

Bat Survey Report

The Lake House

Old Hollow

West Sussex

RH10 4TB

Date: August 2024

Revision: Original

1 Summary

Site:	The Lake House, Old Hollow, Rowfant, Nr Copthorne, West Sussex, RH10 4TB
Central OS Grid Reference:	TQ 31628 37593
Report Commissioned by:	Planit Consulting
Date of Roost Assessment:	3 rd June 2024
Dates of Nocturnal Roost Surveys:	26 th June 2024 16 th July 2024 7 th August 2024
Author:	Zenobia Hatch BSc (Hons), Ecologist
Reviewed and Approved by:	Graeme Down BSc (Hons) PhD MCIEEM, Principal Ecologist

Bat Survey Results	Bat Roost Assessment	No evidence of roosting bats was recorded, although building B1a was considered to hold high suitability for roosting bats during the active season, and low suitability for hibernating bats. Three follow-up emergence surveys were therefore undertaken in line with standard guidance (Collins, 2023).
	Nocturnal Surveys	Low numbers of common pipistrelle <i>Pipistrellus pipistrellus</i> and soprano pipistrelle <i>Pipistrellus pygmaeus</i> were recorded emerging from building B1a. Three-day roosts of common pipistrelle and two day roosts of soprano pipistrelle bats are present. The roosts are considered to be of importance at the local level .
	General Bat Activity	Species recorded using the site for foraging and commuting purposes from the most to the least include: Common pipistrelle, soprano pipistrelle, serotine <i>Eptesicus serotinus</i> , noctule <i>Nyctalus noctula</i> , and brown long-eared bat <i>Plecotus auritus</i> . The site is of local importance for foraging and commuting bats.
Avoidance and Mitigation	Licensing and lighting Precautions	A European Protected Species Mitigation Licence will be required before there are any works affecting the bat roosts identified within building B1a. Manage artificial lighting sensitively for bats during the construction and operational phases of the development
Enhancements	Bat Boxes	Install two Greenwood Half and Half Bat Boxes (or suitable long-lasting, self-cleaning alternative) onto retained suitably mature trees and / or new buildings to enhance roosting opportunities for bats within the development. Any new planting should be native species of local provenance.

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2 Introduction

2.1 Background

David Archer Associates was commissioned by Planit Consulting to undertake bat surveys at The Lake House, Old Hollow, Rowfant, Nr Copthorne, West Sussex, RH10 4TB, hereinafter referred to as the 'site'. The surveys comprised a preliminary bat roost assessment (PRA) and nocturnal surveys of buildings B1a and B1b located within the site. Recommendations for further surveys, avoidance, mitigation and enhancement measures for bats are included in this report where applicable. This report will support a planning application to demolish the existing residential dwellings and construct a new one in their place.

2.2 Site Location and Description

The site is located c. 1.3km to the east of Crawley and the M23 motorway at central Ordnance Survey Grid Reference TQ 31628 37593. The application site totals c. 0.2ha, comprising built-up areas and gardens, buildings, and developed land; sealed surface. Habitats within the wider site ownership boundary comprise grassland, woodland, hedgerows and lines of trees.

The site is situated within a rural location and surrounded by agricultural land and associated buildings, grassland, pockets of woodland, intermittent dwellings and garden space, interspersed by waterbodies, lines of trees and hedgerows.

2.3 Development Proposals

The proposed development includes demolishing the existing residential dwellings, and constructing a new one in their place, including a garage for car parking (**Figure 2.1**). This will require the partial removal of built-up areas and gardens within the proposed development boundary. It is understood that no habitats are to be impacted within the wider ownership boundary.

2.4 Legislation and Policy

All UK species of bats and their roosts are strictly protected under UK legislation (*Conservation of Habitats and Species Regulations 2017 (as amended)* (CHSR), and the *Wildlife and Countryside Act, (1981)* (WCA). Post-Brexit, four bat species, included in Annex II of the *Habitats Directive 1992* are still a feature for which Special Areas of Conservation (SACs) can be designated. Bat foraging / commuting habitat is not legally protected, although it is a material consideration within the planning process under the *National Planning Policy Framework*. Refer to **Appendix 1** for further information about the legislation and planning policies that protect bats.

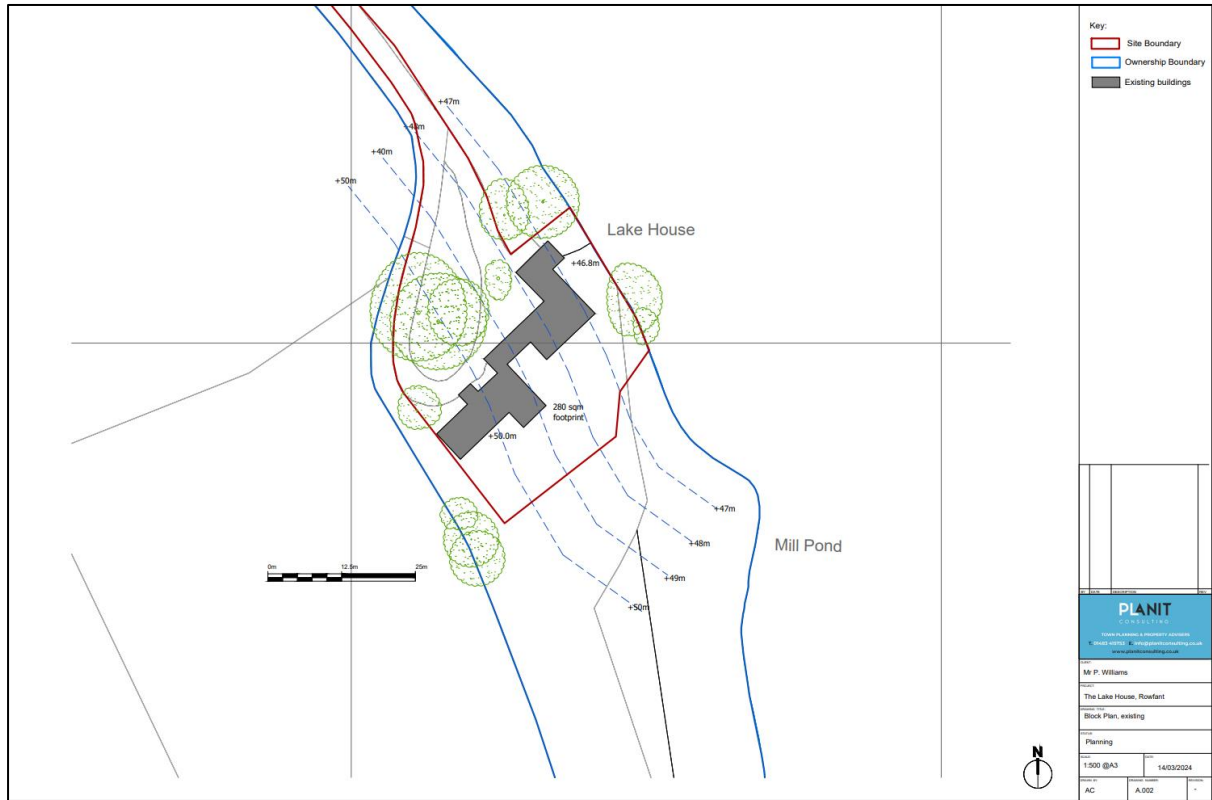
2.5 Objectives

The objectives of the surveys and this assessment are to:

- Assess presence / likely absence of roosting bats within the buildings on-site;
- Identify the species, numbers, usage and access points (if roosting bats are present);
- Determine habitat usage within the site by foraging and commuting bats;
- Assess any impacts that the development may have on any roosting and foraging / commuting bats;

- Determine the need for a Natural England European Protected Species Mitigation (EPSM) licence; and
- Inform any avoidance, mitigation and enhancement measures, if required.

Figure 2.1: Existing and proposed site plan, showing red line boundary used for this assessment (Planet Consulting, 14th March 2024, drawing number: A.002).



3 Methodology

3.1 Summary of Survey Methods

A roost of the site concluded that building B1a held **high**, and building B1b held **negligible** suitability for roosting bats during the active season (David Archer Associates, 2024). Follow-up nocturnal surveys of the building B1a were therefore undertaken in line with the Bat Conservation Trust's *Bat Surveys for Professional Ecologists: Best Practice Guidelines* (Collins, 2023; BCT, 2022). Building B1a also holds **low** suitability for bats during the hibernation season.

3.2 Surveyor Information

The nocturnal bat roost surveys were undertaken by the following suitably experienced surveyors:

- Zenobia Hatch (Accredited Agent for Level 1 bat licence activities under licence WML-CL18-2015-12515-CLS-CLS, conducting bat surveys since 2017)
- Caitlin Laver BSc (Hons) MSc (Accredited Agent for Level 1 bat licence activities under licence WML-CL18-2015-12515-CLS-CLS, conducting bat surveys since 2022)
- Luke Raper (conducting bat surveys since 2023)
- Abigail Dodge (conducting bat surveys since 2023)
- Stacia Newman (conducting bat surveys since 2024)
- Sarah Laver (conducting bat surveys since 2024)

3.3 Data Search

3.3.1 Designated Sites

The Multi-Agency Geographical Information for the Countryside (MAGIC) website was accessed on the 11th July 2024 for information on the location of any statutory sites designated for bats within 5km of the application site.

3.3.2 Bat Records

The Sussex Biodiversity Record Centre (SxBRC) was also consulted on 4th June 2024 for bat records within 2km of the site. MAGIC was also accessed on the 11th July 2024 to identify any bat mitigation licences granted by Natural England within a 2km radius.

3.4 Habitat Survey

The survey involved a site visit on 3rd June 2024 to record and map habitat types and ecological features within the site. The survey was undertaken in accordance with *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017). Refer to the PEA Report for more detailed information (David Archer Associates, 2024).

3.5 Preliminary Roost Assessment

A daytime roost assessment was undertaken on the 3rd June 2024. The weather conditions during the survey were noted to be 18°C, calm – light air (Beaufort 0 - 1), 90% cloud cover and dry. A full external and internal assessment of the buildings within the site was carried out using, where relevant, binoculars, a ladder, and a high-power torch. All buildings were described and surveyed for bats and

their evidence, which includes droppings, staining, scratch marks and feeding remains. Each building was then assigned a level of suitability for roosting bats as outlined in **Table 3.1** below.

Trees that may be suitable to hold potential to support bats were described, mapped and surveyed for direct evidence of bats and for Potential Roost Features (PRFs). The types of feature which are known to have potential to be used by roosting bats include woodpecker holes, rot holes, hazard beams, cracks and splits, knot holes, cavities, loose bark and partially detached ivy (Andrews, 2013). Trees within the site were inspected for the presence of these features and then the features were assigned a level of suitability for roosting bats as outlined in **Table 3.2** below.

Table 3.1: Classifying the bat roosting suitability of buildings (Collins, 2023).

No roosting suitability	No features likely to be used by any roosting bats at any time of year.
Negligible roosting suitability	Buildings with few, if any, features suitable for roosting, however a small amount of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
Low roosting suitability	One or more potential roost sites that could be used by individual bats opportunistically at any time of year. The features do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats.
Moderate roosting suitability	One or more potential roost sites that could be used by bats due to their space, shelter, protection, appropriate conditions and/or suitable surrounding habitat but are unlikely to support a roost of high conservation status (e.g. maternity or hibernation).
High roosting suitability	One or more potential roost sites that could be used by larger numbers of bats on a more regular basis/ longer periods of time, due to their space, shelter, protection, appropriate conditions and/or suitable surrounding habitat. These structures could support roosts of high conservation status (e.g. maternity or hibernation).
Confirmed roost	Evidence of bat occupation found.

Table 3.2: Classifying the bat roosting suitability of trees (Collins, 2023).

No roosting suitability	Trees with no PRFs or highly unlikely to be any.
Further Assessment Required (FAR)	Further assessment needed to determine if PRFs are present.
Potential Roost Features (PRF)	A tree with one or more PRFs. Categorise where possible as: - PRF-I – suitable for individual or small numbers of bats due to size or lack of suitable habitat nearby; or - PRF-M – suitable for many bats and potentially a maternity roost.

3.5.1.1 Foraging and Commuting

The site was assessed for its suitability to support foraging and commuting bats according to **Table 3.3**.

Table 3.3: Classifying the suitability of bat foraging and commuting habitat (Collins, 2016).

Negligible	Negligible habitat features on-site likely to be used by commuting or foraging bats.
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Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated or poorly connected to habitat in the surrounding landscape. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in parkland) or a patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that bats may use for commuting such as tree-lines and scrub or linked back gardens. Habitat that connects to the wider landscape that bats may use for foraging such as trees, scrub grassland and water.
High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, tree-lines and woodland edge. High quality habitat that is well-connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

3.6 Nocturnal Surveys

Building B1a was subject to three emergence surveys in line with standard guidance (Collins, 2023; BCT, 2022). The emergence surveys commenced fifteen minutes before sunset and continued for 1.5 hours after sunset. Refer to **Table 3.3** for the survey dates and weather conditions.

Three surveyors and three infra-red (IR) cameras, each with separate IR lamps, were situated at key points around building B1a to give suitable coverage (see **Appendix 3** for map showing surveyor, IR camera and illuminator, and static detector locations during the surveys). The hand-held equipment used included Echo Meter Touch 2 Pro and Elekon BatLoggerM recorders. Infra-red technology used included:

- One Canon XA40 4K UHD camcorder with two Domar waterproof 80cm CCTV camera IR illuminator lamps and Windows Media Player for reviewing the footage.
- One Canon XA11 4K UHD camcorder with two Domar waterproof 80cm CCTV camera IR illuminator lamps and Windows Media Player for reviewing the footage.
- One NightFox Whisker night vision goggles - 1080p resolution, 30 fps, 1-10x optical zoom, 8x digital zoom with built in Infra-red illuminator. Recorded onto 128 gb san-disk memory cards. Reviewed using VLC media player and edited using Bandi-cam.

Surveyors recorded any bat activity observed within the site, including species, flight direction and behaviour. Bat calls were then analysed using BatExplorer and Kaleidoscope software.

Table 3.3: Times and weather conditions of the emergence / re-entry surveys.

Date (2024)	Sunset (24 Hrs)	Survey Duration	Weather Conditions
26 th June	21:20	21:05 – 22:50	21°C - 20°C, 0% cloud cover, 0B - 1B, and no rain.
16 th July	21:10	20:55 – 22:40	17°C, 40% cloud cover, 1B, and no rain.
7 th August	20:35	20:20 – 22:05	18°C, 90% cloud cover, 3B, and no rain.

3.7 Evaluation and Impact Assessment

The evaluation of any bat roosts and foraging / commuting habitat is made with reference to *Valuing Bats in Ecological Impact Assessment* (Wray, et al., 2010) and the *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

Refer to **Appendix 4** for the method of evaluation.

3.8 Limitations and Assumptions

The roof void inspection of building B1a was restricted to the ladder due to health and safety concerns, during the preliminary bat roost assessment. This however is not considered to represent a significant constraint, as further bat surveys have been undertaken.

The nocturnal roost surveys were completed in suitable conditions for bats to be active. Therefore, the survey results are not significantly limited and are considered to represent a valid assessment of roosting, foraging and commuting bats within the site.

On the assumption that site conditions and habitats remain unchanged, the bat roost surveys will remain valid for one year i.e. August 2025, and should be updated if a planning application has not been submitted within this timeframe. Please note that for licencing purposes Natural England usually require data from the most recent relevant season.

4 Results and Evaluation

The results of the background data search and field surveys are set out below, together with an evaluation of any bat roosts and foraging / commuting habitat identified on- site.

4.1 Data Search

4.1.1 Designated Sites

No statutory sites designated for bats are located within 5km of the site.

4.1.2 Bat Records

SxBRC returned records for five bat species: Whiskered/Brandt's *Myotis mystacinus/brandtii*, noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared *Plecotus auritus*. No EPSM licenses are noted within 2km of the site (MAGIC, 2024).

4.2 Habitats

Habitats within the site comprise buildings, built-up areas and gardens and developed land; sealed surface. The site is of **low suitability** for foraging and commuting bats. Refer to **Appendix 2** for a map of the habitats noted within the site and the PEA report for detailed habitat descriptions (David Archer Associates, 2024).

4.3 Preliminary Roost Assessment

The relevant buildings on-site have been described below. Refer to **Appendix 2** for the building locations.

4.3.1.1 Roosting (Trees)

One of the pedunculate oak trees on-site (**Appendix 2, Target Note 1**) has features that are **PRF-I** suitability for roosting bats during both the active and hibernation seasons, including dense ivy *Hedera helix* coverage.

Other trees surveyed on site are of **no** suitability for roosting bats during both the active and hibernation seasons as they lack suitable features. It is understood that the tree will not be impacted as part of the proposed development. Therefore, no further action is recommended.

4.3.1.2 Roosting (Buildings)

The relevant buildings on site have been described below. Refer to **Appendix 2** for the building locations.

Building B1a

Building B1a is an 'L' shaped, two-storey, wooden cladded, residential dwelling, with a clay-tiled pitched roof, comprised of one pitch sloping east to west, and the other section north to south, with two chimneys, one on the eastern and the other on the western aspect of the building (**Photo 4.1**). Numerous gaps beneath lifted tiles (**Photo 4.2**), and gaps between the wooden cladding (**Photo 4.3**), were recorded on all aspects of building B1a.

A dormer is present within the roof pitch along the northern (**Photo 4.1**), western, and southern (**Photo 4.4**) aspects. The lead flashing appears to be well-sealed around the dormer windows, although numerous tile gaps are present.

Chimneys located on each of the roof pitched sections are both in a good state of repair with no obvious gaps visible. The lead flashing around the base of the chimney was also noted to be well-sealed.

A small section of hanging tiles is located on a mini-pitch above a window along the eastern aspect (**Photo 4.5**). Gaps were noted beneath the hanging tiles.

Internally, the roof void was viewed from the ladder due to health and safety concerns, so the entire roof void was not visible. It is noted to be the length and width of building B1a, and c. 1.5-2m tall at its highest point. The roof void comprises a timber ridge beam, rafters and purlins, with breathable roofing membrane underlay, lined with chipboard in some sections. The roof void is insulated at floor level, and divided by brick walls that form the chimneys, although offers a large, connected space, allowing free-flight access throughout for bats (**Photos 4.6** and **4.7**). No light ingress was observed within the roof void. Rodent droppings were recorded within the roof void.

No evidence of bats was noted on or within building B1a at the time of the survey.

Due to the number of gaps underneath roof tiles and wooden cladding, along with other features, building B1a is of **high** suitability for bats during the active and **low** suitability during the hibernation season. Although the dwelling is not regarded as a typical hibernation roost for bats, the potential for hibernation cannot be entirely ruled out. There is a low risk that small numbers of isolated bats could use some of the discrete features noted above over winter, due to the uncertainty around hibernation roosts in certain species (Korsten et al., 2015).

Further surveys for bats during the active season have therefore been recommended in **Section 5**.

Photo 4.1: North-eastern aspect of building B1a.



Photo 4.2: Gaps beneath lifted tiles along the northern aspect of building B1a.



Photo 4.3: Gaps beneath the wooden cladding along the western aspect of building B1a.



Photo 4.4: South-western aspect of building B1a.



Photo 4.5: South-eastern aspect of building B1a.



Photo 4.6: Internal roof void of building B1a, facing west.



Photo 4.7: Internal roof void of building B1a, facing east.



Building B1b

Building B1b comprises an annex that adjoins building B1a via a small glass walkway (**Photo 4.8**). The annex is shaped similarly to a 'Z', and comprises two-storeys, with the first storey consisting of a garage for car parking, and the second storey above the garage, as well as a small walkway beneath in front of the garage area (**Photo 4.9**). The annex comprises a flat roof of bitumen roofing felt and plastic cladding that is noted to be well sealed, and no gaps were recorded.

Building B1b does not contain an internal roof void.

No signs of bats or potential roosting features were identified. Therefore, building B1b is of **negligible** suitability for roosting bats during the active and hibernation season.

No further action is recommended.

Photo 4.8: Walkway that joins buildings B1a and B1b.



Photo 4.9: North-western aspects of building B1b.



Overall Suitability for Roosting Bats in Buildings

Several access points and roosting opportunities were available for bats within building B1a, which are described in **Table 4.1**. The roost assessment concluded that building B1a holds **high** suitability for bats during the active season and **low** suitability during the hibernation season, and building B1b has **negligible** suitability for roosting bats during the active and hibernation season.

Further surveys for roosting bats for building B1a have therefore been recommended in **Section 5**.

Table 4.1: Potential access points and roosting opportunities for bats.

Building number	Evidence of Bats	Potential Access Points	Potential Roosting Opportunities	Bat Roosting Suitability
B1a	None identified at the time of the survey.	Numerous gaps beneath lifted tiles and between wooden cladding along all aspects.	Under lifted tiles, wooden cladding, and potentially within the roof void.	High (active season) Low (hibernation season)
B1b	None identified at the time of the survey.	None identified at the time of the survey.	None identified at the time of the survey.	Negligible

4.4 Nocturnal Surveys

A summary of the nocturnal surveys has been provided below. Refer to **Appendix 3** for the raw data tables, results maps and photographs of bat roost locations that were identified during the surveys.

4.4.1 Dusk Emergence Survey 26th June 2024

A soprano pipistrelle was recorded emerging from underneath wooden cladding on the southern end of the eastern aspect of Building B1a at 21:32. A common pipistrelle was observed emerging from underneath wooden cladding on the southern aspect at 21:36, and a second common pipistrelle was recorded emerging from beneath the roof overhang at the apex on the gable end of the northern aspect at 21:42.

In total, one soprano pipistrelle, and two common pipistrelles emerged during this survey. Refer to **Appendix 3** for more information.

4.4.2 Dusk Emergence Survey 16th July 2024

One soprano pipistrelle was recorded emerging from beneath the roof overhang on the western side of the gable end of Building B1a on the southern aspect at 21:20.

In total, one soprano pipistrelle emerged during this survey. Refer to **Appendix 3** for more information.

4.4.3 Dusk Emergence Survey 7th August 2024

Three common pipistrelles were recorded emerging from beneath the roof overhang on the western side of the gable end of Building B1a on the southern elevation at 20:48, 20:51 and 21:00 respectively. Two common pipistrelles were observed emerging from beneath the roof overhang at the apex on the gable end of the northern elevation, the first at 20:49, and the second at 21:11. One soprano pipistrelle was recorded emerging from a gap beneath wooden cladding on the eastern elevation at 21:00.

In total, five common pipistrelles and one soprano pipistrelle emerged during this survey. Refer to **Appendix 3** for more information.

4.4.4 General Bat Activity

Common pipistrelle was the most frequent bat recorded, followed by soprano pipistrelle, with occasional passes of serotine *Eptesicus serotinus* and noctule, across all three surveys. One brown long-eared bat *Plecotus auritus* was recorded commuting during the second survey only. Foraging and commuting activity was focused around the trees along the site boundaries (on-site) and the lake (off-site).

4.5 Evaluation

An evaluation of roosting, foraging and commuting bats within the site is provided below. Refer to **Appendix 4** for the process of evaluation.

4.5.1 Bat Roosts: Active season

Overall, a cumulative total of seven common pipistrelle, and three soprano pipistrelles were recorded emerging from building B1a across all three surveys. This is likely to be comprised of six common pipistrelle and two soprano pipistrelles.

Due to the low number of bats recorded, and the inconsistency of the number of bats recorded across all three surveys, these are considered to be day roosts of males or non-breeding females. Building B1a has a total of three roosts of common pipistrelle and two roosts of soprano pipistrelle as follows:

- 2x common pipistrelle under a roof overhang on the gable end of the northern elevation
- 3x common pipistrelle under a roof overhang on the gable end of the southern elevation
- 1x common pipistrelle under wooden cladding on the southern elevation
- 1x soprano pipistrelle under a roof overhang on the gable end of the southern elevation
- 1x soprano pipistrelle under wooden cladding on the eastern elevation

The roosts within building B1a are given **local level importance** due to comprising of low numbers of bats that are of common prevalence both locally and cross the UK (Bullion, 2009). See **Appendix 4** for the process of evaluation.

4.5.2 Bat Roosts: Hibernation season

The features identified as potentially suitable for hibernating bats on building B1a do not lend themselves to typical hibernation survey methods of measuring activity by use of static detectors and manual inspection over winter months as they do not have access or space for static detectors or manual inspection, and endoscope use may be too disturbing and harmful to bats and therefore is not appropriate. Based on the latest mitigation guidelines (BCT, 2023), no winter working seasonal constraints to the removal of this building applies in relation to bats. However, this will be influenced by the outcome of active season surveys. If no active season roosts are located, then works to this building should be timed for September – October when impacts to both bats and nesting birds are likely to be lowest. One bat box suitable for hibernation, such as a Schwegler 1FW bat box (or suitable long-lasting alternative), should be installed on a retained tree. The box should be installed at least 5m above the ground, not be south-facing, not subject to artificial lighting and should be clear of obstructions, such as overhanging branches.

4.5.3 Foraging and Commuting Bats

Suitable habitat for foraging and commuting bats was recorded within the wider site ownership boundary including hedgerows and lines of trees that connect to similar habitats within the wider area. Habitats within the proposed development site boundary were limited to a small number of scattered trees. Prior to the nocturnal surveys being undertaken, the site was therefore considered to be of **low suitability** for foraging and commuting bats. The proposed development itself is relatively small and does not offer high quality habitat for foraging bats, habitat of higher suitability exists within the wider site ownership boundary, as well as the wider landscape.

The nocturnal surveys have indicated that the site is used by small numbers of mainly common species for foraging and commuting purposes. Common pipistrelle was the most frequently recorded species, followed by soprano pipistrelle, along with very occasional passes of the rarer serotine and noctule.

Using the criteria outlined in **Appendix 4**, the site is assessed as being of **local importance** for foraging and commuting bats.

Further surveys for foraging and commuting bats are not necessary, as the proposed development will not significantly impact foraging and commuting habitats within the site. However, further action to avoid and mitigate any impacts on foraging and commuting bats is detailed in **Section 6**.

5 Impact Assessment

Potential impacts of the proposed development in the absence of mitigation during construction and operation are discussed below.

5.1 Designated Sites

No statutory sites designated for bats are located within 5km of the application site and therefore **no impacts** are expected. No further mitigation is required.

5.2 Bat Roosts

5.2.1 Building B1a

Building B1a supports a low number of male / non-breeding female common and soprano pipistrelle bats, comprising five day roosts on the eastern, southern and northern aspects underneath wooden cladding and roof overhangs, but the opportunities for roosting bats extend to all elevations of building B1a due to the presence of hanging tiles and gaps beneath wooden cladding. The works to building B1a (being demolished) would result in the loss of these roosts. This would be considered a moderate adverse impact at the local level. Another potential impact may result from an unsupervised contractor killing or injuring bats during construction, causing a major adverse impact at the local level. Inappropriate timing of works may also lead to disturbance any hibernation roosts, if present. These would be considered a moderate adverse impact at the local level.

5.3 Foraging and Commuting Bats

Artificial lighting used during both the construction and operational phases of the development has potential to disturb foraging and commuting bats within the site and the local area (Stone, 2013; and Fure, 2006). Further actions in **Section 6** have therefore been recommended for foraging and commuting bats.

6 Recommendations for Avoidance, Mitigation and Enhancement

6.1 Avoidance and Mitigation

A mitigation strategy that is designed to protect bats and maintain their favourable conservation status will need to be submitted to support the planning application. A European Protected Species Mitigation (EPSM) licence from Natural England will also be required before there are any works that may impact the bat roosts identified within building B1a.

Natural England take at least six weeks to determine an EPSM Licence application and a Licence will only be granted once planning consent has been received with all conditions relating to wildlife discharged.

Planning permission and a licence will only be issued for developments that are considered to meet the following three tests:

1. The development is in the interests of public health and safety, or is required for imperative reasons of overriding public interest.
2. There is no satisfactory alternative to the development.
3. The local favourable conservation status of the bat populations concerned will be maintained.

6.1.1.1 Imperative Reasons of Overriding Public Interest

The existing building does not meet the needs of the current owner and their family. The proposed work will provide additional accommodation and storage space for the family.

6.1.1.2 No Satisfactory Alternative

The client does not own an alternative site and the works are required to provide additional accommodation and storage space to meet the needs of the client and their family. The proposed works have been judged as the most satisfactory method for improving the use of the building, while maintaining the welfare of the family on site and the preservation of the bat population on-site.

The 'do nothing approach' was rejected as the current building does not meet the requirements of the client and the client does not own an alternative site.

6.1.1.3 Favourable Conservation Status

The Bat Mitigation Licence will include the required bat mitigation strategy to ensure roosting bats are protected and their favourable conservation status maintained. The mitigation strategy will include the following:

Roosting provision

- Alternative roosting sites in the form of three long-lasting bat boxes, suitable for pipistrelles, will be incorporated onto the northern, eastern, and southern aspects of the new building, within similar locations to the current roost sites (**Appendix 6**). These features will be located and positioned as per the advice of the licenced ecologist undertaking the licensable works. The contractors employed to install these features should liaise directly with the licenced ecologist, to ensure correct positioning. The bat tubes must not be illuminated by any lighting on-site, adjacent to the site or attached onto the outside of the building.

-
- One long-lasting bat box suitable to support hibernating pipistrelle bats will be installed on to the new building or a suitably mature tree, in a position that is not directly south-facing and is free of artificial lighting. This will provide a suitable alternative hibernation roosting opportunity for bats should a hibernation roost be present within building B1a. A suitable example is the Schwegler 1WQ bat box, which is self-cleaning and so requires minimal upkeep post-installation.
 - Two bat boxes (e.g. Greenwood Single Crevice Bat Box or suitable alternative, suitable for pipistrelle bats) will also be erected on to a mature tree within the site boundary prior to works commencing. These boxes will be located and positioned as per the advice of the licenced ecologist undertaking the licensable works. The bat boxes will provide a suitable temporary roost whilst the works proceed, provide a suitable release site during the capture and exclusion works and will be left *in-situ* on completion of the works as part of the proposed enhancement features for the site.
 - Any liner within the roof of the new dwelling will be traditional 1F bituminous roofing felt with a hessian matrix and not breathable membrane. This is due to the risk of bats becoming entangled in breathable membranes and dying.
 - The timber used within any attic voids, and external wooden cladding if proposed, should only include timber treatments which are safe for bats and in line within the guidance provided by Natural England (<https://www.gov.uk/government/publications/bat-roosts-insecticides-and-timber-treatments/timber-treatment-products-suitable-for-use-in-or-near-bat-roosts>). This requirement will be stipulated within the bat mitigation licence due to the risk of bats dying.

Timing of Licensable works

- The licensable works to remove any bats and bat roosting features from Building B1a will be undertaken during the active season, which runs from March – October. Licensable works must not be undertaken within the hibernation season (November – February). As hibernation potential within Building B1a cannot be ruled out, this will remove any risk to potential hibernating bats.
- Licensable works will only be completed during weather conditions suitable for bats to be active (this is typically considered 5-7°C or above for three consecutive nights).

Capture and exclusion methods

- A toolbox talk will be given to all site workers by a suitably qualified ecologist prior to works commencing. This will cover the legal protection of bats, any potential risks on-site (including species recorded within the local area and roost locations), what evidence of roosting bats looks like and the protocol that must be followed in the event a bat or evidence of roosting bats is noted within Building B1a.
- A pre-demolition internal and external inspection of Building B1a will be carried out by a suitably licensed ecologist. This will include an internal inspection of the attic space to confirm there is no change in roost status at the time of the works. A high-powered torch, endoscope and ladder will be used where appropriate.
- A destructive search by soft demolition of all suitable bat roosting features within Building B1a will be completed under supervision of a licensed ecologist. The suitable bat roosting features

will be carefully dismantled by hand and in stages, to allow these areas to be checked by the licensed ecologist supervising the works.

- In the event a bat is found, the bat will be checked over to ensure it is healthy and then moved to the pre-erected bat box present on site. The entrance to the bat box will be stuffed with a cloth to allow the bat to settle and decrease the risk of the bat flying in the daytime / returning to the building. The cloth will be removed at the end of the day to allow the bat to emerge at dusk.
- The name and contact details of a local bat carer will be obtained and retained on-site in the event a bat is injured on-site or found to require care. It is recommended that the bat carer be informed of the date of the works to ensure that this measure can be implemented successfully in the event it is required.

Monitoring

The roosts to be impacted do not meet criteria that will require post-works monitoring.

6.1.2 Foraging and Commuting Bats

The following measures should be implemented within the development to reduce impacts on foraging and commuting bats caused by artificial lighting (BCT & ILP, 2023):

- Direct any task lighting used during construction away from boundary vegetation and any newly installed bat boxes;
- Set any necessary security lighting on short timers with a sensitivity to large moving objects only;
- Consider installing internal light fittings in a recess where installed in proximity to windows facing the boundary vegetation in order to reduce glare and light spill;
- Limit lighting times to provide dark periods;
- LED light sources should be used wherever possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capabilities. A warm spectrum light (ideally <2700 Kelvin) should be used to reduce the blue light component. Lights should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012). Luminaires should be mounted on the horizontal, i.e. with no upward tilt. Avoid the use of UV light and do not use metal halide, fluorescent light sources; and
- As a last resort, use hoods or cowls to avoid light being directed at the sky or towards the boundary vegetation.

6.2 Enhancements

Install two Greenwood Half and Half Bat Boxes (or suitable long-lasting, self-cleaning alternative) onto retained suitably mature trees and / or new building to enhance roosting opportunities within the development for bats. Install the bat boxes at least 5m above the ground and face them in a southerly direction, so that they receive sun for part of the day. Avoid placing near artificial lighting and ideally locate the boxes adjacent to commuting or foraging habitat, such as dark tree or hedge lines, ensuring that clear access is maintained to the boxes for bats.

For any new planting within the wider site ownership, native specimens of local provenance should be utilised (refer to **Appendix 5** for suitable species).

7 Conclusion

The development can proceed with minimal impact to bats with a bat mitigation licence in place, and the mitigation and avoidance measures outlined within **Section 6** implemented. The installation of bat boxes will also enhance the development for roosting and foraging / commuting bats in the long-term.

8 References

Altringham, J.D., 2003. *The New Naturalist: British Bats*. Harper Collins, London.

Andrews, H., 2013. *Bat Tree Habitat Key*. Bridgewater: Andrews Ecology.

Bat Conservation Trust (BCT), 2022. *Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys, May 2022*.

Bat Conservation Trust (BCT) & Institute of Lighting Professionals (ILP), 2023. *Bats and Artificial Lighting At Night. Bats and the Built Environment Series. Guidance Note 8/23*. Bat Conservation Trust & Institute of Lighting Professionals.

CIEEM, 2018. *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Winchester: CIEEM.

Collins, J., (ed.), 2023. *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 4th ed. London: The Bat Conservation Trust.

David Archer Associates, 2024. *Preliminary Ecological Appraisal for The Lake House, West Sussex, RH10 4TB*.

DLUHC, 2023. *National Planning Policy Framework*,. [Online]
Available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Entwistle, A.C., Harris, S., Hutson, A.M., Racey, P.A., Walsh, A., Gibson, S.D., Hepburn, I. and Johnston, J., 2001. *Habitat management for bats: A guide for land managers, land owners and their advisors*. JNCC, Peterborough.

European Community, 2007. *Guidance document on the strict protection of the animal species of Community interest under the Habitats Directive 92/43/EEC*. Final version, February 2007.

Fure, A., 2006. Bats and lighting. *The London Naturalist*, 85.

HMSO, 2019. *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations*, London: HMSO.

HMSO, 2017. *The Conservation of Habitats and Species (Amendment) Regulations 2017*. HMSO, London.

HMSO, 2006. *Natural Environment and Rural Communities Act (NERC Act) 2006*. HMSO London.

HMSO, 1981. *Wildlife and Countryside Act 1981*. HMSO, London.

Jones, J., 2000. *Impact of Lighting on Bats*. The Bat Conservation Trust, London.

Natural England, 2023. *MAGIC Map Application*. [Online]
Available at: <http://www.natureonthemap.naturalengland.org.uk/MagicMap.aspx>

Reason, P.F. and Wray, S., 2023. *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. Chartered Institute of Ecology and Environmental Management, Ampfield.

Russ, J., 2012. *British Bat Calls: A Guide to Species Identification*. Pelagic Publishing, Exeter.

Stone, E.L., 2013. *Bats and lighting: Overview of current evidence and mitigation guidance*. University of Bristol.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, A., 2010. *Valuing Bats in Ecological Impact Assessment*. In Practice, 70: 23-25.

Appendix 1 Legislation and Policy

All 18 British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981 (as amended)* and Schedule 2 of the *Conservation of Habitats and Species Regulations (CHSR) 2017 (as amended)*. Furthermore, the *Countryside and Rights of Way Act 2000* (Schedule 12, Paragraph 5) has amended Section 9 of the 1981 Act. Bats are therefore, fully protected under Section 9 of the 1981 Act and under Regulation 41 of the *CHSR 2017 (as amended)*, which previously transposed the Habitats Directive into UK law. Since the UK's departure from the European Union, the *Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019* essentially transfers the procedural aspects of the EU legislation into a national framework, with no material changes to the protection afforded to the habitats and species within.

In addition to the protection afforded to all bats, four UK bat species are listed in Annex II of the EC Directive, with the same additional level of protection being transposed into the *CHSR* for post-Brexit application. These four species are the greater horseshoe bat *Rhinolophus ferrumequinum*, the lesser horseshoe bat *Rhinolophus hipposideros*, Bechstein's bat *Myotis bechsteinii* and the barbastelle *Barbastella barbastellus*, for which Special Areas of Conservation can be designated under certain criteria.

All British bat species are also listed as protected under national laws via Schedule 5 of the *Wildlife and Countryside Act (WCA) 1981 (as amended)*. Furthermore, the *Countryside and Rights of Way (CROW) Act 2000* (Schedule 12, Section 5a) has amended Section 9 (subsection 4) of the WCA Act, 1981 thereby strengthening the level of protection further to include 'reckless' offences as well as 'intentional'.

Ultimately, the above legislation makes it an offence to, or to attempt to do, any of the following:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb a bat, including in particular any disturbance which is likely to impair a bat's ability to survive; breed or reproduce; or rear or nurture their young;
- In the case of hibernating or migratory species, to impair their ability to hibernate or migrate;
- Affect significantly the local distribution or abundance of the species to which they belong;
- Damage, destroy or obstruct a breeding site or resting place of a bat whether intentionally or recklessly; and / or,
- Possess, control, transport, exchange or sell a bat or parts of a bat, alive or dead.

Furthermore, where development will result in damage to, or obstruct access to, any bat roost (whether occupied or not) or risks harming or significantly disturbing bats, a mitigation licence is required from Natural England, the regulatory body responsible for protected species in England, to allow the development to proceed.

The legal interpretation of "development" in the context of bats is not restricted to works requiring planning permission from LPAs but includes permitted development and can encompass works that do not require any formal permission.

Bats are also afforded more general protection in England (and Wales) within the *Natural Environment and Rural Communities Act, 2006*. This imposes a duty on all public bodies, including local authorities and statutory bodies, in exercising their functions, “to have due regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity” [Section 40 (1)]. It notes that “conserving biodiversity includes restoring or enhancing a population or habitat” [Section 40 (3)]. Consequently, attention should be given to dealing with the modification or development of an area if aspects of it are deemed important to bats, such as roosts, flight corridors and foraging areas.

Species of Principal Importance in England (SPIE) – formerly UK Biodiversity Action Plan Priority (BAP) include the barbastelle, brown long-eared bat *Plecotus auritus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, greater horseshoe, lesser horseshoe and Bechstein's bat.

Appendix 2 UK Habitat Map



Legend

- Application site boundary
- Ownership boundary
- Target note
- u1 - Built-up areas and gardens
- u1b - Developed land; sealed surface
- u1b5 - Buildings



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Appendix 3 Bat Roost Survey Results

Table A3.1: Bat emergence survey results.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
Emergence Survey 1: 26th June 2024, sunset: 21:20, survey: 21:05 – 22:50	
21:32	Soprano pipistrelle, emergence from underneath wooden cladding on the southern end of the eastern aspect, approximately at the halfway height point of the building, 12 minutes after sunset (Photo A3.4).
21:36	Common pipistrelle emergence underneath wooden cladding on the southern aspect, 16 minutes after sunset (Photo A3.5).
21:42	Common pipistrelle emergence from beneath the roof overhang at the apex on the gable end of the northern aspect, then commuted south and foraged, 22 minutes after sunset (Photo A3.6).
21:43	Common pipistrelle, foraged around the northern aspect intermittently until survey end (22:50).
21:50	Common pipistrelle HNS along the western aspect.
21:52	Common pipistrelle commuted from the south to the north above the building.
21:54	Common pipistrelle commuted from the south to the north along the eastern aspect.
21:55	Soprano pipistrelle HNS and foraged along the western aspect.
21:57	Soprano pipistrelle commuted from the north to the south along the eastern aspect and foraged.
21:56	Serotine commuted from the south to the north along the western aspect.
21:56	Common pipistrelle commuted from the south to the north above the building and foraged.
21:57	Common pipistrelle commuted around the building along all aspects intermittently until 22:08.
22:02	Soprano pipistrelle commuted from the south to the north along the eastern aspect and foraged.
22:03	Soprano pipistrelle HNS and foraged along the western aspect intermittently until 22:09.
22:05	Common pipistrelle commuted from the east to the west above the building, then commuted south.
22:08	Common pipistrelle HNS and foraged along the western aspect intermittently until 22:15.
22:09	Common pipistrelle commuted from the west to the east along the southern aspect of the building, then foraged above the lake. Lots of foraging activity from multiple bats was noted above the lake to the east of the building until 22:29.
22:11	Soprano pipistrelle HNS and foraged along the western aspect intermittently until 22:16.
22:13	Serotine HNS along the western aspect.
22:17	Common pipistrelle HNS along the western aspect.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
22:17	Noctule HNS along the western aspect.
22:18	Common pipistrelle circled the garden to the south of the building and foraged until 22:20.
22:22	Common pipistrelle HNS and foraged along the western aspect of the building until 22:25.
22:24	Noctule HNS along the western and eastern aspects.
22:34	Common pipistrelle HNS and foraged along the western aspect.
22:39	Noctule HNS along the northern aspect.
22:42	Common pipistrelle HNS intermittently and foraged along the western aspect until survey end (22:50).
22:47	Noctule HNS along the eastern aspect.
Emergence Survey 2: 16th July 2024, sunset: 21:10, survey: 20:55 – 22:40	
21:17	Soprano pipistrelle HNS along the eastern aspect.
21:20	Soprano pipistrelle, emergence from beneath the roof overhang on the western side of the gable end on the southern elevation, 10 minutes after sunset (Photo A3.4).
21:33	Common pipistrelle HNS along the eastern aspect.
21:34	Common pipistrelle foraged along the eastern and northern aspect.
21:35	Common pipistrelle commuted along the southern aspect of the building and foraged until 21:36.
21:36	Common pipistrelle HNS and foraged along the northern aspect.
21:38	Common pipistrelle commuted from the south to the north above the building.
21:39	Common pipistrelle HNS along the northern aspect until 21:52.
21:40	Soprano pipistrelle HNS along the western aspect.
21:40	Two common pipistrelles foraged along the eastern aspect.
21:41	Common and soprano pipistrelle foraged above the building.
21:42	Soprano pipistrelle foraged along the southern aspect.
21:43	Common pipistrelle HNS along the northern aspect.
21:43	Common pipistrelle foraged along the southern and eastern aspect until 21:46.
21:45	Soprano pipistrelle commuted from the north to the south along the western aspect.
21:48	Soprano pipistrelle foraged along the western and eastern aspect until 21:52.
21:48	Common pipistrelle foraged along the eastern aspect.
21:52	Common pipistrelle HNS along the eastern aspect.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
21:53	Common pipistrelle foraged along the western aspect until 22:04, joined by a second bat at 22:00 and both seen foraging together.
21:53	Common and Soprano pipistrelle HNS along the northern aspect.
21:54	Common pipistrelle HNS and foraged along the eastern aspect.
21:56	Common pipistrelle foraged along the eastern aspect.
21:57	Soprano pipistrelle foraged along the eastern aspect.
21:59	Common pipistrelle foraged along the eastern and northern aspect until 22:04.
22:04	Soprano pipistrelle foraged along the western aspect.
22:08	Common pipistrelle HNS and foraged along the western and eastern aspect.
22:09	Noctule HNS along the eastern aspect.
22:11	Common pipistrelle HNS and foraged along the western, eastern and northern aspect.
22:13	Common pipistrelle commuted along the eastern aspect.
22:17	Brown long-eared bat, HNS.
21:17	Common pipistrelle HNS along the western, eastern and northern aspect.
21:19	Common pipistrelle HNS and foraged along the western and northern aspect.
22:20	Common pipistrelle HNS and foraged along the western and eastern aspect.
22:21	Common pipistrelle HNS and foraged along the western aspect.
22:22	Soprano pipistrelle HNS along the eastern aspect.
22:25	Brown long-eared bat, HNS.
22:26	Common pipistrelle HNS along the western, eastern and northern aspect.
22:27	Soprano pipistrelle HNS along the eastern aspect until 22:32.
22:28	Common pipistrelle HNS along the western and eastern aspect.
22:29	Soprano pipistrelle HNS along the western, eastern and northern aspect.
22:30	Common pipistrelle HNS and foraged along the western aspect until 22:34.
22:36	Common Pipistrelle HNS along the eastern aspect until 22:39.
22:37	Noctule HNS along the western aspect.
22:37	Common pipistrelle HNS and foraged along the western aspect until survey end (22:40).
22:40	Common pipistrelle HNS along the northern aspect.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
Emergence Survey 3: 7th August 2024, sunset: 20:35, survey: 20:20 – 22:05	
20:48	Common pipistrelle, emergence from beneath the roof overhang on the western side of the gable end on the southern elevation, 13 minutes after sunset (Photo A3.5).
20:49	Common pipistrelle emergence from beneath the roof overhang at the apex on the gable end of the northern elevation, 14 minutes after sunset (Photo A3.5).
20:51	Common pipistrelle, emergence from beneath the roof overhang on the western side of the gable end on the southern elevation, 16 minutes after sunset (Photo A3.5).
20:57	Common pipistrelle HNS along the eastern aspect.
21:00	Common pipistrelle, emergence from beneath the roof overhang on the western side of the gable end on the southern elevation, 25 minutes after sunset (Photo A3.5).
21:00	Soprano pipistrelle, emergence from a gap beneath the wooden cladding on the eastern elevation, 25 minutes after sunset (Photo A3.4).
21:00	Common pipistrelle HNS along the eastern and northern aspect.
21:09	Common pipistrelle commuted along the northern aspect.
21:11	Common pipistrelle foraged around the dwelling until 21:13.
21:11	Common pipistrelle emergence from beneath the roof overhang at the apex on the gable end of the northern elevation, 36 minutes after sunset (Photo A3.6).
21:14	Common pipistrelle HNS and foraged along the northern aspect.
21:16	Common pipistrelle foraged around the dwelling until 21:17.
21:18	Soprano pipistrelle foraged around the trees to the east of the dwelling.
21:22	Common pipistrelle HNS and foraged along the western, eastern and northern aspect.
21:25	Common pipistrelle HNS briefly along the western and northern aspect.
21:26	Noctule HNS along the northern aspect.
21:27	Noctule HNS along the eastern aspect, three passes within 1 – 2 minutes.
21:28	Common pipistrelle foraged along the western aspect briefly.
21:30	Noctule HNS along the eastern aspect, two passes within 1 minute.
21:31	Noctule HNS along the northern aspect.
21:31	Soprano pipistrelle HNS and foraged along the western aspect.
21:32	Common pipistrelle HNS and foraged along the western and northern aspect.
21:33	Soprano pipistrelle HNS and foraged along the western aspect.
21:33	Noctule, HNS.
21:34	At least two common pipistrelles foraging to the south of the building.

Time	Notes (HNS = heard but not seen) (SNH = seen but not heard)
21:37	Soprano pipistrelle HNS along the northern aspect.
21:40	Soprano pipistrelle HNS and foraged along the western aspect.
21:41	Serotine HNS along the northern aspect
21:42	Common pipistrelle HNS along the western aspect.
21:46	Serotine HNS along the northern aspect
21:47	Common pipistrelle HNS along the northern aspect.
21:48	Noctule HNS along the northern aspect.
21:49	Common pipistrelle HNS along the western aspect.
21:51	Common pipistrelle HNS along the western aspect.
21:53	Soprano pipistrelle HNS and foraged along the eastern and northern aspect.
22:01	Common pipistrelle HNS and foraged along the western aspect.
22:02	Noctule HNS along the northern aspect.
22:05	Common pipistrelle HNS along the northern aspect.

Figure A3.1: Location of surveyors (green circle) and IR equipment (blue circle), and surveyed building (red rectangle) during the bat surveys (adapted from MAGIC, 2024).

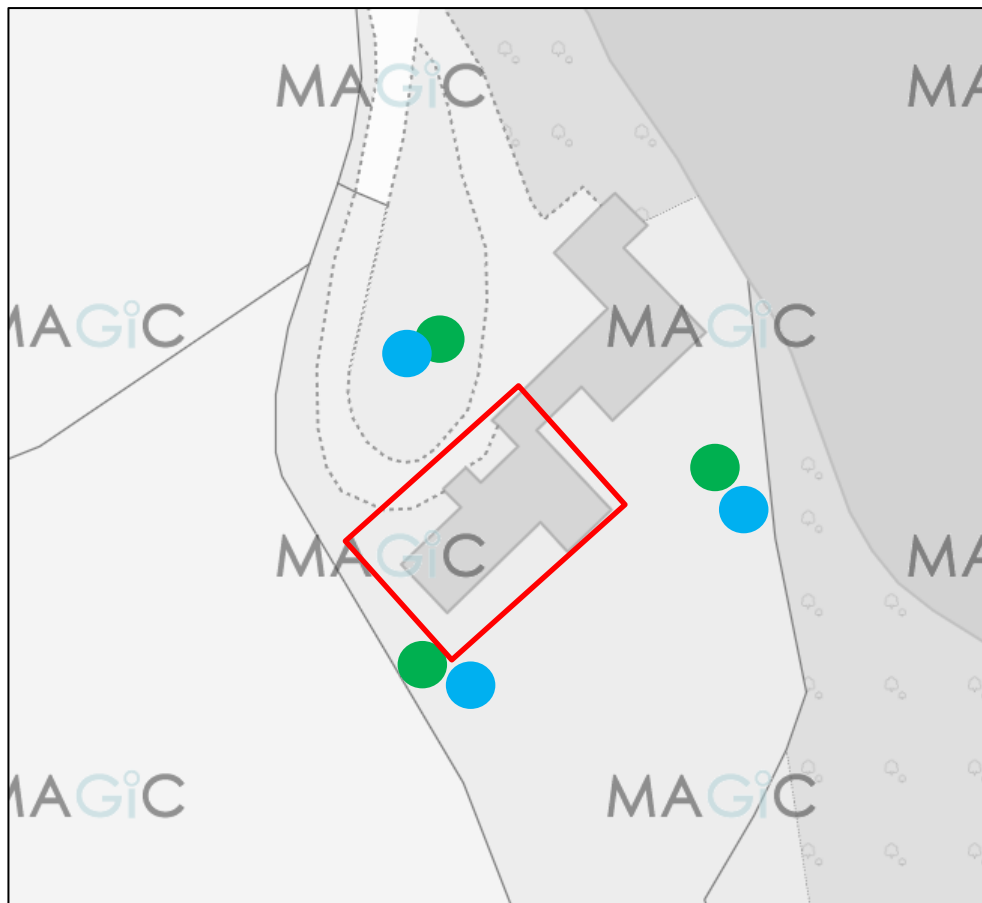


Photo A3.1: Canon IR image at the darkest point of the survey facing the south-western aspect of the building, 26th June 2024.



Photo A3.2: Nightfox IR image at the darkest point of the survey facing the northern aspect of the building, 16th July 2024.



Photo A3.3: Canon IR image at the darkest point of the survey facing the southeastern aspect of the building, 26th June 2024.



Photo A3.4: Soprano pipistrelle emergence locations during the first survey (26th June 2024) circled in orange, and the second survey (16th July 2024) circled in yellow, and the third survey (7th August 2024) circled in orange, on the southeastern aspect of building B1a.



Photo A3.5: Common pipistrelle bat emergence location during the third survey (7th August 2024) circled in blue, on the southeastern aspect of building B1a.



Photo A3.6: Common pipistrelle bat emergence locations during the first survey (26th June 2024) and third survey (7th August 2024) circled in blue, on the northern aspect of building B1a.



Appendix 4 Evaluating Bats in the Wider Ecological Context

The evaluation of the bat population using the site is based on *Valuing Bats in Ecological Impact Assessment* (Wray *et. al.*, 2010). The text in **bold** indicates the process of evaluation for roosting, commuting and foraging bats on site.

Where bats (species and number) use certain habitats (to roost, commute or forage), their population is assigned a relative ecological value. The value to the species is partly based on habitat usage and the rarity of the bat species. For commuting routes or foraging areas, the number of roosts nearby is also a factor. Once the value of the bat population is calculated, mitigation for impacts on the bats can be determined.

British bat species have been subdivided into groups, dependant on their abundance within England; common, rarer and rarest.

Table A4.1: Categorising bats by abundance in England.

Rarity	Bat Species
Rarest	Greater horseshoe bat Bechstein's bat Alcathoe's bat Greater mouse-eared bat Barbastelle Grey long-eared bat
Rarer	Lesser horseshoe bat Whiskered bat Brandt's bat Daubenton's bat Natterer's bat Leisler's bat Noctule Nathusius' pipistrelle Serotine
Common	Common pipistrelle Soprano pipistrelle Brown long-eared bat

Table A4.2: Evaluating bat roosts.

Geographic Frame of Reference	Roost Types
International	SAC sites.
National/UK	Maternity sites (rarest species). Sites meeting SSSI guidelines.
Regional	Mating sites (rarer/rarest species) including well-used swarming sites. Maternity sites (rarer species). Hibernation sites (rarest species). Significant hibernation sites for rarer/rarest species or all species assemblages.
County	Maternity sites (common species). Small numbers of hibernating bats (common and rarer species). Feeding perches (rarer/rarest species). Individual bats (rarer/rarest species). Small numbers of non-breeding bats (rarer/rarest species).
District, Local or Parish	Feeding perches (common species). Individual bats (common species). Small numbers of non-breeding bats (common species). Mating sites (common species).

To calculate the score for either commuting routes or foraging areas the numerical values from each column below are added together (**Tables A4.3 and A4.4** below).

Table A4.3: Evaluating commuting routes.

Species	Number of Bats	Roosts / Potential Roosts Nearby	Type & Complexity of Linear Features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts or close to a SSSI (5)	Well grown and well connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table A4.4: Evaluating foraging areas.

Species	Number of Bats	Roosts / Potential Roosts Nearby	Foraging Habitat Characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts or close to a SSSI (5)	Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Finally, the evaluation of bat commuting routes and foraging areas on the site is based on the following scoring system.

Table A4.5: Scoring system for valuing commuting and foraging bats.

Geographic Frame of Reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, Local or Parish	11-20
Not Important	1-10

Appendix 5 Planting for Bats

(Source: 'Gardening for bats', Bat Conservation Trust, 2004)

Aim to have flowers in bloom throughout the year, including annuals and herbaceous perennials. Below are suggestions, but this is not an exhaustive list. Flowering times are approximate, and vary depending on the region. Regular dead-heading extends flowering period in many flowers.

A= Annual, HA = Hardy annual, HHA = Half-hardy annual, P = Perennial, W = Wild flower.

Flowers for Borders			
St. John's wort	<i>Hypericum sp.</i>	P	March
Marigolds	<i>Calendula</i>	H/A	March-October
Aubrietia	<i>Aubrietia deltoidea</i>	P	March-June
Honesty	<i>Lunaria rediviva</i>	HB	March
Forget-me-not	<i>Myosotis sp.</i>	A/P	March-May
Elephant ears	<i>Bergenia</i>	P	April
Wallflowers	<i>Erysimum</i>	B	April-June
Cranesbills	<i>Geranium sp.</i>	P	May-September
Yarrow	<i>Achillea</i>	P	May-
Poppies	<i>Papaver sp.</i>	A	May- July
Dames violet	<i>Hesperis matronalis</i>	P	May-August
Red valerian	<i>Centranthus ruber</i>	P	May-September
Poached egg plant	<i>Limnanthes</i>	HA	June-August
Knapweed	<i>Centaurea nigra</i>	P	June-September
Phacelia	<i>Phacelia tanacetifolia</i>	HA	June-September
Ox-eye daisy	<i>Leucanthemum vulgare</i>	P	June-August
Evening primrose	<i>Oenothera biennis</i>	B	June-September
Candytuft	<i>Iberis umbellate</i>	HA	June-September
Sweet William	<i>Dianthus barbatus</i>	B	June-July
Blanket flowers	<i>Gaillardia</i>	P	June -
Verbena	<i>Verbena bonariensis</i>	HHA	June-October
Scabious	<i>Knautia arvensis</i>	P	July-August
Night-scented stock	<i>Mattiola bicornia</i>	HA	July-August
Pincushion flower	<i>Scabious sp.</i>	A/P	July-September
Cherry pie	<i>Heliotrope</i>	HHA	July-October
Mexican aster	<i>Cosmos sp.</i>	A/P	July-October
Cone flower	<i>Rudbeckia sp.</i>	A/P	August-November
Mallow	<i>Lavateria sp.</i>	P	August-October
Michaelmas daisy	<i>Aster sp.</i>	P	August-September
Ice plant 'Pink lady'	<i>Sedum spectabile</i>	P	September
Herbs – Both Leaves and Flowers are Fragrant			

Fennel	<i>Foeniculum vulgare</i>	July-September	
Bergamont	<i>Monarda didyma</i>	June-September	
Sweet cicely	<i>Myrrhis odorata</i>	April-June	
Hyssop	<i>Hyssopus officinalis</i>	July-September	
Feverfew	<i>Tanacetum parthenium</i>	June-September	
Borage	<i>Borago officinalis</i>	May-September	
Rosemary	<i>Rosmarinus officinalis</i>	March-May	
Lemon balm	<i>Melissa officinalis</i>		
Coriander	<i>Coprianrum sativum</i>	June-August	
Lavenders	<i>Lavendula</i> sp.		
Marjoram	<i>Origanum</i> sp.		
Trees, Shrubs and Climbers Important for Insects			
Oak	<i>Quercus</i> sp.	large gardens only	
Silver birch	<i>Betula pendula</i>		
Common alder	<i>Alnus glutinosa</i>	Suitable for coppicing	
Hazel	<i>Corylus avellana</i>	Suitable for coppicing	
Elder	<i>Sambucus nigra</i>	Small	
Goat willow	<i>Salix caprea</i>	Suitable for coppicing	
Hawthorn	<i>Crataegus monogyna</i>	Suitable for coppicing	
Honeysuckle	<i>Lonicera</i> sp.	Grow a variety for succession	
Dog rose	<i>Rosa canina</i>	Climber	
Bramble	<i>Rubus fruticosus</i>	Climber	
Ivy	<i>Hedera helix</i>	Climber	
Guelder rose	<i>Viburnum opulus</i>	Shrub	
Gorse	<i>Ulex</i> sp.	Shrub	
Plants for Pond Edges and Marshy Areas			
Purple loosestrife	<i>Lythrum salicaria</i>	W	June-August
Meadow sweet	<i>Filipendula ulmaria</i>	W	June-September
Lady's smock	<i>Cardamine pratensis</i>	W	April-June
Water mint	<i>Mentha aquatica</i>	W	July-September
Angelica	<i>Angelica sylvestris</i>	W	July-September
Hemp agrimony	<i>Eupatorium cannabinum</i>	W	March-May
Marsh marigold	<i>Caltha palustris</i>	W	June-September
Creeping Jenny	<i>Lysimachia nummularium</i>	W	May-August
Fringed water lily	<i>Nymphoides peltata</i>	W	June-September
Water forget-me-not	<i>Myosotis scorpioides</i>	W	June-September

Appendix 6 Bat Mitigation Plan

Figure A6.1: Proposed front and rear elevations with suggested bat box locations (yellow circles)
(Adapted from Planet Consulting, 11th July 2024, drawing number: A.203).



Side Elevation (South, Main House)

Side Elevation (North, Main House)

1. 100% COMPLIANT WITH THE BUILDING REGULATIONS 2010
2. 100% COMPLIANT WITH THE BUILDING REGULATIONS 2010

PLANIT CONSULTING
100% COMPLIANT WITH THE BUILDING REGULATIONS 2010
100% COMPLIANT WITH THE BUILDING REGULATIONS 2010
100% COMPLIANT WITH THE BUILDING REGULATIONS 2010

Mr P. Williams
100% COMPLIANT WITH THE BUILDING REGULATIONS 2010
100% COMPLIANT WITH THE BUILDING REGULATIONS 2010
100% COMPLIANT WITH THE BUILDING REGULATIONS 2010

Proposed Elevations, Sides Main House
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Planning
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