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

Woodside, Pear Tree Lane, Shorne, Gravesend, Gravesham, Kent DA12 3JT

Client

Mr Raj Sakaria

Report Date

12/08/2026

Project

This report is prepared to inform a planning application for the proposal described as "The erection of a two-storey rear extension with balcony to first floor; single storey side extensions, and a two-storey front extension with roof lantern and 3 roof lights to main roof" [20251086].

Elodie Noyes-Gouan, BSc (Hons)

Consultant Ecologist

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Contents

Executive Summary 1

Site Context and Background 2

Proposed Works 3

Surveyors and Equipment 4

Surveyor Positions 5

Survey Visit Details 6

Limitations 6

Emergence Results 7

Roosts and Impacts 8

General Observations & Impacts 9

Requirements & Enhancements 10

Version Control and Copyright 13

Appendices 14

Survey Author & Designer

Survey design and oversight were provided by Consultant Ecologist Elodie Noyes-Gouan BSc (Hons), (Accredited on Craig Williams's Natural England Bat License No. 2025-86119-2025-BAT) 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.

One roost was identified during the course of this survey. 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 Mitigation Class 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 BMCL is not submitted by 29/10/2026 a material changes check will be required. If the BMCL is not submitted by 01/05/2027 updated dusk surveys may be required. The BMCL 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.
BRD	Due to the presence of bat roosts on site, local bat records will need to be obtained to inform the licence application.
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 may be required. The level of survey effort will depend on the specific circumstances of the site.

Site Context and Background

Background

B1 was assessed to be of moderate value during the initial Preliminary Roosting Assessment (Arbtech, 2026). The loft is well-sealed, though the clay tiles were noted as optimal features for roosting.

Context

Number of buildings on site

1

Number of buildings surveyed

1

Site Inspection

The inspection of the void was undertaken one hour before the second emergence survey, by Elodie Noyes-Gouan BSc (Hons), Consultant Ecologist. No evidence of bats was observed within the loft space.

Figure 1a: Void 1

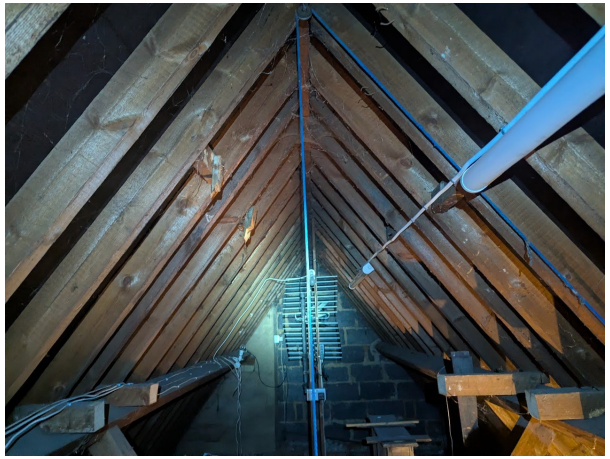

Figure 1b: Void 1

Proposed Works

Proposed Development

Current use of building(s)

B1 is currently used as a dwelling.

Proposed use of building(s)

B1: N/A.

Structural changes to building(s)

B1: N/A.

Cosmetic/repair work

B1: N/A.

Type of permission required

Full planning application

Proposed Plan

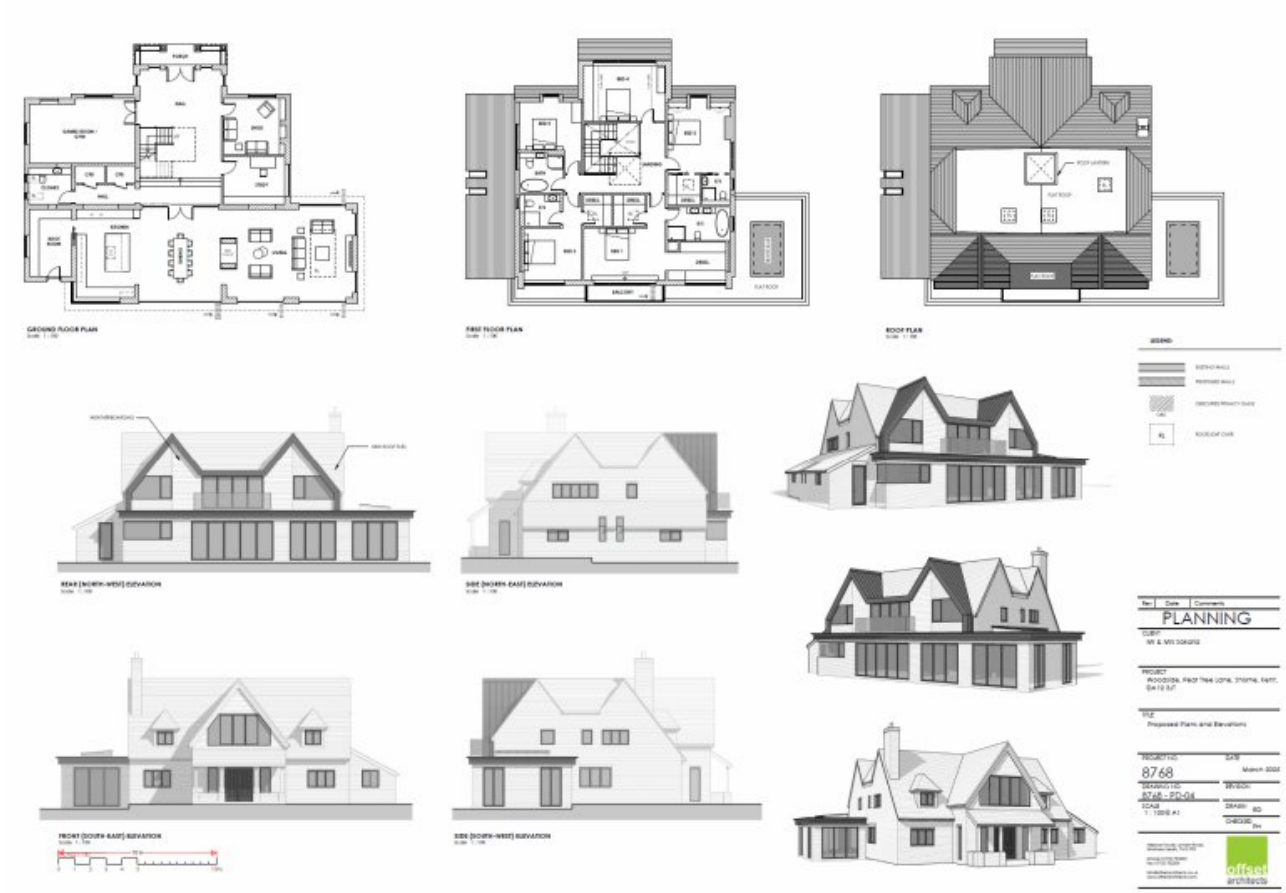

Figure 2: The proposed plans

Surveyors and Equipment

Surveyors

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

Name	BERS Experience	Bat Licence	BCT Competency
Harry White	1 years	N/A	Level 1
Elodie Noyes-Gouan	5 years	N/A	Level 2
Inez Daly	4 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	Visit 3
Night Vision Aid	Nightfox Whisker	2	3	3
Additional illumination	Nightfox XB5 PRO	2	3	3
Bat detector	Wildlife Acoustics Echo Meter Touch 2	2	3	2
Bat detector	Magenta Electronics Bat 4	2	2	2
Two-way radio	BAOFENG FV-880E two-way radio (or similar)	2	2	2
Bat detector	Titley Chorus Static Bat Detector	-	1	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
B1-1	southeast and southwest	Elodie Noyes-Gouan (LS)	Elodie Noyes-Gouan (LS)	Elodie Noyes-Gouan (LS)
B1-2	northwest and northeast	Harry White	Inez Daly	Inez Daly
B1-3	northeast (semi-manned)	-	Elodie Noyes-Gouan (LS)	Elodie Noyes-Gouan (LS)

Survey Visit Details and Limitations

Visit 1
09/06/2026

Start time	Sunset	End time
20:58	21:13	22:43

Start Conditions
Temperature(°C): 12.0
Relative humidity (%): 70.0
Wind (km/h): 2.0

End Conditions
Temperature(°C): 11.1
Relative humidity (%): 81.0
Wind (km/h): 1.0

Rain
None

Buildings surveyed
1

Trees surveyed
N/A

Visit 2
06/07/2026

Start time	Sunset	End time
21:03	21:18	22:48

Start Conditions
Temperature(°C): 26.3
Relative humidity (%): 28.0
Wind (km/h): 3.0

End Conditions
Temperature(°C): 22.1
Relative humidity (%): 53.0
Wind (km/h): 2.0

Rain
None

Buildings surveyed
1

Trees surveyed
N/A

Visit 3
29/07/2026

Start time	Sunset	End time
20:37	20:52	22:22

Start Conditions
Temperature(°C): 23.7
Relative humidity (%): 43.0
Wind (km/h): 1.0

End Conditions
Temperature(°C): 20.7
Relative humidity (%): 78.0
Wind (km/h): 0.0

Rain
None

Buildings surveyed
1

Trees surveyed
N/A

Limitations

There are no limitations associated with this survey.

Emergence Results

Findings

Summary of all recorded emergences

Emergences were recorded for building B1. One distinct species was recorded emerging; Common pipistrelle.

Full details of emergences, including times and species, can be found in Appendix 4.

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 - B1	Beneath hanging tile at the northwest elevation	Common pipistrelle	-	-	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 - B1	Beneath hanging tile at the northwest elevation	Hanging tile	Day roost	Common pipistrelle	1	Destruction	Site

Images of roosts 1 are shown in figure 3a below.

Figure 3a: Roost 1 (B1)

General Observations & Impacts

Findings & Impacts

Summary of all other observations and impacts

Key Foraging Areas

Bats were most often viewed foraging within the vegetated garden to the northwest of B1.

Key Commuting Paths

Commuting activity of common pipistrelles was observed along west to east, north of B1, south to southwest, south of B1 and southeast to southwest, south of B1.

Commuting activity of noctules was observed southeast to northeast, east of B1.

Impacts on Foraging / Commuting Bats

There will be no impacts on foraging or commuting bats.

Hibernation suitability

The site does not offer any suitable hibernation habitat.

No further surveys required.

Other Observations and Impacts

A common pipistrelle was observed roosting underneath the hanging tiles on the northwestern elevation, before the 2nd survey commenced (06/07/2026).

Requirements & Enhancements

Requirements

Bat Licence

The BMCL will include (but are not limited to) the following measures:

- The installation of 1 bat box per species 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.
- 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).
- The bat roosts will be soft demolished by hand under supervision of the named ecologist or accredited agent. The ecologist will move any bats found to the bat box by gloved hand.

The BMCL will only include the bat species, numbers and roost types listed above. 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 bat box.

BMCLs 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 BMCL.

BRD

Due to the presence of bat roosts on site, local bat records will need to be obtained to inform the licence application.

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

Requirements Continued

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 Favorable Conservation Status (FCS) of the local bat population.
The BMCL will include (but are not limited to) the following measures:

- The installation of 1 bat box per species 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.
- 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).
- The bat roosts will be soft demolished by hand under supervision of the named ecologist or accredited agent. The ecologist will move any bats found to the bat box by gloved hand.

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BMCLs 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 BMCL.

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

Enhancements Continued

Bat Boxes Continued

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.

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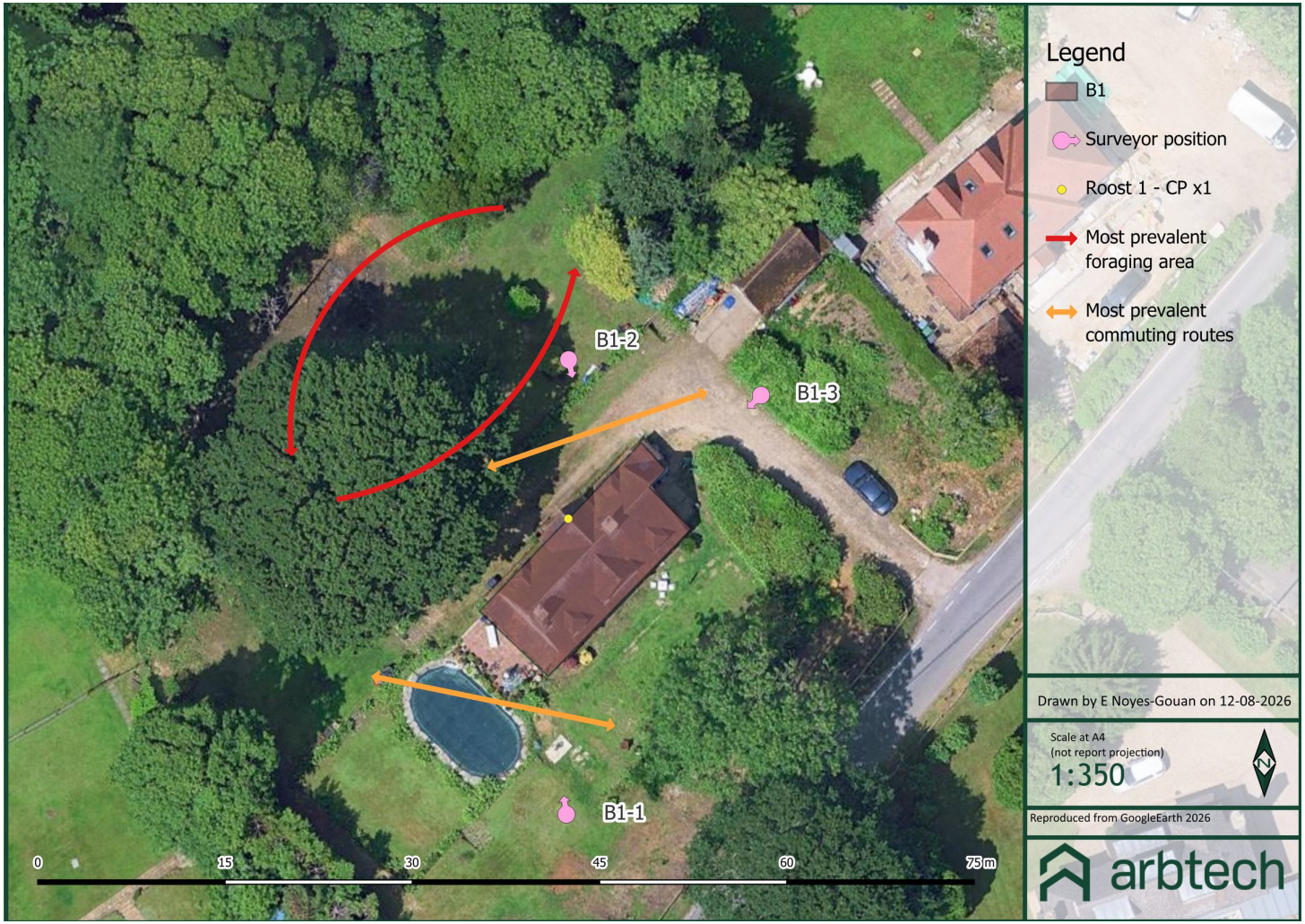
Version Control

Status	Issue	Name	Date
Draft	0.1	Elodie Noyes-Gouan, BSc (Hons), Consultant Ecologist	12/08/2026
Review	0.2	Harley Stone, BSc (Hons), Senior Ecologist	12/08/2026
Final	1.0	Elodie Noyes-Gouan, BSc (Hons), Consultant Ecologist	13/08/2026

Appendix 1: BERS plan



Appendix 2: Surveyor Photos

Note: Visit 1: The images for position B1-2 were unavailable due to Visit 1: The image for position B1-2 was unavailable due to technical difficulties post-review..

V1 B1-1 surveyor photo

V2 B1-1 surveyor photo

V3 B1-1 surveyor photo

V1 B1-1 darkest point image

V2 B1-1 darkest point image

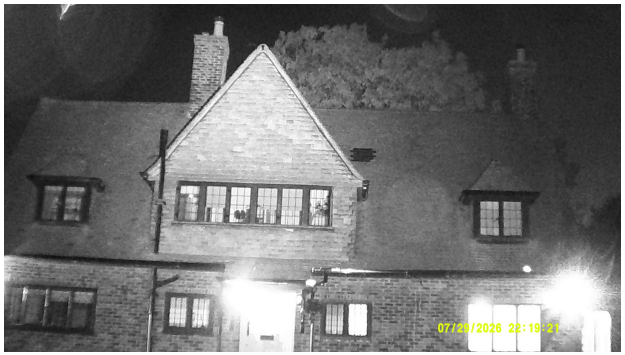
V3 B1-1 darkest point image

V1 B1-2 surveyor photo

V2 B1-2 surveyor photo

V3 B1-2 surveyor photo

V2 B1-2 darkest point image



V3 B1-2 darkest point image

V2 B1-3 surveyor photo

V3 B1-3 surveyor photo

V2 B1-3 darkest point image

V3 B1-3 darkest point image

Appendix 3: Summary of Call Data

Species	Visit 1	Visit 2	Visit 3	Total
Common pipistrelle	4	16	9	**29**
Soprano pipistrelle	6	6	2	**14**
Common noctule	2	-	2	**4**
Serotine	-	-	4	**4**

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** - Alcathoe **BECK** - Bechstein's bat **GME** - Greater mouse-eared bat

Visit 1

Time	Pos	Spp	Act	Notes	PSR
21:25	B1-2	NOC	Call	Heard not seen	
21:27	B1-2	SPIP	Call	Heard not seen feeding buzzing	
21:35	B1-2	SPIP	Call	Heard not seen feeding buzzing	
21:36	B1-2	NOC	Call	Heard not seen	
21:37	B1-2	CPIP	Call	Heard not seen feeding buzzing	
21:42	B1-2	CPIP	Call	Heard not seen feeding buzzing	
21:44	B1-2	SPIP	Call	Heard not seen feeding buzzing	
21:49	B1-2	CPIP	Call	Heard not seen feeding buzzing	
21:52	B1-2	SPIP	Call	Derived from foraging observations	
21:59	B1-2	SPIP	Call	Head not seen feeding buzzing	
22:02	B1-2	SPIP	Call	heard not seen feeding buzzing	
22:04	B1-2	CPIP	Call	heard not seen feed buzzing	

Visit 2

Time	Pos	Spp	Act	Notes	PSR
21:48	B1-1	CPIP	Call	Derived from foraging observations	
21:48	B1-1	CPIP	Fora	Northwest, within the vegetated garden	
21:50	B1-2	CPIP	Call	HNS	
21:50	B1-3	CPIP	Call	Heard not seen	PSR
21:51	B1-2	CPIP	Call	Derived from foraging observations	
21:51	B1-2	CPIP	Fora	Northwest, within the vegetated garden	
21:52	B1-2	CPIP	Call	Derived from foraging observations	
21:52	B1-2	CPIP	Fora	Northwest, within the vegetated garden	
21:53	B1-1	CPIP	Call	Heard not seen	
22:01	B1-2	CPIP	Call	HNS	
22:05	B1-2	CPIP	Call	HNS	
22:10	B1-2	SPIP	Call	HNS	
22:12	B1-2	SPIP	Call	HNS	
22:14	B1-2	CPIP	Call	HNS	
22:19	B1-2	CPIP	Call	HNS	
22:20	B1-1	SPIP	Call	Heard not seen	
22:22	B1-2	CPIP	Call	HNS	
22:25	B1-2	CPIP	Call	HNS	
22:25	B1-3	SPIP	Call	Heard not seen	PSR
22:26	B1-2	SPIP	Call	Derived from foraging observations	
22:26	B1-2	SPIP	Fora	Northwest, within the vegetated garden	
22:28	B1-2	SPIP	Call	HNS	

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:29	B1-2	CPIP	Call	HNS	
22:33	B1-2	CPIP	Call	HNS	
22:36	B1-3	CPIP	Call	Heard not seen	PSR
22:38	B1-2	CPIP	Call	HNS	

Visit 3

Time	Pos	Spp	Act	Notes	PSR
21:04	B1-2	NOC	Call	Derived from commuting observations	
21:04	B1-2	NOC	Comm	West to east, north of B1	
21:05	B1-3	CPIP	Call	Derived from commuting observations	PSR
21:05	B1-3	CPIP	Comm	southeast to northeast, east of B1	PSR
21:16	B1-1	CPIP	Comm	South to southwest, south fo B1	
21:18	B1-1	NOC	Call	Faint	
21:19	B1-2	CPIP	Call	Derived from foraging observations	
21:19	B1-2	CPIP	Fora	Northwest, within the vegetated garden	
21:31	B1-2	CPIP	Call	Derived from foraging observations	
21:31	B1-2	CPIP	Fora	Northwest, within the vegetated garden	
21:32	B1-2	CPIP	Call		
21:32	B1-1	CPIP	Comm	South to southwest, south fo B1	
21:42	B1-2	SPIP	Call		
21:44	B1-2	CPIP	Call	Derived from foraging observations	
21:44	B1-2	SPIP	Call	Derived from foraging observations	
21:44	B1-2	SPIP	Fora	Northwest, within the vegetated garden	
21:48	B1-2	CPIP	Call	Derived from emergence observations	
21:48	B1-2	CPIP	Emer	Northwest (Roost 1)	
21:49	B1-2	SERO	Call	Derived from foraging observations	
21:49	B1-2	SERO	Call		
21:49	B1-2	SERO	Fora	Northwest, within the vegetated garden	
21:51	B1-2	CPIP	Call		

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:51	B1-1	CPIP	Call	Derived from commuting observations	
21:51	B1-1	CPIP	Comm	Southeast to southwest, south of B1	
21:54	B1-3	CPIP	Call	Derived from commuting observations	PSR
21:54	B1-3	CPIP	Comm	southeast to northeast, east of B1	PSR
22:16	B1-2	SERO	Call		
22:17	B1-1	SERO	Call	Heard but not seen	

Appendix 5: General Methodology

BAT EMERGENCE AND RE-ENTRY SURVEY METHODOLOGY — GENERAL

1. Survey Aims and Approach

Dusk bat emergence 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 Elodie Noyes-Gouan BSc (Hons), (Accredited on Craig Williams's Natural England Bat License No. 2025-86119-2025-BAT) at BCT Level 2 competence. On-site survey work was led by Elodie Noyes-Gouan, BSc (Hons) at BCT Level 2 competence, supported by 2 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. Assistants worked under the supervision of the Project Surveyor and were responsible for securing 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 as part of the surveyor observations within the report (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.
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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 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 Consultant Ecologist Elodie Noyes-Gouan BSc (Hons), (Accredited on Craig Williams's Natural England Bat License No. 2025-86119-2025-BAT) 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 site complexity, number of features and safe deployment conditions for equipment. 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.