

Bat Emergence and Re-Entry Survey

This report is supplementary to the Preliminary Roost Assessment report completed by Arbtech Consulting Ltd (2025).

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

Survey Site

**Little Orchard, Dagbrook Lane,
Henfield, West Sussex
BN5 9SH**

Client

Mr and Mrs Miller

Report Date

08/07/2026

Project

This report is prepared to inform a planning application for the proposal described as the demolition of the existing dwelling and erection of a replacement dwelling.

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Senior Ecologist

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Survey Author & Designer

Survey design and oversight were provided by Senior Ecologist Zenobia - Jay Pattison BSc (Hons), (Accredited on Natalie Evans’s Natural England Bat License) at BCT Level 2 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 (2025) 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.

The surveys undertaken to date have indicated that there is a sufficiently low risk of bat roosts being present on site, and works can proceed without any further survey or licence requirements.

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

Requirement	Details
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

Building B1 is a single-storey brick-built residential dwelling. Gaps beneath the clay interlocking tiles were observed in several locations, which could be utilised by crevice dwelling bats. The proposed works will result in the demolition of the building. This could result in the destruction of any bat roosts if present, and could cause disturbance, death or injury to bats. Two bat emergence surveys are required for building B1 to confirm the presence or likely absence of roosting bats.

Context

Number of buildings on site

2

Number of buildings surveyed

1

Reason for omitting buildings

Building B2 was determined to have negligible bat roosting habitat value.

Site Inspection

An updated internal and external inspection was undertaken by Thomas Doarks, immediately prior to the start of the second bat emergence survey (22nd June 2026). No evidence of bats, or bats themselves, were recorded. Additionally, no further suitable roosting features in addition to the PRA report were identified. All conditions remained the same as they were during the PRA survey.



Figure 1a: Internal roof void of building B1 during the updated internal inspection



Figure 1b: Internal roof void of building B1 during the updated internal inspection

Proposed Works

Proposed Development

Current use of building(s)

B1 is currently used as a residential dwelling.

Proposed use of building(s)

B1: N/A - to be demolished. A replacement dwelling will be constructed in its place.

Structural changes to building(s)

B1: N/A - to be demolished.

Cosmetic/repair work

B1: N/A.

Type of permission required

Full planning permission

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
Luke Pattison	4 years	n/a	Level 1
Sarah Helen Rennie	3 years	N/A	Level 1
Stuart Rennie	1 years	N/A	Level 1
Thomas Doarks	1 years	N/A	Level 2

Equipment

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

Category	Equipment	Count	
		Visit 1	Visit 2
Night Vision Aid	Nightfox Whisker	4	4
Additional illumination	Nightfox XB5 PRO	3	4
Two-way radio	BAOFENG FV-880E two-way radio (or similar)	4	4
Bat detector	Wildlife Acoustics Echo Meter Touch 2	3	3
Additional illumination	Nightfox Arc IR Floodlight	1	-
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
B1-1	Northeast	Luke Pattison (LS)	Thomas Doarks (LS)
B1-2	South (semi-manned)	Luke Pattison (LS)	Thomas Doarks (LS)
B1-3	Southwest	Sarah Helen Rennie	Sarah Helen Rennie
B1-4	North	Stuart Rennie	Stuart Rennie

Survey Visit Details and Limitations

Visit 1			Visit 2		
26/05/2026			22/06/2026		
Start time	Sunset	End time	Start time	Sunset	End time
20:45	21:00	22:30	21:05	21:20	22:50
Start Conditions			Start Conditions		
Temperature(°C): 22.0			Temperature(°C): 23.0		
Relative humidity (%): 51.0			Relative humidity (%): 74.0		
Wind (km/h): 6.0			Wind (km/h): 3.0		
End Conditions			End Conditions		
Temperature(°C): 18.0			Temperature(°C): 21.0		
Relative humidity (%): 65.0			Relative humidity (%): 76.0		
Wind (km/h): 3.0			Wind (km/h): 4.0		
Rain			Rain		
None			None		
Buildings surveyed			Buildings surveyed		
1			1		
Trees surveyed			Trees surveyed		
N/A			N/A		

Limitations

There are no limitations associated with this survey.

Summary Findings

Findings & Impacts

Summary of all observations and impacts

Emergences

No emergences were observed during any visit.

Roosts

No roosts were observed during any visit.

Key Foraging Areas

Low numbers of individual soprano and common pipistrelle bats were recorded foraging on- and off-site across the two surveys. A total of two common, and seven soprano pipistrelles were recorded foraging across both surveys, primarilyly above the driveway along the northern aspect of the site. No other species were recorded foraging.

Key Commuting Paths

A low number of individual bats were recorded commuting across site, primarily east to west and west to east above building B1 and the treeline along the northern edge of the site boundary. A low number of bats were also recorded commuting from north to south along the eastern elevation of building B1.

Impacts on Foraging / Commuting Bats

No impacts foreseen to roosting bats. Foraging and commuting bats could be impacted by additional lighting on-site which can reduce resources for the local population. The site was noted to be used primarily by small numbers of common and widespread species of bat, for mostly commuting and foraging purposes. Due to the numbers and species of bats recorded during the surveys, no impacts at population level are anticipated. Impacts will be at site level only.

Hibernation suitability

There are some limited habitat in crevices and within the internal roof void, however, these do not offer the stable environment generally required for hibernation. No further surveys are required.

Requirements & Enhancements

Requirements & Enhancements

Requirements

Bat Licence

A bat licence is not required for the proposed works.

Mitigation

The surveys undertaken to date have indicated that there is a sufficiently low risk of bat roosts being present on site, and works can proceed without any further survey or licence requirements. In the unlikely event bats are found, work must stop and a suitably qualified ecologist will be contacted for further advice.

Wildlife Sensitive Lighting Strategy

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 one bat box at the site will provide additional roosting habitat for bats. The bat box will be integrated within the new build. 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 box will be a specification suitable for crevice dwelling species.

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Version Control

Status	Issue	Name	Date
Draft	0.1	Zenobia - Jay Pattison, BSC (Hons), Senior Ecologist	08/07/2026
Review	0.2	Zenobia - Jay Pattison, BSC (Hons), Senior Ecologist	08/07/2026
Final	1.0	Zenobia - Jay Pattison, BSC (Hons), Senior Ecologist	08/07/2026

Appendix 1: BERS plan



Appendix 2: Surveyor Photos



V1 B1-1 surveyor photo



V2 B1-1 surveyor photo



V1 B1-2 surveyor photo



V1 B1-1 darkest point image



V2 B1-1 darkest point image



V1 B1-2 darkest point image



V2 B1-2 surveyor photo



V1 B1-3 surveyor photo



V2 B1-3 surveyor photo



V2 B1-2 darkest point image



V1 B1-3 darkest point image



V2 B1-3 darkest point image



V1 B1-4 surveyor photo



V2 B1-4 surveyor photo



V1 B1-4 darkest point image



V2 B1-4 darkest point image

Appendix 3: Summary of Call Data

Species	Visit 1	Visit 2	Total
Soprano pipistrelle	23	14	37
Common pipistrelle	4	25	29
Common noctule	1	5	6
Myotis sp.	2	2	4
Serotine	-	1	1

Appendix 4: 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
21:24	B1-3	NOC	Call	Heard not seen	
21:26	B1-1	SPIP	Call	Derived from commuting observations	
21:26	B1-1	SPIP	Comm	Soprano pipistrelle from West - East over length of house.	
21:27	B1-4	SPIP	Call	Derived from commuting observations	
21:27	B1-4	SPIP	Comm	West to east in front of north facing side. From over treeline with property to the west.	
21:30	B1-1	SPIP	Call	Derived from commuting observations	
21:30	B1-4	SPIP	Call	Derived from commuting observations	
21:30	B1-1	SPIP	Comm	Soprano pipistrelle from West - East over length of house.	
21:30	B1-4	SPIP	Comm	West to east in front of north facing side. From over treeline with property to the west.	
21:31	B1-1	SPIP	Call	Derived from foraging observations	
21:31	B1-1	SPIP	Fora	East side in garden above B1 position	
21:33	B1-4	SPIP	Call	Derived from foraging observations	
21:33	B1-4	SPIP	Fora	Driveway in front of the north facing side	
21:37	B1-1	SPIP	Call	Derived from foraging observations	
21:37	B1-1	SPIP	Call	Derived from foraging observations	
21:37	B1-1	SPIP	Call	Derived from commuting observations	

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:37	B1-4	SPIP	Call	Derived from foraging observations	
21:37	B1-4	SPIP	Fora	From the north into the driveway in front of the north facing side and then round to the east of the building.	
21:37	B1-1	SPIP	Comm	Soprano pipistrelle from West - East over length of house.	
21:39	B1-3	CPIP	Call	Heard not seen, very brief and faint	
21:39	B1-4	CPIP	Call	Heard not seen	
21:52	B1-1	CPIP	Call	Heard not seen	
22:02	B1-4	MYOSP	Call	Heard not seen	
22:03	B1-1	MYOSP	Call	Heard not seen	
22:09	B1-4	SPIP	Call	Heard not seen	
22:10	B1-3	SPIP	Call	heard not seen,	
22:11	B1-3	SPIP	Call	Heard not seen, very brief and faint	
22:12	B1-3	SPIP	Call	Heard not seen	
22:14	B1-4	SPIP	Call	Heard not seen	
22:15	B1-1	SPIP	Call	Heard not seen	
22:15	B1-4	SPIP	Call	Heard not seen	
22:19	B1-3	SPIP	Call	Heard not seen briefly	
22:20	B1-1	CPIP	Call	Heard not seen	
22:23	B1-3	SPIP	Call	Heard not seen	
22:24	B1-3	SPIP	Call	Heard not seen	
22:24	B1-4	SPIP	Call	Heard not seen	
22:28	B1-3	SPIP	Call	Heard not seen	
22:29	B1-3	SPIP	Call	Heard not seen	

Visit 2

Time	Pos	Spp	Act	Notes	PSR
08:45	B1-1	SPIP	Call	Derived from commuting observations	
08:45	B1-1	SPIP	Call	Derived from commuting observations	
08:45	B1-1	SPIP	Comm	Soprano pipistrelle from West - East over length of house.	
21:35	B1-3	SPIP	Call	Heard not seen	
21:37	B1-3	SPIP	Call	Heard not seen	
21:37	B1-1	SPIP	Call	Derived from commuting observations	
21:37	B1-4	SPIP	Call	Derived from commuting observations	
21:37	B1-1	SPIP	Comm	Soprano pipistrelle from West - East over length of house.	
21:37	B1-4	SPIP	Comm	West to east in front of north facing side. From over treeline with property to the west.	
21:38	B1-4	SPIP	Call	Derived from foraging observations	
21:38	B1-4	SPIP	Fora	Driveway in front of the north facing side	
21:39	B1-1	SPIP	Call	Derived from foraging observations	
21:39	B1-1	SPIP	Fora	East side in garden above B1 position	
21:40	B1-4	SPIP	Call	Heard not seen	
21:46	B1-4	NOC	Call	Heard not seen	
21:48	B1-4	SPIP	Call	Derived from foraging observations	
21:48	B1-4	SPIP	Call	Derived from foraging observations	PSR
21:48	B1-4	SPIP	Fora	Driveway in front of the north facing side	

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:48	B1-4	SPIP	Fora	Driveway in front of the north facing side	PSR
21:51	B1-1	CPIP	Call	Heard not seen	
21:53	B1-1	CPIP	Call	Heard not seen	
21:54	B1-1	CPIP	Call	Heard not seen	
22:01	B1-4	MYOSP	Call	Heard not seen	
22:01	B1-4	MYOSP	Call	Derived from commuting observations	PSR
22:01	B1-4	MYOSP	Comm	West to east in front of north facing side. From over treeline with property to the west.	PSR
22:03	B1-3	SERO	Call	Heard not seen	
22:05	B1-3	CPIP	Call	Heard not seen, very faint and brief	
22:06	B1-3	CPIP	Call	Heard not seen, very faint and brief	
22:08	B1-3	CPIP	Call	Heard not seen, very faint and brief	
22:09	B1-3	SPIP	Call	Heard not seen	
22:10	B1-1	SPIP	Call	Heard not seen	
22:11	B1-3	CPIP	Call	Heard not seen	
22:11	B1-3	CPIP	Call	Heard not seen, loud	
22:12	B1-3	SPIP	Call	Heard not seen	
22:12	B1-3	CPIP	Call	Heard not seen	
22:13	B1-3	CPIP	Call	Heard not seen	
22:13	B1-3	NOC	Call	Heard not seen, loud	
22:13	B1-4	NOC	Call	Heard not seen	
22:14	B1-3	CPIP	Call	Heard not seen	
22:14	B1-1	NOC	Call	Heard not seen	
22:15	B1-3	NOC	Call	Heard not seen	
22:15	B1-3	CPIP	Call	Heard not seen	
22:16	B1-3	CPIP	Call	Heard not seen	
22:16	B1-4	CPIP	Call	Heard not seen	

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:17	B1-4	CPIP	Call	Derived from foraging observations	PSR
22:17	B1-4	CPIP	Fora	Driveway in front of the north facing side	PSR
22:21	B1-3	CPIP	Call	Heard not seen	
22:24	B1-3	CPIP	Call	Heard not seen	
22:25	B1-3	CPIP	Call	Heard not seen	
22:25	B1-1	CPIP	Call	Heard not seen	
22:26	B1-3	CPIP	Call	Heard not seen, very brief	
22:28	B1-3	CPIP	Call	Heard not seen, very brief	
22:29	B1-1	CPIP	Call	Heard not seen	
22:37	B1-4	CPIP	Call	Heard not seen	
22:38	B1-1	CPIP	Call	Heard not seen	
22:46	B1-4	CPIP	Call	Derived from foraging observations	PSR
22:46	B1-4	CPIP	Fora	Driveway in front of the north facing side	PSR

Appendix 5: 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 Senior Ecologist Zenobia - Jay Pattison BSc (Hons), (Accredited on Natalie Evans's Natural England Bat License) at BCT Level 3 competence. On-site survey work was led by Zenobia - Jay Pattison, BSc (Hons) at BCT Level 2 competence., supported by three additional Bat Surveyors and one unmanned cameras. 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°C at survey start; wind ≤ Beaufort Scale 3 (~5 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 2 (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). Where auto-ID was used, the system and version, validation steps, thresholds and manual verification criteria are documented in Appendix 5 (BCT 10.2.21).

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.

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.
- CIEEM (2017a) Guidelines for Ecological Report Writing (2nd ed.). CIEEM, Winchester.
- CIEEM (2019) Advice Note on the Lifespan of Ecological Reports and Surveys. CIEEM, Winchester.
- 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 6: 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 Senior Ecologist Zenobia - Jay Pattison BSc (Hons), (Accredited on Natalie Evans's Natural England Bat License) at BCT Level 2 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. Where required, additional assistants were present to monitor semi-manned positions to provide additional equipment security. Surveyor and equipment positions are shown on Appendix 1.

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 2 (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 the locations of features and their visibility. 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.