

Bat Emergence and Re-Entry Survey

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.

Survey Site

**7 Stoke Mead, Limply Stoke, Bath,
Somerset
BA2 7GX**

Client

Peter Watkins

Report Date

01/06/2026

Project

This report is prepared to inform a planning application for the proposal described as erection of single storey rear extension, along with demolition of existing extension.

Harvey Braun, MSc (Hons)

Assistant Ecologist

harveybraun@arbtech.co.uk

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Survey Author & Designer

Survey design and oversight were provided by Assistant Ecologist Harvey Braun MSc (Hons), at BCT Level 2 competence and Consultant Ecologist Bethany Swain BSc (Hons) Accredited Agent On Natural England Licence 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 (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.

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.

Requirement	Details
Wildlife Sensitive Lighting Strategy	A low impact lighting strategy will be adopted for the site during and post-development.

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

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 Collington Winter Environmental Ltd in March 2026. The survey assessed a single building onsite B1. As a result of an internal and external inspection, B1 was assessed as having low bat roosting habitat value. Consequently 1 survey was required to assess the presence/likely absence of roosting bats within B1. No evidence of bats recorded on site during PRA. The 5 potential features identified all comprise of discreet crevice-type features such as lifted tiles and missing mortar suitable for use by individual crevice-dwelling species. There are 2 suboptimal access points into the loft. Site provides features for individual roosting bats only. No evidence of bats recorded on site during PRA.

Context

Number of buildings on site

1

Number of buildings surveyed

1

Site Inspection

Loft space was measured to be 1.6m in height and lined with bitumen felt appearing in good condition with only a few gaps and tears present. No droppings were recorded nor other any evidence of bat roosting activity. No light spill from the eaves. Temperature was recorded above 25 degrees celsius with high humidity levels. The loft was consistent with the photos shown in the PRA. Site inspection was conducted by Georgina Rennie, BSc (Hons), MSc. CL17 Bat Survey Licence at BCT Level 2 competence.



Figure 1a: Loft Void



Figure 1b: Loft void

Proposed Works

Proposed Development

Current use of building(s)

B1 is currently used as a dwelling.

Proposed use of building(s)

B1: Dwelling (no change)

Structural changes to building(s)

B1: Increase roof pitch to main building (house), changes to fenestration. Demolition of existing rear extension and creation of new single storey rear extension with pitched roof and with a larger footprint.

Cosmetic/repair work

B1: N/a.

Type of permission required

Full planning permission

Proposed Plan

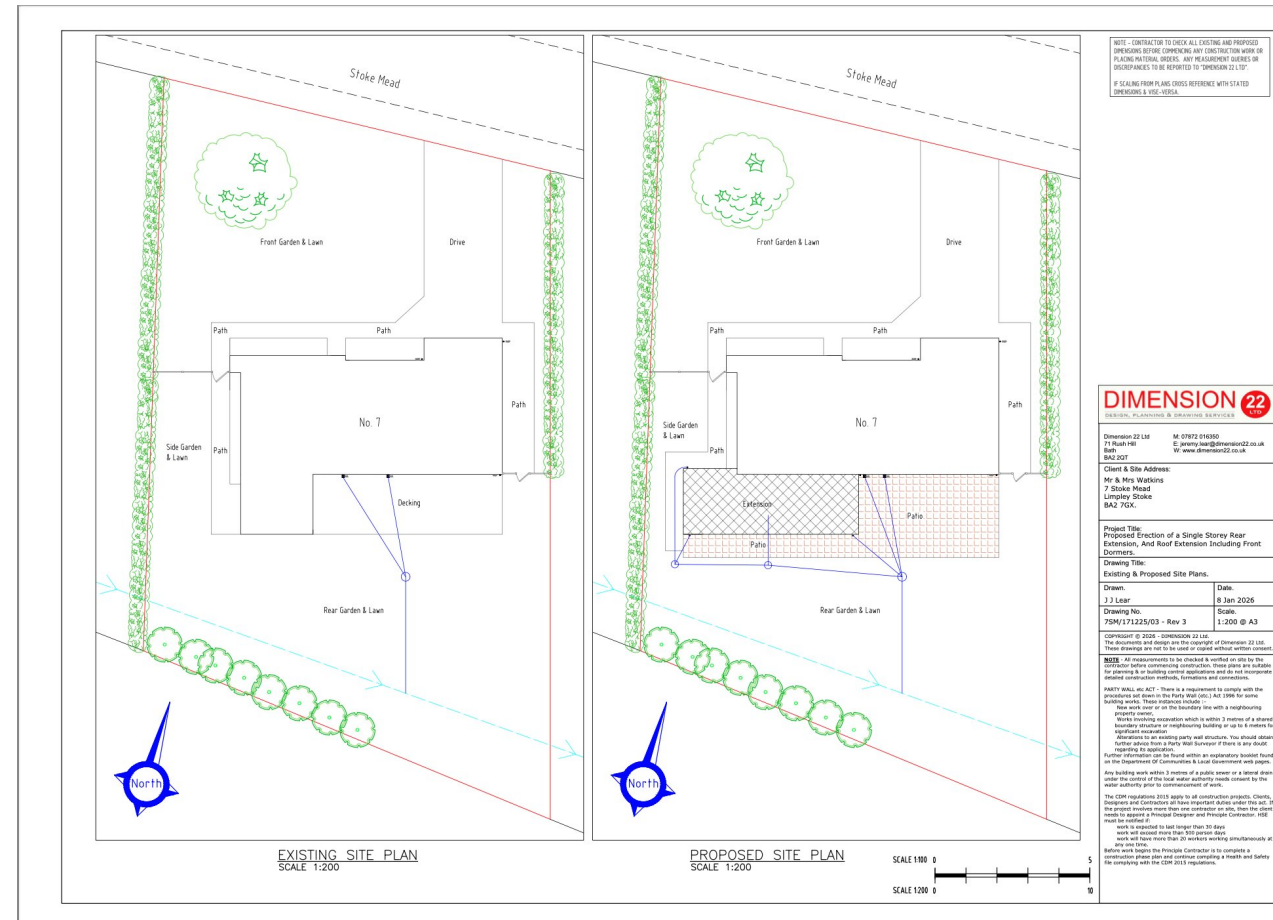


Figure 2: The proposed plans

Surveyors and Equipment

Surveyors

Name	BERS Experience	Bat Licence	BCT Competency
Harvey Braun	1 years	N/A	Level 2
Georgina Rennie	4 years	Level 1	Level 2

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

Equipment

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

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

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.

Position	Elevation	Visit 1
B1-1	Rear south	Harvey Braun
B1-2	West (semi-manned)	Harvey Braun
B1-3	North and East	Georgina Rennie (LS)
B1-4	North (semi-manned)	Georgina Rennie (LS)

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

Survey Visit Details and Limitations

Visit 1		
25/05/2026		
Start time	Sunset	End time
20:53	21:08	22:38
Start Conditions		
Temperature(°C): 27.3		
Relative humidity (%): 79.0		
Wind (km/h): 8.5		
End Conditions		
Temperature(°C): 19.9		
Relative humidity (%): 65.0		
Wind (km/h): 7.1		
Rain		
None		
Buildings surveyed		
1		
Trees surveyed		
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

Foraging activity was observed at all elevations of B1. Largely Soprano pipistrelles (low conservation species) were observed circling the whole building, foraging at the South and East of B1 in the back garden, East of B1, North of B1 in the front garden, and South west corner of B1.

Key Commuting Paths

Key Commuting activity was observed along West to east along hedgerow in back garden (Soprano pippistrelle) and South to north (east of B1) (Soprano pippistrelle). Other commuting activity was observed around B1 (North to south) (Soprano pippistrelle), West to east in front of B1 (Soprano pippistrelle), and East to west over rear extension (Soprano pippistrelle), High North West to South East above B1 (Common Noctule).

Impacts on Foraging / Commuting Bats

There will be some impact on foraging/commuting bats as the new development may increase lighting which will affect commuting paths and foraging areas.

Hibernation suitability

The building (B1) is considered to provide low hibernation suitability. Low risk habitat includes a small number of lifted tiles and only 2 suboptimal access points into the loft void. Habitat beneath roof tiles cannot be surveyed and the good condition of the intact bitumen felt prevents access from lifted tiles to loft void. No evidence of bat presence/activity was identified within the loft space during the internal visits completed in March 2026 and May 2026.

Other Observations and Impacts

No further impacts are anticipated.

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

Foraging and commuting bats could be impacted by additional lighting on site which can affect resources for the local population. Only common and widespread species were identified on site, therefore no impacts at population level are anticipated. Impacts are at site level only.

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 (2023).

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.

Version Control and Copyright

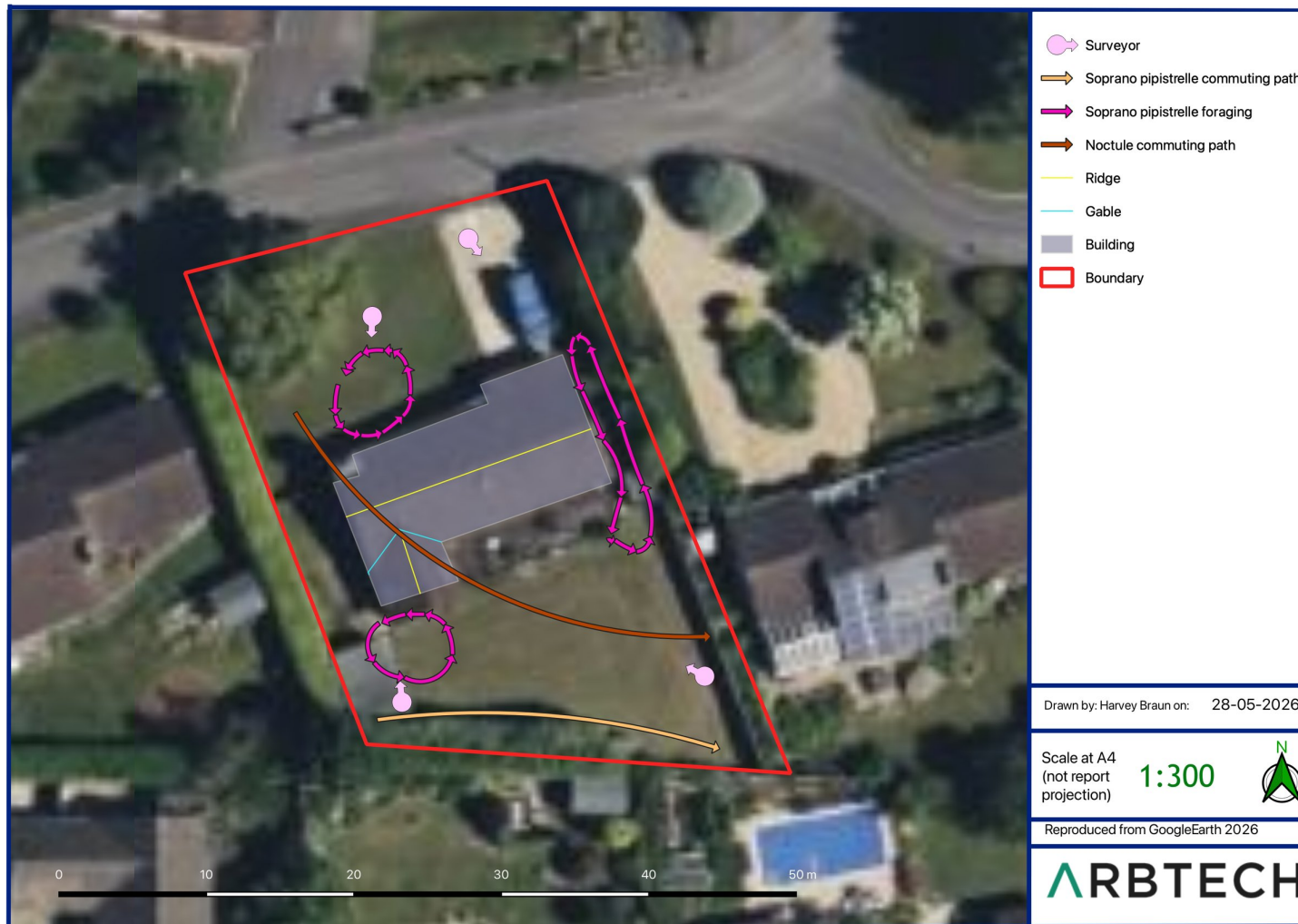
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Version Control

Status	Issue	Name	Date
Draft	0.1	Harvey Braun, MSc (Hons), Assistant Ecologist	01/06/2026
Review	0.2	Bethany Swain, BSc (Hons) [Accredited Agent on Natural England Licence] and BCT competency level 2, Consultant Ecologist	01/06/2026
Final	1.0	Harvey Braun, MSc (Hons), Assistant Ecologist	01/06/2026

Appendix 1: BERS plan



Appendix 2: Additional Site Inspection Images



Loft void

Appendix 3: Surveyor Photos



V1 B1-1 surveyor photo



V1 B1-2 surveyor photo



V1 B1-3 surveyor photo



V1 B1-1 darkest point image



V1 B1-2 darkest point image



V1 B1-3 darkest point image



V1 B1-4 surveyor photo



V1 B1-4 darkest point image

Appendix 4: Summary of Call Data

Species	Visit 1	Total
Soprano pipistrelle	22	22
Common noctule	4	4
Common pipistrelle	3	3
Soprano pipistrelle x2	2	2
Brown long-eared bat	1	1
Myotis sp.	1	1
Soprano pipistrelle x3	1	1

Appendix 5: Raw Survey Data Log

Pos - Position **Spp** - Species **Act** - Activity **Emer** - Emergence **Fora** - Foraging **Comm** - Commuting **PSR** - Post-survey result **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
21:22	B1-1	SPIP	Call	Derived from commuting observations	PSR
21:22	B1-1	SPIP	Comm	West to east along hedgerow in back garden	PSR
21:33	B1-1	SPIP	Call	Derived from commuting observations	PSR
21:33	B1-1	SPIP	Comm	West to east along hedgerow in back garden	PSR
21:34	B1-2	SPIP	Call		PSR
21:34	B1-2	SPIP	Call	Derived from commuting observations	PSR
21:34	B1-2	SPIP	Comm	East to west over rear extension	PSR
21:37	B1-1	NOC	Call	Derived from commuting observations	PSR
21:37	B1-3	SPIP	Call	Derived from commuting observations	
21:37	B1-3	NOC	Call	Derived from commuting observations	
21:37	B1-2	NOC	Call	HNS	PSR
21:37	B1-1	NOC	Comm	High North West to South East above B1	PSR
21:37	B1-3	SPIP	Comm	South to north (east of B1)	
21:40	B1-2	SPIP	Call	Derived from foraging observations	PSR
21:40	B1-2	SPIP	Fora	South west corner of B1	PSR
21:41	B1-1	SPIP	Call	Derived from foraging observations	PSR
21:41	B1-3	BLE	Call	Derived from foraging observations	
21:41	B1-3	SPIP	Call	Derived from commuting observations	

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:41	B1-1	SPIP	Fora	South and East of B1 in the back garden	PSR
21:41	B1-3	BLE	Fora	East of B1	
21:41	B1-3	SPIP	Comm	South to north (east of B1)	
21:42	B1-3	SPIP	Call	Derived from commuting observations	
21:42	B1-3	SPIP	Call	Derived from commuting observations	
21:42	B1-3	SPIP	Comm	South to north (east of B1)	
21:42	B1-3	SPIP	Comm	South to north (east of B1)	
21:43	B1-3	Soprano pipistrelle x2	Call	Derived from foraging observations	
21:43	B1-3	Soprano pipistrelle x2	Fora	East of B1	
21:44	B1-3	SPIP	Call	Derived from foraging observations	
21:44	B1-2	SPIP	Call	Derived from foraging observations	PSR
21:44	B1-3	SPIP	Fora	East of B1	
21:44	B1-2	SPIP	Fora	South west corner of B1	PSR
21:44	B1-2	SPIP	Fora	South west corner of B1	PSR
21:45	B1-1	CPIP	Call	HNS	PSR
21:45	B1-3	SPIP	Call	Derived from commuting observations	
21:45	B1-3	SPIP	Comm	Around B1 (North to south)	

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:48	B1-3	SPIP	Call	Derived from commuting observations	
21:50	B1-3	SPIP	Call	Derived from foraging observations	
21:50	B1-3	SPIP	Fora	North of B1 in the front garden	
21:51	B1-3	SPIP	Call	Derived from commuting observations	
21:51	B1-3	SPIP	Comm	Around B1 (North to south)	
21:52	B1-3	Soprano pipistrelle x2	Call	Derived from foraging observations	
21:52	B1-3	SPIP	Call	Derived from foraging observations	
21:52	B1-3	SPIP	Fora	North of B1 in the front garden	
21:52	B1-3	Soprano pipistrelle x2	Fora	Circling whole building	
21:55	B1-1	SPIP	Call	Derived from foraging observations	PSR
21:55	B1-3	SPIP	Call	Derived from foraging observations	
21:55	B1-1	SPIP	Fora	South and East of B1 in the back garden	PSR
21:55	B1-3	SPIP	Fora	Circling whole building	
22:02	B1-3	NOC	Call	Heard not seen	
22:03	B1-3	Soprano pipistrelle x3	Call	Derived from commuting observations	

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:03	B1-3	Soprano pipistrell e x3	Comm	West to east in front of B1	
22:10	B1-2	CPIP	Call	HNS	PSR
22:13	B1-3	SPIP	Call	Derived from commuting observations	
22:13	B1-2	MYOSP	Call	HNS	PSR
22:16	B1-3	SPIP	Call	Derived from commuting observations	
22:16	B1-3	SPIP	Comm	West to east in front of B1	
22:21	B1-2	SPIP	Call	Derived from foraging observations	PSR
22:21	B1-2	SPIP	Fora	South west corner of B1	PSR
22:22	B1-3	CPIP	Call	HNS	

Appendix 6: General Methodology

BAT EMERGENCE AND RE-ENTRY SURVEY METHODOLOGY — GENERAL

(Applies to all BERS — to be included in every report alongside the relevant survey-type methodology)

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) Accredited Agent On Natural England Licence, at BCT Level 2 competence. On-site survey work was led Assistant Ecologist Harvey Braun MSc (Hons), at BCT Level 2 competence, supported by 1 additional Bat Surveyor(s). Bat Surveyor Georgina Rennie, BSc (Hons), MSc. CL17 Bat Survey Licence at BCT Level 2 competence 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 visit was timed within the core May–August survey window wherever feasible.

Survey dates, start/end times, and sunset/sunrise times are provided in Table 5.

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 Table 5.

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 3 (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 7 (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.

- 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.
- 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 7: Survey Methodology

BAT EMERGENCE SURVEY METHODOLOGY — HYBRID NVA/ECOLOGIST SURVEY

(Semi-manned and manned approach — to be used alongside the General Methodology)

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 Assistant Ecologist Harvey Braun MSc (Hons), at BCT Level 2 competence and Consultant Ecologist Bethany Swain Bsc (Hons) Accredited Agent On Natural England Licence at BCT Level 2 competence. 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 3 (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. 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.