

Bat Emergence and Re-Entry Survey Report of Building B1b

This report is supplementary to the Preliminary Ecological Appraisal
By ProHort (2025) and the Interim report completed by Arbtech
Consulting Ltd (2025).

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

Survey Site

**Lordship Farm, Hollwell, Hitchin,
Hertfordshire
SG5 3SS**

Client

Netherdown (Herts) Ltd

Report Date

07/08/2026

Project

**This report is prepared to inform a planning
application for the proposal described as
Conversion of existing grade II listed buildings and
associated curtilage buildings, and erection of
four detached and semi-detached dwellings with
associated parking and gardens.**

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Assistant Ecologist

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Survey Author & Designer

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

Executive Summary

This report is an addendum to and must be read in conjunction with the Preliminary Ecological Appraisal completed by ProHort (2025) and the Interim BERS Report 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.

Four roosts were 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
BRD	Due to the presence of bat roosts on site, local bat records will need to be obtained to inform the licence application.
Bat Licence	A Bat Licence is required to legally permit the works. This requirement exists independently of the planning system, and is required whether planning permission is needed or not, and whether this is listed as a condition of planning or not.
Wildlife Sensitive Lighting Strategy	A low impact lighting strategy will be adopted for the site during and post-development.
Further Surveys	Further assessment of the full site is recommended. B1a, B1c, B1d, and B1f are all functionally linked to B1b and are assessed to have high suitability for roosting bats. Consequently, three emergence surveys are recommended to categorise the roosts within these buildings. B1g is assessed to have moderate suitability for roosting bats. Consequently, two surveys are recommended to assess the presence/likely absence of roosting bats. B2, B3 and B4 are assessed to have low suitability for roosting bats. Consequently, one survey is recommended to assess the presence/likely absence of roosting bats. B1e is assessed to have negligible suitability for roosting bats. Therefore, no further surveys are recommended for B1e.

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

Context

Number of buildings on site

10

Number of buildings surveyed

1

Reason for omitting buildings

Although Arbtech was not commissioned to complete the required surveys on these buildings, the remaining buildings have been recommended to have further surveys during the next active bat season.

Background

A Preliminary Ecological Appraisal (PEA) was completed by ProHort in 2025. The survey assessed two buildings onsite (*B1-B2*). As a result of an internal and external inspection, *B1* and *B2* were assessed as low habitat value. Consequently, one survey was required to assess the presence/likely absence of roosting bats. Arbtech Consulting Ltd was instructed to undertake Bat Emergence and Re-entry Surveys (BERS) of Buildings *B1* and *B2*, which comprise two functionally linked structures within a much larger building complex. *B2* was surveyed, however, *B1* could not be surveyed in full given that the view of it was largely inhibited by the position of surrounding buildings. This is a significant limitation due to the observed emergences and high activity levels, along with the likely connectivity with other buildings within the wider curtilage. This will need to be mitigated in further surveys by additional surveyors situated around the perimeter of the complex, and the utilisation of cameras and surveyors within the building, in order to ensure the roost locations can be sufficiently categorised for licensing purposes. An interim report was completed by Arbtech Consulting Ltd in 2025. Upon arriving on site it became apparent that the habitat value of *B1* and *B2* have been significantly undervalued in the PEA done by ProHort in 2025. *B1* and *B2* are both functionally linked to each other as well as being functionally linked to the rest of the buildings on site. An internal inspection of *B1* and *B2* was completed, as well as a check of the other buildings on site, given their proximity and links to *B1* and *B2*.

In this report, the buildings have been renumbered to reflect their connectivity; B1 has been designated as B1a, while B2 is now referred to as B1b.

Within B1a and B1b, which are adjoined, a number of droppings and moth wings were located scattered through the buildings. The droppings were crumble tested and confirmed to be bat. An updated internal inspection will be required in the 2026 season. Within B1a and B1b there are dozens of bird carcasses in varying stages of decay, as well as the floor being covered thick with bones. The mummified carcass of a fox was also discovered, as well as droppings, which included a number of berries and could likely be attributed to badger.

Regarding the wider curtilage of the site, some buildings were fenced off and not accessible but clearly opened into B1a and B1b. In open buildings to the north of the site, evidence of barn owl nesting was found including a number of broken eggshells, whitewashing, owl pellets, and barn owl feathers. Further piles of moth wings were found, as well as a large collection of bat droppings centralised in one of the smaller rooms within the complex. The dusk emergence survey and walkover of the buildings on site have indicated multiple roosts across multiple buildings, including what is likely to be maternity roosts of Brown Long-Eared bats (BLE) and Common Pipistrelles (CPIP). The PEA has mis-assigned habitat value to buildings B1a and B1b and has failed to consider the other interconnected buildings. B1a, B1b, B1c, B1d, and B1f have high habitat value, building B1g has moderate habitat value, B2, B3 and B4 have low habitat value and B1e has negligible habitat value. There is presently evidence of bat use in B1a and B1f. Further surveys are needed to understand bat roosting behaviour across the site, to identify all roost locations and to inform impact assessments and licensing requirements. The wider complex provides additional sheltered habitat, including areas of ruderal vegetation and evidence of decomposing animals, both of which are likely to support increased invertebrate abundance; in addition, the open but sheltered barn environment is likely to provide a relatively warm and protected microclimate in which flying insects may congregate. Bats are known to exploit such post-industrial and agricultural building complexes for sheltered foraging, and this was supported by the BERS observations of the evening, with common pipistrelles repeatedly using building B1c for foraging without being observed entering the building from outside. Common pipistrelles were also recorded consistently foraging within B1a, B1b and B1c, including relatively late into the survey period. It is therefore considered highly likely that gaps within the timber work and masonry of B1a and B1b provide suitable roosting opportunities, while the wider interconnected complex provides an environment through which bats can move, forage and potentially access alternative buildings without necessarily emerging externally at the locations or times typically expected during a conventional emergence survey. Consequently, a bat roosting within B1a could theoretically move internally through the complex.

Site Inspection

Further site inspections were completed on 16/07/2026 by Carly Preen BSc (Hons) MSc Consultant Ecologist, licence number 2024-12326-CL17-BAT. Since the previous assessment, the condition of B1a and B1b has deteriorated, with larger gaps developing within the external brickwork and significant deterioration and damage evident within the timber walls, increasing the availability of potential roosting features. Feeding remains and scattered bat droppings were also recorded throughout the buildings and the wider complex.

Two walkovers of the wider site were undertaken during the survey; however, the wider areas were not the principal focus of the BERS and activity elsewhere within the complex could therefore have been missed.

The wider complex shows substantial evidence of use by birds. Numerous discarded eggshells, whitewashing, and decomposing bird remains were recorded within several areas, indicating nesting and/or roosting use by at least one species and potentially several. A pair of kestrels *Falco tinnunculus* was observed leaving Building B2 during both site walkovers and subsequently remaining in the immediate vicinity, indicating potential nesting use of this building. Evidence of barn owl *Tyto alba* use from the recent season was also identified within the complex by way of owl pellets and feathers. Suitable nearby ledges were inspected at height using a ladder and no immediately observable evidence of an active nest was identified; however, it is important to recognise that the commissioned surveys related specifically to B1a and B1b. Although a precautionary inspection of the wider complex was undertaken, the survey effort and attention were necessarily concentrated on those two buildings, and the remainder of this extensive complex has not been subject to the level of systematic inspection that would be required to confidently establish the full extent of bat and nesting bird use across the site. All photos shown in Appendix 2.

Proposed Development

Current use of building(s)

All buildings on site are disused agricultural barns.

Proposed use of building(s)

B1a and B1b are to be converted into residential dwellings.
B1c-B1g, B2, B3 and B4 are to be demolished.

Structural changes to building(s)

B1a and B1b are to be converted into residential dwellings.
B1c-B1g, B2, B3 and B4 are to be demolished.

Cosmetic/repair work

B1a and B1b are to be converted into residential dwellings.
B1c-B1g, B2, B3 and B4 are to be demolished.

Type of permission required

Full planning application

Proposed Plan

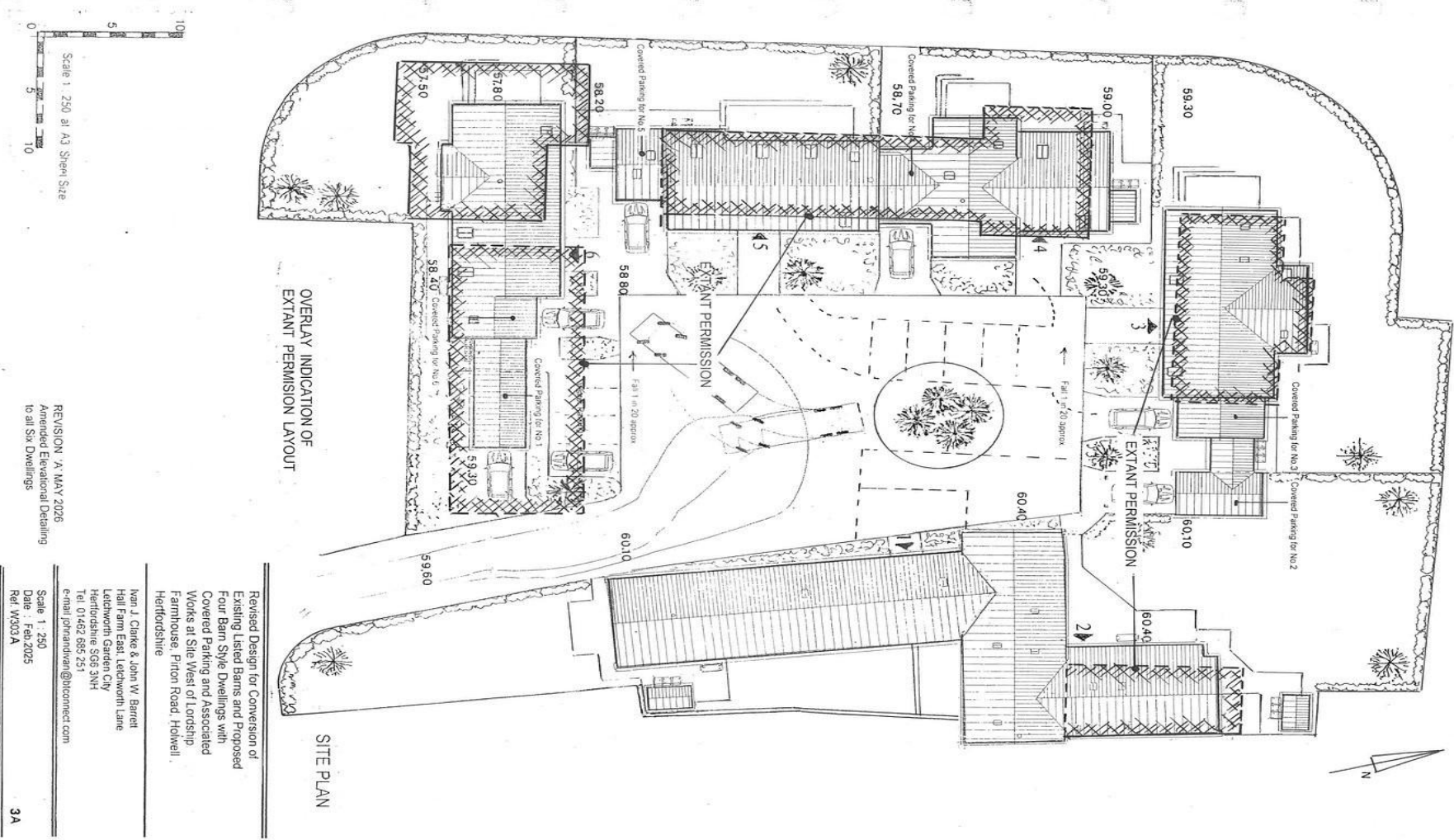


Figure 1: The proposed plans

Surveyors and Equipment

Surveyors

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

Name	BERS Experience	Bat Licence	BCT Competency
Erin Boothby	2 years	N/A	Level 2
Justine Rutland Tucker	1 years	N/A	Level 2
Megan Jefferson	2 years	N/A	Level 2
Carly Preen	8 years	Level 1	Level 2

Equipment

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

Category	Equipment	Count	
		Visit 2	Visit 3
Night Vision Aid	Nightfox Whisker	4	4
Additional illumination	Nightfox XB5 PRO	4	1
Bat detector	Wildlife Acoustics Echo Meter Touch 2	3	3
Bat detector	Magenta Electronics Bat 4	3	2
Two-way radio	BAOFENG FV-880E two-way radio (or similar)	3	4
Additional illumination	Nightfox Arc IR Floodlight	-	3
Bat detector	Titely Chorus Static Bat Detector	-	1
Bat detector	Batbox Duet	-	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 2	Visit 3
B1b-1	East	Justine Rutland Tucker	Megan Jefferson
B1b-2	South	Erin Boothby (LS)	Erin Boothby (LS)
B1b-3	West	Megan Jefferson	Carly Preen
B1b-4	Internal camera (semi-manned)	Erin Boothby (LS)	Erin Boothby (LS)

Survey Visit Details and Limitations

Visit 2			Visit 3		
27/05/2026			16/07/2026		
Start time	Sunset	End time	Start time	Sunset	End time
20:50	21:05	22:50	21:02	21:17	23:02
Start Conditions			Start Conditions		
Temperature(°C): 18.0			Temperature(°C): 20.4		
Relative humidity (%): 62.0			Relative humidity (%): 63.0		
Wind (km/h): 4.0			Wind (km/h): 6.0		
End Conditions			End Conditions		
Temperature(°C): 11.6			Temperature(°C): 17.7		
Relative humidity (%): 80.0			Relative humidity (%): 73.0		
Wind (km/h): 11.0			Wind (km/h): 7.8		
Rain			Rain		
None			None		
Buildings surveyed			Buildings surveyed		
1			1		
Trees surveyed			Trees surveyed		
N/A			N/A		

Limitations

All Visits

Restricted view of B1a - All positions

B1b was surveyed, however, B1a could not be surveyed in full given that the view of it was largely inhibited by the position of surrounding buildings. This is a significant limitation due to the observed emergences and high activity levels, along with the likely connectivity with other buildings within the wider curtilage. This will need to be mitigated in further surveys by additional surveyors situated around the perimeter of the complex, and the utilisation of cameras and surveyors within the building, in order to ensure the roost locations can be sufficiently categorised for licensing purposes.

Emergence Results

Findings

Summary of all recorded emergences

Emergences were recorded for building B1b. Two distinct species were recorded emerging; Common pipistrelle and Brown long-eared bat.

Full details of emergences, including times and species, can be found in Appendix 7.

Table 5: Number of emergences by species during these surveys

			Peak Counts		
Roost	Roost Location	Species	Visit 2	Visit 3	Total
1 – B1b	Unknown internal crevices	Common pipistrelle	21	38	59
2 – B1b	Unknown internal voids	Brown long-eared bat	-	8	8

Roosts and Impacts

Findings & Impacts

Reports on the roosts identified

Table 6: The roosts identified

Roost	Location	Access Point	Type	Species	Peak Count (2025)	Peak Count (2026)	Impact Level	Impact Scale
1 – B1b	Unknown internal crevices	Through open gaps between B1a and B1b and through the open doorway between B1b and B1c. Foraging inside B1b and then returning into B1a/B1c or exiting through the open barn doorway and open gaps on the south elevation of B1b.	Likely maternity roost	Common Pipistrelle	16	59	Destruction	Site
2 – B1b	Unknown internal void	Through open gaps between B1a and B1b and through the open doorway between B1b and B1c. Foraging inside B1b and then returning into B1a/B1c or exiting through the open barn doorway and open gaps on the south elevation of B1b.	Likely maternity roost	Brown Long-Eared	12	8	Destruction	Site
3 – B1b	Under timbers at the apex of the southern gable of B1b	Through gaps between the timbers.	Day roost	Common Pipistrelle	1	-	Destruction	Site
4 – B1b	Continuous foraging inside B1b, and perching on the wooden roof trusses to feed occasionally throughout the survey	From the open main barn doorway into B1b, from the open timber frames between B1a and B1b and through the open doorway between B1b and B1c.	Feeding roost	Brown Long-Eared	-	-	Destruction	Site

Roosts and Impacts (continued)

Roost 1 & 2 (B1b): The number provided in the above table signifies the number of bats seen exiting externally from B1b. There is no way to know if these same bats then entered from a different building, commuted internally and then exited externally again. Consequently, there is no possible way to accurately determine the number of bats utilising this building until a comprehensive set of Bat Emergence and Re-entry Surveys (BERS) has been conducted across all relevant buildings. This thorough assessment is essential, as it will provide the necessary data to evaluate the extent of bat activity and ensure that all potential roosting sites are adequately examined. Only through the completion of these surveys can we gain a clear understanding of the number of bats, behaviours and patterns within the specified environment.

Roost 1 (B1b): 16 emergences were identified during the 2025 survey.

Roost 2 (B1b): 12 emergences were identified during the 2025 survey.

Roost 3 (B1b): Roost 3 was identified as a bat roost during the 2025 survey. No emergences were recorded from this roost during the current survey; it is included on the basis of that previous identification.

Images of relating to roosts identified in this survey can be found in Appendix 4

Roosts and Impacts (continued)

Table 7: Roosts identified in previous surveys

Year	Roost	Location	Access Point	Type	Species	Peak Count
2025	1 – B1b	Unknown internal crevices	Through the open barn doorway and gaps between the wood panelling on the southern elevation	Maternity roost	Common pipistrelle	16
2025	2 – B1b	Unknown internal void	Through the open barn doorway	Maternity roost	Brown long-eared bat	12
2025	3 – B1b	Under timbers at the apex of the southern gable of B1b	Through gaps between the timbers	Day roost	Common pipistrelle	1

General Observations & Impacts

Findings & Impacts

Summary of all other observations and impacts

Key Foraging Areas

Foraging activity was observed in the trees south-east of B1b, in front of the south elevation of B1b and in between B1a and B1b on the south-east the buildings. Continuous foraging seen within B1b throughout both surveys by common pipistrelles. On visit 3 brown long-eared bats and natters bats were also observed foraging inside B1b. During a walk over of the site, bats were observed foraging within B1a and B1c. Myotis SP Identification is shown in Appendix 5.

Key Commuting Paths

Commuting activity was observed from east to west and west to east across the site in between B1b and B4, from B1b towards the south and from the west towards B1b and then to the south.

Impacts on Foraging / Commuting Bats

Foraging and commuting bats could be impacted by additional lighting on site which can affect resources for the local population. A wildlife sensitive lighting strategy will be adopted within the proposed development during and post-development. This should be designed in accordance with Guidance Note GN08/23 Bats and Artificial Lighting at Night (Institution of Lighting Professionals, 2023). The proposed development will result in the loss foraging habitat due to the buildings being demolished. High numbers of bats were recorded utilising the buildings for feeding. This could reduce the availability of foraging or commuting resources in the locality and could also disrupt dispersal corridors for bats leaving or returning to roosts in the wider area.

Other Observations and Impacts

One barn owl was seen emerging from the holes in the top of the south elevation of B1b. Evidence of owls was noted in B1a, B1f and B3. Numerous eggshells and different nests were noted to be scattered throughout the complex. A pair of suspected kestrels were observed leaving B2, travelling north, one was then observed perching in a nearby tree. Multiple pigeons seen roosting throughout the complex in every building.

The proposed development could result in the destruction or the disturbance and subsequent abandonment of active bird nests.

Requirements & Enhancements

Requirements & Enhancements

Requirements

Bat Licence

A bat licence is required for the proposed works. Recommendations for this cannot be advised on until a comprehensive set of Bat Emergence and Re-entry Surveys (BERS) has been conducted across all relevant buildings. This thorough assessment is essential, as it will provide the necessary data to evaluate the extent of bat activity and ensure that all potential roosting sites are adequately examined. Only through the completion of these surveys can we gain a clear understanding of the number of bats, species, behaviours and patterns within the specified environment.

BRD

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

Mitigation

Mitigation is required for the proposed works. Recommendations for this cannot be advised on until a comprehensive set of Bat Emergence and Re-entry Surveys (BERS) has been conducted across all relevant buildings. This thorough assessment is essential, as it will provide the necessary data to evaluate the extent of bat activity and ensure that all potential roosting sites are adequately examined. Only through the completion of these surveys can we gain a clear understanding of the number of bats, species, behaviours and patterns within the specified environment.

Hibernation Survey

Due to the presence of what appears to be a BLE maternity roost, hibernation will be assumed.

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 & Enhancements

Requirements Continued

Further surveys are recommended

Further assessment of the full site is recommended. B1a, B1c, Bd, and Bf are all functionally linked to B1b and are assessed to have high suitability for roosting bats. Consequently, three emergence surveys are recommended to categorise the roosts within these buildings. B1g is assessed to have moderate suitability for roosting bats. Consequently, two surveys are recommended to assess the presence/likely absence of roosting bats. B2, B3 and B4 are assessed to have low suitability for roosting bats. Consequently, one survey is recommended to assess the presence/likely absence of roosting bats. B1e is assessed to have negligible suitability for roosting bats. Therefore, no further surveys are recommended for B1e.

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 per building at the site will provide additional roosting habitat for bats. The bat boxes 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 boxes will be a specification suitable for crevice dwelling species.

Cavity Bat Box

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

Planting - Fruit trees and hedgerows

Habitat should be retained where possible. Planting of native fruit bearing tree and hedgerow planting will increase opportunities for foraging and commuting bats.

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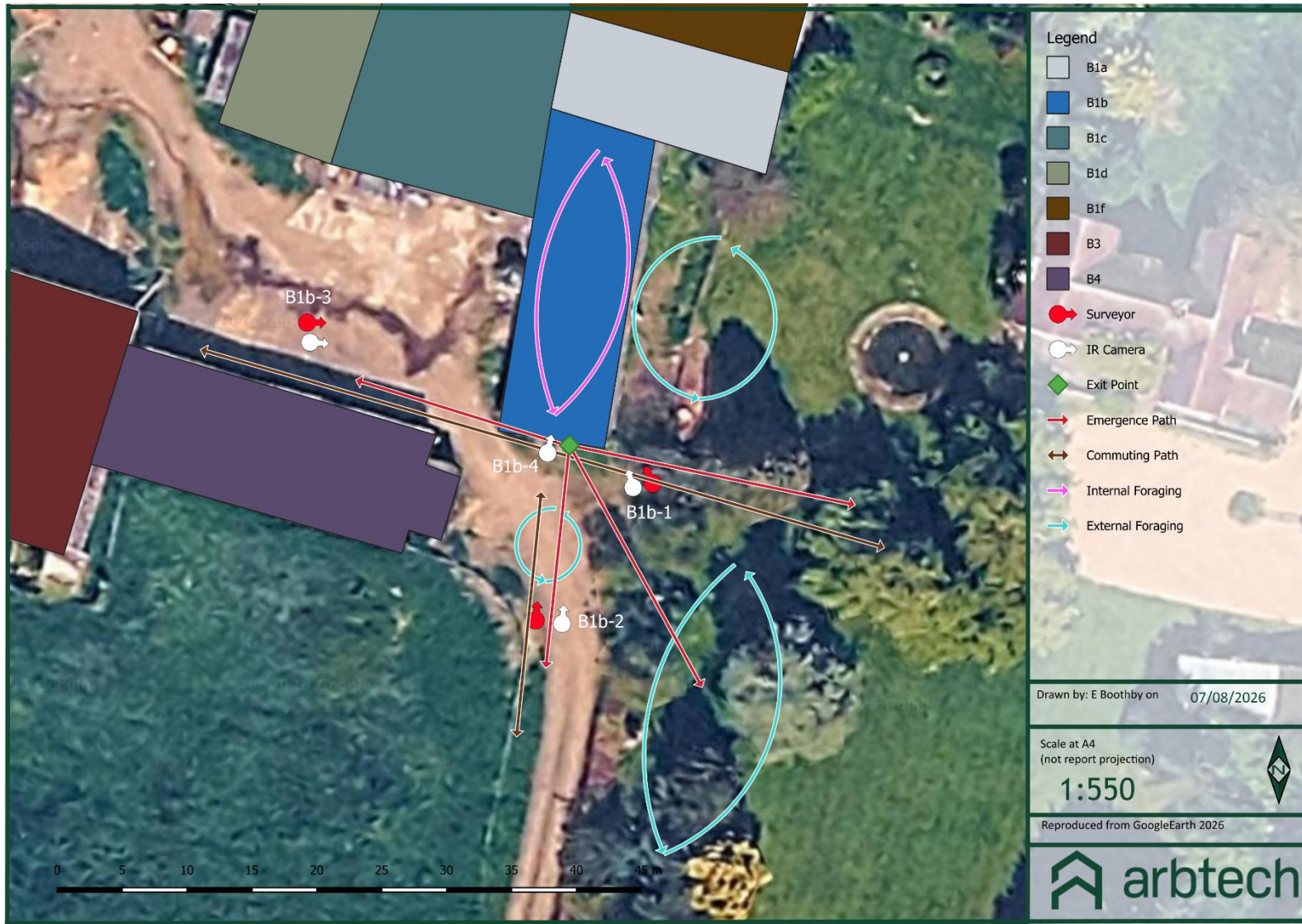
Version Control

Status	Issue	Name	Date
Draft	0.1	Erin Boothby, BCT competency level 2, Assistant Ecologist	07/08/2026
Review	0.2	Bethany Swain, BSc (Hons) (Accredited Agent on Natural England Licence) and BCT competency level 2, Consultant Ecologist	14/08/2026
Draft	0.3	Erin Boothby, BCT competency level 2, Assistant Ecologist	16/08/2026
Review	0.4	Bethany Swain, BSc (Hons) (Accredited Agent on Natural England Licence) and BCT competency level 2, Consultant Ecologist	17/08/2026
Draft	0.5	Erin Boothby, BCT competency level 2, Assistant Ecologist	17/08/2026
Review	0.6	Natalie Evans BA (Hons), MA, MRSB, Principal Consultant, Bat Licence Lead	21/08/2026
Final	1.0	Erin Boothby, BCT competency level 2, Assistant Ecologist	28/08/2026

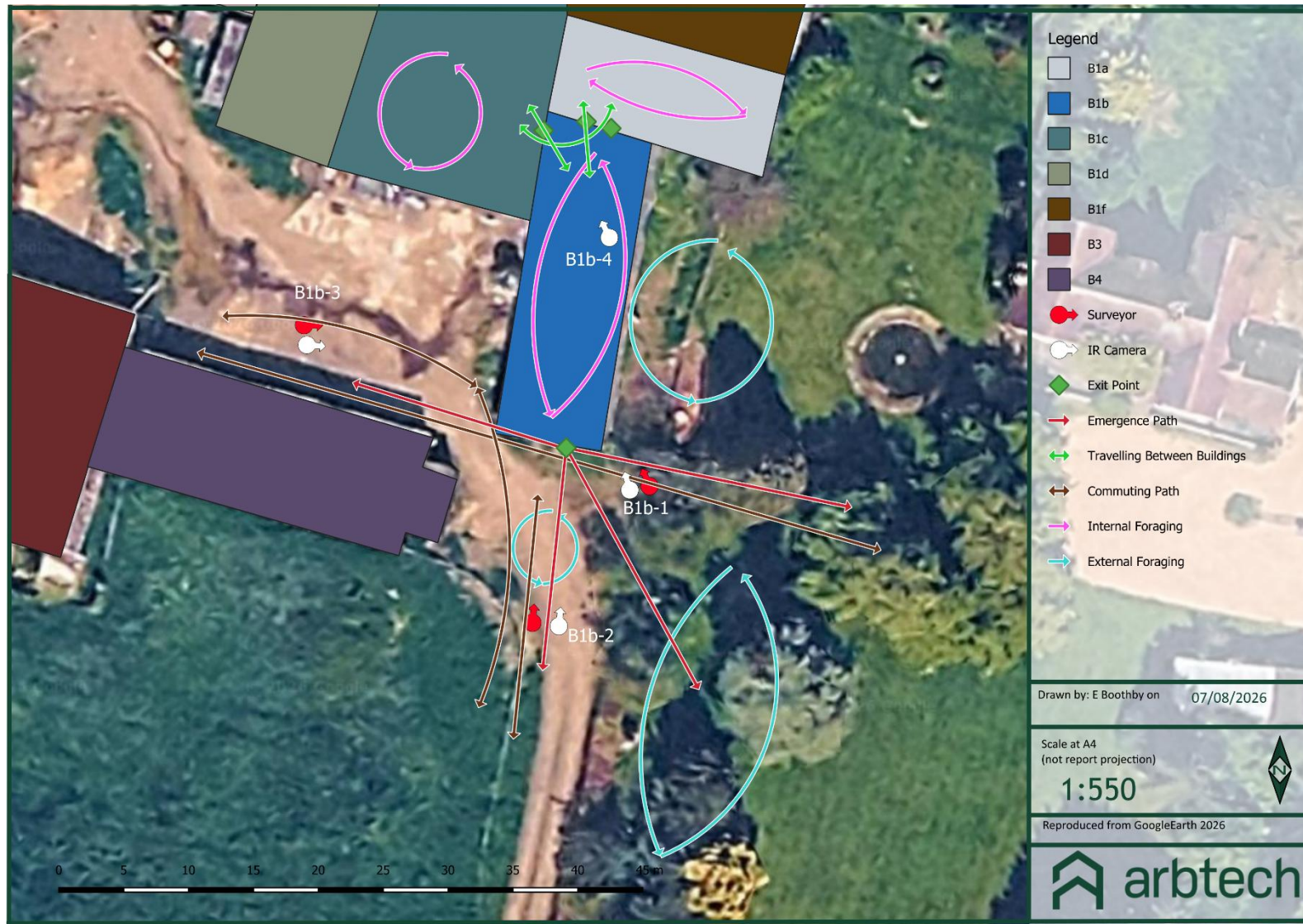
Appendix 1: BERS plan



Plan 1: Site Map



Plan 2: Visit 2 Activity Map



Plan 3: Visit 3 Activity Map

Appendix 2: Additional Site Inspection Images



Internal of B1a



Internal of B1b



Gaps present throughout buildings



Owl pellets and whitewashing



Fresh feeding remains



Pile of old and some new droppings



Scattered droppings



Pigeon nesting



Discarded egg

Appendix 3: Surveyor Photos



V2 B1b-1 surveyor photo



V3 B1b-1 surveyor photo



V2 B1b-2 surveyor photo



V2 B1b-1 darkest point image



V3 B1b-1 darkest point image



V2 B1b-2 darkest point image



V3 B1b-2 surveyor photo



V2 B1b-3 surveyor photo



V3 B1b-3 surveyor photo



V3 B1b-2 darkest point image



V2 B1b-3 darkest point image



V3 B1b-3 darkest point image



V2 B1b-4 surveyor photo



V3 B1b-4 surveyor photo



V2 B1b-4 darkest point image



V3 B1b-4 darkest point image

Appendix 4: Additional Roost Images



Roost 1 & 2 – External entry and exit point



Roost 1& 2 – Internal entry and exit points



Roost 4 - Perch areas

Appendix 5: Myotis SP Identification

Natterer's bat, (*Myotis nattereri*). Calls were most consistent with Natterer's based on their very broad bandwidth, high start frequencies, low terminal frequencies around 20 kHz and steep FM structure with no pronounced knee and only a slight heel. Species-level identification remains probable rather than definitive due to acoustic overlap within *Myotis* and the internal recording environment.

Internal *Myotis* activity was recorded during the emergence survey, but no definitive emergence point was observed and no entry into the building was seen beforehand. The activity may therefore represent an internal roost or internal night-time flight/foraging. If suitable droppings are available, DNA analysis should be undertaken to seek species confirmation; otherwise, any future licensing assessment should take the probable Natterer's identification into account.

The probable species identification was reviewed and confirmed by Rhianna Trim BSc (Hons), MSc, Consultant Ecologist and Level 1 and Level 2 Accredited Agent under Natalie Evans' Natural England bat licence. Rhianna has three seasons of professional bat acoustic-analysis experience, over three years' routine use of Kaleidoscope, and relevant BatAbility CPD in *Myotis* acoustic identification, call structure, clutter effects and manual verification of automated classifications.

Appendix 6: Summary of Call Data

Species	Visit 1	Visit 2	Total
Common pipistrelle	88	198	286
Brown long-eared bat	3	41	44
Common noctule	1	6	7
Soprano pipistrelle	3	3	6
Likely Natterer's bat	-	5	5
Leisler's noctule	1	-	1

Appendix 7: 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 2

Time	Pos	Spp	Act	Notes	PSR
21:23	B1b-2	CPIP	Call	Derived from re-entry observations	
21:23	B1b-1	CPIP	Call		
21:23	B1b-2	CPIP	Re-ent	From the east into the building (Roost 1)	
21:26	B1b-2	CPIP	Call	Derived from re-entry observations	
21:26	B1b-2	CPIP	Call	Derived from re-entry observations	
21:26	B1b-1	CPIP	Call		
21:26	B1b-3	CPIP	Call	faint	
21:26	B1b-2	CPIP	Emer	East (Roost 1)	
21:26	B1b-2	CPIP	Emer	East (Roost 1)	
21:27	B1b-2	CPIP	Call	Derived from emergence observations	
21:27	B1b-2	CPIP	Call	Derived from emergence observations	
21:27	B1b-2	CPIP	Call	Derived from emergence observations	
21:27	B1b-1	CPIP	Call		
21:27	B1b-3	CPIP	Call	Faint	
21:27	B1b-2	CPIP	Emer	East (Roost 1)	
21:27	B1b-2	CPIP	Emer	South (Roost 1)	
21:27	B1b-2	CPIP	Emer	East (Roost 1)	
21:28	B1b-2	CPIP	Call	Derived from emergence observations	
21:28	B1b-3	CPIP	Call	Faint	
21:28	B1b-2	CPIP	Emer	East (Roost 1)	
21:29	B1b-2	CPIP	Call	Derived from emergence observations	
21:29	B1b-2	CPIP	Call	Derived from emergence observations	

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
21:29	B1b-3	CPIP	Call	faint	
21:29	B1b-2	CPIP	Emer	East (Roost 1)	
21:29	B1b-2	CPIP	Emer	East (Roost 1)	
21:30	B1b-2	CPIP	Call	Derived from emergence observations	
21:30	B1b-2	CPIP	Call	Derived from emergence observations	
21:30	B1b-2	CPIP	Call	Derived from emergence observations	
21:30	B1b-3	CPIP	Call	faint	
21:30	B1b-2	CPIP	Emer	South (Roost 1)	
21:30	B1b-2	CPIP	Emer	East (Roost 1)	
21:30	B1b-2	CPIP	Emer	East (Roost 1)	
21:31	B1b-2	CPIP	Call	Derived from commuting observations	
21:31	B1b-3	CPIP	Call	Derived from commuting observations	
21:31	B1b-2	CPIP	Comm	From east to west across the site in between B1b and B4	
21:31	B1b-3	CPIP	Comm	North to south, between B1b and B4	
21:34	B1b-1	CPIP	Call	3 separate pips flying around each other	
21:35	B1b-2	CPIP	Call	Derived from emergence observations	
21:35	B1b-2	CPIP	Call	Derived from emergence observations	
21:35	B1b-2	CPIP	Emer	East (Roost 1)	
21:35	B1b-2	CPIP	Emer	East (Roost 1)	
21:36	B1b-2	CPIP	Call	Derived from emergence observations	
21:36	B1b-1	CPIP	Call		

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Time	Pos	Spp	Act	Notes	PSR
21:36	B1b-2	CPIP	Emer	East (Roost 1)	
21:38	B1b-1	CPIP	Call		
21:39	B1b-2	CPIP	Call	Derived from commuting observations	
21:39	B1b-1	CPIP	Call		
21:39	B1b-2	CPIP	Comm	From west to east across the site in between B1b and B4	
21:40	B1b-3	CPIP	Call	Derived from commuting observations	PSR
21:40	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	
21:43	B1b-1	CPIP	Call	Derived from foraging observations	
21:43	B1b-1	SPIP	Call	continuous activity for 3 minutes	
21:43	B1b-3	CPIP	Call		
21:43	B1b-1	CPIP	Fora	In between B1a and B1b on the south-east	
21:44	B1b-2	CPIP	Call	Continuous activity for 7 minutes	
21:44	B1b-3	CPIP	Call		
21:45	B1b-2	CPIP	Call	Derived from emergence observations	
21:45	B1b-2	CPIP	Call	Derived from emergence observations	
21:45	B1b-1	CPIP	Call		
21:45	B1b-2	CPIP	Emer	South (Roost 1)	
21:45	B1b-2	CPIP	Emer	East (Roost 1)	
21:48	B1b-3	CPIP	Call	faint	
21:49	B1b-1	CPIP	Call	around B1b and then around corner	

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Time	Pos	Spp	Act	Notes	PSR
21:49	B1b-3	CPIP	Call	Derived from commuting observations	
21:49	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	
21:50	B1b-3	CPIP	Call	faint	
21:51	B1b-1	CPIP	Call	continuous activity of multiple bats flying around B1b towards B1a	
21:51	B1b-3	CPIP	Call	faint	
21:52	B1b-2	CPIP	Call	HNS social call	
21:52	B1b-3	CPIP	Call	Derived from commuting observations	PSR
21:52	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	PSR
21:53	B1b-1	CPIP	Call	social call on emt	
21:54	B1b-2	CPIP	Call	Derived from commuting observations	
21:54	B1b-2	CPIP	Comm	From west to east across the site in between B1b and B4	
21:55	B1b-3	CPIP	Call	Derived from commuting observations	
21:55	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	
21:56	B1b-2	CPIP	Call	Derived from foraging observations	
21:56	B1b-2	CPIP	Fora	In the trees south-east of B1b	
21:57	B1b-1	CPIP	Call		
21:57	B1b-2	CPIP	Re-ent	From the east into building (Roost 1)	
21:58	B1b-3	CPIP	Call		
21:59	B1b-3	CPIP	Call		
22:06	B1b-2	CPIP	Call	Derived from emergence observations	
22:06	B1b-2	CPIP	Call	HNS	
22:06	B1b-2	CPIP	Emer	East (Roost 1)	
22:07	B1b-2	CPIP	Call	Derived from foraging observations	

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Time	Pos	Spp	Act	Notes	PSR
22:07	B1b-1	CPIP	Call		
22:07	B1b-2	CPIP	Fora	In front of the south elevation of B1b	
22:08	B1b-3	CPIP	Call		
22:09	B1b-2	CPIP	Call	Derived from emergence observations	
22:09	B1b-3	LEI	Call		
22:09	B1b-2	CPIP	Emer	South (Roost 1)	
22:10	B1b-2	CPIP	Call	Derived from commuting observations	
22:10	B1b-3	CPIP	Call	faint	
22:10	B1b-2	CPIP	Comm	From east to west across the site in between B1b and B4	
22:11	B1b-2	CPIP	Call	Derived from commuting observations	
22:11	B1b-2	CPIP	Comm	From east to west across the site in between B1b and B4	
22:12	B1b-2	CPIP	Call	Derived from commuting observations	
22:12	B1b-2	CPIP	Comm	From west to east across the site in between B1b and B4	
22:13	B1b-3	CPIP	Call	Derived from commuting observations	
22:13	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	
22:14	B1b-2	CPIP	Call	Derived from re-entry observations	
22:14	B1b-2	CPIP	Call	Derived from emergence observations	
22:14	B1b-2	CPIP	Call	Derived from foraging observations	
22:14	B1b-1	CPIP	Call		
22:14	B1b-2	CPIP	Re-ent	From the east into the building (Roost 1)	
22:14	B1b-2	CPIP	Emer	East (Roost 1)	

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Time	Pos	Spp	Act	Notes	PSR
22:14	B1b-2	CPIP	Fora	In front of the south elevation of B1b	
22:15	B1b-2	CPIP	Call	Feeding buzz	
22:15	B1b-3	CPIP	Call	Derived from commuting Observations	
22:15	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	
22:16	B1b-1	SPIP	Call	continuous activity of multiple bats for 3 minutes	
22:16	B1b-3	CPIP	Call	faint	
22:17	B1b-2	CPIP	Call	Derived from emergence observations	
22:17	B1b-2	CPIP	Emer	East (Roost 1)	
22:22	B1b-2	CPIP	Call	Derived from emergence observations	
22:22	B1b-1	NOC	Call		
22:22	B1b-2	CPIP	Emer	South (Roost 1)	
22:23	B1b-2	CPIP	Call	Derived from foraging observations	
22:23	B1b-2	CPIP	Fora	In front of the south elevation of B1b	
22:24	B1b-3	CPIP	Call	Derived from commuting observations	PSR
22:24	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	PSR
22:25	B1b-2	CPIP	Call	HNS	
22:26	B1b-2	CPIP	Call	HNS	
22:29	B1b-3	SPIP	Call		
22:34	B1b-2	BLE	Call	Derived from foraging observations	PSR
22:34	B1b-1	CPIP	Call	HNS for 5 minutes	
22:34	B1b-1	BLE	Call	flew around in front of B2 for a few seconds before flying behind position	
22:34	B1b-3	CPIP	Call		
22:34	B1b-2	BLE	Fora	In between B1a and B1b on the south-east	PSR

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Time	Pos	Spp	Act	Notes	PSR
22:39	B1b-2	BLE	Call	HNS	
22:40	B1b-2	CPIP	Call	Continuous activity for 6 minutes	
22:40	B1b-3	CPIP	Call	Derived from commuting observations	PSR
22:40	B1b-3	CPIP	Comm	From west went towards B1b and then to the south	PSR
22:43	B1b-3	CPIP	Call		
22:44	B1b-2	CPIP	Call	Derived from re-entry observations	
22:44	B1b-3	CPIP	Call		
22:44	B1b-2	CPIP	Re-ent	From the east into the building (Roost 1)	
22:46	B1b-3	CPIP	Call		
22:47	B1b-1	CPIP	Call	continuous activity for 4 minutes	
22:49	B1b-3	CPIP	Call	faint	
23:53	B1b-2	CPIP	Call	Derived from re-entry observations	

Visit 3

Time	Pos	Spp	Act	Notes	PSR
21:28	B1b-3	CPIP	Call	2 x CP seen flying inside B1a.	
21:28	B1b-3	CPIP	Call	Derived from foraging observations	
21:30	B1b-3	CPIP	Call	Distant foraging heard. CP 2-3 identified foraging inside building to west of B1b. Continued until 21:52	
21:32	B1b-4	CPIP	Call	Derived from emergence observations	PSR
21:32	B1b-4	CPIP	Emer	From B1a into B1b (Roost 1)	PSR
21:34	B1b-4	CPIP	Call	Derived from emergence observations	PSR
21:34	B1b-4	CPIP	Emer	From B1c into B1b (Roost 1)	PSR
21:37	B1b-4	BLE	Call		PSR
21:38	B1b-4	BLE	Call		PSR
21:38	B1b-4	BLE	Call	Derived from emergence observations	PSR
21:38	B1b-4	BLE	Emer	From B1c into B1b (Roost 2)	PSR
21:39	B1b-2	CPIP	Call		
21:40	B1b-4	CPIP	Call		PSR
21:40	B1b-1	CPIP	Call	Derived from emergence observations	
21:40	B1b-2	CPIP	Call	Derived from emergence observations	
21:40	B1b-2	CPIP	Emer	South-east (Roost 1)	
21:41	B1b-4	CPIP	Call		PSR
21:42	B1b-1	CPIP	Call	Derived from emergence observations	
21:42	B1b-1	CPIP	Call	Derived from emergence observations	
21:42	B1b-1	CPIP	Call	Derived from emergence observations	

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Time	Pos	Spp	Act	Notes	PSR
21:42	B1b-2	CPIP	Call	Derived from emergence observations	
21:42	B1b-2	CPIP	Call	Derived from emergence observations	
21:42	B1b-2	CPIP	Call	Derived from emergence observations	
21:42	B1b-2	CPIP	Call	Derived from emergence observations	
21:42	B1b-2	CPIP	Emer	South-east (Roost 1)	
21:42	B1b-2	CPIP	Emer	West (Roost 1)	
21:42	B1b-2	CPIP	Emer	East (Roost 1)	
21:42	B1b-2	CPIP	Emer	East (Roost 1)	
21:43	B1b-4	CPIP	Call		PSR
21:43	B1b-4	BLE	Call		PSR
21:43	B1b-4	BLE	Call	Derived from emergence Observations	PSR
21:43	B1b-4	BLE	Emer	From B1a into B1b (Roost 2)	PSR
21:44	B1b-4	BLE	Call		PSR
21:44	B1b-1	CPIP	Call	Derived from emergence observations	
21:44	B1b-1	CPIP	Call	Derived from re-entry observations	
21:44	B1b-2	CPIP	Call	Derived from emergence observations	
21:44	B1b-2	CPIP	Call	Derived from re-entry observations	
21:44	B1b-2	CPIP	Emer	West (Roost 1)	
21:44	B1b-2	CPIP	Re-ent	From the south into B1b (Roost 1)	
21:45	B1b-4	CPIP	Call		PSR

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Time	Pos	Spp	Act	Notes	PSR
21:45	B1b-1	CPIP	Call	Derived from re-entry observations	
21:45	B1b-1	CPIP	Call	Derived from emergence observations	
21:45	B1b-1	CPIP	Call	Faint	
21:45	B1b-2	CPIP	Call	Derived from re-entry observations	
21:45	B1b-2	CPIP	Call	Derived from emergence observations	
21:45	B1b-2	CPIP	Call	Derived from emergence observations	
21:45	B1b-3	CPIP	Call	Seen foraging over the building to the west B1b.	
21:45	B1b-2	CPIP	Re-ent	From the south into B1b (Roost 4)	
21:45	B1b-2	CPIP	Emer	South-east (Roost 1)	
21:45	B1b-2	CPIP	Emer	South-east (Roost 1)	
21:46	B1b-4	CPIP	Call		PSR
21:46	B1b-1	CPIP	Call	Derived from re-entry observations	
21:46	B1b-1	CPIP	Call	Derived from emergence observations	
21:46	B1b-1	CPIP	Call	Derived from emergence observations	
21:46	B1b-2	CPIP	Call		
21:46	B1b-2	CPIP	Call	Derived from emergence observations	
21:46	B1b-2	CPIP	Call	Derived from emergence observations	
21:46	B1b-2	CPIP	Emer	West (Roost 1)	
21:46	B1b-2	CPIP	Emer	South-east (Roost 1)	
21:47	B1b-4	BLE	Call		PSR
21:47	B1b-4	CPIP	Call		PSR
21:47	B1b-2	CPIP	Call		
21:47	B1b-3	CPIP	Call	Passed west over B1b.	

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Time	Pos	Spp	Act	Notes	PSR
21:48	B1b-4	CPIP	Call		PSR
21:48	B1b-1	CPIP	Call	Derived from re-entry Observations	
21:48	B1b-1	CPIP	Call	Derived from emergence Observations	
21:48	B1b-1	CPIP	Call	Derived from emergence observations	
21:48	B1b-2	CPIP	Call		
21:48	B1b-2	CPIP	Call	Derived from emergence Observations	
21:48	B1b-2	CPIP	Emer	West (Roost 1)	
21:48	B1b-2	CPIP	Emer	East (Roost 1)	
21:49	B1b-4	CPIP	Call		PSR
21:49	B1b-4	BLE	Call		PSR
21:49	B1b-1	CPIP	Call	Derived from emergence observations	
21:49	B1b-3	CPIP	Call	Passed west-to-east across the parking area.	
21:50	B1b-4	CPIP	Call		PSR
21:50	B1b-4	BLE	Call		PSR
21:50	B1b-1	CPIP	Call	Derived from emergence observations	
21:50	B1b-2	CPIP	Call	Derived from emergence observations	
21:50	B1b-2	CPIP	Emer	East (Roost 1)	
21:51	B1b-4	CPIP	Call		PSR
21:51	B1b-4	BLE	Call		PSR
21:51	B1b-1	CPIP	Call	Derived from emergence observations	

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Time	Pos	Spp	Act	Notes	PSR
21:51	B1b-1	CPIP	Call	Derived from emergence observations	
21:51	B1b-2	CPIP	Call		
21:51	B1b-2	CPIP	Call	Derived from emergence observations	
21:51	B1b-2	CPIP	Call	Derived from emergence observations	
21:51	B1b-2	CPIP	Emer	East (Roost 1)	
21:51	B1b-2	CPIP	Emer	East (Roost 1)	
21:52	B1b-1	CPIP	Call		
21:52	B1b-1	CPIP	Call	Derived from emergence observations	PSR
21:52	B1b-2	CPIP	Call	Derived from emergence observations	PSR
21:52	B1b-2	CPIP	Emer	East (Roost 1)	PSR
21:53	B1b-4	BLE	Call		PSR
21:53	B1b-4	CPIP	Call		PSR
21:53	B1b-1	CPIP	Call	Derived from commuting observations	
21:53	B1b-2	CPIP	Call		
21:53	B1b-2	CPIP	Call	Derived from emergence observations	
21:53	B1b-2	CPIP	Emer	East (Roost 1)	
21:53	B1b-1	CPIP	Comm	From west to east across the site in between B1a and B4	
21:54	B1b-4	CPIP	Call		PSR
21:54	B1b-4	BLE	Call		PSR
21:54	B1b-2	CPIP	Call		
21:55	B1b-4	BLE	Call		PSR
21:55	B1b-4	CPIP	Call		PSR

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Time	Pos	Spp	Act	Notes	PSR
21:55	B1b-1	CPIP	Call	Derived from re-entry observations	
21:55	B1b-1	CPIP	Call	Derived from emergence observations	
21:55	B1b-1	CPIP	Call	Derived from emergence observations	
21:55	B1b-2	CPIP	Call	Derived from re-entry observations	
21:55	B1b-2	CPIP	Call	Derived from foraging observations	
21:55	B1b-2	CPIP	Re-ent	From the east into B1b (Roost 1)	
21:55	B1b-2	CPIP	Fora	In the trees south-east of B1b	
21:56	B1b-4	CPIP	Call		PSR
21:56	B1b-1	CPIP	Call	Derived from emergence observations	
21:56	B1b-1	CPIP	Call	Derived from emergence observations	PSR
21:56	B1b-2	CPIP	Call	Derived from emergence observations	PSR
21:56	B1b-2	CPIP	Call	Derived from emergence observations	PSR
21:56	B1b-2	CPIP	Call	Derived from emergence observations	PSR
21:56	B1b-2	CPIP	Emer	East (Roost 1)	PSR
21:56	B1b-2	CPIP	Emer	East (Roost 1)	PSR
21:56	B1b-2	CPIP	Emer	South-east (Roost 1)	PSR
21:57	B1b-4	CPIP	Call		PSR
21:57	B1b-2	CPIP	Call		
21:58	B1b-4	CPIP	Call		PSR
21:58	B1b-1	CPIP	Call	Derived from emergence observations	

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Time	Pos	Spp	Act	Notes	PSR
21:58	B1b-1	CPIP	Call	Derived from commuting observations	
21:58	B1b-2	CPIP	Call		
21:58	B1b-2	CPIP	Call	Derived from re-entry observations	
21:58	B1b-2	CPIP	Call	Derived from re-entry observations	
21:58	B1b-2	CPIP	Call	Derived from emergence observations	
21:58	B1b-2	CPIP	Call	Derived from emergence observations	
21:58	B1b-2	CPIP	Re-ent	From the west into B1b (Roost 1)	
21:58	B1b-2	CPIP	Re-ent	From the west into B1b (Roost 1)	
21:58	B1b-2	CPIP	Emer	East (Roost 1)	
21:58	B1b-2	CPIP	Emer	East (Roost 1)	
21:58	B1b-1	CPIP	Comm	From east to west across the site in between B1b and B4	
21:59	B1b-4	CPIP	Call		PSR
21:59	B1b-1	CPIP	Call	Derived from re-entry observations	
21:59	B1b-2	CPIP	Call		PSR
22:00	B1b-4	CPIP	Call		PSR
22:00	B1b-4	BLE	Call		PSR
22:00	B1b-1	CPIP	Call	Derived from emergence observations	
22:00	B1b-1	CPIP	Call	Derived from emergence observations	
22:00	B1b-1	CPIP	Call	Derived from emergence observations	
22:00	B1b-2	CPIP	Call		
22:00	B1b-2	CPIP	Call	Derived from emergence observations	

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Time	Pos	Spp	Act	Notes	PSR
22:00	B1b-2	CPIP	Call	Derived from emergence observations	
22:00	B1b-2	CPIP	Call	Derived from emergence observations	
22:00	B1b-3	CPIP	Call	Walkover of site done. CP (min 3) observed foraging within B1a, B1b, and B1c	
22:00	B1b-2	CPIP	Emer	East (Roost 1)	
22:00	B1b-2	CPIP	Emer	West (Roost 1)	
22:00	B1b-2	CPIP	Emer	South-east (Roost 1)	
22:01	B1b-1	NOC	Call		
22:01	B1b-2	NOC	Call		
22:02	B1b-2	CPIP	Call		
22:03	B1b-4	CPIP	Call		PSR
22:03	B1b-1	CPIP	Call		
22:03	B1b-2	CPIP	Call		
22:03	B1b-2	CPIP	Call	Derived from emergence observations	
22:03	B1b-2	CPIP	Emer	East (Roost 1)	
22:04	B1b-4	CPIP	Call		PSR
22:04	B1b-1	CPIP	Call		
22:04	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:04	B1b-2	CPIP	Call		
22:04	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:04	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:04	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:04	B1b-2	CPIP	Emer	East (Roost 1)	PSR
22:04	B1b-2	CPIP	Emer	East (Roost 1)	PSR
22:05	B1b-1	CPIP	Call	Derived from emergence observations	PSR

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Time	Pos	Spp	Act	Notes	PSR
22:05	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:05	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:05	B1b-2	CPIP	Call		
22:06	B1b-4	CPIP	Call		PSR
22:06	B1b-1	CPIP	Call		
22:06	B1b-2	CPIP	Call		
22:06	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:06	B1b-2	CPIP	Emer	East (Roost 1)	PSR
22:07	B1b-4	CPIP	Call		PSR
22:07	B1b-1	CPIP	Call		
22:07	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:07	B1b-2	CPIP	Call		
22:07	B1b-2	CPIP	Call	Derived from re-entry observations	PSR
22:07	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:07	B1b-2	CPIP	Re-ent	From the east into B1b (Roost 1)	
22:07	B1b-2	CPIP	Re-ent	From the west into B1b (Roost 1)	PSR
22:08	B1b-4	CPIP	Call		PSR
22:08	B1b-1	CPIP	Call		
22:08	B1b-2	CPIP	Call		
22:08	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:08	B1b-2	CPIP	Emer	West (Roost 1)	PSR
22:09	B1b-4	CPIP	Call		PSR
22:09	B1b-4	CPIP	Call		PSR

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Time	Pos	Spp	Act	Notes	PSR
22:09	B1b-1	CPIP	Call		
22:09	B1b-2	CPIP	Call		
22:09	B1b-2	CPIP	Call	Derived from re-entry observations	PSR
22:09	B1b-2	CPIP	Call	Derived from re-entry observations	PSR
22:09	B1b-2	CPIP	Re-ent	From the east into B1b (Roost 1)	PSR
22:09	B1b-2	CPIP	Re-ent	From the east into B1b (Roost 1)	PSR
22:10	B1b-4	CPIP	Call		PSR
22:10	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:10	B1b-2	CPIP	Call	Derived from foraging observations	PSR
22:10	B1b-2	CPIP	Fora	In the trees south-east of B1b	PSR
22:11	B1b-4	CPIP	Call		PSR
22:11	B1b-1	CPIP	Call		
22:11	B1b-2	CPIP	Call		
22:12	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:12	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:12	B1b-2	CPIP	Call		
22:13	B1b-4	NAT	Call		PSR
22:13	B1b-1	NOC	Call		
22:13	B1b-2	NOC	Call		
22:14	B1b-4	CPIP	Call		PSR
22:14	B1b-1	CPIP	Call	Derived from emergence observations	
22:14	B1b-2	CPIP	Call		
22:14	B1b-2	CPIP	Call	Derived from emergence observations	PSR

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Time	Pos	Spp	Act	Notes	PSR
22:14	B1b-2	CPIP	Emer	South-east (Roost 1)	PSR
22:15	B1b-4	CPIP	Call		PSR
22:15	B1b-1	CPIP	Call	Derived from commuting observations	
22:15	B1b-2	CPIP	Call		
22:15	B1b-1	CPIP	Comm	From west to east across the site in between B1b and B4	
22:16	B1b-4	BLE	Call		PSR
22:16	B1b-4	NAT	Call		PSR
22:16	B1b-1	NAT	Call	Derived from commuting observations	
22:16	B1b-1	NAT	Comm	From B1b heading south	
22:17	B1b-4	BLE	Call		PSR
22:17	B1b-4	NAT	Call		PSR
22:17	B1b-1	CPIP	Call	Derived from commuting observations	
22:17	B1b-1	CPIP	Comm	From west to east across the site in between B1b and B4	
22:18	B1b-4	BLE	Call		PSR
22:18	B1b-2	BLE	Call	Derived from emergence observations	PSR
22:18	B1b-2	BLE	Emer	East (Roost 2)	PSR
22:19	B1b-4	CPIP	Call		PSR
22:19	B1b-1	CPIP	Call		
22:19	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:19	B1b-1	CPIP	Call	Derived from emergence observations	PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:19	B1b-2	CPIP	Call		
22:19	B1b-2	BLE	Call	Derived from emergence observations	
22:19	B1b-2	BLE	Emer	East (Roost 2)	PSR
22:20	B1b-4	BLE	Call		PSR
22:20	B1b-1	BLE	Call	Derived from emergence observations	
22:20	B1b-2	BLE	Call	Derived from emergence observations	PSR
22:20	B1b-3	CPIP	Call	Brief foraging heard	
22:20	B1b-2	BLE	Emer	South-east (Roost 2)	PSR
22:21	B1b-4	BLE	Call		PSR
22:21	B1b-4	CPIP	Call		PSR
22:21	B1b-2	CPIP	Call		
22:22	B1b-2	NOC	Call		
22:22	B1b-2	CPIP	Call	Derived from re-entry observations	PSR
22:22	B1b-2	CPIP	Re-ent	From the south into B1b (Roost 1)	PSR
22:23	B1b-1	NOC	Call		
22:24	B1b-4	CPIP	Call		PSR
22:24	B1b-1	CPIP	Call		
22:24	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:24	B1b-2	CPIP	Call		
22:24	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:24	B1b-3	CPIP	Call	Brief foraging heard.	
22:24	B1b-2	CPIP	Emer	East (Roost 1)	PSR
22:25	B1b-2	BLE	Call	Derived from emergence observations	PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:25	B1b-2	BLE	Emer	South-east (Roost 2)	PSR
22:26	B1b-4	CPIP	Call		PSR
22:26	B1b-1	CPIP	Call		
22:26	B1b-2	CPIP	Call	Derived from re-entry observations	PSR
22:26	B1b-2	CPIP	Re-ent	From the west into B1b (Roost 1)	PSR
22:27	B1b-4	CPIP	Call		PSR
22:28	B1b-4	BLE	Call		PSR
22:28	B1b-1	CPIP	Call		
22:28	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:28	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:28	B1b-2	CPIP	Emer	East around B1b towards B1a (Roost 1)	PSR
22:29	B1b-4	BLE	Call		PSR
22:29	B1b-1	BLE	Call	Derived from emergence observations	
22:29	B1b-2	BLE	Call	Derived from emergence observations	PSR
22:29	B1b-2	BLE	Emer	East towards B1a (Roost 2)	PSR
22:31	B1b-4	BLE	Call		PSR
22:33	B1b-1	CPIP	Call		
22:33	B1b-2	CPIP	Call		
22:34	B1b-1	SPIP	Call	Faint	
22:34	B1b-2	SPIP	Call		
22:35	B1b-4	BLE	Call		PSR
22:35	B1b-2	CPIP	Call		
22:35	B1b-3	SPIP	Call	Distant foraging heard briefly.	

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:36	B1b-4	BLE	Call		PSR
22:36	B1b-1	CPIP	Call		
22:40	B1b-1	CPIP	Call		
22:40	B1b-2	CPIP	Call		
22:44	B1b-4	BLE	Call		PSR
22:44	B1b-4	CPIP	Call		PSR
22:45	B1b-4	CPIP	Call		PSR
22:45	B1b-1	CPIP	Call		
22:45	B1b-2	CPIP	Call		
22:45	B1b-2	CPIP	Call		
22:46	B1b-1	BLE	Call		
22:46	B1b-2	BLE	Call		
22:46	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:46	B1b-2	CPIP	Call	Derived from re-entry observations	PSR
22:46	B1b-2	CPIP	Emer	South (Roost 1)	PSR
22:46	B1b-2	CPIP	Re-ent	From the south-east into B2 (Roost 1)	PSR
22:47	B1b-4	BLE	Call		PSR
22:47	B1b-3	CPIP	Call	Close pass heard	
22:48	B1b-1	CPIP	Call	Derived from emergence observations	PSR
22:48	B1b-2	BLE	Call	Derived from emergence observations	PSR
22:48	B1b-2	BLE	Call	Derived from re-entry observations	PSR
22:48	B1b-2	BLE	Emer	South (Roost 2)	PSR
22:48	B1b-2	BLE	Re-ent	From the south into B1b (Roost 2)	PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:49	B1b-4	CPIP	Call		PSR
22:49	B1b-1	CPIP	Call		
22:49	B1b-2	CPIP	Call		
22:50	B1b-4	NAT	Call		PSR
22:50	B1b-2	CPIP	Call	Derived from emergence observations	PSR
22:50	B1b-2	BLE	Call	Derived from re-entry observations	PSR
22:50	B1b-2	CPIP	Emer	West (Roost 1)	PSR
22:50	B1b-2	BLE	Re-ent	From the south into B1b (Roost 2)	PSR
22:53	B1b-4	BLE	Call		PSR
22:57	B1b-3	CPIP	Call	Distant foraging heard briefly.	
22:58	B1b-4	BLE	Call		PSR
22:58	B1b-2	BLE	Call		
23:02	B1b-4	CPIP	Call		PSR

Appendix 8: General Methodology

BAT EMERGENCE AND RE-ENTRY SURVEY METHODOLOGY — GENERAL

1. Survey Aims and Approach

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

2. Guidance and Standards

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

3. Competence and Roles

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

4. Survey Timing, Effort and Seasonal Windows

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

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

5. Weather Conditions

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

6. Survey Area and Position Design

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

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

- 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 9: Survey Methodology

BAT EMERGENCE SURVEY METHODOLOGY — HYBRID NVA/ECOLOGIST SURVEY

1. Survey Method

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

2. Position Design

The arrangement of manned and semi-manned positions was determined from the PRA and/or tree PRF assessment, with coverage designed so that all elevations and identified roosting features were monitored (BCT 7.2.12). Survey design and oversight were provided by Consultant Ecologist Bethany Swain BSc (Hons) (Accredited on Natalie's Natural England Bat License No. Details Available Upon Request) 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 not wanting to disturb bats within their roosting habitat. All external positions were manned positions. 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.