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Bat Emergence and Re-Entry Surveys (BERS)

Survey site:

Wallington Farm, Worthenbury, Wrexham, LL13 0AL

Client:

Doreen Manning

Report date:

4th November 2024

Project:

This report is prepared to inform a planning application for the proposal described as:

"Conversion of an existing outbuilding to residential housing"

This report is supplementary to the Preliminary Roost Assessment report completed by Arbtech Consulting Ltd (2024).

BERS survey methodology and legislation can be found in the Arbtech Supplement: **BERS Methodology and Legislation - 2024.**

This report is an addendum to and must be read in conjunction with the Preliminary Roost Assessment completed by Arbtech Consulting Limited (2024) 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 lead surveyor for advice.

Executive Summary

Background

The PRA identified <100 bat droppings throughout the loft. The loft is a mitigation bat loft which was created under EPSL (69527: OTHEPS:2016) for the destruction of a Natterer's roost and a common pipistrelle roost within another on site building (roost type not stated within the report but species and number suggest both maternity roost). Under this EPSL, a bat loft was created as mitigation within one of the neighbouring barns, the building which is subject of these BERS (B1) (CES Ecology, 2015).

The PRA concluded the site has High habitat value.

BERS results

The surveys confirmed the following roosts:

- **Roost 1**: common pipistrelle day/night roost x5 individuals located in in B1, emerging from damaged lining in the southern roof structure (further confirmed by DNA analysis of droppings).
- **Roost 2**: brown long-eared day/night roost x3 located in loft of B1 utilising the eastern open window of B1 (further confirmed by DNA analysis of droppings).
- **Roost 3**: Brandt's myotis occasional/transitional roost of unknown numbers (DNA of droppings).

The development will need ro be permitted by a bat mitigation licence.

The site surveys were designed and managed by Kayleigh Davies, BSc (Hons), MSc, Graduate Ecologist.

See surveyor locations in the **BERS plan in Appendix 1, 2 and 3. DNA analysis results are in Appendix 4.**

Limitations	Visit 3 took place in September which is considered sub-optimal for bat surveys. However, this is not considered a significant limitation as the weather conditions were optimal and the survey confirmed the presence of a brown long eared roost and still observed common pipistrelle emergences. Furthermore, visit 3 covered the early transitional period of bats. Furthermore, as the surveys started in July, there is a risk that maternity roosts had split off, however the difference in droppings from the PRA and the BERS suggests limited additional bat activity.

Field Survey	
Dusk Emergence Survey 1	
Building B1	
Building inspection prior to survey	An updated internal inspection was conducted by Lizi Pimlott, holder of Natural Resources Wales Bat License (details on request), on 23/07/2024. This assessment found no material changes. Due to the volume of the droppings within the space it was undetermined if the volume had increased, and no fresh droppings were identified. No bats were observed in the space during the assessment. Internal conditions assessed to be 16°c and 80% humidity. The bird nest located to the east of the loft (as detailed in the preliminary roost assessment report) was found to still be active with fresh droppings around the nest and an individual unknown bird flew out of the loft upon entrance. *Figure 1 &2 - overview of the interior of the loft (left) and dropping number (right).*  
Surveyor and position	**Lead Surveyor 1 –** Kayleigh Davies – 3 years bat survey experience- BCT Competency Level 2– observing the south and west elevation of B1 **Surveyor 2** – Lizi Pimlott – 12 years bat survey experience and holder of NRW bat license - BCT Competency Level 2 – observing the north and east elevation of B1

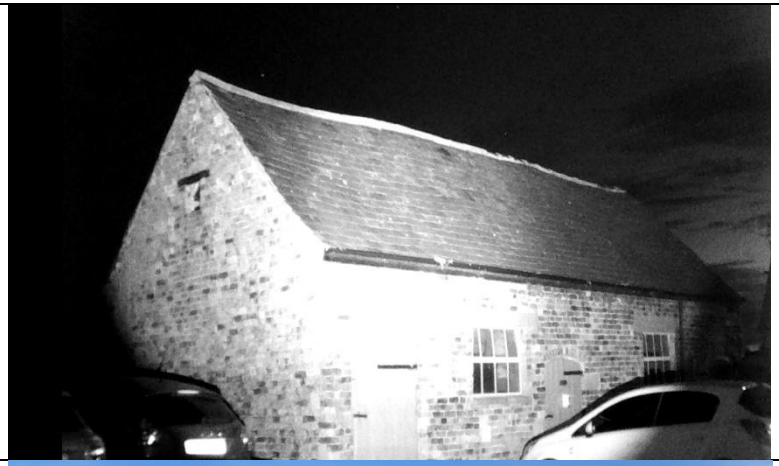
	Unmanned Camera 1 – observing the interior of the loft, facing the east of B1	
Weather (start/end)	Temperature (°C): 15 Relative humidity (%): 80 Cloud cover (%): 30 Wind (m/s): 1 Rain: None	Temperature (°C): 13 Relative humidity (%): 84 Cloud cover (%): 10 Wind (m/s): 1 Rain: None
Equipment used	Echometer Touch x 3, Heterodyne detector x3, Nightfox Whisker IR camera x3, Nightfox IR torches x3	

Results

Date of survey	Sunset Start - End	Species and numbers	Roost type	Structure reference	Roost location	Access points	Dimensions and explanation of roost location
23/07/2024	Sunset 21:14 20:59 – 22:44	CP x2	Day	B1	The lining and tiles of B1 on the southern roof structure with one emergence observed to the southwestern corner.	Damaged lining within the loft space and western opening in brick work.	There are several sections of damaged lining throughout the loft that would allow access beneath the lining and the tiles on the southern elevation.

Surveyor observations

Surveyor 1	**No emergences observed.** The first bat was recorded at 21:44, when a noctule was heard not seen. At 22:07 a common pipistrelle began foraging over the grassland to the northwest of B1. This was constant until 22:20. No further bat activity was recorded during the survey.	

IR position 1	IR camera was position with surveyor 1 and review confirmed no emergences, and no additional bat activity observed.	
Surveyor 2	**Common pipistrelle emergences observed.** **The first bat activity was at 22:06 when a common pipistrelle emerged from the northwestern gable end, foraged briefly at this gable end and then re-entered the barn through the open window.** At 22:09 a common pipistrelle foraged along the southwestern elevation flying close to the eaves of the elevation before foraging in front of the elevation above the southern field until 22:13. A noctule was heard commuting at 22:16. At 22:38 a common pipistrelle bat commuted across the southwestern elevation, heading east to west. No further bat activity.	

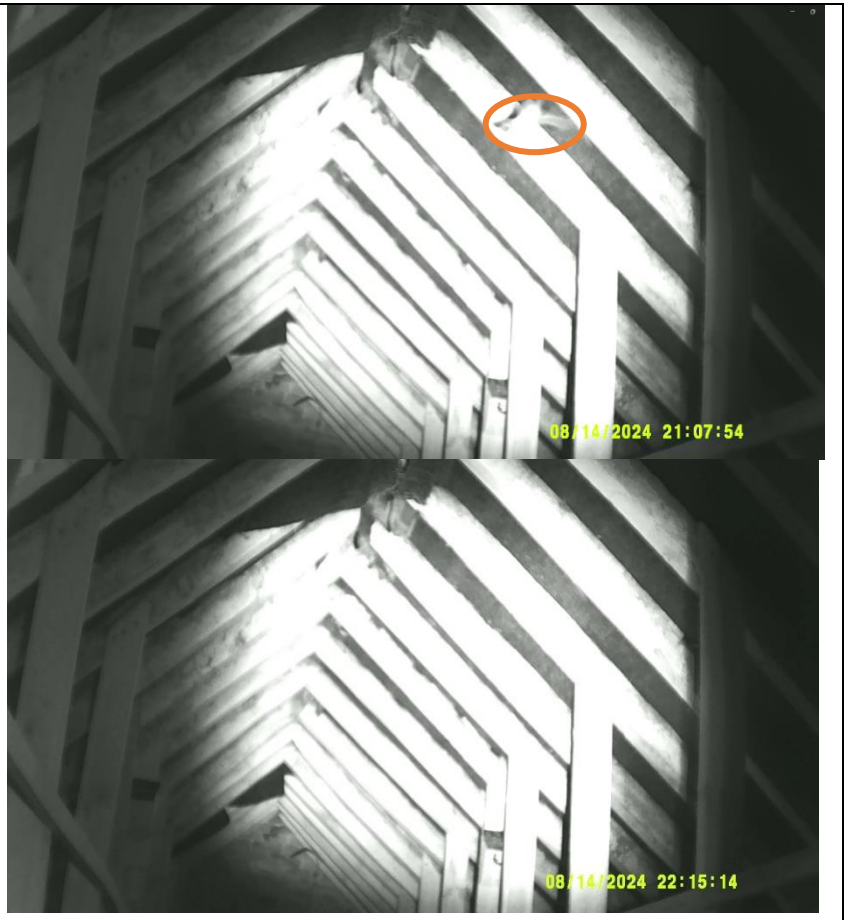
IR position 2	IR camera was position with surveyor 2 and review confirmed **emergence of one common pipistrelle and re-entry at 22:06.**	
Unmanned Camera	**The first bat activity was a common pipistrelle which appeared in frame from the northwestern side of the barn and foraged along the median walkway at 21:38.** At 21:48 a common pipistrelle foraging above the median walkway until **21:52 when it was joined by a second common pipistrelle.** Tandem foraging occurred until 21:54 when one common pipistrelle left the camera frame to the northwest and the second continued to forage until 21:56 when it also left the camera frame to the northwest. A common pipistrelle entered the camera frame to forage above the median walkway at 22:02 before leaving the frame to the southeast at 22:04. The same activity was observed 22:10-22:13. No further bat activity was observed.	

Field Survey							
Dusk Emergence Survey 2							
Building B1 and B2							
Surveyor and position	**Surveyor 1 –** Amber Williams – 1 year's bat survey experience - BCT Competency Level 2– observing the south and west elevation of B1 **Lead Surveyor 2 –** Kayleigh Davies – 3 years bat survey experience– BCT Competency Level 2- observing the north and east elevation of B1 **Unmanned Camera 1 –** observing the interior of the loft, facing the east of B1						
Weather (start/end)	Temperature (°C): 15 Relative humidity (%): 77 Cloud cover (%): 10 Wind (m/s): 6 Rain: None				Temperature (°C): 13 Relative humidity (%): 80 Cloud cover (%): 0 Wind (m/s): 6 Rain: None		
Equipment used	Echometer Touch x 3, Heterodyne detector x3, Nightfox Whisker IR camera x3, Nightfox IR torches x3						
Results							
Date of survey	**Sunset Start - End**	**Species and numbers**	**Roost type**	**Structure reference**	**Roost location**	**Access points**	**Dimensions and explanation of roost location**
14/08/2024	Sunset 20:39 20:24 – 22:09	CPx5	Day and Night roost	B1	The lining and the roof tiles of B1	Bat access tiles on the northern elevation and damaged lining that leads to the southern elevation.	Between the lining and the tiles on the southern elevation.
		BLE x 1	Day and night roost	B1	Internal void of B1	Unknown (see V3)	Unknown (see V3) The loft is ~25m in length and ~7m wide and ~2m in height.
Surveyor observations B1							

Surveyor 1	**No emergences.** The first bat activity was a common pipistrelle heard but not seen at 21:22. At 21:27 a common pipistrelle was observed foraging in front of the western gable end. Regular common and soprano pipistrelle foraging activity was observed in front of the southwestern elevation above the southern field from 21:30-21:36. Common pipistrelle foraging activity was heard but not seen at 21:43-21:45. At 21:49 a brown long eared bat was heard but not seen. At 21:59 a common pipistrelle was observed commuting along the south elevation towards the west of B1. The final bat activity was a distance noctule call which was heard but not seen at 22:02. No further bat activity was observed.	
IR position 1	IR camera was position with surveyor 1 and review confirmed no emergences, and no additional bat activity observed	

Surveyor 2	**7 common pipistrelle emergences (later confirmed to be 5 emergences and 2 re-entries).** Activity began with a common pipistrelle distant pass at 21:00, heard but not seen. At 21:13, a possible common pipistrelle emergence was observed, however this was later confirmed to be a close pass along the roof of the northern elevation in a northern direction. **At 21:14 two common pipistrelles were observed emerging from the western window, with one circling near the western elevation for ~10s before flying south.** **A third common pipistrelle emergence was observed from the western window at 21:14 that flew south.** **At 21:15, another common pipistrelle emerges (later confirmed to be a re-entry and then re-emergence). This individual foraged around the western elevation before flying back through the window, re-emerges and flies west.** **Two further emergences were observed at 21:20 and 21:23 from the middle bat access tile on the western elevation on the bottom row by common pipistrelles. Both individuals flew north.** Constant foraging activity was observed from 1-2 common pipistrelles from 21:23-21:38 in the northern car park in front of B1. One soprano pipistrelle call was heard but not seen at 21:41. There were a further two heard not seen common pipistrelle calls at 21:42 and 21:46. A brown long eared bat was heard but not seen at 21:55 and 22:03. The final activity was a common pipistrelle which was heard but not seen at 22:07.	

IR Position 2	**IR confirmed 5 common pipistrelle emergences. Also 2 common pipistrelles re-entered and re-emerged.** 21:14 – two common pipistrelles emerge from the eastern window (indicated yellow). 21:14 – one common pipistrelle emerges and then re-enters western window. 21:15 – common pipistrelle re-emerges, before re-entering and re-emerging all within ~10 seconds and flies west. 21:21 – emergence from the middle bat access tile on the bottom row (indicated red) and forages around northern car park for 1 minute before flying north. 21:23 – common pipistrelle emerges from same access tile and flies north. Several close passes of 1-2 common pipistrelles from 21:22-21:30 along the ridgeline and to the north of B1. No further bat activity observed.	

Unmanned Camera *1*	The first bat activity was a common pipistrelle which appeared from the northwestern corner of the barn interior at 21:07. The bat foraged up and down the median walkway before landing on one of the timber beams at 21:08. Two common pipistrelles then flew from the southwestern corner and foraged up and down the walkway from 21:08 - 21:12. One of the common pipistrelles can be seen flying to the northeast of the interior and then leaves the camera frame and is not seen again **(likely the bat that emerges at 21:21 from the access tile here).** At 21:23 a common pipistrelle emerges from the centre apex of the interior of the barn and forages briefly before leaving the camera frame to the north of the interior of the barn and not seen again **(also likely to be the second emergence from the bat tile).** At 21:50 a brown long eared appeared flying from the western elevation of the barn interior behind the camera and landed on the timber frames at the centre of the barn on the northeastern roof structure. The bat was observed grooming hanging from the timber beam until 21:55 before dropping and swooping south out of the camera frame. At 21:59 a common pipistrelle was observed flying directly in front of the camera from the eastern interior towards the western interior before commuting towards the southern elevation at 22:00 **(surveyor 1 observes a commuting common pipistrelle to B1 to the western elevation and therefore re-entry of one common pipistrelle).**	

Field Survey							
Dusk Emergence Survey 3							
Building B1							
Surveyor and position	**Lead Surveyor 1** – Kayleigh Davies – 3 years bat survey experience – BCT Competency Level 2- observing the south and west elevation of B1 **Surveyor 2** – Amber Williams – 1 years bat survey experience– BCT Competency Level 2- observing the north and east elevation of B1 **Unmanned Camera 1** – observing the interior of the loft, facing the east of B1						
Weather (start/end)	Temperature (°C): 12 Relative humidity (%): 76 Cloud cover (%): 60 Wind (m/s): 6 Rain: None	Temperature (°C): 12 Relative humidity (%): 72 Cloud cover (%): 30 Wind (m/s): 5 Rain: None					
Equipment used	Echometer Touch x 3, Heterodyne detector x3, Nightfox Whisker IR camera x3, Nightfox IR torches x3						
Results							
Date of survey	**Sunset Start - End**	**Species and numbers**	**Roost type**	**Structure reference**	**Roost location**	**Access points**	**Dimensions and explanation of roost location**
04/09/2024	Sunset 19:53 19:38 – 21:23	CPx3	Day and night	B1	Between lining and the tiles on the southern roof structure	Damage to the loft lining.	Gap between the lining and the loft of B1.
		BLE x 3	Day and night	B1	Loft of B1.	The open window on the western and eastern elevation (observed emerging from the eastern elevation).	The loft is ~25m in length and ~7m wide and ~2m in height.
Surveyor observations							

Surveyor 1	**3 emergences, 4 re-entries and 1 light sampling 2 common pipistrelle emergences and 1 brown long-eared bat.** **The first bat activity was a brown long eared emerging and re-entering (light sampling) the barn through the open barn window on the eastern gable end at 20:15. Re-entered and did not emerge again through the survey.** At **20:21 2 x common pipistrelles were observed commuting from the southeastern of B1 across the eastern elevation, one entered** the structure through the gable window and one continued north to foraging in the courtyard to the north of B1. **At 20:23 one common pipistrelle emerged form the eastern gable window and proceeded to forage above the grass to the east of B1 until 20:28.** **At 20:28 a common pipistrelle was observed re-entering the structure through the eastern gable window.** **At 20:29, a common pipistrelle was observed light sampling via the eastern gable window.** At 20:29, a noctule was heard but not seen. **At 20:31, a common pipistrelle emerged from the eastern gable window and proceeded to foraging in front of the eastern elevation including low to the ground above the grass to the east of B1.** At 20:33, a common pipistrelle was observed commuting from the eastern site boundary up to B1 passing along the eastern elevation to the south. **At 20:38, a common pipistrelle re-entered the structure through the eastern gable window.** At 20:39, a noctule was observed commuting over the ridge of B1. At 20:55, 21:09 and 21:10 a brown long eared bat was heard but not seen.	

	At 21:16, a soprano pipistrelle was heard but not seen. Final bat activity was a soprano pipistrelle which was heard but not seen at 21:23. No further bat activity was observed.	
IR position 1	IR review confirmed all emergences viewed by surveyor 1 with no additional bat activity observed. The two further brown long eared bat emergences caught by the unmanned camera were not visible on this camera.	
Surveyor 2	**No emergences observed.** Activity began at 20:16 and 20:23 with a distant common pipistrelle heard but not seen. At 20:27, a soprano pipistrelle passed overhead from west to east over the field to the south of B1. A noctule was heard but not seen at 20:29. Constant activity from 1 noctule was observed in the southern sheep field from 20:31 – 20:50. A brown long eared bat was heard but not seen at 20:49. A further two brown long eared bats were heard but not seen at 20:54 and 20:56. At 20:58 and 21:01 a noctule heard not seen.	

IR position 2	IR review confirmed no emergences and no additional bat activity.	
Unmanned Camera 1	**Common pipistrelle x 1 emergence and 3x brown long eared bat emergences.** The first activity was a brown long eared bat which descended from the centre apex (yellow) to perform warm up flight along the median walkway at 20:08 before landing on the northern elevation timber beams at 20:09. This activity began again at 20:11-20:13 and again at 20:14-20:21. The bat was observed light sampling at the eastern gable end window at 20:15. At 20:23 the brown long eared flight activity began again, joined by a common pipistrelle at 20:27. **The common pipistrelle was observed light sampling at 20:29 before exiting the building through the eastern gable window at 20:31.** **The brown long eared bat exited the building through the eastern gable window at 20:37.** A brown long eared bat enters the frame from the western side of the void at 20:40 and forages in the void until 20:42 before disappearing.	

	A brown long eared bat is observed performing warm up flights along the median walkway at 20:48 before exiting the structure through the eastern gable window at 20:49. **A brown long eared bat descended from the same apex timber beam as the first brown long eared bat at 20:56 and exited the structure via the eastern gable window at 20:57.** At 21:13 a common pipistrelle appears from the southern roof structure and exits the frame to the west of the void. At 21:23 a common pipistrelle enters the frame from the western boundary of the void until 21:24. This was the final bat activity.	

Conclusions, Impacts and Recommendations	
Survey Results Summary	The surveys found the presence of five roosts within B1 with three bat species. The DNA analysis of the droppings taken from the preliminary roost assessment found the presence of three bat roosts within B1. These are described as below: **Roost 1**: common pipistrelle day/night roost x5 individuals located in in B1, emerging from damaged lining in the southern roof structure (further confirmed by DNA analysis of droppings). Due to the surveys being conducted towards the end of the maternity season, this is likely the result of the remainder of the maternity roost here of common pipistrelles. **Roost 2**: brown long-eared day/night roost x3 located in loft of B1 utilising the eastern open window of B1 (further confirmed by DNA analysis of droppings). **Roost 3**: Brandt's myotis occasional/transitional roost of unknown numbers (DNA of droppings). There was frequent foraging activity by common pipistrelles in the southern field of B1 and the north carpark of B1.
Impact Assessment	The proposed development will include the renovations of the bottom floor of the barn to residential accommodation. As the confirmed roosts are present within the loft void within the second storey of B1, all roosts are expected to be retained. However, renovation works will cause significant disturbance to bat roosts present and will change the environmental conditions within the loft long term. Furthermore, the proposed development will include an increase in artificial lighting which will impact on bat flightlines and foraging habitat.
Recommendations	An EPSL application to Natural Resources Wales will be required to legally permit the proposed works. If the current licence is still active, this will need to be modified to include the new proposed works and will need to be done by the original named ecologist. A Material Changes Check will be required within three months of the EPSL submission, if no survey work has been undertaken within that period.

	The EPSL 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 the following measures: • Timing of works to avoid the maternity season (May to September) • Destructive works should be timed to take place in the 'shoulder' seasons October-November or March-April. If this is not possible, a survey to rule out hibernating bats will be required. Impacts to hibernating bats is never approved by Natural Resources Wales, so any works within the hibernation period will need to demonstrate an absence of bats before commencing. • The installation of 3 bat boxes at the site (one bat box per bat species) prior to works commencing to form a receptor site for any bats found during the works. These boxes may be installed on buildings or trees or can be pole mounted but must be in an undisturbed location and will need to be maintained in this location post-development. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light. • The provision of a toolbox talk to contractors, by the Named Ecologist or an Accredited Agent, to inform them of the presence of bat roosts. • 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). Supervision of any and all works that will impact the loft floor or loft space will be required by a licensed ecologist to ensure no impacts to roosting bats and these will need to be timed accordingly.

	• Avoiding the use of unnecessary lighting, particularly at night, or implementing a low impact lighting strategy to avoid illumination of retained or newly created roosts or roost features. • Avoiding excessive noise or vibration disturbance e.g. from power tools or radios, within close proximity of retained or newly created roosts or roost features. • • Post development monitoring will be required in years 2 and 4 post development. This will involve a dusk emergence survey to cover all current bat roosts. Should timber treatment be required this should follow guidance set out at the below link: https://www.gov.uk/government/publications/bat-roosts-insecticides-and-timber-treatments/timber-treatment-products-suitable-for-use-in-or-near-bat-roosts The EPSL will only include the bat species, numbers and roost types listed above. If bats are found during periods of adverse weather conditions, these must be left undisturbed until weather conditions become more favourable to move bats to the receptor bat box. 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. **Lighting**

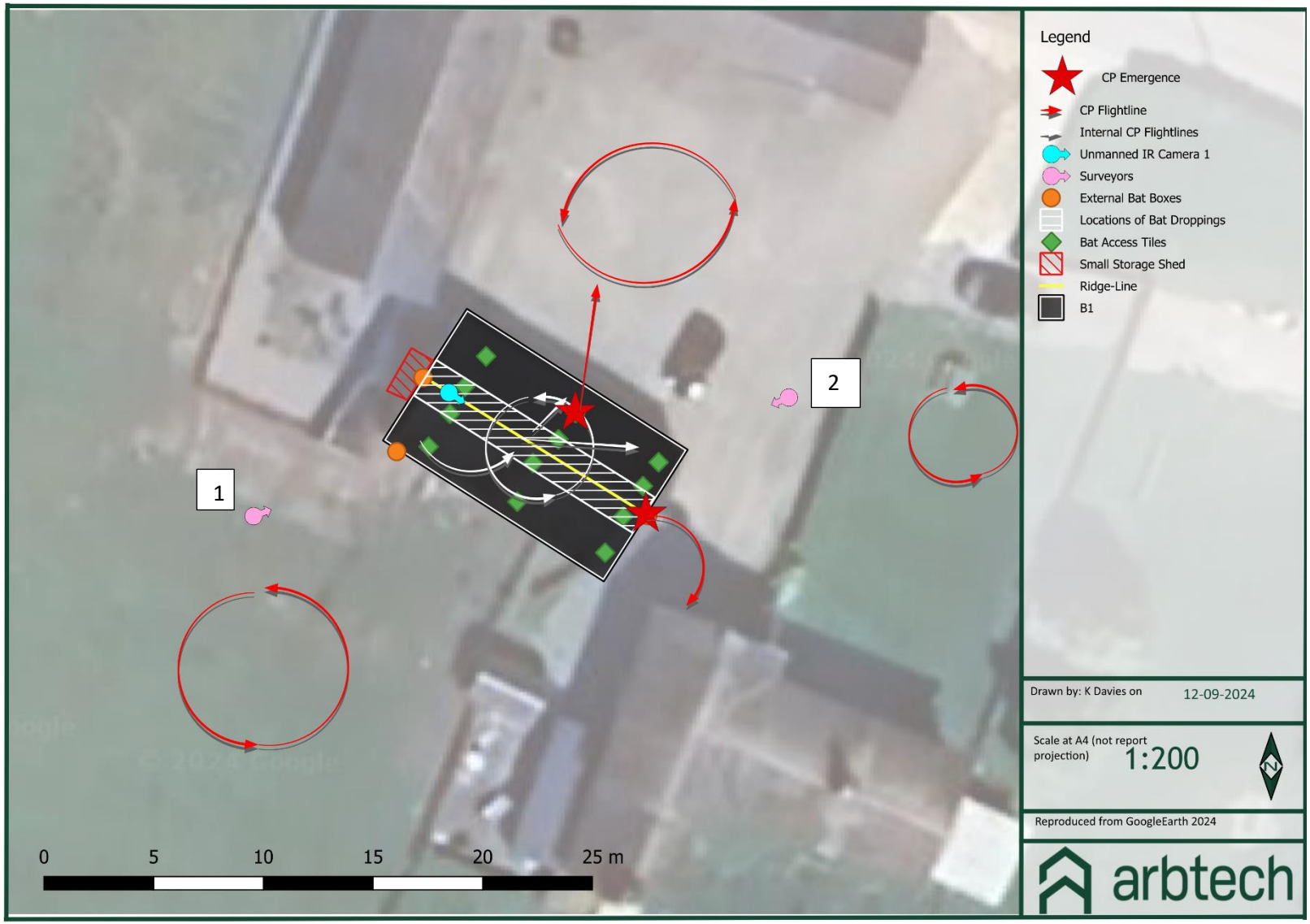
	A low impact lighting strategy will be adopted for the site during and post-development, which will include the following measures: • Light spill on to the southern field and additional lighting on the northern car park should be avoided. • Use narrow spectrum light sources to lower the range of species affected by lighting. • Use light sources that emit minimal ultra-violet light. • Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin. • Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on. • Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available.
Enhancements	One additional bat box will be installed on mature trees post construction. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light. The bat boxes will be a specification suitable for common pipistrelle bats such as the Beaumaris Woodstone Bat Box or a similar alternative brand.

Version control			
Status	**Issue**	**Name**	**Date**
Draft	0.1	Kayleigh Davies, BSc (Hons), MSc, Graduate Ecologist	12/09/2024
Proof	0.2	Ashleigh Domblides, Graduate Ecologist	10/10/2024
Amendments	0.3	Kayleigh Davies, BSc (Hons), MSc, Graduate Ecologist	11/10/2024
Proof	0.4	Natalie Evans BA (Hons), MA, MRSB, Principal Consultant	28/10/2024
Amendments	0.5	Kayleigh Davies, BSc (Hons), MSc, Graduate Ecologist	31/10/2024
Proof		Natalie Evans BA (Hons), MA, MRSB, Principal Consultant	01/11/2024
Final	1.0	Kayleigh Davies, BSc (Hons), MSc, Graduate Ecologist	04/11/2024

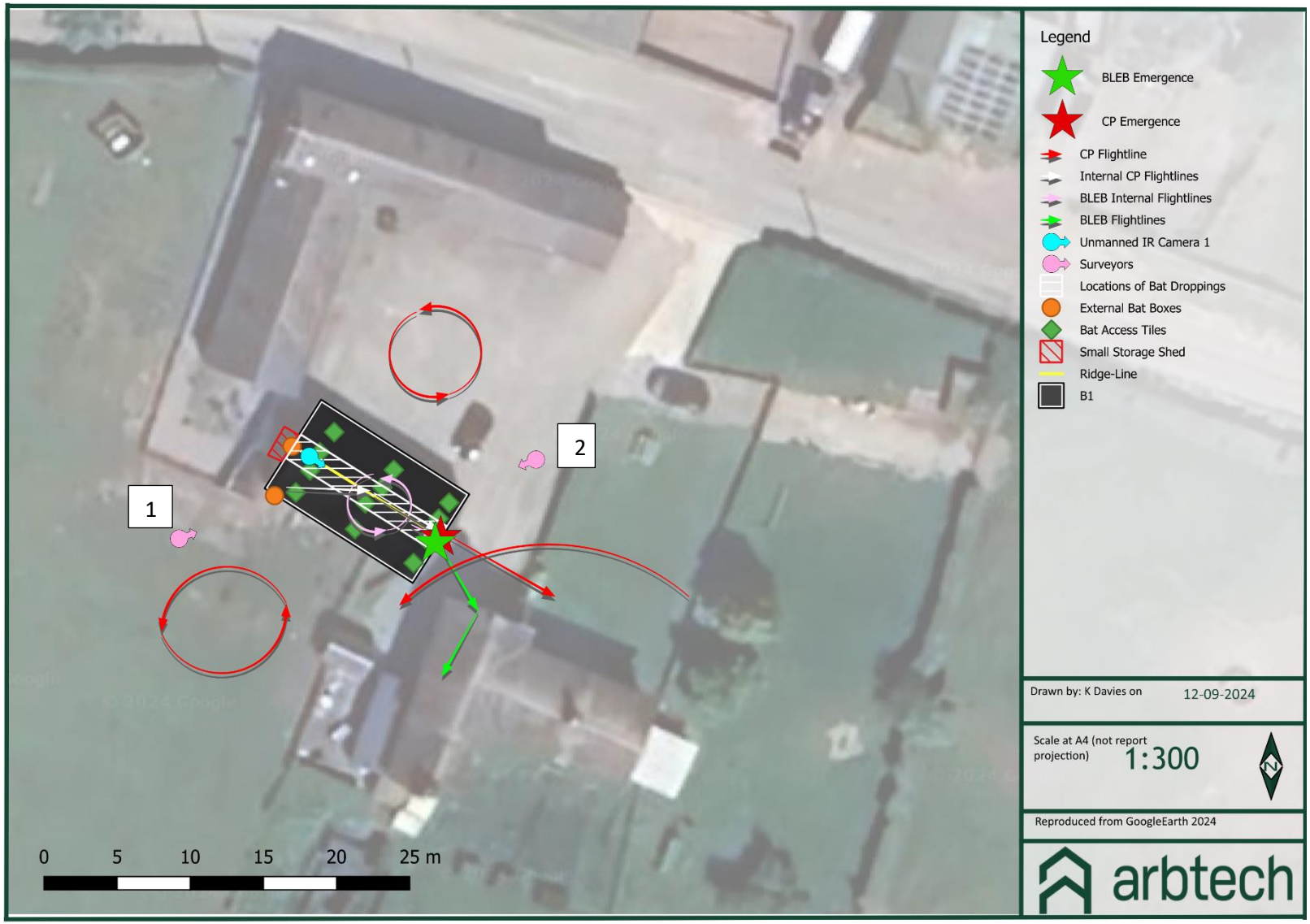
Appendix 1: Visit 1



Appendix 2: Visit 2



Appendix 3: Visit 3



Appendix 4: DNA of Droppings

ecotype genetics

Results

Sample ID: EG-1660-1

Sample information:

Sample type: Faecal **Species group:** Bats

Suspected species: BLE **Site Location:** LL13 0AL

Comments: Several droppings taken from different sections of loft, likely multi species

Laboratory information:

DNA Extraction Code: EG-2024-1726 **Identification method:** qPCR

Analysis Procedure Notes:

Laboratory Comments:

None

Species Identified:

Species 1: Pipistrellus pipistrellus (Common pipistrelle bat)	**qPCR Ct Value:** 24
Species 2: Plecotus auritus (Brown long-eared bat)	**qPCR Ct Value:** 23
Species 3: Myotis brandtii (Brandt's bat)	**qPCR Ct Value:** 22

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