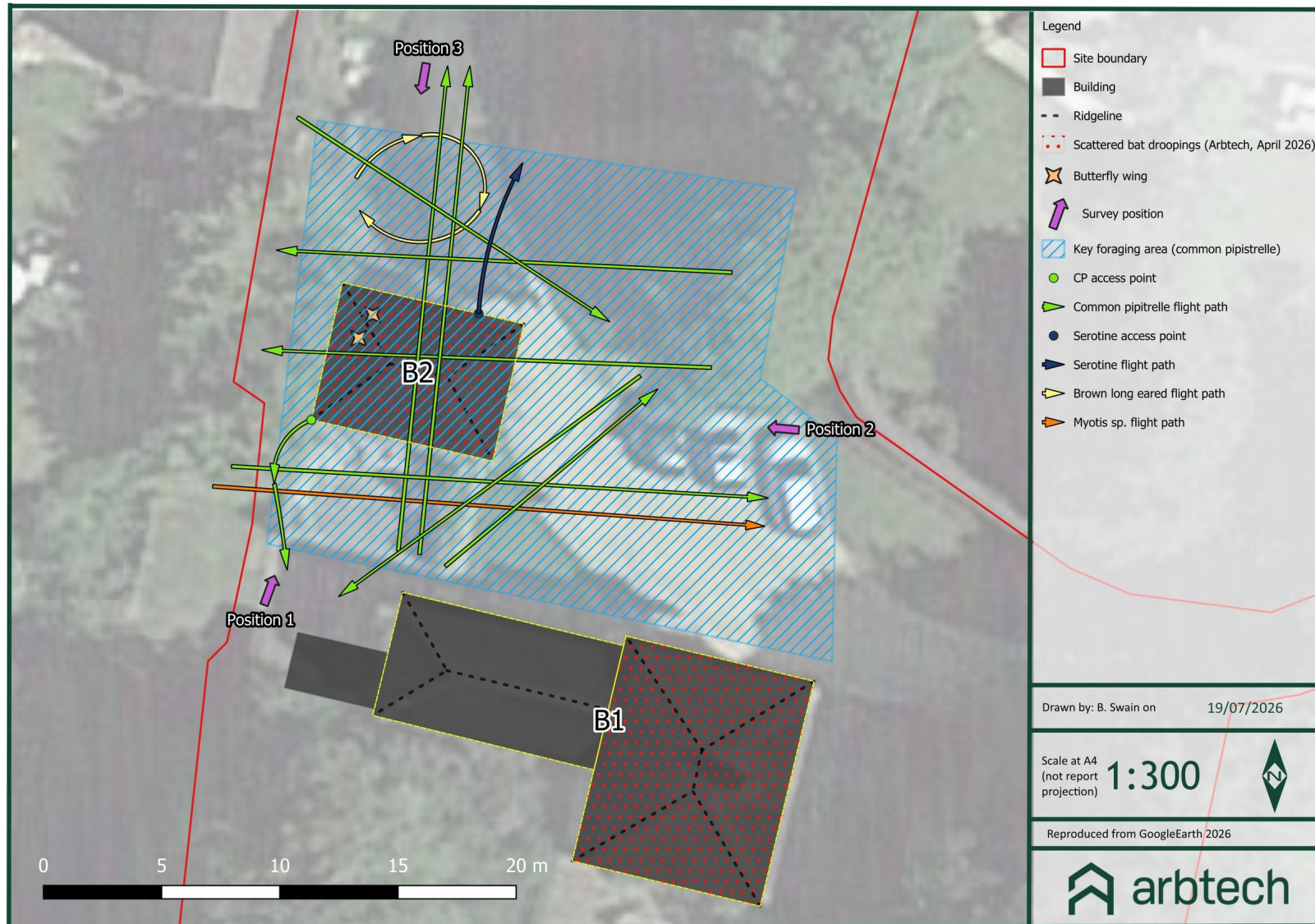
Version Control

Status	Issue	Name	Date
Draft	0.1	Bethany Swain, BSc (Hons) [Accredited Agent on Natural England Licence] and BCT competency level 2, Consultant Ecologist	19/07/2026
Review	0.2	Natalie Evans, MA, MRSB, Principal Consultant	25/07/2026
Review	0.3	Natalie Evans, MA, MRSB, Principal Consultant	05/08/2026
Final	1.0	Bethany Swain, BSc (Hons) [Accredited Agent on Natural England Licence] and BCT competency level 2, Consultant Ecologist	05/08/2026

Appendix 1: BERS plan



Plan 1: BERS Plan



Plan 2: BERS Results: Key foraging and commuting areas/roost locations

Appendix 2: DNA Results



LABORATORY REPORT

Species Identification from Biological Samples

CUSTOMER

Jade Patience
Arbtech
3 Well House Barns, Chester CH4 0DH, United Kingdom

ORDER DETAILS

Order Number: EG3509
Order Date: 01/07/2026

Sample Information

Sample ID	EG3509-1
Sample Type	Faecal
Suspected Species	
Site Location	SU 10156 57152
Comments	The Old Vicarage, Wilsford, Pewsey, Wiltshire, SN9 6HB - B1 LV1
Date Collected	20/04/2026
Date Arrived at Lab	03/07/2026
Results Date	06/07/2026

Laboratory Information

DNA Extraction Code	EG-2026-1595
Identification Method	qPCR
Analysis Procedure Notes	All UK bat species tested for - only a single species detected in this sample.
Laboratory Comments	None

Species Identified

Species	Ct Value
Plecotus auritus (Brown long-eared bat)	24



LABORATORY REPORT

Species Identification from Biological Samples

CUSTOMER

Jade Patience
Arbtech
3 Well House Barns, Chester CH4 0DH, United Kingdom

ORDER DETAILS

Order Number: EG3509
Order Date: 01/07/2026

Sample Information

Sample ID	EG3509-2
Sample Type	Faecal
Suspected Species	
Site Location	SU 10144 57168
Comments	The Old Vicarage, Wilsford, Pewsey, Wiltshire, SN9 6HB - B2 garage
Date Collected	20/04/2026
Date Arrived at Lab	03/07/2026
Results Date	06/07/2026

Laboratory Information

DNA Extraction Code	EG-2026-1596
Identification Method	qPCR
Analysis Procedure Notes	
Laboratory Comments	None

Species Identified

Species	Ct Value
Plecotus auritus (Brown long-eared bat)	21
Cnephaeus serotinus (Serotine bat)	23

Appendix 3: Biological Record Details

Species	Record Count	Closest Record (km)	Closest Record Date
<i>Pipistrellus pygmaeus</i> (Soprano pipistrelle)	4	0.7	06 Jul 2017
<i>Pipistrellus pipistrellus</i> (Common pipistrelle)	21	0.8	1971
<i>Pipistrellus</i> sp.	11	0.8	21 Aug 2001
<i>Myotis daubentonii</i> (Daubenton's bat)	2	1.1	30 Aug 2019
<i>Chiroptera</i> (Unidentified bat)	2	1.1	30 Aug 2019
<i>Eptesicus serotinus</i> (Serotine)	6	1.5	27 Jul 2017
<i>Nyctalus noctula</i> (Noctule)	3	1.5	27 Jul 2017
<i>Plecotus auritus</i> (Brown long-eared bat)	11	1.9	Sep 2015
<i>Myotis</i> sp.	2	2.0	Jul 2018
<i>Myotis mystacinus</i> (Whiskered bat)	2	2.0	Jul 2018

Appendix 4: Additional Site Inspection Images



Loft void of B2 taken from the northwestern corner.



Eastern half of B2.



Western half of B2.

Appendix 5: Surveyor Photos



V1 B2-1 surveyor photo



V2 B2-1 surveyor photo



V3 B2-1 surveyor photo



V1 B2-1 darkest point image



V2 B2-1 darkest point image



V3 B2-1 darkest point image



V1 B2-2 surveyor photo



V2 B2-2 surveyor photo



V3 B2-2 surveyor photo



V1 B2-2 darkest point image



V2 B2-2 darkest point image



V3 B2-2 darkest point image



V1 B2-3 surveyor photo



V2 B2-3 surveyor photo



V3 B2-3 surveyor photo



V1 B2-3 darkest point image

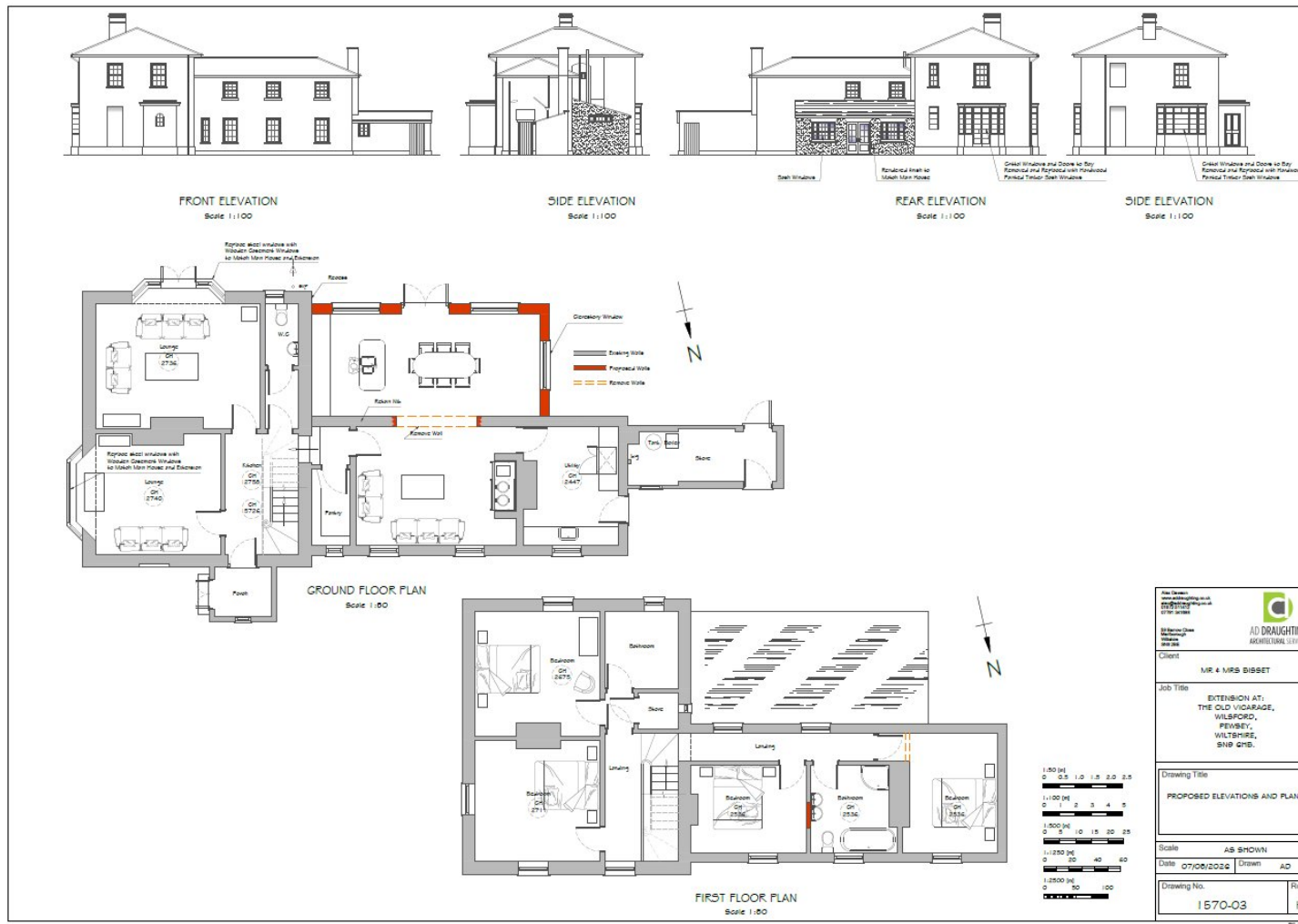


V2 B2-3 darkest point image



V3 B2-3 darkest point image

Appendix 6: Proposed Plans (B1)



Appendix 7: Summary of Call Data

Species	Visit 1	Visit 2	Visit 3	Total
Common pipistrelle	71	30	48	149
Brown long-eared bat	11	5	2	18
Serotine	1	-	5	6
Soprano pipistrelle	6	-	-	6
Common noctule	3	1	1	5
Myotis sp.	3	-	-	3

Appendix 8: Raw Survey Data Log

Pos - Position **Spp** - Species **Act** - Activity **Emer** - Emergence **Fora** - Foraging **Comm** - Commuting **PSR** - Post-survey result **Re-ent** - Re-entry **CPIP** - Common pipistrelle **SPIP** - Soprano pipistrelle **PIPSP** - Pipistrelle sp. **BLE** - Brown long-eared bat **PLECSP** - Plecotus sp. **NOC** - Common noctule **DAUB** - Daubenton's bat **NAT** - Natterer's bat **WHI** - Whiskered bat **WHI/BRAN** - Whiskered/Brandt's bat **MYOSP** - Myotis sp. **SERO** - Serotine **NYCSP** - Nyctalus sp. **LEI** - Leisler's noctule **NPIP** - Nathusius pipistrelle **LHO** - Lesser horseshoe bat **BARB** - Barbastelle **GHO** - Greater horseshoe bat **GLE** - Grey long-eared bat **ALCA** - Alcahoo **BECK** - Bechstein's bat **GME** - Greater mouse-eared bat

Visit 1

Time	Pos	Spp	Act	Notes	PSR
12:27	B2-3	CPIP	Call	Derived from commuting observations	PSR
12:52	B2-3	CPIP	Call	Derived from commuting observations	PSR
21:32	B2-1	CPIP	Call	Derived from foraging observations	PSR
21:33	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:33	B2-2	CPIP	Call	Derived from foraging observations	
21:33	B2-3	CPIP	Fora	West side of B2	PSR
21:33	B2-1	CPIP	Fora	Over garden and to the west of B2	
21:33	B2-2	CPIP	Fora	Above the trees to the west of B2 and circling around B2.	
21:35	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:35	B2-3	CPIP	Fora	Circling B2	PSR
21:36	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:36	B2-3	CPIP	Fora	West side of B2	PSR
21:39	B2-1	CPIP	Call	Derived from emergence observations	PSR
21:39	B2-1	CPIP	Emer	South (Roost 1)	PSR
21:40	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:40	B2-1	CPIP	Call	Derived from commuting observations	PSR
21:40	B2-3	CPIP	Fora	Circling B2	PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:40	B2-1	CPIP	Comm	N->S between tree and W side of B2	PSR
21:41	B2-3	CPIP	Call	Derived from commuting observations	
21:41	B2-3	CPIP	Call	Derived from commuting observations	PSR
21:41	B2-1	CPIP	Call		PSR
21:41	B2-3	CPIP	Comm	NE->SW in front of elevation	PSR
21:41	B2-3	CPIP	Comm	SW->NE in front of elevation	PSR
21:42	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:42	B2-2	BLE	Call		
21:42	B2-3	CPIP	Fora	West side of B2	PSR
21:43	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:43	B2-1	CPIP	Call		PSR
21:43	B2-3	CPIP	Fora	Circling B2	PSR
21:44	B2-1	CPIP	Call	Derived from foraging observations	PSR
21:44	B2-1	CPIP	Call	Derived from commuting observations	PSR
21:44	B2-2	CPIP	Call	Derived from foraging observations	
21:44	B2-1	CPIP	Fora	Over garden and to the west of B2	
21:44	B2-2	CPIP	Fora	Above the trees to the west of B2 and circling around B2.	
21:44	B2-1	CPIP	Comm	SE->NW from B1 over garden in front of B2	PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:46	B2-2	CPIP	Call	Derived from commuting observations	
21:46	B2-2	CPIP	Comm	East, above surveyor position 2.	
21:47	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:47	B2-3	CPIP	Fora	West side of B2	PSR
21:49	B2-1	CPIP	Call	Derived from commuting observations	PSR
21:49	B2-1	CPIP	Comm	NE->SW over roof of B2	PSR
21:50	B2-3	CPIP	Call	Derived from foraging observations	PSR
21:50	B2-1	CPIP	Call	Derived from foraging observations	PSR
21:50	B2-2	SERO	Call		
21:50	B2-3	CPIP	Fora	West side of B2	PSR
21:50	B2-1	CPIP	Fora	Over garden and to the west of B2	PSR
21:51	B2-1	BLE	Call		PSR
21:51	B2-1	CPIP	Call	Derived from foraging observations	PSR
21:51	B2-1	CPIP	Call	Derived from foraging observations	PSR
21:51	B2-1	CPIP	Fora	Over garden and to the west of B2	
21:53	B2-1	CPIP	Call		PSR
21:53	B2-2	BLE	Call		
21:55	B2-1	CPIP	Call		PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:56	B2-1	CPIP	Call	Derived from commuting observations	PSR
21:56	B2-2	CPIP	Call		
21:56	B2-1	CPIP	Comm	S->NW from behind surveyor into neighbours garden	PSR
21:57	B2-1	CPIP	Call		PSR
21:57	B2-2	CPIP	Call	Derived from foraging observations	
21:57	B2-2	NOC	Call		
21:57	B2-2	CPIP	Fora	Figures of eight around B2 and to the north of B1.	
21:58	B2-1	CPIP	Call	Derived from commuting observations	PSR
21:58	B2-1	CPIP	Comm	NW->E between the two buildings on site	
21:59	B2-3	CPIP	Call	Derived from commuting observations	PSR
21:59	B2-3	CPIP	Comm	SW->NE in front of elevation	PSR
22:01	B2-1	CPIP	Call		PSR
22:03	B2-1	CPIP	Call	Derived from commuting observations	
22:03	B2-1	CPIP	Comm	SE->NW from B1 into neighbours garden	
22:04	B2-1	CPIP	Call	Derived from commuting observations	PSR
22:04	B2-1	CPIP	Call	Derived from commuting observations	PSR
22:04	B2-1	CPIP	Comm	N->S between tree and W side of B2	PSR
22:04	B2-1	CPIP	Comm	N->S between tree and W side of B2	PSR
22:06	B2-2	CPIP	Call	Derived from commuting observations	
22:06	B2-2	CPIP	Comm	East, above surveyor position 2.	

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:07	B2-3	CPIP	Comm	NE->SW in front of elevation	PSR
22:08	B2-1	MYOSP	Call		PSR
22:08	B2-2	MYOSP	Call	Derived from commuting observations	
22:08	B2-2	CPIP	Call		
22:08	B2-2	DAUB	Comm	West to east along the southern elevation of B1.	
22:10	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:10	B2-2	BLE	Call		
22:10	B2-3	CPIP	Fora	West side of B2	PSR
22:16	B2-1	CPIP	Call		PSR
22:17	B2-1	CPIP	Call		PSR
22:17	B2-1	CPIP	Call		PSR
22:18	B2-2	CPIP	Call	Derived from commuting observations	
22:18	B2-2	CPIP	Comm	Southeast to northwest above B2.	
22:20	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:20	B2-1	MYOSP	Call		PSR
22:20	B2-3	CPIP	Fora	West side of B2	PSR
22:21	B2-1	CPIP	Call		PSR
22:21	B2-2	CPIP	Call		
22:28	B2-3	CPIP	Call	Derived from commuting observations	PSR
22:28	B2-1	CPIP	Call		PSR
22:28	B2-1	CPIP	Call	Derived from commuting observations	PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:28	B2-3	CPIP	Comm	NE->SW in front of elevation	PSR
22:28	B2-1	CPIP	Comm	Flew in from the neighbours garden to the west, landed on the west wall of B2 before flying back off to the west	PSR
22:29	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:29	B2-1	CPIP	Call		PSR
22:29	B2-2	CPIP	Call		
22:29	B2-3	CPIP	Fora	West side of B2	PSR
22:29	B2-1	CPIP	Fora	Over garden and to the west of B2	PSR
22:30	B2-2	CPIP	Call		
22:33	B2-2	NOC	Call		
22:35	B2-1	NOC	Call		PSR
22:37	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:37	B2-3	CPIP	Fora	West side of B2	PSR
22:38	B2-1	CPIP	Call	Derived from commuting observations	PSR
22:38	B2-2	CPIP	Call		
22:38	B2-1	CPIP	Comm	From N between tree and W side of B2, leaving to the W over neighbours garden	PSR
22:39	B2-1	CPIP	Call		PSR
22:39	B2-2	CPIP	Call		
22:41	B2-1	CPIP	Call		PSR
22:42	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:42	B2-3	CPIP	Fora	Circling B2	PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:43	B2-1	CPIP	Call		PSR
22:43	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:43	B2-2	CPIP	Call		
22:43	B2-1	CPIP	Fora	Over garden and to the west of B2	PSR
22:46	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:46	B2-3	CPIP	Fora	North of elevation	PSR
22:47	B2-1	CPIP	Call		PSR
22:47	B2-2	BLE	Call	Continuous activity until 22:50.	
22:47	B2-2	BLE	Call	Derived from foraging observations	PSR
22:47	B2-2	BLE	Fora	Above the trees to the west of B2 and circling around B2.	PSR
22:48	B2-1	BLE	Call		PSR
22:49	B2-1	BLE	Call	Derived from foraging observations	PSR
22:50	B2-1	BLE	Call		PSR
22:51	B2-1	SPIP	Call		PSR
22:52	B2-2	SPIP	Call		
22:54	B2-2	SPIP	Call		
22:55	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:55	B2-1	CPIP	Call		PSR
22:55	B2-2	SPIP	Call	Derived from foraging observations	PSR
22:55	B2-3	CPIP	Fora	Circling B2	PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:55	B2-2	SPIP	Fora	Above the trees to the west of B2 and circling around B2.	PSR
22:56	B2-1	CPIP	Call		PSR
22:57	B2-1	BLE	Call		PSR
22:57	B2-2	BLE	Call		
22:57	B2-2	SPIP	Call		
22:58	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:58	B2-3	CPIP	Fora	West side of B2	PSR
22:59	B2-1	SPIP	Call		PSR

Visit 2

Time	Pos	Spp	Act	Notes	PSR
21:56	B2-2	CPIP	Call		
21:59	B2-2	CPIP	Call	Derived from commuting observations	
21:59	B2-2	CPIP	Comm	West to east along the southern elevation of B1.	
22:00	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:00	B2-3	CPIP	Call	Derived from foraging observations	
22:00	B2-1	CPIP	Fora	Circuits around B2.	PSR
22:00	B2-3	CPIP	Fora	West side of B2	
22:01	B2-2	CPIP	Call		
22:02	B2-2	CPIP	Call	Derived from foraging observations	
22:02	B2-2	CPIP	Fora	Foraging above the courtyard and position P2.	
22:04	B2-3	CPIP	Call	Heard Not Seen	
22:07	B2-2	CPIP	Call	Derived from commuting observations	
22:07	B2-2	CPIP	Comm	West to east along the southern elevation of B1.	
22:08	B2-2	CPIP	Call	Derived from foraging observations	
22:08	B2-3	NOC	Call	heard not seen	
22:08	B2-2	CPIP	Fora	Foraging circuits around B2 and surveyor position P2.	
22:09	B2-3	CPIP	Call	heard not seen	
22:10	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:10	B2-3	CPIP	Call	Derived from foraging observations	
22:10	B2-1	CPIP	Fora	Circuits around B2.	PSR
22:10	B2-3	CPIP	Fora	West side of B2	
22:13	B2-3	CPIP	Call	Derived from emergence observations	

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:13	B2-3	CPIP	Emer	Headed south from building (Roost 1)	
22:16	B2-3	CPIP	Call	heard not seen	
22:17	B2-3	CPIP	Call	Derived from foraging observations	
22:17	B2-3	CPIP	Fora	West side of B2	
22:20	B2-3	CPIP	Call	Derived from foraging observations	
22:20	B2-3	CPIP	Fora	West side of B2	
22:28	B2-2	CPIP	Call		
22:29	B2-2	CPIP	Call	Derived from foraging observations	
22:29	B2-2	CPIP	Fora	Foraging above the courtyard and position P2.	
22:30	B2-3	CPIP	Call	heard not seen	
22:31	B2-2	CPIP	Call		
22:32	B2-2	CPIP	Call	Derived from foraging observations	
22:32	B2-2	CPIP	Fora	Foraging circuits around B2 and surveyor position P2.	
22:36	B2-2	CPIP	Call		
22:37	B2-2	CPIP	Call	Derived from foraging observations	
22:37	B2-2	CPIP	Fora	Above the trees to the west of B2 and circling around B2.	
22:39	B2-2	CPIP	Call	Derived from commuting observations	
22:39	B2-2	CPIP	Comm	West to east along the southern elevation of B1.	
22:40	B2-3	CPIP	Call	heard not seen	
22:42	B2-3	CPIP	Call	heard not seen.	
22:42	B2-3	CPIP	Call	heard not seen.	
22:43	B2-2	CPIP	Call		
22:50	B2-2	CPIP	Call		
22:51	B2-2	CPIP	Call		

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:58	B2-2	BLE	Call		
23:05	B2-2	BLE	Call		
23:05	B2-3	BLE	Call	heard not seen	
23:08	B2-2	BLE	Call		
23:12	B2-1	BLE	Call	Derived from foraging observations	PSR
23:12	B2-1	BLE	Fora	Circuits around B2.	PSR

Visit 3

Time	Pos	Spp	Act	Notes	PSR
17:45	B2-1	SERO	Call	Derived from emergence observations	PSR
17:45	B2-1	CPIP	Call	Derived from emergence observations	PSR
17:45	B2-1	SERO	Emer	West (Roost 2)	PSR
20:20	B2-3	CPIP	Call	Derived from emergence observations	PSR
20:20	B2-3	CPIP	Emer	Emerges from the western elevation and heads south over B2-3 position (Roost 1)	PSR
21:54	B2-2	CPIP	Call		
21:56	B2-3	CPIP	Call	Check IR	
21:57	B2-2	CPIP	Call	Derived from foraging observations	
21:57	B2-1	CPIP	Call	Derived from commuting observations	PSR
21:57	B2-2	CPIP	Fora	Foraging circuits around B2 and surveyor position P2.	
21:57	B2-1	CPIP	Comm	East to west in front of the northern elevation of B2.	PSR
22:00	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:00	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:00	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:00	B2-1	CPIP	Fora	In front of the northern and western elevations of B2.	PSR
22:01	B2-3	CPIP	Call		
22:01	B2-2	CPIP	Call	Derived from commuting observations	
22:01	B2-2	CPIP	Comm	East, above surveyor position 2.	
22:02	B2-3	CPIP	Call	Derived from foraging observations	

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:02	B2-3	CPIP	Fora	W to E Anticlockwise around the building	
22:03	B2-3	CPIP	Call	Derived from foraging observations	
22:03	B2-3	CPIP	Call	Derived from commuting observations	
22:03	B2-2	CPIP	Call	Derived from foraging observations	
22:03	B2-3	CPIP	Fora	E to W Clockwise around building	
22:03	B2-2	CPIP	Fora	Foraging circuits around B2 and surveyor position P2.	
22:03	B2-3	CPIP	Comm	South to north over building	
22:05	B2-3	CPIP	Call	Derived from commuting observations	
22:05	B2-3	CPIP	Comm	North to south over building	
22:07	B2-3	CPIP	Call	Derived from foraging observations	
22:07	B2-3	CPIP	Call	Derived from foraging observations	
22:07	B2-1	CPIP	Call	Derived from emergence observations	PSR
22:07	B2-3	CPIP	Fora	W to E Anticlockwise around the building	
22:07	B2-3	CPIP	Fora	W to E Anticlockwise around the building	
22:08	B2-3	CPIP	Call	Derived from foraging observations	
22:08	B2-3	CPIP	Fora	W to E Anticlockwise around the building Heading south into fields	
22:09	B2-3	SERO	Call		
22:10	B2-3	SERO	Call		
22:10	B2-3	CPIP	Call		
22:12	B2-3	CPIP	Call	Derived from commuting observations	

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:12	B2-3	CPIP	Comm	South to north over building	
22:15	B2-3	CPIP	Call	Derived from foraging observations	
22:15	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:15	B2-3	CPIP	Fora	W to E Anticlockwise around the building Heading south into fields	
22:15	B2-1	CPIP	Fora	In front of the northern and western elevations of B2.	PSR
22:16	B2-3	CPIP	Call	Derived from foraging observations	
22:16	B2-3	CPIP	Fora	Gardens in front of western elevation	
22:18	B2-3	CPIP	Call	Derived from foraging observations	
22:18	B2-3	CPIP	Fora	Gardens in front of western elevation	
22:20	B2-3	CPIP	Call	Derived from foraging observations	
22:20	B2-3	CPIP	Fora	E to W Clockwise around building	
22:21	B2-3	CPIP	Call	Derived from foraging observations	
22:21	B2-3	CPIP	Call	Derived from foraging observations	
22:21	B2-3	CPIP	Fora	E to W Clockwise around building	
22:21	B2-3	CPIP	Fora	E to W Clockwise around building	
22:23	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:23	B2-1	CPIP	Fora	In front of the northern and western elevations of B2.	PSR
22:24	B2-3	CPIP	Call	Derived from foraging observations	
22:24	B2-3	CPIP	Fora	E to W Clockwise around building	

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:26	B2-3	CPIP	Call	Derived from foraging observations	
22:26	B2-3	CPIP	Fora	W to E Anticlockwise around the building Heading south into fields	
22:27	B2-3	CPIP	Call	Derived from foraging observations	
22:27	B2-3	CPIP	Call	Derived from foraging observations	
22:27	B2-3	CPIP	Fora	E to W Clockwise around building	
22:27	B2-3	CPIP	Fora	Gardens in front of western elevation	
22:29	B2-3	CPIP	Call		
22:30	B2-3	CPIP	Call	Derived from commuting observations	
22:30	B2-3	CPIP	Comm	South to north over building	
22:33	B2-3	CPIP	Call		
22:38	B2-2	BLE	Call		
22:40	B2-3	SERO	Call		
22:40	B2-2	SERO	Call		
22:41	B2-3	NOC	Call		
22:43	B2-3	CPIP	Call		
22:43	B2-2	CPIP	Call		
22:44	B2-3	CPIP	Call		
22:48	B2-2	CPIP	Call		
22:48	B2-1	CPIP	Call	Derived from foraging observations	PSR
22:48	B2-1	CPIP	Fora	In front of the western elevation of B2.	PSR
22:49	B2-3	CPIP	Call		
22:50	B2-3	CPIP	Call		
22:50	B2-2	CPIP	Call		
22:50	B2-2	BLE	Call		
22:53	B2-1	CPIP	Call	Derived from foraging observations	PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:53	B2-1	CPIP	Fora	In front of the northern and western elevations of B2.	PSR
22:54	B2-3	CPIP	Call		
22:54	B2-2	CPIP	Call		

Appendix 9: General Methodology

BAT EMERGENCE AND RE-ENTRY SURVEY METHODOLOGY — GENERAL

1. Survey Aims and Approach

Dusk bat emergence surveys (and, where justified, dawn re-entry surveys) were undertaken to determine the presence or likely absence of roosting bats and, where present, to characterise roosts by species, numbers, access points, roost type and how bats use the site. Survey design follows an iterative approach: results and audit data are reviewed after each visit so that subsequent survey effort, positioning, equipment deployment and objectives can be refined as needed (BCT 7.2.17; 10.1.1).

2. Guidance and Standards

All surveys were designed and delivered with reference to Bat Surveys for Professional Ecologists — Good Practice Guidelines (4th ed.) (Collins, 2023), the CIEEM Guidelines for Ecological Report Writing (2nd ed.) (CIEEM, 2017a), and other relevant guidance including Natural England standing advice for bats (updated April 2025) and BS 42020:2013. Where departures from published good practice were made, the report identifies what changed, why, how survey robustness was maintained, and the competence of the ecologist(s) making that judgement (BCT 1.1.4–1.1.5; 2.2.32–2.2.33).

3. Competence and Roles

Survey design and oversight were provided by Consultant Ecologist Bethany Swain BSc (Hons) and BCT competency level 2, (Accredited on Natalie's Natural England Bat License No. Details Available Upon Request) at BCT Level 3 competence. On-site survey work was led by Kiera Horman, BSc (Hons) at BCT Level 2 competence, supported by 3 additional Bat Surveyor(s) and/or Assistant(s). Bat Surveyors (minimum BCT Level 1, trained to internal standard) worked under the supervision of the Project Surveyor and were responsible for data collection at their manned positions, including real-time species identification and operating IR camera/acoustic equipment. Training records and competency sign-offs are maintained in line with CIEEM Code of Professional Conduct. Full surveyor details are provided in Table 2.

4. Survey Timing, Effort and Seasonal Windows

Survey effort was set in line with BCT Tables 7.1 and 7.2 and reviewed as results emerged. Dusk emergence surveys commenced with surveyors and equipment in place 15 minutes before sunset and continued for 1.5–2 hours after sunset (BCT 7.2.31). Survey visits were spaced a minimum of three weeks apart and timed within the core May–August survey window wherever feasible. Where September surveys were required, the report details the justification, how robustness was maintained, and any residual uncertainty.

Survey dates, start/end times, and sunset/sunrise times are provided in the survey visit details section of the report.

5. Weather Conditions

Surveys were undertaken only when conditions were likely to support typical bat emergence and flight behaviour. Conditions were assessed using forecasts and confirmed on arrival. Minimum thresholds: temperature $>7^{\circ}\text{C}$ at survey start; wind $\leq$ Beaufort Scale 3 ($\sim 5\text{ m/s}$); no persistent heavy rain. Where suboptimal but permissible conditions occurred (e.g. intermittent light drizzle), these are recorded and interpretation reflects this. Weather data recorded during each survey are provided in the survey visit details section of the report.

6. Survey Area and Position Design

The survey area comprised 1 building, selected on the basis of the PRA findings and/or tree assessment results. Justification for the extent of survey coverage is provided in the Site Context and Background section.

The arrangement of surveyors and equipment was informed by the Preliminary Roost Assessment (structures) and/or tree assessment (PRFs/GLTA) so that identified roosting features and likely access points were the focus of coverage, while recognising that bats may emerge from unexpected locations (BCT 7.2.12). Where NVAs were deployed, a still image or screenshot was captured from the darkest point of the survey from each NVA to demonstrate field of view and adequacy of illumination; these are provided in 4 (BCT 7.2.10). Surveyor and equipment positions for each survey visit are shown on Appendix 1.

7. Equipment Standards

All electronic survey equipment (detectors, recorders and NVAs) was tested prior to deployment (function check, storage capacity, battery health, time synchronisation) and calibrated/tested in line with manufacturer guidance, typically at least annually, with evidence retained and available on request (BCT 2.5.14). Microphone sensitivity was verified prior to the survey season, as sensitivity can decline over time (BCT 2.5.16). Equipment was selected as suitable for the target species and site conditions (BCT 2.5.13; 2.5.17). Detector settings and deployment metadata were documented consistently, including gain/sensitivity, trigger parameters, recording format, sample rate, firmware/app version, time settings and any filters applied (BCT 2.5.15; 2.5.20). Equipment details and settings are provided in Table 3.

8. Data Capture and Acoustic Analysis

All results were recorded using a standardised digital survey form, including surveyor positions, start/end times, weather at intervals, equipment identifiers, detector settings, observed emergences/returns, bat passes, flight direction, behaviour notes and confidence/uncertainty notes (BCT 7.2.19). Raw audio/video recordings and metadata were retained as an auditable record. Negative survey results were also recorded (BCT 2.5.19).

A bat pass was defined as a sequence of two or more echolocation pulses produced by an individual bat, with a new pass recorded when a gap of one second or more occurred between successive calls. Where sustained activity was recorded (e.g. circling bats), this was noted as sustained activity rather than counted as individual passes.

At manned positions, species identification was carried out in real-time by the ecologist using a heterodyne detector for live listening and an Echo Meter Touch

(built-in MEMS microphone) for full-spectrum recording. All recordings were retained as an auditable record. Post-survey acoustic review was undertaken only where specific calls could not be confidently identified on site; these were reviewed using Wildlife Acoustics Kaleidoscope Pro with reference to Russ (2012) *British Bat Calls: A Guide to Species Identification*.

Where semi-manned positions were deployed (Titley Chorus with ultrasonic microphone), recordings were processed through Titley Scientific Anabat Insight (BatClassify UK plug-in) to provide automated species identification. Auto-ID outputs were subject to targeted manual verification by an experienced ecologist using Kaleidoscope Pro. Manual verification was applied to: uncertain or low-confidence classifications; any classifications of conservation-significant, locally uncommon or Annex II species regardless of confidence score (BCT 10.2.19); and any records detected at unusual times. Manual verification involved visual inspection of spectrograms and examination of call parameters including peak frequency (kHz), start and end frequency (kHz), call duration (ms), inter-pulse interval (ms), bandwidth (kHz), and call shape/structure (e.g. FM, FM-QCF, QCF). Where calls could not be confidently assigned to species level (e.g. *Myotis* species group), they were recorded at the most reliable taxonomic level.

It is acknowledged that automated classification software is not infallible; false positives and false negatives may occur. Different species can produce similar calls, and recording quality, environmental conditions and bat behaviour can affect call characteristics. Some species groups (e.g. *Myotis* spp., *Nyctalus/Eptesicus*) cannot be reliably separated by echolocation alone (Russ, 2012).

Acoustic data were reviewed promptly after each survey to inform subsequent survey design (BCT 2.2.16; 10.1.1).

9. Health and Safety

A site-specific risk assessment was prepared addressing both site and generic survey hazards (night working, slips/trips, lone working, antisocial behaviour risk). The risk assessment was reviewed on arrival at each visit, and new hazards identified on site were recorded for subsequent visits (BCT 2.7.3).

10. Report Quality Assurance

This report has been written by, or reviewed by, a senior member of staff to confirm technical adequacy, clarity and that recommendations are justified (BCT 11.4.1). Survey effort has been checked as part of project quality assurance (BCT 7.2.13).

11. Limitations and Survey Validity

Survey data in this report were collected during the 2026 survey season. In accordance with CIEEM (2019) Advice Note on the Lifespan of Ecological Reports and Surveys, survey data are generally considered valid for up to 12 months / state period from the date of the last survey visit. Where this report is relied upon beyond that period, an update assessment may be required.

- Weather conditions (suboptimal conditions, aborted/rescheduled surveys)
- Access constraints (areas not surveyed and reasons)

- Timing constraints (surveys outside core season, justification)
- Equipment limitations (NVA range/coverage gaps, IR illumination constraints, detector sensitivity to quiet species such as Plecotus)
- Health and safety constraints affecting survey design
- Any other factors, and how these were addressed or their implications for survey robustness

References

References relevant to this methodology.

- BCT (2023, amended 27.03.2024) Bat Surveys for Professional Ecologists — Good Practice Guidelines (4th ed.). Bat Conservation Trust, London.
- BCT / Fawcett-Williams, J. (2021) Thermal Imaging: Bat Survey Guidelines. Bat Conservation Trust, London.
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- BSI (2013) BS 42020:2013 Biodiversity — Code of practice for planning and development. British Standards Institution, London.
- Natural England (2025) Bats: advice for making planning decisions. Updated April 2025.
- Russ, J. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.

Appendix 10: Survey Methodology

BAT EMERGENCE SURVEY METHODOLOGY — HYBRID NVA/ECOLOGIST SURVEY

1. Survey Method

This survey used a hybrid approach combining manned positions (ecologist with NVA, live detector and recording) and semi-manned automatic recording positions (NVA with dedicated static audio detector). Semi-manned positions were deployed to maintain coverage of roosting features while reducing the number of human positions required, consistent with BCT guidance that NVAs can reduce the number of surveyors where appropriately deployed with a detector soundtrack and evidence of efficacy (BCT 7.2.8; 7.2.11).

2. Position Design

The arrangement of manned and semi-manned positions was determined from the PRA and/or tree PRF assessment, with coverage designed so that all elevations and identified roosting features were monitored (BCT 7.2.12). Survey design and oversight were provided by Consultant Ecologist Bethany Swain BSc (Hons) and BCT competency level 2, (Accredited on Natalie's Natural England Bat License No. Details Available Upon Request) at BCT Level 3 competence. at BCT Level 3 competence (BCT 7.2.6). Manned positions were staffed with either Project Surveyors or Bat Surveyors, who were responsible for data collection, including real-time species identification and recording all bat activity, including peripheral activity across the wider site (BCT 7.2.13). Semi-manned positions were monitored by either the Project Surveyor or Bat Surveyors, which were allocated by the Project Surveyor.

3. Equipment

Manned positions: IR camera (Nightfox Whisker) with tripod; true IR illumination source (Nightfox XB5 Pro 850 nm); tablet for digital data capture; full-spectrum detector (Echo Meter Touch, built-in MEMS microphone) with recording enabled, supplemented by heterodyne detector for real-time species identification; radio communication; red-light head torch; weather meter/anemometer.

Semi-manned positions: IR camera with true IR illumination source; full-spectrum static bat detector/recorder (Titley Chorus with ultrasonic microphone, unique identifier) deployed on a tripod at approximately 1.5–2 m above ground level, with the microphone oriented horizontally and directed towards the building features under observation — height and orientation were adjusted on site as necessary to maximise acoustic coverage of identified roosting features; tripod/clamp system for stable alignment and security.

Staffing and equipment deployment were designed to ensure survey effort was not diluted across the site, with sufficient coverage of all relevant elevations and features (BCT 7.2.15).

All equipment was tested and calibrated in line with manufacturer guidance, with evidence retained and available on request (BCT 2.5.14). Detector settings (gain/sensitivity, trigger parameters, recording format, sample rate, firmware version, time settings) were documented (BCT 2.5.15; 2.5.20). Equipment details

and settings are provided in Table 3, along with any deviations from this kit list.

4. Survey Operation

All equipment was deployed and operational before the 15-minute pre-sunset survey start. Each NVA was checked for focus, field of view and adequacy of true IR illumination (BCT 7.2.10). NVAs and audio recorders were turned on before the survey window and remained running until after completion (BCT 7.2.11). During the survey, each surveyor monitored their allocated NVAs and carried out operational checks (recording status, IR illumination timing, lamp alignment). Surveyors maintained constant radio contact. A still image was captured from the darkest point of the survey from each NVA to demonstrate field of view and illumination adequacy; these are provided in Appendix 4 (BCT 7.2.10).

5. Post-Survey Review

NVA footage was reviewed promptly (typically the following day) while the survey remained fresh in surveyors' minds (BCT 7.2.16). Acoustic files were processed promptly to inform subsequent survey design (BCT 2.2.16; 10.1.1). Results from each visit were used to refine positioning, equipment deployment and objectives for subsequent visits where required (BCT 7.2.17). Where overlap between independent observer and NVA detections was noted, this was recorded to support internal quality assurance (BCT 7.2.14). Where bats were observed emerging, survey interpretation recognised that the roosting location may differ from the emergence point, and follow-up survey design was adjusted accordingly (BCT 7.2.17).

6. Justification for Method

This hybrid approach was selected as appropriate for the site based on site complexity and number of features. The method maintains full auditable NVA and acoustic coverage of all identified roosting features while providing direct ecologist observation at key positions.

7. Limitations

All limitations are listed, along with their impact level, in the Limitations section of the main report.