Bat Emergence and Re-Entry Survey

Survey Site
Ruabon Brickworks, Hafod Road, Wrexham
LL14 6ET

Client
ST Demolition and Groundwork Ltd

Report Date
03/08/2026

Project
This report is prepared to inform a planning application for the proposal described as Deconstruction of the buildings and grub up hard standing ground.

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.

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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 7

Emergence Results 8

Roosts and Impacts 9

General Observations & Impacts 11

Requirements & Enhancements 12

Version Control and Copyright 15

Appendices 16

Survey Author & Designer

Survey design and oversight were provided by Consultant Ecologist Amber Williams BSc (Hons) MSc MPhil, (Natural England Bat License No. Level 1 2026-89835-SCI-CL17 and Accredited under Natural Resources Wales Bat Licence (details available on request) 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.

Two 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
Bat Licence	A European Protected Species 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 EPSL is not submitted by 21/10/2026 a material changes check will be required. If the EPSL is not submitted by 01/05/2027 updated dusk surveys may be required. The EPSL 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.

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

There are five buildings on site (B1-5).
B1 is a single-storey, semi-detached, brick-built out-building. The structure features a multi-gabled roof clad in clay tiles. B1 is assessed to have low habitat value for roosting bats due to the volume of lifted tiles and features suitable to support individual crevice dwelling bats.
B2 is a two-storey, semi-detached, brick-built disused warehouse and office block. The building features a multi-gabled roof comprising a mixture of asbestos corrugated sheeting and clay tiles, with some defects noted including local gaps or damage. Internal voids were recorded within the structure. Brown long eared bat droppings were identified within the building. B2 is assessed to have confirmed roost habitat value for roosting bats due to the identification of bat droppings within the loft space

Context

Number of buildings on site

5

Number of buildings surveyed

2

Reason for omitting buildings

Buildings 3-5 was determined to have negligible bat roosting value.

Site Inspection

Internal inspections were completed by Amber Williams.
An internal inspection was conducted on B1 prior to the BERS on 27th May 2026. The inspection noted no material changes to the structure since the preliminary assessment. The internal was dilapidated and unsafe to explore in full. There is a large volume of missing tiles exposing the internal void to weather and daylight.
A site inspection was conducted prior on B2 prior to the BERS on 7th June 2026. No material changes were noted to the building or loft void during the inspection. A single brown long-eared bat was identified within the void hanging from the timber beam close to the apex of the void. The bat was situated to the far side of the loft void (eastern aspect).



Figure 1a: Single brown long-eared bat within void.



Figure 1b: Internal of B1

Proposed Works

Proposed Development

Current use of building(s)

B1 is currently disused and B2 is currently used as a warehouse and office block.

Proposed use of building(s)

Demolition.

Structural changes to building(s)

B1: N/A and B2: N/A.

Cosmetic/repair work

B1: N/A and B2: N/A.

Type of permission required

Full planning application

Proposed Plan

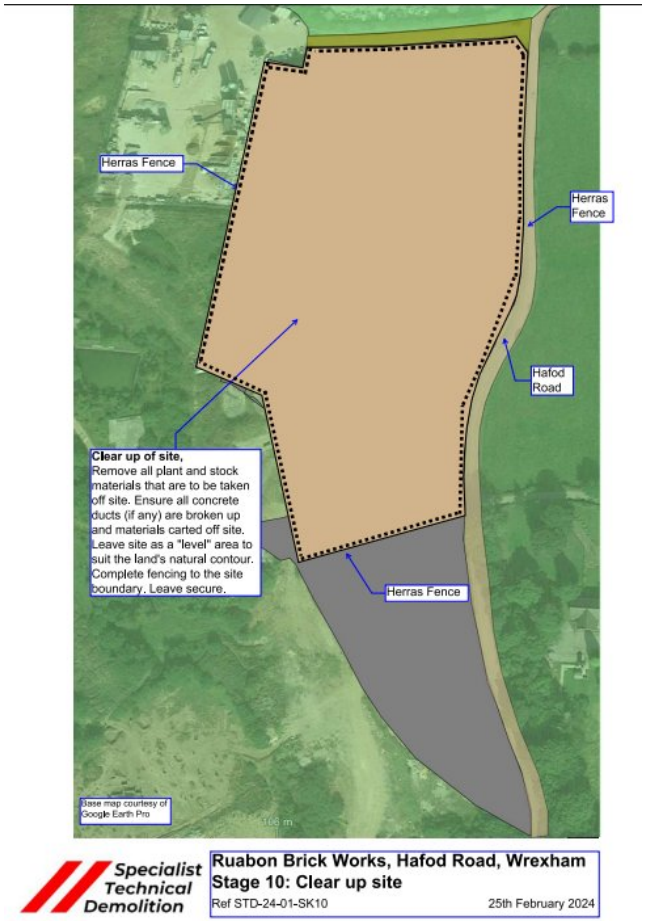


Figure 2: The proposed plans

Surveyors and Equipment

Surveyors

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

Name	BERS Experience	Bat Licence	BCT Competency
Amber Williams	4 years	Level 2	Level 2
Vanessa Ferguson	3 years	N/A	Level 1
Ryan Oakes	2 years	N/A	Level 1
Margaret Warren	3 years	N/A	Level 2
Anna-Emilia Paakkonen	1 years	N/A	Level 1
Benjamin Giardelli	1 years	N/A	Level 2
Abbie Saul	4 years	n/a	Level 1
Jamie Keith	1 years	N/A	Level 2
Erin Meyer	1 years	N/A	Level 1

Equipment

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

Category	Equipment	Count			
		Visit 1	Visit 2	Visit 3	Visit 4
Night Vision Aid	Nightfox Whisker	3	5	5	5
Additional illumination	Nightfox XB5 PRO	2	3	2	4
Bat detector	Wildlife Acoustics Echo Meter Touch 2	2	4	3	3
Two-way radio	BAOFENG FV-880E two-way radio (or similar)	2	3	3	3
Bat detector	Magenta Electronics Bat 4	2	2	3	2
Additional illumination	Nightfox Arc IR Floodlight	1	2	2	1
Bat detector	Titley Chorus Static Bat Detector	1	-	1	2

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	Visit 4
B1-1	eastern	Amber Williams (LS)	-	-	-
B1-2	southern	Vanessa Ferguson (LS)	-	-	-
B1-3	west (semi-manned)	Amber Williams (LS)	-	-	-
B2-1	northeast	-	Amber Williams	Margaret Warren	Jamie Keith (LS)
B2-2	eastern	-	Margaret Warren	Benjamin Giardelli (LS)	Jamie Keith (LS)
B2-3	southeastern (semi-manned)	-	Amber Williams	Benjamin Giardelli (LS)	Jamie Keith (LS)
B2-4	northwestern	-	Vanessa Ferguson	Anna-Emilia Paakkonen	Erin Meyer
B2-5	southwestern	-	Ryan Oakes	Benjamin Giardelli (LS)	Abbie Saul

Survey Visit Details

Visit 1
27/05/2026

Start time	Sunset	End time
21:10	21:25	22:55

Start Conditions
Temperature(°C): 20.0
Relative humidity (%): 64.0
Wind (km/h): 9.0

End Conditions
Temperature(°C): 13.6
Relative humidity (%): 96.0
Wind (km/h): 8.9

Rain
Very light rain Brief <10 mins

Buildings surveyed
1

Trees surveyed
N/A

Visit 2
07/06/2026

Start time	Sunset	End time
21:23	21:38	23:08

Start Conditions
Temperature(°C): 12.1
Relative humidity (%): 89.0
Wind (km/h): 20.2

End Conditions
Temperature(°C): 11.9
Relative humidity (%): 90.0
Wind (km/h): 18.9

Rain
Very light rain Brief <10 mins

Buildings surveyed
1

Trees surveyed
N/A

Visit 3
30/06/2026

Start time	Sunset	End time
21:31	21:46	23:16

Start Conditions
Temperature(°C): 15.2
Relative humidity (%): 88.0
Wind (km/h): 7.5

End Conditions
Temperature(°C): 13.8
Relative humidity (%): 92.0
Wind (km/h): 6.8

Rain
None

Buildings surveyed
1

Trees surveyed
N/A

Visit 4
21/07/2026

Start time	Sunset	End time
21:11	21:26	22:56

Start Conditions
Temperature(°C): 14.8
Relative humidity (%): 85.0
Wind (km/h): 15.1

End Conditions
Temperature(°C): 14.2
Relative humidity (%): 86.0
Wind (km/h): 9.3

Rain
None

Buildings surveyed
1

Trees surveyed
N/A

Limitations

Visit 1

Road disruptions (noise from cars, headlights) - B1-2

The site is located adjacent to a road, and occasional vehicle movements resulted in intermittent noise disturbance and transient headlight illumination across parts of the building. Traffic movement and associated lighting are typical features of the site context. Bat activity recorded during the survey indicates that local bats are habituated to this background disturbance. Acoustic detection remained clear and uninterrupted. There was no measurable impact on survey data collection or interpretation.

Emergence Results

Findings

Summary of all recorded emergences

Emergences were recorded for building B2. One distinct species was recorded emerging; Common pipistrelle.

Full details of emergences, including times and species, can be found in Appendix 6.

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**	**Visit 4**	**Total**
1 - B2	B2 eastern elevation gable end barge board (northernmost board)	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 - B2	B2 eastern elevation gable end barge board (northernmost board)	In between the roof tiles and the fascia board of the gable end.	Day roost	Common pipistrelle	1	Destruction	Site
2 - B2	Within isolated loft void above B2 during internal inspection prior to BERS. Individual identified hanging from the timber ridge beams towards the eastern aspect of the extending gable. This loft void is not connected to other voids or internal areas within B2 or other buildings, restricting the roost space to the single void.	-	Day roost	Brown long-eared bat (BLE) X 1	-	Destruction	Site

Roosts and Impacts (continued)

Roost 2 (B2): We observed no emergence from Roost 2 but based on droppings found within the structure and the presence of a single live brown long eared bat it can be considered a brown long eared day roost.

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



Figure 3a: Roost 1 (B2)



Figure 3b: Roost 2 (B2)

General Observations & Impacts

Findings & Impacts

Summary of all other observations and impacts

Key Foraging Areas

Foraging activity was observed above grassland to east and within B2 courtyard.

Key Commuting Paths

Commuting activity was observed north over B1, along eastern elevation of buildings, SE to NW along the vegetation at the west of B2, S to N along western elevation of buildings, and NE to SW behind trees at W elevation of B2.

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

Nesting swallows were observed within B1 and B2.

Demolition of the structures could result in the destruction of active birds nest if present during works.

Requirements & Enhancements

Requirements & Enhancements

Requirements

Bat Licence

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

If the licence is not submitted by 21/10/2026 a material changes check will be required.
If the licence is not submitted by 01/05/2027 updated dusk surveys may be required.

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

DNA

The droppings collected during the PRA have been analysed and confirmed as Brown long eared bat. Please see Appendix 2 for full results.

BRD

Local bat records have been obtained. The following species are found to be present within a 2km radius of the site:
There are foraging records of Daubenton's bat, brown long eared bat, common pipistrelle and soprano pipistrelle ~290m W at Hafod Newt Reserve.
There is a record of a brown long eared roost ~1km N.
There are records of foraging/commuting soprano and common pipistrelles ~1km W.

Mitigation

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

- The named ecologist will need to visit the site prior to preparation of the licence documents.
- The installation of bat boxes and/or replacement roosts appropriate for the species and roost types present prior to works commencing to form a receptor site for any bats found during the works. Boxes may be installed on buildings or trees or can be pole mounted but must be in an

Requirements Continued

Mitigation Continued

undisturbed location and will need to be maintained in this location post-development. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light.

- Timing restrictions are required for maternity and hibernation roosts.
- The provision of a toolbox talk to contractors, by the Named Ecologist or an Accredited Agent, to inform them of the presence of bat roosts prior to the start of works.
- A pre-commencement inspection of any roost features by the Named Ecologist or an Accredited Agent using a torch and an endoscope (this may be via ladders, scaffolding or a mobile elevated platform).
- Soft demolition of bat roosts by hand under supervision of the named ecologist or accredited agent. The ecologist will move any bats found to the receptor site by gloved hand. If bats are found during periods of adverse weather conditions, these must be left undisturbed until weather conditions become more favourable to move bats to the receptor site.
- Roost replacement appropriate for the species and roost types present will be required on site.
- Post-development monitoring may be required dependent upon species present and roost replacement type.

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

Wildlife Sensitive Lighting Strategy

Due to the works includes demolition of the buildings on site and site clearance, no additional lighting will be installed. As such, a low impact lighting strategy will not be required.

Enhancements

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

Bat Boxes

The installation of one crevice dweller bat boxes at the site will provide additional roosting habitat for bats. The bat boxes will be mounted on poles or on mature trees on the site boundaries. 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 and unlit by artificial light. The bat boxes will be a specification suitable for crevice dwelling species.

Cavity Bat Box

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

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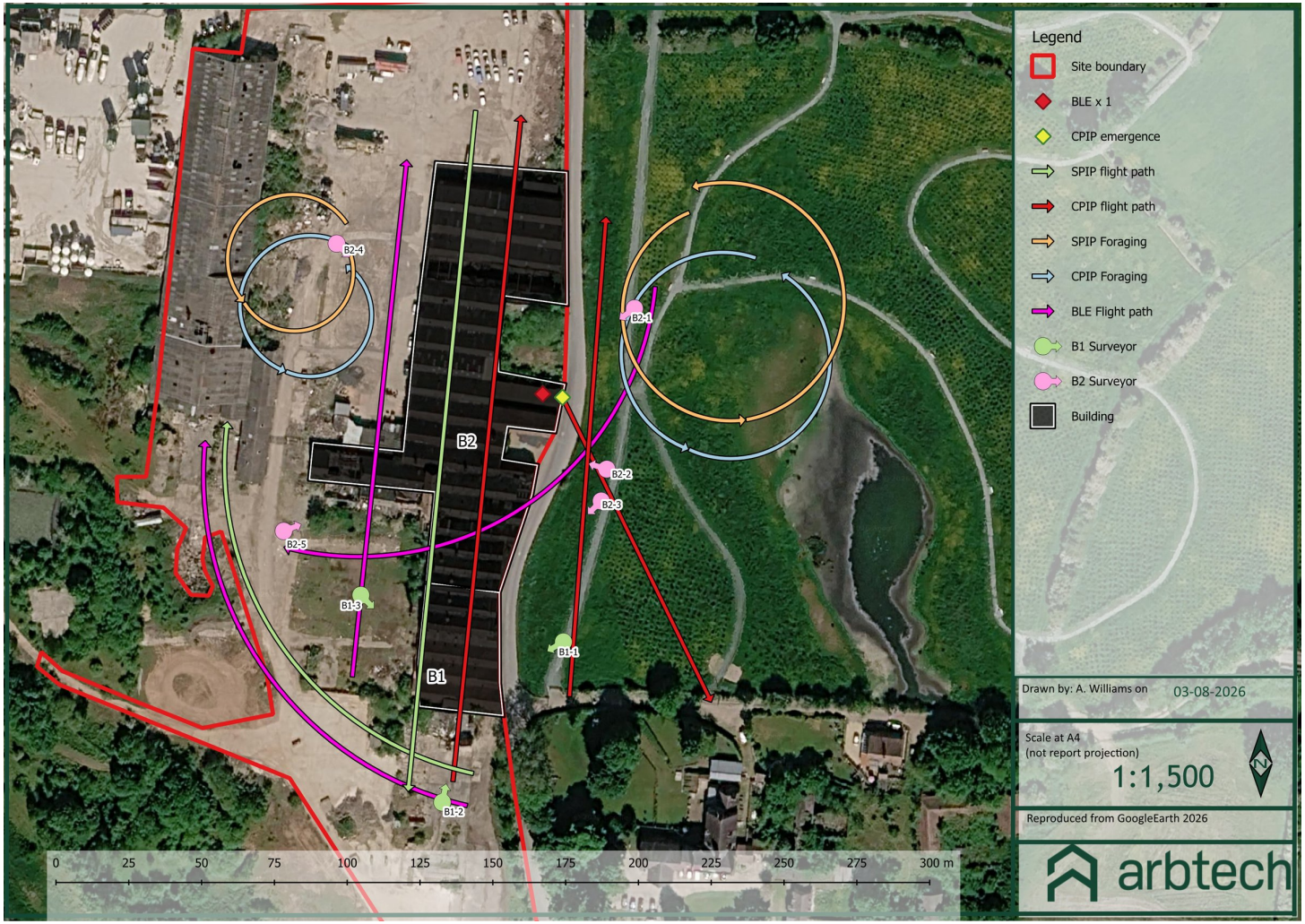
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Version Control

Status	Issue	Name	Date
Draft	0.1	Amber Williams, BSc (Hons) MSc MPhil, Consultant Ecologist	03/08/2026
Review	0.2	Leo Plevin, BSc (Hons), MSc MCIEEM, Technical Manager	05/08/2026
Final	1.0	Amber Williams, BSc (Hons) MSc MPhil, Consultant Ecologist	06/08/2026

Appendix 1: BERS plan



Appendix 2: DNA Results

Sample Information

Sample ID	**EG3215-1**
Sample Type	Faecal
Suspected Species	Brown long eared
Site Location	LL14 6ET
Comments	
Date Collected	22/04/2026
Date Arrived at Lab	14/05/2026
Results Date	14/05/2026

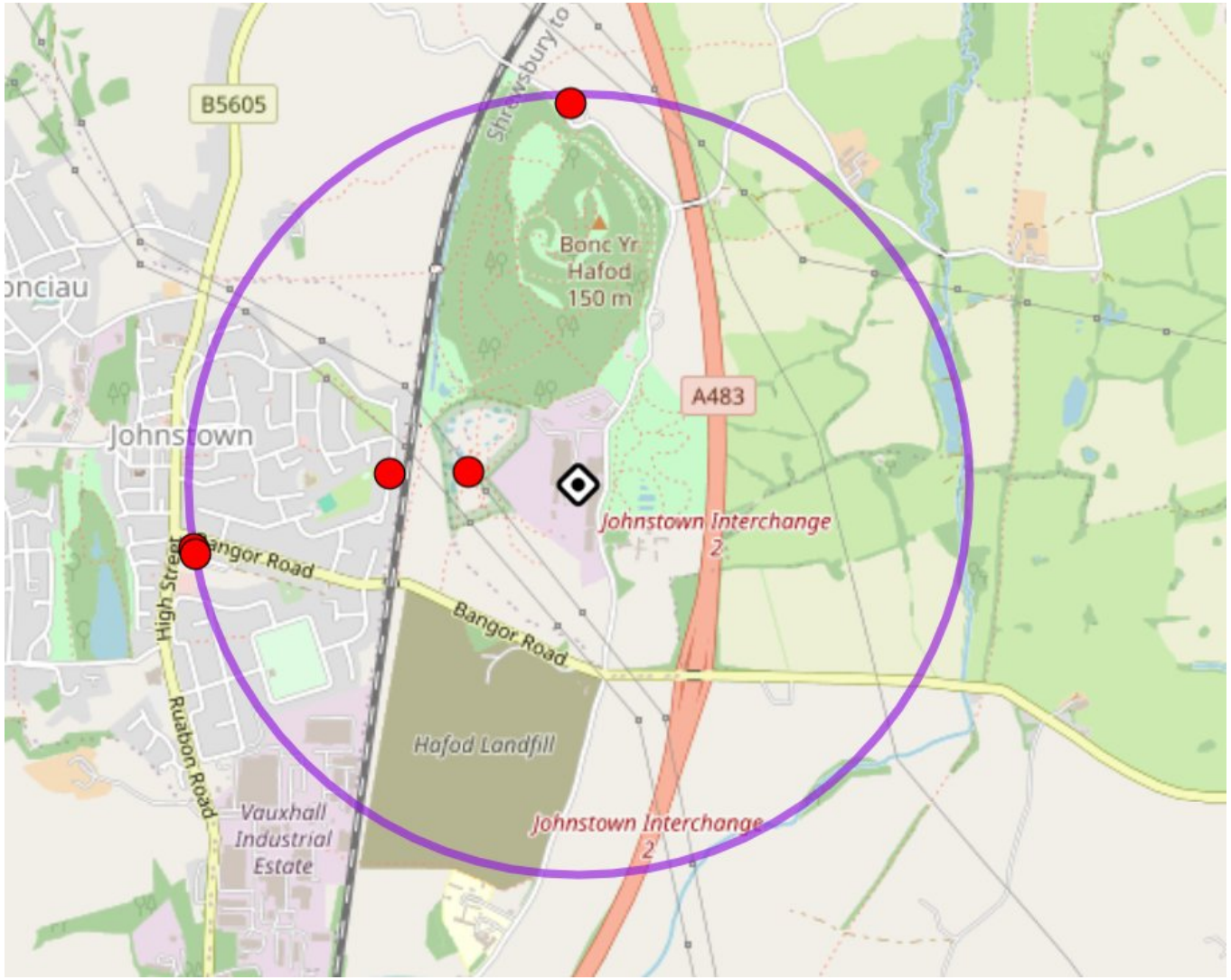
Laboratory Information

DNA Extraction Code	EG-2026-0892
Identification Method	qPCR
Analysis Procedure Notes	All UK bat species tested for - only a single species detected in this sample.
Laboratory Comments	None

Species Identified

Species	Ct Value
Plecotus auritus (Brown long-eared bat)	20

Appendix 3: Biological Record Details



Appendix 4: Surveyor Photos



V1 B1-1 surveyor photo



V1 B1-2 surveyor photo



V1 B1-3 surveyor photo



V1 B1-1 darkest point image



V1 B1-2 darkest point image



V1 B1-3 darkest point image



V2 B2-1 surveyor photo



V3 B2-1 surveyor photo



V4 B2-1 surveyor photo



V2 B2-1 darkest point image



V3 B2-1 darkest point image



V4 B2-1 darkest point image



V2 B2-2 surveyor photo



V3 B2-2 surveyor photo



V4 B2-2 surveyor photo



V2 B2-2 darkest point image



V3 B2-2 darkest point image



V4 B2-2 darkest point image



V2 B2-3 surveyor photo



V3 B2-3 surveyor photo



V4 B2-3 surveyor photo



V2 B2-3 darkest point image



V3 B2-3 darkest point image



V4 B2-3 darkest point image



V2 B2-4 surveyor photo



V3 B2-4 surveyor photo



V4 B2-4 surveyor photo



V2 B2-4 darkest point image



V3 B2-4 darkest point image



V4 B2-4 darkest point image



V2 B2-5 surveyor photo



V3 B2-5 surveyor photo



V4 B2-5 surveyor photo



V2 B2-5 darkest point image



V3 B2-5 darkest point image



V4 B2-5 darkest point image

Appendix 5: Summary of Call Data

Species	Visit 1	Visit 2	Visit 3	Visit 4	Total
Common pipistrelle	21	14	89	31	**155**
Common noctule	2	8	18	10	**38**
Soprano pipistrelle	15	5	5	6	**31**
Brown long-eared bat	2	3	-	10	**15**
Myotis sp.	-	-	1	-	**1**

Appendix 6: 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
21:42	B1-2	CPIP	Call		
21:43	B1-2	CPIP	Call	faint	
21:47	B1-1	CPIP	Call		
21:51	B1-1	NOC	Call		
21:57	B1-2	SPIP	Call		
21:58	B1-1	CPIP	Call	Derived from commuting observations	
21:58	B1-1	CPIP	Comm	south across B1	
21:59	B1-2	SPIP	Call	Derived from commuting observations	
21:59	B1-2	SPIP	Comm	south across B1	
22:01	B1-2	CPIP	Call		
22:04	B1-3	NOC	Call	Derived from commuting observations	PSR
22:04	B1-1	CPIP	Fora	above grassland to east	
22:04	B1-3	NOC	Comm	north over B1	PSR
22:06	B1-3	SPIP	Call		PSR
22:07	B1-2	BLE	Call	Derived from commuting observations	
22:07	B1-3	BLE	Call	faint	PSR
22:07	B1-3	SPIP	Call		PSR
22:07	B1-2	BLE	Comm	south across B1	
22:09	B1-3	CPIP	Call		PSR
22:10	B1-3	SPIP	Call		PSR

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:10	B1-3	CPIP	Call		PSR
22:11	B1-1	CPIP	Call		
22:11	B1-1	CPIP	Fora	above grassland to east	
22:14	B1-1	CPIP	Call		
22:14	B1-3	SPIP	Call		PSR
22:15	B1-1	CPIP	Call	Derived from foraging observations	
22:15	B1-2	CPIP	Call		
22:15	B1-1	CPIP	Fora	above grassland to east	
22:16	B1-1	CPIP	Call		
22:16	B1-2	SPIP	Call		
22:16	B1-1	CPIP	Fora	above grassland to east	
22:17	B1-2	CPIP	Call	Derived from commuting observations	
22:17	B1-1	CPIP	Comm	north over B1	
22:17	B1-2	CPIP	Comm	north along eastern elevation of buildings	
22:18	B1-2	SPIP	Call		
22:18	B1-2	CPIP	Call		
22:18	B1-1	CPIP	Fora	above grassland to east	
22:19	B1-3	CPIP	Call		PSR
22:20	B1-3	SPIP	Call		PSR
22:20	B1-3	SPIP	Call		PSR
22:20	B1-3	CPIP	Call		PSR
22:20	B1-1	SPIP	Fora	above grassland to east	

Visit 1 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:24	B1-2	CPIP	Call		
22:27	B1-3	CPIP	Call		PSR
22:27	B1-1	CPIP	Comm	north along eastern elevation of buildings	
22:34	B1-1	CPIP	Call		
22:35	B1-3	CPIP	Call		PSR
22:35	B1-3	SPIP	Call		PSR
22:36	B1-2	SPIP	Call		
22:36	B1-3	SPIP	Call		PSR
22:37	B1-1	SPIP	Call	faint	
22:43	B1-3	CPIP	Call		PSR
22:43	B1-3	SPIP	Call		PSR

Visit 2

Time	Pos	Spp	Act	Notes	PSR
21:28	B2-3	SPIP	Call		PSR
21:28	B2-3	CPIP	Call		PSR
21:46	B2-5	CPIP	Call		
21:51	B2-3	NOC	Call		PSR
21:51	B2-1	NOC	Call		
21:54	B2-5	NOC	Call	distant	
21:54	B2-3	NOC	Call		PSR
21:54	B2-3	CPIP	Call		PSR
21:54	B2-2	NOC	Call		
21:57	B2-5	NOC	Call	a lot louder	
21:58	B2-5	CPIP	Call	same time as NOC	
21:58	B2-2	NOC	Call		
21:59	B2-3	CPIP	Call		PSR
22:02	B2-5	CPIP	Call	Derived from commuting observations	PSR
22:02	B2-5	CPIP	Comm	NW to SW over B2	PSR
22:05	B2-5	CPIP	Call	Derived from commuting observations	
22:05	B2-5	CPIP	Call		
22:05	B2-2	NOC	Call		
22:05	B2-5	CPIP	Comm	NW to SW over B2	
22:08	B2-3	BLE	Call		PSR
22:09	B2-3	BLE	Call		PSR
22:15	B2-5	CPIP	Call	happened again at 22:26	
22:16	B2-2	CPIP	Call		
22:17	B2-1	CPIP	Call		

Visit 2 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:18	B2-3	CPIP	Call		PSR
22:18	B2-3	BLE	Call		PSR
22:19	B2-5	SPIP	Call	very distant	
22:20	B2-3	SPIP	Call		PSR
22:27	B2-1	SPIP	Call		
22:28	B2-3	SPIP	Call		PSR
22:30	B2-2	CPIP	Call		
22:35	B2-4	CPIP	Call	faint	

Visit 3

Time	Pos	Spp	Act	Notes	PSR
21:33	B2-4	NOC	Call		
21:39	B2-4	MYOSP	Call	faint	
21:57	B2-1	NOC	Call		
22:01	B2-1	NOC	Call		
22:07	B2-1	NOC	Call		
22:10	B2-3	CPIP	Call		PSR
22:10	B2-1	CPIP	Call	Emergence from southeastern elevation of B2. Heading south east	
22:10	B2-2	CPIP	Call	Derived from commuting observations	
22:10	B2-2	CPIP	Call	Derived from emergence observations	
22:10	B2-2	CPIP	Emer	South/ South East, over the road and along the footpath (Roost 1)	
22:10	B2-2	CPIP	Comm	from B2 heading SE	
22:12	B2-1	NOC	Call		
22:15	B2-4	CPIP	Call		PSR
22:16	B2-4	CPIP	Call		PSR
22:16	B2-5	CPIP	Call		PSR
22:17	B2-4	CPIP	Call		PSR
22:17	B2-5	CPIP	Call		PSR
22:18	B2-4	CPIP	Call		PSR
22:18	B2-4	CPIP	Call		PSR
22:19	B2-5	CPIP	Call		PSR
22:19	B2-5	CPIP	Call		PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:19	B2-5	CPIP	Call		PSR
22:20	B2-4	CPIP	Call		PSR
22:21	B2-5	CPIP	Call		PSR
22:22	B2-4	CPIP	Call		PSR
22:22	B2-5	CPIP	Call		PSR
22:23	B2-4	CPIP	Call		PSR
22:23	B2-4	CPIP	Call		PSR
22:23	B2-5	CPIP	Call		PSR
22:24	B2-4	CPIP	Call		PSR
22:24	B2-4	CPIP	Call		PSR
22:24	B2-1	CPIP	Call		
22:25	B2-4	CPIP	Call		PSR
22:25	B2-5	CPIP	Call		PSR
22:26	B2-4	CPIP	Call		PSR
22:26	B2-4	CPIP	Call		PSR
22:26	B2-5	CPIP	Call		PSR
22:26	B2-5	CPIP	Call		PSR
22:26	B2-5	CPIP	Call		PSR
22:26	B2-5	CPIP	Call		PSR
22:26	B2-5	CPIP	Call		PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:27	B2-4	CPIP	Call		PSR
22:27	B2-4	CPIP	Call		PSR
22:27	B2-4	CPIP	Call		PSR
22:27	B2-4	CPIP	Call		PSR
22:27	B2-4	CPIP	Call		PSR
22:27	B2-4	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:27	B2-5	CPIP	Call		PSR
22:28	B2-4	CPIP	Call		PSR
22:28	B2-4	CPIP	Call		PSR
22:28	B2-5	CPIP	Call		PSR
22:29	B2-4	CPIP	Call		PSR
22:29	B2-4	CPIP	Call		PSR
22:29	B2-5	CPIP	Call		PSR
22:29	B2-5	CPIP	Call		PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:30	B2-4	CPIP	Call		PSR
22:30	B2-4	CPIP	Call		PSR
22:30	B2-4	CPIP	Call		PSR
22:30	B2-4	CPIP	Call		PSR
22:30	B2-4	CPIP	Call		PSR
22:30	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:30	B2-1	CPIP	Call		
22:30	B2-1	CPIP	Call	Derived from foraging observations	
22:30	B2-2	CPIP	Call	Derived from foraging observations	
22:30	B2-5	CPIP	Call		PSR
22:30	B2-5	CPIP	Call		PSR
22:30	B2-3	CPIP	Fora	above grassland to east	PSR
22:30	B2-1	CPIP	Fora	B2 courtyard	
22:30	B2-2	CPIP	Fora	B2 courtyard	
22:32	B2-4	CPIP	Call		PSR
22:33	B2-5	CPIP	Call		PSR
22:34	B2-4	CPIP	Call	Derived from commuting observations	
22:34	B2-4	CPIP	Call		PSR
22:34	B2-4	CPIP	Call		PSR
22:34	B2-5	CPIP	Call		PSR
22:34	B2-5	CPIP	Call		PSR

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:34	B2-4	CPIP	Comm	NW to SW over B2	
22:36	B2-1	CPIP	Call	Derived from foraging observations	
22:36	B2-1	CPIP	Fora	B2 courtyard	
22:38	B2-3	CPIP	Call		PSR
22:38	B2-2	CPIP	Call	Derived from foraging observations	
22:38	B2-2	CPIP	Fora	B2 courtyard	
22:40	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:40	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:40	B2-3	CPIP	Fora	above grassland to east	PSR
22:40	B2-3	CPIP	Fora	above grassland to east	PSR
22:42	B2-4	SPIP	Call		PSR
22:42	B2-1	CPIP	Call	foraging	
22:42	B2-5	SPIP	Call		PSR
22:45	B2-2	CPIP	Fora	B2 courtyard	
22:48	B2-1	CPIP	Call		
22:54	B2-3	CPIP	Call		PSR
22:54	B2-3	SPIP	Call		PSR
22:54	B2-3	NOC	Call		PSR
22:54	B2-1	NOC	Call		
22:54	B2-2	CPIP	Call		
22:54	B2-2	NOC	Call		
22:54	B2-2	SPIP	Call		
22:55	B2-3	CPIP	Call	Derived from foraging observations	PSR
22:55	B2-1	NOC	Call		

Visit 3 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:55	B2-1	CPIP	Call		
22:55	B2-3	CPIP	Fora	above grassland to east	PSR
22:57	B2-4	NOC	Call		PSR
22:57	B2-1	NOC	Call		
22:57	B2-5	NOC	Call		PSR
22:58	B2-4	NOC	Call	EMT2 & Magenta 4	
22:59	B2-4	NOC	Call	EMT2 & Magenta 4	
23:00	B2-4	NOC	Call	EMT2 & Magenta 4	
23:00	B2-4	NOC	Call	EMT2 & Magenta 4	
23:00	B2-1	NOC	Call		
23:00	B2-2	CPIP	Call		
23:00	B2-2	CPIP	Call	Derived from commuting observations	
23:00	B2-2	CPIP	Call	Derived from foraging observations	
23:00	B2-2	CPIP	Fora	B2 courtyard	
23:00	B2-2	CPIP	Comm	north along eastern elevation of buildings	
23:03	B2-4	NOC	Call		PSR
23:06	B2-2	CPIP	Call	Derived from foraging observations	
23:06	B2-2	SPIP	Fora	B2 courtyard	
23:10	B2-3	CPIP	Call	Derived from foraging observations	PSR
23:10	B2-3	CPIP	Fora	above grassland to east	PSR
23:13	B2-4	CPIP	Call		PSR
23:13	B2-5	CPIP	Call		PSR
23:15	B2-2	SPIP	Call		

Visit 4

Time	Pos	Spp	Act	Notes	PSR
21:53	B2-1	NOC	Call		PSR
21:59	B2-2	NOC	Call		
21:59	B2-1	NOC	Call		PSR
21:59	B2-3	NOC	Call		PSR
22:03	B2-1	CPIP	Call		PSR
22:07	B2-5	SPIP	Call	Derived from commuting observations	PSR
22:07	B2-5	SPIP	Comm	SE to NW along the vegetation at the west of B2	PSR
22:10	B2-2	CPIP	Call		
22:10	B2-3	CPIP	Call		PSR
22:18	B2-3	CPIP	Call		PSR
22:19	B2-1	CPIP	Call		PSR
22:19	B2-1	CPIP	Call		PSR
22:19	B2-3	CPIP	Call		PSR
22:19	B2-3	CPIP	Call		PSR
22:20	B2-1	CPIP	Call		PSR
22:21	B2-1	CPIP	Call		PSR
22:21	B2-3	CPIP	Call		PSR
22:22	B2-2	CPIP	Call		
22:22	B2-2	NOC	Call		
22:22	B2-3	CPIP	Call		PSR
22:23	B2-1	CPIP	Call		PSR

Visit 4 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:25	B2-5	CPIP	Call	faint	
22:28	B2-5	NOC	Call		
22:28	B2-1	NOC	Call		PSR
22:28	B2-3	NOC	Call		PSR
22:29	B2-2	SPIP	Call		
22:29	B2-3	SPIP	Call		PSR
22:30	B2-3	CPIP	Call		PSR
22:30	B2-3	SPIP	Call		PSR
22:31	B2-2	CPIP	Call		
22:31	B2-3	CPIP	Call		PSR
22:32	B2-5	NOC	Call	faint	
22:37	B2-5	NOC	Call	brief	
22:39	B2-5	BLE	Call	Derived from commuting observations	
22:39	B2-5	BLE	Comm	S to N along western elevation of buildings	
22:41	B2-1	CPIP	Call		PSR
22:42	B2-3	CPIP	Call		PSR
22:43	B2-3	CPIP	Call		PSR
22:43	B2-3	CPIP	Call		PSR
22:44	B2-5	BLE	Call	Derived from commuting observations	
22:44	B2-5	BLE	Comm	E to W over the roof space between two gable ends of B2 at W elevation	
22:45	B2-3	CPIP	Call		PSR

Visit 4 - ctd

Time	Pos	Spp	Act	Notes	PSR
22:46	B2-3	CPIP	Call		PSR
22:47	B2-2	CPIP	Call		
22:47	B2-1	CPIP	Call		PSR
22:47	B2-3	CPIP	Call		PSR
22:53	B2-5	BLE	Call		
22:55	B2-3	CPIP	Call		PSR
22:59	B2-1	CPIP	Call		PSR
23:01	B2-3	SPIP	Call		PSR
23:10	B2-5	BLE	Call	Derived from commuting observations	
23:10	B2-1	SPIP	Call		PSR
23:10	B2-5	BLE	Comm	SE to NW along the vegetation at the west of B2	
23:16	B2-5	BLE	Call	brief	
23:20	B2-2	BLE	Call		
23:22	B2-5	CPIP	Call	faint	
23:22	B2-5	CPIP	Call	Derived from commuting observations	
23:22	B2-5	CPIP	Comm	S to N along western elevation of buildings	
23:24	B2-5	BLE	Call	Derived from commuting observations	
23:24	B2-5	BLE	Comm	SE to NW along the vegetation at the west of B2	
23:25	B2-5	BLE	Call	Derived from commuting observations	
23:25	B2-5	BLE	Comm	NE to SW behind trees at W elevation of B2 and over vegetation to W	

Visit 4 - ctd

Time	Pos	Spp	Act	Notes	PSR
23:25	B2-5	BLE	Comm	SE to NW along the vegetation at the west of B2	
23:26	B2-5	BLE	Call	Derived from commuting observations	
23:27	B2-5	BLE	Call	faint	

Appendix 7: 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 Amber Williams BSc (Hons) MSc MPhil, (Natural England Bat License No. Level 1 2026-89835-SCI-CL17 and Accredited under Natural Resources Wales Bat Licence (details available on request) at BCT Level 2 competence. On-site survey work was led by Amber Williams, BSc (Hons) MSc MPhil at BCT Level 2 competence, supported by 8 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 2 buildings, selected on the basis of the PRA findings and/or tree assessment results. Justification for the extent of survey coverage is provided in the Site Context and Background section.

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

7. Equipment Standards

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

8. Data Capture and Acoustic Analysis

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

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

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

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

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

It is acknowledged that automated classification software is not infallible; false positives and false negatives may occur. Different species can produce similar calls, and recording quality, environmental conditions and bat behaviour can affect call characteristics. Some species groups (e.g. Myotis spp., Nyctalus/Eptesicus) cannot be reliably separated by echolocation alone (Russ, 2012). Where auto-ID was used, the system and version, validation steps, thresholds and manual verification criteria are documented in the appendices (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.

- The site is located adjacent to a road, and occasional vehicle movements resulted in intermittent noise disturbance and transient headlight illumination across parts of the building.

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 8: 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 Amber Williams BSc (Hons) MSc MPhil, (Natural England Bat License No. Level 1 2026-89835-SCI-CL17 and Accredited under Natural Resources Wales Bat Licence (details available on 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 4 (BCT 7.2.10).

5. Post-Survey Review

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

6. Justification for Method

This hybrid approach was selected as appropriate for the site based on the option for safe deployment of equipment focused on areas with minimal features or activity. 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.